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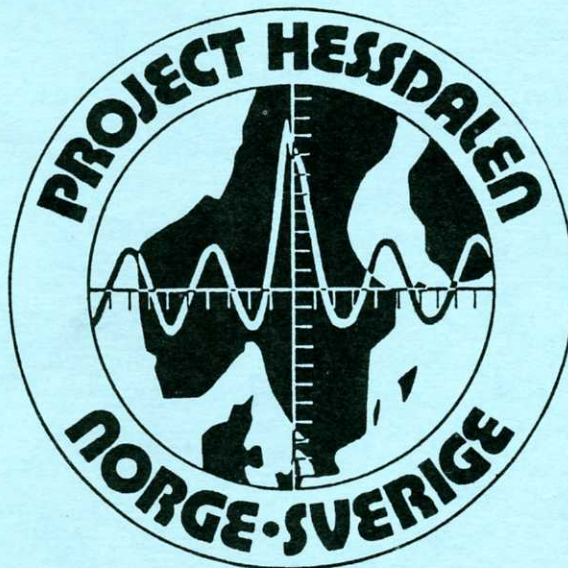
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PROJECT HESSDALEN 1984

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FROM THE EDITOR

The majority of this issue is devoted to a series of reports compiled by Phillip Mantle, MUFON's representative for England, whose picture can be found on page 6. Their origin is Project Hessdalen, a combined, instrumented UFO field study conducted by ufologists from both Norway and Sweden, beginning in the winter of 1983-84. Many of the photographs and much of the text are hereby presented in English for the first time. The project itself is a model of what can be accomplished with cooperation among varied personnel and parties, and a shoestring budget whose main coin is determination. And of course a "willing" UFO phenomenon. That the project was simultaneously able to record nearly 200 observations and not jump to conclusions as to their source commends both their dedication and objectivity. Ufologists have discharged their responsibilities in this case by revealing the presence of an unidentified phenomenon. Othodox "science" now stands derelict in its own duties if it does not accept their challenge.

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Hessdalen: An Introduction

By Dennis Stacy

Dennis Stacy is editor of the Journal.

Hessdalen is a 12-kilometer long valley southeast of Trondheim, Norway, approximately 11 degrees east of the Greenwich Median and about four degrees of latitude below the Arctic Circle. Typical Santa Claus country in a word, and sparsely populated, as might be expected. Think of the territory between Anchorage and Fairbanks, Alaska, as an easy comparison.

In November of 1981, Hessdallenders began reporting sightings of anomalous lights in the valley. The lights would sweep between the mountains, stop and hover for as long as an hour or more, then rapidly ascend or accelerate horizontally. Literally hundreds of such sightings were made, mostly in the morning, about 7:30 am, and again at "night," between 10:30 and 11 pm.

ANOMALIES

On March 26, 1982, UFO-Norge, Norway's foremost civilian UFO research organization, arrived in the area, and held a town meeting in Alen, attended by 130 local residents. Some 30 sightings had been reported just since the previous December. Of those attending, 17 reported a yellow spherical light, 12 a possible cigar-shaped object, and six an oblong shape with one red and two yellow lights. No one reported either physical or psychological effects in association with the lights, though one witness noted animal reactions, and three mentioned radio or TV interference.

Norwegian electronic and print media began turning their attention toward Hessdalen. Near the end of March, 1982, two officers from the Vaernes Air Force base even arrived

on the scene. "We didn't see any UFOs," said the two, a Capt. Nyland and Lt. Reymert. "On the other hand, we saw 30 shooting stars and satellites and 6 or 7 planes. And not least, we saw a lot of UFO hunters in the area."

The officers added that "the people of Hessdalen have been seeing luminous objects since 1944, but many years passed before they dared to talk about the sightings. But the accounts are credible, and we in the Defense (Department) must take them seriously. There are more things between Heaven and Earth than can be explained at first sight."

PROJECT

On June 3, 1983, several groups, including UFO-Norge and UFO-Sverige, joined together to form Project Hessdalen under the direction of Leif Havik, Odd-Gunnar Roed, Jan Fjellander, and others. The loan of much sophisticated measuring equipment was arranged through several local universities and institutions, including a seismograph, fluxgate magnetometer, a spectrum analyser, geiger counters, and so on. A target date of January 21 to February 26, 1984, was set as the optimum period for observations, based on previously recorded sightings. These might have been optimum times for the Hessdalen phenomenon itself, but being the dead of winter conditions were less than ideal for human observers. Still, the Project Hessdalen team carried out a remarkable series of measurements and individual observations, and racked up an impressive number of both color and black and white photographs. They are to be congratulated for their perseverance.

The following sections, then, consists of several separate reports that came out of Project Hessdalen activi-

ties. We are indebted to Phillip Mantle, MUFON's representative for England, who compiled and summarized the accompanying material. As with any translation from a foreign language, there is a possibility that some mis-statements of fact or assumption may have made their way into the English articles. Ground Saucer Watch of Phoenix, Arizona, provided computer enhancement and analysis of the Hessdalen photographs.

The Project also carried out observations during the winter of 1984-85, but these were largely hampered by deteriorating weather conditions. On January 26, 1985, Project Hessdalen was visited in the field by the late Dr. J. Allen Hynek. "It seems we have something important here," said Hynek. "Nowhere else in the world has the UFO phenomenon been known to stay put for so long a time."

Altogether, the Project Hessdalen team reported 188 instances of observations of luminous phenomena.



Project Hessdalen

By Leif Havik

Hessdalen is a valley in the middle part of Norway, and lies south-east of Trondheim, about 30 km northwest of the town of Roros. The whole valley stretches 12 km in length, and only around 150 people inhabit the area.

In December 1981, unknown lights suddenly started to appear in the skies above Hessdalen. These lights could sometimes stand still for more than an hour. They were also seen to move around slowly before stopping, and sometimes they were observed traveling at a fast rate of speed. At one time the lights were tracked by radar and were estimated to be traveling at approximately 8500 meters per second.

These lights were observed just about everywhere and more often than not they were below the horizon, down in the valley and not high up in the sky. It has to be said that the vast majority of the lights were reported to be below the tops of the nearby mountains. No one in Hessdalen could offer an explanation for these strange lights.

The lights appeared to have several different specific shapes. This was something that became quite apparent when the lights were photographed. The main shapes of the lights were: a bullet shape, with the sharp end down, a round football shape, an upside down Christmas tree. Of course, there were other shapes, but these were the main ones. The colors of the lights were mostly white, or a yellow/white. Sometimes a small red light could be seen among the white. On a few occasions the lights were made up of every color in the rainbow.

They could be observed several times a day, but they were seen more during the night. At most they could be observed around four times a day. There were more reports of the lights

in the winter rather than the summer. One reason for this might be the fact that in summer Hessdalen has almost perpetual daylight. The lights could be split into three groups:

- Small, strong white or blue flashes which could show up everywhere in the sky.

- Yellow or yellow/white lights. These lights were, more often than not, observed down in the valley and below the horizon. Sometimes they were just above the rooftops and even down on the ground. They could appear stationary for more than an hour before slowly moving off around the valley, and sometimes they could show extremely fast accelerations and very fast speeds. They were also observed high up in the sky.

- Several lights together with a fixed distance from each other. Mostly these were a yellow or white light with a red light in front. These lights could move slowly around the tops of the mountains.

REPORTS INCREASE

The reports of the lights carried on throughout 1982, but suddenly in the spring of 1983, the lights were reported much more seldom. In the summer of 1983, we had no reports at all. However, in the autumn and winter of 1983, reports again started coming in, but much fewer than previous years. However, in the autumn of 1984, the reports again increased.

As no official institute with governmental support seemed to be bothered with these unknown lights, five individuals started their own research project. This became known simply as PROJECT HESSDALEN. The aim of the project was to find out what this strange phenomenon in Hessdalen and nearby areas was. Even if we didn't succeed in that, we hoped

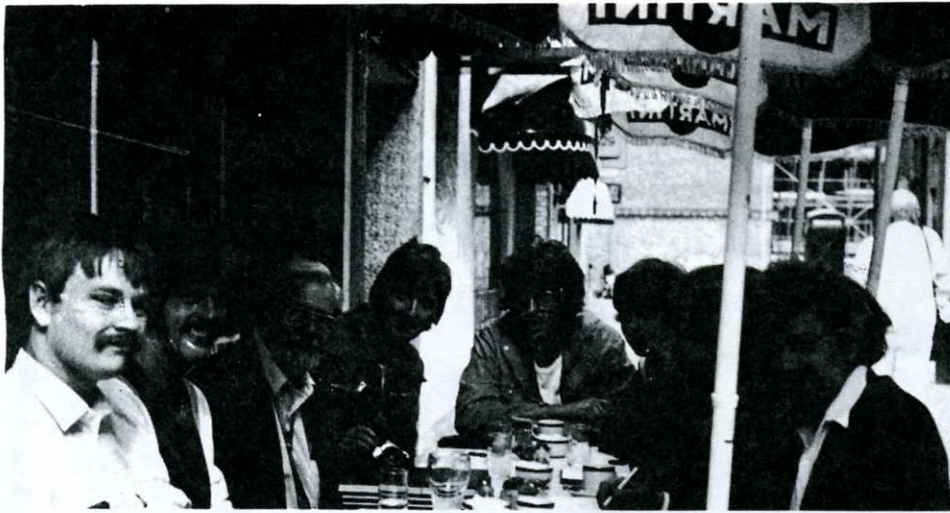
to find out at least a little more about these lights than we previously knew.

The project consisted of a "working committee", which had the responsibility of running the project, and an "advisory committee", which should help the working committee in the theoretical part of the project.

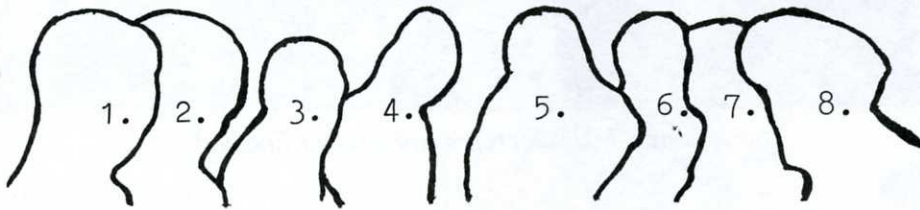
It should also act as an expert group and answer questions from the working committee. The fact is that the advisory committee got very little work from the working committee, because we managed to build up a local expert group which consisted of people from the Norwegian Defense Research Establishment (NDRE), The University of Oslo, and the University of Bergen, and on occasion, the University of Trondheim also.

The project first went "public" on June 3, 1983. On August 27, 1983, it was presented to the third BUFORA International UFO Congress in England. During the autumn of 1983, a research program was established. On November 19, 1983, the project was presented to the inhabitants of Hessdalen and surrounding areas. During the first part of January 1984, an information bulletin, explaining the project, together with a simple report form, which people should return to us, was sent out to 3,300 households in the district. The work in the field, with all the instrumentation, started on January 21, 1984, and ended on February 26, 1984.

The primary instrumentation of the Project took place between February 11th to the 26th, although prior to that we had a "test weekend," during which 22 observers were present. They were divided among three main locations, including Aspaskjolen, where the headquarters caravan, or trailer, was parked, Finnsahoga and Fjellbekkhoga. During the primary observation period itself Aspaskjolen remained the base of operations, while the field stations were moved to Hersjoen and Litfjellet.



Project Hessdalen members from both UFO-NORWAY and UFO-SWEDEN pictured with the late Dr. J. Allen Hynek at the 3rd BUFORA International UFO Congress, London, 1983. 1. Erling Strand; 2. Odd-Gunnar Roed; 3. Dr. J. A. Hynek; 4. Christer Nordin; 5. Hakan Ekstrand; 6. Ulf Elkstedt; 7. Kristin; 8. Jan Fjellander.



During both trial sessions and the main part of the project, numerous observations of the lights were made. Photographs were taken of the lights, and various other instruments were used to record the phenomenon. What follows is a brief summary of some of the observations made just after the trial sessions.

RADAR RETURNS

Two days after the trial tests (Jan. 25, 1984) an observation was made during which phenomena were observed both visually and on radar at the same time. This happened at 5:32 pm, January 27, 1984. An oblong-shaped light was observed to the southwest of Finnsahogda. The light moved in a northerly direction and could be observed until it disappeared over the horizon. The light had a white and red color which blinked at uneven intervals. Radar returns were made as the light passed directly to the west of the observation point, but this phenomenon was not photographed.

At 3:49 pm, on January 28, 1984, "something" was detected by the radar. An oval-shaped strong echo moved in a southwesterly direction to the west of us. The echo signal

appeared in size to be about one-third larger than a single-engine aircraft. The "object" on the screen moved quickly and divided into two parts on the north side of Rognefjellet. One part moved towards the mountain, while the other moved towards Hessdalen (the valley). As this happened during daylight hours, and in good visibility, it is reasonable to assume that something could be seen with the naked eye, but nothing was. Nevertheless, 14 single frames of film were shot in the direction of the echo, but nothing showed up on the film when it was developed later.

The following day, January 29, 1984, at 4:19 pm, radar contact was obtained with "something" moving north, this time on the east side of the base station. The distance was about 500 meters and the shape of the echo might indicate that something was descending. On January 31, 1984, at 7:01 pm, an echo was detected from Rognefjellet, passing on the west side of Aspaskjolen. Nothing was observed with the naked eye. It should be noted that long hours of continued observation of the radar screen, with nothing unusual registered, resulted in the observers becoming tired and starting to turn their attention to something else less

boring. But then when an occasional glance was made of the radar screen, "something" was there. This repeated itself on numerous occasions. However, we cannot explain why the source of the echo could not be seen with the naked eye.

On February 1, 1984, at 3:49 pm, we had a radar contact with "something" traveling north, from Varhushjolen, along Finnsahoga towards Hammerkneppen. Nothing was observed with the naked eye again. The next day, February 2nd, I was reflecting on the relevant observation times of so-called daylight observations. Realizing that several observations had occurred at 2:05 pm, the thought came to mind to check the radar screen, and sure enough, right on time at 2:05 pm, 3 strong echoes were registered east of Aspaskjolen, moving north. Exactly 30 minutes later more echoes were observed on the screen, this time on the west side of Aspaskjolen, but moving north also. These last 3 echoes were detected at every other sweep of the radar. Could this be caused by a wave movement which had been observed earlier?

More echoes were to come — at 3:46 pm, 2 echoes south of Kjolen; at 3:49 pm, 1 echo west of Kjolen; at

3:51 pm, 1 echo south of Kjolen. Then at 3:53 pm, the electric power supply suddenly went off for about 15 seconds, then gradually returned to normal after about a minute or so. In this connection I contacted a person on the nearby farm from which we obtained our power supply. He admitted to having pulled a switch which might have cut off the electricity, but insisted that this was closer to 4:00 pm, as he had observed the time when he arrived at the farm, and it was then 3:50 pm. The man had performed several tasks before going out into the barn and could not have achieved this in 3 minutes. Besides the power should have come back on immediately when the switch was turned back on. None of the neighbors had noted any power failure. A small transformer was, by the way, located about 150 meters from the base station.

At 4:03 pm, 2 echoes were registered traveling north. Later that evening we had an observation of something which we like to say was "first class". This Thursday night was the only one out of the whole month of intense radar surveillance, that no one was watching the radar. I was sitting at Jon Aspas's with a good cup of coffee, when the telephone rang. The neighbor informed us that "now it's coming". Hardly had the receiver been put down when the phone rang again. This time it was Lars Lillevold who had seen "it." From this moment on everything happened very fast. I literally jumped into my shoes and dived outside, managing to seize a camera with a 400 mm telephoto lens as my only "weapon". A well-lighted, oblong light, yellowish in color and red in front, passed on a northerly course; the time was 8:11 pm. It moved with a wavelike motion. This light source was observed by at least 9 persons and from 3 different locations. The photographs taken were probably not too successful.

On Friday, February 3, 1984, at least 31 radar echoes were registered between 3:12 pm, and 5:04 pm, at distances ranging from 450 to 2000 meters. Although observers were stationed at 2 locations in the moun-



Philip Mantle, MUFON representative for England.

tains, nothing unusual was observed. The next day, February 4, 1984, 4 echoes were observed between 1:40 pm and 2:29 pm. As time passed, we noticed that many hours of intense surveillance seldom produced results and the phenomena often was discovered through an accidental glance out through the caravan window.

COINCIDENCES

Since the autumn of 1982, I have been through a number of odd "coincidences," the nature of which it must be permissible to wonder about. On 4 separate occasions it happened that we came to the top of Varuskjolen, stopped the car, went outside and there "it" came immediately and passed by us. The same thing happened once on Aspaskjolen.

All these instances happened at different times of the day and most of the time it was an impulse which made us take an evening trip to Hessdalen by car. It also happened that we cancelled some trips. Personally, I have certain reservations about believing that a possible plasma phenomenon can appear "on order". On some occasions other observers had been looking for hours without suc-

cess. It might be argued that this is not so unusual, but when the coincidences are repeated a countless number of times there is reason to wonder.

"Coincidences" also happened to the video equipment which recorded the radar screen. One evening the pen of the magnetograph failed to work. At the same time the video tape had come to an end, and the phenomenon appeared less than one minute later. The next evening we made certain that the pen had sufficient ink and turned on the video recorder 10 minutes later than the night before. We thought that now everything was ready for the usual 10:47 pm "message". The video tape ran out at 10:57 pm and we thought that tonight "it" had failed us. But at 10:58 pm the usual phenomenon appeared. Such occurrences may happen due to coincidences, but at the end of the project period almost everything started to happen by coincidence. I would suggest these coincidences are an argument against the Hessdalen phenomena being of natural origin.

Another interesting example is the following one: One person living on Aspas, suddenly got the "idea" or

feeling that she should go outside. As soon as she did, she observed a lighted spheroid passing by. One must ask what causes persons to stop

what they are doing and go outside to observe something strange. This should strengthen theories pointing towards the Hessdalen phenomenon

being of far greater interest than plasma or meteorological interpretations.

Site Instrumentation

By Erling Strand

The main purpose of the Hessdalen project was to try and find out what the "Hessdalen Phenomenon" was, or at least to discover more about it than we already knew. To achieve this various instruments were utilized which together could measure most of what we considered of value.

Cameras with grating filters proved the most efficient means of gathering information about the Hessdalen phenomena and pointed to the most pertinent questions. Are the lights a continuous spectrum or not? Are they a thermal or plasma process, and if so, what gases are involved? Plasma phenomena like the aurora borealis, for example, should provide a line spectra for future analysis. Answering any of these questions would help to eliminate competing hypotheses as well as indicating the directions subsequent investigations should take. In all, we obtained six grating readings, three of which were specifically designed for spectral analysis. Numerous different single lens reflex cameras were used, along with a wide variety of telephoto lenses. Literally dozens of the lights were captured on film, several examples of which accompany this article.

The seismograph is an instrument that can measure any and all movements in the earth's crust. We installed a MEQ 800 seismograph in Hessdalen. This is the same type of seismograph that is used all over the world to measure any large earthquakes. This type of seismograph is also very capable of measuring any local tremors which might not be picked up by other stations. The seismograph was installed in Hessdalen on October 24, 1983, and we never recorded any local seismic



Project researcher Leif Havik with photographic equipment outside Headquarters caravan.

activity in the area. There has been very little seismic activity in Hessdalen over previous years. During the six years prior to 1983, there had been only four small tremors within a 70 km radius of Hessdalen. Over a radius of 50 km there had been 15 minor tremors over the last 100 years. At present, no connection between seismic activity and the Hessdalen phenomenon has been found.

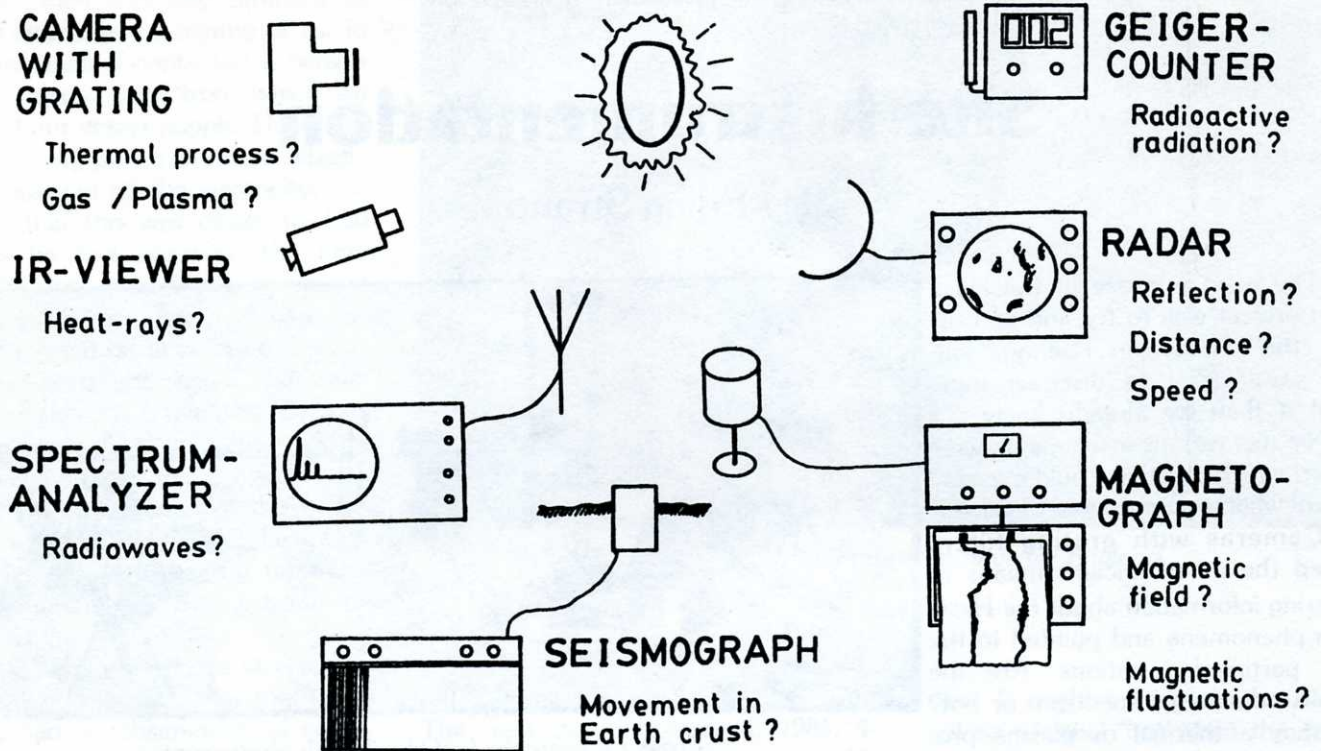
In total, we had 36 radar recordings. Three of these were also observed with the naked eye. All of the others were not seen by the naked eye. On nine occasions out of the 36 recordings, the radar echo on the screen traveled on a nearly straight line. We took a number of photographs where the returns were coming from in the sky, but none of the photographs showed anything at all. On two occasions we managed to photograph the radar return on the screen. These two reflections were very strong and stood out just as clear and defined as the surrounding mountains. Such a

strong return can be caused by a solid object, by a temperature inversion, and by humidity or pressure. The radar photographs were analyzed by a radar expert from the Norwegian Defense Research Establishment (NDRE) and he stated that "if this isn't a reflection of a solid object, but only some kind of gas in the air, the gas has to be locally and strongly ionised. Otherwise, it would not give such a strong reflection." We did not obtain radar returns from all the lights. The reason being that mostly we had the radar adjusted to show up anything within a radius of 5.5 km. On the three occasions that we did have both radar and visual observations of the lights we had the radar adjusted for a much greater radius.

RADAR/VISUALS

The first time we obtained a radar/visual of the lights was on Saturday, January 21, 1984, at 17:50. It was a light that traveled towards the

HESSDALS - PHENOMENON



north over Finnsahoga. When it was in the north, it almost stopped moving before suddenly descending vertically and going out of sight. We obtained one radar return in the same direction (+ or - 5 degrees) when the light dropped vertically.

The second radar/visual was on Wednesday, January 24, 1984, at 17:32. A large light came from the south, moving towards the north over Finnsahoga. When the light was just over Finnsahoga, there was a return on the radar in the same direction as the light seen by our observers. On the next radar sweep no returns were seen. On the sweep after that, it was seen again. No more radar returns were seen as the light moved off towards the north.

The third radar/visual was on Friday, January 27, 1984, at 22:58. A light was observed traveling from south to north. The speed of the light was very fast. There were two returns on the screen. The time between these two returns was 2.4 seconds, and the distance between them was about 20 km. Just after it was

observed on the radar, the radar operator went outside and was informed by the observers outside that they had observed a light which seemed to correspond with the image picked up on the radar screen.

The radar proved an invaluable piece of equipment. Although some of the radar returns could have been better, with further study the radar could go a long way in helping us find out what we are dealing with in Hessdalen. The type of radar used was an Atlas 2000.

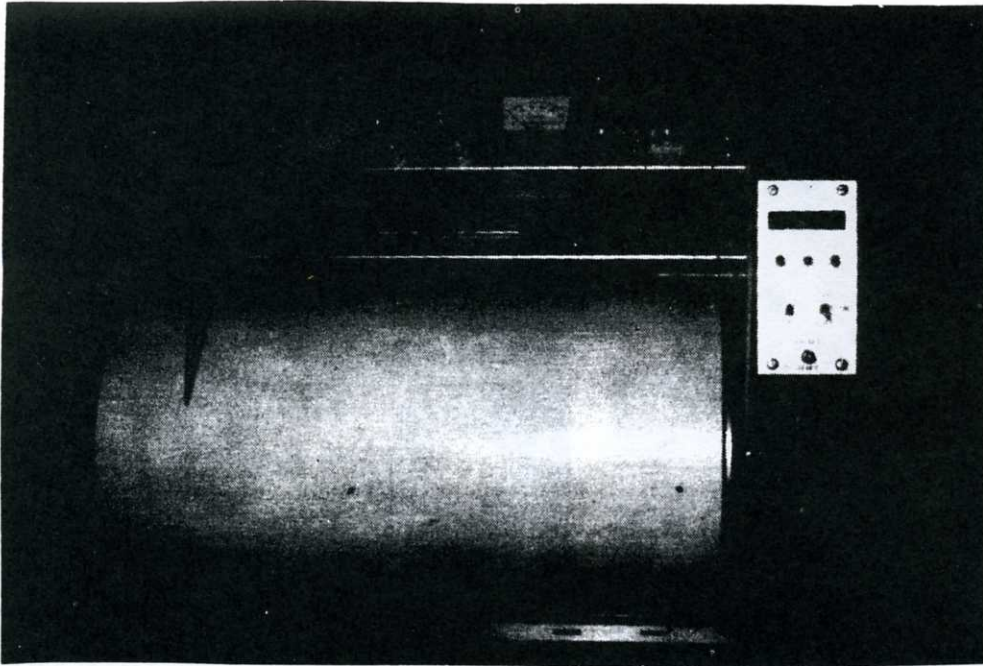
SPECTRUM ANALYZER

If a wideband antenna is connected to the spectrum analyzer, all radio signals will be visible on the screen. Long wave, medium wave and short wave is in the range from 160 KHz to 30 MHz. FM radio is in the range of 80 MHz to 100 MHz. The VHF television signal is about 170 MHz to 190 MHz. We had the spectrum analyzer adjusted so that we could see all radio waves (electromagnetic) from 100 KHz to 1250

MHz, which meant that we received all radio and TV signals simultaneously. At no time did we see anything on the spectrum analyzer while the lights were in view. But we did get some unknown readings at other times when no lights were visible.

MAGNETOMETER

A magnetometer measures the strength and direction of the earth's magnetic field. The instrument we utilized, model FM 100, can be used to measure magnetic activity high into the atmosphere. Magnetic storms, which are especially strong during aurora borealis, give high meter readings. This instrument was connected to a continuous graphic printer, in order that variations in the magnetic field could be read at any time. The results from these readings will be compared to those from other stations at Dombos and Andoya. We will then hopefully be able to learn if there are any special magnetic activities over Hessdalen or if the phenomena are activated at times of special



MEQ 800 Seismograph to register Earth movement.

magnetic activity in the atmosphere, or if the phenomena is surrounded by a strong magnetic field. After the project had ended, and the magnetometer readings had been studied carefully, we could find no correlation with the lights and the readings obtained.

LASER

We used the laser and pointed it at the lights a total of nine times. Eight out of the nine times when we did this, we managed to obtain a reaction from

the lights. On one occasion there was a regular flashing light slowly moving towards the north. The date was January 12, 1984 at 19:35 pm. The light flashed very regularly all of the time until we pointed the laser at it, that is. As soon as the laser was aimed at the light it changed its flashing sequence from a regular flashing light to a regular double flashing light, i.e., flash-flash ... flash-flash ... flash-flash. After about 10 seconds we stopped the laser and the light immediately changed back to its previous flashing sequence of flash ... flash ... flash. After about another 10

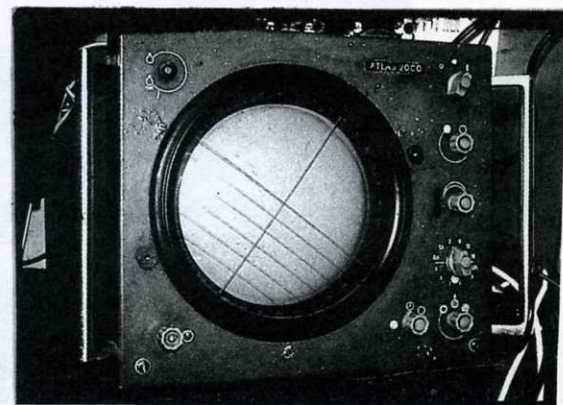
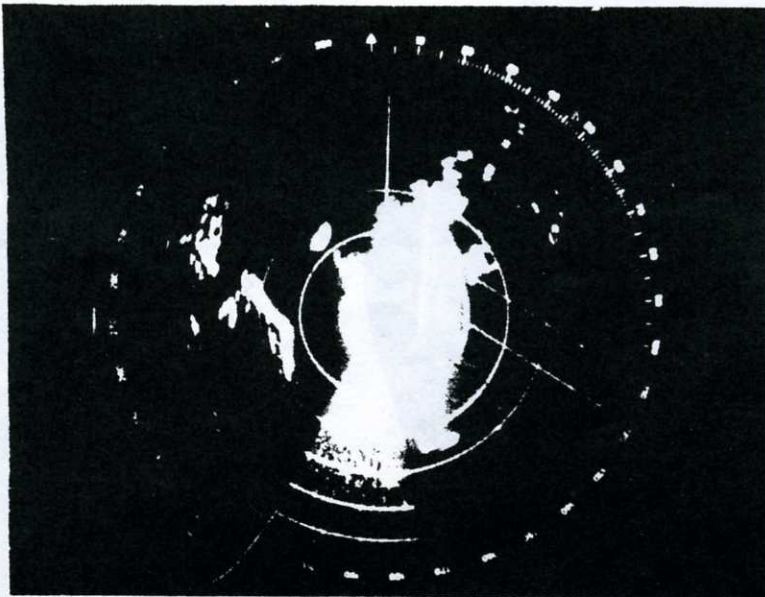
seconds we repeated the exercise and again the light responded by changing to a double-flash sequence. In all we repeated this exercise four times and every time we got the same reaction from the light.

GEIGERCOUNTER

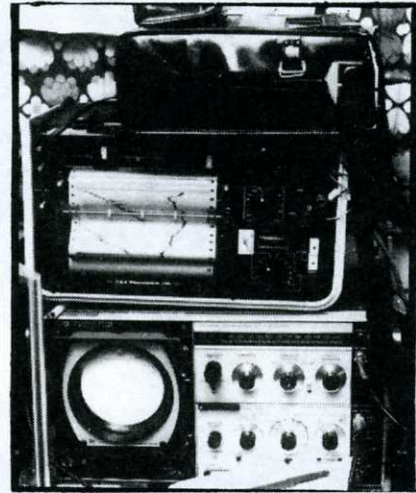
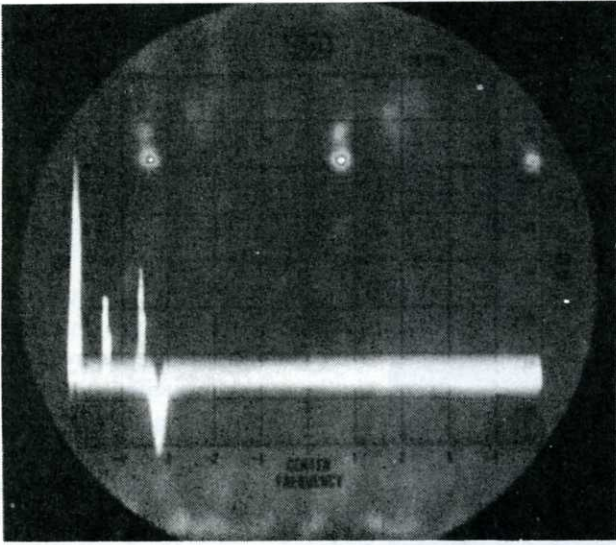
The geigercounters we used made a beeping sound every time they made a measurement. They were functioning continuously throughout the project but no reaction was measured by the geigercounters while the lights were visible. This may not be surprising since we never came within 1 km of the lights.

INFRARED VIEWER

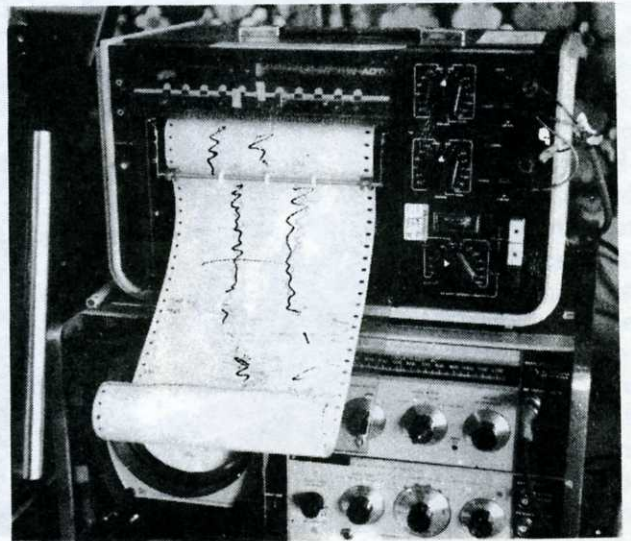
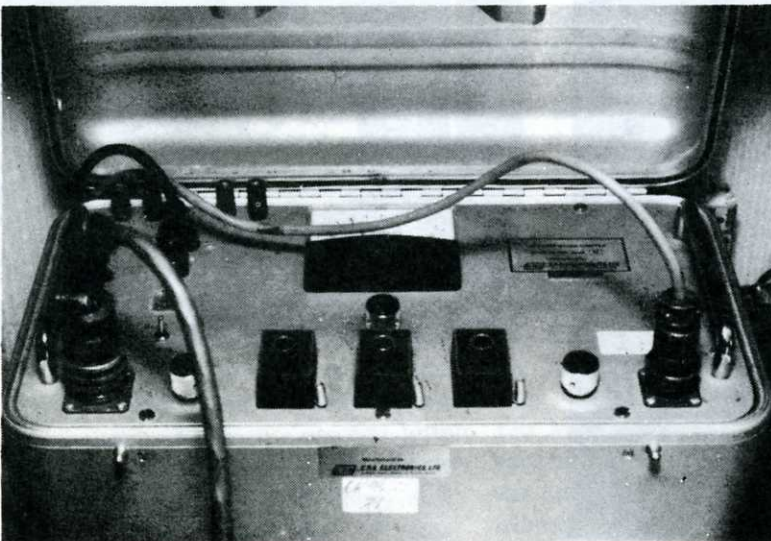
On the two occasions when the lights were observed through the IR viewer there was no IR radiation visible. The viewer was used only on lights a long way off. The power from the lights could have been too weak to be detected. It should be made clear that with hindsight more use should have been made of the viewer and at this moment in time we do not have sufficient data on the use of this instrument to comment further.



Atlas 2000 radar unit, above. Illuminated screen inside Headquarters caravan, left.



Clockwise from above left: Screen of spectrum analyzer; analyzer with other equipment ; radar screen showing surrounding mountains; magnetometer print-out; magnetometer model Fm 100: and Project infrared viewer.



Hessdalen Photographs

By Odd-Gunnar Roed

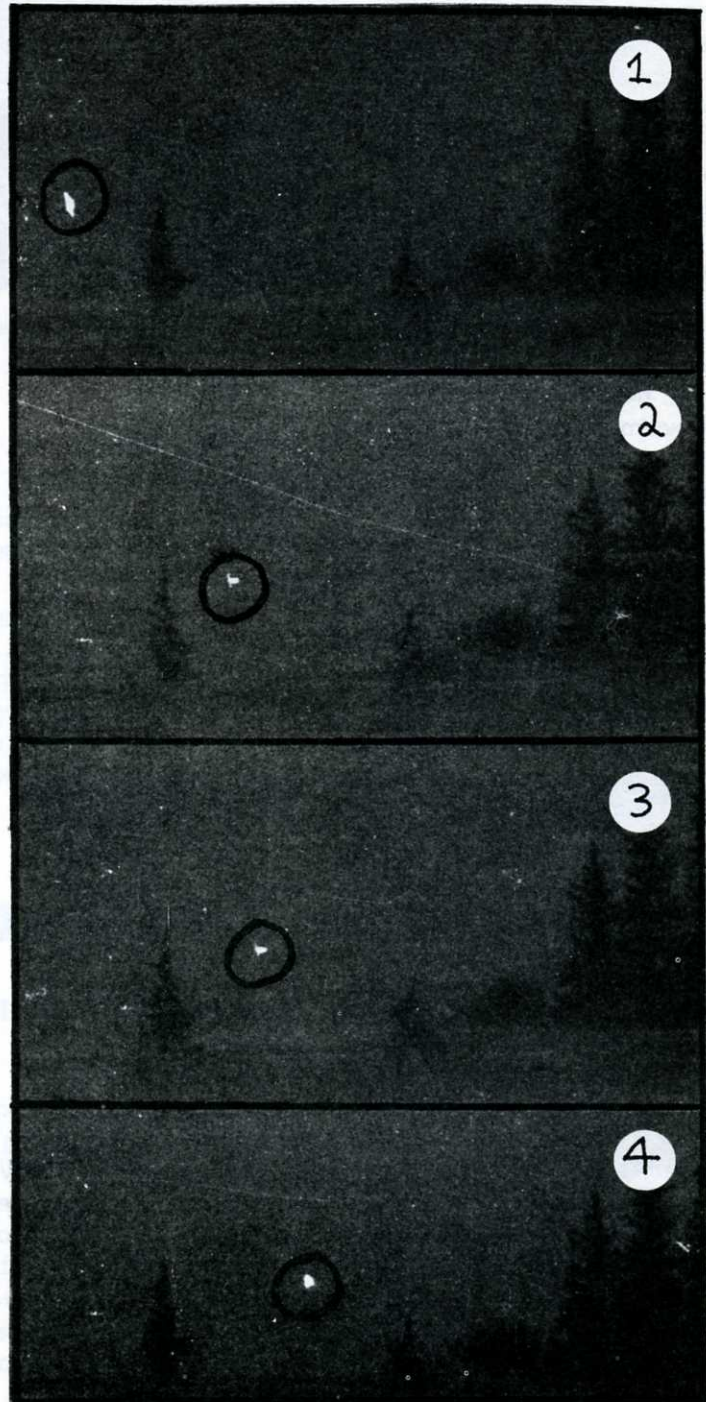
During the whole of the project, dozens of color photographs of the lights were taken. Some of these photographs were time exposures, i.e., the camera's shutter was left open for a number of seconds which resulted in the lights being elongated in appearance, when in fact the light was round or oval in shape. All of the cameras used were tripod-mounted to reduce blurring the photographic image. It is virtually impossible to reproduce some of the photographs in black and white and the sheer volume of photographs taken prevents us from using only a small handful. However, we believe that the photographs that follow are fairly representative of the Hessdalen phenomenon.

These first four photographs were taken by Mr. Roar Wister on Saturday, February 18, 1984, at 8:18 pm. The photographs were taken facing a northeasterly direction and the duration from the first photograph to the last photograph was two minutes.

The light is marked for easier observation, but it is easy to see that the light was at a low altitude and was traveling fairly slowly from left to right. It is also noticeable that the light also changes shape during the photographic sequence. The reason for this is unknown.

The first attempt to analyze some of the photographs was done using a spectral photograph. A spectral photograph will definitely reveal whether or not the source is a solid object or some sort of plasma, or even a combination of both. During the project we were unsuccessful in obtaining sufficient data from such photographs and we feel that further analysis of this sort is needed.

Once the project ended and we were busy studying the various results we had achieved, it was decided that further analysis of the photographs was needed. This was carried out by



GSW in America, the results of which are shown in full later in this report.

What is the phenomenon and what do we know about it? We have not yet answered the first question and perhaps this could be expected. But we do know that the phenomenon, whatever it is, can be measured.

Besides the light measurement, it can be "measured" by radar and laser. Perhaps the measurements we did on the magnetograph and spectrum analyzer were due to the phenomenon as well. We have to do more measurements before we can be sure of that.

We obtained no unusual measurements at all from the geigercounter, the seismograph or the infrared viewer. But I will prefer to use these instruments again in the next period. It might also be useful to record events that seem unimportant. We stand in front of something unknown and we must collect everything that might lead us to answers.

Some hypothesis of what the phenomenon is might be weakened or strengthened after analyzing the measurements in the project. However, the different hypotheses will not be discussed here. Further discussion is needed on the phenomena and further measurements have to be carried out. Then perhaps we can



Dr. J. Allen Hynek at Hessdalen Headquarters, 1985.

plan our strategy for the next project.

But in the meantime, despite all the measurements with the various instruments, despite all of the eye witness observations of the lights, despite all the photographs and the computer analysis of such photographs, we still do not know what this phenomenon is nor do we know its origin. Perhaps in our next project we will find out.

If anyone is interested in reading more about the Hessdalen Project, then they are advised to purchase a copy of the Project Hessdalen Report, Final Technical Report Part One, by Erling Strand, from: UFO-NORWAY, Postbox 14, 3133 Duken, Norway. I can assure you it does make fascinating reading.

GSW Photoanalysis

By Fred Adrian & William Spaulding

ANALYSIS

A collage of color and black and white photographs was forwarded to GSW for computer analysis by Paul Norman. The anomalous phenomena pictures represent a series of inarticulate light sources taken during a flurry of reports of UO (unidentified objects) by a team in Norway, using scientific methods and applying a serious research effort to identify the source (origin) of the images.

All major modes of computer processing were used during the evaluation. At no time did GSW attempt to use any of the sighting descriptive data and apply it to the photograph. Each photograph was treated as a separate entity and appropriately evaluated. For ease of reporting our data, each photo was numbered 1 through 8.

The following information was obtained.

Photo 1

Two white lights with a red light. The lights were very bright and measured nearly the same density. They appear to be elongated in shape, as opposed to being elongated due to "object" movement within the field of camera view.

The size of the light images, as measured with video micrometers, are nearly equal in length.

There is no evidence of any

"structure" behind or adjacent to the light sources. Distance calculations, based on distortion measurement techniques, appear to show that the lights were photographed at a far distance from the camera.

Photos 2, 3 and 4

Single, bright light source.

The subject single light source photos are nearly the same size and density and were evaluated as a system, although photographed on separate occasions (based on the data provided to GSW).

The subject lights (photos 2 and 3) reveal a light band (aura) effect permeating around the circumference of the light image.

The photographic data within the center of the light image reveals a non-symmetrical shaped source.

Photo 4 reveals "object" movement, accounting for the elongated shape.

Photos 5, 6 and 7

Single, bright light source.

The symmetry between photos 5 and 6 is equal.

The density, as compared to all three pictures, is nearly constant.

The aura effect on these photographs is similar to the banding (of light) noted in photos 2 through 4.

This series of pictures indicates that this unknown light source is close to the ground. The brilliance from the light is illuminating structures on the ground.

There is no evidence of a hoax technique applied to these photographs.

Photo 8

Light streak across photo field of view.

A 75mm lens has a field of view of approximately 32 degrees. Assuming that the photo used for analysis was not cropped, the unknown light has transversed approximately 82 percent or 26 degrees of sky, with an exposure time of 10 seconds. This object (light) was not traveling very fast and is well within the parameters of an aircraft.



Photo #1 showing elongated shapes.

However, the oscillation pattern is too tight and symmetrical for a common wing light. NOTE: All calculations could be off considerably, if there was wobble in the camera mount.

The density of the "streak" dims and brightens as the unknown light crosses the camera's field of view.

Distortion calculations indicate that the unknown light is at an appreciable

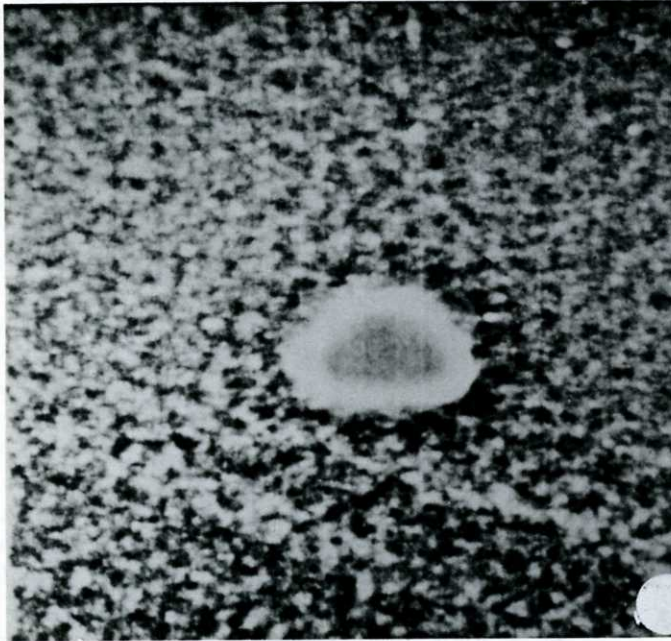
distance from the camera.

CONCLUSIONS

Although most nocturnal light photos can be simply replicated by photographing landing and wing lights of aircraft, xenon lights on helicopters or simple pen lights, (with and without mirrors), photos 5, 6 and 7 do



Photo #4. Elongated shape due to movement.



Computer photo of light source just above ground.

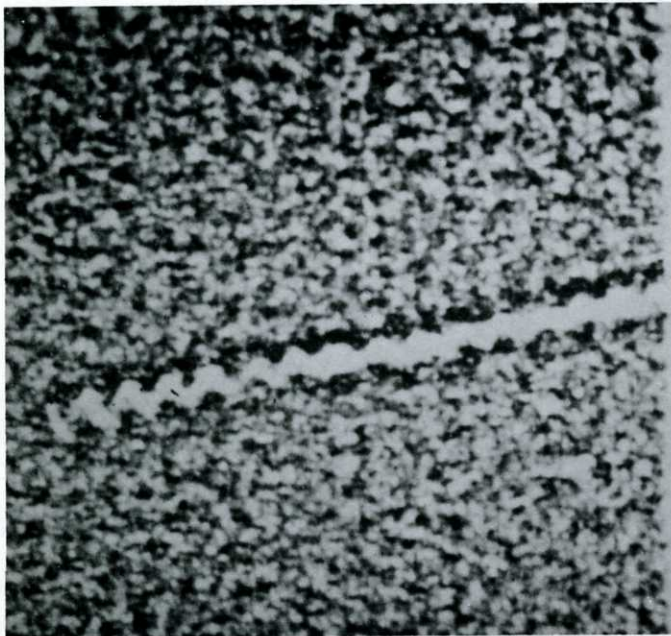
not lend themselves to this possibility.

While NATO and the Soviet Union have been testing RPVs (remotely piloted vehicles) and slow moving drones in the Scandinavian countries for years, photos 5 through 7 do not fully meet this criteria.

Although there was no photographic evidence uncovered (such as a structured surface) which would aid

in the identification, conventional sources cannot be overlooked as the stimulus for many of these cases. However, in the case of photo number 5, if sufficient observational data (such as no sound heard during the sighting) exists, then we would consider this incident an unknown to all conventional sources/origins.

A black and white photograph of



Light streak shown in photo #8, computer picture.

an unidentified object (UO) was also forwarded to GSW for computer image enhancement via Paul Norman. The subject photo was taken in a nocturnal sky and contains numerous artifacts. The exposure was taken using a grated camera and a "light-streak" was produced for spectrum analysis.

The photograph contains no foreground or background evaluation reference and appears as a bright, yet nebulous light source. Since the complete camera/film data was not supplied, a detailed report cannot be provided. The following represents the findings of the evaluation.

- The "double image" light source is extremely bright and compares on a microdensitometry level to that of point "A" (0) circled on the light spectrum streak. The level is well within the angstrom level of visible light range.

- The exact shape of the UO is extremely difficult to gauge due to its brilliance and the effect of light "spillover" from this source.

- The appendage in the upper right hand quadrant of the UO appears to be a beam of light that is highly directional. Void, however of the complete lens/exposure parameters, one could argue that the "light beam" could be attributable to object-image movement.

- Void of photographic references, it is impossible to gauge the UO's distance from the camera.

- There is no evidence to suggest that the subject photo was retouched or hoaxed in any manner (although the picture is of poor copy quality).

- GSW Photo 1 (computer output) reveals the brilliance of the image as well as the light spillover intensity.

CONCLUSION

Due to the moderate strangeness of the subject UO and its high intensity, there is good argument against the light being attributable to a ground source, e.g. a vehicle with a small spotlight. Better, however, is the possibility that an airborne heli-

copter or surveillance fixed-wing craft, using a larger (brighter) spotlight, could be the source of the UO. It is well within the realm of possibility that the Hessdalen Project did attract some "official" interest and a simple overflight in a helicopter or similar craft is probable.

The measured effects of the light, as well as its observational characteristics, support a helicopter spotlight hypothesis. However, the witness observational data should be used to enable the photographer to rule out the helicopter theory based on the elevation of the camera to the image, any associated rotor noise and specific camera data parameter, e.g. what was the exposure time?

Should these data not be answerable, then a case could be made relative to the UO being an unknown object of unknown origin.

RADAR RETURNS

The two photographs showing a "radar target" from Hessdalen Project sightings were also forwarded to GSW for evaluation. The two color pictures of the targets on the radar screen contain anomalous reflections due to poor photographic techniques.

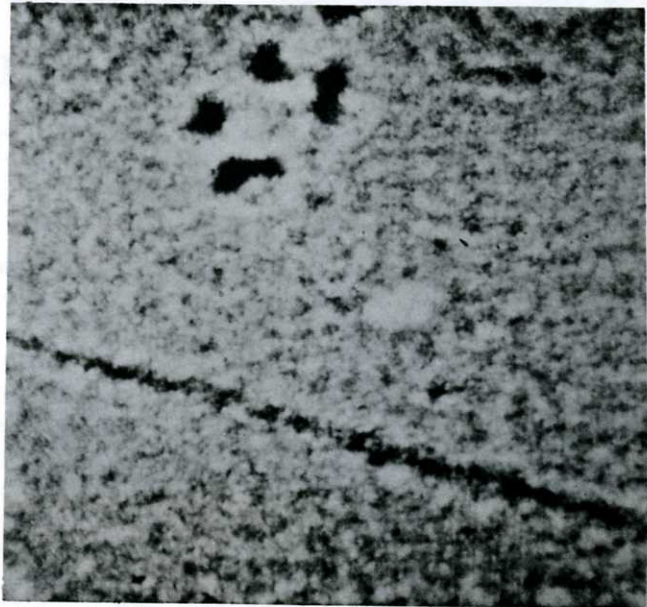
The photo enhancement and interpretation of the radar targets is extremely difficult. Initially, we are working, for all technical purposes, with a picture from a glass-based surface. Secondly, we are dealing with a sound reflection from an "object" that is reflecting radar waves on to a CRT.

Not all of our "UFO software" worked on these pictures and therefore we used a collage of modified programs to interpret (or should I say attempt to interpret) these pictures. The following was ascertained.

- The signal from the target appears to be a solid, therefore, a return from a good radar-reflecting source.

- The shape of the "return" is non-symmetrical and is more dense in the center (reference the color computer photos).

- The return appears to be more indicative of one from a water-laden cloud, which would explain the shape of the targets.



GSW computer picture of Hessdalen radar returns.

- The edges (periphery) of the returns are tenuous. This could be attributable, however, to the photographic technique employed by the photographer, rather than attributable to the radar target itself.

CONCLUSIONS

If the weather report can be substantiated that the target is not connected to the environmental conditions during the time the photograph

was taken and if all tests were conducted by the equipment operator to verify that the image is not a radar "ghost", then the returns could be connected to the sightings of strange aerial phenomena.

This is the best that we can do with this type of photograph. An expert radar operator from the FAA or similar organization, given sufficient data on this incident, should be able to provide additional insight to these events.



Hessdalen Headquarters caravan. The radar antenna is atop the tower at right.

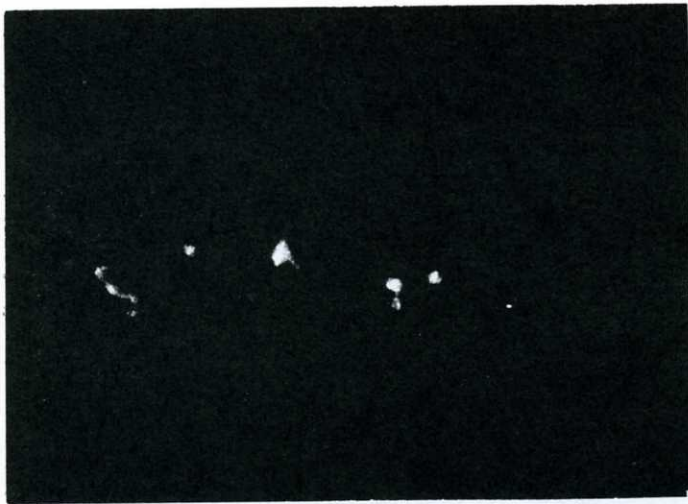


Figure 1.

Time exposure photograph taken at a place called Arendal. The original color photograph shows a yellow-orange light moving across the sky.



Figure 2.

Also taken at Arendal. The original color photograph depicts a large orange light with a yellowish center.



Figure 3.

This photograph was taken at Hessdalen on 12-2-1983, at 17:53 hours. Again the original photograph is in color. The two round lights are blue in the middle with a green band around the edges.