

PHOTOGRAPHIC ANALYSIS OF THE CALVINE UFO PHOTOGRAPH

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EXTENDED and UPDATED VERSION 5.0 – June 2024



The Original Calvin Image (Craig Lindsay / Sheffield Hallam University 2022)

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CONCLUSIONS

- This investigation concludes that the print provided to the researchers by Craig Lindsay is without doubt a genuine copy of the original Calvin photograph analysed by the MoD in 1990.
- This black and white print is most likely to have been made from a copy negative produced by the Daily Record on Ilford XP-1 film from an original colour print provided by the witness. This print was probably produced on a Colour Mini-Lab machine at the Daily Record prior to the original colour negatives being provided.
- As far as can be determined the image itself is a genuine photograph of a scene before the camera and if any manipulation or construction took place, this was something occurring in the scene rather than in camera or in post-production. No evidence of any such manipulation before the camera can be found.
- No evidence of the date of the photograph or the location at which the photograph was taken can be derived from the print and for these essential details we are reliant on the eyewitness testimony shared with the Daily Record and Craig Lindsay.
- Although the print is credited to 'Kevin Russell' the true identity of the photographer remains unknown.
- An Teampan, the summit of Struan Point to the south of Calvin is a possible location for the photograph however this cannot be confirmed as the location without further evidence.
- There is insufficient data to reach any conclusion regarding what the unidentified object might be.
- The projected timeline of the photograph being captured on the 4th of August, arriving at the Daily Record in late August and at the MoD on the 10th of September fits with all available evidence.
- All evidence provided by the Calvin print, its envelope and the accompanying photocopies, fits with the essential narrative of the sighting provided by Craig Lindsay and other credible sources.
- If the image is the result of a hoax, no evidence of this is present in the image.

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Section A – SUMMARY OF FINDINGS

After detailed analysis of the image itself and the physical properties of the print it is my considered opinion that:

- The Calvine Image provided by Craig Lindsay is a genuine photograph of the Calvine sighting and identical to both the photocopies faxed to the MoD and the original negatives provided by the Daily Record and subsequently printed as Vu-Foils (images on transparent film) and studied by the Joint Air Reconnaissance Intelligence Centre (JARIC) before being finally released to the public in the form of poor-quality photocopies from the Vu-Foil images in 2009.
- The time frame from sighting on the 4th August to the arrival of the images at the Daily Record and the arrival of the negatives at the MoD in London on the 10th September is realistic and fits with statements provided by numerous witnesses.
- To date the photographer and witnesses to the Calvine sighting remain unknown.
- The kitchen porter named Kevin Russell who worked at the Hydro Hotel at the time of the sighting denies any knowledge of the incident and cannot explain why his name appears on the back of the image. Other names have been suggested however investigations have so far failed to trace those named or corroborate this.
- The most likely camera to produce the original Calvine image would be a 35mm SLR or Compact Camera fitted with a 50mm Standard Lens or a 35-70mm or similar zoom Lens.
- The Calvine photograph provided to Craig Lindsay is a black and white image made from a copy negative of an original colour print which was printed on Ektacolor 78 Resin Coated colour photographic paper as manufactured by Kodak, between 1972 and the early 1990.
- The print size of 10x8" has resulted in a cropping of 17% of the width of the original negative.
- Whilst the film used to make the Calvine print provided to Craig Lindsay could have been a 100 ISO B/W film such as Ilford FP4 or Kodak Plus-X, the 'normal' enlarger colour settings revealed by the print code suggest that this print was from a negative produced on Ilford XP-1 film.
- The available evidence indicates that the print was produced on a Colour Mini-Lab machine as might have been found at a newspaper or in larger photography stores and chemists in the early 1990s.
- The film grain distribution suggests that no negative or print based manipulation of the image has taken place and that the image is a genuine representation of a scene in front of the camera.
- The amount of chromatic aberration present would tend to indicate a lower quality enlarging lens.
- The landscape just visible behind the fence consists of a number of ridges or low hills at different distances from the camera position with groups of trees visible on the far distance ridge to the left and a modest peak behind the right-hand fence post.
- The fence is approximately 10.6m distant from the camera position (assuming a 50mm lens) and has a smooth top wire and a barbed lower wire showing a regular 10cm spacing of barbs.
- Whilst the trees, fence and the limited landscape features present in the photograph are in keeping with landscape around Calvine and in particular the area around An Teampan on Struan Point to the southwest, to date it has not been possible to identify the exact location where the photograph was taken, and it must remain a possibility that whilst it could have been taken on the moors close to Calvine it could also have been taken elsewhere.
- Although the possibility of the image being a reflection in the surface of a lake cannot be categorically ruled out this is considered unlikely and unproven due to the lighter density of the 'reflection', the required camera position and the lack of any objects or disturbance in what would be the lake surface.
- The unidentified object does not have a symmetrical shape in either dimension however due to blur poor image resolution it is not possible to identify any features.
- The unidentified object has an approximate length of between 30 m and 40 m and a height of between 8 m and 12 metres (+/- 10%).
- The plane shows both slight focus blur and lateral movement blur suggesting it was moving from left to right across the image when photographed. Resolution and blur prevent a conclusive identification of the plane however the shape is consistent with the outline a Harrier would produce.
- The plane is approximately 755m (0.47 miles) distant from the camera position and flying at a height of approximately 117 m (383') above ground (assuming a 50mm lens)
- The weather and sun data for the day in question are thus consistent with the claimed heritage of the photograph and the visual evidence contained within.

Section B – INTRODUCTION

B-1 – INTRODUCTION TO 2024 UPDATE

This paper is an updated version of the original analysis I produced in the summer of 2022 following the discovery of the only extant photograph of the Calvine sighting by Dr David Clarke and its donation by Craig Lindsay to Sheffield Hallam University prior to the publication of an exclusive story of the print's discovery in the Mail on Sunday on the 13th of August 2022. This update extends my previous discussions with additional information, further detail and new material.

This analysis and discussion is largely restricted to matters directly related to the photographic print and it's known heritage rather than the wider legend associated with the Calvine sighting. In part because this is my area of expertise and in part because the story and associated debates are widely discussed elsewhere.

In producing this analysis, I have had unrestricted access to the original Calvine print, the photocopies of the print made by Craig Lindsay in order for the image to be faxed from RAF Pitreavie Castle to the MoD in London, and the original envelope in which the print was sent from the Daily Record to Craig Lindsay. Dr David Clarke has also provided me with full access to his recorded and transcribed interviews with Craig Lindsay and others related to the sighting and additional information has kindly been provided by Giles Stevens, a local resident familiar with the area around Calvine.

My personal research interest is in the role that photographs are often called upon to play in providing visual evidence of UFO sightings, and more generally, the evidential potential of photography. My aim in producing this analysis is neither to prove the sighting and the Calvine UFO are real, nor to prove they are fake, but rather to analyse both the photograph and the available evidence alongside the witness statements and other documentation and commentary in order to clearly identify what information can be gleaned from the photograph and to what extent this supports or contradicts eyewitness statements.

B-2 – NOTE CONCERNING PHOTOGRAPHIC EVIDENCE

Photographs provide very detailed and accurate visual evidence of what was before the camera at the moment the shutter was released, however, for this visual information to function as evidence and provide reliable information further context is required.

We must ask where and when the photograph was taken; who took it and why; what camera was used; what lens and what film stock? It would be helpful to know what shutter speed and aperture were used, and with analogue imagery where and how the film was processed and even what chemistry was used. Having access to the original negatives rather than first, second or subsequent generation prints is essential so a high-quality version of the full image area can be studied rather than an isolated section of a degraded copy. Access to more than a single negative can also place the photograph in the context of the proceeding and subsequent images providing additional context and evidence.

Unfortunately, in the majority of cases, photographs provided in support of UFO sightings lack sufficient contextual detail to fulfil their role as evidence and allow a full and complete analysis. This is true of the Calvine photograph. The eyewitness report claims the photograph was taken on the moors above Calvine on the evening of the 4th of August 1990, however we have no way of confirming either the location or the date on which the photograph was taken. The witness also claimed that six images were produced, and a number of other reliable witnesses, including Craig Lindsay, confirm that they saw another five variants of this image. However, no negatives or other prints are known for any of the other 5 images. We do not know what camera the photograph was taken on nor what lens, exposure, setting or film type were used. We also do not know who took the photograph. According to the eyewitness statement two people were present however, Craig Lindsay only talked to one witness whose name he doesn't recall, and we do not know the names of either witness. These may be included in the unredacted MoD report of the sighting however this is currently sealed under the Data Protection Act until January 1st 2076.

It is hoped that a detailed study of the original materials provided by Craig Lindsay will help establish further information regarding both the sighting and the production of the photograph and this is what this analysis will attempt.

B-3 - ORIGINAL MATERIALS

This analysis is based on a detailed study of original materials comprising:

The Original Calvin Image



The front and back of original Calvin Image, photograph © Andrew Robinson 2024.

The only extant print of the Calvin image, which was sent to Craig Lindsay, RAF Press Officer for Scotland at RAF Pitreavie Castle by the Daily Record in Glasgow and which Craig kept in his possession from 1990 until it was revealed to Dr David Clarke who secured its donation to Sheffield Hallam University in June 2022 and its subsequent publication on the 13th August 2022.

Daily Record Card Envelope

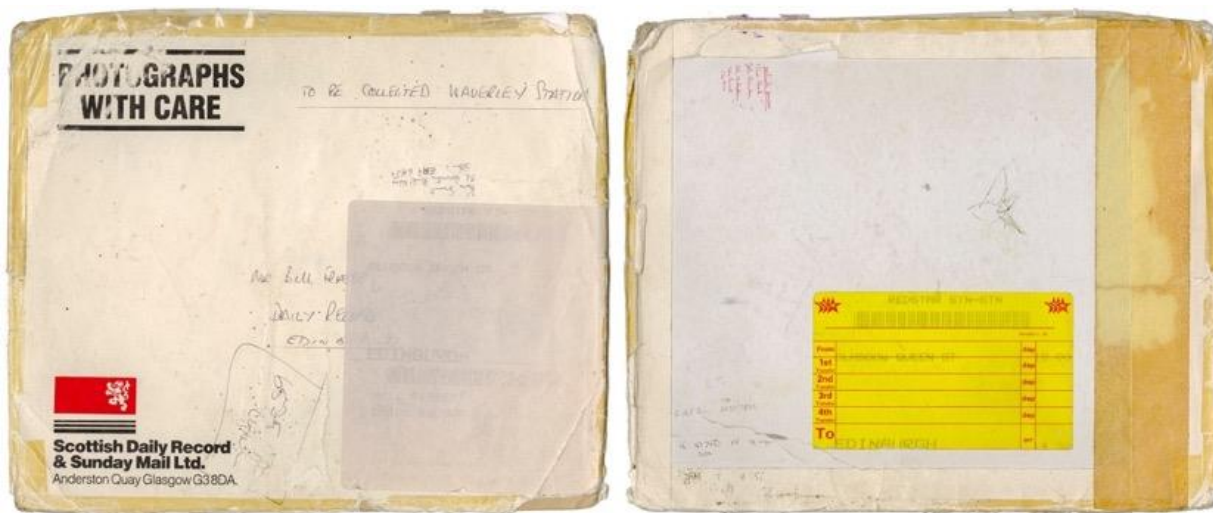
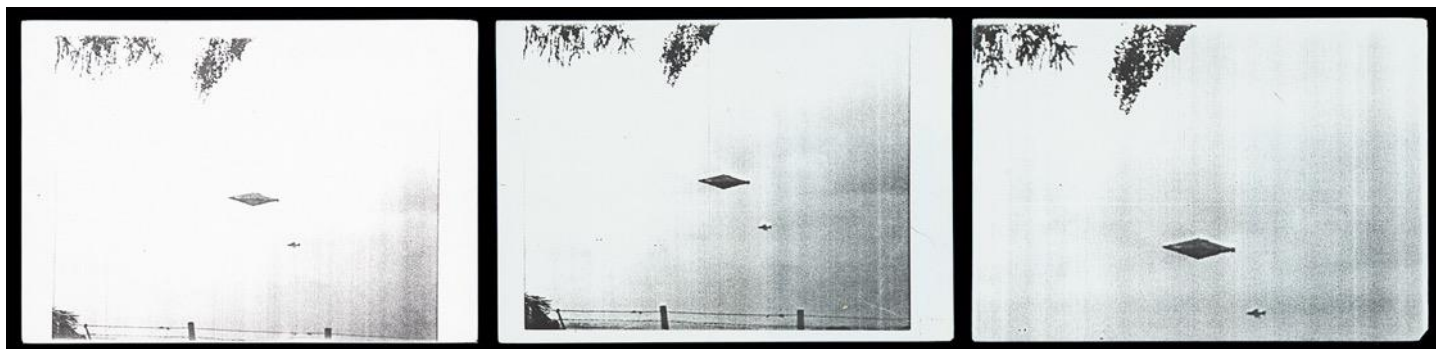


Image showing the front and back of the envelope used to send the Calvin Print to Craig Lindsay © Andrew Robinson 2024.

The original envelope in which the Calvin print was sent from the Daily Record in Glasgow to Craig Lindsay at RAF Pitreavie Castle near Edinburgh and in which print was stored by Craig Lindsay between August 1990 and June 2022.

Photocopies of the Calvin print



Composite image showing the three photocopies produced by Craig Lindsay in August 1990, © Andrew Robinson 2024.

The original photocopies produced by Criag Lindsay in August 1990 in order to fax the image to the MoD upon first receiving it from the Daily Record. These were kept with the print in the original card envelope.

In addition, a number of digital copies and enlargements of the original print have been produced by the reviewer to allow more detailed analysis. These include:

- Photographic copies of entire print and envelope (front and back)
- Detailed macro photographs of key areas of the print
- A high-resolution flatbed digital scan of the image and envelope

Digital images were produced on a Nikon D610 using a 110mm Micro-Nikkor resulting in NEF raw files at full frame resolution. Images were processed in Adobe Lightroom and exported as 16bit Tiffs with a file size of approximately 138.5 mb.

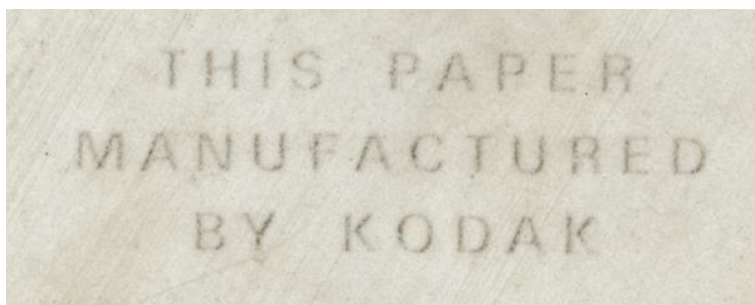
Digital scans were produced on a A3 Epson Flatbed Scanner using VueScan capture software resulting in 16bit Tiff Raw files. Images were processed in Adobe Lightroom and exported as 16bit Tiffs with a file size of 2.8 – 2.9 GB

Scans of Colour prints produced from XP-2 negatives dating from 2002 and HP5 black and white negative dating from 1988 were also made at an equivalent size and resolution in order to provide comparisons of the print emulsion and grain size.

SECTION C – PRINT ANALYSIS

C-1 - Paper Type

The backstamp identifies the paper as a Kodak Ektacolor paper.



Enlargement of backstamp on the rear surface of the original Calvin image, photograph © Andrew Robinson 2024.

Prior to 1961 Kodak paper was produced with a backstamp or water mark printed across its rear surface comprising of EKC encircled by a double-lined circle. This was replaced in 1961 by a single line of text reading: 'A KODAK® PAPER'. From 1972 up until the early 1990s this changed to the watermark shown on this print which comprised of three lines of text:

THIS PAPER
MANUFACTURED
BY KODAK

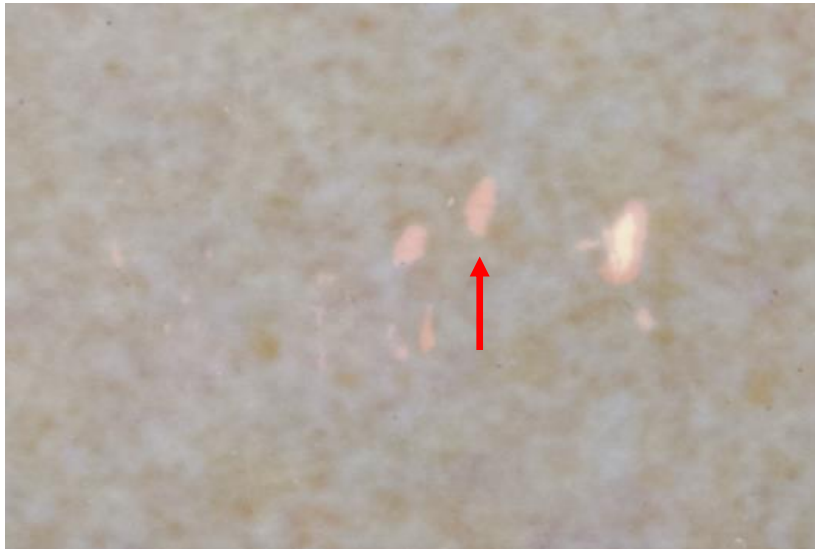
In 1989 Kodak introduced Ektacolor Portra and in 1991 Ektacolor Edge both using the new RA-4 process with different backstamps so the backstamp on the Calvin print would suggest the paper used was Ektacolor 78 and that the print was processed using EP-2 chemistry sometime between 1979 and 1991. (Keirstead, Weaver and Lon, 2009).

The weight, texture, surface, finish and thickness of the paper identify it as a resin coated paper. RC paper comprises of a thin layer of paper sealed between two layers of polyethylene (plastic) with the photographic emulsion and a top coating on the top surface. RC papers are thinner and lighter than fibre based (FB) paper at around 190gms compared to 250gms or more for FB paper. The introduction of RC speeded up processing times as the plastic coating prevents the absorption of processing chemicals which dramatically reduced the required washing and drying time. RC paper was produced with the following surfaces: F (glossy), N (matte), Y (silk), E (lustre) with glossy by far the most popular. The

image quality of RC prints was less than Fibre Based paper due to the thinness of the emulsion present and the lower silver content which also resulted in a more limited response to toning in Black and White photography. RC paper was extensively used in the printing of colour negative photography where the speed of processing and drying was important.

Kodak Resin Coated (RC) supports, were introduced to their colour paper range in 1968. RC papers were most popular in situations where the speed of printing was important and were typically used in consumer high street printing, press and publicity photography, police, healthcare and other applied or commercial areas of practice. Fibre Based paper continued to be used for exhibition and archive prints within art photography and other areas where image quality and permanence were a priority although RC paper would typically be used for contacts and proof prints.

A small area of abrasion of the paper emulsion in the lower right section of the photograph (see image detail below) reveals an orange/red layer beneath the image layer which is consistent with COLOUR paper.



Enlargement of scratches on original Calvine Image, photograph © Andrew Robinson 2024.

Comparisons with abrasion marks on prints made from both XP-2 film and Colour negative film show similar results with a reddish tone where the image layer is partially removed and a yellowish background where more of the image layer is removed. If greater abrasion is applied the entire emulsion layer is removed to reveal the white paper base:



Abrasion - 1993 XP-2 Print



Abrasion - Original Calvine Print

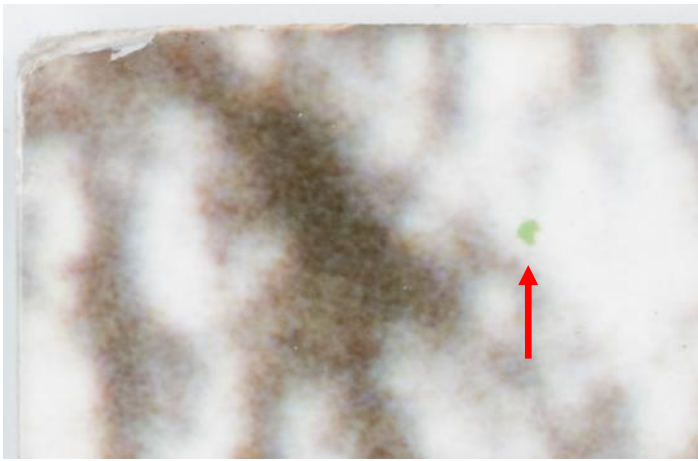


Abrasion - 1990's Colour Neg Print

All details reproduced at same scale and resolution from 10x8" prints

Enlargement of scratches on different types of colour prints, photograph © Andrew Robinson 2024.

A small turquoise/green 'spot' in the upper left section of the print (see image detail below) appears to be a small unprocessed area of the paper – unprocessed colour negative paper has a turquoise/green colour – possibly resulting from a small piece of dirt or adhesive being attached to the print surface during processing. This would again suggest that the paper type is colour rather than a toned Black and White print.



Enlargement of the upper left corner of the Calvin Image – photograph © Andrew Robinson 2024.

Conclusion – The image is printed on Ektacolor 78 resin coated colour photographic paper manufactured by Kodak.

C-2 - Film Type

Areas of the image which would exhibit colour in a colour print (the sky, the trees in the near foreground and distance, the grass in the foreground) are all rendered in monochrome. The image is however not pure black and white having a slight purple/brown sepia tone. Sepia tone can be achieved by toning a black and white print or by printing a black and white negative on colour paper..

Two main types of black and white film might have produced a suitable negative:

- a traditional black and white photographic film processed using standard black and white processing chemicals (e.g. Ilford FP4 or HP5; Kodak Pan-X, Tri-X or T-max; Fuji Neopan 400)
- a chromogenic colour film designed to be processed using standard C41 colour negative processing chemistry to produce a monochromatic image when printed on colour paper (eg Ilford XP1 or XP2).

The fact that this, the only extant print of the Calvin Image, is in black and white is at odds with all descriptions of the Calvin photographs to be found in official MoD documentation for example: DEFE 31/179: 156-7 (The National Archives, 2009) and witness statements where the prints and negatives are always described as being in colour.

When recently asked about this discrepancy Craig Lindsay stated that he couldn't explain other than suggesting that because the print has a light brown, sepia tone he possibly described it as 'colour' however this doesn't explain the numerous other occasions on which witnesses described the images as being in colour.

Additional Information: A number of colour photographs taken by eye witness and pictures passed to RAF Pitreavie and Scottish Daily Record. Original negatives then passed to the Daily Record.

Detail of the handwritten memo outlining the Calvin sighting produced in September 1990 - DEFE 24/1940: 113 (The National Archives, 2008)

Careful examination of the documents released by the MoD may provide an explanation. In the handwritten memo describing the Calvin incident (The National Archives, 2008), which dates from early September, prior to the negatives being sent to the MoD in London, the situation is described thus: "Pictures passed to RAF Pitreavie and Scottish Daily Record. Original negatives then passed to the Daily Record." This would suggest that the witnesses actually provided original PRINTS to the Daily Record. If this was the case then for the Daily Record to have provided Craig with a 10x8" print of the image, prior to the negatives being passed to the paper, they must have copied their original print in order to produce an image to send to RAF Pitreavie Castle.

The Daily Record had facilities for copying prints and negatives, so when asked to provide Craig with a photograph they could have quickly copied the original prints onto black and white film and printed them a colour print machine resulting in a black and white print on colour paper which was then sent to Criag. Why the Daily Record would use black and white film rather than colour to make this copy is unknown, it could simply be that that was the film loaded in their copy camera at the time and the job was urgent. Subsequent prints made by the MoD or the Daily Record from the original negatives when they became available would then be in colour.

The copy negatives produced as a result might well be those that the former press photographer Stuart Little claims to have seen taped to the back of a print on the wall of the picture desk when he visited the Daily Record in 1993 (Little 2022).

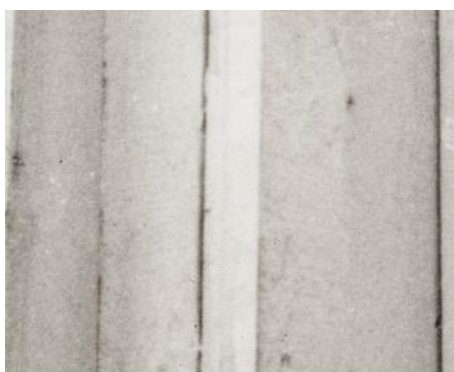
The other possibility is that the original images were produced on Black and White film and the print sent to Craig Lindsay was made from the original negatives and the subsequent statements that the images were in colour were a mistake by the witnesses concerned. If this was the case, then the use of either traditional B/W or XP-1 film rather than normal colour negative film by the photographer would suggest that they were both interested in and knowledgeable about photography as at this time the use of B/W films was not particularly common within popular photography. During the late C20th black and white practice was largely limited to student photography, traditional documentary practice and landscape photography. Given the number of documents describing the Calvin images as being in colour this explanation would seem unlikely.

Conclusion – The Calvin Photograph is a black and white image printed on colour photographic paper made from a copy negative of an original colour print.

C-3 - Film Grain

The film grain within the image is noticeable however not extreme. Film grain is largely determined by the film stock however is also a result of the processing chemistry. Higher speed film has course and more noticeable grain while speed increasing, or edge sharpening developers may also produce coarser grain. Grain size is also determined by the amount of enlargement.

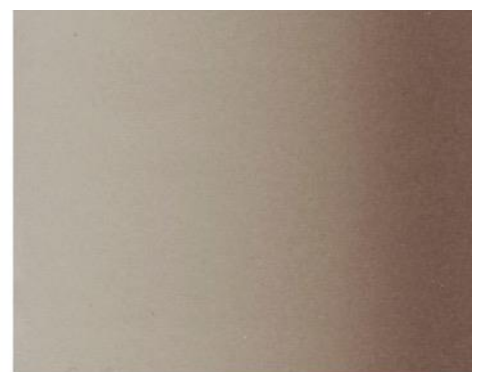
A full frame image printed to 10x8" will exhibit finer grain than a portion of the same image enlarged to 200% and printed on 10x8" paper. Assuming the print is full frame (with a slight crop to the edges due to proportions of the paper size) the grain size present in the appears to be reasonably fine grained and most consistent with a film with an ISO of 100 processed in a normal B/W developer. Finer grain results from a faster film could also result from using a specialist fine grain developer.



Print from Ilford FP4 100 ISO Negative 1988



Original Calvin Print



Print from XP-2 Negative c1992

All images from 10x8" prints scanned at same size and cropped to the same size

Comparisons of enlarged areas of prints made from images on different film stock, photograph © Andrew Robinson 2024.

Comparisons of the grain of the original Calvin print with enlarged sections of roughly contemporary 10x8" prints produced from both XP-2 and FP4 negatives (see above) reveals that the grain on the Calvin print is coarser than that produced by XP-2 and similar to that visible on a print from a FP4 negative if perhaps a little coarser. This would suggest that the most likely film based on grain type would be a 100 ISO B/W film such as Ilford FP4 or Kodak Plus-X or perhaps

a coarser grain 400 ISO film such as Ilford HP5 or Kodak Tri-X. Another possibility might be Kodak T-Max 100 however the grain structure of this 'T' grain film would have a different appearance.

Ilford's XP films were well known for their fine grain properties at different film ISOs, dependent to some extent on the type and quality of developer used, and the grain visible in this print might suggest a traditional black and white film rather than Ilford XP-1.

Conclusion – The film used to make the Calvin Photograph was most probably a 100 ISO film such as Ilford FP4 or Kodak Plus-X or alternatively Ilford XP-1.

C-4 - Print Size

The Calvin Image is a borderless black and white image printed on a Kodak Ektacolour 78 photo paper precisely 7.9" x 9.9" (20.1 x 25.2 cm) in size. This suggests the print was made either on an individual sheet of 10x8" Ektacolor paper (official cut size 20.3 x 25.4 cm) and either machine or hand processed or printed on 10" (25.4 cm) wide Kodak Ektacolor Roll paper on an automatic 'Mini-Lab' printer (Kodak, 1979).

10x8" was the most popular paper size within professional photography for much of the second half of the 20th and prints of approximately this size became the standard for press and publicity prints, proof prints, police and health situations. Since the advent of digital photography paper sizes have largely moved to the 'A' series of paper sizes although photographic (analogue) paper is still produced in imperial sizes.



Image showing the cropped areas of the Calvin Image in grey, © Andrew Robinson 2024.

35mm film has a ratio of 3:2 while 10x8" paper has a ratio of 5:4 thus in order to print a 35mm image on a sheet of 10x8" photo paper without borders approximately 17% of the sides of the image would have to be cropped (shown as grey in the above image). It should be assumed that the Calvin image has been cropped in this manner when printed.

The common paper sizes for typical consumer 'en-prints' 6x4" (ratio 3:2) and 7x5" (ratio 3.5x2.5) are a better fit for 35mm film requiring little cropping.

Given that the negative for this image is not available it is possible that the Calvin photograph might be a selective enlargement of a section of a larger image and whilst there is nothing to suggest that this is the case this cannot be ruled out as a possibility.

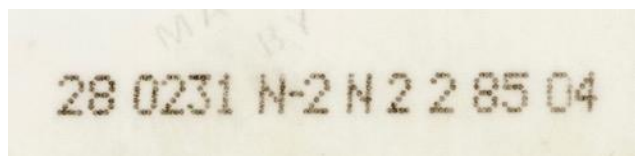
Conclusion – The print size of just over 10x8" has resulted in a cropping of 17% of the width of the original negative and is consistent with enlargements produced on Mini-Labs by newspapers, high street photo labs and chemists.

C-5 – Printing and Processing

The Calvin image is a borderless colour print made from a Black and White negative. At the time the print was produced two likely means of producing a colour print of this size from a B/W or Colour negative exist. The print could have been hand printed in a darkroom on a colour enlarger and processed in a EP-2 dry to dry colour print processor. This would typically produce a print on a standard sized photographic paper with white borders determined by the masking easel settings. Ektacolor 78 paper was available in 20.3 x 30.5 cm (10x8"), 24 x 30.5 cm (approx. 9.5 x 12") and 27.9 x 35.6cm (approx. 11 x 14") (Kodak 1979). Alternatively, such a print might be produced on a dry-to-dry auto print machine (a 'mini lab') loaded with EP2 colour negative paper 10" wide producing a borderless image.

A third option, a colour handprint, tray processed (wet processed) in colour chemistry, is possible but highly unlikely, especially in a photo lab or newspaper setting of the early 1990s.

It is normal with mini-lab machine prints for a print number to be present on the back of the print and such a code exists on the rear of the Calvin print halfway along the left-hand edge.



Enlargement of the print code printed on the rear of the Calvin Image, © Andrew Robison 2024.

These numbers are a record of the print settings. Different manufacturer's processing machines use different configurations and individual labs can configure their codes to meet their own needs however most use similar conventions (linda_vesci1, 2009 and Michael C, 2017).

- Codes usually start with a number to identify the machine the image was printed on so this appears to be printed on machine '28'. Alternatively, this is sometimes used to identify the roll and frame number.
- The next numbers usually identify the manufacturer and film speed –so the code might suggest manufacturer '02' and film speed '31' however sometimes these might also be used for the film processing settings.
- The 'N' numbers represent the enlarger/printer settings for YELLOW, MAGENTA and CYAN (or sometimes Cyan, Magenta and Yellow).
- 'N' means no adjustment while '2' or (+2) represents an increase of two units of colour and -2 represent a reduction of two units of colour with 1 Unit = 5%.
- The colour adjustment settings are then usually followed by the density and contrast settings which might be + or – with units equal to 10% density.
- Thus the print was probably made with a setting of:
- Normal Yellow / -2 Magenta / Normal Cyan / +2 units of exposure / +2 Units of Contrast.
- The last two numbers are likely to be batch numbers rather than date numbers.

The colour setting of *Normal Yellow / -2 Magenta / Normal Cyan* suggests that this print was NOT made from a traditional black and white negative. Such negatives can be printed on colour paper to give fairly neutral black and white results however the adjustments needed to the colour filter settings on the enlarger would be considerable and the setting detailed in this print code is a fairly normal setting for printing from standard colour film or Ilford XP-1 film suggesting that the negative for this copy print was most probably produced on one of these films and not on a traditional black and white film. Given that we believe the original print that this copy negative was produced from was in colour, based on these settings the film type used to produce this black and white copy print is most likely to have been Ilford XP-1.

Given the presence of such a code number the most likely explanation is that the print was produced on a 'Mini-Lab' automatic print machine that a photo lab, chemist or newspaper would use for quickly producing prints in house. This would also be consistent with the poor chromatic aberration visible in the print. Typically, the lens used on a traditional colour enlarger would have much less chromatic aberration than seen in the print (although this depends on the quality of the lens employed).

Before the advent of digital imaging and internet publication, newspapers made reproductions of images they published available to the public for a small fee. These were typically 10x8" in size and by the 1990s most newspapers would be using a 'mini-lab' printer to quickly produce these in house at low cost.

It would be useful to find out what equipment the Daily Record used to produce press prints in the early 1990s (mini lab brand & manufacture). Someone who worked in the darkrooms at the Daily Record might also be able to shed light on the codes used here or if other photographs printed at roughly the same time were available more information might be derived from the code however it is unlikely that this would reveal anything other than film manufacturer, film iso, the machine this was printed on, and the batch number.

Conclusion – The available evidence suggests that the print was produced on a Mini-Lab or automatic printer/processor machine as might have been found at a newspaper or in larger photography stores and chemists in the early 1990s. The 'normal' enlarger colour settings revealed by the print code suggest that this print was from a negative produced on Ilford XP-1 film.

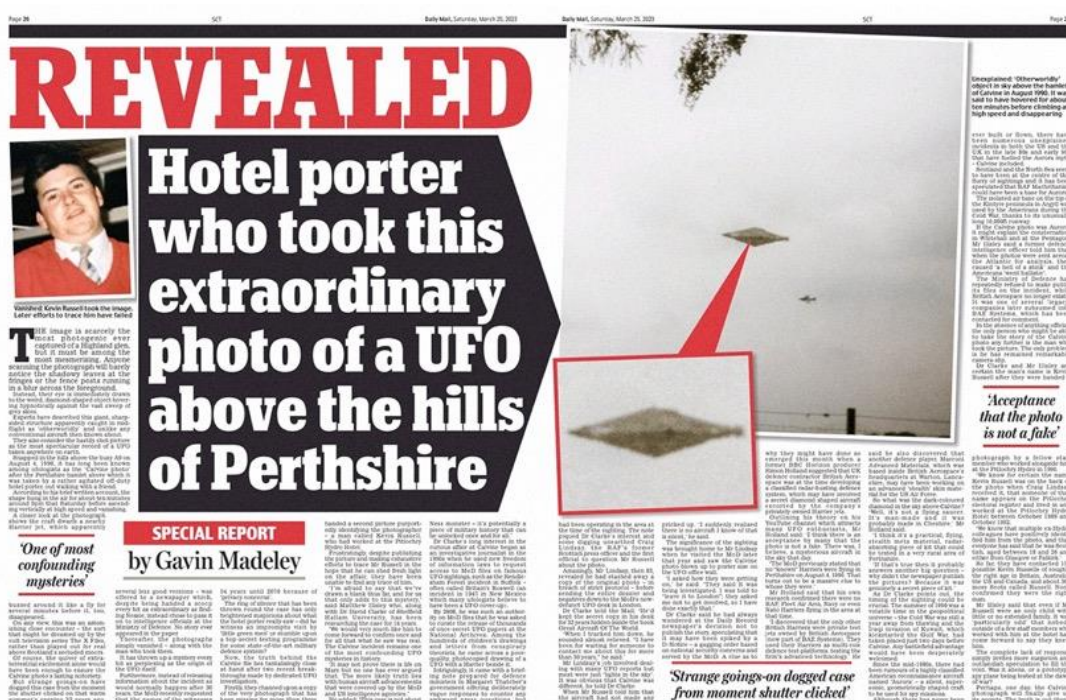
C-6 – Copyright Notice

A copyright notice is written on the rear of the Calvine photograph which states "Copyright Kevin Russell, C/O Daily Record, Glasgow".



Copyright notice on the rear of the Calvine Image, © Andrew Robinson 2024.

This text was present on the print when it arrived in the care of Craig Lindsay in late August 1990. It follows that this was written on the print by someone at the Daily Record, probably Andy Allen, the picture editor at the time who originally contacted Craig Lindsay to ask for comment on the photographs and arranged for a copy of the best image to be sent to RAF Pitreavie Castle. The text is written in red chinagraph pencil. Chinagraph pencils (also known as 'grease' or 'wax' pencils or 'china markers') were in common use by photographers and picture editors at this time to mark-up contact prints in order to indicate selected images due to their ability to write on shiny or plastic surfaces such as the front or back of resin coated or fibre based photographic papers.



Story published in the Scottish Daily Mail in March 2023 revealing a photo of a Kevin Russell who worked in Pitlochry in 1990.

An extensive search by Dr David Clarke and investigative journalist Matthew Isley traced more than 140 men of the correct age named Kevin Russell in Scotland and further afield. This search ultimately identified a man named Kevin Russell who appears on the Pitlochry Electoral Register in 1990 where he is listed as living at the town's Hydro Hotel working as a kitchen porter. A co-worker at the hotel provided a photograph of this person which was published in the Glasgow Daily Record on the 6th of March 2023 (McGiven, 2023) and the Daily Mail Scotland on the 25th March 2023 (Madeley, 2023 - see above) and shared widely on social media in an attempt to find him. In May 2024 the man pictured in this photograph, who was using the name Kevin Russell in 1990, came forward and confirmed that he had worked as a porter at the Pitlochry Hydro Hotel at the time of the sighting however he claims he knows nothing about either the sighting or the photographers and cannot explain why his name would appear on the rear of the Calviné Photograph.

Dr David Clarke has recently revealed details from another witness who worked at a different hotel in Pitlochry at the time of the sighting. Former chef Richard Grieve claims in statements to the researchers and to the Daily Mail that he knew the two witness and worked alongside them in the kitchens at Fishers Hotel, Pitlochry, in the summer of 1990. He remembers them talking about the sighting, taking the photographs to the Daily Record and saw them interviewed by MoD investigators however according to Grieve neither of these people were named 'Kevin Russell'.

Conclusion – The photographer and witnesses to the Calviné sighting remain unknown. The kitchen porter named Kevin Russell who worked at the Hydro Hotel at the time denies any knowledge of the incident and cannot explain why his name appears on the back of the Calviné image. Other names have been suggested by former Chef Richard Grieve however investigations have so far failed to trace those named or corroborate this.

Section D – IMAGE ANALYSIS

D-1 - Image Overview



The Original Calviné Image (Craig Lindsay / Sheffield Hallam University 2022)

The image is taken looking slightly upwards with the majority of the frame filled with sky and only a small portion of landscape visible along the lower edge of the frame. Variations in the tonality of the sky allow clouds to be distinguished and the scene appears to be lit by diffused light from an overcast sky rather than by direct sunlight.

D-2 – Branches

Along the left-hand half of the top edge of the image two groups of branches, identified as Scots Pine, partially frame the image. The left-hand group itself consists of three or four groupings of branches with an increasing density of leaves closer to the upper edge of the image compared with the lower ends of the branches.



Details of the branches visible in the upper left corner of the Calvine Image, photograph © Andrew Robinson 2024.

The second distinctive group or branches are located to the right of the first just to the left of the central point along the top edge of the image. These branches are darker in tone and more heavily covered with leaves than those to its left. These branches also enter the image at a steeper incline and may be different in kind to the leaves to their left.



At the far left of the lower edge of the image there is a darker area which appears to be the branches and leaves of a tree, bush or some kind of plant. The leaves are long, thin and pointed and appear quite different to those seen above the along the upper left-hand edge of the image. These leaves may be obscuring a log, rock or other solid item located behind them.

Conclusion – The branches visible along the top of the image, identified as Scots Pine are consistent with trees found in the vicinity of Calvine and elsewhere in the area.

D-3 – Fence

Along the lower edge of the image can be seen a fence supported by three (or possibly four posts): two thicker posts (possibly wood) and to the left-hand side a thinner fence support which appears to have a circular hole in the top through which the uppermost wire of the fence passes. This would appear to be a metal post or separator. A third post maintaining the regular post spacing may be hidden behind the 'bush' at the left-hand corner of the print but it is not possible to clearly identify this. Two wires are visible passing from post to post to form the fence. The uppermost of the two fence wires visible appears smoother than the lower.



Images showing details the fence along the lower edge of the Calvine Image, © Andrew Robinson 2024.

Two dark marks appear along this upper wire just to the left of both of the two thicker posts (see above). It is not possible to clearly determine what these marks are with any certainty however they are likely to be grass or animal fur, wool, or some similar material which has become attached to the fence wire. There appears to be some threads or some other material hanging from the two marks to the left of the left-hand wooden post.

The lower of the two fence wires has regular markings along its length (see below) whereby the wire appears slightly thicker at regular intervals. It is possible that this wire forms the uppermost edge of gridded wire fencing with the marks indicating where slightly thinner vertical wires are attached which have not registered on the film however it is most likely that the wire is barbed. The barbed wire typically used in agriculture and forestry has a standard space of 10cm between the barbs, (Crestala Fencing Centre, 2024 and Jackson Fencing, 2024). In a recent photograph taken by the author of a barbed wire fence with 10cm spaced barbs on moorland in the Peak District the wire appears similar to that in the original photograph (see below).



Section of Original Photograph show wire (assumed to be barbed) with approximately 16 ‘barbs’ visible



Authors recent photograph shot on 70mm lens focused on near foreground (5 feet distant) showing 16 barbs of a barbed wire fence at a distance of 15 feet appearing slightly out of focus. As the barbs fall out of focus their points disappear and they appear as a slightly thickening of the wire at regular intervals similar to that seen in the original photograph.

Conclusion – The fence present along the lower edge of the image has a smooth top wire and a barbed lower wire showing a regular spacing of barbs.

D-4 – Background

If we examine the landscape visible behind the fence along the lower edge of the print, a number of features can be seen. These include what appears to be a faint undulating horizon in the background along with and a slightly darker ridge towards the left side of the image with a number of dark protrusions which are interpreted as groupings of trees. Closer to the fence at the far right in a darker tone, can be seen what appears to be the tops of trees or a ridge in the middle distance. All these features appear in sharper focus than the foreground fence and thus are interpreted as being in the background rather than being part of the fence. A linear feature that appears just below the wire to the left of the centre-left post (marked in red in the diagram) might be interpreted as a continuation of the wool or grass attached to the upper fence wire however it appears in sharper focus suggesting that it is a background feature.

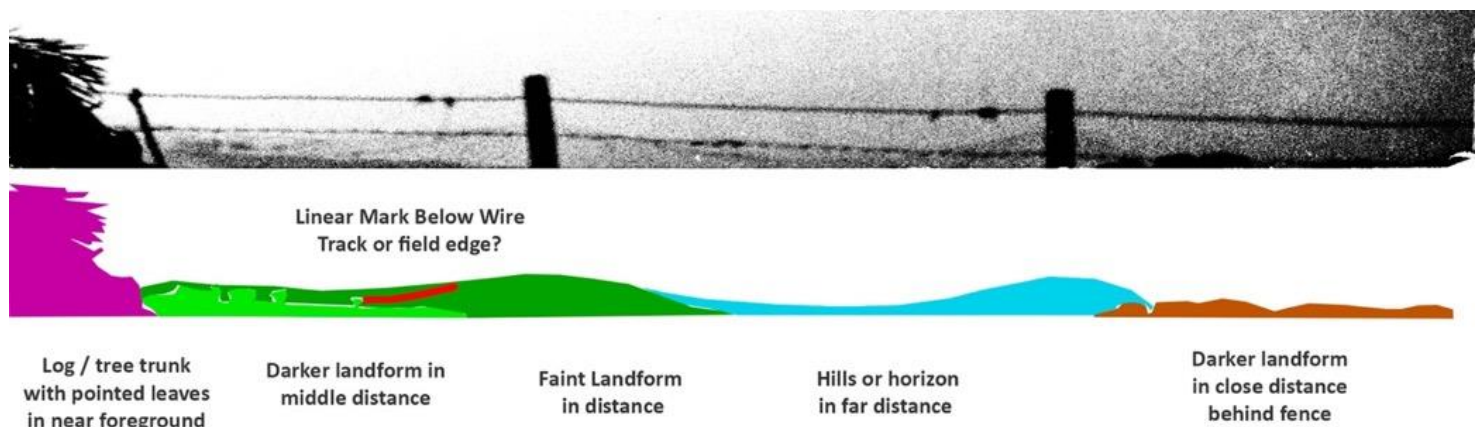
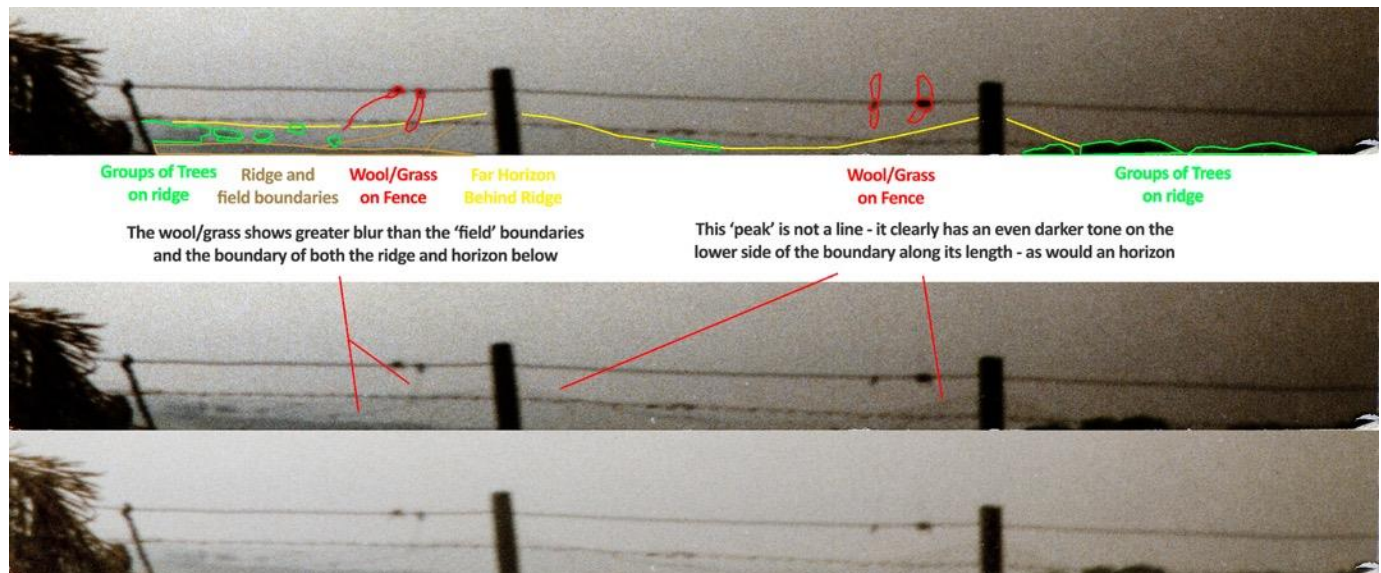


Illustration of the landforms identified behind the fence along the bottom of the Calvine Image, © Andrew Robinson 2024.

The horizon appears not as a line but as a tone boundary between a light area above (sky) and an darker area below (land). Other commentators have interpreted this differently and believe that this is part of the fence, perhaps a finer wire mesh 'rabbit' fence however I believe the focus and tonality indicate otherwise. This boundary is sharper than the fence wire and posts suggesting it is in the background rather than part of the fence. The tree lined ridge is also darker than the horizon landscape behind it – this is consistent with atmospheric haze which results in distant landscapes appearing lighter in tone than those nearer to the viewer.

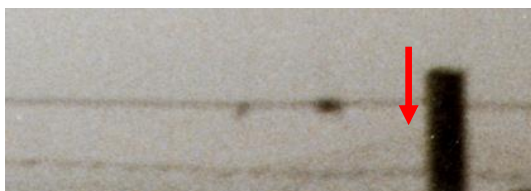
Where the 'wool/grass' attached to the fence hangs down below the fence wire it appears more blurred than either the 'field boundaries' (shown in brown) and the horizon line (yellow). The 'wool/grass' is thus interpreted as being attached to the fence while the features identified as a ridge, trees, field boundaries and horizon line are interpreted as being in the background.



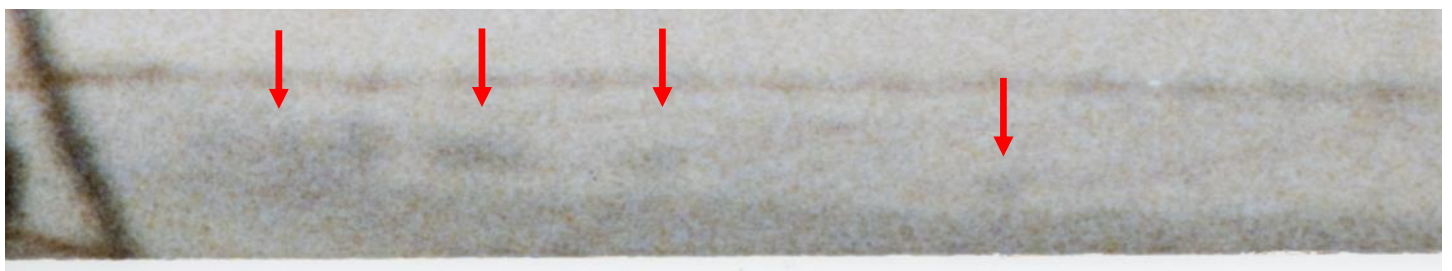
(NB - A simple darkening has been applied to the top two versions while the bottom strip is unaltered)

Identification of landforms and fence details along the bottom of the Calvine Image, © Andrew Robinson 2024.

About two thirds of the way along the bottom of the photograph and behind the third fence post there is a distinctive angular peak on the horizon which is the highest point visible in the background (see below)



Just to the right of the left hand thinner fence post and in front of the range of hills on the horizon, there is a slightly lower darker hill or ridge (shown in brown on the top image above) with what appears to be three groupings of trees (shown in green), a large grouping closest to the fence post followed by a small group of 3-4 trees and finally what appears to be a single tree or possibly a pair of trees (see below). A little further along the ridge, approximately midway between the first and second fence post there appears to be a further lone tree on this hill.



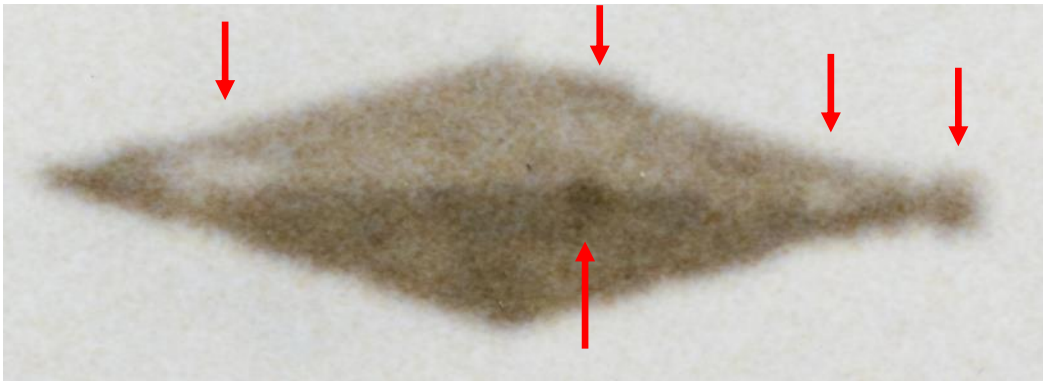
Some way closer to the camera, just visible to the right of the right-hand fence post and to the right of the distinctive hill on the horizon is an irregular dark area at the very lower edge of the print (see below). This would appear to be the tops of trees in a forest or wooded area in the middle distance (shown in green on the large image).



Conclusion – The landscape just visible behind the fence consists of a number of ridges or low hills at different distances from the camera position (middle distance, far distance and horizon) with groups of trees visible on the far distance ridge to the left of the image and a slight peak behind the right-hand fence post.

D-5 – Unidentified Object

In the Centre of the image appears an unknown object with a squashed diamond shape. This object has some slight variation in it's tonality along with length with a dividing line along it's length with the upper surface lighter in tone than its lower surface. The lighting of this object is consistent with the diffused overcast lighting of the overall scene.



Identification of key features on the unknown object in the centre of the Calvine Image, © Andrew Robinson 2024.

At either end of the object, approximately a fifth of the distance along its length, a lighter area of tone is present with the left-hand area being both larger and lighter than area visible at right hand end. Just to the right of the centre of the object a darker circular area of tone is present. Along the top right-hand slope close to the peak is a small darker raised area. The far-right hand extremity of the object, where the upper and lower surfaces join, extends to circular 'nose' like form. In contrast, at the left-hand extremity of the object the upper and lower surfaces join at a point. No smoke or fumes are to be seen around the object. It should be noted that the top half of the diamond is NOT a mirror image of the lower half.

Conclusion – The unidentified object does not have a symmetrical shape in either dimension however due to poor resolution and image blur it is not possible to identify any features.

D.6 – Film Grain Around Unidentified Object



Enlargement with increased contrast showing grain structure around unknown object. © Andrew Robinson 2024.

The grain around the unidentified object in the centre of the image shows no break, distortion or unevenness and is continuous across the object boundaries. There is no evidence from the grain distribution around the object that the image has been collaged or constructed. The grain is continuous, in size, texture and density across the whole image suggesting that the image itself (both negative and print) has not been manipulated. The grain present here is consistent with this being a genuine recording of a scene in front of the camera.

A possible approach to disguising the collaging and construction of an image, either on the negative or print would be to rephotograph a manipulated image on a coarser grain film so that a convincing and genuine grain distribution disguises any joins or artefacts resulting from the manipulation. Whilst it is impossible to fully rule this out this would be unlikely due to the fineness and consistency of the grain in this image.

Conclusion – The film grain distribution suggests that no negative or print based manipulation of the image has taken place and that the image is a genuine representation of a scene in front of the camera.

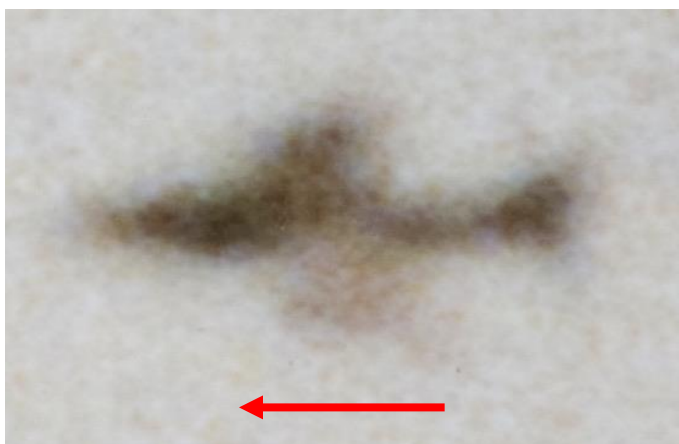
D-7 – Plane/Harrier

The plane flying below and apparently behind the unidentified object is traveling from right to left and, from its position in relation to the landscape behind, it appears to be flying at a relatively low height.



Image Source – Warbird News [HERE](#)

Although it is not possible to clearly identify the plane due to its distance from the camera; the slight blur in the image; and the film grain, the plane's silhouette is nevertheless consistent with that of a Harrier Jet.



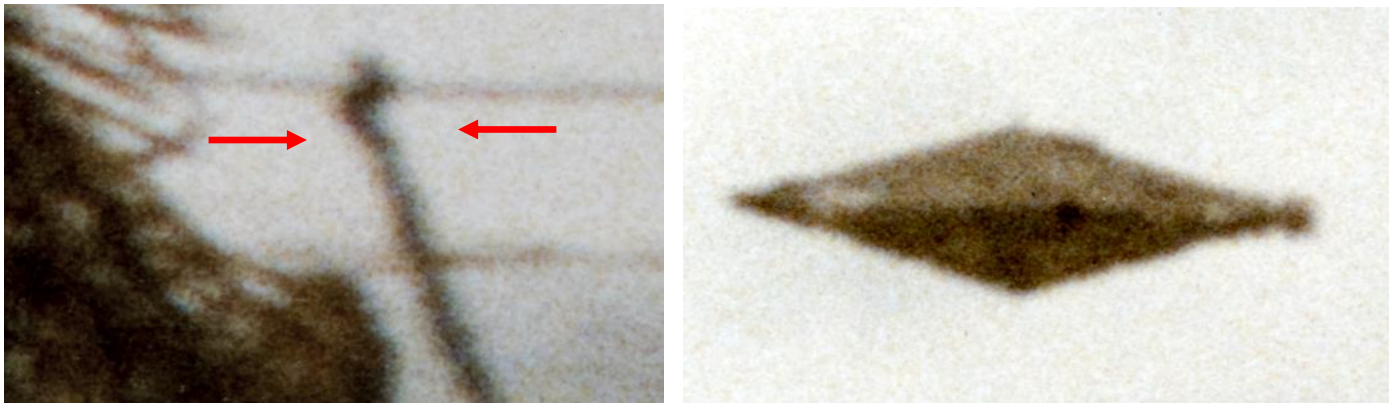
Enlargement showing detail of the 'Harrier' seen in the Calvine Image, © Andrew Robinson 2024.

The 'harrier' is blurred, whilst there may be a small amount of focus blur present, lateral movement blur can be seen suggesting that the plane is moving at speed. The interpreting of this blur as movement is supported by the fact that the Harrier, whilst appearing close to the sharper background, is the most blurred object in the image. There is a lighter blurred area on the lower wing which in part obscures the shape of the wing. It is not clear what might be causing this - it may be an effect of the film grain, or a mark on the neg, or the wing may have caught the light.

Conclusion – The plane visible in the image shows both slight focus blur and lateral movement blur suggesting it was moving at the time it was photographed. Resolution and blur prevent a conclusive identification of the plane however the shape is consistent with the outline a Harrier would produce.

D.8 - Chromatic Aberration

Peripheral areas of the print, especially the branches of the trees at the top left and the fence and bushes at the lower left and right exhibit lateral chromatic aberration. Chromatic aberration, also known as colour fringing, is a colour distortion resulting from the camera or enlarger lens which creates an outline of colour along metallic surfaces or high contrast edges resulting in a blur of blue-yellow, red-cyan or magenta-green fringing around the edge of objects in the photograph. Lateral chromatic aberration only occurs at the edge of images while longitudinal chromatic aberration occurs across the whole frame.



In the detail above red-cyan fringing can be seen around the fence post with a red/yellow fringe to the left and a weaker green/blue fringe to the right of the post. This is not seen on the fence post at the centre of the lower edge nor on the unidentified object at the centre of the image.

If, as believed, the printed image was taken on B/W film (probably Ilford XP1) even if chromatic aberration was present in the camera lens B/W film would not record chromatic (colour) aberration as a colour fringe as we see in the print but rather as a very slight blurring of the image in the area where any aberration was present.

The colour aberration visible in the print must thus be a result of the enlarging lens used when the B/W negative was being printed onto colour paper.

Conclusion - The chromatic aberration present is a result of the printing process and suggests a lower quality enlarging lens on the enlarger or mini-printer.

D-9 - Climatic Conditions

The image reveals an overcast sky with diffused light and no visible blue sky or direct sunlight. The date given for the creation of the photograph is Saturday 4 August 1990 at 2100 GMT approx. The weather recorded by the UK Met Office for that day includes the following summary of the weather in Scotland:

"Scotland and Northern Ireland had a rather cloudy day, but some eastern parts of Scotland were quite sunny. There was some rain in the north and west of Scotland with a few showers in Northern Ireland and southern Scotland by the evening. Temperatures were a little above average." (Met Office, 1990).

Central Scotland had between 2 and 4 hours of sunshine from dawn to dusk with temperature of between 18 and 22 degrees centigrade (Met Office, 1990). Sunset on the 4th August 1990 was at 09:20:53 PM (MapLogs.com, 2024) which would place the origin of the photograph around 20 mins before sunset.

Conclusion - The weather and sun data for the day in question are consistent with the claimed heritage of the photograph and the visual evidence contained within.

SECTION E – CAMERA AND LENS

Photographic Details: (i) Confirmation of date and time, (ii) What sort of camera
(iii) What type of lens (iv) What focal length

Note on MoD handwritten summary of Calvine sighting indicating missing camera information, DEFE 24/1940: 113

No information is available concerning the type of camera used to capture the Calvine image. The handwritten summary of the sighting released by the MoD (The National Archives, 2008) apparently written between the arrival of the negatives at the MoD on the 10th September 1990 and their return to the Daily Record on the 14th September 1990, indicates a desire for details regarding the camera type, lens and focal length, possibly to enable size and distance calculations however there is no evidence that these were ever provided or documented. Analysis of the Calvine print can however provide some suggestions of possible camera details.

The sharpest point in the image is the unidentified object in the sky with both foreground and background details appearing out of focus in comparison. Due to the sharpness of the central object, the blurring of other areas of the image except for the plane would seem to be a result of focus and the depth of field used rather than due to camera or subject movement during the capturing of the image.

Depth of field is the depth of the scene that is rendered in focus either side (in front or behind) of the point of focus and is a function of the aperture (F Stop) used along with the focal length of the lens. Wider apertures and longer focal length lenses result in a shallower depth of field. The depth of field visible in the image is fairly shallow suggesting either a wider aperture (e.g. F2.8 – F5.6) and/or a longer lens (e.g. 50mm - 80mm or above).

Assuming the image has been printed full frame (aside from the small amount of image cropped off each side to allow the image to fit on the 10x8" sheet of paper) the field of view and the absence of either the distortion produced by wide angle lenses, or the compression produced by telephoto lenses, suggests that lens used is likely to have been a standard 50mm or possibly either a slightly wider 35mm lens or a 80mm short telephoto lens.

The above information would suggest the use of a traditional SLR (single lens reflex) camera fitted with either a fixed focal length prime lens of between 35mm and 80mm OR a zoom lens with a variable focal length of perhaps 35-70mm or 35-80mm. This would be fairly common equipment for an interested amateur photographer in the late 1980s and early 90s.

The second possibility is that the image was taken on a simpler and cheaper 'point and shoot' compact camera. Compact cameras of the late 1980s and early 1990s were fairly advanced with auto exposure and accurate auto focus available at a reasonable price. At this time point and shoot film cameras were the most popular camera for amateur family, travel and holiday photography. Most compact cameras were fitted with either fixed focal length lenses (typically 50mm but sometimes 35mm) or short-range zoom lenses such as 35-70mm or 35-110mm and it is quite possible that such a camera might have been used to produce this photograph.

Although Kodak first introduced the 35mm 'Fling' single use camera in 1988, such disposable cameras which became popular with amateur photographers in the mid 1990s, were not commonly available in the UK in 1990.

Kodak B/W single use ('disposable') cameras were not available at this time. Ilford didn't introduce a single use camera using B/W HP5+ film until the early 2000s (the earliest data sheet is dated 2002) and a single use camera using XP-2 was not introduced until 2013.

Conclusion – The camera most likely to have been used to produce the image is a 35mm SLR or Compact Camera fitted with a 50mm Standard Lens or a 35-70mm or similar zoom Lens.

SECTION F - IMAGE ORIENTATION

Immediately following the publication of the original Calvine Image in the Sunday Mail on the 13th August 2022 numerous theories were proposed online to explain the unidentified object present in the centre of the image. Given

the scope of this analysis it is not possible to consider all of these here, however an persistent interpretation that has gained traction since the image's release suggests that the image is actually inverted and shows a reflection of an object protruding from the surface of a lake.

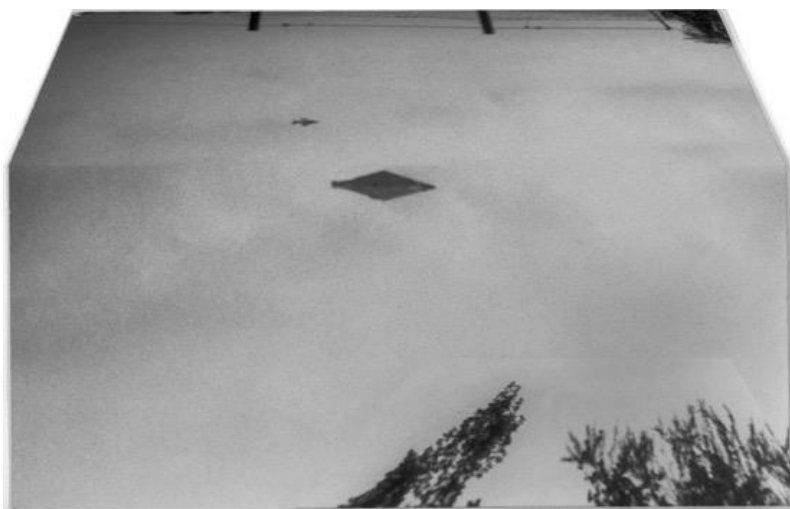


The Original Calvine Image vs inverted version (Craig Lindsay / Sheffield Hallam University 2022)

When the print is inverted and considered as a reflection in a water surface the diamond shaped object could be explained as the reflection of a triangular rock or piece of wood slightly projecting above the water surface. Whilst this may appear possible, it should be noted that the top half of the diamond is NOT a mirror image of the lower half (there are small differences to the shape of the object) and the reflected lower half is LIGHTER than the top half (normally a reflection in water would be DARKER). This would seem problematic for such an interpretation.

If the image was taken at eye level, then we should see a reflection of the landscape beyond the fence rising above it in the 'reflection' unless the lake were on high ground with no higher land present. Were the lake in a valley bottom, as some people have suggested, then the valley side beyond the fence would be seen reflected in the top of the image. The mirror stillness with not a single ripple and the lack of any surface debris (leaves, twigs, bubbles etc.), whilst not impossible, would seem highly unlikely.

It is unlikely that a single viewpoint could produce a reflection of the diamond shaped object, the foreground branches and the background fence as they are seen in the inverted image. Separate adjustment of the perspective of both background fence and foreground branches produces a more realistic view (see below) however this is not what is seen in the original image.



Perspective applied to fence area

Original Image

Perspective applied to branches

Adjusted version of the Calvine image with false perspective applied to tree and fence areas. © Andrew Robinson 2024.

A number of people have attempted to model a reflection explanation in 3D to test its credibility. Ruan3D, who provides online tuition videos and tutorials on 3d creation, has posted a short video on YouTube created in the 3D programme Blender a virtual landscape with a circular lake, overhanging tree and fence along the far side of the lake (Ruan3d 2022). Whilst this effectively demonstrates this theory here the perspective of the fence and tree branches in the resulting image do not accurately match those seen in the Calvine Image.



Stills taken from Ruan3D's video showing generated landscape (left), reflection in the lake as seen by the virtual camera (centre) and the resulting image when inverted (right). © Ruan3d 2022. ([LINK](#))

The 3D rendering software used by Ruan3d correctly produces a darker shadow for the reflection of the object in the lake surface than that above the lake surface which when the image is inverted (see below) clearly doesn't match the original Calvin image where the lower half of the diamond is darker.



Stills taken from Ruan3D 's video showing details of the 3D generated image (left - top half of object darker than lower) and the original Calvin image (right - bottom half darker than top). © Ruan3d 2022.

The Danish 3D illustrator who posts on YouTube as ThomasH has produced a much more detailed 3D recreation of the inverted reflection interpretation (ThomasH, 2023a). Here he has created a lake on a valley floor in a highland landscape bounded by a fence on one side with trees or bushes along the opposite bank. In order for the reflection to produce an image that begins to match the Calvin Photograph the camera position has to be elevated considerably so that the branches of the trees themselves rather than their reflection are appearing in the bottom of the image. This would require a steep bank or cliff face behind the trees to provide sufficient elevation for the image to work. (see below).



Stills taken from a 3d recreation of the reflection interpretation of the Calvin sighting produced within Blender by 'ThomasH' showing the arrangement of fence, lake and tree (left) and the camera position required to produce a suitable image (right). © ThomasH, 2023. ([LINK](#))

Whilst this arrangement can produce a similar image there are a number of problems with this which Thomas points out in the voice over that accompanies the video:

"I think the scene makes okay sense but there's also some things that makes me doubt it, I had to cheat to have the water reflecting like this because the reflection is brighter than the actual object normally the reflection is darker... I find it a bit incredible for the water to be so clean clear and still so you can't see the difference between real things, reflections and front or back"

Another issue present in this interpretation concerns the Harrier which is here replaced by a blurred bird in flight. The height and position required for the Harrier to appear at the correct size and orientation in the reflection would be highly unlikely. Whilst this 3D recreation has some strengths the issues present ultimately undermine its viability as a possible explanation. Numerous other interpretations of the image exist both online and in print. Many of the suggested explanations don't match the available data however even those that might be plausible tend to create more problems than they solve. The simplest explanation, that we are seeing a photograph of a real object in the sky, is by far the most convincing and currently fits the available photographic evidence and the narrative of the sighting best.

Conclusion – Although the possibility of the image being a reflection in the surface of a lake cannot be categorically ruled out this is considered unlikely and unproven due to the lack of any objects or disturbance in the lake surface, the lightness of the reflection of the object in the water, and the required camera position and surrounding landscape.

SECTION G – SIZE AND DISTANCE CALCULATIONS

G-1 – Size of Object and Harrier

The relative sizes of objects in the photograph, as measured from a print, are dependent upon their actual size, their distance from the camera and the focal length of the lens. This relationship is an inverse linear relationship, i.e. size is $1 / \text{distance}$ - if you double the distance the size halves.

The length of a Harrier Jet is known and the length of a section of the barbed wire in the foreground can be calculated based on the standard spacing of barbs on the typical type of barbed wire in universal use across farming and forestry applications where the barbs are spaced in 10cm intervals (Crestala Fencing Centre, 2024 and Jackson Fencing, 2024). Thus if we are able to determine at what point between the fence in the foreground and the jet in the background the unidentified object is flying, we are able to calculate an approximate value for the size for the unidentified object.

Background - Harrier Jet



Length of Harrier GR3/AV-8A = 14.4 m / Length on Print = 0.80 cm

Middle Distance - Unidentified Object



UFO - Length on print = 3.33 cm / Height on print = 0.97 cm

Foreground: Wire Fence



To Scale from Original Image

Length of Fence (18 barbs) = 170 cm / Length on Print = 6.11 cm

Measurements of Harrier, unidentified object and barbed wire from a copy of the Calvine print, © Andrew Robinson 2024.

- **Harrier** - True Length = 1440 cm / Image Length = 0.80cm
- **UFO** – True Length = Unknown / Image Length = 3.33cm
- **Fence** - True Length = 170cm / Image Length = 6.11cm

Calculations of the approximate size of the Unidentified Object have been made based on three different placements of the object between the fence in the foreground and the harrier jet in the background:

Option 1 - Assuming UFO is 50% of distance between fence and jet - UFO Length = 30.43 m / UFO Height = 8.86 m

Option 2 - Assuming UFO is 33% of distance between fence and jet - UFO Length = 20.60 m / UFO Height = 6.00 m

Option 3 - Assuming UFO is 66% of distance between fence and jet - UFO Length = 40.27 m / UFO Height = 11.73 m

Conclusion - Assuming the position of the unidentified object is (as it appears to be) closer to the Jet in the background than the fence in the foreground, an approximate length of between 30 m and 40 m and a height of between 8 m and 12 metres can be calculated for the object. NB – It should be noted that the measurements calculated here are approximate and are based on the stated assumptions and will have a margin of error of approximately +/- 10%.

G-2 Distance of Fence and Harrier

Give the barbed wire provides a measurable scale at the position of the fence in the foreground of the image and the Harrier provides a measurable object in the distance of the photograph, using trigonometry we are able to calculate the distance between the camera position and both the fence and the Harrier for a given focal length lens. Before doing this we first need to calculate the full uncropped width of the image:

- 35mm Neg dimensions 24 x 36mm
- Calvin Print Dimensions 201 x 252 mm (20.1 x 25.2 cm)
- Print width has been cropped to fit on 10x8" paper.
- Assuming print shows full height of negative
- To calculate print width if whole negative were printed to this size $201/W = 24/36$
- $W = 201/0.6667m = 302mm = \mathbf{30.2cm}$

Fence Distance - Knowing the probable spacing of the barbs on a barbed wire fence provides a scale at the position of the fence. This allows us to calculate the total width of the field of view visible across the film frame at this point in the image.

6.11cm (18 barbs on fence) on print measures 170cm in reality.

Thus, width of fence visible in full width of negative = $(170/6.11) \times 30.2 = 766.27 \text{ cm} = 7.66m$

Knowing the field of view for a given focal length lens we can then use this width and TAN to calculate the distance of the camera position from the fence.

Field of View for **50mm lens** = 39.6°

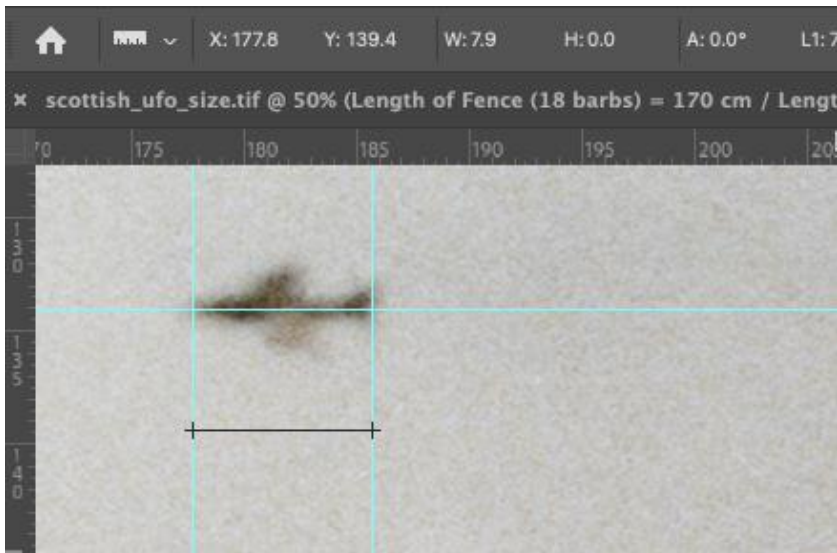
Half width of field of view triangle (Camera to Fence) = $7.66/2 = 3.83cm$.

- $\tan \text{Angle} = \text{Opp}/\text{Adj}$
- $\text{Adj} = \text{Opp}/\tan \text{Angle}$
- $\text{Adj} = 3.83 / \tan 19.8 = 3.83/0.36 = 10.64m$

The same calculation can be made for a 35mm Focal length lens with a horizontal field of view of 54.4° and this provides a distance between fence and camera position of 7.45m.

Conclusion – The fence is approximately 10.6m distant from the photographer (assuming a 50mm lens) or 7.45m (assuming a 35mm lens)

Harrier Distance - Knowing the length of the Harrier a similar methodology can be used to calculate the approximate distance of the harrier from the camera position.



Measuring the length of the Harrier on a high-res scan of the original image in Photoshop, © Andrew Robinson 2024.

Length of Harrier (GR3/QV-8A) on print (0.80cm) measures 1440cm in reality

How many Harriers would fill width of print = $30.2\text{cm}/0.80\text{cm} = 37.75$

Width of field of view at distance of Harrier = $37.78 \times 1440 = 54,360\text{cm} = 543.60\text{m}$

Horizontal Field of View for **50mm lens** = 39.6°

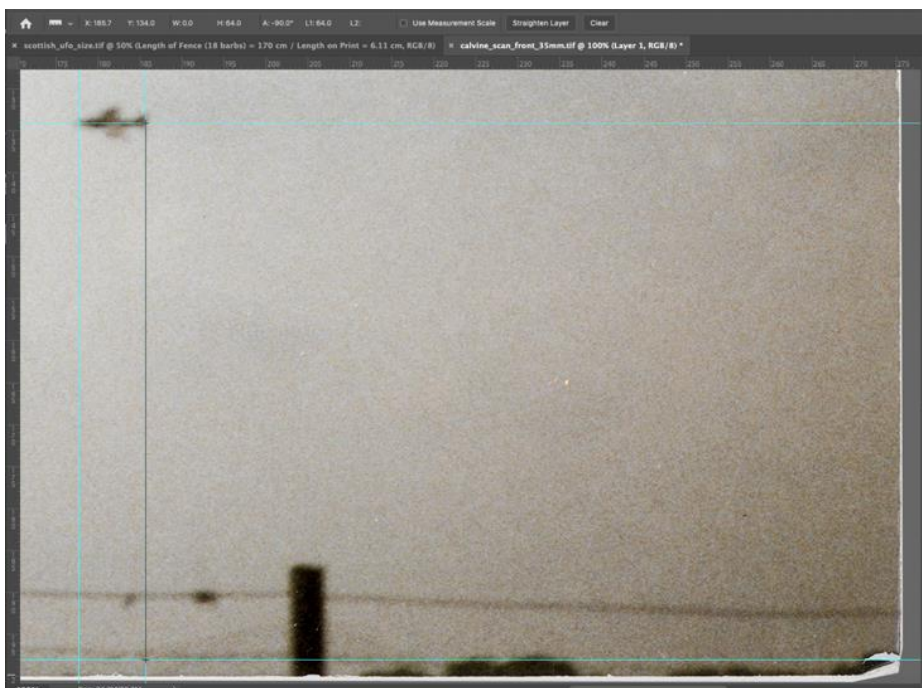
Half width of field of view triangle (Camera to Harrier) = $543.60/2 = 271.80\text{m}$

- $\tan \text{Angle} = \text{Opp}/\text{Adj}$
- $\text{Adj} = \text{Opp}/\tan \text{Angle}$
- $\text{Adj} = 271.80/\tan 19.8 = 271.80/0.36 = 755\text{m}$

The same calculation can be made for a 35mm Focal length lens with a horizontal field of view of 54.4° , and this provides a distance between fence and camera position of 529m (0.33 miles)

Conclusion – The Harrier is approximately 755m (0.47 miles) distant from the Photographer (assuming a 50mm lens) or 529m (0.33 miles) distant (assuming a 35mm lens).

Harrier Height - The known length of the Harrier also allows calculation of the approximate height of the harrier above the tree line visible in the bottom left of the image.



Measuring the height of the Harrier above the top of 'trees' (may be heather or moorland?) visible along fence line at the bottom right of image. © Andrew Robinson 2024.

The top of the trees (may be heather or moorland?) visible along fence line at the bottom right of image lie beyond the fence appearing to be in the middle distance at roughly the position of the Harrier. The height of the Harrier above these trees can be measured on the print. Given the length of the Harrier is known the approximate height can be calculated:

Height of Harrier above 'trees' on 35mm print – 6.4 cm

Length of Harrier measured on 35mm print – 0.79 cm

Length of Harrier (GR3/QV-8A) in reality = 1440cm

True Height of Harrier (H) = (Height on Print / Length on Print) X (True Length)

True Height of Harrier (H) = (Height on print/0.79) X 1440

$H = (6.4/0.79) \times 1440$

$H = (8.10126582) \times 1440$

$H = 11,665.8228 \text{ cm}$

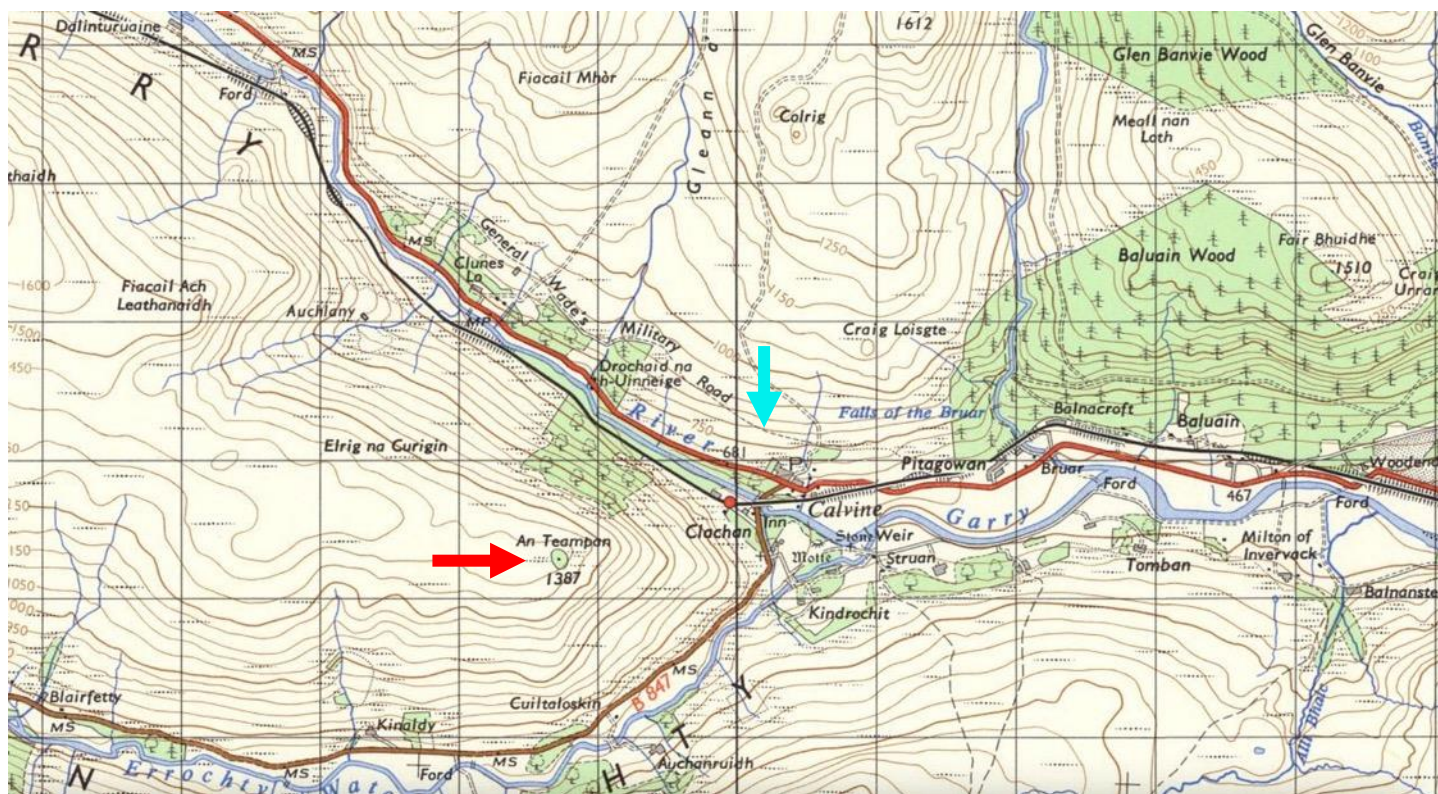
$H = 116.658228 \text{ m}$

(NB Measurements made on 300 dpi digital image 30 x 20cm in size)

Conclusion – The Harrier is flying at a height of approximately 117 m (383') above ground (assuming a 50mm lens).

SECTION H – LOCATION

Knowing the exact location at which the photograph was taken would help prove that the eyewitness story is genuine. Unfortunately, all that is known about the location is the information provided by the eyewitness first to the Daily Record and then to Craig Lindsay. They claimed that after work on the evening of the 4th of August 1990 they drove from Pitlochry to Calvine, parked their car and walked up onto the moors. Unfortunately, there is so little contextual information in the photograph that it has thus far proved impossible to determine an accurate location. However, given that sheep grazing around Calvin is now, as it was in 1990, only to be found in a limited number of locations this, along with the tree branches (identified as Scots Pine) play an important role in identifying potential locations.



Map showing Calvine and surrounds with An Teampan on Struan Point marked in red and the location from which the photograph used in the Channel 5 reconstruction was taken marked in Blue - OS One Inch - Sheet 48 - Loch Tay © Ordnance Survey 1963, provided by National Library of Scotland [Here](#) via [CC BY 4.0](#)

Calvine lies in a valley running east-west along which runs the A9 road, this is joined by a second valley from the south at Calvine. Moorland areas are present to the north, the southwest, and the southeast with easily accessible tracks, roads and footpaths to the north and southwest. The area to the north is gradually rising, forested Moorland, quite boggy in places, where the majority of fencing is present to control deer. Such fencing is typically 6 feet or more high often with wire 'rabbit proof' netting covering the lower section as can be seen in the image below taken above the General Wade Road to the north of Calvine.



6' high deer fencing, with rabbit netting at base on the moors to the north of Calvine - © Giles Stevens 2024.

The moorland to the southwest rises steeply to Struan Point. Here the land is a mixture of forested areas and open moor with occasional dilapidated walls and some areas enclosed by sheep fencing, which is less than half the height of the deer fencing found to the north of Calvine. Giles Stevens, who lives a short walk from Calvine, knows the local ghillie and has walked the area extensively, believes the most likely location lies to the south of Calvine due to the type of fencing present in the photograph. Giles has identified a small cluster of trees at An Teampan, the summit of Struan Point, along the side of which runs a sheep fence, as the most likely location. This location has subsequently been visited by Dr David Clarke, Craig Lindsay, and the American documentary maker, James Fox.

The view to the East from under the most southerly tree along the fence line provide a striking similarity with the Calvine image making this a credible location although to date we haven't been able produce a photograph with the required horizon and the current fence present here does not include barbed wire.



View to the East from An Teampan with Scots Pine and sheep fencing. Photograph © Giles Stevens, 2022 / The Original Calvine Image (Craig Lindsay / Sheffield Hallam University 2022).

This point has both the elevation and general outlook seen in the photograph with a very similar fence, fence posts, and overhanging trees. Whilst this can be considered as a possible location for the photograph we do not have the evidence needed to prove conclusively that this is where the photograph was taken. To do this we need to show a photograph can be taken at this location with the foreground and horizon matching that seen in the original image. Fence posts and wire may have changed slightly in 30 years however the landforms and horizon will be the same and need to be matched to provide any degree of certainty.

There are two problems in matching the location at An Teampan with the photograph. Firstly, none of the sheep fencing surveyed by Giles Stevens and others on or around Struan Point includes barbed wire as seen in the photograph. Whilst it is possible that the original wire may have been replaced since the photograph was taken, it doesn't seem to be common practice to use barbed wire on this type of fencing in this area.

Secondly the camera position required to achieve the upward looking view of the sky, with no landscape visible ABOVE the fence line at the bottom of the photograph, would need to be lower than ground level present at the fence. This can be seen in the detailed 3D recreation of the scene produced in Blender 3D and posted on YouTube by 'ThomasH' in which he demonstrates that the Calvine Photograph could be produced as told by the eyewitness to Craig Lindsay (ThomasH, 2023b)



Still images taken from a 3D recreation of the Calvine sighting produced within Blender by 'ThomasH' showing the view from the camera position (left) and the slope behind the fence required to produce the correct arrangement of fence, trees and distant landscape (right). © ThomasH, 2023. ([LINK](#)).

In the video Thomas states:

"I must admit that it's actually possible with all the angles camera settings etc. but the camera has to be a lot lower than the fence to make it possible to have that much sky in the photo, mountain tops in the bottom and only the top of the poles in the frame."

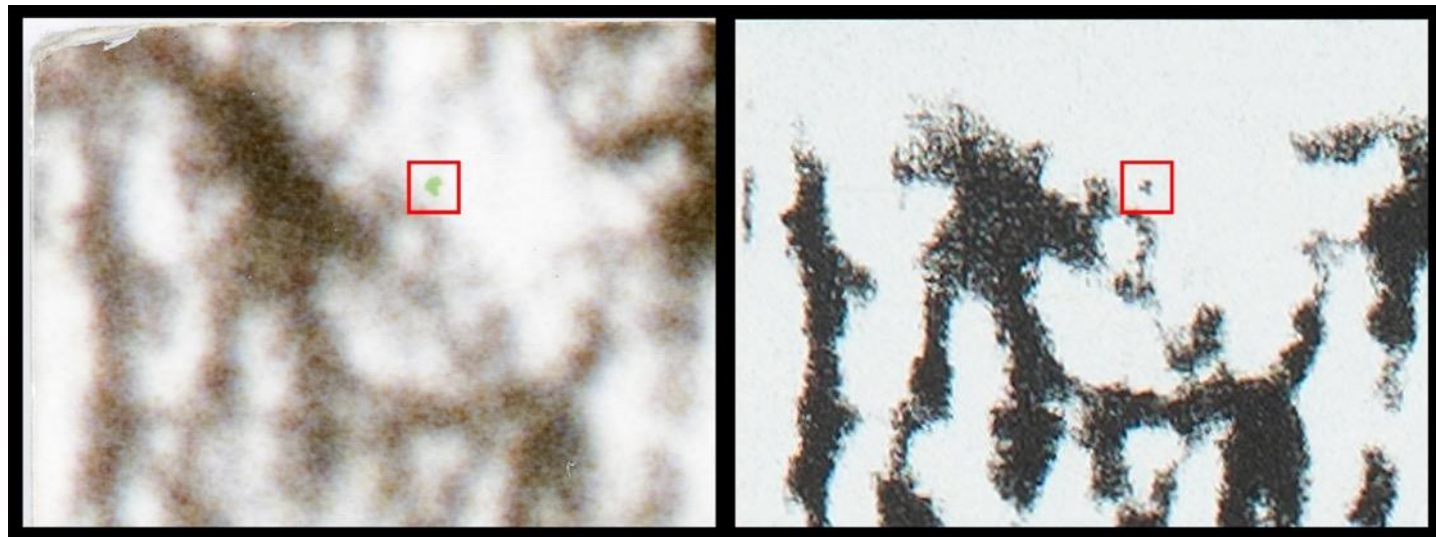
As can be seen in the video the landscape generated to produce an identical result to the original image requires a much lower camera position and higher hills in the background than are available at Struan Point. The ground level at An Teampan is fairly level either side of the fence or rises as one moves away from the fence and under the overhanging trees. To date investigations have not been able to locate a camera position looking UPHILL towards a sheep fence from under overhanging trees. This video may however be prove helpful in suggesting alternate locations as investigations continue.

Conclusion – Whilst the trees, fence and the limited landscape features present in the photograph are in keeping with landscape around Calvine and in particular the area around An Teampan on Struan Point to the southwest of the village, to date it has not been possible to identify the exact location where the photograph was taken, and it must remain a possibility that whilst it could have been taken on the moors close to Calvine it could also have been taken elsewhere.

SECTION I – IMAGE HERITAGE

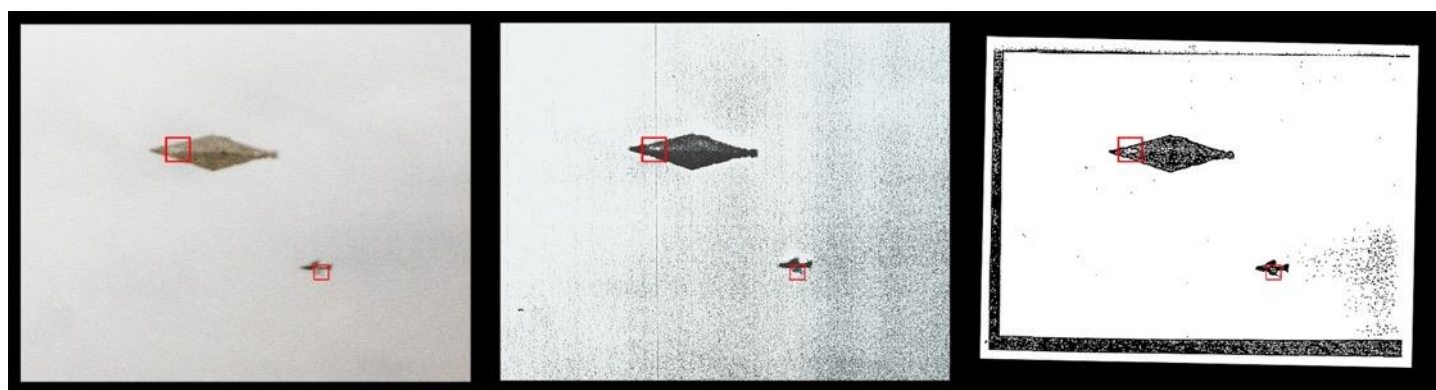
I-1 – Authenticity of Calvin Image

Some commentators have questioned the authenticity of Craig Lindsay’s photography suggesting it may not be the image supplied to the MoD as he claims or not even one of the Calvin photographs at all.



Enlargement of the top right corner of the original Calvin Image (l) and the photocopy faxed to London by Craig Lindsay both showing the same unique mark. © Andrew Robinson 2024.

The small area of underdeveloped paper base, which appears in the top left of Craig’s print and is unique to this print (see above image) , can also be found on the photocopies sent by Craig to the MoD in London. If we then overlay these images – the original Calvin Print and the photocopies that were faxed to London they align perfectly proving that the photocopies were made from this image.



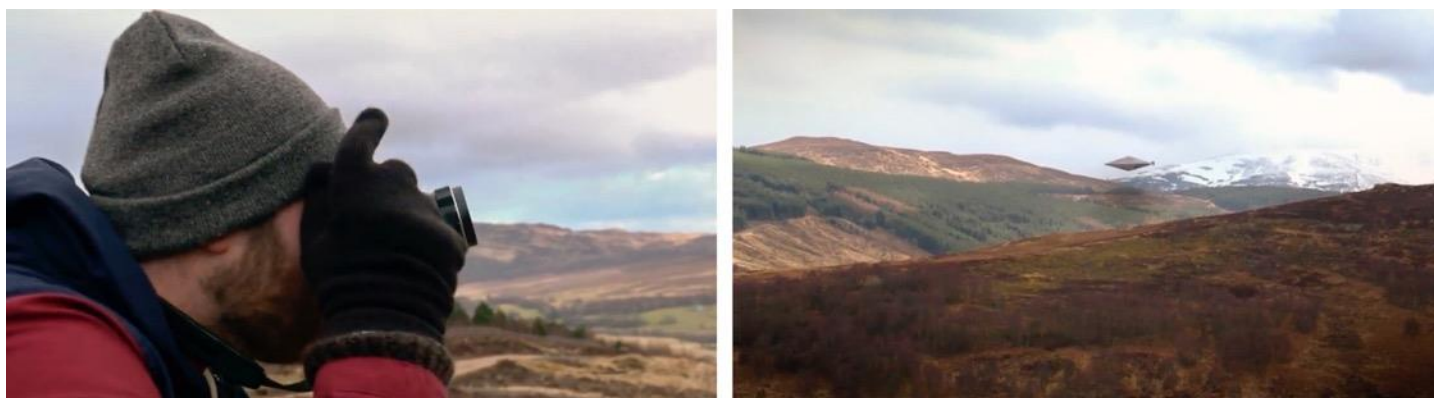
Comparison showing the original Calvin Image (l), the Photocopy sent to the MoD by Craig Lindsay (centre) and the Vu-Foil Photocopy released by the MoD in 2009 (r). © Andrew Robinson, 2024.

Likewise, when the two photocopied Vu-Foil images released by the MoD (The National Archives, 2009) are overlaid on the Calvin Image and photocopies all three images align perfectly. In addition, the light area on the nose of the object along with the rendering of the motion blur and missing wing tip of the Harrier (both highlighted in red) are identical on all three images.

Conclusion - The Calvin Image provided by Craig Lindsay is a genuine copy of the original Calvin photograph and identical to both those faxed to the MoD and the original negatives provided by the Daily Record and subsequently studied by JARIC before being finally released to the public in the form of poor-quality photocopies from Vu-Foil images in 2009.

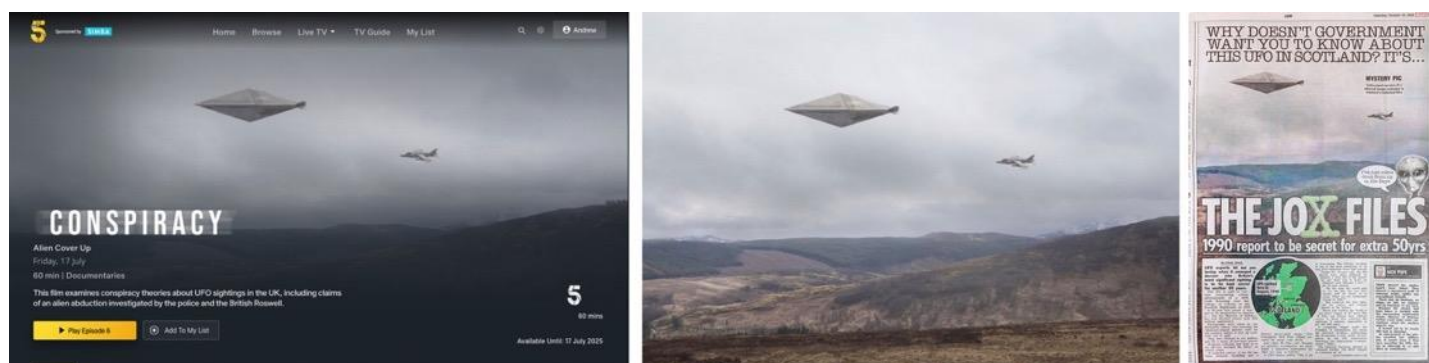
I-2 Channel 5 Reconstruction

In 2015, for an episode of the series 'Conspiracies' entitled 'Alien Cover Up', Channel 5 dispatched a film crew and a pair of actors to Calvine to reconstruct the sighting. Giles Stevens has located the site where the filming took place and also the location where the still image used to create a reconstruction of the Calvine Image were taken. Both are to be found close to the Old General Wade Road on the moorland just to the north of Calvine.



Stills taken from 'Alien Cover Up', Season One, Episode 6, of 'Conspiracy' TV Series, Directed and Produced by Phil Stein, first broadcast Channel 5, 17th July, 2015.

Nick Pope, who was acting as both an interviewee and consultant on the documentary travelled from his home in San Jose, California to Los Angeles where he worked with a graphic artist to create both a still and animated reconstruction of the sighting of the unidentified craft (Pope, 2015). When first aired on Channel 5 in the UK between 8pm-9pm on Friday, 17th July 2015 an audience of 680,000 viewers making it the 21st most popular show on Channel 5 that week (IMDB, 2015).

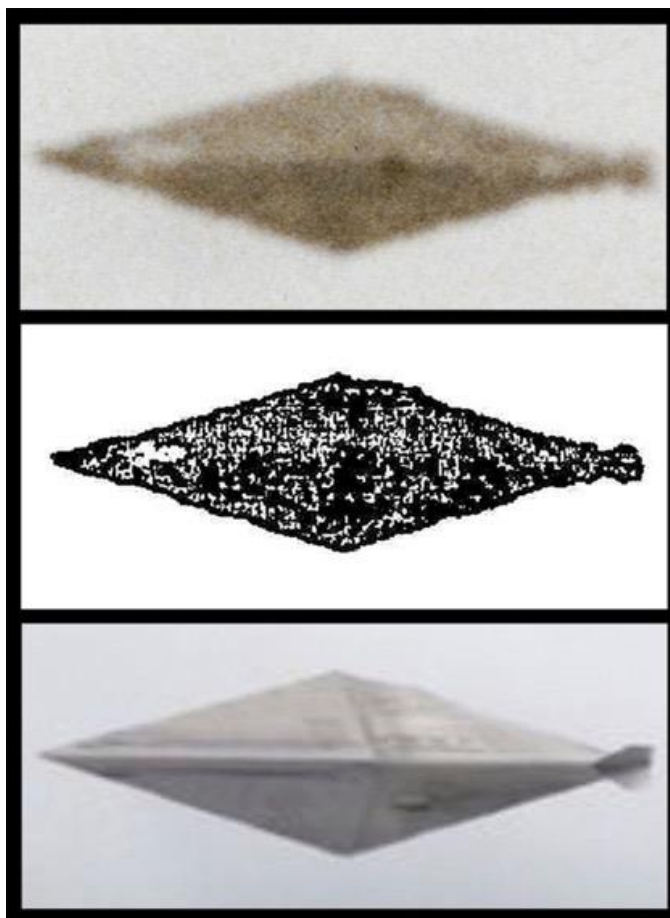


'Alien Cover Up' on My Five / Channel 5 Reconstruction of Calvine Image / 'The Jox Files' The Sun, Oct 10, 2020.

The photographic reconstruction of the Calvine Image used in the show was published in the Sun (Sims, 2020). Prior to the release of the original Calvine Image in 2022 this became the defining image of the Calvine sighting with some believing it showed the exact location where the sighting took place. Indeed, the Sun article pictured here incorrectly describes this reconstruction as a 'Colourised version of a blurred image included in the ministry's redacted files' and even after the genuine Calvine Image was published Nick Pope continued to use this reconstruction on his social media to illustrate the story.

Although the photograph bares a remarkable similarity to the genuine Calvine Image provided to Dr David Clarke by Craig Lindsay, the Channel 5 film crew, using the descriptions of the sighting released by the MoD in 2009 as a guide, could fairly easily have captured the landscape used in the reconstruction by taking the most direct and accessible route onto the moorland above Calvine. Working with the resulting footage, photocopies of the Vu-Foil image released by the MoD in 2009, and Nick Pope's recollection of the enlarged print that used to adorn his office wall, the graphic artist would then be able to produce both the video reconstruction included in the documentary and the still image used in related publicity with a reasonable degree of accuracy.

By over laying the Channel 5 reconstruction with the original Calvin image and the Vu-Foil photocopy images released in 2009 we can see the dimensions are consistent with it being copied from the Vu-Foil and accurate when compared to the original image (see image below).



Comparison showing the unidentified object as seen in the original Calvin Image (top), the Vu-Foil Photocopy released by the MoD in 2009 (centre), and the Channel 5 reconstruction broadcast in 2015 and published in the Sun in 2020. © Andrew Robinson 2024.

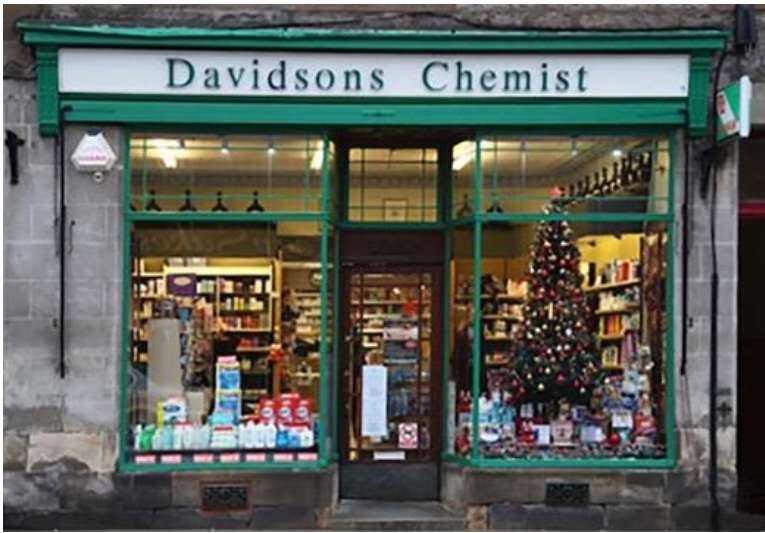
It's it is unfortunate, however, that the animation doesn't accurately portray the movement of the craft as described by the witnesses who explain it simply silently hovered for four or five minutes before slowly ascending vertically, gradually increasing in speed. There is no evidence of it zipping along the valley as shown in the Channel 5 reconstruction.

Conclusion - The reconstruction produced for the 2015 Channel 5 Documentary and later published in the Sun is not a copy of a genuine Calvin image however it is an accurate artists reconstruction which could have been produced from the information readily available at the time.

SECTION J - TIMELINE

When a wishing to use a photograph as evidence to support an event such as an alleged UFO sighting, knowing the date and time the photograph was taken and establishing a timeline for the subsequent movement of the photographs and negatives is essential for the confirming the heritage of both print and image. In the case of the Calvin image and negatives we are reliant on the story told by the witnesses to the Daily Record and Craig Lindsay, on Craig Lindsay's memory of events, on information provided by other staff at the Daily Record and MoD and on MoD documents. These sources have been used here to construct a possible timeline.

The eyewitnesses told both the Daily Record and Craig Lindsay that the photographs were taken at around 9:00pm of the evening of the 4th of August 1990, on the moors above Calvin. Whilst there is nothing to suggest they weren't, we have no proof of this other than the statement provided by the eyewitness.



Davidsons Chemist, 112 Athol Road, Pitlochry – uncredited photograph.

The photographer would have had to have taken his images to either a local chemist or photography shop, or sent them away for processing in a prepaid envelope as was popular at the time. Davidson's Chemists located close to the local hotels in the middle of Pitlochry, provided processing services and would seem a logical choice although there is no indication as to where the film was processed and printed. At this time some larger photography shops and chemists had their own in-house mini labs and provided a 24 hour or in some case a one-hour service for an extra cost however these were mainly found in larger towns and cities and it is unlikely that such a service would exist in Pitlochry in 1990. At this time, it would be typical for processing to take anything from 3 – 6 days depending on the service provided by the store so if the photographer had taken the films straight in for processing on Monday the 5th August they might have expected to receive them back at the earliest later that week (8th August) or early the following week (12th August).

The former editor of the Daily Record, Malcolm Speed, has stated in an interview with David Clarke that the images arrived at the Record just before he went on his Summer holiday and that he took this every year during the August bank holiday week. In 1990 August Bank Holiday Monday fell on the 27th which would mean the photographs probably arrived at the Daily Record on or about Thursday the 23rd of August.

Craig Lindsay would most likely have been contacted on either Friday 24th August or possibly immediately after the Bank Holiday on Tuesday the 28th of August. He requested a copy of the photograph, and this was sent promptly, possibly on the same day (perhaps the 28th or 29th August?). The Daily Record envelope in which the photograph was sent is not dated and analysis of detailed scans of the faded envelope label have been unable to recover the text present or reveal a date (see below).



Analysis of the faded label on the front of the Daily Record envelope image fails to identify a date - © Andrew Robinson 2024.

The Red Star sticker shows it left Glasgow Station at 19:00h and arrived at Edinburgh Waverly at 19:50h.

REDSTAR STN-STN		BR25996/1 /M	
From	GLASGOW QUEEN ST	dep	19 00
1st Transfer		dep	
2nd Transfer		dep	
3rd Transfer		dep	
4th Transfer		dep	
To	EDINBURGH	arr	19 50

Red Star Sticker present on the read of the envelope sent to Craig Lindsay - © Andrew Robinson 2024.

The envelope is addressed to Bill Fraser, a colleague of Andy Allen who worked in photography department of the Edinburgh office of the Daily Record, and would probably have been dispatched to collect the envelope and take it directly to RAF Pitreavie Castle where it was handed in at the office and passed to Craig Lindsay - probably sometime on the Thursday 30th August.



Craig Lindsay's Desk in the Press Office at RAF Pitreavie Castle in the 1990s, © Craig Lindsay 2024.

Craig then contacted SEC(AS) – the MoD ‘UFO desk’ - in London and faxed them a photocopy of the image. SEC(AS) got back in touch immediately requesting the negatives and further information. Craig contacted the Daily Record who agreed to arrange for the negatives to be sent to London and also provided Craig with a phone number for the witness. Craig then phoned the number he was given which was for a hotel in Pitlochry and spoke for up to 30 minutes with one of the eyewitnesses who was working in the kitchens. Craig typed up his findings and faxed his summary to SEC(AS) in London, either on the same day or first thing the following day (possibly Thursday 30th or Friday 31st August).

The negatives were then taken in person or posted to the Daily Record who forwarded them to SEC(AS) at the MoD where, according to MoD document *DEFE 31/179: 156-7*, they arrived on Monday 10th September. By the Thursday the 14th of September the photographs had been analysed, a response to potential questions in the House drafted, and the

negatives returned to the Daily Record in Glasgow (The National Archives, 2009). What happened to these negatives subsequently is unknown.

2. The photographs, which were received on 10 Sept, are alleged to have been taken near the A9 road at Clavine, north of Pitlochrie on the evening of 4 August. They show a large stationary, diamond-shaped object past which, it appears, a small jet aircraft is flying. The negatives have been considered by the relevant staffs who have established that the jet aircraft is a Harrier (and also identified a barely visible second aircraft, again probably a Harrier) but have reached no definite conclusion regarding the large object. It has also been confirmed that there is no record of Harriers operating in the area at the time at which the photographs are alleged to have been taken. The negatives have now been returned to the Scottish Daily Record.

Section of briefing produced by Sec(AF)2a for Minister for Defence regarding Calvine sighting detailing the arrival of the Calvine images on the 10th September and their return to the Daily Record on the 14th September (DEFE 31/179: 156-7)

Whilst the above timeline involves considerable conjecture it demonstrates that the known sequence of events and the available dates do not contradict one another and that following a sighting on the 4th August it would be possible for the photographs to be processed in time to be delivered just before the August Bank Holiday, a print provided to Criag Lindsay at RAF Pitreavie Castle and the negatives sent to London in time to arrive by the 10th of September 1990.

Conclusion – The time frame from sighting on the 4th of August to the arrival of the images at the Daily Record and the arrival of the negatives at the MoD in London on the 10th of September is realistic and fits with statements provided by numerous witnesses.

SPECIAL THANKS

A special note of thanks is extended to my colleague Dr David Clarke for his willingness to share materials from his archive and especially his transcripts and original recordings of interviews with key witnesses; Giles Stevens for his help in identifying locations surrounding Calvine and for providing a selection of images of the area; Matthew Isley for his excellent detective work; and Craig Lindsay for his openness and honesty regarding his role in the Calvine mystery and not least for keeping safe the only surviving photograph of the sighting for more than 30 years before donating it to the Special Collection at Sheffield Hallam University.

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