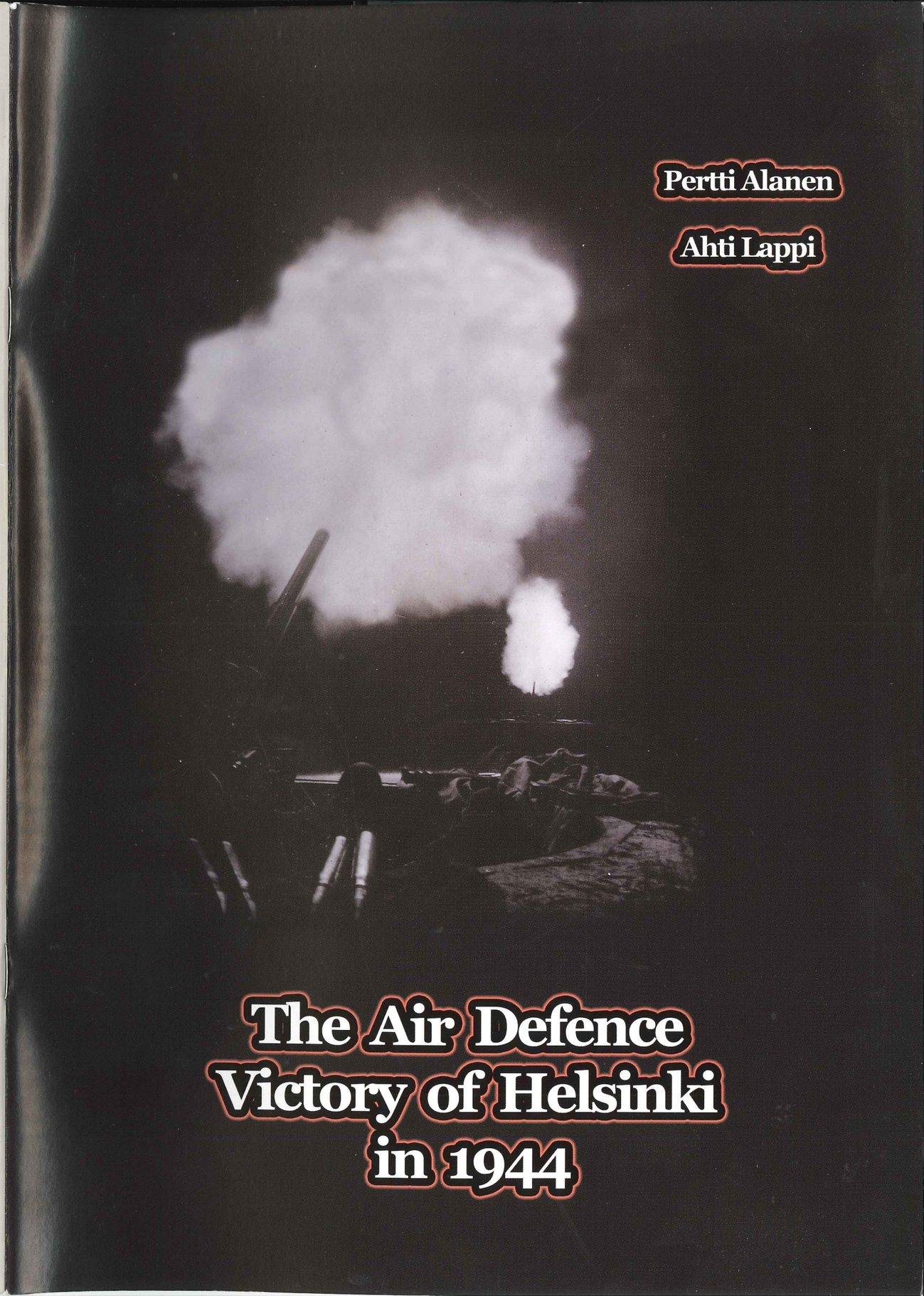
Hundreds of cities and towns were utterly destroyed or severely damaged and hundreds of thousands of people killed or injured in the bombings of World War II. Helsinki was an exception, being saved from the worst by its efficient air defence.

The critical factor was the 1st Anti-Aircraft Regiment's heavy batteries, whose deterrent fire persuaded enemy aircraft to turn away. German night fighters also took part in Helsinki's defence during the last two bombing raids, prowling on targets illuminated by searchlights.

About 2,000 Soviet bombers flew sorties during the offensive, dropping more than 16,000 bombs. Of these, a mere 5 per cent landed in the city area, while the rest fell outside the target zone.

The bombings could neither break the resolve of Finns to defend, nor force Finland to accept unfavourable peace terms. The first decisive battle of 1944 ended in a defensive victory.



Pertti Alanen

Ahti Lappi

The Air Defence Victory of Helsinki in 1944

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Monuments to Helsinki's Air Defence

Plaque commemorating Air Defence Task Force (founded on 1 July 1925)
External wall of Länsi-Mustasaari island barracks at Suomenlinna sea fortress, unveiled on 1 July 1960.

Monument commemorating Helsinki's anti-aircraft artillery in 1939–1944
76mm Bofors gun at Länsi-Mustasaari island, Suomenlinna sea fortress, unveiled on 4 October 1969.

Plaque commemorating Santahamina Anti-Aircraft School, 1 August 1940 - 21 September 1963
External wall of former school building at Santahamina island, unveiled on 30 November 1970.

Plaque commemorating war-time Air Defence Operations Room
Stone foundation of Erottaja fire station at Korkeavuorenkatu 26 (street address), unveiled on 30 November 1974.

Monument commemorating anti-aircraft artillery in Continuation War, 1941–1944
88mm RMB gun at Kalastajatorppa hotel, Munkkiniemi district, unveiled on 12 May 1975.
There is also a commemorative plaque in English on the hotel wall.

Monument commemorating air defence of Lauttasaari island, 1939–1944
76mm SS gun at Myllykallio, Lauttasaari island, unveiled on 12 June 1980.

Monument commemorating Heavy AA Battery at Taivaskallio
76mm Bofors gun at Taivaskallio, Käpylä district, unveiled on 29 May 1983.

Plaque commemorating 101st Heavy AA Battery ("Itä") of Continuation War
At Patterimäki, Laajasalo island, unveiled on 22 October 1988, reattached later.

Monument commemorating 32nd Heavy AA Battery ("Länsi") of Continuation War
76mm SS gun (Russian) at Tuulimäenpuisto park, Tapiola district, unveiled on 13 October 1992.

Monument commemorating Helsinki's air defence
88mm RMB gun at Veijarivuorenpuisto park, Lauttasaari island, unveiled on 16 February 1994.

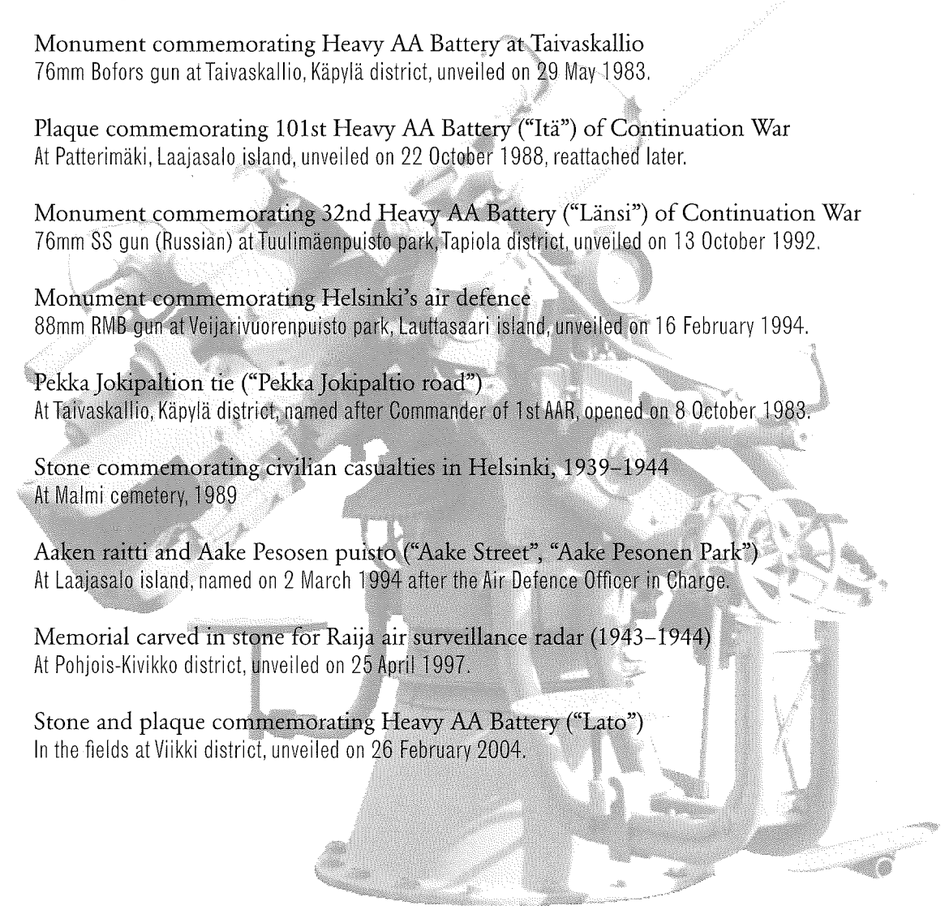
Pekka Jokipaltion tie ("Pekka Jokipaltio road")
At Taivaskallio, Käpylä district, named after Commander of 1st AAR, opened on 8 October 1983.

Stone commemorating civilian casualties in Helsinki, 1939–1944
At Malmi cemetery, 1989

Aaken raitti and Aake Pesosen puisto ("Aake Street", "Aake Pesonen Park")
At Laajasalo island, named on 2 March 1994 after the Air Defence Officer in Charge.

Memorial carved in stone for Raija air surveillance radar (1943–1944)
At Pohjois-Kivikko district, unveiled on 25 April 1997.

Stone and plaque commemorating Heavy AA Battery ("Lato")
In the fields at Viikki district, unveiled on 26 February 2004.



In Remembrance of Those Who Saved our Capital

The capital of a nation has always been considered as having key military significance. As put by Karl von Clausewitz, the Prussian general and military strategist, two centuries ago: "When invading a country, attention must be focused on its capital. Every capital has great strategic significance – some more, some less. Those capitals that best correspond with the true concept of a capital city have greater significance, while those that serve as the hub of political party activity are the most important."

During World War II, many capital cities were captured, including Paris, Oslo, Copenhagen, Rome and Berlin. Attempts were made to destroy some of those that could not be seized, such as London, Moscow, Tokyo and Helsinki. Strategic bombing was aimed at crippling the ability and will to defend. These campaigns wrought terrible havoc in cities like Berlin, Hamburg, Dresden, London and Tokyo.

In February 1944, the fate of Helsinki lay in the balance when the Soviet Union tried to break the will of the Finnish people and force them into accepting harsh terms of peace. If we consider the fate of certain other bombed cities, Helsinki, the target of 2,000 bombing sorties and more than 16,000 bombs, could also have suffered immense damage. But this did not happen. Why?

The air defence of the Finnish capital was well organised in February 1944. The primary responsibility lay with the 1st Anti-Aircraft Regiment that had superb means at its disposal compared with the resources generally at hand. Some of the equipment was the most modern in the world, such as the German radar devices and 88mm heavy guns. The defenders were highly skilled and motivated. Their leaders were able to coax the maximum out of the equipment and the personnel. They had great tactical and technical competence. Improvisation and deception also played key roles. The defensive fire was sometimes made to seem more intimidating than it may actually have been. Helsinki could not avoid some losses, but it did avoid large-scale destruction. The fundamental duty of the air defence forces – minimising casualties – succeeded beyond expectations.

Had it been understood during the war what an act of bravery the 1st Anti-Aircraft Regiment performed, perhaps its leaders and men would have been better rewarded. In the words of Sir Winston Churchill, "never in the field of human conflict was so much owed by so many, to so few." At least the citizens of Helsinki owe a debt of gratitude to those veterans, members of the women's auxiliary services and soldiers who saved Helsinki.

The original version of this historical account was published in 1994 conjunction with the exhibition commemorating the 50th anniversary of the air defence victory of Helsinki. The script was written by Captain Pertti Alanen. Colonel Ahti Lappi has revised this edition to include new information obtained from Russian archives and other sources. The new edition also features additional photos.

Colonel Ahti Lappi

Battle of Helsinki, February 1944

Situation On The Eastern Front And In Finland

In early 1944, Finns on the front line and at home were reading in the newspapers, hearing on the radio, talking and thinking about two issues that stood out from the daily worries of the long-drawn-out conflict, namely the breaking of Germany's siege of Leningrad and the Allies' offer of peace to Finland. The Finns were very concerned about the future, because if – or more likely when, since confidence in a German victory had been waning from the spring of 1943 – Germany lost the war, what would become of Finland?

On 14 January 1944, the Red Army's Leningrad and Volkov front-line forces commenced an offensive to defeat the Germans' North Army Group. On 27 January, Moscow officially announced to the world that the siege of Leningrad had been ended once and for all. On 1 February, the Red Army forces reached the Narva bridgehead, as the Germans withdrew to the Panther Line. In the first week of February, the Finns were left wondering whether Germany's Narva Front would last, and for how long. Finland's strategic position had radically changed in a way that every Finn who was up with the times could understand. On 31 January, the U.S. Chargé d'Affaires in Helsinki notified Henrik Ramsay, the Finnish Foreign Minister, that the Finnish Government should contact the Soviet Union to begin peace negotiations. At the beginning of February, War Marshal Gustaf Mannerheim, Commander-in-Chief of the Finnish Armed Forces, told the country's top political leadership that Germany had lost the war and that Finland would have to sue for peace.

The Allies' peace offer was made public during the first half of February in a speech by Cordell Hull, the U.S. Secretary of State which was cited and commented on in Finland and abroad, especially in Sweden. Both the media and the Government Information Office, the body tracking public opinion, used the term "peace offensive" to describe the foreign pressure. When Finns considered the future of their country, their first question was, "What will the terms of peace be like?"

"We must make the Finnish people suffer in order to remove the militarythreat from our north-west corner"
said Joseph Stalin on 6 December 1943

While Finns were just beginning to discuss the peace offensive, Moscow had already decided on and started preparations for another kind of offensive to coerce Finland into peace – one that was less subtle but widely used at the time, namely mass bombing of Finnish territory with the purpose of demonstrating the might of the Soviet Union, eroding the Finns' will to fight, compelling them to the negotiating table and finally eliminating them from the war as Germany's ally.

The decision to bomb had been made earlier, immediately after the Tehran conference in December 1943, at which time the 1944 operational plan of the Stavka, the Soviet supreme command headquarters, had been updated. "We must make the Finnish people suffer in order to remove the military threat from our north-west corner," said Joseph Stalin on 6 December 1943. It is most likely that preliminary plans had already been made in the autumn.

The bombing raids were to be part of the Soviet Union's wider Finnish offensive. If Finland failed – even after the bombings – to consent to peace in the spring of 1944, it would face a major offensive by the Red Army in the summer. For the purpose of this "peace persuasion" from the air, Joseph Stalin, Marshal of the Soviet Union, Chairman of the State Defence Committee of the USSR, Commander-in-Chief of the Armed Forces, Chairman of the Council of People's Commissars and Secretary General of the Communist Party's Central Committee, had the perfect tool. It was the ADD, Stalin's personal air force, acting directly under his orders.

Soviet Union's Long-range Bomber Command (ADD)

In February–March 1942, the Red Army's long-range bomber command, known as the DBA, was reorganised to be directly subordinate to the Stavka. It was renamed Aviatsija Dalnego Dejstvija (ADD) and placed under the command of Major-General Aleksandr Golovanov, 37. In the late stages of the war, Golovanov was one of the more prominent Soviet air force commanders, ranking second only to Aleksandr Novikov, Chief Marshal of Aviation.

The ADD was supplied with above-average personnel and gear. In May 1943, it comprised eight air army corps. According to Finnish war-time estimates, the ADD's total strength in early 1944 was ten air army corps and 700–800 aircraft (in other estimates 800–900), while its combat strength for the Helsinki operation was about 25 air regiments, totalling 500–600 planes. Russian sources later

revealed that, in February 1944, the ADD comprised eight air army corps, each featuring two air divisions made up of two regiments consisting of three 9-plane squadrons. Although the ADD's total strength, including training and reserve aircraft, was 1,070 planes, only 777 of the actual bombers were in flying condition. Furthermore, although there were crews for 865 planes, only 732 of them were competent for night sorties.

The main Soviet-manufactured aircraft used by the ADD were the twin-engine, long-range Ilyushin Il-4 (DB-3f) bomber, and the four-engine Petlyakov Pe-8 (TB-7) heavy bomber, fewer than 100 of which had been manufactured at the time. In fact, only one heavy bomber squadron took part in the raids on Helsinki. Additionally, the ADD's resources included DC-3 (Li-2) aircraft made under licence in the Soviet Union and adapted as bombers, as well as American-made A-20 Boston and B-25 Mitchell aircraft received from the western allies under the lend-lease program.

The ADD was not deployed very much to bomb enemy industrial and administrative-political centres (to use Soviet phraseology). These tasks accounted for only 3.1 per cent of the over 7,000 wartime sorties carried out by the ADD. Stalin assigned the ADD for strategic bombing on just two occasions. The first major independent air operation was conducted against Finland. Its primary target was Helsinki, and the other targets were the Finnish cities of Kotka, Turku, Oulu, Rovaniemi and Tampere, of which the last was never bombed. The second operation was carried out in September 1944, when Budapest was targeted. The strategic objective of these operations was to coerce the governments of Finland and Hungary, respectively, to make peace.

Knowing the significance of their task, the ADD's command and staff headquarters carefully planned the air operation against Finland. Once the Stavka had given the go-ahead, its implementation commenced. A substantial proportion of the ADD's units was transferred to air bases in the Leningrad and Bologoje areas. Special attention was paid to the concealment of all activities. Nevertheless, Finnish air defence reconnaissance was perfectly able to monitor the build-up of a new concentration of Soviet air power from December 1943.

A special operations team headed by Lieutenant-General M.I. Shevelyov, the ADD's Chief-of-Staff, was sent to the air bases to assume direct command of combat operations. Marshal Golovanov stayed in Leningrad, from where he issued combat missions to unit commanders.

The air operation took place over three nights, with bombing commencing on the evenings of 6, 16 and 26 February and lasting well into the early hours of the following days. The ten-day intervals were not pre-planned, but were partly due to weather conditions.

The air units were given a target zone of about one square kilometre centred on Helsinki's Vanhakirkko Church. The bombing targets comprised 19 military facilities (staff headquarters and barracks), 12 naval targets (ports and docks), 5 railway targets, 9 industrial plants and 6 government buildings (including the President's Palace, the Parliament, the Council of State (Government) building and the Bank of Finland). Individual targets were given to certain B-25 and Li-2 divisions. The targets assigned to the division of Pe-8 heavy bombers based at Kratovo (currently Ramenskoje) near Moscow included the "Kaartin kaupunki" ("Guards district") from Smolna to the Guards' manège, the Cable Works and Jätkäsaari area and the railway and bus stations.

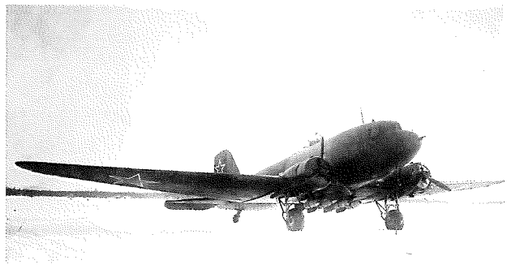
When performing massed air strikes, the ADD's operational flight grouping consisted of formations of different corps, in which air divisions and regiments followed one another. The battle sequence consisted of 1) a formation of weather reconnaissance planes, 2) an echelon to secure the operation, including lead planes and pathfinders, a group of target illumination planes and a group of planes intended to paralyse air defence, 3) a strike echelon and 4) an observation group. The strike echelon was a stream of single bombers following one another

Performance of ADD aircraft

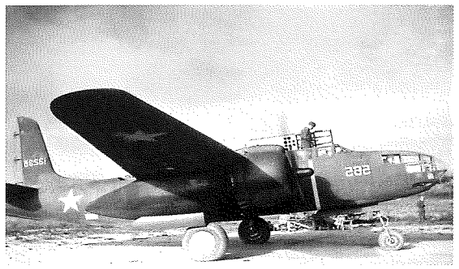
Type of aircraft	Max. speed (km/h)	Range (km)	Max. altitude (m)	Bomb load (kg)
IL-4	445	3800	9700	1500
Li-2	280	2500	5600	1000
B-25	443	2400	7300	1800
Pe-8	440	4700	9300	3100 – 5000

Iljushin IL-4

North American B-25 Mitchell

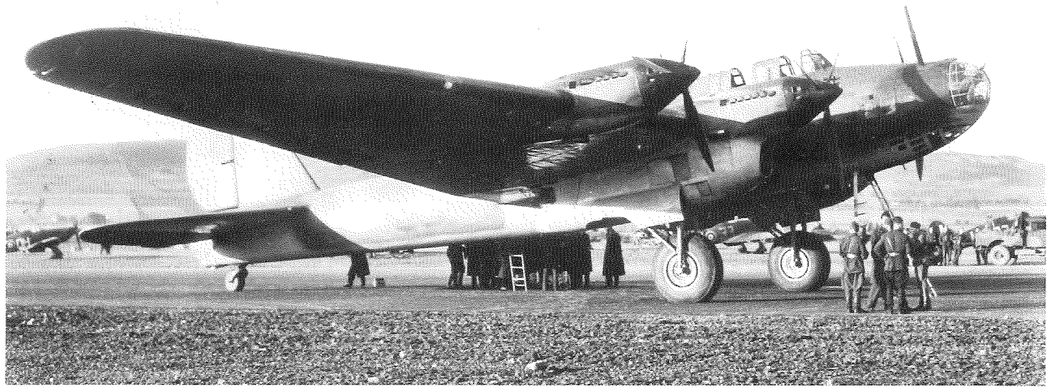


Li-2NB



Douglas A-20 Boston

Most of the ADD's aircraft were tactical bombers, with only the rare four-engine Pe-8 being a strategic bomber.



Petljakov Pe-8

and flying at different altitudes at regular intervals, so that the performance frequency at the target was four to five planes a minute. The bomb release altitude varied between three and seven kilometres.

The force used in the Helsinki bombings comprised 8 air-army corps and 17 air divisions, of which nine consisted of Il-4 bombers, five of Li-2 bombers, two of B-25C bombers and one of Pe-8 heavy bombers. As some of these planes were based on airfields in the southern part of the Karelian Isthmus, they could even fly a couple of sorties in one night. The flight time was three to four hours from the nearer airfields, and five to seven hours from further airfields.

Different estimates were made as to the numbers of ADD planes involved in the bombings. The 1st Anti-Aircraft Regiment in Helsinki initially estimated about 1,200 planes, but this was revised later in the light of new information. According to the new estimates, there were some 350 sorties in the first night, 650 in the second and 1,000 in the third, totalling some 2,000. It was also estimated that the ADD planes dropped about 20,000 bombs, the total weight of which was 2,386 tons.

The official history of the Soviet Air Force, "The Soviet Air Force in World War II, Official History, 1973" states the following:

"During the nights of 6, 16 and 26 February, the aircraft of the long-range bomber command performed three bombing raids against military industry targets in the vicinity of Helsinki. In the course of these attacks, 1,980 planes dropped 2,386 tons of bombs onto military targets. The third attack was particulary large in scope, with 850 planes taking part during 12 hours, approaching their targets from different directions at different times and altitudes."

According to the most recent information from Russian archives, the number of planes was as follows:

Date	No. of bomber	
	Taking off	Dropping bombs
6.-7.2.	785	728
16.-17.2.	406	383
26.-27.2.	929	896
Total	2120	2007

As these figures indicate, the previous estimates of the total number of planes were rather accurate, but those of the planes involved in each attack were off the mark. The discrepancies between the number of planes taking off and the number dropping bombs is explained by the fact that some planes had to abort their missions due to technical problems, while others were designated for target illumination, observation, etc. In all, 16,490 bombs were dropped, totalling about 2,604 tons.

Types and numbers of bombs dropped in the Helsinki bombings

Bomb type	1st raid	2nd raid	3rd raid	Total no. of bombs	Weight of bombs (tons)
FAB-5000	2	-	-	2	10,0
FAB-2000	6	-	20	26	52,0
FAB-1000	4	-	3	7	7,0
FAB-500	328	286	621	1235	617,5
FAB-250	1111	902	1431	3444	817,0
FAB-100	2017	1010	1493	4520	452,0
FAB-50	52	96	16	164	82,0
ZAB-100TsK	1618	1258	1376	4252	425,0
ZAB-50	1853	765	222	2840	142,0
TOTAL	6991	4317	5182	16490	2604,5

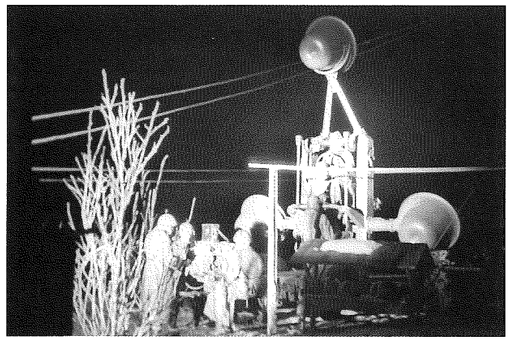
FAB = demolition bomb ZAB = incendiary bomb

Helsinki's Air Defence

It was only in the summer of 1942 – about one year into the so-called Continuation War against the Soviet Union – when the overall organisation, supreme command and areas of responsibility of the Finnish Air Force were specified in clear terms. Finnish air defence was then divided operationally into air corps, anti-aircraft operations and air surveillance. On 1 July 1942, Colonel Frans Helminen was appointed Head of Anti-Aircraft Command in the Air Defence Staff. At the same time, air surveillance, previously a part of the anti-aircraft organisation, was given a separate status under the Air Force's Communications Head.

In November 1942, Lieutenant-General Jarl Lundqvist, Commander of the Air Force, issued an order on the rearrangement of regional anti-aircraft forces. Air defence regions and local air defence centres were abolished and replaced by three anti-aircraft regiments and five separate anti-aircraft artillery battalions. The staff and anti-aircraft troops of the Helsinki-based 30th Local Air Defence Centre were formed into the 1st Anti-Aircraft Regiment (1st AAR) on 10 December 1942.

On 12 March 1943, Lieutenant-Colonel Pekka Jokipaltio assumed command of the 1st AAR, replacing Major Paul Rosokallio who had been transferred to front-line duties. Jokipaltio began his new post by rearranging the artillery batteries more purposefully and taking steps to improve lines of communication. During that time, a new Air Defence Centre code-named "Torni" (Tower) was completed in the rock shelter in Korkeavuorenkatu street, opposite the premises of the Helsinki Telephone Society, that was able to set up enough direct communication links to the units increasingly transferred to Helsinki from the front. Another advantage of the new location was that the Helsinki Air Surveillance Centre (ASC) under Captain Risto Kavanne had been situated adjacent to it.



Long-range listening devices were used to indicate targets for searchlights and artillery units when radar was not available.

Air surveillance by women's auxiliary services played a key role before radar devices became available.

The close co-operation between these two centres proved to be of great importance during battle.

Fire fighting and rescue operations in Helsinki were the responsibility of the fire brigades, and air raid protection and clearance units. These were co-ordinated by the Helsinki Air Raid Protection Centre that was part of the Defence Forces organisation and occupied the same shelter facilities at Korkeavuorenkatu street as the Air Defence Centre and the ASC. Major Tauno Hannus was the officer in charge of Helsinki's air raid protection. Responsibility for making public alarms was held by the civil defence authority, an air raid protection organisation that acted on air surveillance information.

The Winter War (which ensued when the USSR attempted an invasion of Finland in the winter of 1939/40) had exposed a number of weaknesses in Finland's anti-aircraft defence. Even though the tactical principles were basically sound, equipment shortages made it difficult to conduct anti-aircraft defence successfully. Serious problems arose due to inadequate personnel training, unfamiliarity with the basics of surface-to-air fire and the rather undeveloped designs of predictor and fire control devices. Particular difficulties were encountered when firing in the dark or other conditions of poor visibility.

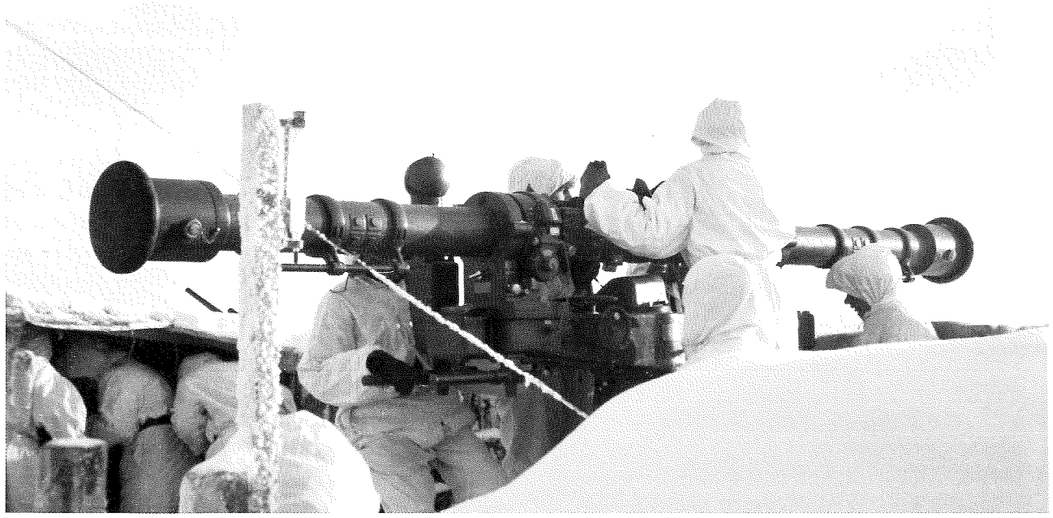
As predictor fire, i.e. destruction fire, had proven difficult, optional methods had to be found. Experiments in barrage fire – concentrated fire aimed in front of enemy aircraft – were commenced in Helsinki in autumn 1941 by Major Eino Tuompo, Commander of the 1st Air Defence Region. The development process was continued by Captain Pentti Paatero, Head of the 30th Local Air Defence Centre. After being transferred to Kotka to assume command of the 10th Local Air Defence Centre in 1942, Paatero arranged barrage fire there as well, based on the experience gained in Helsinki.

The new Chief of Operations of the Helsinki Air Defence Centre's Anti-Aircraft Office, Captain Aake Pesonen, continued Paatero's work. Barrage rings were extended to 4–14 kilometres around the city at two-kilometre intervals and their lengths varied between 1,000–1,500 metres depending on the distance of the ring from the centre. Each battery worked out its own firing co-ordinates (lateral direction, elevation and burn time of the shell's time fuse) in the vertical direction at every 200 metres up to 6,000–7,400 metres, depending on the guns' ranges. The resulting values were entered in the batteries' barrage records. The Air Defence Centre then needed to determine the anticipated flight track and flying altitude and speed of approaching enemy aircraft, select the barrage to be applied, designate the batteries to fire and issue the order to fire. The combined fire effect of many batteries would compensate for the insufficient predictor fire capability of individual batteries. The purpose of the barrages was not so much to destroy enemy planes in the air, but to prevent them from reaching their targets. Until the summer of 1943, flight tracks were measured with long-range listening devices and optical range measurement devices, with the help of searchlights.

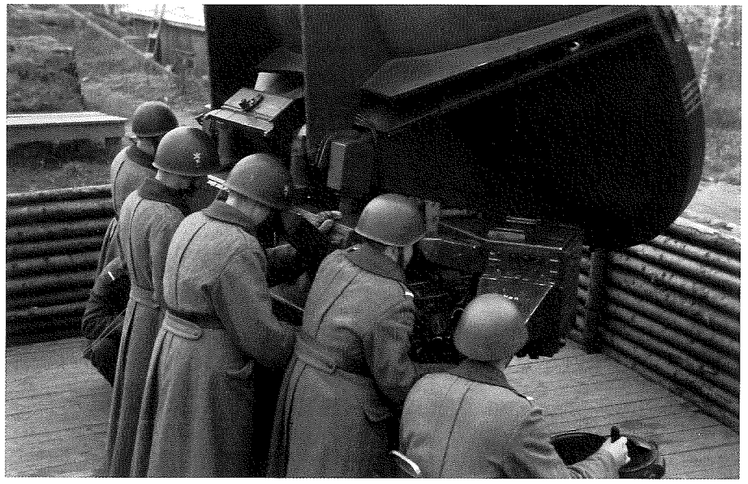
The capability of Helsinki's air defence improved drastically after radars, heavy anti-aircraft batteries, searchlights and long-range listening devices could be purchased from Germany. The first Finnish detail, commanded by Captain Pesonen, received radar training in Germany in February–March 1943. The next detail, under Captain Paatero, was trained in March–April. After this, Freya long-range radars (air surveillance radars), Würzburg D (Dora) gun-laying radars (fire control radars) and three anti-aircraft batteries each armed with Rheinmetall Borsig's (RMB) M37 88mm guns (state-of-the-art, high-power anti-aircraft guns) arrived in Finland during the spring and early summer of 1943.

Of the two air surveillance radars, code-named "Raija" in Finland, one was placed in the vicinity of Helsinki's Malmi airport and the other on the island of Kuningassaari. The gun-laying radars were given the codename "Irja". Four of them were placed in Helsinki and two in Kotka. Each of Helsinki's anti-aircraft battalions received an Irja radar of its own. These radars were positioned in the battalions' main batteries, three of which had new German 88mm RMBs, while the fourth had older heavy 75mm Škoda guns from Czechoslovakia.

The main batteries could then perform predictor fire, i.e. destroy enemy planes in the air. Radar could also be used to more accurately control the barrage fire of the battalion's other batteries.



Optical range measurement devices were used to determine the distance to target, but they could mainly be used only in daylight and in good visibility.



The radar played a key role in Helsinki's air defence. The Würzburg D gun-laying radars (code-named "Irja") acquired from Germany in 1943 made accurate night fire possible.

Deployment of the 1st AAR's heavy batteries

Unit	Name	Location	Main equipment
Air Defence Centre	Torni	Korkeavuorenkatu rock shelter	AA operations room equip.
1st Heavy AA Battalion		South-east sector	
7th Heavy AA Battery (main battery)	Rata	Santahamina island airfield	6 X 88 AA gun/37 RMB Fire control radar
101st Heavy AA Battery	Itä	Laajasalo island	4 x 75 AA gun/ 37 Škoda
102nd Heavy AA Battery	Santa	Southern tip of Santahamina	4 x 75 AA gun/ 37 Škoda
4th Heavy AA Battalion		North-east sector	
108th Heavy AA Battery (main battery)	Lato	Fields at Viikki	4 x 75 AA gun/ 37 Škoda Fire control radar
107th Heavy AA Battery	Kasa	Kasavuori	4 x 75 AA gun/ 37 Škoda
I/1st AA Regiment		North-west sector	
9th Heavy AA Battery (main battery)	Käpy	Käpylä trotting track	6 x 88 AA gun/37 RMB Fire control radar
5th Heavy AA Battery	Taivas	Taivaskallio	4 x 76 AA gun/27 Bofors Fire control radar
1st Heavy AA Battery	Musta	Länsi-Musta, Suomenlinna sea fortress	4 x 76 AA.gun/27 Bofors Fire control radar
II/1st AA Regiment		South-west sector	
8th Heavy AA Battery (main battery)	Puisto	Lauttasaari island, Ryssänkärki	6 x 88 AA gun/37 RMB Fire control radar
4th Heavy AA Battery	Lautta	Lauttasaari island, Myllykallio	4 x 76 AA gun/31 SS
3rd Heavy AA Battery	Paja	Pajakukkula	4 x 76 AA gun/31 SS
32nd Heavy AA Battery	Länsi	Westend (currently Tapiola)	4 x 76 AA gun/31 SS

The Helsinki area had been divided into four sectors, each under the responsibility of an anti-aircraft battalion. The south-east sector was the responsibility of the 1st Heavy Anti-Aircraft Battalion, commanded by the now Major Pentti Paatero. It comprised three heavy anti-aircraft batteries, as well as three coastal artillery batteries that had been subordinated to it with respect to anti-aircraft duties.

The north-east sector was the responsibility of the 4th Heavy Anti-Aircraft Battalion under Major Reino Oksanen. It featured two heavy anti-aircraft batteries.

The north-west sector was the responsibility of the 1st AAR's 1st Battalion (I/1st AAR) led by Captain Aksel (Aki) Marte and, during his assignment in Germany in January–March 1944, by Major C.A. Ehrnrooth and Lieutenant M.P. Reinikainen. The battalion had three heavy anti-aircraft batteries.

The south-west sector was the responsibility of the 1st AAR's 2nd Battalion (II/1st AAR) under Major Kaarlo Seppälä. It comprised four heavy anti-aircraft batteries, and also had three heavy batteries (including 16 guns) in training.

The regiment's light anti-aircraft battery sections, which numbered ten and were armed with 40mm anti-aircraft guns, had been spread out in the areas of the various battalions, mostly in the southern parts. 20mm guns had been placed on the roofs of the Vesilinna water tower, the Chief Post Office, the Alko Head Office and the Katajanokka warehouses, on Tähtitorninmäki (Observatory Hill) and at the Malmi airport. These lighter weapons were intended to counter low-altitude attacks. The four searchlight batteries that belonged to the regiment's Searchlight Battalion, established on 29 January 1944, had been positioned in the city's surroundings. Altogether there now were 36 searchlights and a number of long-range listening devices.

And then there came the attack: the most devastating and destructive night of bombing began.

Civil defence shelters saved many lives during the bombings.

Helsinki's air defence was now substantially stronger than earlier. The approach of enemy aircraft could be observed in all conditions – whether at night, in rain or fog or above the clouds – at a range of 100–200 kilometres with the air surveillance radar devices, and at a range of 20–30 kilometres with the gun-laying radar devices. Adding to the usefulness of radar in the Battle of Helsinki was the fact that, in early 1944, the Soviet Air Force did not systematically jam enemy radar devices.

The First Bombing, 6–7 February

As day broke on Sunday, 6 February in Helsinki, the sky was overcast but cleared up later in the morning. The temperature was -3 degrees Celsius. The Air Surveillance Centre (ASC) noted a couple of sorties by enemy aircraft that prompted defence alerts for anti-aircraft units at 8.43 a.m. and 10.16 a.m. In the afternoon, a plane flying about 40 kilometres from Helsinki caused a defence alarm at 2.35 p.m. that lasted some 20 minutes until the plane turned away. Nobody suspected in Helsinki that these sorties were the ADD's reconnaissance missions in preparation for mass bombing that night.

In the evening, around 6 p.m., a thick layer of fog hung low over the city, but higher in the sky the moon shone brightly. At 6.16 the Air Surveillance Centre received intelligence that the droning of a number of aircraft could be heard at the bottom of the Gulf of Finland and ordered the air surveillance radar units to scan the east. One minute later Captain Kavanne, Head of the ASC, ordered a blackout in Helsinki.

After Tallinn, the Estonian capital, had given warning of an air raid twenty minutes later, the ASC issued an air raid warning also for Helsinki. The Torni Air Defence Centre then gave the 1st AAR a defence alarm, and in a few minutes the regiment's units were at battle stations. According to the readings of the Raija radar devices, large formations were approaching the city. Captain Kavanne ordered the Air Raid Protection Centre to sound an air raid alarm, and Engineer Esko Toivola duly hit the button at 6.51 p.m.

Rooftop alarm sirens began to wail and the residents of Helsinki rushed to the air raid shelters, unprepared as they were mentally for the massive bombing that was imminent. The first, and the most destructive, of the three bombing nights had begun.

The Air Defence Centre, where the battle phones of all units were listened to collectively, monitored the situation minute by minute. The main batteries' radar devices and the listening devices in the east received from the Air Defence Centre an air surveillance radar target indication in the south-east square, where the first formation of planes was arriving some 30 kilometres from Helsinki.

Soon, the gun-laying radar of the 88mm "Rata" battery on Santahamina island reported that it was following a target and began to relay readings to the Air Defence Centre. The radar's firing azimuth was relayed to the Centre's status table electrically through a pointer sunk on the status table in the radar's position. The Operations Officer monitoring the radar at the status table held the long celluloid pointer attached in the radar's position all the time in the direction of the pointer's firing azimuth indicator and recorded the horizontal range value received by phone with a grease pen. When three points had been thus marked on the status table, the Chief of Operations selected a barrage in the predicted path of the aircraft. Anti-aircraft shells exploded in front of the approaching planes, close enough to intimidate the bombers into dropping their load before reaching the target and turning away.

In determining the most applicable barrage, the Chief of Operations had to consider the aircraft speed, the time needed to relay firing co-ordinates to the batteries and to aim the guns, as well as the shell flight time. After a moment of calculation, an order was issued: "Barrage No. 1023, Altitude 3,000". This referred to a barrage located 10 kilometres from Helsinki's geographical centre at a direction 23-00 (in points divisible by 6,000), i.e. almost exactly to the south-east and at an altitude of three kilometres.

Heavy anti-artillery guns played a key role in Helsinki's air defence.

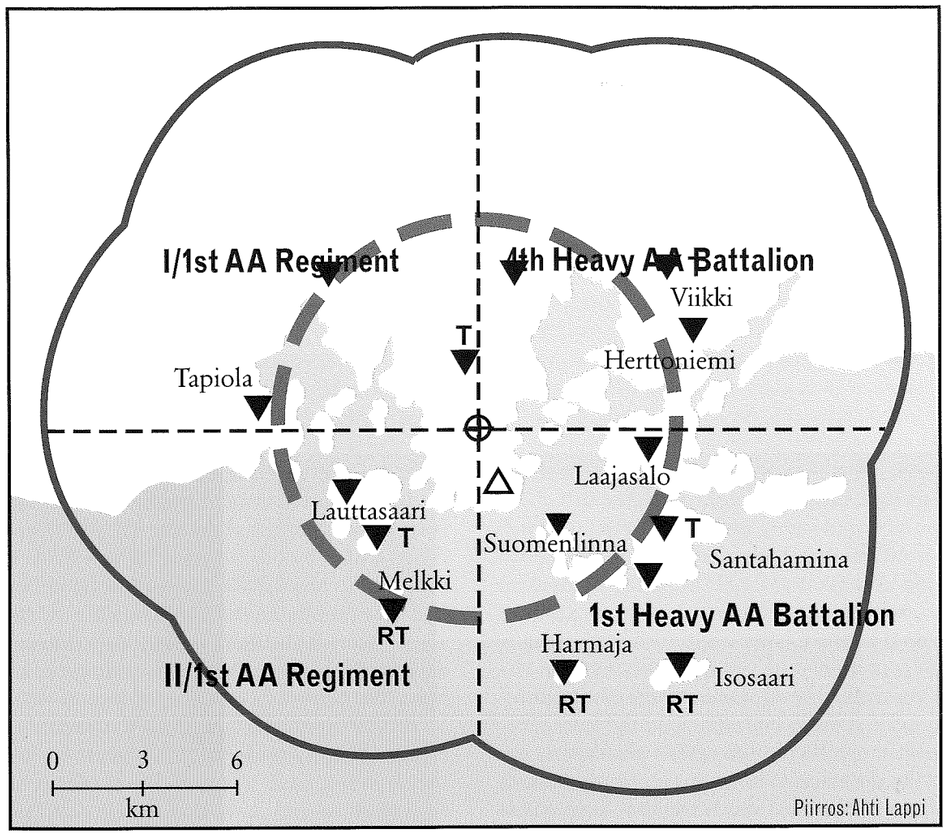
Shortly after 7.00 p.m. the heavy guns of the five southern batteries roared and the sky above Helsinki was ablaze with bright red flashes of shells, timed to explode in the barrage. Without any pause, the batteries began to fire new barrages, as ordered by the Air Defence Centre, towards the east and south-east.

It was not only the muzzle flashes of the anti-aircraft guns, the searchlight beams and the shell blazes that illuminated the sky. They were now suddenly joined by other glaring lights – flash bombs dropped by the ADD's target-marking aircraft that had successfully found their way above the city. These "Christmas trees", as they were called, slowly descended, bathing their surroundings in a bright light. The battle of Helsinki had begun.

At 7.16 p.m. the first bombs struck the city's eastern fringes, while at 7.22 bombs exploded in the shunting yards of the Helsinki railway station. At 7.40 mine and incendiary bombs set the headquarters of the National Railways Board on fire.

The battalion in the most crucial defensive sector, the south-east, commanded by Major Pentti Paatero, shouldered the heaviest burden on this night, as was to be the case in the following raids. The fire control device of the battalion's main Rata battery was under repair and thus was not able to perform predictor fire, but, like the adjacent batteries, fired barrages as ordered by Torni. Once the communications to Torni had been lost through bomb damage, the main battery's radar readings could not be transmitted to Torni. After this, the battalion fired "free barrages" at their own discretion. The 4th Heavy Anti-Aircraft Battalion that was in charge of the north-east sector fired relentlessly upon enemy aircraft approaching from the east and south-east. Its main "Lato" battery, positioned in the open fields at Viikki, performed predictor fire on the basis of radar readings, while the adjacent "Kasa" battery at Kasavuori fired barrages. As the battalion's Rata II battery was in training at Santahamina island and their own equipment was not yet in working order, its crew acted as ammunition bearers at the Rata battery.

Deployment of 1st AAR's heavy batteries on 6 February 1944



▼T Heavy anti-aircraft battery (radar)

▼ Heavy anti-aircraft battery (no radar)

▼RT Coastal artillery battery (AA)

▽ Defence centre of 1st AAR

– – Border of battalion's defence sector

Maximum bomb drop zone

Range zone of heavy AA batteries

The II/1st AAR's main "Puisto" battery operating in the south-west sector held positions at the southern end of Lauttasaari island. It first fired four barrages ordered by Torni and then transferred to predictor fire. Its adjacent batteries, "Lautta" at Myllykallio and "Länsi" at Westend (Tapiola), fired barrages at a rapid rate.

Although the battalion responsible for the north-west sector, I/1st AAR, was not in the worst position with respect to the attackers, it had plenty of good targets because, in the early stages of the offensive, enemy planes tried to enter the city's airspace from all directions. The battalion's main "Käpy" battery, located at the Käpylä trotting track, commenced predictor fire based on radar readings at 7.13 p.m. and during the next hour fired 11 rounds of predictor fire and 13 barrages ranging from 2,800 to 4,600 metres in altitude. The battalion's "Taivas" battery, situated at Taivaskallio, fired barrages ordered by Torni right from the start, as did the "Paja" battery, part of Major Kaarlo Seppälä's south-west sector battalion, from its position at Pajakukkula.

At the Air Defence Centre, the situation was the most dire in the early stages of the attack, when enemy planes sought to paralyse Helsinki's anti-aircraft forces by attacking the city simultaneously from all directions. The routes of approaching aircraft were marked on the radar status table by Captain Veikko Rantalainen (aide to the Chief of Operations), and Lieutenant Einari Lavonen and Second Lieutenant Aarre Nenonen (both AA Operations Officers) and on the listening device table that served as the stand-by status table by Staff Sergeants Olli Laiho and Toivo Ripatti and Sergeants Olli Kalliovaara and Arvo Kuusla.

The Air Surveillance Centre operations also suffered from the bombings, as communications were lost to many air surveillance units, including one of the two radar air surveillance units.

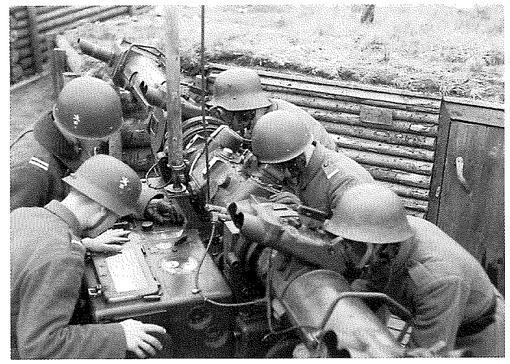
At around 9.00 p.m., the ASC announced that there were no more aircraft headed for Finland, and at 9.11 p.m. Torni gave the regiment a "defence alarm over" order. However, the ASC's sirens sounded the "air raid alarm over" signal only at 9.40 p.m., and at 10.17 p.m. streetlights were lit and tram traffic was allowed to resume.

Fire brigades and air protection and clearance companies could now continue with their fire fighting and rescue activities in less hazardous conditions. In all, 53 fires had started in the city and bombs had hit a number of buildings in the city centre. 55 civilians had been killed and 164 wounded. 20 had been poisoned due to damaged gas pipes, among them the daughter of the commander of the 1st AAR, Lieutenant-Colonel Pekka Jokipaltio.

But Helsinki's ordeal was not yet over. After midnight the ASC was informed that droning had again been heard in the southern part of the Karelian Isthmus. An air raid warning was given at 0.57 a.m. and Torni ordered an air defence alarm to be issued to the regiment at 1.02 a.m. Eight minutes later the ASC ordered an air raid alarm to be given in the city. The early evening fog had cleared and there were only sparse clouds in the sky. The temperature was -6 degrees Celsius.

The situation of the Santahamina battalion in the south-east was difficult due to the destruction of internal communications connections and of its connections to Torni. But the "Itä" battery at Laajasalo island was able to relay barrage commands to the battalion's main Rata battery, as well as to the "Santa" battery as the first enemy aircraft arrived within the guns' range at 2.06 a.m. The main batteries of the other battalions found targets early on and commenced predictor fire.

This time the planes did not attack from all directions, but mostly from the south-east, east and south. According to the 1st AAR's battle report, "the formations comprised 1–5 planes and came in succession, which made them easier to counter than in the earlier attack." Later it turned out that the formations were merely single planes from the ADD's strike echelon.



The AA predictor was the "brains" of a heavy AA battery. An AA predictor crew at work, a task that required great accuracy.

The predictor fire of the main south-west battery at Lauttasaari island successfully forced many planes coming in from the south and south-west to turn back. The other batteries of Major Seppälä's battalion fired those barrages their ranges allowed them to. Flight altitudes varied between 3,000 and 5,000 metres. At Viikki in the north-east, Major Reino Oksanen's battalion applied predictor fire and barrage fire to numerous targets, efficiently preventing sorties from reaching Helsinki in that sector.

Although the batteries' ammunition had been replenished during the final stages of the evening attack and before the night attack, it became apparent during the night attack that ammunition was running short even at the ammunition depot. Torni then ordered semi-barrages (two grenades per gun) to be fired whenever possible. At 2.30 a.m., the Käpy battery ran out of ammo. But its adjacent batteries still had enough shells to continue their defence against the increasingly infrequent sorties.

There were more serious problems at Major Pentti Paatero's battalion in the south-east, where all guns of both the Itä and Santa batteries had broken down by 2.36 a.m. During the early morning hours, most of them were restored to working order by Jorma Sakki, Armourer. The high intensity of the night shooting had revealed that the heavy guns could not sustain continuous strain for long periods. This was equally the case with the Czech, Swedish and Soviet equipment.

The sorties ended near 4.00 a.m. At 4.16 a.m. an "air defence alarm over" order was given to the regiment and at 4.57 a.m. the sirens signalling the end of the air alarm were sounded in Helsinki.

The night attack had been less intense than the evening attack and the anti-aircraft operations had been clearly more successful. 37 civilians had been killed and less than 100 wounded. 15 fires had

started around the city. After the figures were rechecked, the death toll for the whole first night of bombing was confirmed at 103 and the number of wounded at 295. The regiment's losses were two dead and four wounded. Around the city, 28 buildings were destroyed and 137 damaged.

The number of enemy aircraft shot down – four or five planes – was small, but the actual defence operation, forcing the enemy to drop its bombs prematurely, succeeded well. The enemy only managed to drop five per cent (331 in number) of its bombs within Helsinki. In a national radio broadcast from Moscow on 7 February, the Soviets themselves announced that four of their planes had failed to return.

The first bombing raid had one significant outcome. The Nachtjagd night fighters requested from Reichsmarschall HERMANN GOERING by the German liaison officer Captain KURT RHEINDOLF on 6 February by phone at the Air Defence Centre arrived at Helsinki's Malmi airport on 12 February. The detachment consisted of twelve Messerschmitt Me 109 fighters. They were part of the Fighter Squadron 302's 1st flight, commanded by Captain WALTER LEWENS. These Me 109s were not equipped with radar, as their deployment was based on illuminating their targets with searchlights. But the flight was very experienced in night sorties.

THE SECOND BOMBING, 16–17 FEBRUARY

Immediately after the first bombing, Lieutenant-Colonel Pekka Jokipaltio, commander of the 1st AAR, commenced measures to increase the regiment's combat ability. The commander arranged a meeting in the Air Defence Centre for battalion commanders and the officers in charge of the batteries, for the purpose of comparing in-battle observations of enemy tactics and the course of battle, and issuing instructions on future operations and the participation of night fighters in Helsinki's air defence.

To secure phone connections, the broken aerial cables to batteries in the east of the city were replaced with ground cables. Moreover, ammunition stocks were replenished and placed in protective shelters near the guns, and all artillery and fire control equipment was inspected and serviced.

All during 16 February, starting from the small hours, there was flight activity over the Gulf of Finland, prompting several defence warnings and alarms in Helsinki. The last sorties of the afternoon were weather reconnaissance missions.

At 6.42 p.m., Torni received a phone call from the Air Force Staff Headquarters warning them of imminent attack. The Air Force's radio intelligence

The Luftwaffe's Messerschmitt Bf 109 night fighters successfully took part in Helsinki's air defence during the two last bombing raids. The picture shows an Me 109 at Malmi airport.

unit, the 6th company of the HQ's Radio Battalion, had been monitoring the ADD's preparatory radio traffic. At 7.55, the Air Surveillance Centre ordered a blackout in the city and Torni gave the regiment a defence alarm. At 8.12, an air raid warning was sounded in the city, and simultaneously the night fighters scrambled from the Malmi airport and started to circle in their waiting areas east and west of the city at 5,000 metres. Their task was impeded by lack of moonlight, which would have helped the radarless fighters to detect the enemy aircraft.

The Air Surveillance Centre reported at least 120 planes approaching the city. The gun-laying radar devices received an order for target indication on the formation's leading planes and began to transmit their readings to the status table. At 8.24, Torni ordered the first barrage under the number 1426, or at a distance of 14 kilometres in the direction 26-00. The idea was to force the target-marking planes to drop their flash bombs outside Helsinki. For the same reason, the main batteries in the east commenced predictor fire at the extreme ranges of their guns.

However, some of the target-marking planes were able to complete their missions and drop their bright flash bombs on the eastern and northern fringes of the city. At 8.30, bombs were beginning to blast in the sea west of Laajasalo island and at 8.41 at the tip of the Katajanokka peninsula near the city centre. But fierce anti-aircraft fire dispersed the tight bomber formation following the target-marking planes and successfully intimidated enemy bombers into dropping their bombs prematurely.

Major Paatero's battalion, handicapped in the previous attack, was now in peak operating order. Its main Rata battery sent up predictor fire, while the adjacent Rata II battery, still in training, and the battalion's other batteries, Itä and Santa, combined to fire more than 100 barrages.

In the attack's initial stages, ADD aircraft again attempted to enter the city airspace from different directions, forcing Torni to divide its firepower. Lato, the main battery of the north-western battalion, discharged so much predictor fire that the over-heated gun barrels glowed red. This phenomenon, which occurred at most of the batteries, made it necessary to cool off the guns one at a time. Other problems also affected artillery operation so that, from time to time, Lato could only fire with two guns.

Puisto, the main battery of the south-west sector, commenced predictor fire at 8.20 p.m., but, because of technical difficulties with the radar, it fired barrages too at certain times. There were fewer targets within range of the adjacent Lautta

Searchlights were used to illuminate targets for the German night fighters.

battery and particularly the westernmost Länsi battery. Thus Länsi only fired 20 barrages during the attack. Similarly, the Paja battery in the south-west corner, the direction with the least enemy activity, fired only 17 barrages in total.

The "Musta" battery at Suomenlinna sea fortress, which now had its communication lines up and running, fired 44 barrages as ordered by Torni. Some of the batteries used special shells with enlarged detonation chambers containing a mixture of magnesium and aluminium that had been added at the ammunition depot. This chemical composition enhanced the exploding shells' blaze effect, adding to the psychological intimidation aspect of the barrages. It seemed to work well.

Käpy, the main battery of the regiment's north-west battery, also commenced predictor fire right after the attack started, but switched to firing barrages according to Torni's orders at 8.50, as a defect appeared in the connection between the battery's radar and fire control device. The Käpy II battery, in training at the time, took part in barrage fire as well.

The weather did not favour the use of searchlights. Even though the air was clear, there were a lot of clouds scattered about and they reflected the searchlight beams. On occasion, searchlights did manage to spot and follow enemy planes for a while, but not long enough for the night fighters to reach them. However, the searchlights were so dangerous for enemy pilots – not merely on account of the night fighters, but also because of optical firing and blinding – that their positions were bombed many times. The air surveillance and anti-aircraft units made a number of reports of enemy aircraft shot down or going down, and of parachuting crew members.

The intensity of the attack began to lessen. As on the first bombing night, so now the raid turned into a stream of single planes approaching at regu-

lar intervals and becoming much easier to counter. The main responsibility was again carried by Major Paatero's battalion in the south-east sector, supported by those eastern and southern batteries whose ranges allowed them to take part. "Meri" (Melkki) and "Hara" (Harmaja), the two coastal artillery units that were subordinated to the 1st AAR with respect to anti-aircraft measures and had lost communication contacts to the Air Defence Centre in the first bombing night, now fired barrages according to Torni's orders. The 6-inch guns of "Kani", the coastal artillery battery on Isosaari island, also participated in the firing when the elevation allowed it.

At 9.52, Torni was notified that all the night fighters had landed at Malmi airport. The reason was apparently the increasing cloud cover. The weather was clearer on the Estonian coast, and the German liaison officer RHEINDORF received information that Junkers Ju 88 night fighters based in Tallinn, the Estonian capital, had shot down two enemy aircraft.

At 11.10 p.m., the Raija radar device detected no more approaching targets. The ASC ordered the "air raid alarm over" signal, but did not yet issue permission to end the blackout of the city. Tram traffic was allowed to resume at 11.17. The regiment's alert level was lowered from air raid alarm to stand-by at 11.10, after which the batteries immediately began to service their guns and look after the troops.

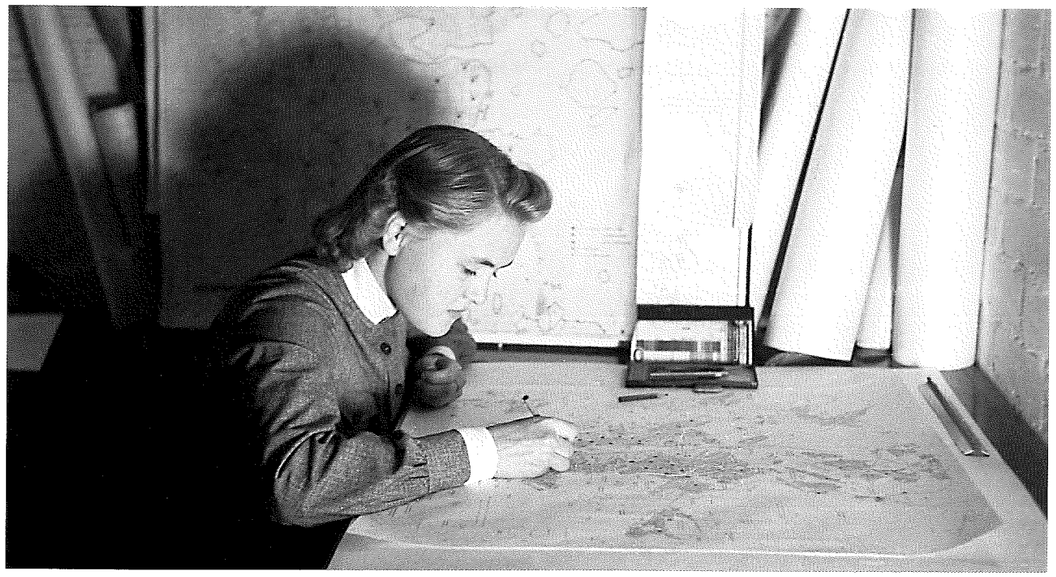
This time the anti-aircraft measures had been a lot more successful than in the first attack. A number of bombs had been dropped in the city and some fires had started, but Torni was notified that the number of casualties had remained fairly low.

However, the sky above Helsinki did not remain tranquil for long. The ASC soon announced that new bomber formations were approaching Helsinki. Torni issued the regiment an air raid alarm at 11.40 p.m. and the city's sirens began their ominous wailing five minutes later. According to the intelligence received, dozens of new waves of bombers were again headed west.

The sky was completely overcast by then. The night fighters scrambled to the heights, but returned to base 15 minutes later after noticing that the searchlights were not able to illuminate targets for them. During the ensuing attack, searchlights were used only to deceive the enemy by turning on just the city's easternmost lights. This succeeded in fooling some of the ADD's pilots and bomb aimers, since it was just this area where many of them dropped their load.

The main batteries in the east located their targets just before midnight and commenced predictor fire. Torni ordered six consecutive barrages in the direction 16-00 to 18-00 (east/east-by-south-east) at two-minute intervals, and at 0.10 a.m. and 0.15 a.m. the first reports of two burning enemy aircraft were received. The first formations flew at an altitude of 4,000–5,200 metres, but the radar devices also detected planes flying higher.

The consecutive waves came without exception from the east and south-east, which made it much



Womens' auxiliary services carried out important tasks in staff HQs and operation rooms.

Light 20mm and 40mm anti-aircraft guns effectively prevented low-altitude bombing, but their tracer shells also served to intimidate the enemy at even higher altitudes.

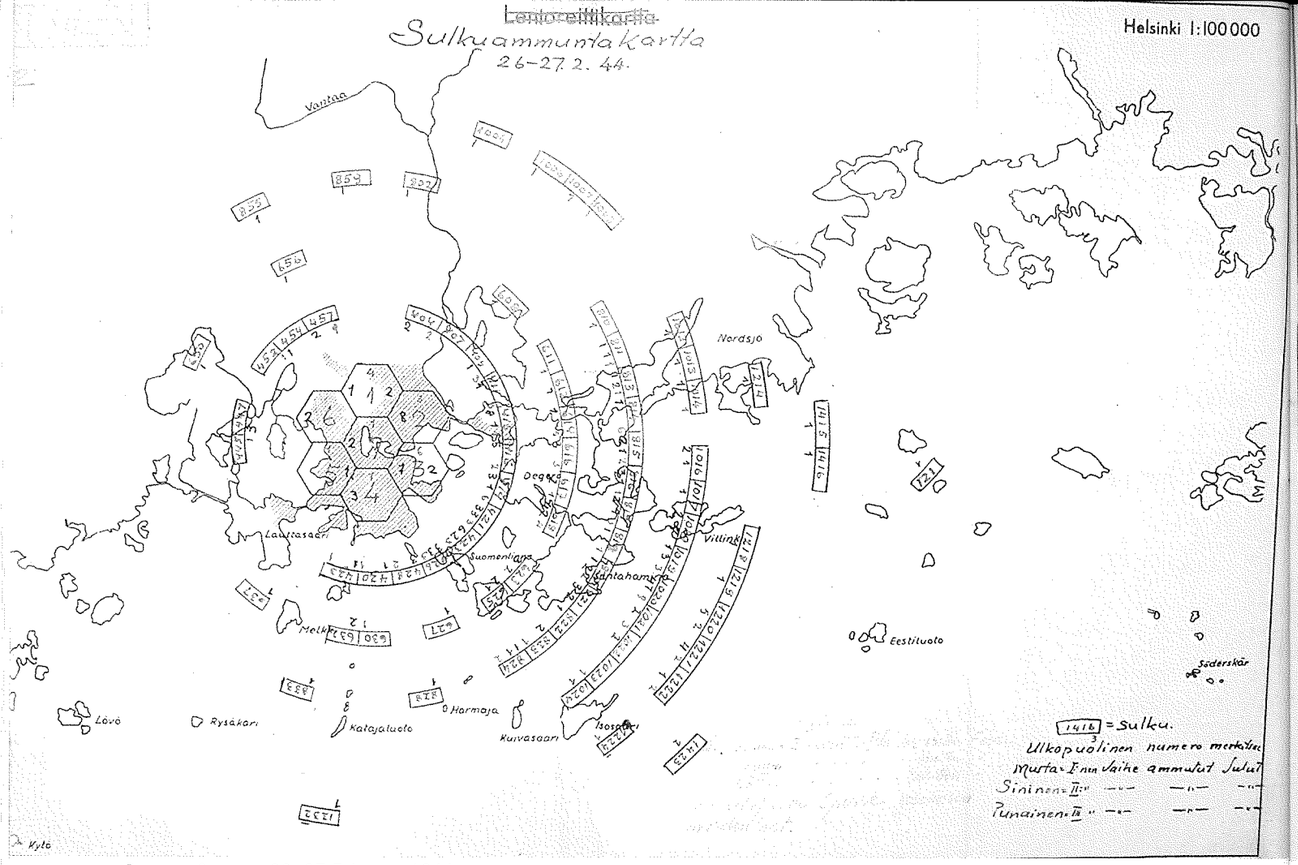
easier to concentrate anti-aircraft firepower. Major Paatero's battalion was again in the fiercest theatre of action, and things got literally too hot for some of the men loading heavy shells in the chamber high up in the gun's bore. Despite the sub-zero temperatures, they stripped off all their upper body clothing. The rhythm of the ADD's flight activity is clearly revealed by the barrage log of the Musta battery at Suomenlinna sea fortress. The battery fired 15 barrages during the first hour after midnight, 9 during the second, 5 during the third, 11 during the fourth and 3 during the fifth. The most efficient firing of the other battalions was naturally performed by their main batteries, since they were capable of predictor fire. The other batteries participated in barrages only as necessary. Flight activity was less intense in the western parts of the city.

The regiment's air raid alarm was ended at 5.53 a.m. The city's sirens sounded the "air raid alarm over" signal at 5.49 and residents were able to exit shelters after a bombing ordeal that had lasted for nine hours.

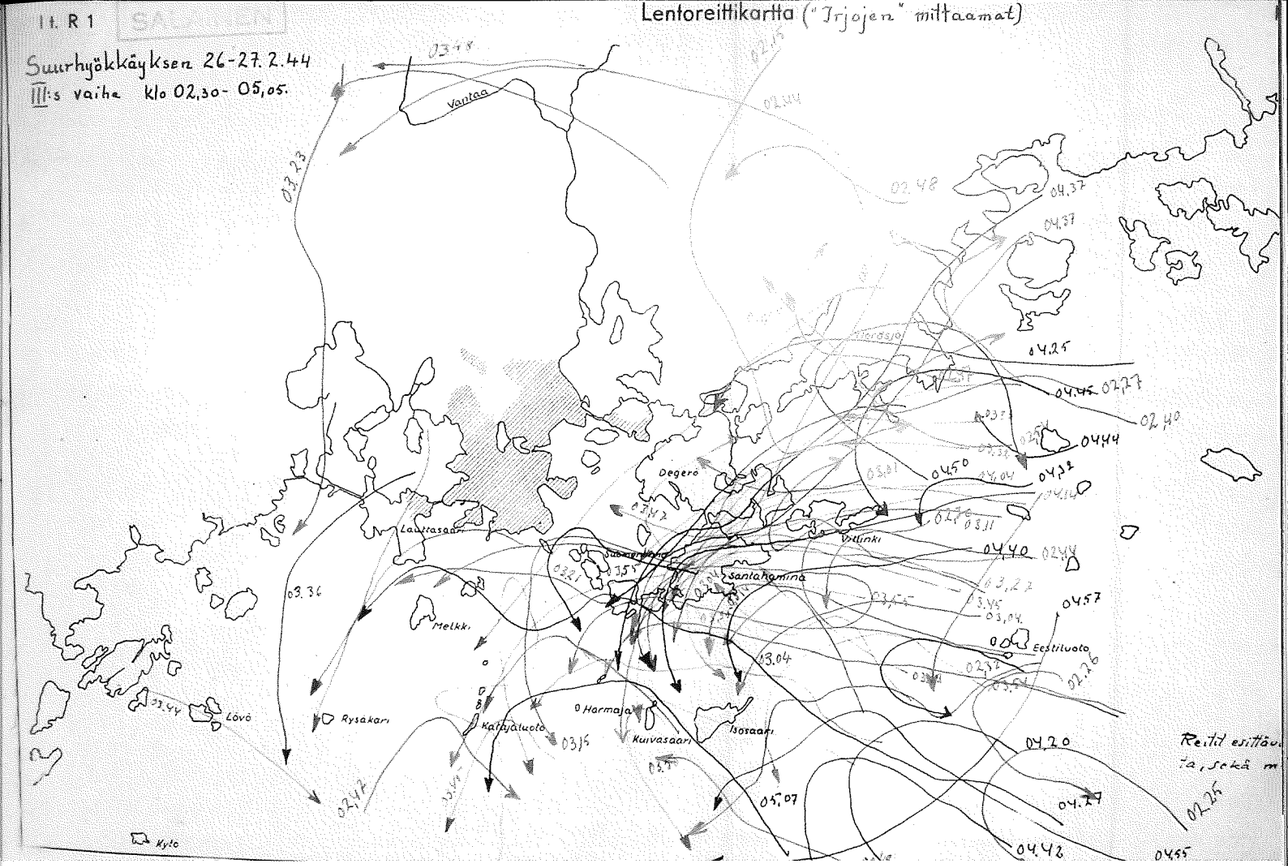
The casualties of the second night of bombing were substantially smaller than those of the first night – 25 dead and 27 wounded. 22 buildings had been destroyed and 53 damaged. The reduction in casualties undoubtedly resulted not only from more efficient air defence, but also from lessons learned by city residents in the first attack and their better preparation. 130 bombs landed in the city, or three per cent of the total number of bombs. By Finnish observations, 10 enemy aircraft were shot down, of which Major Paatero's battalion (based on its own estimates) accounted for seven. Major Seppälä's battalion was estimated to have shot down two planes. According to a Moscow radio announcement, 14 planes failed to return to base. Captain Lewens' night fighters were said to have gunned down two bombers.

12,000 heavy shells were fired in the 184 barrages fired during the attack and in the main batteries' predictor fire. The light batteries fired about 5,700 shells.

Executive command duly noted the success of the 1st AAR's undertakings. Lieutenant-General Lundqvist, Commander of the Air Force, sent a letter (affirmed by Colonel Helminen, commander of anti-aircraft forces) to Lieutenant-Colonel Jokipaltio commending the regiment for its efficiency during 16–17 February 1944. Special recognition was to be conveyed to Captain Aake Pesonen, Chief of Operations.



Barrage fire map 26–27 February 1944.



Enemy flight routes 26–27 February 1944. As can be seen, the great majority of the aircraft turned away after reaching the anti-aircraft fire zone.

THE THIRD BOMBING, 26–27 FEBRUARY

After the second bombing, Lt.-Col. Jokipaltio again held a joint meeting for battalion commanders and the officers in charge of the batteries, in which the lessons learned in the first two attacks were reviewed for application in a possible third attack. Under the leadership of Torni, a number of barrage fire drills took place, and co-operation was honed with the night fighters and searchlight units.

Anti-aircraft defence in the city's southern sector had been bolstered by the establishment of the Lohman detachment there, headed by Captain AIMO LOHMAN. The detachment featured the "Kaivo" battery (formerly Puisto II, trained at Lauttasaari) in Kaivopuisto park, and it was reinforced with the Musta battery on Suomenlinna sea fortress and a light artillery unit at Hernesaari.

As a result of a number of other deployments, the 1st AAR now comprised 15 heavy anti-aircraft batteries, five of which had six guns and the others four. Additionally, three coastal artillery anti-aircraft batteries, one of which had three guns and the other two, had been subordinated to the south-east sector's battalion, with respect to anti-aircraft activities. Thus there were altogether 77 heavy guns. Light units still numbered 10 and featured a total of 21 guns. For low-altitude countermeasures, there were a further six anti-aircraft machine gun platoons available. The four searchlight batteries remained, totalling 36 searchlights. The regiment's total strength including maintenance sections was about 4,600 persons.

Deception tactics were now prepared more systematically than before the previous attacks. A four-gun barrage fire battery, dubbed "Pommi" (bomb), had been placed at Vuosaari, east of the city. Its mission was to light huge bonfires (piled in advance) right at the beginning of the bombing and to fire dense barrages. As only the searchlights in the eastern parts of the city would be used, it was believed that it would be possible to trick ADD pilots into believing that Helsinki lay further east than it actually did. However, later Russian studies have downplayed the significance of this diversion.

On 26 February, the familiar sign of an impending ADD attack – a sortie comprising a fast PE-2 escorted by two fighters flying over Helsinki at 6 kilometres of altitude – was again observed. At 5.25 p.m., Torni was again tipped off by the Air Force Staff Headquarters (acting on information received by their radio intelligence unit) that a massive attack was underway.

The Air Surveillance Centre had also received a warning and, at 6.09 p.m., ordered the Raija radar units to take readings in the east. By 6.29, air surveillance radar devices had detected targets and an air raid warning was given in Helsinki. The night fighters took off from Malmi to circle in their waiting areas. Torni gave the regiment a defence warning at 6.34 and a defence alarm ten minutes later. Air surveillance radar units detected formations of 20–50 aircraft approaching, and more night fighters scrambled. Helsinki's sirens sounded an air raid alarm at 6.45 p.m.

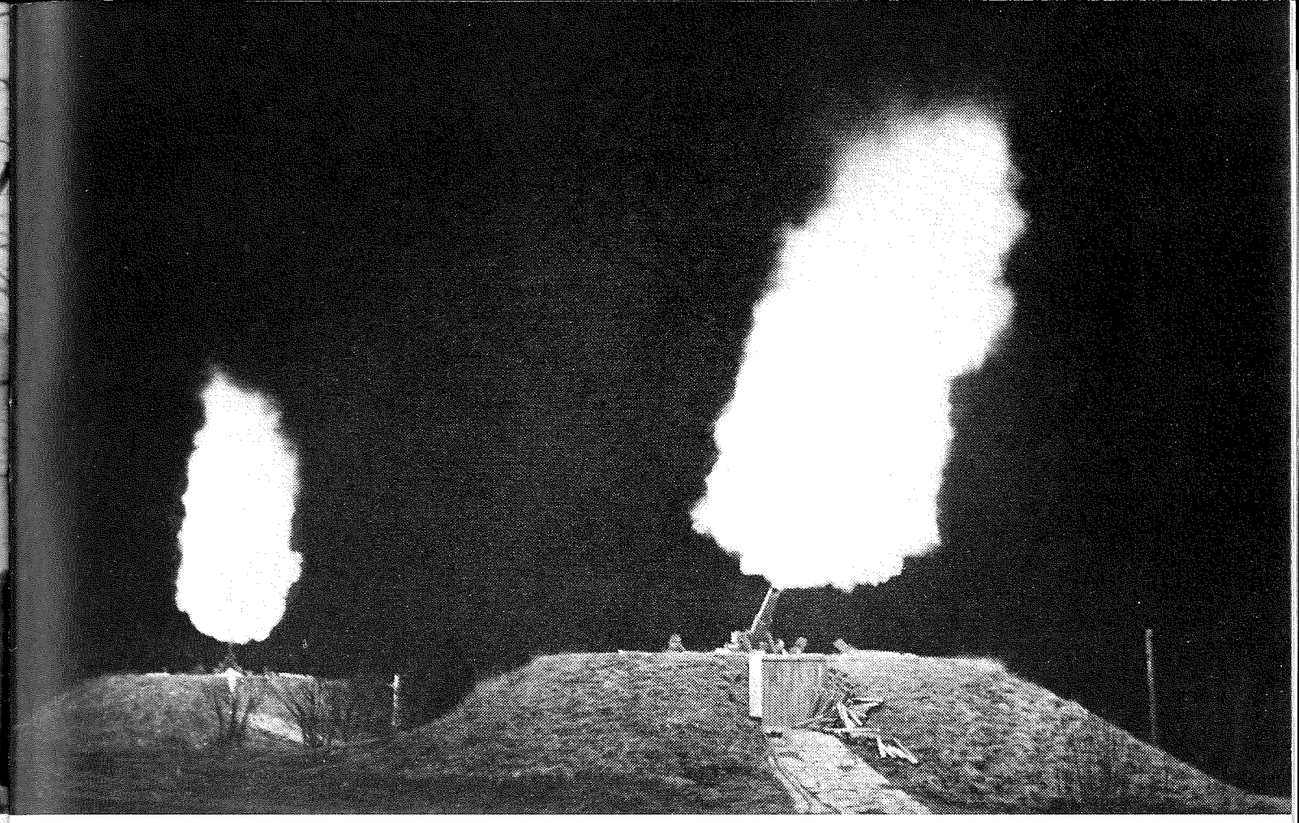
The weather was favourable for the ADD's forces, with a clear, star-studded sky and a temperature of -6 degrees Celsius. Torni had ordered the Irja radar units to indicate targets from the south-east, and soon they were able to scan the first planes of the approaching formations. The Air Defence Centre ordered the first five barrages at a radius of 10 kilometres, and at the same time the main batteries in the east began predictor fire to fend off the target-marking planes. However, some of these were again able to slip through, and before long there were flash bombs slowly descending over Helsinki's southern and eastern parts, brightly illuminating the city below.

As in the previous attacks, bomber formations approached the city from different directions and Torni again needed to divide its firepower. This time there were so many enemy planes that the Air Defence Centre was forced to order barrages to be fired over the city, where most batteries were able to fire. At 7.07, the first bombs exploded in Helsinki, but at the same time the first reports were received of an enemy plane ablaze over the sea.

Right after the attack had commenced, about 20 large bonfires situated east of the city were set alight. The Pommi battery kept up dense barrage fire upon Torni's orders until its communication lines were cut by bombs. After this, the battery continued to fire where the shells of other batteries were exploding. The bright bonfires that were intended as phony targets, together with the eastern searchlights and the muzzle lights of guns, apparently deceived some of the planes, because bombs began to drop in the area. The Pommi battery that served as bait was lucky – it suffered no direct hits or casualties.

Again, enemy pilots were wary of the searchlights. Many batteries reported bombers dropping their loads right after being discovered by searchlight beams and turning away before the arrival of the night fighters. Almost from the outset, communication links to the five long-range listening devices in the east were lost, and not all of them were recovered during the attack. This somewhat hampered the use of searchlights, because the long-range listening devices had provided them with tar-

More than 400 buildings were destroyed or damaged in Helsinki, but effective air defence saved the capital from annihilation.



Heavy anti-aircraft shelling could be seen and heard – and it intimidated the enemy.

get indications. The radar units were unable to do this as they were committed to predictor fire.

After the first attack wave, a steady stream of enemy planes again began to flow, mainly from the south-east and east. There were so many targets that Käpy, the main battery of the north-west sector's battalion, was initially permitted to act independently in its own sector. It fired predictor fire and ordered a total of 24 barrages. This exceptional authorisation for independent operation was granted to the battery to enable the regiment's operations room to focus on the other three sectors and counter the enemy coming in from the east, south-east and south. The heavy guns again caused problems, as they could not endure continuous intense firing. This time there was trouble particularly with the Soviet-manufactured guns captured from the enemy and converted by the Germans to make them suitable for German ammunition.

Bombs had been dropped around the city – near anti-aircraft positions as well – but only at 8.15 p.m. were the first anti-aircraft personnel casualties of the attack experienced. At that time, a demolition bomb and two incendiary bombs hit the barracks of the "Kaivo" battery in the old spa building at Ullanlinna, and two men were killed in the blast.

Around 9.00 p.m., ADD planes were flying at clearly higher altitudes than normal to avoid the very intense anti-aircraft fire. Barrages were ordered at altitudes of 5,800–6,800 metres, i.e. the upper limits of the best batteries' ranges.

At 9.10, the ASC reported that the Raija radar device readings showed that no enemy planes would reach the city at least within the next half hour. To allow the anti-aircraft troops a breather, Torni lowered the alert level from defence alarm to defence warning. The air raid alarm still continued in the city. 15 fires had started, but the number of human casualties remained low.

The breather did not last for long, as the ASC reported that new formations were approaching Helsinki, and Torni ordered a defence alarm. The night fighters took to the air before the anti-aircraft fire started, and at 10.09 the long-range listening unit at Pirttisaari reported an enemy aircraft coming down in flames, and two minutes later another kill.

Bombs again cut the communication lines between the Air Defence Centre and the Itä and Santa batteries, which proceeded to fire free barrages. This time the attackers flew lower, at 3,400–4,600 metres, and arrived in a steady procession. Semi-barrages were also sent up to deter them, as their effectiveness had been noted. There was no threat of ammunition shortage, however, because this time their heavy consumption had been well prepared for.

After midnight, Torni revoked the authorisation for independent operation granted to the northwest battalion and reintegrated its firepower into the air defence of the whole of Helsinki. After this, the battalion's main Käpy battery still fired 18 barrages under Torni's orders.

At 3.49 a.m., Torni was notified that all the night fighters had landed. Although the reason was not reported, at least it could not have been the weather conditions or searchlight operations, which were both favourable. During the early morning hours, searchlights were able to follow enemy aircraft with their beams for even longer periods, but Captain Lewens' aircraft were no longer airborne at that time.

During the night, there was a four-hour period between 10.30 p.m. and 2.30 a.m. when it seemed to the defenders that the enemy's tactics were based on using minimum forces to "wear down and paralyse" the Finns. This was followed by a nearly 3-hour period of more intense flight activity, during which time the ADD attempted to attack the city in larger formations coming from many directions. But the 1st AAR survived this period without major difficulty as well.

"Pekka Jokipaltio, the regiment's commander, was on the move all through the attack, visiting the Air Defence Centre and the various fighting units in turn to observe their operation and encourage the men to make their best effort in a battle that never seemed to end," said Aake Pesonen almost forty years later about his superior's actions that night.

When the last ADD planes had vacated the sky above Helsinki, Torni changed the regiment's defence alarm into a defence warning at 5.11 a.m. The defence warning was maintained for just 15 minutes. The air raid alarm in the city ended only at 6.30.

During the third and final night of mass bombing, the ADD flew 896 sorties to Helsinki. The city's anti-aircraft artillery fired more than 14,200 heavy shells and 4,400 light shells. Of these, Major Paatero's battalion, which bore the brunt of the attack, fired some 4,300 heavy shells. Its main battery alone fired more than 2,300 of these.

The number of casualties was 18 dead and 34 wounded. 67 fires were started, 59 buildings were gutted and 135 were damaged. In all, 338 bombs landed in the city, representing 6.5 per cent of all bombs dropped. The anti-aircraft artillery was reported to have gunned down 8–10 aircraft and the night fighters to have accounted for 4 kills. Furthermore, many planes were damaged by the artillery and night fighters.

Lt.-Gen. Lundqvist, Air Force Commander, sent a letter conveying the recognition and commendation of C.G.E. Mannerheim, Finland's War Marshal, to "the officers, under-officers and men who participated in the air defence of Helsinki for their meritorious activity."

What saved Helsinki?

The bomber forces of Britain's RAF, known as Bomber Command, executed a concentrated mass bombing for the first time on Cologne on the night of 30–31 May 1942. Previously, this tactic had been tried out on a smaller scale in the bombings of Lübeck and Rostock. 457 aircraft were used for the actual attack, although the total number of aircraft participating was about 1,000, one quarter of which were four-engine planes. 240 hectares of the city's area were ravaged, 14,500 buildings were destroyed and a further 6,630 were damaged severely. Some 5,000 people were killed or injured.

In late July 1943, Bomber Command made a series of attacks on Hamburg. In the course of the three largest raids, 2,353 heavy bombers dropped 7,196 tons of bombs in the city (about 9,000 tons during the entire operation). Almost half of the city's 277,330 residential buildings were destroyed completely, 30,500 city residents lost their lives and 900,000 fled the city.

Built on the banks of the Elbe river, Dresden was already a large city by German standards, with a population numbering 630,000 in 1939. Moreover, in early 1945 Silesian refugees had crowded into Dresden and the surroundings, increasing the city's population to about one million. On the night of 13–14 February 773 British Lancasters, and during the following day 450 U.S. B-17s ("Flying Fortresses"), reduced 13 square kilometres of the city's area to rubble. Although it was never possible to accurately establish the number of casualties, the most realistic estimates are at least 35,000 killed.

If we apply the ratio of human tragedy in Dresden (3.5 per cent of the population killed) to the Helsinki bombings, we find that the number of people killed in Helsinki might have climbed to over 10,000. Or if we use the ratio between the number of bombs dropped and the number of people killed and compare the Hamburg bombings to Helsinki, the number of people killed in Helsinki could have exceeded 8,000. Had even half of the ADD's bombs landed in the city, the number of casualties could – by applying the average ratios of the results of ADD operations – have increased 12-fold, leaving more than 1,700 killed and 4,500 injured.

But even if we assume (as would have been likely in the event of an air defence failure) that Helsinki's civil defence shelters would have saved many lives and reduced the number of injured, the city itself would still have suffered severe damage. In fact, fewer than 450 stone and timber buildings were destroyed or damaged in the February bombings, representing some 6 per cent of the city's total buildings. If half of the ADD's bombs had landed in the city's area, the number of destroyed or damaged buildings might have reached 5,000–6,000. At least one-third or even one-half of Helsinki would then have been destroyed, completely or partly. How is it that Helsinki was able to escape the degree of annihilation that many German and Italian cities faced under Allied bombings?

Helsinki's air defence had been bolstered significantly only about six months before the ADD's offensive. The amount of anti-aircraft artillery was very good in proportion to the surface area to be protected – actually better than in any other capital. Radar devices played a decisive role, but, from 11 February 1944, warnings were also received through radio intelligence. Because of the radar devices and new German-made fire control equipment, one out of every four heavy guns was able to efficiently perform predictor fire, which helped them shoot down enemy aircraft and consequently affect enemy pilots' morale. The radar devices also helped to control the barrage fire of other batteries much more accurately than was possible with long-range listening devices and searchlights. Training and continuous drilling also added to the regiment's operating efficiency.

Because the anti-aircraft forces were successful in their task, the exact number of aircraft shot down is actually irrelevant. The 1st AAR reported having shot down 22–25 planes, including at least one four-engine Pe-8 – a rare bird – that apparently fell into the sea off Santahamina island. Judging from the bombs that landed on the target area it can be reckoned that only some 100 enemy aircraft were able to get through the firing area to their intended drop zone. Some of the planes attempting to get through were shot down, while most of the other planes were diverted. It can be estimated that the anti-aircraft artillery knocked out about one-fifth of all aircraft that came within its range. Verifying this later has been difficult, since most of the crippled planes plunged into the sea. Older Soviet sources stated the number of losses at 11, but later this number was revised to 30, of which 20 were losses in battle.

In view of these figures, Soviet losses amounted to 1.3–1.6 per cent of the total number of sorties (3 per cent of the total number of planes), a rather small proportion compared with the bomber losses suffered by the Allied forces. For the sake of comparison, the total losses of the Soviet air force in WWII were 3.4 per cent of the number of sorties. However, general experience of warfare suggests that the number of damaged bombers was probably much higher – even as high as 100–200 – and it is likely that some of these were retired. Some Soviet/Russian sources create the impression that the number of losses was great, despite the fact that the figures presented seem to indicate otherwise. It must be noted that the ADD – "Stalin's air force" – was an elite body, and the losses it suffered caused more grief than those of regular units.

The German night fighters had a deterrent effect. After being detected and tracked by searchlights, enemy aircraft immediately dropped their bombs and turned away, because without the cover of darkness they were in danger of falling prey to the fighters at any time. In February 1944, there were too few searchlights available considering the needs of Helsinki's air defence and night fighter activity, and their operating reliability left plenty to hope for (a deficiency that was improved only in the following summer). Coupling searchlights with radar devices might have substantially improved their target detection abilities, but all the radar devices had been committed to predictor fire. There were simply too few radar devices available.

But the ADD's poor performance was also due to its own deficiencies. Even though the troops and equipment were top-of-the-line by Soviet standards, they could not be compared with the strategic air forces of their allies in the west. The ADD's tactics were basically the same as those experimented with by Air Chief Marshal Arthur T. Harris in the Cologne raids of spring 1942 – first a paralysing massive strike, followed by a continuous stream of bombers (up to 50 planes a minute) designed to wear down resistance.

The ADD was not able to paralyse or wear down Helsinki's anti-aircraft forces, nor even jam their radar devices, and the ADD's aircraft, technical equipment, level of training and flight discipline did not allow them to execute concentrated air attacks like the Allied forces in Germany in 1944–45. The barrages fired in Helsinki in February 1944 would not have stopped RAF or USAAF pilots. The bombers would have flown through or over the anti-aircraft fire, despite large losses.

It must also be borne in mind that Helsinki was the ADD's first strategic target in the war up to that time, and that the air defence the ADD encountered in Helsinki was concentrated in a relatively small area with sufficient equipment and state-of-the-art technology, and that this was backed up by the use of night fighters. The air defence's deterrent effect was formidable. Judging by the accounts of enemy pilots taken prisoner, it is no wonder that bombs were dropped outside the barrages and not within the city.

A third reason can also be mentioned. A Soviet spy assigned to report on the bombings and caught wearing a Finnish uniform in February 1944 was persuaded by typical means of war to act as a double agent. After each bomb raid, he transmitted to the Soviet Union misinformation as directed by the Finns concerning the terrible havoc Helsinki had supposedly experienced. The transmissions were made from the Radio Battalion's 12th separate radio station located at Kuusisaari island in Helsinki.

Pe-8 bombers were able to carry one 5,000 kg bomb at a time, and two of these were dropped on Helsinki.

The effect of the ADD's offensive

The effect of the large-scale bombings of Helsinki, as well as the bombing raids on Kotka, Turku and Oulu and a number of other cities, was contrary to that reckoned by Stalin and the Soviet supreme command. The bombings aroused resentment and were successfully used in Finland for the purposes of moulding public opinion.

Elsewhere, particularly in Sweden, each of the bombings made the headlines. But the reports on the reactions of Helsinki residents to the bombings did not indicate any weakening of the will to defend or desire for peace among Finns – in fact quite the contrary. Some foreign assessments actually emphasised that the Soviet bombings were a miscalculation in the sense that they made Finns more suspicious and less inclined to negotiate and gave them every reason to doubt whether a possible peace accord would be honoured by the other party.

Similar reactions were common in all home fronts that had experienced total air warfare. Bombings not only failed to break the will of the German civilian population, but rather stiffened their resolve to fight. As for the Finnish field army, all the bombings achieved on the front-line was to cause anxiety – an uncertainty that remained until news was received concerning loved ones back home.

Soviet war chronicles of the 1960s and 1970s claimed that the bombings accelerated Finnish withdrawal from the war, but this was not the case. For the people of Helsinki who had been lulled into a feeling of relative security during the long phase of entrenched positions, the February bombing raids were a rude awakening. It was a tangible reminder of the fact that the war still continued. The attacks, coupled with the Soviet Union's peace terms publicly announced at the end of February 1944, only served to convince the home front to continue the fight. In spring 1944, the situation did not yet seem hopeless. After all, the Finnish army stood in its full strength and in combat readiness in the positions it had conquered in the strategic offensive of 1941, and the home area's air defence, especially the anti-aircraft artillery, had shown its ability to fend off the bombing terror tactics that had been widely used in large-scale warfare elsewhere.

Air Marshal A.E. Golovanov, Commander of the ADD, issuing the take-off order to an Li-2 bomber.