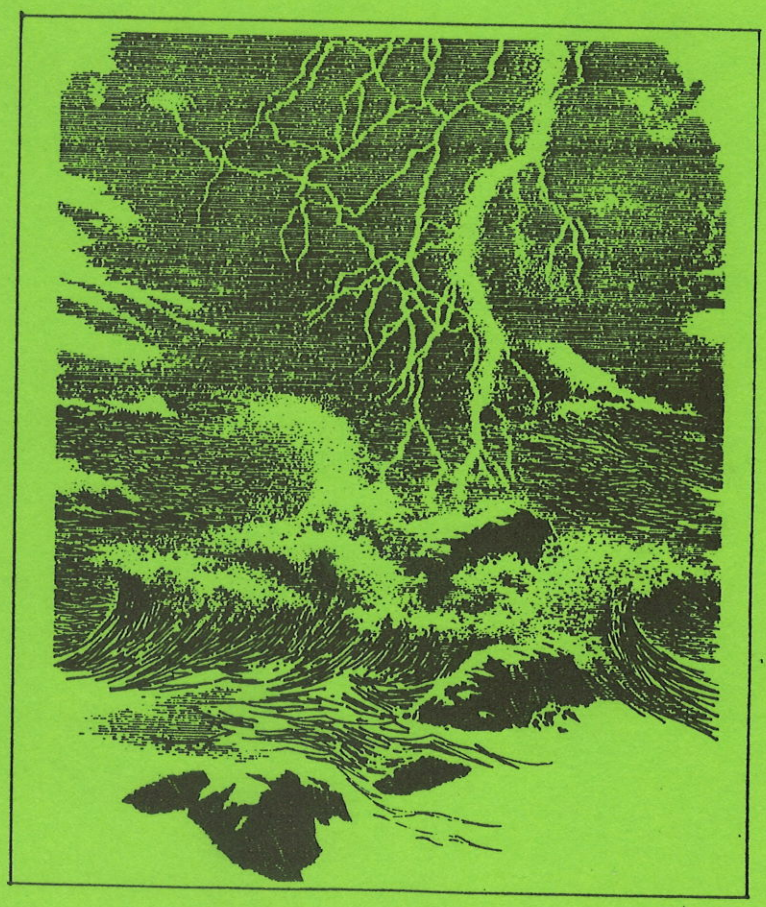
NORSK INSTITUTT FOR VITENSKAPELIG
FORSKNING OG OPPLYSNING

TRONDHEIM, NORWAY

JAN S. KROGH:

THE HESSDALEN REPORT

Reflections of reported atmospheric light phenomena and other observed objects in Holtålen county and surrounding areas 1870 - 1990.



NORWEGIAN INSTITUTE OF SCIENTIFIC RESEARCH AND ENLIGHTENMENT

0. Summary

NIVFO research has mainly contributed to:
-The analysis of observation
-Surveillance of the valley over a long period
-Founding a meteorological station in Hessdalen

In the period when the Air Force Radar Station in Trondheim was involved, they checked NIVFO data. But the Air Force could not find any unidentified tracks on their scopes. The results of these careful investigations are in brief:
1. A huge part of the observations have been misconceptions about conventional phenomena, sometimes during special conditions. A few were hoaxes.
2. On several occasions, lights could be watched which could not be immidiately identified. After careful investigations natural occurrances could always be found.
3. The main idea with the foundation of the Meteorological Station was to test hypotheses. The first was by Dr Tech Thomas McClimans, Trondheim, on the Plasma and Invertion Theory. He showed that the atmospheric conditions in Hessdalen were precisely those needed to create the identified phenomena, i.e. Atmospheric Plasma Balls (an Ionized Gas which could remind people of a traditional UFO) and strong temperature invertions (Layers of warm and cold air which function as a mirror and reflect different sources of light). Radar echoes of lights over Hessdalen can also be identified as a strong concentration of Ionized gas, i.e., Plasma.

The strange lights in Hessdalen are not unique. They can be found world-wide and date back to 1870. As with Loch Ness, Hessdalen is a place where the New Age has founded myths. This has lead to unpleasant consequences for the inhabitants. The light phenomena have been regarded as 'flying saucers', 'visits from space' and the inhabitants have been accused of telling lies when they have reported what they have seen.

The phenomena reached the media's attention in 1982. They were described in newspapers and TV stations abroad and two Norwegian books have been published. The Royal Norwegian Air Force sent two observers to the valley in 1982. The Research Institute of the Norwegian Armed Forces agreed to study the case, but, due to lack of financial means, this was never initiated.

UFO enthusiasts and sensationalist journalists have continually contributed to the spread of doubtful stories and, to some extent, exaggerated the truth about the Hessdalen case.

Introduction

This report is supposed to give a satisfactory picture of the situation which has been and still is in Hessdalen and the surrounding areas with reference to the reported atmospheric phenomena.

The Holtålen municipality is situated just north of the town Røros, and is a small rural municipality in the middle of Norway. Mainly people work within primary and secondary trades. The centre of the municipality is Ålen, about ten kilometres from Hessdalen, which is a smaller valley in Gauldalen, the main valley in the area.

The phenomena took place in early 1982. It was first reported to NIVFO, and later became famous via the international mass media. Books and booklets have also been written on the case. No other so-called Norwegian UFO-case has been so carefully studied as this one. This is owing to the many reported phenomena from this area over a very long period. Twice humanoids have been reported from Space, last time in 1984. Since 1982, much time and work have been spent on solving the so-called mystery of Hessdalen, more commonly known as 'The Hessdalen UFO'. This name is inaccurate because only one object is implied. From this point, the fact is not established, which is, many different phenomena were observed during these years.

'Star-formed lights' were observed in changing speeds, larger lights in many different colours and directions and many others were seen in the area. Some photos, hoax and genuines of the lights existed but the value of these has been disputed. Alone, without any other proof, these Hessdalen photos mean nothing.

This report is based on careful studies during the past years of the circumstances in and around Hessdalen. In April of 1984, NIVFO grounded a meteorological observation station in Heggset, just south of the Hessdalen centre. An important part of the report is based on the results we have from this time.

1. Hessdalen

1.1 The People In Hessdalen - The Observers And Others.

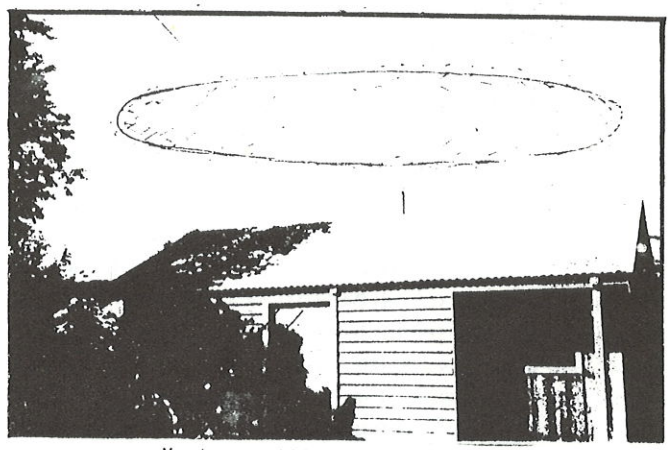
The people who probably have been most active with the problem in the Hessdalen area are Mr Lars Lillevold, Heggset and Mrs Rutt Marry Moe, Aspås and both families.

They have actively joined the activity's administration, helped with different tasks and many other things. It is also likely that members of the Lillevold and Moe families have reported the major part of the observations. Mrs Rutt Marry Moe reported the first object to NIVFO at the end of 1981.

It has been claimed that not all of the reported observations have actually occured. NIVFO has been told that there have been 'competitions' between persons reporting the most 'important' incidents to the international press and media. Out of the approximately 200 inhabitants in the valley, only a few persons wish to stand out and tell what they have seen. The most have no comments on the case but say that enough people have seen many strange lights and people do not lie about things like that.

The Hessdalen people have been the central figures in the sensationalist publications in a difficult case where no-one could give the answers to all the questions which had been raised in the course of some months when the hidden away village had been the centre of attention for the world press' interest. The stories have been discussed in the USA, Australia and other far away countries.

The people have given visitors a cordial welcome to the valley, shown then the correct observations pleces and information about the lights. In spite of the fact, that there were no hotels in the area, there was not any problem with overnight accommodation.



Mr Lars Lillevold's observation on 18th January 1982.

1.2 The Observation Place, Geographical Circumstances In Holtålen And The Areas Around Hessdalen.

Holtålen is a rural municipality in the valley of Gauldalen in the county of South Trøndelag, formed in 1972 by a union of the former municipalities of Haltdalen and Ålen. The municipality was inhabited by 2,640 people in 1979, and consists of the extensive valley of the Gaula River and in the upper area, the extensive valley of the Rugla River, with ridge and mountain areas on both sides. Many smaller rivers and valleys have estuaries to the main valley. The bottom of the main valley and the smaller valleys are strongly cut with precipitous groves and the bottom of the valley is 230m above sea-level. Further up the valley it becomes wider with gentle mountain sides, and the bottom of the upper area are about 700 - 1,200m above sea-level. The tallest mountain is Forolshogna at 1,332m above sea-level in the south-west.

The mountainous area consists of converted combro-

silurian slates some Gabbro and Granite. On the border zone, there are some ore aboundings with contents of Copper, Sulphur and Zinc.

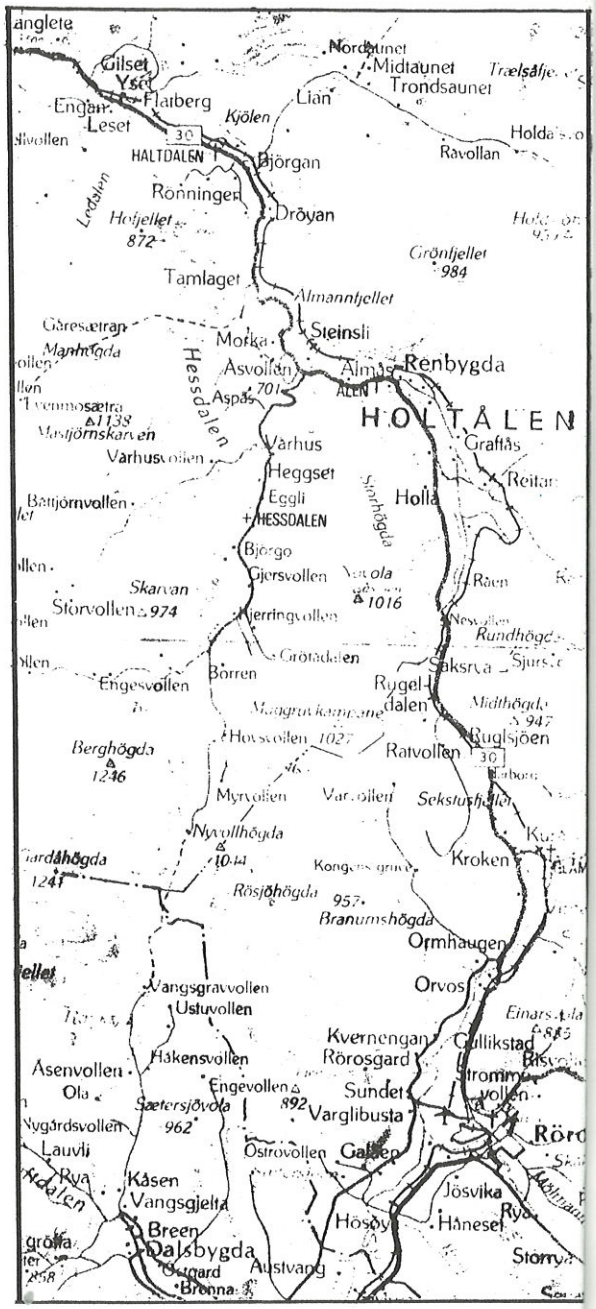
The settling is mainly in the valleys of the Gaula and Rugla Rivers. About 250 persons inhabit the south-west valley of Hessdalen. The densely populated areas are to be found around Ålen which is the municipality's capital.

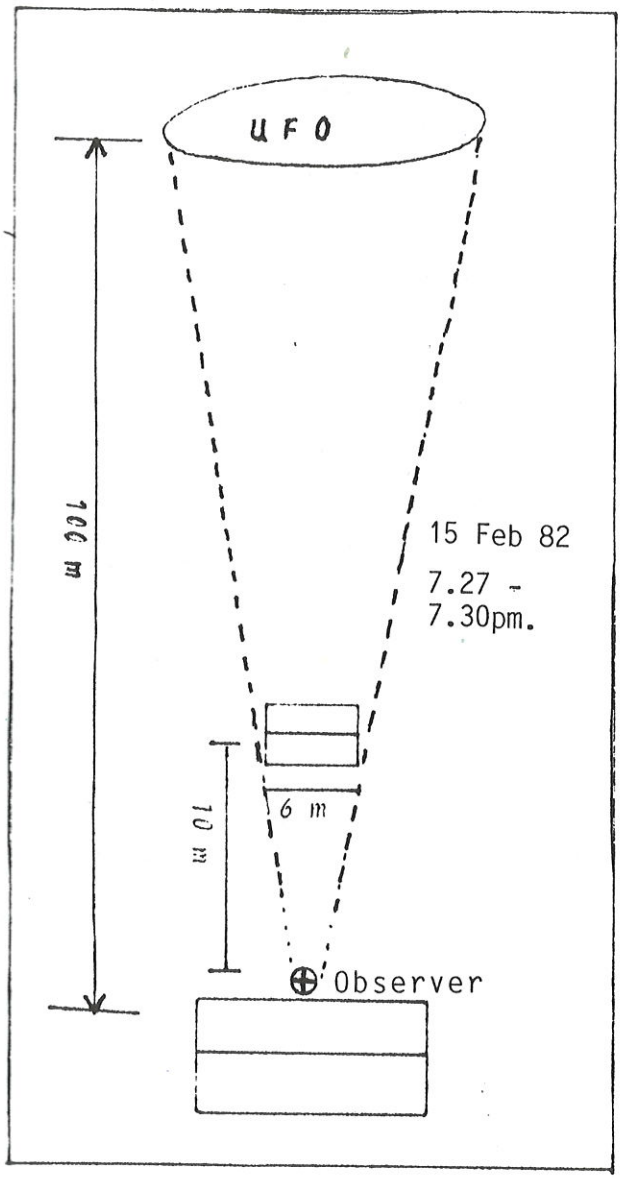
In Killingdal, Pyrite is excavated and the bottom of the mines is 240m below sea-level.

Hessdalen is about 15km long in air route, but has many turns so the real length is considerably longer. The Hesja River follows the valley through the estruary at Gaula. Many lights are observed at the ridge of Hessdalskjølen which is situated in the north of the valley. Here one has view to all directions, and the place is often visited because it has a road to the top. Another place is the valley of Båttjøndalen, west of the Hessjøen Lake where many photos are supposed to have been taken. Outside Hessdalen, but in the same area, lights have been reported from all these settled areas: Røros, Trondheim, Selbu, Stjørdal and surrounding areas. The quantity of reports is probably larger from the village of Hessdalen than from any other place in South Trøndelag county. This point may be explained because of the local's firmness to stand out in the media.

1.3 How Did The Hessdalen Case Begin?

During the Autumn - Winter months of 1981, NIVFO received reports on observations of lights from the area around Røros and Trondheim. Such reports NIVFO regularly receives from all areas across the country, so particular notice was not paid to them, nor did the UFO-enthusiasts or the public. At the turn of that year NIVFO was informed about the conditions in Hessdalen, Mrs Rutt Marry Moe phoned us and told about the lights, and we followed the case up from the early beginning. In January, the newspapers told about some sightings in Hådalen, south-east of Røros. As a following-up on the Hådalen sightings, the report on the Hessdalen sightings was re-





leased on the 18th of January, 1982. Until this date nothing had been written about the observations in the press. After this date, the debates around the case increased to glorious levels during the Autumn and Winter months of 1982/83. From the start 'flying things' and some photos which were supposedly of the lights were shown. Not long after, the stories on humanoids appeared on the scene, and religious views got through. The observed lights were soon associated with space crafts. From the start, probably few or none brought space crafts into the case, but after the UFO-enthusiasts and newspapers started to use the words 'UFO' and 'things' about the objects, this contributed to people beginning to wonder what is hidden beind the strange light spots.

The massmedia were from the early beginning frquently referring to the phenomena and often from Hessdalen. The Oslo newspapers very soon took an interest, hence the case was known all over Norway in a few weeks. The theorists would not be long in coming, but the Hessdalen people were the first and foremost to prompty reject these.

NIVFO, was in the beginning rather reserved in its connection with statements to the media as we, in fact, knew very little about the situation except what the observers had told, but still we had made frequent expeditions to the area.

1.31 Observations Made Before 1981.

From our point of view it is important to note that observations of the lights have been made in the area a long time before 1981. These sightings are of the same types as those in Hessdalen of 1981.

Spring day in the 1870s

Mr Lars Lillevold's grandmother observed something she later describes as a flying object. She also states somebody up in this object beckoned to her. The place where she watched this was at Ålen.

June or July 1943

Mr Jon Aspås and his uncle Mr Martin Lyng watched three different lights from Båttjønndalen, the largest was about the size of the Moon, and the smallest, a star. After some time some kind of smoke came out of the largest object and covered the lights.

When the 'smoke' disappeared, the lights also were lost.

Autumn 1957
Mr Olaf Volla and three other men watched a red, sometimes yellow-white object which pulsed. The light had a round shape and was maybe four or five metres in diametre. The light disappeared, going west as it changed its colour to yellow-white.

Ultimo August 1967
Mr Jon Aspås, Mr Jon Bakås and Mr Alf Schjølberg watched a round shaped brown-coloured light with a clear round edge from outside Mr Aspås' house in the afternoon. The light changed direction many times. The description fits with the plasma description.

Ultimo October 1972
Graduate Civil Engineer, Mr Jørgen B Lysholm watched a luminous cigar-shaped light with an orange colour in 45 degrees at 3.30pm from Tydal, about 30km north-northeast of Hessdalen. The light moved fast and disappeared quickly. It was very windy at this time. The light beamed very energetically.

8th February 1972
At midnight, Mr and Mrs Kjell Christensen sighted an object in the sky, it pulsed with an orange ember, but was more red-coloured near the edge. Mr Christensen, who lives at Nannestad, 50km north of Oslo, filmed the light. This object is very similar to Mr Arne W Wisth's pictures. The light looks like a strong, enlarged star out of focus.

12th September 1972
Mr Jan Heggseth and his wife Liv observed from 2.30am until 3.45am an oval shaped light shining brightly and which spurted sparks. The colour was blue-white. The observation was done during a trip from Reitstøa to Ålen.

1st August 1973
The Røros local Mr Reidar Whist observed a sharp light triangle with a tail. The observation lasted for about 30min. Mr Whist had seven witnesses to the observation which were from Hånesåsen at Røros.

11th August 1975
Many people in the area of Lillehammer - Røros observed groups or series of star-shaped objects which moved very fast over the sky in a northwest-soutwest direction. The time each light could be seen was at the maximun of one minute. The colour was yellow or white. Several newspapers described the enigma with capital letters on the front page. After some time it was found to be only satellites which had been watched.

1.32 Corresponding Places To Hessdalen

Investigations show there several light phenomena attached to one locality in the World. Hessdalen is not at all unique. Here are some examples:

Ramdi, Iraq
West of the Euphrat River, seen by the anthropologist Mr Henry Field.

The Andes Highland, Peru
Those lights are to be seen along the paths and are observed over the Cordills. They are white or green in colour.

Alexandria Station, Australia
White lights flutter over a ranch and seem to be the size of a car's headlights.

Iliamna, Alaska, U.S.
The crew at the air base has often been confused because of a clear gleam of light which seems to be situated in the area around the place.

Margaton, North Carolina, U.S.
Orange or red ball shaped lights, often observed in humid air are to be seen over a 800m high mountain top. Many lights have been seen at the same time. In clear weather, these may be visible for up to 15 minutes.

Maco, North Carolina, U.S.
The lights often hover one metre above a railway track in the location of the railway station.

Pasco, Washington, U.S.
The light ressembles a white lantern and is only visible in humid air. It moves itself over several places in the area and has caused cars to drive off the road.

1.4 Activities In Hessdalen Concerning The Phenomena.

Early January 1982
Mrs Rutt Marry Moe phoned NIVFO and reported the observations. NIVFO starts the investigations.

18th January 1982
The newspaper 'Arbeidets Rett' in Røros presents the phenomena in Hessdalen. On the same date Mr Lars Lillevold observes a large luminous light outside his house in Heggset.

27th January 1982
'Arbeidets Rett' reports that three Home Guard soldiers in complete field uniforms, head lamps and AG3 rifles were searching for the UFOs in the Hessdalen mountains. The area commander from the Home Guard on the other hand says this was an ordinary field exercise and had nothing to do with the observations.

15 February 1982
The US sensationalist newspaper 'Globe' reports from Hessdalen. The article has little or nothing with the real events at all.


GLOBE FEB 15 1982

UFOs HOLD NATION IN GRIP OF FEAR

NORWEGIANS are paralysed by fear that a sudden and massive UFO blitz has signalled the beginning of an extraterrestrial invasion of their tiny country.

The terror of the eerie UFO fleet has been spotted repeatedly near Røros 410 miles north of Oslo, the experts say.

Residents say the sky over their once peaceful valley has been streaked with strange flying objects for several months.

In fear, the villagers have appealed to the nation's highest military authority, the Ministry of Defense, for help against the aliens onslaught.

To quell their fears, the agency has assured residents it is doing all it can to determine what's happening and put a stop to it. Norway's state-owned radio and television stations have been put on alert to give warning when the invasion starts.

Officials are privately worried the unusual saucer hunt is linked to a top-secret NATO military maneuver scheduled to take place in Norway next month.

The Norwegian Air Force has tried — and failed — to track the aliens on radar. But the Ministry of Defense has photographed intense streams of light over the remote valley, sources say.

Geir Grung of the Norwegian Foreign Office says the nation's leading experts can't explain the mysterious sightings.

Incredibly, the aliens have appeared before groups of people, including a busload of shoppers returning from a trip to Trondheim.

Bus driver Olav Peterson told GLOBE: "I was driving along about 45 mph when this gray, metallic object with red lights appeared right in front of the bus. I thought it was going to fly into me."

One passenger, Margit Olesen, adds: "I looked up and saw this strange object glide in. It hovered just in front of us — as if to take a closer look — before flying off as quickly as it had come.

"I'd heard reports from other people in the valley who'd seen these strange flying objects, but I'd never paid any attention to them. I thought they'd been drinking and it was their vivid imaginations.

"But now I've seen it with my own eyes — and I don't drink."

Bjarne Lillvold, a woodsman, claims he saw his first starship last September. "It was hovering 18 feet off the ground in the valley," he says. "It looked like an upside-down Christmas tree spinning in an aura of light. It bobbed up and down like a yo-yo, but was so bright I had to shield my eyes."

Leif Havik, commander of Norway's UFO-Watch forces, told GLOBE the UFO blitz began last spring and has gradually increased to its present fever pitch: "I have seen 30 flying saucers, perhaps more, since my first sighting last March."

SITES of UFO sightings: 7
Have seen 30 or more

20th February 1982
The Entertainment Director at the Norwegian Broadcasting Corporation (NBC), Mr Harald Tusberg, sends two people to Hessdalen to make a TV programme about the sightings.

12th March 1982
A huge article appeared in the Trondheim newspaper 'Adresseavisen' on the Hessdalen sightings with Mr Arne W Wisth's photos and views. Mr Wisth says the lights cannot be from this Earth.

16th March 1982
Researcher Mr Thomas McClimans at Vassdrags- og Havnelaboratoriet in Trondheim says to 'Adresseavisen' that only a part of the lights may be due to reflections in The Invertion Strata.

17th March 1982
The so-called UFOs of Hessdalen are referred in the programme 'Telefontimen' from NBC's local radio station in Trondheim. The public is invited to call and give their views on the UFOs.

20th March 1982
Aeroplanes from the Air Force's school at Trondheim Airport are sent to Hessdalen in search of the phenomena. In the NBC TV news programme 'Lørdagsrevyen' at 7.30pm a five minutes long focus on Hessdalen comes where among others Mr Wisth and Mrs Moe report their views on the case. A short cut from a Hessdalen UFO-movie is also included.

22nd March 1982
Captain Arne Nyland and 1/1tn Peter Reymert of Værnes Air Force Base start the observations in Hessdalen but have to return after three days because of bad weather conditions and without any observations.

31st march 1982
Flying Officer Kjell Berkan in Braathens SAFE thinks a part of the Hessdalen lights may be due to aeroplane lights as many observations are done during clear weather and at regular intervals. He also says that some of the aeroplane lights are turned on exactly in the area around Hessdalen for planes going to Trondheim airport.

1st April 1982
As an April fool 'Arbeider-Avisa' in Trondheim writes: 'Spacecraft from strange planet in Hessdalen'. Furthermore that the space shuttle 'Colombia' and the Air Force are starting their mission in the area. Two photos in the


Romferja Colombia settes inn i jakten:

Farkost fra fremmed planet i Hessdalen

En av de lysende gjenstandene på Hessdalshimmelen er identifisert. Det dreier seg om en farkost fra en fremmed planet med levende vesener ombord.

Sensasjonelle bilder som Arbeider-Avisas fotograf Magnar Kirknes har tatt på Hessdalskjølen, bekrefter denne påstanden.

Magnar Kirknes har i ukevis ligget godt skjult i fjellet og ventet på den omtalte Hessdals-UFO'en. Natt til 30. mars fikk han bildene alle fotografer drømmer om.

– Kirknes forteller: – Plutselig så jeg en lysende farkost på nattehimmelen over Finsåhagda. Den kom mot meg og gjorde en perfekt landing på Hessdalskjølen. Det var en utrolig spennende og fantastisk opplevelse. Jeg finner ingen grunn til å beskrive gjenstanden. Bildet i dagens avis taler slitt tydelige språk.

Arbeider-Avisa

1. APR. 1982

article show a 'space man' and a ball shaped object.

2nd April 1982
'Arbeider-Avisa' reports that Mr Leif Havik of the UFO enthusiast association 'UFO-Norge' admits that he went to Hessdalen to meet the 'spaceman' he read about in the newspaper of 1st April.

4th September 1982
NIVFO makes investigations into air voltage gradients in the area. During an observation of a light the instrument indicated a gradient equivalent to 100 V/m.

19th November 1982
After a 'citizens' action' in Hessdalen the UFOs are reported to the police. The police will not take any steps because the UFOs have not done any crime!

28th December 1982
The Clairvoyant Mrs Anna Elisabeth Westerlund in Oslo

has foretold that 'something' would happen in Hessdalen today. But nothing except that 1,000 people who are waiting fore this 'unknown' to happen feel cold. Mr Wisth and Mr Carl Erik Olsen are filming the area for use in a US TV-programme.

22nd January 1983

A debate happens about The hessdalen Phenomena between Mr Leif Havik, UFO-Norge and Professor Rolf Brahde at the popular 'Lørdagsuniversitetet'. Mr Havik thinks the phenomena are impossible to explain but Mr Brahde says they may be due to lights from the trains reflected in the air strata. Later, 25th Jan, Mr Brahde withdraws the assertion but asks the public to find out if there are children who send balloons up in the air. He maintains that at least some of the phenomena may be due to the train traffic.

10th March 1983

Mr Arne W Wisth presents his book 'UFO-mysteriet i Hessdalen'. At the press conference in Trondheim he states that it is primarily written to satify his own inquisitiveness. He chooses to believe that the UFOs come from Space until the opposite is proved.

30th November 1983

NIVFO states the need to demystify the Hessdalen lights. We also think the lights do not have any connections with earthquakes as shown on a BBC TV-programme on NBC-TV. Instead we say we have a hypothesis on plasma lights.

31st December 1983

Photos taken by NBC's Mr Ingar Øien and Mr Arne W Wisth are shown in the NBC-TV's New Year Eve programme, minutes before the turn of the year. Mr Øien says that he hopes that investigations into the photos will be made.

15th January - 1st February 1984

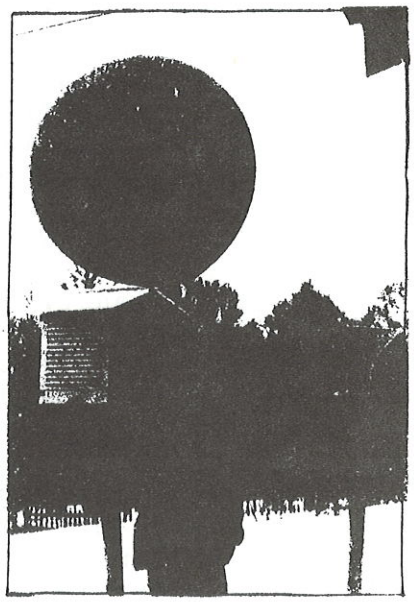
So-called UFO-associations in the Nordic countries join the Project Hessdalen to find out at least what the light enigma in the area is, not, according to the leaders of the associations. Members of the associations are stationed in Hessdalen and registrations are made. Notes are sent to the University of Oslo and the Research Institute of the Norwegian Armed Forces for their views on the registrations.

31st January 1984

A researcher at the Research Institute at Kjeller says to 'Hamar Arbeiderblad' that the geological circumstances in Hessdalen may cause discharges which may be observed visually. But, NIVFO has already checked for the probability of this type of discharge occurring. As there is no pressure on the land in the area, Norges Geologiske Undersøkelser states that there is no possibility that this hypothesis will fit in the Hessdalen case.

22nd February 1984
Holtålen Municipality Board awards Project Hessdalen NOK 500 in connection with the Hessdalen investigations.

31st March - 1st May 1984
NIVFO operates the Hessdalen Meteorological Station at Heggset in Hessdalen. The public shows a huge interest in our work, many journalists from the newspapers and the broadcasting stations visit the station.



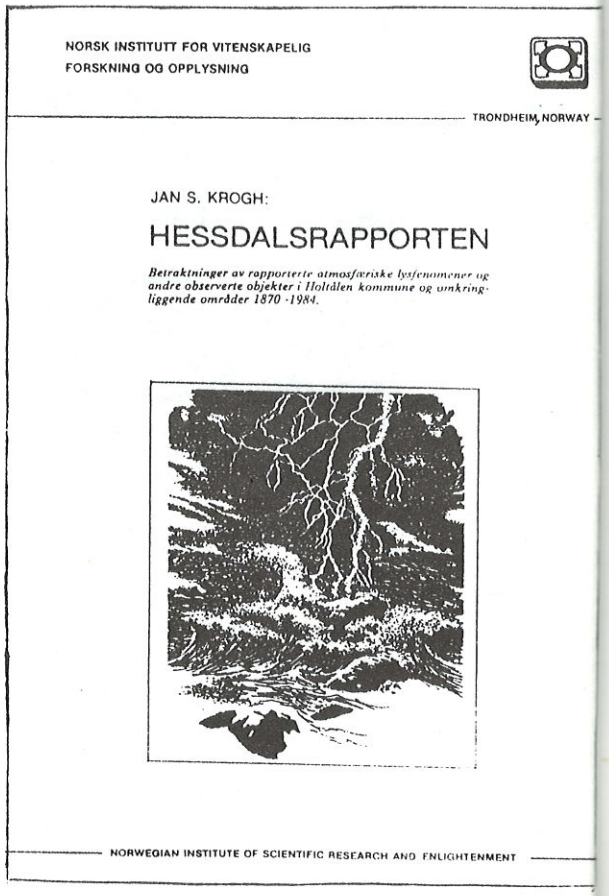
NIVFO launches a meteorological balloon from Hessdalen April 1984.

3rd May 1984
NIVFO arranges a press conferance at the Royal Garden Hotel in Trondheim. The results from the measurements in Hessdalen are shown and state that the phenomena may be explained from the investigations's results.

28th May 1984
In a long report on the assertions published in 'Adresseavisen' recently, NIVFO states the negative reactions of Mr Arne W Wisth and a Hessdalen citizen may be due to lack of understanding about the investigations. All assertions are repudiated.
NIVFO closes down its investigation in Hessdalen and looks at the case as solved.

April 1984 - April 1985
Project Hessdalen and UFO-Norge continue their investigation in the area. Their results, radar photos and more, support the results of NIVFO's investigation. Project Hessdalen sends out 3,300 envelopes with questionnaires to the Hessdalen households, but only about 30 were returned. This indicates a total lack of local interest in the UFO-Norge work.
The Holtålen Municipality Board awards NIVFO NOK 300 in connection with a NIVFO informative arrangement in Hessdalen.

NIVFO publishes the Norwegian-language 'Hessdalsrapporten' which is greatly made mention of in newspapers, broadcasting station etc.



28th January 1985
The leader of 'The Center for UFO Studies' in Illinois, USA, Dr J Allen Hynek visits Hessdalen. The purpose was to have a closer look at the phenomena, but unfortunately he observed no lights. The late Mr Hynek was, for many years, the leader of the Astronomy Department, North-Western University in Evanston, Illinois, USA.
On this day, the Project Hessdalen starts a two-week observation period headed by Civil Engineer Mr Erling Strand.

J. Allen Hynek.

About 1987
The author, Mr Leif Havik, earlier a member of UFO-Norge, publishes the book 'UFO-fenomenet' himself. The book looks at the basis for the Hessdalen Phenomena.

9th January 1990
Three Hessdalen locals tell the newspaper 'Arbeider-Avisa' that the latest observation of the lights happened on the 20th of December 1989. These people have also made many observations since 1985.

10th January 1990
Mr Leif Havik plans measurements of Radon gas in Hessdalen. The last time Havik observed lights in Hessdalen was in April 1987.

1.5 The Situation Today

As time has past the situation shows that the majority in the area has formed an opinion about the phenomena. In 1979 Norsk Opinionsinstitutt made an investigation which showed that 40% of all Norwegians over the age of 15 'believed in UFO', 40% did not, and about 20% were not sure. The same picture turned up in the Hessdalen case. The group who believed in UFOs (read: believed in alien visitors) believe without any doubt that aliens have visited Hessdalen. Those who 'do not believe in UFOs' and who never have done, do not believe in anything supernatural in Hessdalen. This group has either made up its own mind or they abide by the course of events. The 'not sure' group is small and finds the case uninteresting and so does not care.
The newspapers have different views on the case. In the area between Trondheim and Hamar, the largest paper, 'Adresseavisen', is on the same course as NIVFO. The second-largest paper in Trondheim, 'Arbeider-Avisa', has a neutral position in the debate. The smaller paper in the Røros - Hamar area has emphasized the 'space ship' theory. Seeing that the case has lasted for such long time, it is virtually impossible for the Hessdalen people to believe anything else other than what they are convinced of: that the phenomena are lights from alien objects. This fact is indebted to the UFO groups and people who during the past

years, have talked about the 'things' or 'space ships' in the sky, and who could never iagine a natural explanation of the enigma. It is conceivable that the phenomena are mysterious and exciting for many and who would change this feeling with boring plasma lights? If the public should forget the 'Hessdalen UFO' they need something just as phantastic back. This says something about the importance these have for many people.

2. Theories

2.10 Untruths And Inaccuracies

In the nature of things one can make no secret that there are points that have been made from the Hessdalen reports which are not 100% correct. Partly this may be due to ignorance about the actual circumstances or exaggerations which tend to make the reports better. There are also inaccuracies in a few details, and in this extensive case where there is no getting away from the fact that some stories may vary from reporter to reporter.

2.11 Swindles (Conscious/ Unconscious) and Imagination.

NIVFO has found examples of photo swindles in the case. Two alleged photos of the Hessdalen phenomena were mentioned first in the Røros newspaper 'Arbeidets Rett' on 9th March 1982. One photo showed a triangular-shaped figure and the other an oval-shaped object. The paper described then as 'excellent pictures of the increasingly well-known light phenomena in Hessdalen'. The newspaper also states that these pictures had to be the proof of the existence of the phenomena. The first photo was unquestionably of a sheet of paper taped up on a window pane. The other photo is to be found in a SEMIC Norge booklet about UFOs published in the late 1970s. The photographer has probably rephotoed this picture.

Another important point is the fact that the photographer is a famous local eccentric that the journalist should have known about.

It would not be right to supress the fact that there have been photographed sky objects as stars, planets and aeroplanes. None of these objects show any inexplicable objects. Most of the photos only show luminous points, the large object spring up after enlargements of the photos of pointed shapes. This fact may confuse the public, but if the camera is out of focus or if one uses high speed film, the sharp film grain may create a special effect which may confuse. This situation is very clear in the Arne W Wisth's Hessdalen photos.

The majority of the point shaped lights could be of stars or planets. Others could theoretically be hoaxes. This may concluded after the 'Arbeidets Rett's' article where the newspaper did not even put a question to the photo's authenticity.

How then can one identify more diffuse hoaxes from lots of other photos of lights? Or, pictures which the photographer does not recognise as being just stars and/or planets?

NIVFO's opinion is that we do not have any photographical results from the Hessdalen area which are adequate to prove that an unknown or unidentified phenomena exists in the valley today.

2.12 Exaggerations and Imagination.

Mr Arne W Wisth estimate in his book 'UFO mysteriet i Hessdalen' that the distance to a hovering space ship he met in the valley was about 300 metres. A Finnish research headed by Hekkinen showed a 100 metres on the flat was evaluated as 114, 200m as 280, about 40% more than in fact it was. If one wants to evaluate the distance up in the air the situation gets more complicated. 10m up in the air may seem like 50m or more. Mr Wisth's 300m may be only 50m or less. The size of the object will then be much smaller. May be it only was around one metre, the usual size of a plasma ball.

We have registered 'competitions' between some families in Hessdalen about who can tell the most and best stories about the phenomena. The purpose may have been to keep up the interest on the lights. Also, it is generally supposed that one's memory will be inaccurate as time passes. One's own wishes will form the memory, and after some time one will begin to believe that the object had a special form. This may happen for both young and old people as well for trained observers such as pilots or police officers. Also, in the dark, it is very difficult to evaluate distances and remember details. One can therefore not rely on Mr Wisth's data.

2.13 Religious Aspects

From the beginning of the case it seemed like people have understood the lights to be 'hard things' which one can feel and touch. This may be due to the fact that in Norwegian language there is no word for 'lights one cannot feel and touch'. If one called the lights 'things' it would be associated with space ships. In Norwegian the word 'objekt' is difficult for many to use. If the Hessdalen people during the past years have imagined that the lights are from alien space ships, it is difficult not to believe anything else. If so, both the preachers from the UFO clubs must preach something equivalently fantastic in return.

2.2 Stars, Planets, Satellites, Balloons And The Autokinestic Effect As Explanations.

The majority of the Hessdalen observations have taken place during clear weather, and at regular times. When the cload layers disappear, one may observe the planets the stars but also other objects such as satellites, aeroplanes, helicopters and balloons. Among the planets, Mars has very often been regarded as a UFO, but also Venus and bright stars like Sirius. During 1983 NIVFO received dozens of misconceptions especially about Venus. If one gazes at bright stars or planets it may look like the light moves, even if it does not. This phenomenon is called The Autokinestic Effect and during meetings at the Hessdalskjølen, NIVFO observed several times that people were fooled by this effect. Therefore many photos may be taken as 'moving' stars or planets. A similar effect is the phantom vision, this effect is most usual during daylight. Example: A balloon goes up in air, it passes the cloads, but you still can watch the small black point. The same may happen during night with a bright white light.

Satellites may, during favourable conditions, be very bright and be visible for a

long time. Their characteristic is that they move straight over the sky. The Air Force's observers reported to have watched more than 30 meteors and satellites during their two day study in March 1982.

2.3 Meteors

When meteorites or aerolites enter the atmosphere, only the largest will fall down on the ground without being totally destroyed by the friction within the atmosphere. Usually the whole stone gets heated and destroyed, and this may also be observed as a falling star or meteor. Meteors may be observed during the whole year not only during the swarms, even if one has better chance to make an observation then.

The usual time for a falling star observation is about six seconds, but it may vary according to very different sizes and evolutions. It is probable that many Hessdalen observations are due to meteor obsertvatons.

Each year 150 meteorites fall down on Earth. In Norway 11 have been found.

2.4 Aeroplanes

The aeroplanes which go south from Trondheim airport will often pass over Hessdalen.

More interesting is that aeroplanes to the airport have to fly within an 18km broad corridor, and the radio beacons are situated so they will pass some west of Hessdalen, but still be very visible, often they also pass right over.

Small aeroplanes on tour between Røros and Trondheim may go very low, and the lowest level according to international regulations is 500 feet/150 metres.

Passenger planes which are going to Trondheim will, in the area between Tolga, about 30km south-west of Røros and the Hessdalen area, start the landing for Trondheim. Then the landing lights will be turned on. These strong lights may have an effect if they are seen through a cloud layer observed on the ground. If the clouds light up then, in the second that light are turned on, may cause a dramatic effect for observers on the ground. It may appear like a light phenomenon which is flying accross the sky.

The aeroplane noise is easy to hear if it is blowing only a little, or if the wind is blowing in the direction of the observer. But sounds such as from vehicles on the ground may drown out the aeroplane noise.

During the NIVFO observations, public and private aeroplanes were often observed. Private planes, especially, make irregular changes of direction which may confuse the public. It is important to notice that there is an active aeroplane club at Røros, only 25km from Hessdalen.

2.5 The Extra-Terrestrial Theory.

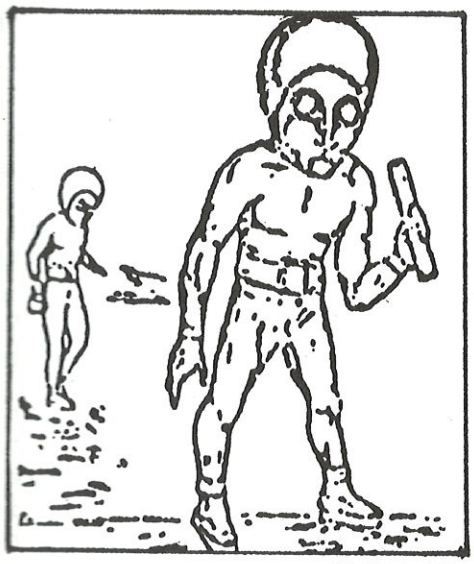
It is obvious this is the theory that has interested the active UFO believers in the debate. After the newspapers started to use the term 'things', it is natural that people have started to consider the lights as space ships.

The fact is that there is no approximate proof for extra-terrestrial visits to Earth. As there has never been alien crafts on Earth then it is only natural to search for a conventional explaination.

Humanoids have been reported

twice in the Hessdalen case. First in July/August 1981, about half a year before the phenomena were reported to NIVFO. The place was Lånke, near Trondheim Airport. In a broadcasting interview, metal-like objects were reported to be seen from a house window. After a NIVFO investigation soon after this interview, we met this observer and interviewed her. She, then, had never seen any humanoids, in fact, no human being was mentioned at the interview. NIVFO found out that she probably had observed an ionosphere balloon. She received some copies out of the magazine 'NIVFO-bulletin' as a gift.

Later on she was interviewed by a local broadcasting station and the major newspaper in the county, and then the humanoid re-entered the story, and it was amazing how indentical this being is to the Leonard Stringfield's drawings



Stringfield's humanoid published in NIVFO-bulletin No 2/ 81.

in one of the magazines the woman received from us, namely NIVFO-bulletin No 2/81. In Mr Wisth's book the humanoid was described as 'not higher than 120cm, and was wearing a grey-brown suit (transl)'. In the local newspapers, one and a half years before Mr Wisth's book was published, she described the humanoid in a very self-contradictory way. She now told how the humanoid straddled, whereas in Mr Wisth's book she told how the alien walked normally. In the magazine 'Norsk Ukeblad', she observed the alien from her garden. In both the local newspaper and Mr Wisth's book she stated it was from the kitchen of her house. It is possible that this case has a psychiatric solution.

The other case is also very uncertain. The observer has not seen any clear being as the distance was very long. The date of the observation is the 1st June 1984 and the observation place is near Ålen.

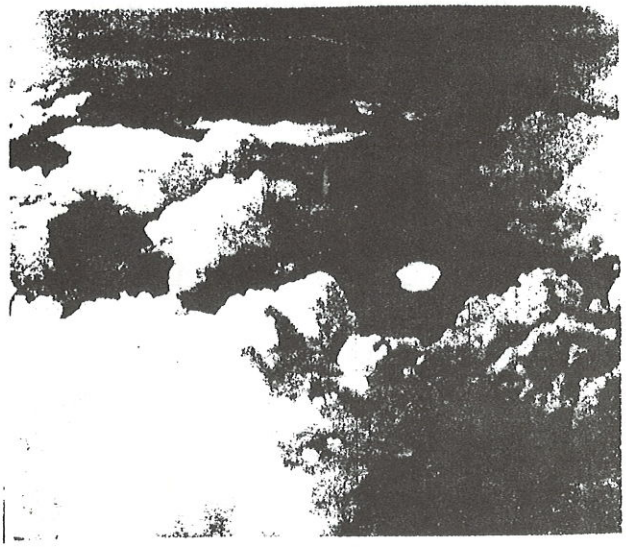
2.6 Geological Discharges

The US Physicist, Michael A Pershinger, says, in areas near geological displacement, the pressure in the crust of the Earth gives rise to balls of light. These balls will be of plasma or warm ionized gases.

The Hessdalen area consists of many types of rocks, much Grey Stone, Amphibolite, Gabbro and Diorite. Only in two places do we find Quartz. These places are at Båttjønn-dalen and Steinsli. Generally one can say that there is no special displacement in the area which may cause such plasma lights. Mr F Chr Wolff at Norges Geologiske Undersøkelser said to NIVFO that the area is relatively uninteresting in that direction, and that it would be more productive to study the coastal areas of the country.

In the Mining Laboratory in Denver, Colorado in the US, Dr Brian Brady at the US Bureau of Mines has found small spark-like balls which spring up when Granite crushes under hard pressure. Dr Brady thinks that the balls are made of plasma and that the lights

may be many metres in diametre and also may exist for many tens of seconds. This theory is probably correct but it is interpreted as controversial because it is only research results which support the theory.



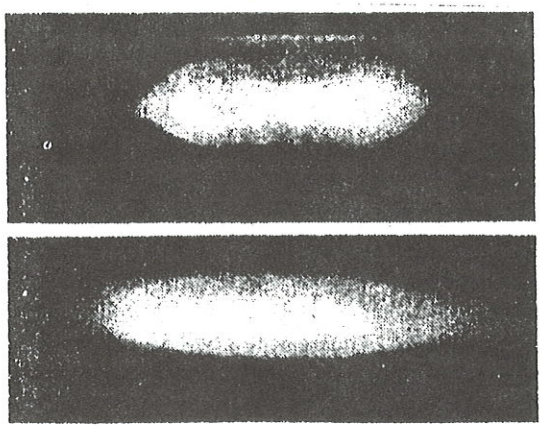
Huge plasma light photographed over thunder cloads by the Canadian pilot R. J. Childerhose in 1956. The aeroplane's altitude was 36,000 feet. Estimated diameter of the plasma is 50 - 100 feet.

Rare photo of a lightning.
Photographed in August 1961 in New Mexico by Dr. B. T. Matthias.

2.7 Plasma Lights And The Inversion Theory

2.71 Inversion Phenomena

The Inversion Phenomena comes into being when a warmer air current floats over a colder one. The higher the point above sea-level is, the more the temperature increases. Between the warm and cold air, a mirror layer develops and a bright light may be reflected.



Syntetic UFOs created at Morehead Planetarium by a spark in a gas.

In one compares the weather data between Røros and Hessdalen for April 1984, it shows that the weather can be very different at two places at the same time. For instance, on the 3rd of April at 7am it was -18.7 deg C in Røros, but -11.4 deg C in Hessdalen. On the same day at 3pm, the situation was respectively -1.7 deg C and 0.3 deg C. Even if the temperature difference was only 2 deg C one should notice that the level difference between the stations is 33m and is in temperature degrees about 0.4 deg C. The difference was then only 1.6 deg C - nearly nil! An important tendency to notice is that the temperature increases in the evenings. It is then warmer in Røros than in Hessdalen, in the mornings it is opposite. This may often be due to the fact that the sun is visible in Røros for a longer period.

An example from the 7th of April (0.4 deg C is added to the Røros temperature):

Time	Røros	Hessdalen
7.00am	1.2	1.7
1.00pm	7.9	7.4
7.00pm	6.9	4.1

Similar circumstances are to be found during the whole month. Local measurements in Hessdalen confirm the situation. The warm air coming up from the south is 1 deg C higher than the air at Heggset only a few km north. There is reason to believe that, the longer it is down to the bottom of the valley, the larger the difference of the temperature will be in the area around Jensvollen.

The wind currents which are mentioned here have nearly opposite directions or headings. Measurements show that the wind at different levels (900m and 150-200m and a lower level around 30-50m) may blow in different directions. If one compares these results with the temperature differences one may establish that there is a meteorological condition for Temperature Inversions in the Hessdalen area.

Wind current measurements show how the wind comes mainly from the south. The intensity could sometimes last a very long time, this indicates that a wind blowing the south via Hessjøen Lake and the north to Hessdalen. The wind could be strong from the north, too, but then we have no falling wind or inversion condition, only more ordinary conditions.

2.72 Plasma Phenomena

Registrations of variations on the electrical air potential was mentioned in the previous chapter. The deflection was about 100V/m. At the same time a point-shaped light phenomenon was noticed at an indeterminable height. An investigation headed by Strandlet and Winn in 1979, showed the basis for intensity measured at a random figure, for example, 1, in heights of only some few hundred metres above this point may be 4-5 times higher.

The sizes of the phenomena have often been reported to be 'very large'. Mr Barry, Los Angeles, stated there may be a difference between a reported diametre and the actual diametre inhalation effect will create diametres bigger than the actual. On the other hand, the visible diametre may be smaller than the actual because of the lack of information between the infraradiation and the actual radial profile. Mr Barry also stated plasma lights of this type have diametres of about 10-50cm.

Mr Powell and Mr Finkelstein mentioned in an article that ball lightnings have been observed for a maximum of several minutes at a time. They also mentioned ball lightnings come into being about as frquently as usual line lightnings, about ten million times per day on the whole Earth surface. Also ball lightnings were observed by about five percent of the Earth's population.

It is a contentious issue as to how high the gradiant is needed to be to keep alive a ball lightning but the majority of the researchers think this level is around 100-1000V/m. This time is dependent on the supply of energy needed. So if the energy exists then the ball lightnings may exist until there is no more left. The longest known period for this is 'some minutes'.

It is probable that plasma lights come into being when the weather conditions create the energy needed and do exist in the Hessdalen area. Plasma lights may be reflected in The Inversion Layer and this may make for a more unusual effect than what is normal for such phenomena. The energy which

springs up in the layer may keep the lightnings alive longer.

Ball lightnings do not only come into being during gale weather conditions. Enough energy is required to keep the lightning alive, and in this connection electrical winds come into the picture. During some circumstances it is not necessary to have only gale winds to create ball lightnings as disparities in topographical, ground and wind conditions are also involved.

Ball lightnings are also observed and photographed in the day light and seem very metallic in colour! It may be due to the fact that the lightnings consist of neutral ionized gas. With some imagination, it is possible to picture humanoids among the dark areas of a plasma light.

3. Additional Results

From the 1st of April to the 1st of May, 1984, between 7am to 10am UTC on the 14th and at 12am UTC on the 15th and at 7am UTC on the 20th, samples were taken of different rainfalls. Later these were analyzed at the Technical University of Norway, in Trondheim. The results were sent to the Norwegian Institute for Air Surveillance. The researcher Arne Semb says to NIVFO in a statement:

-We have unfortunately no analyzed tractoria data for April 1984. Our measurements from Hummelfjell and from Narbuvoll show that there was rainfall on the 19th of April. Sulphate, Nitrate and Ammonciem concentration were the median levels for the year in this area. The air concentration at Hummelfjell shows some higher level of Sulphate for the 15th of April. Unfortunately, we have no data for the 20th but on the 19th there is an increase in the Aerosol concentration. This is all we are able to say at this present moment but it seems like air-born pollution is the most probable explanation of the observation.

It is therefore likely that the same type of pollution is to be found in the Hessdalen area.

4. Conclusion

The light phenomena in the Hessdalen area have existed for a very long time. We have reports from over a 100 years ago. But it is only in the past eight years that they have regular been observed. During these years the entire World has received reports from the remote valley. Maybe because of this fact people have been stimulated to keep on watching the sky after lights. But the Hessdalen people has only observed natural lights or objects as far as we can see. We have nothing which indicates anything else without these. There is also reason to believe that the circumstances in Hessdalen by recently arisen causes have reinforced the phenomena which have taken part in the area before 1981/82.

All the reported phenomena in the area may be explained out of states we know of today. Different states of lights have been observed and reported. Because of known causes there have arisen inaccuracies in reports. One should notice these matters when one studies the reports.

5. Acknowledgements

The author wants to thank the following persons and institutions in connection with the Hessdalen investigation and preparation of this report:

Dr Tech Thomas McClimans, Trondheim.
Researcher Arne Semb, Oslo.
Mr Lars Lillevold, Hessdalen.
Mrs Rutt Marry Moe, Hessdalen.
Mr Martin K Heggset, Hessdalen
Mr K Smedsrud, MI, Oslo.
Mr Jon Skaar, MI, Oslo.
Det norsk Meteorologiske Institutt, Oslo.
Norges Tekniske Høgskole, Trondheim.
Mr Kim Møller Hansen, Ringsted, Denmark.
Skandinavisk UFO Information, Denmark.
Ms Meagan McCue, Mosjøen, Norway/Melbourne, Australia.
The people in Holtålen and Røros municipalities and all other persons or institutions not mentioned in this list else who or which have made this investigation and the publication of this report possible.

6. Appendix

The SYNOP observation data from the Hessdalen Meteorological Station are coded after the FM 12 VII System.
In this appendix only Section 1 is gived below. The copy is coded after the following international meteorological system:

XX XXX (time) IIiii $i_R i_X$hVV Nddff $1s_n$TTT $2s_n T_d T_d T_d$
4PPPP 5appp $6RRRt_R$ $7wwW_1W_2$ $8N_hC_LC_MC_H$.

Please find the SYNOP FM VII map at your local meteorological office.

At the station during the period March - May 1984, NIVFO had made 181 meteorological observations after the FM VII system. These were transmitted to Trondheim Airport and from there to the Meteorological Institute in Oslo. The station had 1st class priority as a meteorological station. The first observation took place at 7.30 pm local time on March 31st 1984, and the last at 7.30 am local time on May 1st 1984.

NIVFO launched some 20 Hydrogen balloons during this period, most of these to heights of about 200 - 300 metres (700 - 3,300 feet).

SYNOP METEOROLOGICAL DATA FROM HESSDALEN METEOROLOGICAL STATION

1.4.84

00 UTC 01239 31480 83613 11034 21041 70232 84660
03 UTC 01239 42480 63605 11035 21042 826XX
06 UTC 01239 11480 73609 11035 21035 69902 77172 87700
09 UTC 01239 41375 80000 11013 21013 52010 78687 887XX
12 UTC 01239 11375 80205 11006 21006 51005 60021 78682 886XX
15 UTC 01239 41370 80809 11004 21018 52005 78682 86400
18 UTC 01239 11375 70905 11010 21017 51003 60022 78582 87700
21 UTC 01239 41370 80905 11015 21015 53010 78582 887XX

2.4.84

06 UTC 01239 11580 50405 11034 21054 52017 69922 70182 85300
09 UTC 01239 42489 31005 11028 21060 52016 82280
12 UTC 01239 32489 20705 11018 21071 51008 82100
15 UTC 01239 42489 10702 10003 21074 51003 81100
18 UTC 01239 31989 21302 11038 21096 53011 70300 82005
21 UTC 01239 41482 31805 11100 21153 53015 70321 83500

3.4.84

06 UTC 01239 32789 11802 11114 21150 52013 81040
09 UTC 01239 42489 12802 11047 21076 51004 81440
12 UTC 01239 31488 31905 11012 21051 58004 70300 83400
15 UTC 01239 42488 11805 10003 21040 58007 81204
18 UTC 01239 11380 61605 11025 21055 57005 69902 77072 86440
21 UTC 01239 41380 41505 11028 21061 57008 70172 84440

4.4.84

06 UTC 01239 31365 81809 11028 21039 57021 70321 887XX
09 UTC 01239 42370 82109 11010 21029 56009 887XX
12 UTC 01239 11260 71805 10000 21024 55007 69901 78582 87744
15 UTC 01239 41280 81713 11003 21033 58004 77072 887XX
18 UTC 01239 11270 81709 11006 21026 56001 69902 70272 887XX
21 UTC 01239 42270 81709 11006 21013 55005 887XX

5.4.84

06 UTC 01239 11260 81902 10005 20001 52005 69902 77072 887XX
09 UTC 01239 42260 81602 10018 20003 53009 887XX
12 UTC 01239 32580 61805 10034 21004 58001 86460
15 UTC 01239 42580 71905 10046 20006 57002 87560
18 UTC 01239 32582 71802 10028 20007 57002 87850
21 UTC 01239 42580 41802 10015 20008 55004 84800

6.4.84

06 UTC 01239 32580 71802 10021 20017 58005 87700
09 UTC 01239 42360 81902 10043 20030 55001 887XX
12 UTC 01239 32470 81602 10050 20027 53005 887XX
15 UTC 01239 42580 52102 10077 20030 58003 85750
18 UTC 01239 32585 22305 10048 20013 57003 82100
21 UTC 01239 42585 22302 10032 20017 55011 82100

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN APRIL 1984

5910 VERNES Kommune: STJØRDAL 12 moh

LUFTTEMPERATUR								SKY-	NEDBØR i mm		
DT	01	07	13	19	Tm	Tx	Tn	DEKKE	R07	R19	R
1	0.5	1.5	3.9	3.2	2.3	4.3	0.1	8777	2.5	0.3	4.9
2	0.8	-0.8	3.8	2.9	1.4	4.9	-1.6	7611	0.0		0.3
3	-3.5	-3.0	4.1	3.5	0.1	5.3	-5.3	1112			
4	0.6	1.1	5.4	5.9	3.1	6.3	-1.1	1777			
5	5.0	6.0	8.6	8.8	7.5	11.2	4.1	7876		0.0	
6	4.2	4.2	8.6	10.0	7.3	11.8	3.3	4623			0.0
7	2.6	2.1	6.2	5.8	5.0	10.2	1.7	5787			
8	1.9	1.8	5.8	6.3	4.3	8.2	1.0	6617			
9	4.6	2.9	5.4	4.7	4.1	6.3	2.4	8888			
10	2.0	0.9	4.3	10.5	5.6	10.5	0.3	8163			
11	7.7	6.8	8.9	7.4	7.8	10.9	5.9	4767			
12	5.1	6.1	9.0	6.8	6.8	9.5	4.9	2721			
13	4.4	5.9	8.6	6.3	5.9	9.8	1.6	2736		0.5	
14	4.2	3.5	8.2	7.1	5.0	8.6	0.6	3588	0.3	0.0	0.8
15	8.3	5.7	7.1	6.0	6.1	8.9	3.6	4761	0.1	0.3	0.1
16	0.9	0.5	8.0	5.9	3.8	9.2	-0.6	6233			0.3
17	3.0	2.9	3.7	3.3	3.2	5.9	0.8	5787	0.0	2.3	0.0
18	1.4	1.7	4.9	4.6	3.1	5.7	0.4	7753	2.8	0.7	5.1
19	-0.2	0.3	8.1	5.0	3.0	8.2	-1.4	0588		2.4	0.7
20	3.7	3.8	8.5	11.3	7.7	12.6	3.2	8866	1.7	0.0	4.1
21	8.0	8.9	11.8	11.1	10.1	13.2	7.1	2777	0.0	0.2	0.0
22	6.8	4.8	5.7	5.7	6.1	11.3	2.5	8787	2.0	1.0	2.2
23	4.8	5.1	7.6	6.9	6.0	7.7	4.2	8888	4.7	2.2	5.7
24	6.6	6.3	7.1	5.9	6.3	7.5	5.5	8888	0.5	4.6	2.7
25	4.9	6.1	6.8	6.1	6.1	8.0	4.3	8888	0.5	0.3	5.1
26	3.0	2.1	9.6	9.5	5.9	12.0	0.0	3111			0.3
27	2.7	2.7	8.2	10.0	6.3	10.7	1.8	3876		0.0	
28	4.7	4.7	10.9	13.8	9.1	15.1	2.9	1000			0.0
29	6.0	4.6	12.0	15.1	9.8	16.6	2.8	2000			
30	5.6	5.3	10.8	12.8	9.1	15.1	3.0	1000			
MIDDEL:	3.7	3.5	7.4	7.4	5.5	9.5	1.9		SUM:		32.3

Max døgntemp	10.1	dato	21.	Max pos. endring av Tm	4.7	dato	19.
Min døgntemp	0.1	dato	3.	Max neg. endring av Tm	-4.0	dato	21.
Abs. maxtemp	16.6	dato	29.	Max døgnamplitude	13.8	dato	29.
Abs. mintemp	-5.3	dato	3.	Max døgnnedbør	5.7	dato	23.
Tm-avvik av normalen:	1.7			Nedbørsum i % av normalen:			53

Døgn med:

Tn<0	Tn<-10	Tn<0	Tx<0	Tx>=20	Tx>=25	R>=0.1	R>=1.0	R>=10.0	R>=25.0
0	0	5	0	0	0	13	7	0	0

Stasjoner som ikke observerer kl 01, har tom 01-kolonne

TEMPERATUR 01,07,13,19: temperatur ved respektive tidspunkt
Tm: døgnmiddel Tx: maksimum Tn: minimum

SKYDEKKE skydekke målt i åttendedeler kl 01,07,13,19 eller 07,13,19
0=skyfritt og 8=overskyet, 9=himmel ikke synlig

NEDBØR R07: nedbør kl 19-07 R19: nedbør 07-19 R: nedbør fra kl 07 foregående døgn til kl 07 dette døgn. Noen stasjoner har ikke R19.

NB! Data for denne måned er ikke maskinkontrollert.

14.4.84

06 UTC 01239 11580 81802 10002 21025 55019 69902 70372 887XX
09 UTC 01239 42580 81802 10027 21001 51001 887XX
12 UTC 01239 11580 80000 10049 20023 58003 69911 70272 889XX
15 UTC 01239 42580 80000 10046 20020 58018 889XX
18 UTC 01239 32575 51904 10047 20026 57015 69912 85440
21 UTC 01239 42575 71708 10031 20013 57013 85900

15.4.84

06 UTC 01239 32589 31704 10030 20014 57030 70121 83400
09 UTC 01239 41162 31802 10031 20015 53012 76162 88900
12 UTC 01239 11X05 83001 10009 20009 52013 60021 78687 89XXX
15 UTC 01239 41589 40300 10049 20019 51002 70182 83204
18 UTC 01239 11589 70000 10040 20014 58002 60022 70352 87900
21 UTC 01239 42589 70000 11009 21016 54000 87900

16.4.84

06 UTC 01239 32589 10000 11015 21064 58008 81400
09 UTC 01239 42589 22002 10021 21070 52008 82070
18 UTC 01239 32589 10000 10008 21067 52062 81400

17.4.84

09 UTC 01239 42582 31702 10004 21076 52066 83208
12 UTC 01239 11460 83302 10016 21055 52036 69901 886XX
15 UTC 01239 41582 73002 10008 21019 52030 78582 87600
18 UTC 01239 11560 43005 11012 21028 52016 69952 78583 84500
21 UTC 01239 41X03 90000 11023 21028 52017 78683 89XXX

18.4.84

06 UTC 01239 11X05 93002 11024 21029 52032 60012 78682 89XXX
09 UTC 01239 41665 30305 11012 21039 52012 78583 83500
12 UTC 01239 11565 73202 10011 21032 52011 69901 78583 87300
15 UTC 01239 41450 73002 11010 21034 51001 78581 87300
18 UTC 01239 11580 73602 11010 21032 58002 69922 78782 87300
21 UTC 01239 41589 20000 11043 21046 56001 70182 82300

19.4.84

06 UTC 01239 11989 21805 11035 21066 57009 69902 70282 82008
09 UTC 01239 42580 81813 10014 21049 58073 885XX
12 UTC 01239 32580 81809 10036 21028 56017 885XX
15 UTC 01239 41570 81809 10011 20001 57008 78522 885XX
18 UTC 01239 11X15 91802 10005 20005 57009 60012 77577 89XXX
21 UTC 01239 41460 81805 10009 20009 57006 70272 885XX

20.4.84

06 UTC 01239 11558 30000 10009 20009 53012 60022 71082 83100
09 UTC 01239 42680 20000 10040 20009 52011 82200
12 UTC 01239 32980 00000 10078 20021 51001
15 UTC 01239 42580 10000 10102 20023 53005 70200 81101
18 UTC 01239 32580 71605 10054 20008 51001 81104
21 UTC 01239 42580 20000 10026 20003 54000 81104

7.4.84

06 UTC 01239 31565 72302 10017 20017 52020 70542 85850
09 UTC 01239 42580 80000 10055 20014 51006 887XX
12 UTC 01239 32680 50405 10074 20029 58001 84760
15 UTC 01239 42770 30405 10072 20025 57004 83100
18 UTC 01239 31470 81602 10041 20013 57006 70521 887XX
21 UTC 01239 41470 60402 10006 20000 57007 70522 86700

8.4.84

06 UTC 01239 31565 71602 10023 20017 57030 70522 87600
09 UTC 01239 42575 51705 10060 20019 55004 85200
12 UTC 01239 32580 42309 10074 20023 57004 84150
15 UTC 01239 42585 52202 10090 20021 57005 82278
18 UTC 01239 32580 30000 10058 20008 56002 82108
21 UTC 01239 42580 80000 10018 20011 54000 887XX

9.4.84

06 UTC 01239 31558 82002 10018 20008 54000 70522 887XX
09 UTC 01239 42580 20000 10037 20025 53002 82700
12 UTC 01239 32980 00000 10072 20027 58002
15 UTC 01239 42580 50205 10049 20014 58007 85100
18 UTC 01239 31575 71502 10034 20014 56004 70521 87600
21 UTC 01239 41565 60000 10010 21009 58009 70522 86600

10.4.84

06 UTC 01239 31680 10302 10024 20024 58045 70521 81040
09 UTC 01239 42580 31802 10065 20020 56013 81106
12 UTC 01239 32585 22609 10078 20014 57017 82206
15 UTC 01239 42585 22709 10090 20005 58020 81201
18 UTC 01239 32585 52413 10057 21004 57020 81441
21 UTC 01239 42585 31909 10020 21002 56007 81441

11.4.84

06 UTC 01239 32585 82113 10004 21016 57033 887XX
09 UTC 01239 42585 62298 10014 21017 55004 86700
12 UTC 01239 32585 61919 10027 21016 58005 86468
15 UTC 01239 42580 71813 10026 21010 55006 86768
18 UTC 01239 32580 71809 10017 21005 51003 85609
21 UTC 01239 42580 81805 10007 21011 52005 887XX

12.4.84

06 UTC 01239 32585 71805 10007 21007 52005 85409
09 UTC 01239 42585 21705 10034 21019 53010 82200
12 UTC 01239 32689 11905 10049 21052 53016 81100
15 UTC 01239 42580 22405 10046 21054 51005 82100
18 UTC 01239 32582 20000 10022 21054 51001 82200
21 UTC 01239 42982 00000 10027 21004 58002

13.4.84

06 UTC 01239 32582 61605 11009 21041 58048 86800
09 UTC 01239 42585 72402 10035 21011 55006 87500
12 UTC 01239 11589 42402 10049 20003 52005 69901 70172 81259
15 UTC 01239 42589 62405 10074 21010 58007 82240
18 UTC 01239 32589 41805 10039 21011 57008 69902 82255
21 UTC 01239 42580 70000 10020 21001 57008 86800

21.4.84

06 UTC 01239 32580 71813 10026 20016 58035 87600
09 UTC 01239 42480 71819 10043 20027 57012 87461
12 UTC 01239 11480 71813 10055 20020 56005 69901 70272 87900
15 UTC 01239 41480 81805 10047 20029 58010 70262 889XX
18 UTC 01239 11480 81809 10040 20030 57009 69902 78582 889XX
21 UTC 01239 41580 81809 10037 20033 58023 70282 889XX

22.4.84

06 UTC 01239 11580 53605 10010 20004 53035 60022 70182 84204
09 UTC 01239 41480 73605 10016 21020 52030 72221 86500
12 UTC 01239 11580 73305 10040 21030 51014 69901 78582 87900
15 UTC 01239 41685 12102 10061 21008 52016 70182 81100
18 UTC 01239 12485 63002 10038 21030 52006 69902 70322 86800
21 UTC 01239 42485 63002 10024 20011 52025 86800

23.4.84

06 UTC 01239 11580 70000 10018 20011 52023 69932 70282 87900
09 UTC 01239 42580 70000 10046 21016 52014 87500
12 UTC 01239 32465 82502 10064 21001 51001 889XX
15 UTC 01239 41480 82002 10051 20021 53008 75052 889XX
18 UTC 01239 11580 80000 10047 20019 54000 69902 75052 887XX
21 UTC 01239 41580 80000 10019 20013 53019 70252 887XX

24.4.84

06 UTC 01239 11582 60000 10039 20027 53032 69902 70252 86200
09 UTC 01239 42582 82602 10061 20027 54000 885XX
12 UTC 01239 32480 53402 10080 20027 53003 83650
15 UTC 01239 41480 80202 10044 20040 53012 75552 885XX
18 UTC 01239 11470 80000 10043 20043 58004 69942 70252 885XX
21 UTC 01239 41465 80000 10023 20023 53002 75352 885XX

25.4.84

06 UTC 01239 11482 73313 10054 20034 58019 69932 75052 889XX
09 UTC 01239 41470 73313 10064 20041 57005 70252 87900
12 UTC 01239 11465 82605 10054 20031 57007 69911 71052 885XX
15 UTC 01239 41465 83602 10036 20029 57002 75052 885XX
18 UTC 01239 11X04 93609 10029 20029 54000 69912 74754 89XXX
21 UTC 01239 41X02 93609 10024 20024 53009 75555 89XXX

26.4.84

06 UTC 01239 11570 70000 10004 21015 52033 69942 70152 87500
09 UTC 01239 42689 12202 10027 21032 52004 81100
12 UTC 01239 32889 11802 10065 21024 58007 81060
15 UTC 01239 42889 13602 10090 21060 57007 81040
18 UTC 01239 32589 10000 10077 21035 57004 81200
21 UTC 01239 42889 20000 10000 21025 53002 82050

27.4.84

06 UTC 01239 32660 71802 10017 21002 54000 87500
09 UTC 01239 41580 83602 10069 20039 53004 70392 885XX
12 UTC 01239 11580 80405 10055 20009 54000 69901 70292 885XX
15 UTC 01239 41580 70305 10065 20029 54000 70192 87500
18 UTC 01239 11580 40000 10063 20026 58003 69902 70192 84200

28.4.84

03 UTC 01239 41962 00000 10004 20001 53001 71021
06 UTC 01239 31962 00000 10042 20035 58001 71021
09 UTC 01239 42980 00000 10110 20044 57004
12 UTC 01239 32989 03602 10149 20047 54000
15 UTC 01239 42989 00000 10158 20039 58003
18 UTC 01239 32980 00000 10131 20023 57002
21 UTC 01239 42980 00000 10032 20015 53007

29.4.84

06 UTC 01239 31958 00000 10042 20027 57009 71000
09 UTC 01239 42980 00000 10106 20029 57005
12 UTC 01239 32985 00000 10132 20039 57004
15 UTC 01239 42980 01302 10131 20035 57008
18 UTC 01239 32880 30000 10103 20028 57003 83050
21 UTC 01239 42580 60000 10045 20022 54000 86850

30.4.84

06 UTC 01239 32980 01102 10054 20022 58016
09 UTC 01239 42989 01802 10111 20040 57004
12 UTC 01239 32989 01802 10163 20057 57006
15 UTC 01239 42989 01105 10160 20047 57009
18 UTC 01239 32989 00000 10146 20044 54000
21 UTC 01239 42885 11802 10044 20026 53009 81080

1.5.84

00 UTC 01239 32580 21809 10035 20020 54000 82500
03 UTC 01239 42880 11805 10031 20021 58002 81050
06 UTC 01239 32580 51802 10069 20037 57002 85270

7. References and literature

POWELL, JAMES R AND FINKELSTEIN, DAVID:

Ball Lightning, American Scientist Vol 58, May - June 1970.

BARRY, J D:

On the Energy Density and Form of Ball Lightning,
Journal of Geophysical Research, Vol 85, June 20, 1980.

CHAUZY, S AND RAIZONVILLE, P:

Space Charge Layers Created by Coronae at Ground Level Below Thunderclouds: Measurements and Modeling,
Journal of Geophysical Research, Vol 87, June 20, 1982.

UFO-NYT No 2, 1984:

R J Childerhose's photo of a daylight plasma ball (1956).

Stastical Yearbook of Norway, 1984, Oslo.

WISTH, ARNE W:

UFO Mysteriet i Hessdalen, Bladkompaniet, Oslo 1983.

HOLT, OLAV:

Forelesninger i kjernefysikk, University of Tromsø, April 1984

CORLISS, WILLIAM R:

Lightning, Auroras, Nochturnal Lights and Related Lumnous Phenomena, Glen Arm, 1982.

DOVLAND, H, JORANGER, E AND SEMB, ARNE:

Deposition of air pollutants in Norway,
Research Report FR 6/76, NISK, Aass, May 1976.

BOOKLETS AND MAGAZINES

UFO-Nyt, SUFOI, PO Box 6, DK-2820 GENTOFTE Denmark.

Norsk Ukeblad, No 27 of 3rd July 1984, N-OSLO 3 Norway.

NIVFO-bulletin, PO Box 2119, N-7001 TRONDHEIM Norway.

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Verdens Gang, N-0107 OSLO 1 Norway.

Nordlandsposten, N-8000 BODØ Norway.