Norsk Luftfartsmuseum

100 Years of Norwegian Aviation

Contents

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Welcome to Air and Pleasure!

– Hey, look, a plane! I gaze to the sky and catch a glimpse of a small speck up there in the blue. Silently and staggeringly high up in the heavens, the plane glides towards a faraway destination. Trailing behind it is a thin white stripe. There's an excited buzz of butterflies in my stomach. I want to fly too!

Airplanes, helicopters, balloons, parachutes, kites, airports, model aircraft. Today, everybody has, in one way or another, become familiar with aviation. Aviation history, on the other hand; can that be interesting? Oh yes, you can be sure of that!

Norsk Luftfartsmuseum is the Norwegian national museum of aviation, and the largest of its kind in the Nordic countries.

At the museum, everyone can see for themselves what happened when Man took the leap to the skies. It certainly did not happen without drama.

Norsk Luftfartsmuseum presents the foremost knowledge on Norwegian aviation history. You will find aircraft here, of course, but also stories, experiences and many other exciting things – everything put together by people with a passion for, and commitment to, the history, as well as a strong desire that you in particular should be able to take part in it all.

Norsk Luftfartsmuseum is situated in a distinctive building shaped like a giant propeller, just outside the city centre of Bodø. We offer information, entertaining experiences, interesting educative arrangements for children and young people, and a pleasant atmosphere where everybody is equally welcome. Our goal is to collect, preserve, research, and exhibit Norwegian aviation history, for the benefit and enjoyment of all.

So please step aboard!

Behind the Scenes

Viewing the exhibitions and reading this publication you will encounter history. What you will not see, however, is everything that takes place behind the scenes. The following people, activities and events make it possible for the Norwegian Aviation Museum to fulfil its goal of collecting, preserving, researching and exhibiting the history of aviation.

Academic staff and administration

There is a large variety of people at work at the museum. The first you will meet are probably the staff at Café Gidsken or at the reception desk. Guides are available to lead tours of the exhibitions. Specialised teachers take care of children from kindergartens and schools. Academic staff and specialists are responsible for the collection of items and artefacts, photographs and archives, the restoration of airplanes, research and exhibition. Other people register collected material in computer filing systems in order to record the material for future reference and retrieval. Old artefacts, photographs and archives will suffer from not being kept properly. Therefore, the museum has dry and safe storage facilities, magazines, where all the old objects are stored. The aim is that all the material kept in the storage rooms should keep forever. The museum also employs technical staff to maintain the museum's various buildings, including the construction of exhibitions. The museum administration is responsible for management.

Photographs, archive material and the library

Stored in its magazines, the museum has extensive collections of artefacts, photographs, archives and literature. With the exception of old airplanes and airplane parts, these represent resources of material that may be used by the public. The museum will assist you with photographs, historical information and literature from the library.

Exhibitions, teaching and other activities

The Norwegian Aviation Museum presents permanent exhibitions as well as exhibitions on loan. In addition, there are special educational activities directed at children and young people, special family Sundays,

Collection of wreckage at the Reinoks Glacier in Nordland. The aircraft, a German Junkers Ju52, made an emergency landing here in 1940 on its way to Narvik carrying supplies for the German forces.

Schoolchildren with selfmade airplanes. The airplanes were exhibited at Norsk Luftfartsmuseum.

a film society and lecture nights. Staff contributes articles to newspapers and magazines.

Children and young people

The Norwegian Aviation Museum offers special activities for children of all ages. In the Exhibitions Section «How can we fly?», you can do the experiments yourself. There are special aircraft set aside for rough handling. The museum also has two flight simulators. The activity aircraft «Morten Dobbeldekker», «Kaja» and «Whisky» are very popular with the very youngest visitors. The museum is an excellent choice for families planning a meaningful day together. A stroll through the exhibitions creates the kind of contact that spans generation gaps.

The café, the gift shop and the auditorium

Café Gidsken and the museum gift shop are found at the entrance to the museum. Light meals and drinks are served in the comfortable surroundings of the café. The museum also has a modernised auditorium which may be booked for meetings and conferences.

Supporters of Norsk Luftfartsmuseum

Bodø Aviation History Society represents one of the most significant supporters of the Aviation Museum. The Society, which numbers approximately three hundred people in Norway and abroad, makes a considerable contribution to the museum through activities as collection of artefacts, aircraft restoration and other activities. The most central and active members of the Society are on the go day and night, even at weekends. The eager conversation usually focuses on aircraft and engines. Naturally, everybody has a joke or good story up their sleeve. Want to stop for a chat? Just drop by, everybody is most welcome.

About Norsk Luftfartsmuseum

Norsk Luftfartsmuseum was officially opened by HM King Harald on 15 May 1994. The museum has been given the paramount responsibility for the administration and management of Norwegian aviation history.

In reality, Norsk Luftfartsmuseum consists of three museums collected under one single roof: Norsk Luftfartsmuseum, Luftforsvarsmuseet (the Norwegian Air Force Museum) and AVINOR Museum. Norsk Luftfartsmuseum is responsible for the general management of the Aviation Museum.

Norsk Luftfartsmuseum has a large number of international contacts and cooperates with leading aviation museums in countries such as Germany, France, Great Britain and the United States.

A Flight to the Past

Olav Gynnild,
Curator, Norsk Luftfartsmuseum

Are you ready for a journey to the past? You can come along with me if you want. I can see that you're keen on going, so step aboard. Please fasten your seatbelt, because this is going to be a special trip!

We're starting from Bodø today. The flight goes to Oslo, or even further if we can manage. The travel time is estimated to approximately one hundred years. A lot is going to happen along the way. The planes will change, and the world around us will be radically altered. All of this probably sounds weird, but that's what it is like to travel in time.

It is early morning at Bodø airport. Still sleepy, we wander over towards gate 14. The security check is thorough, as the September Eleventh events are still very much in people's minds. There are people lining up to pass through the security checkpoint. Oh my, a beep from the scanners. An old lady has been stopped and must step aside for additional checks. What if the scanners beep when we go through? That is always quite upsetting. But luckily, we're through without beeping scanners or any other embarrassments. We're relieved to step aboard the large plane from the airline company Norwegian and find our seats. Adventure awaits us!

A few minutes later we are airborne. Look, there is the Aviation Museum! The propeller-like form of the building is easy to spot. We tear on above the suburbs of Grønnåsen and Alstad. The buildings look like dolls houses, and the rush-hour traffic into the city becomes a thin line. Then we are in the clouds, and the plane trembles gently.

I look at the date on my watch. We are back in the 1990s. The airline company Norwegian does not exist at this time. The air traffic market is becoming more and more regulated, and now we are flying with Braathens. There are many empty seats in this airplane. Air hostesses are serving meals, which are actually included in the ticket price. The passenger next to me is fiddling with a giant mobile phone. I feel I am getting more and more annoyed. Why does he have to sit with that gadget in his hand all the time? He cannot use it in the plane anyway.

Hey, this flight is fast! We're flying through the 1980s. The in-flight magazine has an article on something called "yuppies" – young, wealthy people with flamboyant lifestyles. There seem to be quite a few on this plane; there are at least a lot of businessmen in suits here.

And then we are in the 1970s. It appears

In all the world, how small it has become – with airplanes. Many of the passengers I meet in the 1950s are excited about the new possibilities that are open to them. It is now possible to fly almost everywhere on earth, as long as you can afford the ticket. As the first airline company in the world, SAS opens a polar route in 1954. From 1957 onwards, the airline company flies across the geographical North Pole – from Copenhagen to Anchorage, and then to Tokyo. This picture is taken in one of the SAS DC-7Cs, about 1960. This type of aircraft is used for the North Pole route.

to me that the quality of the on-board services has deteriorated. An air hostess explains that it is all due to the oil crisis. Fuel has become terribly expensive. In order to keep prices down, the airline companies have decided to lower the quality of on-board services. I suddenly start to cough violently. «Can't you ask people to stop smoking?», I ask the air hostess. «You see, I'm allergic to smoke». «Well, I'm sorry, Sir», she replies. «Passengers are actually allowed to smoke on board».

Around 1970 I notice that a lot of the airports along the coast have disappeared. Maybe I am going to have to change my itinerary? «Not necessarily,» says the hostess, who has come to top up my coffee. «Land-based aircraft are still used at the large airports. Along the coast, you can use seaplanes. But as you continue your journey backwards in time, you will notice that the land-based aircraft will gradually disappear and be replaced by seaplanes.»

A sharp jolt goes through the plane. I look out of the window only to discover that the jet engines have vanished. We are back in the 1960s, and jet engines have been replaced by propellers. Compared to the speed of jet aircraft, this feels like riding a tortoise. The cruise speed has actually been cut in half; now the journey will take twice as long as previously planned. In fact, this airplane is also much smaller than the one we were in a moment ago. I count the people around me, making a total of no more than 30–40 people.

I must have fallen asleep for a moment. When I wake up, we are in the 1950s. A married couple from northern Norway has woken me from my sleep. They talk so loudly! Darn it, they sound pretty ecstatic over there. I listen to their conversation, thinking that I should be allowed to do that now that they have woken me. The couple is planning a trip to New York, by the sound of it. «SAS have introduced a new concept

called the economy class», says the husband. «Economy class means tickets that are left over after the ordinary tickets have been sold out», he explains to his wife. «Even though there are some restrictions to the new tickets, the price is reasonable. It makes it possible for people such as you and me to actually fly somewhere once in a while». «Yes», the wife adds, «until now only rich and well-off people could afford to fly». To New York! What's all the fuss about, I wonder. Doesn't everybody go to New York? Hmm...

I want to ask the stewardess where the lavatory is, but where is she now? The date reveals that we have arrived in June 1946. The land-based aircraft that we were sitting in has been transformed into a noisy Junkers seaplane. Both the SAS and the Braathens SAFE companies have yet to come into existence, so now we are flying with Det Norske Luftfartselskap (the Norwegian Airlines) or DNL for short. «Stewardesses?» The question appears to confuse the passenger next to me. He hardly seems to know what a stewardess is. Very well then, no stewardesses on board. But on the other hand, there aren't many passengers here either, only about a dozen. I notice that the cruise speed has dropped even more, maybe to as low as two to three hundred kilometres per hour. Besides, we are now at a much lower altitude, since the aircraft does not have a pressurized cabin. The view is excellent, but I can feel my ears pop.

We land at Hommelvik seaplane terminal outside Trondheim. The DNL is not allowed into the air anymore, because it is now the Second World War, and the German occupation force controls the air. German soldiers are posted on the boat that will take us to shore. We see a couple of Heinkel and Junkers bombers fly overhead. I wait in Trondheim until 1940. At that point in time, DNL is back in the air. I get on the first seaplane, which takes me via Bergen to Oslo.

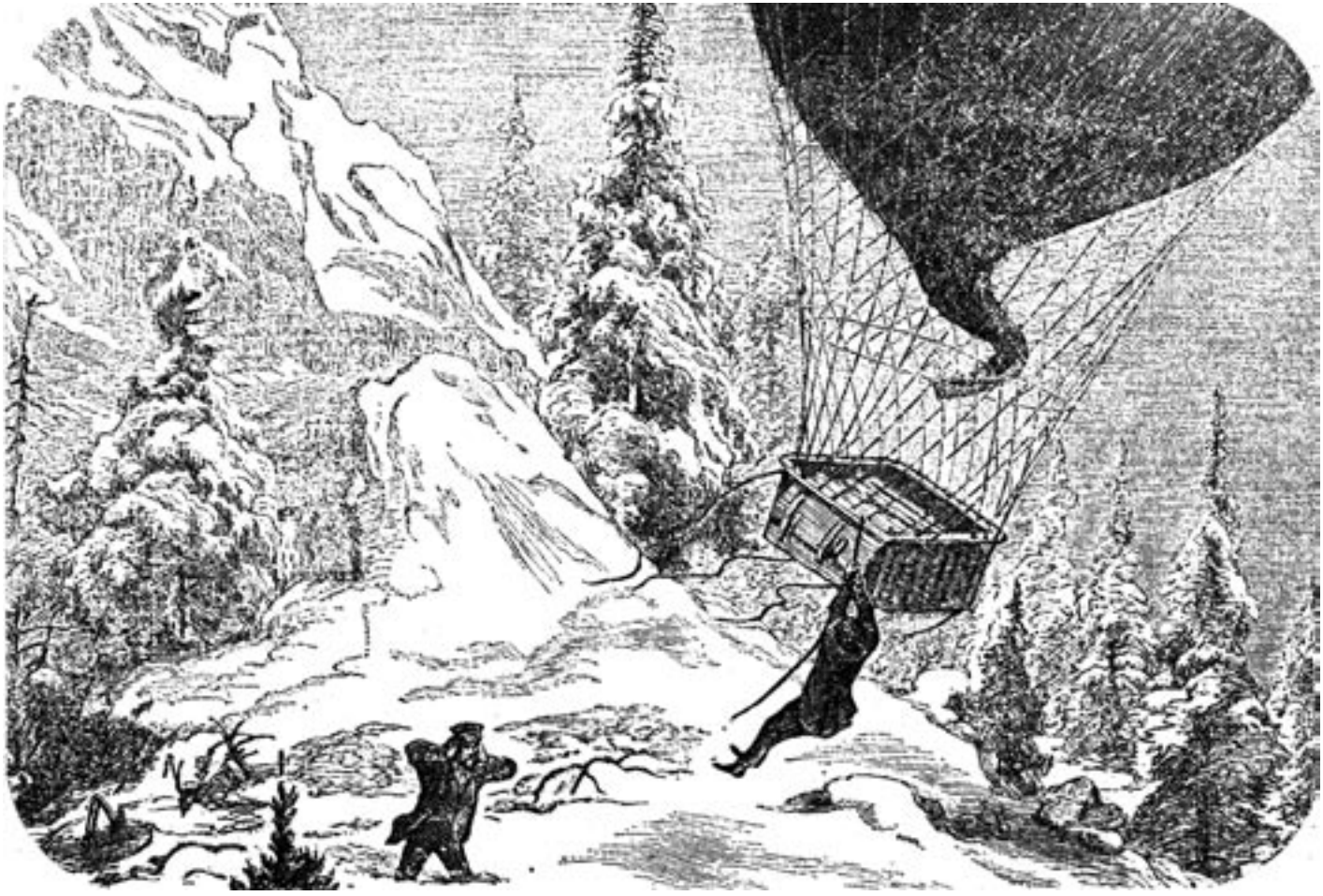
From where I'm sitting, I can see the pilots in the cockpit. What are they doing now, by the way? One is holding a stopwatch and a map, and the other pilot is constantly scanning the ground with his eyes. «Well, it must be difficult to navigate today, with all the clouds blocking the view from the air», the lady next to me says. Oh, so they are actually dependent on having a clear view of the landscape beneath in order to navigate, I think. My neighbour seems calm, but I feel that I am getting scared.

After many stopovers along the coast, we finally land at the Oslo seaplane terminal, Gressholmen. The years go past. The date marker has now reached July 1934, and the DNL is about to cease to exist. I travel to Ingierstrand to look at aircraft. A long, lean man by the name of Viggo Widerøe comes over and asks if I might be interested in a flight. Widerøe is the director of a new company which has its summer base here at Ingierstrand. Just a few days ago, his company opened a new seaplane route to Haugesund. I certainly want to go, but I don't have any money, so, regrettably, I have to decline Mr Widerøe's offer.

At Ingierstrand I meet a group of young people who have come there to swim. «We have been unemployed for a while», one of them tells me, «and none of us can afford to fly. But we dream about it, naturally». «I have just read Syndere i sommersol ("Sinners in the Summer Sun") by Sigurd Hoel», one of the girls interjects. «It really is a strange and captivating novel», she says, «and it has made a strong and lasting impression on me and many of my friends. We, the young people of today, dream of more freedom in life, the freedom to travel the world and experience exciting things. In a few years' time, however, I too will probably be stuck in the kitchen with a bunch of kids pulling my skirt».

I remain a few years in Oslo. On a cold January morning in 1930 I run into a young woman on Oslo's main street, Karl Johan. She introduces herself as Gidsken Jakobsen and is – well, believe it or not – a pilot! She is a tiny woman and looks remarkably young – maybe only twenty? She makes a few heads turn as she walks down the street, some gazes obviously lustful. They have probably never seen a woman quite like her in their lives. «Would you like to come for a flight?», Gidsken asks me. «I have my own aircraft, and it will only cost you a few kroner». I decline, maybe a bit too quickly, because her airplane looks like it is very fragile. In fact, I have started to suffer from an inordinate fear of flying. This is a problem that has been on the increase over the past few years. The newspapers publish a lot of frightening stories about plane crashes these days.

For this reason, I stay longer in Oslo than I first intended. In the 1920s, there is practically no civil aviation in Norway. I can see some military aircraft in the air, but



none willing to take me on board as a passenger. Maybe it is just as well, since pilots fly in open cockpits. It must be freezing!

One day in October 1910 I follow a crowd of thousands to Etterstad in Oslo, or Kristiania, as the city is called now. At Etterstad I witness something quite amazing; a Swede in thick leather clothing taking off in a machine called «a flying

During Cederström's air display at Etterstad in 1910, I start talking to an older gentleman. «Cederström is the first person to operate an aircraft in Norway, but other people were flying in this country before him», he tells me. «Actually, air travel in Norway first took place in 1870, when the French gentlemen Paul Rolier and Léon Bézier drifted off course, in a balloon over Paris, and crash landed on Lifjell mountain, after first scaring half the population of Telemark County to death. This is the landing on Lifjell», the man says and hands me this drawing. «There were other early pioneers in aviation», he continues. «Francisco Cetti, a jack-of-all-trades from Bergen, flew in a balloon in 1890. In the year of Norwegian liberation, 1905, the Norwegian Army used a balloon to spot Swedish army positions, and in 1910, Norsk Luftseiladsforening (the Norwegian Aviation Society) purchased a balloon and made many flights with it».

engine». It is the very first time a person flies in Norway. People are ecstatic, but I would never have dared fly with the man.

Cederström tells us how the French master pilot Louis Blériot, the man who flew across the English Channel in 1909, taught him how to fly an aircraft. «Originally, the new art of flying came from the United States», Cederström tells his audience. There, two brothers, Orville and Wilbur Wright, managed to fly for about twelve seconds in a plane they called the «Flyer». This happened in 1903, in a sand dune at Kitty Hawk, North Carolina.

It is evening, and I settle down for the night. The year is 1905. Tomorrow a new day awaits, and soon Norway will end the union with Sweden. What will the future bring? Some talk about balloons, airships and airplanes, but most people doubt that these flying things will ever be of any importance in Norway. I would naturally love to return quickly to my home in Bodø. Just now, however, northern Norway is far, far away.

Maybe I will catch the coastal steamer north to Bodø when I have the money for it. The steamer only takes a few days from Bergen. Right now, I'm so exhausted after my long journey that I just want some sleep. In a hundred years everything will be forgotten anyway, don't you think?

Enjoy yourselves now, up there in Bodø!

Airplanes are fun!
This picture is taken at Værnes, Trondheim, in 1958.

The Beginnings

1905–1940

Olav Gynnild, Curator, Norsk Luftfartsmuseum

In 1905 the union with Sweden ended and Norway became an independent nation. Five years later, the first aircraft came to Norway. In the decades that followed, aviation and nation building blended into each other. Norway was a poor nation of peasant farms with a wild landscape. It was dark and cold, and many people were doubtful about the new flying machines that whooshed past over their heads. Therefore, aviation had a difficult birth in Norway. Conquering the air became a dramatic event.

The first Norwegian aircraft, the «Start», in the air above Hvaler. The picture was taken on 7 June 1912.

To the sky with Swedish help

It is five years since Norway ended the union with Sweden and became an independent nation, one year since Louis Blériot as the first person in the world flew across the English Channel, and only seven years since the Wright brothers inaugurated the history of modern flight with their «Flyer» in a sand dune at Kitty Hawk in the United States.

The calendar reads 14th October 1910. Thirty thousand people have gathered at Etterstadsletta in Norway's capital, Kristiania. They have arrived to witness the Swedish baron Carl Cederström's air display in his Blériot monoplane, «Bil-bol». The atmosphere is electric. For the very first time, someone will fly a plane in the air in Norway.

«Bil-bol» is pulled out of the makeshift hangar and positioned for take-off. The aircraft is the strangest contraption the spectators have ever seen. The wings and wheels are made of canvas, and there's a small opening in the fuselage for the pilot. A confusing mess of wires keeps the machine together. Cederström is standing next to the hangar, talking to his wife, who is sitting on a lounge chair, sipping her seltzer water. People crane their necks to catch a glimpse of the pair. Everybody who is present on this day senses that something extraordinary and simply unbelievably exciting is about to happen.

Look, over there. Now Cederström is walking towards his aircraft. He wears an elegant, tightly fitting leather suit. In two, three agile jumps, he enters the opening in the aircraft fuselage. «Oh gosh, what a handsome gentleman», a young lady on the first row sighs, nudging the woman next to her. Then a man they call the mechanic starts to turn the propeller. An older gentleman looks worriedly at the sky. But it is not thunder; it is just the engine starting. The noise is infernal.

Carl Cederström posing in front of the «Bil-bol» at Etterstad. Cederström was 43 years old the first time he flew in Norway. He had previously made a living as a cowboy, a musician, a magician, a farmer and a car salesman. Cederström was killed during a flight from Sweden to Finland in 1918.

Three athletic-looking men have grabbed hold of the aircraft, holding it back. «Bil-bol»shakes and rages like a wild bull trying to break loose. Cederström gives a sign, and the men let go of the aircraft. The small plane jumps across the grass tussocks while the baron clings to the open cockpit. Suddenly, as if by magic, he forces the machine from the ground and into the air.

«Bil-bol» rapidly grows smaller against the tranquil autumn sky, which suddenly appears like the staggering depth of the ocean to the spectators. The certainty that Cederström is gliding around up there gives people goose bumps. What a daredevil!

Cederström circles Etterstad a few times, and then makes a detour over the city and Hovedøya before returning and waving to

the crowd. For as many as twenty three minutes, he stays afloat above the heads of the spell-bound observers before elegantly touching down on the ground again.

* * *

The air display continued for several days. The spectators sang «Cederström, o Cederström», and the atmosphere was excellent until, one afternoon, the baron's aircraft veered to the side during take-off and ploughed into the row of onlookers. People, fearing a blood-bath, rushed over to help. The aerofoil of one of the wings, which was partially wrecked, hung from the coachman's seat of a horse cab, towering over the harnessed animal. The horse, strangely enough, seemed unperturbed by the events. «Bil-bol», however, was completely destroyed, reduced to a tangled mass of splintered wood and steel wires.

The baron crawled out of the wrecked aircraft. He seemed to have escaped the accident with surprising luck. But sitting on a chair nearby was «a pale lady. Her garments are torn and she appears to be in agony», a newspaper at the scene reported. Another lady had received a blow to the head and had fainted, allegedly mainly from fear, and an older gentleman had been trampled by a crowd fleeing the accident. Another gentleman had lost his hat and cane and ended up with a few scratches and bruises in the face.

Thus ended the first flights with a flying machine in Norway. The accident was distressing, but those who wanted to fly had to be willing to pay the price. The baron himself took the accident in his stride. «Now, at least, my wife will be pleased, since I cannot take to the air for a while».

The Norwegian «Start»

In the aftermath, not all Norwegians were pleased about Cederström's aerial acrobatics. Five years after the dissolution of the union with Sweden, some would rather have liked a Norwegian to have brought the new art of flying to the young nation. The time when all great events in Norway had been an implicit part of the neighbouring nation's history, had now come to an end.

However, financial backing was required for flying. In the sparsely populated mountainous nation, there was little in terms of riches. «Norway is a poor nation», Prime Minister Gunnar Knudsen stated in 1909. Estimates have revealed that Norway was second only to Finland as the poorest of 13 European countries in 1913.

In 1911, baron Cederström appears back on the scene in Norway. In Trondheim, the baron demonstrates aerial bombardment over the Kristiansten fortress by dropping six lemons from his airplane. Afterwards, several officers take offence to the fact that a Swede has taken the liberty of bombing a Norwegian fortress with airborne fruit. Nevertheless, a full year will pass until a group of Norwegian officers has collected sufficient funds to purchase the first Norwegian aircraft.

Incongruently, it is the officers of Norway's first submarine, «Kobben», who take the initiative for the purchase. In an appeal printed in Norwegian newspapers in April 1912, the officers state that «the Norwegian endeavours in the new field of flying have for too long been restricted to plans

The «Start» photographed at Øra near Fredrikstad on 7 June 1912.

and hopeful expectations. It is now high time for us to start flying». The second in command of the submarine, Hans Fleischer Dons, is ordered to go to Germany to learn the intricacies of flying, as well as to buy a flying machine.

Dons acts quickly. In Berlin, he goes for the very first aircraft he comes across, a Rumpler Taube monoplane. The capacity at the Johannisthal School of Aviation turns out to be more than full, so staying for the full flight certificate is out of the question. On 31 May, Dons is back in Horten. Having had as little as three solo flights, and with no flight certificate, Dons was ready to fly. «The situation seemed both tragic and comical to me», Dons relates. «Imagine if the very first start or flight went wrong. The committee as well as the pilot would be branded as tricksters and charlatans».

On 1 June, Dons takes off from the Gannestad field in Horten and flies to Fredrikstad in the flimsy airplane, now named «Start». The take-off was perfect, Dons later said. «A number of navy vessels were moored at the naval base. The surprise and cheering from the ships was great. Above the middle of the fjord, «Start» entered some low clouds. The altitude was estimated at approximately 600 metres, so I was flying blind. I then took the aircraft down to a lower altitude and soon spotted Jeløya Island and Moss». From here, Dons followed the railroad tracks towards Fredrikstad and landed safely at Øra, 35 minutes after taking off from Horten.

Norway was finally in the air. Swedish congratulations arrived promptly: «Dashed good show!»

Something for Norway's defence?

This was a welcome triumph for the newly reborn nation. The Swedes had been put in their proper place. After his landing, Dons received salutations from the Government: «Heartfelt congratulations on the first Norwegian flight achievement – offering great promise for the defence of the nation».

The congratulations were pleasing, but would the politicians grant sufficient funding for the Ministry of Defence to build an air force? Until this point in time, the outlook had been rather bleak. As early as 1909 Mr Lowzow, the Secretary of Defence at that time, had put forward a royal proposition to have officers sent abroad to study aviation. «When Mr Lowzow defended his proposition in Stortinget [the Norwegian Parliament], his speech was received with condescending smiles and was voted down by a large majority of the votes», Einar Sem-Jacobsen, one of the pioneers in Norwegian aviation, writes.

For this reason, and to «speed up the work in favour of aviation», Einar Sem-Jacobsen and nine other gentlemen took the initiative to form a voluntary society to further work to promote the case. Norsk Luftseiladsforening (the Norwegian Aviation Society) was established on 5 May 1909. The aim and purpose of the Society, as they put it, was «to work for the development of aviation in the service of science, defence, technology, and sport».

In May 1912, almost at the same time as the endeavours by the «Kobben» officers, the Aviation Society launched a «nation-wide fund-raising campaign for an air fleet». The campaign was quite successful, and on 12 June the Norwegian Parliament granted eighteen thousand kroner for a pilot training programme. Lieutenant Einar Sem-Jacobsen promptly left for France in order to obtain pilot training and to purchase aircraft with the money from the fund-raising campaign.

Einar Sem-Jacobsen in full pilot uniform. On 25 September 1912 he set a new Scandinavian distance and altitude record after flying 170 kilometres at up to 1620 metres. Sem-Jacobsen was one of the pioneers when Norway took to the air, and was employed as general manager of the Kjeller aircraft factory from 1916 to 1922.

Roald Amundsen testing the so-called man-lifting kite in 1909. Perhaps the kite could be used for reconnaissance in the Polar Regions? In order to find out, Amundsen started trials in Horten. The results indicated that the kite was capable of lifting a person several hundreds of metres into the air. Then one day, lightning struck the steel wire of the kite. One of Amundsen's men was killed, and the trials were ended.

Conditions at the school of aviation «could at times look somewhat messy», Sem-Jacobsen recounts. «In the first week, three Turks were killed». Choosing the right aircraft was not easy either. «The monoplanes, in particular the Blériot and Deperdussin aircraft, were highly popular. Most of the great feats of aviation had been performed with these airplanes. On the other hand, no other aircraft had claimed the lives of so many bold and fearless pilots». Sem-Jacobsen took a special fancy to the Maurice Farman biplane. In August, two such airplanes, the «Njaal» and the «Ganger Rolf» arrived in Norway.

* * *

And that is how Norway got on its wings. Through two rapid fund-raising campaigns in the spring of 1912, the nation got its three first aircraft. The popular resolve to donate money was admirable. Nonetheless, it remained obvious that the endeavour to build a Norwegian air force could not be based on voluntary effort if the result was to last. After the excitement of the initial Norwegian flights had passed, the future of flying was once again in the hands of the young nation's politicians.

We are one of the «innocent little powers», Gunnar Knudsen said in 1905. This was an interpretation with which most of Norway's politicians could agree. Norway was a nation far to the north, with aggressive intentions towards no other nation and without any apparent enemies. Such a country clearly did not need to allocate much for the defence budget.

When World War I broke out, Norway decided to remain neutral. During the years of the Great War, the nation increased its armament and defence, but during the 1920s and 1930s changing governments cut the defence budget back to the bone. While most European nations armed during the years prior to the World War II, Norway settled on remaining a military «little power». The politicians believed that neutrality would keep the nation out of the potential conflict arising from a threatening situation.

Besides, money for bombs and gunpowder to face a future enemy had to be weighed against the daily demands for balancing the national budget and helping the unemployed and those in need. That left little funding for the Ministry of Defence.

The Army and Navy Flying Corps

With very limited means, not one but two air forces were established in Norway. The aircraft that had been purchased through the Aviation Society fund-raising campaigns, formed the beginning of the Army Flying Corps, whereas the «Start» had floats added and became the first aircraft of the Navy Flying Corps.

It was usual for most nations to have separate and specialised air forces for the army and navy. Airplanes were looked upon simply as an aid to the individual defence branches, while the possibility for independent flight operations was considered to be far more uncertain. It was not until World War II, in Great Britain, that the two air force branches were joined as the Royal Norwegian Air Force.

As soon as the «Njaal» and the «Ganger Rolf» arrived in Norway in

(Over)
The first Army aircraft type, the Farman Longhorn, approx. 1912. The propeller was placed at the back, pushing the airplane forward.

(Left)
Scene from the interior of the Kjeller aircraft factory around 1920, as recreated in the Aviation Museum exhibition. The factory employed engineers, carpenters, canvas workers, mechanics and seamstresses.

August 1912, the Norwegian Army started to look for a suitable airfield. During a bicycle ride in the vicinity of the capital, the two officers Thaulow and Sejersted discovered a field near the farm Kjeller. The field became the start of the Kjeller «flying establishment», the main base of the Army Flying Corps.

The base originally consisted of a small shed and 10 acres of rented land. The airstrip was one hundred metres long and perhaps forty metres wide. No tarmac was added, nor was the airstrip properly prepared. In reality, the airstrip was just a close-cropped, uneven field.

In the next ten years, from 1912 to 1922, the base expanded to about 175 acres of purchased land. Eighty buildings were erected and several kilometres of roads constructed. Large portions of the airfield were levelled and drained. The aviation school opened in 1914. Two years later, the aircraft factory was ready for production. Until that time, aircraft had been constructed in several locations around Kristiania, and then put together at Kjeller. All in all, more than two hundred aircraft were built at Kjeller during the years 1912 to 1940. Some aircraft were based on the factory's own designs and some were manufactured, under licence, from foreign blueprints. This latter group of aircraft included plane types such as the Moth and the Fokker. The quality of the Norwegian-built aircraft was highly variable. The training plane Kaje, built in 1921, was well-constructed, whereas the fighter plane T2 shook and trembled so violent in the air that nobody dared fly it!

From 1918, the Army Flying Corps was organised in three regions – the Sønnenfjelske, based at Kjeller airport, the Nordenfjelske at Værnes airport near Trondheim and the Northern Norway flight region at Elvenes in Salangen. Hålogaland flight region was established at Bardufoss in 1939.

The organisation of the Navy Flying Corps followed a similar pattern to that of the Army Flying Corps. The main base was located at Møringen at Karljohansvern in Horten, where the Navy had an existing base. Here too, an aircraft factory and a pilot training school were started, both in 1915. At the Navy aircraft factory, well over one hundred aircraft were built in the period 1915 to 1940. The majority of the aircraft were based on the factory's own designs. In addition to Karljohansvern, the first seaplane bases were Kongens Verft in Kristiansand (1918) and Flatøya near Bergen (1919). Skattøra seaplane base in Tromsø opened shortly before 1940.

From the outset, land-based as well as sea-based aircraft had been used for both reconnaissance and training. At the outset of World War II, however, other areas of application became evident. In 1915 the Navy designed a new type of plane, the MF.2, capable of carrying two fifty kilo mine bombs and equipped with a radio transmitter and a machinegun in the front seat. In the years between the world wars, there was agreement that reconnaissance aircraft, training aircraft and fighter planes were required. There was, however, little agreement as to the importance of bomber aircraft. Many people considered the bombers to be attack weapons, and therefore unsuitable for a neutral nation like Norway.

An emergency landing always led to much attention. Scene from Soknedal in Sør-Trøndelag, 1919.

Small budgets led to troublesome situations. In the interwar period, the Army and Navy struggled with old, run-down aircraft of highly variable quality. All those in favour of a strong Norwegian defence realised the problem this represented. For the pilots spending every day in these aircraft, the situation was hardly much better.

Lives at stake

«One day, the message from the Flying Corps arrived to let me know that my application had been granted. Was I happy? I certainly was. Indeed I was, yet I was scared. Is it a sign of bravery to perform feats one is scared stiff of doing? I was terribly scared when reporting for duty».

These are the words of Tancred Ibsen, grandson of two of Norway's most famous authors, Bjørnstjerne Bjørnson and Henrik Ibsen, describing his reaction when the message arrived that he had been accepted as a student at the aviation school at Kjeller in 1917. Happy, yes, but also scared to death.

The initial impression of Kjeller was not one to calm Mr Ibsen's nerves: «Kjeller air field was an air field parody, and the Army Flying Corps had been more

neglected than the coastal artillery, at least insofar as I was able to determine». After 37 minutes of flying with an instructor, Mr Ibsen had to fly solo. On board the plane he had five instruments available: the fuel and oil pressure gauges, the tachometer, the altimeter and the speedometer. The aircraft, a Farman, resembled a bathtub with wings and wheels. Ibsen was placed in the open tub, «usually bareheaded and not wearing glasses».

The solo flight was a tremendous success. «It really wasn't any more difficult to fly than to drive a car; well, even easier in so far as there were no pedestrians, roadside guard stones, road blocks or road signs to take into account», Ibsen wrote.

Nevertheless, accidents happened. Quite a lot, too. 52 of the first 100 Army airplanes crashed or were otherwise involved in accidents. The equivalent figure for the Navy was 46. Surprisingly often, pilots escaped with their lives. Compared with today's blindingly fast monsters, the speed was low and the cruising altitude close to the ground. Gliding, an airplane was capable of landing on a field or in a lake. Pilots were in fact much in debt to Norwegian farmers, who, over the years, had put their fields and land at their disposal every time an airplane fell from the sky.

On 1 May 1917 came the day that will remain a sad day of remembrance in the history of Norwegian aviation. Lieutenant Arne Køltzow took off from Kjeller in a Farman aircraft. He was making an attempt to set a new Scandinavian altitude record. The magic height was four thousand metres – four thousand mind-boggling metres above the Earth's surface. In a bathtub.

The spectators, mainly Køltzow's pilot colleagues, watched the aircraft rise gently and slowly towards the sky. Two thousand metres up, or possibly higher, the aircraft disappeared into the clouds. The crowd stood still for a while, listening to the faint roar of the engine.

Then something happens. The plane emerges from the clouds in a spin. The onlookers feel the blood of their veins turn to ice. They realise that this can go terribly wrong.

On 30 July 1914, Tryggve Gran was the first to fly across the North Sea, from Scotland to Revtangen in Norway. The aircraft and engines of the day made the crossing of open stretches of ocean extremely risky. Gran, however, made it in one piece. The picture was taken at Revtangen, after the landing.

The aircraft speeds towards the ground. A few hundred metres from the ground it looks as though Køltzow is trying to level off. But then a loud bang is heard, and one of the onlookers shouts: «The aircraft broke up!». «That means certain death!», adds another. Something is thrown from the plane. It is Køltzow. His body was later found at Brøter farmstead, a few hundred metres from the wreckage of the plane.

Arne Køltzow was the first pilot to perish in Norway. The news of the accident led to strong reactions, not least since the public knew that Køltzow had strongly criticised the Norwegian Defence Ministry for not being sufficiently concerned with aviation security, demanding that something be done to improve conditions. In 1916 he even wrote a letter to the Ministry of Defence, requesting that he be «relieved of his responsibility for military aviation» if nothing was done. The Army's aircraft were far too poor, he claimed.

The criticism didn't lead to much, least of all for Køltzow. With full military honours and a large crowd of people, Køltzow was buried at Vår Frelsers Gravlund (Our Saviours Cemetery). Even though aviation safety improved during the 1920s and 1930s, military aviation still remained a risky business. The nation wanted to cut budgets, and that cost lives. Who could blame pilots for being scared?

Civil aviation facing a headwind

For a long period, Norwegian aviation was tantamount to military aviation. Civil aviation of any size did not exist until the mid 1930s.

Measured against the rapid development and construction of communications generally taking place in Norway, the lack of civil aviation is remarkable. From the 1880s, the telephone came into use, which was quite early compared with most other European nations. In 1893 Hurtigruten (the coastal steamer) opened a shipping route between Trondheim and Tromsø, reducing travel time from seven to two days. A revolution indeed.

From the early years of the twentieth century, railway construction accelerated. Whereas the trip from Kristiania to Bergen took at least 2 ½ days in 1900, The Bergensbanen (the Bergen Railway) which was inaugurated in 1909, reduced travel time to twelve hours. In 1921, Dovrebanen (the Dovre Railway) made railroad traffic possible between the capital and Trondheim. The «automobile» also became a more regular sight on the road. In 1920 there were approximately fourteen thousand registered cars in Norway. The traffic increased markedly. From 1910 to 1935, all forms of transportation were at least doubled, some even tripled or quadrupled.

The development and construction of communications remained in line with the ambitions which the leaders of industry and science advocated. Even though Norway is «a poor nation, our descendants will most certainly inherit a rich nation, and this prosperity will come from scientific and technological development», Prime Minister Gunnar Knudsen claimed in 1909.

Dagny Berger, Norway's first female pilot. In 1927 Berger received her pilot's certificate from the De Havilland pilot training school in Middlesex. She attempted to establish her own little airline company, but received little support. Deeply disappointed, she gave up flying completely and found employment as a governess. Dagny Berger died in a drowning accident at Bygdøy, Oslo, in 1950.

Knudsen and the people who shared his view had a vision that the whole nation would be charted and developed with the aid of science and technology. Improved communications would greatly benefit trade and transport, they believed. The Aviation Society's work to promote Norwegian aviation sprang from the same fundamental idea.

As World War I came to an end, an air route network started to take shape in Europe. Plans for national airline companies were well under way, and airports were constructed. Under the influence of the developments in Europe, several airline companies were formed in Norway, and in 1920, attempts were made to start scheduled flights. The experiments were not successful and did not have any lasting impact. Flight times varied enormously and cancellations were abundant. In addition, passengers stayed away. The air route between Bergen and Stavanger, for instance, had two hundred departures, but only 64 passengers.

Coming face-to-face with some of the rattletraps of the day, most Norwegians preferred to stick to the safety of the ground and the sea when travelling. Reassurance that «the aeroplanes are the best and safest in existence», and the claim that the aircraft were «fitted with as many parachutes as there is room for passengers», did not sway opinion. The Swedish pilot Gustav von Segebaden crashing at Bygdøy in Oslo one Sunday in March 1921, in front of twenty-five thousand spectators, did not improve the situation.

Norwegian civil aviation entered a kind of suspended animation after this. In 1921 the Ministry of Defence, under whose authority civilian aviation was placed at the time, proposed to stop financing civil aviation. Two years later there was, according to the Ministry, «no civil aviation» whatsoever.

In 1927, Norway was the only nation in Europe not to have its own air routes. The neighbouring nations Denmark, Sweden, Finland, Germany, Holland and Great Britain were all in the process of building up their national airline companies and the construction of land-based airports was well on its way.

A nation thinking differently

«It is long, this nation. Most of it is north», the poet Rolf Jakobsen writes in one of his poems. Jakobsen touches upon an important point. The conditions for flying in Norway were different from the rest of Europe.

The wild landscape, the great distances and the cold, dark climate represented a formidable challenge. The aircraft were still small and had on average a sparse selection of instruments. Scheduled flights remained possibly only during the short summer season, making it very tricky to make money in aviation. At the start of the 1930s, there was not a single civilian airport on land in Norway. The sea served as airfield – as long as the weather was good and waves were small.

Many Norwegians were highly sceptical of all the new-fashioned fads coming from abroad. In the years 1905 to 1935, peasant society was receding, but still far from gone. The conflict between those who wanted to build further on the pillars of peasant society, and the supporters of the new industrialised society, was open, deep and unresolved, marking the nation through the whole period.

In the peasant society, the desire to hold on to the old ways remained strong. Whereas many people saw the need for having roads built to reach remote villages, fewer could see the need for air routes. That airplanes could become a «future means of transport for people and goods, I will never be able to get into my head», said one Member of Parliament in 1927.

So even though new forms of communication greatly simplified travelling, local meeting places such as the town square and the hamlet were the centres of life for Norwegians throughout the whole interwar period. Most people rarely travelled. The novelist Knut Hamsun made an attack on the lack of roots and the anxiety he claimed to see as the result of the new technology and the economy based on money. To Hamsun, the vagabond, the traveller, is a negative character, a threat to the values of peasant society. August is such a rootless character: «Never mother and father, never a table around which to gather his own, never a grave to tend, never the godly voice of the native land through the mind. A machine constructed for externality, for industry and trade and mechanics and money. A life, but not a soul».

The interwar period consisted of a series of economic crises. City people, too, could sense that something valuable was about to be lost. The crises forced people from their farms and their land, hit the trade and industry, and caused high unemployment for years. The working class became a political force in this period.

Opposition to modernity mixed with prevailing values emphasising the importance of prudent living. As little money as possible should be spent. The politicians feared that

facilities and the administration of air routes would cost more than necessary.

Nevertheless, towards the end of the 1920s the «flying business» received renewed attention. Newspapers, magazines – and most importantly, moving pictures – contributed to a whetted appetite for aviation. In 1927, the news came that Charles Lindbergh had crossed the Atlantic Ocean on a solo flight. A barrier had been broken. Nothing seemed impossible any more. Eager Norwegian pilots regained their belief that civil aviation was something Norway needed, and supported the cause with new energy. In 1930 the Aviation Society and the newly started Norsk Aero Klubb (Norwegian Aero Club) merged to a common mouthpiece for aviation – the Norwegian Aero Club.

The first Norwegian «principal airport» started as a seaplane terminal in 1927 at Gressholmen in the innermost part of the Oslofjord. The airport, largely constructed through the "work for the needy" programme using unemployed people, provided for the need of a «flying boat terminal» in the capital, something the Ministry of Defence had emphasised for years.

In the summer 1928, the Deutsche Luft Hansa A.G. opened a trial air route between Oslo and Travemünde, using Norske Luftruter A/S as the Norwegian agent.

The flying season lasted from June to August. From 1933, the length of the season increased to five months, from May to September. In 1929 the company Halle & Peterson was granted a licence to run a trial postal route between Oslo and Malmö. From 1930, the postal route was expanded to comprise Oslo–Göteborg–Malmö–København.

Things were moving, although not all the new developments were equally easy to comprehend.

Going dutch to the North Pole

Norwegian aviation history before World War II is the story of how flying, against all odds, went from nothing to something. It is also the story about the rebirth of the nation, about Norway, a major power in

Allers Family Journal had its own «flight club» for children and young people. The magazine went all around Norway in a rented aircraft, advertising the wonderful world of aviation. This is an Allers airplane surrounded by interested onlookers in the middle of the 1930s. The picture is taken at Fagernes, and the aircraft is an Avro Avian.

the conquering of the planet's ice-covered extremes.

As early as the «Fedrelandssang» (national anthem), which Bjørnstjerne Bjørnson wrote in 1859, Norway was given a polar identity. «There lies a land toward the eternal snow», one of the verses goes. Skiing and winter leisure activities swelled to a popular movement in the decades before and after the dissolution of the union with Sweden. Skis contributed towards a Norwegian identity – a common denominator, something to be proud of. Norway was the winter country. Norwegian skiers added to the international renown of the nation, and in 1911 Amundsen and his companions conquered the South Pole.

Roald Amundsen realised early on that the air might be just as appropriate an element as the ice, the snow and the sea for those who desired to explore the Polar Regions. To fly, however, he needed to procure the necessary funding. Amundsen went begging abroad.

In 1924, the American Lincoln Ellsworth got in touch with Amundsen and offered him the money to purchase an aircraft. Amundsen accepted the offer. The final, great wish of the adventurer was to explore the still unknown region situated between the North Pole and Alaska. Amundsen hoped to find new land there. Naturally, it would be a feather in his cap if Amundsen became at the same time the first to fly across the North Pole. The North Pole was considered to have been conquered travelling across the ice already, by one or other of the two American rivals Robert Peary and Frederic Cook – their contemporaries were unable to settle on which one they believed in the most – who had both made a claim to the Pole after their individual dog-sleigh expeditions in 1909.

Roald Amundsen on board one of the flying boats before departure for the North Pole from Spitzbergen in 1925.

Amundsen was in a hurry. Airborne expeditions from several nations were on the verge of taking off. With the help of Ellsworth, he bought two Dornier-Wal flying boats in Italy, the N 24 and the N 25, which he then had shipped to Spitzbergen (Svalbard). On 21 May the aircraft with Amundsen and five companions took off, and the course was set towards the North Pole. After eight hours in the air, one of the engines of the N 25 started to cough and sputter. The crew decided to land on the ice. The landing went well, circumstances considered, and all the men were in good shape. Observations indicated that they had landed at 87° 43' north. The N 24 which had landed in a hole in the ice was unsalvageable, but the N 25 seemed reasonably intact.

In order to be able to fly again, they had to make a runway on the ice. This was a terribly hard job, since the ice was very uneven and hard as rock. Wielding

picks, shovels and knives they managed to fashion a short airstrip in 26 days. The crew was then able to get the N 25 into the air, and to return to Spitzbergen. The whole world took a deep breath of relief. The air expedition was not considered an absolute success, but the escape from the ice was indeed a miracle.

The next year, in 1926, Amundsen returned to Spitzbergen with an airship called «Norge». Together with a crew consisting of the Italian Umberto Nobile who constructed the airship, the American Ellsworth, five Italians and one Swede, Amundsen was determined to fly across the North Pole and explore the ocean towards Alaska.

Before the expedition gets into the air, however, the American Richard E. Byrd appears in Spitzbergen. In a three-engine Fokker airplane, the «Josephine Ford», he flies, according to his own testimony, to the North Pole, right in the face of Amundsen. Afterwards, Amundsen is the very first person to congratulate Byrd. Some even claim to have seen a tear of joy in the corner of Amundsen's eye. But that might have been their imagination.

On 12 May the «Norge» expedition reaches the North Pole. In turn, the Norwegian flag then the American flag and finally the Italian flag, are dropped to the ice below. «The Norwegian flag floated beautifully», Amundsen writes in his diary. After a short stop, the journey continues onwards across the Polar Sea, the real goal of the journey. Amundsen is on the lookout for land, but sees nothing but the sea. A great disappointment. Once the airship lands in Alaska, the relationship between Nobile and Amundsen develops into bitter hostility. The two explorers cannot agree who should take the honour for accomplishing the journey.

The «Norge» expedition was based on Italian technology and Italian, American and Norwegian funding. This journey by air has passed into history as Nobile's great triumph. Nobile had after all constructed the airship, and Nobile was the one who manoeuvred the ship across the ice-covered expanse. Amundsen's mission was to discover new land. But when the journey uncovered nothing but ocean, Amundsen turned his frustration against Nobile.

The «Norge» expedition became a model for Norwegian pilots eager for fame and fortune. It had become pretty evident that the money and technology required for great accomplishments in the air still could not be found in Norway. Bernt Balchen, who followed Amundsen on his 1926 Spitzbergen journey, went with Byrd to the United States to become Byrd's pilot on the first flight to the South Pole. Another pilot, Thor Solberg, wanted to fly across the Atlantic Ocean. «Go to America and fly from there», was Amundsen's advice. «There you will find visionary people. (…) Back here in Norway, people will only laugh at you». Solberg followed Amundsen's advice. In the summer of 1935, he flew from New York to Bergen, a feat for which Solberg was honoured with the Knight Cross of St. Olav.

But what of Amundsen? Recent research suggests that neither Peary, Cook nor Byrd reached the North Pole. If we accept this information, the «Norge» expedition is the first expedition we know with certainty to have reached the North Pole. On the same grounds Amundsen may be credited with

Bernt Balchen approx. 1925. Balchen and Richard E. Byrd flew across the Atlantic in 1927 – only a few days after Charles Lindbergh. Balchen was Byrd's pilot on his flight to the South Pole in 1929. From 1935 to 1940, Balchen was operation manager in Det Norske Luftfartselskap. Later, Balchen became a colonel in the United States Air Force, and contributed greatly to the allied air forces during World War II.

conquering the North Pole, fifteen years after having conquered the South.

«Well done, Miss Gidsken!»

In the summer 1928, Umberto Nobile crashed with an airship in the arctic. Roald Amundsen perished in an airborne attempt to rescue Nobile. Nevertheless, the dramatic events did not deter a twenty years old secretary from Narvik. Influenced by the events that summer, Gidsken Jakobsen decided to become a pilot.

Although she was small and slender like a «10 year old boy», as one newspaper described her, Gidsken started looking for a pilot training school. The training facilities at Kjeller and Horten refused to accept her; only men were allowed there. In the winter 1929, Gidsken travelled to the Aero-Materiel Flygskola outside Stockholm. She was the only woman among the 18 pilot students. After about two months, Gidsken received her private pilot's certificate, emerging as the best student of the class. Norway had only one female pilot, Dagny Berger, but she had already retired from flying.

In August 1929, Gidsken purchased an open, two-seater seaplane in Helsinki. The aircraft was baptised «Måsen» (the Seagull) and flown back to Narvik. On 18 December, in the middle of the dark winter, Gidsken and a Finnish pilot friend by the name of Ville Leppänen took off on a long-haul flight to Oslo. The purpose, according to Gidsken, was to have the aircraft registered.

Wearing tightly fitting pants, thick leather boots and a warm sweater, Gidsken and

Gidsken Jakobsen and her aircraft, the «Måsen», photographed in Trondheim in 1930.

her Finnish friend speed southwards along the coast: Bodø, Helgeland, Steinkjer, Trondheim and then on to Stryn and Lærdal. From Lærdal they pass Filefjell, continue south to Valdres and then reach Oslo. Everywhere they are met by crowds of eager spectators. Twenty years after Cederström's air acrobatics in the capital, there are still many Norwegians who have never seen an aircraft. In several places, the two pilots perform air displays. Loops and «corkscrews» shock the onlookers. Schools close for the pupils to watch the spectacle, and in Stryn, the Sunday church service has to be postponed.

The airplane was fragile, «a wreck», Gidsken said. The floats were far from water-tight, something which caused difficulties at take-off and when the plane was ascending. Strong wind made the plane's joints creak and groan. A door blew out. Above the Filefjell Mountain, the wind took control of the aircraft, and they were only 20–30 metres away from crashing into the mountain side.

On 21 January 1930, Gidsken Jakobsen and Ville Leppänen landed in the capital. The journey had lasted for 34 days, but only 15 hours were spent in the air. Some found this an entertaining fact. But Norway is a very long country from the north to the south, and the weather had been rough. Two records had been set on the way: Nobody had ever crossed Filefjell Mountain, and nobody had ever flown the length of the country in winter. Historically speaking, northern Norway had been the most remote and isolated part of the kingdom. Through Gidsken's pioneering journey, the desire towards national unity and a national identity had taken a big step forward. «Well done, Miss Gidsken!», one newspaper wrote.

Quite possibly, Gidsken had a talent for dramatisation of which her contemporaries were unaware. In Stryn, she sent her flight suit to Oslo by mail. Thus she decreased the total weight of the aircraft, enabling it to increase the range. At the same time, she lent weight to the idea that the flight had been a cold winter expedition. Now that she had become «so used to being cold», she said afterwards, she no longer «suffered any ill effects». In this manner, Gidsken tried to enter the long line of Norwegian gentlemen who had frozen their way to honour and glory on wintery expeditions.

Through stirring comments in the newspapers, Gidsken encouraged wealthy people to support her financially. Her father, a big shot by Norwegian standards, did not have the means required to keep an aviation enterprise running. Just like Roald Amundsen, Gidsken was forced to go begging for support in the poor peasant nation. The winter flight was both a sporting feat and an advertising stunt, intended to raise money. Fame and fortune were added bonuses.

How did the public react?

Gidsken is an «eccentric lady who desires to be someone out of the ordinary», furious workers in Narvik wrote when it became known that her father, the capitalist and timber merchant, planned to finance her costly pilots training. «The money that will now be wasted in Stockholm is the money that Mr Jakobsen in a sense has leeched from his co-workers». That was the class struggle.

When Gidsken came to the capital, however, the image had been turned upside-down. «I felt like a poor Lapp from Nordland; it seemed that we amounted to nothing. There was a fantastic difference between Oslo and Nordland». Northern Norway in the 1930s was still an isolated part of the kingdom. The development of the nation had not progressed further.

There were naturally people everywhere who reacted to a young woman becoming a pilot. Young misses should preferably get married and have children. That was simply to be expected. When Gidsken's childhood sweetheart stopped her from driving a car, she dumped him. By the age of 28, Gidsken had founded three airline companies and survived two mortally dangerous crashes.

In 1936 it was all over. Lacking money and with little credibility after the crashes, Gidsken realised that the future belonged to other airline companies. She went home to Narvik instead, to take over her father's timber trade.

«We fly everywhere!»

In the autumn of 1932, two young Norwegian pilots visit the international aviation exhibition in Berlin. Viggo Widerøe and Helge Skappel are caught by the atmosphere, as they later recounted in their book Pionertid ("Pioneer Days"):

«The exhibition became our temple. The things we saw realised not only strengthened our belief in aviation. They

gave us a sense of confidence. And in between the rows of gliders, sports aircraft and airliners, great plans took shape. Our nation would become a great power in the air, just like our ancestors had made Norway a great shipping nation. And in the same manner that our flag was carried across the waves, it would be carried in the air towards the remote corners of the world. There was no limit to the sky of our aviation dreamlands».

Inspired by what they had seen, Skappel and Widerøe went back home.

Now they intended to promote the aviation cause in Norway. Together with other idealistic pilots, they arranged several air shows in southern Norway in 1933. Watching the aerial acrobatics was free, and for a few kroner, anyone could go for a spin in the air. Several hundreds of thousands of Norwegians were shown that flying might not be so dangerous after all

On 19 February 1934, Widerøe's Flyveselskap A/S (the Widerøe Airline Company Ltd.) was established. «We fly everywhere», was the slogan.

Advertisement for Widerøe's from the 1930s.

Winter ambience. A pilot inspects one of the Widerøe Waco aircraft in the mid-1930s.

The company established a pilot training school and conducted occasional air ambulance, teaching and taxi flights, and aerial photography until 1940. At Easter, the green Widerøe aircraft were regular visitors to the Norwegian mountain areas, carrying skiing tourists from Oslo.

The Widerøe aviation enterprise started in simple ways. There was no large organisation behind the venture. The company built an airport at Ingierstrand in Oslo, which was used during the summer, while the Lake Bogstadvannet became the base in winter. The first aircraft were small, only four or five seaters, so the contact between pilot and passengers became very close. Wherever the pilots arrived, they were very welcome. Coffee and cakes were the usual items on the menu, and there was always time for a quick chat. It wasn't busier than that. The ambulance transport saved many lives.

On 18 June 1934, Widerøe's set up a combined mail and passenger route between Oslo and Haugesund, with stops in the larger cities, to test the possibilities of the route. By the end of the first season, which lasted until 30th September, the company had carried approximately 300 passengers in addition to 13 tonnes of mail and newspapers. After 66 days of flying, the company had made a profit of 2700 kroner. A handsome result.

Overall, the outlook seemed to be brighter. Although the Norwegian national economy was in trouble, the gross national product of the country doubled from 1905 to the second half of the 1930s. There were also signs indicating that the State would grant more economic support to civil aviation companies. In 1932, a public air traffic committee proposed that a government funded national airline company should be established in Norway.

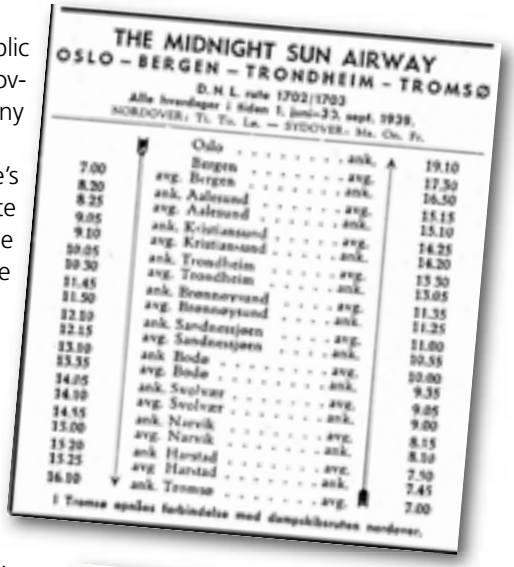
In the autumn 1934, Widerøe's applied for a licence to expand the route between Oslo and Haugesund to include Bergen and Trondheim. But now the company faced fierce competition.

The ship-owners who took off

In 1933, the shipping company Fred. Olsen & Co. decided that it would expand its enterprise to include aviation.

The shipping company took over Det Norske Luftfartselskap (the Norwegian Airlines), which had been established in 1927, and entered into partnership with Det Bergenske Damskibsselskap (the Bergen Steamboat Company) in 1934. The new company was given the name Det Norske Luftfartselskap Fred. Olsen & Bergenske A/S (the Norwegian Airlines Ltd.) or DNL for short. Hjalmar Riiser-Larsen was hired to run the company.

With DNL having entered the field, three airline companies fought over the licence in the autumn 1934. In addition to Widerøe's and DNL, a smaller company, Norske Luftruter A/S (Norwegian Air Routes Ltd.), joined the competition. DNL applied for a ten-year licence including annual government support of half a million kroner. The application comprised several inland air routes as well as one between Kristiansand and


THE MIDNIGHT SUN AIRWAY
OSLO – BERGEN – TRONDHEIM – TROMSØ
D.N.L. rute 1702/1703
Alle hverdager i tiden 1. juni–30. sept. 1939.
NORDOVER: Ti. To. Le. — SYDOVER: Ma. On. Fr.

	Oslo ..... ank.	
7.00	Bergen ..... avg.	19.10
8.20	avg. Bergen ..... avg.	17.50
8.25	ank. Aalesund ..... ank.	16.50
9.05	avg. Aalesund ..... avg.	15.15
9.10	ank. Kristiansund ..... ank.	15.10
10.05	avg. Kristiansund ..... avg.	14.25
10.30	ank. Trondheim ..... ank.	14.20
11.45	avg. Trondheim ..... avg.	13.50
11.50	ank. Brønnøysund ..... ank.	13.05
12.10	avg. Brønnøysund ..... avg.	11.35
12.15	ank. Sandnessjøen ..... ank.	11.25
13.00	avg. Sandnessjøen ..... avg.	11.00
13.35	ank. Bodø ..... ank.	10.35
14.05	avg. Bodø ..... avg.	10.00
14.10	ank. Svolvær ..... ank.	9.35
14.15	avg. Svolvær ..... avg.	9.05
15.00	ank. Narvik ..... ank.	9.00
15.20	avg. Narvik ..... avg.	8.15
15.25	ank. Harstad ..... ank.	8.10
16.10	avg. Harstad ..... avg.	7.50
	ank. Tromsø ..... avg.	7.45
		7.00

I Tromsø opnåes forbindelse med dampskibsruten nordover.

Amsterdam. DNL's bid was based on the assumption that the construction of land-based airports would have first priorities and that proper meteorology and radio services would be established.

In November 1934 it became clear that only one company would be given a licence. The tone of the contest got sharper. At the same time, a debate was raging over land-based aircraft versus seaplanes. While the development in Europe focused increasingly on land-based aircraft, many Norwegian politicians believed it was wiser to stick to seaplanes. Constructing land-based airports would be costly as well as unnecessary, they claimed.

Nevertheless, a national plan for airports was developed. In the plan, new airports were suggested for Oslo, Skien, Kristiansand, Bergen, Ålesund and Trondheim. The ruling Liberal government and its Prime Minister, Johan Mowinckel, opposed the plans. On 20 March 1935 Mowinckel resigned and a new government with Johan Nygaardsvold from the Labour party came into power.

A few days later, on 9 April, DNL was granted exclusive rights to all scheduled

(Top)
One of the DNL aircraft, the Junkers Ju52/3m «Najaden», in the air above Bergen in the 1930s.

(Bottom)
The same aircraft, as recreated by the Aviation Museum. The exhibited aircraft is of the same type and year model as the original «Najaden».

From the inauguration of Fornebu airport on 1 June 1939.

flights, inland and abroad. That summer DNL launched scheduled flights, with a rented Junkers Ju52 seaplane, between Oslo and Bergen. The air route was established on 11 June and operated until 10 September. In addition, a postal route was operated between Bergen and Tromsø from 7 June until 3 August. This air route was opened for passenger flights the following summer. From 1936, DNL cooperated with Widerøe's in running air routes in Norway. Together with airline companies from other countries, DNL also established scheduled flights to cities abroad, such as Gothenburg, Stockholm, Copenhagen and Amsterdam. By way of Gothenburg and Copenhagen, Norway was connected to the entire European network of aviation.

The new air connections caused much ado. In particular, the air route to northern Norway was considered a breakthrough. «In one fell swoop, all of Norway has been compressed into one traffic area which may be traversed in a few hours», wrote the Vesterålens Avis. «Paradoxically we may say that the air has brought unity to the nation. Aircraft such as the «Havørn» and the «Ternen» will in due course manage to make the use of the sad term 'backwoods' for North Norway redundant». The flight from Bergen to Oslo could now be done in nine hours. On a flight to Northern Norway, the «Havørn» overtook four coastal steamers.

Such speed could take anyone's breath away. «When are we going to take off?», asked a 90-year old former maritime pilot from Harstad, after flying for a quarter of an hour with the «Havørn».

Times of change

The licence decision in 1935 marked a change of times. For the first time, the

State and private investors committed themselves to mutual cooperation in order to strengthen civil aviation.

In addition, systematic planning had been introduced as a reaction to the arbitrariness and the absence of definite alternatives for action which until then had characterised state as well as private endeavours in the field.

The appearance of ship-owners on the scene of Norwegian aviation must be viewed against the strong position they enjoyed in society. The ship-owners represented the absolute elite, towering sky-high above the heads of everybody else in Norway. A city-dwelling ship-owner had on average a fortune of almost ½ million kroner in 1929. The remaining trade and industry of the nation consisted largely of small enterprises, savings-banks, sawmills and smaller businesses, usually rooted in a village or a town and subject to local patriotism and other local limitations.

The major ship-owners on the other hand, had ambitions of directing investments and organising enterprise on a national and international scale. The ship-owners, having once made Norway a major shipping power, were now going to conquer the air.

The authorities paved the way. On 11 March 1936, an airport plan was passed by the Parliament, and approximately one million kroner was allocated for construction works. The plan became part of the Labour party's crisis measures to get unemployed people back into work. Airports were established at Sola (1937) and at Fornebu and Kjevik (1939).

There were, however, setbacks en route. On 16 June 1936, the «Havørn» crashed into a mountain side at Lihesten in Sogn. All seven people on board were killed. The accident shook the authorities as well as the man in the street and generated much apprehension.

In Europe, menacing clouds were amassing. In the autumn 1939, the World War became a fact. Almost thirty years after Cederström's demonstration of the airplane's potential as a killing machine, Norwegian politicians realised that Norway was in need of a strong defence. A new airport was completed at Bardufoss in 1938. During 1939–40, field airstrips and provisional seaplane facilities were established around the country, and major airplane purchase contracts were signed with foreign aircraft manufacturers. Before Norway was capable of utilising the aircraft, however, the country was embroiled in the war.

From the clearing-up operations after the «Havørn» crash at Lihesten in 1936. The DNL representative, Bernt Balchen, to the right.

Occupation and Exile

1940–1945

Karl L. Kleve, Curator, Norsk Luftfartsmuseum

Few believed in a German invasion of Norway. We were protected by the powerful British Navy. But on 9 April 1940, the German invasion caught Norway unawares.The spearhead of the German attack came from the air.

Our small and old aircraft were no match for the Germans. Nazi Germany crushed the disorganised Norwegian defence in two months. For the next 5 years, Norway was under German occupation. According to the Nazi race theories, the Norwegian people belonged to the Aryan race – the Master Race. As a consequence, the occupation was relatively mild compared to that of other nations occupied by German forces. Nevertheless, Germany allocated large forces to the occupation of Norway, and considered Norway to be an important theatre of operations. From here, the German Navy had access to the great oceans. The border with the Soviet Union also represented an important front line when Germany attacked the giant in the East. While Germany constructed the "Festung Norwegen" and waged war with the Soviet Union, the Norwegian government in exile established a new Norwegian defence force. With the aid of income from the shipping fleet and support from our allies, Great Britain and the USA, we purchased modern fighter aircraft, established the training camp "Little Norway" in Canada as well as air bases in Scotland and Iceland. From these bases, German ships, submarines and aircraft were attacked.

When the Allies invaded the German-occupied European continent in 1944, Norway participated with its own fighter squadrons. It was time to strike back.

German aircraft at Værnes, 1940.

Like a bolt from the blue: the assault on Norway

We did not have much to counter with when the Germans invaded on 9 April 1940. Nazi-Germany employed the new and terrible weapon of terror: air attacks. Soon, Norway faced the same brutality that the Spanish town of Guernica experienced in 1937: the terror bombardment of many Norwegian cities and towns.

Germany decided early in 1940 to attack Norway. The aggressive nation feared that Great Britain would invade Norway and threaten Germany from the north. If, instead, Germany were to conquer us, the situation would be reversed. Norway would then represent a strategically important position from which to threaten Great Britain. In Norway, the German navy would have excellent bases for operations in the Atlantic Ocean. The Luftwaffe – the German air force – would have air bases for launching operations against Great Britain. Norway would then later be incorporated into the planned post-war German Empire and supply Germany with everything from fish and electric power to iron ore and aluminium.

Therefore, Germany made a daring plan: A cooperative effort between the German navy and the Luftwaffe to give the Royal Navy the slip and invade Norway right in the face of Great Britain. Despite a few setbacks and heavier losses than Germany had initially anticipated, this was exactly the course of events.

The German navy, supported by about 1100 war planes and transport aircraft, left the German bases on the morning of 9 April 1940. German forces landed in many towns and cities in southern Norway, as well as in Narvik. German war planes attacked the Sola and Fornebu airports. Norwegian fighter planes attempted to challenge the German aircraft, but were quickly defeated. Paratroops landing at Fornebu marched into Oslo and occupied the capital early in the day on 9 April. The sinking of the German battleship "Blücher" in the Oslofjord by the guns of the Oscarsborg fortress enabled the Royal Family and the government to escape the invading forces.

Bodø is bombed, 27th May 1940.

Tough battles

In the next two months, German forces fought their way northwards. The fighting was fierce and the scattered Norwegian forces interspersed with a few Allied emergency troops put up a ferocious resistance against the German forces. However, Germany had complete command of the air. The X Fliegerkorps totally dominated the air above southern Norway. The few airports we had were destroyed. German aircraft pursued the Norwegian forces and bombarded them wherever they pulled back. Although the Norwegian losses weren't always so heavy, the effect of the omnipresent German bombers on the fighting morale was powerful. In addition, the Germans employed a method

the world had witnessed for the first time during the Spanish Civil War three years previously: Terror bombardment of civilian targets. Elverum, Åndalsnes, Kristiansund, Steinkjer, Namsos and Bodø were totally destroyed by German incendiary bombs. The Norwegian Army and Navy Flying Corps could not prevent the destruction, and on 28 April the remnants of the Army Flying Corps was pulled back to northern Norway. Later on, the remaining aircraft of the Navy Flying Corps also arrived. There were not many planes left, however. Most of them had been shot down, destroyed, or taken over. In addition, a few of the Navy Flying Corps aircraft had escaped to Great Britain. The British offered a number of troops to help stop the German progress. In southern Norway, though, this had little impact on the German onslaught.

The fighting in northern Norway took place on far more equal terms. This part of Norway had few airports. The Army controlled the newly established grass airstrip at Bardufoss, and the Navy had a base at Skattøra in Tromsø. When the Norwegian troops joined forces with British fighter aircraft stationed at Bardufoss and aircraft carriers off the coast, the air battles over Narvik became more equal. In this region, the Norwegian lack of preparation showed to their advantage. There was not a single airstrip between Værnes and Bardufoss. In addition, construction at Værnes had scarcely started before the outbreak of the war. German engineers started improving the airport at Værnes as soon as it was taken, using Norwegian work forces from Trondheim. Still, the distance to Narvik was very long. At the end of May, German forces in the Narvik region had been surrounded and forced towards and almost across the border to Sweden. The distance from Værnes to Bardufoss meant that only long-range bombers such as the Heinkel 111 and the Ju88 were able to reach targets in the Narvik region, and only without fighter escort. We were able to meet the unescorted bombers with our

(Above)
A British Gloster Gladiator which crashed by the runway at Bodø airport, 27th May 1940.

(Right)
A German Ju-90 with airdrop over Narvik, May 1940.

remaining assorted fighter planes and a couple of British squadrons.

On 24 May, our allies decided to pull back their forces and transfer them to France. On our own we had little chance of keeping the German forces at bay for long. Therefore, the Norwegian forces in northern Norway capitulated on 9 June 1940. The war against Germany on Norwegian soil had come to an end.

Festung Norwegen

Since the Norwegian nation was considered to be an Aryan sister nation to Germany, Hitler did not plan to exploit Norway in the same brutal manner as he had done with other occupied nations. Norway would become part of the German «Großwirtschaftsraum». Our agricultural production would be increased and the Norwegian fisheries would provide all of Europe with fish. Our mines would be enlarged to make us the main supplier of copper, nickel, etc. Norwegian hydro-electric power would enable the huge development of power-demanding industry, making Norway the main power supplier to Europe. According to Hitler, Norway would finally be able to realise its European destiny.

The access to hydro-electric power for the power-demanding production of aluminium was of special interest to the Luftwaffe. The Commander of the Luftwaffe, Hermann Göring, took the initiative to develop several enormous industrial plants in cooperation with, among others, the Norwegian industrial company Norsk Hydro. Norwegian aluminium would form the basis of a massive increase in the German aircraft production. The Luftwaffe established additional repair facilities and manufacturing plants for aircraft production and repair at more than fifty industrial plants all over Norway,.

The German Navy would make good use of Norway: A new German town would be built near Trondheim. It would become the new main base of the German navy. But in the short term, the Luftwaffe had the greatest ambitions: Now Great Britain could be outflanked. The distance from Norway to the British naval bases in the Orkney Islands and the Royal Air Force bases in Scotland had been greatly reduced. The conditions were perfect for German supremacy in the North Atlantic.

It was a great plan, but had one major drawback: The Luftwaffe consisted mainly of short-range bomber and fighter aircraft which were primarily designed for army ground support. There was a lack of long-range bomber aircraft and submarines to take advantage of the new strategic possibilities represented by the German invasion of Norway.

Nevertheless, the ambitions and plans were impressive and difficult to abandon. The fear of losing Norway, the gem of the German Empire, was great. For this reason, Germany stationed several hundred thousand soldiers here. In many Nor-

Festung Norwegen: The construction of Batteri Dietl, Steigen.

wegian towns and villages, the German soldiers comprised a majority of the population. The German occupation force not only constructed industrial plants to serve the post-war Empire, but also a multitude of coastal fortresses, submarine pens and airfields. A long chain of radio beacons stretched from Kirkenes in the north to Lista in the south, enabling communications between German military units from Naples to Kirkenes. Before the war, Norway had half a dozen airports. When German forces surrendered in 1945, they left a large number of airfields all over the country. All of the airports were primitive constructions, mostly with a wooden or grass surface. Nonetheless, these airfields formed the basis for several of the Norwegian airports that were established later. In order to supply the scattered industrial sites and military positions, the German occupation force built roads. And in order to connect Norway with the intended European neighbours properly, the Germans started building a railway between Mosjøen and the border to the Soviet Union. The need for manpower seemed endless. A large number of Norwegian workers were employed after many lean years of high unemployment in the 1930s. In addition, a great number of slave workers were sent to Norway.

In cooperation with the German occupants, the Norwegian Quisling regime tried to put together new Norwegian military units which would fight alongside German forces. The legendary pilot Tryggve Gran attempted to form a separate NS controlled air force, but did not have much success.

Civil aviation during the German occupation (1940–1945)

All scheduled flights were temporarily suspended when the German forces invaded Norway. In mid-May 1940 the occupation forces demanded control of all the DNL aircraft. The Germans wanted a deal with the DNL. The Lufthansa airline company had conceived of a plan whereby the airline companies of the nations under German occupation would continue to fly during the war under German control. After the victorious war, all European aviation would be governed by one giant company, and all airline routes would be controlled from a central, German office. In Norway, the occupation force wanted the DNL to take over the aircraft factories at Kjeller and Horten and fly air routes for the Germans.

A proper agreement was never signed. The DNL continued flying a few routes in the autumn of 1940, continuing until March 1941. Then everything came to a halt. Most of the DNL pilots had escaped to Great Britain, and this made the Germans very furious. After this, all assets were transferred to Lufthansa, and the company attempted to keep a few routes going until 1943. Then air traffic ended.

Widerøe also did not keep any airline routes going, except for some ambulance flights. The company engineering workshops kept a relatively steady output during the war, working with production for the Germans. At the same time, a number of the employees worked illegally. Among other illegal activities, the specially designed aircraft C5 Polar was almost completed in secret. Many of the employees were, however, arrested and charged with illegal activities. Many others escaped abroad to join the Norwegian exile defence force.

The arctic front

Germany invaded the Soviet Union on 22 June 1941. Through the occupation of Norway, German had established a short but vital northern border with the Soviet Union. Murmansk was situated just a few tens of kilometres from the border, with its ice-free harbour facing the North Atlantic, and a railroad going south. Through Murmansk the Soviet Union could receive large amounts of weapons aid from Great Britain and the United States.

A successful invasion of the Soviet Union would also have to originate in Norway. General Falkenhorst's XXI Gruppe would take care of that part – the Karelian Front. The nickel mines in the so-called Finnish Wedge had to be protected, followed by the invasion of the Kola Peninsula and Karelia alongside Finnish allies. The railway connection was the target.

(Top)
C5 Polar.

(Above, left)
JU-88: a German bomber has crashed in Finnmark.

(Above, right)
PE 2: a Soviet bomber has crashed in Finnmark. Under restoration.

X Fliegerkorps was upgraded to Luftflotte 5, but the number of aircraft had been reduced from the time of the invasion of Norway, from 1100 to 190. 60 of the aircraft were disposed for missions at the Karelian front. The fighting in the Arctic stagnated. Several hundred thousand soldiers were involved on both sides and losses were heavy in the inhospitable landscape. The Soviet Union made good use of the superior lines of transportation on its side of the frontline, which is why the railway was never captured.

The convoys

Soon, the Luftflotte 5 was re-assigned to a different mission: To stop the convoys! From the autumn 1941, the convoys transported military equipment from the United States to Murmansk. The Murmansk convoys became the most deadly sailing route for Allied seamen during World War II. But the Soviet Union also had an air force. The Soviet air force was employed against German ships which supplied German bases in Finnmark, as well as bombing Norwegian towns harbouring German soldiers and installations. No other Norwegian towns were subjected to so many bombing missions as Vardø, Vadsø and Kirkenes. Vardø alone was at the receiving end of more than 400 Soviet bombing missions in the years 1942–1944.

The concentration camps

The war against the Soviet Union led to a great need for German military

bases and routes of transportation in northern Norway, as well as a need for more manpower. Soon, German troops started the construction of concentration camps and forced labour camps in Norway. Four thousand Serb nationals were sent to their final destination in Norway. They would be worked to death on road projects in an adverse climate. 70% of the prisoners perished; the majority died during the construction of the «Blood Road» across Mount Saltfjellet. Russians, however, represented the largest group of prisoners. 100,000 Russians, a mixture of prisoners of war, partisans, men enlisted by force and women and children from the German-occupied areas of the Soviet Union, were all sent to Norway. The prisoners built and maintained airfields, roads and coastal fortresses. 80,000 of the prisoners were stationed in 68 camps in Finnmark. A «mere» thirteen thousand prisoners died.

Hjalmar Riiser-Larsen (1890–1965)

He attended the Naval College from the age of 19, and became a member of the newly formed Navy Flying Corps in 1915. He then served in a variety of military and civil aviation-related positions. He became general manager of the Naval Aircraft Factory and Secretary of the Ministry of Defence Aviation Council responsible for the planning and surveillance of the infrastructure of military and civil aviation. He worked as a test pilot for a variety of civil airline companies. He was a polar pilot, both alone and together with, among others, Roald Amundsen on the airship «Norge», as well as leader of the «Norvegia» expeditions to the South Pole. When the Germans invaded Norway, Riiser-Larsen was the general manager of DNL. He reported for duty with the rank of major, though without seeing action. He escaped to Great Britain and was immediately appointed to the position of naval attaché in Washington. In Washington, he was given the assignment to coordinate the reorganisation of the Army and Navy Flying Corps into the newly formed Air Force Supreme Command. He also participated in establishing Little Norway. In due course, Riiser-Larsen was promoted to both admiral and air vice-marshal. In 1944 he became the first head of the new Royal Norwegian Air Force. After World War II, he resigned after internal conflicts to again become the general manager of DNL. Later, he became regional manager in SAS, in charge of international air routes. The establishment of the SAS North Pole-crossing flight route was in a sense the culmination of the professional career of Norway's perhaps most versatile and greatest aviator.

From the ashes, an air force is created in exile

Many Norwegians escaped from the country after the defeat in 1940. A group of officers from the Army Flying Corps went across to Great Britain in mid-May to organise new air force units. The units would be transferred to the battle for northern Norway. However, northern Norway capitulated before the units were ready. Some Norwegian aircraft were flown to Finland. From 1941, several of the aircraft were used by the Finnish against the Soviet Union. In due course, the Norwegians organised themselves in Great Britain. A Norwegian government in exile and a new supreme command of the Norwegian fighting forces were established. The government in exile started negotiations with the British in order to purchase new aircraft and establish new air force units. Hjalmar Riiser-Larsen was sent to the United States to establish closer contact with the United States government and military.

At this time, it was impossible to establish a proper exile air force in Great Britain. That nation needed all its available training facilities and aircraft. Then Canada presented itself as an opportunity. There was plenty of room and the Canadian authorities were willing. Canada was close to the United States, where the exile government had placed orders for aircraft which were still in production. The aircraft could easily be transported to Canada. Norway's ability to pay also represented

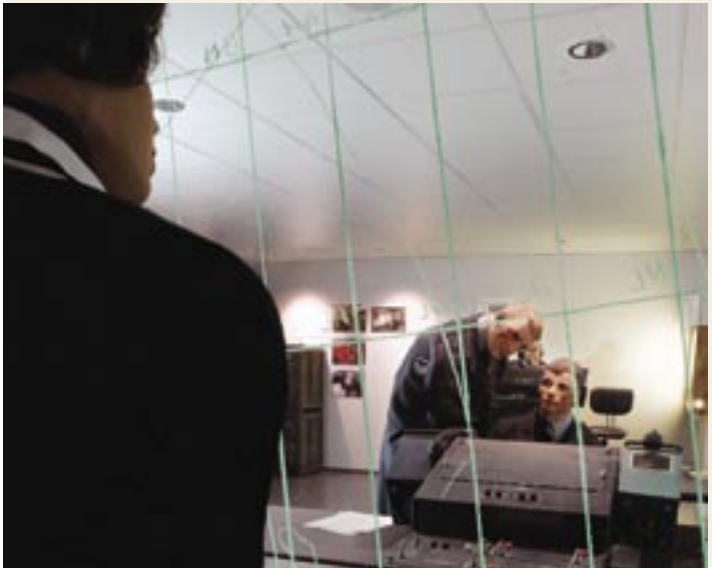
a crucial factor. We had the world's third largest merchant navy, which was usually spread across the seven seas. Our exile government established the state controlled shipping company Nortraship in cooperation with the owners of the merchant navy. The income from Nortraship represented the entire financial basis for the Norwegian exile government and defence forces.

Riiser-Larsen and Bernt Balchen signed an agreement with Canada which granted

(Left)
Fairchild M-62A «Spirit of Little Norway».

(Below)
Link trainer (the flight simulator of the day) from Little Norway.

(Below, right)
The Muskoka cabin, a reconstruction.



Norway the right to use an area in Toronto for a pilot training school, training facilities and aircraft storage. The camp was called Little Norway when it opened on 10 November 1940. During the course of the war, more than 3000 Norwegians were trained as pilots, navigators and ground crew at Little Norway.

Little Norway soon became too small to meet the demands of the training facility. We then established another base in Muskoka, some distance further north. Muskoka was situated right next to a German prison camp, which had a great effect on morale among the Norwegian soldiers.

A new air force

The first Norwegian exile squadron was formed in the autumn 1940. The 330 Seaplane Squadron used Northrop torpedo bombers and was stationed in Iceland. The squadron would guard the North Atlantic against German submarines and surface vessels which threatened the convoys between North America and Great Britain/Murmansk.

As soon as the British could spare any aircraft, several squadrons were established and based in Great Britain. The first fighter squadron, the 331 Squadron, was established in July 1941. Soon after, the 332 Squadron followed. Both squadrons had Spitfire fighter planes. In late 1943, the two squadrons were combined into the 132 (Norwegian) Wing and stationed at the North Weald RAF base north-east of London. The second Norwegian naval squadron, the 333 Squadron, was established in 1943. The squadron was based at Woodhaven in Scotland, using Catalina flying boats and Mosquito fighter bombers.

The Navy and Army Flying Corps were given a common supreme command in 1941: The Air Force Supreme Command. In 1944, the two branches were formally combined to form the Royal Norwegian Air Force. The Air Force Supreme Command was under the command of Hjalmar Riiser-Larsen. Bjarne Øen became the Chief of

(Right)
The first, temporary 331 Squadron logo.

(Below)
Spitfire from 331 Squadron.

Staff, and Ole Reistad was the commanding officer at Little Norway. The Air Force Supreme Command made an agreement with the British that the Norwegian squadrons should be administered and trained by Norwegians. In terms of operations, the squadrons would be placed under the British air force, the RAF. In addition to the 132 Wing and the naval squadrons, Norwegian crew served in other branches of the RAF. Ferry Command transported new aircraft from the United States to Britain. Bomber Command bombed the German occupied areas. On a Norwegian initiative, the RAF established a separate Stockholm route to the Norwegian police and public agencies which, during the course of the war, had been established in Sweden.

The occupied strike back

On 6 June 1944, the United States, Canada and Great Britain finally established the second front in Europe by the invasion of Normandy. The Norwegian squadrons participated in the subsequent liberation of western Europe. In August, the 132 Wing was stationed in Caen, France. During the months that followed, the 132 Wing progressed eastwards and was stationed at a number of air bases in Belgium and Holland before ending up at Twente, Holland, in April 1945.

The naval squadrons continued their battle against German forces at sea. The 330 Squadron escorted convoys in the North Atlantic as well as hunting for submarines and long-range bombers. The 330 Squadron patrolled the Norwegian Sea and carried out operations against German ships and positions along the coast of Norway.

The liberation of Norway

After a while it became clear that there would not be an Allied invasion of German-occupied Norway. Instead, the British and we planned for an expeditionary corps to enter Norway as soon as the Germans had capitulated. The corps would disarm the Germans and enforce the conditions for capitulation When Germany surrendered on 8 May 1945, the corps started to fly Norwegian and British personnel into Norway. Most of the personnel used to disarm the Germans came across the sea from Great Britain or from Sweden. Using airplanes, military units could be deployed much faster. It was of particular importance to have Norwegian units transported quickly to those areas in Eastern Finnmark that had been liberated by Soviet forces. The Soviet Union had driven back the Germans on the Arctic Front as early as the autumn of 1944, and then started the advance into Finnmark. The period of uncertainty and suspicion towards the victorious Soviet Union had begun.

A city bombed to rubble needs reconstruction: Bodø.

Growth and Prosperity in the Shadow of the Cold War

1945–1965

Karl L. Kleve, Curator, Norsk Luftfartsmuseum

The Germans left behind a run-down nation, struggling with the great devastation of war. We had little in terms of resources, and much that needed to be rebuilt. The results of five years of war and occupation had to be removed. At the same time, we could sense a new conflict taking shape between old allies, the Soviet Union on one side, and the western Allies on the other. Norway had to navigate carefully in this landscape. The war had also provided us with the bitter experience that we needed a better national defence.

We therefore entered the newly formed North Atlantic Treaty Organization – NATO – with our western Allies in 1949. When the Korea conflict broke out in 1950, and the Soviet Union started a large military build-up on the Kola Peninsula, NATO voted for a strong expansion of military forces in the member nations. In contrast to 1940, when we thought that Norway was of little strategic importance, it soon became clear that in the new worldwide conflict which emerged after World War II, Norway was right in the line of fire. Our border with the Soviet Union and the North Atlantic became a significant flank. The development of rocket weaponry also placed us in the middle of the American and Soviet nuclear missile attack highway. We therefore lived through several decades of robust increases in our national military force, funded by NATO. Our air defence systems became one of the most advanced in the world. The Cold War transformed Norway into an aviation nation. New airports and civil air routes were established across the country. Northern Norway, once the poorest region in Norway, became the gravitational centre of our military expansion. In the shadow of the nuclear bomb and the Cold War, Norway in general, and northern Norway in particular, saw the greatest welfare increase in the history of the nation.

Never again April 9th

When World War II ended, Norway was needed to be rebuilt. The need for fighter aircraft had now been reduced. In the course of 1945, 132 Wing was completely disbanded. There was nonetheless great need for transportation: Personnel and mail needed transport, Norwegians in exile were going home, and Finnmark had to be re-populated. The Royal Norwegian Air Force transportation aircraft and the naval aircraft played a significant role. There was still no civil air traffic in Norway. In a cooperative effort with British forces stationed in Norway, air routes were established between several locations in Norway. Two transport squadrons were established at Bardufoss and at Skattøra in Tromsø. As long as there were Soviet forces still stationed in eastern Finnmark, the increased Norwegian presence in the northern regions was very important. Finnmark had been subject to the greatest devastations of the war, and rebuilding this county was given high priority.

The German focus on constructing airfields during the occupation of Norway had been important. Nevertheless, the construction of the German airports had by no means been finished, and it therefore became difficult to maintain the regularity of scheduled flights. In the winter 1945/46, the scheduled flights had to be partially cancelled.

Despite the need for air transportation, the Royal Norwegian Air Force had to be reduced and reorganised for peacetime duties. The impetus for many of the changes came from outside the Air Force. The Labour party been in power at the outbreak of World War II, and the party dominated the political landscape in Norway to an even higher degree in the following years. The leading politicians from the pre-war Labour party were eliminated from the post-war party. New and vigorous people who were eager to rebuild Norway in accordance with planned economy principles entered the political centre of the Labour party. The new Secretary of Defence was the 30-year old head of the resistance organisation Milorg, Jens Chr. Hauge. He soon clashed with the old military leaders who wanted to develop further the interwar principles of defence politics. One by one, the old leaders resigned, including the powerful head of the Air Force, Hjalmar Riiser-Larsen. Hauge removed the position as Chief of Defence, instead installing a new quartet of leaders with himself as the dominant figure. He wanted to develop a defence force based on high technology. The defence force would become the technological locomotive in the modernisation of Norwegian society, business and trade. In these plans, the Air Force became a vital branch, in contrast to the weak position held by our air forces in the pre-war defence.

The Directorate of Civil Aviation

As early as 1919, the Norwegian government formed a Civil Aviation Commission to plan for future civil aviation in Norway. Two years later, the Civil Aviation Council was established. The Council had three members and reported to the Ministry of Defence, but interest for state involvement in civil aviation remained small. In the Norwegian Parliament, the regional representatives in particular believed that aviation was an urban phenomenon and certainly nothing on which the authorities should waste money. The authorities' interest and involvement in civil aviation grew stronger during the mid-1930s as well as during World War II. In 1946, the responsibility for civil aviation was transferred to the Ministry of Transportation, and placed on the separate Directorate of Civil Aviation. The Directorate in charge of air traffic control (during the first years only at Fornebu, Kjevik and Sola, The Royal Norwegian Air Force was in charge of air traffic control at the remaining airports), the control and checking of airline companies, as well as management and maintenance of airports, etc.

The state enters civil aviation

Civil aviation was also be rebuilt and to this end it was a stroke of luck that Norway suddenly had many experienced military pilots and ground crew at its disposal.

As early as 1943, the Norwegian exile government in London established the Norwegian Aviation Board, which was to review the future of Norwegian civil aviation. The Aviation Board thought that Norwegian State authorities should take the responsibility for developing and managing airports, radar facilities, and similar installations. The management of air routes should however be left in the hands of a private company with a 20-year monopoly on airline traffic. By state initiative, the New DNL was established in 1946. The airline company received a concession for all domestic airline traffic, and started air routes between many Norwegian cities, using confiscated German Ju52s, C-47 Dakotas (DC-3) and three newly purchased Short Sandringham flying boats. At the same time, the new company started negotiations with the two largest airline companies in Sweden and Denmark. The idea behind the talks was cooperation and possibly the complete fusion into one common Scandinavian airline company. Talks had started in 1940, but had been interrupted by World War II.

The Ministry of Transportation took over the state's responsibility for aviation infrastructure. The Directorate of Civil Aviation was established in 1947. In the same year, the Ministry set up the Civil Aviation Commission, which would assess the need for airports.

In the Defence Commission from 1946, the Royal Norwegian Air Force also examined the same need. Both commissions regarded aviation to be the future form of communication and a highly important aspect of Norwegian defence. But there was as yet no funding for the upgrading of the existing German airstrips. The need for rebuilding was priority number one. The Civil Aviation Committee, furthermore, maintained that civil aviation should aim to manage without state funding. Therefore, the proposal to build a network of small land-based airports to serve smaller communities came to nothing. At the end of World War II, it had become clear that civil aviation would undergo great changes following the invention of the jet fighter. In late 1940s the first jet fighters, British Vampires, were on their way.

The start of the Cold War

East of Norway was the communist Soviet Union. A new conflict seemed to be brewing between the western Allies, with the USA as their leader, and the Soviet Union. In eastern Europe, Soviet-inspired regimes had taken power in the years following 1945. Large Soviet forces were deployed in these countries. Germany had been separated into a Soviet-controlled zone and a West-controlled zone. Most Norwegians wanted to go back to the good old days of neutrality, when the actions of the superpowers did not concern us. A majority in the Norwegian Parliament considered that the Soviet Union was too great a danger for the neutrality line to be viable and voted therefore to join the newly formed Atlantic Ocean Treaty in 1949, together with the United States, Canada and most of western Europe.

Airline traffic over the North Pole

In 1954, SAS started scheduled flights across Greenland to Los Angeles, and in 1957 across the North Pole to Tokyo. Opening the northern icy expanses to scheduled flights and air traffic was important and prestigious for SAS. Flying pioneers from the inter-war period were central to the endeavour. Einar Sverre Pedersen made the flights technically possible through his invention of the gyro compass. Without the gyro compass, navigation in the polar regions would be virtually impossible. Hjalmar Riiser-Larsen came back to SAS after his retirement as head of the Royal Norwegian Air Force in 1946. He was in charge of developing the intercontinental SAS flights, and became a central force in the work to develop air routes following the shortest distance to North America and the Far East, across the North Pole.

In the beginning, the North Atlantic Treaty Organization – NATO – was primarily a mutual defence treaty. It would function as a kind of reassurance that the member countries, and particularly the United States, would come to each other's aid in the case of a Soviet attack. Nevertheless,

it was each member nation's individual responsibility to ensure that their national defence was credible. In Norway, this meant that large sums had to be allocated for defence purposes, despite the need for rebuilding the nation.

In 1950, the recently communist North Korea invaded its neighbour to the south. This course of action, combined with the aggressive Sovietification of Eastern eastern Europe, led to USA granting US$ 80 billion to the upgrading of military equipment in NATO member countries as well as coordinating their forces in order for them to be able to meet a possible Soviet attack as one single unit. The new Iron Curtain divided Europe in two. Norway turned out to be placed in a central and exposed position along the dividing line.

From the periphery to centre stage

If you controlled Norway, you, in practice, controlled important parts of the North Atlantic.

In case of war with the Soviet Union, the North Atlantic would have to be kept open to shipping: Supplies and military forces needed a transport route from North America to western Europe.

In 1950, the Soviet Union started construction of the world's largest military bases on the Kola Peninsula, only a short distance from the Norwegian border. Norway was the only country in NATO to have a border directly facing central military areas of the new enemy to the east.

(Above)
The guardian of the North Atlantic.

(Above, right)
The border with the East.

(Right)
Right in the line of fire.

The importance of controlling the airspace had been proven during World War II. The technological development in the years following the war served to magnify this importance. New, longer-range types of aircraft, the jet engine, large bombers and missiles hinted that the wars of the future would to a large extent be fought in the air. Norway was situated on a direct path between the two superpowers. If American aircraft were to attack central Soviet military installations, they would need bases in Norway for stops, refuelling, etc. The long-range nuclear missiles which appeared in the 1950s, would also have to pass above Norway. All Soviet air attacks on the North-American continent would also have to pass above our heads. Consequently, we would be the first to know about the attack, and be able to warn the rest of the NATO alliance.

Aid for weapons and infrastructure

Norway's new and central position therefore made NATO, and particularly the United States, very interested in arming the Norwegian national defence forces. The Royal Norwegian Air Force received large numbers of aircraft and other military technology from the United States when the Weapons Aid Programme was introduced in 1952.

But military technology alone was not enough. We had to be able to use the aircraft. We needed better airports and fortified installations. Through the Infrastructural Programme, we were offered massive funding for such constructions. The Norwegian defence leadership, the Assessments Staff, suggested that we started out by constructing seven new military airports in Norway: Gardermoen, Rygge, Jarlsberg, Lista, Ørlandet, Bodø and Bardufoss. The NATO summit in Lisbon in February 1952 voted in favour of the proposal and granted 330 million kroner for the first phase of building. The construction work was to be started and preferably finished within the same year. As early as December that year, the next NATO summit voted in favour of granting 120 million kroner for yet another military airport, at Andøy. The work started in the early summer of 1953. Funding of the same magnitude kept coming every year. Only after the fall of the Soviet Union in the early 1990s did the annual investments in infrastructure decrease. By then, several billion kroner had been invested and Norway, in particular northern Norway, had been militarised to a completely different extent than any time previously in the history of the nation. It was intended that Norway, too, should contribute to the NATO infrastructure programme. In reality, we contributed little, and more than 90% of the investments were financed by the United States.

Weapons aid to the Royal Norwegian Air Force, from the USA:

1950	10 pcs.	C-47A Douglas Dakota (Skytrain) transport aircraft
1951	6 pcs.	F-84E Republic Thunderjet fighter aircraft
1952	200 pcs.	F-84G Republic Thunderjet fighter aircraft
1953	22 pcs.	T-33A Lockheed Shooting Star (T-bird) training aircraft
1954	6 pcs.	PBY-5A Consolidated Catalina amphibious aircraft
1955	64 pcs.	F-86K North American Sabre all weather fighter aircraft
1955	16 pcs.	L-18C Piper Super Cub reconnaissance aircraft
1956	35 pcs.	RF 84F Republic Thunderflash reconnaissance aircraft
1956	8 pcs.	C-119G Fairchild Flying Boxcar transport aircraft
1957	115 pcs.	F-86F North American Sabre fighter aircraft
1958	4 pcs.	H-19D Sikorsky Chickasaw helicopters
1960	27 pcs.	O-1A Cessna Bird Dog observation aircraft
1961	18 pcs.	HU-16B Grumman Albatross amphibious aircraft
1963	20 pcs.	F-104G / TF-104G Lockheed Starfighter fighter aircraft
1963	13 pcs.	UH-1B Bell Iroquois helicopters
1966	64 pcs.	F-5A / F-5B Northrop Freedom Fighter fighter aircraft

Advertising poster for the Weapons Aid.

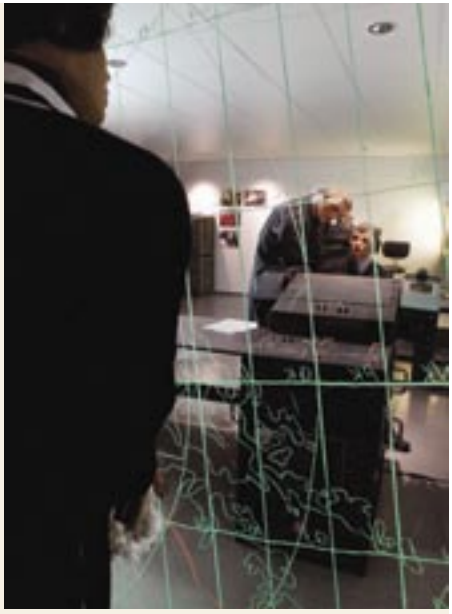
(Above)
The construction of Bodø Main Air Base.

(Left) F-86F fighter bombers at Værnes, ready for delivery.

(Below) F-86F fighter bomber.

The military build-up in Norway happened extraordinarily swiftly because the United States, through NATO, raised the money required. The NATO plans and military strategies changed constantly. The NATO opinions as regards the Soviet threat and how NATO should respond in a war situation also changed rapidly. This affected the work on the military airports and the other military construction projects. All of the projects became more or less continuous. The need for civil infrastructure in the vicinity of military installations was also assessed as the construction work progressed. In the case of northern Norway, it constantly turned out that there was insufficient infrastructure. The military projects had, to an ever greater degree, to include the construction of such necessities as power supplies, roads and harbours, and water supplies.

On a parallel level, but independently from the military construction plans, the Labour government was working on its North Norway Plan. 300 million kroner would be allocated for the modernisation of northern Norway over a 10-year period. The plan has been saluted as a giant effort



for the region. However, investments of the magnitude envisaged by the North Norway Plan were pumped into the region every single year for the development of military facilities!

The northern Norwegian society was transformed by the military investments. Fishermen went ashore to become regular income earners, patterns of settlement changed with people flocking to the new military centres, looking for work. New possibilities arose for making a military or civil career. Northern Norway had historically been a problematic region for Norwegian authorities, as the region struggled with poverty, persistent unemployment, an old-fashioned economic structure, and people moving from their homes in search of a better future. Now,

(Above)
The Cold War becomes ordinary: F-86K during the Open Day at Bodø Main Air Base, approx. 1965.

(Above, right)
Underground: Control and Warning.

(Right)
New Starfighters have arrived at the Bodø docks, and are towed to the air base.

U2: Norway is put on the map during the Cold War

On 1 May 1961, an American spy plane of the U2 class was shot down near the city of Sverdlovsk in Siberia. The aircraft was on its way from Peshawar, Pakistan to Bodø. The purpose of the flight was to photograph Soviet military installations. The United States desired to gain more knowledge about the Soviet weapons programmes. Obtaining this information in the 1950s proved difficult, since space technology had not yet advanced to the point of satellite surveillance. The solution therefore became to use an aircraft capable of extreme altitude and speed, hopefully beyond the range of the Soviet radars, anti-aircraft weapons and intercepting fighter planes. In the first four years everything went well. Even though the Soviet radars were capable of spotting the aircraft, the Russians were unable to shoot it down until 1960.

Bodø was employed as a base for U2 flights for three months in 1958. the CIA, which managed the U2 programme, requested permission to use Bodø as the port of departure for flights in 1960. Norwegian authorities did not permit provocation of the Soviet Union. Therefore all flights were to take place over international waters, in the Barents Sea, and not over Soviet territory. When the shooting down of a U2 spy plane became known, the public surprise was tremendous. The event put Norway under much pressure from the Soviet Union to end the cooperation with the United States. Secretary General Krustsjov even threatened to bomb Bodø with nuclear missiles. The Cold War entered a colder phase, and Norway was put on the world map as an international Cold War «hot spot».

(Above)
U2.

(Right)
The U2 flight across the Soviet Union.

the region slowly but surely grew to become the equal of southern Norway.

Norway's role in NATO

Norway became a central partner in the Western Alliance, and was considered a potential battlefield in case of war. NATO and the Norwegian Military Command did not believe that the Soviet Union would make an isolated attack on Norway. A possible conflict would involve all NATO and Warsaw Pact countries, claiming all of Europe, possibly the whole world, as the battlefield. The Norwegian military strategy was to endure the onslaught for a short period, until reinforcements from other NATO countries could reach the area of conflict.

Now intelligence became the main assignment of the Norwegian military, in anticipation of a possible war. The Royal Norwegian Air Force was given a central

The nuclear bomb

In the first year following the invention of the nuclear bomb in 1944, many nations, even Norway, were interested in getting their hands on the new weapon. The Norwegian military command discussed how the nuclear bomb could enter into the Norwegian weapons arsenal in the 1950s. Should we produce our own nuclear weapons, or purchase bombs from the United States? Should we opt for aircraft and missiles, or make nuclear weapons available also for ships, submarines, artillery, tanks and mines? How should a nuclear weapon be used? Only as a last resort, or as a natural part of the defence against advancing Soviet forces in Finnmark?

At the end of the decade, the perspective on nuclear weapons was about to change. From 1960, it became clear that Norway and the Nordic nations did not want the strong increase in international tension that the local presence of nuclear weapons would cause. We, therefore, never had our own nuclear weapons, but we still had Nike missiles and fighter bombers such as the F104 Starfighter, both capable of carrying nuclear warheads. Through the Weapons Aid programme, we also received Honest John short-range missiles in the mid-1950s. Without nuclear warheads, the missiles were of little use, and were returned to the United States in the mid-1960s. Although we finally decided neither to have our own nuclear weapons nor to allow our allies to place nuclear weapons on Norwegian soil, we still preserved the right to accept nuclear weapons in Norway in case of war. We were part of the NATO alliance 'nuclear umbrella'. If a war broke out, we could probably not escape the effect of the nuclear weapons…

Nike ground-to-air missile guarding the Østlandet region. Designed for carrying nuclear warheads, but used in Norway with conventional warheads only.

role. A network of Control and Early Warning Stations was constructed to conduct surveillance of Norwegian airspace and the nearest regions of the Soviet Union. Our task was to give NATO early warning of Soviet military activities.

Norwegian naval aircraft monitored the ocean areas, constantly on the lookout for Soviet ships and submarines. The intelligence service constructed advanced installations which carefully examined the military development on the Soviet side of the border. Fighter squadrons, consisting of the world's most advanced jet aircraft, patrolled the length of Norway, and on a daily basis intercepted Soviet aircraft monitoring us. Northern Norway was host to annual military exercises involving aircraft, naval and army forces, and thousands of troops from differing NATO countries. British and American surveillance aircraft and spy planes visited us on a regular basis. During the 1950s and 1960s, the Royal Norwegian Air Force was transformed from a small, old-fashioned arm of the armed services into an advanced and powerful force, even by international standards.

We become a nation of fliers

Norwegian civil aviation also went through a transformative phase, becoming the modern and daily means of communication with which we are all familiar. The NATO investments had provided the nation with modern airports and air traffic surveillance radars at a low price for Norwegian authorities. In 1951, DNL formed SAS in a joint venture with the Danish DDL and the Swedish ABA. SAS was granted a monopoly for 20 to 25 years on international routes and domestic routes in Norway, using the regular network of airports, in other words, routes between the new, modern and large airports. Widerøe was given the task of running the shuttle routes, preferentially by seaplane, to the principle airports. In 1952, Parliament voted in favour of the first national plan for the development of civilian airports. The plan established the principle that the recently started military development should also cover civilian requirements. Funding from the civil budget was voted for the construction of only four smaller airports: Alta, Banak, Høybuktmoen (Kirkenes) and Langnes. Two of these airports were nevertheless, in reality, constructed with military funding.

The SAS monopoly grew increasingly hard to preserve. In 1956, SAS, Norwegian authorities and a privately owned Norwegian airline company, Braathens SAFE, signed an agreement to share the air traffic. While SAS was still given priority for the scheduled flights, Braathens was assigned some routes, both domestic and international. In spite of the Norwegian authorities' strong preference for a single monopoly company, private interests had established a variety of new airline companies just after the war. Most of the companies went bankrupt rather quickly or scraped by with occasional commissions. Braathens, however, which originated from the shipping company by the same name, fought for years for the right to fly scheduled flights, and was granted a licence in 1956.

Advertisement for the SAS route across Greenland.

Norway's strong position in both military and civil aviation also produced other results. Norwegian authorities engaged with a carefully selected group of Norwegian businesses that were developing special competence in modern military systems. In 1953, the Defence Research Institute in cooperation with the Kongsberg Våpenfabrikk developed the anti-submarine missile Terne. Civilian rocket technology trials commenced in 1961. That year, a rocket carrying scientific instruments was launched from Jan Mayen. The following year, a rocket was launched from what would become the Andøya Rocket Range. Both rockets were based on the military Nike missile design.

Norway was going through a period of great change. From having been a remote nation on the edge of Europe, Norway had become a modern technology nation. Aviation was no longer a vague dream. It had gradually become a daily business.

Norway on Wings

1965–2005

Stian Bones, Historian, Norsk Luftfartsmuseum

"You will arrive swiftly and comfortably all over the world with SAS, the company which in most of the world's largest cities employs agents, who are always at your service."

Quote from SAS poster.

The world is shrinking

The world has become much smaller in the course of only a single generation. In the mid-1960s, the majority of Norwegian homes still did not own a television set. Immigration to Norway from nations beyond our cultural circle was minimal. Nations and cultures which geographically speaking were far removed from Norway, were also very distant culturally speaking. Until the 1960s, relatively few Norwegians had any experience as airline passengers. Aviation was reserved for people in the higher strata of society, or those in special professions. The average man in the street flew very little, and when he did, it normally took place within the borders of the country.

Today, Norwegian everyday life is strongly marked by the modern communications society. Television and mobile phones are taken for granted in most homes. Many have an Internet connection. The broadcasting monopoly has ended, and there are an abundance of television channels. And not least: We're travelling – by plane. Norway is among the countries with the most airports in relation to the population, and Norwegians are among the most frequent travellers in the world measured by the number of flights per person, both domestic and international.

After World War II, three important changes can be identified in the communications sector. The first phase refers to the transition from the sea to land and the use of the car as a means of communication. Then, the use of aircraft for travelling took off properly in the 1970s. Finally, and particularly since the 1990s, information and communications technology has really taken hold among the processes in society. All of these changes have had great impact on human interaction, and have changed the economy, the way of living, and even our settlement patterns.

Aircraft need maintenance. This is a Caravelle, the SAS group's first jet airliner used in passenger traffic 1959-74.

– and expanding?

Why do Norwegians travel so much by plane? Is it because we are particularly curious about the world? Or is it because of economic conditions? Is it because Norwegians are wealthy and can better afford air travel?

Before making a closer examination of the background for the Norwegian urge to travel by plane, we can note that the desire to travel really took off in the 1950s. The number of travellers on scheduled flights in Norway increased from about 6,000 in 1946 to approximately 200,000 people in 1960, representing an annual increase of 25-30%. Measured as a percentage, the

growth in passengers was greatest in the 1950s and 1960s. Nevertheless, travelling by air only became a realistic alternative for the majority of the population from the 1960s and 1970s. But up until the 1980s, air travel was still considered a luxury that shouldn't be indulged too often. At least many people saw it that way. The process of getting «Norway on Wings – 1965–2005» has, in other words, been an ongoing process for a long time. But it has now been completed: In 2002, 17.2 million single flights were registered in Norway.

This long process is best illustrated by observing that it wasn't until the early 1960s that the domestic traffic grew larger than the international traffic. By that time, the infrastructure as well as the air route network had become well developed. Also, the willingness to pay the cost of domestic flights was on the increase. In due course, business journeys and other work-related travel represented a minority of the air travel. It was also in the 1960s that charter traffic took off. From a modest 17,000 charter passengers in 1966, the charter tourist numbers grew rapidly to a total of 237,000 in 1976. In the 1980s, however, the numbers exploded. The time and age of people booking charter flights to the Mediterranean coincided with the political right gaining popularity across Norway. If we were to pinpoint an exact moment in time, the year 1981 stands out. From this year, charter companies such as Saga Solreiser, Tjæreborg, Star Tours and Vingreiser experienced a golden age. In 1987, approximately 1.6 million international charter flights were registered. In addition, 2.8 million single international journeys were booked on regular scheduled flights.

Aviation has doubtlessly contributed towards familiarising us with the external world, but to what degree has it increased our understanding of foreign cultures?

The 1980s introduced a more market and consumer oriented society in which buzzwords such as liberalisation, deregulation and the freedom to choose came to be central. People had more money. Some of the newly gained prosperity was used for flights and holidays. We can see how improved purchasing power plays the main role in the increased frequency of air travel, although curiosity and the desire to explore also play a role. Most importantly, society is now based on higher mobility: People travel more, both through work and in their leisure time.

With this in mind, we need to ask some basic questions regarding phenomena like travel and flying. People frequently claim that the world has «become smaller» after World War II, and point to air travel as the main reason. Most people would agree to this claim; modern people now have the opportunity to travel virtually wherever they desire. But, on the other hand, this is an opportunity largely reserved for wealthy people, often from countries in the Western hemisphere. Therefore, air travel may not be primarily a sign of greater equality and a more uniform world. Perhaps air travel is rather a symbolic expression of the

prosperity chasm between «the travellers» and «the parochial»?

Let us examine a different issue more closely as well. If the purpose of our holiday trips had been to experience and get to know different cultures, it might have been fitting to claim that not only has the airplane contributed towards making the world smaller, but it has also led to a broadening of our horizon, even to the point of expanding our understanding of the world. Is that, however, the case? Though there are clearly some grounds to support this view, there are good reasons for remaining sceptical as well. The prerequisite for the strong Norwegian increase in holiday travel to international destinations is first and foremost financial: Standards and costs of living are higher in Norway than in the countries we are flying to, and facilities for air travel are well developed. If it is not the desire for cultural exploration that represents the driving force behind the holiday travel, but rather the average Norwegian's bank balance, there follow consequences for how we must view Norwegian travel behaviour. Perhaps charter tourism has been just as much about the export of Norwegian culture as the curiosity to learn more about other peoples' ways of living? The Norwegian tourists who spend much of the year living in Spain insist, after all, that they be allowed to live like Norwegians and not be forced to live like the Spanish. They still want to take pleasure in their goat cheese and enjoy the Norwegian welfare benefits and advantageous public provisions; they just want to do it on the sunny shores of Spain.

Aviation in a shipping nation

In the interwar period, several ship-owners realised that there might be a commercial potential in aviation. Two of the ship-owners were to have a great impact on the development of Norwegian aviation, Ludvig G. Braathen and Fred. Olsen.

Fred. Olsen was involved in civil aviation as the owner of Det Norske Luftfartselskap. From 1934, Det Bergenske Dampskibsselskap A/S shared the ownership of DNL. When the authorities took control of DNL after World War II, it was mainly an effort to ensure public control of Norwegian civil aviation. However, both Fred. Olsen and Bergenske continued their partial ownership of the company.

Ludvig G. Braathens had a vision to start an airline company in order to serve the Norwegian merchant navy. Norway was one of the world's largest shipping nations, and Norwegian ships sailed to every remote corner of the globe. With his airline company, Braathens South-American & Far East Air transport A/S –Braathens SAFE – Braathen wished to use the airplane to support the activities of the merchant navy.

The case of DNL and Braathens demonstrates a characteristic feature of Norwegian civil aviation in the post-war period up to 1970: The Norwegian maritime traditions and long coastline would set their mark on Norwegian civil aviation. There were, for instance, several steamship companies involved in the

(Above) Ludvig G. Braathen; the ship-owner who saw a future for Norwegian aviation.

(Below) The Aviation Museum's DHC-3 Otter, popularly know as the Single Otter (in contrast to the Twin Otter). The Royal Norwegian Air Force as well as Widerøe used this aircraft type. As seaplane on the coast of Finnmark, Widerøe operated with 100% regularity.

ownership and management of Norwegian airline companies; Det Bergenske Dampskibsselskap was far from alone. Besides, Norwegian domestic aviation was completely dependent on the infrastructure and know-how which steamship companies had laboriously developed in the various Norwegian cities and urban areas. Around the country, seaplanes dominated. The seaplanes docked, just like ships – they unloaded and loaded their cargo, then they were ready for a new journey to the next seaplane terminal. And speaking of maritime connections, the first «principle airport » in Oslo was situated at Gressholmen in the Oslofjord.

In the same way as ship navigators, the pilots of the seaplanes also had to navigate the Norwegian coastline with the aid of instruments, topography and meteorological data. Pilots often used special charts, where air routes were glued to a plywood board and then covered in a varnish coating. If the chart was accidentally dropped in the sea, the pilot just had to wipe it dry.

Whereas today's air routes have been carefully plotted in advance, and the movements of the aircraft are carefully monitored by air traffic controllers, the seaplane routes were much more open to pilot improvisation. The routes were normally not drawn along a single predetermined line on the chart; the majority of seaplane routes gave the pilot two different route suggestions. It was mainly the weather conditions, as observed by the pilot, that determined which route was followed.

New air routes unite the nation. Banak was opened in 1963. Norway received considerable NATO funding for the construction work.

The Norwegian civil aviation system

Up until 1994, the Norwegian civil aviation system was under direct regulation by the authorities insofar as airline companies depended on a government-granted licence in order to open and run an air route.

At the outset, DNL, and thereby also SAS, enjoyed an exceptional position within the Norwegian system. SAS had the exclusive rights to all domestic scheduled flights, but the system did however turn out to be more elastic. Norwegian authorities allowed other airline companies to fly those air routes that SAS had rejected. This was how Braathens SAFE and Widerøe's Flyveselskap gained access to regular scheduled air traffic in Norway.

On several occasions, and particularly as the Braathens market share increased, the preferential position SAS enjoyed became a political issue. In the early 1970s, SAS convinced the authorities that the airline company had to retain a real market share of 60% if their preferential position were to remain valid. During the 1980s it nevertheless became clear that Braathens controlled over 40 percent of the regular domestic air traffic network market.

At the turn of the 1970s the Norwegian civil aviation system had settled on an organisational form that would remain in use until 1994, when free competition was introduced for national airline companies. Together, SAS and Braathens developed the network of air routes between the main airports. The main purpose of this network of airports was to connect the different regions and parts of the nation. The air routes in question became known as the primary air routes, handling approximately 80% of all the domestic scheduled traffic.

The deregulation of the Norwegian air traffic market in 1994 brought about changes. Once again, an airline company controlled by a ship-owner, Nils Olav Sunde, was established. The company, called Color Air, collapsed after operating for just one year, from the autumn 1998 until the autumn 1999. The real change, however, came about when Braathens, too, disintegrated, partly as a result of fierce competition with SAS, and partly because of the company's debt. The financial state of the company worsened even further following the costly purchase of the airline company Malmö Aviation. It all culminated with SAS first buying Braathens in 2001 and then establishing a new airline company, the SAS Braathens company, in 2004. The SAS group of companies was already in control of the airline companies Widerøe and Blue 1. Additionally, in 2005 the SAS group owns 94.9 percent of Spanair and is associated with airline companies such as Skyways, Cimber Air, British Midland, airBaltic, Estonian Air and Grønlandsfly.

With these changes it appeared as if the liberalisation of Norwegian air traffic had allowed the SAS group of companies to gain stronger control of Norwegian civil aviation than ever before. SAS did, however, face a new competitor in the Norwegian Air Shuttle. The company Norwegian and its managing director, Bjørn Kjos, had strong ties with Braathens SAFE. Originally, Norwegian was the operating company for Braathens in western Norway. From the autumn of 2002, however, the company started to compete with SAS Braathens in the Norwegian domestic market. Norwegian avoided the fate of Color Air. From 2002 the company grew rapidly, and from the spring 2005 the airline company ran a fleet comprising 13 aircraft.

On green wings into the future

The so-called secondary air routes were established in order to provide connecting flights between the smaller regional airports and the network of larger airports. Widerøe became the dominant regional airline company.

In 1964, 30 years had passed since the establishment of Widerøe's Flyveselskap A/S. In the middle of the 1960s, Widerøe was a relatively small airline company, but had grown at a steady pace through the 1950s because the company had gradually taken over the DNL local air route network. After a while, Widerøe controlled all seaplane routes north of Bodø.

In 1966–67 Norwegian authorities made a decisive choice about the future of Norwegian aviation. Instead of continuing the one-sided development of land-based trunk route airports to replace the seaplane terminals, Parliament decided to support a proposal from the Minister of Transportation, Håkon Kyllingmark, to experiment with the development of short runway airports. The first four smaller airports were established at Namsos, Brønnøysund, Sandnessjøen and Mo i Rana. These airports formed the backbone of the so-called «Helgeland route» between Trondheim and Bodø, which opened for experimental operations on 1 July 1968. With the introduction of the smaller airports, the seaplane era of Norwegian civil aviation had come to an end. The age of the Twin Otter had dawned.

In a surprisingly short period of time, a large number of smaller airports were constructed. As soon as the mid-1970s most of the airports were ready for traffic. From a historical perspective, the construction of a network of smaller airports towards the end of the 1960s represented the third phase of expansion and change in Norwegian civil aviation. The first phase can be dated to the years after World War I. The second phase of expansion and change took place immediately after World War II. The only airline company to survive this phase was Braathens, while among others Polarfly in Narvik succumbed. With the deregulation of the network of trunk airport routes (1994) and the network of smaller airport routes (1997) the fourth, and so far last, wide-ranging restructuring of Norwegian civil aviation was completed.

The Twin Otter - the work horse of the coast. The aircraft has had great social impact.

The construction of the network of smaller airports has been of great importance for the uniting modern Norway. The significance of this development is symbolised by the status of North Norwegian football. The football team Bodø/Glimt had to overcome many obstacles, also in terms of communications, on the long journey towards the team's premier status in northern Norway and its place in the top national division. While trunk roads and other communications were poorly developed, there was a match before the match – and the goal was to get to the arena.

The North Norwegian football teams were excluded from the national football system because communications were far too difficult, according to the Football Association. In the 1970s, however, when air routes had been sufficiently developed, there was no longer any excuse. The North Norwegian football teams had to be allowed to compete on the same terms as the other Norwegian teams. From the 1972 season, northern Norway joined the national league system. Mjølner was the first team to represent the region in the top division. For that was how it was perceived: The football teams from the region represented not only their local city, they represented all of North Norway. In the 1970s, then, Bodø/Glimt therefore became the North Norway's Bodø/Glimt.

Norving

In addition to the great companies of the Norwegian aviation history – SAS, Braathens and Widerøe – there has always existed a small undergrowth of smaller airline companies. When company names such as Vestlandske Luftfartsselskap A/S, Busy Bee of Norway A/S, Partnair, Rørosfly, Helikopter Service AS, are mentioned, savants of civil aviation nod in recognition. Some of the smaller ones have also attempted to grow, either through challenging the larger companies, or by expanding into new markets. The latter was the case when Helikopter Service AS, which today is a relatively large company, became closely associated with the oil industry. The former was the case with Norving, which had to throw in the towel. Let us take a closer look at the Norving case.

Norving can trace its ancestry back to 1959. On 24 July that year, the Norving predecessor, AS Varangfly, was established. The enterprise started with seaplanes. The company concentrated heavily on ambulance flights, and during the first 10–15 years that represented a dominant segment of the company's activities as opposed to post and passenger traffic. In 1970, the company had a breakthrough in land-based flights, after a two-engine small airport plane of the Britten Norman

(Left)
Part of the Norving fleet of aircraft from the time when the airline company worked the regional route network in southern Norway.

(Below)
The Norving logo.

Islander BN-2A type was purchased. The company was among the instigators of the construction of smaller airports at Berlevåg, Gamvik, Hasvik, Båtsfjord and Kjøllefjord in Finmark.

In 1971 AS Varangfly merged with Nor-Wings AS in Tromsø, and the company now took the name AS Norving. Shortly after, a base was established in Bodø, and in 1972, Norving purchased the Bodø-based company AS Nordlandsfly. Norving was thus capable of covering ambulance flights in all of Northern Norway.

Subsequently, the greatest expansion took place in southern Norway. In 1976, the company took over Fjordfly AS in Bergen. In the same year, an air station was established in Skien. From these locations, charter flights and scheduled flights became the most important areas of business.

A few years later it was decided that the company would apply for scheduled flights in southern Norway. This was after the take over of AS Nordsjøfly in Haugesund in 1982, a purchase which required large investments. Some investments were allocated to improving the existing aircraft. The company turnover increased, but so did the company costs. In 1986 the accounts indicated that expenses had outgrown the income. The attempt to win the right to fly regional air routes in southern Norway had been expensive. The period up to the dissolution of Norving in 1994 became a struggle to survive. This was a battle that Norving would eventually lose. Widerøe took over Norving's routes.

It's Scandinavian!

It may at times be frustrating for a Dane or a Norwegian, but the fact is that whenever an American attempts to put us on the map, there is a good chance that he might say: Oh, you're from Scandinavia! We shall not exaggerate and claim that this is purely because of the SAS domination, but the airline company does in fact deserve some of the credit.

SAS was the first European airline company in New York, an event that was celebrated by celebrities such as the New York Mayor Fiorello La Guardia, Bernt Balchen and the UN Secretary General Trygve Lie. SAS was also the first airline company to open an air route directly across the North Pole, from Europe to the American continent. The three Scandinavian Prime Minis-

SAS: The Global Airline. SAS has always had good taste in advertising.

ters Hans Hedtoft (Denmark), Tage Erlander (Sweden) and Oscar Torp (Norway) were on the inaugural flight. The airline company also became the first to take «the short cut to the Far East», to Tokyo, and could proudly advertise its status as «The Global Airline».

By and large, SAS must be regarded as a Scandinavian success story. Shortly after its founding, the airline company

Norwegian aviation has offered attractive employment. Particularly in the 1950s and 60s, aviation had an incredible appeal.

was capable of transporting its passengers to cities all over the world – and even did it in style. The success of the company probably contributed towards increasing the popularity of working as a pilot or stewardess. Every time a position as an SAS stewardess became available, the airline company would receive hundreds of applications!

Turi Widerøe was employed as the first female pilot in a large airline company in 1969. She became a household name all over the world. SAS immediately sent Ms Widerøe on public relations tours of the United States and Canada. Her SAS uniform can today be found at the Smithsonian Institution in Washington DC.

Transport and communication: important political issues!

Hardly any public sector has been subject to so much local and regional conflict as the transportation and communication sector. Hardly any sector has received so much attention from politicians. The improvement of transportation and communication was considered one of the fundamental prerequisites for the modernisation of Norway after World War II.

The prime example of political strife regarding transportation and communication is the conflict over the establishment of a new national airport in Norway. As early as the 1947 Civil Aviation Commission, the idea of establishing a large airport in East Norway was formulated. The matter appeared on the agenda again in 1968, through the work of the Airport Committee for the Oslo Region. The committee agreed that the case should be considered further. Accordingly, the Ministry of Transportation formed a new committee to explore the issue: The National Airport Committee of 1970. This brought political debate further than ever before. A parliamentary resolution that a new national airport should be situated at Hobøl was passed in 1973, but the resolution also

stated that the construction process could not commence until well into the 1980s. In reality, the question regarding the new national airport had been resigned to the future.

During the 1970s it became clear to most people that there were limits to how long Fornebu could handle the ever-increasing air traffic. The question regarding the new national airport resurfaced. The transport and communication authorities had to go through a long list of reports and committees until the Transportation Minister; Kjell Borgen (Labour) was able to present the case to the Parliament in White Paper no. 55 (1986/87). The Labour government, under Prime Minister Brundtland, supported Gardermoen as the best alternative. Also, establishing the new national airport in this area would

(Above)
Hectic traffic at old Fornebu airport.

(Right)
Gardermoen viewed from the south, from the 91 metres tall air traffic control tower. The railway connection is seen to the left. There was a fierce political battle over the building of a new national airport.

The terminal and the car parking facilities at Gardermoen.

have great effects on the development of trade and industry in the region north of Oslo.

SAS, Braathens and a variety of organisations were against the Gardermoen alternative. Hurum was their preference. And they received support from the Parliament. With 81 against 76 votes, the Parliament voted down the Brundtland government proposal. Hurum was chosen; Kjell Borgen resigned. However, both politics and the weather can be unpredictable. Measurements made at Hurumlandet by the Institute of Meteorology indicated that fog could pose a threat to flight regularity. Delays and reduced access could be the result if the airport was established at Hurum. Consequently, the Syse government halted the planning process for Hurum in 1990, and the nation prepared for a rematch over airport location.

The Minister of Transport and Communication in the Brundtland III government was none less than Kjell Opseth. Opseth was renowned as a particularly shrewd transportations and communications politician, something which has made the political science researcher Rune Slagstad characterise him thus: «The dynamite that Martin Tranmæl in his day wanted to stuff into boreholes, was in the 1990s finally detonated by Minister Kjell Opseth's untiring penetration of the West Norwegian mountain ranges. Today we see the results from having in protestant Norway a Fifth Gospel – the Gospel according to Transportation and Communication».

It was Kjell Opseth who once and for all settled the issue of the new national airport. The atmosphere in the Parliament was electric on 8 October 1992, the night when the parliament voted that the airport should be located at Gardermoen. The Conservatives wanted to examine the Hobøl alternative, but never received any support for the idea. Six years to the day after this historic resolution, Oslo Airport Gardermoen was officially opened.

Safety in the air

The novelist Dag Solstad writes somewhere: «One is never followed to the airport, but one may be driven, for example by one's beloved, but there one will be dropped at the entrance to the main building». Solstad continues: «No, she will

not accompany him into the building, they say their goodbyes here, inside the car, for it is so hard to find somewhere to park, and it is so expensive for such short time, she says. So one enters the main building alone, checks in, catches the escalator up to the passport and security checkpoint, gets through, and enters The Travellers' Inner Sanctum, and blends in with all the other travellers who walk determinedly back and forth, or sit in the café glancing discretely at their watches, whom I sit in my chair watching, while I wait for my departure. Here we all are, confined inside the inevitable structure of modernity, and marked by it».

Keywords such as aviation, flight and the modern – there is something here. Perhaps the well-known sociologist Anthony Giddens might be able to help us a little along the way. Giddens claims that the modernisation that so strongly characterises our society, is in reality a double-edged sword. On the one hand, modernisation has produced excellent opportunities for people to lead richer and more secure lives. On the other hand, the same development has created fundamental doubts about many questions regarding our life itself. It appears as if uncertainty and risk have become permanently stuck to the mental lives of humans. Modern man worries over natural disasters, over various strange diseases, over what chemistry and biotechnology researchers may be up to in their laboratories, over economic collapse, over nuclear war, and whether the aircraft he is in will crash. Modern societies are prosperous societies, but modernity is also a high-risk culture.

The reason for this is that we do not really understand, or are not able to control, all the technological aids that make our lives so uncomplicated. The average man or woman cannot possibly be fully aware what air traffic controllers, pilots or aviation engineers really are doing. We have been reduced to having to trust them. As airline passengers, we face the following situation: We have to consider the fact that different people from different countries, people we do not know personally, make decisions which concern us. The question, then, is: Are we confident that civil aviation is safe, or do we remain sceptical and uncertain? Only one thing is for sure: Civil aviation is dependent on passenger trust.

In addition to surveillance and security that airline companies are required to conduct and provide, Norwegian authorities also fund several organisations which work within the same field. Avinor and the Norwegian Civil Aviation Authority hold a unique position.

The state-owned company Avinor AS was established on 1 January 2003. Whereas the Norwegian Civil Aviation Authority had been a state management company reporting to the Parliament and the Ministry of Transportation, Avinor became a fully owned limited company under state control. The Avinor vision is, the way the company has formulated it, to be «leaders in security and punctuality within European civil aviation». Today, Avinor manages 46 airports in Norway.

Many attend to safety in the air. Here are air traffic controllers in the tower at Evenes in 1973.

At the end of 2004, there were 2700 employees in the company.

When the old Civil Aviation Directorate was established in 1947, it faced a formidable task. Not only were airports going to be constructed on land all over the country. The airports should also be run safely under the climatic conditions prevalent in Norway. The Norwegian Civil Aviation Directorate, from 1978 known as Norwegian Civil Aviation Authority, therefore set up a comprehensive flight safety service. A highly advanced and fine-meshed network of technical installations was distributed across the whole country in order to manage air security. Everything had to be controlled, from air traffic, telecommunications, aircraft navigation, meteorological observations, fire and rescue, and it had to be done with pinpoint accuracy. That everything

has worked well, historically speaking, is quite evident. Norwegian Aviation has been afflicted by relatively few accidents, and the regularity at Norwegian airports is good.

Air power

The central task of the Royal Norwegian Air Force has, since World War II, been to control Norwegian air space. Should Norway ever be attacked again, controlling the air space is one of the requirements for allied support.

In the 1950s, the air force strategy was based on the concept of offensive air domination. What does that entail? The air force strategy was designed as a part of the central defensive doctrine of the NATO treaty, the concept of total retaliation. Officially, this concept was in force from 1953 to 1967, and included attacking the Soviet Union with a massive allied nuclear air strike. The strategy called for waves of planes to be sent across Soviet borders to destroy Soviet forces on their native soil, preferably before they reached the Norwegian border. Norwegian squadrons would not carry nuclear weapons, but the planes would form air support for allied planes that did. The aircraft Norway received through the Weapons Aid programme mirrored the doctrine. Primarily, Norway received fighter bombers, which would be highly effective for attacking Soviet forces.

In the course of the 1960s, formally in 1967, the superior defence concept was changed in NATO. The Royal Norwegian Air Force was now given defensive air assignments more in the vein of supporting troops on the ground and at sea. Thus the F 104G Starfighter, the F-5 Freedom Fighter and the F-16

(Top) The Norwegian Aviation Museum RF-5A Freedom Fighter.

(Bottom) F-104G Starfighter: The jewel in the crown of the Norwegian defence for many years.

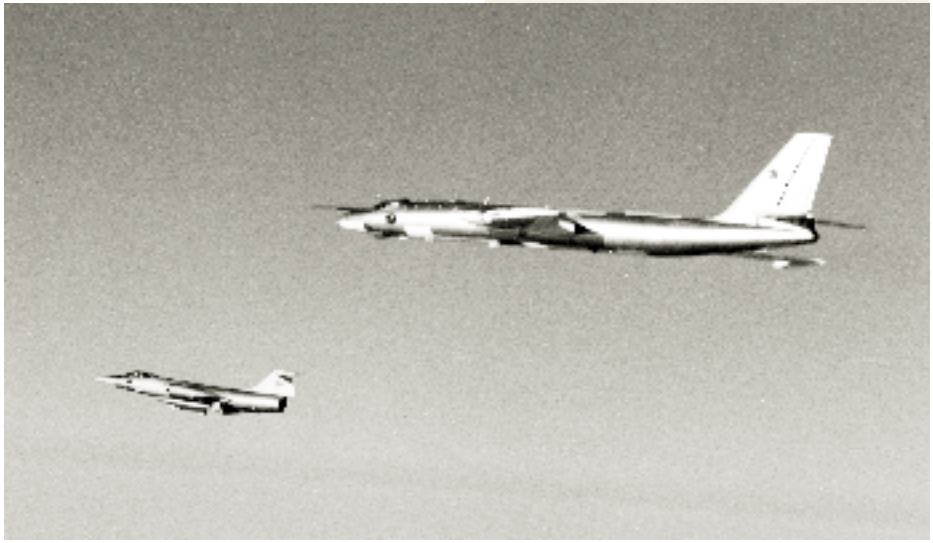
Air superiority test: Norwegian Starfighters practice Napalm bomb runs on the southern side of the Bodø peninsula in the summer 1965.

became the backbone of the national defence against invasion.

In the day-to-day service, the air force played a key role through control of Norwegian ocean areas. On their untiring journey up and down the coast, the F-104, the F-16 and the Orion planes were constantly in contact with Soviet aircraft, ships and submarines. The international air space interceptions were, on the one hand, to have a deterrent effect. On the other hand, the close encounters with Soviet aircraft provided us with unique information on the offensive and defensive capability of the opposing force. The statistical material shows that the number of intercepts in the period 1975–90 varied from a minimum of 60 per year to a maximum of 534 in 1984.

In the naval operations, the air force also had other important assignments. The Royal Norwegian Air Force rescue service is highly visible in peacetime. Quite a few seamen have greeted their rescuer in the back of a Sea King helicopter. A different service was less visible, but very

Close encounter with the enemy: A Norwegian F-104G intercepts a Soviet North Fleet bomber TU-16 Badger. The TU-16 was a highly versatile aircraft.



(Over) The watcher watched: Norwegian surveillance aircraft monitor a Soviet intelligence ship.

(Left) The Sea King - an important tool in both peacetime and war.

important. It concerns surveillance and intelligence work.

Intelligence

Under the leadership of Wilhelm Evang, Norway gave priority to military intelligence. In the pioneering period of the early 1950s, the person based intelligence collection work was intensified – what we call Human Intelligence. Among other activities, 14 different operations placing agents inside Soviet borders from Finnish and Norwegian territory, took place in the years 1952–54. At the same time, several Norwegian shipping agents were operating in Russian harbours. Besides, air reconnaissance took place along the border, and operations with rented boats – among them sealing ships – were carried out.

Nevertheless, it was the field of Communications Intelligence (COMINT) that saw the expansion. Charting the operation pattern of the Soviet North Fleet and air support in the area was of great interest to both Norwegian and allied defensive planning.

The electronic intelligence office, (ELINT), was given the assignment to identify, locate and watch the activity of Soviet radar facilities in the north-west of Russia. Here too, the important purpose was early warning. Besides, the Royal Norwegian Air Force closely monitored all Soviet air activity in the vicinity of Norwegian borders. The charting of such activities would, among other things, reveal to the Allies where it would be safest to enter the Soviet Union in the eventuality of an allied attack.

From the late 1950s, with the increase in Soviet submarine activities, the military interest in sea-based acoustic intelligence (ACOUSTINT) increased. The massive Soviet build-up of forces in the Kola Peninsula and the construction of a submarine base were worrying to NATO. Situated in the Norwegian Sea and the Barents Sea, Soviet submarines carrying nuclear warheads would represent a massive threat against the North American continent. In addition, the communications lines across the Atlantic from the United States to Europe would be subject to Soviet attacks, much like the convoys had been during World War II. On the background of this

information, the station at Stave in Andøya was built in the years after 1957.

Throughout the era of the Cold War, several stories about innocent Western aircraft having been shot down by aggressive communists while carrying out routine missions were leaked to the press. In reality, most of the planes were spy planes, operating along the borders of the Warsaw Pact. The U2 episode remained rather difficult to explain. Sources indicate that there were as many as 3000 such missions every year around the world. It was particularly under President Dwight D. Eisenhower that aerial intelligence grew in importance. He had great faith in this weapon, and is supposed to have said that aircraft were capable of collecting 80–90 % of the information of interest for military purposes.

Norwegian eyes and ears in the north: Orion aircraft above Andenes.

Spying from the air

From the end of the 1940s, the United States was constantly involved in the surveillance of Soviet nuclear weapons tests, missile systems tests, radars and ground facilities. Among other activities, so-called ELINT flights took place along the Soviet borders. In this other nations participated too, particularly Great Britain, but also Norway. Norway constructed permanent bases for electronic intelligence at Høybuktmoen, Vardø, Korpfjell and Barhaug; all of them in the vicinity of the Soviet border. The Navy ship, the «Marjata», had electronic intelligence equipment installed. In addition, the amphibious aircraft, the Albatross, and from 1968, the Orion, have monitored Norwegian areas and simultaneously collected information.

The British had many aircraft operations which were intended for collecting information from the Soviet Union in the 1950s, either through photography or electronic intelligence. One frequently used aircraft for such operations was the English Electric «Canberra». De Havilland Comet 2R was used for electronic intelligence. The British Royal Air Force had their three Comet aircraft delivered in 1957, and the planes were added to the 51st Squadron of the RAF. Aircraft such as the Washington, the Canberra and the Comet flew RAF operations out of Bodø in 1956, 1957, 1958 and 1959. The Americans, too, used Bodø as an airbase in this period, among others for the RB-66C, RB-47, and for the CIA's U2 aircraft. In 1959, interest increased from both the British and the American sides. The reason was that it became important to extract more information about the Soviet Union nuclear test detonations in Novaia Zemlia and the development of long-range missile weapons. The Russians built their first launch base for inter continental ballistic missiles capable of reaching the United States in Plesetsk east of Archangel. The U2 spy plane which was shot down over Sverdlovsk on 1 May 1960 on its journey from Pakistan to Bodø, was scheduled to pass above Plesetsk during the flight.

The Comet aircraft were among the intelligence aircraft which relatively often flew north along the Norwegian coast

and over to the border with the Soviet Union during the Cold War. The Comet was taken out of active duty in 1974 and gradually replaced by Hawker Siddeley Nimrod R1s. The first Nimrod flight took place in 1967. The Nimrod aircraft were used for electronic intelligence. Much like the Comet aircraft, the Nimrods too landed at Andøya during their missions.

Modern air power

The end of the Cold War has provided a new framework for Norwegian aviation. Generally speaking, the international situation was characterised by reduced tension in the vicinity of Norway, combined with increased unrest in other locations. In NATO, there was fear of revolution and civil war in the collapsed Soviet Empire. The fear was not unfounded. The acts of war in the former Yugoslavia led to Norwegian participation in peace-restoring operations in both Bosnia (from 1995) and Kosovo (1999). Shortly thereafter, the al-Qaeda terror strike on the United States, on 11 September 2001, activated Article 5 in the Atlantic Treaty for the first time in history. Norwegian fighter aircraft were deployed in battle in Afghanistan in participation in the «war on terror».

The wars that have started in the aftermath of the Cold War have displayed how effectively missiles and aircraft may be operated. The new international situation has also altered the design of the Norwegian defence, from the well-known invasion defence strategy to a national task force with international capability. When Norway in a few years' time purchases new fighter aircraft, these planes will have other purposes than those for which the Starfighters and F-16s had been purchased.

Conquering the air

How should we characterise the development of Norwegian aviation? Not anyway as a life; something that is born, grows up, fulfils its capabilities, and then fades away. On the contrary, Norwegian aviation shows great signs of vitality. At the same time, the Norwegian airline companies have to prepare even more for tougher international competition.

Is there anything we can recognise as peculiarly «Norwegian» about Norwegian aviation? Some features stand out.

First of all, Norwegian aviation bears constant evidence of Norway's strong naval traditions and the strong dependence on the coast and the sea. Norwegian ship-owners have, up to the present day, left their marks on the business. And when Norway became an oil producing nation in the 1970s, that boost in activity also spilled over into Norwegian aviation. On the one hand, the Norwegian oil adventure led to the establishment of even more smaller airports. On the other hand, considerable helicopter traffic developed between the shore and the many off-shore oil installations.

Secondly, Norwegian airline companies still use national symbols. The airline company Norwegian Air Shuttle believes that high visibility for their fleet of aircraft is very important, particularly in an eye-catching manner: «The design today consists of a red nosed aircraft and a tail section with famous Norwegian heroes and heroines».

Thirdly and perhaps most importantly: Aviation has become decentralised. The many airports, small and large, bind the nation together in a powerful web. Norwegians have understood the value of making use the whole country in order for people to settle where they wish. Will that still be the perspective in 20 years time?

In a longer perspective, the history of Norwegian aviation is a small story which can enter into a much larger human epic: It is the grand story of how Man conquered the air and later went on to conquer space. Humans, by nature bound to the ground, rebelled against the confines of gravity. The history of aviation can, in this perspective, tell us much about the human condition: About the desire to explore and creative forces; about victories and defeats; about human prosperity and about destruction. It is an exhilarating story, and the Norwegian Aviation Museum would like to share it with you.

Norsk Luftfartsmuseum

100 Years of Norwegian Aviation