

# The Vemork Action

*A classic act of sabotage*

## **Claus Helberg**

*The following is an edited version of an article which was originally published in 1947 Yearbook of the Norwegian Tourist Association. The author, who was a member of a Norwegian sabotage team, has authorized its inclusion in Studies in Intelligence. The sabotage operation against the German heavy water production plant was celebrated in a movie, "The Heroes of Telemark." Mr. Helberg, who participated in the operation, is still hearty. In 1990, he took a member of the Editorial Board of Studies in Intelligence on a trip to Vemork, retracing part of the journey described in the article.*

All mountain hikers still recollect that the Hardanger Plateau in Norway was blocked off by the Germans during World War II. From the spring of 1943 to the German capitulation, the plateau was a forbidden area, and the Wehrmacht confiscated the cabins in the mountains. Not even the cabins of the Norwegian Tourist Association were exempt. The Germans burned, plundered, and destroyed, and there were rumors circulating about clashes between British troops and Germans.

The reason for the German actions gradually became public knowledge. It was because of the sabotage action in February 1943 against the heavy water production plant at Vemork. As long as the war lasted, however, people were not given a factual explanation about these events, but they understood that something important was happening.

The importance of the sabotage action was not disclosed until after the war against Japan was over. At that time, the War Department in London published the story on the Vemork action, and Churchill stated that the attacks against Vemork constituted a major event in the struggle for atomic power. The Germans had actually depended on heavy water from Vemork for their experiments with the atom bomb. As a member of one of the sabotage groups and as an employee of the Norwegian Tourist Association, I consider it appropriate to tell part of the story of what happened at Vemork and on the Hardanger Plateau during the war years.

## **How it Began**

In the summer of 1942, I was a member of the Linge Company's training camp in the mountains of Scotland. We were being trained for industrial and maritime sabotage and for training the Norwegian resistance forces. Professor (and Major) Leif Tronstad planned and organized the industrial sabotage. An excellent scientist, Tronstad was a member of the allied technical council. He made solid contributions to the Allies during the war, including the intelligence work behind the successful bomb attack against the German missile-testing site at Peenemunde.

Tronstad was keenly interested in the heavy water production at Vemork. In 1934, as a chemical consultant, he had participated in planning the plant. One day in August 1942, the training camp in Scotland was informed that four men, including myself, were to report to Professor Tronstad in London.

In London, our team leader received instructions for the assignment. To keep the information on the planned attack from leaking, only he was briefed on the real assignment. The rest of us believed that the action concerned training the resistance.

By the end of August, we had rounded up the skis, boots, and other winter equipment we needed. Then we had to wait for a moonlit night and fair weather. For the next six months, the weather was our worst enemy, not the Germans.

On our first infiltration flight, one of the plane's engines burned up, and we limped back to England. The next time we had to turn back because of heavy fog.

## **Jumping In**

Finally, on 18 October, we had some luck. In the most beautiful moonlight, we circled over the Hardanger Plateau to find the target for our jump, the extensive Lökkje Marshes at Ugleflott. We believed that the navigator would have no trouble finding them.

It is hard to describe my state of mind just before jumping. A few hours earlier, I had been soaking up sun on a lawn in England. The joy of returning home blended with the excitement of the jump itself. As the plane descended from 4,000 meters to 300 meters, the terrain no longer looked so fine and flat. "Action station! " The sharp command gave us something else to think about, and a few seconds later I was floating down to the plateau.

We quickly learned that the pilots had not found Ugleflott after all. We ended up in rough terrain, in boulders and rocky mountain slopes. But all four of us plus our 12 containers with food, equipment, weapons and ammunition landed nicely. Even our radio transmitter seemed to have survived the rocky landing. After a year in England, we were not quite used to the sharp, dry cold.

## **Mission Revealed**

We soon got something else to think about, once our team leader told us about our actual mission. To assist in destroying the plant at Vemork, we were to find a good landing site for two British gliders with 40 Royal Engineers and to guide the men from the landing site down to Vemork. We also were to reconnoiter the plant in advance and obtain all information about its German guards. The landing site could not be too far from Vemork. The British would not have skis, which meant that the site would have to be close to a road. The Skodal Marshes, 5 kilometers west of the Mos Lake Dam, were a logical choice. They are on both sides of the road between the dam and Rauland.

## **Some Tough Going**

The operation was to be carried out during the next moon period, which was in one month. Unfortunately, we had landed 15 kilometers farther west than planned, at Fjarefit in the mountain range east of the Songa River. It is roughly 100 kilometers from Fjarefit to the Skoland Marshes. We had to pull 300 kilos of the equipment we needed, including food, skis, our radio, and weapons and ammunitions. This would have worked out well on good snow. But in October we could not even expect snow for skiing. The snow that was on the ground melted the next day in the sun. However, we did not dare to go without taking our skis. If it should snow, we would be completely stuck without them. It took two days to collect our things, to pack what we would take, and to hide the rest in a depot. We had no time to spare. During the third night, heavy, wet snow began to fall.

On 21 October we began marching to Mos Lake. For more than 14 days, we struggled in rough terrain and in indescribably bad snow. On good snow, an experienced skier would have covered that distance in a day or so. We just about exhausted ourselves to make it in 14 days. The Songa and Bitdal Rivers were not yet

covered with ice, which meant that we had to struggle along steep birch-covered slopes. Each of us carried more than 30 kilos, and that was only half of the equipment, so we had to backtrack and walk each distance twice. Under such conditions, we were tempted to leave behind as much as possible, either in the depot or along the route.

We soon realized that we would have to resort to the strictest rationing to make the food last for four weeks. This was our daily menu: 1/4 plate of pemmican, one handful of oats, some crackers, and some chocolate. Because of the toil, our need for calories was much higher than normal. Each day, we became weaker and weaker. Toward the last day we were not able to cover more than 2 kilometers. Fortunately, there were many cabins along the Songa and Bit Valleys, so we did not have to camp out. If we had had to sleep outdoors, I doubt we would have made it.

On 10 November, we reached the Sandvass cabin, about 10 kilometers south of the Skodal Marshes, where we were to live until the glider party's arrival. On the trek from Fjarefit, our radio operator tried to contact England, but succeeded only once due to a defective battery. To get a new battery and to supplement our scanty food supply, I went down to the well-known skier, Torstein Skinnarland, who was the guard of the dam. Through him, we got all we needed, and from then on the radio link worked smoothly. Skinnarland fed us information on Vemork, and after two of us had been down there to do a little spying, we were well prepared for the assignment.

## **Ill-fated Attempt**

On 19 November we were told over the radio that the gliders would be coming the same night. Later in the evening, we went down to the landing site and put out our reception lights. But the wind increased, and it seemed that London had second thoughts. We were informed over the radio that the operation was postponed for an hour. At 2300 hours, we heard the sound of planes. It certainly was a marvelous feat that the pilots had found the place in this weather. The lights were lit, and we expected every moment to see the gliders land. A little later, we heard plane engines, but now black cloud banks were drifting along the mountains, so I assumed that the chances were small for our lights to be seen.

The next day, we received a sad report from England. Only one of the planes had returned. One glider had been dropped over southern Norway, and the other plane with a glider was missing.

We had nothing else to do than to wait for further orders. We did not feel very safe in our cabin. The German camp at the Mos Lake Dam was only 5 kilometers away. Consequently, we went northwest again, toward Saura, between Mogen and Kalhovd. There was a little hunting cabin there that was not marked on the map, and it became our home for three months.

## **More Hard Times**

This period offered us a fair share of difficulties. At the outset the Germans were especially worrisome. One day when I was down at the Mos Lake to get the latest news from our contact, Torstein, I was told that he had just been arrested. There had been large raids in Rauland, Mosstranda and Rjukan, and many people were arrested. A German radio-direction-finding car had been observed at Rjukan, and German patrols had headed for the mountains. Every house in Rjukan and the Vestfjord Valley was searched, and the Germans asked everywhere if people had seen Englishmen in the area.

The reason for the raids was obvious. It was a known fact that the British from one of the gliders had been captured and killed by the Germans. In the glider, the Germans had found maps and information showing that Vemork was their target.

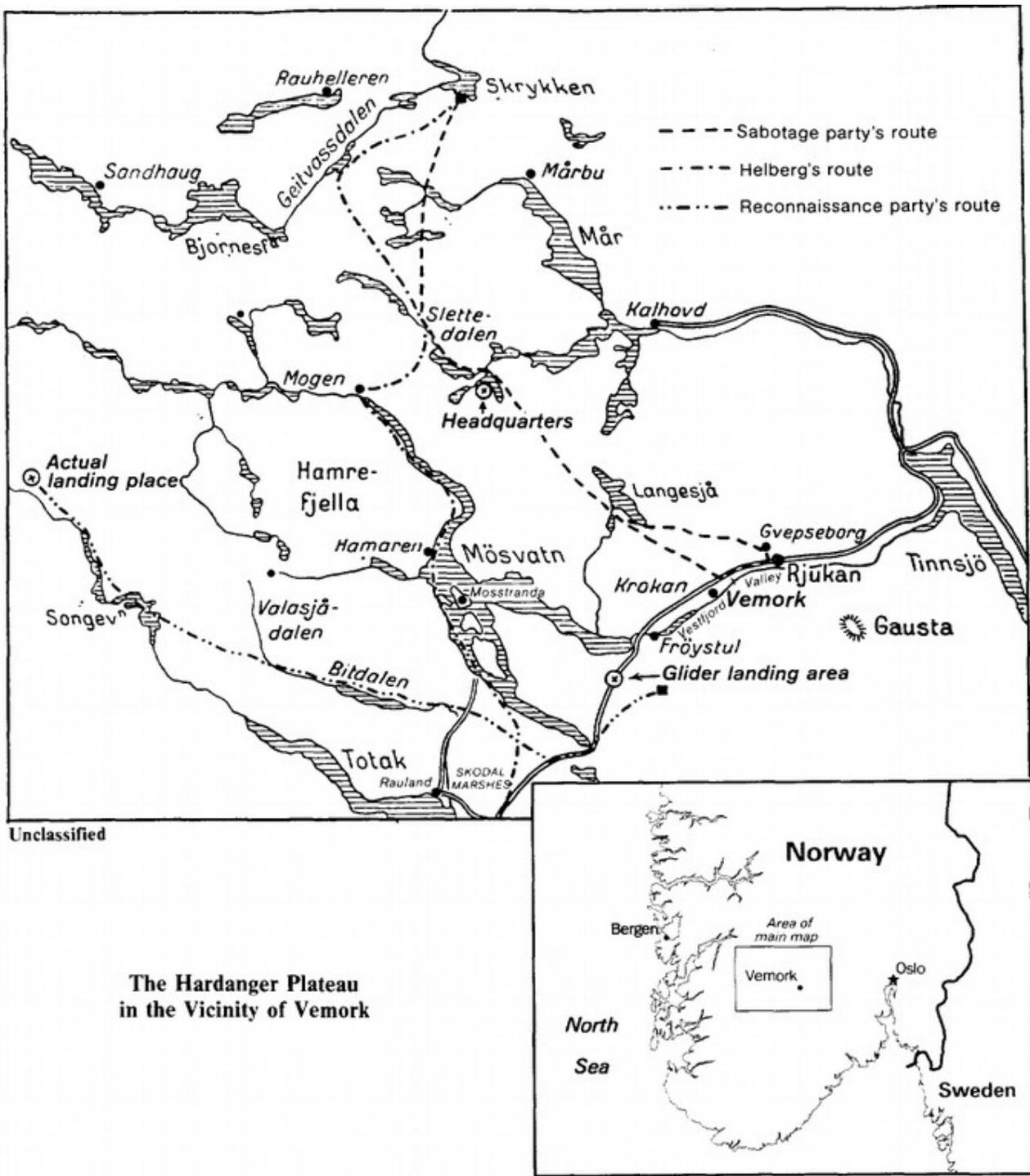
The Germans also almost certainly deduced that a radio transmitter in the area had been in contact with the British. Their suspicion fell on Einar Skinnarland, Torstein's brother. But because he was not at home

when the Germans came to arrest him, they took Torstein instead. The Germans were closer to their target than they realized. Einar belonged to our own group. He had, however, left England as early as April 1942 to furnish the Allies with information on German activities in the Rjukan region. We had not been in contact with Einar yet, but he joined us later in the winter.

After we lost our contact with Torstein, our food situation became difficult again. For two weeks, we lived on oats, some margarine, sugar and Iceland moss. We dug the moss up from under the snow and boiled it. It hardly gave us any nourishment, but we imagined it did, and that helped a little.

On this diet, our strength waned quickly, and we were susceptible to diseases. At one time, we were all in bed, except the chief. I believe he managed to keep healthy because he spent much time thinking about reindeer steaks. He had shot many reindeer in these mountains before the war. The others in our group who had hardly seen a wild reindeer before were more skeptical about his chances of killing one.

Meanwhile, the radio connection with England was maintained. We were told a new party would be sent, but only one plane would be used, and that it would deliver no more than six men, all from the Linge Company. The fellows would parachute to our quarters at Saura. So we would be 10 in all. The German guard force at Rjukan and Vemork numbered between 200 and 300 men. But we thought it would work out.



Shortly before Christmas, there was a lot of rain and fog. Such troublesome weather suited us admirably. The Germans got tired of their patrolling and the wild reindeer came down from the western areas of the plateau. From then on, our chief was out daily to bag an animal, but conditions were not good for hunting. The fog was thick in the mountains, and he was so weak that he could only get to the nearest peak.

But on Christmas Eve we received a welcome gift, clear and fine weather. Our patient leader went out again; this time he returned with reindeer meat. For two months, we ate only reindeer meat, as many as 11 animals. To prevent scurvy, we ate the stomach and its contents from every animal. It tasted quite good, when mixed with blood and fat.



Tough sledding.

There was miserable weather in the mountains that winter, and we could not go hunting often. For weeks, the big storms would rage, and it was almost impossible for us to go outside. From time to time, we had a short break when the storms changed from east to west or the other way around, and then we had to make the utmost use of our time to go hunting or pick firewood. Fortunately, Saura was blessed with a birch forest.

Polar disease is the name of a disease attacking people who live in isolation under difficult conditions. In a short time, the best friends may become the most bitter enemies. Even the most cheerful people may collapse. The fact that we did not fall victim to diseases was largely due to our leader's creative ability.

We had no light, which meant long evenings. Idleness is the cause of polar disease to a great extent. To prevent this, our chief started a study circle. Each evening, one of us gave a lecture. The theme did not matter; the main thing was our thoughts were removed as much as possible from our daily existence.

From time to time, I went for a walk down to Rjukan or to the Mos Lake. We have a couple of contacts who furnished us with information on the movements of the Germans in the Vestfjord Valley. Meanwhile, the situation at Vemork had become less favorable. It looked like the Germans were prepared for an attack, as the number of guards at the plant increased steadily. The Austrian guards were replaced by Germans; there were double guards where there had been single ones, and mines were deployed. Mounted floodlight facilities were installed so that the whole factory area could be lighted up as bright as day in case of alarm.

We sent reports on these developments to England. The transmitter demanded much electricity, so we made strenuous trips with the battery to and from the charger. And I had to make many return trips. Often I was unable to force my way through the storms.



Contacting England.

## **A New Group Arrives**

Fair weather finally returned one day at the end of February. It was real "drop weather," with moonlight and quiet, but 34 degrees below centigrade. Over the radio, we were told that the men would come that night, which meant that we would stand outside with the lights. We stood there in the cold until 0500, but nobody came.

The next day we were told that the plane had not been able to find us and that it had dropped the men on the High Plateau, most likely 50 kilometers north of our position. At the same time, we were hit by a terrible storm, the worst we had experienced. We had to stay in the cabin for a week.

"Gunnarside" was the code name of the new group. They were given a rough reception: the big storm struck even before they had collected all their equipment. They were lucky, however, as there was a large cabin right by the landing site.

On the first day of good weather they headed south, and in the evening we saw them coming from the west. It was fun to talk with friends who had news to tell. We had lived for five months alone in the mountains, and the change was welcome.

## **Attack Planning**

We immediately began to plan for the attack. We had to figure out how to get into the factory area and from there into the factory itself, and then how to get back alive. We had two alternatives to get to our target. One

was the bridge across the gorge by Vemork, but it was guarded. Liquidating the guard would make noise and perhaps reduce our small force. Another way was to try to cross the gorge under the bridge, and from there move unseen into the factory. We knew that the Germans believed that no one would try it that way. Our contact from Vemork had told us that no one could cross the gorge. But we doubted that. Local people often do not know their own area all that well, when you boil it right down.

On the last day before the attack, I left the others to investigate on my own the possibility of getting across the river gorge. In the bright daylight I strolled down the country road past Vaer. A little farther down, I left the road and headed for the gorge. I was able to make it down to the river ice, and I was also lucky enough to find a somewhat passable way up the factory side. It would not be as easy to go this way in the dark, but it was better than trying to get past the German guards on the bridge.

On the basis of my information on the way across the gorge, our plan for our advance and attack was simple. As it got dark, we would start down the Fjosbu Valley, and then hike down into the Vestfjord Valley until we reached the country road. We would then follow the road about 1 kilometer to the spot where I had found the ford, move across the river and up on to the railroad line between Rjukan and Vemork on the south side of the valley. We would follow the railroad up to the fence surrounding the factory area. After cutting our way through, we would split into a cover party and a blasting party. The cover party would take up positions so it could make a surprise attack in case the Germans sounded the alarm. If all stayed quiet, everyone was to remain at their posts until the explosion was heard. If the alarm was sounded during the advance, the cover party would attack the guards immediately. When the explosion was heard, they should assume that the blasting party was outside the factory area. An order to withdraw would then be given. The passwords would be: "Picadilly? Leicester Square!"

The blasting party would destroy the heavy water plant in the basement of the Hydrogen Factory. They would try to find an open door into the factory. If they did not succeed, they would try to crawl through a tunnel for pipes and cables leading into the building. If something unforeseen happened, everyone was to act on his own initiative to complete the mission.

## **Closing In**

It was overcast and there were heavy winds when we went down into the valley with skis and packs. We all wore British uniforms. On the road, the ice was as slick and shiny as an ice rink. Off and on, the wind came in such strong gusts that we fell on the road. The weather could not have been better. We were the only ones out in such conditions. The climb down into the gorge went better than expected, but the river had risen because of the mild weather, and the water ran high above the river ice. But we got across and up to the railroad on the other side.

When we were only 500 meters from our target, we stopped to go through the plan for the last time. It was vital that each man knew his assignment. We had a fine view of the bridge where the guards were posted. There would be a changing of guards at midnight, and because the guards' house was up by the factory building, we let the off-duty guards have 30 minutes to fall asleep. Then we went up to the fence and cut our way through.

I was with the cover party, and we took up our positions. We covered the German guardhouse and the entrances of the factory. Fortunately, we did not see a single guard. The noise from the factory was quite loud, and there was no other sound. It was pitch dark, and, even if a German had come, I do not believe he would have seen us leaning against the factory wall.

The blasting party had some difficulties getting into the factory. The doors were locked, and it was not easy to find the cable tunnel in the dark. During the search, the men lost track of each other, and only two finally found the opening. They had the explosives, and the tunnel was just wide enough for them to crawl through. They entered the room next to the heavy water plant. The entrance door was open, and they walked right in. There was a worker there, and he probably was scared stiff at the sight of the uniformed men. But he sensed the situation, and he kept quiet.

## Success

The men started to place their explosives. They had practiced on wooden models in England, and loads and fuses had been cut to size beforehand. While they were busy working, the silence was broken by the sound of glass being shattered nearby. One of the others in the blasting party who had not found the cable opening had decided to act on his own, and, when he found a window, he smashed it and crawled through. He assisted in completing the work.

To make sure that the explosives would not be removed, the fuses were cut as short as possible. The leader lighted the fuse, the worker dashed up the stairs to the upper floors, and the saboteurs ran out through one of the basement doors. The loads exploded 30 seconds later, and the heavy water instruments were destroyed.

Except for smashed windows, only the instruments were demolished. The factory itself was undamaged. It may have been this fact that made the Germans react so slowly. One of the off-duty guards poked his head out the guardhouse door, turned a flashlight on the factory building, and then went back to bed!

Thus, we got an unexpectedly large headstart, and it was not until we were up on the country road that the first cars with Germans came up from Rjukan. We found our skis and headed for the town.

## Getting Away

There was some discussion as to whether we should go straight up the mountain slope, but those of us who knew the area were able to veto that. The slope would have been too steep and heavy. Of course, it was risky to go down this road, because we could run into Germans at any moment, but we had no other way. The German cars went towards Vemork on the road right below us. Nobody must have thought that we would go *toward* Rjukan. At 0500, we were at Gvepseborg. And we felt great satisfaction when we sat and looked at Vemork and thought of all the commotion we had caused down there.

Then we headed for Hardanger Plateau again and for new assignments. Five men made straight for Sweden on skis, in English uniforms, with guns and ammunition.

Our leader made his way alone to Oslo and then on to Sweden and England. Two went westward and established headquarters for the resistance forces in the Vinje region; one was back in England by Christmas, while the other stayed in Norway until the end of the war. The two telegraph operators established a radio station in the Hamre Mountains by the Mos Lake, and one operated this station until the war was over.

## A Hot Pursuit

Many exciting stories can be told about each one of the men from that time on, but I will limit myself to my own adventures after our action. First, I had to make a trip to Fjosbu Valley, and then I was to catch up with the others near Rjukan. But because of bad weather, I was delayed and did not find them. I therefore went alone to Geilo and took the train to Oslo. I left my uniform in the mountains.

So far, the Germans had not started to search the Hardanger Plateau, and three weeks after the action I headed for the mountains again. I went from Imingen north to Skrykken. The purpose of my trip was to hide some weapons and explosives that had been left behind by Gunnerside at Skrykken.

I found the cabin where the men had stayed and went in to get a little food after a long hike. The cabin

looked like a pigsty, and it was obvious that the Germans had been there. Perhaps they were close by! I ran out. Sure enough. Four or five men came running up towards the cabin. I put my skis on in a hurry and took off. My only weapon was a pistol.

I had to rely on my abilities as a skier. After some shooting, one of the Germans was catching up with me. We were heading westward at great speed. I just wanted to have the evening sun in my face, to blind the Germans when they were shooting. But one German kept my speed. Fortunately, he also just had a pistol. Thus the chances were equal, and the best shooter would win.

The German evidently determined that the fight would be to my advantage. He became so scared when I began to shoot at him that he emptied his whole magazine at me. All misses. Suddenly, our roles were changed. He threw himself around and headed back towards the other Germans. I hesitated for a moment, and then I pursued him as fast as I could. Every second was precious. His friends could show up over the crest at any moment. At a distance of about 30 meters I fired a few shots at him. The sun had gone down, and darkness was approaching. I was safe, at least for the time being.

But the ski tracks were a problem. The Germans could follow them, even in the dark. I knew there was no snow on the ice of Vra Lake, so I made for the lake. It was a starry night, but it was dark, and I had the bad luck of skiing off a precipice in the Slette Valley, just north of Vra Lake. I hurt my left arm badly, but I had to move on.

Down by Mogen, I barely avoided the Germans. They were swarming all over the place. It was obvious that they had started a major raid. But with a broken arm, I could not head for the mountains again. I had to see a doctor.

Later in the day, I reached Hamaren, tired and hungry. I knew the people there, but I could not stay because the Germans searched every house at the Mos Beach. After I had had something to eat and rested a little. I moved across Mos Lake and down to Rauland. I had been on my feet for 36 hours and covered 160 kilometers.

Rauland was standing on end. I could not have chosen a worse haven. There were about 300 German troops there. The weather turned mild, and it was impossible for me to consider moving on. I knew a merchant at Austbo, and I moved in with him and was allowed to sleep on his kitchen floor. The Germans had requisitioned the other rooms.

## **Fast Thinking**

During the night, I concocted a story to tell the Germans, and they bought it! I said that I had reported as a local scout for the Germans in their search for the Vemork saboteurs and had broken my arm in their service. The Germans must have thought that I was quite a likable fellow. The German field doctor at Rauland examined my arm and sent me by ambulance down to Dalen, where I could travel on to Oslo by myself. In Dalen, I said *auf wiedersehen* to my helpers, and we parted as good friends.

A boat was to leave the next day, and I wanted to rest a little. The tourist hotel looked inviting, and I found lodgings there. But bad luck struck again. Two German officers and their staffs came to the hotel in the evening and requisitioned most of the rooms. All the doors were blocked, and it was out of the question to try to escape. All 30 guests were interrogated. We each had to give our name, address, age, and purpose of staying in Dalen. My identification card, which had been made in London, withstood a close examination.

## **Under Arrest**

The next morning, 18 guests, including myself, were told to pack. We were arrested because of "insolent behavior." I was in great doubt as to what to do, but I finally decided to go with the prisoner transport and

then make a run for it. At any rate, I could not go all the way to Grini prison camp. I had put my pistol under the lining of my ski jacket.

Before long, a big bus pulled up in front of the hotel, and we were accompanied to it, one by one. I made sure I was the last one to get out of the hotel, so that I would get a seat right by the exit door in the bus. A German thought that I moved too slowly, and he gave me a kick in the rear so that I stumbled on the stairs. My pistol fell out of my ski jacket and landed between the feet of a German. Now I was in a jam! The Germans obviously did not know what to do with me, but the order was to send us to Grim, and an order is an order.

One German guard was sitting in the front of the bus, and four others on two motorcycles convoyed us, one motorcycle 10 meters in front of and the other 10 meters behind the bus. My seat was on the floor in the rear of the bus. A young lady from Oslo sat next to me. We got to talking and actually had a cozy time. The German guard in the bus was envious, and eventually we changed seats. I got to sit up front by the exit door, and he sat in the back.

Of course, that made things easy. We had driven for nine hours, and it had become dark. In the Lier Hills between Drammen and Oslo, I opened the door and jumped out, amid the oaths of the Germans. I fell on the road, but got back on my feet just as the Germans in the rear motorcycle were about to jump on me. Pursued by exploding hand grenades, I got into the forest, and, thanks to the darkness, my pursuers lost me. They gave up and had to go on without me.

After benevolent treatment at Lier Asylum and a three-week stay at Drammen Hospital, I went on to England through Sweden.

## **Another Mission**

In the night of 4 October 1944, nine soldiers parachuted at Ugleflott. One of them was Major Leif Tronstad. My original team leader, another team leader, another team member, and myself were also among these men. Einar Skinnarland stood on the ground with the landing lights.

Our assignment at this time was to assist the resistance force in Upper Telemark with weapons and training. It was of decisive importance for the economy of Norway after the war that the valuable industry in Telemark should remain intact. The Germans could be desperate enough to destroy the factories when they withdrew. The resistance would help to prevent this.

Our headquarters was established in Skinn Valley by Mos Lake, with Tronstad as the chief. During the winter, we requested and received more than 100 "drops." Almost every moonlit night, large Stirling planes came with guns, ammunition, food, uniforms and radio equipment. We had radio stations in every district, and we communicated among ourselves and with England.

We established so-called cells, and the men in them were fully trained militarily. They were the elite troops. Training with weapons was given at night in the farm areas and in the towns. We had field maneuvers in the mountains on Sundays. The Germans were more alert than ever, and their raids were part of our daily routine.

We regarded the Hardanger Plateau almost as a recovered area. The blockade was still on, but the Germans had no chance of maintaining effective control there.

Then came 8 May. All the groups mobilized. On the mountain farms at the Mos Beach and Rauland, in every town and farm area, men and young boys dressed in uniforms. They had been prepared to defend their country. Fortunately, actions were not necessary. A long, liberating breath was let out by all Norwegian lungs.

Professor Tronstad did not live to see that day. On 11 March, he and another team member were shot by a traitor close to our headquarters. It was a great loss for Norway. Tronstad was an important scientist, and in

no way could we afford to lose him.

The people in the mountain farms around the Mos Beach mourned Tronstad deeply. Never had one person been so loved by the people on those isolated farms. All through the winter, he had lived with them. They appreciated his inexhaustible spirit and optimism, and they especially were fond of him for his considerate and friendly nature and for the warmth of his heart.

For years to come, the memory of Professor Leif Tronstad will live on among the Mos Beach people.

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