

379
N81
No. 6532

CZECHOSLOVAKIA'S FORTIFICATIONS: THEIR
DEVELOPMENT AND IMPACT ON CZECH
AND GERMAN CONFRONTATION

THESIS

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

Kreg A. Walvoord, B.A.

Denton, Texas

May 1989

W.K.

Walvoord, Kreg A., Czechoslovakia's Fortifications:
Their Development and Impact on Czech and German
Confrontation. Master of Arts (History), May, 1989,
100 pp., 14 Illustrations, 4 maps, 69 titles.

During the 1930s, the Republic of Czechoslovakia endeavored to construct a system of modern fortifications along its frontiers to protect the Republic from German and Hungarian aggression and from external Versailles revisionism. Czechoslovakia's fortifications have been greatly misrepresented through comparison with the Maginot Line. By utilizing extant German military reports, this thesis demonstrates that Czechoslovakia's fortifications were incomplete and were much weaker than the Maginot Line at the time of the Munich Crisis in 1938. The German threat of war against Czechoslovakia was very real in 1938 and Germany would have penetrated most of the fortifications and defeated Czechoslovakia quickly had a German-Czech war occurred in 1938.

TABLE OF CONTENTS

	Page
LIST OF ILLUSTRATIONSiii
LIST OF MAPS.	iv
Chapter	
I. THE HISTORICAL DEBATE.	1
II. HISTORICAL AND THEORETICAL BASIS OF MODERN FORTIFICATIONS.	10
III. ORIGIN OF CZECHOSLOVAKIA'S FORTIFICATIONS AND THE PROBLEM OF DEFENSIBILITY.	21
IV. LIGHT FORTIFICATIONS	33
V. MEDIUM FORTIFICATIONS.	47
VI. HEAVY FORTIFICATIONS	55
VII. MUNICH AND THE THREAT OF WAR	69
VIII. GERMAN OCCUPATION AND EXAMINATION OF CZECHOSLOVAKIA'S FORTIFICATIONS.	88
IX. CONCLUSION	94
BIBLIOGRAPHY.	96

LIST OF ILLUSTRATIONS

Figure	Page
1. Gruson Cast Iron Turret.	13
2. Liège Fort	16
3. Czech Roadblock.	37
4. Permanent Rail Roadblock	37
5. Czech Tank Barrier	39
6. Four-Armed Concrete Hedgehog	42
7. Six-Armed Iron Hedgehog.	42
8. Light Concrete Machine Gun Post.	44
9. Firing Pattern of Medium Strength Casemates. .	50
10. Medium Strength Casemate	50
11. Medium Strength Casemate	52
12. Individual Heavy Fort.	58
13. Troppau Group of Forts	64
14. Effects of German Artillery Tests on Czech Bunkers	92

LIST OF MAPS

Map	Page
1. Central Europe	23
2. Topography of Czechoslovakia	26
3. Czechoslovakia's Fortifications September 1938.	34
4. German Plan for the Invasion of Czechoslovakia.	80

CHAPTER I

THE HISTORICAL DEBATE

During the 1930s, the Republic of Czechoslovakia began constructing a system of defensive border fortifications to protect the Republic from foreign aggression. In its concept and design, this system was, in some ways, similar to the famed French Maginot Line. Photographs of the Czech works reveal, to a certain degree, the influence that the Maginot Line had on the Czech fortifications program. In terms of appearance, it is often difficult to distinguish a Czech casemate from a comparable French one. This similarity, however, should not be construed as evidence of French supervision of the project, an allegation that is often made. The Czechs and the French did discuss technical issues regarding the construction of fortifications, but the French exercised no supervision over the project. It was a Czech project, Czech designed, and Czech constructed. Similarities between the Czech fortifications and the Maginot Line were the result of a healthy respect in Czechoslovakia for the strides taken by the French in the field of military engineering and the fact that both nations were operating from a similar technological base with similar foreign policy desires. Dissimilarities between the two

systems are striking, and these dissimilarities reveal the true strategic and tactical purpose of Czechoslovakia's fortifications.

Different opinions exist concerning the strength or weakness of the Czech defensive network, but the generally accepted opinion among post-war historians is favorable, often to the point of exaltation. David Vital, for example, has stated:

The Czechs had constructed a formidable chain of fortifications. It was an immense complex of underground blockhouses and casemates, forts, electric barriers, tank barriers, and underground aerodromes.¹

Others, William Carr, John W. Wheeler-Bennett, William L. Shirer, and John Toland included, have also spoken favorably of Czechoslovakia's fortifications.² Wheeler-Bennett has even stated that the Czech fortifications "contained the secrets of the Maginot Line," a statement popular among French apologists.³

1. David Vital, "Czechoslovakia and the Powers, September 1938," in Hans W. Gatzke, ed., European Diplomacy Between Two Wars, 1919-1939 (Chicago: Quadrangle Books, 1972), 201.

2. William Carr, Arms, Autarky and Aggression: A Study in German Foreign Policy, 1933-1939 (New York: W.W. Norton and Company, Inc., 1972), 89; John W. Wheeler-Bennett, Munich: Prologue to Tragedy (1948; reprint, New York: The Viking Press, 1965), 333; William L. Shirer, The Rise and Fall of the Third Reich: A History of Nazi Germany (1959; reprint, New York: Simon and Schuster, Inc., 1981), 382; John Toland, Adolf Hitler (1976; reprint, New York: Ballantine Books, 1981), 459.

3. Wheeler-Bennett, Munich, 375.

What is more striking and revealing, however, are the opinions expressed by persons involved with the events prior to the Second World War. Winston Churchill, for example, in his multi-volume history of the Second World War, committed one sentence to Czechoslovakia's fortifications network, calling it "the strongest fortress line in Europe."⁴

Eduard Beneš, foreign minister of the Republic of Czechoslovakia from 1918 to 1935 and president from 1935 to 1938, allowed three sentences in his memoirs to these fortifications, stating that they were "at least as efficient as the Maginot Line and in some respects surpassed it."⁵ It should be remembered here that Churchill and Beneš were both opponents of appeasement. Persons who were supporters of appeasement tend to express a less optimistic opinion about Czechoslovakia's fortifications. Neville Henderson, Britain's ambassador to Germany from 1937 to 1939 and supporter of Neville Chamberlain, Britain's prime minister who signed the Munich agreement, while conceding the strength of the forts in northern Czechoslovakia, committed an equally limited amount of text in his memoirs to this topic, labeling the Czech defensive position as

4. Winston S. Churchill, The Second World War: The Gathering Storm (Boston: Houghton Mifflin Company, 1948), 310.

5. Eduard Beneš, Memoirs of Dr. Eduard Beneš: From Munich to New War and New Victory (Boston: Houghton Mifflin Company, n.d.), 28.

"highly vulnerable to attack" and "completely helpless."⁶

Differing opinions are not only present among the anti-German elements of the period, but are also present, and more pronounced, among the Germans themselves. Wilhelm Keitel, Chief of Staff of the German Armed Forces High Command from 1938 to 1945, wrote in his memoirs, which were written at Nuremberg in 1945, that German 88-millimeter flak "were able to smash right through the normal bunkers," a role in which, he states, these guns would have been used in a German-Czech war in 1938.⁷ While on the stand at Nuremberg, however, Keitel expressed a contrary opinion:

We were extraordinarily happy that it had not come to a military operation, because throughout the time of preparation we had always been of the opinion that our means of attack against the frontier fortifications of Czechoslovakia were insufficient. From a purely military point of view we lacked the means for an attack which involved the piercing of the frontier fortifications.⁸

Alfred Jodl, Chief of the Operations Staff of the German Armed Forces High Command from 1939 to 1945, expressed his opinion about Czechoslovakia's fortifications during a pre-trial interrogation at Nuremberg:

6. Neville Henderson, Failure of a Mission: Berlin, 1937-1939 (New York: G.P. Putnam's Sons, 1940), 130-131.

7. Wilhelm Keitel, The Memoirs of Field-Marshal Keitel (New York: Stein and Day, Publishers, 1965), 74.

8. International Military Tribunal, Trial of the Major War Criminals Before the International Military Tribunal (Nuremberg: United States Government Printing Office, 1947), 10:509.

Q. "And weren't these Czech fortifications modeled after the Maginot fortifications?"

A. "They were not by a long shot so strong as the Line Maginot. Only now and then were certain fortifications which were stronger than the general outline of the fortifications along the border."

Q. "My question is where [sic] they not based on the Maginot fortifications; in other words, modeled after the plans of the Maginot fortifications?"

A. "The Maginot Line was a giant construction, very deep and very heavy and extremely strong. You can't compare them in any way with the Czech fortifications, which were all above ground."

Q. "I was speaking only as to design, not as to military strength."

A. "No comparison whatsoever. It would be as if you would compare a rowboat with a battleship."

Heinz Guderian, proponent of German tank warfare and Chief of the General Staff of the German Army High Command from 1944 to 1945, stated in his memoirs that the Czech fortifications "were not as strong as we had expected them to be," while Erich von Manstein, head of the Operations Section of the German Army General Staff from 1935 to 1938, testified at Nuremberg that:

there is no doubt whatsoever that had Czechoslovakia defended herself, we would have been held up by her fortifications, for we did not have the means to break through.¹⁰

9. Alfred Jodl, Interrogation of 28 August 1945, 14:50-17:15, Office of the U.S. Chief of Council for the Prosecution of Axis Criminality (OCCPAC), Interrogation Division (Microcopy M-1270, Roll 8, Frame 0266), Interrogation Records Prepared for War Crimes Proceedings at Nuremberg, 1945-1947, Records Group 238, U.S. National Archives, Washington, D.C.

10. Heinz Guderian, Panzer Leader (New York: E. P. Dutton and Company, Inc., 1952), 59; Trial of the Major War Criminals, 20:606.

Albert Speer, German Minister for Armaments and War Production from 1942 to 1945, contradicted Keitel's statement about German artillery smashing through Czech bunkers when he wrote in his memoirs:

The Czech border fortifications caused general astonishment. To the surprise of experts a test bombardment showed that our weapons would not have prevailed against them. . . . The fortifications were amazingly massive.¹¹

Even Adolf Hitler is alleged to have bragged in 1939, after he had personally toured the Czech fortifications in 1938:

When after Munich we were in a position to examine Czechoslovak military strength from within, what we saw of it greatly disturbed us: we had run a serious danger. The plan prepared by the Czech Generals was formidable.¹²

Such sweeping and conflicting statements make it clear that memoirs and Nuremberg Trial testimony require corroboration and should be used carefully in their proper context.

The opinion that Czechoslovakia's fortifications were formidable, similar to the Maginot Line, and that the Germans would have found it very difficult to pierce them, and the opinion that the fortifications were much weaker than the Maginot Line, hardly comparable, and that the Germans would not have found them difficult to overcome,

11. Albert Speer, Inside the Third Reich (1969; reprint, New York: Avon Books, 1971), 161.

12. Wheeler-Bennett, Munich, 333.

are but a small part of a much larger disagreement. Some, including the opponents of appeasement, argue that the Czechs and the Western Powers should have resisted German pressure and risked a war with Germany in 1938. Supporters of this view point out the deficiencies of the German army as it existed then and argue the logic of resisting Germany with the Czech army and fortifications intact. This argument concludes that since the odds favored Czechoslovakia and her allies, Germany would have lost such a conflict and Europe would have been spared the catastrophe of world war. Others, including the supporters of appeasement, contend that nothing could prevent Germany from occupying Czechoslovakia, if she chose to do so, that the Czech army and fortifications were weaker than had been advertised, and accordingly, it was better to negotiate with Germany, give in somewhat to German pressure, prevent war at that time, and continue with Western rearmament. This argument concludes that since the Western Powers were unprepared and unwilling to go to war with Germany for the sake of Czechoslovakia, Germany, in a relatively short period of time, could have defeated Czechoslovakia militarily. The problem with both arguments is that they are both self-serving and expressed from hindsight. As regards Czechoslovakia's fortifications, one view tends to praise their strengths while the other tends to note their deficiencies. A careful and accurate study of the

fortifications would shed light upon this disagreement and, perhaps, justify one of the two arguments.

Despite the great amount of historical study and analysis which has occurred since the Second World War a cohesive picture of Czechoslovakia's fortifications has not emerged. This is partly due to the nature of self-serving memoirs and Nuremberg Trial testimony by persons involved with the events prior to the Second World War, accounts which are deficient in substantial information regarding the fortifications. More importantly, this lack of understanding suffers from the general inaccessibility to Czech national archives, and the remnants of the forts themselves are, of course, behind the iron curtain. A few studies by Czech scholars concerning Czechoslovakia's arms, armaments industry, and defensive situation in 1938 have appeared in the post-war years, but their impact upon Western historical circles has been limited.¹³

The definitive historical account of Czechoslovakia's fortifications program remains for the future, but the situation is not entirely hopeless. German military engineers examined the Czech forts in detail during the period of Germany's occupation of the Sudetenland in 1938

13. Jonathan Zorach, "Recent Studies on Czechoslovak Arms and Armament Works," East Central Europe/L'Europe du centre-est 4, No. 1 (1977): 86-92. Such Czech studies include the only comprehensive history of Czechoslovakia's fortifications program available today, Ota Holub, A věže mlčí (Praha: Kontakt Pressfoto, 1973).

and the rest of Czechoslovakia in 1939 and their reports are available to Western historians. These German reports, which were not intended for public consumption, offer the best source of technical information currently available about Czechoslovakia's fortifications, and it is from these reports that much of the information for this thesis will be drawn.

This thesis will examine Czechoslovakia's fortifications by first presenting the historical and theoretical basis for such a program. The immediate reasons why the Czechs decided to construct fortifications and an evaluation of the general defensibility of the Republic will then be presented, followed by data concerning the location and physical characteristics of the forts themselves. The role and impact of the fortifications upon the Munich Agreement and in relation to the threatened German-Czech military confrontation in the autumn of 1938 will then be discussed and evaluated. Finally, some German perspectives will be presented, including the German response to the fortifications upon their occupation of Czechoslovakia, because the network was predominately directed against them.

CHAPTER II

HISTORICAL AND THEORETICAL BASIS OF MODERN FORTIFICATIONS

The art and science of fortification is as much a part of human history as any other human endeavor. As long as conflict and warfare have existed, so too has fortification been practiced. The two are intrinsically inseparable. What is not often realized, however, is that at no time in history have fortifications been so prevalent and popular as during the twentieth century. In this regard then, Czechoslovakia's fortifications can be seen as but another example of man's search for security in the face of potential aggression and as a statement against the rise in the frequency and ferocity of war which has occurred in the modern era.

During the 1920s and 1930s, European nations studied the problems of defense and security as never before, largely as a consequence of the First World War. Some nations rejected the concept of fixed fortifications and the prepared battlefield. It was, after all, a major national investment to pursue such a program. Other nations believed in the worth of fortifications and adopted their own construction programs. France, Belgium, Germany, Czechoslovakia, Yugoslavia, the Soviet Union, Finland, and

to a lesser degree, Britain, Italy, Rumania, and Poland, all constructed fortifications during the interwar years. Other European nations experimented with fortified defenses, but made no major investments.

Though the great impetus of modern fortifications was the First World War, the origin of such fortifications can be found in the nineteenth century. Advances in technology and industrialization led to improvements in weaponry which increased the ferocity of war. The introduction of rapid firing breech-loading rifles and artillery, as well as other military advancements, seemed to support and promote offensive theory. The Prussian rout of the Austrian army at the battle of Königgrätz in northern Bohemia during the Six Weeks War of 1866 and the Prussian successes against the French in 1870 were seen as stunning examples in support of offensive theory and firepower. The ineffectiveness and neutralization of the older masonry forts in those wars, and other wars, by large caliber, long range, and rapid firing artillery using explosive conical shells necessitated a re-thinking of the problems and theory of defense and of fortifications in particular.¹ Artillery was the greatest threat to the effectiveness of any fort. Ingenious pits and other obstructions, supported by small

1. James Cross Giblin, Walls: Defenses Throughout History (Boston: Little, Brown and Company, 1984), 75; Peter Pareet, ed., Makers of Modern Strategy: From Machiavelli to the Nuclear Age (Princeton: Princeton University Press, 1986), 437-438.

arms fire, could effectively prevent any attempt by infantry to assault a fort, but these types of defenses could not stop artillery from pounding a fort mercilessly. Forts, if they were to continue to exist, would have to be redesigned to provide maximum security from artillery by reducing the effectiveness of an artillery shell when it struck the fort.

The first major improvement in fortification design occurred during the 1870s with the introduction of the Gruson cast iron turret in Germany.² Large, thick, cast iron sections, curved and sloping backward, could be fitted together to form a circular, low-profile, tortoise shell turret. Circular openings in some of the cast iron sections allowed gun barrels to protrude. A stone, concrete, or iron glacis covering the low forward lip of each section could be constructed to deflect shells up and off the curved iron surface and thus prevent a turret's rotation mechanism from being jammed or sections of a turret being blown off.

Another German development soon appeared which increased the degree of protection afforded by the Gruson turret, the Schumann retractable cupola. By using a counter balance mechanism, an iron shell cupola resting at ground level could be raised briefly to expose a short iron

2. Ian V. Hogg, Fortress: A History of Military Defense (New York: St. Martin's Press, 1974), 95-97.

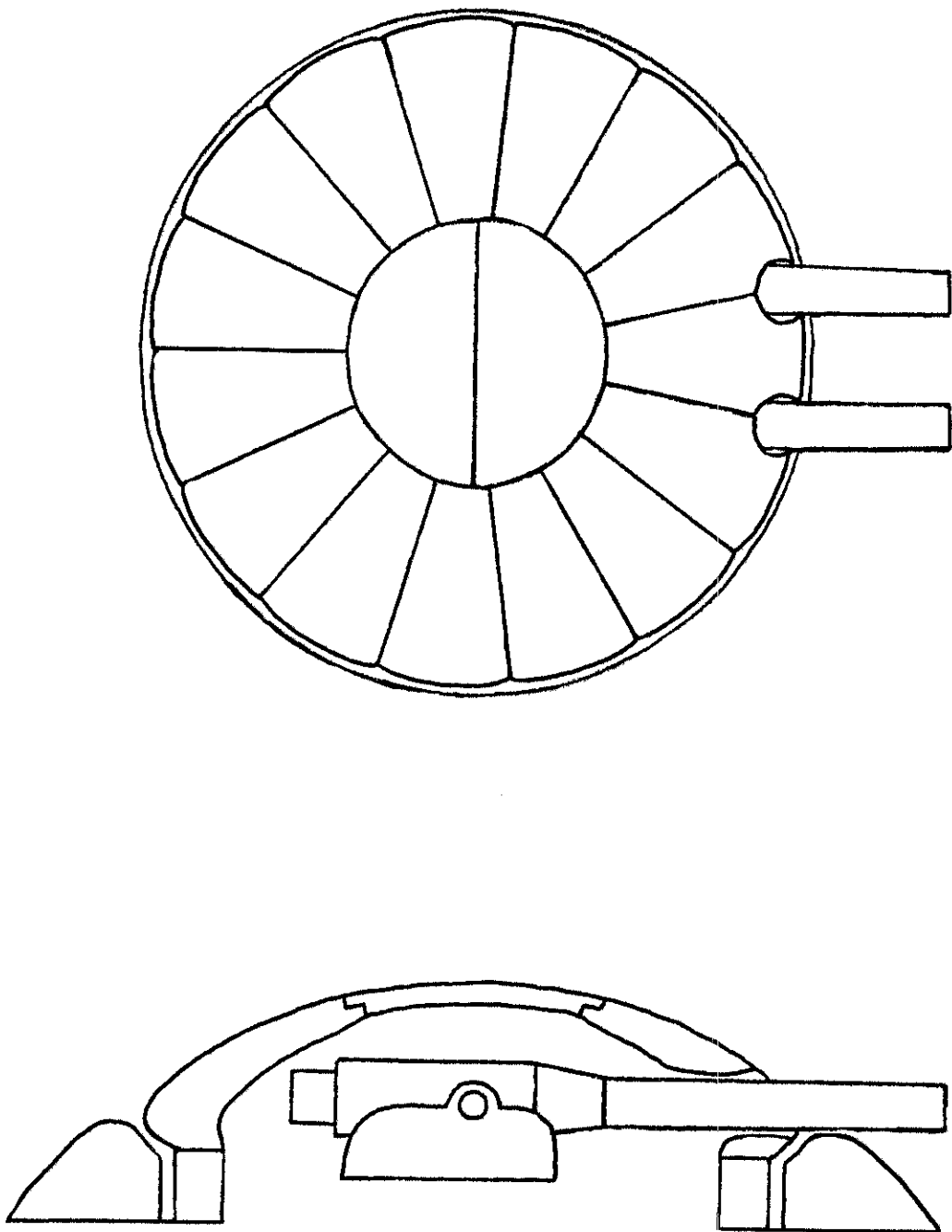


Fig. 1--Gruson Cast Iron Turret

cylinder from which artillerymen could fire a gun.³ A unique recoil system operated a trip mechanism which automatically caused the cupola to sink again to ground level as soon as the gun had been fired.

The Gruson and Schumann developments caused enthusiastic interest in other countries, particularly France and Belgium, because it now seemed that an invulnerable system of defense could be constructed. In the 1880s, Mougin, a French engineer and designer for the St. Chamond gunmaking company, became interested in fortification design and produced models which exceeded Gruson's and Schumann's designs in their complexity and ingenuity. Mougin was the first to design a truly modern integrated fort. Mougin's specimen fort consisted of a large underground concrete structure. Its low profile dome-shaped roof was the only portion of the fort visible above ground level. In the roof were built nine iron turrets fitted with an assortment of weapons. Deep beneath the fort were ammunition stores and living quarters. Mougin believed that a number of these forts could be constructed encircling important cities. He proposed no pits, obstructions, or outworks. Firepower alone would provide protection.⁴ Though Mougin's specimen fort was

3. Ibid., 97-99.

4. Ibid., 99; Giblin, Walls, 75.

never built, the new concepts it presented were incorporated into a number of forts in eastern France.

In the 1880s, Belgian general Henri Brialmont consolidated and expanded upon these newer concepts for fortified defenses and began the construction of the fortress complexes at Liège and Namur. Built on a triangular trace on high ground, each fort contained a huge central concrete redoubt topped with numerous cupolas and turrets containing artillery up to 210-millimeters.⁵ The entire redoubt was surrounded by a huge concrete ditch filled with entanglements. The inner wall of this ditch sloped toward the central redoubt forming an escarp so that the fort's guns could bring the ditch itself under fire. Beneath the forts were a maze of tunnels and chambers. The Liège and Namur fortress complexes were the last major advancements in Europe in fortress design and construction before the eruption of the First World War.

When they were constructed, these modern fortifications, particularly Liège, represented the zenith in fortification design and theory. These forts were practically impervious to infantry assault and were built to withstand the largest land guns then available. As with every advancement in defense, however, an opposing offensive

5. Barbara W. Tuchman, The Guns of August (New York: Macmillan Publishing Co., Inc., 1962), 190.

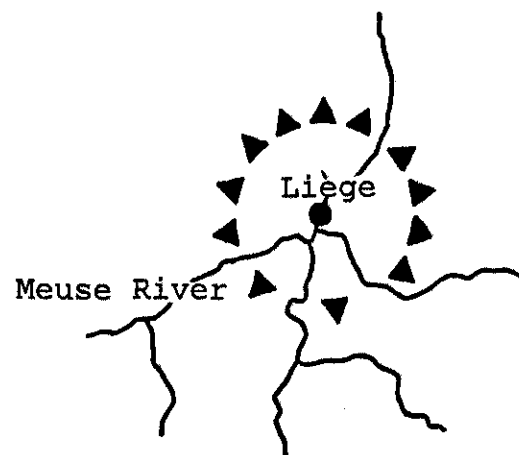
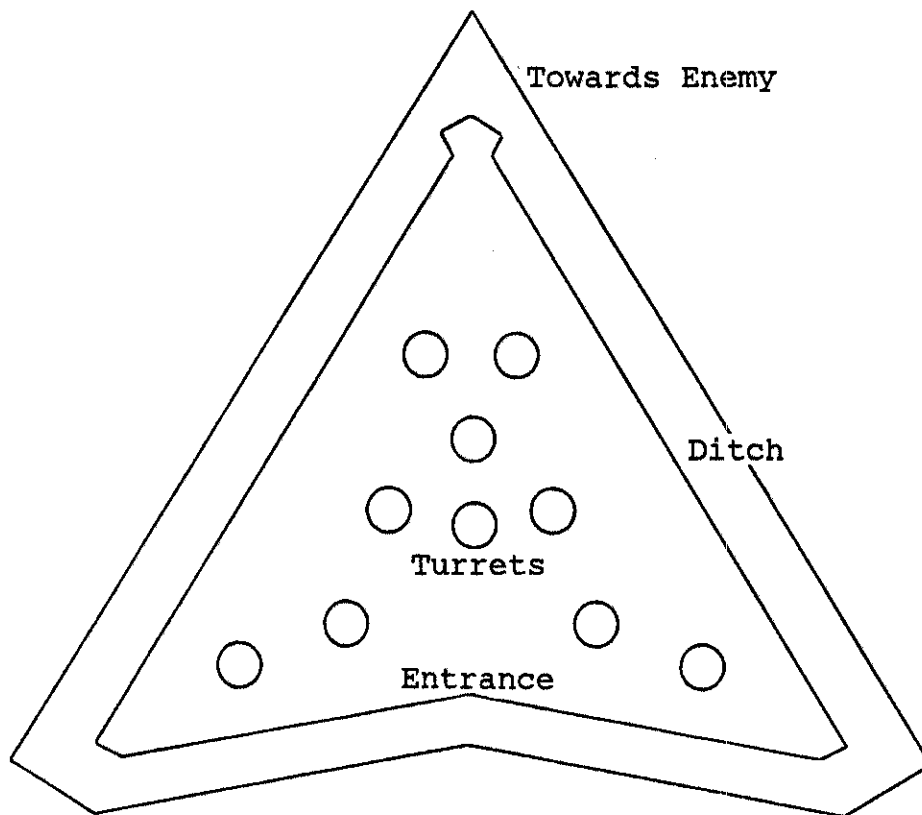


Fig. 2--Liège Fort

capability eventually developed. Though the Germans had contributed to the technology of fortified defense, German fortification before the First World War was oriented to coastal defense in response to the superior British navy. On land, the German army was offensive in strategy and large land fortifications were not a priority. As the First World War approached, however, the Germans began to study the problem of fortress reduction more closely. Wherever it marched, east or west, the German army would encounter forts inspired by Brialmont, with thick concrete and armored turrets, since the Russians and the Rumanians had, like the French and the Belgians, become interested in fortification.

After the Russo-Japanese war of 1904-1905 and the siege of Port Arthur, the Germans began to explore the possibility of large caliber siege guns which could be transported overland. The incomplete fortress of Port Arthur had held out for 148 days against countless Japanese attacks supported by artillery up to 280-millimeters.⁶ If Port Arthur was an example of the strength of modern fortifications, the Germans must have wondered how the superior fortress of Liège could be neutralized. Larger guns could be built. The German Krupp and the Austrian Skoda armaments works both possessed the technical capability to manufacture large guns and make them

6. Hogg, Fortress, 115.

available to the Germans. The problem was in the transportation of such guns and this problem would strain the technological limits of the gun makers and not be satisfactorily overcome until just before their need arose.

When the Germans invaded Belgium in accordance with the Schlieffen Plan in August 1914, their first obstacle, and a critical one, was the reduction of Liège. The twelve large forts surrounding the city had to be taken quickly to afford a successful crossing of the Meuse; otherwise, the entire German plan would be seriously hampered. On August 5 German infantry began assaulting the forts supported by light field artillery.⁷ By August 12 only one of the forts had been taken by assault and that came at a tremendous cost in German lives. It was then that the Germans brought forward their newly developed heavy siege guns to deal with the forts: two Krupp-made 420-millimeter and two Skoda-built 305-millimeter heavy siege mortars. Transported by rail to within twenty miles of Liège, these mammoth guns were then hauled by tractors and teams of horses to within range of the forts. The larger Krupp guns weighed 98 tons when assembled and fired a conical shell weighing 1,800 pounds nine miles in an arc 4,000 feet high. The shell took sixty seconds to reach its target. These guns were fired electrically with their large

7. Tuchman, Guns of August, 199.

crews wearing cotton padding over their eyes, ears, and mouths and lying on the ground three hundred yards from these guns.⁸ The shelling began late on August 12. By August 16 the Germans had destroyed or occupied the remaining eleven forts, opening the way for the German drive across northern France.

To some the First World War seemed to signal the end of large fixed fortifications. The Krupp and Skoda siege guns had left a trail of shattered forts throughout eastern and western Europe. Some military critics remained skeptical and argued that the forts taken were of low quality, that they were not constructed so that they could support each other, and that they were large and obvious targets. Above all, the war seemed to vindicate the idea that defense in depth using layers of field fortifications, trenches, barbed wire, dugouts, and machine gun posts, supported in the rear by field artillery, was now the most effective way to absorb and destroy enemy offensives. It also became evident to postwar military engineers that several criteria now had to be met to construct an effective and worthwhile fort. These criteria included: cover and camouflage, to hide a fort from an attacker; adequate observation, to allow fortress defenders to see what an attacker was doing; obstacles to hold up an enemy's attack

8. Ibid., 218.

or channel attackers into vulnerable areas; protection against enemy fire; firing facilities to counterattack and destroy enemy units; and communications to coordinate fire and facilitate supply, reinforcement, counterattacks, and, if necessary, evacuation.⁹ These six criteria formed the basis of interwar fortification strategy, but few interwar defensive systems adequately met all these criteria owing to various political, geographic, monetary, and time constraints.

The conduct and outcome of the First World War thus heavily influenced the fortifications of the 1920s and 1930s. These fortifications endeavored to incorporate the best technical aspects of the large fixed fortifications with the practical realities evidenced in trench warfare. Interwar fortifications were, consequently, more inconspicuous, more subterranean, and were constructed in continuous linear layers with depth and integral strength being the two main concerns. In this regard, interwar fortifications, particularly the Maginot Line, were grand elaborations of the lessons learned in the First World War.¹⁰

9. "A French Officer," The Maginot Line: The Facts Revealed (London: Duckworth, 1939), 27. Authorized by the French War Office.

10. Hogg, Fortress, 129.

CHAPTER III

ORIGIN OF CZECHOSLOVAKIA'S FORTIFICATIONS AND THE PROBLEM OF DEFENSIBILITY

Czechoslovakia, which came into existence as a nation in 1918, had no tradition upon which to base its fortifications program. There were a few older nineteenth century Austrian masonry forts in Bohemia and Moravia, but these were historic relics of an age the First World War had swept aside. That Czechoslovakia would endeavor to construct a system of modern fortifications along its borders was something very new, indeed unprecedented, for central Europe. It was no coincidence, however, that the two nations that had the most to lose from a revision of Versailles, and the two nations that were most closely linked during the interwar years, France and Czechoslovakia, should both construct fortifications facing a common potential foe.

The Czechoslovakian nation made the decision to construct border fortifications only in 1932 after Beneš had returned home from the Geneva Disarmament Conference and expressed a pessimistic and realistic opinion about European disarmament prospects.¹ Relations between the

1. Jonathan Zorach, "Czechoslovakia's Fortifications: Their Development and Role in the 1938 Munich Crisis," Militärgeschichtliche Mitteilungen 2 (1976): 83.

nations of Europe were becoming more tense and uncertain. The post-Locarno détente had waned. Economic depression had set in. The Versailles Treaty and other post-war treaties, in which Czechoslovaks had placed their faith, were being increasingly discredited. Czechoslovakia was concerned about the nations which shared borders with the Republic. Poland and Hungary, which had never been friendly to Czechoslovakia, were becoming more authoritarian and belligerent. Austria was militarily weak but contained a growing internal Nazi element, and Germany, which had much to gain from a revision of Versailles, was on the threshold of becoming a Nazi pan-German state. These concerns greatly influenced Czechoslovakia's decision to construct border fortifications, but, initially at least, little was done beyond conducting studies of Czechoslovakia's terrain and communication and transportation systems which would have to be improved to facilitate military mobilization and support the envisioned fortifications network along the frontier.

It was not until 1934, however, that Czechoslovakia actively began a fortifications program. The increasingly unstable atmosphere in Europe showed few signs of abating. With the signing of the German-Polish declaration in January and the murder of Austrian Chancellor Engelbert Dollfuss in July by Austrian Nazis, support in Czechoslovakia for her fortifications program coalesced and



Map 1--Central Europe

became united.² Planning for the physical characteristics of the forts themselves began as analysis of the frontier terrain continued. In March 1935, the Czechoslovakians established an office to direct and coordinate the fortifications program under the leadership of the Deputy Chief of the General Staff, General Otakar Husárek.³ Husárek and his staff of over four hundred civilian and military personnel developed and designed the technical and military aspects of the fortifications.⁴ In June 1936 the Czech Supreme Defense Council met and outlined a construction program for the fortifications. The Council estimated that the program would take ten to fifteen years to complete at a total cost of ten billion Czech crowns.⁵ (June 1936: 1 Kč = 0.04\$) Thus, in 1936, the Czechs had estimated that their fortifications, as they originally envisioned them, would be complete sometime between 1946

2. Ibid., 83.

3. Ibid., 83; Denkschrift über die tschecho-slowakische Landesbefestigung, Berlin, 1941, Oberkommando des Heeres (OKH), Generalstab des Heeres, General der Pioniere und Festungen b. Oberbefehlshaber des Heeres, Abteilung Auswertung fremder landesbefestigungen (Microcopy T-78, Roll 642, 22), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C. This is the most detailed study of Czechoslovakia's fortifications undertaken by German military engineers and is the final German report on the data collected.

4. Zorach, "Czechoslovakia's Fortifications," 86.

5. OKH, Denkschrift, 22.

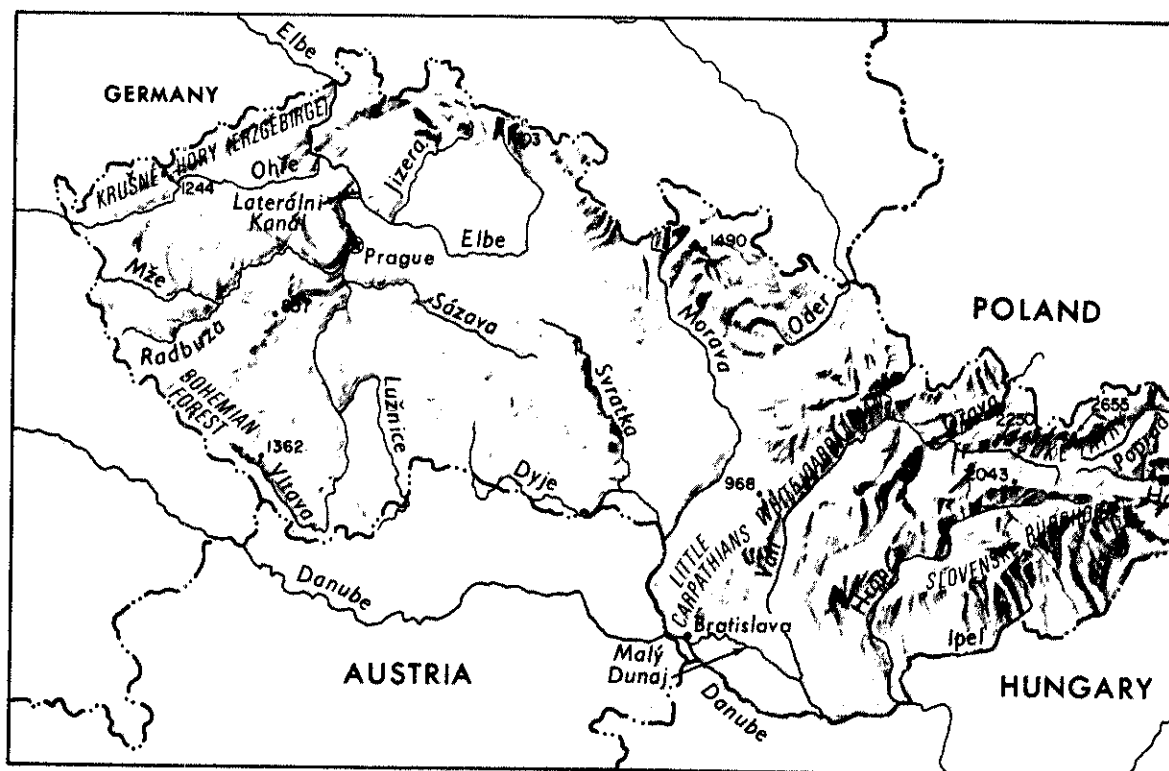
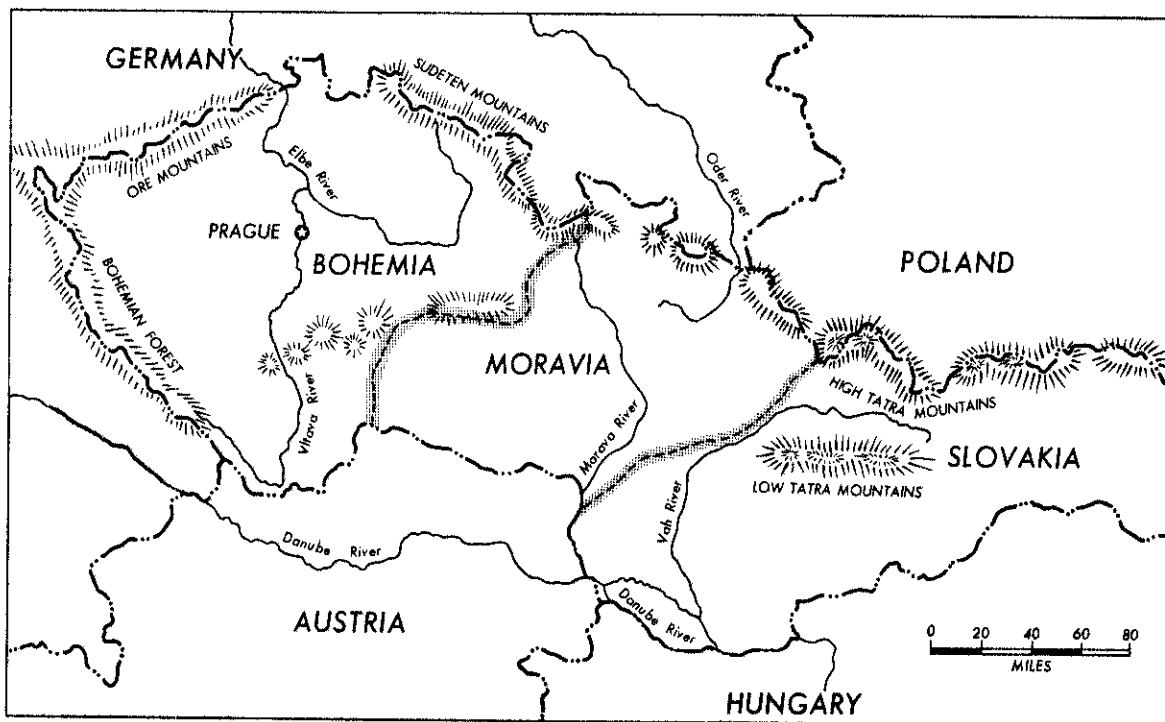
and 1951. When one realizes the problems Czechoslovakia faced regarding the construction of adequate defenses, this estimate was probably an accurate one.

With an ethnically diverse population of just over fifteen million persons and an area of approximately 140,000 square kilometers, Czechoslovakia had a total frontier length of 4,114 kilometers: 1,539 with Germany, 984 with Poland, 832 with Hungary, 558 with Austria, and 201 with Rumania.⁶ By contrast, France possessed a frontier with Germany of only 389 kilometers, roughly one-fourth that of Czechoslovakia's.⁷ With the incorporation of Austria into the German Reich in March 1938, Czechoslovakia's frontier with Germany would extend to a length of 2,097 kilometers. With Poland and Hungary expressing a belligerent attitude toward Czechoslovakia, the Czech Republic faced a potentially hostile frontier 3,913 kilometers long.

To her advantage, Czechoslovakia did possess two mountain ranges which ran along her border with Germany, the Erzgebirge in northwestern Bohemia and the Riesengebirge in northeastern Bohemia and northern Moravia. It is generally assumed that it would have been difficult for German military units to cross these ranges and invade

6. League of Nations, Armaments Year-Book (Geneva: 1937), 262.

7. Zorach, "Czechoslovakia's Fortifications," 83.



Map 2--Topography of Czechoslovakia

Czechoslovakia. Apart from these two natural barriers, however, there were several geographic features, excluding the Austrian Plain, which were a disadvantage to the Republic. They included the Moravian Gate, a roughly eighty kilometer wide valley where the Oder flows northward from Moravia through Silesia; the Landeshut and Glatz Depressions, involving numerous gaps in the Riesengebirge; the Elbe Valley, east of where the Erzgebirge ends; and the region of Czechoslovakia facing Bavaria, a hilly and forested, but not impassable, region running some two hundred kilometers southeastward to the Austrian border.⁸ These features offered the Germans a number of good avenues for an invasion of Czechoslovakia. After the Austrian Anschluss, these German opportunities were, of course, much greater.

Czechoslovakia's fortifications are often compared with the Maginot Line, simply because the Maginot Line is the most well known of all the interwar European fortification systems, and because the Czech fortifications are so misunderstood. The very fact that this comparison is made has led to much distortion concerning the Czech works. In September 1938, during the height of German-Czech tension, when Czechoslovakia needed her fortifications to

8. Ibid., 83; Richard Freund, Watch Czechoslovakia! (London: Thomas Nelson & Sons, Ltd., 1937), 99; Anthony Kemp, The Maginot Line: Myth and Reality (New York: Stein and Day, Publishers, 1982), 53.

defend against the very real possibility of a German invasion, her fortifications were incomplete and were much weaker than the Maginot Line as it existed then, or in 1940 when Germany invaded France. The French began their fortifications in the late 1920s whereas the Czechs poured the first concrete for their fortifications in 1935 at the Moravian Gate.⁹ Construction at the Glatz Depression and other areas began in 1936. The French thus had over a decade to work on the Maginot Line while the Czechs had little more than three years to develop their works. Events outstripped Czechoslovakia's fortifications program. Given enough time, the fortifications on her northern frontier would have approached the strength of the Maginot Line, and Czechoslovakia did make maximum use of her limited time constraints. After the German occupation of the Rhineland in 1936, and the resulting deterioration of the European situation, Czech construction intensified. When Germany occupied Austria in March 1938, a move which the Czechs were quite unprepared for, Czech construction reached a furious pace. So much work was done in 1938, including a line of forts along the Austrian frontier, that the Germans estimated, after their occupation of the

9. Die tschechischen Befestigungsanlagen, Berlin, 2 December 1938, Oberkommando des Heeres, Generalstab des Heeres, 2. Abteilung, (Microcopy T-78, Roll 298, Frame 6248382), Records of Headquarters German Army High Command, Records Group 1027, U.S. National Archives, Washington, D.C.

Sudetenland in October, that the Czechs could have completed their fortifications by 1940, years earlier than the original Czech estimate.¹⁰ In terms of expenditure, the Germans estimated, after 1940, when they were in a position to compare both the Maginot Line and the Czech fortifications firsthand, that the Czechs had spent about one-thirtieth of what the French had spent on the Maginot Line.¹¹ Since the Czech frontier with Germany was so much longer than the Franco-German frontier, the per-kilometer expenditure was, of course, even less. The Czechs, however, were not lax in their effort to fortify the Republic. This relative weakness was simply the consequence of beginning their fortifications program much later than the French began theirs, possessing less capital with which to fund their program, and attempting to overcome significant geographic problems which the French did not have.

The strategic role the Czechs envisioned for their fortifications network was, also, somewhat different from the Maginot Line. Unlike the Maginot Line, the Czech fortifications were not built to be an impervious defense in all sectors. For Czechoslovakia, with her extensive frontier and limited resources, that was simply not possible. Whereas the Maginot Line was constructed to

10. Ibid.

11. Zorach, "Czechoslovakia's Fortifications," 86.

withstand major assaults along France's entire eastern frontier, the Czech fortifications only began to approach the strength of the Maginot Line in critical areas on her northern border like the Moravian Gate. Everywhere else along the Czech frontier the fortifications were of modest strength and were built to slow down and hamper enemy attacks while the field army mobilized.

The primary pillar of Czech security was their alliance with France. In this regard, the Czechs viewed their fortifications as a secondary pillar, an augmentation of their alliance, as well as something which could provide a measure of security and deterrence from aggression. Ideally, the Czechs planned to fortify their entire frontier with Germany, most of their frontier with Hungary, which Czechoslovakia considered a threat almost as great as Germany, and a few strategic sections along her Polish and Austrian frontiers. The strongest fortifications were to be built opposite the Moravian Gate and the Glatz and Landeshut Depressions where a successful German penetration could, theoretically, cut Czechoslovakia in two at her waist, separating Bohemia and Moravia from Slovakia. If the Germans succeeded in doing that, the Czech armies in Bohemia and Moravia would be surrounded and Slovakia would be virtually helpless, ripe for Polish and Hungarian intervention. Thus, the fortifications in these areas were to be so strong that a German attack from the north could

be halted, the forecast of which might possibly deter the Germans from striking there and cause them to opt, instead, for an attack against western Bohemia. To meet this possibility, the Czechs planned to construct several parallel belts of fortifications in western Bohemia. These belts were not to be as strong as the fortifications on her northern frontier. Their purpose was to successively weaken and delay the presumed German attack from the west and allow the Czechs to fall back toward Moravia, buying time, while awaiting the assistance that other nations would provide.¹² This was a defensive strategy and the most logical one for Czechoslovakia to follow in any German-Czech war, because the longer the Czechs could sustain themselves in war, the greater the possibility of foreign assistance and the weaker the German situation would become. The fortifications planned for the Hungarian and Polish frontiers would protect Czechoslovakia's flanks while the mass of the Czech army was in Bohemia and Moravia engaging the Germans. Naively, the Czechs counted on Austrian neutrality in the event of a war with Germany or Hungary. Initially, they planned few fortifications for their Austrian frontier, with the exception of the bridgehead at Pressburg (Bratislava) where strong

12. Oberst Biermann, "The Czech System of Fortification," Royal Engineers Journal 53 (June 1939): 213. This is a translation of an article by Oberst Biermann in the Vierteljahreshefte für Pioniere (February 1939).

fortifications would prevent Hungarian forces from crossing Austrian terrain and achieving a crossing of the Danube in southern Moravia.

With these strategic concepts in mind, the Czechs began to construct their fortifications. Time, funding, and an unexpected German occupation of Austria were the greatest enemies to Czechoslovakia's fortifications program.

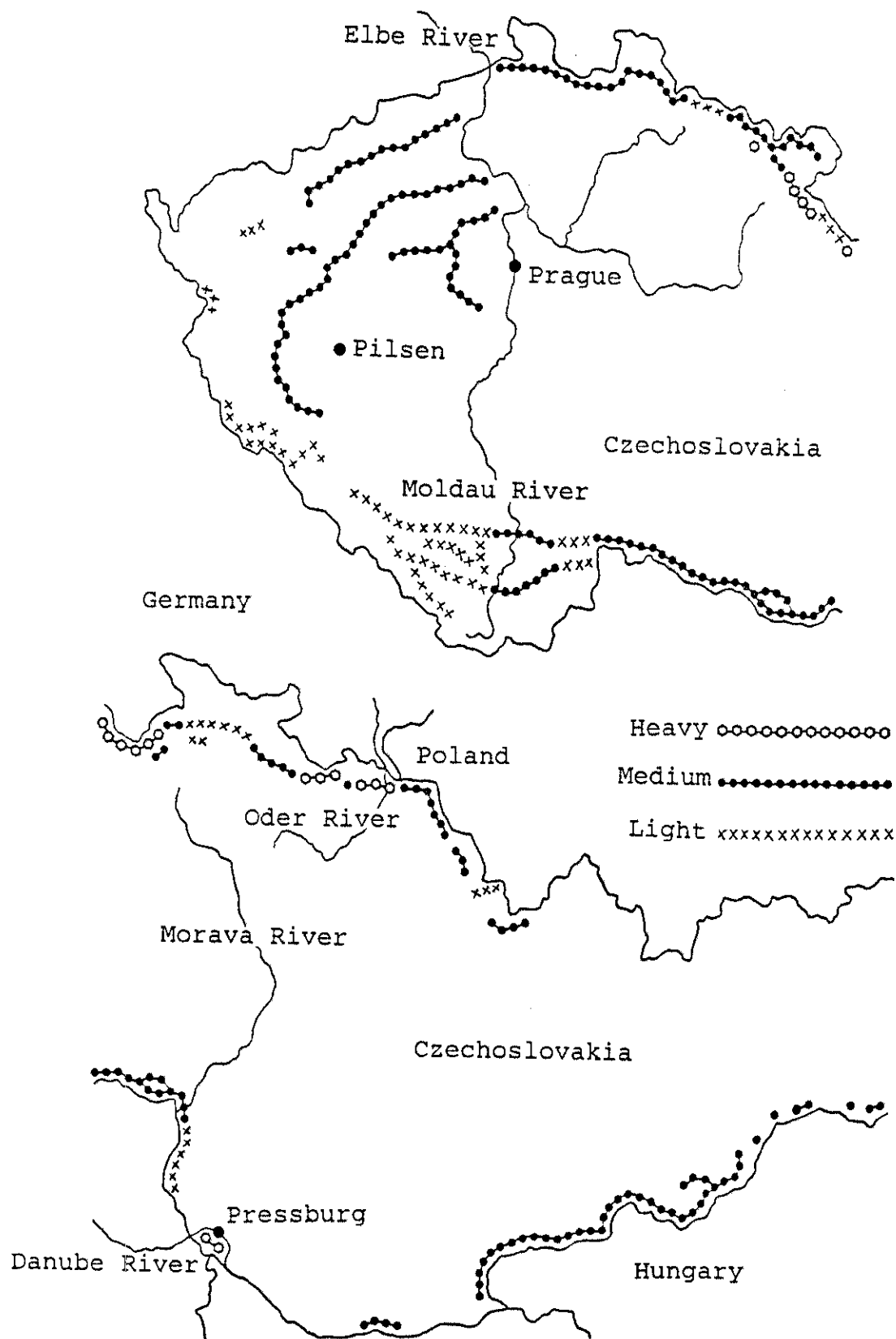
CHAPTER IV

LIGHT FORTIFICATIONS

Though the Czechs developed many different designs for their individual works, the fortifications themselves can, for the sake of simplicity, be described as consisting of three main types: light field works, medium strength casemates, and heavy forts. The Germans followed this simple model, classifying the fortifications as Sperrausbau, Stellungsmässiger Ausbau, and Festungsmässiger Ausbau respectively.¹

Unlike the medium and heavy fortifications, which can be described with some consistency, the light fortifications, as they are described here, were a collection of different types of obstructions, including roadblocks, trenches, minefields, hedgehogs, upright rails, and small reinforced concrete or wooden bunkers containing machine guns. These types of works were numerous and were used extensively along the entire fortified frontier and in conjunction with the medium and heavy fortifications. When used in conjunction with the heavier works, these

1. Merkblatt für das Angriffsverfahren gegen Grenzbefestigungen, Regensburg, 19 September 1938, Wehrkreise 13, 10th Division, (Microcopy T-79, Roll 129, Frame 000604), Records of German Army Areas, Records Group 1031, U.S. National Archives, Washington, D.C.



Map 3--Czechoslovakia's Fortifications September 1938

types of obstructions were intended to help slow down and channel an invading military force into areas where the fields of fire from the larger and stronger fortified positions, as well as the Czech field army, could converge upon the invading force and, they hoped, destroy it. These obstructions also helped to protect the medium and heavy posts from tanks or squads of engineers rushing them. Light field works were also constructed at several locations where they were the only types of fortifications present, such as in the more rugged sections of the Riesengebirge, an unlikely location for a German attempt to cross the frontier.² There were, however, two locations where these light field works were the only fortifications present, which were potential locations for a significant German thrust. They were a fifty kilometer section of frontier north of Pressburg, where the Austrian Plain flows into western Slovakia, and a one hundred kilometer section of frontier in southwestern Bohemia opposite Bavaria.³ These two sections were the weakest links in the Czech chain of fortifications, and if pierced, nothing but open rolling countryside lay before an invading military force.

Every major road crossing on the German-Czech border had one of two types of roadblocks. The more common type

2. OKH, Denkschrift, Anlage: Bild 1, Übersichtskarte der Tschecho-Slowakei mit Befestigungen.

3. Ibid.

of roadblock consisted of several concrete walls extending halfway across the roadway and placed, alternately, on the left and righthand side of the roadway to a depth of about fifty meters. This configuration forced vehicular traffic to slow down and follow a zig-zag pattern to pass through the roadblock. At the entrance to this type of roadblock was a large steel crossbar which could be raised or lowered as necessary. The concrete walls, which were looped for rifle fire, averaged one meter in thickness, were one and one-half meters high, and extended across the roadway to a length of seven and one-half meters.⁴ On either side of this type of roadblock could be found barbed wire, trenches, or wooden or concrete obstructions to prevent an attempt to circumvent the roadblock.

The second type of roadblock which the Czechs built consisted of a double row of iron rails, placed upright in a concrete base, extending across a roadway.⁵ These rails, rising roughly one meter in height above ground level, were used by the Czechs whenever they desired to permanently close a roadway to vehicular traffic. The rails themselves were composed of two L-shaped members which, when placed together in their concrete base, formed a hollow square tube which was then filled with concrete.

4. Ibid., 185.

5. Ibid., 186-187.

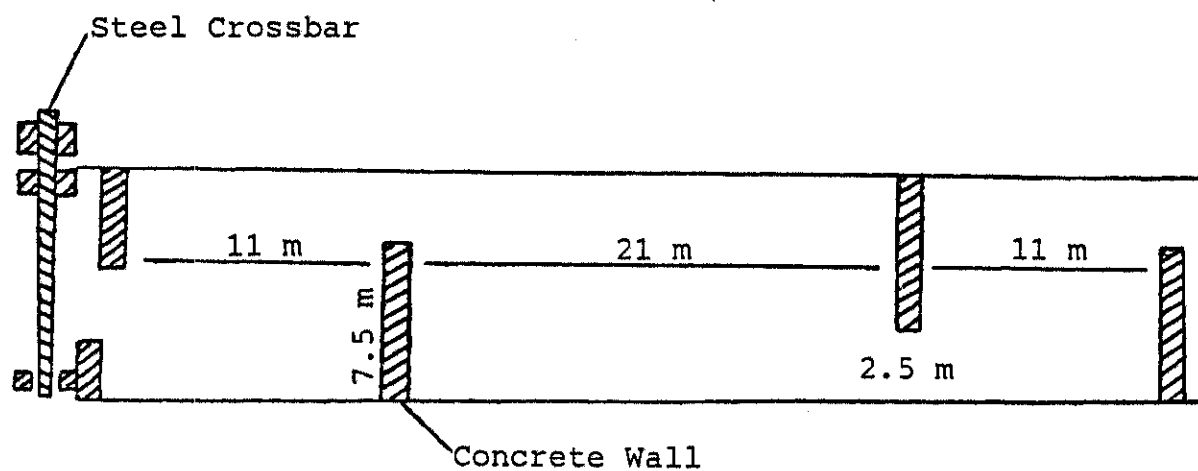


Fig. 3--Czech Roadblock

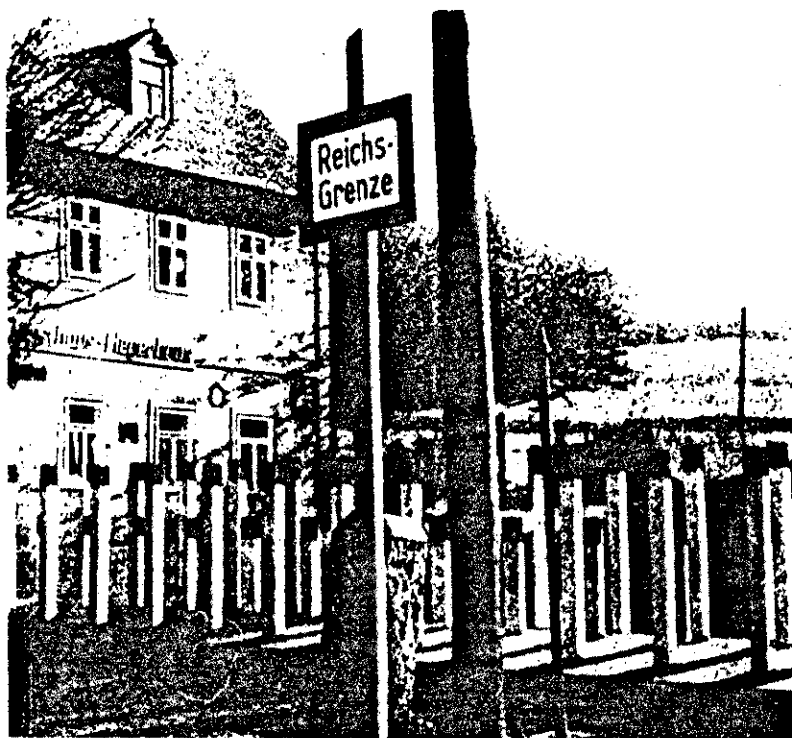


Fig. 4--Permanent Rail Roadblock

Upright rails were also used in the field to close off sections of open terrain. When used in this manner, the rails were often laced with barbed wire and could form a belt many kilometers in length.⁶ The French also constructed belts of upright rails in the Maginot Line to seal off sections of terrain to enemy tanks and other vehicles. French rails were solid iron members embedded in concrete and extended to varying heights, unlike the Czech uniform one meter. Occasionally, the French would conceal their rails in beds of tall grasses. A typical French belt of upright rails could be as many as six rails deep. Czech belts, two deep, were undoubtedly weaker than their Maginot counterpart. If supported by anti-tank weapons and machine guns, belts of upright rails laced with barbed wire could offer a good defense. Unsupported, such defenses could be breached by attacking units of engineers with demolition equipment in a relatively short period of time.

Of the many kilometers of trenches which the Czechs dug in their frontier region, most served simply as infantry firing pits or for communications between other fortified posts. A typical trench of this type was about 1.5 meters deep and 0.8 meters wide.⁷ Other trenches were more elaborate and served as tank barriers. For this purpose,

6. Ibid., 177.

7. Ibid., 203.

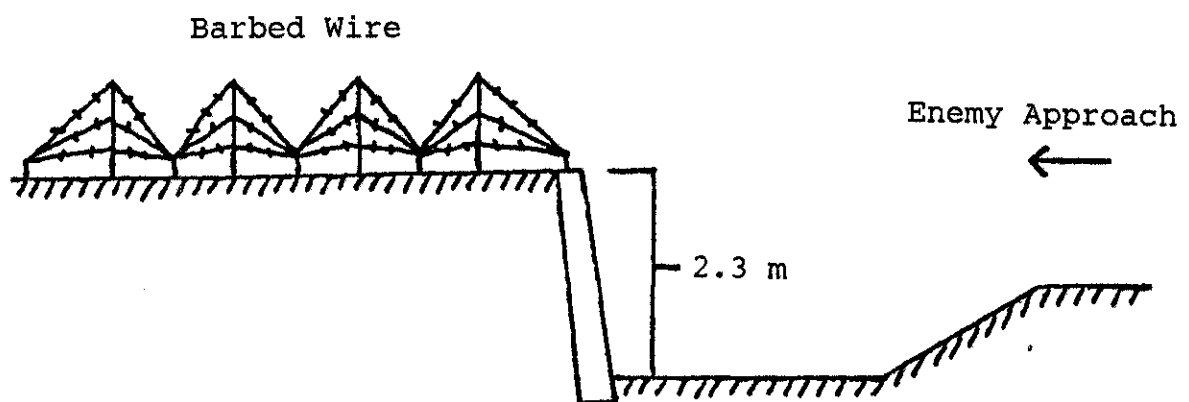


Fig. 5--Czech Tank Barrier

the trench sloped easily downward on the side an invader would approach. On the far side of the trench the invader met an almost vertical wall of concrete some 2.3 meters high. Immediately behind the concrete wall, on the defending side of the trench, lay a thick field of barbed wire to hamper invading infantry who might scale the trench.⁸ These trenches were impenetrable to vehicular traffic. For vehicles to cross this obstacle, the trench would have to be bridged or filled in or the concrete wall destroyed and excavated. This, of course, would be quite difficult to do under fire from a determined field army supporting its tank barrier.

The Czechs did not sew minefields extensively, primarily because it was an unwise practice to bury mines for indeterminate periods of time, particularly in populated border areas. When they were sewn, they were placed in controlled areas in front of other types of fortifications so that the minefield was the first obstacle encountered by an invader. The standard Czech mine possessed a one kilogram explosive charge and was intended as an anti-personnel mine rather than an anti-vehicular mine. Individual mines were sewn in rows and spread five meters apart. Trip wires ran from each mine toward the next mine in a row filling in the gaps between individual mines.

8. Ibid., 179.

Rows of mines were staggered and separated by a distance of about three meters.⁹

Hedgehogs were another type of obstruction used extensively by the Czechs along their frontier. These obstructions, like the upright rails, were primarily an anti-vehicular obstacle, though, when laced with barbed wire, they served as an infantry obstacle as well. The Czechs used two types of hedgehogs in their fortified zones. The first type, which the Czechs used early on in their construction, was a four-armed concrete hedgehog. The second type, which the Czechs used in their later construction, was a six-armed iron hedgehog. The Czechs came to prefer the iron hedgehogs because they were less expensive and could be transported in a disassembled state and quickly bolted together on site. The concrete hedgehogs were not only more cumbersome, but could not be manufactured and set up as quickly as the iron hedgehogs. Hedgehogs were used to protect the larger manned fortifications, but were also used, like the upright rails, to seal off sections of open terrain. When used for this purpose, hedgehogs were placed in rows two or three hedgehogs deep. Hedgehogs were sometimes used in conjunction with upright rails and barbed wire to form a stronger, denser belt of obstructions.¹⁰

9. Ibid., 189-190.

10. Ibid., 172-175; Biermann, "Czech System of Fortification." 220-221.

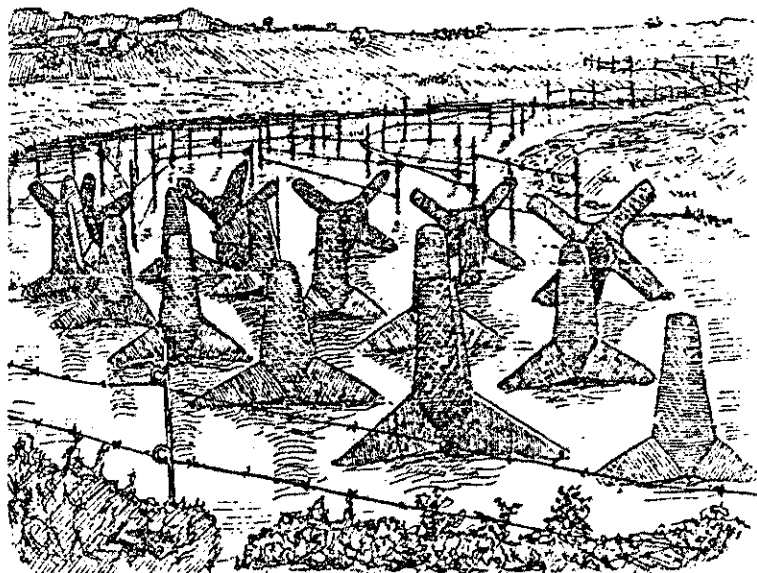


Fig. 6--Four-Armed Concrete Hedgehog

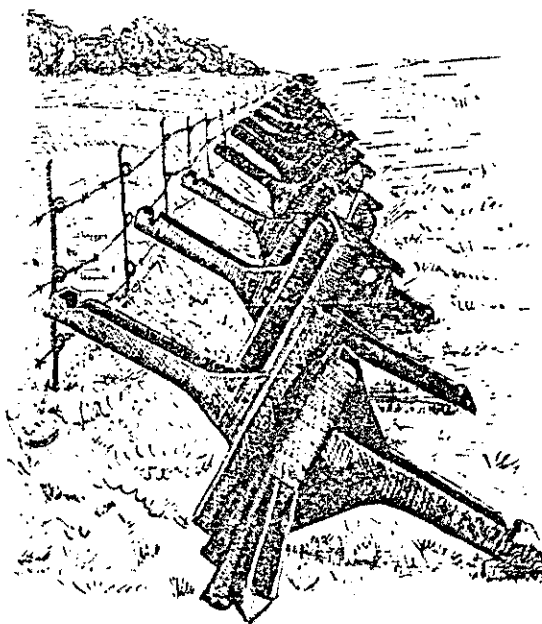


Fig. 7--Six-Armed Iron Hedgehog

Small reinforced concrete or wooden machine gun posts were another aspect of the fortifications which can be classed in the category of light field works. These posts were some of the first works constructed by the Czechs and could be found, like all the other types of light fortifications and obstructions, at locations along the entire fortified frontier. Wooden machine gun posts were built, primarily, in forested sections of the frontier and were used to billet troops and workers before concrete posts were completed. Even after the more permanent concrete forts were completed, the Czechs often let the wooden posts remain to augment the fortified zone. These wooden structures were partially sunk in the ground and constructed of rough logs. Earth was piled against the exposed walls and roof and vegetation was grown on and around these structures to help camouflage them. An open doorway in the rear of these wooden posts provided entry into these posts. Firing slits were cut in the front and side walls of these bunkers.¹¹

The Czechs also designed and constructed three different types of small concrete machine gun posts. About 3,800 such posts were built. Manned by four to six men, these bunkers contained one, two, or three light caliber machine guns providing frontal fire. The thickness of the

11. OKH, Denkschrift, 206-207.

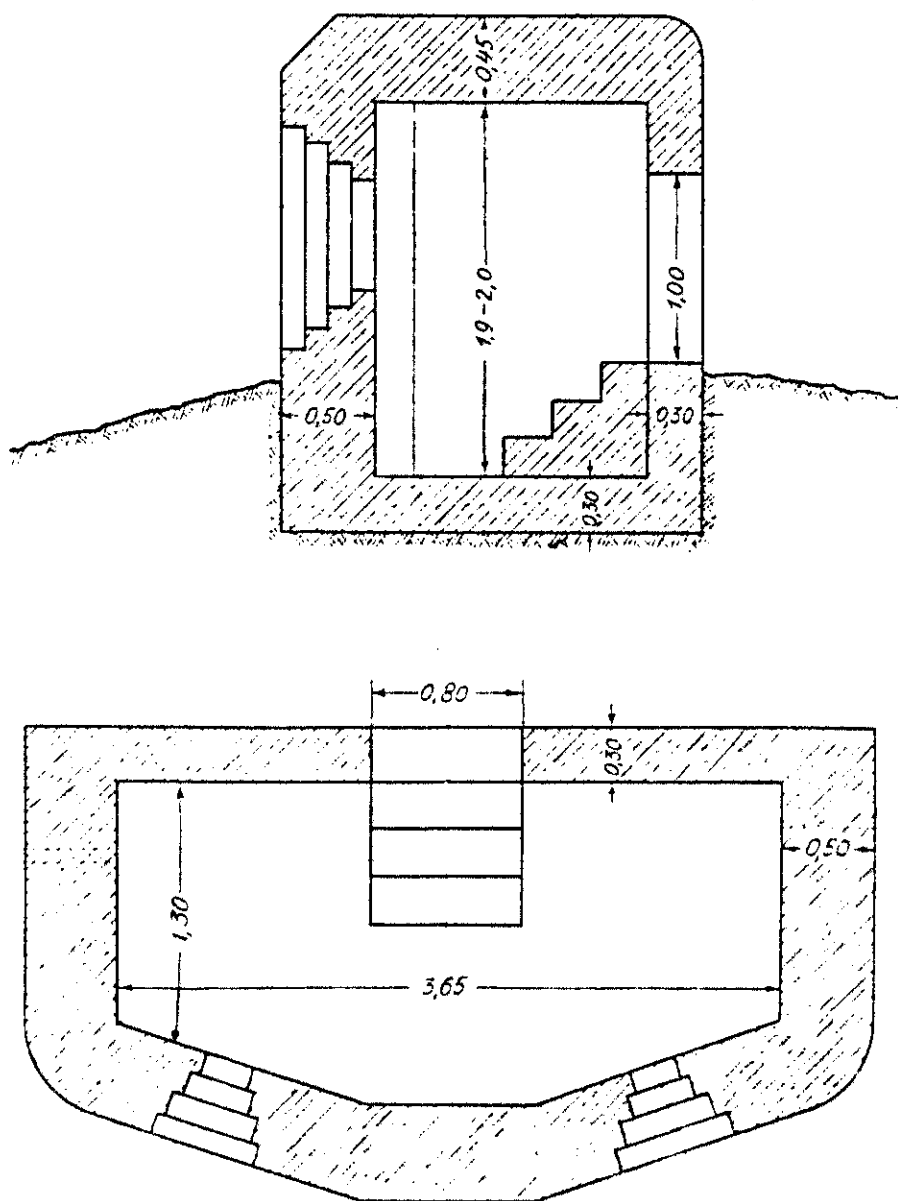


Fig. 8--Light Concrete Machine Gun Post
(Dimensions in Meters)

concrete of these bunkers was: ceiling 0.3 to 0.7 meters; front wall 0.5 to 0.7 meters; side walls 0.3 to 0.6 meters; rear wall 0.3 to 0.5 meters; and floor 0.25 to 0.3 meters.¹² A single steel bomb-proof door in the rear of these bunkers protected their entryways. The base of these bunkers was shallowly submerged and sheer vertical walls rose about two meters above ground level. Rectangular in shape, these posts had an exposed front wall anywhere from 2.62 to 6.2 meters broad, depending on whether the post had one, two, or three machine guns. This aspect made these posts particularly vulnerable to enemy artillery fire. The embrasures for the machine guns tapered inward where the weapon and its accompanying periscope fastened directly to a heavy steel plate at the rear of each embrasure. The tips of the machine gun and periscope just penetrated this plate. Very little was externally exposed. The angle of fire of these weapons was sixty degrees horizontally (thirty degrees left and thirty degrees right) and forty degrees vertically (twenty degrees upward, twenty degrees downward) forming a roughly pyramid-shaped firing zone extending outward from each embrasure. This was the standard Czech angle of fire for most types of weapons firing from all types of bunkers, both large and small.¹³

12. Ibid., 49.

13. Ibid., generally 55, 124-143.

Czechoslovakia's light fortifications were modestly strong in and of themselves. These types of fortifications were best used when placed in conjunction with the heavier fortifications. By themselves, they could only offer a serious defense when the Czech field army could support them.

CHAPTER V

MEDIUM FORTIFICATIONS

The medium strength fortifications in the Czech fortified zones were quite different from the light concrete machine gun posts in both design and function and were constructed with a good degree of consistency. The medium strength fortifications were composed entirely of well designed and protected reinforced concrete casemates providing flanking fire and were constructed to defend broad sections of frontier. These casemates were, by far, the most common type of fortified concrete posts the Czechs constructed. Many thousand were built. These casemates were most dominant in the Teschen sector, in the western Riesengebirge, western Bohemia, southern Moravia (after March 1938), along the Hungarian frontier, and formed a defensive half-circular arc west of Prague.¹ Medium strength casemates could also be found supporting the heaviest Czech forts in the important sectors of the northern frontier.

Because the Czechs relied so heavily on their medium strength casemates to defend the integrity of their frontier,

1. Ibid., Anlage: Bild 1, Übersichtskarte der Teschechoslowakei mit Befestigungen.

they were eager to use the terrain as much as possible to hide and protect these posts. Where feasible, they built these posts in wooded areas. Otherwise, the Czechs chose the cautious strategy of placing them on the reverse side of slopes.² This practice protected these posts from direct enemy observation and artillery fire, but had the disadvantage of virtually surrendering some high ground to the invader. Though this was an unusual strategy, compared to the fortification systems of other nations, it did complement Czech defensive strategy, particularly in western Bohemia, by being willing to give some ground in return for better defense.

The medium strength casemates were functionally defensive and very few had forward firing guns. These casemates were designed, primarily, to provide flanking fire. Constructed in rows, these posts were spread 150 to 400 meters apart. Successive rows were roughly staggered. Zones fortified with these posts could be up to four rows and several hundred meters deep.³ Light field works, of the types already described, were often spread in front of, around, or between these medium strength casemates. The armaments in these posts, machine guns or, sometimes, 47-millimeter anti-tank guns, fired from the sides in a

2. Biermann, "Czech System of Fortification," 216; Kemp, The Maginot Line, 53.

3. OKH, Denkschrift, 54.

sixty degree arc toward the neighboring post in its row. In this way, each casemate defended and supported its neighboring casemate by being able to fire in front of, upon, or behind its neighboring post, as well as cover the ground between them. The fields of fire were, thus, interconnecting and, if drawn out, would form a "lazy tongs" pattern.⁴ In wooded areas, firing clearances were made by felling trees along the lines of this firing pattern. Manned by five to six men, these casemates were constructed using anywhere from 33.12 to 74.42 square meters of reinforced concrete, depending on the particular casemate's size and shape.⁵ The most common design for these medium-strength casemates was, generally, rectangular with two large, rounded, column-like concrete buttresses extending from its sides.⁶ The Germans referred to these buttresses as "ears," commonly calling the entire casemate an "ear post," or "Ohrenstand." The tapered embrasures for the post's weaponry lay in the side walls behind their protecting buttresses and were very similar to the embrasures, already described, of the light machine gun posts. Entry into these casemates was gained in their rear

4. Biermann, "Czech System of Fortification," 217.

5. Theodor von Brosch-Aarenau, "Wie war die Tschechoslowakei befestigt?" Militärwissenschaftliche Mitteilungen 70 (1939): 362; Ota Holub, A věže Mlčí, Praha: Kontakt, Pressfoto, 1973), 266.

6. OKH, Denkschrift, 56-57.

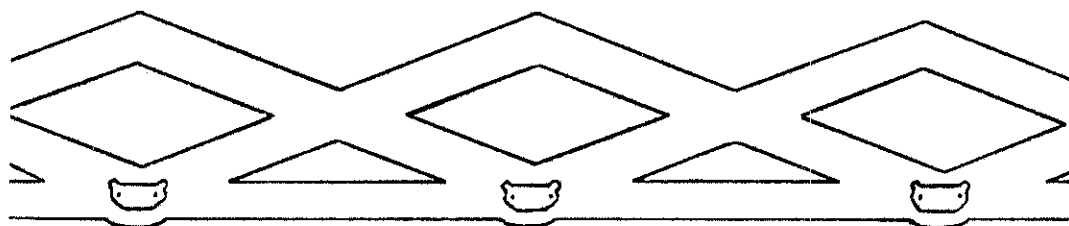


Fig. 9--Firing Pattern of Medium Strength Casemates

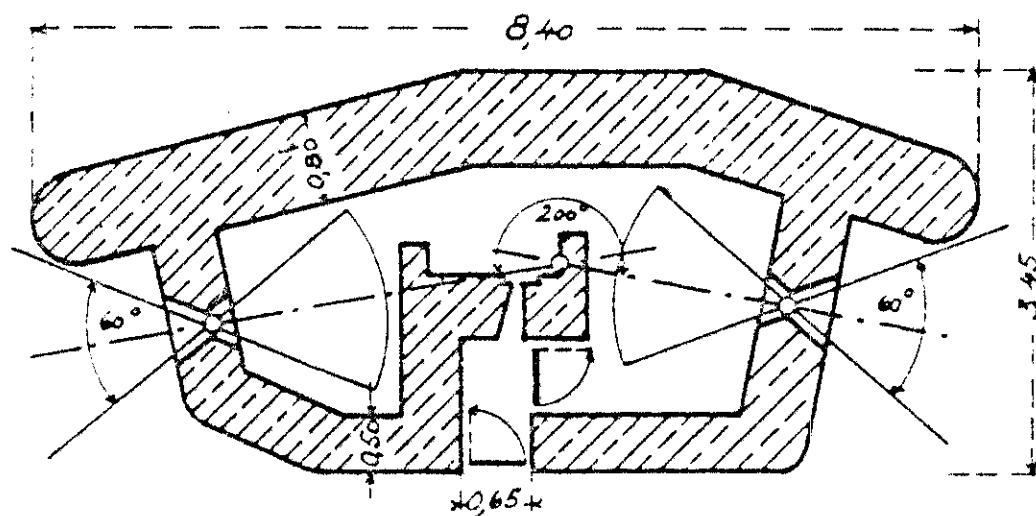


Fig. 10--Medium Strength Casemate (Dimensions in Meters)

through a double door system. The first door, flush with the rear concrete wall, was a locking steel bar door, somewhat like the door of a common jail cell.⁷ This door swung inward into a rectangular shaped entryway. The second door, a solid steel bomb-proof door, stood at the side rear, either right or left, of the entryway, ninety degrees to the line of entry. This second door also swung inward into the interior chamber of the casemate. This double door system was actively defended in two ways. At the rear of the entryway, a tapered machine gun embrasure was positioned, similar to those on the external side walls. The machine gun in this embrasure fired rearward, toward and through the barred door, defending both doorways.⁸ A second close quarter rear defense consisted of a grenade chute positioned just to the right or left of the barred door. Angling downward from the interior to the exterior of these casemates, a Czech defender could open the chute from inside and slide a grenade down this chute where it would fall to the ground outside the casemate near the rear doorway.⁹ These two measures effectively defended the bunker entrance. The thickness of the concrete of these medium strength casemates was: ceiling 0.95 meters;

7. Ibid., 154.

8. Ibid., 155.

9. Brosch-Aarenau, "Tschechoslowakalei," Beilage 1, Skizze 4.



Fig. 11--Medium Strength Casemate

front wall 0.6 to 0.85 meters; side walls 0.8 to 0.9 meters; rear wall 0.5 to 0.85 meters; and floor 0.5 meters.¹⁰ These casemates were submerged to a depth of about 1.4 meters. Vertical side and rear walls rose above ground level to a height of about 2.5 meters.¹¹ The forward wall and part of the roof were covered by a large bank of rock and earth which protected these bunkers from frontal fire, forming a pre-detonation layer against enemy artillery shells. This bank of rock and earth, along with the side buttresses, gave these casemates their distinctive appearance and specialized function. From an attacker's perspective, this type of fortified sector would look like a field of light obstacles studded with large mounds of rock and earth. The sides of these casemates were not readily visible from a distance. As a final precaution, the Czechs painted the concrete in earth tones and, occasionally, strung camouflage netting from hooks placed in the concrete around the rim of the casemates' roof. Such camouflage techniques were useful in hiding the exposed rear and side walls, particularly from aerial observation.

Though technically strong, in and of themselves, lack of a forward firing capability weakened these medium

10. Ibid.; OKH Denkschrift, 56-57, 59-61.

11. Brosch-Aarenau, "Tschechoslowakei," Beilage 1, Skizze 4.

strength fortifications. To be effective defensively, these fortifications required a sizeable supporting element of Czech infantry and artillery stationed behind them.

CHAPTER VI

HEAVY FORTIFICATIONS

The heavy forts constructed by the Czechs were the most impressive aspect of their fortifications and were constructed individually and in groups with interconnecting underground passages. The Czechs constructed heavy forts only at the most important sections of the frontier. In the north, at the Moravian Gate and the Glatz and Landeshut Depressions, they built some 250 heavy forts. In the south, at the Pressburg bridgehead, they built six.¹ These heavy forts were supported and interspersed with medium and light works to help protect and augment the heavy forts and give these fortified zones greater depth. In their general layout, however, the heavy forts were positioned in the forward areas of their fortified zones. Czech defensive theory reasoned that an invading enemy force, after encountering the stiffest resistance first, would have received so many casualties and be so badly shaken, that the subsequent supporting lines of lighter fortifications would be sufficient to contain the enemy force in its weakened condition if a breakthrough occurred. For the Czechs, this configuration had the additional advantage of

1. OKH, Denkschrift, 31.

creating the impression that their heavily fortified areas were stronger than the enemy might anticipate. This was the reverse of French theory and practice. In the Maginot Line, weaker defenses were placed before stronger defenses. French theory contended that after being weakened and broken apart by the lighter defenses, the attacker would then meet the main line of resistance and be destroyed there.²

Individual heavy forts required three months for planning and nine to twelve months for actual construction and were comparable to the interval blockhouses in the Maginot Line.³ These forts possessed an upper and a lower level. The upper level contained the fort's combat and communication stations. A stairway in the center of the fort led to the lower level which contained sleeping quarters, munition and other stores, kitchen and toilet facilities, and a machine room containing the fort's power plant and air pumps.⁴ The air pumps and filter system maintained a positive air pressure inside the fort to prevent poison gas, if used, from seeping into the fort and to help expell exhaust fumes leaking from the breaches of the fort's guns when fired. The armaments in these forts

2. Biermann, "Czech System of Fortification," 218.

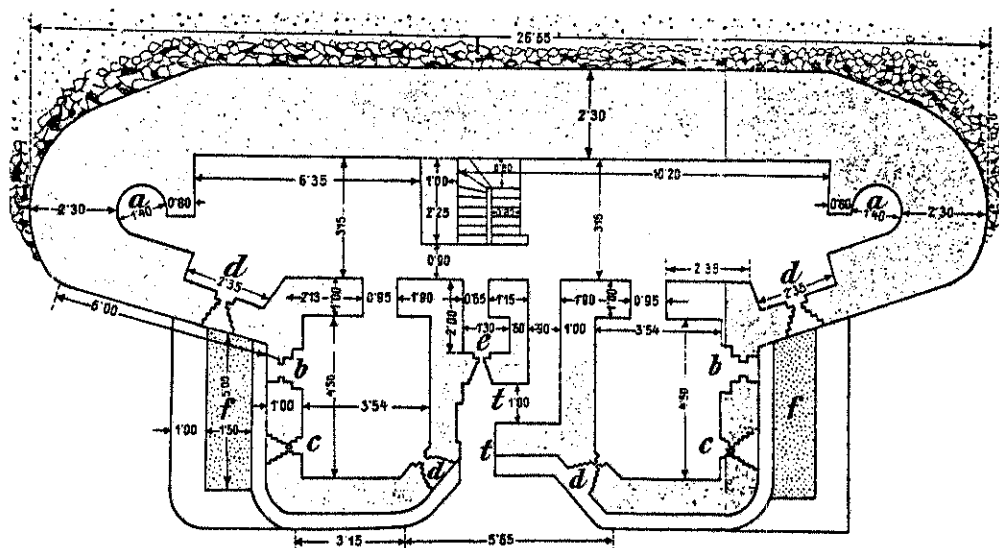
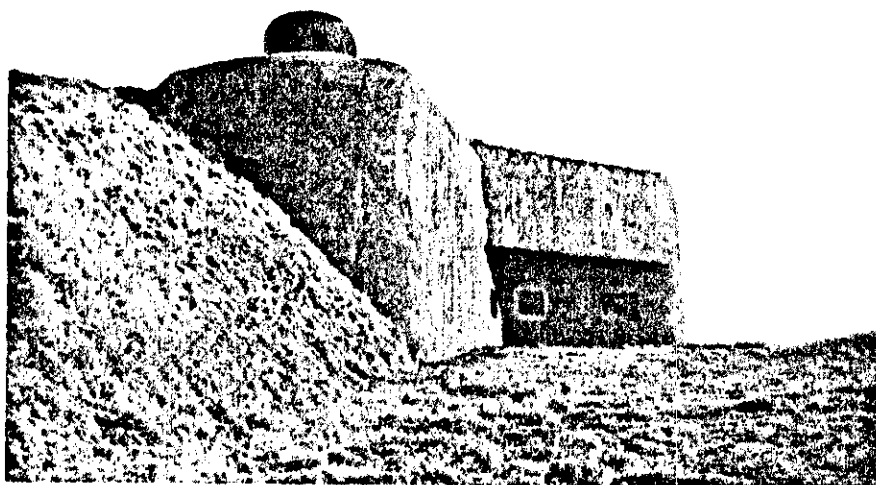
3. OKH, Denkschrift, 36.

4. Ibid., 68-69.

were varied and included machine guns, anti-tank guns, mortars, and even flame throwers. Spaced at intervals of approximately five hundred meters, individual forts were manned by thirty to thirty-five men under the command of a post officer.⁵ The general shape of these individual forts was similar to the medium strength casemates, but they were much larger. A huge bank of earth and stone protected their forward wall. Large rounded concrete buttresses protruded from the sides of these forts and contained rotating steel turrets with machine guns, giving the forts, unlike the medium strength casemates, a 360 degree firing zone. Like the medium strength casemates, heavy emphasis was given to flanking fire. The side walls of the heavy forts, protected by the concrete buttresses, contained three firing embrasures each, two firing sideward and one firing more toward the rear.⁶ The rearward firing weapon was, usually, a single machine gun. The sideward firing weapons were a double machine gun and a 47-millimeter anti-tank gun in combination. A flamethrower could substitute for one of these weapons and provide close quarter defense and sometimes the side weapons included a 90-millimeter mortar within a specially constructed embrasure that had a sliding steel door provided for

5. Ibid., 64.

6. Ibid., 68; Brosch-Aarenau, "Tschechoslowakei," Beilage 2, Skizze 7.



a Armored Machine Gun Turret

b Anti-Tank Gun

c Double Machine Gun

f Concrete Moat

d Single Machine Gun

e Entrance Machine Gun

t Double Door Entrance

Fig. 12--Individual Heavy Fort (Dimensions in Meters)

long-range defense.⁷ Entry into these forts was, like the smaller bunkers, in the rear where the Czechs used the double door system, already described. The entryway was recessed in these heavy forts and provided two angular walls on either side of the initial barred door. In each wall was a machine gun embrasure which, along with the rearward firing machine gun inside the entryway, gave an effective defense against an enemy attempt to force entry into the fort.⁸ Grenade chutes were also set into the exposed walls of these heavy forts. In some cases, a broad concrete moat with a retractable gangway was constructed around the side walls and doorway of a heavy fort to prevent enemy soldiers from reaching the walls.⁹

The thickness of the concrete of these individual heavy forts was: ceiling 2.3 to 2.55 meters; front wall 2.25 to 2.3 meters; buttresses 2.25 to 2.3 meters; side walls 1.0 to 1.3 meters; and rear wall 1.0 to 1.3 meters.¹⁰ These heavy individual forts were half submerged with the upper floor being above ground level. The exposed side and rear walls rose vertically to a height anywhere from 6.4 to

7. OKH, Denkschrift, 142

8. Ibid., 156.

9. Ibid., 159-160.

10. Ibid., 68; Brosch-Aarenau, "Tschechoslowakei," Beilage 2, Skizze 7-9.

8.9 meters above ground level.¹¹ This did create a high profile, inviting possible enemy artillery fire, but for enemy guns to achieve a clear shot on these exposed walls at a reasonable range, an enemy would have to approach close to the line of forts so that they could shoot around the corner of the fort and its protecting concrete buttress. In doing so, the attacking force would be simultaneously exposed to Czech fire, not only from the fort being attacked, but also from neighboring forts. From the front, the only portion of these individual heavy forts which was exposed were the rotating steel turrets. These rounded, bell-shaped turrets, usually two in number but occasionally three or four, were made of steel 150, 210, or 310 millimeters thick.¹² These turrets were consistently armed with one or two machine guns and could provide all around fire support and observation. None contained artillery.

The Czechs also endeavored to construct several individual heavy forts together, some with specialized functions, forming a group of heavy forts with interconnecting underground passages. These groups were the most impressive aspect of Czechoslovakia's fortifications. The Czechs attempted to construct eight of these groups of heavy forts, but at the time of the German

11. OKH, Denkschrift, 68; Brosch-Aarenau, "Tschechoslowakei," Beilage 2, Skizze 9.

12. OKH, Denkschrift, 66.

occupation of the Sudetenland in October 1938, not one of these groups was entirely completed. Several were simply masses of scaffolding and forms awaiting the pouring of concrete. Groups of forts required one year for planning and three to four years for construction.¹³ These eight groups were under construction on Czechoslovakia's northern frontier at the most important locations. They included: the Troppau group, just to the east of the town of Troppau at the Moravian Gate; the Berghöhe, Baudenkoppe, and Adamsberg groups, in the southern area of the Glatz Depression, protecting routes leading into the March river valley in northern Moravia; the Panske Pole, Skutinaberg, and Nachod groups, protecting the western exit of the Glatz Depression leading into the upper Elbe valley near the town of Nachod; and the Trautenau group, protecting the Landeshut Depression, which led into northeastern Bohemia.¹⁴ Construction of these groups began with the Troppau group in March 1936 and with the other groups in late 1936 and 1937.¹⁵ Much thought went into the planning and construction of these unfinished groups which were designed around and in hilltops to dominate large areas of surrounding terrain. The most complete group was the

13. Ibid., 36.

14. Ibid., 72; Biermann, "Czech System of Fortification," 218.

15. OKH, Denkschrift, 73.

Troppau group which was very near the end of its construction before the Germans occupied it. Because each of these groups of heavy forts operated on the same principles, the Troppau group can serve as an example for the other, more incomplete, groups.

The Troppau group was constructed in the Hrabín mountain east of the town of Troppau and laid out along a Y-shaped trace.¹⁶ Five heavy forts composed this group. Four forward forts formed the two upper prongs of the Y-shaped trace and faced the direction enemy forces would approach. The fifth fort lay in the rear on the far reverse slope at the base of the Y-shaped trace where entry into the group was attained.

The two forward-most forts were spread about 350 meters apart. These forts were almost entirely submerged and contained four steel turrets protruding above ground level. These rotating steel turrets were 310 millimeters thick and contained machine guns. The roofs of these forts, flush with ground level, were 3.5 meters of concrete thick.¹⁷ Chambers below these forward forts contained munitions and other supplies for the forts. A concrete staircase led downward to the group's main underground horizontal passageway which led to the other forts in the group.

16. Ibid., 74.

17. Ibid., 73, 75.

The other two forward forts in this group were artillery forts. Positioned closer to the center of the group's trace, these forts were not spread as widely apart as the two forward-most forts and were further up the forward slope, at a greater altitude. This greater height allowed these artillery forts to be able to fire over and above the two forward forts in this group. The two artillery forts in the Troppau group were each of a different design and function. The first type of artillery fort contained three forward firing 100 millimeter howitzers in echelon, as well as two rotating steel machine gun turrets atop the fort and two forward firing machine guns in the fort's front wall.¹⁸ Constructed into the hillside, the only portion of this fort which was exposed was the upper half of the fort's front wall, containing the fort's artillery combat stations, and the roof, containing the fort's machine gun turrets. This type of artillery fort, like the other heavy forts, contained an upper and lower level. The lower level was entirely underground. A staircase and elevators for artillery shells connected with the group's main underground passageway. Elongated in shape, the exposed forward wall of this artillery fort was approximately 47 meters broad and 1.5 meters thick.¹⁹ A concrete moat protected the

18. Ibid., 77.

19. Ibid.

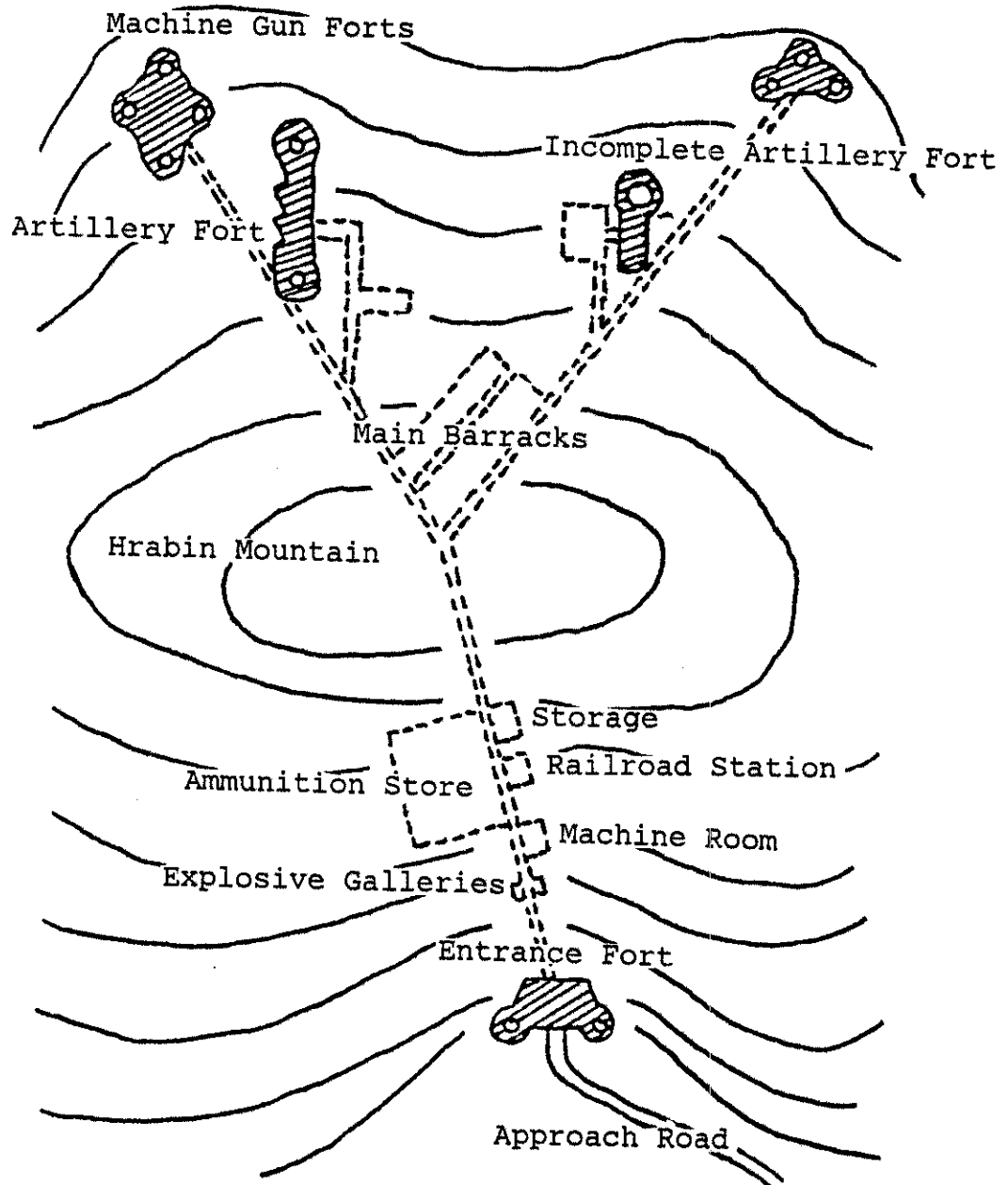


Fig. 13--Troppau Group of Forts

exposed front wall from close action and was three meters wide and two to three meters deep.²⁰

The second artillery fort in the Troppau group was found by the Germans to be incomplete, even though the Troppau group was the most complete group of heavy forts under construction in Czechoslovakia. This fort, entirely submerged, was constructed to house a large rotating steel cupola some eight meters in diameter and flush with ground level.²¹ Presumably, this cupola would have been similar to the retractable tortoise shell cupolas in the Maginot Line which could be raised and lowered as necessary to fire its protected artillery pieces. Upon occupation, the Germans found a deep open concrete pit eight meters broad and fifteen meters deep. The entire concrete structure was complete, with its two levels of adjoining underground chambers, but no machinery, guns, or cupola was in place. Like the other forts in the group, a concrete staircase led downward to connect with the group's underground passageway. The Germans presumed that forts of this type, when completed, would have contained two large howitzers which would have provided the group of forts with a long range 360 degree heavy artillery capability.²² In their unfinished state,

20. Ibid., 78

21. Ibid., 76.

22. Ibid.

artillery forts of this type constituted a serious weakness to the integrity of the group and could have provided an attacking force with an easy access into the interior of the group. To defend against this possibility in a German-Czech war in 1938, the Czechs would have had to destroy or fill in the open pit. The Czechs did not take these measures. Events occurred quicker than the Czechs could respond to them.

Almost a thousand meters in the rear of the Troppau group, at the base of its Y-shaped trace, on the reverse slope, the Czechs constructed the fifth fort in the group which contained the group's main entrance. Embedded in the hillside, only the front exterior wall of the entrance fort was exposed. This wall was 3.5 meters of concrete thick.²³ The actual entrance was recessed between two large concrete buttresses, each containing a rotating machine gun turret protruding from the top of each buttress. In the recessed walls, on either side of the entrance, were placed two machine gun embrasures for further protection of the entrance. A roadway led from rear areas up to the entrance itself which was composed of two large steel barred doors which swung inward. This entrance was large enough to allow supply trucks to enter the fort and park in an alcove off to one side of the fort's interior after passing

23. Ibid., 79.

through the fort's second door, a large solid steel bombproof door.²⁴ Next to the fort's small parking garage was a double-tracked small gauge railway which ferried men and supplies into the underground interior of the group. Up this passageway, about one hundred meters from the main entrance, side galleries containing explosives were constructed to blow up the tunnel should enemy forces penetrate the main entrance.²⁵ Further up the tunnel was the group's main railroad station and large chambers to store munitions and other supplies. Offices, sleeping quarters, machine rooms, pump and filter rooms to maintain a positive internal air pressure, kitchens, toilets, and communication and recreation rooms were also constructed deep within the group. The deepest part of the group was about fifty meters below the crest of the Hrabín mountain.²⁶ The entire complex, when complete, was to be manned and operated by a complement of about five hundred men with enough supplies to operate for one month in a self-contained state.²⁷ The entire group was surrounded by belts of barbed wire and light field obstacles to give the

24. Ibid.

25. Biermann, "Czech System of Fortification," 220.

26. Ibid.

27. Milan Hauner, "Ein Bericht des britischen Militärattachés in Prag vom 4. April 1938 über seine Reise zur Besichtigung der tschechischen Grenzbefestigungen," Militärgeschichtliche Mitteilungen 2 (1978): 133.

fort complex even greater security. Additionally, the exposed concrete surfaces were painted in earth tones. Occasionally, wooden facades were built to cover certain forts giving them the appearance of being farm houses, barns, or sheds.²⁸

Though magnificently planned and constructed, these groups of heavy forts were so few in number and substantially incomplete that their effectiveness in a German-Czech war in 1938 is questionable.

28. OKH, Denkschrift, 201.

CHAPTER VII

MUNICH AND THE THREAT OF WAR

1938 would prove to be the critical year for Czechoslovakia's fortifications program. During the six months from March to September, political and military considerations overtook and outstripped the Czech efforts to fortify their frontiers, despite the furious pace of construction.

In Germany, Hitler's intentions toward Czechoslovakia were first expressed during the Hossbach Conference of 5 November 1937.¹ Present at the conference were Hitler, the German Minister of War, Werner von Blomberg, the Commanders-in-Chief of the three armed services, Werner Freiherr von Fritsch, Erich Raeder, and Hermann Göring, the German Foreign Minister, Constantin Freiherr von Neurath, and Hitler's senior military adjutant, Friedrich Hossbach. During the conference, Hitler spoke in broad terms about Germany's need for "Lebensraum." Concerning Czechoslovakia, Hitler stated, "our first objective. . . must be to overthrow Czechoslovakia and Austria simultaneously in

1. Jonathan Wright and Paul Stafford, "A Blueprint for World War? Hitler and the Hossbach Memorandum," History Today 38 (March 1988): 12.

order to remove the threat to our flank in any possible operation against the West."² The military representatives, quite taken aback, expressed a cautious attitude toward such a measure. Blomberg and Fritsch expressed concern over Czechoslovakia's fortifications "which had acquired by now a structure like a Maginot Line and which would gravely hamper our attack."³ Hitler brushed these concerns aside. Though interpretations of the Hossbach Conference are much debated, it is true that, after the conference, the Germans began to draw up plans for an invasion of Czechoslovakia. This planned invasion carried the code name "Operation Green."

The sudden, and largely improvised, German occupation of Austria in March 1938 succeeded in bypassing the lines of light and medium strength fortifications in western Bohemia which the Czechs had constructed down to their Austrian frontier. The broad and defenseless southern Moravia front now lay open before the Germans. This move dramatically increased the Czech fear that the Republic could be split in two at her waist, now by a German pincer movement from the north and the south, should a German-Czech war occur. In response, the Czechs began to concentrate

2. Friedrich Hossbach, Memorandum, 10 November 1937, Raymond J. Sontag, ed., Documents on German Foreign Policy (Washington, D.C.: United States Government Office, 1949), Ser. D, 1:35.

3. Ibid., 38.

their efforts to fortify their 558-kilometer Austrian frontier as quickly as possible.⁴ German-Czech tension increased.

The German occupation of Austria necessitated a revision of the Operation Green plan. During April and May 1938, three different revised draft directives were prepared for Operation Green. The second draft, dated 20 May 1938, stated in part:

The army. . . must force the frontier fortifications with speed and energy, and must break boldly into Czechoslovakia. . . . It must be the purpose of these thrusts to break into the Czech fortified line at numerous points and in a strategically favorable direction,⁵ to penetrate them or to take them from the rear.

Attached to the May 20 directive was a list of questions, likely raised by Hitler, relating to Operation Green. One of these questions asked what caliber and quantity of heavy artillery were needed to dispose of Czechoslovakia's fortifications.⁶ On May 23 the German Armed Forces High Command answered these questions, stating that only 210-millimeter siege mortars would be effective and that

4. Biermann, "Czech System of Fortification," 213; Zorach, "Czechoslovakia's Fortifications," 84; A. H. B., "What Might Have Happened," Fighting Forces 15 (December 1938): 428.

5. Letter, Chief of Supreme Headquarters, the Wehrmacht (Keitel) to the Führer, enclosing Revised Draft Directive, Operation "Green," 20 May 1938, Documents on German Foreign Policy, Ser. D, 2:301-302.

6. Entwurf für die neue Weisung "Grün," Fragen zu "Grün," Berlin, 20 May 1938 (Microcopy T-77, Roll 1510, Frame 000277), Records of the German Armed Forces High Command, Records Group 242, U.S. National Archives, Washington, D.C.

twenty-three of these guns were available in Germany.⁷

The Germans were, apparently, taking the Czech fortifications seriously, but, as yet, no date had been set for the commencement of Operation Green.

Hitler was at Berchtesgaden on 20 May 1938, reviewing the plans for Operation Green, when rumors of German troop movements toward the Czech border sparked what has become known as the May Crisis. The source of these rumors is still uncertain but the Czechs, the French, and the British, took them quite seriously, which caused a series of frantic diplomatic exchanges on the weekend of May 19-22. The Czechs, since the Anschluss, were very anxious about any further German actions and decided on May 21 to call up a class of reservists, constituting a partial military mobilization.⁸ When the rumors subsided, the Western press contended that the Czech mobilization had forced Hitler to back down and withdraw his troops from the Czech border. No German troop movements had, in fact, taken place. Hitler was outraged at the Czech reaction to these rumors and ordered the drafting of a third revision of the Operation Green directive. This third and final draft,

7. Fragezettel vom 23.5., Berlin, 23 May 1938 (Microcopy T-77, Roll 1510, Frames 000278-000279), Records of the German Armed Forces High Command, Records Group 242, U.S. National Archives, Washington, D.C.

8. Gerhard L. Weinberg, "The May Crisis, 1938," Journal of Modern History 29 (September 1957): 217.

dated 30 May 1938, though very similar in content to the second draft, Hitler signed, and it began with the sentence, "It is my unalterable decision to smash Czechoslovakia by military action in the near future."⁹ He set 1 October 1938 as the date for the execution of Operation Green.

Throughout the summer of 1938, the Germans made preparations in accordance with Operation Green. The German-Czech situation became more and more tense as October 1 approached. The resulting crisis focused on the issue of the Sudeten Germans living in the frontier regions of Czechoslovakia, but there was much more to the crisis. During the latter half of September 1938, German military units began to move into positions near the German-Czech border. The Czech army mobilized and manned their fortifications. On both sides of the frontier aircraft and tanks were fueled, ammunition was dispensed, and artillery was wheeled into position. War seemed imminent. The future of Europe hung on one man, for Hitler alone could decide if war occurred.

It is not necessary to relate here all the events surrounding the Munich Conference of 29 September 1938. It suffices to say that an imminent war was prevented. Czechoslovakia, facing the option of fighting Germany alone,

9. Directive for Operation "Green" From the Führer to the Commanders-in-Chief of Supreme Headquarters, the Wehrmacht (Keitel), Berlin, 30 May 1938, Documents on German Foreign Policy, Ser. D, 2:358.

submitted to the provisions of the Munich Agreement and evacuated the Sudetenland. Germany, on October 1, occupied the region and took possession of Czechoslovakia's precious fortifications.

Czechoslovakia's fortifications at the time of the Munich Crisis were incomplete. The submission of Czechoslovakia to the Munich Agreement can partially be attributed to this fact. Though the Czechs had taken great strides in fortifying their Austrian frontiers in the months preceding Munich, the fortifications there lacked strength and depth. The Czechs had attempted to construct an almost continuous belt of light and medium strength forts along this frontier, but could not entirely do this in so short a period of time. The concrete of many of these forts was still moist when the Germans occupied them. Their stark whiteness and lack of camouflage made them obvious targets. For many of these works, the Czechs did not have time to build up their protective earth and stone banks, making the exposed and defenseless forward walls particularly vulnerable to German artillery. Realizing these deficiencies, the Czechs, just before Munich, had positioned the strongest elements of their army in southern Moravia opposite their Austrian frontier.¹⁰ The situation seemed bleak for the Czechs. They could not cover every

10. Zorach, "Czechoslovakia's Fortifications," 90.

sector of their lengthy frontier with adequate forces, particularly if Hungary or Poland became actively involved in the conflict.

The exact number of available divisions in the Czech army at the time of Munich is an elusive fact, partly owing to the way in which the Czechs organized their military forces. Many units were not under divisional commands. Most sympathetic post-war Western accounts give a figure close to forty divisions. One communist Czech source gives the exaggerated figure of forty-five divisions.¹¹ The League of Nation's Armaments Year-Book for 1938 states that the standing Czech army consisted of twelve infantry divisions, two mountain infantry brigades, twelve light field artillery brigades, and four cavalry brigades.¹² The budgetary effectives of Czechoslovakia's military forces, including the standing army, activated reserves, gendarmerie, and air force personnel, totaled 197,704 men.¹³ This would be equivalent to about sixteen divisions. This figure, however, does not include most of the reservists available. In July 1938 the German Army High Command estimated that the Czechs could maintain a total military strength of

11. Československý vojenský atlas (Praha: Ministerstvo Národní Obrany, 1965), 316.

12. League of Nations, Armaments Year-Book (Geneva: 1938), 268.

13. Ibid., 281.

about 300,000 men through a continued call up of reservists.¹⁴ In August the Germans estimated the total Czech strength to be about 382,000 men.¹⁵ In early September they expected the total Czech strength to be about 400,000 men.¹⁶ On September 26, this German estimate rose to 500,000 men.¹⁷ On September 28, the German estimation of total Czech military strength rose to 562,000 men distributed among seventeen infantry divisions, four "fast" divisions (cavalry and tanks), numerous battalions of fortress troops (equivalent in numbers to about seven infantry divisions), six reserve infantry divisions, air force personnel, gendarmerie, and administrative personnel.¹⁸ This last German estimate,

14. Lagebericht Nr. 20, Berlin, 8 July 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000590), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

15. Lagebericht Nr. 29, Berlin, 16 August 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frames 000557-558), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

16. Lagebericht Nr. 33, Berlin, 3 September 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000541), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

17. Lagebericht Nr. 44, Berlin, 26 September 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000493), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

18. Lagebericht Nr. 46, Berlin, 28 September 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000488), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

like earlier estimations, represents total Czech military strength rather than the effective field strength of the Czech army. The dramatic increase in the figures through 1938 reflects the Czech efforts to raise their military strength as German-Czech tension increased and the cautious attitude of the German Army High Command as the possibility of war became more certain. From these figures it can be surmised that the Germans expected the effective field strength of the Czech army to be in the range of thirty-four divisions, a respectable military force. In other respects, the Germans seemed to consider the Czech military forces as inferior to their own. Numerous German military reports prior to Munich note that only about fifty-two percent of Czechoslovakia's military personnel were Czechs; the rest being made up of Germans, Slovaks, Magyars, Poles, and Ruthenians.¹⁹ The implication is, of course, that the non-Czech soldiers would not be as determined in their defense of the Republic as the ethnically Czech soldiers. Considering the behavior of Czechoslovakia's minorities in the months preceding Munich, especially the Sudeten Germans, this observation was a credible one. In another German report before Munich, the German Army General Staff

19. Lagebericht Nr. 1, Berlin, 28 April 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000668), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

evaluated the leadership of the Czech armed forces and stated that the Czech General Staff, which was composed almost entirely of men who had served in the Czech Legion in Russia in 1918, was dependent on the advice of the French military mission to Czechoslovakia.²⁰ The implication here is that the Germans believed the Czech General Staff incapable of acting on its own. It is true that Czech tactical doctrine was similar to French doctrine in advocating defense on a broad front, which could have worked to the Germans' advantage.²¹

Because of the possibility of Polish and Hungarian involvement in the potential German-Czech military confrontation in the autumn of 1938, the Czechs were obliged to position at least six divisions in Slovakia; three facing Poland near the Teschen sector and three against the Hungarian frontier, not including fortress troops and gendarmerie assigned to these areas.²² This would leave, at most, only twenty-seven divisions in Bohemia and Moravia to repel the Germans.

20. Lagebericht Nr. 44, Berlin, 26 September 1938, Oberkommando des Heeres (Microcopy T-78, Roll 561, Frame 000494), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

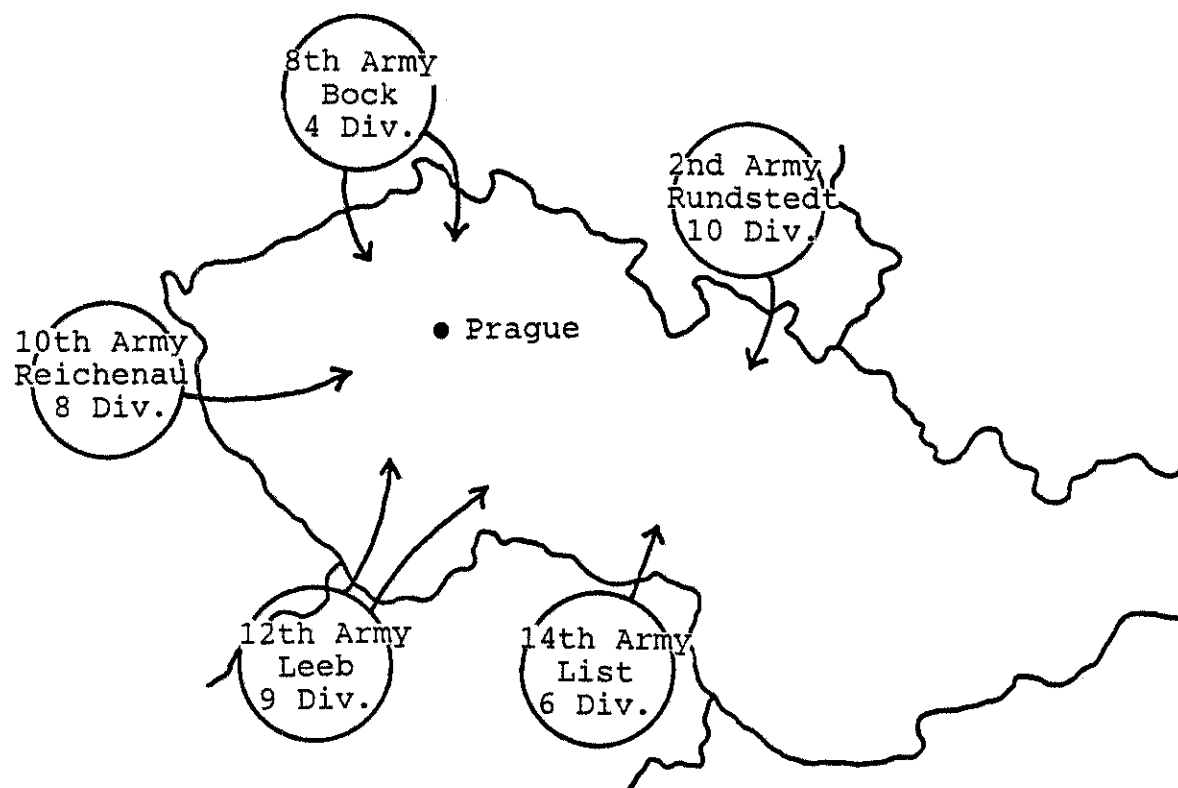
21. Zorach, "Czechoslovakia's Fortifications," 90.

22. František Nesvadba, Proč nezahřměla děla (Praha: Nase vojsko, 1986), 385; Československý vojenský atlas, 316.

The lengthy frontier was a severe strain on the available Czech military forces. If the Czechs spread their forces thinly, to cover more terrain, they could be overwhelmed at the point of a German attack. 400,000 men spread along their 2,097-kilometer German and Austrian frontier would leave only 190 men per kilometer. If they consolidated their forces, they would leave gaps. The Czechs did their best to estimate areas where the Germans might attack, but still they could never be certain that their troop placement was sound until the attack actually came.

The German plan for the invasion of Czechoslovakia involved thirty-seven field divisions distributed among five German armies and the seventh Flieger (parachute) division assigned to drop in the rear areas of Czechoslovakia's northern frontier.²³ The Second Army, under the command of Gerd von Rundstedt, was composed of ten divisions and was positioned in Silesia for a strike at the Moravian Gate. The Eighth Army, commanded by Fedor von Bock, contained four divisions and was prepared to attack northern Bohemia following the line of the Elbe Valley. The Tenth Army, under the command of Walter von Reichenau,

23. Kemp, Maginot Line, 53; Fall "Grün," Berlin, 18 September 1938, Oberkommando der Wehrmacht (Microcopy T-77, Roll 1510, Frame 000345), Records of the German Armed Forces High Command, Records Group 242, U.S. National Archives, Washington, D.C.



Map 4--German Plan for the Invasion of Czechoslovakia

had eight divisions in Bavaria and intended to strike toward Pilsen. The Twelfth Army, under Wilhelm Ritter von Leeb, was composed of nine divisions ready to attack southern Bohemia, and the Fourteenth Army, commanded by Wilhelm List, was positioned north of Vienna where it would strike northward into the heart of Moravia.²⁴ These dispositions gave the Germans a divisional advantage ratio of 1.4 to 1 over the Czechs in Bohemia and Moravia. This was not an overwhelming advantage in manpower, but it is comparable to the German-Polish manpower ratio of 1.5 to 1 in western Poland in September 1939.²⁵

In terms of armored fighting vehicles, the Germans also had a modest advantage over the Czechs. Czechoslovakia's total armored force in September 1938 consisted of 70 tankettes, 51 armored cars, 50 LT Vz. 34 tanks, and 298 LT Vz. 35 tanks.²⁶ These 469 vehicles were distributed among Czechoslovakia's four "fast" divisions.

24. Nesvadba, Proč nezahřměla děla, 376; Fall "Grün," Berlin, 18 September 1938, Oberkommando der Wehrmacht (Microcopy T-77, Roll 1510, Frame 000345), Records of the German Armed Forces High Command, Records Group 242, U.S. National Archives, Washington, D.C.

25. Steven Zaloga and Victor Madej, The Polish Campaign, 1939 (New York: Hippocrene Books, Inc., 1985), 107.

26. The Czech tankettes were small tracked vehicles containing a machine gun. The armored cars contained a machine gun in a turret atop the vehicle. The LT Vz.35 tank was a refined version of the LT Vz. 34 tank and contained a highly advanced, but troublesome, hydraulic and compressed air system for braking, gear reduction, clutch engagement, and turret traverse.

About 400 of these vehicles were stationed in Bohemia and Moravia during September 1938.²⁷ By contrast, the Germans had 720 armored fighting vehicles available to invade Bohemia and Moravia, a 1.8 to 1 advantage. These German vehicles consisted mostly of light tanks (Panzerkampfwagen Marks I and II) plus an assortment of armored scout vehicles. These German vehicles comprised 43 panzer companies which were distributed among Germany's three panzer and three "light" divisions.²⁸ The main Czech tank available, the LT Vz. 35, was comparable to the main German tank available, the Pzkw. Mark II, in terms of speed, range, weight, size, and armored protection. The only significant difference between the two tanks was that the main Czech tank possessed a 37-millimeter gun and the main German tank possessed a 20-millimeter gun.²⁹ In a one-on-one duel, the Czech LT Vz. 35 had an advantage over the German Pzkw. Mark II, even though each model had the potential to destroy the other. The Czech advantage was

27. Jiri T. Vojta, "The History and Development of Czechoslovak Armored Fighting Vehicles, Part II," AFV-G2, Vol. 3, No. 3 (November 1971), 8; Československý vojenský atlas, 316.

28. Československý vojenský atlas, 316; Williamson Murray, "Munich 1938: The Military Confrontation," The Journal of Strategic Studies, Vol. 2, No. 3 (December 1979), 283; Georg Tessin, Formationsgeschichte der Wehrmacht, 1933-1939: Stäbe und Truppenteile des Heeres und der Luftwaffe (Boppard: 1959), 61.

29. Robert J. Icks, Tanks and Armored Vehicles (New York: Duell, Sloan and Pearce, 1945), 207 and 243.

partly negated by the fact that the Germans had more tanks available, adequate numbers of mobile anti-tank guns, and, of great importance, a strong superiority in ground attack aircraft.

As the plans for Operation Green were formulated, most of the German tanks were originally allotted to Rundstedt's Second Army. The General Staff believed they were most needed there to assist in Rundstedt's attempt to pierce the heavily fortified Moravian Gate. In September 1938, Hitler altered this plan, to the consternation of his generals, and ordered most of the available German tanks to be given to Reichenau's Tenth Army facing western Bohemia. Hitler's logic, which seems sound in this case, was that the tanks would be wasted in the effort to force the Moravian Gate, causing a "repetition of Verdun."³⁰ In the confined, heavily fortified Moravian Gate, the heavy forts, with their anti-tank guns, could very well have destroyed most of the German tanks advancing up the valley. Fields of hedgehogs, upright rails, and anti-tank ditches would have made this German effort difficult. German infantry and engineers, supported by artillery fire, were better suited to the task of assaulting the Moravian Gate. Another reason for Hitler's alteration of these plans was his understanding that Germany could not afford for the conflict to be prolonged, for the longer it lasted, the

30. Vital, "Czechoslovakia and the Powers," 202.

greater the possibility of Western intervention. Though Hitler knew the French would take no immediate measures to aid Czechoslovakia, he wanted to ensure French inactivity by capturing Prague quickly. Capturing Prague quickly would also provide a psychological victory for the Germans and a psychological defeat for the Czechs.

Czechoslovakia's air force at the time of Munich consisted of approximately 700 available aircraft.³¹ Most were fighter aircraft: the Avia B-534, the Letov S-328, and an odd assortment of older Czech models.³² The Germans had 1,669 serviceable aircraft available out of a total strength of 2,928 aircraft in August 1938.³³ Although some of these aircraft were in Spain at the time, it is likely that the Germans had about 1,400 serviceable aircraft available to support the planned invasion of Czechoslovakia; a 2 to 1 advantage over the Czech air force. This numerical advantage was magnified by the fact that the German planes were technically superior to the Czech planes. The Luftwaffe in 1938 was equally divided among bomber and

31. League of Nations, Armaments Year-Book (Geneva: 1938), 271; G. Donald Hudson, ed., Encyclopedia Britannica World Atlas (Chicago: Encyclopedia Britannica, Inc., 1945), 80.

32. Enzo Angelucci, Airplanes: From the Dawn of Flight to the Present Day (New York: McGraw-Hill Book Company, 1973), 130.

33. H. A. Probert, The Rise and Fall of the German Air Force, 1933-1945 (Dorset: Arms and Armour Press, Ltd., 1983), 19.

fighter aircraft. Of the types available, the Luftwaffe possessed a stable of Junker 52s, Junker 86s, Junker 87s, Dornier 17s, Heinkel 51s, Heinkel 111s, Henschel 123s, and Messerschmitt Bf-109s (Series B, C, and D). The primary Czech fighter, the Avia B-534, was a nimble aircraft and, quite possibly, was one of the best half canvas biplane fighter aircraft ever produced, but it could not match the German Bf-109. The disparity in aircraft was made worse by the fact that Czechoslovakia had only five hundred anti-aircraft guns available in the entire country.³⁴ It is likely that within the first week of conflict the Germans would have achieved complete air supremacy over Czechoslovakia. This could only have helped the German ground effort.

It can be assumed that the heavy fortifications constructed at the Moravian Gate, supported by the Czech Seventh and Eighth infantry divisions, would have held up Rundstedt's Second Army (ten divisions) for a while. List's Fourteenth Army, attacking northward into Moravia, would have encountered a broad area of hastily constructed medium strength fortifications defended by six Czech infantry divisions and one of Czechoslovakia's "fast" divisions. List's six divisions probably could not have achieved a quick breakthrough into Moravia if these Czech

34. Zorach, "Czechoslovakia's Fortifications," 81, 92.

divisions responded quickly to the German presence. The Czech defensive strategy of preventing a German pincer movement from the north and south would probably have been successful initially. The defense of Bohemia would not have been as successful. Of the three German armies poised to invade Bohemia, Reichenau's Tenth Army, containing most of the Germans' mechanized capability, and Leeb's Twelfth Army had the greatest potential for success. Totalling seventeen divisions, these two German armies faced a Czech defensive force of three infantry and two armored "fast" divisions defending one of the weaker fortified zones in the Czech frontier, one mostly composed of light field works. It is entirely possible that either one, or both, of these German armies could have penetrated the weakly fortified zone in southwestern Bohemia quickly. Once penetration was made, Reichenau's mechanized forces could have swept eastward toward, or around, Pilsen and threatened the area south of Prague. If the Czechs responded to this penetration by pulling their forces back or by shifting a division or two westward from southern Moravia, their difficulties could have increased, because this would have relieved some of the pressure on List's Fourteenth Army in southern Moravia. Once sizeable numbers of German forces had penetrated beyond the frontier and gained access to the open country in Bohemia, the Czechs would have had to tighten up their lines, giving some ground in the process.

Once this had been done, it is also possible that Polish and Hungarian forces, waiting cautiously, would have realized that neither Western nor Soviet assistance was forthcoming and would then have taken advantage of the poor Czech situation and moved across the border to occupy territory in Slovakia. This is just one of several possibilities for the threatened German-Czech war in 1938. Few historians doubt that Germany could have defeated Czechoslovakia militarily, given enough time, and with Western inactivity a certainty, the Germans would have possessed the necessary time.

CHAPTER VIII

GERMAN OCCUPATION AND EXAMINATION OF
CZECHOSLOVAKIA'S FORTIFICATIONS

The Germans, before Munich, expressed much concern about Czechoslovakia's fortifications and wondered, in particular, whether their artillery would be effective against them. Originally it seems, the Germans had little accurate information about the fortifications and could only speculate on their exact locations and strength. Observations from the German side of the frontier provided little data, because many of the forts were in wooded areas or were on the reverse side of slopes. During the summer and fall of 1938, German intelligence improved significantly, primarily because their efforts to secure information increased. Much of their information about the fortifications came from sympathetic German inhabitants in Czechoslovakia's frontier regions.¹ Other information was collected by aerial observations or through the German embassy in Prague. By using these means, the Germans were able to construct very detailed maps of the Czech frontier

1. Zorach, "Czechoslovakia's Fortifications," 90.

showing precise locations of individual bunkers.²

Pre-Munich maps prepared by the Germans correspond very well with maps drawn up later. The Germans were also able to gather information from deep within Czechoslovakia about the fortifications. One German intelligence report, dated 3 September 1938, confirms the construction of a new line of bunkers on the east bank of the Moldau, twenty kilometers southwest of Prague, and states their characteristics.³

Before Munich, the Germans apparently conducted firing tests and practice assaults against model fortifications constructed within Germany. An extensive German report describes the results of these tests upon various targets, such as concrete bunkers, steel machine gun embrasures, armored turrets, and even hedgehogs, all of which could be found in the Czech fortifications. Dated July 1938, the report reveals that the machine gun embrasures of the concrete bunkers were the bunker's most vulnerable aspect and could be jammed or destroyed by using a wide variety of

2. Befestigungskarte Tschechoslowakei, Berlin, 30 June 1938, Oberkommando des Heeres, Generalstab des Heeres, Abteilung IIb (Microcopy T-79, Roll 16, Frames 9-10), Records of German Army Areas, Records Group 1031, U.S. National Archives, Washington, D.C.

3. Lagebericht Nr. 33, Berlin, 3 September 1938, Oberkommando des Heeres, Generalstab des Heeres, Abteilung IV (Microcopy T-78, Roll 561, Frame 000541), Records of Headquarters German Army High Command, Records Group 242, U.S. National Archives, Washington, D.C.

weapons. These German trials also revealed that hedgehogs were best dealt with by throwing cables over them and simply dragging them back toward one's own lines, rather than attempting to drive over them.⁴ Though these tests were conducted under ideal conditions, they perhaps gave the Germans some insight as to how they could assault the Czech fortifications effectively.

When the Germans occupied the Sudetenland in October 1938, they found the fortifications stripped of most of their armaments.⁵ The evacuating Czechs had removed them. In some cases a number of bunkers were burnt out or bridges destroyed. When the Germans examined the fortifications firsthand, they quickly determined that only some of their original fears were justified. A preliminary German report dated 15 October 1938 stated that the gaps between the medium-strength casemates were inadequately defended and, because of this weakness, these types of fortifications could have been successfully neutralized. The report also noted that their camouflage was inadequate.⁶ In certain

4. Angriffsmittel gegen armierte Betonbauten und Hindernisse, July 1938, Oberkommando des Heeres, Generalstab des Heeres, Abteilung 4 (Microcopy T-79, Roll 181, Frames 000084-000091), Records of German Army Areas, Records Group 1031, U.S. National Archives, Washington, D.C.

5. Zorach, "Czechoslovakia's Fortifications," 87.

6. Vorläufiger Erfahrungsbericht, 15 October 1938 (Microcopy T-79, Roll 16, Frame 00042), Records of German Army Areas, Records Group 1031, U.S. National Archives, Washington, D.C.

areas where the fortifications were heavy the Germans were quite impressed.

The Germans conducted firing trials upon the Czech fortifications to answer further questions they had concerning the forts. These trials showed mixed results. 105-millimeter artillery fired from a range of five hundred meters had very little effect upon the fort's forward protective bank of stone and earth, while 37-millimeter Pak were very effective at a range of 450 meters when firing upon the machine gun embrasures of these forts. Most impressive was the effect German 88-millimeter flak had upon the medium strength casemates. When 88-millimeter shells were fired from one thousand meters upon an exposed portion of a casemate's concrete walls, the casemate virtually collapsed. The trials also demonstrated that, whenever close quarter action was possible, the air ducts were quite vulnerable and could be pried open and grenades dropped in.⁷ Shooting trials against the heavy forts demonstrated that it would have been very difficult to subdue them. These forts were impervious to all but the heaviest German guns.

Against the heavy forts the Germans would have been obliged to use their 210-millimeter siege guns to achieve

7. Versuchsschiessen gegen Tschechenbunker, Karlsbab, 19 October 1938, Heeres Gruppenkommando 4. (Microcopy T-77, Roll 737, Frames 1965484-1965487), Records of Headquarters German Army High Command, Records Group 1026, U.S. National Archives, Washington, D.C.



Fig. 14--Effects of German Artillery Tests on Czech Bunkers

a quick breakthrough of the heavily fortified zones. These tests, conducted under ideal conditions, proved, at least, that determined German assaults, supported by heavy artillery fire, could have breached the medium strength fortified lines rather quickly. Contrary to popular belief the German examination of Czechoslovakia's fortifications told them very little about the Maginot Line. The Germans did receive some benefits from Czechoslovakia's fortifications, however. Photographs of German soldiers, taken inside the Czech fortifications, were issued to the Western press as photographs of the deep forts in the Siegfried line; the Siegfried line, of course, had no deep forts.⁸

8. Kemp, Maginot Line, 53.

CHAPTER IX

CONCLUSION

Czechoslovakia's fortifications have been the target of unceasing speculation in the study of modern European history. The very fact that they were handed over to the Germans without a struggle has fueled this speculation and has caused many misconceptions and too many comparisons with the Maginot Line. Contrary to Keitel's and Manstein's opinions at Nuremberg, the Germans did possess the means to pierce these defenses in 1938. It is difficult to forecast precisely how the fortifications would have fared had a German-Czech war broken out in the fall of 1938. The fortifications were incomplete and, in some aspects, were seriously flawed. In some areas, the fortifications were complete and had obtained their full defensive capacity. It can be assumed that the Germans would have breached the thinly fortified line in southwestern Bohemia and broken into the heart of Bohemia quickly. Once this occurred, the integrity of the entire fortified frontier was threatened. It is likely that Germany could have defeated Czechoslovakia in 1938 in about one month's time.

The fortifications of Czechoslovakia, nevertheless, were a remarkable example of Czech ingenuity, engineering,

and industry. As it turned out though, the Czechs had bound and invested the future of the Republic in a marvelous defensive dream. With hindsight, it is easy to say that the Czechs, in effect, wasted the resources of their Republic in their fortifications program. The same thing is often said of the French with their Maginot Line, yet during the 1930s, it seemed to be a rational response to difficult and threatening inter-European problems. In this regard, the Czech fortifications and the Maginot Line can be viewed as the last efforts of the victors of the First World War to maintain their hard-fought status behind an inflexible wall of concrete which would protect them from those beyond the wall who would forceably attempt to revise the face of Europe.

BIBLIOGRAPHY

UNPUBLISHED MATERIAL

- United States. National Archives and Records Service.
Interrogation Records Prepared for War Crimes Proceedings at Nuremberg, 1945-1947. Washington, D.C.: 1983. Records Group 238, Microcopy M-1270, Roll 8.
- United States. National Archives and Records Service.
Records of the German Armed Forces High Command, 1914-1945. Washington, D.C.: 1970. Records Group 242, Microcopy T-77, Roll 1510.
- United States. National Archives and Records Service.
Records of German Army Areas. Washington, D.C.: 1956. Records Group 1031, Microcopy T-79, Rolls 16, 129, and 181.
- United States. National Archives and Records Service.
Records of Headquarters German Army High Command. Washington, D.C.: 1959. Records Group 1026, Microcopy T-77, Roll 737.
- United States. National Archives and Records Service.
Records of Headquarters German Army High Command. Washington, D.C.: 1960. Records Group 1027, Microcopy T-78, Roll 298.
- United States. National Archives and Records Service.
Records of Headquarters German Army High Command. Washington, D.C.: 1966. Records Group 242, Microcopy T-78, Rolls 561 and 642.

PUBLISHED MATERIAL

PRIMARY SOURCES

- Beneš, Dr. Eduard. Memories of Dr. Eduard Beneš: From Munich to New War and New Victory. Boston: Houghton Mifflin Company, n.d.

Churchill, Winston S. The Second World War: The Gathering Storm. Boston: Houghton Mifflin Company, 1948.

Guderian, Heinz. Panzer Leader. New York: E.P. Dutton & Company, Inc., 1952.

Henderson, Nevile. Failure of a Mission: Berlin, 1937-1939. New York: G.P. Putnam's Sons, 1940.

Keitel, Wilhelm. The Memoirs of Field-Marshal Keitel, New York: Stein and Day, publishers, 1965.

League of Nations. Armaments Year-Book. Geneva: 1937.

League of Nations. Armaments Year-Book. Geneva: 1938.

Speer, Albert. Inside the Third Reich. 1969. reprint. New York: Avon Books, 1971.

International Military Tribunal. Trial of the Major War Criminals Before the International Military Tribunal. Vol. 10, Nuremberg: United States Government Printing Office, 1947.

International Military Tribunal. Trial of the Major War Criminals Before the International Military Tribunal. Vol. 20, Nuremberg: United States Government Printing Office, 1948.

Sontag, Raymond J., ed. Documents on German Foreign Policy, 1918-1945. Ser. D, Vols. 1 and 2. Washington, D.C.: United States Government Printing Office, 1949.

SECONDARY WORKS

Angelucci, Enzo. Airplanes: From the Dawn of Flight to the Present Day. New York: McGraw-Hill Book Company, 1971.

B., A.H. "What Might Have Happened." Fighting Forces 15 (December 1938): 426-432.

Biermann, Oberst. "The Czech System of Fortification." Royal Engineers Journal 53 (June 1939): 212-223. Translation of an article by Oberst Biermann in the Vierteljahreshefte für Pioniere, (February 1939).

von Brosch-Aarenau, Theodor. "Wie war die Tschechoslowakei befestigt?" Militärwissenschaftliche Mitteilungen 70 (1939): 356-376.

Campbell, F. Gregory. Confrontation in Central Europe: Weimar Germany and Czechoslovakia. Chicago: University of Chicago Press, 1975.

Carr, William. Arms, Autarky and Aggression: A Study in German Foreign Policy, 1933-1939. New York: W.W. Norton & Company, Inc., 1972.

Československý vojenský atlas. Praha: Ministerstvo Národní Obrany, 1965.

Cooper, Matthew. The German Army, 1933-1945: Its Political and Military Failure. 1978, reprint. New York: Bonanza Books, 1984.

"Czech 'Maginot Lines' now German: An Inspection by Herr Hitler." Illustrated London News (October 15, 1938): 676-677.

Davies, W. J. K. German Army Handbook, 1939-1945. New York: Arco Publishing, Inc., 1973.

Deighton, Len. Blitzkrieg: From the Rise of Hitler to the Fall of Dunkirk. New York: Alfred A. Knopf, 1980.

Eastwood, James. The Maginot and Siegfried Lines: Walls of Death. London: Pallas Publishing Company, Ltd., n.d.

"A French Officer." The Maginot Line: The Facts Revealed. London: Duckworth, 1939. Authorized by the French War Office.

Freund, Richard. Watch Czechoslovakia! London: Thomas Nelson & Sons, Ltd., 1937.

Gatzke, Hans W., ed. European Diplomacy Between Two Wars, 1919-1939. Chicago: Quadrangle Books, 1972.

Giblin, James Cross. Walls: Defenses Throughout History. Boston: Little, Brown and Company, 1984.

Griffin, Jonathan. "Czechoslovakia's Military Strength." Fortnightly (July 1938): 66-72.

Grinsell, Robert. Messerschmitt Bf 109. London: Jane's Publishing Company, Ltd., 1980.

- Hauner, Milan. "Ein Bericht des Britischen Militärattachés in Prag vom 4. April 1938 über seine Reise zur Besichtigung der tschechischen Grenzbefestigungen." Militärgeschichtliche Mitteilungen 2 (1978): 125-136.
- "Herr Hitler with Military Experts Examining Czech 'Pill Boxes.'" Illustrated London News (November 19, 1938): 915.
- Hogg, Ian V. Fortress: A History of Military Defense. New York: St. Martin's Press, 1975.
- Holub, Ota. A věže mlčí. Praha: Kontakt Pressfoto, 1973.
- Hudson, G. Donald, ed. Encyclopaedia Britannica World Atlas. Chicago: Encyclopaedia Britannica, Inc., 1945.
- Hughes, Judith M. To the Maginot Line: The Politics of French Military Preparation in the 1920s. Cambridge: Harvard University Press, 1971.
- Icks, Robert J. Tanks and Armored Vehicles. New York: Duell, Sloan and Pearce, 1945.
- Kemp, Anthony. The Maginot Line: Myth and Reality. New York: Stein and Day, Publishers, 1982.
- Krybus, Josef. "The Avia B.534," in Martin C. Windrow, ed., Aircraft in Profile. New York: Doubleday & Company, Inc., 1970.
- Murray, Williamson. "Munich, 1938: The Military Confrontation." The Journal of Strategic Studies 2 (December 1972): 282-302.
- Murray, Williamson. "The Luftwaffe Before the Second World War: A Mission, A Strategy?" The Journal of Strategic Studies Vol. 4, No. 3 (September 1981): 261-270.
- Nesvadba, František. Proč nezahřměla děla. Praha: Nase vojsko, 1986.
- Paret, Peter, ed. Makers of Modern Strategy: From Machiavelli to the Nuclear Age. Princeton: Princeton University Press, 1986.
- Probert, H.A. The Rise and Fall of the German Air Force, 1933-1945. Dorset: Arms and Armour Press, Ltd., 1983.
- Rajninec, Juraj and James V. Sanders. "Combat over Slovakia." Aero Album Vol. 3, No. 3 (Fall 1970): 27-35.

- Shirer, William L. The Rise and Fall of the Third Reich: A History of Nazi Germany. 1959, reprint. New York: Simon and Schuster, Inc., 1981.
- Taylor, John W. R., ed. and comp. Combat Aircraft of the World: From 1909 to the Present. New York: G. P. Putnam's Sons, 1969.
- Tessin, Georg. Formationsgeschichte der Wehrmacht, 1933-1939: Stäbe und Truppenteile des Heeres und der Luftwaffe. Boppard: 1959.
- Thompson, Paul W. Engineers in Battle. Harrisburg: The Military Service Publishing Company, 1942.
- Toland, John, Adolf Hitler. 1976. reprint. New York: Ballantine Books, 1981.
- Tuchman, Barbara. The Guns of August. New York: Macmillan Publishing Company, Inc., 1962.
- Vojta, Jiri T. "The History and Development of Czechoslovak Armored Fighting Vehicles, Part II." AFV-G2 Vol. 3, No. 3 (November 1971): 4-8 and 32.
- Weinberg, Gerhard L. "The May Crisis, 1938." Journal of Modern History 29 (September 1957): 213-225.
- Weinberg, Gerhard L. "Secret Hitler-Beneš Negotiations in 1936-37." Journal of Central European Affairs Vol. 19, No. 4 (January 1960): 366-374.
- Wheeler-Bennett, John W. Munich: Prologue to Tragedy. 1948. reprint. New York The Viking Press, 1965.
- Wistrich, Robert. Who's Who in Nazi Germany. 1982, reprint. New York: Bonanza Books, 1984.
- Wright, Jonathan and Paul Stafford. "A Blueprint for World War? Hitler and the Hossbach Memorandum." History Today 38 (March 1988): 11-17.
- Zaloga, Steven and Victor Madej. The Polish Campaign, 1939. New York: Hippocrene Books, Inc., 1985.
- Zorach, Jonathan. "Czechoslovakia's Fortifications: Their Development and Role in the 1938 Munich Crisis." Militärgeschichtliche Mitteilungen 2 (1976): 81-94.
- Zorach, Jonathan. "Recent Studies on Czechoslovak Arms and Armament Works." East Central Europe/L'Europe du centre-est 4, No. 1 (1977): 86-92.