

THREE MINUTES IN
JUNE



the UFO sighting
that changed the world

Bruce Maccabee, Ph.D.

Three Minutes in June

The UFO Sighting That Changed the World

By Bruce Maccabee

Richard Dolan Press
2017



Richard Dolan Press
Rochester, New York 14619
USA

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Library of Congress Cataloging-in-Publication Data

Maccabee, Bruce

Three Minutes in June / by Bruce Maccabee

141 p. cm.

ISBN-13: 978-1547130054

1. Unidentified Flying Objects

2. History.

I. Maccabee, Bruce. II. Title

First published in the United States by Richard Dolan Press

Manufactured in the United States of America

First Printing: June 2017

Also by Bruce Maccabee

The FBI-CIA-UFO Connection

Abduction in My Family

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Kenneth Arnold, shortly after his famous UFO sighting of June 24, 1947.

Prologue

Three minutes. Not a long time, but long enough for a flight of strange

objects to convey a message to humanity.

The message?

You are not alone.

Strange objects flying through the sky have been seen by numerous people during the preceding centuries but the people have not fully understood or appreciated the message.

It was left to one man who realized that the flight was evidence of a phenomenon far beyond anything known to him. The existence of this technology conveyed the message and, even though he did not fully understand it, he told his friends and they told the worldwide news media and before long many people knew of the message, and some believed it was true and many didn't.

But then the message was given to dozens, hundreds, thousands even millions of people the world over and eventually people began to understand that we are not alone.

Introduction

Unidentified Flying Objects are real. Most reports of UFOs result from failures by the witnesses to recognize known phenomena; they are explainable. However some of them are not and some of those that are not explainable are Alien Flying Craft (AFC), devices not made by mankind but rather by Non-Human Intelligences (NHIs).

This I learned from some 50 years of studying UFO sightings. It is easy to arrive at this conclusion after a short (i.e. several months to several years) study of UFO-related literature combined with sighting case investigation. It is not as easy to prove to everyone's satisfaction that this conclusion is correct, at least so I thought until I studied and analyzed the first widely reported sighting. Then I discovered that this sighting by itself, when fully understood, has all the evidence that is needed to prove my conclusion.

This book is unique in that it presents a detailed analysis of the information contained in the first widely publicized flying saucer report, a depth of analysis not presented in other books. If you have ever wondered what this "flying saucer stuff" is all about or why anyone would spend time studying

sightings of UFOs, you should read the following analysis and discussion of the first sighting to garner public interest.

* * *

Scientists, philosophers and theologians have, for centuries, offered their opinions that there were other, non-human intelligent creatures in the universe, perhaps on the Moon or Mars or Venus or that there are other inhabited planets orbiting distant suns or even unseen non-human creatures living here on the earth. However, none of them had any convincing evidence to prove their speculations.

Then, during a three minute period of time in the middle of the afternoon of June 24, 1947, the answer was provided when a successful businessman, who also was the pilot of a small airplane, saw nine strange objects fly in front of him. He realized that these objects were evidence of a technology far beyond anything with which he was familiar. Eventually he realized that the existence of these objects proved that there are non-human, intelligent creatures flying around the Earth.

Of course, he didn't think of this as an explanation for the objects until some time after the sighting was over. His immediate thought during the sighting was that they were an incredible new type of aircraft invented by the (Army) Air Force or perhaps the Soviets in Russia. The three minutes that they were in sight had given him enough time to carefully observe the unusual way they flew and their odd shape. It also gave him enough time to do something no other person had done: he made measurements during the sighting. The results of his measurements made him confident that he had seen something completely unusual and certainly not any familiar type of aircraft. He told his friends and they told the press and the story was reported around the world.

Ever since then people have tried to identify the objects he saw as mundane, explainable objects or "phenomena." However, careful analysis, based on the high quality of the observations made during this sighting, has shown that the objects couldn't be explained as anything other than flying objects not made by mankind! In other words, when properly analyzed, as demonstrated in great detail below, the witness' testimony leads us to conclude that we are not alone and that some of the hundreds or thousands of unexplainable sightings that occurred afterward and even up to the present

day confirm this discovery.

Chapter 1 - Summary of the Sighting

A detailed analysis of the sighting is presented below. Here is a relatively brief summary for readers not familiar with it.

Kenneth Arnold, successful businessman and private pilot with several thousand hours of flying time in the mountains of the northwest United States, was not expecting to see anything unusual as he was flying eastward in his small airplane.

He was near Mineral, Washington, at an altitude of about 9,200 ft, and about 23 miles west-southwest of the peak of Mt. Rainier, a 14,400 ft high volcano in the state of Washington. The weather was perfect for flying, the air was not turbulent and the sky was clear.

He was startled by a flash of light on his airplane. It was so intense that it briefly lit up the cockpit. He scanned the clear sky looking for the source of the flash and then he saw them. They were at his left, far north of him and traveling southward over the state of Washington. Each one would repeatedly flash a bright light, which is what attracted his attention.

For three minutes in the middle of the afternoon of June 24, 1947, he watched as nine shiny, almost circular objects zipped through the sky at such a high speed that he was astonished. He wondered what they might be. It bothered him that, no matter how hard he stared at them, he could see none of the standard features of an airplane, namely wings, fuselage, tail wings, vertical stabilizer and engine(s). He also was astonished at the way they flew, tilting rapidly, left and right, somewhat like a flat plate skipping on water. "They must be new design of Air Force aircraft," he said to himself. They seemed to be traveling at an incredible speed. "How fast are they going?" he wondered. Then he did something that most people would not have thought to do during a surprise event such as this. What he did is what made this sighting so important that his report was news around the world: he decided to measure their speed!

He could see that, if they continued their travel in a roughly straight track, they would pass by Mt. Rainier and then pass by another large mountain, Mt.

Adams, about 50 miles south. He knew that he could use his airplane dashboard clock to time the passage and then, from the known distance between mountains, he could calculate the speed. So, he decided to take the chance that the objects would fly straight southward. As they passed Mt. Rainier he looked at the clock and he then watched carefully as these things traveled toward Mt. Adams. He could see where they were by the light flashes. He looked at the clock again as the flashes passed Mt. Adams.

He was astounded: a minute and 42 seconds, or a mere 102 seconds! A crude calculation of speed gave him a number he could not believe: over 1,700 mph, more than 1,000 mph faster than any airplane known to him. "I must have done something wrong," he thought. "Perhaps I overestimated the distance between mountains."



Mt. Rainier (foreground) with Mt. Adams in the distance to the left. Mt. St. Helens is farther back on the right. Photo by Dllu - Wikimedia Commons

After he landed he used a map to determine the distance between the mountains. Then he redid the calculation several times and each time came up with an unbelievable speed. He told his friends at the airport and they, too, were astonished at the speed and decided that the objects must be new high speed aircraft or missiles. His friends alerted the press and the next day the world learned about these astounding things that didn't look like airplanes, traveled faster than any airplane and flew with a wobbling, skipping motion similar to that of a thrown saucer skipping on a flat body of water. The press

used Arnold's description of how they flew as a name for the craft, and that is how the term *flying saucer* came to be.

It was Kenneth Arnold who had discovered them. All the sightings that followed were merely confirmation.

Chapter 2 - Reaction to Arnold's Sighting

With this sighting the human race was put on notice: someone else is here. Arnold's report and the hundreds that followed during the following several weeks were initially treated seriously by the news media and the Air Force. However, after the Air Force denied responsibility for the sightings and rejected the suggestion that the Russian Air Force was responsible and because of the failure of anyone to provide conclusive evidence in the form of hardware, the news media and the populace in general began to treat the reports as mistakes (failures by witnesses to correctly identify objects) by honest people, hoaxes or tall tales by dishonest people.[\[1\]](#)

Sightings of flying saucers have affected the lives of tens or hundreds of thousands of people the world over. So, why haven't conventional history textbooks mentioned Arnold's sighting and others? They haven't mentioned his sighting because the subject of flying saucers or Alien Flying Craft (AFC) has been considered to be largely nonsense. Even though no one has yet offered an explanation that is convincing, credible and prosaic (based on known phenomena) for this first publicized sighting, it has been tacitly assumed by the majority of the academic community, the community most likely to write history books, that Arnold's sighting (and the tens or hundreds of thousands of others since his) has been explained.

This assumption by conventional historians is based on the fact that proposed explanations for Arnold's sighting, and for the other sightings, were widely publicized by the press, skeptical scientists and the U.S. Air Force. Historians, not having the necessary training in physical and perceptual sciences, could not properly evaluate these explanations and therefore assumed they were correct or probably correct. Basically, they simply quoted explanations offered by authorities and didn't attempt to determine whether or

not the explanations made any sense. The failure of the Air Force or any other government agency or group of people to present conclusive proof or hard evidence (such as pieces of a saucer, aliens, dead or alive) meant that there was no compelling reason to question the explanations and so the explanations carried the day, and the day after that, and the day after that. More than seventy years later these bogus explanations prevent June 24, 1947 from taking its rightful place in history. It is my intent in this book to show how the explanations have failed leaving Arnold's sighting as (the first) conclusive proof of the existence of AFC. In doing so, I hope to justify the inclusion of Arnold's three minute sighting on this day in future history books.

Chapter 3 - Pre-History

Unknown to most of human society, during the spring of 1947 strange things were happening. Oddly shaped objects flying through the skies were seen by a few people. They didn't look like any type of flying craft made by mankind. They did not have aerodynamic shape, yet they traveled at high speed. The sightings were miracles of a sort, anomalous events with no explanation. They were a preview of coming events. The sightings were portentous occurrences, heralding the dawn of a new era, but the pre-Arnold witnesses did not know this. All the witnesses knew was that they had seen something strange. Probably some new development of the Air Force, they thought. The general population was amazed by the rapid technological developments during the recent war (e.g., new weapons, radar, atomic bomb) so people were not surprised when they saw something they had not seen before. They marveled at the sightings but they didn't tell anyone and soon after they forgot about them. It is possible that these sightings would have been lost in their distant memories, absent from history, if it hadn't been for the publicity surrounding Arnold's sighting and his speed calculation. The witnesses would read Arnold's report in their local paper, recall their own sighting and then report it to the local paper.

What follows is a short list of pre-Arnold sightings that were reported in newspapers or reported to the U.S. Air Force (USAF) after the publication of Arnold's sighting.

In January, 1947 a British Mosquito fighter aircraft chased an unknown flying object for half an hour off the coast of Britain.

In April, in Richmond, Virginia, meteorologists saw round silvery objects fly past the meteorological balloons they were tracking.

In May a pilot saw a huge, shiny, disk-shaped object fly at a high speed and high altitude over him (he was on the ground at the time) without making any noise.

During the same month, seven employees of a railroad in Colorado watched a strange object perform strange maneuvers for several minutes. It looked metallic and it made no sound.

Near the end of May, a doctor who was fishing in South Carolina saw four discs which appeared to be spinning as they flew nearly over his head at a high rate of speed. They made no sound. There were a few other sightings in May and then the sighting rate began to increase in June.

The post-Arnold newspaper reports compiled in Reference 1 (Bloecher) are known to be an underestimate of the true number of sightings, but at least they give us an idea of what happened so long ago. According to Bloecher there was approximately one sighting every other day for the first half of the June. These were scattered over the midwest and western United States. Then the sighting rate doubled to about 2 per day until June 20. Bloecher found 3 sightings for June 20, two for June 21, three on June 22, six on June 23, and then the explosion: Bloecher found 20 reports on June 24! These were mostly in the far northwestern states of Washington, Oregon and Idaho. Sightings were scattered throughout the day from morning to night. After the 24th the sighting rate stayed at about 10 per day or higher, with sightings occurring not just in the west but throughout the country. In early July the sighting rate climbed beyond 20 per day to 88 sightings on July 4, 76 on July 5, 156 on July 6, 159 on July 7, and a whopping 189 on July 8. After that it dropped quickly back to 20 per day and then only a few per day. By the end of July the sighting rate was about one per day and by August it was down to several per week. (During this several week period newspapers reported a few sightings in other countries as well.)

What had happened? Had the American people undergone a summertime silly season? Was there something in the air that made people see things that were not there? If you looked at the major national press for that period you would get the impression that the citizens of the United States had been spooked by some odd phenomenon which had burst upon the country with

great speed and fury and had departed just as suddenly. After the 1947 flap was over there was no hard evidence—at least none available to the general public—to prove that any of the reported objects were real, i.e., solid, metallic objects. There were only stories and a few disputed photos. During the flap and afterward the U.S. government vehemently denied responsibility for any sightings and furthermore the Army Air Force claimed that a search for evidence of unusual flying craft had produced nothing. By early July explanations were running rampant and by late July the subject was being forgotten by all but the witnesses themselves, the Air Force, and the FBI.[2]

As explained above, during the first several weeks of the 1947, flap the press had a generally positive attitude toward the sightings. There was a feeling that something had really been seen and there were two acceptable theories: advanced U.S. aircraft or enemy (Soviet) aircraft. But then the USAF denied having any such aircraft and it became apparent that the Soviets would be foolish to fly any advanced aircraft over the United States (they might crash and we would learn their secrets from studying the debris). Some people toyed with the idea that the saucers were interplanetary, but the scientific community rejected that idea because the distance between stars is so great that “they can’t get here from there” and also because there was no corroborating evidence. Therefore, with little support for the reality of saucers, the press became hostile to the idea that they were real flying craft. Instead, saucer sightings were explained in newspapers and magazine as delusions, moles in the eye, reflections off distant aircraft, ice meteors (!), misidentified natural phenomena, atmospheric effects such as strangely shaped clouds or mirages, and hoaxes (of which there were a number) or just plain tall stories by people wanting notoriety. By the middle of July, the press began to embarrass witnesses by ridiculing their reports. New witnesses just decided to shut up. Even Mr. Arnold told the press that he would not report anything else he might see.

Of course, the subject of flying saucers did not die with the end of the this sighting period. It just went underground, so to speak, only to pop up again and again in one form or another as sightings ebbed and flowed through the years following 1947. And, as students of the subject well know, the Air Force did not forget the sightings. For years there was a publicly known Air Force effort to collect and analyze sightings (projects called Sign, Grudge, and Blue Book). During Project Grudge the Air Force investigators tackled Kenneth Arnold’s sighting. In December, 1949, they publicly claimed to have

explained the sighting (they had not). This claim was enough to remove Arnold's sighting from consideration by historians. From then on the reasoning went something like this: if the first major report of what appears to be a new phenomenon turns out to be faulty and explainable, then it is probable that any other similar reports are also faulty and explainable. And, by extending this logic to the many other sightings that followed Arnold's, the Air Force was able to claim that they all were explained and so the whole subject was rejected by conventional science, the press and the historians.

However, as the following discussion shows, what was faulty was not Arnold's sighting. What was faulty was the reasoning which led to various incorrect explanations.

Chapter 4 - Analytical History of Arnold's Sighting

4.1 Basic Analytic Technique

This sighting and the reaction to it is a microcosm of what has happened with sightings ever since. First, a witness(es) presents his/her/their story (sighting report) as clearly as possible. The report (history of the sighting) includes information about the conditions of the sighting (how it happened, location, weather, etc. any type of information that could affect the analysis of the sighting). Then investigators discuss whether the report can be accepted as at least reasonably accurate and self-consistent. Finally, they discuss whether or not the described object (or phenomenon) can be explained in terms of known objects (or phenomena).

The discussion over whether or not a particular sighting can be explained generally proceeds as follows: someone suggests a "Proposed Explanation" (PE). This explanation is characterized by certain salient features, herein called "Details of the Proposed Explanation" (DPE). Similarly, the sighting report is characterized by certain features herein called "Details of the Sighting Report" (DSR). The extraction of important characterizing details from the sighting report is valid only if the sighting details are of high quality, i.e., the details described in sighting report must be clearly reported, reasonably accurate and self-consistent. The details of the proposed explanation, DPE, are then compared with the corresponding reported details

of the sighting DSR. If there are DPE that don't agree with the corresponding DSR then the PE is rejected. Another explanation can be proposed and tested by having its DPE compared to the DSR. This process of testing as many proposed explanations as it makes sense to test is normal science in action. If no reasonable PE is found the sighting may be considered unexplainable and, if the details of the observed object so suggest, the object may be classified as possibly an AFC. This PE testing process is amply illustrated in great detail in the following discussion where I have, for convenience, labeled the various important details contained in the sighting report.

4.2 The Sources of Information

Summaries of Arnold's sighting report have been published in a number of books (references 1, 2, 3, 4, 5, 6, 7, 8, 9, 10) including his own (ref. 11). Unfortunately these books leave out some of the details that must be known in order to properly evaluate (and reject) the explanations that have been proposed. I do not reproduce his complete sighting report (the letter to the USAF, ref. 12). However, I do present most of the information in that report so that the reader will have a good understanding of what Arnold reported.

Appendix 1 contains a transcript of what was apparently the first radio interview of Mr. Arnold. This presents a very brief overview of the sighting as recalled the day afterward. I present it in the appendix to show that his basic story had not changed over the several weeks between the sighting and when he wrote a letter to the Air Force, in which he presented his most detailed recollections of his sighting.

What follows is a complete history of the sighting. I have added numerous comments that supply additional information and contain discussions of the importance and likely accuracy of what Arnold has said. Basically, the information provided in the sighting report has been broken into parts so that each part can be analyzed by itself to determine the probability of it being true and accurate and as to its importance to the sighting as a whole.

4.3 What He Was Doing Before the Sighting

According to Mr. Arnold, at 2:00 p.m., June 24, 1947 he took off from Chehalis, in the state of Washington, in his small plane after completing a business trip. He sold and installed fire control equipment and used a small plane to travel the considerable distances between customers. He planned to spend about an hour searching for a lost C-46 Marine transport plane that had

crashed in the mountains on the south-western flank of Mt. Rainier. (There was a \$5,000 reward for finding the plane.) After searching until just before 3:00 p.m. and not finding anything he turned east toward his next destination, Yakima, Washington. When the sighting began he was near Mineral, Washington, about 22 miles west-southwest of Mt. Rainier, and Yakima was about 80 miles east of him along a flight path that would take him just about 12 miles south of the peak of Mt. Rainier.

After climbing to about 9,200 ft altitude he leveled out onto his new flight path and the sighting began within a minute or two later.

4.4 The Sighting Begins

The following are Kenneth Arnold's own words supplemented by the author's commentary. Sentences and paragraphs taken from Arnold's letter to the Air Force (ref. 12) are preceded by (Arnold's letter), while statements from his book (ref. 11) are preceded by (Arnold's book). As you read the following story please keep in mind that this is history. It actually happened!

* * *

(Arnold's Letter) *"The air was so smooth that day that it was a real pleasure flying and, as most pilots do, when the air is smooth and they are flying at a higher altitude, I trimmed out my airplane in the direction of Yakima, which was almost directly east of my position and simply sat in my plane observing the sky and terrain. There was a DC-4 to the left and to the rear of me approximately fifteen miles distance, and I should judge, at 14,000 ft. elevation. The sky and air was as clear as crystal."*

(Arnold's book) *"It was during this search [for the crashed military plane] and while making a turn of 180 degrees over Mineral, Washington, at approximately 9,200 ft altitude, that a tremendously bright flash lit up the surfaces of my aircraft."*

(Arnold's letter) *"I hadn't flown more than two or three minutes on my course [eastward toward Yakima] when a bright flash of light reflected on my airplane. It startled me as I thought I was too close to some other aircraft."*

Note that in his book, written about four years after the event, Arnold puts the initial flash during the turn toward the east, whereas in the letter to the Air Force written several weeks after the sighting, see below, he indicates that he had completed the turn before he saw the first flash. The time was about 3:00

p.m. and the sun was just slightly to the southwest of being directly overhead. [3] The general geometry of this sighting is illustrated in the following diagram. The objects traveled almost due south along a path that took them just west of Mt. Rainier. Their travel path from far to the north of Mt. Rainier to far south of Rainier was nearly perpendicular to Arnold's planned eastward flight route. They were closest to Arnold and directly ahead of him shortly after they passed Mt. Rainier. Not shown is the track of the plane during the short time (several minutes?) that he flew southward parallel to the track of the objects (see below).

It is important to notice how Arnold's attention was first drawn to the presence of strange flying objects because his initial observation, to have occurred as he reported, would require an extremely bright light source to produce a noticeable increase in the light intensity on his airplane in broad daylight. Arnold thought the objects reflected the sun. This first Detail of the Sighting Report (DSR1), the extreme brightness of the flashes, is very important and is further discussed below.

(Arnold's book) *"I spent the next twenty to thirty seconds urgently searching the sky all around—to the sides and above and below me in an attempt to determine where the flash of light had come from. The only actual plane I saw was a DC-4 far to my left and rear, apparently on its San Francisco to Seattle run. My momentary explanation to myself was that some lieutenant in a P-51 had given me a buzz job across my nose and that it was sun reflecting off his wings as he passed that had caused the flash. Before I had time to collect my thoughts or to find a close aircraft, the flash happened again. This time I caught the direction from which it had come. I observed, far to my left and to the north, a formation of very bright objects coming from the vicinity of Mt. Baker, flying very close to the mountain tops and traveling at tremendous speed."*

(Arnold's letter) *"I observed a chain of nine peculiar looking aircraft flying from north to south at approximately 9,500 ft elevation and going, seemingly, in a definite direction of about 170 degrees."*

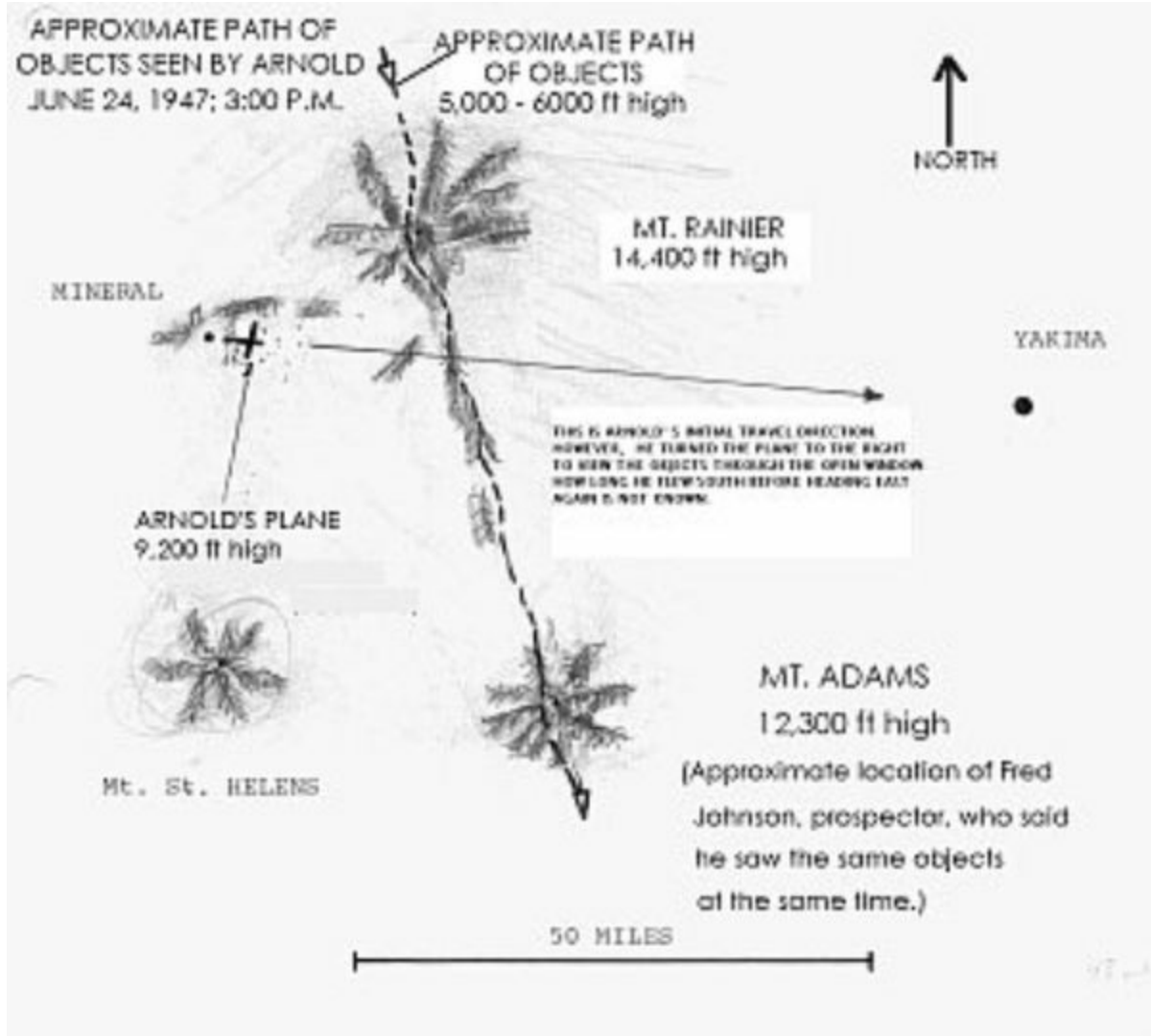
Mt. Baker (altitude, 10,000 ft) is about 130 miles north of Mt. Rainier. Arnold reported that they appeared to be "in the vicinity" of Mt. Baker when

he first saw them. However, considering the apparent brightness of the flashes, much brighter than the sky brightness in order to be seen at a great distance, one may consider it more probable that they were in the approximate direction of Mt. Baker, but much closer than Mt. Baker. Even if the objects were not as far away as Mt. Baker, the flashes must have been very, very bright to be visible over a great distance in full sunlight.

Note that if the path of the objects as estimated by Arnold, 170 degrees azimuth, is projected northward from Mt. Rainier, his sighting line to Mt. Baker crosses the projected path about 50 miles from his plane, which is a more likely distance for his initial observation of the flashes.

Arnold referred to these flashes in the following manner. From his book, as “a tremendously bright flash (that) lit up the surfaces of my aircraft.” In his letter to the Air Force, he wrote: “I hadn't flown more than two or three minutes on my course [eastward toward Yakima] when a bright flash of light reflected on my airplane. It startled me as I thought I was too close to some other aircraft.” In his lecture many years later at the UFO Congress, he described it as:

“a tremendous flash [that] appeared in the sky and . . . at it lit up my whole aircraft, even, it seemed, the cockpit of the airplane and I was rather startled. . . . And then the flash came again and this very, very bright flash, it was almost like an arc light.”



His initial impression was that the flashes were sunlight reflected from the upper surfaces of the objects. In thinking over the sighting in the following days, however, he became more and more convinced that the objects were not only reflecting sunlight but were also emitting the bright, blue-white flashes that he compared to a welder's arc. However, it is shown in Appendix 4 that sunlight reflections from mirror-like surfaces of the size and distance of the objects would not be bright enough to be noticed as flashes of light on the airplane surfaces.

4.5 Description: No Wings, Tails or Engines

(Arnold's book) *"At first I couldn't make out their shapes as they were still at a distance of over a hundred miles. [4] I could see that the formation was going to fly in front of me, as it was flying at approximately 170 degrees. I*

watched as these objects approached the snow border of Mt. Rainier, all the time thinking to myself that I was observing a whole formation of jets. In group count that I have used in counting cattle and game from the air, they numbered nine. They were flying diagonally in echelon formation with a larger gap in their echelon between the first four and last five. What startled me most at this point was the fact that I could not find any tails on them. I felt sure that, being jets, they had tails, but figured they must be camouflaged in some way so that my eyesight could not perceive them. I knew that the Air Force was very artful in the knowledge and use of camouflage. I observed the objects' outlines plainly as they flipped and flashed against the snow and also against the sky."

(Arnold's letter) "Anyhow, I discovered that this was where the reflection had come from, as two or three of them every few seconds would dip or change course slightly, just enough for the sun to strike them at an angle that reflected brightly on my plane."

Arnold estimated that there were nine objects flying in a diagonal echelon formation and grouped as 4 in front and 5 in the rear. He was surprised to find that, in spite of concentrating his attention, he could see no tails (DSR2) nor wings (DSR3) nor vertical stabilizer (DSR4) nor engines (DSR5).

4.6 Beginning the Timing of the Flight Between Points

(Arnold's book) "Since this formation of craft was at almost right angles to me and was traveling north to south I was in an excellent position to clock their speed. I determined to make an attempt to do so."

(Arnold's letter) "I had two definite points I could clock them by. (Note: by this he means Mt. Rainier and Mt. Adams, about 50 miles to the south). The air was so clear that it was very easy to see the objects and determine their approximate shape and size at almost fifty miles that day. I remember distinctly that my sweep second hand on my eight day clock, which is located on the instrument panel, read one minute to 3 p.m. as the first object of this formation passed the southern edge of Mt. Rainier."

"Now, clocking speeds by only your sweep second hand cannot be entirely accurate because several seconds could be lost in breaking your gaze to observe your clock. I recall that when the first craft of this formation jetted to the southward from the snow-based cleft of Mt. Rainier my second hand was

approaching the top of my hour dial and the time was within a few seconds of one minute of three.”

“I watched these objects with great interest as I had never before observed airplanes flying so close to the mountain tops, flying directly south to southeast down the hog’s back of a mountain range. I would estimate their elevation could have varied a thousand feet one way or the other up or down, but they were pretty much on the horizon to me which would indicate that they were near the same elevation as me. They flew like many times I have observed geese to fly in a rather diagonal chain-like line as if they were linked together. They seemed to hold a definite direction but rather swerved in and out of the high mountain peaks. I could quite accurately determine their pathway due to the fact that there were several high peaks a little this side of them as well as higher peaks on the other side of their pathway.”

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As to the authenticity of my story or a phantom contribution
as to my capabilities, I have received no interest from these two important
protective forces of our country; I will go so far as to state that any
report I gave to the United and Associated Press and over the radio on two
different occasions which apparently set the nation buzzing, if our military
intelligence was not aware of what I observed, they would be the very first
people that I could expect as visitors.

I have received lots of requests from people who told me to make a lot
of wild guesses. I have based what I have written here in this article on
positive facts and as far as guessing what it was I observed, it is just as
much a mystery to me as it is to the rest of the world.

My pilot's license is [redacted]. I fly a Cessna airplane; it is a three-
place single engine land ship that is designed and manufactured at Afton,
Wyoming as an extremely high performance, high altitude airplane that was
made for mountain work. The national certificate of my plane is [redacted]

1st [redacted]
[redacted]
Boise, Idaho.

travelling this way →



They seemed longer than wide, their
thickness was about 1/20th of their w

side view

travelling this way →

Horror Strips

They did not appear to be to whirl or spin but seemed in fixed position,
travelling as I have made drawing

UNCLASSIFIED [redacted]

Copy of Arnold's report showing his impression of the shape: mostly circular but with a convex triangular rear (DSR6).

These statements about how they flew near the mountain peaks are very important details of the sighting (DSR7) because they provide information on the distance from Mr. Arnold. These mountain peaks lie along a wide north-south line extending southward from Mt. Rainier to Mt. Adams. These peaks were about 20 miles east of Arnold at the time. These statements also provide the altitude of the objects. To Arnold they appeared to be approximately at his altitude because they seemed to be "pretty much on the horizon to me." Since he was flying at 9,200 ft, this implies that they were close to that altitude. (Arnold actually stated in his letter that he thought that they were at 9,500 ft.) However, the mountain peaks south of Rainier generally are 5,000 to 7,000 ft high, with the higher ones being farther away (more to the east) from Arnold. Hence his statement that there were higher peaks on the far side of the pathway indicates that the objects were definitely lower than about 7,000 ft. Furthermore, he stated that they went behind some (or at least one) of the lower, closer peaks such as Pyramid Peak (7,000 ft). Geological survey maps show that mountain peaks which the objects could have disappeared behind have altitudes of 5,000 to 7,000 ft. Hence it appears that they were lower than 7,000 ft and that Arnold overestimated their altitude.^[5] Instead, he clearly said he could see them silhouetted against the snow of Mt. Rainier. Hence Arnold's testimony indicates that their path was west of Rainier.

Is it reasonable to assume that he could have made an error of several thousand feet in estimating their altitude? The answer to this question lies in the fact that Arnold inferred the altitude by observing that the objects appeared to be almost exactly on his horizon (i.e., level with his altitude). But it is very difficult to determine the exact horizon from an airplane. In this case, the angle (the "depression angle") between exact horizontal (horizon at 9,200 ft) and his downward sighting line to the mountain peaks south of Mt. Rainier was very small. The depression angle from Arnold's plane at 9,200 ft altitude to the top of a 6,000 ft high mountain at a distance of 20 miles (105,600 ft) was a little smaller than 2 degrees. Such a small depression angle would be difficult to detect from an airplane. So the answer is yes, he could easily have made an error of 3,200 ft in estimating the altitude of the objects. Perhaps if he had looked up the actual altitudes of the mountain peaks south of Mt Rainier he would have revised his statement. On the other hand, if the objects had been at 9,500 or so feet they would have been clearly above the

tops of the mountains south of Mt. Rainier and one wonders why Arnold would have said that they appeared to “swerve(d) in and out of the high mountain peaks.”

4.7 Formation and “Skipping Saucer” Flight Dynamics

While Arnold was timing the flight he observed the objects carefully.

(Arnold’s letter) *“I observed these objects not only through the glass of my airplane but turned my airplane sideways where I could open my window and observe them with a completely unobstructed view. (Without sun glasses.)”*

Arnold turned his plane “sideways” (DSR8) and opened his window (DSR9). He was sitting in the pilot’s seat at the left side of the plane and slid open the left side window and turned the plane to the right about 90 degrees. He did this so he could eliminate any effects of the plexiglass window on his view of the objects. It is important to note that at this time he was traveling southward, same direction as the objects (DSR10)

(Arnold’s book) *“I was fascinated by this formation of aircraft. They didn’t fly like any aircraft I had ever seen before. In the first place their echelon formation was backward from that practiced by our Air Force. The elevation of the first craft was greater than that of the last. They flew in a definite formation but erratically. As I described them at the time their flight was like speed boats on rough water or similar to the tail of a Chinese kite that I once saw blowing in the wind. Or maybe it would be best to describe their flight characteristics as very similar to a formation of geese, in a rather diagonal chain-like line, as if they were linked together. As I put it to newsmen in Pendleton, Oregon, they flew like a saucer would if you skipped it across the water.”*

Herein lies the origin of the term *flying saucer*. It wasn’t intended to describe the exact shape of an object but rather the way they rocked back and forth as would a disc or saucer skipping across the surface of water. (DSR11)

(Arnold’s book) *“Another characteristic of these aircraft that made a tremendous impression on me was how they fluttered and sailed, tipping their wings alternately and emitting those very bright blue-white flashes from their surfaces. At the time I did not get the impression that the flashes were emitted by them, but rather that it was the sun’s reflection from the extremely highly*

polished surface of their wings.”

He again comments on the brightness of the “blue-white flashes” and his thought at the time that they were not emitting the flashes but, rather, reflecting the sun as they tilted back and forth. However, his description here as blue-white and elsewhere [see Appendix 3] as “almost like an arc light,” which is extremely bright and bluish (indicating a very high temperature),^[6] suggests that the flashes were not solar reflections, but were actually light emitted from the objects. This is discussed more in Appendix 4 wherein it is shown by conventional optical analysis that the flashes probably were not reflections of sunlight.

(Arnold’s letter) “What kept bothering me as I watched them flip and flash in the sun right along their path was the fact that I couldn’t make out any tail on them, and I am sure that any pilot would justify more than a second look at such a plane. The more I observed these objects the more upset I became, as I am accustomed and familiar with most all objects flying whether I am close to the ground or at higher altitude. Even though two minutes seems like a very short time to one on the ground, in the air in two minutes time a pilot can observe a great many things and anything within his sight of vision probably as many as fifty or sixty times. Of course, when the sun reflected from one or two or three of these units, they appeared to be completely round; but, I am making a drawing to the best of my ability, which I am including, as to the shape I observed these objects to be as they passed the snow covered ridges as well as Mt. Rainier.”

His failure to find any recognizable features of the objects disturbed him greatly and caused him to pay close attention to what was happening. The length of the sighting gave him time to check and recheck his observations. His comment about seeing the shape when they were tilted by some amount but “when the sun reflected they appeared to be completely round” is consistent with looking at the sun reflection from a flat reflective surface as the reflected beam is swept across one’s eyes. When the center of the beam is pointed directly at the eyes of the observer, and the observer is “on axis,” the observer is dazzled by the brightness and the shape seems round (and “spikey”) regardless of the actual shape (round, square, rectangular, oblong, etc.) However, when the center of the beam is a short distance from the eyes

of an observer that is slightly off axis, the observer sees a bright but non-dazzling glow from the mirror that has the shape of the mirror. This can be confirmed by experiment with a flat mirror on a sunny day.

(Arnold's letter) *"When the objects were flying approximately straight and level, they were just a black thin line and when they flipped was the only time I could get a judgement as to their size. These objects were holding an almost constant elevation; they did not seem to be going up or coming down, such as would be the case of artillery shells. I am convinced in my own mind that they were some type of airplane, even though they didn't conform with the many aspects of the conventional types of planes I know."*

In his letter Arnold included a sketch which shows the leading edge being nearly a semicircle, with short parallel sides and with the rear being a wide angle convex (protruding) V shape that comes to a rounded point at the trailing edge.^[7] He wrote on the sketch that "they seemed longer than wide, their thickness was about 1/20th of their width." His suggestion that their width (or length) was about twenty times greater than their thickness may be an exaggeration. The sketch he drew of how they appeared on edge has the dimensions 4 mm wide by 45 mm long (approx.) which suggests a ratio closer to 1/11. Although he did not mention it in his letter, he later stated in his book that one of the objects had a somewhat different shape. His book shows an illustration in which the object has a semi-circular front edge and a rear edge that consists of two concave edges that join at a rearward pointing cusp at the center of the rear edge. See below (DSR12).

4.8 The Size of the Objects

(Arnold's letter) *"I knew they must be very large to observe their shape at that distance, even on as clear a day as it was that Tuesday. In fact I compared a dzus fastener or cowling tool I had in my pocket - holding it up on them and holding it up on the DC-4 - that I could observe at quite a distance to my left, and they seemed smaller than the DC-4; but I should judge their span would have been as wide as the furthest engines on each side of the DC-4."*

"I observed the chain of these objects passing another snow-covered ridge in between Mt. Rainier and Mt. Adams, and as the first one was passing the south crest of this ridge the last object was entering the northern crest of the

ridge. As I was flying in the direction of this particular ridge, I measured it and found it to be approximately five miles so I could safely assume that the chain of these saucer like objects were at least five miles long.”

(Arnold’s book) “Even though they held a constant direction they swerved in and out of the high mountain peaks which are found on the hogback of the Cascade mountains between Mount Rainier and Mount Adams. I determined my distance from their pathway to be in the vicinity of 23 miles because I knew where I was and they revealed their true position by disappearing from my sight momentarily behind a jagged peak that juts out from the base of Mt. Rainier proper. Considering that I was flying all this time in the direction of their formation, the determination can be only approximate, but it is not too far off.”

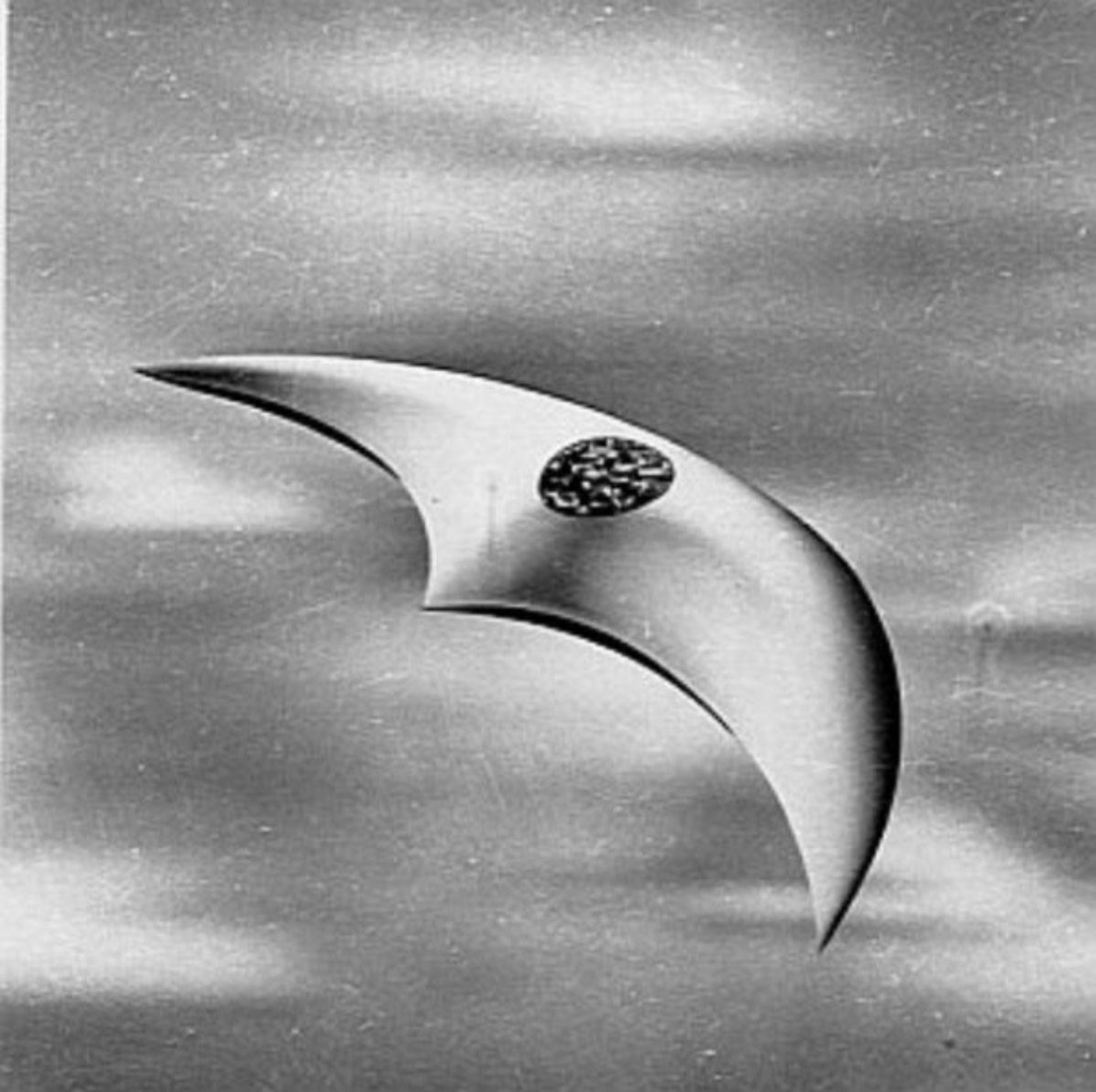


Illustration of the what Arnold believed one of the craft he saw looked like.

“Between Mount Rainier and Mount Adams there is a very high plateau with quite definite north and south edges. Part of this chain-like formation traveled above this plateau toward Mount Adams, while part of the formation actually dipped below the near edge. As the first unit of these craft cleared the southernmost edge of this background, the last of the formation was just entering the northern edge. I later flew over this plateau in my plane and came to a close approximation that this whole formation of craft, whatever they were, formed a chain in the neighborhood of five miles long.”

According to Arnold, they “swerved in and out of the high mountain peaks” and some of the lower objects “actually dipped below the near edge” of a plateau that is south of Mt. Rainier confirming that they were far from the plane. This established an estimated distance of 20-25 miles (DSR13) when closest to the plane. This distance, when combined with the “angular size” measurement of the DC-4 he saw northwest of him, can be used to calculate an actual size in the following way.

He used the angular size of a dzus fastener held at some distance from his eyes as a reference for angular size and thereby determined that the front-to-back size of the objects appeared to be comparable to the spacing of the engines on a DC-4 (four-engine propeller driven, 117 ft wingspan, 94 ft length, 27 ft height) which he estimated to be 15 miles away. He estimated the engine spacing to be 45-50 ft, although 60 ft would have been a better estimate. (DRS14)

It is possible to make an estimate of the front-to-back size of the objects assuming his estimate of the distance to the DC-4, 15 miles, was (approximately) correct. Using the outer engine spacing as about 60 ft, the angular size at his estimated distance is $60 / (15 \times 5280) = 0.00076$ radians (DSR15) or about 2.6 minutes of arc (1 degree = 60 minutes = 0.0174 radians). Projecting this angle to the 20 mile estimated minimum distance to the objects, yields a size of about $(20 \times 5280 \times 0.00076 =)$ 80 ft (DSR16). Had he overestimated the distance to the DC-4 (if it had been less than 15 miles away) the calculated angular size, and hence the calculated object size would increase. If he underestimated the distance to the DC-4, then the calculated size of the objects would decrease. My own suspicion is that he overestimated the distance and that therefore the objects were larger than 80 ft in length. Unfortunately no investigator pursued this size estimate at the time and with Arnold’s death many years ago it is no longer possible to improve the size estimate.

4.9 Measuring the Speed

(Arnold’s book) *“As the last of this group of objects sped past and seemed to gather altitude at a point beyond the southernmost crest of Mount Adams, I glanced at the sweep second hand of my instrument clock. As closely as I could determine, this strange formation of aircraft had covered the distance between Mount Rainier and Mount Adams to the south in one minute and forty-two seconds.”*

(Arnold's letter) *“As the last unit of this formation passed the southernmost high snow covered crest of Mt. Adams, I looked at my sweep second hand and it showed that they traveled the distance in one minute and forty-two seconds. Even at the time this timing did not upset me as I felt confident after I would land there would be some explanation of what I saw. I might add that my complete observation of these objects, which I could even follow by their flashes as they passed Mt. Adams, was around two and one-half or three minutes—although, by the time they reached Mt. Adams they were out of my range of vision as far as determining shape or form.”*

Using the dashboard clock in his airplane Arnold measured the time from when the first object passed the side of Mt. Rainier until the last object passed Mt. Adams (DSR 16). The distance from the flank of Mt. Rainier to the peak of Mt. Adams is about 45 miles (depending upon where on the side one picks as the starting point). Since the length of the chain of objects was about five miles, the leading object was about five miles south of Mt. Adams when the last object passed Mt. Adams. Hence the total distance it (and the others) traveled was about 50 miles in 102 seconds. This corresponds to a speed of about 1,760 mph (DSR17).[\[8\]](#)

Arnold estimated that he had the objects in view for a total of about 2.5 to 3 minutes. During that time, if their speed was constant, they may have traveled a total of 80 to 90 miles, starting from a location about 30 or 40 miles north of Mt. Rainier where Arnold first saw them (not from the 100 mile distance near Mt. Baker, as Arnold had thought) to some distance south of Mt. Adams, where they disappeared from view. According to Arnold's book, the trailing five of this strange formation of aircraft, which were at a lower altitude than the leading four, seemed to “gather altitude,” i.e., rise upward, as they passed Mt. Adams. If true, then they were clearly not falling to the Earth (see meteor explanation below).

In Arnold's book, he wrote that after this sighting, he considered continuing the search for the downed C-46, but “somehow the \$5,000 (reward) didn't seem important. I wanted to get on to Yakima and tell some of the boys (other pilots) what I had seen.”



Kenneth Arnold some years after his sighting.

Chapter 5 - Arnold Reports His Sighting

When Arnold landed at Yakima, Washington, he told some of the people at the airport about these amazing high speed aircraft.

(Arnold's letter) *"When I landed at Yakima, Washington airport I described what I had seen to my very good friend Al Baxter, who listened patiently and was very courteous but in a joking way didn't believe me."*

He then flew to Pendleton, Oregon on a business trip. During that flight he did an initial calculation of the speed of the craft. Much later he recalled that one of the objects had (Arnold's book) "looked different from the rest, was darker and of a slightly different shape." This was the craft with the double crescent rear end illustrated above.

The discussion of his sighting presumably would have ended in Yakima if it hadn't been for the fact that someone at the airport contacted the press to report that some new, high speed aircraft had been sighted. When Arnold arrived at Pendleton he was surprised to find a number of reporters eager to learn about the new aircraft. Arnold told them about the sighting and his (under)estimated speed of 1,200 mph. He then described how they flew: they wobbled and flipped, like saucers skipping on the water.

(Arnold's letter) *"I did not accurately measure the distance between these two mountains [Rainier and Adams] until I landed at Pendleton, Oregon, that same day where I told a number of pilot friends of mine what I had observed and they did not scoff or laugh but suggested they might be guided missiles or something new. In fact several former Army pilots informed me that they had been briefed before going into combat overseas that they might see objects of similar shape and design as I described and assured me that I wasn't dreaming or going crazy.... A former Army Air Forces pilot ... [told me] ... 'What you observed, I am convinced, is some type of jet or rocket propelled ship that is in the process of being tested by our government or even it could possibly be by some foreign government.'"*

A reporter used the description of the way they flew, as saucers skipping across the water, as a name for the objects and after several days the press condensed this into the name which we have been stuck with ever since: *flying saucers*.

Pilot Sees 'Saucer-like Objects' Flying at 1,200 m.p.h. in Oregon

Pendleton, Ore., June 25.—(AP)—Nine bright, saucer-like objects flying at "incredible" speed at 10,000 feet altitude were reported here today by Kenneth Arnold, Boise, Idaho, pilot, who said he could not hazard a guess as to what they were.

Arnold, a United States Forest Service employee, engaged in searching for a missing plane, said he sighted the mystery objects Tuesday at 3 p.m. They were flying between Mount Rainier and Mount Adams, in Washington State, he said, and appeared to weave in and out of formation. Arnold said he clocked them and estimated their speed at 1,200 miles an hour.

He added he talked today with an unidentified man from Ukiah, south of here, who said he had seen similar objects over the mountains near Ukiah Tuesday.

"It seems impossible," Arnold said, "but there it is."

Arnold said he clocked the objects from Mount Rainier to Mount Adams, and estimated their speed at 1,200 miles an hour. He said they appeared to fly almost as if fastened together—if one dipped, the others did, too.

After the incident, he said, he talked to other pilots when he landed at Yakima, Wash., but none of them had seen anything similar.

Oregon is perhaps more concerned than many areas over reports of mysterious objects because of the

wind-borne balloons launched from Japan during the war. One of the bomb-laden balloons fell near Lakeview, Ore., in May, 1945, killing six persons.

At Portland, Ore., Edward Leach, senior C.A.A. Aeronautical Inspector, said he could offer no explanation of the fast-flying objects reported by Arnold.

"If they were actually as described," Leach said, "I don't know what they could be. I rather doubt that anything would be travelling that fast."

Leach said he was not sure whether objects travelling at 1,200 miles an hour could be seen clearly enough to tell that they were weaving in formation, as reported.

In Washington, the War Department said it had no information on the Oregon sky mystery.

An Army spokesman expressed interest in any object which would fly at the estimated speed of 1,200 m.p.h., declaring:

"As far as we know, nothing flies that fast except a V-2 rocket, which travels at about 3,500 miles an hour — and that's too fast to be seen."

Moreover, the V-2s, unlike the saucer-shaped objects seen in Oregon, are cigar-shaped.

The spokesman said it was safe to say that the Army is not conducting any high-speed experimental tests in the area mentioned and is certainly "not shooting" in populated regions.

Men From Mars? Sky Whizzer Seen!

PENDLETON, Ore., June 25.—(AP)—A tale of nine mysterious objects—big as airplanes—whizzing over western Washington at 1200 miles an hour got skepticism today from the army and air experts.

The man who reported the objects, Kenneth Arnold, a flying Boise, Idaho, businessman, clung, however, to his story of the shiny, flat objects, each as big as a DC-4 passenger plane, racing over Washington's Cascade mountains with a peculiar weaving motion "like the tail of a kite".

MAY BE ROCKET.

An army spokesman in Washington, D. C., commented, "as far as we know, nothing flies that fast except a V-2 rocket, which travels at about 3500 miles an hour—and that's too fast to be seen".

The spokesman added that the V-2 rockets would not resemble the objects reported by Arnold, and that no high-speed experimental tests were being made in the area where Arnold said the objects were.

LIKE PIE-PAN.

Arnold described the objects as "flat like a pie-pan," and so shiny that they reflected the sun like a mirror.

He said he was flying east at 2:50 p. m. two days ago toward Mt. Rainier when they appeared directly in front of him 25 to 30 miles away at 10,000 feet altitude.

By his plane's clock he timed them at 1:42 minutes for the 47 miles from Mt. Rainier to Mt. Adams, Arnold said, adding that he later figured by triangulation that their speed was 1200 miles an hour.

Mysterious Objects Whizzing Over U. S.? Officials Skeptical

Mysterious page 1 2c 24 ...oael
PENDLETON, Ore., June 26 (AP)—Army and CAA spokesmen expressed skepticism today over a report of nine mysterious objects—big as airplanes—whizzing over western Washington at 1200 miles an hour.

Kenneth Arnold, a flying Boise, Idaho, businessman who reported seeing them, clung, however, to his story of the shiny, flat objects, each as big as a DC-4 passenger plane, racing over Washington's Cascade mountains with a peculiar weaving motion "like the tail of a kite."

An army spokesman in Washington, D. C., commented, "as far as we know, nothing flies that fast except a V-2 rocket, which travels at about 3500 miles an hour—and that's, too fast to be seen."

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Arnold described the objects as "flat like a pie-pan," and so shiny that they reflected the sun

like a mirror.

By his plane's clock he timed them at 1:42 minutes for the 47 miles from Mt. Rainier to Mt. Adams, Arnold said, adding that he later figured by triangulation that their speed was 1200 miles an hour.

"I could be wrong by 200 or 300 miles an hour," he admitted, "but I know I never saw anything so fast."

KANSAS CITY, June 26 (AP)—Nine shiny objects flying at a high rate of speed, such as described by a Boise, Idaho, pilot, were reported by W. I. Davenport, a carpenter, to have been sighted here yesterday.

Davenport, working on the roof of a house, said he saw the objects flying west shortly after noon. He said he first heard the faint sound of motors.

"There were nine of them, flying in a group, with one a little to one side," he said. "They were flying so fast I barely had time to count them before they were gone. They were leaving vapor trails."

He added that he could not describe the shape of the objects since he could not see them clearly.

In These United States

Supersonic Flying Saucers Sighted by Idaho Pilot

Speed Estimated at 1,200 Miles an Hour
When Seen 10,000 Feet Up Near Mt. Rainier

PENDLETON, Ore., June 25.—(P.)

NINE bright, saucer-like objects flying at "incalculable" speed at 10,000-foot altitudes were reported here today by Kenneth Arnold, Pendleton pilot, who said he could not hazard a guess as to what they were.

Arnold, a U.S. Forest Service employee searching for a missing plane, said he sighted the mysterious craft yesterday at 3 p.m. They were flying between Mount Rainier and Mount Adams, in Washington state, he said, and appeared to weave in and out of formation. Arnold said he clocked them and estimated their speed at 1,200 miles an hour.

Inquiries at Yakima last night brought only blank stares, he said, but he added he talked today with an unidentified man from Ukiah, south of here, who said he had seen similar objects over the mountains near Ukiah yesterday.

"It seems impossible," Arnold said, "but there it is."

Chapter 6 - The Initial Press Interest and the Term Flying Saucer

In 1988 Pierre Lagrange, a sociologist who lives in France, interviewed Bill Bequette, one of the first reporters to interview Arnold. In 1947, Bequette was a 28 year-old journalist, working for the East Oregonian newspaper in Pendleton, Oregon in 1947. He wrote the first Associated Press dispatches and these news stories were the first indicators of the 1947 UFO sighting flap. Bequette said he first met Arnold the day after the sighting (i.e., June 25). Quoting from Lagrange's interview,

“Both Nolan Skiff and I were in the office, which was small, when Mr. Arnold came in. As I remember, we both talked with him, listened to his story, told him we didn't have a clue to what he had seen but would send the story to the Associated Press in hopes some editor or newspaper reader might be able to explain the strange objects. That first meeting probably lasted no more than five minutes. Nolan jotted down a few notes, then wrote a short story, which I squeezed into the bottom of page one. Then I punched an even shorter (as I recall) version into the AP wire. We were only minutes from 'putting the paper to bed' so we didn't have much time to give him.”

It is important to note Bequette's statement that the initial stories on the new wires were based on this very brief interview and description of the sightings. The brevity can explain why some important details did not make it into the initial published news stories and why there is some confusion on details in the initial stories. Of course, the press rarely gets stories 100% correct even when including all details.

Later, there was a more extensive interview by Bequette: “When I returned to the office after lunch, the receptionist's eyes were as big as saucers—the kind we use under coffee cups! She said newspapers from all around the country and Canada had been calling. They wanted more details on the 'flying saucers.' I spent the next two hours with Mr. Arnold in his hotel room. From that interview I wrote a story about 40 column inches long. The story was telephoned to the AP Bureau in Portland. Next morning, almost

every newspaper in the country published the story on Page 1. Even after forty years I feel some embarrassment over the original UFO story. My embarrassment is because I failed to recognize what a big story Mr. Arnold brought into the office that day.”

Bequette did not believe that he invented the term flying saucer. He told Lagrange, “I don’t remember whether or not Arnold used the words ‘saucer-shaped craft.’ I am inclined to credit his version (that he only spoke of objects moving like a saucer if you skipped it across the water), knowing the tendency of journalists to rephrase. I’m sure I didn’t coin *flying saucers*.”

Bequette also formed an opinion about Arnold: “Mr. Arnold did not impress me then as a person who ‘saw things.’ And Nolan Skiff also believed Mr. Arnold to be an honest and sincere person who was genuinely puzzled by what he had seen that day. Arnold was most cooperative when I went to his hotel room for a follow-up story. He seemed eager, as I remember, to answer all my questions as fully as possible. Arnold became the butt of many jokes, some of which were not good-natured, in the ensuing days and weeks.”

Arnold’s first radio interview is in Appendix 1 and the Air Force opinion of Arnold is in Appendix 2. A news story a few days later expressed Arnold’s reaction to the furor over his report:

Harassed Saucer-Sighter Would Like to Escape Fuss

PENDLETON. June 28 (UP)—Kenneth Arnold said today he would like to get on one of his 1200-mile-an-hour “flying saucers,” and escape from the furor caused by his story of mysterious aircraft flashing over southern Washington.

“I haven’t had a moment of peace since I first told the story,” the 32-year-old Boise, Idaho, business man-pilot sighed. “This whole thing has gotten out of hand,” Arnold went on. “I want to talk to the FBI or someone. Half the people I see look at me as a combination Einstein, Flash Gordon, and screwball. I wonder what my wife back in Idaho thinks.” But all the hoopla and hysterics haven’t caused Arnold to change his mind or back down. He doesn’t care if the experts laugh him off. He said most of his aviator friends tell him that what he saw were probably either one of two things: new planes or guided missiles still in the United States Army air forces’ secret category. Some theorized they were experimental equipment of another nation, probably Russia.

“Most people,” he said, “tell me I’m right.” But meanwhile, aeronautical experts in Washington and elsewhere were teeing off on Arnold’s story with facts and figures straight out of the books.

Their principal point seemed to be that if Arnold’s saucers moved as fast as he claimed, they couldn’t have been tracked with anything short of radar. The fastest man has yet flown is 647 miles per hour—a record set recently by Col. Albert Boyd in a P-80.

Reacting to the continued public interest that was intruding upon his life he wrote: “I can’t begin to estimate the number of people, letters, telegrams, and phone calls I tried to answer. After three days of this hubbub I came to the

conclusion that I was the only sane one in the bunch.... In order to stop what I thought was a lot of foolishness and since I couldn't get any work done, I went out to the airport, cranked up my airplane and flew home to Boise. It wasn't long after I arrived home when Dave Johnson called on me. Dave Johnson is aviation editor of *The Idaho Statesman* newspaper, and a man of respected ability and intelligence in matters related to military and civilian aviation. When I caught the look in his eye and the tone of his words, flying saucers suddenly took on a different and a serious significance. The doubt he displayed of the authenticity of my story told me, and I am sure he was in a position to know, that it was not a new military guided missile and that if what I had seen was true it did not belong to the good old U.S.A. It was then I really began to wonder.”

On June 28, 1947, the United Press published the following article:

“Kenneth Arnold, businessman-pilot who made the headlines with his story of sighting strange disk-like flying missiles in southern Washington, was back in his home town of Boise Saturday—and his story hasn't changed a bit. ‘I saw what I saw,’ he said, ‘No one can change my mind. I'll match my judgment, position, and everything on what I saw with my own eyes. I never suffered from snow-blindness, spots before my eyes, or hallucinations. Physically, I'm 100 percent. I'll submit to any kind of test. I only reported what any pilot would report. I certainly have nothing to gain in a business way with all this hullabaloo.’ Arnold resides on a ranch near here. He uses a hayfield for an airport. He sells fire-control equipment. Arnold said he saw strange “flying saucers”—nine of them—near Mt. Rainier while flying to Yakima, Wash., this week. He said he is more concerned with the fact that neither the FBI nor the Army appears interested in his story. ‘If I were running the country,’ he said, ‘and someone reported something unusual, I'd certainly want to know more about it.’”

Chapter 7 - Arnold's Sighting Explained ... or Not?

The question now arises as to whether or not Arnold's sighting can be explained as some known, natural or man-made phenomenon or if the sighting cannot be explained. If it cannot be explained then Arnold's sighting by itself (no other sightings needed) proves there were unexplainable objects, craft of non-human origin, flying around in our atmosphere. It is therefore necessary to carefully study and analyze this sighting to determine whether or not there is a reasonable explanation based on known, if rare, phenomena that

obey conventional science, particularly physics.

During the summer of 1947, shortly after Arnold's sighting and during the massive wave of sightings that occurred between late June and the middle of July, there were numerous Proposed Explanations (PE) for the sightings of Arnold and other witnesses. The first explanation (PE1) was that proposed by Arnold himself, namely that saucers were some new secret high speed aircraft or missile 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 told privately to J. Edgar Hoover, the Director of the Federal Bureau of Investigation (FBI) by General George Schulgen of the Army Air Force Intelligence.^[9]

On the other hand, the Air Force began to be worried over the possibility that the Soviet Union had developed flying saucers, possibly based on German war research (PE2), to threaten the United States, but this worry was not conveyed to the public. The Air Force also considered the possibility that saucer stories were generated by U.S. citizens who were Soviet sympathizers to make the American people think that the Air Force could not control the skies over the U.S. Because of this possibility, the Air Force asked the FBI to interview witnesses. The FBI did interview about two dozen witnesses and found no evidence of communist sympathizers.

Howard Blakeslee, the Associated Press Science Editor, wrote an article that suggested "quirks of eyesight" could explain the saucer mystery (PE3). 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."

One of the proposed explanations was that flying saucers were actually "motes in the eye" which are small particles such as blood cells which float in the fluid within each person's eyeball (PE4). Motes are only visible when they move to an area between the lens and the fovea; 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 what seem to be unearthly speeds to the apparently distant, large objects.[\[10\]](#)

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. According to Nelson, all sightings from inside vehicles, including airplanes, that had windows were reflections of sunlight from shiny objects onto the windows (PE5). 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 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.”

It is fair to call this a classic case of armchair theorizing. Obviously Nelson’s explanation could not apply to Arnold’s sighting, since Arnold viewed the objects through the open window. In fairness, Nelson didn’t know that, as Arnold’s full report was not published until many years later.

Other explanations offered in the press for the numerous sightings reported in June and July, 1947, included just about anything that could be seen in the sky such as clouds, birds, kites, balloons, mirages and even “ice meteors.” Several years later the Air Force settled on *mirage* as the explanation for Arnold’s sighting. Having read the previous material you may wonder how the Air Force could justify that explanation. The answer is not straightforward.

Chapter 8 - The Air Force Investigates

The Air Force intelligence established Project Sign and secretly investigated the saucer reports that started in the summer of 1947 and continued through the summer of 1948. The technical intelligence analysts of Project Sign treated all of the sightings, including Arnold's, seriously. This was, at least in part, a result of the fact that a number of Air Force pilots also reported seeing flying saucers. Arnold's sighting was included as unexplained in the Top Secret intelligence memorandum compiled by Air Force intelligence at the Pentagon during the late fall of 1948 (ref. 5). However, in the early fall of 1948, General Hoyt Vandenberg, Chief of Staff of the Air Force, rejected the conclusion arrived at by technical intelligence analysts at Wright Field (Wright-Patterson Air Force Base). They had written a secret document called "the Estimate of the Situation," wherein they "estimated" that the saucers were interplanetary vehicles.^[11] The analysts, who were the acknowledged experts in analyzing foreign aerodynamic vehicles, then visited the general to argue their case, but he told them something like this: "Sorry, wrong answer!"

By rejecting the Estimate, in spite of the evidence, Vandenberg effectively established an Air Force policy that the interplanetary hypothesis was not to be considered as an acceptable explanation for any sighting.

Another alternative they considered was that the Russians had made immense improvements on German aircraft developed during WWII and were flying their new aircraft over the United States. However, intelligence analysts didn't believe this, either. Therefore they were forced to come up with some conventional explanation for each sighting even if there was no logical conventional explanation. This urge to explain biased the sighting analyses done during the projects that followed Sign (1948-1949), namely Project Grudge (1949-1951) and Project Blue Book (1951-1969).^[12]

Chapter 9 - Proposed Explanations

As shown above there was no shortage of proposed explanations (PE) offered during the days and weeks following the sighting. Many of these are discussed in depth below. Each PE has characteristic details of the proposed explanation (DPE) that can be compared with the corresponding details of the sighting report (DSR) as discussed previously. As pointed out above, it makes sense to compare the DSR with DPE only if the DSR are of high quality, that is, they are believable (the witness wasn't lying or inventing a story) and accurate in detail (descriptions by the witness are as accurate as one might expect under the conditions of the sighting).

So, dear reader, if in your opinion Arnold was telling the truth and was at least reasonably accurate in his description of what happened, then read on and see how the various PE fail to explain his sighting. However, if you think he lied, made up a story or created a hoax, and nothing could change your opinion, then you may as well stop reading because the rest of this discussion is based on the assumption that Arnold reported, as accurately as he could, his actual sighting of the strange objects.

The following discussion is quite lengthy and technical and may be overkill as far as providing reasons to reject explanations (PEs) is concerned but it is presented in detail so that the skeptic can't say "But why couldn't it be..." If you don't feel the need to see why the following PEs fail then jump to the next chapter.

9.1 Aircraft

During the early years of UFO sightings, explanations for Arnold's sighting were proposed by two scientists with close connections to the Air Force project. These skeptical scientists were Dr. J. Allen Hynek and Dr. Donald Menzel. Dr. Hynek, a professor at Ohio State University and then at Northwestern University, was the astronomy consultant to the Air Force's UFO projects starting with Project Sign in 1948 and continuing through the end of Project Blue Book in 1969. Although his specialty was astronomy he was asked to suggest explanations for all types of sightings. Dr. Menzel was an astrophysicist and director of the Harvard Observatory during the same time period. Dr. Hynek, who died in 1986, reversed his skeptical stance toward UFO reports in the late 1960s and, in 1973, founded the Center for

UFO Studies, headquartered in Chicago, Illinois. Dr. Menzel, who died in 1976, never retreated from his published opinion that all sightings by credible observers could be explained, many as meteorological and weather phenomena (see below).

In 1948 Dr. Hynek—who was not aware of the conclusions expressed in the Top Secret Air Intelligence Report (ref. 5) or the Estimate of the Situation—was hired to analyze sightings and to decide which ones could be categorized as misidentified astronomical phenomena. As a side benefit, as it were, to the Air Force he also gave his opinion on the other sightings, including Arnold's. (ref. 4, 6, 7)

Hynek began his analysis by using optical science of the human eye in order to develop what would turn out to be his Proposed Explanation. He used a theory to supplement the available data, a perfectly acceptable scientific technique when properly applied. Hynek assumed that at least part of what Arnold said was true: Arnold could see the overall shape of the objects (DSR6), that he could see them edge-on, and that he thought their width was about twenty times greater than their thickness.

Hynek decided to try to calculate their size based on Arnold's estimate of distance (DSR13) and the basic visual capability of the human eye to discern shape of an object of small angular size. He pointed out that, theoretically, the angular resolution of the human eye, the ability to discern shape of an object (more than just a dot) is about 3 minutes of arc.^[13] He then claimed that if the vertical angular size, i.e., the apparent thickness, were substantially less than this, Arnold could not have seen the objects edge-on. Hence, Hynek concluded that the thickness must have been at least 3 minutes of arc, or about one-tenth of the apparent size of the Moon.

Hynek calculated the vertical size using the equation, (angular size in radians) x (distance) = size, as measured perpendicular to the line of sight. Three arc minutes is 0.00087 radians and the distance was estimated to have been 25 miles. Combining these in the equation he calculated a vertical size (thickness) of an object to be (0.00087 rad) x (25 miles) x (5280 ft/mile) = 115 feet. Arnold had estimated a 20:1 ratio of length to thickness. If this were correct, then the theory predicted that the objects were more than 2,000 ft long. Dr. Hynek could not accept the idea that 2,000 ft long objects were flying at high speed through the earth's atmosphere. It was just too ridiculously large.

But, on the other hand, Arnold had not said that the objects were that large.

He had estimated that the objects were about as long as the spacing between the engines of a DC-4, about 50-60 ft (DSR14), he thought. One may imagine Hynek saying to himself, “Aha, a contradiction! There must be an error in Arnold’s estimates.” Hynek calculated that if, indeed, they had been this short then they would have been too small for Arnold to see any details. Furthermore, if the 20:1 ratio were correct, they would have been too thin to see edge-on if 25 miles away. Thus Hynek claimed that there was an inconsistency in Arnold’s report: if the objects’ size and distance were as estimated by Arnold he could not have seen any details of their shape.

Hynek decided to resolve the inconsistency by disputing the accuracy of some of the sighting data. It is not unusual for scientists to dispute or question the accuracy of data that characterize whatever phenomenon is being discussed. However, the argument over whether to accept or reject a certain data point, herein called a Detail, must be convincing and, in principle (if not in practice) not based upon a desired (by the scientist) outcome, but rather on whatever is the natural outcome.

Hynek didn’t like the idea of large craft flipping and flashing through the atmosphere. He therefore decided to ignore both Arnold’s distance estimate, which was based on his observation of the objects going in and out of the mountain tops (DSR7) some 20-25 miles away (DSR13), and Arnold’s length estimate (50-60 ft; DSR14), which was based on his comparison with a distant DC-4. Hynek was then able to propose a size that seemed more reasonable to him, say, that of the largest known aircraft, roughly 400 ft long and 30 feet high.

Once Hynek altered a key piece of data, much else changed as well. With a much smaller size, he concluded the objects must have been much closer to Arnold in order for them to be seen edge-on. Hynek estimated this distance to be six miles. At that distance, the aircraft could appear (from the position of Arnold’s plane) to travel past Mt. Rainier and then past Mt. Adams in 102 seconds if their speed were only about 400 mph.

Using the result of this impeccable reasoning, Hynek concluded as follows: “in view of the above (calculations) it appears probable” that Arnold saw “some sort of known aircraft.” (PE6)

As a result of Hynek’s discussion of the so-called discrepancy between Arnold’s estimates of the distance and size of the objects, the Air Force officers who wrote the final report of Project Grudge in 1949 decided that “the entire report of this incident is replete with inconsistencies and cannot

bear even superficial examination.” (ref. 2)

So, what about Hynek’s proposed explanation (large, relatively nearby airplanes) which he derived from his claim that the human eye can’t see the shape of something smaller than 3 arc minutes in angular size? In fact, Hynek’s explanation is incorrect.

First, many people can in fact see the overall shape of objects smaller than 3 arc minutes in angular size, especially if they are larger than this in one dimension (e.g., like a long cylinder, such as a long wire or an airplane fuselage, viewed from the side).

Moreover, we have some evidence of Arnold’s eyesight in his report to the Air Force. Although it would have been nice if Arnold could have taken an eye test to provide Hynek with actual visual acuity data, the fact is that information in his report, information that Hynek ignored, provides us with a clue as to Arnold’s visual acuity. He said he was able to see a DC-4 at 15 miles (estimated distance) and he compared the spacing of the engines (DSR14) on the plane with the apparent size of the saucers. With its fuselage diameter of about 23 ft, the vertical angular size of the DC-4 at that distance was about 0.00034 radians or about 1 arc minute.[\[14\]](#) Hence, according to Hynek’s theory, Arnold should not have been able to see the basic airplane shape of the DC-4, and certainly he wouldn’t have been able to see the engines and thereby to see the spacing of the engines. But Arnold said that he did see the airplane and its engines and Hynek did not dispute that statement. Therefore Hynek’s objection—the alleged inconsistency— must be rejected.

Had Dr. Hynek compared the details that characterize his Proposed Explanation against the Details of the Sighting Report he might have rejected his own explanation. To compare Hynek’s PE with Arnold’s sighting, assume that the unknown objects were ordinary large aircraft that flew in front of Arnold only six miles away. If this were so, ask the following question: why was Arnold unable to see prominent features of the hypothetical airplanes such as tails (DSR2), wings (DSR3) or vertical stabilizers (DSR4) or engines (DSR5), even though Arnold was able to identify these features on another aircraft that was about 15 miles away? Evidently Hynek did not notice the inconsistency in his own analysis. Had Hynek done what skeptics usually fail to do, that is, to thoroughly test his suggested explanation against the data, i.e., to compare the relevant details, he would have seen that his hypothetical solution failed. Of course, the reasoning that applies to the failure of PE6 applies to the Russian Aircraft explanation (PE2) also.

It is amusing to imagine what would have been the history of UFOs if Hynek had accepted Arnold's distance estimate. Then he would have been forced to accept the high velocity (about 1,700 mph), in which case it is conceivable that the early history of the UFO subject would be different from what actually occurred. But instead, Hynek, for good scientific reasons, I presume, chose to take the road more traveled, to reject important parts of Arnold's sighting, and (with apologies to Robert Frost) that has made all the difference. The handwriting was on the wall, but Hynek erased it.

9.2 Weather Phenomena

Dr. Hynek's work was done secretly for the Air Force, and his discussion of Arnold's sighting was not published for many years. His conclusion, however, was mentioned in the Project Saucer report published by the Air Materiel Command at Wright-Patterson Air Force Base on April 27, 1949. Few civilian scientists had access to Air Force files, and so there was no dispute of Hynek's analysis until Dr. Donald Menzel decided to write about Arnold's sighting in his first book on UFOs, which was published in 1953 (ref. 7). This was the first flying saucer book by a scientist and, because of Menzel's stature in the field of astrophysics, it was treated very seriously. It received favorable reviews, although there were some atmospheric scientists who questioned Menzel's use of weather phenomena to explain sightings. Libraries and scientific organizations throughout the United States and in other countries ordered the book and it became an important reference for scientists in the following years. In retrospect this is unfortunate since, as I will demonstrate, Menzel did not provide accurate descriptions of some sightings and he apparently ignored or changed the data (the important DSRs) as necessary to make his explanations fit, beginning with Arnold's sighting.

Menzel criticized the Air Force for accepting Hynek's suggestion that Arnold had seen rather close aircraft. His book presents a brief description of Arnold's sighting and mentioned Arnold's estimate of distance and total sighting duration (3 minutes). Menzel wrote, "He 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." Menzel did not mention that Arnold used the dashboard clock to time the flight of the objects between two points (Mt.

Rainier and Mt. Adams). Instead, Menzel invented a travel distance of 25 miles, and implied that this distance was covered in 3 minutes (180 seconds). Hence he was able to calculate a much lower, although still “startling,” speed of 500 mph.

Menzel rejected PE6 and then went on to solve, after his own fashion, the mystery of Arnold’s sighting:

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 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 describe his (first) Proposed Explanation: Arnold saw “billowing blasts of snow, ballooning up from the tops of the ridges” caused by highly turbulent air along the mountain range (PE7). 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 PE by a scientist with the reputation of Dr. Menzel may seem slightly convincing, but only until one realizes that (a) snow cannot reflect light rays from the sun and create the very bright flashes that Arnold reported (DSR1) 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), and (d) Arnold had traveled westward past the southern flank of Mt. Rainier minutes before his sighting, and then after the sighting he flew eastward past the southern flank. Surely his plane would have been strongly buffeted (and perhaps destroyed) by such high winds, but instead he reported 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 snow blowing from the mountain tops, especially since he flew over the mountains about 12 miles south of Mt. Rainier on his way east just a few minutes after the sighting.

In case PE7 wasn’t sufficiently convincing, Menzel offered PE8. 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 reflective effect from an atmospheric layer when the sun is so low on the horizon 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 because of the following Detail of the Proposed Explanation (DPE): the sun was at an elevation of 60 degrees and west-southwest of (behind) Arnold. An atmospheric oscillation wave can't bend or reflect light over an angle of nearly 60 degrees, which would be necessary to make it appear as if the sun had been reflected by objects nearly at Arnold's altitude. Moreover, an atmospheric oscillation wave with a phase velocity of 1,200 mph is unlikely, but in any case, when traveling southward its crests would be oriented east-west, so if it reflected any sunlight at all (highly unlikely), the reflection would be in the north-south direction and not westward toward Arnold's plane. 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 the effects of a haze layer.

Ten years after his first book, Dr. Menzel offered three new PEs in his second book (ref. 8), written with Lyle Boyd. These were mountain top mirages (PE9), “orographic clouds” (PE10) and “wave clouds in motion” (PE11).

To support PE9, Menzel presented 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.[\[15\]](#) 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.) An important detail of the proposed explanation is that such mirages can be seen only under proper atmospheric conditions (requiring a stable atmosphere) when the line of sight from the observer to the mountain top is tilted by no more than one half of a degree above or below horizontal. Since Arnold was at 9,200 ft and Mt. Rainier is 14,400 ft high, the line of sight was tilted at $\arctan [(5200 \text{ ft}) / (20 \text{ miles} \times 5280 \text{ ft/mile})] = 2.7 \text{ degrees}$.

This is far beyond the largest tilt angle for a mirage. Furthermore, unintentionally (or intentionally?) Menzel failed to report in his book the following Detail of the Sighting Report (DSR): as the objects traveled

southward, he saw them silhouetted against the side of Mt. Rainier. Although mountain top mirages occur above the mountain peaks, these objects were below any possible mirage of Mt. Rainier. Another DPE is that mountain top mirages stay above the tops of the mountains, so the mirage theory cannot explain DSR17: the lateral high speed movement of the objects reported by Arnold. Nor can a mirage explain DSR1, the bright flashes of light from the objects.

Menzel's fourth proposed explanation, and the tenth so far (PE10), 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 the following DPE: 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 proposed explanation (PE11), wave clouds in motion, 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 (DSR1), for distinct semi-circular shapes (DSR6) and for the high lateral speed (DSR17). Again, Arnold surely would have recognized a cloud as he flew past Mt. Rainier.

In his third and last UFO book, [\[16\]](#) Menzel again discussed Arnold's sighting and offered his sixth (and final) proposed explanation: Arnold saw water drops on the window of his aircraft (PE12). To support this explanation Menzel described a sighting of his own 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. There is a detail of the proposed explanation (DPE) of major importance to the water drop explanation: the window must be closed so that there would be glass to support the water drops. Had Menzel bothered to carefully read Arnold's letter to the Air Force he would have discovered that there was a DSR that directly contradicts this DPE. Arnold reported that he turned his plane and he "viewed the objects through an open window" to be sure that he was getting no reflections from window glass. Fortunately, at least, Menzel did not propose water drops on Arnold's eyes.

The bottom line is that neither Hynek nor Menzel proposed reasonable and convincing explanations for Arnold's sighting, but that didn't stop the Air Force from accepting one of them. The official Air Force explanation is that Arnold saw a mirage!

9.3 Meteors

In June, 1997, just in time for the 50th anniversary of Arnold's sighting, *San Francisco Examiner* writer Keay Davidson published the meteor explanation (PE13). The details of the explanation are given in a small monthly publication by well known UFO skeptic, Philip J. Klass, the Skeptics UFO Newsletter.[\[17\]](#) Mr. Klass had been writing articles and books purporting to explain UFO sightings for at least the last 30 years, yet he had not previously tried to explain the Arnold sighting.[\[18\]](#)

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 that 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's article, the large number of meteors detected in June "lends support" to the meteor hypothesis.[\[19\]](#)

Klass' *SKUFON* article mentioned Arnold's statement that the objects seemed bright and shiny, as if reflecting the sun (DSR1). By way of comparison and explanation, Klass cited 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 (DPE). 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 pointed out that pilots can make errors, as if readers did not know that. The implication was 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 considerably lower than the top of Mt. Rainier, that is, well under 14,000 ft.^[20] He realized that the flashes occurred as the objects tilted steeply to the left and right as they flew along a southward path. 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 making a bright flash, he saw them as semi-circular at the front with convex, somewhat pointed rear ends. One seemed to have a double concave crescent shape at the rear.

By way of contrast, meteors which are traveling fast enough to appear to glow do not dim to the point of being “not bright” and then brighten again. 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 rapidly heats the air as it passes through.^[21] 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 (30 miles and up) 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.

The bottom line is that it is doubtful that any meteor would be still glowing at an altitude of 10,000 ft. Moreover, if it were, it would be quite large and eventually slowed to the point of hitting the Earth. The suggestion that one, or several, meteors could travel many miles horizontally at a speed high enough to glow while at an altitude below 10,000 ft is not supported by any known physics of meteors (DPE).

Klass points out that Arnold estimated he saw the objects for 2½ to 3 minutes. This included about ½ minute before they passed Mt. Rainier and another nearly 2 minutes after they passed Rainier. This would be extremely long for a meteor, as most burn out in a second or so, although large meteors called fireballs can last many seconds. Hence Klass argued that Arnold’s time estimate was probably wrong. He pointed out that “witnesses are notoriously unreliable in estimating the time duration of unexpected events” and cited the March 3, 1968 reentry of the Soviet *Zond* space rocket as an example in which witness errors resulted in sighting duration estimates as low as 15 seconds and as high as 5 minutes.

There is an important difference between Klass’s example of witness error in estimating the sighting duration and the Arnold sighting: Arnold used a clock (DSR16)! Klass acknowledges that Arnold used his dashboard clock to time the passage of the objects between Mt. Rainier and Mt. Adams but Klass did not mention the time duration reported by Arnold. Instead, he questioned “whether Arnold ... who was focusing his attention on the unusual objects while also occupied flying his aircraft ... would have taken his eyes off the objects to carefully observe his cockpit clock.” In other words, Klass questioned the accuracy of the witness’s claims about his own actions. If the actions seemed illogical to Klass, then the actions were suspect and, of course, any data resulting from the actions was suspect.

So, why would Arnold do such a supposedly 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 did 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 and Mt. Adams). He reported that he could see the objects were flying southward, so he looked at his dashboard clock as the first object passed the south flank of

Mt. Rainier. He then watched the objects as they continued southward. During this time, the objects passed over a ridge that is about 5 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 they covered a total distance of about 5 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. The second hand on his clock showed that 102 seconds had passed.[22]

The calculated speed based on Arnold’s measured time between Rainier and Adams is by itself sufficient to reject the meteor explanation (one wonders if this was why Klass did not report the calculated speed). The objects traveled about 50 miles in 102 seconds, corresponding to a speed of about 1,700 mph (DSR17), far below any meteoric speed (DPE) 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 but at an altitude below 14,000 ft, it would have required roughly 9 - 10 seconds to travel from Mt. Rainier to Mt. Adams. Even at Klass’s underestimated speed of 10,000 mph, the flight time between the peaks would be only about 17 seconds. One would expect that Arnold, using his dashboard clock, could tell the difference between 102 seconds and 10 (or 17) seconds.

Aside from the difficulty in imagining that Arnold could mistake 10 seconds for 102 seconds, the mere suggestion that a meteor, or nine such meteors, could travel at a meteoric speed at an altitude of 6,000 to 7,000 ft while glowing brightly is far outside the accepted meteor phenomenology. As pointed out above, 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.

9.4 Pelicans

During the latter 1990s Martin Kottmeyer, James Easton, and other skeptics proposed that Arnold saw a flight of geese or, more probably, white pelicans (PE14) heading southward at high altitude (about 9,000 ft). These birds were proposed because they can fly quite rapidly, perhaps up to 50 miles per hour

(DPE) and, being white, could cause flashes of light as they flapped their wings (DPE). Of course they would have had to have been quite close to Arnold for him to see them. Consider that 80 ft long objects at 20 miles would appear to be the same size (subtend the same angle) as 4 ft long objects at 1 mile. This size refers to the length of the bodies of the hypothetical birds. The wings would have been seen nearly edge-on and so, although the wingspan might be as much as 12 ft, this size would not have been seen broadside, but in a foreshortened end-on perspective when they were closest, east of Arnold.

The geometric conditions of the sighting, the sun above and behind Arnold while the objects were ahead of him, would preclude any hypothetical birds from causing bright mirror-like reflections of the sun. Nevertheless, skeptics claimed that the birds could cause bright flashes and, as evidence for their claim they referred to a surprising sighting by Arthur C. Clarke of “flying saucers at sunset.” According to Clarke, “They looked like metallic mirrors ... [and] were so bright against the darkening sky that it was almost impossible to decide their shape, but they gave me the impression of being ellipses.”^[23] As the objects moved, in a few seconds Clarke realized that he was looking at seagulls flying just above the sun at sunset so there was a small angle between the sun and the birds. The sighting occurred when the sun was in the same direction as the birds. When the light source and the reflective object are in the same direction (within a few degrees) a little-known optical phenomenon known as forward gloss can occur (DPE). Forward gloss refers to an enhanced reflection from a diffuse (optically rough, not like a mirror) surface when the angle between an incident light ray and the surface is small (“grazing incidence”), typically less than a degree. Had Arnold’s sighting occurred just after sunrise there might be some justification in referring to forward gloss. However, as it is, Clarke’s observation of bright reflections from birds at sunset does not apply to Arnold’s sighting.

Since the sun was in the West (DSR), the skeptics had to propose another source of light that could reflect from the hypothetical birds at grazing incidence. They suggested that the snow on the mountains could reflect sunlight westward toward Arnold and the birds and thus cause a very bright reflection due to the forward gloss effect as happened in Clarke’s sighting. However, this would not cause extremely bright flashes. This is because the light reflected from the birds would be less bright than the source of the reflected light, namely the sunlit snow, and Arnold never said that the snow was causing a brilliant reflections (DSR). At twenty or more miles distance,

the snow would appear dull white, not as brilliant as sunlight reflected from a mirror.

Just like Menzel before them, the pelican proponents ignored Arnold's statement that he turned his plane and opened his pilot side window to view them without glass in the way (DSR9). The window is on the left side of the airplane where the pilot sits. Since the objects were east of him, to look at them through his open window he had to turn to the right, and so after his turn he flew southward (DSR10), parallel to the flight path of the objects, for a short time. Because of the type of aircraft he was flying, his speed would definitely have been above a stall speed of 80 mph (Arnold said he was traveling over 100 mph air speed). If the objects had been birds flying at top speed of 50 mph he would have quickly realized either that he was gaining on them (if they were ahead of him, flying southward) or he was leaving them behind, if he was ahead of them. In either case, in a few seconds he would have realized that they were relatively slow compared to his speed and certainly he wouldn't have estimated their speed at anything like 1,700 miles per hour, or even 100 miles per hour. 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.

9.5 Explained, or Not?

Consider the conventional proposed explanations, based on known objects and phenomena, that have been offered to explain the Arnold sighting.

1. New US Air Force jet aircraft (Arnold and others).
2. Soviet secret aircraft (Arnold and others).
3. Quirks of eyesight (Howard Blakeslee).
4. Motes in the eye (in a press article)
5. Reflections from mirrors (Dan Nelson).
6. Large nearby airplanes (Allen Hynek).
7. Blasts of snow (Donald Menzel).
8. Haze reflection (Donald Menzel).
9. Mirage (Donald Menzel).
10. Orographic clouds (Donald Menzel).
11. Wave clouds in motion (Donald Menzel).
12. Water drops on the windshield (Donald Menzel).
13. Meteors (Philip Klass/Leon Davidson).
14. Geese/pelicans (Martin Kottmeyer, James Easten, et al).

With all these available proposed explanations, surely the Arnold sighting has been explained as some mundane, well understood phenomena. After all, isn't it likely that the more proposed explanations there are, the greater is the probability that the sighting has been accurately explained?

Clearly the answer is no. Indeed, I will offer a counter suggestion: the more conventional proposed explanations there are, the *less* likely it is that one of them is correct.

9.6 Arnold Considers the Unconventional

Not yet mentioned is a non-conventional proposed explanation: flying saucers or Alien Flying Craft (AFC) piloted by Non-Human Intelligences (NHI).

Within a few days of the publication of the sighting some people, including Kenneth Arnold, began to consider that possibility. Arnold said he hoped that the saucers were some development of the Army Air Force but when the AAF said *not ours* a week or so later, Arnold, realizing the technological leap represented by non-aerodynamic objects traveling more than twice as fast as any aircraft made by mankind, went *interplanetary*.

In a *Chicago Times* article of July 7, Arnold expressed his leaning toward the interplanetary hypothesis:

“Arnold, a pilot for nearly 15 years ... is not so certain that the strange contraptions are made on this planet. Arnold, who was the first to sight the “saucers”... said he hoped the devices were really the work of the U.S. Army. But he told the *Times* in a phone conversation: ‘If our government knows anything about these devices, the people should be told at once. A lot of people out here are very much disturbed. Some think these things may be from another planet. But they aren't harming anyone and I think it would be the wrong thing to shoot one of them down—even if can be done. Their high speed would completely wreck them...’

Arnold, in pointing to the possibility of these discs being from another world, said, regardless of their origin, they apparently were traveling to some reachable destination. Whoever controlled them, he said, obviously wasn't trying to hurt anyone. He said discs were making turns so abruptly in rounding peaks that it would have been impossible for human pilots inside to have survived the pressure. So, he too thinks they are controlled from elsewhere, regardless of whether it's from Mars, Venus, or our own planet.”

'Flying discs' called real by 2 air veterans

(This version of "flying saucers" appears on page 1. Other pictures are on page 23.)

By HENRY HEIL.

Two aviation veterans who gazed from high altitudes at the world-disturbing "flying saucers" agreed today the weird devices were real. But they differed on theories of their origin.

In Chicago on business, Capt. Emil J. Smith, of Seattle, Wash., United Air Lines pilot for nearly 14 years, declared:

"These flying saucers are man-made, I am certain. There are definite indications that they may be controlled from the ground. It's my further belief that they are being used in some experimental operation by our own armed forces."

But Kenneth Arnold of Boise, Ida., head of a western fire fighting equipment house and also a pilot for nearly 15 years, is not so certain that the strange contraptions are made on this planet.

First to see discs

Arnold, who was first to sight the "saucers" on June 24, over Mt. Rainier in the state of Washington said he hoped the devices were really the work of the U. S. Army. But he told THE TIMES in a phone conversation:

"If our government knows anything about these devices, the people should be told at once. A lot of people out here are very much disturbed. Some think these things may be from another planet. But they aren't harming anyone and I think it would be the wrong thing to shoot one of them down—even if it can be done. Their high speed would completely wreck them."

Capt. Smith, who observed the flying discs near Boise at sunset Friday, emphatically denied the possibility that they were caused by optical illusion of any sort or that they were a mirage.

Co-pilot sights discs

Pointing out that visibility was excellent that day and that the strange objects were between his own plane and the setting sun, Smith asserted his opportunity for observation was excellent even though the objects were probably 20 miles away.

Having spent most of his avia-

tion career flying over the mountains of the Northwest, Smith told TIMES men he knew what he could expect to see in the skies at that time of the evening.

His co-pilot, Flight Officer Ralph Stevens of Seattle, was the first to sight a huge disc and put on the landing lights of their craft in the belief it might be a plane.

Both men soon were convinced, however, that they weren't looking at a plane. Shortly behind it was a group of four discs traveling in formation. The leader, they estimated from experience in judging objects far away, was about the width of a four engine plane.

Such planes usually are about 103 feet wide. The strange discs seemed slightly longer than they were wide and the depth of these objects seemed approximately one-tenth of the width. The tops seemed slightly "rough or irregular."

Terrific speed

In the evening sunlight, Capt. Smith said, these strange objects traveling at terrific speed, appeared dark gray. Bottoms of the devices seemed flat. As the first group of five disappeared, Smith said a second group of four approached.

They called the plane stewards to see. Holding their plane to its course, Smith still had opportunity to observe the last group of sky rovers for about 15 minutes.

They could see no vapor trails which might have resulted from use of airplane fuels. Smith said he and his co-pilot noticed the pattern of movements of the flying saucers and believed that the leader in each group was ground controlled.

This, they theorized, then exerted mechanical control over the others.

Another world

Arnold, in pointing to the possibility of these discs being from another world, said, regardless of their origin, they apparently were traveling to some reachable destination. Whoever controlled them, he said, obviously wasn't trying to hurt anyone.

He differed with Smith somewhat in his description of the tops of the discs which he believes to be flat. He was flying at an altitude of about 8,000 feet in search of a marine plane and its crew which disappeared there last winter.

The discs, he said, were traveling about 1,000 feet lower. He said the discs were making turns so abruptly in rounding peaks that it would have been impossible for human pilots inside survived to have survived the pressure. So he, too, thinks they are controlled from elsewhere, regardless of whether it's from Mars, Venus or our own planet.

In an Associated Press story from July 19, Arnold reiterated his belief that, if the disks are not from any foreign country and “if the Army has no explanation, then the disks must be—‘and I know this sounds crazy’—from another planet.”



Kenneth Arnold [c] with United Airlines Captain E. J. Smith [l] and co-pilot Ralph Stevens [r], examining an early UFO photograph, 1947.

In April 1949, UFO skeptic Sydney Shallet wrote an article that was published in the *Saturday Evening Post* entitled “What You Can Believe About Flying Saucers.”^[24] Shallet was critical of sightings and witnesses and accepted the official Air Force opinion (as portrayed by Project Grudge) that every report could be explained. Nevertheless, he quoted Arnold as follows:

“Since my first observations and report of the so-called ‘flying disks’ I have spent a great deal of money and time thoroughly investigating the subject. There is no doubt in my mind but what

these objects are aircraft of a strange design, and material that is unknown to the civilization of this earth.”

The article continued to say:

“Arnold himself has been conducting a one-man campaign to prove that he did see something out of the ordinary that day over Mount Rainier. Arnold has written other articles for *Fate Magazine*, one titled *Phantom Lights Over Nevada*, and another *Are Space Visitors Here*. In the latter, discussing a fisherman’s report of seeing weird purplish spheres with portholes maneuvering over the Crown River, in Ontario, Arnold wrote: ‘Once again, we can be sure that these Canadian blue-green-purple globes are not meteors, nor are they fragments of a comet or Venus. What, then, are they? Spacecraft from another world?’”

When interviewed by famous journalist Edward R. Murrow in 1950, Arnold said “being a natural-born American, if it’s not made by our science or our Army Air Forces, I am inclined to believe it’s of an extraterrestrial origin.” Then he added that he thought everybody should be concerned, but “I don’t think it’s anything for people to get hysterical about.” In later years he attributed some lifelike properties to the objects and described the flashing lights as having a sort of rhythm comparable to that of a human heart.[\[25\]](#)

Chapter 10 - Arnold Was Not Alone

Kenneth Arnold was not the only person to see strange things in the sky that day. According to Ted Bloecher, there were at least 19 other sightings, mostly in Oregon and Washington. They occurred throughout the day, from late morning to late evening. Several occurred at or about 3:00 p.m. and may have been related to Arnold’s sighting.[\[26\]](#)

A woman in Yakima, Washington, Ethel Wheelhouse, reported seeing several flying discs moving at fantastic speeds at around the same time as Arnold’s sighting. They were “too fast to count.”

A member of the Washington State forest service, Robert Hubach, who had been on fire watch at a tower in Diamond Gap, about 20 miles south of Yakima, reported seeing flashes over Mount Rainier at 3:00 p.m. on June 24. The flashes appeared to move in a straight line.

Similarly, at 3:00 p.m., Sidney B. Gallagher, who was near Mineral, reported seeing nine shiny disks flash by to the north.

A woman near Tacoma said she saw a chain of nine bright objects flying at high speed near Mt. Rainier. Unfortunately, the news story didn't give the exact location or time but indicated it was around the same date as Arnold's sighting.

L. G. Bernier of Richland, Washington, about 100 miles east of Mt. Adams and 140 miles southeast of Mt. Rainier, reported that at about 2:30 p.m., he saw three flat objects fly over Richland. They were flying "almost edgewise" toward Mt. Rainier. Bernier thought the three were part of a larger formation. They were traveling at high speed, certainly faster than any P-38 (maximum speed about 440 mph). They were traveling in a northwesterly direction so Bernier thought that, "No doubt Mr. Arnold saw them just a few minutes or seconds later, according to their speed." Bernier was among the first witnesses to suggest saucers might be of interplanetary origin: "I believe it may be a visitor from another planet."[\[27\]](#)

Chapter 11 - The Prospector's Sighting

Not mentioned in the short list of corroborating witnesses presented in the last chapter is the most important and unique witness following Arnold. This was Fred Johnson, prospector, who claimed that he saw the same objects at the same time as Arnold. His sighting occurred just as Arnold was losing sight of them near Mt. Adams. He did not report his sighting to the press, but rather directly to the Air Force.[\[28\]](#)

In the latter half of August the Air Force received an unsolicited letter dated August 20, 1947, [\[29\]](#) which reads as follows:

Sir. Saw in the portland paper a short time ago in regards to an article in regards to the so called flying disc having any basis in fact. I can say am a prospector and was in the Mt Adams district on June 24th the day Kenneth Arnold of Boise Idaho claims he saw a formation of flying disc. And I saw the same flying objects at about the same time. Having a telescope with me at the time I can assure you they are real and noting like them I ever saw before they did not pass very high over where I was standing at the time. plobly 1000 ft. they were Round about 30 foot in dimater tapering sharply to a point in the head end in an oval shape. with a bright top surface. I did not hear any noise as you would from a plane. But there was an object in the tail end looked like a big hand of a clock shifting from side to side like a big magenet. There speed as far as I

know seemed to be greater than anything I ever saw. Last view I got of the objects they were standing on edge Banking in a Cloud.

Yours Respectfully
(Fred Johnson)

At this time during the summer of 1947 the FBI was actively investigating sightings, at the request of the Army Air Force, to determine whether or not any such reports could be part of subversive activities carried on by enemies of the United States.^[30] Therefore, at the request of the Air Force, an FBI agent interviewed Mr. Johnson. He sent a copy of his report to FBI headquarters in Washington, DC, with the title "REPORTS OF FLYING DISCS, SECURITY MATTER - X."^[31] The FBI report on Johnson's sighting reads as follows:

(Fred Johnson, resident of) First Avenue, Portland (Oregon), reported without consulting any records that on June 24, 1947, while prospecting at a point in the Cascade Mountains approximately five thousand feet from sea level, during the afternoon he noticed a reflection, looked up, and saw a disc proceeding in a southeasterly direction. Immediately upon sighting this object he placed his telescope to his eye and observed the disc for approximately forty-five to sixty seconds. He remarked that it is possible for him to pick up an object at a distance of ten miles with his telescope. At the time the disc was sighted by Johnson it was banking in the sun, and he observed five or six similar objects but only concentrated on one. He related that they did not fly in any particular formation and that he would estimate their height to be about one thousand feet from where he was standing. He said the object was about thirty feet in diameter and appeared to have a tail. It made no noise.

According to Johnson he remained in the vicinity of the Cascades for several days and then returned to Portland and noted an article in the local paper which stated in effect that a man in Boise, Idaho, had sighted a similar object but that authorities had disclaimed any knowledge of such an object. He said he communicated with the Army for the sole purpose of attempting to add credence to the story furnished by the man in Boise.

Johnson also related that on the occasion of his sighting the objects on June 24, 1947 he had in his possession a combination compass and watch. He noted particularly that immediately before he sighted the disc the compass acted very peculiar, the hand waving from one side to the other, but that this condition corrected itself immediately after the discs had passed out of sight. Informant appeared to be a very reliable individual who advised that he had been a prospector in the states of Montana, Washington and Oregon for the past forty years.

Mr. Johnson's letter to the Air Force indicates that he was in the right area at the right time to see the objects which Arnold reported. Johnson, like Arnold, reported that his attention was attracted to them by a reflection, possibly a flash of light on the rocks he was examining. There is a minor difference in that he reported only five or six, but it is likely that he missed seeing the others as he concentrated on his telescopic view of a single one. Perhaps the leading four objects, which, according to Arnold, were at a higher altitude than the latter five, had entered a cloud by the time he looked

up. It is also to be noted that he was recalling the event almost two months after it occurred, so he may well have forgotten some details, such as the exact number of objects.

He thought they were only about 1,000 ft above his altitude of about 5,000 ft. This was a guess on his part since he had no way of knowing for certain. However, he did indicate that they were at cloud level which could have been several thousand feet above him. Adding his estimated distance of the objects above him, 1,000 ft, to his estimated altitude, 5,000 ft, yields an altitude for the UFOs of about 6,000 ft, which is consistent with the altitude indicated by Arnold's claim that they were traveling "in and out" of the mountain peaks south of Mt. Rainier. On the other hand, Arnold also said that, from his point of view, the lower, trailing, objects seemed to be climbing as they passed Mt. Adams. He thought that they might even have been a bit higher than Mt. Adams which is about 12,000 ft high. This higher altitude of the objects might be more consistent with Johnson's statement that he last saw them "standing on edge Banking into a cloud."

Johnson claimed that he watched one disc for 45 to 60 seconds. Assuming that they were traveling at the speed calculated previously, about 1,700 mph, in 45 seconds they would travel about 20 miles. Although it may have been possible that Johnson could see the objects over a distance of 20 miles from his location, it seems more likely that he saw them for less time. However, even if it were only for 30 seconds with his telescope, we may assume that he was able to discern many details that Arnold couldn't see, such as the point on the front and the tail waving side to side "like a big magenet" in the rear. (Here I presume Johnson is comparing it with the magnetic needle in a compass which swings left and right before finally pointing in the direction of the local magnetic field.) He claimed that the objects were round and also oval, thus generally agreeing with Arnold's description of nearly round objects (certainly they weren't square or triangular or T-shaped) and he estimated that they were 30 ft in diameter, a value that is smaller than Arnold's estimate and smaller than the previously calculated value, suggesting that Johnson underestimated the size.[\[32\]](#) He also stated that the speed was "greater than anything I ever saw," which is consistent with the speed calculated from Arnold's sighting. He heard no noise. He observed that while the objects were in sight the needle of his compass waved from side to side. The waving stopped after the objects were out of sight.

The last statement in Johnson's letter, "Last view I got of the objects they

were standing on edge Banking in a Cloud,” provides important confirmation of Arnold’s observation of the objects tilting to various angles.

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. This observation has led to calculations of the assumed magnetic field strength needed to affect a compass in this way from a distance of 1,000 ft or more. The resulting field strengths are immense.[33]

Dr. Hynek, in reviewing all the sightings for Project Grudge in 1949, did not offer an explanation for this sighting. Dr. Menzel, on the other hand, did claim to have explained it (ref. 7). Menzel began his review of the sighting by pointing out that it occurred on the same day as Arnold’s. However, he did not tell his readers that it took place at the same time in the afternoon, nor did he mention that Johnson was near Mt. Adams at the time and thus in the area where Arnold last saw the objects (flying past Mt. Adams). Therefore the reader of his book would not have known, as Menzel probably did (Menzel had access to the Air Force files), that Johnson said he saw the objects reported by Arnold!

Menzel accepted Johnson’s sighting as real (i.e., not a hoax, not a delusion), but explainable. After pointing out that Johnson observed the objects through his telescope for nearly a minute Menzel stated his explanation: “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 many seconds through a telescope as they traveled by rapidly and were last seen banking into a cloud.

Menzel also dismissed the wobbling compass effect by suggesting 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.

The bottom line is that Menzel’s explanation makes no sense at all.

Fred Johnson’s sighting holds a unique place in the history of the Air Force investigation. Although, as I have pointed out (ref. 2), after the early fall of 1948 the Air Force investigators were under pressure to provide conventional

explanations for all sightings because *interplanetary* was not an option, the fact is that some sightings resisted explanation. By the time Project Blue Book closed in 1969 the Air Force analysts at the Air Technical Intelligence Center at Wright-Patterson Air Force Base in Dayton, Ohio, had collected a total of about 13,000 sightings. Of these, about 700 were left unexplained. Fred Johnson's unique place in UFO history is based on the fact that his sighting is the first unexplained sighting.

But, you may ask, why isn't Arnold's sighting first, if Johnson saw the same things minutes (or less) after Arnold, and Johnson's sighting is unexplained? The answer is that due to sloppy record keeping and analysis (or by intent) these two sightings were effectively separated. Hynek did not know that Johnson's sighting occurred immediately after Arnold's. Hence, one sighting could not support the other. Then, when Arnold's sighting was determined by Hynek to be "replete with inconsistencies" it lost its credibility and was therefore explainable (as a mirage).

Incidentally, the Air Force has explained its failure to identify the 700 or so unexplained sightings by claiming there was not enough information to allow a positive identification. In other words, the Air Force says, "If we had had more information we could have identified these, too." Although this may seem like a reasonable explanation, the fact is that the unidentified sightings were the ones with *too much* information that contradicted all known possible explanations.

Johnson's sighting is a good example of this. If he had just said "I saw some strange objects fly over. They were shiny and very fast. I don't know what they were," and left it at that, any reasonable explanation would be acceptable. Instead, he provided specific details. He described high speed, large angle tilting during flight, unusual semi-circular shape, tail wobbling back and forth, lack of noise and the apparent magnetic effect on his compass.

What conventional aircraft or phenomenon had these characteristics in June, 1947? Answer: none. To explain this sighting, one has to reject almost the complete description. No wonder it was left unexplained.

Chapter 12 - Three Minutes That Changed Our World

Seventy years later, it is evident that Kenneth Arnold's (and Fred Johnson's) sighting contained sufficient information to demonstrate that strange objects, which were not man-made aircraft, were flying around in the atmosphere. Therefore it is a tribute to the effectiveness of the propaganda put forth by the government and military, and widely promulgated by the press, that all sightings have been or could be explained, that society has not accepted the idea that at least some reported UFOs/saucers are real, physical hardware, objects of odd, non-aerodynamic shape and extreme dynamical capabilities, objects that represent the technological capabilities of some non-human intelligences.

It is resoundingly *not* a tribute to science that Dr. Menzel's reputation carried such weight with the scientific community that scarcely anyone analyzed his atmospheric explanations to see if they made any sense.[\[34\]](#) On the contrary, his book was complemented for bringing a measure of alleged sanity to the field of flying saucer research.

Hynek's and Menzel's so-called explanations helped the Air Force to establish the tradition which we live under today, that flying saucers/AFCs, are all mistakes or hoaxes or delusions and certainly nothing to worry about. This tradition has been so effective in suppressing society's need to understand what is really going on that you could write a song about it, and have a portly gentleman dancing around singing TRA-DI-TION, *a la* Fiddler on the Roof.

However, careful analyses of sightings such as these by Kenneth Arnold and Fred Johnson show that this tradition is akin to a house of cards. As more and more people learn the truth about these sightings, and the thousands of unexplainable sightings that have occurred since, the more likely it is that the tradition will collapse, leaving a greater mystery: given that AFCs are real, who are they, where do they come from, and what are they doing here?

Conclusion

The subject of this book is a strange sighting event that occurred some 70 years ago.

I have been asked why I would bother to study and write about a sighting that old when there are thousands of more recent sightings which are better in some way, such as multiple witnesses, physical traces, photos, film, video, radar, etc.?

My answer is this: after chasing the will-o'-the-wisp commonly known as flying saucers (UFOs or AFCs) for some 50 years, mostly by studying the better and more recent sightings, and not finding any real answers as to what these events represent (*i.e., not getting anywhere!*) I decided it was time to turn back the clock to the beginning in the hope that I might discover something important that we investigators had missed.

As pointed out previously in this book there were many hundreds of sightings during the period June-August, 1947. The question was, which one(s) should I study? Most of the sighting reports had not been investigated, as we would think of investigations nowadays (learning the complete history of a sighting from multiple interviews of witnesses, learning the details of the environment at the time, studying physical effects, if any, searching for possible explanations, etc.) The closest there was to modern UFO investigations were the interviews of witnesses by news reporters, by members of Air Force intelligence and, in a few cases, by the FBI, and these interviews usually provided only superficial information about the sightings. Technical details that are needed in order to make a UFO-or-not decision weren't provided in most cases.

As I studied the many various cases to find out if we had missed something, some important detail(s) about the "flying saucers," I began to realize that one sighting stood out, head and shoulders above the rest. That sighting stood out because the witness had, in effect, interviewed himself. In the report of his "self-interview" he had provided a detailed history of the event along with numerous technical details that would make it possible to decide whether or not it could be explained.

I am referring, of course, to Kenneth Arnold's sighting. It was not merely by chance that it was the first publicized sighting. His measurements and speed calculation set it apart from other saucer sightings and his initial belief that he had seen radical, new airplanes gave him a sort of cover for presenting

his discovery to his peers without them thinking that this seemingly normal man had gone crazy.

After I realized that this sighting was important for reasons other than that it was the first publicized sighting, I began to ask myself, what had we missed when we, with our modern “sophisticated” approach to UFO investigation, had almost tossed out this sighting because it involved only one witness (it was believed that there was no conclusive proof that other reports referred to the same sighting) and because there was no support from photographic or radar or other evidence.

Then I began to realize what we had missed. What we had missed was the fact that five important types of information needed for proper analysis of a UFO sighting, types that were missing from other reports, were included in Arnold’s report:

1) *Witness Credibility and Accuracy*: he was a successful businessman with no history of making up stories or hoaxing; he was technically trained and tried to be as accurate as possible in presenting his sighting; he was appropriately critical of the accuracy of his observations and properly skeptical about what he had seen; he was the best investigator of his own sighting and that made him the first UFO (flying saucer) investigator.

2) *The Right Place*: he was flying at a high altitude with visibility “unlimited” and therefore he could see the objects for many miles to the north and south and for many seconds; he was west of the objects and traveling almost perpendicular to their travel direction; he could see them pass by tall mountains including Mt. Rainier and Mt. Adams; for part of the time they were close enough for him to see their overall shape.

3) *The Right Time*: he was flying at a time when the atmosphere was quiet so he could let the plane essentially fly itself while he observed the objects; he was there when they appeared and flew past; he was there when the sun was high and west of him thereby giving him optimum viewing of the overall scene east of him

4) *The Right Attitude*: he was inquisitive enough about what he saw to decide to try to estimate size and speed using the tools he had available (dzus fastener; clock with a sweep second hand; two geographical features of known spacing (Mt. Rainier and Mt. Adams).

5) *He was fully alert* and able to record (in his memory) the major details and some of the minor details of the passage of the nine objects that clearly were not conventional aircraft.

The more I thought about these five types of information, and, in particular, the information in (4) above, the more I wondered if it was merely random chance that brought them all together in this one sighting or if something deeper was going on here. If not random chance, had this sighting been arranged . . . *by them?*

I asked myself, why would the objects let themselves be seen by a credible witness under optimum viewing conditions such that the sighting could not be explained?

And then an answer came to me: by appearing to an unimpeachable witness and providing him with sufficient visual information to make the sighting unexplainable, *they* had sent a message to him and, through him, to all mankind.

The message?

You are not alone.

It was then that I decided to write this book to show everyone the true importance of that sighting: it proved that we are not alone.

Appendix 1 - Radio Interview of Kenneth Arnold, June 26, 1947

I thank Mike Christol for providing the audiotape and John Powell for transcribing it and posting it on the Encounters Forum of Compuserve. This is probably Arnold's the first radio interview.

Newscaster:

The nation, every newscaster, and every newspaper across the nation has made headlines out of it, and this afternoon we are honored, indeed, to have here in our studio this man, Kenneth Arnold, who, we believe, may be able to give us a first-hand account and give you the same on what happened.

Kenneth, first of all if you'll move up here to the microphone just a little closer, we'll ask you to just tell in your own fashion, as you told us last night in your hotel room, and again this morning, what you were doing there and

how this entire thing started. Go ahead, Kenneth.

Kenneth Arnold:

Well, about 2:15 I took off from Chehalis, Washington, en route to Yakima, and, of course, every time that any of us fly over the country near Mt. Rainier, we spend an hour or two in search of the Marine plane that's never been found that they believe is in the snow someplace southwest of that particular area. That area is located at about, it's elevation is about 10,000 foot, and I had made one sweep in close to Mt. Rainier and down one of the canyons and was dragging it for any types of objects that might prove to be the Marine ship, and as I come out of the canyon there, was about 15 minutes, I was approximately 25 to 28 miles from Mt. Rainier, I climbed back up to 9200 feet and I noticed to the left of me a chain which looked to me like the tail of a Chinese kite, kind of weaving and going at a terrific speed across the face of Mt. Rainier. I, at first, thought they were geese because it flew like geese, but it was going so fast that I immediately changed my mind and decided it was a bunch of new jet planes in formation. Well, as the plane come to the edge of Mt. Rainier flying at about 160 degrees south, I thought I would clock them because it was such a clear day, and I didn't know where their destination was, but due to the fact that I had Mt. Saint Helens and Mt. Adams to clock them by, I just thought I'd see just how fast they were going, since among pilots we argue about speed so much. And, they seemed to flip and flash in the sun, just like a mirror, and, in fact, I happened to be in an angle from the sun that seemed to hit the tops of these peculiar looking things in such a way that it almost blinded you when you looked at them through your plexiglass windshield. Well, it was about one minute to three when I started clocking them on my sweep second hand clock, and as I kept looking at them, I kept looking for their tails, and they didn't have any tail. I thought, well, maybe something's wrong with my eyes and I turned the plane around and opened the window, and looked out the window, and sure enough, I couldn't find any tails on 'em. And the whole, our observation of these particular ships, didn't last more than about two and a half minutes and I could see them only plainly when they seemed to tip their wing, or whatever it was, and the sun flashed on them. They looked something like a pie plate that was cut in half with a sort of a convex triangle in the rear. Now, I thought, well, that maybe they're jet planes with just the tails painted green or brown or something, and I didn't think too much of it,

but kept on watching them. They didn't fly in a conventional formation that's taught in our army, they seemed to kind of weave in and out right above the mountaintops, and I would say that they even went down into the canyons in several instances, oh, probably a hundred feet, but I could see them against the snow, of course, on Mt. Rainier and against the snow on Mt. Adams as they were flashing, and against a high ridge that happens to lay in between Mt. Rainier and Mt. Adams. But when I observed the tail end of the last one passing Mt. Adams, and I was at an angle near Mt. Rainier from it, but I looked at my watch and it showed one minute and 42 seconds. Well, I felt that was pretty fast and I didn't stop to think what the distance was between the two mountains. Well, I landed at Yakima, Washington, and Al Baxter was there to greet me and he said [unintelligible].

And, he told me, I guess I better change my brand, but he kind of gave me a mysterious sort of a look that maybe I had seen something, he didn't know, and well, I just kind of forgot it then, until I got down to Pendleton and I began looking at my map and taking measurements on it. And, the best calculation I could figure out, now even in spite of error, would be around 1200 miles an hour, because making the distance from Mt. Rainier to Mt. Adams, in, we'll say approximately two minutes, it's almost, well, it'd be around 25 miles per minute. Now allowing for air, we can give them three minutes or four minutes to make it, and they're still going more than 800 miles an hour, and to my knowledge, there isn't anything that I've read about, outside of some of the German rockets, that would go that fast. These were flying in more or less a level, constant altitude. They weren't going up and they weren't going down. They were just simply flying straight and level and I, I laughed ...[unintelligible]..., they sure must have had a tailwind. But it didn't seem to help me much.

But to the best of my knowledge, and the best of my description, that is what I actually saw, and like I told the Associated Press, I'd be glad to confirm it with my hands on a Bible because I did see it, and whether it has anything to do with our army or our intelligence or whether it has to do with some foreign country, I don't know. But I did see it and I did clock it and I just happened to be in a beautiful position to do it and it's just as much a mystery to me as it is to everyone else who's been calling me the last 24 hours, wondering what it was.

Newscaster:

Well, Kenneth, thank you very much. I know that you've certainly been busy these last 24 hours, 'cause I've spent some of the time with you myself, and I know that the press associations, both Associated Press and our press, the United Press, has been right after you every minute. The Associated and the United Press, all over the nation, have been after this story. It's been on every newscast, over the air, and in every newspaper I know of. The United Press in Portland has made several telephone calls here at Pendleton to me, and to you this morning, and from New York I understand, they are after this story, and that we may have an answer ...[unintelligible]... because, if it is some new type of Army or Navy secret missile, there would probably a story come out on it from the Army or Navy asking, saying that it is a new secret plane and that will be all there is to it, and they will hush up the story, or perhaps that we will finally get a definite answer to it.

I understand the United Press is checking on it out of New York now with the Army, and also with the Navy, and we hope to have some concrete answer before nightfall. We certainly want to thank you, Kenneth for coming into our studio. We feel very pleased that this news which is making nationwide news across the country, we are able to give our listeners over KWRC a first-hand report direct from you, of what you saw. And we urge our listeners to keep tuned to this station, because anytime this afternoon or this evening, and we get something on it on our United Press teletype, which is in direct communications with New York, Chicago, Portland, in fact, every United Press bureau across the nation, why, we'll have it on the air.

Appendix 2 - Air Force Evaluation of Arnold

Kenneth Arnold (1915-1984), at the request of the Army Air Force Intelligence investigators, wrote the following brief biography early in July, 1947:

Some Life Data on Kenneth Arnold

"I was born March 29, 1915 in Subeka, Minnesota. My father's name was Edward Erb Arnold; my mother's maiden name was Bertha E. Barden. I was

a resident of Minnesota until I was six years old when my family moved to Scobey, Montana, where they homesteaded. My grandfather, Roland. C. Arnold also homesteaded in Scobey, Montana, and became quite prominent in political circles along with Burton K. Wheeler, the famous Montana senator.

I went to grade school and high school at Minot, North Dakota. I entered scouting at twelve years of age and achieved the rank of Eagle scout before I was fourteen. My former scout executive was H.H. Prescott, now a regional commissioner for the Boy Scouts in Kansas City, Kansas.

As a boy, I was interested in athletics and was selected as an all-state end in 1932 and 1933 in the state of North Dakota. I entered the U.S. Olympic trials in fancy diving in 1932; I was a Red Cross Life Saving Examiner during the years of 1932, '33 and '34. I taught swimming and diving at scout camps and the municipal pool in Minot, North Dakota. I went to the University of Minnesota, where I swam and did fancy diving under Neils Thorpe, and also played football under Bernie Bierman, but upon entering College I was unable to continue my football career because of an injured knee. My high school football coach was Glenn L. Jarrett, who is now the head football coach of the University of North Dakota. I had little or no finances, and my ambition in furthering my education in college was through my athletics. As a boy in Minot, North Dakota, I did a good deal of dog sled racing, placed first with my dog in 1930 in the Lions Club Dog Derby.

In 1938 I went to work for Red Comet, Inc. of Littleton, Colorado, manufacturer of automatic fire fighting apparatus. In 1939 I was made district manager for them over a part of the western states, and in 1940 I established my own fire control supply known as the Great Western Fire Control Supply. I have been working as an independent fire control engineer since, and I handle, distribute, sell and install all types of automatic and manual fire fighting equipment in the rural areas over five western states.

My flying experience started as a boy in Minot, North Dakota, where I took my first flying lesson from Earl T. Vance, who was originally from Great Falls, Montana. Due to the high cost at that time, I was unable to continue my flying and did not fly of any great consequence until 1943. I was given my pilot certificate by Ed Leach, a senior CAA inspector of Portland, Oregon, and for the last three years have owned my own airplane covering my territory with same and flying from forty to one hundred hours per month since. Due to the fact that I use an airplane entirely in my work, in January of

this year I purchased a new Callair airplane, which is an airplane designed for high altitude take-offs and short rough field use.

In the type of flying that I do, it takes a great deal of practice and judgment to be able to land in most any cow pasture and get out without injuring your airplane; the runways are very limited and the altitude is very high in some of the fields and places I have to go in my work. To date, I have landed in 823 cow pastures in mountain meadows, and in over a thousand hours a flat tire has been my greatest mishap.”

Many years later he was interviewed by reporter Bob Pratt. Pratt wrote that he “graduated from the University of Minnesota as a chemical engineer.” However, his daughter, Kim has told me that he didn’t graduate because of a sports injury. This shows, nevertheless, that he had a scientific nature and would take a scientific approach to understanding the unusual. It explains why he would think of trying to measure the speed of the objects using the tools available to him (clock, mountains).

Arnold was interviewed by Air Force Intelligence (Lt. Frank Brown). The following document is part of the Arnold case in the files of Project Blue Book.

16 July 1947

Memorandum for the Officer in Charge

On 16 July 1947, Mr. Arnold,, Box 387, Boise, Idaho, was interviewed in regard to the report by Mr. Arnold that he saw 9 strange objects flying over the Cascade Mountain Range of Washington State on July 25th [sic]. Mr. Arnold voluntarily agreed to give the interviewer a written report of exactly what he has seen on the above mentioned date. The written report of Mr. Arnold is attached to this report as Exhibit A.

AGENT’S NOTES: Mr. Arnold is a man of 32 years of age, being married and the father of two children. He is well thought of in the community in which he lives, being very much the family man and from all appearances a very good provider for his family. Mr. Arnold has recently purchased a home on the outskirts of Boise, recently purchased a \$5000 airplane in which to conduct his business to the extent of which is explained in the attached exhibit. It is the personal opinion of the interviewer that Mr. Arnold actually saw what he stated that he saw. It is difficult to believe that a man of Mr. Arnold’s character and apparent integrity would state that he saw objects and write up a report to the extent that he did if he did not see them. To go

further, if Mr. Arnold can write a report of the character he did while not having seen the objects that he claimed he saw it is the opinion of the interviewer that Mr. Arnold is in the wrong business, that he should be writing Buck Rogers fiction. Mr. Arnold is very outspoken and somewhat bitter in his opinion of the leaders of the U.S. Army Air Forces and the Federal Bureau of Investigation for not having made an investigation of this matter sooner. To put all of the statements made by Mr. Arnold in this report would make it a voluminous volume. However, having checked an aeronautical map of the area over which Mr. Arnold claims that he saw the objects it was determined that all statements made by Mr. Arnold in regard to the distances involved, speed of the objects, course of the objects and size of the objects could very possibly be facts. The distances mentioned by Mr. Arnold in his report are within a short distance of the actual distances on aeronautical charts although Mr. Arnold has never consulted aeronautical charts of the type the Army uses. Mr. Arnold says his business has suffered greatly since his report on July 25 (sic) due to the fact that at every stop on his business routes large crowds of people were waiting to question him as to just what he had seen. Mr. Arnold stated further that if he, at any time in the future, saw anything in the sky, to quote Mr. Arnold directly, 'If I saw a ten story building flying through the air I would never say a word about it.' due to the fact that he has been ridiculed by the press to such an extent that he is practically a moron in the eyes of the majority of the population of the United States.

Appendix 3 - Speech at UFO Congress, 1977

Here is a transcript of the germane portion of the tape of Arnold's speech at the First International UFO Congress in Chicago, Illinois, held on or about June 24, 1977. Transcribed by Bruce Maccabee in February, 2000.

[Note by the author] Mr. Arnold started by describing himself and flying and his business, etc. He spent some time talking about the dangers of his search

for the Marine Transport. Clearly he had been flying around Rainier for some years before his famous flight. This makes complete nonsense of Menzel's claims that Arnold misidentified weather phenomena such as fast moving clouds of snow, etc. from Mt. Rainier. I gather from what he said that he flew westward while dropping in altitude in order to view the southeastward, southern and southwestward flanks of Mt. Rainier.

“As I came out below on this first sweep I passed over a little community of Mineral Washington, the pine trees there, and knew pretty much where I was. I made a turn at probably 2000 ft over Mineral, Washington and started climbing back slowly but steadily climbing, to gain sufficient altitude to go back on the high plateau again for another pass at this mountain. As I was making this turn and, of course flying directly toward Mt. Rainier, at about 9200 ft elevation... it was a beautiful day, in fact the plane was very stable, I didn't have to fight controls or weather or anything ... a tremendous flash appeared in the sky and it lit up my whole aircraft, even, it seemed, the cockpit of the airplane, and I was rather startled.

I thought I had seen a plane that was very close to me, or possibly it had been a military plane that had dove over my nose and the reflection of the afternoon sun against his wing surfaces had caused the flash. Now this just, in less than one tenth of a second, I think, went through my mind. I looked all around below me and looked ahead of me. And then the flash came again and this very, very bright flash, it was almost like an arc light, was coming from a group of objects far up to the north of Mt. Rainier, in the area of Mt. Baker, which is almost in a line with Mt. Rainier and Mt. Adams. I observed a chain of very, very peculiar aircraft approaching Mt. Rainier very rapidly. I think I described them like the tail of a chinese kite. They seemed to be in an echelon formation. However, in getting a look at them against the sky and against the snow of Mt. Rainier as they approached, I just couldn't discern any tails on them, and I had never, never observed an aircraft without a tail. Particularly, these were of fairly large size and there was nine of them in number. I was good at counting things like this because I flew missions counting antelope, sheep, cattle, and what not in the course of my lifetime. I kept searching for their tails.

I was quite surprised that I couldn't find their tails. I was aware that the military was very clever at camouflage and I was, of course assuming all the time that these were military craft or at least military missiles. I was puzzled

because the formation of their echelon travel which was at 170 degrees, which is south, from north to south, following very closely to the Cascade Range, their formation as I observed it seemed to the first craft was at a higher elevation than all the rest of the craft, which, of course, is not conventional, military formation at all, in either this country or Russia or Germany or anything that I had ever heard of before. So I just assumed, in a flash, that they were some new type of military missile or jet and possibly remote controlled. They didn't fly like airplanes actually.

This brilliant flash that came from their surfaces, which I assumed was from the sun reflection at first, would pulsate and they would flutter like this and sail. They seemed to fly just as readily on edge as they did on a level. As I mentioned before, they seemed like they were linked together in a sort of diagonal chain-like formation, similar to geese, but (chuckle) they were not geese. I was very puzzled about that. However, I made a special note, they were all independent. Individually they were flying on their own, but every once in a while one of them would give off a flash like this and gain a little more altitude or deviate just a little bit from the echelon formation. And this went periodically on among the (objects), alternately, I should say, not in regular rhythm particularly, among all the nine craft I was observing.

When they approached Mt. Rainier's north edge, I could see they were to the west of Mt. Rainier, which was a very good observation from my standpoint, because I was at right angles to them. I determined that if they were missiles or, whatever they were, I was going to clock their speed, or make an attempt to clock their speed. Now, around airports most pilots are always arguing about the speed of military craft, they're always arguing about the speed of their own planes. And I just thought, oh, it's a beautiful day and I've got a beautiful viewpoint here and I'm going to clock their speed even though I was closer to Mt. Rainier than to Mt. Adams, which was directly to the south and in their line of flight. I was going to clock their speed with my 24 hour clock which has a big sweep second hand on my instrument panel.

As the first one was putting its nose out of the southern edge of the snowfield of Mt. Rainier, my sweep second hand was just approaching, if I remember it correctly, about one minute to three. I think it was just going over the three. And they kept, of course flying and...in between Mt Rainier and Mt Adams there is quite a lot of rough, high terrain, it's been named for many years Goat Ridge. I don't know why. Supposedly, because it is very

rough and very steep. But this Goat Ridge, as I later flew it, is approximately 5 miles long and is in a line similar to this. I was approaching Mt. Rainier. I realized that my attempt to clock their speed absolutely accurately would have been hopeless because I was rapidly approaching Mt. Rainier at 9200 ft at about a hundred miles an hour, steadily climbing myself and, of course, they were passing from north to south and anyhow, what took place was that, as the first one was passing this Goat Ridge and as the first one actually passed the end of Goat Ridge the last one seemed to enter above the Goat Ridge. I made a guess that the formation of these peculiar aircraft was approximately 5 miles long. Now this estimation is purely an estimation because the Goat Ridge is quite irregular. It isn't running at exactly 170 degrees. But I was getting some kind of a judgement as to how long the formation was.

These craft seemed to be climbing a little bit as they were following this 170 degree heading and I knew that I was on a level with them because they were on a horizon with me, so my altimeter showed a little over 92 hundred feet, so they were flying at an elevation of about 92 hundred, probably a little less or a little more as they sort of undulated, if you want to call it that, as they flew.

To be quite sure, as the last of this echelon formation of these strange aircraft actually passed Mount Adams, and to the best of my judgement were above a little bit, some of them, the head one was a little above Mt. Adams, I looked at my sweep second hand, and they had covered that distance of about 50 miles in a minute and 42 seconds. I knew they were flying really fast. I knew they were faster than our P-51's, or any planes I knew of militarily speaking, However, I didn't really try to figure out how many miles they were going.

Somehow I had a rather unusual feeling about it because of their size, and I judged their size to be probably, a hundred feet, their wingspan a hundred feet in diameter. And, of course, I was very puzzled by the fact that they didn't have tails. But I got a good look at their image on the snow. Now, when they gave off this flash they would appear to be round. When they turned lengthwise or flatwise to me they were very, very thin. And actually they disappeared behind a sharp projection on Mt. Rainier in the snow field to my eyesight.

And, since I knew approximately where I was, flying of course toward the mountain, I knew where they had passed. I thought my judgement and my

clocking could be within reasonable limits as to about how fast they were going. As they were going past this Goat Ridge the second from the last one seemed, it was not reflecting and it seemed to turn its rear end toward me. I guess that's the best expression I can use. And I could see that it was a very wraith-like looking thing, but it wasn't round at all. And the other ones gave me the impression they were rather like a tadpole. If you've ever seen a tadpole they have a little sort of a peak at their rear. But I couldn't quite positively determine if they were all the same design as this one I particularly noticed or whether they were (different). Actually this one was a little larger. It seemed a little darker in color than the others and its wingspan seemed a little bit lighter. Of course, a leader of a group of craft of this kind would, of course, you would assume, would probably be the first ship. This was second from the last one and the last ship I couldn't see too well because he was fluttering and jerking very rapidly.

The way that they performed was that, if there was a human being in them, they would have been made into hamburger at the first turn because they were going very fast and very erratically and they could change their direction almost instantly and it would have been awfully hard, the centrifugal (force) must have been terrific, if there were human beings on them. This is the reason that gave me the impression that they must robot guided missiles.

Anyhow I sort of lost interest in my search mission and I decided that maybe I ought to go to Yakima and report it. Now in my craft in order to save weight so I can make high altitude take offs with it on short airfields I don't carry a lot of radio gear. I just had a small, little radio that I could contact the control tower with. I didn't need expensive and elaborate gear and so I couldn't very well call Seattle tower, I couldn't call Takoma tower or McCord or anything. I just kept flying on the way they had traveled across the Cascade Range and on to Yakima.

I felt positive in my own mind as I was continuing my flight to Yakima the forest observatories which run up and down the Cascades just couldn't possibly have missed seeing them because they were large and very distinct and there was quite a formation of them. However, I later found out that they had observed them but they had given their report not to the press or not to the public but of course to their superiors which, everything ends up eventually, I guess, in the Pentagon. I don't know.

So I landed at Yakima and I knew the pilots there. Al Baxter was the

general manager of Central Aircraft. He was an examiner as well, and I explained this all to him and I said they didn't have any tails and I told him the approximate size and I mentioned the tremendous speed and acceleration they had and the seemingly effortless way they flew. And he was really quite puzzled. We had been friends for a long time and he knew that I wouldn't make such a report unless it was absolutely true. Many of the helicopter pilots in the area had come in that afternoon and one of them mentioned, Well, Ken, I think you saw some of those guided missiles from Moses Lake. I said I never heard of guided missiles from Moses Lake. I thought, well maybe that's what it is. And I felt satisfied that that's probably what they were."

Arnold continued his talk by describing what happened afterward. He made the 35 minute flight from Yakima to Pendleton Oregon. There were people and reporters at the airport. His story had preceded him. While flying he had calculated the speed. He had measured the minimum distance from the southern flank of Mt. Rainier to the northern flank of Mt. Adams, about 39 miles. He estimated that they had traveled at least this distance in the time he measured. He got speeds above 1200 miles an hour (39 miles in 102 seconds corresponds to over 1,300 mph.). He said he stopped at Pendleton because he thought he should tell the FBI. He thought the objects could possibly be from Russia. Of course, no one had seen circular aircraft. At Pendleton he went to the FBI office but it was locked, so he went to the newspaper office and told the person there he wanted to see the FBI. The newspaper man wanted to know what the story was. He had charts with him and described it to the newspaper man. Before the evening was over Arnold was besieged and being asked all types of questions. Many of the newspapermen would ask a bunch of questions, get a few answers and rush away to file their stories. Many of the stories ended up very distorted. These stories were reported in the press and then not too long afterward there were other reports. Before the night was over he had calls from London, from religious groups, etc. Arnold thought that maybe the military took this way to introduce a new technology. Arnold said he had never read anything about strange things in the sky, other than "sightings" in the Bible.

After three days in Pendleton and getting no sleep and after all the sightings coming in he decided he "was the only sane person in the whole damn town. They must live a very interesting life." [laughter]

Appendix 4 - What Was the Flash?

Arnold reported seeing bright flashes from the objects, flashes that he compared with the “dazzling” brightness of reflections of sunlight from mirrors and brightness and color of a welder’s arc (blue-white). (The “dazzle phenomenon” that occurs when a person looks at a mirror reflection of the sun can be experienced by anyone on a sunny day. Simply look at the sun reflection using a small, flat mirror at tens of meters distance. The figure below shows sunlight reflected from a small mirror that “dazzled” the camera.)



**SUNLIGHT REFLECTED FROM A 1.25 INCH
DIAMETER FRONT SURFACE ALUMINIZED MIRROR
The mirror was about 280 ft from the camera.**

His immediate thought was that the nearly circular objects with their apparently flat tops were reflecting the afternoon sun but later he began to think that the flashes were caused by beams emitted from a single location on the top of each object. There are implications in either case. If the mirror-like top surfaces reflected the sunlight then the flashes on his airplane could have been random accidents of optical alignment as the objects tilted left and right as they flew. If on the other hand the beams were emitted by the objects, then the flashes on his plane could be accidental as, for example, if the light beams were scanning around like searchlights or laser radar beams and occasionally accidentally hit the plane. Or, they could be intentional, for example if the beams were signaling their existence and locations to the plane. In order to

choose between these two options, it is necessary to answer this question: does it make physical sense to say that sunlight reflections from the objects could be bright enough to cause the flashes Arnold described?

Of course, there was no one around to measure the brightness of flashes so the answer must be based on some reasonable assumptions and calculations based on optical physics equations. The first flash occurred when the objects were still distant, perhaps more than 50 miles from the plane. The question then becomes. how bright did the first flash have to be for Arnold to notice it when it was reflected from the surfaces of his airplane despite the presence of very bright sunlight and sky light also illuminating the surfaces? The fact that he did see the flash under these conditions can be used to provide an indirect estimate of the brightness of the flash as reflected from the airplane. It is then possible to “work backwards” to find the necessary brightness of the source of the flash at the distance of the object.

The reflection explanation would make physical sense if the top surfaces of the objects were mirror-like (specular), e.g., flat, polished metal surfaces, that occasionally reflected the sunlight toward Arnold’s plane. It is well known that sunlight reflected by even small (e.g., 1 foot or less in diameter) mirrors can be seen over distances much greater than fifty miles under clear atmospheric conditions when the observer is looking directly at the flashes. [35] The Royal Signal Society claims a signaling distance of ten miles for each inch of mirror size, but this depends upon the conditions of sunlight and atmosphere. [36] This is the underlying principal upon which is based point to point signaling and communication using mirrors on sunny days. Therefore it is reasonable to suggest that the bright flashes he saw when looking directly at the objects might have been of sunlight reflected from mirror surfaces. What is surprising is that the first flash (and maybe the others, too) was so bright that he could see it reflected from the airplane surfaces that were already brightly lit.

The outer surface of the airplane was intensely illuminated by the direct overhead sunlight and the cockpit surfaces were lit by environmental light (direct and indirect sunlight and skylight) so, to be seen as a sudden increase in brightness of the surface, the light from the flash must have been at least as intense as, say, one percent of the sunlight, and as much as ten percent. To see the flash indirectly (reflected from the inner or outer surface) would require a considerable increase in the brightness of the source of the flash over the source brightness that would be needed for the flash to be seen when

looking directly at the source.

Since the sun was at an elevation of about 60 deg., the top surface of an object must have tilted momentarily to an angle of 60 degrees or so to the horizontal in order to cause a reflected sun ray to travel nearly horizontally in the atmosphere from the object to Arnold's plane. This large amount of tilt seems consistent with Arnold's description of how they tilted as they flew.

He noticed the initial flash as a brief increase in reflected light from the airplane surface. This is important because this observation provides an estimate of how much light emitted from the object actually reached the airplane. Consider that the airplane surface was already lit by direct sunlight and skylight. It is not known just how much brighter the airplane surfaces appeared during the flash but it seems reasonable to assume that the flash caused a fractional increase in brightness of the surface. Label this fraction k , where k is probably much less than unity (perhaps 1% to 10%). Let the intensity of the environmental light on the airplane surface, which is mostly sunlight, be labeled I_s^P and the intensity of the flash at the airplane be labeled I_f^P . These two quantities are related by the following equation that applies at the plane:

$$I_f^P = kI_s^P \quad 1)$$

The flash is assumed to have been caused by sunlight which was reflected from a tilted, flat mirror of surface area, S in square meters (m^2), and which then traveled in an essentially horizontal pathway through 80 km (50 miles) of atmosphere to "hit" the airplane. Reflection of sunlight from a flat mirror creates a beam of sunlight that diverges, i. e., grows in diameter as it travels, because the sun is not a point of light but instead has an angular diameter of about 0.52 degrees or 0.009 radians (1 radian = 57.5 degrees; 1 degree = 0.0174 radians). The divergence causes the diameter of the reflected beam to increase with distance as follows: $D = 0.009R$, where D is the beam diameter at range R from the mirror. Let t be the angle between the normal to (the perpendicular to) the tilted reflecting surface and the direction to the sun. Let T_{atm} be the atmosphere transmission factor and let I_s^0 be the intensity of the sun at the location of the object. The irradiance on the airplane at distance $R = 80,000$ m from the mirror is given by the following equations:

$$D = 0.009 R = 0.009 \times 80,000 = 720 \text{ m} \quad (2)$$

$$t = 30^\circ \quad (3)$$

$$I_f^P = I_s^0 (S \cos t) (T_{(R)}) / [(\pi/4)D^2] = \quad (4)$$

$$= I_s^0 S (0.87)(T_{(R)}) / (0.79 \times 720^2) \quad (5)$$

$$= 2.1 \times 10^{-6} \times I_s^0 S T_{\text{®}} \quad (6)$$

where $(S \cos t)$ is the effective mirror surface area that collects the solar radiation and reflects it toward the plane. The atmosphere absorbs and scatters some of the reflected light and transmits the remainder according to the following equation, where T is the transmission factor, b is the optical extinction coefficient, and distance is R :

$$T_{\text{®}} = e^{(-bR)}, \quad (7)$$

where b varies with altitude and atmospheric conditions. Assuming a standard clear atmosphere probably similar to what Arnold was experiencing (not much haze) one can use published extinction "model" curves (e.g. as found in the RCA Electro-optics Handbook) to estimate b . The optical beam probably traveled upward from about 7,000 ft to about 9,500 ft. The optical attenuation of the beam for this slant path is approximated by using the attenuation coefficient for a horizontal path at 8,000 ft. The result is that the attenuation coefficient was probably about 0.025/km. Hence the transmission factor due to the atmosphere is estimated to have been

$$T_{(80)} = e^{-bR} = e^{-0.025 \times 80} = e^{-2} = 0.13. \quad (8)$$

The net result is

$$I_f^P = I_s^0 S (2.1 \times 10^{-6} \times 0.13) = 2.7 \times 10^{-7} I_s^0 S \quad (9)$$

Now recall Eq. (1) which specifies that the flash brightness on the plane should be k times the brightness of the sun on the plane. Substitute kI_s^P for I_f^P

in Eq. (9):

$$kI_s^p = 2.7 \times 10^{-7} I_s^o S. \quad (10)$$

Because the sky was clear with “unlimited” visibility it is reasonable to assume that the sunlight brightness illuminating the object was the same as illuminated the airplane:

$$I_s^p = I_s^o \quad . \quad (11)$$

Because these brightness values are equal they can be cancelled in both sides of the equation leaving an equation that calculates the value of k for a given area, S:

$$k = 2.7 \times 10^{-7} S. \quad (12)$$

For example, if the diameter of the mirror (object) were 20 m, about 65 ft, as estimated from Arnold’s size measurement, $S = 0.78 \times 20^2 = 314 \text{ m}^2$ and k would equal 8.5×10^{-5} which is much smaller than the estimated minimum value of k mentioned above, $k = 1\% = 0.01 = 1 \times 10^{-2}$. This raises the question, did Arnold underestimate the size? What if he were off by a factor of two, for example? If the diameter were doubled to 40 m the area would be four times larger, about $1,300 \text{ m}^2$, and k would be 3.4×10^{-4} , still much smaller than the minimum value of k. If the distance at the time of the first flash were only 40 miles, 64 km, D in Eq. (1) would change to 576 m, 2.1×10^{-6} in Eq. (6) would become 3.3×10^{-6} , 0.13 in Eq.(8) would become 0.20 and 2.7×10^{-7} in Eq. (12) would become 6.5×10^{-7} . This shows that even at the smaller distance the brief increase in brightness of the surfaces of the airplane during the first flash would have been too dim to see.

When the objects were closest to the plane, about 20 miles or 32 km, east, $D=288 \text{ m}$, 2.1×10^{-6} would become 1.3×10^{-5} , 0.13 becomes 0.44 and 2.7×10^{-7} in Eq. (12) would become 5.0×10^{-6} . For a 20 m mirror surface, k is too small ($k=0.008$) for a flash caused by a mirror reflection of sunlight to be seen as a flash on the airplane surfaces. Of course, after the first flash Arnold was looking directly at the objects and therefore, if there had been reflections of sunlight, they could have appeared to be quite bright.

These calculations show that at least the first flash was much brighter than a reflection from the sun. Therefore it appears that the objects had some sort of beam that was stronger than a sunlight reflection. The flashes were bluish-white, according to Arnold, and this color variation from the white-yellow of the sun is further evidence that the objects were emitting some unknown radiation.

Hence it appears that Arnold was correct in revising his opinion on the source of the flashes: they were not reflections of sunlight from mirror-like surfaces. Unfortunately there is not sufficient information to indicate what the flashes were. A reasonable guess would be that they were like laser beams, perhaps scanning the skies like radar systems.

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Endnotes

[1] The famous Roswell crash case that was publicized in early July 1947, had the potential to prove the existence of flying saucers but the Air Force immediately removed it from consideration by claiming that it was a weather balloon. The Roswell case played no significant role in the (publicly known) history of UFO/flying saucer sightings until some thirty years later when one of the witnesses told investigators of his part in the cover-up and that initiated an investigation that is still going on.

[2] Yes, the FBI did investigate sightings in 1947 and collected AFC information for years afterward. The *X Files* are real. See Ref. 2.

[3] Azimuth 230 deg., elevation 60 deg.; this was only two days after the summer solstice.

[4] BM Note: This was probably more like 50 miles.

[5] The only peak high enough to block his view of an object flying at 9,500 ft altitude is a peak jutting out from the southeast side of Mt. Rainier. In order for the objects to pass behind this peak they would have had to pass behind, i.e. east of, the main peak of Rainier. However, Arnold didn't indicate that they disappeared behind Rainier itself; see above and also a statement below.

[6] The sun is "yellow," a lower temperature than "blue."

[7] See also his recorded description in Appendix 1: half a pie pan with a convex triangle at the rear.

[8] During discussions with the press he intentionally underestimated this speed, saying that it was 1,200 mph or more, which was still faster than any aircraft of the day. Chuck Yeager was the first person to break the sound barrier at about 700 mph in October, 1947.

[9] The denial is in the FBI's file on flying discs, the real X File. See Maccabee, B., [*The FBI-CIA-UFO Connection*](#), Richard Dolan Press, Rochester, NY, 2014.

[10] 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.

[11] See Maccabee, B., [*The FBI-CIA-UFO Connection*](#), Richard Dolan Press, Rochester, NY, 2014. Gilmour, Daniel S. Ed., *The Scientific Study of Unidentified Flying Objects*, Chapter 5, Section 1; AFOSR contract study F44620-67-C-0035; Edward U. Condon, Director, Bantam Books Edition, New York, NY, 1969, pg. 481. Jacobs, David. M. *The UFO Controversy in America*, Indiana University Press, 1975. Ruppelt, Edward J. *The Report on Unidentified Flying Objects*, Doubleday and Co., Garden City, NJ, 1956.

[12] This sorry situation is described more fully, with numerous examples in Maccabee, B., [*The FBI-CIA-UFO Connection*](#), Richard Dolan Press, Rochester, NY, 2014.

[13] 1 minute of arc = 1/60 of a degree = 0.00029 radians = 0.29 mr, where mr is the abbreviation for milliradians; the angular size of the moon is about ½ degree or about 30 minutes of arc or about 9 mr.

[14] Even if Arnold overestimated the distance and it was really 10 miles away, then the vertical angular size would still have been less than 2 arc minutes.

[15] This is the explanation which appears in the files of Project Blue Book,

making it, one supposes, the official Air Force explanation.

[16] Menzel, Donald and Taves, Ernest. *The UFO Enigma*, Doubleday and Co., Garden City, NY, 1977.

[17] SKUFON issue #46, July 1997. One wonders why it took 50 years for this explanation to be proposed. Could it be that previous skeptics considered this to be just too outrageous?

[18] His first book, *UFOs Identified*, was published by Random House in 1968.

[19] 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*.

[20] They were probably about at 6,000 ft since they went “in and out” of mountain peaks south of Rainier.

[21] 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. Low Earth 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.

[22] Arnold 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 15 miles north and heading away from him.

[23] A. C. Clarke, “Things in the Sky,” a 1958 essay.

[24] See Maccabee, B., *The FBI-CIA-UFO Connection*, Richard Dolan Press, Rochester, NY, 2014.

[25] Kim Arnold (daughter), private communication.

[26] Bloecher, Ted. *The UFO Wave of 1947*, NICAP, 1967.

[27] For further information on Arnold and sightings by others on the same day, see https://en.wikipedia.org/wiki/Kenneth_Arnold_UFO_sighting and https://en.wikipedia.org/wiki/Kenneth_Arnold

[28] Evidently, Dr. Hynek was not aware of this because he indicated in his analysis of the Arnold sighting that there were no other witnesses.

[29] The Project Blue Book file page which contains this letter is labeled “A TRUE COPY” that was authenticated by Lt. Col. Donald Springer. I assume that the errors in the letter were in the original letter and were not simply errors in copying.

[30] The FBI ended these investigations in the fall of 1947, having found no evidence of subversion.

[31] This report was discovered when the FBI responded to a Freedom of Information Act request which I made in 1976 for any documents concerning flying saucers, UFOs, etc. The FBI found well over 1,000 pages of material relating to the Air Force investigation of UFOs, internal memoranda and sightings reported to the FBI. See Maccabee, B., [*The FBI-CIA-UFO Connection*](#), Richard Dolan Press, Rochester, NY, 2014.

[32] If he underestimated the distance above him he could also be likely to underestimate the size, since the size estimate is based on the angular size—the visually apparent size—and the estimated distance.

[33] For a discussion of magnetic effects in sightings, including Johnson’s see <http://brumac.mysite.com/MagneticUFO/MagneticUFO.html>.

[34] I am aware of only one review of his first book that criticized Menzel’s appeal to various rare atmospheric phenomena to explain all the sightings.

[35] For further information see www.wikipedia.org/wiki/Heliograph

[36] see <https://www.royal->

signals.org.uk/Datasheets/THE_HELIOGRAPH.php

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