

## **The Willamette Pass Oregon UFO Photo Revisited: An Explanation**

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**Abstract**— In November of 1966, a Ph.D. scientist, returning to his California home from a business trip in Washington, was driving through Oregon and paused at a lookout point to photograph Diamond Peak. Of the three photographs taken at this location the last one included a strange object. This photo ultimately became the focus of a controversy among UFO investigators and has been the subject of numerous articles as well as a book. In this paper we present a chronicle of the author's investigation of this intriguing photo as well as an explanation of the true nature of the object in the photo.

### **Historical Background**

#### *The Photograph*

The author first encountered the photograph in a book (Vance, 1977) where it was prominently displayed as evidence to confirm a theory on UFO propulsion. Fig. 1 shows the photo which exhibits a "classic" domed disk-shaped object with a series of alternating dark and light bands beneath and a faint vapor-like trail apparently emanating from below these bands.

#### *The Witness*

According to the investigator who first interviewed him', the witness-photographer was a Ph.D. Biochemist who had been a Naval officer during World War II. During that military service he had been trained in quick response identification of enemy aircraft under adverse conditions. Further, he was successful in his profession and preferred to remain anonymous. These factors constituted a nearly ideal combination for a reliable witness.

#### *The Event*

Evidently, the witness and his wife were returning from a business trip and decided to take a scenic route on the way back to their home in California. Between 9:00 and 10:00 A.M. on November 22, 1966 they were driving southeast on route 58 in Oregon, stopping at various spots along the way to take pictures of the scenery. One such stop was at the Diamond Peak vista point at Willamette pass. His wife was driving and pulled into the turnout, keeping the motor running while the witness got out of the car and climbed part way up a snow bank to get a few snapshots of Diamond Peak off in the distance. The peak was covered with clouds, but the witness took two photos and decided to

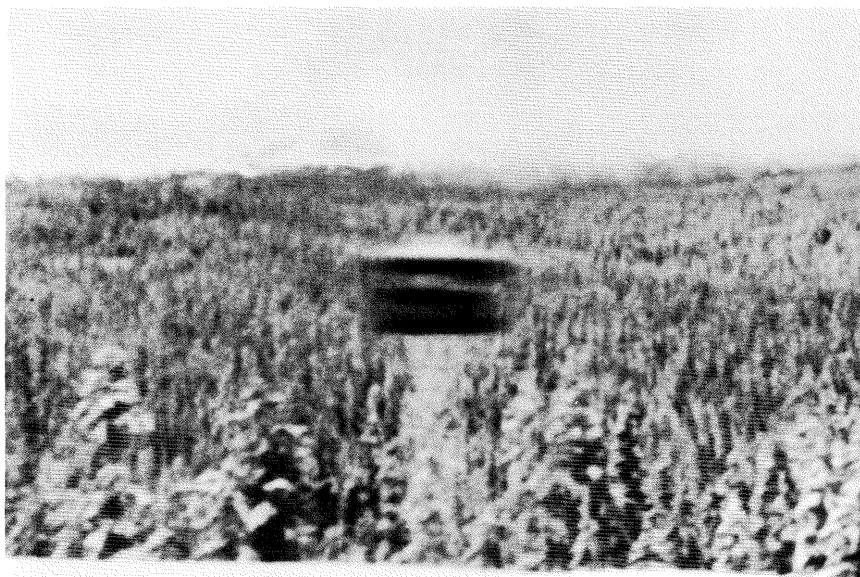


Fig. 1. A cropped enlargement of the object taken from the original negative.

wait a few moments to see if the clouds would part so that he could get a clearer picture of the peak. The witness stated that as the clouds started to open up he aimed his camera at the peak and was framing the picture when his eye caught something moving into the range of the viewfinder. Reflexively he snapped the shutter, looked up quickly and (utilizing his military experience) noted details of the object as it moved silently and rapidly to his right, disappearing in a matter of seconds into a cloud bank several miles away.

#### *The First Acknowledgement Of The Sighting*

When the film was developed, the witness' wife was the first to inspect the pictures and immediately noticed the strange object in one of the prints taken at Willarnette Pass. It was only then that the witness mentioned that he had seen something while taking the picture. The witness told his wife that what he had seen was like the top portion of the object in the photograph; he had not seen the banded structure beneath the object, nor had he seen the misty trail.

#### *The Reactions To The Photo*

Some months later the witness and his wife were showing the photo to a friend who happened to be in the Air Force reserves. At his urging, and through his contacts in the Air Force, a print of the photo was submitted for evaluation. Shortly thereafter the witness was contacted by a major in the Air Force who

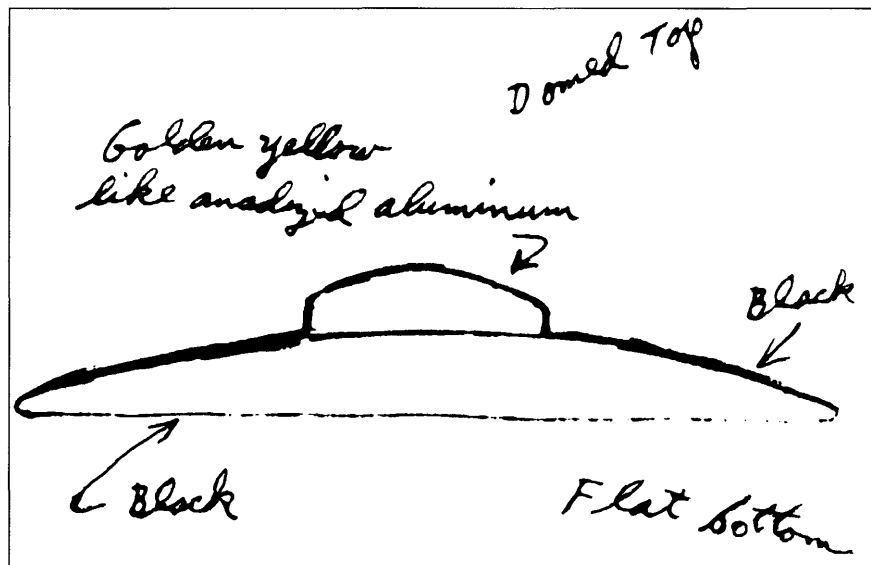


Fig. 2. The sketch made by the witness of what he saw at the time he took the photograph and immediately after.

suggested that the photo could have been made by tossing three frisbies into the air and snapping a picture, and expressed no interest in pursuing the matter further.

Nevertheless, in 1969, the witness contacted Dr. William K. Hartmann, who had been identified in the journal "Science" as the principal photographic analyst for the Colorado project under Dr. Edward Condon. However, Dr. Hartmann did not respond. This discouraged the witness so that he made no further attempts at eliciting interest until 1971 when he met veteran UFO investigator Paul Cerny. After interviewing the witness, Mr. Cerny asked him to fill out a standard report form.

### *The Witness Report*

In the report the witness stated the following:

- a) The object rose, in apparent "pulses."
- b) He was aware of the object as he snapped the picture and immediately thereafter.
- c) The object disappeared up and to the right in 2-3 seconds.
- d) He saw only one object which did not show the tiered structure in the photograph.

His descriptive sketch of the object is reproduced in Fig. 2.

### **Publications Concerning the Photograph**

There were at least 6 publications in the literature which dealt with or referred to this Oregon photograph during the period from 1971 through 1981. Initially the response to the photo was one of doubt<sup>2</sup>, primarily because of the large discrepancy between what the witness claimed to have seen and what was recorded in the photograph, and in particular because of the dark bands which persisted even though an object of high brightness was supposed to have moved up and past these black areas during the exposure (Nixon, 1971).

A second argument was made that if the object had been only the uppermost part as shown in Fig. 2, and the tiered effect was a result of the object being in three locations during the photographic exposure, then background trees should have been visible through much of the image, and this was not the case (Nixon, 1972).

A further argument against the validity of the photo was that the witness did not mention the sighting to his wife when he returned to the car. (Nixon, 1973).

Nevertheless, UFO investigator Adrian Vance was apparently convinced that this photograph was valid and represented an opportunity to understand the unknown technology by which UFO's might be propelled. In order to explain the strange appearance of the photo, he proposed a mechanism for UFO propulsion which involves rapid disappearance and reappearance of solid bodies (Vance, 1973 and 1977).

In 1981 noted UFO proponent and investigator Dr. Allen Hynek believed sufficiently in the validity of the photo to highlight it in a publication of the M.I.T. alumni (Hynek, 1981). In it he refers to the photo as "one of the most puzzling on record."

Thus the reaction by the UFO community was mixed and ranged from enthusiasm to skepticism. Nevertheless, the photograph is still prominently displayed at UFO symposia and in television documentaries.

### **Phase I, The Belief Mode**

#### *The Author Gets Involved*

As a physicist with an active curiosity, the author had been aware of the UFO puzzle but had avoided active participation in a UFO investigation because never before had a case presented an opportunity for him to apply the scientific method as part of the study. Despite doubts concerning the model proposed by Adrian Vance, his idea that this was an important photo (if we could understand it) was intriguing. Accordingly, in August of 1980, the relevant UFO investigators<sup>3</sup> were approached to arrange a meeting with the anonymous witness. It was then learned that the witness lived nearby. This coincidence in combination with the witness' excellent credentials as outlined above made this event a very attractive one for study. Thus began a series of meetings with the witness which continued sporadically for several years.

Initially, we went over the sighting in exhaustive detail, and early on agreed that access to the original negative (which had been in the custody of Adrian Vance) would be essential for the research. After months of negotiation, Vance finally agreed to relinquish control of the negative, subject to the condition that it would be transferred in person. Subsequently, the author drove to the Los Angeles area and received the original negative.

### *The Negative*

The negative was in its original strip form and the sequence of photos was consistent with the witness' description, starting up north and following the trail of his trip through Oregon, with the three shots taken at Willamette Pass in the middle of the strip. These three shots were as described by the witness, the first two showing the trees and distant cloud-covered mountain, and the third with a strange object between the camera and the trees. The original negative had not been tampered with and had been developed at the time and place identified by the witness. At this point, I had been infected by Vance's enthusiasm and began to believe that this photograph was unique. The enlarged prints and negatives made from the original negative<sup>4</sup> revealed much more detail than the reproductions in the various journal articles and enhanced my enthusiasm for the project.

### *The Approach*

With the authenticity of the negative established, inquiries were made to verify the education of the witness and confirm his credentials. As a result of these inquiries I found myself in a strong belief mode. It was then that the decision was made to assume that everything that the witness said was true, (especially the discrepancy between what the witness saw and what was recorded on the film) and to see where that would lead.

### *The First Investigations*

Rather than viewing the discrepancy between the eye and the film as a negative factor as Stuart Nixon had, (Nixon,1971) I chose the Adrian Vance approach and treated it as a potential opportunity to learn something about UFO sightings. In order to confirm what the witness actually saw, an attempt was made with regressive hypnosis to bring the witness back to the time of the sighting, but he proved impossible to hypnotize. The witness remained adamant that what he saw was not three-tiered but was like the upper portion of the object in the photo.

Attempts at computer enhancement of the original negative had been initiated<sup>5</sup> but had resulted in no improvement of image quality.

*A Review of the Literature*

In (Nixon, 1971) the argument was made that because the witness claimed to have seen one object and there appeared to be a multiple image on the film the validity of the photograph was therefore questionable. From a physics viewpoint this argument can be challenged because of differences between the human eye and photographic film. Parameters such as response time or spectral sensitivity may be quite different for these two detectors. Surely, there could be circumstances where different results could be obtained with two such different detectors.

The point that the witness said nothing to his wife when he returned to the car was used as evidence that the photo was invalid (Nixon, 1973). However, the witness' attitude on this matter is purely personal and should not necessarily cast doubt on the photo.

A further point was made that if the object was rising, the preservation of the extremely dark bands would not be possible since the bright upper portion of the object would have exposed the film in the dark areas as it swept by (Nixon, 1971). However, this argument did not take into account the possibility that the object could have swept up in a pulsed manner at a very high speed between resting places, thus leaving little or no trace of exposure in the dark areas.

The matter of the tree background not leaking through the image of the object (Nixon, 1972) was a potentially serious problem. If the object was really like what appeared only at the top of the image (see Fig. 2) and was really rising in pulses as the witness described in his original report, then there should have been at least one horizontal band where the object could have been for at most one third of the time—and the background should have leaked through with at least two thirds of its original intensity. This was clearly not the case, so that the approach calling for one object in three places had to be abandoned. Instead, it would be necessary to pursue models that allow for only one object that might appear differently to the naked eye from what would be recorded on film during a short exposure.

*An Attempt At A Physical Explanation*

Since the witness was absolutely certain that he had seen only the top portion of the object in the photo, it was necessary to concentrate on optical effects in the region underneath an object with this shape. From my viewpoint, the only way that the discrepancy could be explained was to invoke a physical process in the air underneath the object that was time-dependent in such a way as to give a different image in the short exposure time of the camera as compared with the longer response time of the human eye. This kind of an explanation would obviate the troublesome lack of transparency that was ever-present with a single object in pulsing motion during the exposure.

Possibilities that were considered included a time-dependent refractive or absorptive phenomenon in the air beneath the object with a duration which

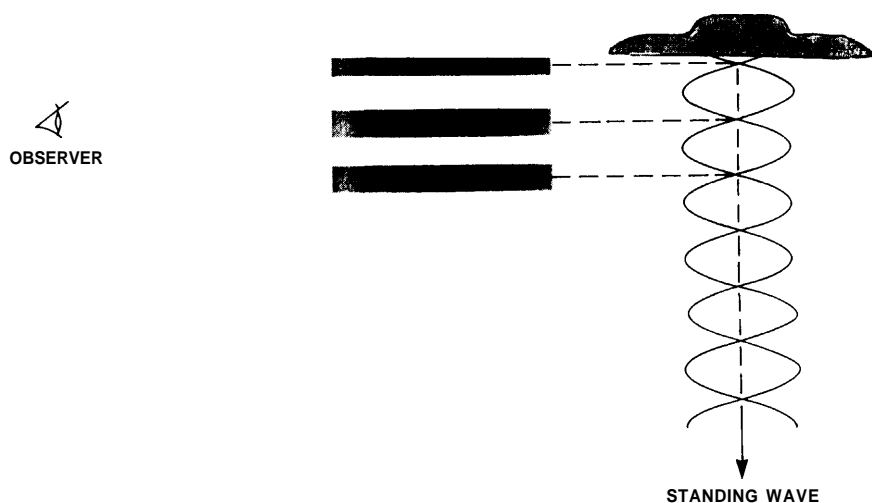


Fig. 3. Correlation between the dark bands of the object and a hypothetical standing wave.

was longer than the stated exposure time (0.01 sec) but shorter than the persistence time of an image on the eye (perhaps as much as 0.04 sec). While this did not leave much leeway it could possibly explain the discrepancy. Some experiments in my laboratory confirmed that a periodic absence of light for a time of 0.03 sec was discernible to the naked eye, while a periodic absence of light for only 0.01 sec was not. These experiments were performed with light from a continuous light source passed through a variable speed shutter and then projected onto a screen. The time dependence of the light on the screen was monitored with a fast detector and an oscilloscope. Thus if the dark bands under the object were dark for only 0.02 sec or less then the eye would not see them. On the other hand, if the camera were open for just 0.01 sec and in approximate synchronism with whatever was causing the time-dependent dark bands then the camera would record the dark bands.

Such an effect would need to be generated by some kind of a standing wave with a spatial periodicity matching the periodicity beneath the object. The effect would need to have a saturation property which could account for the sharp edges at the tops and bottoms of the black areas. Without specifying the nature of the standing wave, or the physical effect it might have on the column of air underneath the object or even whether the terrain below could reflect this wave coherently, the periodicity of the banded structure could be related to a standing wave. Fig. 3 is a schematic diagram of how such a wave could be associated with the appearance of the alternating bands in the photo. Notice that the dark areas under the main image roughly coincide with the areas of maximum change in the hypothetical standing wave. Any explanation using this model would have to include temporary density gradients in the air which could give a "mirage" effect at very small angles of observation, and which

could recover in a time short compared with 0.03 sec. The need for small angles in the mirage effect could explain the presence of only the first two nodes in the photograph.

Some time was spent considering this model but no known physical effects could even qualitatively explain the tiered effect that would be visible only with a short exposure on film and not to the eye. Refractive effects fell short because a dark region<sup>6</sup> would have to be displaced far in the distance from the column of air under the object in order for the small angles needed for a "mirage" effect to be present. Since the underside of the object was the only uniformly black source in the vicinity of the sighting, and it couldn't be at the large distance from the column of air required for the small angles of the mirage approach, this model could not explain the phenomenon. Nor was there any better chance for time-dependent induced opacity since there were no known effects that could cause intense absorption in air at all the wavelengths covered by film sensitivity. Nevertheless, it was difficult to abandon the "optical effect" model because it appeared to have the potential of explaining the problem.

These ideas were presented orally at the 1981 CUFOS conference in Chicago Ill., but no written version was published in the Proceedings of that conference.

#### *Further Detective Work On The Photos — Sideways Motion?*

At this point it was unproductive to review the sighting any further with the witness as nothing new had turned up in repeated interviews. Instead, attention was focussed on the pictures themselves. The author had mentioned during the oral presentation in Chicago that the leading and trailing edges of the object were smeared and allowed some background to leak through and that this could be accounted for by sideways motion of the object. This effect was very clear when viewing the original negative with a bright light behind it and with a magnifying glass. However, the background leakage on the leading and trailing edges was inconsistent with the witness' statement that "the object rose in apparent pulses."

Another factor which made it plausible that the object was moving horizontally rather than vertically was the statement to me by the witness that he shot the picture reflexively when it appeared in his viewfinder. If the object had been rising in pulses to the extent shown by the tiered structure in the photograph during the 0.01 sec exposure, then in the normal human reaction time of 0.2 sec the object would have travelled twenty times as far as the vertical dimension of the tier, and it is extremely unlikely that the object would be on the frame at all let alone so near the center of the photograph. On the other hand, if the object were in horizontal motion in an amount shown by the edge smearing of the image during 0.01 sec, then in the normal reaction time, it could move only a few object lengths which is consistent with the location of the image on the negative. Thus, it was becoming clear that sideways motion of the object during the exposure was a better fit to the evidence than pulsing vertical motion.



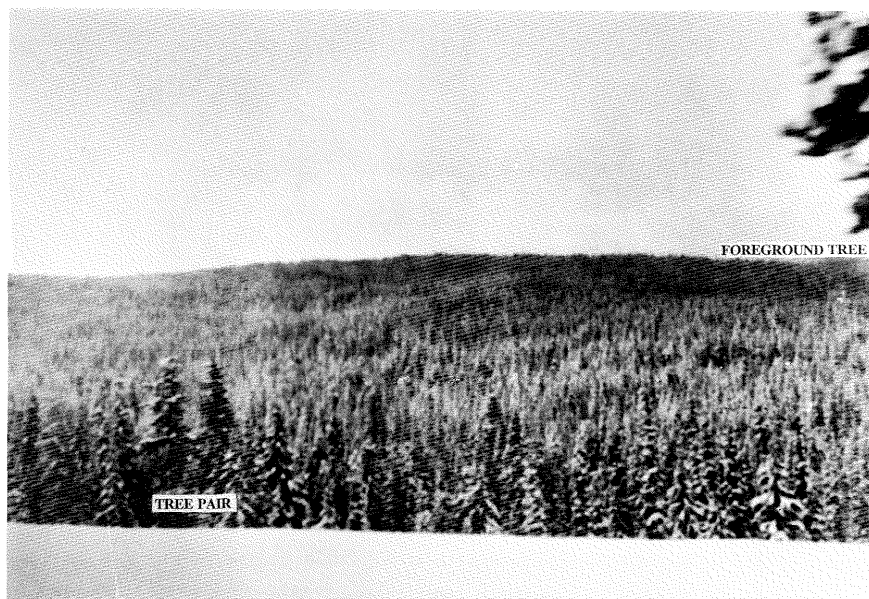


Fig. 4. A full frame enlargement of the first photo taken at the site

### *Further Interviews With The Witness*

In an attempt at understanding the discrepancy between the evidence that the object appeared to be moving sideways and the witness' statement that the object was rising in pulses the witness was questioned once more on this point and he then revealed that he NEVER ACTUALLY SAW THE OBJECT RISING but had only surmised it after seeing the picture. He believed that such a pulsing, rising motion was consistent with the object that he saw. Questioning in other areas produced no further modifications to his original statement and he remained steadfast that he only saw a single cymbal shaped object which disappeared into a cloud bank in the distance. Despite this unwavering testimony of the witness skepticism was beginning to set in.

### *A Major Discrepancy*

With this new attitude, a search for further discrepancies was initiated. Photos taken at the site were studied with a more skeptical eye. Figs. 4, 5 and 6 are full frame enlargements from the original negatives of the pictures snapped at the site. Note that in Fig. 4, which was taken first, there is a part of a large tree visible in the right foreground and a pair of distinctive large trees in the near background to the left of center. In Fig. 5, the second picture taken, these same two trees are identified as having been displaced to the right and there is now a large tree trunk in the left foreground. These pictures were clearly snapped at the same general location but at different angles. Now in Fig. 6 the third pic-

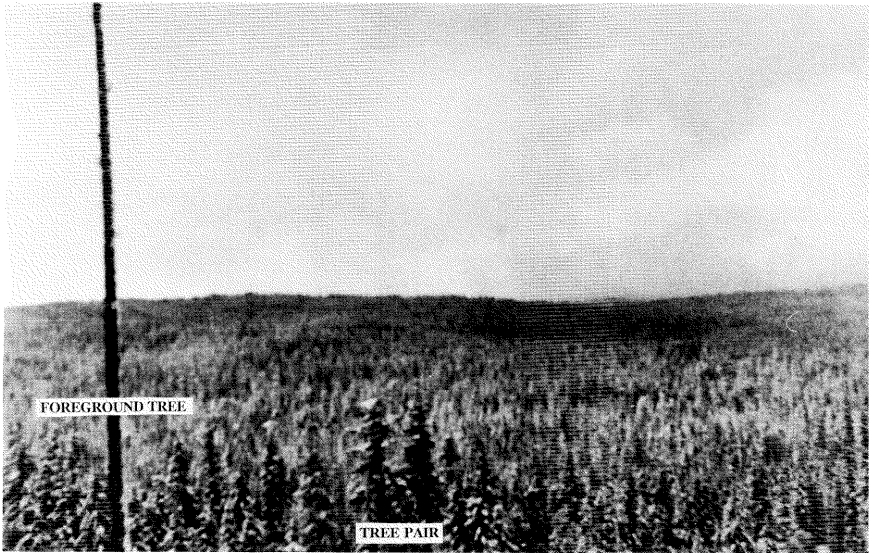


Fig. 5. A full frame enlargement of the second photo taken at the site.

ture which, according to the witness, was also taken at the same location, we cannot find the distinctive tree pair in the near background, and neither foreground tree is present. Furthermore, simple measurements of the distances on the prints reveal that it is geometrically impossible to squeeze a photograph between those foreground trees without one or the other showing.

The witness was asked about this apparent discrepancy, specifically if all the photos were aimed in the general direction of Diamond Peak and whether he took any of the three photos in some other direction. He stated that all photos were pointed at where he thought Diamond Peak was and that at most he changed the camera direction by 5 or 10 degrees. That amount of shift would explain the difference between the first two photos but not the third. Since the horizontal field of view of his camera was about 36 degrees, any shift of only 5 or 10 degrees would require that one or the other of the single large foreground trees be in the field of the third photo, as well as, the distinctive tree pair that was in the first two photos. Since they were not, it was evident that the third photograph was NOT taken at the same site as the first two. This realization completed the transition from the belief mode to the skeptical mode.

### **Phase II, the Skeptical Mode**

#### *A Review Of The Inconsistencies*

In early 1982 the problem was put aside, and it was not until late 1989 that the author was again drawn to the investigation. The first task was to reconsider the inconsistencies which had led to skepticism; not only did they remain

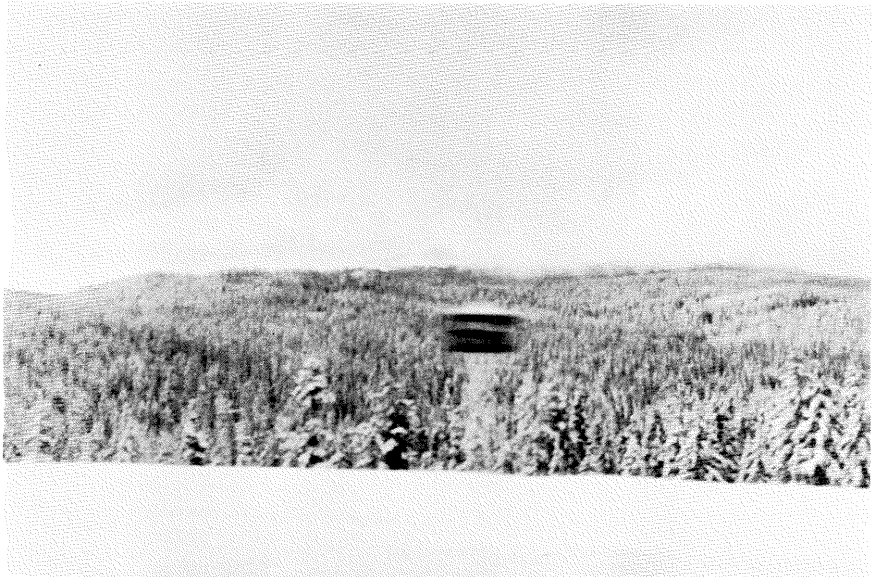


Fig. 6 A full frame enlargement of the third photo taken at the site

but another one surfaced. In addition to the problem of the sideways motion of the object rather than the vertical motion and the further problem of two sites rather than the one site there was a third problem. This was that, according to the date on the original negative, the witness waited for over a month to get the film developed after he returned to his home. Even though it had been believable (to me) that he failed to tell his wife when he got back in the car, it was highly doubtful that he would wait a full month (before he took the film in for processing) to see if the film had captured something as spectacular as he later described.

Oddly, none of these discrepancies had surfaced in the many publications on this photo.

#### *An Object At The Side Of The Road*

During the earlier investigation the witness had been asked several times if he had taken any photographs from his moving car during their trip. He was quite positive that he hadn't, so at the time, in the strong belief mode, I abandoned that line of inquiry. However, in view of my newly found skepticism and the strong evidence for a second site, the possibility had to be considered that the witness had been mistaken. Conceivably, he had taken a photo of something from the moving car at a different site along the side of the road. The problem was, where was the second site and what could look like the object that was photographed?

After discussing the possibilities for roadside objects with several acquaintances<sup>7</sup> the most likely candidate was a road sign. A photo of a sign taken from

a moving vehicle could explain several of the features exhibited by the photo. It could explain the dark bands as spaces between the rows of letters, the "vapor trail" could be the smeared image of the pole supporting the sign, and the general appearance of sideways motion could be due to the motion of the vehicle from which the photo was taken.

### *The First Sign Fabrication*

In order to test the sign theory with an actual experiment from a moving vehicle it was necessary to fabricate a sign. Measurements of the tiered portion of the image on enlargements from the negative yielded the relative dimensions of the tier to be in a ratio of height to width of about 0.7. To arrive at the actual size of the sign one would need to know the focal length of the camera lens which took the photo, the distance to the object, and the size of the image on the negative. For the camera used by the witness the focal length was known to be 50 mm and the width of the image on the negative was roughly 2 mm. Simple geometrical calculations predicted an object width of about 14" by 10" for a distance to the object of about 30 feet. This seemed like a good starting point, so a "sign" was constructed with these dimensions. Since any message which might be on the sign was unknown at the time five equally spaced alternating black and white stripes, of widths about 0.2 of the tier height were used to approximate two rows of lettering with space above, between, and below the rows of letters.

### *The Parallax Effect*

From simple geometrical considerations it can be shown that, from a given observation point, the angular shift of an object due to relative motion of an observer and an object is inversely proportional to the distance between the observer and the object. It can also be shown that if the background is sufficiently far away the apparent displacement of the object on the background is independent of whether it is the object or the observer which moves.

### *The Speed of the Car*

To apply the parallax effect to the Oregon Photo we noted that the background trees behind the object were at least 10 times as far away as a road sign. Thus for the purpose of calculating the required vehicle speed the parallax of the trees could be neglected and the assumption made that the angular shift of the sign would be the predominant effect of the vehicle motion. From the sideways smearing effect an indication of vehicle speed could be obtained if the distance to the object and the exposure time were known. The apparent velocity of the object could then be calculated by translating the amount of smear on the negative to a distance apparently traveled by the object during the exposure time. Assuming an object distance of 30 feet, a sign width of 14" and an exposure time of 0.01 sec, this reduced to an approximated object speed of about 11 mph. Then in accordance with the above discussion on parallax the

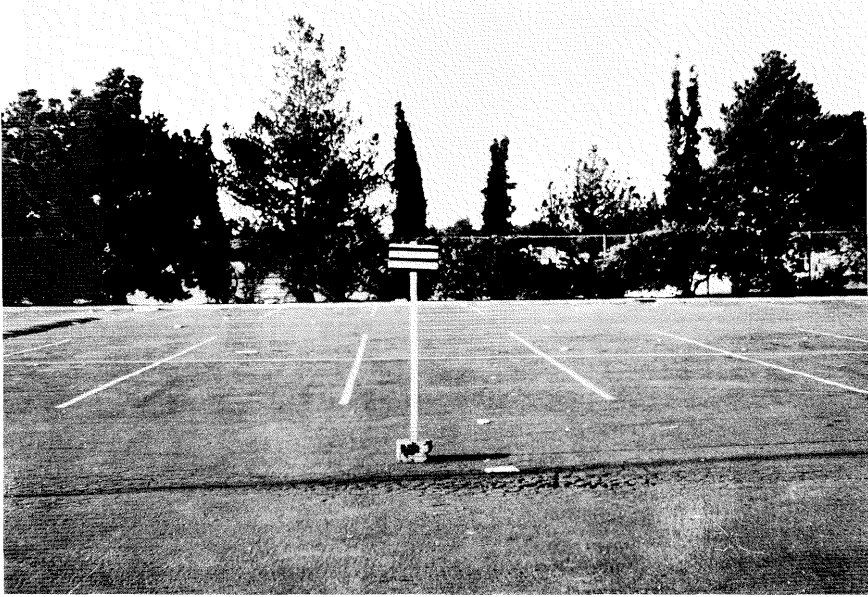


Fig. 7. The first experimental "sign."

same displacement would occur if the vehicle rather than the object were moving at 11 mph.

The width of the vertical supporting pole was arbitrarily chosen to be the same as the width of one of the tiers in order to have a substantial amount of smearing to give the vapor-trail appearance in the original photograph.

### *The Snow Effect*

If the object were indeed a sign then it most probably would have an inch or two of snow on top, given the amount of snow showing on the trees and the size of the snowbank in the foreground. In addition a portion of the vertical pole would most probably be protruding above the sign. With this in mind, a strip of white was added to the top of the tier structure and the vertical support was allowed to protrude above the tier. Fig. 7 shows the resulting fabricated sign in a parking lot just prior to the experiment.

### *The First Trials*

The experiment was performed using a polaroid camera set at an exposure of 0.01 sec. A vehicle was driven<sup>R</sup> past the "sign" at various speeds while photographs were taken from the passenger side at each passby. The results were immediate and gratifying. Fig. 8 was taken during the very first series at about 15 mph and a distance of about 30 feet. Many of the features of the famous photo were already there.

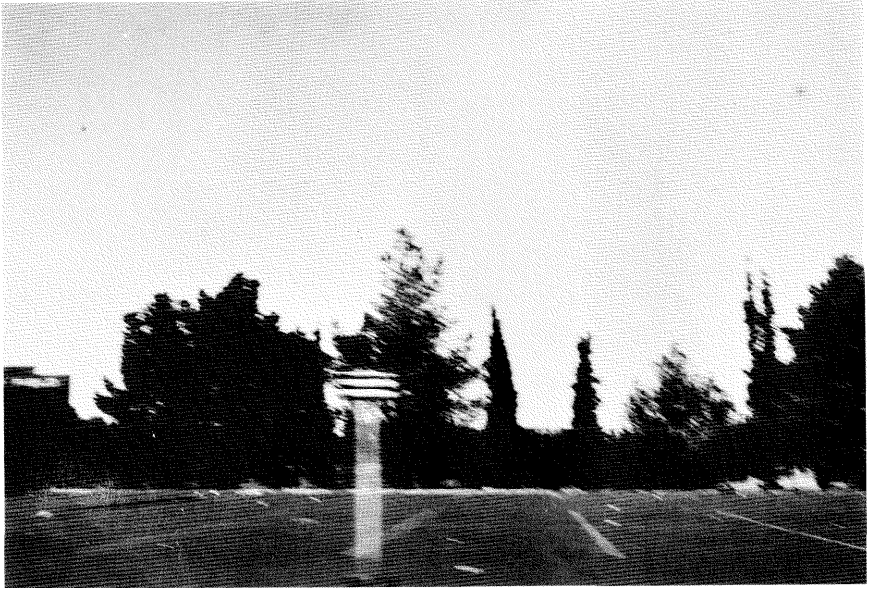


Fig 8 The sign of Fig. 7 photographed from a moving car traveling at 15 mph and 30 feet away.

In order to generate pictures a little closer to the original photo, a few minor changes were then made. The white stripes were made shorter and greyer and the vertical pole was also greyed. Fig. 9 was taken at 11 mph and a distance of 30 feet at a different location after these changes were made. It was now abundantly clear that we were on the right track.

### A Sign of the Times

#### *The First Site Visit*

The results of the first and second series of runs were so close to the original photo that a trip to the site was in order. It appeared that the sign was nearly right and, assuming the witness had given us the right location, a sign of the general size, shape, and distance to the road as the one in the experiment should be readily seen at the site. Of course some twenty odd years had passed since the sighting and things could have changed.

In June, 1989 we made a trip to the site and were disappointed since all that could be seen at the required distance from the road and at the required height were some old metal poles which looked as if they might have once supported signs. There were no signs even remotely similar to the small black and white sign of our experiment or any similar object, at about 30 feet from where a car would be driving by.

It seemed that too much time had elapsed and it was too late to determine the exact nature of the sign. One significant thing we did learn was that there were



Fig. 9. The sign of Figure 7, after modifications, photographed from a moving car traveling at 11 mph and 30 feet away.

two lookout points for Diamond Peak, about 2 to 3 miles apart, both on the right hand side of the road so that, traveling south on route 58, a passenger could take a photo of Diamond Peak from a moving vehicle through a window. The other thing we learned was that the first lookout area going south was not as deep as the second one. These points would prove to be significant in view of developments to come.

### *The Salem Sign Shop*

Without much hope, the possibility was pursued that there might be some way of determining exactly which signs might have been at the two Diamond Peak lookout points at Willamette Pass in November of 1966. The starting point was a friend<sup>9</sup> who knew some of the people associated with the Oregon Transportation Department. The trail led from district highway engineers, through various veteran supervisors, to people responsible for road sign maintenance, and finally to the sign shop in Salem, Oregon.

The foreman introduced me to various workers in the shop<sup>10</sup> who collectively provided the following information:

- a) There was only one possibility for any sign at the lookout points from 1966 to the present time and that was a large 36" by 24" green sign with two rows of large white letters with upper lettered row showing DIAMOND, the lower lettered row showing PEAK and a vertical large white

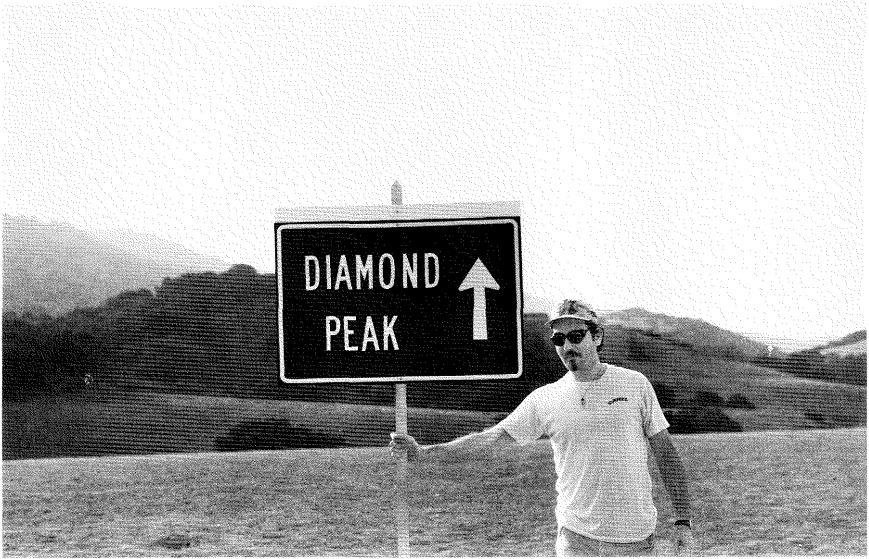


Fig. 10. The first version of a sign fabricated according to the instructions and specifications of the sign shop in Salem, Oregon.

arrow to the right of the lettering. There could be no other other sign because the state highway department had authority over the entire turnout, and that was the only sign that they had there.

- b) This type of sign would be at both lookout points and at the farthest point from the road since the turn off area was plowed during the snowy winter months. Indeed, a snow plow occasionally snapped off a sign pole and there could possibly be times when one or both of the turnouts had no signs at all.
- c) There had been only minor modifications in the sign since 1966, mostly in the reflective power of the letters and borders. The basic design of the sign had remained the same.

They also provided an exact dimensional layout of the sign including letter templates, an arrow template and a piece of an old sign painted the color that was used in 1966, in short, sufficient information and material to be able to recreate the original sign.

### *A New Problem*

The information from the Salem sign shop presented a new set of problems. The original experimental sign was a much smaller and closer black and white sign with only "lettering" in comparison with the actual sign at the site which was green and white, much larger and further away and had an additional complication of the large vertical arrow on the right side. At first these differences



seemed overwhelming and it appeared unlikely that this sign was what the witness photographed. We had not even noticed such a sign at our first site visit or if we did we had dismissed it out of hand.

However, the color of the sign really didn't matter since the witness had used black and white film and the green sign background could easily appear to be black. The size and distance of the sign were of no special consequence either since there was probably sufficient room at one of the lookouts to double the original estimate of the distance. The arrow could be a problem, however, as it was difficult to see how relative motion could erase all that white vertical image and leave the dark bands intact.

With all this in mind a sign was fabricated using the specifications provided by the people in the sign shop. As before a white strip was added to the top of the sign and the pole allowed to protrude above the sign. A first version of the sign is shown in Fig. 10.

### *The New Parameters*

Now that the precise dimensions of the sign were known the exact distance from the vehicle to the sign could be established by measuring the image on the negative or, preferably, a full frame enlargement. Working with the frame that contained the object, and using the relatively unsmearred vertical dimension, a reliable measurement could be made on an enlargement. The enlargement scale factor could then be determined by comparing the dimensions of the frame in the enlargement with that of the frame on the negative. Using this procedure, the calculated distance from the object to the camera was about 58.6 feet.

The next parameters that were needed were the vehicle speed and shutter open time. As discussed above these two parameters are linked as follows:

$$\text{apparent velocity} = \text{displacement/exposure time}$$

The frame containing the object was considerably darker than the other two frames taken at the site. Thus we can guess that even though the two frames taken at the first turnout were probably exposed for 0.01 sec as the witness stated, the darker frame was probably exposed for a longer time. For cameras such as the one used by the witness (a Kodak 35mm) the next longest available exposure times are 0.02, 0.033 and 0.0625 seconds. From measurement of the smear on the print enlargement, the displacement (at the object distance) was calculated to be roughly 8 to 12". The uncertainty arose because of the difficulty in deciding where the smear began and ended. Using 10" as a compromise we arrived at a velocity of 500" per sec for the 0.02 sec exposure, 300" per second for the 0.033 second exposure, and 160" per second for the 0.0625 sec exposure. These translate to 28.4 mph, 17.04 mph, and 9.09 mph respectively.



Fig. 11. The sign of Figure 10 photographed from a moving car traveling at a nominal speed of 15 mph and 60 feet away.



Fig. 12. The sign of Figure 10 photographed from a moving car traveling at a nominal speed of 22 mph and 60 feet away.



Fig. 13. The sign of Figure 10 photographed from a moving car at a nominal speed of 30 mph and 60 feet away.

#### *Experiments With The New Sign*

During the period from Nov. 1989 to Jan. 1990 several runs<sup>11</sup> were attempted at various locations in the S.F. Bay Area using a Nikkormat camera loaded with Kodak Panatomic-x black and white film (The same film as used by the witness). Several new problems were encountered and solved during that period. For example, with the increased area the sign would topple over in the prevailing Bay Area breezes before we could do the driveby. This required a redesign of the mount with a much heavier base. Next there was a substantial variation in the amount of smearing from a given set of conditions. This resulted from the uncertainty in attaining and maintaining a constant speed in a confined parking area. Finally, little irregularities in the road caused jiggling of the camera during the exposure thus skewing the image. These problems were solved by selecting areas with a longer approach so that speed was in a steady state at the time of the exposure, and taking six exposures for each set of conditions in a given run, in the hope of obtaining at least one good photo out of six.

Our most useful sequence during that period was taken at about 60 feet and 1/30 sec with the results shown in Figs. 11, 12, and 13 at nominal car speeds of 15, 22, and 30 mph. One can see that at a high enough speed the vertical arrow completely disappears. On the other hand, at the highest speed the degree of smearing is too much. Also, there is an extra white line at the bottom and the trail below is too bright. Despite these minor problems this seemed to be the sign that the witness had photographed, and renewed efforts were made to ob-



Fig. 14. Photo of the sign at the first turnout at Willamette Pass ca. Jan., 1990.

tain a photograph of this sign (from a moving vehicle) which would be undisputably close to the original. However, the minor differences proved difficult to eliminate and persisted despite numerous changes in conditions.

Before spending any additional effort to close the gap between the initial results and the famous photo, it seemed appropriate to verify that all the details of the sign were correct. Accordingly, arrangements were made to get a current photo of the sign at the site". When the photo arrived (Fig. 14) it was compared with the fabricated sign (see Fig. 10) and the only significant differences were that the post of the sign at the actual site was wider and quite a bit duller than our fabricated sign post, probably because most of the paint had peeled off. There was no way to establish what the state of the paint on the sign post was in 1966 so that it seemed fair to adjust the brightness of the post to whatever was needed to get the proper effect. The width of the post was increased to the 4" as called for by the specifications for a 1966 sign (currently 5" posts are used) from the Salem sign shop. Finally, the top of the post that was protruding was modified to make it more rounded as it would have been at the time of the event with an inch or two of snow on the sign.

After making these changes a new series of runs was made which incorporated the notion that the original camera had been out of focus and that lighting conditions were different from anything that had been tried so far. In April 1990, on the tenth run we were able to generate the photo shown in Fig. 15. This has all the features of the original photograph including the substantial



Fig. 15. Photo of the sign in Figure 10 after minor modifications taken from a moving car at a nominal speed of 15 mph and 60 feet away. Foothill College parking lot ca. April 1990.

suppression of the bottom white line and the vertical arrow. This was accomplished through choosing a cloudy day, deliberately defocussing the camera, and underexposing the film. The photo was taken with black and white Panatomic-x film at a speed of 15 mph at 60 ft., with an exposure time of 1/16 sec and with the f stops deliberately set at up to two stops below what the light meter requested. It was my belief that we had reached the point of diminishing returns and that this was as close as we could get to duplicating the original photo in a reasonable amount of time.

#### *A Comparison of the Newly Generated Photo With the Original*

While there are still minor differences between the two photos such as that the dark bands in the original photo are somewhat sharper and darker and the "vapor trail" is more diffuse, it is worth pointing out that in addition to the overall similarity of the two photos there is one very crucial detail which appears in both photos. On the extreme right of the object, seemingly connecting the two lower light bands, is a faint vertical white arrow. This is clearly a residual image from the white vertical arrow on the sign at Willamette Pass and most certainly shows that this sign was indeed what the witness photographed. Significantly, although this feature had been noticed during Phase I, it had been interpreted by me as an extension of a tree (which coincidentally appears just below the right side of the object) showing through the edge of the object.

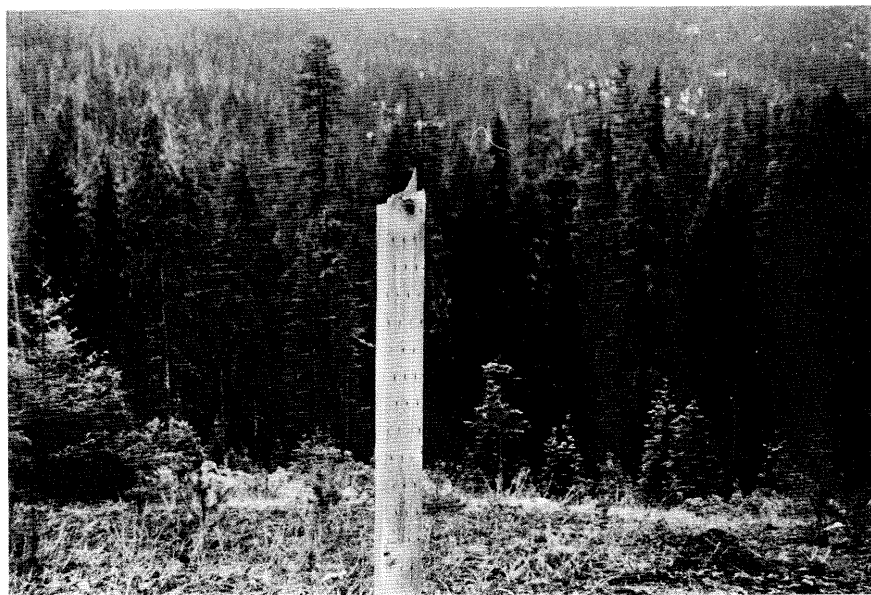


Fig. 16. Photo in the second turnout at Willamette Pass of the broken post which normally supports a sign identical with the sign in Figure 14 ca. April 1990.

### *A Final Trip to Willamette Pass*

There were still some lingering questions about the two sites and how the actual event might have unfolded. Accordingly, we packed the camera equipment into the car and headed up to Willamette pass for a final look. One objective was to verify that there was a sign at the correct distance and a second objective was to take photographs at the actual site of the actual sign if possible.

We arrived at the site in the early morning and it was dark, drizzling and wet. At the first site going south from Eugene we found the sign that we expected. We then measured its distance from the road where a passenger would be in a car driving south and found the distance to be about 40 feet. Moreover, the turnout was not deep enough to have a sign any further away from the road. Recall that we had established earlier that a distance of 58.6 feet was required to obtain the image size measured on the negative. This clearly ruled out the first site as the one where the photograph was taken. Despite this we attempted to take pictures from our moving vehicle and found that in addition to being at the wrong distance the sign was also at the wrong height.

We proceeded down the road to the second site and found no sign at all, despite the fact that one should have been there according to our information. However, we did find the stub of a 5" by 5" post identical with the post supporting the sign at the first site but broken off presumably by a snow plow as the technicians at the Salem sign shop had mentioned did happen occasionally. A

measurement of the distance from the passenger side of a car which would be traveling south on the road to the remaining stub revealed a distance of about 60 feet. Fig. 16 is a photo of the post stub as of April 1990. We conclude that this post or one like it at this very spot supported the sign of the photograph.

#### *A Review Of What Was Established*

As a result of this investigation we have shown that the object in the photo was indeed a specific sign in a lookout point. This was accomplished by establishing that:

- 1) The only sign that could have been in the lookout point was a specific sign identifying Diamond Peak in the distance.
- 2) There is usually one of these signs at the correct distance of 60 feet from a southbound car on the road (consistent with the image size on the original negative) at the second turnout.
- 3) Such a sign when snowcapped and photographed from a moving car 60 feet away yields images which contain all the significant features of the original photograph.

### **A Reconstruction of the Events**

#### *Background*

While it is impossible to know precisely how or why this event happened it is of some interest to speculate on the sequence of events that led up to it.

#### *The Taking of The Photographs - A Possible Scenario*

The witness most probably took the first two pictures at the first site just as he described. However, instead of taking the third photo as he stated, he got tired of waiting in the cold and got back into the car. They proceeded south with his wife driving and as they passed the second site he noticed that the clouds around Diamond Peak were lifting, and he snapped a picture from the passenger side of the moving vehicle. From the results of our experiments it is most likely that the camera was set at 1/30 of a second and that they were traveling at about 30 mph. (It is also possible that the camera was set at 1/50 of a second and that they were traveling at 50 mph). He may not have noticed the sign or if he saw it he may have wanted to frame the sign so that the vertical arrow was pointing right at Diamond Peak.

#### *The Photograph*

When the photos came back from the processor over one month later, the witness noticed how puzzled his wife was about the object in the photo. After examining the photo himself, he evidently decided that he must have taken a picture of a UFO. For reasons known only to the witness, at some point he started to claim that he actually saw the top portion of the photo first in his

viewfinder and then with his naked eye moving silently and swiftly from left to right.

#### *A Non-Premeditated Hoax*

It is likely that the witness never originally intended this as a hoax at the time he took the photo. Indeed, since he captured the picture in one passby and it took over 100 tries to approximate his photograph one would have to conclude that the photograph was taken by chance. Since he properly identified the location this would also seem to rule out a deliberate premeditated hoax. This would not, however, rule out the possibility of an instantaneous decision to hoax when he first saw the photo.

For whatever reason, once he started down this path he never wavered.

### **Implications for UFO Research**

#### *Investigator Polarization*

In this investigation progress was hampered for some time because the author stayed in a pure belief mode. What is especially revealing is that the author remained temporarily oblivious to an abundance of evidence that should have signaled something was wrong. If anything can be learned from this, it is that UFO researchers need to be more diligent in applying the principles of scientific research. As is well known but not always applied, this means that one must be dedicated to the truth and be willing to accept the results of an inquiry without personal bias.

#### *Witness Reliability*

This work demonstrates that our criteria for judging the reliability of a witness are inadequate. In this investigation the witness was judged on the basis of his high level of education, his level of attainment and special training in the military, his professional success, and his desire for anonymity. All these factors contributed to a highly credible witness according to conventional wisdom, and were key to the author stubbornly staying in the belief mode. It is not obvious that anything can be done about improving this situation. If a witness with these credentials cannot be believed then it appears that the concept of advancing a field on the basis of witness reports may be flawed.

#### *The Effect Of Witness Reliability On Research Results*

In the case of statistical studies of the UFO phenomenon there is a danger that by simply tabulating the number of sightings with a particular attribute, such as time of day or some observed side effect, any conclusions that are drawn may be skewed by the possibility that the overwhelming majority of the data points may be false or inaccurate. This problem may be addressed by choosing only cases with uncoupled multiple witnesses. While this would



greatly reduce the size of the statistical samples it might also increase the chance of meaningful results.

In the case of alleged contacts with and abductions by extraterrestrials we have a much more serious problem. Because of the very nature of the field the evidence is gathered predominantly from the perceptions of single witnesses. Even assuming that the majority of these witnesses believe what they are saying, there is the problem of determining if some or all of their descriptions are generated by internal rather than external stimuli. The task of formulating valid criteria for believing such witnesses may be formidable if not impossible.

### Footnotes

1. The first investigator who interviewed the witness on behalf of any UFO organization was Paul Cerny. From his notes and correspondence with the witness, he provided me with information about the witness and the event.
2. The Nixon references listed below were published in journals affiliated with The National Investigations Committee On Aerial Phenomena, Inc. (NICAP) which ceased to exist ca. 1980.
3. Tom Gates and Paul Cerny who was at that time regional director of MUFON.
4. The photo processing and enlarging was performed in his darkroom by Zev Pressman, a professional photographer and associate. He continued to contribute his skills throughout the course of this investigation whenever special photographic processing was required.
5. The digitization had been done at Cal. Tech. in Pasadena, California by Dr. Robert Nathan.
6. The requirement of a black area somewhere in the direction of observation in order for a mirage type effect to occur was pointed out by Prof. Peter Sturrock during discussions with him ca. 1981.
7. From a time very early in the investigation, Al Reed who had been contributing artists' renditions of various UFO sightings to the UFO community suggested that the object might be a road sign but the suggestion was ignored at that time since the author was still in a strong belief mode. Mr. Reed also contributed his time and the use of his Technical Publications facility to generate all the transparencies used for the oral presentation at the 1981 CUFOS conference.
8. The driver for these initial experiments was Lois Joan Wieder.
9. Lucretia Z. Sarles who at that time was a member of the Oregon Traffic Safety Commission.
10. Darryl Austin was particularly helpful in this matter.
11. For these and subsequent experiments the vehicle driver was Adam Wieder.
12. Melanie and Michael Greenberg were enlisted to drive down to the first lookout point from their home in Eugene, Oregon, and they took several pictures of the sign at that location.

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