

**COMMITTEE VI**  
The Universe and Its Origin:  
From Ancient Myth to Present Reality  
and Fantasy

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**UFOs: FANTASY OR PRESENT REALITY**

by

**Bruce Maccabee**  
Chairman  
Fund for UFO Research  
Silver Spring, Maryland USA

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## INTRODUCTION

"This 'flying saucer' situation is not all imaginary or seeing too much in some natural phenomenon. Something is really flying around."<sup>(1)</sup>

Reports of unusual objects moving around in the sky have been made occasionally since biblical times.<sup>(2)</sup> Therefore it is not particularly surprising that unusual objects are still being reported in the skies, although there does appear to be a major difference between the ancient and the modern reports. Generally the ancient reports could rather easily be explained as misinterpretations of natural phenomena that have only recently become understood or as "visions" (psychological manifestations, often of a religious nature). However, a considerable number of the modern reports that have been made since the spring of 1947 are different from the ancient reports because they seem to be inexplicable, even after careful investigation and analysis, in spite of our increased knowledge of natural phenomena and our increased technological sophistication. The reports I refer to form a subgroup of the general class known as "flying saucer" or UFO (Unidentified Flying Object) reports.<sup>(2)</sup> I call the members of this subgroup TRUFO

(True UFO) reports. Examples are presented in this paper.

The "Generalized UFO Phenomenon" can be defined as the continuous flow of reports, from throughout the world, of sightings of aerial objects or phenomena that the witnesses cannot identify. An important characteristic of the generalized UFO phenomenon is its persistence or "robustness" in the face of the skeptical attitude toward such sightings on the part of the general population and scientists in particular. Reports continue to be made by persons who would, under other circumstances, be considered reliable and reasonably accurate observers. The reports continue in spite of a generally skeptical attitude that often leads to ridicule if a report becomes public knowledge.<sup>3</sup> (Note: although reports by mystically or religiously oriented persons, by hoaxers and by charlatans are also part of the "Generalized UFO Phenomenon," as a physical scientist I don't consider them to be an important part, although a sociologist might do so.)

It is natural to suspect that such a robust phenomenon has a real, hitherto unknown underlying cause, whether it is purely psychological in origin or is based on physical reality. In other words, it is natural to suspect that at least *some* reports result from sightings

of phenomena that remain unexplained after careful investigation, just as it is natural to suspect that "where there's smoke, there's fire." I label as "TRUF0s" those phenomena which remain unexplained after a careful investigation and after a subsequent expert analysis of the information thus obtained. Whether or not there have actually been any sightings of TRUF0s is a key question.

In order to find out whether or not any TRUF0s have been sighted it is necessary to very carefully study many individual sightings. Such a study will show that most sightings can be explained in terms of known, if rare, phenomena or psychological manifestations (including hoaxes). However, some sightings will be found to defy logical explanation in terms of known phenomena. The question then becomes, why can't each these sightings be explained? Is it because each of the unexplained sightings was made by a poor observer and the report doesn't provide enough high quality information for a positive (or even probable) identification? Or is it because, in spite of (or rather, because of) the quality, self-consistency and apparent accuracy of a report, it is very difficult or impossible to conceive of any rational explanation in terms of known phenomena?

## TRUFOS OR INSUFFICIENT INFORMATION?

"Of course there always will be UFOs."

A statement like this is sometimes made by a skeptic who realizes that there will always be some sightings that can't be explained because of a lack of information. For example, a UFO investigator might fail to identify a reported object as a balloon because he did not know that a balloon could have been at the location of the sighted object. As another example, a sighting of Venus might go unrecognized because the witness failed to note the time or direction of the "UFO."

Is it true that the unexplained sightings are simply those lacking sufficient information for a definite explanation? The answer to this question is no, according to an Air Force sponsored<sup>4</sup> study that was done many years ago by the Battelle Memorial Institute of Columbus, Ohio. Their scientists worked on Project Stork for the Air Force the during the years 1952 and 1953. (3.5.4) Project Stork was a classified (secret) in-depth study which introduced state-of-the-art (at that time) computer aided statistical analysis techniques into the field of UFO research ("ufology"). The BMI scientists, along with the Air Force experts, carefully studied 3201 reports that had been collected by the Air Force from 1947 through 1952. They found that 2214

reports (69.2%) could be explained with varying degrees of confidence in a number of different ways. The explained reports were designated "K" for "Known." <sup>(7)</sup> Reports that didn't provide sufficient information to allow for a definite identification of the phenomenon were labelled I.I., for "Insufficient Information" (298 reports or 9.3%). The scientists probably were not <sup>(4)</sup> surprised to find a sizable number of reports (689 or 21.5%), which they couldn't explain even though there didn't appear to be much, if any, information missing. They labelled these "U" for "Unknown." *They emphasized that the U reports were clearly distinct from the I.I. reports.* <sup>(5)</sup>

#### TRUFOS OR POOR OBSERVERS?

"Less well informed individuals are more likely to see an UFO...."

"In our experience those who report UFOs are often very articulate but not necessarily reliable."  
(E.U. Condon <sup>(2)</sup>)

The BMI scientists analyzed each sighting to determine an overall estimate of its reliability. They constructed a semi-quantitative scale of the reliability of a sighting by combining a relative scale value of the reliability(ies) of the witness(es) with another relative scale value of the reliability of the report. The

relative reliability of a witness was based on his (her) experience as "deduced from his occupation, age, and training" and upon the "observer's fact reporting ability and attitude, as disclosed by his manner of describing the sighting." '5' The relative reliability of a report was based on "consistency among the several portions of the description of the sighting" and upon the "general quality and completeness of the report." '5' Once the overall relative reliability had been determined for each report the scientists divided the reports into four levels of relative reliability, Poor (525 or 16.4%), Doubtful (1298 or 40.5%), Good (1070 or 33.4%) and Excellent (308 or 9.6%). '6' They then calculated the percentages of K, I.I. and U sightings for each reliability level. They found that the percentage of I.I. sightings generally decreased as the reliability increased from Poor to Excellent (19.6%, 11.6%, 3.1% and 3.9%, respectively). This was expected since the relative reliability assigned to a sighting depended upon the amount of credible, self-consistent information contained within the report. They also found that most sightings within each reliability level could be explained (62.1%, 72.8%, 70.6% and 61%, respectively). What wasn't expected was that the percentage of unexplained sightings generally *increased* with the

increase in reliability (18.3%, 15.6%, 26.3% and 35.1%, respectively). The percentage of unexplained Excellent sightings increased even further when civilian sightings were removed from the total collection leaving only military sightings, most of which had been made by servicemen on duty at the times of the sightings. Of the 1226 military sightings, 204 (16.6%) were rated as Excellent and of these 37.7% were sightings of Unknowns according to the Battelle scientists. <sup>9</sup>

I have pointed out elsewhere that, if there were no TRUFOS to be sighted (i.e., TRUFOS don't exist), then this result implies that the more reliable a witness is, the more likely he is to make mistakes in his report of a sighting. <sup>6</sup> On the other hand, if there were TRUFO sightings in the BMI sample, then the result is completely consistent with our understanding of reliability. <sup>10</sup>

The Air Force did not mention this conclusion about the relationship between reliability and the percentage of unexplained sightings when the report was declassified and released in 1955. <sup>3</sup> Nor did the Air Force publicize Battelle's conclusion that 21.5% of all of the sightings made between 1947 and 1952 had not been explained. <sup>3</sup>

I have studied many UFO reports and have found a number of them that appear to me to have more than enough



credible information for identification if identification were possible. These are, in my opinion, reports of TRUFOS (TRUFO reports). Some such reports are discussed in later sections of this paper.

I therefore tend to agree with the opinion presented at the very beginning of this paper, an opinion that was written by an Air Force intelligence analyst in the summer of 1947: "Something is really flying around."<sup>11</sup>

#### EARLY AIR FORCE OPINION

"It can't be, therefore it isn't."

This is the way Dr. J. Allen Hynek, former consultant in astronomy to the Air Force during Projects SIGN and BLUE BOOK, has characterized the attitude taken by the Air Force investigators, especially in later years.<sup>11</sup> However, it wasn't always that way. Initially Air Force intelligence concluded that at least some reports were of real objects. The opinion stated at the beginning of this paper<sup>1</sup> was repeated by Lt. General Nathan Twining in a Sept. 1947 letter to Brig. Gen. George Schulgen, who was the Chief of the Intelligence Requirements Branch of (Army) Air Force Intelligence.<sup>12</sup> Twining indicated to Schulgen that there was a requirement for a special project to analyze flying saucer reports. The Air Force responded to Twining's letter by setting up Project SIGN<sup>13</sup>

The opinion that real objects were the causes of some UFO sightings was also expressed in a Top Secret Air Intelligence document that was not declassified and made available to the public until March, 1985, about 36 years after it was written. This document expressed the conclusion that "some type of flying objects have been observed, although their identification and origin are not discernible." <sup>(14)</sup>

This recently released document appears to be a rewritten or "watered-down" version of the legendary "Estimate of the Situation," which was written by the staff of the Air Technical Intelligence Center (ATIC) at Wright-Patterson Air Force Base in the late summer of 1948. <sup>(15)</sup> According to Capt. E. J. Ruppelt, the first director of Project BLUE BOOK, the Estimate presented the conclusion that flying saucers were extraterrestrial vehicles. The estimate is "legendary" since all copies were destroyed in the years following General Hoyt Vandenburg's rejection of its conclusion. <sup>(3, 15)</sup>

(Vandenburg was the Chief of Staff of the Air Force.)

In view of the skeptical attitude toward UFO sightings that was expressed publically by scientists and also by the Air Force in 1947 and 1948, one wonders what could have made the intelligence analysts confident that "some type of flying objects" had really been

observed? In view of the skeptical attitude of the Air Force and of the general scientific community through the 50's, 60's and 70's and thus far into the 80's, the reader may well wonder why *I* tend to agree with the opinion of the Air Force Intelligence analysts in 1947-1948. After all, hasn't this question of UFOs been "put to sleep" by numerous scientists from various fields over the past 35 years? Consider, for example, the Colorado University Study<sup>(2)</sup>, or the papers by Urner Liddel<sup>(16)</sup>, William Markowitz<sup>(17)</sup>, and Donald Warren<sup>(18)</sup>, or the books by Donald Menzel<sup>(19, 20, 21)</sup>, Philip Klass<sup>(22, 23, 24)</sup>, Robert Sheaffer<sup>(25)</sup> and Otto Billig.<sup>(26)</sup> Haven't these works established that "further extensive study probably cannot be justified in the expectation that science will be advanced thereby?"<sup>(2)</sup> Haven't they shown that there are no truly unexplainable reports?

These questions can best be answered after a study of some representative TRUFO reports. These reports provide a basis for understanding the claim that "something is really flying around."

#### TRUFOs BY THE DOZEN

"I have a little list...."<sup>(27)</sup>

In Table 1 I have listed about two dozen reports which I believe are a "challenge to science."<sup>(28)</sup> For each one there is enough information available to allow

for an explanation if an explanation were possible, yet there seems to be no reasonable explanation. I have chosen these out of the thousands available for a combination of reasons. One reason is the interesting nature of the reported phenomenon. A major reason for choosing some of them has been my own involvement in the investigations. I have directly investigated, either through "paper research" or through personal interviews with witnesses, several of the sightings (numbered 6, 7, 8, 9, 13, 19, 20, 21, 22, 23, 24, 25). Another reason is that a number of the sightings have been known for many years and have been critically discussed by several authors. Some have even been "explained," often in several different ways. I have learned how avid skeptics have treated the UFO problem by studying these "explanations." In particular, I have found that, at least for the sightings listed here, the explanations appear to be wrong or at the very least unconvincing. I have also selected these cases to "cover" modern UFO history and to illustrate the types of sightings which have been reported. Finally, I have chosen these cases for their high levels of physical detail and witness credibility, as compared to reports of distant lights seen at night and distant objects seen during the daytime without optical aids or to reports of abductions and

interactions with "ufonauts." I have chosen these reports because the witnesses appear not to have had any "axes to grind" in making the reports. Instead, they are ordinary people who have been involved in extraordinary events for short periods in their lives and then have reverted to ordinary behavior after the events. I have not included reports made by people who claim repeated contacts with or ascribe religious purposes to "ufonauts" (e.g., Adamski, Bethuram, Fry, etc.; see ref. 3).

Needless to say, this particular collection is not unique. Someone else who selects a limited number of sightings for detailed analysis might choose an entirely different set. For example, Dr. Thornton Page selected 16 cases for illustration in book *UFOs, A Scientific Debate*, which reported on the AAAS UFO meeting that was held in December, 1969<sup>(29)</sup>. There is no overlap between his selection and the list in Table 1. On the other hand, Ronald Story's selection of ten cases<sup>(30)</sup> does include several that are presented here (numbers 14, 16, 22 and 23).

The reports in Table 1 have been discussed at greater length in an unpublished paper that is over a hundred pages long<sup>(31)</sup>. Because of a lack of space less than a dozen are discussed in this paper (most of which are in the Appendix). Nevertheless these few

examples should suffice to illustrate that there are sightings with credible information reported by qualified observers and that skeptics have sometimes incorrectly applied methods of scientific analysis in order to provide explanations for some sightings. One may even infer, from the military sightings, that the U.S. Air Force still has an involvement with the UFO problem.

TABLE 1

## TRUFO REPORTS

DATE	TYPE OF SIGHTING	WITNESS(ES)
1) Apr., 1947	visual;theodolite	meteorologists
2) June 24, '47	visual from aircraft	private pilot
.....	visual from ground	prospector
3) July 8, '47	visual	MUROC Air Force Base employees and officers
4) July 8, '47	material recovered	farmers, A.F. Major
5) Apr. 24, '49	visual;theodolite	meteorologists
6) May 24, '49	visual Ames Research Lab.	engineers
7) Jan 22, '50	visual;radar	Navy pilots
8) Apr,May,'50	cinetheodolite films	Army missile scientists
9) May 11, '50	visual;photograph	farmers
10) Aug. 15, '50	visual;movie	manager/secretary
11) Oct. 10 & 11 1953	visual	Skyhook balloon scientists
12) May 5, '53	visual;optical effect	chemist
13) Aug. 29, '56	visual;photographic	Canadian AF pilot
14) Nov. 2-3'57	visual;effects on automobiles	multiple
15) Jan. 16, '58	visual;photographs	multiple (Trindade Is.)

- |     |                    |  |                                     |
|-----|--------------------|--|-------------------------------------|
| 16) | June 26-28<br>1959 | visual                                     | multiple<br>(Gill/Boainai Is.)      |
| 17) | Apr. 24, '64       | visual                                     | police officer (Zamorra)            |
| 18) | Oct. 21, '65       | visual; photo                              | deputy sheriff (Strauch)            |
| 19) | Aug. , '66         | visual                                     | Navy chemist, Navy pilot            |
| 20) | Apr. 17, '70       | visual                                     | elected official                    |
| 21) | July 27, '75       | visual                                     | Navy technical writer               |
| 22) | Sept.21, '76       | visual;radar                               | Iranian AF jet pilots               |
| 23) | Dec. 31, '78       | visual;radar;<br>movie film;tape recording | multiple witnesses<br>(New Zealand) |
| 24) | Aug. 9, '80        | visual                                     | security guards<br>(Kirtland AFB)   |
| 25) | Dec. 4, '81        | visual;photographic                        | multiple                            |



## DISCUSSION OF A REPORT AND THE EXPLANATIONS

"They were flat and flew like "pie plates skipping over the water" (Kenneth Arnold<sup>(2)</sup>)

Kenneth Arnold's sighting on June 24, 1947, was the first publicized sighting but it was not the first sighting recorded by the Air Force for the year 1947. The date of the first sighting was January 16; the location was over the North Sea. On that night, at 10:30 P.M., a British Mosquito aircraft chased an unidentified object for half an hour. According to the official report, "the unidentified aircraft appeared to take efficient, controlled evasive action." The British government did not report this incident to the U.S. (Army) Air Force until July because the Air Force had indicated no interest in such sightings until after Arnold's sighting. <sup>(32)</sup>

Several sightings were made during the first three months of 1947 by meteorologists in Richmond, Va. On four occasions, each time while tracking a weather balloon, a meteorologist saw a "strange metallic disc" fly past the balloon. The observations were made through a theodolite telescope. <sup>(14)</sup> During one sighting, in April, a "disc" was tracked for 15 seconds as it travelled from east to west on an apparently level track. To quote from the report, "The object was a

metallic-like-chrome, shaped something like an ellipse with a flat level bottom and a dome-like round top. The disk appeared to be below the balloon, was much larger (than the balloon) in (angular) size in the (field of view of the) theodolite and shined like silver." The balloon was at 15,000 ft at the time. The visibility was good with generally clear skies. This report was chosen by the writers of the Air Intelligence analysis<sup>'14'</sup> as one of the most important examples of good quality sightings from experienced observers.

These sightings, as with the British sighting, were not reported to the Air Force until July. The reason that the meteorologists did not report was that the observers thought they were seeing U.S. aircraft. However, in July the Air Force stated publically, with support by statements by famous scientists such as Vannevar Bush, Merle Tuve and David Lilienthal<sup>'3, 15'</sup>, that there were no U.S. experimental aircraft that could account for "flying disk" reports. When the meteorologists learned this from press reports they concluded "we must assume this strange object to be foreign" and submitted their report to the Air Force "for your information."

There were several other notable but unreported sightings before June 24, 1947. However, Arnold's

sighting alerted the nation to the fact that people were seeing strange objects flying around in the skies, and within days newspapers were reporting sightings made both before and after Arnold's sighting.

A careful study of Arnold's sighting is valuable for several reasons: it is the prototype of daylight sightings by aircraft pilots; it was the first publicized report and therefore could not have been made as a response to any publicity; it was made by a well-respected and credible observer (Arnold was a businessman with over 4000 hours of flying time); and finally, there are numerous published "explanations" which illustrate how skeptics deal with reports from credible observers. This latter reason is of particular interest to me since I have been particularly interested in studying the techniques used by skeptics to "explain" UFO reports.

Arnold's sighting report is summarized in a number of books (2, 3, 11, 14, 15, 19, 20, 21), although usually not very accurately. Therefore it will not be presented in its entirety here. However, certain statements, extracted from Arnold's written report to the Air Force (32), will be mentioned here as they are needed in order to evaluate the explanations that were offered.

Although numerous scientists, science writers and

laymen offered explanations, Dr. J. Allen Hynek and Dr. Donald Menzel had the most impact on the final evaluation of Arnold's sighting. Moreover, their explanations include all of the potentially valid suggestions offered by others. Therefore I will discuss only their explanations.

In 1947 the Air Force intelligence analysts decided that Arnold's sighting as unidentified, and it is listed as such in the Air Intelligence study<sup>(14)</sup>. Hynek analyzed the sighting during 1948 as part of his work for PROJECT SIGN<sup>(32,33)</sup> and pointed out an inconsistency in the report.

Arnold had claimed that he saw nine thin, semi-circular objects that flying on a southerly course. They "swerved in and out of the high mountain peaks," traveling one after the other in a line which Arnold estimated, by comparison with known mountain peaks, at about 5 miles long. They were 20 to 25 miles away at the time he saw them from his airplane and he thought that they were about the size of a jet fighter (45 to 50 ft). Arnold measured the time duration (using the the dashboard clock which had a second hand) from when the first object passed Mt. Rainier until the last object passed Mt. Adams, a distance of about 47 miles. It took 102 seconds. Arnold estimated their speed at over 1500

mph.

Hynek did a calculation based on the angular resolution of the eye (he assumed 3 minutes of arc) and concluded that if the objects had been 25 miles away they would have had to have been about 2000 ft long to be visible when they were seen edge-on. On the other hand, if they had been only 45 to 50 ft in size they could have been much closer (Hynek estimated 6 miles away) in which case their calculated speed could have been lower (400 mph). Based on this reasoning Hynek suggested that they were aircraft.

As a result of Hynek's discussion of the discrepancy between Arnold's estimates of the distance and size of the objects, the Air Force decided that "the entire report of this incident is replete with inconsistencies" and cannot bear even superficial examination" (from the Project GRUDGE Report). <32>

Evidently Hynek had failed to pay careful attention to Arnold's report, which states that the objects traveled very close to Mt. Rainier and close to the peaks of the mountains which form a chain lying between Mt. Rainier and Mt. Adams, which is slightly east of due south from Mt. Rainier. At the time of the sighting Arnold flying for two or three minutes eastward toward Yakima, Washington, from Mineral, Washington, which is

about 24 miles west-southwest of Mt. Rainier of Mt. Rainier. This fact unequivocally established the distance from his plane to the objects at about 20 miles at their closest to Arnold. A recent recalculation based on the actual distance and on a better estimate of the capabilities of the eye shows that the size of the objects was probably much closer to 300 ft than Hynek's estimate of 2000 ft.<sup>31</sup> The speed was actually about 1800 mph.

Hynek's work was done secretly for the Air Force. However, a few civilian scientists had access to Air Force files and one of these, Donald Menzel, decided to write about Arnold's sighting in his first book on UFOs<sup>19</sup>. He criticized the Air Force for accepting Hynek's explanation. He stated "Although what Arnold saw has remained a mystery until this day, 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).... serves to fix their distance and approximate size and roughly confirms Arnold's estimate of the speed." 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 Menzel may seem slightly convincing, but only until one realizes (a) that the sighting took place at 3:00 P.M. when the sun was high in the sky west of Arnold, (b) that snow cannot reflect light rays from the overhead sun into a horizontal direction "like a mirror," (c) that there are no 1800 mile winds on the surface of the earth to transport clouds of snow or to create an oscillating wave with a phase velocity 1800 mph, and (d) that there are no winds that would carry clouds of snow all the way from Mt. Rainier to Mt. Adams (Arnold saw the objects fly past Mt. Adams before they faded from view). Furthermore, if Menzel were correct, one wonders how Arnold could have failed to realize that he was seeing snow blowing from the mountain tops.

Menzel also offered a second possible explanation for the sighting: 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.<sup>19</sup> 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 "reflection" from an atmospheric layer when the sun is at a grazing angle (near the horizon). If so, then that explanation makes no sense since the sun was nearly directly overhead (and slightly behind Arnold) at the time of the sighting.

Menzel explained Arnold's sighting a third way in his second book (20). He suggested that the objects were actually mirages of the mountain tops. To support this explanation he presented a photograph of such mirages. Such mirages can be seen when the observer's line of sight is tilted no more than 1/2 a degree from the observer's horizon. Evidently Menzel overlooked the following information in Arnold's report: Arnold reported that the objects were, indeed, about at his height (he estimated their altitude at 9500 ft; his altitude was 9200 ft), but that he saw them silhouetted against the side of Mt. Rainier which is 14,400 ft high. Thus the objects were far below the location of any mirage of the top. Moreover, the angular elevation of the peak of Mt. Rainier from Arnold's location would have been over 2 degrees, far too great for a mirage. Of course, such mirages stay above the mountain peaks, so the mirage theory can't account for the high lateral speed reported by Arnold.



Menzel also suggested a fourth explanation: wave clouds in rapid motion<sup>(20)</sup>. This explanation was supported by a "sighting" and a photograph of such a cloud by a newspaper photographer. This explanation also fails to account for the bright reflections reported by Arnold, for the distinct shapes or for the high speed.

In his third and last UFO book, which is subtitled "The Definitive Explanation of the UFO Phenomenon," Menzel again discussed Arnold's sighting and offered yet a fifth explanation: Arnold saw water drops on the window of his aircraft.<sup>(21)</sup> To support this claim Menzel offered an account of a "sighting" of his own that turned out to be water drops condensed on the outside of the aircraft window. The water drops were so close to his eye that they were out of focus and he thought they were distant objects. They moved slowly along the window surface from front to back, given the illusion of distant objects moving at great speed... until he refocused his eyes and discovered what they were. In comparing his "sighting" with Arnold's Menzel states as follows: "I cannot, of course, say definitely that what Arnold saw were merely raindrops on the window of his 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."

Had Menzel bothered to reread Arnold's report before writing this "explanation" he, presumably, would not have proposed the water-drop explanation because he would have found Arnold's statement that he turned his plane sideways and viewed the objects through an open window.

Incidentally, the Air Force eventually decided that what Arnold saw was a mirage<sup>(32)</sup>. My own opinion is that he saw TRUFOS.

#### AN EXCESSIVE URGE TO EXPLAIN

Skeptics sometimes claim that an inner desire for "the unexplained" keeps UFO "proponents" from accepting reasonable explanations for sightings. No doubt this is at least partially true for some proponents. However, I have found that the reverse is also true: some skeptics are so desirous of explanations that they will gladly accept virtually almost explanation, even if it conflicts with the sighting report. The Arnold sighting is a case in point.

In reviewing Hynek's and Menzel's treatment of the "first" UFO sighting I was struck by two factors: (a) both men accepted Arnold's sincerity and considered him to be a credible, reasonably accurate witness; neither man thought Arnold's sighting was a hoax or a manifestation of some psychological problem; (b) both men made use of only certain parts of the information Arnold

supplied, those parts which tended to support their hypotheses; and (c), when one explanation seemed unconvincing, another was suggested. Specifically, Hynek accepted Arnold's estimate of the size of the objects, yet rejected the estimate of distance, even though the distance estimate was more likely to be correct since the objects flew near known landmarks (mountain peaks). Menzel, on the other hand, accepted the distance estimate, with the consequently large size of the objects and the high speed. He then conceived of explanations in terms of natural phenomena and either extrapolated the characteristics of those phenomena far beyond the known characteristics, or else he ignored certain details in Arnold's report when they didn't fit the explanation. For example, Menzel extrapolated the light-bending capability of a mirage far beyond what is known to occur. He ignored the fact that mountain top mirages remain over the mountain tops. He attributed near specular reflectivity to clouds and to dust layers in the atmosphere.

From comparing the explanations of this sighting with explanations of other sightings I have studied I have concluded that certain people have an excessive urge

to explain. They propose explanations which do not stand up to scrutiny. Yet, they are entirely serious when they claim that the sightings are explained. Furthermore, if one explanation is questioned they offer another. Menzel, in the Arnold case, offered five explanations in his three books when one should have been sufficient. It is as if some skeptics feel that the probability that a sighting can be explained increases with the number of explanations that can be proposed. Actually the probability is either independent of the number, or perhaps it even decreases as the number of explanations increases. I have often felt that when "experts" have offered several different explanations for a sighting that it probably has not been explained after all.

A number of sightings are described in the Appendix. The descriptions are based on information from a number of sources (ref. 35 through 60) and include discussions of that have been proposed explanations. They provide further illustrations of the types of well reported sightings that exist and of the attempts that have been made to explain such sightings. The reader will note that two skeptics in particular are mentioned several times (Menzel and Klass). This is not because I have chosen to narrow down on those two people, but because, unlike most skeptics, they have published their

explanations in books that are often referred to by scientists who are, more or less casually, looking into the subject. Furthermore, they have presented explicit, sometimes semi-quantitative, explanations that can be compared with the information available in the sighting reports, thereby allowing for a reasonably definite judgement as to whether or not their explanations are acceptable.

TRUFOS, "THE MODERN MYTH" (34)

Skeptical scientists have long argued that TRUFOS are not real; that they are a "modern myth." This argument is based, ultimately, on the claim that all sightings can be explained. Obviously that claim is not universally accepted (if it were this paper wouldn't exist). Why not? Where lies the problem with universal acceptance of the idea that all sightings can be explained?

As I see it the problem does not lie with the convincingly explained sightings. Nor does it lie with those sightings which have not been explained because of a lack of information (it is possible to decide when a report does not provide enough information about the phenomenon or about the circumstances under which the sighting took place). Instead, the problem lies with those well reported sightings for which some skeptical

scientists have proposed explanations that, after careful analysis, have been found to be wrong or simply unconvincing. Very often when wrong or unconvincing explanations are proposed for well reported sightings by credible observers, other scientists and educated laymen conclude that such sightings can't be explained.

#### SKEPTICAL OF THE SKEPTICS

Since "explanation" lies at the heart of science, skeptics have a fundamentally appealing argument when they claim that all sightings can be explained. Therefore a scientist who is just beginning a study of the UFO problem is likely to initially accept the skeptical point of view. This acceptance will lead the scientist, as it led me, to try to explain sightings.

I like explanations when they are convincing, and especially when they are correct. (Note: one cannot always know whether or not an explanation is correct, but one can know whether or not an explanation is convincing.) I like to make a UFO sighting "go away" as a result of a good explanation. I have provided a number of explanations myself for visual and also for photographic "sightings." I always begin a sighting investigation with the assumption it can be explained. Moreover, I always immediately start forming "candidate explanatory hypotheses" as soon as the data (sighting

information ) become available. These hypotheses help me formulate key questions which can identify the true nature of the reported phenomenon. Thus, I accept the general idea of trying to explaining UFO sightings, and, to that extent, I agree with the skeptics. It was only after a careful study of some published explanations, followed by my realization that the explanations just could not be correct, that I became skeptical of the skeptics.

FROM WHENCE COMETH....

If TRUFOS are real a lot of room for speculation is opened up. Although I tend to take the experimental approach and let the data "speak for themselves" (the UFO data have not spoken clearly yet), I will make some brief comments on theories which presume that at least some UFOs sightings have resulted from a phenomenon (or from phenomena) that is (are) inexplicable in terms of conventionally accepted phenomena.

Some theories suggest that some TRUFOS are hitherto unknown or not well understood natural *unintelligent* phenomena. For example, some sightings of odd lights might be sightings of ball lightning. <sup>(22,30)</sup> However, theories which attribute all unexplained sightings to natural phenomena must explain how natural unintelligent phenomena can look like "craft" or "machines" and can act

dynamically as if they were responding to human actions. Such theories also have difficulty explaining reports of "entities" or "ufonauts."

Other theories assume that some intelligence lies behind UFO reports. The intelligence could be either human or non-human. One "human intelligence" theory is that TRUFOS are a "secret development" of some government or secret organization.<sup>(30)</sup> This theory is not viable. Another such theory is that TRUFOS are psychological constructs within the witnesses. If this is so, then psychologists have a great deal of work ahead of them. This theory would have a difficult time explaining multiple witness sightings, landing trace sightings, photographic sightings and radar sightings.

(Psychologists who have studied the problem have decided that there must be real unknown physical phenomena underlying at least some of the sightings.<sup>(41,42)</sup>)

Still other theories tread a fine line between physical and psychological, suggesting "projections" into our time and space or into our minds.<sup>(30)</sup> (These theories have difficulties in explaining physical effects.)

The most widely known (I hesitate to say, popular) theory is the somewhat overemphasized Extraterrestrial Hypothesis or ETH.<sup>(30,43,44)</sup> This hypothesis is that



aliens from outside our solar system have figured out how to get "here" from "there" in spite of astronomical distances. The ETH has inspired a number of theories that could explain how "they" got here from there without violating known laws of space and time, as well as a number of theories which violate spacetime as we presently understand it. I do not intend to go into these other than to point out two things: (a) the most credible reports provide no evidence as to the origin(s) of the TRUFODs, and (b) arguments against brute force space travel (i.e., with rockets) are not arguments based on physical laws; instead, they are arguments based on presumed alien sociology or the desire of aliens to travel (e.g., if you have enough time and don't mind being cut off from your "roots" you can travel immense distances). The ETH has generally been ruled out by astronomers and others because of the large distances and physical limitations as we know them (the speed of light, for example).<sup>63,64</sup> This is a main reason why scientists have argued that UFO sightings cannot be evidence of alien "craft" and, consequently have paid little attention to the UFO phenomenon. On the other hand, it has been pointed out that this failure to take UFO reports seriously might actually lead us to overlook a real alien landing.<sup>65</sup>

For my part, I have tended to stay away from theories and concentrate on the "data." I feel that, ultimately, the data will stand or fall on their own merits, quite independently of which theory is popular at any particular time. I presume that once sufficient data are available it will be possible to determine "the answer" without resort to theoretical constructs (but I could be wrong on this; some physical data cannot be understood without resort to complex theoretical arguments).

#### CONCLUSION: FANTASY OR REALITY?

I believe that there are now and have been for many years sufficient data to answer the question of TRUFO reality. Since good reports by credible observers have been made, and continue to be made, the challenge to science is to prove that these sightings can be convincingly explained in conventional terms. This does not mean, as some critics have suggested, that scientists must explain *all* sightings. Explanations are needed only for those sightings which clearly have scientific merit and credibility. The ones discussed in this paper would be a good place to start. Finally, if convincing explanations are not forthcoming, the scientific community should admit it and begin to consider the implications of TRUFOs.

## APPENDIX

## TRUFO SIGHTINGS

This Appendix presents discussions of about a dozen incidents which appear to be sightings of TRUFODs.

Although some of the discussions are very brief, most of them include comments which help to place the sightings in their proper historical contexts. Also, wherever possible, explanations for the sightings are discussed.

## PROSPECTOR CONFIRMS ARNOLD'S SIGHTING

"I saw the same flying objects at the same time" (Fred Johnson <sup>(32)</sup>)

It is not generally known that a second witness very probably saw the same things Arnold did. Hynek evidently was not aware of this, as he indicated in his analysis of the Arnold sighting that there were no other witnesses. <sup>(32)</sup>

Arnold last saw the objects passing Mt. Adams and continuing in a south-southeasterly direction. The probable second witness was a prospector who was working at about a 5000 ft altitude near Mt. Adams in the Cascade Mountain chain. In the middle of the afternoon of June 24 he was startled by a reflection from the sky. He looked up and saw a number of shiny objects pass by at an altitude above him. He looked at one of them with a telescope for "45 to 60 seconds" and saw that it was a

round object "tapering sharply to a point in the head and an oval shape with a bright surface." He also noted that there was "an object in the tail end" that "looked like a big hand of a clock shifting from side to side." He thought that the speed was greater than anything he had ever seen. He heard no noise. He observed that while the objects were in sight the needle of his compass wavered from side to side. The waving stopped after the discs were out of sight. Several days later when he returned to Portland, Ore. and read of Arnold's sighting in a paper, he wrote to the Air Force and described his sighting "to add credence" to Arnold's story. The FBI subsequently interviewed him and concluded that he "appeared to be a very reliable individual." <32>

Aside from the apparent confirmation of Arnold's sighting, Johnson's sighting is unique as being the first to include a report of a physical effect during sighting (the apparent effect on the needle of his compass).

Menzel discussed Johnson's sighting and pointed out that it occurred on the same day as Arnold's. However, Menzel did not mention Johnson's claim that it took place at the same time in the afternoon, nor did he mention that Johnson was near Mt. Adams at the time. Thus the reader of his book would not have realized, as perhaps Menzel did not, that Johnson may well have sighted the

same objects. Menzel accepted Johnson's sighting as real, but explainable. After pointing out that Johnson observed the objects through his telescope for nearly a minute Menzel stated "The behavior of the saucers... is distinctive enough to label them as probably a true sighting. Bright reflections from patches of clouds were the most likely cause." One wonders how Menzel could seriously suggest that Johnson could fail to realize that the objects were merely clouds after viewing them for nearly a minute through a telescope.

Menzel also dismissed the wobbling compass effect, arguing that in his excitement Johnson was not able to hold the compass steady. This is essentially saying that Johnson, who had about forty years of prospecting experience at the time, would not realize that the compass would wobble if he didn't hold it steady.

Johnson's sighting is unique for a second reason. It is the first unexplained sighting in the Air Force file.

#### TRUFOS OR SKYHOOKS

"There is not a single reliable report of an observation (of a UFO) which is not attributable to the cosmic balloons." (Urner Liddel <3>)

The high altitude "Skyhook" balloon program began launching balloons in the fall of 1947. Because the

project was secret most people did not know about it until years later. In particular, people did not know about the great size (about 100 ft in diameter) or the extreme altitude (around 100,000 ft) of these balloons. These balloons could be seen with the naked eye during the day if the sky were clear and, in the morning or evening, these balloons could create bright colorful glints of sunlight in the sky. Their great altitude allowed the balloons to be illuminated by sunlight for quite a time before sunrise or after sunset. Because of these balloon characteristics Liddel probably would have been correct if he had claimed that *some* sightings by reliable observers were of high altitude balloons. However, he was not correct in saying that all reliable sightings were of these balloons because a number of reliable sightings were *made by the people who launched and tracked Skyhook balloons*. Consider, for example, the following "prototype" of such sightings.

Charles B. Moore and four Navy enlisted men were tracking a balloon near White Sands Proving Ground on April 24, 1949. Moore spotted a "whitish spherical object" which he, at first, thought was the balloon. It moved rapidly from a location near the balloon (from about 45° elevation by 210° azimuth), "through" the location of the sun (60° elevation and 127° azimuth) and

disappeared north-northeast of them ( $20^\circ$  to  $25^\circ$  azimuth). The minimum angular elevation was about  $25^\circ$  when the object was north-northeast of them and just before it disappeared in the distance the elevation increased to about  $29^\circ$ . The implication of this is that the object was rising upward as it disappeared. As seen through the theodolite telescope the object appeared as a whitish ellipsoid about  $0.02^\circ$  in maximum size with a 2:5 to 1 "slenderness ratio." When first seen the object was moving eastward at about  $5^\circ/\text{sec}$  relative to the observers. The total duration of the sighting was about 60 seconds. (36)

Fifteen minutes after the object had disappeared they launched another balloon which, after an 88 minute flight, burst at 93,000 ft altitude only about 13 miles south of them indicating very low speed generally southerly winds at all altitudes up to 93,000 ft. Moore concluded that the unidentified object was not a balloon. (36)

Menzel discussed this sighting in his first book and devoted a substantial portion of the appendix to a theory which he claimed could explain it. He assumed that a hemispherical "dent" in a temperature inversion layer would form an "inversion lens" in the atmosphere which could bend the light rays reflected from the balloon and

thus make it appear to be at a different location. <sup>(19)</sup>

In other words, even though the balloon was at a considerable angular elevation ( $45^\circ$ ) above the horizon, Menzel argued that Moore saw a mirage of the balloon. The occurrence of a mirage at such a high angular elevation seems theoretically impossible, but, if it occurred because of highly peculiar atmospheric conditions such as suggested by Menzel, then it would probably persist for only a very short time (seconds or less?) and the angular between the line of sight to the mirage and the line of sight to the actual balloon would be very small. According to Menzel's own calculations, "such a lens can produce a distorted image whose maximum displacement from the true direction of the object is on the order of  $0.25^\circ$ ."

In his book Menzel has included a sketch which is presented as a simplified diagram of the sighting. The diagram shows an observer looking upward through an inversion layer to the balloon. The inversion layer has a hemispherical depression, an "inversion lens," in it. Just below the real balloon is a distorted balloon image produced by the lens. The angle between the lines of sight to the real balloon and to the mirage image is small. Menzel nowhere states an actual value for the angle between the balloon and the UFO, thus leading the



reader to believe that the angle difference in the actual sighting was also small. Nowhere does he point out that the angle between the unidentified object and the balloon continually increased in time, going far, far beyond the  $0.25^\circ$  limit of his theory. (The maximum angular separation was about  $120^\circ$ .)

Dr. James McDonald discussed this sighting in his Congressional UFO Symposium paper <sup>37</sup> and took Menzel to task for proposing such a large atmospheric effect. He pointed out that astronomers are well aware that normal atmospheric refraction effects can "bend" starlight by only as much as several tens of seconds of arc, far less than  $0.25^\circ$ , which is 900 seconds. According to McDonald, "If the transmission properties of the earth's atmosphere were as anomalous as Menzel assumes in his handling of UFO observations, he and his colleagues (astronomers) would be out of business." <sup>37</sup>

Using the azimuth and elevation angle data it is possible to estimate the size of the object and its speed if the altitude is assumed. If it had been at the height of the balloon, about 90,000 ft, its largest dimension (length) would have been about 30 ft and its speed would have been about 8,000 ft/sec or over 5,000 mph.

Other sightings by balloon project personnel occurred several years later, on January 16, <sup>15</sup> October

10 and 11, 1951<sup>37</sup>.

#### TRUFO OR KITE?

"Object appeared round and shiny, something like a fifty-cent piece, viewed from below and to one side. Object's color was silvery and it appeared round in plan view... Just before Mr.... (name censored) handed the glasses to Mr. .... the object made a turn on its vertical axis with no tilting or banking..

The trailing edge of the object as it traveled appeared somewhat wrinkled and dirty looking."

(Rogue River sighting <30>)

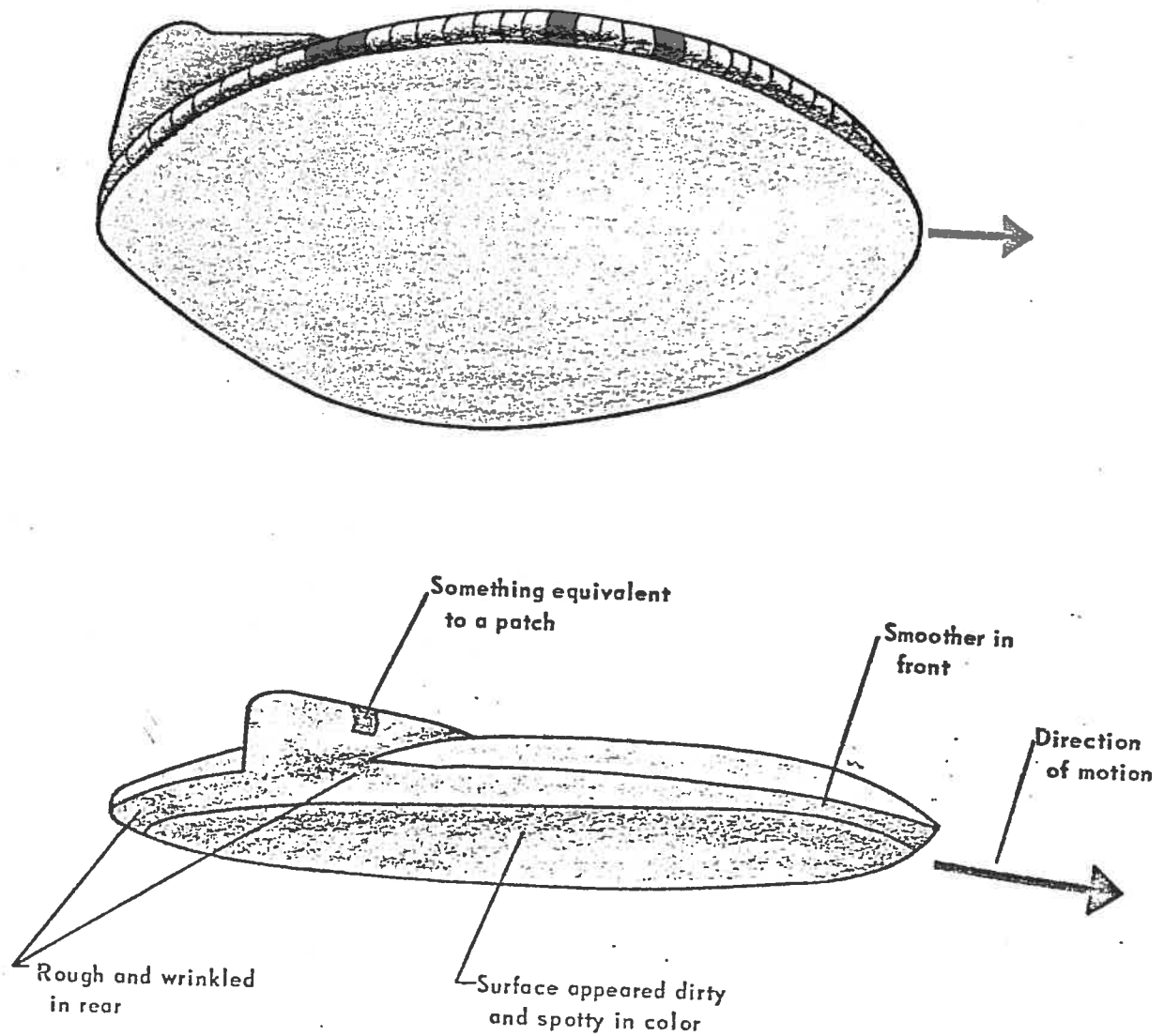
When you can see something well enough to gain an impression of the nature of its surface, then you can certainly see it well enough to gain an impression of its overall shape. This is a key point in my argument that the object sighted flying over the Rogue River on May 24, 1949 is a TRue UFO.

This was a multiple witness sighting involving five observers, three men and two women. All the observers saw the object with their naked eyes. Their descriptions of their naked eye views of the object indicate that it was shiny, round and flat. It appeared to be only a couple of miles away, about a mile high, and they heard no noise from it. Two of the observers were engineers

who worked at the Ames research laboratory, south of San Francisco, where jet engines were being developed. They each had about a minute apiece to look at the object through 8 power binoculars. They observed that it was pancake shaped with a sort of tail on the upper surface. They could see no antenna, no lights and no propellers. The object traveled in a southerly direction to a point east of the witnesses, stopped, turned on a vertical axis without tilting or banking, and then sped off in a southeasterly direction, "accelerating to the approximate speed of a jet plane." (38)

The Battelle scientists chose this sighting as one of the twelve best to occur between June 1947 and December 1952. They included a very brief, and slightly innaccurate, summary of the sighting along with two drawings of the object in Special Report #14. (5) Their summary and drawing are reproduced in Figure 1. They evidently chose this case because the observers were, as nearly as can be determined, thoroughly reliable. The two engineers reported their sighting to the Security Officer at Moffett Field. The Security Officer requested an investigation by Air Force intelligence. The investigation, which included interviews with all the witnesses, established the high degree of credibility of the witnesses. There is no evidence that this sighting

An employee in the supersonic laboratory of an aeronautical laboratory and some other employees of this lab, were by a river, 2-1/2 miles from its mouth, when they saw an object. The time was about 1700 hours on May 24, 1949. The object was reflecting sunlight when observed by naked eye. However, he then looked at it with 8-power binoculars, at which time there was no glare. (Did glasses have filter?) It was of metallic construction and was seen with good enough resolution to show that the skin was dirty. It moved off in horizontal flight at a gradually increasing rate of speed, until it seemed to approach the speed of a jet before it disappeared. No propulsion was apparent. Time of observation was 2-1/2 to 3 minutes.



(FROM PROJECT BLUE BOOK SPECIAL REPORT # 14)

was ever mentioned in the popular literature, indicating that the witnesses "kept silent" after informing the government.

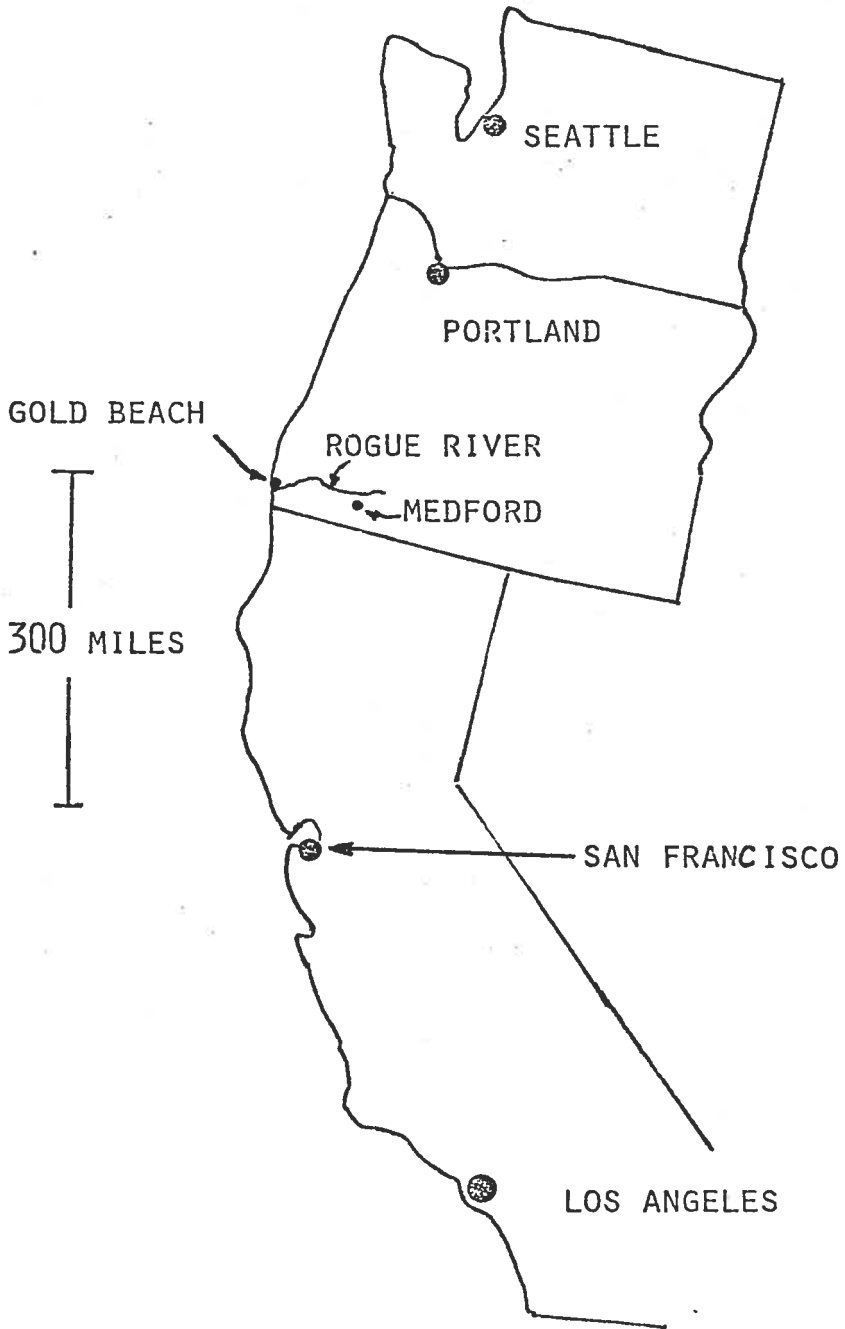
The only conventional explanation that was ever offered for this case was the suggestion that it might have been an errant radar "kite" launched from the San Francisco area. The Air Force accepted this suggestion as the official explanation for the sighting despite the clear difference in shape between the object and a radar kite (see Figure 2). <sup>(38)</sup>

The Battelle scientists did not accept the Air Force "explanation" because of the extreme difference in shape. I have found another reason to reject the kite hypothesis: the weather records show that the winds at all altitudes for the day of the sighting and the day preceding were blowing from the west to the east, and could not have carried a balloon from San Francisco about 300 miles northward to the Rogue River.

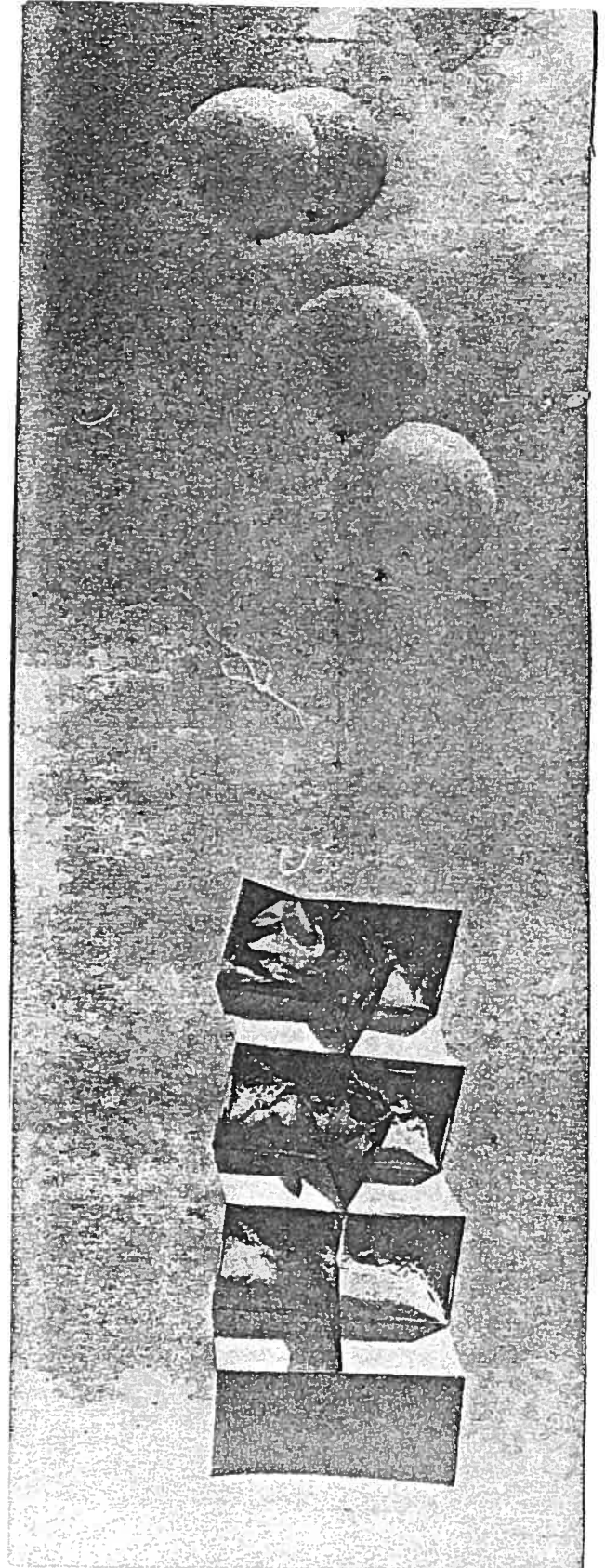
I agree with the Battelle scientists: this sighting remains unexplained.

FILM OF TRUFOS?

"Some photographic activity occurred on 27 April and 24 May, but simultaneous sightings by both cameras were not made so that no information was gained." (L. Elterman, Final Report on Project



GEOGRAPHICAL RELATIONSHIP BETWEEN GOLD BEACH AND SAN FRANCISCO



RADAR REFLECTOR AND BALLOONS ("KITE")

Twinkle<39>)

"Film from station P10 was read, resulting in azimuth and elevation angles recorded on four objects." (W. Mitchell, Mathematician, Data Reduction Unit<40>)

In December, 1948, a new wrinkle was added to the UFO phenomenon: green fireballs. These fireballs were observed on numerous occasions by security guards and other people in the vicinity of military restricted areas in the Southwest during the last month of 1948 and throughout 1949 and 1950. At a meeting at Kirtland Air Force Base, Albuquerque, N.M. in February, 1949, Fred Reines, Joseph Manley and Edward Teller of the Los Alamos Scientific Laboratory and several other scientists along with representatives from the Air Force Office of Special Investigations (AFOSI), the Army and the Atomic Energy Commission, heard Lincoln La Paz describe his investigation of the green fireball sightings. Dr. La Paz had specialized in retrieving meteorites by estimating their landing locations using observational data gathered from witness interviews. La Paz pointed out that despite excellent reports of sightings he had not been able to retrieve any meteorite after a green fireball sighting. He listed a number of reasons why these were not normal meteors (sightings localized in the

southwest, unusual green color, flat trajectory that ends with a slight drop, etc.) based on numerous observations including his own. Although there was no general conclusion that resulted from the February meeting, La Paz independently argued that the AFOSOI should investigate these sightings to determine whether or not they were missiles launched from Russia. In later analyses of sightings around military installations for the AFOSI La Paz also mentioned a "disk variation." (40)

In March 1950 the AFOSI decided to set up a project to photograph the green fireballs and any other unusual phenomena which might occur near the military installations near Holloman Air Force Base. The actual observations and photography were to be done by the Land-Air Corporation, the company which operated the cinetheodolite cameras during rocket launch tests, and by Air Force personnel.

Dr. Anthony Mirarchi of the Geophysics Research Division of the Air Force Cambridge Research Laboratory (AFCRL), Cambridge, Mass., took a special interest in these events. He visited Holloman AFB in June or July, 1950, and asked for a report on sightings that occurred in April and May of that year. (To the best of my knowledge the report he received is the only existing first-hand information on these sightings.) The report



stated that sightings had been made on April 27 and May 24 during morning daylight hours by Land-Air personnel "while engaged in tracking regular projects with Askania theodolites." The report continued "It has been reported that objects are sighted in some number; as many as eight have been visible at one time. The individuals making these sightings are professional observers. Therefore I would rate their reliability superior. In both cases photos were taken with Askantias." In commenting on the May 24 events the report reads "It was believed that triangulation could be effected ....because pictures were taken from two stations. The films were rapidly processed and examined by Data Reduction. However, it was determined that the sightings were made on two different objects and triangulation could not be effected." (My emphasis.)

Although the report to Mirarchi did not include any data on the May 24 sighting it did include the results of the analysis of the April 27 sighting. Shortly after a missile test someone spotted several unusual objects moving in the sky. Since the theodolites were connected by an intercom, several stations were instructed to try to get pictures. Unfortunately only one camera still had film in it (the others had been unloaded and the operators did not have to reload before the objects were

gone).<sup>41</sup> According to the report sent to Mirarchi the film was analyzed "resulting in azimuth and elevation angles recorded on four objects. In addition the size of the image on the film was recorded." There was also a single azimuth angle available from another station (but no film) making it possible to do a triangulation. The Data Reduction Unit concluded that the objects were at an altitude of about 150,000 ft over the Holloman mountain range, were about 30 ft in diameter and were traveling at a "undeterminable, yet high speed." (Note the similarity in the altitude and size of the object reported by C.B. Moore.)

Over a year later Dr. Louis Elterman referred to these and other sightings of 1950 in the Final Report of Project TWINKLE as follows:

"Some photographic activity occurred on 27 April and 24 May, but simultaneous sightings by both cameras were not made, so that no information was gained. On 30 August 1950, during a Bell aircraft missile launching, aerial phenomena were observed over Holloman Air Force Base by several individuals; however, neither Land-Air nor Project Personnel were notified and, therefore, no results were acquired. On 31 August 1950, the phenomena were again observed after a V-2 launching. Although much film was

expended, proper triangulation was not effected, so that again no information was acquired."

The repeated statements to the effect that nothing was learned are apparent. Perhaps Elterman was not aware of the Data Reduction Unit calculation that gave explicit height and size estimates for the April 27<sup>th</sup> sighting. Nevertheless, Elterman should have pointed out that, at the very least, the existence of some real, unexpected phenomenon had been proven by the repeated observations by many people.

In the conclusion to the report Elterman pointed out that "Many of the sightings are attributable to natural phenomena such as the flights of birds, planets, meteors, and possibly cloudiness." However, Elterman admitted that the "findings to date cannot be considered conclusive." Thus he left the door open to the possibility that something other than birds, etc., might be involved. Nevertheless, he recommended "no further fiscal expenditure be made in pursuing the problem." Thus ended Project TWINKLE. The data were all transferred to Geophysics Research division of the Air Force Cambridge Laboratory and, were subsequently forgotten.

The casual reader of Elterman's report would conclude that nothing of importance had occurred during

Project TWINKLE and that the few sightings that were recorded on film could be explained. Yet, on more careful analysis one finds that not to be true. Project TWINKLE was at least partially successful: instrumented, multiple witness sightings by project personnel of unidentified flying objects actually occurred several times. Unfortunately the cognizant scientists failed, or refused, to understand the importance of the sightings. Thus Project TWINKLE did not fail science; however the scientists did.

All right, AFCRL, where are those films?

A LOW FLYING TRUFO?

"....I could see the object pass the plane and cover an area about the size of the fuselage..."

(Navy chemist '42')

A chemist who, at the time of his sighting, worked at a Navy laboratory at Indian Head, Maryland, reported several years later that he had been involved in a multiple witness sighting. According to this man, on a date he couldn't remember in August, 1966, around 5:00 P.M. he and several others were standing outside talking when they were startled to see a "spherical metallic object streaking across the horizon" moving from south-southwest toward the north-northeast. In his written report he stated as follows:

"This object had no wings, no tail and no signs of jet or propellor motors. It appeared to look simply like a spherical aluminum or steel colored object traveling at a fast speed. My immediate impression was of a satellite moving through the atmosphere instead of space." <42>

He had the object in view for 15 to 20 seconds. During this time it passed beneath a jet passenger aircraft that was in its final landing pattern, approaching National Airport. The estimated height of the plane was 600 to 800 ft. The plane "was so close I could make out the fuselage, see the jet motors clearly and even see the windows of the plane." According to the chemist

"The mysterious object flew below the altitude of the plane. When it streaked past, my line of sight was such that I could see the object pass the plane and cover an area about the size of the fuselage from the wing forward."

One of the other witnesses was a Navy aviator. According to the chemist this man stated that "in all his flying time he had never seen such an object." <42>

#### BRIGHT LIGHTS IN THE DAYLIGHT SKY

On July 28, 1975 I learned of a sighting the previous day by an employee of the Navy laboratory where

I work. I immediately interviewed him and two days later visited him and his family at his home in Cheverly, MD where the sighting occurred. He and his family had seen two bright lights appear in the sky north of them at about noon on a clear, sunny day.

Cheverly is part of the densely populated northeastern suburb of Washington, D.C. The main witness, who is a technical writer, was reading the Sunday paper on his front porch when his young daughter called his attention to a bright light coming down from the blue sky. He got up from his chair and walked onto the front lawn to look at it. "It was descending in a very smooth and fluid motion similar to that of an object dropped by parachute. I was at once fascinated at this sight and began to observe the object with great interest. The sky was clear and the object was clearly visible against the field of blue sky. The brilliance of this object remained constant and in a few moments the object appeared to remain still in the sky."<sup>43</sup> By this time the angular elevation of the object had decreased to about 20° to 30°, as determined from subsequent measurements. "As my eyes were fixed on this object I was surprised and puzzled when I looked to the left of it and saw another object identical to the first." The two objects were now at the same angular elevation and

remained stationary for perhaps as long as a minute, according to an estimated based on a reenactment of the sighting. "The second object suddenly ascended in what appeared to be a left-to-right, right-to-left motion and then assumed a more direct vertical ascent and disappeared from sight in a few moments. Almost simultaneously the first object began to ascend upward into the sky and I watched it until it disappeared from sight." (43)

In commenting on his reaction to the sighting, the witness wrote:

"I have witnessed rockets being launched into space at Cape Canaveral and have observed these types of vehicles in the sky. I also have experience and familiarity with many types of military and commercial aircraft as well as balloons of different varieties. I must state that these objects did not appear as any of the above. My immediate reaction after seeing these objects was one of puzzlement which basically stemmed from their brightness in the sky and their motion and speed." (43)

The witness called his wife out just after the second object appeared. She looked for a short time but then went into the house to get sunglasses because her

eyes were not adapted to the bright glare of the sky. By the time she came back out the second-appearing object had already disappeared and the first-appearing object was ascending into the sky.

The main witness and his wife agreed that each object had a faint dark ring around it. The radius of the ring was about twice the radius of the bright central area. The main witness was given slide photographs of ordinary "bright" objects in the sky, i.e., airplanes, so that he could make a brightness comparison. He was emphatic that there was no comparison: the objects were the brightest things he had ever seen in the sky except the sun. He compared their brilliance to that of burning phosphorous. He also mentioned that the most surprising thing to him was the zig-zag departure path of the second object.

No reports of the lights were made to UFO organizations by other witnesses, although they may well have been observed by others. A check with local radar installations (National Airport, Andrews Air Force base) about two weeks after the event failed to turn up any information. These objects would have been within radar coverage, unless they were too low. The main witness estimated that the objects were visible for over three minutes. A reenactment of the sighting yielded 110 to



205 seconds, with the objects stationary most of the time. Although this time duration would have been sufficient for many radar detections, the radar would have been operating in the MTI (moving target indicator) mode which is used to remove ground clutter. When MTI is in use anything moving more slowly than some minimum speed is not displayed. According to the controller to whom I spoke, the minimum speed may have been as high as 50 or 60 mph.

Balloons, airplanes, helicopters, birds and kites were considered as possible explanations. However, each of these was found to conflict in more than one way with the characteristics of the objects, most notably the size (between 0.001 and 0.01 milliradians), the shape (round), the brilliance (like burning phosphorous), the presence of a faint circular dark ring around each and the flight dynamics (downward, hovering, zig-zag departure upward). The objects remain unidentified.

TRUFO OR BEACON?

..(if it is not a beacon, then) "an extraterrestrial craft had traversed interstellar distances to fish for squid in the waters of New Zealand." (Philip Klass '24')

The New Zealand multiple witness-radar-photographic sightings became public

knowledge with an unprecedented level of publicity. Although they occurred off the coast of New Zealand, they were discussed throughout the world and even were given about five minutes of time on the CBS Evening news on January 2, 1979. The reason for the publicity was that the witnesses included a TV news crew. Besides recording the events as they occurred, newsman Quentin Fogarty and cameraman David Crockett managed to obtain many feet of 16 mm color movie film of lights which the pilot and copilot claimed they had never seen in the area before. The news crew also learned of ground radar detections and even witnessed an apparent airplane radar detection of a bright object that appeared to be traveling along with them. After the sightings were over Fogarty's employer, an Australian TV station, without any investigation, but only taking the air crew's word for it, went public with the claim that Fogarty had filmed UFOs... interpreted, of course, as interplanetary craft, in spite of the fact that there was no evidence for such a claim. The Australian TV station sold a half hour documentary of the events. The documentary caused quite a bit of confusion because the tape recorded descriptions of the events were not synchronized with the film and a portion of the film that was shown had been taken when the camera was defocused.

Reaction from the scientific community was immediate. Published explanations included Venus, Jupiter, stars, "unburned meteorites" (from Bernard Lovell), reflections from flocks of birds, lighted squid boats, drug smugglers, and hoax. After several days the TV station realized it was losing its credibility and made a public promise to have the sightings investigated. As a result of a quirk of fate, I was asked to do the investigation. After a three month investigation that included analysis of the film and interviews with the witnesses in New Zealand and Australia I concluded that at least three distinct sections of the film showed lights that, in my opinion, could not be identified with known sources. In the subsequent years since the spring of 1979 I have repeatedly reviewed the data and analysis and have found no reason to change my opinion.

The complete story of the New Zealand sightings and the aftermath can be found in references 44 and 45. Technical papers have been published on one portion of the sighting (46,47,48). The skeptical viewpoint has been presented in several publications, 24,25,49. A response to these is presented in reference 31. For the purposes of this discussion I will pick only one incident from the sightings and will discuss only the photographic evidence. The reason for picking this incident is that

one skeptic<sup>24</sup> has claimed to have explained the film in a way which violates optical physics.

The particular section of the film which is discussed here shows images that oscillate at a regular rate of about once per second from very bright (overexposed) to dim. Within several of the frames there is a small triangular cluster of images consisting of an orange "dot" over two red "dots." Although these dim triangular cluster images are interesting in themselves, to simplify the argument I will discuss only the brightest images.

The brightest (and largest) images have "pure" white overexposed centers that are surrounded by a highly exposed pale yellow or pale orange region. The centers of the brightest images on this color reversal film have a film density only a few hundredths larger than the clear leader density. Outside the very bright images the film appears black, i.e., unexposed.

Klass<sup>24</sup> has suggested that these oscillating images were made by light from the red anti-collision beacon at the top of the aircraft.<sup>50</sup> This suggestion was made because the rotation rate of the beacon was, to within "experimental error," the same as the oscillation frequency of the pulsating light. Of course the cameraman could not photograph the beacon directly from

inside the cockpit. Therefore Klass has suggested that light was reflected off a propellor blade and into the camera lens. It seems hardly likely that the cameraman would have, or even could have<sup>(51)</sup>, filmed a propellor. However, assuming that might be possible, the question becomes this: can a red light make white overexposed images without leaving any "trace" of red?

It is well known that overexposure can change the color of an image. The New Zealand film provides direct evidence of this effect. Several sections of the film show red landing field lights that are overexposed. The film even shows overexposed images of the anti-collision beacon at the top of the aircraft. The cameraman obtained the images by filming the aircraft from a location about a hundred feet away while the aircraft was on the ground. This occurred several hours before any of the sightings. The film proves that an overexposed image of the red beacon has a circular pale yellow central area (the area of maximum overexposure) which is surrounded by a red "fringe" that extends outward away from edge of the yellow area. Independent tests have proved that this is a general effect and have verified a general explanation for it.<sup>(52)</sup>

The bright images made by the unknown light are not surrounded by a red fringe; in fact, they are not

surrounded by any fringe at all. Thus the bright images were not made by filming the red anticollision beacon, or of any red light. The source of the light remains unidentified.

#### THE AIR FORCE TANGLES WITH TRUFOS

"...after driving closer he observed a round, disk shaped object.... the object he observed was not a helicopter." (Air Force Office of Special Investigations Report of a "CR 44" related incident<sup>54</sup>)

According to the official Air Force Fact Sheet<sup>55</sup> "With the termination of Project BLUE BOOK, the Air Force regulation establishing and controlling the program for investigating and analyzing UFOs was rescinded." Also according to the fact sheet "no UFO reported, investigated and evaluated by the Air Force has ever given any indication of threat to our national security." Project BLUE BOOK was closed in 1969. According to this Fact Sheet the Air Force no longer investigates sightings. However, at least one intelligence arm of the Air Force does investigate UFO sightings, as was recently discovered in a document that was formally released (after a Freedom of Information Act request) in 1983.<sup>53</sup> According the document from Kirtland Air Force Base (Albuquerque, NM), ".... the USAF

no longer investigates (UFO) sightings unless they occur on a USAF base."

The fact that the Air Force still investigates sightings has not been generally acknowledged by the Air Force because this would imply that some investigating group still exists. However, the existence of a group which investigates is completely consistent with information found in a document that was released in 1979. The document addressed the problem of what to do with UFO reports after Project BLUE BOOK ended. <sup>(56)</sup> It began by outlining the reporting procedure for UFO report while BLUE BOOK was operating. According to the memorandum "reports of unidentified objects which could affect national security... are not part of the BLUE BOOK system." This suggests that really important reports didn't go to BLUE BOOK. Referring to the method for handling reports after the end of BLUE BOOK General Bolender, the author, wrote, "reports of UFOs which could affect national security would continue to be handled through the standard Air Force procedures designed for this purpose."

The claim by the Air Force that "no UFO.... has ever given any indication of threat to our national security" seems to be contradicted by several official Air Force reports of UFOs. One could consider, for example, the

UFOI overflights of the Strategic Air Command bases in the fall of 1975<sup>57, 58</sup>, the Iranian Jet sightings<sup>59</sup> and the Kirtland Air Force Base landing<sup>54</sup>.

The SAC base overflights involved intruders over restricted air spaces near and above nuclear missile site. Some of the events were designated "suspicious unknown air activity" and in some cases the intruders were referred to as helicopters, apparently because of their ability to hover and because of some associated noise. However, chases by other helicopters or jet aircraft failed to identify the intruders. One of many incidents in October and November, 1975, occurred at Malmstrom Air Force Base in Montana. At 2:15 A.M. local time, Nov. 8, 1975, missile site guards and security alert personnel reported that a large bright light was hovering as low as 200 ft over a missile sight. Jets were scrambled. According to the guards the light went out when jets approached the area. The jets failed to make "contact" and flew past. After the jets had passed the light came back on when the jet went by. Then about 40 minutes later the object increased in speed and ascended into the sky and disappeared. Another incident occurred at Minot Air Force Base in South Dakota, at 4:25 A.M. on Nov. 10, 1975. As in the previous incident, the UFO sighting was reported to the NORAD command director.



According to the report "a bright, star like object" was seen in the west moving toward the east, i.e., toward the base. It was "about the size of a car" and it "passed over the radar station (at an altitude of) 1,000 to 2000 ft.... no noise was heard." (57, 58)

The Iranian Jet incident involved two F-4 jets piloted by Iranian Air Force pilots. These pilots chased a large bright, multicolored object in the vicinity Tehran in the very early morning hours of Sept. 19, 1976. The incident began when the air traffic controller at Mehreb主 Airport in Tehran received several phone calls from people in Tehran about a strange object flying over the northeast portion of the city. The controller went outside to look for himself. Through binoculars he observed, northeast of his position, a "rectangular shape about five miles away at a height of about 6000 ft" implying an angular elevation of about  $13^\circ$ . According to the controller when he first saw the light "The right end was blue, the left end was blue and in the middle was a red flashing light." (59). The object subsequently moved around the northern Tehran area and changed color and apparent shape.

The controller knew there were no low flying aircraft in the area so he called the Iranian Air Force. A General who lived in Tehran was contacted and he looked

for himself. He confirmed the sighting and ordered a jet to be scrambled from Shahroki Air Base about a hundred miles away. By this time the lighted object had increased in altitude. The jet flew at a speed of around 1300 nautical miles (nm) per hour but couldn't catch up with the object. However, it did approach to a distance of about 25 nm, at which time it lost all communications including internal (intercom) communication. Running low on fuel, the pilot returned to the base. The General scrambled a second jet and it, too, could not catch the object. As it approached the radar system locked onto the object at a distance of about 27 nm. The rate of closure device ("VC") indicated an approach rate of about 150 nm/hr, indicating that the object was traveling only about 150 nm/hr more slowly than the jet. Then, at a distance of about 25 nm, about 50 seconds after radar lock-on, "the object moved away at a speed that was visible on the radar scope and stayed at 25 nm. The size of the return was comparable to that of a 707 tanker." Subsequently the object released a smaller bright object that headed toward the jet and the pilot decided to launch a heat seeking (AIM-9) missile. But at that instant his weapons control panel went off and he lost all communications including his internal intercom (which connects the pilot and copilot). The pilot turned the

plane away from the chase and then regained communications and all control systems. The smaller bright object then rejoined the main bright object. '59'

Klass '24' has argued that this Iranian sighting resulted from a combination of several factors: (a) the failure of the citizens who called the airport to realize that they were seeing Jupiter or some other celestial body, (b) the failure of both the air traffic controller and the General to realize that they were looking at the planet Jupiter or some other celestial body, (c) the failure of the pilots to realize they were chasing Jupiter or some other bright celestial body, (d) poor maintenance of the aircraft electronic systems. However, for the following reasons (and for other reasons as well) this explanation appears to be completely at odds with the available information '59': (a) at the time of the first calls Jupiter would have been behind the high mountains that partially encircle Tehran, (b) the sighting direction from the control tower to the object changed numerous times, beginning with northeast and ending with south, (c) according to the controller the planes chased the object not only in the eastward direction but also in other directions as the object moved around rapidly, (d) the descriptions of the object given by the controller and the pilots is difficult to

reconcile with a celestial body, and (e) the electronic systems failed only temporarily and the failures appeared to be associated with the proximity of the aircraft to the object; the systems "repaired themselves" after the aircraft turned away from the chase.

The third example which contradicts the public Air Force statement that no UFO has ever given an indication of being a threat to national security is the landing at Kirtland Air Force base just after midnight, August 9, 1980. According to the document (S2) three guards of the Manzano Weapons Storage area (a fenced in area in which nuclear devices are stored) saw a bright light performing "strange aerial maneuvers (stop and go)." The light descended into a restricted test area in the Coyote Canyon several miles east of them. They called Central Security which, in turn, contacted Sandia Security (of the Sandia National Laboratory, which is also at Kirtland Air Force Base). Sandia had a security guard in the area on routine patrol. About one-half an hour after the three Manzano guards had seen the object descend into Coyote Canyon the Sandia guard

"was driving east on the Coyote Canyon access road on a routine building check of an alarmed structure. As he approached the structure he observed a bright light near the ground behind the structure. He also

observed an object he thought at first was a helicopter. But after driving closer, he observed a round disk shaped object. He attempted to radio for a back up patrol but his radio would not work. As he approached the object on foot armed with a shotgun, the object took off in a vertical direction at a high rate of speed. The guard was a former helicopter mechanic in the U.S. Army and stated that the object he observed was not a helicopter." <54>

The three Manzano guards saw the "light take off and leave proceeding straight up." The alarmed structures within the restricted area contain devices related to nuclear weapons.

Because of the important implications of the event described in the document I tried to carry out an independent investigation. However, I was prevented from personally investigating by the Air Force Office of Special Investigations and Sandia Security. Nevertheless, I interviewed the agent who wrote the document, Richard Doty. He confirmed to me several times that he had personally investigated and he vouched for the complete accuracy of the document. <60> He also indicated that there was more information (a follow-on document) but I was not able to obtain any further information from AFOSI headquarters.

It appears that the unauthorized landing of some object in a military restricted area was a real event. Therefore, because the landing took place near a building that houses nuclear weapon related devices, it potentially was a threat to our national security.

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would fail to explain a sighting would increase as the number of errors in a report increased or as the amount of information about the phenomenon decreased. On a statistical basis one would expect that reports with more than an average amount information from witnesses with a greater than average reliability, i.e., the "best reports," would contain more than the average amount of reliable information about the sighted phenomena, *and thus would be more likely to be explained*, than would reports with less than the average amount of information from witnesses with less than the average level of reliability (the "worst reports"). If, in such a statistical study, it is found that a larger fraction of the best reports remains unexplained than of the worst reports, then this can be attributed to either an increase in errors within the best reports, as compared to the worst reports, or to truly unexplainable phenomena that are described in the reports and that are more likely to be recognized as such in the best reports than in the worst reports.

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50.) Ref. 24, pgs. 254 and 255. The author has incorrectly stated that the color of the anti-aircraft beacon is red-orange. Actually the beacon is "pure" red.

51.) The cameraman was very probably looking forward, as were the others, at an unusual flashing light that had appeared. The shape and size of the cockpit would have made it very difficult, and perhaps impossible, for the cameraman to film one of the propellers without displacing with the copilot or the pilot from his seat. No such displacement occurred, however.

52.) A study of this effect using color reversal (slide) film under controlled conditions has shown that the outer diameter of the yellowish area is usually as large as or larger than the geometric size of the image (i.e., the image size created by simple geometric imaging of the camera). The red fringe extends far beyond the geometric

size of the image. The red fringe is created by red light which impinges on the overexposed area and then diffuses sideways within the film. As it diffuses sideways the light intensity decreases, and, by the time it has diffused beyond the boundary of the central yellowish area, the intensity of the light is low enough to create proper exposure of the film, i.e., a red image. Thus the image of an overexposed red light consists of a pale yellowish center surrounded by a red fringe, the width of which depends upon the intensity of the light.

53.) Other explanations that have been offered for this section of the film include (a) a chance alignment of ground level marine navigation beacons, (b) a beacon on another aircraft, (c) a reflection of lights inside the cockpit, (d) a specific beacon in Wellington Harbor, (e) an astronomical source (not Venus) affected by atmospheric scintillation, (f) a ground-level emergency vehicle and (g) earthquake lights. All of these have been carefully considered and none of them has been found to be satisfactory.

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