

Prosaic Explanations: The Failure Of UFO Skepticism

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Introduction

"If I had found even a single case that defied prosaic explanation, I would have rushed to my typewriter (now my PC) to write the most exciting story ever published by Aviation Week & Space Technology Magazine."
-in a letter from Philip J. Klass to Dr. Eugene Mallove

Could some UFO sightings actually be manifestations of Other Intelligences (OIs) or Non-Human Intelligences (NHIs) such as extraterrestrials (ETs), visiting the earth and interacting with human beings? Or are all reports of such sightings simply mistakes, hoaxes, or dreams of the hopeful believers? It all comes down to explanation. If there were no sightings which are richly detailed, credible, and yet unexplainable, the UFO subject would be based totally on "will-o the wisp-like, indistinct observations or on theoretical expectations, as is the so-called Search for Extraterrestrial Intelligence (SETI). SETI is based on the theory that we could detect electromagnetic radiation, such as radio waves or light, that is radiated toward us, intentionally or unintentionally, by extraterrestrial civilizations.

If all the richly detailed sighting reports had reasonable explanations, then theoretical speculations about ET intelligences visiting the earth might be interesting but of little practical consequence. Ufology, if there were such a thing in the absence of unexplainable sightings, would consist of studying witnesses who, evidently, failed to identify explainable (identifiable) phenomena or who simply made up "tall stories" about ET visitation. "Ufological science," if it existed under these circumstances, would consist of psychology, psychiatry and perhaps sociology.

There are skeptics who believe that this is exactly what should constitute ufology.

Noted UFO skeptic Philip J. Klass has provided perhaps the most straightforward statement of the skeptic's position on UFO sightings in his book *UFOS: the Public Deceived* (Prometheus Books, Buffalo, NY, 1983, pg. 297), wherein he writes that the "Occam's Razor" alternative to unexplained UFO sightings, is this: "...roughly 98% of sightings are simply misidentifications of prosaic, if sometimes unfamiliar, objects by honest persons...(and) ... the balance, roughly 2%, are self-delusions or hoaxes by persons who like to spin tall tales and become instant celebrities." In other words, UFO reports are the results of misidentifications, delusions, and hoaxes, period! More recently he has indicated that in his thirty or so years of investigation he has found not one case for which he could find no "prosaic explanation" (see the quote at the beginning of this article). As evidence of this Mr. Klass has offered prosaic explanations for a number of famous sightings. Of course, Mr. Klass has not attempted to explain each of the hundreds of thousands of sighting reports which have been made over the last half century. However, he has proposed explanations for a representative sample of reports which are classified as "good" by most ufologists and, on this basis, he has generalized his statement to apply to the bulk of the UFO sighting reports.

Mr. Klass claims that he has found "prosaic" explanations for all the reports he has studied. A reader of Mr. Klass' discussions of sightings would likely assume that each prosaic explanation is, in fact, the actual explanation for a particular sighting. At least, that is what the typically logical, but uneducated (in the deep lore of ufology) and trusting reader would infer from Klass' statement. It is also what the generally skeptical scientific community and the news media would infer from Klass' statement. This would be an unfortunate and incorrect inference, as I will show below.

Klass would have the reader believe that he has correctly explained all the sightings he has investigated. If he were correct then his argument about misidentifications, hoaxes, and delusions making up 100% of UFO sightings would be unassailable, at least for the sightings which he has investigated. (One can always imagine that some sighting(s) not investigated by Klass is (are) unexplainable, but that's not the point of this discussion.) However, in some cases he has offered prosaic explanations which are demonstrably wrong. In other cases he has proposed explanations which may not be provably wrong but which are, at the very

least, weak and unconvincing. (Note that in the absence of confirmatory information, it may not be possible to decide whether an explanation is correct, but it is possible to decide whether or not an explanation is convincing.) Hence, whereas Klass' claim (that sightings are all misidentifications, hoaxes and delusions) seems, on the face of it, to be correct (because he has offered prosaic explanations for the all sightings he has investigated), a deeper analysis of his explanations often shows that they are very weak or just plain wrong. One can conclude, then that Klass' claim is, itself wrong and there are sightings which he has investigated but has not actually explained. From the scientific point of view, it is not sufficient to propose explanations. They also have to be demonstrably correct or at the very least, not contradicted by the sighting information.

To say that at least some of Klass' prosaic explanations, even explanations for well publicized sightings, are wrong is a strong statement. However, an even stronger statement can be made: Klass' analysis has demonstrated that at least some of the cases he has investigated have no prosaic explanations. Why is this? Because Klass, having analyzed these cases carefully, has proposed the only potential explanations that remain after all other explanations have been rejected. That is, there are no other potential prosaic explanations that make any sense. Hence, when his proposed explanations are proven wrong there are no remaining candidate explanations and the sighting becomes that of a TRue UFO (TRUFO), which might be evidence of OI/NHI/ET.

The Case of the Damaged Police Car

The first example of a case for which Klass' proposed prosaic explanation is wrong, or, at best, unconvincing, is the rather traumatic experience of police officer Val Johnson of Warren, Minnesota. (See the above reference, page 223). Shortly after 1:30 a.m., August 27, 1980, as he was cruising the countryside in his police car in an area of low population, he noticed a bright light that he could see through the trees of a small wooded area. Thinking it might be a landed airplane carrying illegal drugs from Canada, he accelerated along a road toward the area of the light. Suddenly this light moved rapidly toward his car. He heard a noise of breaking glass and lost consciousness. When he regained consciousness, he was leaning forward with his head against the top of the steering wheel. There was a red mark on his forehead which suggests that he might have bumped his head on the wheel hard enough to render him unconscious (he said he was not wearing his seatbelt at the time). After regaining consciousness he called the police station. It was 2:19 a.m.. He had been unconscious for about 40 minutes. He reported that something had "attacked" his car.

When another officer arrived on the scene a few minutes after Johnson's report, he found Johnson's car nearly 90 degrees to the road (blocking the road) and skid marks nearly 100 ft long. Johnson was found in a distraught condition, in a state of shock. He said he recalled seeing the bright light rushing toward his police car and he recalled hearing breaking glass. The next thing he recalled was realizing he was sitting with his head on the steering wheel. He did not recall skidding to a stop. He complained about pain in his eyes and was taken to a doctor who could find no eye damage. He did not complain of a headache.

Of particular importance is damage to the police car. One of the two glass headlight covers on the driver's side had been broken; there was a large crack in the windshield on the driver's side; a plastic cover on the light bar on top of the car had a hole in it; there was a dent in the top of the hood, and two of the three spring-mounted antennas were bent 60 or more degrees, with the bend occurring over a short distance (i.e., sharp bends). Examination of the antenna surfaces using a microscope showed that the insect matter ("bug tar") that coated the antennas was "stretched" at the bend, but there was no other disturbance of the insect matter. Evidently the antennas had not been scraped or rubbed when they were bent. Also, the electric clock in the car and Johnson's mechanical wristwatch both read fourteen minutes slow, although Johnson was certain he had set both before he had begun his nightly patrol.

The damage to the car was physical evidence that something strange had taken place. Careful studies of the damage were made by the police department and by scientists working with the Center for UFO Studies. They could find no evidence or reason to believe that Johnson had damaged his own car. They could find no prosaic explanation for the sighting. Klass also investigated the sighting. He spoke to several people who knew Johnson and asked about his interest in UFOs. According to his friends he seemed no more interested in

UFOs than in numerous other subjects. They could provide no reason to believe he would intentionally damage his car to create a UFO incident. He might "hide your coffee cup," one gentleman told Klass, but "as far as we know, he's never told any untruths."

Klass concluded his discussion of the Officer Johnson UFO sighting by offering two alternatives. He wrote:

"The hard physical evidence leaves only two possible explanations for this case. One is that Johnson's car was attacked by malicious UFO-nauts, who reached out and hit one headlight with a hammerlike device, then hit the hood and windshield, then very gently bent the two radio antennas, being careful not to break them, then reached inside the patrol car to set back the hands of the watch on Johnson's arm and the clock on the car's dashboard. These UFO-nauts would then have taken off Johnsons' glasses, aimed an intense ultraviolet light into his eyes, and replaced his glasses, while being careful not to shine ultraviolet on his face. Or the incident is a hoax. There are simply no other possible explanations."

Klass' amusing version of the "UFO/ET hypothesis" should not detract from the importance of his statement that, "There are simply no other possible explanations." In other words, if it was not a hoax then there is no prosaic explanation for this sighting. Perhaps Klass realized that the hoax hypothesis was unconvincing at best and intentionally tried to make the UFO alternative seem silly. (One envisions "little green men" or "grey entities" molesting the police car and officer Johnson, perhaps laughing gleefully as they hammered his car!)

The police department did not accuse officer Johnson of damaging the police car. Yet, Klass' book, published about 3 years after the incident, clearly implies that this event had to be a hoax since it was clearly not a misidentification or a delusion (recall that, according to Klass, roughly 98% are misidentifications and the remainder are hoaxes or delusions). Several years after the publication of the book I challenged Klass to send a letter to the police chief of Warren, Minnesota, along with a copy of his book chapter so that the police chief would realize that he should charge Johnson with damaging the car. So far as I know, Klass never did send such a letter and officer Johnson has never been charged with damaging the police car.

UFO in the Snake River Canyon

Klass is not the first to offer prosaic explanations. Dr. J. Allen Hynek, who, in his later years, became a strong proponent of UFO investigation (founder of the Center for UFO Studies in 1973), began his "UFO career" in 1948 as a strong skeptic/debunker. His explanations of a number of UFO sightings helped to set the tone of governmental UFO investigation in the early years.

One of his most unconvincing explanations was that offered for the sighting by Mr. A. C. Urie and his two sons on August 13, 1947. They lived in the Snake River Canyon at Twin Falls, Idaho. According to the FBI investigative report of this case, at about 1:00 p.m. Mr. Urie "sent his boys to the (Salmon) river to get some rope from his boat. When he thought they were overdue he went outside to his tool shed to look for them. He noticed them about 300 feet away looking in the sky and he glanced up to see what he called the flying disc. This strange object was flying at high speed along the canyon which is about 400 feet deep and 1,200 feet across at that point. It was about seventy-five feet above the floor of the canyon (and so more than 300 feet below the edge of the canyon) and moving up and down as it flew. It seemed to be following the contours of the hilly ground beneath it. Urie, who said he was at about the same level as the UFO, so that he had a side view, estimated it was about twenty feet long, ten feet wide and ten feet high, with what appeared to be exhaust ports on the sides. It was almost hat shaped with a flat bottom and a dome on top (see FIGURE 1).

Its pale blue color made Urie think that it would be very difficult to see against the sky, although he had no trouble seeing it silhouetted against the opposite wall of the canyon. On each side there was a tubular shaped fiery glow, like some sort of exhaust. He said that when it went over trees they didn't sway back and forth, but rather the treetops twisted around, which suggests that the air under the object was being swirled into a

vortex. He and his sons had an excellent view of the object for a few seconds before it disappeared over the trees about a mile away. He thought it was going 1,000 miles an hour.



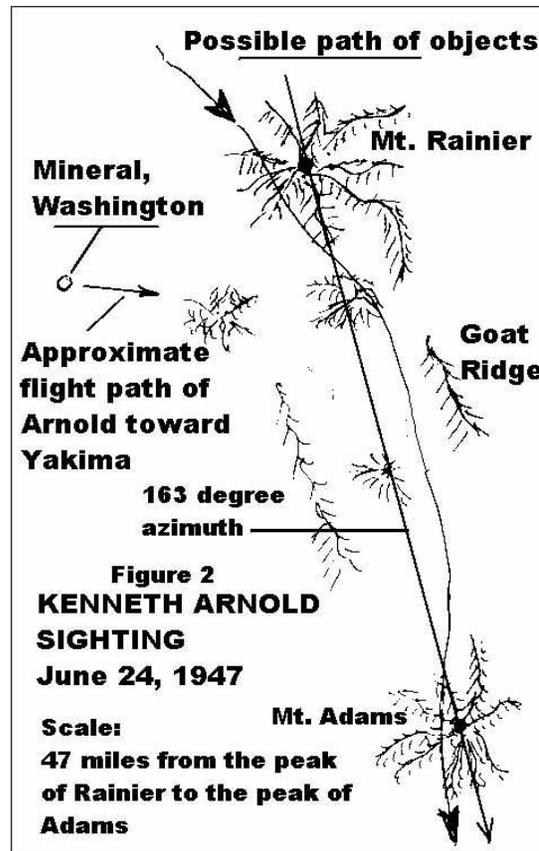
Hynek offered the following "prosaic explanation," which became part of the official Air Force record on the sighting (see the files of Project Blue Book): an atmospheric eddy. Why this explanation? The object appeared pale bluish in color, like the sky, and the trees were moving around as if a swirling wind went over them. Hynek explained the blue color as a "reflection" of the blue sky in the hypothetical atmospheric eddy. He offered no explanation of how this eddy could appear to have the strange "hat" shape, be traveling at about 1,000 miles per hour, how there could be a fiery glow at one location on the side of the "eddy" or why the eddy would appear as a solid rather than transparent object.

With a little thought he could have realized that no atmospheric eddy could reflect or bend light (as in a mirage) coming down from the sky enough to redirect it toward the witnesses. An eddy is a density inhomogeneity in the atmosphere which, in principle, might bend light by a very small fraction of a degree. However, for Hynek's explanation to work, the light would have to be bent five degrees or more, far beyond anything the atmosphere could do. Hynek's explanation is another failed prosaic explanation. Even Hynek realized this and repudiated his explanation years later (see *The Hynek UFO Report*, Dell Pub. co, NY, 1977).

The "First Sighting"

The June 24, 1947 sighting by private pilot Kenneth Arnold was not really the first recorded UFO sighting. However, it was the first sighting to be publicly reported and it attracted worldwide interest. It also attracted many more than its share of explanations. One of the scientists with an excessive urge to explain was Dr. Howard Menzel. In his first book, *Flying Saucers* (Harvard University Press, Cambridge, Mass, 1953),

Menzel offered a blanket explanation for sightings that occurred within the first five years of modern UFO sightings (1947-1952): misidentified atmospheric phenomena including the effects of the atmosphere on sunlight, unusual clouds caused by particular wind patterns, and mirage effects (light ray bending in the atmosphere). He suggested several different atmospheric and cloud effects to account for the Kenneth Arnold's sighting. In later books (*The World of Flying Saucers*, Menzel and Boyd, Doubleday and Company, Garden City, NY, 1963; *The UFO Enigma, The Definitive Explanation of the UFO Phenomenon*, Menzel and Taves, Doubleday and Company, Garden City, NY, 1977) he offered other atmosphere-related explanations and one non-atmospheric explanation (water drops on the windshield of the airplane).



Mr. Arnold, a businessman and private pilot with over 4,000 hours of flying experience, had reported seeing nine semicircular, thin (compared to the length), shiny objects in a line flying southward past the western flank of Mt. Rainier and "swerved in and out" of the mountain peaks south of Rainier (see FIGURE 2). The objects were therefore a little more than twenty miles east of him (he was about twenty miles west and ten miles south of Mt. Rainier and flying almost due east at beginning of the sighting). He timed their flight from Rainier, southward, to Mt. Adams, a distance of about fifty miles. They crossed this distance in 102 seconds. Hence, the direct interpretation of Arnold's sighting is that these objects were traveling at about 1,700 mph. (This was about four months before Chuck Yeager exceeded the speed of sound, about 700 mph, in a test aircraft, in October, 1947). In reporting the speed calculation, Arnold arbitrarily reduced the speed considerably to account for possible errors in his measurements. He publicly stated that the objects were traveling at about 1,200 mph. Arnold reported that he first noticed the objects as they repeatedly flashed or reflected the bright afternoon sunlight like a mirror (very bright flashes) when they were north of Mt. Rainier and last saw them (by their flashes) as they passed Mt. Adams. The total sighting duration was two and a half to three minutes.

Dr. Hynek was the first scientist to try to explain Arnold's sighting. Hynek used some details of the observation and an assumption about Arnold's visual acuity to calculate an approximate size of the objects.

He obtained a large size (two thousand feet long, one hundred feet thick). He could not accept this size as reasonable so he decided to ignore Arnold's claim that the objects went in and out of the mountain peaks south of Mt. Rainier. By ignoring this statement (essentially implying Arnold had made a mistake in the observation) Hynek was able to assume that the objects were much closer. Hynek decided that Arnold saw large airplanes and he then estimated that the distance was only about six miles. This shorter distance reduced the calculated speed to about 400 mph. Since this speed was within the capability of military aircraft Hynek identified the objects as "aircraft," thereby also ignoring Arnold's description of the objects. Recent analysis of the Arnold sighting shows that Hynek made an incorrect assumption about Arnold's visual acuity. Had he made the correct assumption he would have obtained a much smaller size (under one hundred ft long and ten or so feet thick) and then, perhaps, would not have rejected Arnold's distance estimate, in which case he would have had to accept the speed estimate. Had he accepted the speed estimate the history of the UFO subject might have been different.

Hynek's work was done secretly for the Air Force in 1948 under "Project Sign"(1948). (This was the first of three projects for UFO sighting analysis. The other two were Project Grudge [1949-1952] and Project Blue Book [1952-1969]). About four years later Dr. Menzel tackled Arnold's sighting. In his first book, *Flying Saucers*, Menzel summarized the sighting and then criticized the Air Force for accepting Hynek's explanation and went on to propose a much more "obvious" solution. Menzel wrote, "(Arnold) clocked the speed at about 1,200 miles an hour, although this figure seems inconsistent with the length of time that he estimated them to be in view. From his previous statement they could scarcely have traveled more than 25 miles during the three minutes that he watched. This gives about 500 miles an hour, which is still a figure large enough to be startling." Note that Menzel did not tell the reader that Arnold had timed the flight of the objects between two points. Instead, Menzel invented a travel distance of twenty-five miles, and implied that this distance was covered in three minutes (180 seconds). Hence he was able to assign a much lower, although "startling," speed of 500 mph.

Menzel went on to "solve" the mystery of Arnold's sighting: "Although what Arnold saw has remained a mystery until this day (1953), I simply cannot understand why the simplest and most obvious explanation of all has been overlooked... the association of the saucers with the hogback (of the mountain range south of Mt. Rainier)... serves to fix their distance and approximate size and roughly confirms Arnold's estimate of the speed." (Note that Menzel, unlike Hynek, accepted Arnold's distance estimate). Menzel then went on to suggest that Arnold saw "billowing blasts of snow, ballooning up from the tops of the ridges" caused by highly turbulent air along the mountain range. According to Menzel, "These rapidly shifting, tilting clouds of snow would reflect the sun like a mirror...and the rocking surfaces would make the chain sweep along something like a wave, with only a momentary reflection from crest to crest."

This first explanation by a scientist with the reputation of Dr. Menzel may seem slightly convincing, but only until one realizes that (a) blowing clouds of snow cannot reflect light rays from the sun (60 deg elevation angle) into a horizontal direction toward Arnold's airplane and thereby create the very bright flashes that Arnold reported in the same way that a polished metal surface or mirror would, (b) there are no 1,200 mph or even 500 mph winds on the surface of the earth to transport clouds of snow fortunately!), (c) there are no winds that would carry clouds of snow all the way from Mt. Rainier to Mt. Adams (Arnold saw the objects pass Mt. Adams before they were lost to his view), (d) about 10 minutes before the sighting Arnold flew rather close to south flank of Mt. Rainier while heading westward in order to search for a downed marine transport plane, then, only a few minutes after the sighting he flew eastward along a path that took him a dozen miles south of Mt. Rainier; during each of these flights (west, then east) his plane would have been strongly buffeted (and perhaps destroyed!) by such high winds, but he reported, instead, very calm conditions. Furthermore, even if such amazing atmospheric phenomena had occurred, it is difficult to imagine how Arnold could have failed to realize that he was just seeing light reflected from snow blowing from the top of Mt. Rainier, especially since, only minutes later, he flew along a path south of Mt. Rainier as he continued his trip east to Yakima, Washington.

In case the first explanation wasn't sufficiently convincing, Menzel offered "another possibility": he suggested that perhaps there was a thin layer of fog, haze or dust just above or just below Arnold's altitude which was caused to move violently by air circulation and which reflected the sunlight. Menzel claimed that such layers

can "reflect the sun in almost mirror fashion." Menzel offered no substantiation for this claim. Perhaps he was thinking in terms of a "forward reflection" from an atmospheric layer when the Sun is so low on the horizon (and nearly along the line of sight to the reflection) that the light rays make a "grazing angle" with the layer. If so, then that explanation as applied to the Arnold sighting makes no sense, since the Sun was at an elevation of 60 degrees and southwest of (behind) Arnold, who was looking east. Furthermore, layers form under stable conditions and violent air circulation would tend to break them up so there would be no "reflections" of sunlight. Again, one wonders how Arnold could have failed to notice that he was just seeing strange effects of the atmosphere.

Ten years after his first book, Dr. Menzel offered his third, fourth and fifth explanations in his second book, *The World of Flying Saucers*: mountain top mirages, "orographic clouds" and "wave clouds in motion." To support the third explanation, he presented a drawing made from a photograph of mountain top mirages taken by a photographer many years earlier, and proposed by the photographer as the explanation for Arnold's sighting. (This is the "official" Air Force explanation. It appears in the files of Projects Sign/Grudge/Blue Book along with Hynek's explanation. These files are available to be reviewed on microfilm at the National Archives.) The mirages appear as vague images above the tops of the mountains. (Actually the mirage is an inverted image of the top of the mountain.) These mirages can be seen under proper atmospheric conditions (requiring a stable atmosphere) when the line of sight from the observer to the mountain top is tilted by less than one half a degree above or below horizontal. Unintentionally (or intentionally?) Menzel failed to report in his book the following information in Arnold's report: as the objects traveled southward, he saw them silhouetted against the side of Mt. Rainier which is 14,400 feet high, much higher than the altitude of the saucers. Since mountain top mirages occur above the mountain peaks, these objects were far below any mirage of Mt. Rainier. Of course, mountain top mirages stay above the tops of the mountains, so the mirage theory cannot explain the lateral high speed movement of the objects reported by Arnold. Nor can a mirage explain the bright flashes of light from the objects.

Menzel's fourth explanation was that Arnold saw orographic clouds, which can assume circular shapes and often form in the lees (i.e., downwind of) mountain peaks. The clouds would, of course, be large but, as Menzel notes in his book, they "appear to stand more or less motionless." The lack of motion, as well as the lack of bright reflections, rules them out, so why did he even mention them? Also, Arnold would have realized they were just clouds as he flew past Mt. Rainier only minutes later.

Menzel's fifth explanation, wave clouds, is comparable to his first suggestion of "billowing blasts" of snow, except that this time he proposed clouds of water vapor instead of snow. In his second book, this explanation was supported by a photograph of such a cloud taken by a newspaper photographer. However, this explanation, too, fails to account for the very bright reflections reported by Arnold, for distinct semi-circular shapes, and for the high lateral speed. Again, Arnold surely would have recognized a cloud as he flew past Mt. Rainier.

In his third and last UFO book, *The UFO Enigma, The Definitive Explanation of UFO Phenomenon*, written in the early 1970's, (just before Menzel died), he again discussed Arnold's sighting and offered his sixth (and last) explanation: Arnold saw water drops on the window of his aircraft.

To support this explanation, Menzel appealed to his own sighting of "UFOs" that turned out to be water drops that had condensed on the outside of the window of an aircraft in which he was flying. They moved slowly backwards from the front of the window. They were so close to his eyes as he looked out the window that they were out of focus and he thought they were distant objects moving at a great speed until, after a few seconds, he refocused his eyes and discovered what they were. In comparing his "sighting" with Arnold's, Menzel writes: "I cannot, of course, say definitely that what Arnold saw were merely raindrops on the window of this plane. He would doubtless insist that there was no rain at the altitude at which he was flying. But many queer things happen at different levels in the earth's atmosphere."

Although no one would argue with Menzel's claim that "queer things" happen at different levels of the atmosphere, this fact is irrelevant. Had Menzel bothered to carefully read Arnold's letter to the Air Force, he

would have seen Arnold's statement that he turned his plane sideways and viewed the objects through an open window (at his left) to be sure that he was getting no reflections from window glass. (Fortunately, Menzel did not propose water drops on Arnold's eyes!)

The "bottom line is that neither Hynek nor Menzel proposed reasonable explanations for Arnold's sighting, but that didn't stop the Air Force from accepting one of the explanations (mirage).

In 1947, shortly after Arnold's sighting and during the massive wave of sightings that occurred between late June and the middle of July, numerous explanations for the sightings of Arnold and other witnesses were proposed. The first explanation was that proposed by Arnold himself, namely that saucers were some new secret aircraft of the United States Army Air Force (the Air Force was still part of the Army). However, very quickly (within days) after Arnold's sighting the U.S. government publicly denied having any secret aircraft that could account for saucer sightings. This denial was also privately made to J. Edgar Hoover, the Director of the Federal Bureau of Investigation (FBI) by General George Schulgen of the Army Air Force. (The denial is in the FBI's file on flying discs, the "real X file. See *The UFO-FBI Connection* by Bruce Maccabee, Llewellyn Pub. , St. Paul, MN. 2000) On the other hand, the Air Force began to be worried over the possibility that the Soviet Union had developed flying saucers to threaten the United States, but this worry was not conveyed to the public.

Howard Blakeslee, the Associated Press Science Editor, wrote an article that suggested "quirks of eyesight" could explain the saucer mystery. He pointed out that anything looks round if it is too far away to see details. "This law covers small things seen nearby and large ones at great distances." He described his own sightings of "flying saucers" which were bright reflections from distant aircraft. "Planes at great distances tend to look round when light is reflected from their sides," he wrote. He rejected the daytime meteor hypothesis (see below) and the hypothesis that upper altitude ice crystals formed "little round clouds." According to Blakeslee, "Nothing published in science or atomic studies gives the slightest clue to flying saucers unless the objects are aircraft."

An article in the New York Times, July 8, 1947, suggested red corpuscles of blood in front of the retina, i.e., "motes in the eye," which are small particles which float in the fluid within each person's eyeball. Motes are only visible when they move to an area between the lens and the fovea and cause a shadow, a dark spot, on the retina. When they move out of this area they "disappear. These particles, when viewed against a bright sky, can appear to be dark objects far away and thus may be mistaken for large objects at a great distance. Of course, they move whenever the eye does and this can impart "unearthly speeds" to the apparently distant, large objects. (Note: one can be temporarily fooled by motes, but a simple test is to turn the eye and stare in another direction. If the "object" moves with the eye, then it was a mote.)

Dan Nelson, an attorney in Oklahoma City, published his explanation in the "Daily Oklahoman" newspaper, July 29, 1947. On July 30 the FBI contacted him to learn more about his solution to the mystery. (Yes, the FBI did investigate sightings in 1947, so, in a small sense the "X files are real!) According to Nelson all sightings from inside vehicles, including airplanes, that had windows were reflections of sunlight from shiny objects onto the windows. The light reflected from these shiny objects was then re-reflected toward the eye of the observer who was looking through a window and could thus see the reflection silhouetted against the background as if there were a shiny object "out there", far outside the vehicle. Naturally reflections such as this could do unnatural things such as pace a vehicle or suddenly accelerate, make fast turns and even suddenly disappear. According to Nelson, the vibration of a car, for example, would give the objects "an appearance of rotating" and "reflections (in the windows) caused them to appear flat or saucer shaped." Moreover, "...any number of objects might be seen according to the direction that the car is traveling and the number of bright objects being reflected onto the window. He further stated that these objects might be seen in an ordinary window in a house according to the lighting conditions..." Mr. Nelson told the FBI that he had not actually talked to saucer witnesses but "he believed that these reflections plus the excitement and hysteria caused by other reports has been the basis for most flying saucer reports." (Classic armchair theorist!!) Obviously Nelson's explanation could not apply to Arnold's sighting, but Nelson didn't know that since Arnold's full report was not published until many years later.

In recent years two people have proposed that Arnold saw birds. Martin Kottmeyer proposed that Arnold saw geese (Kottmeyer, private communication, 1993). This is based in part on Arnold's description of how they flew and Arnold's own statement that it made him think of geese in flight. More recently James Easton (Easton, 1997, 1999, internet communication) has amplified on Kottmeyer's ornithological argument and has proposed even larger birds, pelicans. According to Easton's sources pelicans can fly at high altitudes and at speeds up to 50 mph. Of course they would have been quite close to Arnold for him to see them (an eighty foot long object at twenty miles has the same apparent [angular] size as a four foot long object at one mile). Of course, these birds would not cause bright mirror-like reflections of the sun, visible over distances of many tens of miles but, as skeptics often do, they tried to convince people that Arnold incorrectly reported the bright "flashing" of these objects (perhaps assuming that Arnold got it wrong or simply lied about it). They also overlooked the implications of Arnold's claim that he turned his plane and rolled down his window to look at the objects with no intervening glass. Since he was sitting on the left side of the plane it is logical to assume, although Arnold did not explicitly say so, that he turned the plane to the right and rolled down the left hand window to look eastward toward the objects. At this time he would have been flying southward, roughly parallel to the flight path of the objects for a short time. Arnold stated in his lecture at the 1977 International UFO Congress in Chicago that his air speed was about 100 mph. Hence he would have, in a short time, realized that he was gaining on these objects. He would have realized that they were relatively slow compared to his speed and certainly he wouldn't have estimated the speed at anything like 1,700 miles per hour, or even 100 miles per hour. (Note that 1700 mph at 20 miles distance is equivalent in angular speed to 85 mph at 1 mile distance, which means that if the objects had been birds they would have had to be flying at about 85 mph to cross the same apparent distance, from Mt. Rainier to Mt. Adams, in the same measured time, 102 sec.) In other words, had they been birds, even if unrecognized by Arnold, he would have had no reason to think that he was seeing radically new aircraft with extreme flight capabilities, so his whole report would have to be a fabrication.

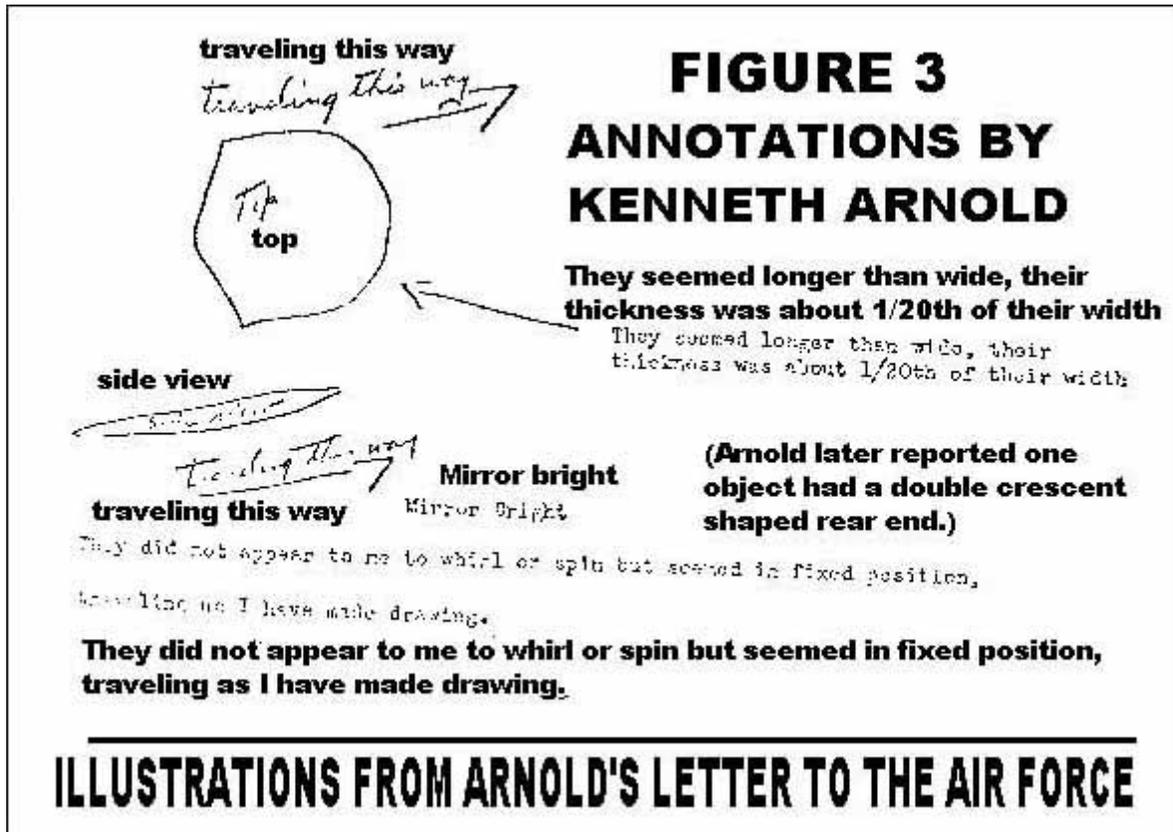
In June, 1997, just in time for the Fiftieth Anniversary of Arnold's sighting, San Francisco Examiner science writer Key Davidson published yet another explanation: meteors. The details of the explanation are given in a small monthly publication by Philip Klass which he calls the Skeptics UFO Newsletter (SKUFON; issue #46 of July 1997). (One wonders why it took fifty years for this explanation to be proposed. Could it be that previous skeptics considered this to be just too "outrageous?") Mr. Klass has been writing articles and books purporting to explain UFO sightings over the last thirty years, yet he has not previously "explained" the Arnold sighting. (His first book, *UFOs Identified*, Random House, New York, was published in 1968.)

According to Mr. Klass, writing in SKUFON, the new explanation was published by Mr. Davidson after some research that was "sparked by a conversation" with Mr. Klass. The exact nature of this conversation was not reported, but one may imagine Klass suggested that Davidson ought to check on the possibility that Arnold saw meteors. According to Klass, after some research Davidson discovered that "the number of meteor falls reaches a peak around 3:00 p.m." in June in the northern hemisphere. Arnold's sighting occurred at 3:00 p.m., June 24, 1947. Thus, according to Klass' article, the large number of meteors detected in June lends support to the meteor hypothesis. (The astute reader will note the careful, "lawyerly" use of words: "lends support to" which is not the same as "proves" or "is evidence for.")

Klass' SKUFON article mentions Arnold's statement that the objects seemed bright and shiny as if reflecting the sun. By way of comparison and explanation, Klass cites a 6:00 p.m., June, 5, 1969 pilot sighting, which he claims turned out to be several meteors, in order to point out that meteors, when seen in the daytime, can look as if they are shiny metal. These pilots saw the bright objects seeming to come toward them (i.e., they were looking along the trajectory of the objects) and thought they were looking at shiny metallic objects. The pilots thought the objects were close, when in fact they were over a hundred miles away.

Klass also points out that pilots can make errors (as if we didn't know that!). The implication is that if the 1969 pilots could mistake daytime meteors for UFOs, then perhaps Arnold did also. However, the Arnold sighting was quite different from the 1969 sighting.

Arnold reported seeing repeated bright flashes at varying time intervals from nine objects traveling one after another, along a roughly horizontal trajectory. Their altitude was under 10,000 feet (perhaps as low as 6,000 ft since, according to Arnold, they went behind a mountain peak south of Mt. Rainier). He realized that the flashes occurred as the objects tilted steeply to the left and right as they flew along a southward path. Arnold concluded that the flashes were a result of reflections of light from the sun which was high in the sky to the west (behind him). The objects flew southward past Mt. Rainier and, when they weren't tilted, he saw them as thin dark lines silhouetted against the snow on the sides of Mt. Rainier. When they were tilted but not aligned with the sun, so as to make a bright flash, he saw them as semi-circular at the front with convex, somewhat pointed rear ends (see FIGURE 3; one object, not shown in Figure 3, seemed to have a double concave crescent shape at the rear).



By way of contrast, meteors which are traveling fast enough to glow (or, actually, to cause the air around them to glow) do not dim to the point of being "not bright" and then brighten again, repeatedly. This is because, as Klass correctly points out, what causes the light is the high velocity of the meteor passing through atmosphere. The meteor is traveling so fast that it "instantaneously" heats the air as it passes through. (Note: Klass gives a meteor speed as 10,000 mph or 2.8 mi/sec. However, this is lower than that of any body entering the earth's atmosphere from space. Free fall to the earth from a great distance would produce a speed of about 7.4 mi/sec at the earth's surface in the absence of atmosphere. Orbital speed, which is lower than meteoric speed, but still large enough to cause a plasma in the upper atmosphere, is about 5 mi/sec.) This heating is a very rapid process caused by the meteor compressing the air ahead of it and raising the temperature (kinetic energy of the air molecules) to the point where the air becomes ionized (a plasma). In returning to the un-ionized state (free electrons reuniting with the atoms/molecules) the atoms/molecules give off light, which appears to envelop the meteor (one does not see the meteor itself, but rather the envelope of heated air). The natural tendency of a meteor is to slow down as it meets with resistance, while forcing itself at high speed through the atmosphere. If it slows to a speed low enough so that it no longer creates a plasma, it will become dark (not giving off light) and will not again appear bright, since there is no way for it to regain its lost speed. At the high altitudes of meteors (50 miles and higher), the atmosphere is quite thin and easily

heated to the plasma state by the speed of the meteor. Furthermore, the air resistance is quite low, so the meteor can travel a great distance before being slowed to "sub-plasma" speed. However, as the altitude decreases, the atmospheric density, increases and it takes ever more energy from the meteor to maintain a glowing plasma. It is doubtful that any meteor would be still glowing at an altitude of 10,000 feet, but if it were, it would be quite large and eventually would be slowed to the point of hitting the earth.

Klass points out that Arnold estimated he saw the objects for two and a half to three minutes. This includes about half to three quarters of a minute before they passed Mt. Rainier and another nearly two minutes after they passed Rainier. This would be "extra long" for a meteor. Most meteors burn out (at high altitude) in a second or so, although large meteors, called fireballs, can be seen from one location on the earth for many seconds up to a minute. Since meteor durations are limited to a minute or less, Klass argues that Arnold's time estimate was probably wrong. He points out that "witnesses are notoriously unreliable in estimating the time duration of unexpected events" and cites the March 3, 1968 reentry of the Zond Soviet space rocket as an example in which witness errors resulted in sighting duration estimates as low as fifteen seconds and as high as five minutes.

There is an important difference between Klass' example of witness error and the Arnold sighting: Arnold used a clock!

Klass acknowledges that Arnold used his dashboard clock to time the passage of the objects between Mt. Rainier and Mt. Adams, but Klass does not mention the time duration reported by Arnold. Instead, he writes as follows: "SUN questions whether Arnold...who was focusing his attention on the unusual obejcts while also occupied flying his aircraft... would have taken his eyes off the objects to carefully observe his cockpit clock." In other words, Klass questions the accuracy of the witness' claims about his own actions. If the actions seem illogical to Klass, then the actions are suspect and, of course, any data resulting from the actions are suspect. (Note: if Arnold had not looked at his clock but simply reported an estimated time the skeptics would probably raise the question, why didn,t he look at his clock?)

So, why did Arnold do such an "illogical" thing as look at his dashboard clock as the objects were disappearing? Even though Klass used Arnold's letter to the Air Force as a reference, he does not tell his readers that Arnold wrote that he intentionally measured the speed: "I had two definite points I could clock them by" (he was referring to Mt. Rainier about twenty miles east-northeast of him and Mt. Adams about forty-seven miles south-southeast of him). He reported that he could see that the objects were flying southward so he looked at his dashboard clock as the first object passed the south flank of Mt. Rainier and noted the time. He then watched the objects as they continued southward. During this time the objects passed over a ridge that is about five miles long. According to Arnold "the first one was passing the south crest of the ridge" as the last one "was entering the northern crest." Hence, the line of nine objects covered a total distance of about five miles. By the time they were passing Mt. Adams they were so far away he could only see their flashes. At this point there was no reason to continue watching carefully because they were fading out in the distance. Therefore he wasn't missing anything by taking his eyes off the objects to look at the clock. As the last object appeared to pass to the west of Mt. Adams the second hand on his clock showed that 102 seconds had passed. (Note: he was able to pay attention to the objects even though flying the plane because, as he reported, the atmosphere was calm and clear and there were no aircraft in his vicinity; the closest aircraft was roughly fifteen miles north and heading away from him.)

The calculated speed based on Arnold's measured time between Rainier and Adams is by itself sufficient to reject the meteor explanation (is this why Klass did not report the calculated speed?). The objects traveled about fifty miles in 102 seconds, corresponding to a speed of about 1,700 mph, far below any meteoric speed and certainly not enough to make the atmosphere glow.

By way of comparison, if one were to hypothesize a meteor in a level trajectory traveling at essentially orbital speed it would have required only about ten seconds to travel from Mt. Rainier to Mt. Adams. Even at Klass' underestimated speed of 10,000 mph the flight time between the peaks would be only about seventeen

seconds. One would hope that Arnold, using his dashboard clock, could tell the difference between 102 seconds and ten (or seventeen) seconds.

Aside from the difficulty in imagining that Arnold could mistake ten seconds for 102 seconds, the mere suggestion that a meteor, or nine such meteors, could travel at a meteoric speed at an altitude lower than 10,000 feet while glowing brightly is far outside the accepted meteor phenomenology. Meteors cool as they penetrate the lower atmosphere, or rather the speed decreases to the point that they are no longer ionizing the dense air. Hence the basic concept that Arnold saw bright meteors traveling past Mt. Rainier must be rejected.

Consider now the number of explanations that have been offered for the Arnold sighting: (1) secret, radically new US aircraft (Arnold and other witnesses), (2) secret Soviet aircraft (US Air Force Intelligence), (3) quirks of eyesight (Blakeslee), (4) motes in the eye (New York Times), (5) reflections in glass (Nelson), (6) ordinary American Air Force aircraft (Hynek), (7) blasts of snow (Menzel), (8) haze reflection (Menzel), (9) mirage (Menzel an Air Force), (10) orographic clouds (Menzel), (11) wave clouds in motion (Menzel), (12) water drops on the windshield (Menzel), (13) birds/geese/pelicans (recent skeptics), and (14) meteors (Klass/Davidson). With this dozen or so available explanations, surely the Arnold sighting has been explained.

NOT!

The complete Arnold sighting and an in-depth discussion of the failed prosaic explanations are available from this author via email (brumac@compuserve.com).

Debunking Rules: "Any Explanation in a Storm"

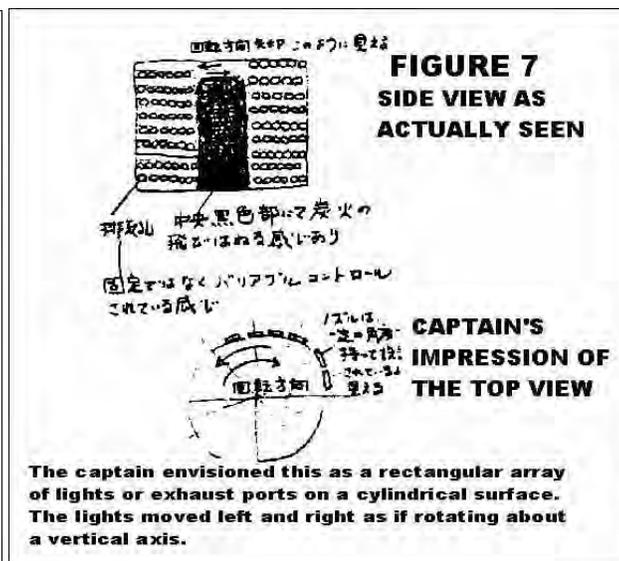
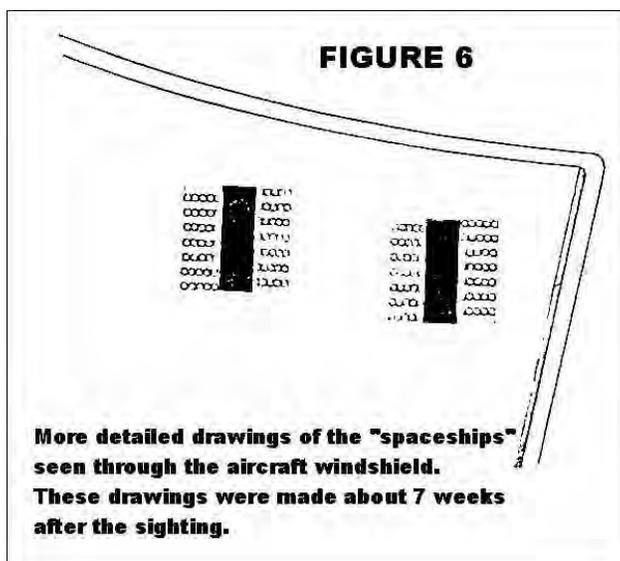
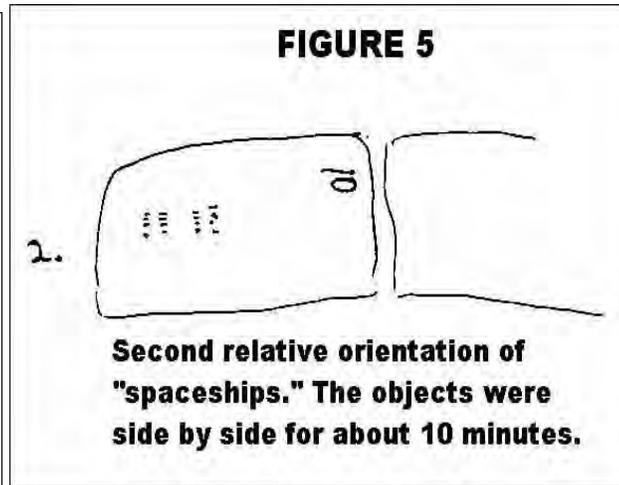
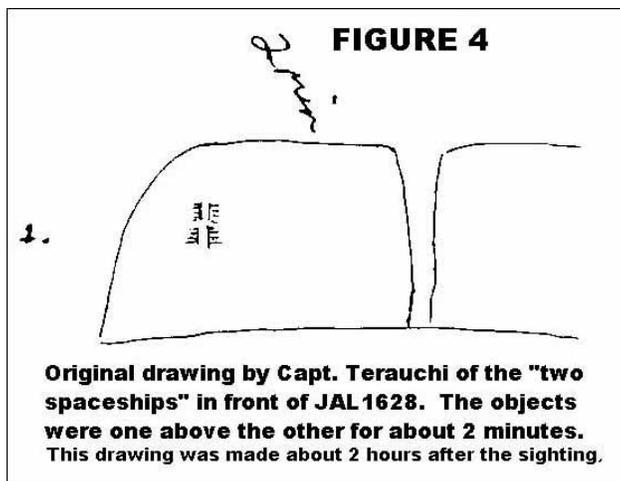
From studying the approach of the skeptics to explaining just the Arnold sighting, one learns **Maccabee's First Rule of Debunking**: *any published explanation is better than none*. The **Second Rule** is, *if the first explanation seems unconvincing or just plain doesn't work, publish another*. The Corollary to the Second Rule is (you guessed it!) if that doesn't work try yet another.

The procedure of proposing explanations is part of the scientific approach to explaining UFO sightings. However, simply proposing explanations is not sufficient. It is the "first half" of the method. The other "half" of the method is to test each proposed explanation against the information from the sighting and to decide whether or not it is, at least, convincing (you may not be able to determine whether or not an explanation is correct, but it is possible to determine whether or not it is convincing). Unfortunately Menzel, Klass and other skeptics generally have not carried out this second half of the scientific method. Menzel simply proposed explanations, one after another, as if it were logical to believe that the more prosaic explanations one could offer for a sighting, the more likely it is that the sighting could be (or has been) explained by one of the explanations. This, of course, makes little sense. Each sighting has one and only one explanation. Thus the analyst should pick the best or most convincing explanation out of a collection of potential explanations (by using the complete scientific method on each sighting and rejecting the unconvincing ones) and then publish that explanation and only that explanation. As a "rule of thumb" to help the reader decide whether or not a sighting has been explained, I would suggest that the larger the number of proposed, unconvincing explanations, the less likely it is that the sighting has been explained.

The Fantastic Flight of JAL 1628

Klass followed the scientific procedure when he published his analysis of the Val Johnson case discussed above. Klass clearly stated that the only prosaic explanation was a hoax by officer Johnson, all others having been rejected by the testimony and the hard evidence. He then left it up to the reader to decide whether or not he had made a convincing case for it being a hoax. However, he did not follow the scientific method in his

attempt to justify the meteor hypothesis for the Arnold sighting, nor in his analysis of the following sighting that occurred in 1986.

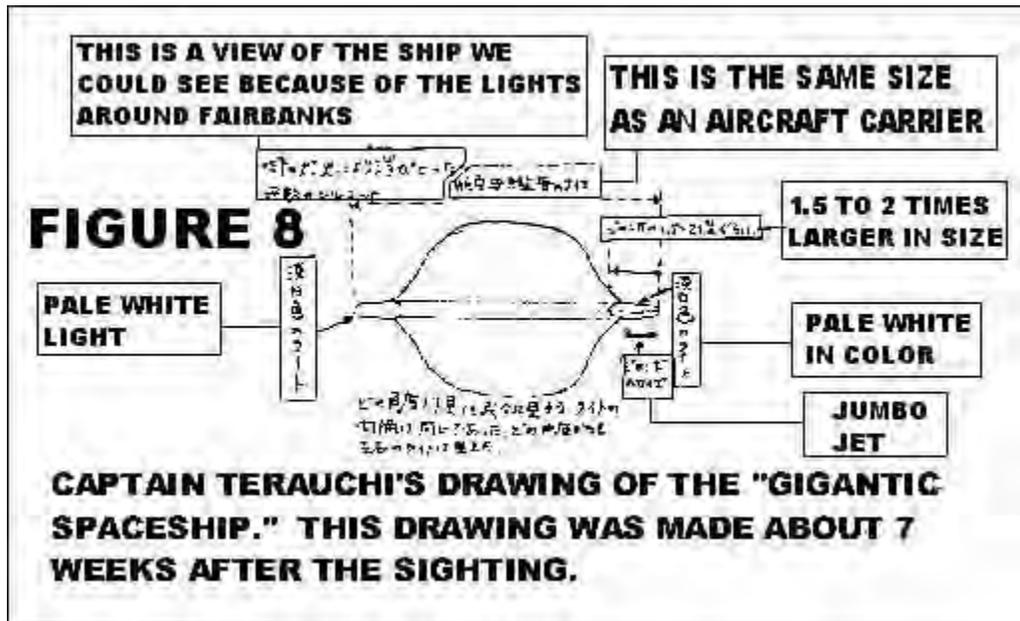


Japan Airlines Captain Kenju Terauchi had been mildly interested in UFOs for years, but didn't get to see one close-up until November 16, 1986. He and two other crew members were flying a 747 Jumbo jet (designated JAL1628) that was transporting a load of wine from Paris to Tokyo (and they didn't have one drop to drink...nor one drink to drop!), when suddenly, while over northeastern Alaska, they were confronted with a startling event: the appearance of two objects or "crafts" right in front of their aircraft. These objects suddenly appeared and maintained a fixed distance, estimated at 1,000 feet, ahead of their aircraft for about ten minutes (they were flying at 35,000 feet at about 600 mph). The captain reported that he felt the sudden occurrence of heat on his face. Each object had two parallel vertical rows of yellowish lights that appeared like exhausts emitting flames. Each object rocked from side to side, and the rocking of the two objects was synchronized. Initially the objects were one above the other (FIGURE 4), but after several minutes they suddenly moved to a side-by-side orientation (FIGURES 5, 6, 7).

They were not recognized as any known aircraft by the crew, which reported the event to the Anchorage, Alaska, Air Route Traffic Control Center (ARTCC). The ARTCC tracked the airplane on radar and tried to detect the objects but was unable to do so. About ten minutes after their initial appearance, these "crafts" suddenly disappeared from ahead of the airplane. Within seconds of the disappearance, the captain noticed a

strange light, like a long narrow fluorescent glow, at the left side of the airplane, quite a distance away. He turned on his airplane weather radar and noticed a large radar return about eight miles away in the direction of the faint glow. As the plane flew southward, this light drifted behind the aircraft. Suddenly, a lot more of it became visible (by self-glow or by silhouette) and the captain referred to it as a "gigantic spaceship" (FIGURE 8). This caused the captain to request a decrease in altitude to get away from it. A few minutes later the ARTCC requested that the plane make a circle to see what was behind it. Nothing was seen, but a radar target was detected momentarily behind the aircraft. Subsequently the aircraft was flying southward toward Anchorage when the captain last saw the "gigantic spaceship" far to his left and behind him, that is, roughly north of the aircraft.

The most complete report of this sighting ever published, along with analysis and a discussion of the proposed explanations, is presented in the article entitled "The Fantastic Flight of JAL1628, which appears in the May-June, 1987, issue of the International UFO Reporter (IUR), which is published by the Center for UFO Studies (www.cufos.org). An email version is available from the author. The information presented above is a very shortened version of the sighting but it contains enough information to allow a proper evaluation of the "prosaic explanations" proposed and publicized by the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). The sighting occurred in November, 1986. The Federal Aviation Administration announced in early January 1987 that it was going to investigate the sighting because of all the press interest. (This is anomalous by itself since, so far as I know, the FAA had never investigated any sighting before.) Less than a month later, and more than a month before the FAA announced the results of its investigation, CSICOP announced that the sighting had been explained ("UFO Mystery Solved, press release by CSICOP on January 22, 1987, Buffalo, NY).



The press release stated that, "according to a leading UFO investigator (Philip J. Klass) "at least one extraterrestrial object was involved - the planet Jupiter, and possibly another - Mars. The press release asserted that at the time of the sighting Jupiter was "extremely bright at a -2.6 magnitude and would have been about ten degrees above the horizon on the left side of the aircraft where the pilot first reported seeing the UFO. Mars would have been slightly lower and about twenty degrees to the right of Jupiter. According to the press release, "Although the very bright Jupiter and less bright Mars had to be visible to JAL Capt. Kenjyu Terauchi, the pilot never once reported seeing either - only a UFO that he described as being a white and yellow, light in his initial radio report to the Federal Aviation Administration controllers at Anchorage.

The press release could have mentioned, but did not, that Terauchi did report seeing numerous stars in the sky, city lights, and a glow of sunset in the west.

The CSICOP explanation was based mostly on Klass, interpretation of an early version of the transcript of the audio tape made at the Anchorage ARTCC. The radar tracking data were not made available until over a month later, so Klass had no information on the precise locations and flight directions of the plane at the times of the various sighting events. Therefore, he couldn't prove that Jupiter and Mars were in the locations or sighting directions (relative to the airplane) that he stated in the press release. On the other hand, there were rather explicit descriptions and drawings by the captain which had been widely publicized and which certainly were available to Klass but apparently he ignored them.

Klass made a major error in not waiting for the release of the complete information package by the FAA, because, if he had waited, he would have found that the publicized versions of the sighting were quite close to the descriptions of the "crafts" that were given by the crew during interviews. These descriptions rule out Jupiter and Mars as possible causes of the sighting. Without the FAA data package he did not know that initial drawings (FIGURES 4 and 5) were made only about two hours after the event. Nor did he know that the other crew members, in separate interviews, supported the captain's report of the objects that appeared in front of the plane. Nor did he know that at the beginning of the sighting the two crafts were almost directly ahead of the plane and not in the direction of Jupiter and Mars. Nor did he know about the sudden rearrangement of the relative positions of the objects from one above the other to one beside the other, a maneuver that Jupiter and Mars would have difficulty carrying out during the time of the sighting (!). Nor did he know that at the end of the sighting, while the plane was flying southward, nearly toward Jupiter and Mars, that the pilot reported the "gigantic spacecraft was behind and to the left, in a direction nearly opposite to the direction to the planets.

The CSICOP press release discussed and rejected the FAA and Air Force radar detections. Curiously, however, it completely ignored the claim by the pilot that the airplane radar did detect a radar-reflective object at seven to eight miles in the direction of the UFO. Perhaps Klass rejected this claim, but if he had waited for the data package from the FAA, he would have learned that the other two members of the crew confirmed the pilot's statement about the radar detection.

Thus, the Jupiter-Mars explanation is contradicted by the sighting directions to the UFO at various times, by the descriptions of the crew members, and by the airplane radar detection. (Another "prosaic explanation" bites the dust!) Unfortunately, the "gullible press did not know that at the time. The explanation was widely publicized. It made the captain look like an idiot, but as far as the press was concerned, that's OK. Only idiots report UFOs. Having done their duty the news media promptly forget about the sighting. (Note: Terauchi was a senior captain at the time but he was temporarily grounded after the press reports of his sighting.)

In retrospect it appears that the CSICOP press release which was marked "FOR IMMEDIATE RELEASE" should have been marked "FOR PREMATURE RELEASE".

The FAA finally did make a public report on the sighting on March 5, 1988 ("FAA Releases Documents on Reported UFO Sighting Last November, by Paul Steucke, Office of Public Affairs, Alaskan Region, Federal Aviation Administration (FAA), U.S. Department of Transportation, March 5, 1987, Anchorage, AK). This report concentrated on the controversy over the radar detections or non-detections by the ARTCC. It did not discuss the airplane radar detection nor did it discuss the visual sightings. It basically said that the ground radar did not support the claim of a sighting. This was not, of course, the same as saying there was no sighting, but the national press presented the FAA investigation results as if they proved there was no sighting.

The most important result of the FAA investigation was a data package which the FAA made available. This included radar data listing the exact airplane locations, headings and speed, the complete transcript of the ARTCC audio tape of the event and all the transcripts of the interviews with the crew members and air traffic

controllers. With this data package anyone could have analyzed the sighting and concluded that Mars and Jupiter were not the solution.

Apparently that is exactly what Klass concluded after my detailed article was published by the Center for UFO Studies, because several months later CSICOP published another explanation (recall Maccabee's Second Rule of Debunking mentioned above). This time it was moonlight on clouds! (Klass, P.J., "FAA Data Sheds New Light on JAL Pilot's UFO Report, The Skeptical Inquirer, Summer, 1987, Buffalo, NY). Since the moon was low in the eastern sky Klass argued that the "crafts" were explained as reflections of moonlight from the clouds and "turbulent ice crystals. According to Klass, the turbulent ice crystals "could have generated flame-colored lights (he didn't explain how) and "this would also explain why the undulating lights would periodically and suddenly disappear and then reappear as cloud conditions ahead changed. When the aircraft finally outflowed the ice clouds and the initial UFO, disappeared for good (the Captain) would search the sky for it, spot Jupiter further to the left and conclude it was the initial UFO. Klass attributed the airplane radar sighting to "an echo from thin clouds of ice crystals.

Klass's explanation verges on scientific garbage. Although the crew reported there were thin clouds far below the plane there is no reason to suppose that moonlight reflected off ice crystals in these clouds would generate "flame colored lights. Klass, explanation certainly could not account for the heat which Terauchi felt on his face. Nor would it explain the peculiar parallel arrays of flames or yellowish lights (illustrated in detail in FIGURES 6 and 7) associated with two independently flying objects that appeared ahead of and above the plane, continuously for many minutes. Nor would it explain the sudden rearranging of these arrays of lights. According to Klass, the reflection from crystals could explain the colors of the lights. However, the reflected light would be basically the color of the moonlight. A variation in color would occur only if the moonlight were "broken into its spectrum by refraction of light in the crystals (similar to what happens with rain and a rainbow). But the spectrum of white light contains more than just the yellow, amber and green which were reported. Blue and red should also have been noted if the air crew were looking at what would essentially be a "rainbow.

The lights ahead of the aircraft were described as bright. The copilot compared them to headlights of oncoming aircraft. A reflection of the moon from thin clouds would cover large areas of cloud and would be dim, diffuse, or "patchy, but not point-like. Klass, explanation for the airplane radar target is total conjecture on his part since the clouds were reported by the crew to be thin. Would there be any return at all from such clouds? One might ask, if there were so many clouds, why didn't the radar pick up numerous "blobby returns on the right side and ahead of the aircraft as well as on the left where the "gigantic spaceship appeared to be. And, of course, Klass, explanation does not account for the appearance of a "gigantic spaceship.

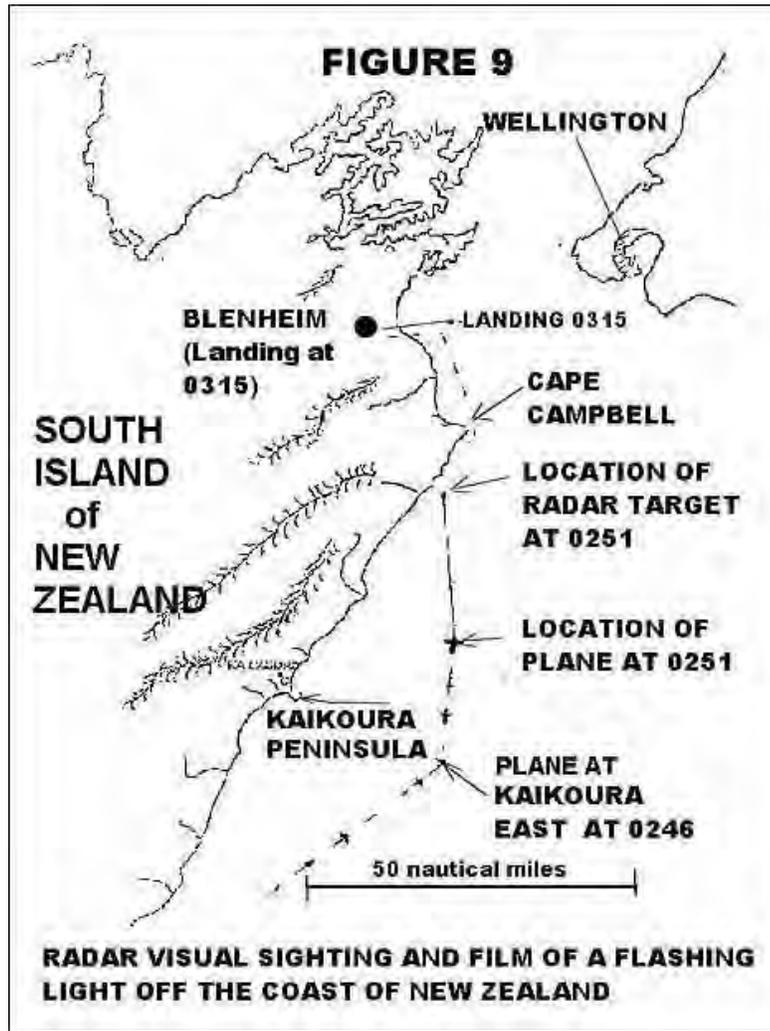
The bottom line is that Klass proposed two prosaic explanations for this sighting but neither explanation was correct. Each one failed for physical reasons when compared with the information in the sighting report. The fact that he was able to propose seemingly reasonable prosaic explanations was valuable from the standpoint of publicity for the skeptical viewpoint and debunking sightings, but it was useless from the point of view of scientific analysis of UFO sightings. This sighting, along with those of officer Johnson, Kenneth Arnold, and A.C. Urie remain unexplained and, in my opinion, will remain unexplained.

The Case of the Flashing Triangle

It is rare when the physics of the physical evidence in a sighting absolutely proves a prosaic explanation to be wrong. If there is physical evidence associated with a UFO sighting, its value or pertinence is generally disputed by the skeptics, who find some justification for ignoring the physical evidence and thereby removing an impediment to accepting the proposed explanation. However, in the case I am about to discuss the physical evidence stands on its own and MUST be explained if the sighting is to be rejected as evidence for the ET or OI/NHI hypothesis.

During the early morning of December 31, 1978, between 12:15 AM and 3 AM local time there was a series of sightings off the east coast of the South Island of New Zealand. These sightings made news around the

world. While flying on a freighter aircraft loaded with newspapers a TV news crew saw and filmed strange lights which, in the opinion of the experienced air crew (pilot, copilot) were extraordinary. The series of sightings can be very roughly divided into three parts: (1) between 12:10 AM and 1 AM while the aircraft was flying from Wellington to Christchurch; (2) between 2:10 AM and 2:40 AM while the aircraft was flying northeast from Christchurch; and (3) between 2:40 AM and 3 AM while the aircraft was flying roughly north-northwest toward Cape Campbell (on its way to Blenheim; see FIGURE 9).



The sighting of a very bright light during part (2) was featured in international media because of the lengthy color movie film made at the time. It was this section of film that garnered a collection of spurious explanations such as Venus, Jupiter, light reflected from the breasts of flying birds, drug running aircraft and a Japanese squid boat (which uses bright lights at night to lure squid to the surface where they can be netted). Although the numerous prosaic explanations offered for the sightings in parts 1 and 2 have been shown to be wrong there is not space in this article to describe them. Instead, the subject of this discussion is one of the sightings that took place during part 3, a sighting that never was discussed by the media (probably because it was not emphasized in the original press stories out of Australia and New Zealand). The complete story of this part has been published in the article entitled, "Analysis and discussion of the Images of a Cluster of Periodically Flashing Lights Filmed Of the Coast of New Zealand, which is published in the Journal of Scientific Exploration, Vol 1 #2, 1981, pg. 149 (www.jse.com). An email version is available from the author. The published article presents the in-depth analysis of all the images in the movie film obtained during this sighting. It is sufficient for this discussion to describe only those few images which are of particular interest here.

The TV news cameraman used a large Bolex electric camera with a telephoto lens. He held this camera on his shoulder because there was no room on the flight deck for a tripod. The flight deck has windows at the front and sides positioned so that the fields of view of the pilot and copilot, added together, is somewhat more than 200 degrees from left to right (the pilot sits on left side of the cockpit, the copilot on the right). The cameraman sat in a seat between and slightly behind the pilot and copilot and therefore had a field of view of less than 180 degrees. This is important to understand, because from his position he could not film the right wing of the aircraft without placing his camera lens directly in front of the copilot or sitting in the copilot's seat.

At 2:51 a.m., as the Argosy freighter was heading almost northward enroute from Christchurch to Blenheim (see FIGURE 9), the Wellington Air Route Traffic Control Center (WARTCC) announced to the crew that there was a large radar target north-northwest and about 20 miles ahead of them. They were about 20 miles east of the coast, approaching Cape Campbell, at the northeastern "corner of the South Island, at the time of the radar report. The air crew and the news crew recall seeing a light appear ahead of the plane and the news reporter on board recorded a statement about seeing a flashing light "like an aircraft beacon" that suddenly dropped downward and started "rolling and turning." He also said that he could see "orange and red among the lights." This all appeared to be happening in the sky above the land or ocean near the northeastern area of the South Island.

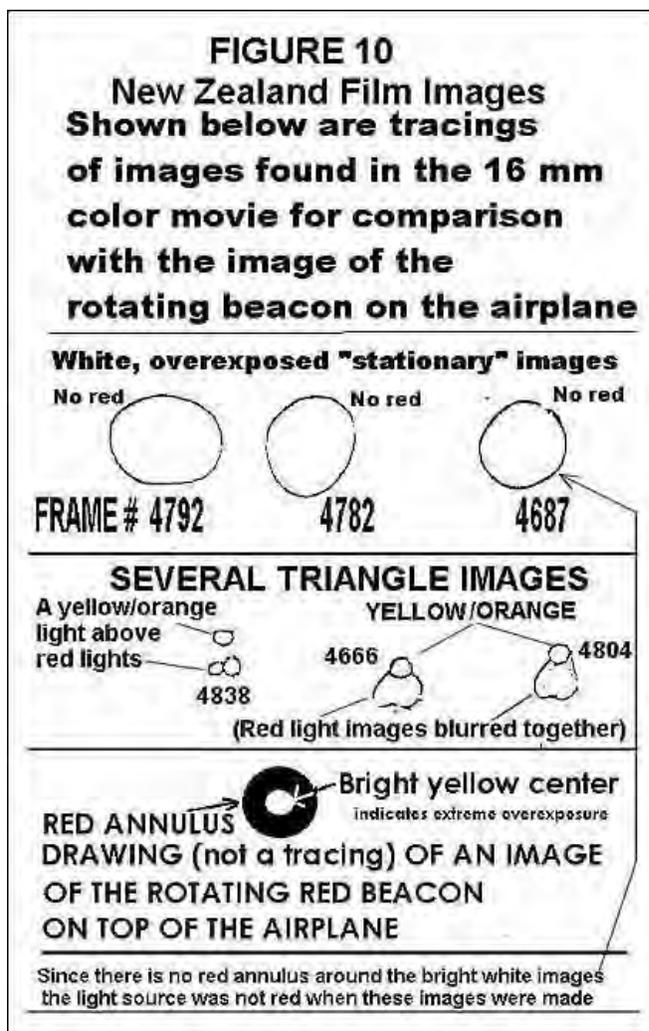
Although it is impossible to prove from direct evidence that the cameraman filmed this same light (because there was no synchronization between the filming and the audio tape), it can be proven that this section of his film was taken in the same time frame (before the landing at Blenheim, which is on the film). Moreover, the film does, indeed, show a flashing light which cannot be identified with any known light in the area. Its flash rate is about once per second.

The movie camera created a series of pictures, called "frames," which recorded the images of the light, one after another, at a rate of about ten frames (ten pictures) per second. (The cameraman intentionally slowed the frame rate from the normal 24 frames per second in order to be sure that he got good exposures of the images.) Looking frame-by-frame through the 279 frames of the flashing light one finds that there are about ten frames per cycle of the flash (nearly thirty cycles are on the film). During each cycle the images start large and white or very pale yellow (overexposed) and they shrink in size and brightness to dim combinations of red and yellowish-orange and then increase in brightness and size back to large and white. It is of importance, for comparison with the proposed prosaic explanation, to note that the overexposed images have NO trace of red associated with them (see FIGURE 10).

Philip Klass devoted three chapters of the above cited book (*UFOs, The Public Deceived*) to the famous New Zealand sightings. He proposed numerous prosaic, though, in my opinion, wrong, explanations for the lights seen and filmed and for the radar targets which were reported during the flight of the aircraft, first southward from Wellington to Christchurch (part 1 mentioned above) and then northward from Christchurch to Blenheim (parts 2 and 3 as discussed above).

In Chapter 27 he discussed the section of film which is of interest here. Klass described the flashing light in the film as follows: "a light that fluctuates rapidly from dim red-orange to a bright white, then back to red-orange, then back to bright white at approximately the flash rate of the red-orange anti-collision beacons installed atop and beneath the the Argosy's fuselage."

Here Klass refers to the red, not red-orange, rotating beacons on the top and bottom of the aircraft. These beacons project narrow beams of light that rotate around and appear as red flashes to a distant observer. These beacons were captured on film by the cameraman before the flight began. He set up his camera on a tripod while the plane was still at the airport and filmed the plane as the engines were warming up in order to "run in" his camera. The images of these beacons show that when the light is pointed at the camera and is, therefore, brightest, the image is overexposed and consists of a yellow central circle surrounded by a wide, red annular region, i.e., a red ring around a yellow center (see FIGURE 10).



Noticing that the flash rates of the upper beacon and the light on the film were, for all practical purposes, equal, Klass proposed that the flashing light on the film was actually the upper beacon. How could this have been done since there was no way the cameraman could directly film the beacon from inside the aircraft? Klass writes:

"(the cameraman) would not have been able to film the topside beacon directly. But its intense illumination could have been reflected off one of the aircraft's rotating propellor blades when the beacon rotation rate and the propellor speed were roughly synchronized., Such synchronization would have occurred when (the captain) began to throttle back for his descent (into Blenheim), possibly increasing the propellor pitch angle. A short time later, when he throttled back further, the requisite synchronization would have been lost and the (UFO image) would mysteriously disappear."

The images on the film vary considerably in shape and size from frame to frame. Klass offered the following explanation of the image shape changes:

"If (this section of film shows) a reflection of the beacon from the curved surface of the propellor blades, whose rotation rate was not perfectly synchronized with the rotating topside beacon, it readily explains the remarkable changes in shape, size and appearance of the (UFO) images that occur in a fraction of a second."

The actual explanation for the shape change is straightforward and has nothing to do with a hypothetical temporary synchronization of the beacon and the propellor rotation. Since the cameraman supported the camera on his shoulder in a moving, vibrating airplane most of the images were smeared by camera motion. However, some images were either not smeared or were smeared very slightly. This is because the camera pointing direction vibrated about some average position. Each time the image moved away from the center of the film the cameraman would twist the camera to recenter the image. The image would reach a maximum distance from center and then the image motion would momentarily cease before the direction reversed and the image moved back toward the center. Therefore, the frames obtained during moments of direction reversal, the "stationary frames," contain images that were not smeared or smeared very little. The brightest white images in these stationary frames are circular or nearly circular. The white and red-orange images that occur between stationary frames were stretched by the camera motion into "hot dog" shapes (elongated). The stationary frames which contain the dimmest, smallest images show a very unique arrangement of lights: a triangle consisting of an orange "dot" image just above two side-by-side red "dot" images.

Klass points out in his book that I rejected his hypothesis that the UFO image could have been a result of filming the reflection off the propellor of the beacon. Unfortunately, however, he did not describe my objections to his hypothesis even though he should have known what they were because of our extensive discussions of this sighting in numerous letters long before he wrote his book. (Note: I first explained to Klass the optical reasons for rejecting the beacon as the light source - see below - in May and June, 1980, nearly 3 years before his book was published. Yet he published his explanation anyway.)

My first objection is not based on physics but on the fact that the cameraman, from his middle seat, could not have filmed in the direction of the propellor without putting his camera in front of the copilot or sitting in the copilot's seat, and neither the cameraman nor the copilot recall either such event.

The second objection is based on fundamental physics (optics/photography) and is, in fact, devastating to Klass' "prosaic explanation." (As mentioned above, I made him aware of this objection but he did not include it in his book.)

The clues have already been given and the astute reader may have already deduced the second objection. It is most evident in the comparison of the bright, overexposed UFO images with the bright, overexposed beacon images. As I stated above, the cameraman filmed the red flashing upper (and lower) beacon before the plane took off. The film shows that when the beacon was pointed toward the camera the images were relatively large and consisted of a yellow central circular area surrounded by a wide red annular region. The yellow center is caused by overexposure to the extent that the film cannot produce the correct color (it produces pale yellow rather than red because more film color layers than just the red-producing layer have been exposed by the extreme intensity of the light). The red annular region is a result of light scattering sideways in the film. As the light scatters sideways from the extremely bright central region of the image, the intensity decreases to a level at which the film can produce the correct color, in this case, red. (Example: had the light been green there would be a pale center with a very green annulus around it.)

This is completely different from the brightest images on the UFO film, however. A careful examination of the overexposed images shows that the centers are white or very pale yellow and there is NO red annular region (see FIGURE 10). That means that these images were absolutely NOT made by filming a red light, whether directly, as by having the camera film directly toward the beacon, or indirectly, such as by reflecting the beacon light off the rotating propellor blades. (There is another optical/photographic reason for rejecting the "propellor-reflected-light" hypothesis: a reflection off propellor blades would be extremely weak because the blades do not "fill up" the space. After all, propellor blades "disappear" and you can "see through them" when they are rotating rapidly. Any reflection under such circumstances would be extremely weak and diffuse and very unlikely to cause any overexposed images.)

Hence Klass' explanation is rejected for perfectly good physical reasons. (Note: a TRue UFO might be able to violate physics as we know it, but known objects such as beacons, cameras, and film cannot violate physics as we know it. The previous argument against the beacon hypothesis is based on well-known optical physics.)

The logical, skeptical response to the absolute rejection of this explanation would be, of course, to propose another explanation. Since the airplane was flying many miles off the east coast of the South Island of New Zealand, and since there were beacons along the shore, the first logical suggestion would be that the film shows one of these beacons. The cameraman said he was certain that he had not filmed a beacon. He said that whenever he saw a light which he couldn't identify he asked the pilot or copilot to identify it. The air crew was, of course, familiar with the beacons in the area and told the cameraman which lights were beacons. The statement by the cameraman is supported by a comparison of the film images with known beacons. Careful analysis of the film indicates that the source of the images was a triangular arrangement of lights consisting of a pale yellowish-orange light that pulsated at about 1 Hz, which was above two pulsating side-by-side red lights. The intensity of the upper light ranged from effectively zero (no image) to such a large value that it overexposed the film. The red lights also pulsated at 1 Hz, but in the opposite phase: when the upper light was at zero brightness the red lights were maximum, and vice versa. The red lights never got bright enough to overexpose the film. Using information supplied by the New Zealand government a search was made of all the beacons within about 50 miles of the aircraft. None of the beacons had a triangular arrangement of lights. Moreover, all the beacons were found to be too weak, too far away, to have the wrong flash period, or the wrong color. There is no beacon that could account for the film.

Yet another logical suggestion would be another aircraft. However, there were no other aircraft flying in that area of New Zealand at the time, according to the air traffic controller who was monitoring the Argosy flight to Blenheim. (The radar was picking up anomalous targets, however.)

The possibility that the film showed light from a boat was considered. There are no flashing lights such as this on boats (which have steady lights that do not change color). The only boats with lights bright enough to make overexposed images at long distances are squid fishing boats. They use very bright incandescent lights to lure squid to the surface at night for netting. The Japanese squid fleet was in New Zealand waters at the time, but their lights are steady and only white.

Yet another suggested explanation is that there was an emergency vehicle or police car with its lights flashing on the land closest to the airplane. Aside from the fact that emergency vehicles do not carry lighting of the type that would create images such as this, the pilot checked with the authorities and was told that there were no emergency or law-enforcement vehicles traveling the New Zealand highways and byways near the location of the plane at the time.

Another suggestion was that a light inside the aircraft was filmed. However, this suggestion was rejected because there were no flashing lights inside the aircraft and, furthermore, the captain had turned off all the cockpit lights, leaving only steady, dim red meter lights on the control panels.

As a last resort one might propose a distant bright planet on the horizon, fluctuating in brightness and color as a result of random atmospheric refractions. However, such fluctuations would not be perfectly steady and furthermore, Venus, the only astronomical light source bright enough to produce images remotely like these, was not visible at the time.

Now you know the reason that Klass proposed the upper beacon explanation: he was aware, from our considerable correspondence on this sighting, that all the other explanations had failed. The only remaining light that had a remote chance of explaining the sighting was the upper beacon, because of the near equivalence of the flash rate. Then Klass had to propose an auxiliary hypothesis to explain how the beacon could be filmed from inside the aircraft by reflection off the propeller. This was very clever, but unconvincing to the experienced optical physicist. The final rejection of his hypothesis is based on the images of overexposed red lights as described above.

Without any other known sources of light to create the film images, this has to be considered unexplained and I know of no reason to believe that it will be eventually explained. It is a True UFO. If we assume that the lights which made these images were part of the object detected by radar at 2:51 a.m., at a distance of about 20 miles ahead of the airplane, then quantitative estimates can be made of the intensity and spacings of the

lights (see the above cited reference for details of the calculations). From the spacing of the "dots in the triangular images (orange "dot above to side-by-side red "dots) one can calculate that the red lights were about 50 feet apart and the yellow-orange light was about 90 ft above the red lights. (Note: the calculated spacing is proportional to the distance assumed. If the lights were closer the spacing was less.) At its peak brightness the intensity of the upper light was considerably over a million candlepower. It was as if a powerful, pulsating spotlight had been pointed toward the witnesses on the airplane.

CONCLUSION

The few sightings discussed here are important because they illustrate the problem faced by skeptics who would argue that, because there are prosaic explanations for all sightings, there is no evidence for ET/NHI/OI contact. The problem faced by the skeptics is that there are sightings for which the generally accepted (by skeptics!) prosaic explanations are wrong or at least unconvincing. The failure of UFO skepticism, from the scientific point of view, has been to allow such explanations to be accepted by the scientific community. If UFOs were "ordinary science," the proposed explanations would have been rigorously analyzed, and probably rejected, rather than simply accepted. Scientific ufology needs skeptics, but skeptics who are capable of recognizing when a sighting simply cannot be explained by any prosaic explanation.