

SCIENTIFIC STUDY OF UNIDENTIFIED FLYING OBJECTS

Conducted by the
University of Colorado
under contract No. 44620-67-C-0035
with the
United States Air Force

Dr. Edward U. Condon
Scientific Director

D D C

JAN 28 1969

Volume 2

Reprinted by the
CLEARINGHOUSE
for Federal Scientific & Technical
Information Springfield, Va. 22154

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 10/1/01 BY 60322 UCBAW

BLANK PAGE

Copyright © 1966 by the Board of Regents
of the University of Colorado

All rights reserved

No part of this book may be reproduced in any form, by photostat, microfilm, xerography, or any other means, without the written permission of the copyright owner.

Chapter II

Case studies during the term
of the project

(Cases 11 - 45)

Case 11

South Central

Winter 1966

Investigator: Roach

Abstract:

Four members of the crew of a DC-8 aircraft on a night flight from Lima, Peru to Mexico, D.F. reported sighting two bright lights which appeared to increase their angular separation with time. At the greatest angular separation the lights appeared to one of the observers to be connected by a body which had a suggestion of windows. Protuberances from the main "body" were reported. The object appeared to fly "in formation" with the aircraft for about two minutes and then was lost to view behind the wing of the aircraft.

It is suggested that the sighting may have been the result of the reentry of fragments of the Agena from Gemini II.

Background:

During a regular flight of a DC-8 commercial airliner from Lima to Mexico City four crew members reported an interesting sighting to the left of the aircraft. Here is the description given by the captain.

Two very bright lights, one of which was pulsating; from the two lights were two thin beams of light (like aircraft landing lights) which moved from a V initially to an inverted V finally. At one point the object seemed to emit a shower of sparks (similar to a firework). There appeared to be a solid shape between the two white lights, which was thicker in the middle and tapered outwards. There was also a strip of light between

the white lights (not very bright and yellowish in color). Much like cabin lights of an aircraft.

The chronology and circumstances of events are given below:

Time: Winter 1966; 0803 GCT; 0238 local time.

Position of aircraft: Latitude 6°S; Longitude 81°42'W.

Moon: Almost full moon, high in the sky behind the aircraft.

Heading of aircraft: 318° magnetic, 324° geographic (36°W of N).

Table 1

Time (relative)	Description
0 min.	First sighting. Two lights, 70° left, about 10° above the horizon. Estimated separation of the lights about ½°.
4 min.	Lights now about 90° to the left, brighter than the full moon, separation of the lights estimated at about 9° or 10°. A suggestion of "windows" between the lights. Shower of sparks from more northerly light.
5 min.	"Pacing" the aircraft
6 min.	"Pacing" the aircraft
7 min.	Object lost to view behind the left wing.

Suggested explanation of the sighting:

The apparent "pacing" of the aircraft by the object for an estimated two minutes is a puzzling feature of the sighting. Also the captain's sketch is suggestive of some kind of a craft. These add up to the intriguing possibility of an intelligently guided craft which, in the words of the aircraft's captain, "is a craft with speed and maneuverability unknown to us."

In a discussion with the captain, who has had some 26 yr. of flying experience, I asked his opinion of the following possibilities:

Table 2

Explanation	Evaluation by Captain
Aircraft	Definitely no
Meteor	No
Reentry of satellite	Possible

The Agena from Gemini II (see Plate 20) had been predicted to reenter at 0730 GCT at latitude 21 N, and longitude 134 E (NE of the Philippine I.). This is some 33 min. earlier than the sighting and about 1/3 of the earth's circumference away. NORAD has made a calculation of a reentry of a fragment or fragments from the Agena which would have a much smaller drag coefficient than the Agena proper. The final computer predictions to represent an extended reentry of a low drag fragment in the vicinity of the aircraft are shown in Table 3. It is noteworthy that during the last two minutes from 08h 04m 30s to 08h 06m 21s the object is dropping almost vertically from 26 km. to 10 km. The aircraft was presumably flying at about the latter height.

The closest approach of the Agena and the aircraft is about 250 statute mi. The rapid deceleration of the reentering fragment

at the end of its journey is consistent with the impression of the crew that the object was pacing the aircraft since it could have appeared close to 90° on the left side of the aircraft for some minutes during its final descent into the atmosphere. The time of the sighting was given by the report of the crew as 0803 GCT. It is not known whether this time was near the early or the late part of the event. Also there is some uncertainty as to the exact geographical location of the aircraft during the sighting. With these uncertainties it seems that the proposed explanation of the sighting as due to the reentry of the Agena from Gemini II is reasonable (but not proven) so far as the relative paths of the aircraft and the predicted reentry are concerned.

Table 3
NORAD Computer Predictions for Extended
Reentry of Low Drag Fragment of Agena

Date	Hr.	Min.	Sec.	S. Lat.	E. Long.	Ht. (km.)
30 Dec. 1966	08	00	30	4°.498	268°.218	81
		01	30	6 .390	271 .476	74
		03	30	9 .264	276 .572	43
		04	30	9 .558	277 .106	26
		05	30	9 .577	277 .142	15
		06	21	9 .577	277 .142	10

Case 12

North Eastern

Winter 1967

Investigators: Fred Hooven and David Moyer of Ford Motor Company

Abstract:

Witness reported that, while she was driving alone at night, a luminous object hovered over her car for several miles, then moved rapidly into the distance, and that several mechanical and electrical functions of her car were found to be impaired afterward. Examination of the car two months later disclosed no faults that were not attributable to ordinary causes, nor any significant magnetic or radioactive anomaly in or on the car body.

Background:

The witness reported this and an earlier sighting to a sheriff who referred her to someone at a local university. The latter, in turn, reported the case to the Colorado project staff. Because the report indicated that the case would afford a good opportunity to test the possibility of electromagnetic effects on an automobile by an UFO, Hooven and Moyer were asked to carry out a detailed investigation.

Investigation:

In the spring of 1967 Moyer recorded an interview with the witness and drove her car back to Dearborn, where Ford engineers and laboratory staff under Hooven's direction examined it in detail.

The witness, a professional secretary, reported that, while driving on a rural road near her home about 2 a.m. one morning in the winter of 1967, she first noticed that the scene in front of her was brightly illuminated. Thinking at first that her headlights were on high beam, she operated her foot switch but this

made no difference, although the indicator light was responding. She then turned the headlamps out, but the illumination was undiminished. She then observed that its source was a luminous body over her car, which she perceived in the rear-view mirror and from the side windows. The object remained directly over her car for ten or fifteen minutes as she drove along the road rather slowly. The car would not accelerate. She depressed the accelerator all the way. Though the car went straight, she felt that she was not steering it, rather it -- or her mind -- was being steered from the mysterious object. She opened one window and could hear no sound. At the top of a rise the object drew away and "made a big check mark in the sky." It disappeared rapidly into the distance, growing redder as it did so. As it moved away, it resembled an inverted mushroom having a short stem on top and a uniform yellowish glow and two bright white lights and several smaller ones underneath.

The witness reported four instrument malfunctions after the incident that she had not noticed before: (1) the radio was weak and full of static; (2) the speedometer read low; (3) the battery did not charge properly and the ammeter did not read as usual; (4) the oil gauge was stuck at the maximum reading.

After his interview with the witness, Moyer drove her car, a 1964 Comet, to Detroit, where Ford engineers and research staff investigated its condition in detail. With respect to the malfunctions reported by the witness, they found that: (1) The radio antenna had been broken off the car, so that only local stations could be heard through the background noise. (2) The fan belt, which operated the generator, was so loose that the generator was not delivering normal charging power to the battery. (3) In the speedometer, a die casting that provided alignment for the bearings had been broken, repaired, and apparently had broken again, causing bearing friction that caused the speedometer to read low. This condition was aggravated by sticky lubricant from the speedometer cable that had worked up. (4) The transmitter element of the oil gauge was malfunctioning because of electrical leakage due to corrosion.

All of the reported malfunctions were found to result from conditions that are commonplace in cars of the age and mileage of the witness' Comet.

The metal-forming operations in the manufacture of a car body produce a characteristic magnetization pattern for each model, which persists for years with little change unless the metal is reworked or subjected to a magnetic field substantially stronger than that of the earth. An examination of the magnetic "signature" of the witness' car body revealed no significant difference from that of three out of four other randomly selected similar cars of the same age. It was therefore concluded that no significant magnetic field had acted on the witness' car.

A Geiger beta-gamma survey counter showed no significant radioactivity from the car body. Scrapings of accumulated dirt and debris from hood and deck lid flanges, drip rail, etc., showed a low level radioactive contaminations, the strongest being about 5 gammas per sec. at 120 keV. A similar survey of material from another 1964 Comet showed a similar level of contamination, though with a different spectral distribution. The radioactivity found is not unusual; however, an accurate evaluation of its significance was impossible in the absence of detailed knowledge of the environmental history of the car.

Comments:

This case is especially interesting because of the specific and detailed information given by the witness, and the "strangeness" of the encounter. Her recorded testimony indicates a competent, practical personality, trained and accustomed to keeping her presence of mind in unexpected situations. By her account, her first intimation of something strange was the abnormally bright headlight field. Her practical response was to try the high-low beam switch, and she distinguished between the dash-signal indication and the lack of change in the illumination. Later she lowered the window to listen for any unusual

sound. Most interesting is her comment that, after she realized something strange was above the car, she remembered stories of alleged mental influence by such apparitions and kept talking to herself to keep her mind actively busy. "I was not about to give it an opening." In short her testimony presents the picture of a woman alone on a deserted road confronted by a strange phenomenon, scared but coping intelligently with the situation.

However, her account is not free of discrepancies. She remembered bright moonlight, but the moon was at last quarter on 3 January, and would not have been very high even on that date. Her description of what she saw of the UFO through the rear-view mirror is open to question. The Ford investigators noted that the internal mirror allows a field of only 3° above the horizontal. The UFO would have had to be about 20 times as wide as its elevation above the car to be seen in the mirror at all. She also reported several earlier UFO sightings by herself and friends and family in the vicinity of her home. These reports suggest the possibility of a preoccupation with the subject. However, she apparently was not seeking publicity. She mentioned the incident early in March to a local deputy sheriff, who reported it to a person at a local university. All of the malfunctions of the car that the witness stated had manifested themselves after the UFO experience were found to be the results of gradual wear and deterioration except the broken radio antenna, which was inconclusive. The case remains interesting but unexplained.

Case 13

North Eastern

Winter 1967

Investigators: Ayer, Wadsworth

Abstract:

Two women, joined later by a third, reported three appearances of a disc-shaped object with lights while they were driving in early darkness. Because of elapsed time and other factors, no evaluation was practicable.

Investigation:

Interviews with the three women in autumn 1967 developed the following account:

A woman (witness A), and her niece about 16 yr. old (witness B), were driving north toward town at about 5:45 p.m. They had just passed the lake and were about 0.5 mi. south of town, when they saw a "classical" disc-shaped object moving toward them from the general direction of the mountain on their right. The disc had several round lights or "portholes" on its equator, and bright beams pointed in all directions. It stopped and hovered about 200 yd. from the road at such an altitude that it appeared to be below the crest of the mountain. (Since the top of the mountain was 400 ft. higher than the road and 2,400 yd. away, the object would have been 53 ft. off the ground if it had been seen in line with the mountain top.)

The women stopped and observed this phenomenon for five minutes, until the lights went out and the craft vanished. They stayed in the car during this time, with the engine running and the lights on.

They then drove on to town to pick up a woman friend (witness C). Just before arriving in town they looked back and saw the same or another object overtaking them from the direction of the lake. This second object looked and behaved like the first, hovering over

the ground, remaining for about the same time, and finally vanishing when its lights went out. This time the women got out of the car, but left the lights on and the motor running.

The women continued their drive, picked up their friend, and returned to a point just east of the town to see if the object(s) had reappeared. Seeing nothing, they drove around to the east of the mountain and continued south. About a mile south of the mountain, they saw another object similar in shape to the first two, but having dim red, square windows, hovering near the road on their right at the same altitude as before. The three women got out of the car and turned off the motor and lights, and watched the object until the lights went out and it disappeared.

Comments:

This case is stronger than most eyewitness accounts, because two original witnesses were corroborated by a third although the third is not independent. Unfortunately, the incidents occurred eight months before the interviews, thus affording opportunity for significant distortions of memories. Because of the time lapse, a search for other witnesses or other contributing evidence did not appear practicable. The case therefore must be regarded as unexplained for lack of knowledge of the context in which it occurred.

During the interview, the niece made a remark that seemed especially relevant to the numerous sighting reports in that region. When asked whether she had seen anything like the disc before, she said she had not, "But we frequently see moving lights." Questions about altitude and azimuth, characteristics of the lights and frequency of appearances, brought out that lights had been seen several times a week, mostly toward the northwest (15 to 20 mi. away), at a low altitude just above the tree line. The lights were white points and moved rather rapidly in a random manner.

Case 14

South Central

Winter 1967

Investigators: Low, Powers, Wadsworth, Crow

Abstract:

Six UFO reports in the area of two South Central cities were investigated in the winter of 1967. Of the six, three were promptly identified, two as astronomical objects and one as a chemical-release rocket shot. The other three remain unidentified as follows:

- (1) The city police chief and several officers reported sighting an extended object of spherical shape one morning, winter, 1967. It was of whitish or metallic color and showed no surface features as it drifted slowly near the outskirts of the city. The officers watched it for about 1.5 hours before it drifted out of sight.
- (2) Several town policemen reported a red-and-green light moving irregularly in the western sky in the morning in winter, 1967. The planet Jupiter was low in the western sky also, but according to the witnesses the object displayed movement which would rule out identification as an astronomical object. They also stated that a bright "star" was visible near the object.
- (3) Three teenage boys in the city reported to the police that they had just seen a large elongated UFO at the edge of town. Their description closely matched that of a recently publicized set of pictures that have since come under suspicion as a probable hoax. Credibility of these witnesses was considered marginal.

Background and Investigation:

First Sighting

One morning in the winter of 1967 about 1.5 hours before dawn, the city police received a call from the town police reporting that an unidentified object was headed southeast toward the city. A police lieutenant drove to a location approximately four miles north of the city, and within a few minutes saw what he described as a huge silvery object moving slowly in his direction. The object was low on the horizon at an estimated elevation of 1,000 ft.

Several minutes after the object first became visible, it turned in a southwesterly direction, heading toward a nearby town. At this point, additional officers were called as witnesses. They met at a point just west of the city, about four miles from the town. The object was visible to all until it drifted out of sight just before dawn.

There is no reason to doubt the credibility of the sighting; however, the question of *what* was seen remains unresolved. One bit of corroborating evidence was brought to light during the investigation. A periodic glow or reflection from the object was described by the Joplin lieutenant. He stated that the glow had a regular five-second period. One-half mile from the witnesses' first location was the local airport. The half-rotation period of the airport's two-way beacon is five seconds, and thus consistent with the periodic glow seen coming from the object. If the object was both low and nearby, it might have been illuminated by the beacon.

The possibility of conventional explanation as a balloon was ruled out when a weather check indicated that lower winds were from south to southwest.

Second Sighting.

At approximately 5:00 a.m., the following morning, a sergeant of the police department observed an unidentified object in the western sky. He described the object as a bright light one-fourth the diameter of the full moon, showing no distinct outline, and colored red on the left and greenish-blue on the right. The object first attracted attention because of its apparent motion, which was irregular, involving stopping and changing direction. After a period of observation during which time several other officers were present, the object suddenly dropped as though it were going to "crash", but stopped a short distance above the horizon. By comparing the remembered elevation of the object to a pencil held vertically at arms length, it was estimated that the object when first observed, was 12 degrees above the horizon, and then dropped 9 or 10 degrees before stopping.

The sergeant was questioned about Jupiter, which was low in the west at the time. He said that a bright "star" was also visible, but that the motion of the object was too pronounced for it to have been a star or planet. He also emphasized that all of the witnesses observed the motion simultaneously, and that the object moved relative to

the fixed background of stars. The object was still visible when the witnesses left the scene.

On the basis of witness testimony, it seems unlikely that the object spotted was Jupiter; however, evidence was insufficient to establish this.

Third Sighting

A sheriff and a police chief reported seeing a bright bluish cloud-like display for over an hour just before dawn on a winter morning, 1967. As daylight approached the object disappeared.

This "object" was later identified as an active chemical rocket launched from Eglin AFB, Florida, at 5:40 a.m. CST. It rose to an altitude of approximately 100 mi., where it released for scientific purposes a cloud of barium particles that glowed brilliantly bluish through chemical reaction with the surrounding atmosphere. It has been determined that this display would have been clearly visible from the area where the sighting took place.

Fourth Sighting

Three teenage boys reported having seen a large UFO at the edge of town about 11:30 p.m., one evening, winter 1967. They described structural details, fins, and lights. After first seeing the object directly in front of their car, they followed it as it drifted over a wooded area into which there was a narrow access road. There they got out of their car, but became frightened when the object appeared to move in their direction, whereupon they returned to their car and left to report the incident. The boys' description and a sketch drawn by one of them closely matched recently publicized photographs, one of which had appeared in a local newspaper a few days before the sighting. Nevertheless, during interviews, the boys showed no evidence of falsification and seemed to have been genuinely frightened by the experience. No corroborating evidence was found to support this report.

Fifth Sighting

At 12:30 a.m., one morning, winter 1967, a report came into the city police station from the state patrol. The report stated

that a UFO was at that moment under observation, that it was being photographed, and that it had caused an observer's car to stall. Low immediately investigated this report and identified the object as Jupiter. The stalled car was still at the scene with apparently a low battery. The observer who had photographed the object said it had moved markedly before coming to rest at its present position. Thus, the possibility exists that initially he was watching something other than Jupiter; but there was no doubt of the identity of the object that he photographed.

Sixth Sighting

At approximately 1:30 a.m., one morning, winter 1967, the city police dispatcher reported an object low in the East. This was promptly identified as Arcturus, which was scintillating markedly.

Weather Conditions:

The following are pertinent excerpts from the meteorological report for the area on the day of the first sighting as prepared by Loren W. Crow:

The semi-stationary weak cold front lay in a north--northeast-south-southwest orientation approximately forty miles northwest of [the city]. Behind this front cloudiness was generally overcast at 10,000 feet or more above the ground. To the east of the front, the sky was generally clear with some patches of scattered clouds. Visibility was 15 miles or greater, and the flow of the air was from the south-southwest at the surface in the vicinity of [the city] . . . (at higher elevations).

CLOUDS: It is of some interest to note that the clear condition being observed at [three local stations] at 5:00 a.m. changed to reports of at least two cloud layers by 7:00 a.m. at all three stations. Part of this would have been due to increasing amounts of light for the trained observers to be able to identify cloudiness which could not have been seen during the darker hours of the night . . .

Although the type of clouds being reported at 10,000 feet over [the city] were not identified, the type of cloud in this height range was identified as alto-cumulus over [nearby cities]. It is the Author's opinion that this type of

cloud would have been *altocumulus castellatus*, which tends to have rounded edges. The initial formation of such clouds would constitute small individual cloud cells. Each may have shown for a matter of a few minutes then may have been replaced by another cloud cell nearby which may have been similar in shape. This could have indicated movement from the position of the first cloud parcel (which now would have disappeared) to the position of the newer cloud. At the same time, the individual clouds would be moving with the wind, which was from a westerly direction at those elevations.

It is fairly certain that cloudiness began to appear in this area sometime between 4:00 and 6:00 a.m. There may have been a few isolated cloud parcels visible with the limited moonlight available at 5:00 a.m....

Conclusion

Of the six sightings investigated, three objects were identified. In only one case of an unidentified object was the evidence strong for both its reality and its strangeness. That was the first, which involved a slowly drifting sphere, metallic in color. We have little basis for speculation about *what* the object was, since the sighting occurred in pre-dawn darkness and no surface details or structural features were seen. In the other two unknown cases the evidence is less substantial, one case having low credibility and other marginal strangeness.

Case 15

South Mountain

Winter 1967

Investigator: Wadsworth

Background

A private observer had reported by telephone that for several months he had repeatedly seen in the west at evening a green light as large as a two-story building. Sometimes it appeared round, sometimes oblong. He reported that the object had been landing five to 20 miles west of his house several times per week, in the period about 4:30 to 7:30 p.m. Observing through binoculars, he had seen two rows of windows on a dome-shaped object that seemed to have jets firing from the bottom and that lit up a very large surrounding area.

Investigation

The investigator visited the site on a winter evening, 1967, arriving at the observer's home about 6:30 p.m. The observer pointed out as the object of his concern a bright planet 10-15 degrees above the western horizon. Wadsworth suggested that the object appeared to be a star or planet. (Both Venus and Saturn were visible about 1.3 degrees apart, Venus being the brighter.) The observer agreed, saying that, had he not seen it on other occasions when it appeared much nearer and larger, he would have the same opinion. Also, he held to his description of the surface features that he claimed to have seen through the binoculars. His wife concurred with this statement, supporting his allusion to windows. It was suggested that some object other than a planet might have been involved, but no other bright light was visible in that area of the sky.

The phenomena of scintillation and color change characteristic of light sources low on the horizon were described to the observer, and he seemed to accept the possibility that what he had seen was only a planet

seen under conditions unusual in his experience. Thus what he had observed, even with the binoculars, apparently had not been sufficiently clear to be conclusive to him. The possibility of a second object seems very unlikely, although at times he may have observed stars or planets other than the one he noted at this time. This possibility would account for the long period during which the sightings had occurred.

Conclusion

The reported "landings" apparently were the nightly settings of the planet. The glow around the "landed" object probably was the bright moonlit snowscape seen through the binoculars. The motion was described as always the same, a very gradual descent to the western horizon, where the object would "land" and shortly thereafter cut off its lights. It is believed that the alleged size, brightness, and surface features were largely imagined.

The observer seemed quite sincere and curious; however, his description of the phenomena could not be considered scientifically reliable. He demonstrated an inadequate grasp of basic scientific information, and seemed unable to distinguish between objective observations and subjective impressions.

Case 16

South Mountain

Winter 1967

Investigators: Van Arsdale, Hynek

Abstract:

Daylight visual sightings of "silvery specks" overhead were reported, but pilots of aircraft sent to investigate saw nothing. Two radars concurrently detected several intermittent stationary targets in the reported area, and then a single target that moved slowly several minutes. Then it disappeared on one radar, and on the other described an approximately circular course at high speed. The visual sighting, and a later one, are impossible to evaluate. The radar targets are attributed to propagation anomalies, a balloon, and malfunction of one radar.

Background:

Reports of reliably witnessed visual and radar sightings in the vicinity of an Air Force base reached the project, leading to the decision to send an investigator there. It was arranged that Dr. Hynek, who was to be at the base on other business, should participate in the investigation.

Investigation:

The investigators examined the radar plots and talked with the base UFO officer, the Public Information Officer, and the radar operators who had reported the unidentified targets. From these inquiries, the following account developed.

At 10:25 a.m. a young man telephoned the base UFO officer to report that he was seeing "silvery specks" passing overhead. During about 30 min., he had seen two or three groups of 30 to 40 such objects moving southwest. He was at a point (Point "1," Fig. 1) in the mountains NE of the base.

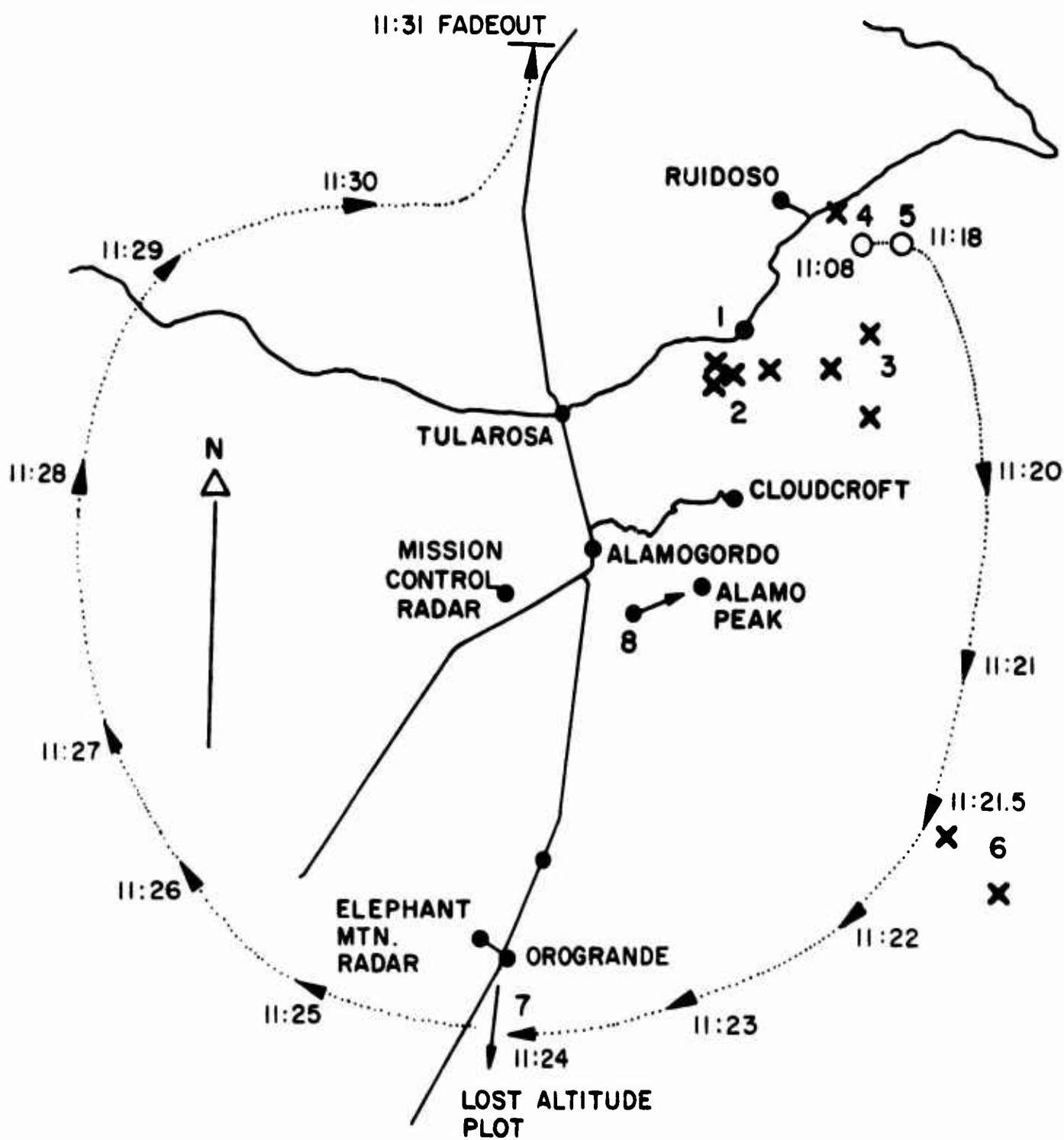


Fig. 1

The UFO officer finished his conversation with the witness at 10:50. He then had two aircraft sent to the reported location; but they reported nothing unusual.

He also asked range surveillance radar to seek the objects. (Being inexperienced in such investigations, he told the operators where to look, instead of simply asking them whether they had any unidentified targets). Only two surveillance radars were operating, one at Mission Control on the base and the other 35 mi. south.

About 10:55 both radars plotted four objects about five miles south of the visual sighting, and a little later three other objects ("2" and "3" Fig. 1). All of these objects were intermittent, appearing sometimes on one sweep of the radar screen and not on the next, so that the radar tracking equipment could not "lock on" them; but they appeared to be stationary.

Then at 11:08 both radars plotted a slow-moving object at 25,000 ft. altitude, and tracked it ten minutes while it moved three or four miles eastward ("4" and "5" Fig. 1). At this point, at 11:18 a.m., it disappeared from the south radar screen, while the radar at Mission Control showed it moving southward at Mach 1.2. It continued approximately on a circular course centered on Mission Control radar, while both radars scanned clockwise. At 11:21.5 both radars showed two stationary objects ("6" Fig. 1) that also flickered intermittently. Mission Control radar continued to follow the fast-moving target on its circular course until it abruptly climbed to 80,000 ft. ("7" Fig. 1), and followed it on around to the north until it appeared to go out of range at 100,000 ft. altitude, at 11:31.

During the tracking of the circular course, the operator stated that he thought the radar was not functioning properly. The UFO officer accordingly was advised that he should not consider the plotted tracks "firm and accurate." FAA radar did not confirm the circular track, and range-data radars were not operating. The following day, the radar supervisor reported that evaluation of the Mission Control radar record indicated that the instrument had plotted a noise track. Also, there exist unexplained discrepancies

of 5 to 15 mi. between the ranges of the various unidentified targets displayed on photographs of the radar plotting boards, compared with the written report issued by Mission Control the next day. Positions indicated on Fig. 1 are taken from the plots.

An electronics technician reported that at 11:20, while he was at location "8" (Fig. 1), he saw a saucer-shaped object moving rapidly away from him; it disappeared behind a nearby peak. His line of sight to the peak was approximately toward the point on the circular track traced at 11:20 by Mission Control radar.

Comment:

With the limited information available, the two visual sighting reports are impossible to evaluate. The "silvery specks" could have been plant seeds of the type that float like parachutes, but such a suggestion is speculative.

The radar observations offer a more substantial basis for analysis, since they involved two trained operators and instrument records (See also Section III Chapter 5). However, the UFO officer remarked that the men on duty during the sightings were second-line operators having little experience with "track" (surveillance) radar. As noted earlier, they were told to look for unidentified objects at a specified location and had perhaps in consequence found them there ("2" on Fig. 1). It appears probable that these intermittent, stationary targets were mirage-like glimpses of peaks or other high points that were just below the radar line of sight, and were brought into view sporadically by fluctuations in the atmospheric path. There is the strong implication that the operators noticed these "objects" at location "2" because they were directed to look for something there, and that they could have found similar targets at other points on the mountain landscape. In fact, they did just that, at locations "3" and "6" (Fig. 1). These observations appear to be similar

to some reported in other cases (e.g., Case 35) in which operators of highly specialized radar equipment have failed to notice extraneous objects on their screens because they were intent on the targets that they had been assigned to track. They become aware of such commonplace objects only when a "UFO flap" has diverted them from routine procedure and encouraged them to look for anomalies. It should be noted that such a habit of ignoring irrelevant information in the perceptual field unless attention is directed to it is common in other instrument observations, and indeed in ordinary experience. It has accounted for many visual UFO reports.

The slow-moving radar object ("4" and "5" on Fig. 1) was entirely compatible with a weather or research balloon drifting with the prevailing westerly winds.

The evidence indicates that the circular track plotted on Mission Control radar, but not on the south screen, was an instrumental anomaly. The operator at Mission Control judged that the instrument was malfunctioning, and the subsequent evaluation by the civilian radar supervisory staff attributed the circular trace to a "noise track." Why the slowly-drifting object should have disappeared from both radars at nearly the same time is not clear. However, if it is assumed that the circular track represented a real object, then it is much more difficult to explain why the south screen never picked it up, even though it passed within seven miles of that station when the radar was working as attested by its plotting the targets at location "6."

It is important to note that none of the radar targets exhibited motions agreeing even approximately with those reported in the two visual sightings. The "silvery specks" were moving southwest. The saucer-like object of the second sighting was moving "away from" the observer and disappeared behind the peak, which was ENE of him, while the radar "object" was moving south. Also, inspection of the contours of the region indicates that the radar "object" plotted at 25,000 ft. altitude would have been obscured by mountain ridges from the observer at location "6"

throughout at least 25° of azimuth to the north of the peak.

This case is not fully clarified in all details; but the evidence indicates decisively that it is typical of many instances in which an initial sighting of dubious quality stimulates unusual attention and induces an expectant emotional state in which commonplace phenomena assume apparent significance.

Case 17

South Mountain

Spring 1967

Investigator: Wadsworth

Abstract:

A youth reported that a large, glowing object approached his car and accompanied it more than twenty miles. He described apparent electromagnetic effects on his automobile. Investigation revealed neither a natural explanation to account for the sighting, nor sufficient evidence to sustain an unconventional hypothesis.

Other reported sightings in the area were investigated without conclusive results.

Background:

The Primary Sighting

On a night in the spring of 1967 an 18 year-old high school boy (Witness I) was returning from a first-aid class in town to his parents' home, a general store. He reported that shortly after 11:00 p.m., when he was three miles west of the town, he noticed an object high in the sky directly ahead of him. He compared its apparent size and brightness to an ordinary incandescent light bulb seen at about twenty feet, or a slow-moving ball of fire. As he continued, the object descended at an angle toward his left, closed on his automobile, and accompanied it at a distance and elevation he estimated at one hundred feet each. He estimated the dimensions of the object as approximately 30 by 100 feet. It was shaped like an inverted bowl, flat on the bottom and arched on top. No surface features were visible, only an overall glow that was blue at the top and blended gradually through cream color and orange to bright red at the bottom. At times he noticed a

white vapor associated with the object. The only other feature he noted was a periodic on-off manifestation of the glow.

The witness also reported a sensation of intense heat coming from the object, such that he began perspiring profusely even with the car windows down. At this same time, the automobile engine began to sputter and miss, the radio and headlights went out, the ammeter indicated "discharge," and shortly afterward the temperature light indicated "hot."

To see the road, he used a battery-powered spotlight that was independent of the car battery. It continued to function normally. He drove as rapidly as possible (50-60 mph) under the adverse conditions, and was paced the entire twenty-odd miles to his home. As he approached the family store, the object moved off ahead of him for the first time and stopped above the store as if to wait for him. As he turned in, the object blacked out and vanished into the darkness.

The witness reported that after the incident his car never recovered. Its condition worsened continually until it was beyond repair.

Investigation:

Wadsworth investigated this and other reports in the area, Spring 1967. Although no unequivocal corroborating evidence was uncovered, testimony from a game warden who is regarded as highly reliable by area residents, provided possible corroboration. He reported having seen a round, reddish object in the sky a little later on the same evening. He was travelling the same stretch of the road that was involved in the sighting already described. The object he saw was so distant that its identity with the other is uncertain.

Witness' automobile was monitored for high-energy radiation. Smear samples were analyzed for alpha, beta, and gamma radiation. Alpha and beta were at normal background levels, and gamma was a trace above; this result may relate to the presence of uranium deposits in the vicinity. The magnetization pattern of the automobile body was checked against a control auto and found to be normal.

The auto engine was found to be badly out of tune and in generally poor running condition. Unfortunately, it was impossible to determine whether any specific damages resulted from the effects of ordinary wear and tear. Nevertheless, the witness stated that his car was in good running condition before the incident.

The route on which the sighting occurred was inspected under both day and night conditions. No physical evidence was found that could be related to the sighting; however, terrain and highway features were consistent with the witness' account.

Additional Sightings.

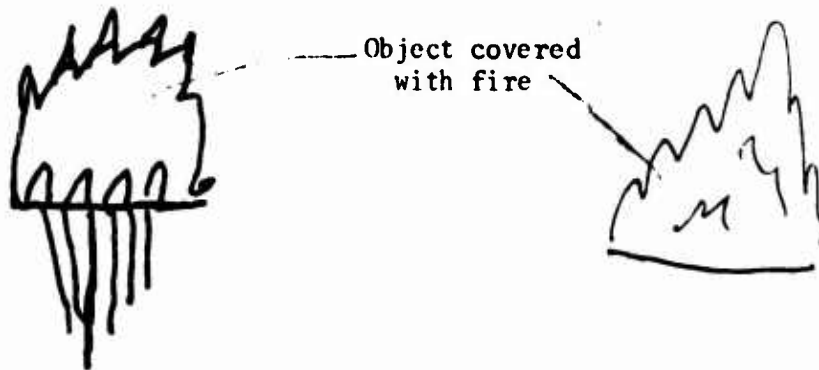
After the initial report, additional sightings were reported in the area. Many of these were of marginal quality and insufficiently detailed to warrant further investigation. In a few cases, followup attempts were made. Most of the witnesses were Indians, who were difficult to locate because they live in remote places, and were extremely difficult to interview once found because they speak little English and are not familiar with such a procedure. It was thus almost impossible to obtain more than the barest details.

The most useful materials obtained from these witnesses were their sketches of the objects they reported having seen. These sketches show a considerable range of variation, suggesting several types of objects. It should be noted that the Navajo appear to be unsophisticated as to UFOs. That is, they are less likely than a member of the general population to know what an UFO is reported to look like. Also, these reports cannot be assessed in terms of the same psychosocial dynamics that are appropriate to most UFO reports.

Reported loss of UFO-caused power failures were checked with an official of the local Power Association. He stated that nothing out of the ordinary had been reported to him. In one case, an Indian witness reported loss of power at his cabin when an UFO landed nearby.

Available Details of Additional Sightings.

- (1) Evening of the first sighting, 9:00 p.m., Duration 2 min., two witnesses.



Fire from
bottom

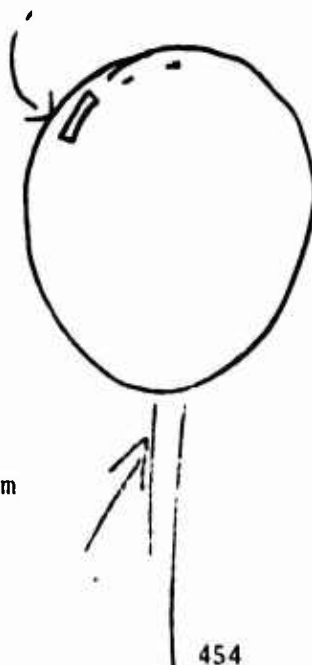
Witness II

Witness III (same object)

(2) Following evening, 9:00 p.m., one witness.

Object appeared to be 100 to 150 yards away. It was a reddish-white light, the apparent size of a car. There were lighted windows all around the edge. Fire coming from the bottom of the object left a trail; however, it left no evidence on the ground. The witness stopped his car and shut off his lights. When his lights went out, so did the lights of the object. It did not reappear.

windows around
edge

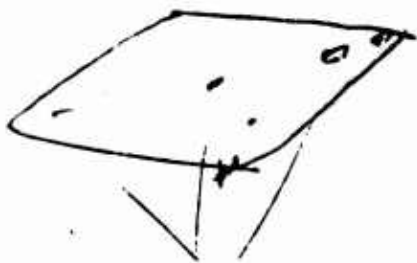


Witness IV

fire from
bottom

(3) 14 da. after original sighting, 3:00-3:30 a.m., duration 2 minutes, one witness, estimated altitude, 150 feet; estimated size, 20 feet long; weather clear.

Object had blue lights the color of a welding torch in a band around center. It was reddish at the bottom. It moved up and out, vanishing in the distance.



lights
side view

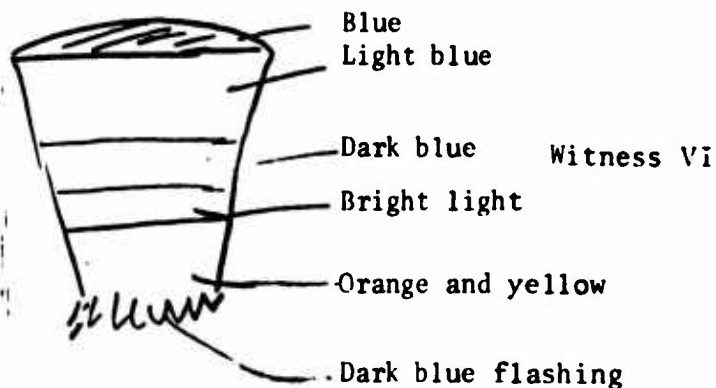


Bottom view

Witness V

(4) 15 da. after original sighting, 11:20 p.m., duration 20 minutes. One witness.

Witness was on duty as hoistman at the mine at time of sighting. Object approached the mine, hovered nearby, then departed rapidly at an upward angle. He reported that the incident so scared him that he was still shaking when he went home.



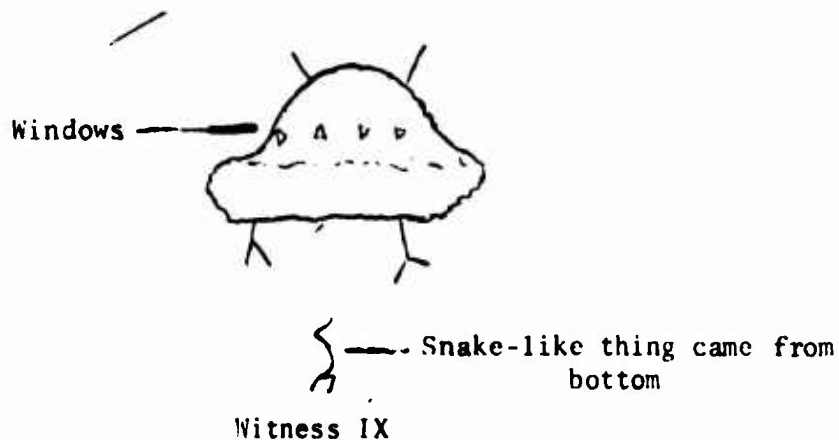
(5) 17 da. after original sighting, 9:58 p.m.,
duration 5 minutes, three witnesses including witness VI above.

Witness VI said the object looked very much like the one he
had seen two rights previously.



(6) Spring, 1967, night, duration 6 min. Two
witnesses (IX and X).

Witness IX was in his cabin when the lights went out. He put
on his miner's light, went out to investigate, and saw an object on
the ground near his cabin. He then went inside to get a rifle. When
he came out again, he saw the object departing into the distance. The
cabin lights came back on after the object had left.



The above list is by no means inclusive of the sightings reported in the area. For example, the mother of the witness I reported two sightings of marginal quality. There were numerous others; but the investigation began three weeks after the primary sighting, and the signal-to-noise ratio was poor.

Conclusion

On the basis of available evidence, it is impossible say whether or not the event reported is real.

Case 18

South Mountain

Spring 1967

Investigators: Low, Wadsworth

Abstract:

Several reports of lights in the sky traveling slowly and emitting sparks as they disappeared were attributed to hot air balloons set off as a scientific experiment by neighborhood boys.

Background:

One night in the spring of 1967 four hot air balloons were released by several college students. These balloons set off a small wave of UFO sightings. Accounts of some of the sightings were reported in local newspapers, and for several days the source of the objects was unknown except to the students who launched them. Because of the unexpected publicity, the students decided to come forth and give an account of the event to this project.

This report is intended primarily to examine the degree of correspondence between the reports of the event and the event itself. A description of the event based on an interview with the students is presented, followed by report summaries of a number of the sightings. It should be noted that the students were not attempting to make careful observations when they launched the balloons. Their accounts were somewhat general and lacking in details.

Description of Event as reported by Students

Four balloons of the type recently publicized in various news media and magazines were released. These balloons consisted of plastic dry-cleaners' suit covers, sealed at the top and held open at the bottom by crossed drinking straws attached to the edge of the opening. Hot air was generated by a cluster of birthday candles

mounted along the straws where they crossed near the center of the opening.

The first balloon was launched at 9:15 p.m. There was no ground wind, and the sky as clear except for scattered patches of thin haze. This balloon did not travel far from the launching site. It went up a fairly short distance and then went out. The object appeared to the students to be larger than a star. Duration of the event was estimated at five to ten minutes.

By 10:00 o'clock, three more balloons were ready and were launched one after another. They appeared to maintain three different altitudes as they rose, and showed some flickering, growing dim and then brightening up again. The balloons quickly became unrecognizable as balloons and showed only as fire-colored lights. The plastic envelopes were faintly visible as dim shapes. The lights appeared the size of bright stars or larger.

One of the most obvious features of the event was the triangular formation that the balloons assumed upon gaining altitude. This triangle endured for some minutes; then upper level winds apparently began to take the balloons in different directions. The lower one drifted apart and went out. Duration of the entire event was estimated at 20 to 25 minutes.

Summaries of Observers' Reports:

1. Time: 9:15 p.m.

Observers: mathematics professor and wife.

Location: 0.25 mile WSW of launch site.

Description: gold or orange-yellow light, larger than a star but smaller than a dime at arm's length, brighter than anything else in the sky; through binoculars, observers could see an area of "stronger density" adjacent to the light source.

Direction and disappearance: object first seen at an elevation of 45° in the east; began moving north, receded toward the east and faded out.

Duration: 5 minutes

2. Time: 9:15 p.m.

Observers: language professor and public school teacher.

Location: 0.4 mile ENE of launch site.

Description: orange-yellow object larger than a star, smaller than a plane (which passed by at the time) but larger than the lights of the plane.

Direction and disappearance: object stopped, light varied and seemed to fizzle out, sparks dropped and light disappeared.

Duration: 10 minutes

3. Time: 9:15 p.m.

Observers: two students

Location: same as (2) above.

Description: gold-yellow object, little larger than a star, first thought it was a satellite.

Direction and disappearance: object was first seen slightly south of west and moving slowly eastward toward observers. Object came nearly overhead, dimmed, brightened, emitted sparks and went out.

Duration: 5 minutes

4. Time: 10:00 p.m.

Observers: two women.

Location: 0.7 mile ENE of launch site.

Description: three lights in triangular formation; two on left were yellowish, one on right was reddish. Objects were about the size of a star when first seen, but grew larger as they moved toward the observers. Other people in the parking lot seemed not to notice the objects.

Direction and disappearance: Objects were first seen in southwest at about 45 to 60° elevation. They then seemed to move north, shifting from the triangle to a vertical line formation and rising. Observers left while objects were still visible. The objects seemed to have moved back to their original positions and become smaller.

Duration: 15 minutes

5. Time: 10:05 p.m.
Observers: fine arts professor and wife.
Location: 0.7 mile SE of launch site.
Description: three red or pink lights in triangular formation at 45° elevation. Size and speed compared to Echo satellite.
Direction and disappearance: Objects first observed in northwest, then began to move southeast and shift from triangle to straight line formation. Movement continued till objects were approximately overhead and seemed to stop. Then one went south and went out, one north and went out, and one west and went out.
Duration: 15 minutes
6. Time: 10:13 p.m.
Observer: chemical research assistant.
Location: 0.5 mile ESE of launch site.
Description: three lights like large stars in the form of a triangle. One appeared red, the others orange.
Direction and disappearance: objects were overhead and somewhat to the south when first seen. One moved to the southeast and disappeared in haze. One stayed overhead, then flickered, moved west, and blinked out. One arched away to the east and disappeared.
Duration: 5 minutes
7. Time: 10:00-10:30 p.m.
Observer: man.
Location: 0.4 mile SE of launch site.
Description: three yellow-orange lights in a rough line formation. Appeared as dull glowing objects with haze around them. Observer thought they were small and low.
Direction and disappearance: objects were seen first in the northwest at an elevation of about 35°. Motion was southward, slow and haphazard. The first one continued to move south. The second two passed nearby overhead, seemed to move closer together, and drifted away to the southwest.
Duration: 5-10 minutes

8. Time: 10:40 p.m.

Observer: astronomer.

Location: 1.0 mile SW of launch site.

Description: One object visible low in the east, yellow-orange and glowing continuously except several times when it dimmed. It was about 2nd or 3rd stellar magnitude, and 10° - 15° above eastern horizon. Through binoculars it remained visible only as a point of light.

Direction and disappearance: Position when first viewed was about 10° north of east and 10 - 15° above horizon. Motion was very slow and difficult to determine, because of the lack of nearby reference stars.

Duration: 3-5 minutes

9. Time: 10-10:15 p.m.

Observer: man.

Location: about 300 yards SE of launch site.

Description: two bright lights seen through the curtains of observers' apartment. From outside, they looked like blimps with fire at one end, and were one-quarter to one-half the apparent size of full moon. A third similar object appeared shortly after the first two.

Direction and disappearance: the first two appeared at 30 - 40° elevation in the northwest and drifted to an overhead position, where they separated and diminished with increasing altitude. The third behaved similarly.

Duration: 10-20 minutes

Table 4

COMPARISON OF REPORTS IN TERMS OF DESCRIPTIVE CHARACTERISTICS

STUDENTS' ACCOUNT				OBSERVERS' REPORTS	
LAUNCH TIME	9:15 p.m.	10:00 p.m.	9:15 p.m.	10:00 p.m.	
SIZE	Larger than a star	Size of large star or larger	1. Larger than a star 2. Larger than a star 3. Larger than a star	4. Star 5. Echo satellite 6. Star 7. Size not given 8. 2nd or 3rd Magnitude star 9. $\frac{1}{4}$ or $\frac{1}{2}$ diameter of full moon, (observer could see the plastic envelope as well as the light, and his size estimate referred to the whole balloon)	
SHAPE	First visible as balloon; diminished to point source	First visible as balloons; diminished to point sources	1. Point source light (accompanied by area of density) 2. Point source light 3. Point source light	4. Point source light 5. Point source light 6. Point source light 7. Point source (dull glow) with haze 8. Point source light 9. Like a blimp with fire at one end	
COLOR	Fire-colored	Fire-colored	1. Gold/orange-yellow 2. Orange-yellow 3. Gold-yellow	4. Yellow/red 5. Red or pink 6. Red/orange 7. Yellow-orange 8. Yellow-orange 9. "Fire"-colored	
FORMATION OF OBJECTS	Single object	Balloons assumed triangular formation, then dispersed.		4. Triangular 5. Triangular 6. Triangular 7. Line 8. Only one object seen by observer 9. Objects close to observer; formation not noticed	

Conclusions

A comparison of the event as described by the launchers with the reports of accidental witnesses reveals obvious similarities regarding size, shape, color, and relative positions of the objects. Taking into consideration the known inconsistencies inherent in most eye-witness testimony, the degree of similarity between the reports is noteworthy, especially since times of observations and locations of observers were not the same. Certain dissimilarities should be noted. For example, observer IX was located very near balloons. However, he was not able to identify the objects; nor did he mention the triangular configuration reported by other witnesses, probably because the objects seemed more scattered, suggesting separateness rather than relatedness. It is interesting to note the tendency of observers to give more detailed accounts of the event than the launchers themselves gave.

The sightings all occurred within approximately one mile of the launch site. With two exceptions, the balloons were first observed in the direction of the launch site. The exceptions are sighting number 6, in which case they are nearly overhead when first seen; and number 8, when only one object remained visible. In three other cases the balloons were reported as being overhead or nearly so at some time during the observations. These three sightings (5, 7, and 9) along with number 6 are all located in the southeast quadrant of the sighting area, indicating that the balloons drifted southeast. It should be pointed out that the balloons also were moving relative to each other, and it was this motion that the students and most witnesses referred to in their accounts. The limited area of sightings is probably characteristic of cases involving these balloons, and could be considered along with the slow aimless drifting, the flickering, and the red-orange color as identifying evidence in future cases.

In summary, we have a number of reports that are highly consistent with one another, and those differences that do occur are no greater than would be expected from situational and perceptual differences.

Many small discrepancies could be pointed out, especially with regard to estimates of distance and direction, but these are not great enough to affect the overall impression of the event.

It would be expected that a survey of witnesses' speculations about the nature of the objects would have shown much greater divergence, but this report is confined to observational data.

Case 19

South Mountain

Spring 1967

Investigator: Wadsworth

Abstract:

A project investigator was at the site of a predicted UFO landing. The landing did not occur.

Background:

This investigation was made in response to a unique sighting prediction based on alleged telepathic contacts with UFOs. The prediction came from a man who claims to have psychic abilities. He declared that his past predictions had been accurate, and he was confident that this one would produce positive results, specifically an UFO landing at a racetrack on a given day at 11:00 a.m.

On the night before leaving for the site, Wadsworth telephoned the predictor to get any additional information he might have. He confirmed the exact time and location of the predicted landing and stated that he had received "a very strong indication" that the event would occur. He assured us that we would not be disappointed. The purpose, he claimed, was "just to show us" that UFOs are real. He said that only one "saucer" would appear.

Investigation:

Wadsworth was met in the state capital city by two officers of the highway patrol. Patrol cars and a small aircraft were provided for the trip to the site.

Weather in the capital was clear; however, a squall front was moving into the racetrack area. When the party arrived at the racetrack at 10:15 a.m., the weather was still clear. The patrol plane was circling overhead. Wadsworth decided that the best place to wait would be the center of the large circular track. (There are two tracks at the raceway: one is straight and runs NW-SE; and adjacent to it is a large circular track which, as seen from the air,

would be a possible target area.) Before landing the plane, the pilot directed the patrol car to the center of the circle by radio. The predictor had been very definite about 11:00 as the time for the event to occur. In his own words, the UFO would appear *exactly* at 11:00 a.m.

At 11:00 nothing unusual was noted. The front was still moving in; rain began at 12:00 noon. At 12:30 p.m. the group left the area.

Case 20

North Pacific

Spring 1967

Investigators: Craig, Wadsworth

Abstract:

Reports of "beeping" sounds emanating apparently from invisible aerial sources were identified with the calls of small owls.

Background:

Spring 1967 this project received word that a state Department of Civil Defense had been investigating an unidentified sound in an area of the state. Wadsworth telephoned the same day to obtain more complete information about the sound, and to determine whether it might be connected with UFOs.

The investigation was being conducted by the warning officer and communications coordinator for the state's Department of Civil Defense, who gave further information. He described the sound as a repetitious beeping signal of practically unvarying period and pitch that had been heard regularly from the same location for a period of several weeks, continuing for hours at a time without interruption. The most puzzling aspect of the sound was the lack of any visible source. Witnesses had approached the apparent location, only to find that the sound seemed to come from directly overhead. This location was at the top of a hill in a wooded area to which access was difficult. However, local interest in the sound was so high that many individuals had hiked into the area to hear it. The sound reportedly began at 8:00 p.m. PST each night, and continued until 3:00 or 4:00 a.m.

Other aspects that the Civil Defense official reported were: The sound had been heard for about three weeks. It had been heard as far as two miles away from its apparent source. A similar sound (believed by some to be from the same source) had been received on a police patrol car radio at 150 megacycles while the sound was

being heard by persons in the above-mentioned area; visual UFO sightings had been reported in the general area of the sound during the same period. One sighting reported by two police officers and several FAA men occurred two days before the reported onset of the sound. A disc-shaped object was reportedly sighted passing overhead beneath an overcast ceiling of 1,000 feet. The sound did not alter perceptibly when people were in the area, even though they made noise, shone lights, or fired guns. When local time shifted from standard to daylight, the nightly time of onset also shifted an hour, indicating that the sound was oriented to real time, not clock time. The periodicity of the sound was approximately two beeps per second. Sometimes the sound source seemed to move as much as a quarter of a mile from its usual location in a few seconds, sometimes silently, sometimes beeping as it moved. One explanation for the sound that had been put forth was that it was the call of either a pygmy or a saw-whet owl, both of which are found in that area and emit calls similar to the reported sound.

A similar unidentified sound had been recorded elsewhere. Wadsworth took a tape recording of the sound under investigation and the other sound to an expert on bird calls. His opinion was that the latter was probably a saw-whet owl. The former, however, seemed unlike any bird or animal he had heard, although he could not be certain without knowing what distortions had been introduced by the tape recordings.

A decision whether to send out a field team was suspended until more could be learned about investigations already in progress. Any connection between the reported sounds and UFOs was speculation, and continued visual observations at the site of the sound had revealed nothing significant.

During the following week, significant new developments were reported. Sounds identical to that near the original location had been heard in other locations in the state.

The Civil Defense informant reported unusual animal reactions

in some cases. Frogs, which were numerous and loud in the area, had all become silent 10-20 seconds before onset of the sound, suggesting that they might be sensing some kind of energy other than the audible sound. At other times, the cows and dogs in the area had suddenly shown marked excitement, and then become suddenly quiet. In one instance, this pattern had been repeated three times before the beeping began.

On another occasion, a man whose house was at the bottom of the hill where the sound seemed to originate had been frightened by the sound, which he said came suddenly down from the hill and continued beeping loudly just above his house. He was standing in the yard, and the sound was so eerie that he could "take it" for only a few minutes before going into the house.

The Civil Defense coordinator felt that he was at an impasse, and urged that a team from this project be sent to investigate.

Investigation

Spring 1967, Craig and Wadsworth went with three primary objectives: 1) to gather more information on the sound phenomenon and to experience it directly; 2) to obtain instrumented measurements, if possible; 3) to check for possible correlative visual sightings in the areas involved.

When the team arrived, they met with the Civil Defense coordinator and staff to plan the investigation. It was decided what area would be the best location for a thorough surveillance of the sound, and a base was set up in a barn about a mile below the hilltop where the sound was usually heard.

Stereo tape equipment was set up in the barn, and microphones were located about a quarter of a mile apart. The sound usually had been clearly audible at this location.

It was learned that, although the beeps had been loud in all kinds of weather, there was a considerably better chance of hearing them on a clear night. It was also reported that on some occasions the sound was very faint and of such short duration that no accurate

location could be determined. It was not clear whether the occasions of fainter sound were due to distance or to a real drop in volume.

Equipment taken to the more inaccessible field site included: portable tape recorder; directional ultra-sonic translator; military infrared sniper scope; directional microphone audio detector ("snooperscope"); cameras loaded with infrared, ultraviolet, and conventional high-speed film; and two-way portable radios for communication with the operating base at the barn.

Shortly before the advance group reached the top of the hill (an hour's climb through steep, heavily forested terrain), the sound was heard. It lasted not more than 10 seconds and seemed to come from a direction different from its usual location. The team's subjective impression was that it sounded like a bird.

Throughout the night, and until 5:00 a.m., the sound was heard faintly eight or ten times for a few seconds each time. It did not seem to originate from directly overhead at any time, and the apparent direction and distance varied considerably. Part of this series was recorded on tape, but the sound was of low amplitude and brief duration. It was never heard at the main base below, so no high-quality tape was obtained.

Descriptions of an earlier observation had related that the sound had come from the top of a tall tree, then left the tree top and circled around it when someone climbed the tree. Although no bird had been seen in the darkness at the apparent source of the sound, and this description was similar in this respect to the farmer's account of the descent of the beeping source from the distant hill and its circling over his farm yard, such behavior certainly seemed owl-like. However, since the field team had heard only brief and distant emissions of the sound, they could not positively identify it.

Early the next evening, this team drove to a second site. The weather was rainy. Perhaps a dozen other cars were parked or cruising slowly by the area. The team heard no beeping sound during two hours of waiting.

The following morning, the team telephoned the county

Sheriff's office, which had been handling the local investigation to ask whether the sound had been heard during the previous night. They were told that a bird had been shot by a farmer who lived adjacent to the second location. He had told the sheriff that, when the sound began the night before, he had gone out with a light and gun, shot the bird while it was beeping, and brought it in as evidence.

The owl was identified as a saw-whet by a local biology teacher. Despite this identification, some local persons expressed skepticism that the dead owl had been the source of sounds that they believed to be too constant in pitch and period to be generated by a bird. They questioned whether the farmer, who had been subjected to much harassment by the public, might not have produced the owl, hoping to put an end to these difficulties.

Tape recordings of the sound, made both before and during the project investigation, were later analyzed sonographically and compared with sonograms of recorded calls known to have been made by pygmy, saw-whet, and ferruginous owls. The original comparison was made with calls recorded in Peterson's Field Guide to Western Bird Calls. Later, other recordings of these calls were obtained from Cornell University's Laboratory of Ornithology. The comparisons showed the same sound structure, pitch, and period for the unidentified sound and for the saw-whet owl. Fewer overtones were displayed on the sonogram of the unidentified sound, but this difference probably was due to lack of sufficient amplitude and recorder frequency range limitations. It was concluded that the recorded unidentified sound was made by a saw-whet owl.

Conclusions

None of the reported visual sightings of UFOs in the vicinity was impressive enough to warrant more intensive investigation. While the project investigators could not be certain that owls accounted for all of the unidentified sounds reported from various areas of the state, they felt confident that the audible beeping was unrelated to visual sightings of UFOs, and that owls certainly accounted for most of the beeping sounds. The latter conclusion was

based upon:

1. The correspondence between sonograms of the unidentified sound and of the beeping of a saw-whet owl;
2. Testimony that the dead saw-whet owl had been shot while making the beeping sound;
3. The fact that the locations and movements of the reported apparent sources were typical of those expected of owls.

The small size of the saw-whet owl (about six inches long) may account for the difficulty observers had in seeing it, thus allowing them to conclude that the sound came from a point in space that was not occupied by a physical object.

Case 21

South Mountain (location A)

Spring 1967

Investigators: Low, Rush

Abstract:

Operators of two airport radars reported that a target equivalent to an aircraft had followed a commercial flight in, overtaken it, and passed it on one side, and proceeding at about 200 knots until it left the radar field. No corresponding object was visible from the control tower. On the basis of witnesses' reports and weather records, explanations based on anomalous atmospheric propagation or freak reflection from other objects appear inadequate. The case is not adequately explained despite features that suggest a reflection effect (See Section III Chapter 6).

Background:

A radar traffic controller (Witness A) at an AF installation that serves as an airport for a nearby city (location A), telephoned the Colorado Project in the middle of May, 1967 to report an unexplained radar anomaly. The report was referred to Dr. Donald H. Menzel for comment, and Witness A and three other witnesses were interviewed at various times. The information so obtained is summarized in the next section.

Investigation:

Witness A, an air traffic controller of 20 years' experience, reported the following observations. At about 4:40 p.m., he and three other men were in the IFR (radar) room at the airfield. Two radars were in use: azimuth surveillance radar (ASR), used for early detection of arriving aircraft, and precision approach radar (PAR), used to monitor both azimuth and elevation of an aircraft approaching the runway (Fig. 2).

The controllers were monitoring the approach of a commercial Boeing 720. They got him onto the correct azimuth and glide path

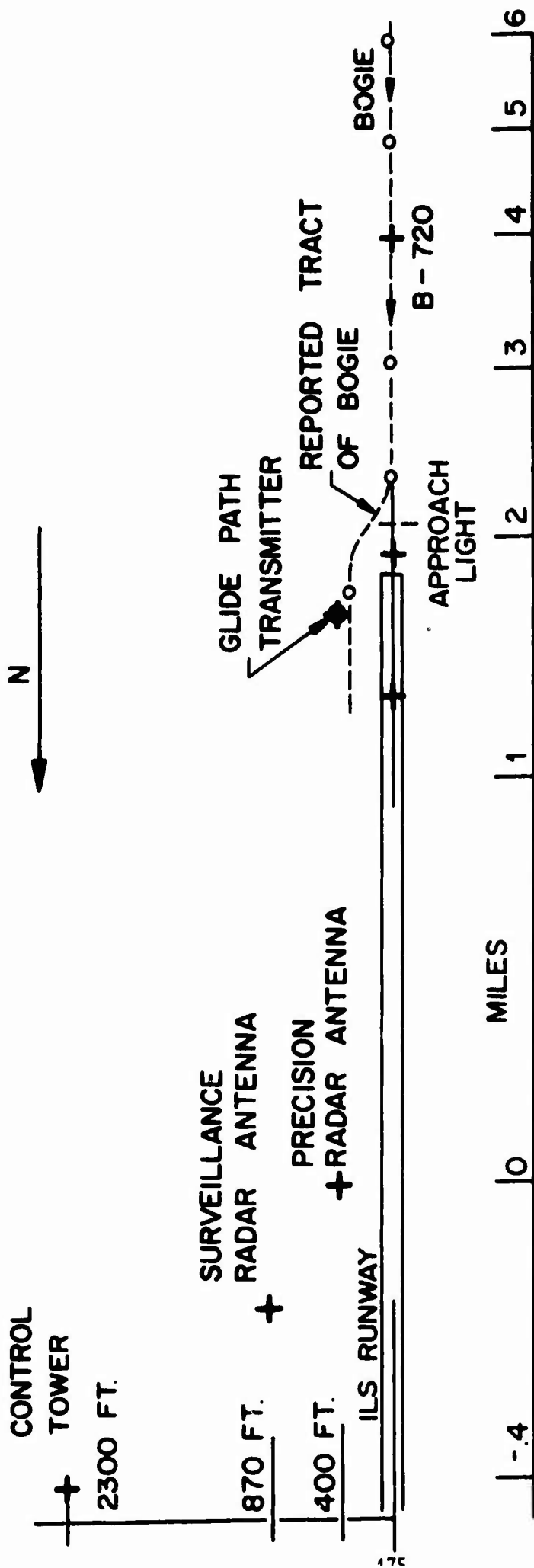


Fig. 2

ILS runway at the airfield, showing locations of radar antennas and tracks of aircraft and unidentified radar "bogie."

just as he broke through the 3,000 ft. ceiling about four miles from the radar receiver. Another commercial flight, a Viscount, showed on the surveillance radar about six mi. behind the 720. About the time the 720 appeared in the field of the precision radar, operated by Witness A, he noticed a very faint target on the elevation (glide path) screen about two mi. behind the 720. He adjusted the sensitivity of the instrument, and the unknown target became visible on the azimuth screen also. It appeared to be following the 720 on the glide path.

When the 720 had advanced about one mi., Witness A asked the operator of the surveillance radar, Witness B, whether he had the unidentified target; he did. Witness A then reported the object to the Viscount crew, about four mi. behind it. They saw nothing, though visibility under the overcast was 25-30 mi. He then reported the object to the visual control tower; but none of the three controllers there could see anything to account for it, even with binoculars. At this point, the departure scope man (the surveillance radar had duplicate screens for monitoring arrivals and departures) and the arrival data position man walked over to observe the precision scope. The target showed with equal clarity on both the elevation and azimuth screens. The unidentified object was overtaking the 720, and was about 0.25 mi. behind as the 720 passed the approach lighting system. At that point, the object pulled over, moved eastward, passed the Boeing on its right side, and continued on a parallel course at 200 ft. altitude and some 300 ft. east of the runway, until it passed out of the field of the precision scope. Unfortunately, no one thought to see whether the object appeared on the surveillance radar departure scope. At disappearance, it was about 1-1.5 mi. from the control tower. The controllers in the tower never saw anything to account for the target.

The Viscount came in normally on the radar, with nothing following. Its crew reported after landing that they had not at anytime during the approach seen anything between them and the 720.

Witness A observed that the 720 had not been visible as far out as six mi., where the "bogie" first appeared. It looked like an aircraft target, though weaker than usual, and became quite clear as it came nearer. He commented also that the bogie followed the correct procedure for an overtaking aircraft, and that, if a pilot is practicing an instrument approach but does not want to touch down, his prescribed procedure is to level off and cross the field at 200 ft., as the bogie appeared to do on the radar. In fact, the object showed the flight characteristics of a Century-series jet fighter (F-100, F-104, etc.), making an approach at a speed of 200-250 knots. However, such a jet makes a great deal of noise, and should have been heard even in the glass-enclosed tower.

Witness A was interviewed in detail when he first telephoned the project in Spring 1967, and questioned further on various aspects at several later dates. Other witnesses unfortunately were not contacted until Fall 1968.

Witness B, who had been monitoring the surveillance radar approach scope, was unable to recall details of the incident. He remembered only that it was "an odd thing" -- a radar target, but nothing visual.

Witness C was a controller of 15 years' experience, 11 on radar, who had been in the radar room when the sighting occurred, and had watched it on the precision scope. He recognized the difficulty in remembering accurately after such a time interval, but felt that his memory for the key details was good. He had been deeply impressed by the incident, and had discussed it with Witness A and others on various occasions.

He confirmed the account of Witness A in almost all respects. He was not certain that the bogie had come in on the ILS glide path (which is indicated by a line on the elevation screen of the precision radar); it was following the Boeing and must have been on or near the glide path. Witness A had stated that the bogie overtook and passed the 720 at about the approach end of the runway. Witness C, however, recalled that the bogie had overtaken the 720 and flown alongside "like a wingman" (i.e., slightly behind and to the

right of the 720) for one or two miles before touchdown. Then, about a half mile from the runway, it had "pulled up" and flown on ahead. The 720's approach speed was about 140 knots.

Witness C emphasized that the bogie target was indistinguishable from an aircraft. He said that, if the bogie had appeared ahead of the 720, he would not have hesitated to warn the 720 off the approach.

He noted also that the surveillance radar was an old, faulty instrument that sometimes missed targets that were known to be in the field.

Witness D was a controller in the tower during the incident. He remembered that the radar crew phoned about the bogie; the tower men looked and saw the 720 coming in, but nothing else, even with binoculars. The conditions were such that he was confident that no such aircraft as the radars indicated could have come in without the tower crew having seen it.

Weather

The report of the project's consulting meteorologist follows:

Following is a brief summary covering the weather situation near . . . [the airfield in location A] at and near 1640 MDT . . . [in the middle of] May . . . 1967:

SOURCES OF DATA

Hourly surface observations from -

. . . [Location A, location B, location C, location D, location E, location F]

Two and three hourly data from -

. . . [Location G, location H, location I]

Winds aloft and radiosonde data for . . . [location D], at 12:00 noon and 6:00 P.M. MDT.

GENERAL WEATHER SITUATION

The general weather situation prevailing in . . . [the general area] was a condition of drizzle and fog with low ceilings at most all stations east

of . . . [location H]. Amounts of precipitation were generally light but the drizzle and fog continued for many hours at most stations.

Shortly after noon colder air moved in from a northerly direction in a layer from 1000 to 5000 feet above the surface. At . . . [location D] the drop in temperature measured between the noon and 6:00 P.M. radiosondes was between 5° and 6° F. in this layer. This drop in cloud layer temperatures was accompanied by increasing winds near the surface. At 2:30 P.M. gustiness at . . . [location D] reached 30 knots. Similar increases in wind velocities began later at . . . [location A, location B, location E, and location J]. Some snow and snow pellets fell at various stations as this mixture of colder air took place. MOST PROBABLE WEATHER AT 1640 MDT AT . . . [THE] AIRFIELD

Two layers of scattered clouds, at 900 and 2400 feet respectively, would have been moving rapidly from north to south in an air flow having surface winds averaging nearly 30 mph. It occurred at 1630 MDT. Gustiness of 8-10 additional miles per hour was occurring at this time. A layer of overcast cloudiness was estimated at 4000 feet above the station. Visibility was greater than 15 miles.

A condition of very light drizzle had ended at 1530 MDT and light snow pellets began at 1710 MDT. The differences in *surface* temperatures was only 1° (34 to 33) indicating that the greatest amount of change was taking place in the air at cloud level.

The snow pellets which began at 1710 MDT and intermittent snow showers continued past midnight. It is well known that water and ice surfaces mixed together inside clouds tend to intensify radar echo causing bright spots or bright lines to appear.

The snow pellets would have produced an increased intensity of the radar echos in some small shower areas. Although snow pellets were not occurring at the station at 1640 MDT it is highly probable that some were in the vicinity.

Total amounts of precipitation were light. Only .03 inch was measured in the 24 hours ending at midnight.

At the same time that snow pellets and snow showers were observed at . . . [the airfield, location B] reported no precipitation.

SUMMARY

It is my opinion that fragmentary segments of two layers of scattered clouds moving at variable speeds beneath a solid overcast would have given a rapidly changing sky condition to any observer at or near the airport. Reflection of any lights could have caused greater or lesser brightness to the under surfaces of some of these scattered clouds. The strong gusty winds were not only capable of moving the clouds rapidly but could have carried some light substances, such as paper to an elevation similar to the lower cloud height. The shafts of snow pellets at a mile or more away from the base may have caused some distortion of visibility in directions concentrated to the west and northwest of the field.

Hypotheses

Anomalous targets on radar generally are caused by instrumental defects, birds, anomalous atmospheric propagation (e.g., mirage effects), out-of-phase echoes, or multiple reflections. Instrumental defects appear to be eliminated in this case, since the bogie was seen consistently on the surveillance radar and both the azimuth and elevation beams of the precision radar. The speed of the bogie, its radar intensity, and the course it followed all appeared inconsistent with a bird.

Neither did this anomaly show any of the typical characteristics of the "angels" caused by anomalous propagation; moreover, weather data indicate no inversion was present. Both witnesses A and C had had many years of experience with all the usual types of anomalies. The fact that they were mystified by the phenomenon and considered it worth reporting indicates that it was an uncommon effect.

Sometimes a distant, strong reflector may return a radar echo so long delayed that it arrives after a second pulse has been emitted. It will therefore appear at a spuriously short range. This possibility appears to be precluded by the different pulse frequencies of the surveillance and precision radars (1000 and 5500 per sec., respectively), and by the behavior of the bogie, which appeared to relate it to the Boeing 720.

There remains the possibility of multiple reflections. After reviewing a report of the incident, Menzel suggested that the bogie had been produced by reflection of radar energy from the 720 to a fairly efficient reflector on the ground, back to the 720, and thence to the radar receiver. The superfluous echo would have appeared on the line of sight from radar antenna to aircraft, and beyond the aircraft the same distance as that from aircraft to reflector. Menzel suggested that a structure involving a cube-corner -- e.g., a steel dump-truck body -- might act as a rather efficient reflector.

This hypothesis would explain some aspects of the observations. The bogie appeared about two miles behind the 720 when it was about four miles out, and gained on it at a rate roughly equal to the airplane's own ground speed of about 120 knots, as would be expected. This would imply that the reflector was about two miles ahead of the 720, which would place it about half a mile south of the approach end of the runway. The bogie then should have overtaken the 720 at that point.

Witness A said that it was about 0.25 mi. behind the 720 as the latter reached the approach light system; that would place the

reflector approximately at the approach end of the runway. Witness C, however (a year and a half after the incident), stated that the bogie caught up with the 720 "one or two miles" before touchdown, flew alongside, and pulled ahead about a half mile from the runway. That would place the reflector about 0.5 to 1.5 mi. south of the runway, differing by as much as a mile from the location resulting from Witness A's account.

So far, so good. Men who were a bit excited, or trying to remember details after such an interval, might differ by a mile in their estimates, particularly since the range scale on the precision radar scope is logarithmic. Incidentally, half a mile from the runway the elevation of the ILS glide path was about 200 ft. -- the elevation at which the bogie appeared to overfly the field.

However, a target produced by such a delayed reflection would not have appeared on the glide path. In elevation, the glide path was a line rising at an angle of 2.7° from the ILS transmitter 7,300 ft. south of the precision radar antenna. The line of sight from the radar to the Boeing four miles out thus intersected the glide path at a substantial angle, so the bogie reflection, seen on the radar line of sight, would have appeared about 0.25 in. below the line marking the glide path on the radar scope. It does not seem likely that an experienced controller would have failed to notice a discrepancy amounting to some 200 ft. in elevation that if not corrected would have been disastrous to an aircraft.

The shift of the unidentified object to the right as it overtook the 720 can be partially explained. If it is assumed that the bogie was a secondary echo from a reflector near the runway, then the bogie would have been always the same distance behind the 720 as the reflector in front of it, and would have appeared on the line of sight from the precision radar antenna to the 720. Since the antenna was about 400 ft. east of the runway, the bogie would have appeared projected to the west of the approach track. Its apparent course would have been a gradual swerve to its right.

However, the bogie would have nearly coincided with the radar image of the 720 as it passed low over the reflector; and immediately

thereafter, as the 720 passed beyond the reflector, the bogie would have stopped its forward motion and moved laterally to the west. This hypothetical behavior contrasts sharply with the statements of witnesses A and C, both of whom insisted that the bogie moved over and passed the 720 on the right (east), and that it continued on that course, ahead of the airplane, until it left the radar field.

The case is therefore not satisfactorily explained. In general, the association of the unidentified target with the 720 and the lack of a visible counterpart suggest strongly that it was a radar artifact. Yet the details of its course can be reconciled with the reflector hypothesis only by discounting the accuracy of reports by observers who were intimately familiar with the context in which they were working.

Case 22

North Central

Spring 1967

Investigator: Craig

Abstract:

A weekend prospector claimed that a "flying saucer" landed near him in the woods, and that when he approached the object and touched it with his gloved hand, it soared away, its exhaust blast leaving a patterned burn on his abdomen and making him ill.

Events during and subsequent to a field search for the landing site cast strong doubt upon the authenticity of the report.

Background:

A 50-year-old industrial mechanic (Mr. A) claimed to have observed two UFOs while prospecting in the North Central area. The reported time of the sighting was about 12:12 p.m., CDT.

According to Mr. A, his attention was distracted by the squawking of nearby geese. He looked up and saw two disc-shaped objects descending together from the SW at an angle of 15°-20° above the horizon. One stopped 10-12 ft. above the ground; the other continued downward, and landed on the flat top of a rock outcropping 160 ft. from Mr. A. The objects had domes and were about 40 ft. in diameter. They had flown three or four diameters apart, keeping a constant distance. The first object hovered in the air (one of Mr. A's accounts says it hovered about 15 ft. above him) for about three minutes, then ascended in the same direction from which it had come, changing color from bright red to orange to grey and back to bright orange as it disappeared in the distance. It moved noiselessly, much faster than airplane speeds.

When Mr. A turned his attention to the landed craft, it, too, was changing color from glowing red to the iridescence of hot stainless steel. The craft had no markings. Intense purple light shone from apertures around the dome of the craft. Mr. A noticed wafts of warm air, a smell of sulphur, and a hissing sound from the craft. He sketched the object. After about 15 min. he noticed that a hatch on the side of the craft had opened. He could see nothing inside, because the light was too bright.

He waited in vain for someone to emerge through the hatch.

About 30 minutes later, Mr. A approached the craft and heard human-like voices from within. Thinking the craft was of U.S. origin, he addressed the assumed occupants in English. When no response was heard, he tried Russian, German, Italian, French, and Ukrainian. The voices stopped. Panels slid over the hatch, through which Mr. A had noticed that the craft's walls were about 20 in. thick, and honey-combed. After the hatch closed, Mr. A touched the craft with his gloved hand, burning the fingertips of his glove. The craft tilted slightly and started to spin rapidly. He was standing near a patterned ventilation or exhaust area on the craft's side. When the craft started moving, a blast from this opening burned his upper abdomen and set his shirt and undershirt afire. He tore off the shirts and threw them to the ground, stamping out the fire. His outer shirt was almost totally burned, but he retrieved the remains of his undershirt. A hole also was burned in the front of the top of the cap he was wearing. He was left with burns on his abdomen and sickened, apparently as a result of inhalation of vapors from the machine. The craft disappeared in the direction from which it came at a bearing of 255° (determined by Mr. A's compass) and at a speed estimated as far exceeding known aircraft capability.

Mr. A said he suffered headache, nausea, and cold sweats within minutes after the experience. He returned to his prospecting site (160 ft. away) and got his coat and prospecting equipment. He put the remains of his undershirt in his prospecting satchel. Feeling weakened and vomiting frequently he struggled to the highway to seek medical assistance. He was aware of a horrible odor associated with his breath.

He reached the highway and requested help from a constable of the Royal Canadian Mounted Police (RCMP) who was driving by. The constable thought Mr. A was intoxicated, and refused to help. Mr. A also failed to get help at the park headquarters and went back to his motel at Lake X. After several hours, he took a bus to Winnipeg. While waiting for the bus, he telephoned the *Winnipeg Tribune* to request assistance, asking, at the same time, he said, that they give his experience no publicity.

Mr. A was met by his son, who took him to hospital X for medical attention. The burrs on his abdomen were diagnosed as superficial, and Mr. A returned home. He continued to complain of nausea, headache, offensive odor from his lungs, lack of appetite, and rapid weight loss.

Two days after the alleged event, Mr. A was attended to by a personal physician, whom he had not visited since Spring 1966. The following day he was taken to hospital Y to be checked for radiation trauma by the hospital's Department of Nuclear Medicine. A radiation pathologist found no evidence of the effects of radiation on the burned area, in his blood, or on Mr. A's clothing. He reported that the burn was thermal. A week after his sighting Mr. A was checked in the whole-body radiation counter at an Atomic Power Installation. This counter detects and measures gamma radiation from isotopes in the body. The test showed no count above normal background.

Mr. A said he lost a total of 22 lb. over the next seven days, but had regained his strength and some weight 11 days after his sighting.

Investigation:

The case involved close contact, and one of the most detailed descriptions of a material object of this type on record. The site at which the event allegedly took place had not been re-visited since the event, and held promise of providing tangible physical evidence that an unusual material object had actually been present. A project investigator left for city A as soon as word was received that Mr. A was physically able to search for the landing site. The investigator wanted to visit and examine the alleged site before it was disturbed by others.

Nearly two weeks after the event, when Mr. A was interviewed by the project investigator, he had regained sufficient strength to lead a search, which was planned for the following day. Mr. A displayed a rash on his neck and chest, which he associated with the alleged UFO exposure. He said the rash appeared two days earlier, 11 days after the sighting, and he had visited his physician the morning of the interview to have it checked. Mr. A had, on the same day, cooperated with authorities in a ground and air search which had not located the

UFO landing site. Mr. A reluctantly agreed to lead another ground search, indicating that the new rash made him uncertain of his physical health.

Later, Mr. A led a party, including the project investigator, on a hike in the Canadian bush, ostensibly searching for the landing site which assertedly was about three air miles north of a highway, which skirts the north shore of Lake X. The area searched was located $49^{\circ}43' \pm 1'N$, $95^{\circ}19' \pm 1'W$, in a forest reserve. A fire-watch tower stands between the highway and the area searched. The party began the search within a half mile of this tower, and never got more than two miles from it while wandering back and forth through an area within which Mr. A said the site had to be. Most of the area was covered by dense vegetation. Numerous beaver ponds, swamps, and rock outcroppings were contained in the area, the outcroppings rising as much as 40 ft. above the swamp level. It was on such an outcropping that the landing allegedly occurred.

This "search" impressed the investigator, as well as other members of the party, as being aimless. Mr. A expressed the desire to terminate the search after a few hours of hiking. The rest of the party felt a good effort had not yet been made, and pressed him to continue. In the early afternoon, when it seemed obvious that a "landing site" would not be found that day, the party returned to Lake X resort, where the investigator interviewed other people who were in the vicinity on the day of the alleged event.

Two youngsters who claimed they saw an UFO over the lake on the date in question gave a description suggesting that they may have observed a box kite or a balloon, but certainly not an object of the type described by Mr. A.

According to Conservation Officer Jim Bill, the fire lookout towers were manned on this date after 9 a.m. A ranger with Officer Bell indicated that the forest was dry at this time. Both rangers felt that a fire capable of burning a man would have started the forest burning. They commented that watchmen in the towers generally notice smoke immediately from even a small campfire, and felt that a small fire in lichen and moss, such as Mr. A said he tramped out when he

threw his burning shirts to the ground, would have been seen by the watchman. They also believed objects as described by Mr. A would have been seen by the tower watchman, had they been present for even a fraction of the time Mr. A claimed. Watchtowers are 8' x 8'. About six other towers are visible in the distance from the tower near the alleged landing site. Although a 35-40 ft. metallic saucer only 1/2-2 mi. away should have attracted the watchman's attention, nothing unusual was noted from the watchtower.

Weather Bureau information indicated the day of the reported sighting was mostly clear with broken clouds, in agreement with Mr. A's description.

The flight direction Mr. A gave for the UFOs would have brought them within about a mile of the golf course at Beach X, at an altitude of 4,000 ft. The course attendant said that there were hundreds of golfers on the course on this date, none of whom reported seeing an object such as Mr. A described.

The investigator sought other information supporting the claim that an unconventional flying object had been in the area on the sighting date. A check of several other UFO sighting reports in the region revealed that they had no relation to Mr. A's sighting, having occurred on a different day (except for the lake sighting already mentioned) in a different area.

Radar observers at three other locations (60 mi. NW of the claimed sighting, 85 mi. W, and 40 mi. E) reported noticing nothing unusual on the alleged sighting date.

With Mr. A's permission, the project investigator reviewed the case with his physician and with the other M.D.'s involved. Items of particular interest which were revealed to the investigator by Mr. A himself were (a) a rapid weight loss; (b) a lymphocyte count of 16% climbing later to 21%; and (c) the rash on Mr. A's throat and upper chest which developed 11 days after his reported sighting.

The claimed weight loss of 22 pounds in seven days, including 14 pounds the first three days, could not be verified. Mr. A's physician did not see the patient until two days after the alleged exposure and

had not seen him during the previous year. There was no way to verify the weight claimed prior to the event. A medical consultant considered the claimed weight loss logically excessive for an inactive, fasting patient.

The lymphocyte percentages were not outside the limits of expected statistical variation of two routine counts of the same blood, and were therefore not considered to be significant.

The rash, which was not on the same body area as the original burn, looked like the normal reaction to insect bites. Mr. A said the rash appeared on the day he had gone on the site search with RCMP officers. In view of the great number of black flies in the area, the coincidence in date, Cpl. Davis' report that he was severely bitten while on the search, and the accessibility of the affected neck and chest area to flies when the shirt collar is not buttoned (it was Cpl. Davis' belief that Mr. A had worn his collar unbuttoned during the search), it seems highly probable that the rash was the result of insect bites and was not connected with the alleged UFO experience.

Comparison of recordings of separate accounts of Mr. A's UFO experience, as told to an APRO representative two days after the reported event and to the project investigator short of two weeks later, revealed minor variations, as would be expected in any two accounts of an involved experience. The inclusion in the account of a magnetic effect of the UFO developed during the first interview. The APRO representative asked Mr. A if the UFO had affected his compass. Mr. A first answered: "I couldn't tell you if the compass needle was affected. I hadn't looked before. It was kind of abnormal." Upon further discussion, the effect developed to a definite spinning of the needle, then a rapid whirling as the second object left the area. This latter description was repeated in subsequent accounts. It is hard to reconcile such a magnetic effect with the facts that Mr. A not only reported a definite compass reading for the direction of departure of the second UFO but also a definite reading of 140° for the direction of approach and departure of the first, which left while the second was still present.

The undershirt which Mr. A presented had been ripped apart in front, where it was burned. It also carried a patterned burn centered high on the back, the pattern matching, according to Mr. A, the pattern of the UFO's exhaust openings from which the burning vapors had spurted. Mr. A had been burned only on the abdomen, with slight singeing of the forehead. The reason for the presence of a patterned burn on the back of the undershirt was not obvious.

Mr. A was deemed very reliable by his employer. He had convinced representatives of the RCMP and RCAF, two of the several physicians involved, as well as his family, that he was telling the story of a real event. During the project investigator's interview, he seemed honest, sincere, and concerned. His presentation of his story was convincing. His wife and son verified his claim of an unusual odor coming from his body after his alleged UFO experience, indicating that the odor permeated the bathroom after Mr. A had bathed.

Analysis of Subsequent Developments :

1. The claimed finding of the site by Mr. A and an associate shortly over a month later.

The site was allegedly still obvious, with moss blown away in a circular pattern. Samples of soil and moss from the area, portions of the burned shirt, and a six-foot measuring tape which Mr. A had left behind were brought to city A. All three were radioactive. When sent to city B for analysis, they were found to be so strongly radioactive that the Radiation Protection Division of the Dept. of Health and Welfare considered restricting entry to the forest area from which they allegedly were taken. A careful check of the site by a representative of this department revealed that the perimeter of the "landing circle" and beyond were free of radioactive contamination. According to his report:

A thorough survey of the landing area was carried out, using a Tracerlab SU14, Admiral Radiac 5016, and a Civil Defense CDV 700 survey meter. One small

area was found to be contaminated. This was located across the crown of the rock. There was a smear of contamination about 0.5 x 8.0 inches on one side of the crack. There was also some lichen and ground vegetation contaminated just beyond the smear. The whole contaminated area was no larger than 100 square inches. All water runoff areas were checked for possible contamination, but nothing was found.

No representative of an independent or official agency was present when the circular area alleged to be the landing site was rediscovered. In spite of an RCMP understanding with Mr. A that no evidence should be removed from the area should he relocate it, radioactive soil samples, (fortuitously selected from the small contaminated area), remnants of cloth, and the measuring tape were represented as having been removed from the area. Why the cloth remnants and the tape were radioactive was never explained. While these items could have been contaminated by contact with the soil samples, reports received by the project indicated that the items were in separate plastic bags, and major contamination would not be expected. The partially-burned undershirt had earlier been found not to carry radioactive contamination. The tape would have been left some 160 ft. from the landing circle, in an area found to be free of radioactive contamination.

Other individuals checked the site for radioactivity later. One of these was Mr. E. J. Epp of city A, who searched the site in Fall of 1967 and found no radioactive material. At the project's suggestion, he had the records of the Dept. of Mines and Natural Resources searched for mineral claims in the area filed by Mr. A. This was requested because of the possibility that Mr. A had deliberately misdirected the earlier searches in order to protect mineral claims. Such claims were filed by him, but not until later in the Fall.

The project never received a final report of the analyses of the soil samples taken by the Dept. of Health and Welfare. The origin of this material is therefore on open question.

The site presented did not match Mr. A's earlier description of it. An opening in the trees through which Mr. A said the UFO came and departed would have required the object to leave the landing circle travelling in a NNE direction, whereas Mr. A had said it departed to the WSW. Other aspects also differed from the original description.

2. Claimed recurrences (in the early Fall and other occasions) of the physiological reactions to the UFO experience.

Relation of these reported attacks with Mr. A's alleged UFO experience has not been established.

3. Commercial publication of Mr. A's story in a booklet.

This account differs in some aspects from Mr. A's original reports. In the booklet, for example, Mr. A is reported to have stuck his head into the open hatch of the "saucer" and observed a maze of randomly flashing lights inside the craft. In earlier accounts, Mr. A stated that he avoided going near the hatch and was unable to see inside it because of the brightness of the light coming from it. The account was chronologically jumbled, and showed a carelessness with fact.

4. A claimed visit to the site by Mr. A and another associate a year after the alleged sighting, at which time they discovered massive pieces of radioactive material in a fissure of the rock within the "landing circle." This material reportedly consisted of two W-shaped bars of metal, each about 4.5 in. long, and several smaller pieces of irregular shape. These items were said to have been found about 2 in. below a layer of lichen in the rock fissure. They were later analyzed as nearly pure silver. The results of the analyses of these pieces of metal were sent to the Colorado Project by Dr. Peter M. Millman of the National Research Council of Canada. The analysis of the report by Mr. R. J. Traill (Head, Minerology Section, NRC) showed that the two fragments each consisted of a central massive metal portion which was not radioactive. One of these was 93% and the other 96% silver. Both contained copper and cadmium, and had a composition similar to that found in commercially available sterling silver or sheet silver. The metal was coated with a tightly-adhering layer of quartz sand, similar to that used as a foundry sand. This also was not radioactive. The radioactivity

was contained in a loosely-adhering layer of fine-grained minerals containing uranium. This layer could be removed readily by washing and brushing. The minerals were uranophane and thorium-free pitchblende, characteristically found in vein deposits. Mr Traill's conclusion was:

I would interpret the specimens as pieces of thin sheet silver that have been twisted, crumpled, partly melted, and dropped into, or otherwise placed in contact with, nearly pure quartz sand, while still hot. They have subsequently been covered with loosely-adhering radioactive material which consists of crushed pitchblende ore, much altered to uranophane and containing associated hematite. These naturally-occurring radioactive minerals are found typically in the uraniferous deposits of . . . [River X] area and in parts of . . . [camp X].

In view of the thoroughness of earlier searches of the site for radioactive material, it is improbable that the particles discovered a year later would have been missed had they been present when the earlier searches were made.

Conclusions:

If Mr. A's reported experience were physically real, it would show the existence of alien flying vehicles in our environment. Attempts to establish the reality of the event revealed many inconsistencies and incongruities in the case, a number of which are described in this report. Developments subsequent to the field investigation have not altered the initial conclusion that this case does not offer probative information regarding unconventional craft.

Case 25

North Central

Spring 1967

Investigators: Foster, Peterson, Wertheimer

Abstract:

Three couples hunting raccoons at night reported that an aerial object approached them, played a brilliant light on them briefly, then turned it off and flew away. Individual versions of the incident differed substantially as to motion, appearance, duration of sighting, and the object's identity. Investigation attributed the sighting to a prank by the crew of an airplane with a searchlight that had flown over the hunt area at the reported time.

Background:

Witness A reported the incident to an AFB two days afterward. A week later he wrote a report to NICAP, which sent a copy of his letter to the Colorado project. A telephone conversation with Witness A resulted in sending investigators to the area late in June.

Investigation:

The investigators interviewed seven witnesses and visited the site of the incident with one of them. They also visited the AFB to check on aircraft activity on the night of the incident.

Witnesses' versions of what had happened differed rather widely. For that reason, the situation as developed by the witnesses will be outlined, followed by a summary of the disparities in their stories.

Three couples were hunting raccoons on a ranch. Mr. A. was a professional man, Mr. B an administrator, and Mr. C a rancher. Witness D was another rancher who was keeping an eye on the hunters. "About 11:30 p.m." the men were about 0.5 mi. W of their truck, in which the women were waiting. They carried powerful flashlights that they turned on only briefly as needed.

All of the men and women saw a lighted aerial object approach as if gliding down toward them. When immediately over them, it turned a brilliant beam of light on the men for a short time, then turned it off and proceeded on its way. Witness D also saw the light.

However, the details of the individual accounts differed widely. (On some points, some witnesses did not comment.)

Five witnesses reported that the object came from the NW; one from the N; and one from the E.

Three reported that it flew a straight course; two thought it turned 90° as it departed.

Three reported that it hovered while the bright light was on; two, that it kept moving.

All reported the light was blue, bluish-white, or white except D, who said it was yellowish.

One witness reported the object was about 50 ft. in diameter, alternately glowing dimly or brilliantly. Two reported several small red lights; one, small white and red lights; one, small blinking red, white, and green lights; one, no lights.

Four witnesses reported that the light from bright spotlight did not move the ground. Two of the other three thought a second spotlight might have done so. All agreed that the beam was conical, emanating from a narrow source. Witnesses disagreed widely as to the location of the beam on the ground; each of those in the light path tended to think it was aimed directly at him.

Three witnesses reported a sound similar to that of a small airplane engine as the object approached; four noticed it some time after the bright light was turned on.

Total duration of the sighting was estimated by two witnesses as one to three minutes of the bright light; two to three minutes, one and a half minute, "a minute or so," a half minute, 30-45 sec., five seconds, and 15 sec., off briefly, then on again momentarily. Only one witness ventured a guess at the time the sighting occurred, "approximately 11:30 p.m."

One witness reported that he recognized the sound as that of a small twin-engine airplane, and thought he saw its outline as it departed. He suggested that the crew might have seen the hunters' blinking flashlights and turned the spotlight on them.

At the AFB, the investigators learned that on the date of sighting a rather slow twin-engine Navy airplane equipped with a powerful searchlight had departed at 10:34 p.m. on a course to the SE that would have taken him almost directly over the location of the sighting. The pilot was flying "visual," not on instruments. Further, an airman at the AFB reported that he had heard some conversation between the pilot and co-pilot before takeoff, indicating that they intended to use the searchlight to set off some UFO stories. Evidently the rancher's surmise was right: they had seen the blinking flashlights of the hunters and taken the opportunity to startle them.

Comment:

Unlike many comparable cases in which a mystifying apparition has generated widely different versions of the experience, this one was convincingly explained. It therefore affords an unusually good opportunity to study the reactions of witnesses to an unfamiliar and unexpected situation. The most obvious inference, already familiar to the legal profession, is that eyewitness testimony in such circumstances is inherently unreliable.

It is significant also that the only witnesses who recognized the object as an airplane were the two ranchers and the wife of one of them. They were in a familiar situation. The two couples from the city were on unfamiliar ground, were disoriented as to directions, and may have felt a bit of latent uneasiness that made them emotionally oblivious of this possibility. Witness A reported that, when the brilliant light came on, the rancher (Witness C) exclaimed to him: "My god, what's that?" A: "I don't know." C: "Do you suppose it's one of those flying saucers?"

Witness C, who said he had recognized the object as an airplane, commented in his interview: "It seemed to me the light came right out of the plane--after I got over tellin' it was a flyin' saucer!"

Mrs. C., who had been in the truck with the other women, commented in an interview: "We talked about it. First it was a plane--then I said, 'Was that a flying saucer?' and we just got to thinking..."

Case 24

North Eastern

Summer 1967

Investigators: Craig and Wadsworth

Abstract:

A 50-year-old general machine handyman and his son, 11, claimed to have seen and photographed a "flying saucer" close to their rural home. Neither the numbers on the backs of the two Polaroid photographs nor the focus of objects in the field of view were consistent with the account of the alleged sighting.

Background:

Two polaroid photographs of a saucer-shaped UFO were said to have been taken by the witness about 12:15 p.m. EDT.

The photographs showed windows or ports in both the upper and lower halves of the object. According to Mr. A's account, he was taking a picture of his 11-year-old son with his Model 800 Polaroid camera when a high-pitched humming noise attracted their attention. They looked in the direction of the noise, and saw an UFO about 60 ft. in diameter, some 500 ft. away, moving about 30 to 40 mph, at an altitude of 500-600 ft. Mr. A snapped two pictures during the 15-20 sec. before the object departed at a speed, estimated to be 2,000 mph.

According to his account, Mr. A immediately took the pictures to a farm house, about 300 yd. from his home to show the pictures, and learn if the neighbors also had seen the object. The neighbor, Mr. B. says that Mr. A arrived at their house about 12:30 p.m. $\pm$ 5 minutes, and the pictures were still "wet." None of the family had seen nor heard the UFO. At Mr. B's insistence the incident was made known to the public. Mr. A wanted to destroy the photos and not tell anyone else of the incident, for fear of ridicule. Mr. B.

with A's reluctant permission, notified the state police and local newspapers of the incident and the existence of the photographs.

Investigation:

Although there are unexplained discrepancies in the story and pictures, project investigators were not able, on the basis of their investigation, to determine that the incident was a hoax. Mr. B was convinced the pictures were of a real object. Both Mr. A and his son's stories were generally consistent, and presented seriously with conviction. Neither witness was shaken from his original statement after hours of conversation and discussion. The suggestion that such pictures might result from deliberate deception brought only emphatic denial. Although Mr. A would not agree to lend the original pictures to this project for analysis, copies of the photographs were obtained.

In picture number one the UFO is in sharp focus but is dimly outlined against the sky because of overexposure. It appears to have three dark windows or ports on its lower section (which has the appearance of a pie tin) and a row of square dark windows of similar size, but more closely spaced, around its top portion (which resembled a lid of a frying pan, with a knob on top). A dark streak extends about half the distance along the ridge-like juncture of the top and bottom portions. This streak ends abruptly.

The image of the UFO in picture number one is just over three centimeters long. The top of a near-by automobile, the top of a ridge some 30 ft. from where Mr. A stood, and several trees and a bee-hive on the ridge are also visible in photo number one. The trees were not in focus.

Photo number two shows apparently the same UFO, somewhat more distant (a 2.8 cm. image), not in sharp focus, but with good contrast against the sky background. In this photo the UFO appears below a wire clothes line located seven feet from the camera. Tops of trees are visible in each bottom corner of the picture.

Both photos were taken within a few feet of Mr. A's house, number two from a position about 20 ft. from where he stood while taking number one. Photo number one was taken at a bearing of 100°, photo number two at 300°. The tree tops visible in photo number two are at distances of 40-65 ft. away from the camera. They are not the same trees that appear in photo number one.

Investigation Results:

1) Polaroid photograph numbers. Mr. A said the film had been in the camera several months, and only three pictures remained to be taken on the roll. He took number six, a picture of his son. Numbers seven and eight would then be the UFO photos. The numbers on the back of the UFO photos, however, were one and seven respectively.

2) Disappearance of other photographs and photographic material. Mr. A "could not find" the picture of his son, although Mrs. B said he had the three photos, including one of his son, when he arrived at the farmhouse at 12:30. Mr. A. said he "had thrown away" the negative back sheets of all photographs.

3) Lack of other witnesses. An object 60 ft. in diameter and at 500 ft. altitude would have been over a point less than 100 yd. from a major highway at the time the pictures were taken, and would have crossed over the highway on departure. The highway carries heavy traffic. A crew of gravel-company workmen would have been on their lunch break in the gravel pits over which the object was allegedly flying when it was photographed. No one reported seeing such an object, in spite of a radio appeal for other observers to identify themselves. No workmen in the gravel pit saw the object, although when questioned several of the workmen expressed the opinion that they are so accustomed to loud noises while they work that they would not have noticed the sound from an UFO as described by Mr. A. Neither Mr. B., who was on a tractor at 12:15, nor any of his family or crew saw the UFO.

The only response to the appeal for anyone who had seen UFO about noon on the date of Mr. A's sighting to identify himself came from youngsters. Project investigators checked what seemed the most significant of these reports but they had no relation to the object in Mr. A's photos.

One farmer did report that he and his brother, baling hay about one mile from Mr. A's home, (in the direction of claimed departure of the UFO), heard something that sounded like "many jet planes" about noon on this date. They commented on the sound to each other at the time, but did not see anything which could have generated this noise.

It seems probable that someone on the highway, or working in the vicinity, would have seen the UFO if it were as described.

Inquiries were made at radar installations at Youngstown, Ohio air terminal and with the FAA Cleveland Center. No observations of unidentified objects were made at either place.

4) Position from which picture number two was taken. To reproduce picture number two (minus the UFO), it was necessary for the photographer to lower the camera by kneeling on the ground. Mr. A. said he merely stooped over a bit to take the second photo.

5) Preliminary examination of the photographs by W.K.H. Copies of Mr. A's photographs were sent to Dr. Hartmann for preliminary examination and evaluation. A summary of his response follows:

In picture number one, the object is in focus (showing square corners on portholes), while the background trees and beehive are out of focus. Since the trees and beehive are some 80 ft. away, they should have been in fairly sharp focus if the camera were focused for any distance close to or greater than 80 ft. Had the object been some 500 ft. away, as Mr. A claimed, and the camera focused essentially at infinity, the trees should be in sharper focus than the nearer car top. Photograph number one shows the car top in sharper focus than the trees, and the object in sharper focus than the car top.

In picture number two, the object is less sharp (portholes are blurred, not clearly square). The clothes wire also is somewhat out

of focus, while the trees (40-65 ft. away in this case) are in sharper focus than in picture number one.

One possible interpretation of these observations is that the object, and the camera focal distance, was closer in picture number one than was the top of the car. The object would then have been five to ten feet from the camera. Picture number two could have been made with the focus of the camera set at about 30 ft. while the object was enough closer to the camera to be noticeably out of focus.

If the object were five feet away its diameter was ten inches; if ten feet away, 20 in. Pictures duplicating Mr. A's could be produced with a 10-12 in. model, focusing the camera at five feet and 30 ft. for the first and second pictures, respectively, and suspending the model by fine thread or monofilament fishing line. (In photo number two the suspension could be either from the clothes line which appears in the picture or from a fishing pole.)

Conclusions:

The relative focus of objects in picture number one is not consistent with the claim that the UFO was a large object beyond the trees in the picture, but is consistent with an assumption that the UFO was pie pan sized. The other discrepancies in the account discussed here also contribute to the conclusion that these photographs would not merit further analysis even if the originals were made available for detailed study.

Case 25

North Eastern

Summer 1967

Investigators: Armstrong, Levine

Abstract:

Reports of noise, flashes, and power interruptions were attributed to power-line faults.

Background

A representative of APRO and NICAP phoned the project to report the following incident. On a Wednesday morning at 4:10 a.m., a man employed by an aircraft company reported that while driving in a northwest direction to work, he saw a bright light flashing to his rear. He turned his car around, and drove back to the location of the flashing light, and stopped at the intersection of two roads. He saw a ball he estimated to be two and one-half feet in diameter above trees to the northeast. He was frightened, and left the scene to report to the police. He said he saw the flash five times. The next day he stopped at the home of the woman on whose property the trees were located. She told him that she had seen the light.

The NICAP and APRO representative learned of the incident from the police. He interviewed both witnesses. He then looked about the scene of the sighting and discovered a place in some tall grass, about 30 inches high, where the grass had been flattened. The depression in the grass was circular and about six to ten feet in diameter. The grass was bent in a counter-clockwise direction. At 8:00 p.m., he took three Polaroid pictures of the area, one of which was a close-up of the depression. He reported that the close-up came out "white" and suggested radioactive fogging. On the basis of these reports, Armstrong and Levine went to this area.

Investigation

The investigators met with the APRO-NICAP man three days later at

11:00 a.m. The aircraft employee was not available, so they copied a tape recording of a statement he had given to the APRO-NICAP man.

The investigators then talked with the woman witness. She reported that she had been awakened at 4:40 a.m. on Wednesday by a noise she described as rumbling, crackling, or a "thunder sound", but she knew it was not thunder. Through a small crack in closed Venetian blinds, she had seen flashes of light that lit up her bedroom bright enough to read by. The light went on and off several times, and there were "nine or ten rumblings." She stopped watching, but could still hear the noise. The bright light lasted longer than lightning, but only a few seconds. She reported that the power had gone off at about 5:45 a.m. for about 45 minutes.

The investigators next examined the grassy depression. They found no radioactivity above background level. The depression was roughly circular, but there was little evidence of the grass lying counter-clockwise. The grass was of a kind that, if pushed down, stayed down for a long time. Foot tracks that had been made in it two days earlier were clearly visible. The investigators concluded that (1) there was no evidence of anything unusual about the depression, and (2) the depression could have been made at any time during the past week or longer.

They then spoke with a man who lived nearby. He reported having seen the light and heard the noise, which he said sounded like a power relay cutting out, between 4:30 and 6:00 a.m. He also noticed that light came from two places, a power pole with a transformer on it about 300 feet from his house, and an indistinct location down the road in the direction of the woman witness' house. A night-light in his room went out for 35 or 40 seconds when the noise and flash came, and all of these effects coincided in time. He noted that just before the sighting a heavy fog and rain had made the branches of the trees very heavy. He had attributed the noise and the flashes to the power transformers.

Conclusions

In view of the reported power interruptions and the heavy fog

and rain, it is probable that all three of the witnesses' sightings were of flashing arcs associated with the power lines. The fog would enhance the dispersion of the light and lend a strange quality to it and would also facilitate high-voltage corona discharges.

Case 26

South Pacific

Summer 1967

Investigator: Craig

Abstract:

A 67-year-old security guard, on night duty at a lumber yard, reported firing six shots at a cigar-shaped UFO, and later, finding four of the flattened bullets which he said had fallen to the ground after ineffective impact with the UFO. Faced with police evidence, the guard admitted that the bullets were ones fired at a steel drum and that the "sighting" of the UFO was fictitious.

Background:

The witness reported firing six shots from his .38 caliber revolver at an 80-100 ft. long, cigar-shaped UFO which was hovering at about 50 ft. in the air at a distance of some 100 ft. The initial report of the incident was made at 3:50 a.m. PDT and the local police immediately made a preliminary investigation. At 8:00 a.m. on the same day, the witness reported finding four flattened slugs which he said he dug out of furrows in the asphalt surface.

The witness said that after being fired at, the object rose slowly at first, then sped out of sight in a westerly direction. A bluish-green light, which surrounded the UFO, went out after the second shot. The object made no noise until it sped away, at which point the sound was comparable to that of an idling automobile motor.

Investigation:

A project investigator arrived at about 8:00 p.m. By this time, the witness had changed his story saying that he had made a mistake and was now sure that he had fired at a balloon. He said he shot at it only once, and that there was no visible effect,

if in fact he hit it at all. The flattened slugs were ones he had saved from earlier target practice, and he had produced them on the spur of the moment, to embellish his UFO story.

Police investigation had showed that the furrows in the ground, from which the bullets had allegedly been retrieved, were made by bullets entering them at a 30-40° angle. It appeared more likely that the slugs were fired directly into the asphalt, and had not fallen to it as reported. However, the witness later asserted that he had made the furrows with a ball-peen hammer. In addition, police investigation had turned up a steel drum, with numerous holes and indentations on it from bullet impact. When presented with this evidence, the witness admitted having fired at the drum for target practice about a month before, and said that the slugs in question were some of those which had struck the drum.

There were no other reports of any unusual sightings in the vicinity on that day.

Conclusion:

In view of the witness' own admission that he had fabricated the story no further investigation or comment was deemed necessary.

Case 27

North Eastern

Summer 1967

Investigator: Rothberg

Abstract:

During a "flap" in the North East area, the project decided to study the feasibility of fielding an investigation in the area with maximum instrumentation. The objective was to obtain instrumented observations of UFOs and, if possible, to correlate sightings with nightly exposures made by an all-sky camera. Although UFO reports continued at high frequency during the feasibility study, less than 12 of 9,000 all-sky camera exposures contained images not immediately identifiable. Only two of these coincided in time and azimuth with a sighting report. Study of one negative suggests that the image is either that of a meteor whose path was at or nearly at a right angle to the focal plane or that an emulsion defect or impurity is responsible for the image. The other negative's image was identified as a probable aircraft.

Background:

During the summer of 1967, more than 80 sightings were reported in this North East area. The project decided to field an investigation in the area in the hope that the wave of sightings would continue and could be directly observed and measured by an array of instruments. The investigator was equipped with a car having a radio-telephone, still and motion-picture cameras, two U.S. Army infra-red detectors, and a Geiger counter. When on patrol the investigator was in frequent communication with a telephone answering service which had been retained to accept sighting reports and record them on Early Warning report forms. The number of the answering service was widely publicized throughout the region.

An all-sky camera (see Section VI, Chapter 10) was mounted in an undisclosed location, on the well-guarded roof of a local hospital dominating the area. It was hoped that if the frequency of reports was maintained, some of them could be correlated with all-sky camera exposures. The camera was operated during 17 nights. The camera made 9,000 exposures each covering a considerable area of the night sky over a period totalling some 150 hr.

Results:

No occasion arose in which it was possible to use any of the instrumentation with which the project investigator had been equipped.

One UFO was seized. It was a plastic bag made into a hot air balloon by mounting candles across its mouth and launching the device.

More than 100 sighting reports were filed, of which 50 were readily explainable as natural or man-made phenomena, 17 were judged to be identifiable, and 14 seemed to require further investigation. Attempts to acquire sufficient additional information regarding the last category were unavailing, so that no conclusion was drawn regarding them.

Study of the two all-sky camera negatives that contained images not immediately identifiable and that approximately coincided in time with reported sightings was undertaken by project experts and others. These were exposures made on two separate nights at 8:57 p.m. and 9:57 p.m. EDC.

The first frame contains a strong, elliptical spot. No adjacent frames show any image of similar intensity. Examination of the spot under 120X magnification shows near its center a minute defect or contamination that could have caused spurious development, but otherwise the spot shows the gradation of density normal to an exposure caused by light. The image's ellipticity could indicate motion of the light source during the exposure. Because the image appears on a single frame, it is regarded as either an emulsion or

development defect or as caused by a meteor whose path was almost directly perpendicular to the focal plane of the camera.

The second frame contains a light trace resembling an airplane track and is identified as a probable aircraft. The sighting report that coincides in time with this exposure, however, is so fragmentary as to make impossible any firm identification of the object reported as being the trace shown on the film.

A third frame for 4 September at 00:32 EDT was also deemed worthy of further study by the field investigator, but project experts report that it and adjacent frames contain only the images of stars.

Conclusions:

This investigation was of particular importance because it offered an opportunity for study of UFOs at the time they were reported, and for measurement of their properties using sophisticated instrumentation, including the all-sky camera. The fact that even though scores of UFOs were reported during that time, the investigator could find nothing to examine with his instruments and nothing remarkable on thousands of all-sky camera exposures with the exceptions noted above is highly significant. We conclude that the expectation that it might be possible to place a trained, equipped investigator on the scene of an UFO sighting has a probability so low as to be virtually nil.

Case 28

South Pacific

Winter 1966 through Summer 1967

Investigators: Roach, Wadsworth

Abstract

Repeated sightings that began in late 1966 and recurred for many months, arousing widespread interest, were identified as a jet aircraft engaged in aerial refueling training practice.

Background

During late 1966, mysterious lights began to appear over the central part of an agricultural valley in the South Pacific. Local residents soon began to report them as UFOs, and the resultant publicity led eventually to investigation by NICAP and this project. These sightings, instead of reaching a peak and tapering off, continued for many months. By summer of 1967 interest was intense. Most of the sightings were witnessed from a site near a foothills town located at the eastern slope of the valley.

The key witness in the area was a resident (Witness I) of the town. He and his wife had observed, logged, and photographed UFOs on numerous occasions during the preceding months. He also coordinated an UFO surveillance network using Citizens Band radio which covered a radius of approximately 80 miles. As principal contact in the area, he provided background information that included names of witnesses, taped interviews, and photographic evidence. This material proved invaluable in preliminary assessment of the situation.

Sightings, General Information

The sightings fell into two groups: one (hereafter referred to as the primary group) was highly homogeneous and comprised approximately 85% of the total number of sightings. Objects in the primary group appeared as orange-white lights above the valley at night.

These lights moved, hovered, disappeared and reappeared, and sometimes merged with one another. This report deals with the primary group of sightings.

Sightings from the smaller group will be reported separately, as they form a heterogeneous assortment that is clearly discontinuous with the primary group.

Photographs

The high frequency of primary-group sightings provided Witness I with numerous opportunities to take pictures with a tripod-mounted Rolleiflex camera. The resulting photographs, while providing no answers to *what* the objects were, did constitute firmer evidence than the unsupported testimony of witnesses .

Area Features

- a. The ranch home of Witness I was located in the foothills east of the valley and 1800 ft. above the valley floor.
- b. The view from the ranch was unobstructed from southeast to southwest. Foothills in the foreground obscured in the distant horizon from northwest to northeast.
- c. Most observations from the home of Witness I were from the rear patio, which faced south with a full view of the unobstructed horizon as well as parts of the foreground foothills to the east and west. In most instances he , alone, made the observations.
- d. Most sightings were to the southwest over the valley floor.
- e. Area residents habitually sat outside at night during the summer because of the heat. This practice contributed to the frequency of sightings.
- f. The recurrence of sightings excited the people in the area, thereby causing an increase in reports of low reliability.

Investigation

After detailed discussions with local NICAP people, including Witness I and his wife, project investigators decided to try to observe the UFOs themselves. On the night of 12 August they saw nothing unusual. On 13 August, however, the following events occurred:

At 10:30 p.m. a light appeared low in the southern sky, travelling

approximately 10^0 /sec. After about 10 sec., more detail became visible and the object was identified as probably an aircraft with conventional running lights and an anti-collision beacon.

Meanwhile, another light had appeared to the east of the presumed aircraft, travelling west at a similar angular rate. This light was not obviously an aircraft, but appeared as a dull orange light that varied somewhat in intensity as it moved. The object could have been an aircraft. Witness I, however, said that it was exactly the kind of thing that had been reported frequently as an UFO. He was disappointed that it had not been as near and bright as he had observed on other occasions.

After about 15 sec., the UFO, which had been travelling horizontally westward, seemed to flicker and then vanished. The original object continued eastward, disappearing in the distance in a manner consistent with its identification as an aircraft. Duration of both observations was less than a minute.

On 14 August Wadsworth and Witness I drove to a village 20 miles south of the sighting area, where several sightings had been reported, and west and northwest toward towns A, B, and C. This area, had been most frequently indicated by observers as the apparent location of the UFOs. However, interviews with area residents disclosed no significant information.

Another sky watch that evening by Wadsworth, Witness I and his wife (Roach had gone) yielded nothing unusual until midnight. At 12:00 a.m. and again at 12:42 a.m. on 15 August UFOs were observed. They hovered, moved horizontally, and vanished. They appeared as bright orange lights showing no extended size and varying in intensity. Wadsworth thought they might be low-flying aircraft on flight paths that produced illusory hovering, but they could not be identified as such. Witness I described the lights as "good solid sightings," typical of the recurrent UFO sightings in the area. One of the sightings was later confirmed in all essentials by two women, who lived nearby.

The Monday night sighting was reported by telephone to the base

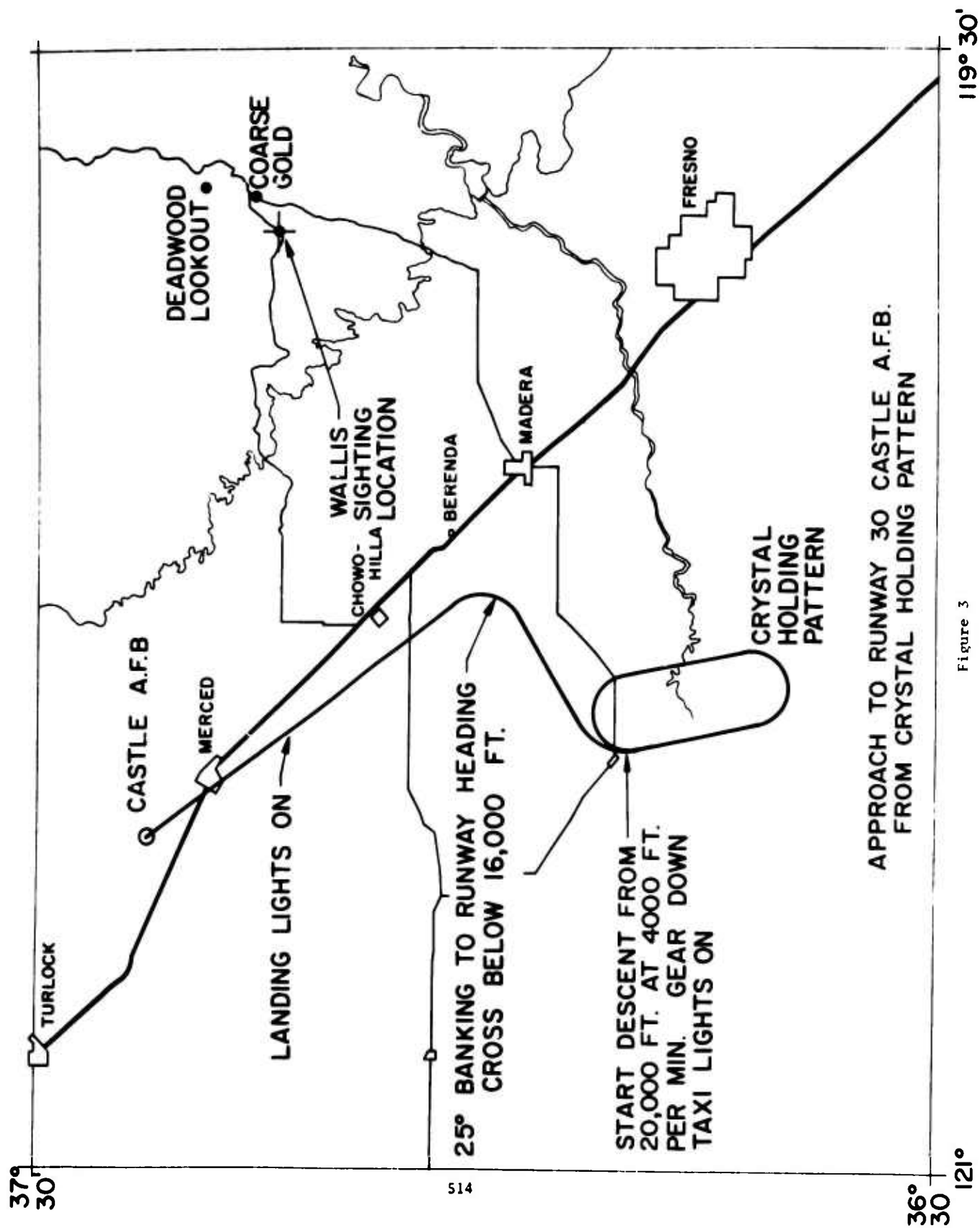


Figure 3

UFO officer at a nearby Air Force base. He stated that no aircraft from that base had been in the air at the time of the sighting.

Project investigators then instituted a surveillance plan for the night of 15-16 August. About 9:00 p.m., Wadsworth drove to a fire lookout tower atop a mountain near the sighting area. This lookout, the highest in the area, afforded an optimum view over the entire valley. He carried a transceiver to communicate with Witness 1 in the town of sighting for coordination of sighting observations, and was accompanied by a local NICAP member. Also present were the resident fire lookouts at the station.

At midnight orange lights appeared successively over the valley in the direction of towns A, B and C (see map, figure 3). These lights, observed simultaneously by Wadsworth and Witness 1, appeared to brighten, dim, go out completely, reappear, hover, and move about. Sometimes two of them would move together for a few moments and then separate. This behavior continued for an hour-and-a-half.

The mountain vantage point afforded a much more comprehensive view of the phenomena than did the valley town site. It was possible to observe a general pattern of movement that could not have been seen from below, because the north end of this pattern was over Town C, which was not visible from the sighting town. Even with binoculars Wadsworth had to study the pattern for more than an hour before he could begin to understand what was happening.

Essentially, the lights made long, low runs from Town C toward Town B, which was not visible from the sighting town. Even with binoculars Wadsworth had to study the pattern for more than an hour before he could begin to understand what was happening. At other times they appeared to hover, flare up, then go out completely. Witness 1 believed that the lights flared up in response to signals he flashed at them with a spotlight. Many of his flashes were followed by flare-ups of the UFOs, but to Wadsworth these flare-ups appeared coincidental.

Observations lasting about two hours convinced Wadsworth that the lights were aboard aircraft operating out of an Air Force base in Town C. He was finally able to see the lights move along what was apparently a runway, then lift off, circle southward, and go through the behavior previously described before returning to land at Castle. It should be pointed out that none of this pattern was obvious, even to the NICAP man some thirty miles away, and visibility was limited by haze. In checking further with the base, it was learned that most of the aerial activity there involved tankers and B-52s in practice refuelling operations. Between 400 and 500 sorties were launched each month, day and night. These planes carried large spotlights that were switched on and off repeatedly during training. This feature explains the flare-ups and the disappear-reappear phenomena, that had been observed from the town. The apparent hovering is accounted for by the fact that part of the flight pattern was on a heading towards the observer. The closing behavior followed by separation was the refuelling contact. Maps supplied by the AFB showed flight patterns consistent with these sightings as to the objects' locations, motions, and disappearance-reappearance-flare-up behavior. (See fig. 3, p. 514) Since these objects were essentially identical to those seen the previous night, it was assumed that the UFO officer had been in error when he stated that no aircraft activity had originated at the Air Force base.

Summary and Conclusion

The sightings were of interest for two reasons. First, the phenomena were strange enough to defy simple explanation. Second, they were on a large enough scale to arouse widespread interest. Sighting frequency was high and did not decline with time.

However, the sightings were not individually spectacular, being essentially lights in the night sky. This case is an example of conventional stimuli (aircraft) that, by their unusual behavior, lighting, and flight paths, presented an unconventional appearance to witnesses.

Before the project investigation, observers had become loosely organized around Witness I, who logged sightings, taped interviews

with witnesses, and obtained photographs of the objects. He also called on Los Angeles NICAP for further assistance. But one thing that apparently no observer did was to drive across the valley to the Air Force base while sightings were occurring. There may have been two reasons for this omission. First, Witness I had phoned the base on several occasions to report sightings, and had been erroneously but authoritatively informed that the sightings could not be accounted for by planes based locally. Second, few observers were seeking a conventional explanation that would dispel the intriguing presence of UFOs. Even then the sightings were identified by Wadsworth, Witness I was loath to accept the aircraft explanation. Thus a solution was not forthcoming from the local situation, which had reached a kind of equilibrium.

After examining the previously compiled information, project investigators decided a more direct approach was needed. The methods of inquiry and observations that they used resulted in the discovery of a pattern of behavior readily identified with aircraft activity originating from the local air base.

Case 29

North Eastern

Summer 1967

Investigators: Craig, Levine

Abstract:

Six to 16 bright lights, appearing and disappearing in sequence, were seen by several independent witnesses. Some witnesses reported seeing the outline of an object to which the lights were apparently attached. Investigation showed that the lights were ALA-17 flares dropped from a B-52 aircraft as part of an USAF aircrew training program.

Background:

At least 17 witnesses in ten independent groups reported seeing six to 16 bright objects or as many lights associated with a single object, in the northeastern sky at about 9:30 p.m. EDT. Most of the reports indicated that the lights were visible for 10-15 sec., although a few claimed durations up to five minutes.

The first report was made by a group of six teenagers who said they saw a noiseless "flying saucer" with six yellow lights 200 ft. in the air over the concession stand on the beach. They reported the object to be about 20-35 ft. across with a "round thing on the top and bottom."

Publication of this report was followed by numerous reports of similar observations that had been made at the same time. These observations were from four different beaches, an airport, and a fishing boat off-shore. The reports varied in detail, but agreed that the sighting was sometime between 9:15-9:45 p.m.; several reports placed the time within five minutes of 9:30. They all agreed that the lights appeared in the northeast. Elevation angles that were indicated varied from 5-30° above the horizon. The lights were described as blinking on and off; some descriptions indicated that they appeared

in sequence from left to right and blinked off in reverse sequence, right to left. Most observers saw five or six yellow lights in a roughly horizontal line, each light being comparable in brightness with the planet Venus. One private pilot observing from the ground at an airport saw a horizontal string of six to eight pairs of lights, one yellow and one red light in each pair. The array moved toward the horizon and seemed to get larger for five to seven seconds, stopping four to five seconds, then beginning to retrace the approach path before blinking out about four seconds later. While most observers saw only lights, at least one witness, in addition to the teenagers at the original beach, reported seeing a large disc-like object encompassing the lights. Other of the witnesses "had the feeling the lights were attached to an object."

Investigation:

Six witnesses in this northeastern area were interviewed directly, most of them at the locations from which they saw the lights. Others were contacted by telephone. The multiplicity of consistent reports indicated that unusual lights in the sky had indeed been seen; it was not certain whether they were separate lights or were lights on a single object.

Reports of these UFO sightings, when they had been telephoned to the nearest Air Force Base by observers, had been disregarded there. No unusual unidentified radar images had been recorded at the nearest FAA Center.

The observations as described did not resemble airplane activity or meteorological or astronomical phenomena. No blimps or aircraft with lighted advertising signs were in the vicinity of the sighting at the time.

Since reports of UFO sightings had been frequent in this region, the investigating team spent several late hours observing the sky in hopes of getting first-hand information about the lights or objects that had been seen. No UFOs appeared during the watches.

One of the witnesses to the original sighting, a high-school senior, reported seeing "that object" again on a subsequent evening. He guided the investigating team around a golf-course, describing a large saucer with surrounding windows which he had seen there just a few yards above his head. This report was judged to be a fabrication.

A few weeks after the project team returned to Colorado, the NICAP Subcommittee Chairman, Raymond E. Fowler, learned that 16 flares had been dropped at 9:25 EDT on the night in question from a B-52 aircraft 25-30 mi. NE of the beach area. Information about the flare drop was furnished, at Mr. Fowler's request, by the Wing Information Officer.

The Strategic Air Command had initiated an aircrew training program for dropping ALA-17 flares on the day before with aircrews releasing as many as 16 flares per drop. The flares are released over controlled areas at 20,000 ft. or more. They burn with a brilliant white light, and are easily visible at distances in excess of 30 mi.

Conclusion:

In view of the close coincidence in time, location, direction and appearance between the flares dropped and the UFOs sighted on the same day, it seems highly likely that the witnesses saw the flares and not unusual flying objects. It also seems highly likely that the suggestion of an outline of an object as reported by a few witnesses was, in fact, a product of their expectation to see lights in the sky on something rather than floating about by themselves.

Case 30

South Pacific

Fall 1967

Investigator: Staff

Abstract:

A civilian employee at an AFB confirmed an earlier report that base personnel had made an UFO sighting, although official sources denied that such an event had occurred.

Background:

A rumor was relayed to this project by a source considered to be reliable, reporting in the fall, 1967, six UFOs had followed an X-15 flight at the AFB. It was suggested that motion pictures of the event should be available from the Air Force.

Investigation:

Before initiating a field investigation, Project members checked by phone with Base Operations for confirmation of the rumor. There was no log book record of an UFO report and no X-15 flight on that day. The last X-15 flight had been 8 days previously and the last recorded UFO report submitted to the base had been a month before.

The rumor persisted, however, with indications that official secrecy was associated with the event. If reports of the event had been classified, no record would appear on the operations log. Although there apparently was no association with an X-15 flight, a responsible base employee (Mr. A), who wished to remain anonymous, had reassured our source that there was a sighting by pilots and control tower operators. Mr. A had left the AFB for temporary duty elsewhere. His replacement, Mr. B, was unable to obtain details of the event but was quoted as saying that there apparently was something to it because "they are not just flatly denying it."

Mr. A was contacted by telephone at his temporary assignment by a project investigator. He said he actually did not know too much about the incident, since all the information had been turned over to the public information officer, who was the only one at the base who could discuss it. According to Mr. A the information had come to his desk; his action was to pass it on to the PIO.

Attempts to learn more about the reported event from the PIO were met with apparent evasion from that office. The Director of Information was reportedly unavailable when phoned. He did not return calls. On one attempt to reach him, the investigator indicated to a PIO secretary that he would prefer to replace the call when the Colonel was in, rather than to speak with a lieutenant who was available at that moment. The secretary's response was "Well, the Colonel is busy this year - but you'd still prefer to wait until next Monday?"

On Monday, the Colonel was again unavailable and once again did not return the call. A request was then made through the Pentagon for determination of whether or not an UFO event had in fact, occurred at the base on the day specified. A Pentagon officer, transmitted a request to the base Director of Information that he telephone the project investigator and clarify this situation. This resulted in a telephone message, left by an assistant to the Director of Information, that there was no UFO event at that base on the day in question.

Mr. A was contacted later, after his return to the base, and asked for clarification of the incident. He responded only that the Director of Information had told him to "stay out of that."

Conclusion:

Although it is true that the report of this incident was never more than a rumor, it is also true that project investigators were not able satisfactorily to confirm or deny that an UFO incident had

occurred. Attempts to investigate the rumor were met with evasion and uncooperative responses to our inquiries by base information.

Case 31

North Eastern

Fall 1967

Investigators: Ayer, Wadsworth

Abstract:

A woman and her children driving on a rural road at night saw a trapezoidal pattern of dim red lights over the road. As the car approached the lights, they moved off the road and disappeared between the trees. The possibility that the lights were on a microwave tower in the vicinity of the sighting is discounted by the witness' familiarity with the road and tower, her accurate account of accessory details, and other factors.

Investigation:

Interviews with the principal witness in the fall of 1967 brought out the following account:

A woman was driving north with her three young sons on a country road about 7:45 p.m., when her oldest boy, aged about ten, called her attention to about 18 extended dim red lights arranged in a trapezoidal pattern. They appeared about as high as the first cross-piece on a telephone pole, and as wide as the road--that is, about 15 ft., and hovered about 1.5 ft. above the road.

As soon as the woman saw the lights, she accelerated to try to catch them, and chased them up the road about 300 yd. until they vanished between two sugar maples on her left. The lights disappeared as if they had been occulted from right to left. The structure to which the lights were presumably attached was never visible.

After hearing the woman's report, a project investigator drove S on the road about 4:30 p.m. to check the landmarks. In addition to the two maples about 300 yd. north of the house where the lights were first seen, there was a third maple nearer the road and

about 250 yd. further north, and a microwave tower about 500 yd. N of the third maple and somewhat W of the road. Such towers usually are well lighted at night. It appeared that, if the trees cut off the view of the top of the tower, the lower part would resemble the strange lights, provided that the number of lights agreed with those reported. The third maple would be responsible for the occultation.

Accordingly, both investigators returned to the road about 8:30 p.m. The first glimpse of the illuminated tower severely undermined the hypothesis. The tower carried only a red beacon at the top and four red lights halfway down, one on each leg of the rectangular structure.

A subsequent talk with the witness revealed that she had traveled back and forth along the road a great many times. She was quite familiar with the appearance of the tower, and denied emphatically that it was what she had seen, because the lights on the object were dim and extended, while those on the tower were "points with rays." Furthermore, there were too few lights on the tower.

Comment:

This witnesses impressed both investigators as an accurate and wide-awake observer who was quite capable of relating to known landmarks the behavior of an unexpected and unfamiliar sight with little distortion.

The sighting can be explained by the presence of the microwave tower. A further argument for the tower hypothesis depends on the fact that the road ran upgrade about 40 ft. in elevation between the witness' locations at first sighting and at disappearance. Thus, it appears that the light on top of the tower would have been seen low over this rise in the road, the lower lights on the tower being obscured.

The tower cannot therefore be regarded as a fully satisfactory explanation. The reported lights were seen just above the roadway; but at no point does the road run directly toward the tower. Further

by the witness' account, the strangeness of the object was apparent to both her and her son, both of whom were very familiar with the road and the tower.

Case 32

South Mountain

Fall 1967

Investigators: Ayer, Wadsworth

Abstract:

The death of a horse was popularly believed to be related to UFO sightings, but professional investigation disclosed nothing unusual in the condition of the carcass. No significant conclusions could be derived from numerous reports of UFO sightings.

Background:

During the early fall, 1967, news of a series of events that were popularly held to be related filtered in to the Colorado project. One such event had been the death of a horse under allegedly mysterious circumstances a month before. This death had become associated in the public mind with recent UFO sightings in the area.

The horse, owned by a woman and pastured on her brother's ranch, had not come in for water one day and had been found dead two days later. It was reported that all the flesh and skin had been removed from his head and neck down to a straight cut just ahead of the shoulder, and that crushed vegetation, strange depressions in the ground, and dark "exhaust marks" had been found nearby. The owner of the horse was a correspondent for a local newspaper, and a spate of releases had rapidly inflated public interest in the case.

When, a few days later, word came through that a second dead horse had been found, amid persistent rumors of unreported UFOs, it was decided that project investigators should go to the area.

Investigation:

The area about the carcass had been trampled by several hundred visitors. The investigators therefore considered it was not worthwhile to try to investigate anything at the site except the carcass. When they learned that no veterinarian had examined it, they called in a veterinarian, who examined the carcasses of both of the horses. His essential findings were:

The horse's carcass was extremely old for an autopsy, but there was evidence suggesting a severe infection in a hindleg that could have disabled or killed the animal. There was evidence also of a knife cut in the neck, possibly made by someone who found the horse hopelessly sick. Absence of nerve tissues and viscera was normal for a carcass dead several weeks.

Magpies and other birds ordinarily cannot peck through the skin of a horse, but will eat the flesh and skin if they can get into it. In this case, they evidently had taken advantage of the cut and removed all accessible skin and flesh from the neck and head before the carcass had been found.

The second horse carcass showed evidence that death had resulted from encephalitis.

It had been reported that a forest ranger with civil defense training had found a high level of radioactivity near the "exhaust marks." When questioned by an investigator, he said that his meter had indicated only "slight" activity two weeks after the carcass had been found. The investigators concluded that the activity he had measured on his simple survey instrument had been no greater than the normal background radiation they measured three weeks later.

Conclusions:

There was no evidence to support the assertion that the horse's death was associated in any way with abnormal causes.

Other Sightings:

The investigators then turned their attention to the numerous reports of UFO sightings in the same area. Many were vague or involved direct lights at night. Only the more interesting cases are reported here.

1) A service-station attendant and former aircraft gunner reported three sightings in ten years. The second, about 1962, occurred while he, with three companions, was driving west at 65 mph., about 3:30 a.m. They noticed on the slope of a nearby mountain a point of blue light that moved toward the highway and then turned parallel to it, pacing the car a few feet from the ground. It soon pulled ahead and vanished over the valley. Suddenly, the witness saw what he assumed was the same light appear in the middle of the road some distance ahead and approach at high speed, so that he ran the car off into the graded ditch to avoid collision. As the light approached, it grew to at least the size of his car. As it passed, it shot upward a few feet, turned south, and disappeared.

In the spring of 1967, the same witness, with his wife, was driving west when he saw an object that resembled a box kite crossing the highway from the left. He associated it with a helicopter, although he was familiar with them and the apparition was silent. Thinking that it was some kind of aircraft that might land at the airport, he drove directly there. During this part of the trip, the object disappeared behind some buildings. When they arrived at the airport, it was nowhere in sight.

2) About 5:15 a.m., late summer, 1967, a couple were driving south when they saw two extended objects outlined with a dull glow, at an altitude of about 15°. One was directly south over the road, and the second was south-southwest. The objects moved northwesterly until they were apparently "directly over [the mountain]." There the second moved up beside the first and they hovered for several minutes before descending rapidly to the ground, where they merged with the vegetation and disappeared. The witnesses

estimated that the minimum distance to the objects was one mile, and presumably was never very much greater; however, they hovered "directly over [the mountain]," which was at least 8 mi. away.

3) On an unrecalled date, late in the summer, 1966, about 5:30 a.m., two boys, ages 13 and 17, were traveling north when they saw an extended bright light in the road. The UFO kept ahead of them for about 20 mi., then disappeared.

4) At 10:15 p.m., early fall, 1967, the owner of the horse mentioned above, with her husband, was driving west. They saw three pulsating red-and-green lights pass over, moving generally southwest.

After five to ten minutes, the third object seemed to explode, emitting a yellow flash, then a second flash nearer the ground, and a puff of smoke that the witnesses observed for ten minutes. Several fragments were seen to fall to the ground after the second explosion.

The husband and wife disagreed as to the location. He said the wreckage should lie somewhere between the second and fifth hill south of a nearby town, but she said she saw the explosion over a brown hill ten miles east of the same town. The explosion was also seen by a farmer, and his times and bearings supported the husband's account. Ayer drove between the second and third and the third and fourth hills, and he flew over the region south of the fifth hill, but he saw nothing of interest.

The data on this sighting were sent to Major Quintanilla, who reported that no satellite re-entries had been seen or predicted at the reported time. This finding, however, did not preclude the unobserved re-entry of a minor fragment that had not been tracked.

5) Another couple reported several sightings, one of these, between 9:00 and 10:00 p.m., fall, 1967, considered by them to be a "meteor." Its location was not given. This sighting was also reported to Major Quintanilla, but no satellite had been observed to re-enter on that day.

6) In the fall, 1967, "ten minutes before dark," two ranchers driving west saw a small cigar-shaped cloud, vertically oriented in a sky that had only one other cloud in it. The cigar was about the size of a thumb at arm's length, 20° above the "horizon" and 45° south of the road, that is, southwest of the point of first sighting. It was slightly boat-tailed at the bottom and its outlines were not sharp. The second cloud was obviously a cloud, at a slightly greater altitude in the south. The two men drove about three miles while the "cigar" tilted slightly toward the other cloud and moved slowly toward it. They stopped the car to observe more closely. Pointing toward the larger cloud, the "cigar" continued to approach it. After a few minutes the witnesses drove on, and a few minutes later the "cigar" melted into the cloud.

Summary:

None of these sighting reports were considered to be current or strange enough to warrant detailed investigation.

Case 33

North Eastern

Summer 1967

Investigators: Ayer, Wadsworth

Abstract:

Two teen-aged girls in a rural home reported that in the evening a large glowing object had hovered nearby and that several child-sized figures had been seen running about near the barn. Testimony of others in the area was inconclusive, in some respects supporting and in others weakening their account. No definite explanation was found, but the case is considered weak.

Background:

Preliminary information, elaborated by interviews of the witnesses, developed the following summary account:

Two fourteen-year-old girls in a second-story bedroom in the home of one of them were looking out a window about 9:00 p.m., when they saw a large glowing object above and beyond the barn, which was south of the house. During the next hour, the object moved up and down, left and right, and varied considerably in brightness. Both girls thought the object was between the barn and a hill no more than a few hundred yards beyond it. After about a half-hour they heard a sound, apparently from the barn, like the "put-put" made by a power mower when it fires but fails to start. Then three small figures ran from the barn and stopped by a mail box next to the adjacent road. They stood there for several minutes looking in the direction of the house and then ran across the road to stop under a large tree where they were partially hidden in shadow. Shortly afterward a car approached, the object blacked out, and the figures ran across the road, past the barn and disappeared into the shadows. After the car had passed, the object began to pulsate between a very bright white and a dull red. It also began moving diagonally from upper right to lower left. This was repeated a number of times before a second car,

driven by the mother of the girl whose home they were in, approached the house. The object then became dim, as if reacting to the approach of the car. The mother was able to see the object dimly, and it remained dim throughout her observation. No attempt was made to get a closer look, and around 10:00 p.m. the observers went to bed, with the object still dim but visible. Nothing unusual could be found to account for the sighting.

Investigation:

Interviews of witnesses

The two girls were interviewed in the home where the sighting had occurred. Conditions were unfavorable as other members of the family were present and asking them to leave would have been awkward. Because of the initial nervousness of the girls, and since they had already been interviewed separately by Ted Thobin of NICAP, a single interview was held with both girls. Their accounts were generally the same as told earlier to Thobin; however certain discrepancies in different versions will be pointed out: Both witnesses tended to be very general when asked to describe the sighting in a narrative manner. Thus it became necessary to ask direct questions in order to obtain details, so that it was difficult to avoid leading the witness. In general, the girls seemed to lack curiosity and interest in the sighting. They also seemed rather immature for fourteen-year-olds, and it is difficult to evaluate the reliability of their report.

Related testimony

Two neighbors were questioned in connection with the sighting. One lived about a quarter-mile south of the house where the sighting had occurred; i.e., in the general direction of the sighting. She had seen nothing unusual on the night of the sighting; however, she remembered that several fires were burning in a swamp area about one-half mile southeast of her house at the time of the sighting, and were tended by someone on a motor scooter. A check of the exact location of the fires relative to the UFO was inconclusive. The UFO was approximately S of the house, while the fires were 10-15° E of S. The motor scooter might account for the "put-put" sound. When asked about this, the girls stated that the sound

had come from the barn, not beyond. It should also be mentioned that the neighbor who mentioned the fires did not see them even though she was much nearer than the girls. The fires were about forty feet lower than her house and sixty feet below the house where the girls were, obscured by moderately dense timber.

A second woman, who lived almost directly across the road from the observers' house, was originally considered a corroborating witness to the sighting. She had reluctantly admitted having seen the object, but emphasized that she did not wish to be involved. She told Ted Thobin that she had seen a bright white watermelon-shaped thing when she went out to take in the wash between 9:00 and 10:00 p.m. This, however, was after she had teased the girls about seeing "little green men." More detailed information sought by the project team was refused. Her husband said that he had taken garbage out around 9:30 p.m. that night and had seen nothing unusual.

Another two-witness report was received later from NICAP as a possible corroboration of the original sighting. An object described as a clam-shaped, glowing red UFO was sighted 15 September 1967 at 7:50 p.m. from a location less than a mile from the girls' sighting.

A sighting made by one of the girls and her mother two nights after the primary sighting was described as follows:

At 9:30 p.m., a bright star-like object was seen in the SE at 25° elevation, moving W at apparent aircraft speed. When directly S of their house (a later version said SW), the object abruptly stopped and remained motionless for several minutes. Then an airplane approached from the E, and the object took off toward the E, retracing its original course and passing above the plane to disappear from sight in the direction from which it had come. Total duration was several minutes.

Reconstruction of sighting

1. The object was first seen as the girls were looking up the road from an upstairs bedroom window. The bedroom light was out, and the only lighted room on that side of the house was the kitchen.

2. The object appeared as a bright white light that alternately dimmed and then brightened again, seeming to grow larger. One of the girls implied that this change of brightness was of several seconds periodicity; the other said that the object "blinked fast," and that it was mostly white.

3. Both girls had watched this for about half an hour when they heard a "putting sound" from the barn. This sound ceased almost immediately, and two or three figures ran from the barn and stopped by the mail box next to the road. At this point, there are discrepancies as to the number of figures and their behavior. One girl initially mentioned three figures; she said two stood by the mail box, one on either side, and then moments later all three appeared as they ran past the barn and vanished into the shadows. NICAP's report indicated that the two figures who stood by the mail box dashed *across the road*, stopped under a tree, and then dashed back across the road, where for the first time a third figure was visible running with the other two past the barn. The version obtained by the project team at first did not mention the figures having crossed the road at all. When asked about this, the girls were vague; however, they agreed that, after the figures stopped by the mail box, they next appeared across the street under a tree. Neither girl remembered seeing the figures cross the road in either direction. Only general details of the figures were reported: height was estimated as about 4.5 ft. by comparison with the mail box; clothing seemed the same for all three -- no details; the heads appeared disproportionately large.

4. After the figures had been momentarily observed across the road, a car approached from behind the observers, and three figures were seen running past the barn, where they vanished in shadow. The figures were seen as silhouettes against background light from the moon which was three days before full phase and from the luminous object. The witnesses could not remember whether the lights of the approaching car partially illuminated the figures. At the same time, the luminous object dimmed out. One girl said that it became so dim they could hardly see it. The other said its

lights went out and did not come back on for five minutes. Thus there was a period during which little was seen, after which the object brightened as before.

5. Then, in addition to its changes in brightness, the object began to move diagonally from lower left to upper right. This motion was confined to several diameters of the object, perhaps two or three degrees according to sketches made by the girls.

6. Another discrepancy concerned the position of the object relative to the background. Originally, the girls had said that the object dropped down behind the barn several times, and also appeared sometimes against the background of trees. Upon closer questioning, using sketches, both girls indicated that the object was never actually below the horizon even when it seemed to drop down. This statement, if accurate, sharply reduces the quality of the sighting, because the original distance limits of a few hundred yards can no longer be relied upon, and size estimates -- which are characteristically exaggerated -- lose meaning. It should be mentioned that the size estimate given Thobin was likened to a VW automobile at 150 yd. The brightness was said to be equivalent to sunlight, but later changed to four times as bright as the moon. In reconstructing what was seen, these various estimates must be given low reliability.

7. Details for the latter part of the sighting are sketchy. Both girls continued to watch the object for 20 or 30 min., while it intermittently behaved as described. It is not clear whether the display declined, but apparently it did. No further sound was heard or figures seen, and one of the girls stated that, by the time her mother returned home, about 10:00 p.m., the object was very dim though still visible. It was implied that the object dimmed in reaction to the approach of the car, but the girls were not clear on this later aspect of the sighting. They apparently were tired of watching, and after showing the object to the mother, they went to bed. The mother apparently had not noticed the object when she returned to the house, until the girls pointed it out to her. Evidently it was not conspicuous enough to attract her attention as she drove into the yard.

8. Nothing unusual was seen the next morning, and nothing was found to account for the sighting. The project investigators later searched the barn and the area beyond for burns, radioactivity, or other evidence, but found nothing significant.

9. At the time of the sighting, the girls did not associate the figures with the luminous object, or the object with UFOs. The figures were assumed to be children; the object was the mystery. Later the girls decided that, since no children of the size they had seen lived nearby, there might be a stranger implication.

Comment:

Essentially, this sighting was a two-witness event with additional low-weight corroboration. The lack of independent witnesses is a weakness for which the marginal corroboration cannot compensate. Though no physical evidence was discovered that could account for the sighting, the possibility of illusory elements and distortions of memory leaves serious doubts as to the accuracy of the account.

Case 34

North Atlantic

Fall 1967

Investigator: Levine

Abstract:

Information obtained in telephone interviews of officers of Canadian Naval Maritime Command and RCMP indicated that an object bearing several colored lights glided with a whistling noise into the sea. Search by boats and divers found no debris or wreckage.

Investigation:

On the basis of a report from James Lorenzen (APRO), project investigators telephoned several sources in the area.

A watch officer at the Naval Maritime Command stated that reports indicated that an object about 60 ft. long with four lights on it had gone whistling into the sea; it flashed when it hit, and a white light remained on the water afterwards. He stated that the original report had come from two teenagers, and that the Navy was searching for wreckage. No aircraft were reported missing in the area. He mentioned also that sightings had been reported throughout the year.

A corporal of the RCMP stated that the first report had come from five young people, 15-20 yr. old, who while driving near the shore had seen three or four yellow lights in a horizontal pattern comparable in size to a "fair-sized" aircraft, descending at about 45° toward the water. The witnesses had lost sight of the object for about ten seconds while passing a small hill; they then saw a single white light on the water about where they estimated the object should have gone in. They observed the light while they drove on about .25 mi., then reported the incident to the RCMP detachment.

Two officers and the corporal had arrived about 15 min. later, in time to see the light on the water. It persisted about five minutes longer. Ten minutes after it went out, the two officers were at the site in a rowboat; a Coast Guard boat and six fishing boats also were on the scene. They found only patches of foam 30-40 yd. wide that the fishermen thought was not normal tide foam; the tide was ebbing, and the white light had appeared to drift with it.

The site of the presumed impact was in between an island and the mainland, about 200-300 yd. offshore. Apparently no one actually saw anything enter the water. However two young women driving on the island reported that a horizontal pattern of three yellow lights had tilted and descended, and then a yellow light had appeared on the water. Another witness, about two miles from the site, saw a horizontal line of three red-orange lights descending at "aircraft speed," with a whistling sound like a falling bomb. He thought the object was like an aircraft. It disappeared behind some houses, and the sound ceased a second or two later.

The RCMP corporal stated that the light on the water was not on any boat, that Air Search and Rescue had no report of missing aircraft in the area, and an RCAF radar station nearby reported no Canadian or U.S. air operations in the area at the time, nor any unusual radar object. The night was clear and moonless. A search by Navy divers during the days immediately following the sighting disclosed nothing relevant.

Five days later the Naval Maritime Command advised the project that the search had been terminated. The watch officer read a report from the RCMP indicating that at the time in question a 60 ft. object had been seen to explode upon impact with the water.

The captain of a fishing boat that had been about 16 mi. from the site of the earlier reports, reported to the project that he and his crew had seen three stationary bright red flashing lights on the water, from sundown until about 11:00 p.m. The ship's radar showed four objects forming a six mile square; the three lights were associated with one of these objects. At about 11:00 p.m., one of the lights

went straight up. The captain had judged that the radar objects were naval vessels and the ascending light a helicopter; he had attached no significance to these observations until he had heard on the radio of the sightings; he then reported the foregoing observations to the RCMP. However, since the position he reported for the objects was about 175 n. mi. from the original site, the two situations do not appear to be related.

No further investigation by the project was considered justifiable, particularly in view of the immediate and thorough search that had been carried out by the RCMP and the Maritime Command.

Case 35

South Pacific

Fall 1967

Investigators: Levine, Low, and others

Abstract:

The events began with a visual sighting about 8:00 p.m. of a stationary object with colored lights over the ocean. Missile-tracking radars were asked to look for the object; they immediately picked up many unidentified targets, most of them moving, and tracked them. Most moving targets permitted radar lock-on. They moved at speeds up to 80 knots, and sometimes returned very strong echoes. Several additional visual sightings were reported. Most sightings were made over the ocean, but some targets appeared to the east and north, over land. The radar targets were still being observed when the equipment was closed down about 2:30 a.m. Yet no aircraft were known to be in the area, and three flights of fighters sent in to investigate found nothing unusual.

An unusually strong temperature inversion provided favorable conditions for both visual and radar mirage effects. Mirages of ships below the normal horizon appear to account adequately for the stationary or slow objects. The higher, faster radar targets were consistent with birds, which tracking-radar operators had not had occasion to look for before. Similar radar observations were reported on two subsequent days.

Investigation:

Project Blue Book had notified the Colorado project of this interesting visual and radar sighting at AFB A. It was also reported that, in a test three nights after the sighting, it had been established that radars at the base could once again observe "bogies"

similar to those sighted on the night of the original sighting. Project investigators and others visited the site on two different dates. On the latter day, the following were present: R. T. H. Collis, Roy Blackmer, and Carl Herold of Stanford Research Institute; Marx Brook of New Mexico Institute of Mining and Technology; Roger Lhermitte of the Environmental Science Services Administration; and Low and Levine of the Colorado project. On the first date Low and Dr. Robert Nathan of the Jet Propulsion Laboratory had visited AFB A.

Observers. The AFB A sightings were exceptional because of the high professional qualifications of the observers. Two were officials of the Western Test Range, each having had 17 yr. of experience as a naval aviator. One of them had 10,000 hr. as an air intercept and final approach controller; the other also had been an air intercept controller. A third, who was Range Air Control Officer on the night of the first sighting had had 11 yr. experience with ground and airborne electronics systems. Six others were radar operators employed by private contractors on the base, all of whom had had extensive experience in radar operation. They displayed impressive understanding of the sophisticated radar systems they were operating and good comprehension of radar engineering principles. Another witness was of the security force, without extensive technical training.

Radars. The following radars were involved in the sightings:

FPS-16 C-band tracking radar with 1.2° beam.

TPQ-18 C-band tracking radar with 0.4° beam.

GERTS X-band tracking and command radar usually used in beacon mode in which the radar transmission triggers a beacon carried by the vehicle being tracked but during the sightings used in skin-track mode, i.e., conventional radar operation in which the target is seen by reflected radiation from the transmitted pulse.

M33 X-band tracking radar.

ARCER L-band search radar.

Details of the sightings. 2000 to 2045 For one-half hour a missile range official observed from his home an object at azimuth 290°. He called another official, also at home three miles to the south, who confirmed the sighting at azimuth approximately 280° and altitude 10° to 15°. The second observer reported that the object seen through 7 X 50 binoculars, appeared the size of a large thumb-tack, elliptical in shape having a red and green light separated by a distance about the wing span of an aircraft. But the object was stationary, and fuzzy like a spinning top.

2045 Observer two called Range Control Operations (located at an altitude of 900-1,100 ft.). The range control officer confirmed the visual observation. To him it appeared to have white, red, and green or blue colors that did not vary. They "looked like the running lights on a stationary object " He gave its bearing as 290°, range, several miles, altitude approximately 10,000 ft., and suggested that the object looked like a helicopter.

2045 FPS-16 radar in search mode locked on two strong targets, one moving around and one stationary. The stationary target appeared in the general direction of the visual sighting, but the optical position was not determined with sufficient accuracy to establish that this was a simultaneous optical-visual sighting. The original interpretation was a helicopter, with another assisting.

2100 The range control officer checked for possible air traffic in the AFB A area with several other air bases. All reported negatively.

2100 Using its FPS-16 in lock-on automatic mode, base D reported strong targets headed toward AFB A. Because of the narrow beam of the radar the targets were presumed to be in line.

2100 TPQ-18 radar at AFB A was brought into operation, and saw many targets. One, at 8 n.m. range, 4,000 ft. altitude, 290° azimuth, and 4°.6 elevation proceeded south at low speed. One strong target approached and went directly overhead. At one time, the TPQ-18 saw

four targets. Base D saw as many as eight. AFB A and base D did not establish that they were looking at the same targets.

Radar observations.

a. Dozens of targets were seen. Speed ranged from 0 to 80 k. with rapid changes in altitudes. The radars would lose their tracking "locks" on the objects, and then re-engage.

b. The target that went directly overhead produced an extremely strong 80 dB signal. Three persons went outside the radar shack, but were unable to see any object. On the TPQ-18 radar one of the strongest targets appeared to separate into eight objects after which it was necessary to switch to manual to gain control to separate the signal.

c. NORAD surveillance radar at AFB A operates at a frequency quite different from the tracking radars. It saw no targets, but its operator reported clutter or possible jamming.

d. Base D reported a target "bigger than any flat-top at three miles."

e. As the radar activity increased, the number of visual observations decreased.

Visual sightings (only the most interesting are described).

a. Many objects were sighted, but they declined in frequency as the radar activity increased.

b. One visual appeared to move toward the observers so alarmingly that one of them finally yelled, "Duck."

c. One object, dull in color but showing red, white, and green, moved generally south and finally out of visual range.

d. Another, the color of a bright fireball, moved on a zig-zag course from north to south. Two radar operators reported, "The radar didn't get locked onto what we saw. By the time the radar slaved to us, the object was gone visually, and the radar didn't see anything... It looked like a fireball coming down through there. Like a helicopter coming down the coast, at low elevation. We got the 13-power telescope on it." Then it grew smaller and smaller until it disappeared. Duration 1.5-2 min. Moved only in azimuth. Brighter than a bright

star. Like aircraft landing lights except yellower. This sighting occurred between 0100 and 0200 on the second night. A balloon was released about this time, and the winds were right to accord with the sighting; but the weather officer thought it could not have been a balloon, because the report did not indicate that the object rose, and a balloon would have risen at approximately 1,000 fpm.

f. Two other radar operators reported having seen an object that traversed 45° in a few seconds, "making four zigs and four zags," and then, after reappearing for one second, disappeared to the north.

2310 Air Defense Command scrambled the first of three flights of fighters to investigate the situation. The tape of the conversations with the radar sites and other bases gave evidence of considerable confusion at this time.

The fighters were handed off to AFB A Range Control by the FAA at a nearby city and controlled locally. Range Control tried to vector the fighters in on the bogies, but found it impossible to do so very systematically. By the time the second flight came in, the controllers were so busy with the aircraft that they no longer observed any unidentified targets. They did observe a moderate amount of clutter in the west and southwest quadrant. None of the fighter pilots saw anything. One pilot observed something repeatedly on his infrared detector, but only at distance. As soon as he would close in, the object would disappear. Another aircraft did "lock-on" to a target which was found to be a ship.

Weather. The weather officer reported that there was an inversion layer at 1,800-2,200 ft. (The unidentified targets generally were reported to be above the inversion). All observers indicated that the night was exceedingly clear. The project's consulting meteorologist reports:

The following is a summary of weather conditions surrounding UFO visual and radar sightings near
[AFB A] between 7:30 P.M. and midnight on
[the date of the first sighting].

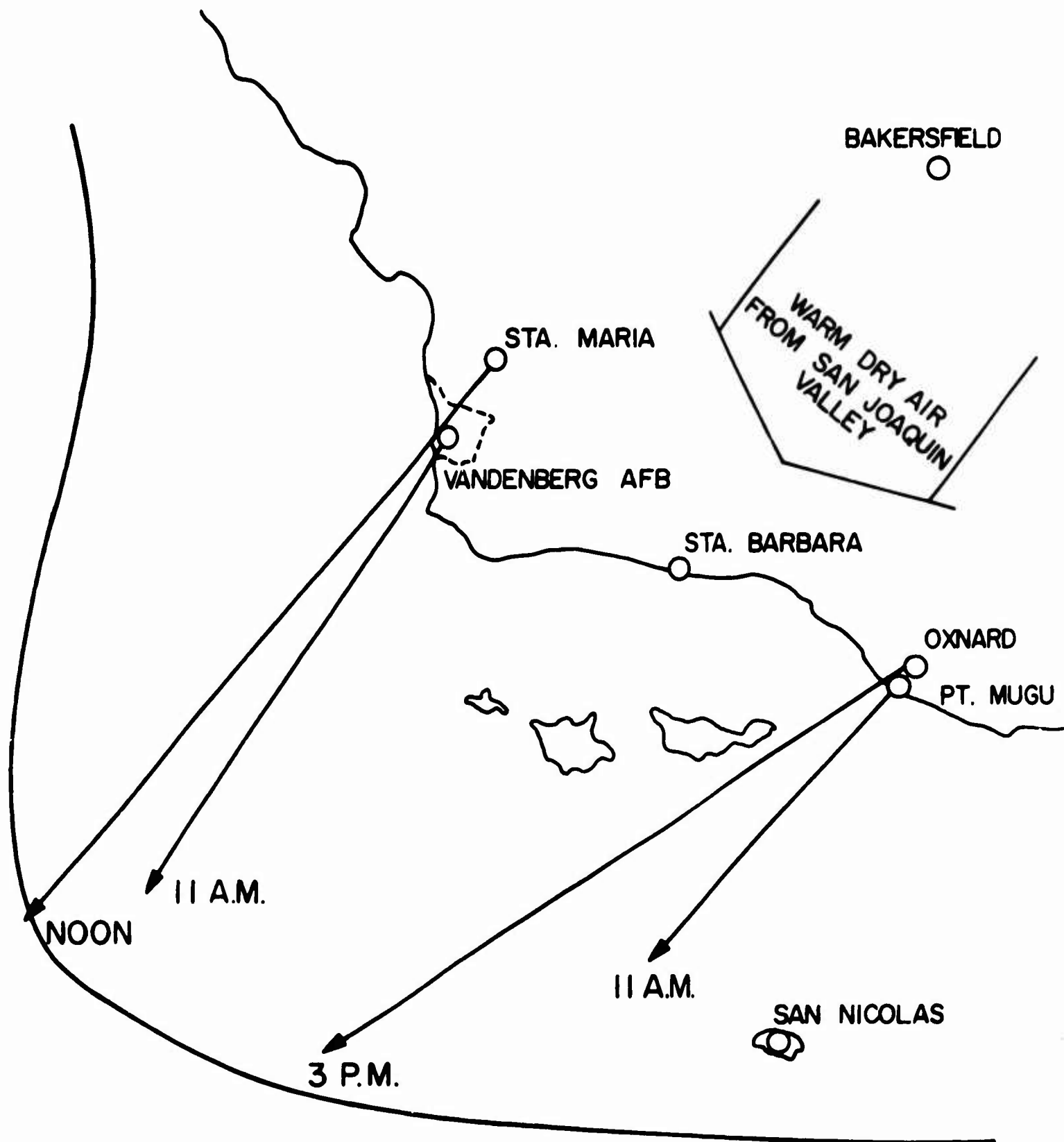


Figure 4

SOURCES OF DATA

Radiosonde and wind data from--

.... [AFB A, island A, city A]

Surface weather observations surrounding the times of sightings from--

.... [city B, C, D, E; AFB A, B, C; base D]

GENERAL WEATHER SITUATION

In a weather sequence which moved a trough line and a low pressure center southeastward from northwestern Utah to northwest Texas.... [the day prior to the first sighting], a dome of high pressure formed over the Great Basin and a surge of warm air moved from northeast to southwest.... Most of the surge of warm air moved southwestward from the southern part of theValley between midnight.... [the day before the sighting] and 3:00 P.M.[the day of the sighting]. Weather stations near the coast from[city B] to[city D] all showed abnormally warm temperatures at a time of day when ordinarily a sea breeze would have created a cooling influence.

THE OVER-OCEAN FLOW OF WARM DRY AIR

Using surface wind data from various coastal stations it is possible to reconstruct an approximate pattern of the forward edge of the warm, dry air which moved out over the ocean from a general northeasterly direction. For most stations, fairly strong northeasterly winds were maintained through 11:00 A.M. (see Fig. 4) with northeast winds continuing until 3:00 P.M. at the surface at[AFB B].

The upper wind flow from 1000' to 7000' was still from an easterly component at[island A] shortly after 3:00 P.M. By 4:00 P.M. air was still moving from an easterly component between 3000' and 10,000' over....[AFB A]. Near the surface westerly winds were beginning to move the warm air back toward the east and south-east. This air had been cooled and some moisture had been added during its stay over the ocean.

During most of the afternoon hours the *modified air* moved from the ocean back over the coastal area. Some of the strongest evidence of the bulge of warm air over the ocean is indicated by the warm, dry air that moved over[city D] between the hours of noon and 5:00 P.M. With surface wind directions from 240° through 300°, temperatures held above 80° with maximum of 90°. A portion of the heating of this air would have been caused by dynamic heating as it moved downslope from the mountains.

The abnormality of the warm air is indicated in Figures 5 and 6 by the approximate difference in air temperatures between 6:00 A.M. and 8:00 P.M. The blue profile of *normal*.... temperature [the date of the first sighting] was made up from long term average maximum and minimum temperatures and an assumed sea breeze influence. The red shaded area indicates the approximate abnormality of warm temperatures on this day as warm, dry air moved from land toward the ocean as compared with typical weather for.... [the date of the first sighting]. The hatched area shows the abnormality remaining after the air had been modified by its path over water.

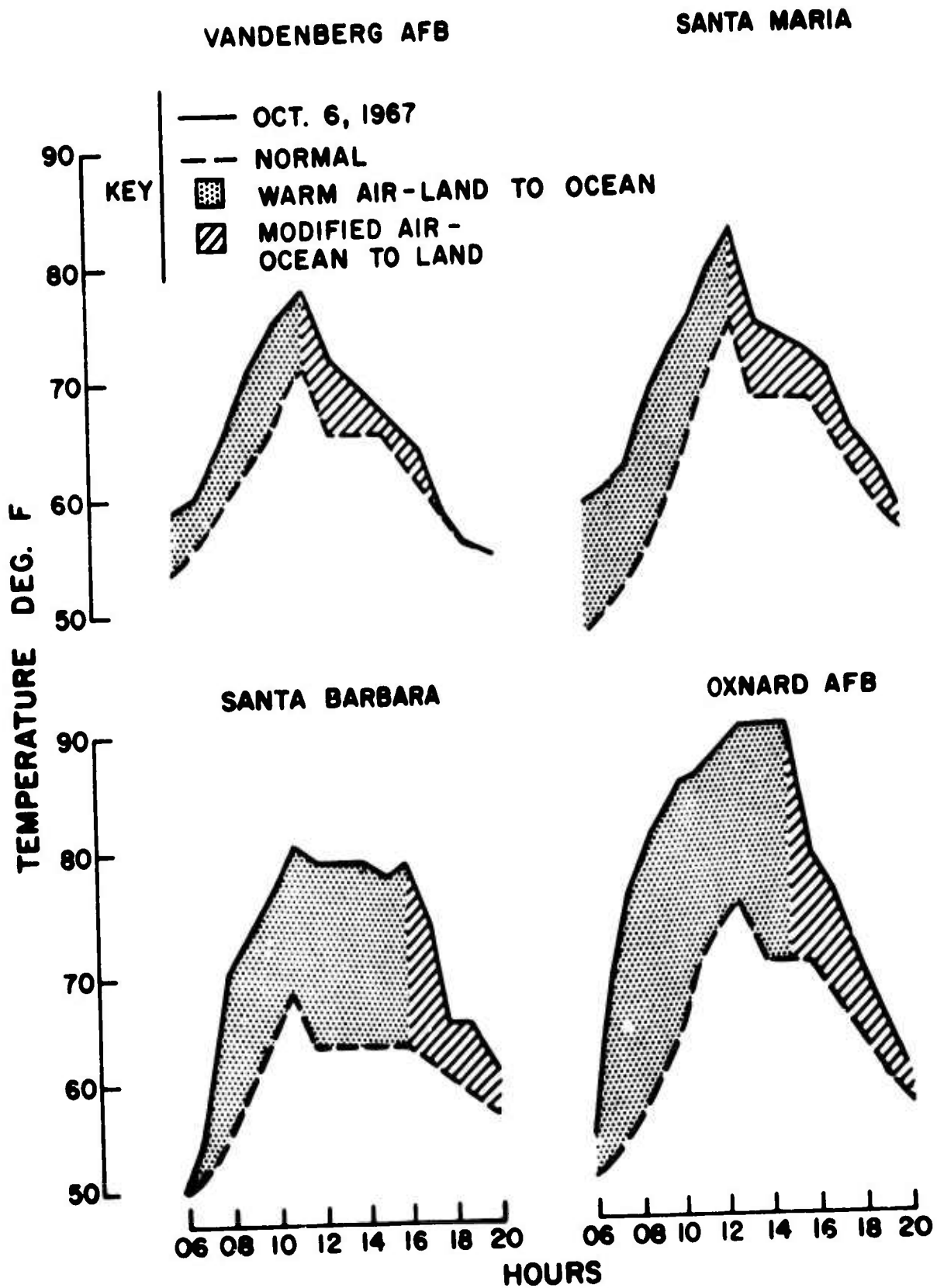


Figure 5

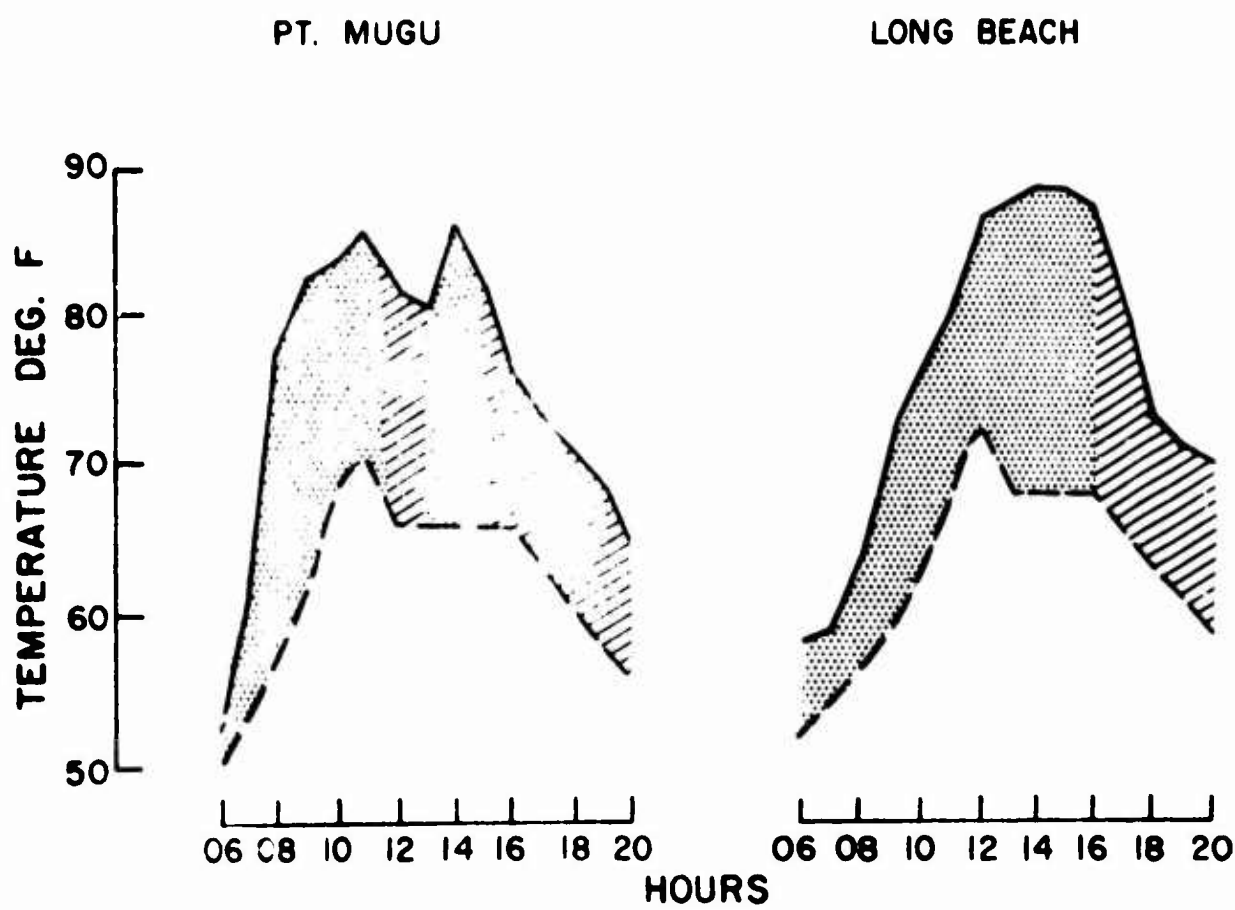


Figure 6

REFRACTION RESPONSE TO WARM, DRY AIR

When warm, dry air is forced to move from a land mass out over cooler water it creates a narrow boundary of mixing as moisture is picked up from the ocean developing small turbulent eddies of cooler, more moist air near the ocean surface. This is accompanied by very rapid fluctuations of refractive index. At the upper edge of the bulge of warm, dry air there would be another more diffuse boundary where somewhat less sharp differences in both temperature and moisture would be present. However, there would be corresponding fluctuations in refractive index.

The Glossary of Meteorology defines a mirage as "a refraction phenomenon wherein an image of some object is made to appear displaced from its true position...The abnormal refraction response for mirages is invariably associated with abnormal temperature distribution that yield abnormal spatial variations in the refractive index. Complex temperature distributions produce correspondingly complex mirages."

The layer of warm, dry air above cooler water from the ocean would have been particularly conducive to anomalous propagation of any radar unit scanning the atmosphere at low angles. A somewhat less important segment of the air mass capable of producing anomalous propagation on the radar would have been the upper boundary of the bulge of warm dry air. The following is quoted from Battan's book on RADAR METEOROLOGY under the heading of Meteorological Conditions Associated with Non-standard Refraction. "There are various ways that the index of refraction can be modified to give rise to anomalous

propagation... When warm, dry air moves over cooler bodies of water, the air is cooled in the lowest layers, while at the same time moisture is added. In this way strong ducts are produced. These conditions are frequently found over the Mediterranean Sea as air blows off the African continent. Extreme anomalous propagation has been experienced in this region. For example, there have been days when centimeter radar sets have 'seen' ground targets at ranges of 400-500 miles, even though the horizon was at perhaps 20 miles. In conformance with meteorological terminology, superrefraction brought about by the movement of warm, dry air over a cool, moist surface may be called 'advective superrefraction.' By the nature of the processes involved, it can be seen that such conditions can occur during either the day or the night and last for long periods of time. The duration would depend on the persistency of the glow patterns producing the advection."

Figure 7 contains the wind and temperature profiles for[island A] and[AFB A] beginning with release times of 3:15 P.M. and 4:08 P.M. PST respectively on[the date of the first sighting]. At[AFB A] (shown by the solid lines of temperature, dew point, wind direction and velocity) dry air prevailed for all levels above the surface at 4:00 P.M. (For the *lowest point* on the profile, surface temperatures reported at 7:30 P.M. have been substituted). The vertical sounding of temperature, dew point, wind velocity and direction for[island A] are indicated by the dashed lines in Figure 7. Temperatures even warmer

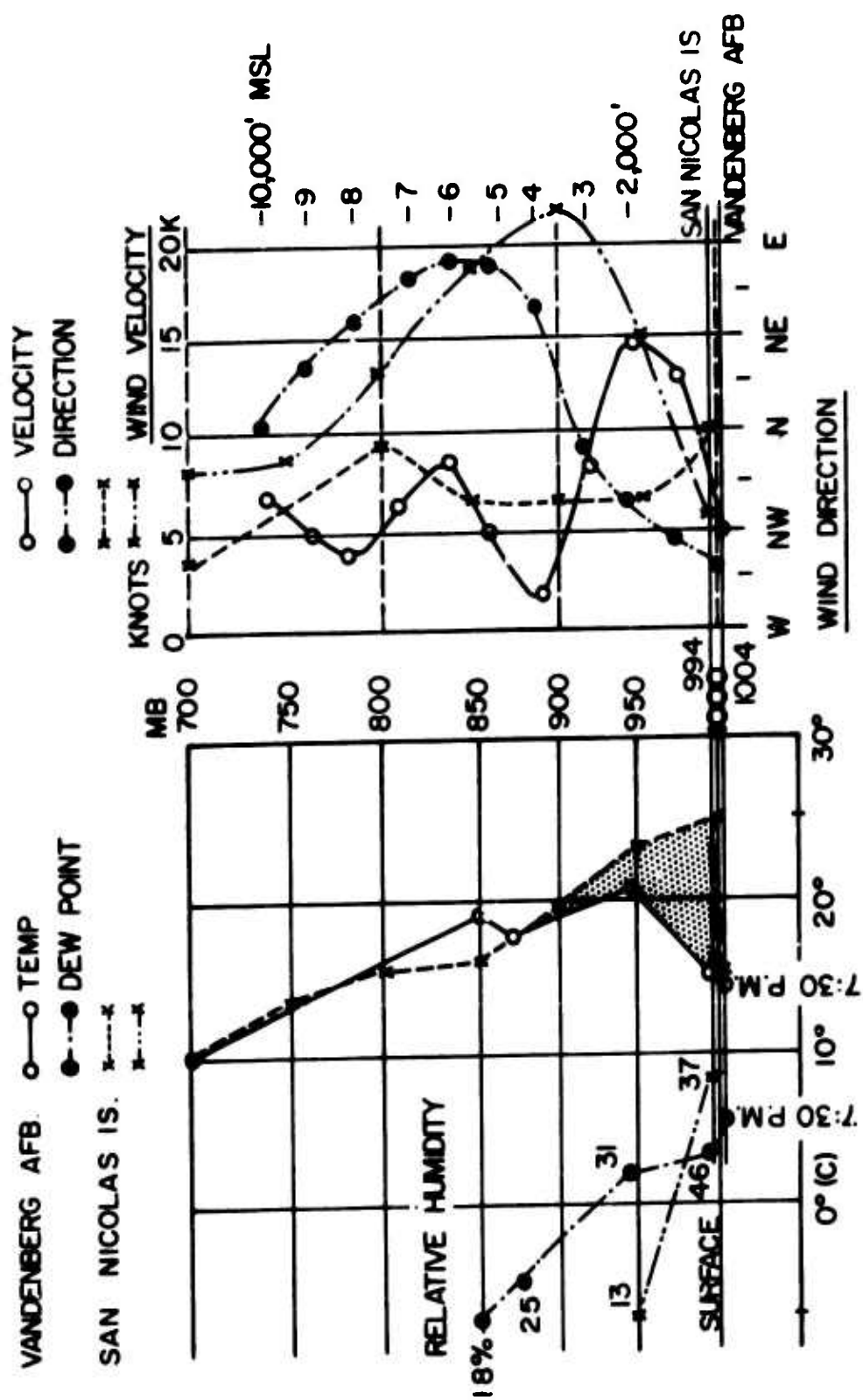


Figure 7

than over[AFB A] were reported in the ascent above[island A]. For emphasis, the area shaded in red indicates how much warmer the temperatures were over[island A] than at[AFB A] during the mid-afternoon hours. Ocean water temperatures between 48° and 59° were being reported, which is considerably cooler than the warm, dry air having temperature in the 90's as it moved from land to over the water.

CONCLUSION

It is the author's opinion that the surge of very warm, dry air may have caused a mirage and visual observations could have been correspondingly distorted in the vicinity of[AFB A] between 7:30 P.M. and 8:30 P.M. It is more certain that the air mass conditions prevailing over the water continuing through at least midnight in an arc from south of[AFB A] swinging eastward to the coastline could have produced anomalous propagation echoes on radar. Visibility observations were generally 12 miles or greater at all stations and no clouds were reported by the observer at[AFB A] between 7:00 P.M. and midnight.[base D] reported a few stratus clouds offshore in the Remarks Column beginning at 7:00 P.M. continuing through 11:00 P.M.

Evaluation and Conclusions:

Further radar tests. Three days after the first sighting, under weather conditions similar to the first day but with more wind, more clouds, and lower temperatures, the FPS-16 radar at....[AFB A] was operated to determine if similar targets could be seen again. Targets having the same general characteristics were acquired, but they were

not as strong as the earlier sightings. Two other operators, working unofficially with a different radar, indicated that they observed "some of the same sort of stuff."

On the night of the investigators' second visit, similar targets were acquired on the FPS-16 and TPQ-18 radars. The radar experts among those present (Blackmer, Brook, Collis, Herold, Lhermitte) immediately requested that printouts be obtained giving information on signal strength. This information could not be compared with earlier sightings because the operators had not taken steps to print out the data from the other observations.

General conclusions. The AFB A series of sightings is remarkable for two reasons; first, because of the extraordinarily high qualifications of the observers, and second, because of the availability of hard instrument data. No other UFO case in the records of the Colorado project contains so many numbers, representing such quantities as range, azimuth, elevation, and velocity. Information from which signal strengths could have been computed also would have been available had the operators thought to print it out, but they did not. To relate signal strengths and ranges for these events, it was necessary to go back to the tape of the conversations and find the reports of signal strengths, which, when assigned precise times (fortunately, the tape contained good timing references), could be compared with the printouts of range, which also included timing references. Information on the visual sightings was, except for the high credibility of the observers, comparable to that in other reports of UFO sightings in the Colorado files: i.e., no reliably measured quantitative values were available from such sightings.

Mirage conditions. The detailed weather study by Loren Crow was not available at the time of the second trip to AFB A, so that it was not known at that time that the atmospheric conditions were in fact quite unusual. Fig. 7 of the Crow report indicates that at AFB A, although return air flow at the surface was well established by the late afternoon of the original sighting, the flow at 2,000 ft. was still from the northeast, so that a thin sheet of warm, dry air . . . er the

cool, moist air. This sheet of air extended southward almost to the island, where there was return flow from the surface to 3,000 ft., but easterly flow persisted from 3,000-10,000 ft. There were strong gradients of moisture and temperature at both stations. Crow has pointed out that the temperature and moisture contrasts probably were even greater than those shown, because the surface measurements were not made at the surface, but at some distance above it. Altogether the weather report indicates that conditions were very favorable indeed for optical mirage and scintillation and for anomalous radar propagation.

It should be noted that the incident that set off the entire sequence of events was an optical sighting at 8:00 p.m. It appears highly probable that the observer saw the running lights of a ship below the normal horizon, but made visible as a result of mirage. The conditions for such a mirage were present, but it must be pointed out that both the first two witnesses insisted emphatically that the object appeared at an elevation of about 10° . That is too high for a mirage of a ship's lights below the horizon. Hence, either their reports of the elevation angle were incorrect, or some other explanation must be found. However, even experienced observers tend to overestimate elevation angles.

A further fact is of interest, and that is that, in the Operations Control Center on the date of the second visit to AFB A, one of the operators of a search radar declared that he never saw any ships, that the shipping lanes were too far off the coast for ships to be seen by radar from that location, although the antenna was at an altitude of approximately 1,000 ft. He thereupon switched to his most distant range (80 mi.) and immediately a sprinkling of blips appeared at extreme range. They turned out to be ships, their identity conformed by their slow speed. Since there is no reason to suppose, from a quick study of weather conditions that night, that anomalous propagation had anything to do with the observation of ships, it must be concluded that they could be seen any time. The only reasonable explanation of the operator's statement that he never saw ships on the scope is that

he had never looked for them. Both the original witnesses indicated that large ships never were seen visually from the coast, and that is undoubtedly correct, because they would be below the horizon. Computations show, however, that, under mirage conditions, the running lights of ships would be visible at the 80 mi. range the radars had indicated.

Some of the visual sightings obviously were not of ships. However, they were impossible to evaluate on the basis of the limited and subjective descriptions given. In this connection, it is significant to note the importance of quantitative instrument observations or records in such investigations. The visual objects could not be evaluated with much confidence, for lack of definitive evidence; but abundant quantitative radar records made it possible to identify most of the radar targets beyond serious doubt.

Birds. The behavior and characteristics of the unidentified radar targets appeared to be consistent with the hypothesis that most of them were birds. Individual birds would produce signal strengths consistent with those observed. (The targets observed the night of the second visit to AFB A, according to calculations made by Dr. Lhermitte, yielded a radar cross section of approximately 10 cm^2). The velocities and coherent tracks of the targets also suggested consistency with the bird hypothesis.

In view of the remarkable inversion conditions on the date of the original sighting, it is highly probable that *some* of the radar targets were effects of anomalous propagation (radar mirages). Temperature and moisture gradients were quite sufficient to produce echoes from atmospheric discontinuities.

At first, even the radar experts were puzzled by the radar data, because the remarkably strong echo signals returned by some of the moving targets suggested much larger objects than birds. Their confusion was resolved when it became apparent from comparisons of range data and concurrent signal strengths that the very strong signals were always associated with targets at close range. A radar echo

declines in strength proportionally to the fourth power of the distance of the target from the antenna, so that even a small target at unusually short range can produce a very strong signal. Also, the pulse power of the tracking radars was much greater than that of the more familiar search radars, and they were normally used to track relatively distant rockets. Consequently, their use in the unaccustomed search mode drew attention to the deceptively strong signals from very near targets.

No attempt had been made during the sightings to associate ranges and signal strengths. Had someone asked, "When you get an 80-dB signal, what range do you read?" the evening probably would have ended differently. Future radar operating procedures might very well provide that, when unidentified targets are causing concern, ranges and signal strengths be correlated. Apparently no formal procedure existed at the time of the sightings for use in identifying unusual radar targets such as insects, sidelobe echoes, anomalous echoes from object on the ground, etc. In the absence of such a procedure, the operators involved in this case handled the situation reasonably.

Comments:

Some comments in a letter from Mr. Collis are particularly pertinent:

I think that the incident could be a landmark case in the whole area of UFO studies. It combines so many factors. Firstly, the incident involved a whole complex of associated events, which were reported by the most respectable observers. It combined multiple radar and multiple optical sightings. It occurred very recently and a substantial amount of recorded data is available-- i.e., the TPQ 18 radar records and the meteorological data. At least in part, the radar echo phenomena were repeatable and were observed by

design on subsequent occasions. It was sufficiently strange to cause interceptor aircraft to be sent off to investigate it in the heat of the moment, and also to cause the local and visiting experts considerable perplexity even in the cool light of day. We thus have a wonderful opportunity not only to study the physical nature of the incident but also to study the psychological implications of such incidents.

It would seem that most of the inexplicability of the events in this case (and possibly in many others) arises not from the facts themselves, (i.e., the specific sightings, etc., at any given instant) but in the interpretation made and significance attached to them when they were considered in inappropriate juxtapositions. The way in which this was done at the time under operational pressures and even subsequently provided, in my opinion, a most important object lesson.

It does indeed! The lesson is that the "flap" could have been avoided if the radar operators had been acquainted with the kinds of targets they might pick up in search mode, especially during anomalous atmospheric conditions. It is unlikely that such a "flap" will occur again at AFB A in such circumstances; but it can happen elsewhere unless this experience is communicated through appropriate operating procedures or in some other manner, to other operators of powerful tracking radars.

Case 36

South Mountain

Fall 1967

Investigator: Wadsworth

Abstract:

Four independent witnesses saw a glowing, rapidly moving object that was evidently a "fireball" meteor.

Investigation:

A University Professor in the South Mountain area supplied statements from four apparently independent witnesses of an aerial event for possible interest.

1. About 9:05 a.m., a man on a golf course six miles east of the city saw a glowing yellow and blue-green cylindrical object cross the sky northward at high speed.

2. About 9:00 a.m., a commercial pilot flying about six miles southeast of the city saw a glowing yellow and blue-green cylindrical object travelling northward on a descending path at very high speed. It exploded or deteriorated in midair as it approached the White Mountain area. He judged it was a meteor.

3. About 9:00 a.m., a rancher and mine-mill worker, north of town, saw a very bright object travelling at high speed northward on a descending path. It exploded in the air.

4. About 10:00 a.m. a mining assayer driving west on the highway six miles east of town saw a cylindrical object glowing a metallic blue-green as it passed in front of him, travelling northward at high speed.

Sighting Features:

The four sightings are summarized in Table 5. The preponderance of similar features indicates a single event. Only in the

Table 5

Sighting	Time, Location	Shape, Color Size	Speed, Path	Duration, Distance, Disappearance	Other
1	9:05 a.m. 6 mi. E of city	Cylinder Brilliant yellow body surrounded by blue- green welding color 200 ft. long 3 ft. diam.	Very fast Northward descending toward White Mt.	2-3 sec. 1 mi. Vanished on course toward base of mountains	Short tapered tail
2	9:00 a.m. 6 mi. SE of city	Cylinder Bright yellow core, blue- green shell ---	Very fast Northward descending 45° toward White Mt.	---	Short tail Thought it was meteor
3	9:00 a.m. E of city	---	Very fast Northward descending	---	---
		Glowing (no specific color) ---		Appeared quite far away (couldn't estimate)	
4	10:00 a.m. 8 mi. E of city	Cylinder Metallic blue- green glowing 4 ft. long	Very fast Northward straight toward White Mt.	2-3 sec. 150 ft. ahead of car ---	May have had a tail or exhaust

fourth sighting is there some reason for doubt. The discrepancies in distance and size are hardly significant because such estimates are characteristically inaccurate. Further, these are consistent in that the ratios of size to distance estimated by witness I and II are roughly similar. These two witnesses were very near each other, and their accounts are similar except for the one hour discrepancy in time. However, witness I was prompted to report his experience by hearing a report of witness IV's experience on the radio, and so may have been influenced by it.

The time discrepancy of one hour has not been accounted for. The preponderance of evidence indicates an error in the time reported by witness IV, but is just as possible that two meteoric fragments came in on similar patterns an hour apart.

Reports of the first and fourth sightings were sent to Dr. Charles F. Olivier of the American Meteor Society, who stated that both accounts showed "every indication of being rather typical daylight fireball reports."

Comment:

It is concluded that probably a single event was witnessed by four observers, and that the object was a "fireball" meteor.

Case 37

South Eastern

Fall 1967

Investigators: Craig, Ahrens

Abstract:

Law enforcement officers in several communities reported seeing, chasing, and being chased by unidentified bright objects in the early morning hours on four successive days. One object was reportedly detected by a ground radar unit while the object was being pursued by two men in a small aircraft. Pictures had been taken. Lengthy interviews of observers, including participants in the airplane pursuit, established clearly that the pursued object was the planet Venus. Jupiter was also involved in some of the reports.

Background:

Initial reports of an UFO sighting suggested that it was an event with unsurpassed UFO information content: A large bright object was seen, that approached as close as 500 ft., and was pursued by reliable observers in different communities; it had been seen repeatedly on successive mornings, and might be expected therefore to reappear while an investigator was on the scene. The pilot of a light aircraft had reportedly seen the object rise from the river below while ground observers were watching it, and had pursued it in vain as it sped away from him; FAA traffic control radar had allegedly reported that returns from both the aircraft and the unidentified object had appeared on the radarscope during the chase. Photographs allegedly had been taken which showed both a bright object near the horizon during a pre-dawn chase and an apparently solid "sombbrero"-shaped object photographed in a wooded section of the same general area by a 13-year-old boy in the afternoon.

The main observers of the pre-dawn phenomenon were law enforcement officers on duty in 11 communities in the central part of the state.

Police officers, sheriff's officers, and highway patrolmen were involved, sometimes in radio communication with each other during a sighting and pursuit. The object fled from and then pursued police cars at speeds up to 70 mph, and came close enough to one police car to light up the interior of the car so brightly that wristwatches could be read. It also changed color and shape while under observation.

Investigation:

The most detailed reports, as well as the airplane chase and the photographs, centered around a town of 11,000 population, Town A. These reports were investigated by the project team. Reports from the other towns generally fit into the same pattern, and were assumed to arise from the same type of observation. Each aspect of the reports was investigated in turn.

Radar Confirmation:

Recorded conversation between the pilot and the Flight Control radar operator, indicated the pilot was chasing an UFO, which he said had risen from the river area below and was now moving away from him. The radar operator said he had a target on the scope, which he assumed to be the plane. He also said he had a second target, seen intermittently for a duration of about one minute. The pilot was heading at 110° , directly toward the object. This direction seemed to be consistent with the assumption that the second target was the chased UFO. The time was 5:40 - 5:58 a.m., EDT.

The pilot said the object was about 1,000 ft. above him, apparently over a small town, Town D. On first contact with the Flight Control, the Cessna was at an altitude of 2,500 ft. climbing as it chased the UFO. The pilot said the object was a very bright light, which he could not catch. He could not match its altitude or speed. He said the object moved toward the ground at times, but maintained an altitude above them at all times. It moved away when they chased it, and came back when they turned.

The radar operator said at the time that the target on his screen was heading at 110° , but he didn't know whether his target was the airplane or UFO. Later, thinking about his experience he left word at the radar tower that he wasn't at all sure he had seen a second target. Contacted later by phone, the operator stated that he never did identify the plane, much less a second object. He had one steady target, which he assumed to be the aircraft, since it disappeared when the pilot said he was at 2,500 ft. and returning to the airport. The intermittent target painted only on two sweeps in about a minute. This was on an ASR-5 radar (which would make 10 or 12 sweeps per minute). It was early in the morning, the operator was somewhat tired at the time, according to his own words. He was quick to point out that the "intermittent target" was not a "good paint", and could well have been a ghost return.

Ground Observation:

Of the numerous law enforcement officers associated with the reports, one of the police lieutenants, a veteran of 11 years on the force, was asked to describe the sightings. He had participated in all the sightings reported from his town. His account of the event follows:

(First Observation)

A. The object was the closest the first night we saw it. We first noticed it at 4:36 a.m., EDT Friday, October 20. At first, I thought it was a new street light we had never seen before, but as we got closer, it began moving away. We followed the object, which was then a bright red, football-shaped light, for about eight miles out into the country. It appeared to be as big as the moon in the sky. We lost sight of it, and headed back into town.

This object, whatever it was, caught up with us as we approached the city limits. The other officer started making a pretty scared sound and pointing out behind us. That is when I turned around and saw it.

It lit the police car enough inside to make the hands on your wristwatch visible. The whole surroundings were lit up. I radioed in that we were being followed by a flying object. I didn't know what it was, but it was following us. I could see the object in the rear-view mirror, but when we stopped the car and I got out, it veered away and disappeared behind the trees.

After we returned to town and got a third officer to come out with us, the object had started climbing and had gotten about twice the height of the tree line. We observed the object for about 20 minutes. It changed from bright red to orange, then to real white-looking. The object then appeared to change its shape from round to the shape of a giant four-leaf clover.

Our radio operator contacted the officers in Town C. In a few minutes they radioed back, and said they had the object in sight. It was to the east of us, apparently hovering over Town B. From Town C, it was to the west and appeared to be between Town A and Town B. We had it between the two of us.

I started back into town, and then is when it started moving south at a very high rate of speed.

(QUESTION: You said earlier that it crossed over the top of the police car. Did it get directly overhead?) No, sir, I didn't mean it came directly over the car. It came over the wooded area, over the top of the trees, and appeared right behind the car. I would say it was maybe 500 feet behind us and maybe 500 or 600 feet high, roughly guessing. When I did stop the car and jump out, I did see it when it went back.

(QUESTION: What direction were you travelling when the object reappeared behind the car?) The car was headed in a westward direction.

(QUESTION: In what manner did the object finally disappear this first night that you saw it?) We watched it until it climbed and took a position in the sky. It climbed to such a height that it appeared to be a star, and that is where it was hanging when I got off duty at 7 o'clock and went home. It was still visible, and looking like a star at that time.

(Second Observation)

B. Although the object was reported from another town on the morning of [Day 2], it was not seen that morning in [Town A], but it was seen here [on days 1, 3, 4, and 5].

Sunday morning, [Day 3], I believe it was about ten minutes till two, or ten after two, when we got a phone call from a gentleman . . . who was on the outskirts of town. He said an object had followed him down the highway. We went out to look for it, and two objects were clearly visible. This was the first morning that two objects were spotted. You can't see the higher object until the other comes to view, then there appears this other object directly over it. It appears to be 5,000 to 6,000 feet above the lower object. The second object is as bright as the first, but higher and smaller.

(QUESTION: In what manner did these objects eventually disappear?) The sky was clear. When I left at 7 o'clock the two objects were still hanging in the sky -- way up high.

(QUESTION: Were they staying about the same distance apart?) Yes. Maybe they had drifted off some, but not too much. About 8:30 or a quarter to nine, after the sun had come up, these objects were still visible, and I showed them to my parents at that time. The objects were still there when I went to bed.

The lower object looked like a piece of floating tin foil, it looked flat, with a bent place in it. The higher object was round, and stationary in one place -- it was not bobbing and floating like the other one.

(Third Observation)

C. Monday, Day 4. This is the morning the airplane went up.

Other people had already spotted it when we went out. The first object was in view. It was bright, star-like. While we watched it, the second object appeared through the trees -- down and to the left of the first object. This was about a quarter to five.

The pilots scrambled to the airport, and went up after the object. We guided the pilots in to the object -- they had gone past it when they were looking for the object, and, after they got back into range, we told him where to look. He said there were hundreds of objects up there -- they were stars, I guess. I turned the police car lights on to show the direction of the object. When I turned him directly into it, he said he had it in sight -- he saw it. I thought he didn't see it, because he flew under it.

The object bobbed and moved upward, but did not move to the side as it was pursued by the plane. I thought, if it tried to escape the plane, it would move to one side or the other, but it just moved upward.

(QUESTION: Did the object appear to get dimmer or smaller, as if it might be moving away from you and the airplane?) No, it didn't appear to get dimmer. I couldn't tell that it was moving away from the airplane.

(QUESTION: How did this object finally disappear?) Again, it was stil' hanging in the sky at 7:30, above the city hall.

The Airplane Chase of the UFO:

The pilot, who flies forest service patrol for the County Forestry Commission and had some 4,000 hrs. flying time, and a companion, formerly with the County Sheriff's Department, took off in a Cessna aircraft shortly after 5 a.m., in an effort to catch the object sighted from the ground. They were in radio contact with the [Town A] airport, and through the airport with the sheriff's officers and others on the ground with walkie-talkies, as well as with the radar operator at the Flight Control Center.

The pilot and his associate were interviewed by project investigators, who wanted particularly to know if they themselves had actually observed the object's rising from the river area below them, as the pilot stated it had in his recorded radio conversation, or if the statement was a mere repetition of the claim of ground observers.

The pilot said when they first started looking for the object, they were looking low, near the ground. One light they spotted proved to be a yard light. They couldn't find the object at first. Ground observers then got word to them that it was behind them -- they had passed it. They turned back, still looking low, when the word came "It's above you". They had seen a light above before, but hadn't paid any attention to it, apparently assuming it was a star. Now they did see the object, and started chasing it. "When we flew directly toward it, it backed off, decreasing in size until it was only about the size of the head of a pencil. We went up to about 3,500 ft., but it kept moving higher and away from us."

The pilot was strongly impressed with the great decrease in the size of the object as it "receded" from the plane. When he first spotted the object, it appeared to him one-half to two-thirds the size of the moon. It decreased to a fraction of its original size. He said he was awakened about 5 a.m., and they landed the plane, after giving up the chase, about 6 a.m. He said the color

of the object was a constant brilliant white. As they gave up the chase and returned to [Town A], the object moved back to about its original position, and was still there when he landed.

Reports from other towns:

1) Town E, sighting early Sunday, Day 3

As reported in local newspapers, a highway patrolman at a state patrol station near [Town E] spotted two UFOs -- one ice blue and about a mile high and the other one a yellow rectangle-shaped object with a red side which was about 100 yd. above the trees.

Another [Town E] patrolman there said he chased a ball of light down a road just outside [Town E]. The object was traveling above tree-top level. According to the patrolman's report, "It was a good distance in front of us, pulling away, so we turned around to come back to town. The object turned on us and followed. It gained on us and was going about 75 mph. After the object caught up with us, it pulled into the sky, emitting a beam of bluish light that illuminated the roadway."

Newspaper accounts stated also that a [Town E] police officer said a dark blue ball chased him and then hovered over [Town E] until daybreak. (The implication is that this experience involved a different officer than the one just mentioned; however, this might be another reference to the same experience.)

2) Additional Reports

A patrolman of [Town E] police department summarized reports of sightings on [Day 1] as follows. This summary is included as an example of the extent of the UFO activity [in this area]. All objects described were noiseless.

UFO Report 0505 hours, Day 1

Lt. A, [Town A] Police Department, reported that Patrolman B and Patrolman C, [also of Town A] Police Department, reported sighting a sphere-shaped object approximately 25 ft. in diameter, red, white flashing red, green and white lights, traveling south from [Town L].

[Town D] Police Department reported an object as above traveling south from [Town D]. Patrolmen D and E, [Town G] Police Department, reported sighting four objects described as above traveling northeast. Patrolmen F and G of [Town G] Police Department reported an object described as above traveling east from [Town G]. Patrolman G from [Town G] Police Department followed the object east . . .

The County Sheriff's Office reported sighting an object described as above traveling east.

[Town H] Police Department reported an object described as above traveling west.

[Town J] Police Department . . . reported an object described as above traveling east from [Town J].

[Town K] Police Department reported an object traveling west.

[Town L] Police Department reported two objects - one traveling south and one traveling east.

Relevant Information

During the period [days 1-5] Venus had a magnitude of -4.2; Jupiter's magnitude was -1.5. Venus rose about 2:50 a.m. local standard time. Jupiter rose about 40 min. earlier, the time difference varying a few minutes each day. The tremendous brightness of Venus made its appearance spectacular, and it had been the cause of numerous UFO reports across the country for weeks prior to these dates.

The moon which was full 15 days later, was shining in the western sky during the early morning hours. The bright star Capella also could be seen to the west (northwest) during the early morning hours.

Analysis of the UFO Observations

The fact that the UFO's reappeared *each day* during early morning hours suggested immediately that the sightings might be related to the earth's rotation. Timing with the appearance of Jupiter and Venus to the east, and the fact that most reports showed the UFO or UFOs to be to the east, made the investigators suspect immediately that the appearance of Venus, plus suggestion and unfettered imagination, might account for most, perhaps all, of the UFO reports in this series. Sleepiness and fatigue also could have been significant factors, since some police officers involved had been working double shift.

Initial checks showed the radar confirmation of the presence of the UFO to be so tenuous as to be essentially non-existent.

The airplane pilot revealed that he had not actually observed the UFOs "rising from the river area," but had merely repeated the claims of ground observers that it had done so. His description of the chase fits nicely with the hypothesis that he was chasing a planet. The apparent recession of the object, with apparent diminishing size, could be accounted for by his rising above a haze layer which, by dispersion of light, caused a magnified appearance of the planet when he was at a lower altitude (See Section VI, Chapter 2). All reports indicated a heavy mist or haze did exist over the river area each morning when the UFOs were observed.

When the investigators suggested to the pilot that he might have been chasing the planet Venus, and explained the reasons for its unusual appearance, the pilot felt that this might possibly have been the case.

As for ground observations, besides daily reappearance, the fact that the object or objects each day eventually took a position in the sky and looked like stars was taken as confirmation that the UFOs indeed were planets. The positions they eventually "took in the sky" were the positions known to be occupied at the time by Venus and Jupiter. The police observers were shown the planet Venus during late morning hours. (Venus was quite visible during the day during this period, but was noticed only if one knew precisely where to look.) They all agreed that the appearance was the same as their UFO after it "took its position" after sun-up.

Conclusion:

The conclusion that the reported UFOs were misinterpretations of sightings of planets, particularly of Venus, seems not only tenable but imperative.

Photographs:

The series of photographs taken during a pre-dawn chase showed a light near the eastern horizon, and was not of special interest. The other pair of photographs, showing an apparently solid object, shaped much like the outline of a sombrero, suspended over a clearing in the woods, was taken by a lone 13-year-old boy who had taken his Polaroid camera into the woods to hunt UFOs. His hunt had been successful, and he got two pictures of the object before it flew away. His pictures apparently were taken with the sun shining directly on the camera lens, diffusing light onto the film and causing the UFO image to appear in very poor contrast with the background.

The photographs were examined by Dr. W. K. Hartmann who commented that while the lack of contact made the appearance consistent with the claim that the object was at a considerable distance, the poor quality of the photographs prohibited significant quantitative tests. The photographs themselves were thus not of high enough

quality to allow determination of the size or distance of the object photographed. It is believed that the object photographed had no relation to the object pursued in the pre-dawn activity.

Conclusions:

It seems quite clear that the UFO excitement was caused primarily by the planet Venus.

The case serves to illustrate the extreme elaboration which can develop from misinterpretation of a natural and ordinary phenomenon. Suggestion, coupled with common visual effects which are not familiar to or understood by the observer (see Section VI, Chapters 1 & 2), frees the imagination, to produce the kinds of observations described in this case.

The case also illustrates the *appearance* of motion of a stationary distant object, particularly that caused by the motion of the observer; the magnifying effects of haze scattering and near-horizon observation; and scintillation of a light near the earth's horizon.

The rapid attrition of supporting information which the initial UFO sighting reports included also is demonstrated impressively in this investigation. The case illuminates the inadequacy of current education regarding fundamental astronomy and atmospheric physics.

Case 38

North Eastern

Fall 1967

Investigators: Ahrens, Craig

Abstract:

Over 800 sightings of UFOs were claimed in the North East region. The sightings, most of which could be attributed to aircraft lights and stars, were largely stimulated by individuals engaged in UFO "research." No evidence was offered to support claims of close sighting of manned saucers, footprints, and saucer "nests."

Background:

Sightings of UFOs were reported almost every night at a small town, location B, seven miles SW of location A. The sightings were purportedly made by dozens of persons, some of whom allegedly had seen 50 or more UFOs, many of them in a single night. A total of over 800 sightings, was claimed in the vicinity by Mr. A, local resident and observer, and Mr. B, who claimed to be investigating on behalf of a civilian UFO research organization. Besides getting radio and newspaper publicity for the events, these individuals had arranged public meetings to discuss UFOs. At one such meeting, Dr. J. Allen Hynek, two Air Force representatives from a nearby airfield, and four news representatives were present, along with several dozen interested local people.

Most sightings were of the moving-light-in-the-sky type. A notable exception was the report by two boys, aged 10 and 12, that they observed at close range a "flying saucer" in which they saw two occupants. Another exception involved a report by a 55-year-old woman residing a few miles from location B. She stated that she had observed a large glowing light behind her house. The next morning, she found a "saucer nest" in the cattails where she had seen the light, according to her account. In another locality, Mr. A claimed to have taken a photograph of a strange footprint, as yet undeveloped.

Investigation:

Project investigators interviewed 12 witnesses, and spent a part of each of three nights on a hill on the outskirts of location B, the locale of most of the reported sightings. Discussions with persons familiar with the situation brought out the following facts:

1. The region has a high density of commercial airplane flights, at both high and low altitude.
2. A charter air service operating out of the airport at location A has four planes equipped with the relatively new stroboscopic anti-collision light. On these planes, this light is mounted on top of the tail fin and can be seen in all directions other than directly below. The light emits 50-60 seven-second flashes/min at an intensity of 2×10^6 candlepower. Its use is under the control of the pilot. Mr. Allen Hayes, operator of the charter service said that his planes frequently fly around the area at night. Many private planes land at location A; a route of several commercial lines pass over this area also. Mr. Hayes felt certain that anti-collision lights on his and other planes were responsible for many of the local UFO reports.
3. The sheriff's office advised that the Asplundh Tree Expert Company had perhaps been flying helicopters at night along the power lines for an electric and gas corporation checking for corona discharge along the lines and sparking from lines to vegetation. Since aerial observation of such an operation could conceivably result in UFO reports, the information was checked. It was found that although this company uses helicopters to spray defoliants along the power lines, the work is done during daylight hours, and had not been conducted within the past two months.
4. Local state police were interested in the UFO reports. State Trooper Eisenberg had responded to a call from Mr. A, had found him and several youngsters with blankets over their

heads, peering from under the blankets to look for UFOs. The trooper observed with them for a time, watched their excitement as they saw "another one," which he also observed. Trooper Eisenberg was certain he and the others were looking at an airplane.

5. Mr. John Levy, Assistant Manager of location A's Chamber of Commerce and occasional reporter for a newspaper in a nearby city, said he went out one evening to observe the UFOs with Mr. A, Mr. B, and the interested local youngsters. While he was there, the others saw three "UFOs", two of which he could identify as airplanes by the sound of their motors. Mr. A has insisted that were were noiseless and therefore not airplanes. (No noise whas heard when the plane lights were first sighted). The third "UFO" was silent, and looked to Mr. Levy like a satellite.

During the investigators' observations, only airplanes and stars were seen. The first two nights were overcast with intermittent snow flurries. On the third night the sky was clear. A project investigator accompanied Mr. A, Mr. B, and one of their friends to the hill outside of location B for observation, while the other investigator remained at the hotel to receive incoming telephone calls.

During the early evening, two calls were received which reported that an UFO was being observed at the time, still hanging in the sky. The UFO he now described was the bright star Sirius. After the suggestion that this might be the case, he phoned back to agree that he had been looking at Sirius. One caller was a high school teacher who had reported earlier a light-in-the-sky sighting that might have been an airplane.

The sky observation party returned to location A later in the evening. The project investigator reported that when Sirius rose over the distant trees as he and the others were watching on the hill, his companions also immediately called Sirius one of the UFOs. They watched it change color, particularly when it was low in the sky. Only after some time did they agree that this "UFO" was a star.

A few minutes later, a phone call reported another sighting. Mr. B spoke to the woman, and, after short conversation, excitedly handed the phone to a project investigator, declaring: "The woman is seeing an object which is spewing out green, white, and red beams" Additional comment indicated the object had emitted glowing red globs and was now hovering near the woman's home. The location described again was that of Sirius. The woman was told there that the star should appear relative to the constellation Orion, and was asked if it possibly could be this bright star she was observing. She did not accept this as a possibility, and relayed information to her daughter for checking, before going into a discussion of other UFO activity in the area. After this review, she was again asked about the hovering object she had originally reported. Her response was, "Yes, I guess we've been bamboozled again. I guess that it is just the star."

Investigation of UFO reports that involved other than lights in the sky revealed the following :

1. The "strange foot print" which reportedly was photographed by Mr. A (photo still in camera) was described and sketched by him. The sketch was the size and shape of a bear track.
2. A daylight search of the small swamp where the "saucer nest" in the form of a 30-ft. diameter area where "cattails and been squashed down and found to lie in a clock-wise spiral pattern" revealed no evidence of existence of such a "nest." This search took place several weeks after the event, and it could be argued that the "nest" had been disturbed in various ways to make it no longer obvious.

The woman who made this report is employed in local government service, and impressed interviewers as sincere and intelligent. According to her testimony, she told her sons (aged 16 and 22) the night of the observation, about seeing the glowing object behind the house during their absence. They were incredulous and she did not tell anyone about finding the "saucer nest" the next morning until some three weeks later, after the report was circulated that the boys had seen a saucer

with occupants. The 16-year-old son of this woman said he had never gone out to look at the saucer nest, even after his mother reported its existence.

With frequent prompting from Mr. B, the 10 and 12-year-old boys in location B told project investigators the story of their sighting. A tape recording of an earlier account by the boys was not entirely consistent with the new account and the taped accounts suggested that the mode of questioning itself was developing the story.

According to the boys, they saw a large saucer-like object which hovered between a tavern-restaurant and an adjacent house across the street from the younger boy's home. The object tilted up, and they saw two occupants by a window on its near side. Instrument control panels with red and white lights were visible through the window. The object disappeared after about two minutes, moving upward before vanishing suddenly.

There were no other observers. The reported event happened on the main street of this small town (location B) at about 9:30 p.m. Three dogs were said to have been howling strangely because of the object's presence. The 12-year-old looked at his watch during this sighting to see what time it happened, according to his account. Discrepancies in the report, resemblance of the reported object and occupants with those pictured in a TV serial, and the prior association of the boys with Mr. A and the group of youngsters he influenced created serious doubts that the described event was real.

After the visit of the project team, a reported discovery of four mysterious clearings on a densely wooded hillside near location A was presented in the magazine section of the local newspaper as tangible evidence that "saucers" had landed or hovered there. In circular or elliptical areas, from 100-150 ft. in diameter, the trees had all fallen. Some were uprooted, others broken off near ground level. Strange lights were reported to have been seen over the wooded area several months earlier.

A copy of the magazine, showing photographs of the areas of forest damage, was sent for comment to Mr. C. A. Shields, Director, Division of

Administrative Management, United States Forest Service. He sent our request to Dr. Carl E. Ostrom, Director, Timber Administrative Management Division, who offered several possible explanations as accounting for the circular patches of damage: 1) A tornado touching down briefly at several places in the forest; 2) Islands of damage caused by heavy ice or snow. This kind of damage occurs to red and jack pine in the Northern Lake States; 3) Patch-like infestations of *Fomes annosus*, a root rotting organism that destroys supporting roots even though the trees remain green; and 4) Pine root-collar weevil, an insect that partially girdles the stem just below the ground line, giving rise to patches of timber collapse.

Dr. Ostrom considered the most likely explanation to be 2) above, perhaps superimposed on stands already weakened by 3) or 4). This area occasionally receives heavy ice and snow storms.

The claimed connection between the areas of forest damage and UFO sightings was extremely nebulous. Since there are natural, ordinary explanations for such patches of damage, it seems most logical to attribute the damage to them.

Conclusion :

The lights-in-the-sky UFO reports apparently were caused by the suggestion and influence primarily of two individuals. Most, if not all, of these reports can be attributed to airplanes and stars.

One housewife testified that she and her husband saw what appeared to be airplanes, except that they were soundless. Yet, she could not believe there could be that many airplanes in the sky around location B on a given evening. On the other hand, she was quite willing to believe there could be that many flying saucers from outer space around her city.

This case stands out as an extreme example of the extent to which UFO excitement can be generated by one or more individuals in an ordinary community, where ordinary events are occurring.

Those reported sightings involving more than lights-in-the-sky were made by people who also were members of or close to the group

activity stimulated by Messrs. A and B. There appeared to be little convincing evidence that these sightings involved objects that were physically real.

Case 39

South Pacific

Fall 1967

Investigator: Craig

Abstract:

A businessman reported that his automobile had been stopped by an UFO he observed while driving alone in a rural area. The case was checked as a possible source of information regarding electromagnetic effects of UFOs. Comparison of the magnetic pattern of the automobile body with that of another car of similar make and model showed the businessman's car had not been exposed to a strong magnetic field. The case, therefore, apparently did not offer probative information regarding UFOs.

Background (as received from members of a NICAP affiliate):

In Fall of 1967, a business executive was driving alone in a 1964 Chrysler convertible in a remote region of the South Pacific area, when at 3:30 or 4:00 a.m. his car stopped, the lights went out, and the radio went dead. He reported feeling strong pressure exerted from above, pressing down on his head and shoulders. He then saw, through a break in the fog in which he had been driving, an unidentified object that moved over his car and hovered over the highway ahead. It now lit up the roadway and area about him. The object was about 30 ft. in diameter, saucer-shaped, red-orange in color, and hazy in outline. Its altitude was estimated at 160 ft. The object had rotating lights, and wobbled as it moved and hovered. The witness viewed the object for about 90 sec. before it took off into the fog ahead. His headlights and radio then came back on, and he was able to re-start the car. It ran unevenly for a few seconds, sounding as if one or two cylinders were not firing. It then operated normally.

The witness was extremely frightened by the experience. He drove immediately to the nearest town, even though it was a short distance

off his route home. He said he had an urgent desire to be where there were other people. He met a milkman, and told him of the experience. No cafe was open, and the milkman directed him to another town, on the witness' original route, where he could get a cup of coffee. He stopped at the cafe and related his experience to a waitress there, who knew him.

He afterward decided, for business reasons, it should not become known that he had reported seeing an UFO, and he told his story to NICAP and project investigators only after firm assurances that he would not be identified.

Investigation by NICAP:

NICAP investigators checked the witness' car for evidence of unusual residual effects. They found the clock had stopped at 3:46 a.m., and was still stopped (the witness said the clock had been running O.K.). They found the paint loose and easy to rub off a spot on the hood, and a strange pitting in both paint and glass. A radiation check on the car showed beta-gamma readings of .01 to .02 mr/hr, which seemed slightly higher to them than readings similarly taken on another car owned by the witness. They felt also that stereotapes which were in the witness' car at the time of stoppage by the UFO had lost fidelity, particularly in the low notes. They also noted areas of unusual optical distortion in the back window as if it had been damaged by its exposure to UFO effects.

Investigation by Colorado Project:

The witness' description of his UFO experience was tape-recorded, and his car examined. The witness then drove the project investigator to the UFO site in the Chrysler and he re-enacted his experience of five days earlier.

The witness was an apparently successful businessman in his forties, seemingly proud of his achievements and particularly proud of his family. His story was basically as told earlier, except for

distance to the object and estimated size of the object. He now estimated the object as probably 55 ft. in diameter, and passing 50 or 75 ft. over his automobile. He still described it as a flowing orange-red object, with noticeable fluttering and rotation.

The automobile was a metallic-silver 1964 Chrysler convertible. The witness bought it as a used car in 1965.

Several areas were noted where the paint was extremely thin, particularly along body ridges and on an area about six by 12 in. on the left side of the hood. Pitting of the paint was evident in this and other areas of the hood. The pitting of the paint was fairly extensive; it appeared to the investigator to be the result of long-term corrosion. On the whole, the paint condition was not unusual for a four-year-old car. As for the thinness of paint, an automobile dealer has pointed out that it is not unusual to receive a car from the factory with a spot almost entirely missed in the painting operation.

The back window, which was said to have been only three months old, did exhibit areas of sharp distortion. Its appearance was almost identical with that of the back window in another 1964 Chrysler convertible that was examined later on a used car lot. Perhaps the witness' window was newer than the one with which it was compared; but it had been subjected to summer use in an area where temperatures of 120° or more are common.

No radioactivity above normal background was found on or in the car.

The clock was stopped at 3:46. The witness had not noticed the stopped clock until the NICAP representatives mentioned the significant agreement with the time of his UFO sighting. He was not certain the clock had been running the day before the UFO experience, but thought it probably was. He was sure it "used to run." Since the automobile clock is spring driven, and only wound by electric current (it continues to run if the line to the battery is disconnected), electromagnetic effects which might conceivably stop cars and car radios would perhaps not be expected to stop such a clock.

The AM radio operated normally. The FM was not operative five days later, but hummed loudly across the entire tuning range. The witness said he normally had good reception from several FM stations in this area. According to his story, he had tired of listening to recorded tapes and had switched on his radio (probably FM) shortly before the UFO sighting.

The project investigator was particularly concerned to determine whether the magnetic signature (characteristic magnetic pattern) of the Chrysler body had been altered as by subjection to a strong magnetic field. A Brunton pocket transit was used for a crude test for magnetic signature change. Readings were recorded for selected spot samplings of points on the hood, left fender, and trunk deck. These readings later were compared with readings at corresponding points on a 1964 Chrysler convertible in Boulder, Colo. The readings were as follows, for points indicated on the sketch (top views shown):

Table 6

front													
A	H	P	Q	R	S	T	U	V	WX	Y	Z	AA	
B	I												
C	J												
D	K												
E	L												
F	M												
	N												
G	O	+chrome strips, separating hood from fender----->											
+	+												

front edge of trunk deck												18"	
1	2	3	45	678	9	10	11	12					
rear deck													

left												right
------	--	--	--	--	--	--	--	--	--	--	--	-------

Table 7
Comparative Magnetic Signature Readings
for Two 1964 Chrysler Convertibles

Position	Car X	Car B	Position	Car X	Car B
A	0	20	U	320	320
B	60	60	V	300	310
C	110	90	W	330	280
D	70	100	X	40	40/80*
E	95	80	Y	30	10
F	70	70	Z	345	340
G	40	80	AA	340	340
H	330	330	1	0	300
I	300	300	2	60	110/0*
J	290	---	3	110	**
K	285	285	4	80/20*	**
L	290	290	5	0	0/180*
M	300	300	6	355	290
N	340	---	7	15	240/310*
O	355	350	8	0	0
P	345	310	9	270	270
Q	20	0	10	293	260
R	345	340	11	0	0
S	340	335	12	100	100
T	320	320			

* When two numbers are shown, a very small variation in front-to-back distance gives markedly different compass readings.

** A visible dent was present in this area on car B. Magnet readings were sporadic around the dented area.

Note: The numbers given are raw transit readings taken with the car, in each case, headed at a magnetic bearing of 160°. The readings were taken by pointing the main transit sight to magnetic north, and reading the compass while holding it next to the car body at the designated point. Since the transit is designed to read the bearing of a sighted object, and the sight is aimed north in these measurements, the readings shown are the 360° complements of compass-needle bearings. Because comparative readings for two cars made the same year at the same factory were all that were of interest, the data were compared without correction.

Some points of sharp change in magnetic orientation may have displayed that change because of structure beneath the hood. However, the comparison car did show readings very similar to those of the witness' car throughout, including corresponding points of sharp change. Even with this crude check, it appears reasonably certain that his Chrysler had experienced no reorientation of its magnetic signature, as one might expect if the car had been subjected to a strong magnetic field.

Miscellaneous Comments:

The milkman told the NICAP people that the witness had told him about the UFO about 3:30 or 3:45 a.m., on the date of the reported sighting. Both he and the cafe waitress said the witness was scared, but not intoxicated when they talked with him.

The witness claimed that his experience had made him both religious and a UFO believer. He was afraid to return to the site of his experience, and said he would avoid this area in the future. In attempting to re-enact his experience at the site, he experienced moments of apparent illness or dizziness, for which he apologized, and waited briefly to regain his composure. Three NICAP people and the Colorado investigator were with him when he returned to the site. When they suggested that they leave in the opposite direction for their return to the city, while he would return in his Chrysler to his home, he asked them to accompany him to the highway intersection 2.6 mi. away, as he did not want to be in the area alone.

There are serious discrepancies in the witness' story. The most serious involves the distance and location of the object.

NICAP people previously had asked him to show how big the object appeared by indicating how much of a ruler held 24 in. away would have matched the diameter of the object. His response was 9.5 to 10 in. When describing the event to the CU investigator in his house, the witness said the object filled his whole windshield, and was 50 or 75 ft. away. During the reenactment at the site, he decided the object had not come directly overhead but had come in from the right side, hovering over the road at a point he indicated by the positions of approaching cars and trucks. This point was measured to be 0.2 mi. away. He said the object was as wide as the road (33 ft.). At the indicated distance, such an object would subtend less than an inch on the ruler held 24 in. away. He was then asked to sketch on his windshield with a wax pencil the outline of the object as he had seen it. (His car was parked where he said it had been stopped.) He sketched a football shape four inches long. His eyes were 18 to 20 in. from the windshield while he sketched.

His description of the object was extremely vague.

The highway ahead at the point of reenactment was bearing about 110°. When he arrived with the investigators at the site, however, he was not sure which straight section of highway he had been on when he saw the UFO. He decided the 110° section must be it. Had he chosen the section on the other side of a curve just passed, the highway bearing would have been almost directly east.

Conclusion

Because of the vagueness of the witness' description of the "object," the wide inconsistencies in his estimates of its size and distance, the fact that no one else observed the alleged event, and the fact that the car body did not show evidence of exposure to strong magnetic fields, more detailed investigation of this event as a source of evidence related to the electromagnetic effect on automobiles did not seem warranted.

Case 40
South Mountain
Fall 1967
Investigator: Ayer

Abstract:

A light witnessed and photographed from a mountain slope was analyzed by rough photometry and reference to a map of the area. It was attributed almost certainly to headlights of a surface vehicle in the valley.

Background:

Two young college men decided to watch for UFOs over a valley from the flank of a mountain peak. In the evening, they drove off a highway east of city A, north on a road about 0.75 mi. past a ranch access road, then turned east on a dirt road about 0.5 mi. up the slope of a mountain. There they set up their camera on a tripod. It was a Yashica-D with 80-mm lens, 2.25 by 2.25-in. frame, loaded with Eastman Tri-X film. The moon was high and the sky clear.

About 1:20 a.m., a white light appeared in the valley to the west, apparently above the valley floor but below the line of lights that marked a well travelled highway on the valley floor. About 1:30 a.m., while the light was still stationary, two photographs were taken with exposures of 40 and 80 sec. Later the light moved northward at both low and high speeds, then returned to its starting point. Its apparent path is shown in Fig. 8.

Investigation:

The latest, unpublished Geological Survey map indicates that the altitude of the camera site was about 7,800 ft. From this and other known altitudes, it was deduced that the line of sight to the UFO intersected the valley floor about seven miles from the camera. The camera position was almost due east of city B, which lies in a valley between a mountain to the south and other mountains to the

north. These features can be approximately identified on the photographs. They indicate that the bearing of the UFO from the camera was 290° .

The positions and lengths of the star tracks, corrected for the camera motion apparent on the longest exposure, indicate that the first exposure was roughly three times as long as the second, and that the reported exposure times were approximately correct. A vertical microdensitometer tracing of the region to the right of the edge of the disc of the UFO spot on the 80 sec. exposure indicated substantial illumination of the valley floor, suggesting that the light was on a vehicle on the ground.

The eye usually can distinguish two objects having an angular separation less than one minute of arc, or about ten feet at seven miles. This limitation would explain why the boys saw only one light, even though the source may have been a pair of headlights. Application of Rayleigh's criterion for resolving power to the camera lens indicates that if of excellent quality it could have resolved headlights at any stop opening greater than $f/12$; presumably it was used wide open.

However, the two headlight images would have been only 8.6μ apart on the camera film. Tri-X film is rather coarse-grained; the manufacturer's specifications indicate that it cannot register separate image details, even with poor efficiency, unless they are at least 15μ apart. Contrast effects between bright headlights and the dark background would further reduce the resolution on the film. It seems clear that a pair of headlights could not have been distinguished from a single light in the photographs. A horizontal densitometer trace showed three shallow peaks of unequal height, but the separation of the two greater ones was roughly ten times the expected value for headlights. The shallowness of the peaks suggested they might be artifacts.

The intensity of the unknown source was determined approximately from the geometry of the situation and the density of the

image of the source on the film. If we call the intensity of the source I , the light flux from the source into the camera lens F , the area of the lens opening A , and its distance from the source R , then $F = IA/R^2$. Absorption and other losses in the lens reduce this flux by a factor T , estimated as 0.8. The remaining light flux falls on an image spot of area at the film. Therefore, if J is the illumination at the image, $Ja = TIA/R^2$.

The lens opening is assumed to have been $f/3.5$, or 2.28 cm. diameter. The diameter of the image spot on the 40-sec. negative was determined from a densitometer trace as 0.4 mm. The density of the image spot, corrected for background, was 3.2. The H-D curve published by Eastman for Tri-X film with antihalation base, developed seven minutes in D-76 at 86 F., shows only the toe and straight section. If the exposure is determined by a linear extrapolation of the straight section, a minimum value of the illumination results, namely 4.0 meter-candles.

If the preceding equation for the intensity I of the unknown source is solved with these data, $I = JaR^2/TA = 197,000$ candlepower. However, this equation has assumed implicitly that the unknown source was radiating uniformly in all directions. Since headlight beams are concentrated in the forward direction, the result above must be reduced by the ratio of the solid angle effectively filled by the headlight beam to that of the full sphere. Since the distribution of light in the beam is not uniform and depends on the individual headlight design and condition, no accurate correction of this result is possible. It can only be noted that the solid angle effectively filled by a headlight is roughly .05 to 0.1 of the full sphere, reducing the computed source intensity to an estimated 10,000 to 20,000 candlepower. Further uncertainties occur as to whether the assumed headlights were pointing directly toward the camera, and in estimating the source distance, lens stop used, and illumination of the film.

Maximum intensities of the high beams of automobile headlights lie in the range 15,000 to 50,000 candlepower. The results

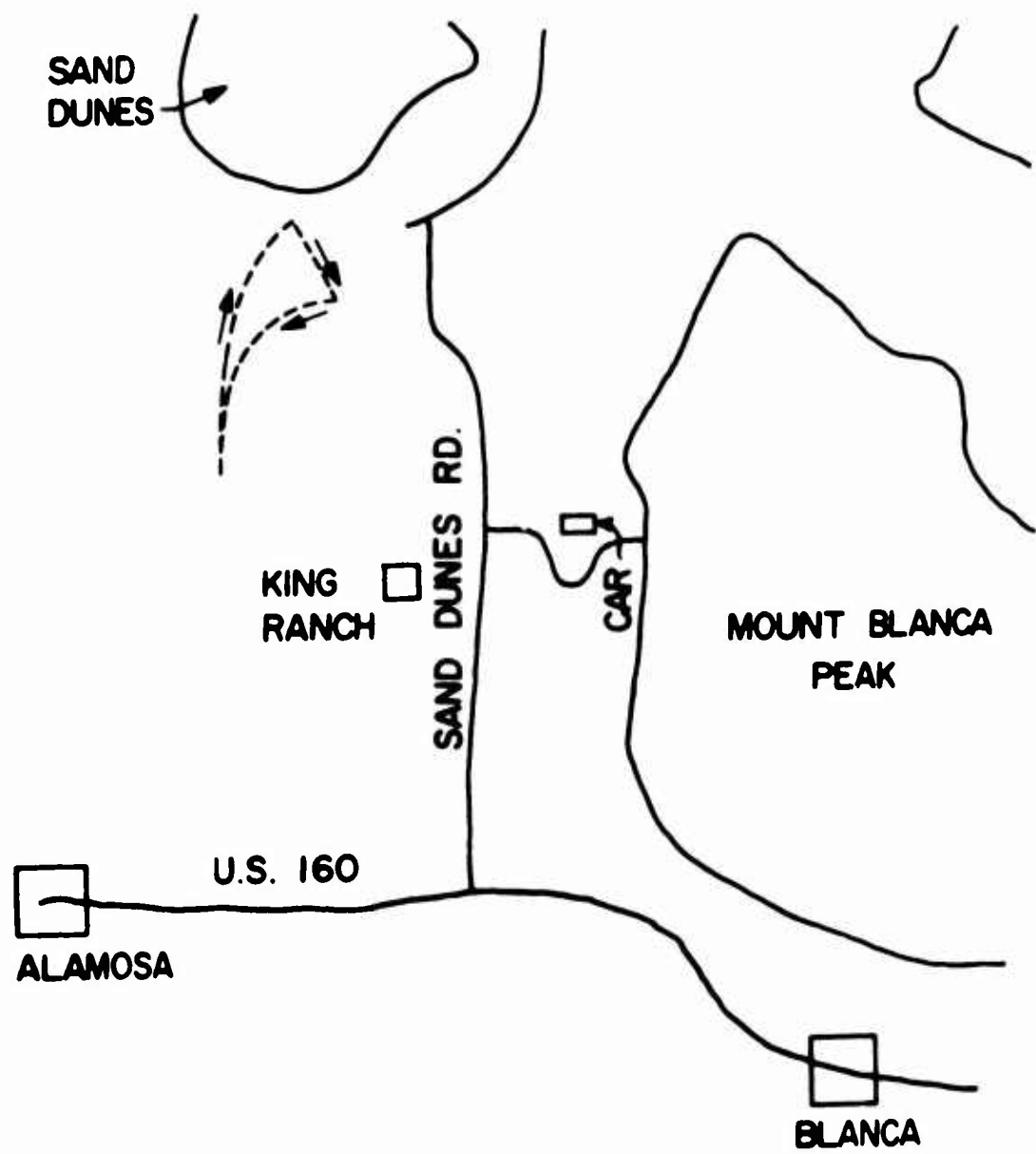


Figure 8

of the photometric computation of the source intensity therefore are compatible with automobile headlights, though subject to broad uncertainties.

The following hypothesis can now be advanced: a vehicle, probably 4-wheel driven, moved in the valley along a path similar to that shown in Fig. 8. No wheeled vehicle can move cross-country in the valley because of the ubiquitous stiff vegetation: but a map of the area shows crude roads or sand tracks that approximate the path described by the boys. These roads are blocked by barbed-wire fences along the section lines. Stopping to open take-down gates in these fences accounts for the interrupted progress of the UFO. The fading of the original light is explained by the change in direction of the vehicle, and the appearance of a red color by the coming in view of a tail-light.

The UFO was reported to have moved toward the boys at high speed. The segment AB of the path marked on Fig. 8 is a straight black-topped road, in the valley with a sufficient "toward" component to correspond to the analogous part of the track in Fig. 8.

Finally, the statement that the UFO returned to its starting point is made plausible by the circuitous pattern of roads and tracks shown on maps of the area.

Many questions remain, not the least of which is: how is it that such a bright light suddenly appeared in the middle of a vast expanse of scrub, and what were the occupants of the vehicle doing at that hour? Perhaps they were trying to jack-light deer (out of season) or rabbits. Since such a pursuit was illegal, the hunters would have chosen a late hour to avoid being seen.

Thanks are due Dr. Elmo Bruner of Laboratory Atmospheric and Space Physics for making the densitometric measurements.

Case 41

South Eastern

Winter 1967

Investigator: Levine

Abstract:

A small bright object that divided into three parts was probably a weather balloon.

Background:

A meteorologist had stepped outdoors about 8:00 a.m. EST to make an observation when he noticed a small bright object high in the sky. He and two other witnesses observed that object through binoculars and with the unaided eye. The object was observed five minutes against clear sky, and then approximately seven minutes through thin cirrus clouds.

The object split into apparently three pieces when it was directly overhead. These three objects were observed for a short period; then two of them disappeared. The object had moved through an arc of 30° in about 12 min.

During the sighting, the High Altitude Control at an ARTC center indicated that they could not detect the UFO on radar.

A radiosonde balloon had been launched by the U. S. Weather Bureau 45 mi. west of the sighting at 6:25 a.m. EST. The balloon persisted until 7:59, when it was at an altitude of 30,600 m. and a slant range of 85,100 mi. east. The horizontal range of the balloon was about 45 mi. The winds aloft at 80,000 and 90,000 ft. were from the east and inconsistent with the reported direction of motion. The winds at lower altitude were generally from the west, and therefore consistent with the eastward drift of the balloon.

If the observed object was at an altitude of 100,000 ft. the observed angular displacement of 30° in 12 min. implies a speed of

about 20 mph. This is comparable with the reported wind speeds at similar altitudes: 80,000 ft., 20 knots; 90,000 ft., 8 knots; 100,000 ft., 6 knots.

Conclusion:

The Weather Bureau stated that when such a balloon bursts, it splits into several parts which quickly disappear; then a parac is deployed. This action fits the appearance of the UFO. The coincidence in time and location suggests that the witness had observed the balloon.

Case 42

North Central

Fall 1967

Investigators: Craig, Ahrens, staff

Abstract:

A state trooper, on duty since 5 p.m., was cruising the outskirts of his small midwestern town alone at 2:30 a.m. He reported a saucer-like object landed on or hovered over, the highway 40 ft. in front of him. The object departed straight upward at high speed. The trooper could not account for a 20-min. period during which he assumed he must have been near the UFO. No evidence was found that a physical object had been present as claimed. Psychological assessment of the trooper, carried out with his approval and cooperation, also failed to provide evidence that the reported object was physically real.

Background:

A state trooper, cruising alone about 2:30 a.m. in his squad car, had a feeling of uneasiness that something unusual was nearby. At 1:00 a.m. and at about 1:35 a.m. he had checked the cattle at the local sale barn, and found them behaving strangely -- bawling and kicking the chutes. After 2:00 a.m. he was checking various facilities along Highway A, and near its intersection with Highway B noticed red lights to his right, which he thought were perhaps on a truck stopped on Highway B. He passed the intersection, then turned around and returned to B, to check the presumed truck. The patrolman switched his headlights to bright and stopped the police car as his headlights struck the source of red light, that he thought was some 40 ft. ahead (later measured to be 150 ft.). The red lights were blinking. They appeared now to be shining from windows of a saucer-shaped object, hovering 6 - 8 ft. above the highway, tilted at an angle of about 15° from the horizontal. The object glowed brilliantly, and started rising, emitting a siren-like sound,

the trooper reported. It rose gradually, with some side-wise fluttering, and emitted a flame-colored material from its under side. With his head out the open car door, the trooper said he watched the object move nearly overhead, then move upward rapidly, shooting out of sight. After a quick check of the site by flashlight, he returned directly to the troop barracks, where he was surprised to find the time to be 3:00 a.m. As he turned his car around on Highway A, he had noticed that the time was 2:30 a.m. & it seemed to him that no more than ten minutes could have elapsed before he reached the troop barracks. He felt that perhaps he had not been conscious during a period of approximately 20 min. while he was observing the UFO. He had a feeling of paralysis at the time, and felt strange, weak, sick, and nervous when he returned to the troop barracks, according to his report.

In describing the object later, the trooper said it had a row of oval portholes around its periphery, each port about two feet across. The light was glowing from inside the object. He could see nothing through the red-lighted ports as the lights blinked off except a black line moving up and down. Below the portholes, he described a cat-walk around the object. The surface of the object appeared to him like polished aluminum, and was quite bright in reflected light. The night was reported to be clear, calm, and moonless.

Investigation:

His superior officer declared that the trooper was dependable and truthful. His chief was convinced that this report of an UFO sighting was not the result of hallucination or dishonesty. He had checked the area the next morning. Among ordinary litter beside the road, beneath the point that the trooper said the object hovered he found a small piece of metallic-appearing material which he did not recognize. This material, less than one centimeter long and paper thin, was offered as possible residue left by the UFO. The chip of material was black on one side, while the other surface had the bright appearance of

aluminum paint. A portion of this material was analyzed semi-quantitatively. Its major constituents were iron and silicon. Since the relation of the material to the reported UFO was so tenuous, no further effort was made to determine its specific origin, for it could plausibly be accounted for in terms of ordinary corroded earthly waste.

The site area was checked for radioactivity, no evidence of which was found. No other evidence that an unusual object had landed on or hovered over the site was found.

His superior officer said the trooper had been given a polygraph examination at the trooper's request by an experienced operator at an official agency. The polygraph reportedly showed no indications that the UFO report was other than truthful.

The trooper said he had served with the U. S. Marines. With his approval, a series of psychological assessment tests were administered by project personnel and psychologists at the University of Colorado Center for Student Life Programs. In addition, a test utilizing partial hypnotic techniques was conducted by Dr. R. Leo Sprinkle, Professor of Psychology, the University of Wyoming. The latter test was conducted in an effort to determine whether or not hypnotic techniques might have value in developing otherwise inaccessible information about UFOs. During this session, new information was added to the trooper's account of his UFO experience; however the authenticity of the reported experience remained unestablished. Dr. Sprinkle expressed the opinion that the trooper believed in the reality of the events he described.

Tests administered were the Rorschach, Thematic Apperception Test, Sentence Completion, Word Association, Wechsler Adult Intelligence Scale, and Minnesota Multiphasic Personality Inventory. Results of these tests were evaluated by Mr. R. Dean Land, Counselor, and Dr. Robert H. Fenner, Assistant Director for Clinical Services, of the University of Colorado Center.

Conclusion:

Evaluation of psychological assessment tests, the lack of any evidence, and interviews with the patrolman, left project staff with no confidence that the trooper's reported UFO experience was physically real.

Case 43

South Central

Fall 1967

Investigators: Ayer, Wadsworth

Abstract:

Confused reports by teenagers of strange lights were attributed to assorted lights on flat countryside and possibly aircraft.

Background

At approximately 10:30 p.m. 5 December 1967, six teenagers returning home from a basketball game detoured in order to drive by a cemetery to frighten themselves. As they approached the cemetery, they saw through the trees a blinking light in the sky beyond. They pulled off the road just past the cemetery, where they had an unobstructed view. The object, low on the eastern horizon, was moving northward with an up-and-down motion. It appeared to be flashing different colors or rotating, or both. The most similar conventional object with which it could be compared would be an aircraft with flashing beacon. This, however, was ruled out by the witnesses because of its up-and-down motion. As soon as they saw it moving north, they turned around and followed, hoping to obtain a better look. Although an accurate estimate of distance could not be made, the witnesses believed the object to be less than two miles away, and heading in a direction they could follow by using country roads.

The remainder of the story is not clear, as individual accounts are highly inconsistent with one another. Generally, witnesses agree that they "followed" the object for several miles, losing sight of it two or three times as they turned down different roads. Finally, they came to a location from which lights, attributed to the original object, were seen off to their left, apparently in a field. Later this location could not be determined as four different possibilities were indicated by the witnesses and no one was certain. Lights were seen in the "field", some like car lights, some (or one) green or blue-green; a dim structure is mentioned, and finally spotlight beams

or revolving beams. The structure mentioned turned out to be an extremely marginal perception, leaving essentially lights and little more.

The dramatic element in accounts written by the witnesses seems based on *interpretation* of the lights as UFO phenomena, rather than on definite evidence. A much less dramatic picture of what they had seen emerged from questioning the witnesses. For example, one witness said that three independent "objects" were possibly involved: the object first sighted, the light which was "followed," and the light(s) in the field. He saw only lights, no structure, and was not sure of what they were. Three others held similar views, except that they were less certain of the sequence of events. The language used in the various reports suggests that they were verbalizing their impressions during sightings and had opportunity to standardize certain descriptive terms.

In addition to written accounts, individual maps showing the areas and locations of various events were obtained through questioning of the witnesses. Wide discrepancies and inconsistencies are apparent in these items.

Two of the witnesses, a girl and her boy friend, produced the most elaborate descriptions and the most dramatic reports. They also appeared to be prone to exaggerate perception of anything fearful or unconventional. The boy had studied UFOs for quite some time, and took them extremely seriously. He was obviously upset about the "experience", and showed very little objectivity about the occurrence. The girl, who drew an elaborate sketch of what she had "seen" in the field, later admitted that she had not actually seen such an object. She said that her sketch was more on the imaginative side and was what the lights *suggested* to her. As to structure, she said that what she actually saw was so dim she had to look to one side to see it. At the height of the excitement, both witnesses thought the object rose up and was coming at them. None of the other witnesses saw this motion, even though all were looking at the same thing. There was, however, general agreement that a bright light like a

searchlight seemed to shine in their direction, whereupon they rapidly departed.

Investigation

Certain important factors were noted during attempts to reconstruct the incident.

First, the area was examined in the daytime during unsuccessful attempts to pin down the location of the final incident. The terrain is monotonous -- flat farmland with scattered scrub growth. The few hills are so low and rounded that one would prefer to call them swells or rises. It was immediately clear that one could easily become disoriented in such an area, especially at night.

The same area was examined at night. Again, one feature stood out. Lights were visible in all directions. These were widely scattered, and were of various colors, intensities, and degrees of scintillation. Some were in clusters, some alone. When witnesses were questioned and returned to the area of the sighting, it became clear that no "site" could be agreed on.

Thus we have six conflicting stories as evidence. There is disagreement over what was seen, where it was seen, and what the witnesses themselves did at the time. There is agreement that a flashing light was followed and lost several times, and that lights seen in a field, were presumed to be the original light and watched until a bright light or lights shone at the observers, whereupon they became frightened and left.

As a tentative explanation, one of the possible sites was found to contain a farm with yard light and outbuildings with blue-green and various other lights. The yard light could be seen discontinuously from locations between the cemetery and the farm. Thus this light, which was bright white and scintillated dramatically when viewed from several miles away, could have been "followed" via various routes by automobile. As one approached more closely, the greenish lights became visible below and to the right of the yard light. A car in the vicinity of the farm might account for the "searchlight" effect reported by witnesses. This, however, is not a completely

satisfactory explanation, mainly because the yard light would have been easily recognizable as such by anyone who approached closely. Possibly this light was switched off by the time the witnesses reached the location. Another flaw in this explanation is the northward motion of the original object. This was reported by all the witnesses, and does not sound like illusory motion caused by involuntary eye movement.

Conclusions

At this point we leave the original object as unidentified. The evidence is not sufficient to rule out aircraft, despite statements by witnesses to the contrary.

Additional Sighting

The only other sighting reported in the area was made by a local radio announcer. He saw an object with red and green flashing lights in the sky northwest of the station at dusk on the same evening as the sighting by the teenagers. The object looked like a small plane; but it was moving very slowly, suggesting a strong headwind. After watching for two minutes, the announcer went into the station and thought no more about the matter until he heard of the other sighting.

Case 44

North Central

Winter 1967

Investigator: Wadsworth

Abstract:

Witness driving on highway at night reported having seen a dim shape and a pattern of colored lights above an underpass. From the farther side of the underpass, it appeared to have moved away opposite to the direction he was traveling. No field investigation was made.

Background:

The witness, a med student, telephoned the project 23 February 1968. He reported that, while driving from city A to city B on U.S. highway A and approaching an underpass 34 mi. from city B about 10:00 or 11:00 p.m., he saw directly above his side of the highway a pattern of lights almost in a vertical line. Two red lights were at top and bottom, and a "blue or green" between them. The lights appeared to be stationary directly above the underpass. Just before he entered the underpass, he saw a white light beside the blue/green.

He stopped about $\frac{1}{4}$ mi. beyond the underpass to look for the lights, thinking they should be overhead, and saw the pattern, now horizontal instead of vertical, low in the ENE, "like a struggling goose in the wind." He thought it was $\frac{1}{2}$ -1 mi. away, and perhaps 200 ft. up. He could not recall how it had disappeared.

Arriving at home he went to his apartment and went to bed. He had a strange feeling that "they" were still with him, and he slept poorly. He felt that "they" had communicated, wanting him to go on a trip with them; feeling of great friendship, buddies. He had "told" them he would go, but was not ready yet, too much to do, responsibilities etc.

Afterward, he could not concentrate on his med studies, lost interest, and "felt pressure building up." He acknowledged that he had been considering psychiatric help but wanted to contact the CU project first; he was concerned that psychiatry might interfere with our investigation. Wadsworth reassured him on this point, but explained that we could not offer any personal assistance. Because of the evidence of emotional disturbance predating the sighting, as well as the lack of supporting witnesses or other basis for further investigation, no field study was made.

Commenting on this case, the project's consulting psychiatrist observes: "Unequivocal statements concerning the emotional state of the witness in this, or any other case, cannot be made in the absence of intensive psychological testing and a psychiatric interview. The witness' statements suggest that he was under severe pressures at the time of the UFO sighting in connection with his studies, his marriage, and other factors in his life situation. One would suspect that at the time these pressures were at the very least producing a severe anxiety attack in the witness. It is conceivable that he was on the verge of a more serious mental disturbance. The fact that the witness states that he feels that he would like to consult a psychiatrist indicates his awareness that the solutions to his problems are to be found within himself rather than in the outside world or in the UFO."

Case 45

South Mountain

Winter 1968

Investigators: Ahrens and Levine

Abstract:

A lighted object seen at night by several people was found to have been a plastic hot-air balloon.

Background:

It was reported to the CU project that several persons at Castle Rock had seen an illuminated transparent object drifting over the town about 6:00 p.m. Mainly because the principal witness insisted that the object appeared to be about 75 ft. long, project investigators went to the scene.

Investigation:

The principal witness, interviewed the following evening, reported that, while he was outdoors in the early evening, he noticed several lights in the sky that were focussed toward him. He made out a transparent object about 75 ft. long by 20 ft. wide. In a circle underneath it were about twelve lights; he judged them to be much brighter than car headlights, though they did not blind him. He estimated the object to be about 25 ft. above the ground, which it illuminated. The object appeared empty; he could see through it. At first it was stationary; then it began to drift northward over the town. He followed in his truck, stopping at a service station to tell the men there of the "flying saucer." They later reported having seen slow-moving lights that dropped several fiery objects as they disappeared north of the town.

The investigators then visited the owner of the service station, and while there heard a radio report that a local teenage boy had launched a plastic hot-air balloon at about the time of the sighting, from a location about a block upwind of the principal witness' location. They learned by further inquiry that the balloon had been a polyethylene

suit bag about two by three feet, with balsa cross-members supporting six small candles and a cup of lighter fluid. Several persons at the launching saw the balloon drift over the principal witness' location.

Conclusions:

The investigators concluded that the object of the sighting reports had been the balloon, despite the witness' exaggerated estimate of its dimensions.

Chapter III

Photographic Case Studies

(Cases 46 - 59)

BLANK PAGE

Case 46

McMinnville, Oregon

11 May 1950

Investigator: Hartmann

Abstract:

Witness 1 reportedly saw a metallic-looking, disk-shaped UFO. She called her husband, they located their camera, and he took photographs of the object before it disappeared in the distance.

Background:

Time: 7:45 p.m. PST (1,2); 7:30 p.m. (3).

Position: Approx. 10 mi. SW of McMinnville, Ore. on the farm of the witnesses; 123 19' 50" W, 45 06' 15" N (7).

Terrain: Rolling farm country, elev. 210 ft.; houses several hundred meters apart (7).

Weather Conditions: Dull with an overcast at about 5,000 ft. (2, confirmed by the photos).

Sighting, General Information:

The sighting occurred in the back yard of a farm about 0.2 mi. S of the "Salmon River Highway" (U.S. 99W (7)). Witness was feeding rabbits in the back yard, S of the house and E of the garage when the object was first sighted (1,2,3,6), apparently toward the NE (6). Witness II was apparently in the house at this moment, as three of the accounts (2,3,6) refer to Witness I calling to him and running into the house to fetch him from the kitchen, although one account (1) states that they had "been out in the back yard," and "both... saw it at the same time."

As far as Witness I could remember 17 yr. later (6), the rabbits gave no indication of disturbance.

Immediately after they both saw the object, apparently as it was still in a NE direction, moving slowly toward the W (6), they thought of their camera (1,2,3,6). Witness II ran to the car, thinking it was there, but Witness I remembered it was in the house and brought it (1,6). Witness II took the camera, which was already loaded. The roll of film had been purchased during the winter and already had two or three shots on it (4).

At this time "the object was coming in toward us and seemed to be tipped up a little bit. It was very bright - almost silvery - and there was no noise or smoke" (1).

Witness II explained that he took the first picture, re-wound his film as fast as possible and then as the object gathered speed and turned toward the northwest, he had to move rapidly to his right to get the second picture. Both were snapped within thirty seconds, he estimated" (1). According to another early reference: "[Witness II] elaborated, 'There wasn't any flame and it was moving fairly slow. Then I snapped the first picture. It moved a little to the left and I moved to the right to take another picture.'" (3). Plates 23 and 24 show the two photographs in the sequence taken. During this interval the object was moving quite slowly, apparently almost hovering, and it apparently shifted both its position and orientation in a complex way, changing direction and tipping just before it moved away, as indicated in Plate 25 (2,6). However, Witness I described it as "not undulating or rotating, just 'sort of gliding'" (2). The UFO accelerated slowly during or just after the second photograph and moved away rapidly toward the west (2). Witness I ran into the house to call her mother-in-law, got no answer, and returned outside just in time to see the UFO 'dimly vanishing toward the west' (2).

Investigation:

The witnesses described the object as "very bright - almost silvery" (1); "brightly metallic, silver or aluminum colored, with a touch of bronze...appeared to have a sort of superstructure... 'like

a good-sized parachute canopy without the strings, only silvery-bright mixed with bronze'" (2); silvery on top but with more bronze on the bottom, the bottom being different (but, this being seventeen years later, Witness I was unsure whether it was darker)...shiny but not as bright as a hub cap...resembling a dull, aluminum-painted tank (which Witness I pointed out to the writer in our interview)... "awful pretty" (6). The rather bright, aluminum-like, but not specular, reflecting surface appears to be confirmed by analysis of the photos (see below). There was no noise, visible exhaust, flames, or smoke (1,3,6).

When the object tipped up, exposing its under side to the witnesses, they felt a gust of wind which they thought may have come from the UFO. "'...there was a breeze as it went overhead... which died down later'" (2). In the interview with the writer, Witness I stressed this, remarking the wind was "about to knock you over," though Witness II (interviewed separately) remarked that it made only a "very little" breeze as it was getting ready to fly off (6).

As to speed, and distance, the witnesses were reluctant to hazard a guess (1,2), as Witness II had no way of knowing its size (2), although one of the references quotes Witness II as estimating a diameter of "20 or 30 ft." (3), and Witness I compared its appearance (though not explicitly its size) to a parachute canopy (2,6).

As to the origin of the UFO, Witness II remarked both at the time and in 1967 that he thought it was a secret U.S. craft (1). "'...you hear so much about those things...I didn't believe all that talk about flying saucers before, but now I have an idea the Army knows what they are'" (3).

Witness II recalls finishing his roll of film on Mother's Day (4) and had it developed locally (1). Witness II mentioned his observation and showed the pictures to a few friends. He did not seek publicity about the pictures, admitting that he was "'kind of

scared of it'" (2,3), and "afraid they would get in trouble with the 'government' and be bothered by the publicity" (2). However, McMinnville *Telephone Register* reporter Bill Powell learned of the sighting from two McMinnville bankers, Ralph and Frank Wortman, and followed up the story (1,2). He found the negatives "on the floor under a davenport where the Witnesses' children had been playing with them" (2). The *Telephone Register* broke the story Thursday, 8 June 1950 with a front page article containing the two pictures and Editor's Note:

"...in view of the variety of opinion and reports attendant to the saucers over the past two years, every effort has been made to check Trent's photos for authenticity. Expert photographers declared there has been no tampering with the negatives. [The] original photos were developed by a local firm. After careful consideration, there appears to be no possibility of hoax or hallucination connected with the pictures. Therefore the *Telephone Register* believes them authentic..." (1).

Various McMinnville residents, including the bankers Wortman, offered to sign affidavits vouching unreservedly for the reputation and veracity of the Witnesses (1,2,4).

On Friday and Saturday, 9 and 10 June, the Portland, Ore., and Los Angeles newspapers carried the story (2,3). *Life* magazine carried the pictures the following week (4). The witnesses accepted an invitation to appear on a television program "We the People," in New York (6). Witness I remarked that they were encouraged by the people responsible for this show to make statements they (the witnesses) regarded as inaccurate. The witnesses, however, did not make such statements, but told only what they saw (6).

While in New York, the witnesses were to receive their negatives from *Life* magazine, but were informed that the negatives were temporarily misplaced (6). *Life* promised to return them by mail to

Oregon, but apparently never recovered them (6). With the cooperation of Life the Colorado project discovered that in 1950 the negatives had been in the possession of International News Photo Service later merged with United Press International. The project located the original negatives and was permitted to examine them.

As mentioned above, various reputable individuals volunteered to attest to the witnesses' veracity. They appear to be sincere, though not highly educated or experienced observers. During the writer's interview with them, they were friendly and quite unconcerned about the sighting. Witness II was at work plowing his field and did not even get off his tractor. From interviews throughout this district one gained the impression that these were very industrious farm people, not given to unusual pranks.

Two inferences appear to be justified: 1) It is difficult to see any prior motivation for a fabrication of such a story, although after the fact, the witnesses did profit to the extent of a trip to New York; 2) it is unexpected that in this distinctly rural atmosphere, in 1950, one would encounter a fabrication involving sophisticated trick photography (e.g. a carefully retouched print). The witnesses also appear unaffected now by the incident, receiving only occasional inquiries (6).

The over-all appearance of the photographs, in particular the slightly underexposed land foreground and properly exposed sky, is consistent with the reported time 7:30 PST (sunset being roughly a few minutes after 7:15, and twilight lasting until after 8:45). There could be a possible discrepancy in view of the fact that the UFO, the telephone pole, possibly the garage at the left, and especially the distant house gables (left of the distant barn) are illuminated from the right, or east. The house, in particular, appears to have a shadow under its roof that would suggest a daylight photo, and combined with the eastward incidence, one could argue that the photos were taken on a dull, sunlit day at, say, 10 a.m.

But accepting the UFO makes scarcely less sense than arguing that the witnesses staged a hoax at 10 a.m. and then claimed the photographs were taken at 7:30 . Densitometry of the original negatives shows that the sky itself is brighter toward the west, as expected. It seems possible that, half an hour after sunset, the cloud distribution could result in a dull illumination preferentially from the NE (certainly there will be skylight from above).

Reality of physical object. As stated previously, it is unlikely that a sophisticated "optical fabrication" was performed. The negatives had not been tampered with.

Further, a geometric test was performed to determine whether the object shown in Plate 24 in approximate cross section was the same object photographed in Plate 23 at a different angle. The apparent inclination, i , can be determined from the ratio of the axes of the apparent ellipse in Plate 23.

$$\sin i = b/a \quad (2)$$

Measures on several copies of photo 1 (the UPI print, an enlargement thereof, and two magazine reproductions) gave $\sin i = 0.368$, and

$$i = 21^\circ.6 \pm 0^\circ.1 \text{ (est. P.E.).} \quad (3)$$

Plate 26 shows enlargements from UPI print with lines of sight superimposed on the Plate 24 "cross section" at $21^\circ.6$. The way in which these lines cut the image is in perfect agreement with the appearance of the object in Plate 23. Judging from the apparent position of the pole it is likely that the object has simply tipped, without rotation, between the two photos.

The lighting is also consistent with that in the rest of the photo. Both photographs, therefore, show real objects and that the object in Plate 23 is a view of the same object in Plate 24, seen in different perspective.

Asymmetry of UFO. It will be noted in Plate 26 that the UFO is distinctly asymmetric. The "pole" is off center and inclined, and there appears to be a difference in the profiles of the right and left sides (Plate 24), the left having a more pronounced notch defining the flange. The shading of the object also indicates a

more distinct flange on the left in Plate 24. The asymmetries are judged physical, not optical effects.

Absence of rotation. The top of the "pole," barely visible in photo 1, is off center to the left by the same amount as in photo 2. This would be rather improbable if the object were rotating, and supports Witness II's statement that it was not rotating. This is a rather strong argument against a fabrication using a necessarily (for stability) spinning model similar to a "frisbee," especially in view of the fact that only 2 exposures were made in the middle of an intact roll of film.

Angular size of object. From measurements of recent photos (6) the photos were scaled and the UFO diameters estimated to be:

Plate 23: $1^{\circ}.4$

Plate 24: $1^{\circ}.3$.

The P.E. is probably about $0^{\circ}.1$, but the object subtends a smaller angle in photo 2, consistent with the allegation that photo 2 was made as the UFO was beginning to depart.

It follows immediately that the distance-diameter relation is determined, and a map of the locale (based on ref. 7) is shown in Fig. 1 with the azimuths, angular sizes, and example, that the object was less than a meter in diameter and over the driveway.

Psychological reaction. I judge it reasonable that as the object allegedly drifted to the left, in danger of being lost to sight behind the garage, that the observer should step unconsciously to his right, as the photos show he did, although one might expect the observer even more reasonably to step forward, to get in front of the garage. The reason for the first response may have been that the second would put the observer close to the house, where the object might be lost to sight if it moved back to the east, while by moving away from the garage, one moves toward the open yard SE of the house. In summary, the movement of the observer is consistent with the alleged observation.

Possibility of fabrication. The above tests all appear to be consistent with the witnesses' testimony. The possibility of optical fabrication seems remote. A model thrown into the air by hand appears an unlikely possibility because of the evidence for absence of rotation.

Another possibility can be considered, however. The object appears beneath a pair of wires, as is seen in Plates 23 and 24. We may question, therefore, whether it could have been a model suspended from one of the wires. This possibility is strengthened by the observation that the object appears beneath roughly the same point in the two photos, in spite of their having been taken from two positions. This can be determined from irregularities, or "kinks," in the wires. The wires pass between the camera positions and the garage (left). We know from the change in orientation of the object that it moved, or was re-oriented by hand, between exposures. The possibility that it is a model hanging beneath a point on the wire suggests a further test: Is the change in distance of the object in Plates 23 and 24 equal to the change in distance from the wires? Measures of the disk indicate that it is about 8% further away in Plate 24. Measures of the irregularities in the wires indicate that they are further away from the camera in Plate 24. The amount of the latter increase from the wires (measured by the separation of rather ill-defined "kinks") is less certain than the distance increase from the disk, but it is measured to be about 10%. These tests do not rule out the possibility that the object was a small model suspended from the nearby wire by an unresolved thread.

Given the foregoing analysis, one must choose between an asymmetric model suspended from the overhead wire, and an extraordinary flying object (See Table 1).

Photometric analysis. Although it is often stated that a single photograph of an object contains no information on the distance, this is not strictly true. Atmospheric extinction and

scattering, combined, serve to reduce contrast as distance increases, an effect perhaps best appreciated by artists. The shadowed bottom of the UFO in Plate 23 has a particularly pale look, suggestive of scattering between observer and object, and if such scattering is detectable, it may be possible to make some estimate of the distance involved.

Table 1
Summary of Possible Interpretations

<u>Interpretations</u>	<u>Rejected</u>	<u>Comments</u>
Optical fabrications		
Double exposure	X	UFO darker than sky background
Retouch; drawn image	X	Negatives unretouched
Multiple copies, recopying	(X)	Overly sophisticated
Physical fabrications		
"Frisbee"-type model in flight	X	No rotation
Model suspended from wire		Under same part of wire in each photo
Extraordinary Flying Object		Photometry suggests large distance

The luminance, or apparent surface brightness at distance r of an object of intrinsic luminance B_0 ($r = 0$) is

$$B = B_{\text{sky}} (1 - e^{-\beta r}) + B_0 e^{-\beta r}, \quad (4)$$

where β is the scattering coefficient. The first term represents scattered light; the second, extinction.

Since all measures must be based on the witnesses' two photographs, we will determine β for the given day from the photographs themselves. Normalizing all brightnesses (measured from the film and assuming that the images measured fall on the linear portion of the gamma curve) to that of the sky near the horizon, i.e. on a line within a few thousand feet of the ground, where the UFO is constrained to be by the reported cloud height and probably nearness to the camera, we have

$$B = 1 + e^{-\beta r} (B_0 - 1). \quad (5)$$

Notice that if an object is sufficiently far away, its brightness equals the sky brightness (in physical terms, the optical depth $\tau \gg 1$).

Given the brightness of an object at zero distance, B_0 , and the observed brightness B , one may solve for the distance r . The first necessary step is to determine the scattering coefficient β . The original negatives were subjected to densitometric analysis, and Table 2 lists observed values of B . "Hill 2" lies at a distance of about 2.2 km (7). The photometry indicates that $B = .695$ for the distant hill, but the foreground foliage gives $B_0 = .403$. This gives

$$\beta = 0.289 \text{ km}^{-1},$$

or optical depth $\tau = 1$ at $r = 3.5$ km, (6)

which appears consistent with the appearance of the photos.

At this point the theory was checked against objects of known distance. For example, the roof of the distant barn ("B" in Fig. 1) has $B = .506$. If one assumes that its intrinsic brightness equals that of the foreground garage, then $B_0 = .495$, so that $r = 0.023$ km

Table 2

Values of B for Objects Photographed*Based on densitometry of original negatives; aperture 75L - 75L

<u>Object</u>	<u>Plate 23</u>	<u>Plate 24</u>
UFO "Pole"	1.07	
Illuminated right side	1.29	1.23
Illuminated left side	(1.35)	1.05
Shaded bottom	.675	
Garage roof	.489	.501
Shadows under eaves	.396	.426
Metallic tank:		
Illuminated	.86	.91
Shaded bottom	(.48)	(.40)
Foreground underbrush	.417	.389
Barn (roof)	.511	.501
Hill		
1	.63	.59
2	.71	.66
House		
Illuminated wall	(.77)	(.77)
Shadow	(.14)	(.52)
Sky		
Upper right	1.29	1.26
Upper left	1.51	1.62
Horizon	1.00	1.00
Unexposed edge of film	.32	.34

Measures in parentheses have lower weight

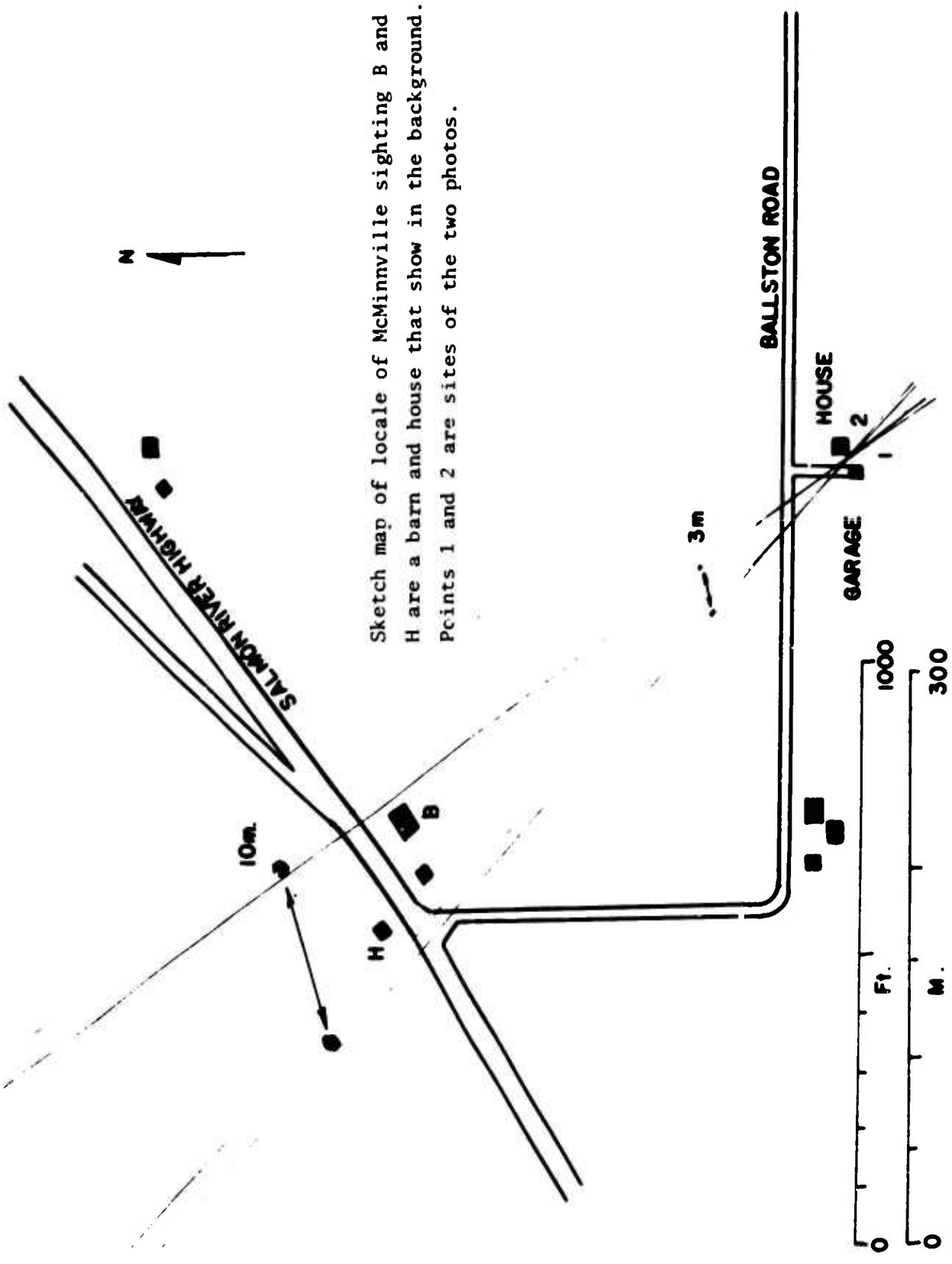
* B values are normalized to horizon sky brightness

the true r is about 0.32 km, and our error is a factor 4. One can resolve the discrepancy by assuming the barn roof was slightly (7%) darker than the garage roof.

Again, one can check the theory on the distant "Hill 1." $B = .610$ and $B_0 = .403$ as measured in the foreground foliage. This gives $r = 1.5$ km. The true r is in the range 1.3 to 1.9 km, depending on the part of the hill observed, and the error is negligible.

A third check, more comparable to the UFO problem, is the distant house ("H" in Fig. 1). Unfortunately the densitometer did not clearly resolve the illuminated white facade from the intervening branches; however, supplementary measures with enlargements indicate that the facade brightness should be only slightly more than 1.00, e.g. $B \sim 1.02$, and $B_0 = 1.04$, which means that the apparent brightness nearly equals sky brightness and hence is very insensitive to distance and gives no good solution. There are shadows visible on the house on the white surface under the eaves. Measures indicate $B = .48$. B_0 for the shadows on this white surface, illuminated by the ambient illumination, should be intrinsically measurably brighter than the shadows under the dark wooden garage eaves and under the tank beside the garage ($B_0 = .41$), but not as much brighter as the white illuminated surface is brighter than the darker wood. (If there were no ambient illumination, all shadows would be intrinsically black; $B_0 = 0$). An estimated value is $B_0 = .43$. This gives a distance or $r = 0.32$ km, only 14% less than the measured distance of 0.37 km. Naïve use of $B_0 = 0.41$, known to be too low, would have given $r = 0.44$ km, 19% too great.

It is concluded that by careful consideration of the parameters involved in the case of recognizable objects in the photographs, distances can be measured within a factor-four error. This justifies the assumption that we are on the linear part of the gamma curve.



Sketch map of locale of McMinville sighting B and H are a barn and house that show in the background. Points 1 and 2 are sites of the two photos.

Fig. 1

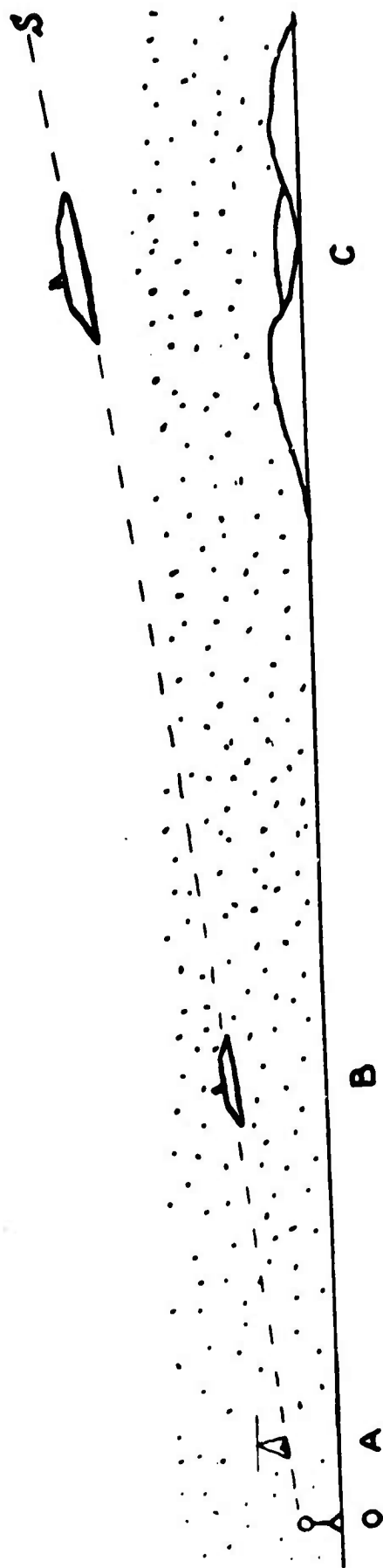
If such a good measure could be made for the UFO, we could distinguish between a distant extraordinary object and a hypothetical small, close model.

At this point we must be explicit about the geometry of the situation. We represent the environment as in Fig. 2. We assume that the UFO is within a homogeneous scattering layer with $\tau = 1$ at 3.5 km. If the UFO were far away and at an altitude greater than the characteristic dimension of the layer (C in Fig. 2), it would be large and extraordinary in any case. If it is relatively close, $r \approx 1$ km, the assumptions are justified. Our objective is to distinguish between cases A and B in Fig. 2. The sky brightness, to which all the brightness values are normalized, must be the sky brightness at the horizon, since this is the value characteristic of long path length through the scattering layer.

For the solution of the UFO distance, we have two independent solutions from two independent observations: the illuminated and shadowed surfaces of the UFO. As was remarked above, it is the shadowed surface in particular that looks pale and hence suggests large distance.

Immediately from Table 2 we see that $B = 1.21$ describes the part of the UFO, while the illuminated part of the nearby dull aluminum-painted tank $B_0 = .885$. Since, as the UFO recedes, B must approach 1.00. We thus know that 1.21 is the minimum intrinsic brightness of the UFO surface, i.e. $B_0 \geq 1.21$. Thus the UFO in any interpretation is known to have a brighter surface than the foreground tank. Thus, the photometry at once confirms the witnesses' report that the UFO was shiny, like a fresh, aluminum-painted surface, but not a specular surface.

The question is, how bright is the surface intrinsically, and what surface properties would be consistent with both the observed illuminated and shadowed side? Fig. 3 shows two families of solutions, one for the illuminated top surface and one for the shaded bottom side. Solutions for the latter have



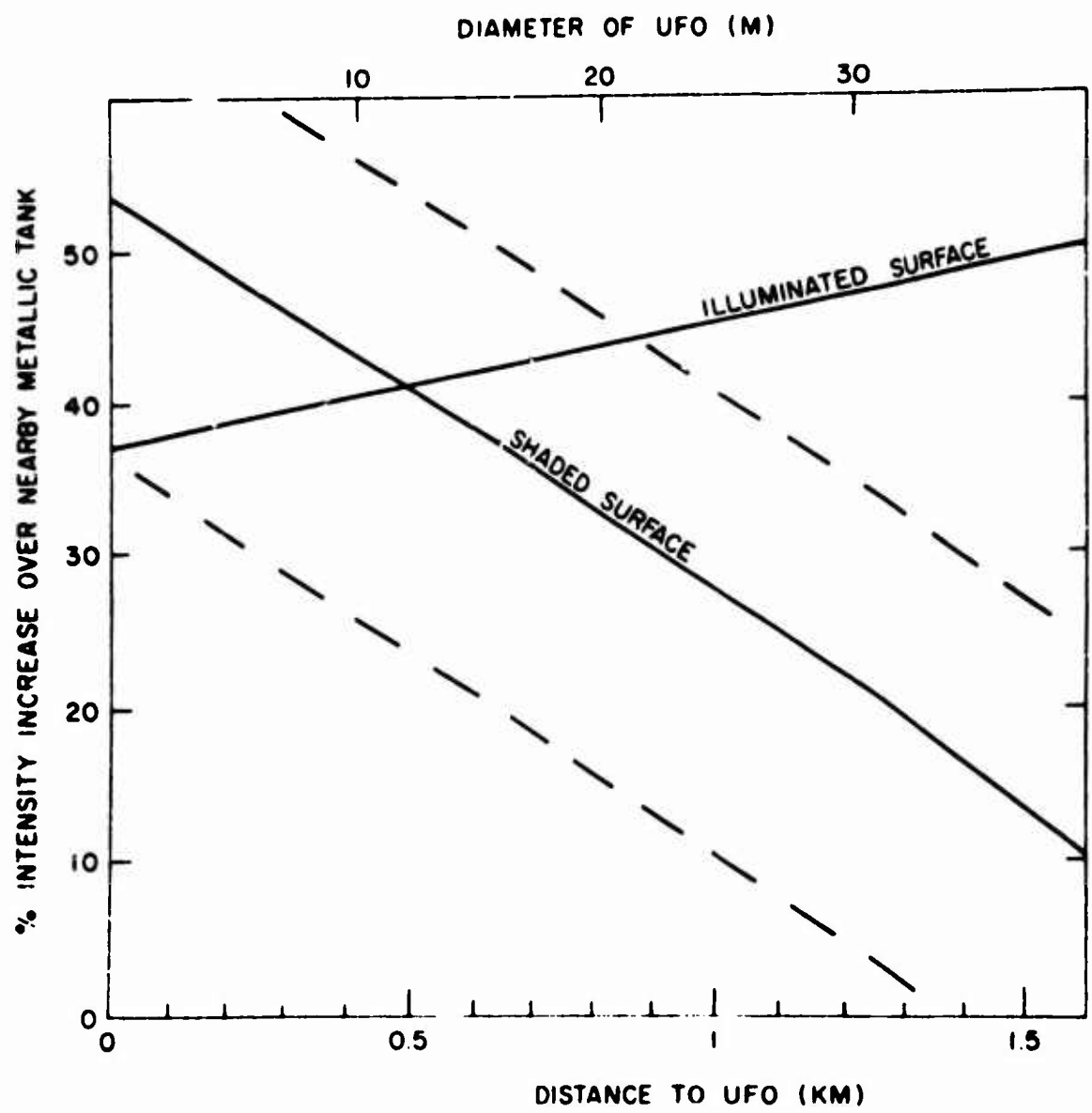


Fig. 3

an uncertainty introduced by the difficulty of measuring the true shadow intensity on the tank. The distance is given as a function of the assumed increase in brightness over the value for the illuminated or shaded side of the aluminum-painted tank, respectively.

Fig. 3 graphically illustrates the problem. For example, if the object is a model suspended from the wire only a few meters away, its surface is some 37% brighter than that of the tank, and the shaded side is probably more than 40% brighter than the shadow on the tank. But this is nearly impossible to maintain in the face of the photometry. Although the distant house's surface is roughly twice as bright as the tank's surface, its shadows can be only a few percent brighter, intrinsically, than those on the tank. This is basically the problem that was suggested by initial inspection of the photos: the shadowed side of the UFO appears to be so bright that it suggests significant scattering between it and the observer.

The upshot is that if the top and bottom surfaces of the UFO are made out of essentially the same material, i.e. with the same albedo, the photometry indicates that the UFO is distant, at roughly $r = 1.3 \pm 0.4$ km (est. P. E.). The witnesses referred to a slightly different hue of the bottom side of the UFO: they said it was more bronze than the silvery top side. We have assumed this change in tint had negligible effect on the photometry, although the implication is that the bottom has slightly lower albedo. If so the UFO would be still more distant.

There is one last possibility for fabrication which has not been ruled out. Suppose the object is a small model with a pale grey top and a bright white bottom (e.g. an aluminum pie pan sealed on the bottom with white paper). Could this account for the apparent lightness of the bottom, shaded side of the UFO?

It is difficult to defend this idea in the face of the photometry. Our analysis of the house indicated that its shaded white surface had an intrinsic brightness of 0.43, which is very

close to the value measured for the shaded part of the aluminum-painted tank. Yet hypothetical fabrication requires a surface on the shaded bottom of the model that is of intrinsic shaded brightness 0.68, considerably brighter than the shaded part of the white house. In other words, the photometry appears to indicate that a *very* white surface on the bottom of a small model would be required to match the appearance of the photographs.

To the extent that the photometric analysis is reliable, (and the measurements appear to be consistent), the photographs indicate an object with a bright shiny surface at considerable distance and on the order of tens of meters in diameter. While it would be exaggerating to say that we have positively ruled out a fabrication, it appears significant that the simplest, most direct interpretation of the photographs confirms precisely what the witnesses said they saw. Yet, the fact that the object appears beneath the same part of the overhead wire in both photos can be used as an argument favoring a suspended model.

Conclusion:

This is one of the few UFO reports in which all factors investigated, geometric, psychological, and physical appear to be consistent with the assertion that an extraordinary flying object, silvery, metallic, disk-shaped, tens of meters in diameter, and evidently artificial, flew within sight of two witnesses. It cannot be said that the evidence positively rules out a fabrication, although there are some physical factors such as the accuracy of certain photometric measures of the original negatives which argue against a fabrication.

Case 47

Great Falls, Montana (lat. $47^{\circ} 30'$ and long. $111^{\circ} 18'$)

15 August 1950 (see below)

Investigator: Hartmann

Terrain: Within the city limits but near the northwestern outskirts of Great Falls, near the Missouri River and the Anaconda Copper Company, and approximately three mi. NW of Malstrom AFB (then, Great Falls AFB).

Weather Conditions: At 5:30 a.m., MST (15 August 1950) the weather was partly overcast with middle altocumulus and altostratus clouds; the surface wind was SW, 16 knots. A cold front lay just north of the Canadian border, extending several hundred miles EW; it moved south and passed over Great Falls in the afternoon. The upper winds were reported W-WNW 250° 280° , 6 knots at 9,000 ft. on the previous evening. Temperatures were of the order of 20°C , dew point 9°C , and there was a slight inversion of 2°C in the 666-636 mb layer. The local half-hourly surface weather observations for 15 August 1950 at the Municipal Airport Weather Station showed that the surface wind increased to readings between 25 and 28 mph between 9:00 a.m. and 12 noon, and that it reached 37 mph at 1:12 p.m., and then stayed between 25 and 30 mph until almost sunset. The surface wind direction was constantly SW from 10:00 a.m. until 4:00 p.m. The sky was clear (visibility, 60 mi.); the temperature was 77° at 11:27 a.m., and reached a maximum of 83° at 4:27 p.m. The barometer fell slightly from 30.05 in. Hg. at 9:30 a.m. to 29.98 in. Hg. at 3 p.m., then steadied, and finally rose again after dark.

Abstract:

Witness I, general manager of a Great Falls baseball team, and Witness II, his secretary, observed two white lights moving slowly across the sky. Witness I made 16mm. motion pictures of the lights. Both individuals have recently reaffirmed the observation, and there is little reason to question its validity. The case remains unexplained. Analysis indicates that the images on the film are difficult to reconcile with aircraft or other known phenomena, although aircraft cannot be entirely ruled out.

Background:

At 11:25 a.m. (5 August or 15 August) Witness I, general manager of the Great Falls Electrics, a baseball team, was making an inspection of the baseball stadium (1,3) with his secretary, Witness II. In virtually all early publications (e.g., 3,5) the date for this is consistently given as 15 August 1950. However, Dr. Roy Craig of the Colorado project notes early correspondence between Witness I and Project Blue Book that raises an uncertainty about the date. A letter dated 9 January 1953, from Great Falls AFB (renamed Malmstrom AFB later) to Project Blue Book, conveying results of a re-interrogation which had been requested by Blue Book, states:

"(Witness I's) version of the incident is as follows:

'On about the 5th or 15th of August, 1950, I, as manager of the Electrics, a local baseball team, walked to the grandstand of the local stadium here in Great Falls, Montana. It was approximately 11:30 a.m. and my purpose was to check the direction of the wind in preparation for the afternoon's game.'"

A subsequent undated Blue Book review of the case, dated late 1956, carries the case dated "5 or 15 August, 1950". Dr. Craig determined by checking Great Falls newspaper records that no home game was scheduled for 15 August, and, in fact, the witness' team played that evening in Twin Falls, Idaho. Mrs. LaVern Kohl, Reference Librarian, Great Falls Public Library, determined, at Dr. Craig's request, that the baseball team played no home games in Great Falls between 9 and 18 August, 1950. The 15 August sighting date is therefore certainly open to question.

Accounts of the incident give essentially the following information:

As was his habit, Witness I looked NNW to the smokestack of the Anaconda Copper Company in order to ascertain the wind direction. (1,2,3) Directly in line with the stack, he saw two bright lights stationary in the sky(1). After a few seconds, he decided they could not be airplanes (1), directed his secretary's attention to the objects, and ran to his car which was 50-60 ft.

away (1,2,3). Her observations were reported in Blue Book files to be identical to Witness I's (1). At his car he took five to eight seconds to load his motion picture camera with Eastman Kodachrome, daylight-type (1). The camera was a Revere turret-type, 16mm. magazine loader, with a F.1.9 telephoto lens with a 3 in. focal length. He set the diaphragm at F.22 and the focus at infinity. Film speed was 16 frames per second (2). From the time of sighting until he began filming, approximately 30 seconds elapsed.(3). At a point near his car (1), he began "panning" his camera slowly from right to left (2). During this time the lights had moved from a stationary position toward the SW and they continued to the SW until they faded away (1,2,3). The first frames were not made until the object was already in the SW (3). (See Plate 27 and Fig 4).

According to the initial Air Force report of 6 October 1950, Witness I described two disk-shaped lights having a bright, clean, "aluminum quality" (2). He thought that the objects were about 50 ft. in diameter, 3 ft. in depth and about 50 yds. apart (2). In a subsequent written statement quoted in the Blue Book report of 9 January 1953, he described them as being "like two new dimes in the sky" (1) and said they may have made whistling or whooshing noise (2).

According to the initial report of 6 October 1950, Witness I described a definite spinning motion (2). While in a stationary position "an occasional vibration seemed to momentarily tilt them, after which they would instantly correct their level plane to its seemingly balanced position. The two objects made an abrupt flight in an arc motion at very high speeds" (1). In late 1952 he estimated the speed as being over 400 mph.(1) The Air Force report of 1950 quotes his first estimate of the speed as about 200 mph (2).

Witness I thought they were between 5,000 and 10,000 ft. in altitude and at an elevation angle of 30° - 35° above the horizon and within 0.75 mi. (2) or 2-2.5 mi. (1) from him (1,2). Measurements of the motion picture film (3) indicate that in the first available frames, the lights were at an elevation of about 15° and slowly descending (3).

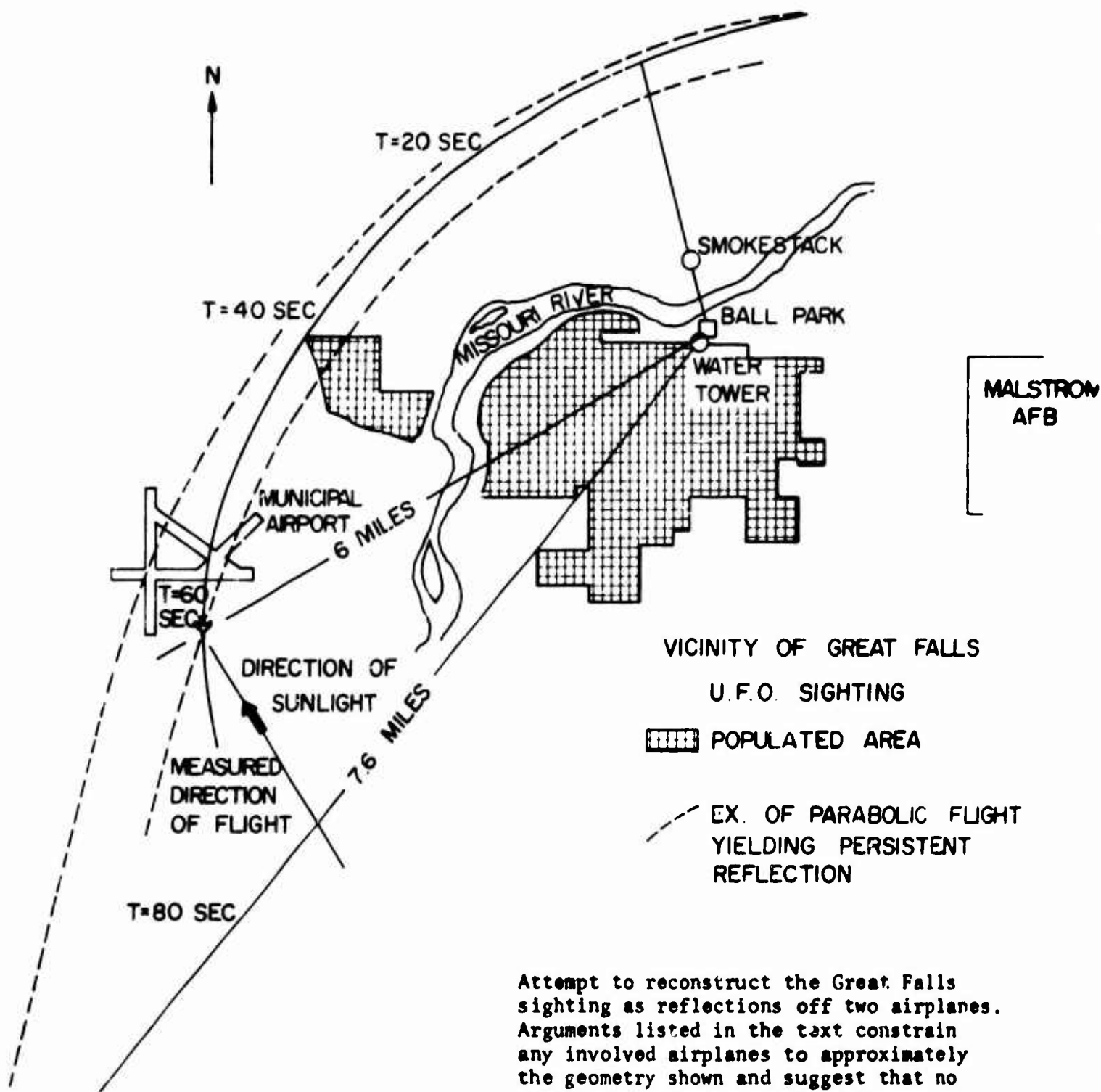


Fig. 4

Attempt to reconstruct the Great Falls sighting as reflections off two airplanes. Arguments listed in the text constrain any involved airplanes to approximately the geometry shown and suggest that no bright reflection would be obtained from the aircraft during the filming. Nonetheless, the arguments against the aircraft hypothesis are inconclusive and the explanation depicted here can be described as tenable. (Adapted from diagrams by Baker, ref. 3).

In 1953 this witness reported that the sighting lasted for 3.5 minutes (1). The 1950 Air Force report says that he reported that the objects were observed a total of about 30 sec. by him and about 7 sec. by Witness II (2). The apparent discrepancy probably refers to the fact that Witness I made about 20 sec. of film. The reference to Witness II seeing the lights for 7 sec. is unexplained. It would appear that about 30 sec. to a minute elapsed from the moment of the sighting (over the smokestack to the north) until he began filming (3). Eight seconds of that time were spent preparing the camera (2). He actually filmed the event for 16 sec. and possibly more (see next paragraph)(3). A Douglas Aircraft Co. report of April 1956 states that the objects hovered at a point above a water tower for "a while" and then flew out of sight with a swooshing sound (1). This may refer to hovering prior to the filming; the film indicates steady motion.

The first 10 to 20 frames on the extant film show the objects at their brightest and largest. Witness I alleges that about 30 frames preceding these show the lights as disk-like objects with rotary motion visible, but that these frames were missing when the film was returned by the Air Force (see below). Throughout the sequence, the two images stand out from the sky background because of their intensity, sharpness, and constant relative orientation, one preceding the other in a smooth progression across the sky and behind the water tower. There is a slow fading and dwindling in size. In the film, the lights do not hover or decelerate near the tower. According to a photogrametric analysis of the film (3), the lights disappear completely from view by the end of the 16 sec. film. A later analysis (3) indicates that although the images are fading by the final frames (fading out by #225), they fade out suddenly enough at the end that they "were not isotropic constant-luminosity reflectors" (e.g. balloons).

At all times ~~te~~ two images present elliptical shapes which the analysis (3) concludes, "is due exclusively to the movement of the camera" (panning right to left), but my own measurements (see below) suggest that, except for a few frames, the ellipticity is present because the reflecting source is not circular. The ellipticity is most clearly seen in the first frames, where the objects appear larger.

Witness I had his film processed and showed it to various interested friends and service clubs (3,4). Witness II never saw this film (4). (No mention of the sighting was recorded in either of the Great Falls newspapers prior to 12 September 1950). Witness I was frequently mentioned in the newspapers in his role as baseball manager, however (4). A newspaperman affiliated with the *Great Falls Leader* was the link in reporting the sighting to officials (4). Witness I submitted the film to Air Force ATIC officials who at that time were investigating UFO's (3). It was analyzed there, and also by the U. S. Navy (3). The initial Air Force report is dated 5 October. Ruppelt (5) reports that:

"(he) had sent his movies to the Air Force back in 1950, but in 1950 there was no interest in the UFO so, after a quick viewing, Project Grudge had written them off as the 'reflections of two F-94 jet fighters that were in the area.'

"In 1952, at the request of the Pentagon, I reopened the investigation...."

After the original, apparently cursory study of the film in 1950, the Air Materiel Command Headquarters in a written statement to Witness I concluded with the following example of military obfuscation: "...our photo analysts were unable to find on it anything *identifiable* of an unusual nature. *Our report of analysis must therefore be negative.*"

According to Ruppelt (5) the 1952 ATIC investigation "quickly confirmed that the objects were not birds, balloons, or meteors." The conclusions were that, assuming the objects to be at a distance too great to be resolved, they moved too fast and were too steady to be birds, but moved too slowly to be meteors. Airplanes were the only tenable alternative (see below). The objects were described by Ruppelt as of "unknown" origin. Mr. Al Chop, employed by ATIC at that time and contacted in 1955 by Baker (3), "recalls that the analysis was considered inconclusive," confirming Ruppelt's account.

When the film was returned from the Air Force, according to Witness I, about the first 30 frames had been removed (3). If so, they were never recovered. According to him, as described by Baker (3), "the first 30-odd frames showed larger images of the UFOs with a notch or band at one point on the periphery of the objects by which they could be seen to rotate in unison while on the rest of the film the objects show up only as unarticulated bright white dots."

The film was purchased by Green-Rouse Productions, Sam Goldwyn Studios, Hollywood, and was made part of a documentary feature-length movie released by United Artists in 1956.

Dr. R. M. L. Baker, Jr., of Douglas Aircraft Co., borrowed a 35mm. reprint of the film from Sam Goldwyn Studios in 1955 for the photogram-metric analysis reported in reference (3).

While studying the problem of reassessing old, "classic" cases, Dr. Roy Craig of the Colorado Project interviewed several of the principals in the case in 1967. Dr. Craig reported (4): (1) that Witness I had a file of correspondence with the Air Force but could not locate a letter in which, he asserted, the Air Force admitted deleting some of the film; he could not remember any information (such as his own discussion in the United Artists' film) about the two airplanes in the vicinity; (2) that Witness I distinctly remembered seeing a single light, rushing outside with Witness I to photograph it, and noting that its appearance was quite different from an airplane; she remembered seeing only one object; (3) that some individuals who reportedly saw the film before it was lent to the Air Force agreed that not all was returned, but several other of these individuals disclaimed having seen the film at all.

Witnesses

1. According to the 1950 report of the Air Force interrogator, Witness I went to Montana State University in 1935 and graduated in 1938 with a BA in journalism. Since 1941 he has resided in Great Falls. During the war he served in the Army Air Forces from June 1943 to October 1945, attaining the rank of Corporal and was editor of a newspaper at Great Falls AFB. He has been married since 1940. At the time of this UFO sighting, he was general manager of the Great Falls baseball club, and was a radio sports commentator. He is regarded as a reliable, trustworthy, and honest individual and is highly respected in the community.

2. Witness II, 19 years of age, was employed as Witness I's secretary at the time of the sighting. She impressed the Air Force interrogator as being a "fairly reliable individual and of good sound judgment."

Analysis

In view of the detailed published analysis by Dr. Baker (3) I will limit this discussion to a summary of his results and some new results of our study.

A test not carried out by Baker has a bearing on his conclusions and thus will be described first. If the clear ellipticity of the images on the film were the result of resolution of disks oriented parallel with the ground, then the apparent inclination i , measured by the minor and major axes, b and a , would be equal to the altitude angle α . That is,

$$i = \arcsin \frac{b}{a} = \alpha$$

The b and a values were measured on a number of the frames, the first frames (the larger images) giving the best measurements. Table 3 shows the results.

In spite of the rather large uncertainties in the i measurements, especially in the later frames, the meaning of the table is clear; the flattening of the recorded image is not nearly enough to be explained by the foreshortening of a horizontally-oriented ellipse. As does Baker, I infer that the object probably is not really resolved; rather, it is a bright source with an angular size somewhat less than the maximum measured in the first frames (0.00151 radians). Since the measured apparent i stays constant while the angular size drops to 0.6 this value by the last measured frames, the true image size must be only slightly less than the apparent size and some of the rounding may be due to halation. Baker concludes that the ellipticity is due to camera panning motion; however, the relative consistency of the " i " values, plus the clear case of camera motion in frame 2, greatly exceeding the flattening in the other frames, indicates to me that there ~~was~~ a true and constant ellipticity or flattening. The true or intrinsic value must be "flatter" than the 59° indicated by Table 3, and could, of course, even be 14° (i.e., consistent with a horizontal disk).

With the conclusion in mind that the angular diameter was less than 0.00151 radians, consider the possible explanations of the film:

If the 15 August date were correct, the objects were not balloons or airborne debris because they are moving into the wind. They are disappearing to the SW, and Baker's analysis indicates a well determined

Table 3

INCLINATION VERSUS ALTITUDE

Frame No. (See Ref. 5)	Inclination		Altitude
	i ₁ (1st UFO)	i ₂ (2nd UFO)	
1	64°	58°	15°
2	image blur due to camera motion		
3	57	59	
16	63	55	14°
32	57	58	
48	48	56	
64	55	62	
80	68	61	
96	58	63	
112	51	75	
128	50	52	13°

azimuth heading of 171° , while the wind was out of the southwest (3).

The objects, as reported, were not birds because of the disk shape and general strangeness to both witnesses; the objects filmed are very unlikely to have been birds because of the linearity of the path and uniformity of the images over 16 seconds, with absence of any variation in photometry or shape that could be attributed to flapping (usually 5-15 strokes/sec.), changes in orientation, or changes in direction.

The objects were not meteors, since their angular rate of travel was so slow, and they were filmed for at least 16 sec., yet they left no trail, made no audible or visible explosions or fragmentation, and were not reported elsewhere across Montana and other northwestern states. The great bolide of 25 April 1966, for example, though it was visible for about 30 sec., underwent marked brightness variations and at least two explosions, left a marked trail indicated on all photos, and was seen by thousands of persons.

Past investigations have left airplanes as the principal working hypothesis. The data at hand indicate that while it strains credibility to suppose that these were airplanes, the possibility nonetheless cannot be entirely ruled out.

There are several independent arguments against airplane reflections. (1) Short-term variations in image size (correlated with brightness), time scale ca. 1 sec., are typically not more than $\pm 5\%$. A priori considerations of aircraft stability and empirical observations by Baker indicate that it is very unlikely that two aircraft could maintain such constant reflections over not only the 16 sec. and the 20° azimuth arc photographed but also the minimum of 50 sec. visually observed. I have confirmed this by studying aircraft visually in the vicinity of Tucson airports; in at least a dozen cases none has been seen to maintain a constant or unidentifiable reflection as long as 16 sec.

(2) Assuming that 15 August was the correct date, Air Force investigators found that there were two F-94 jets in the vicinity and that they landed only minutes after the sighting, which could well have put them in circling path around Malstrom AFB, only three miles ESE of the baseball park. However, Witness I reported seeing two planes coming in for a landing behind him immediately following the filming (3), thereby accounting for those aircraft.

References:

1. Supplemental report of 9 January 1953, which was in response to an order from Project Blue Book for more information. This report contains an approximately one-page typewritten statement by the chief witness.
2. Investigating Officer's report of 6 October 1950, containing summary of information per provisions of Air Intelligence Requirements Memo number four.
3. Baker Jr., Robert M. L. "Photogrammetric Analysis of the 'Montana' Film Tracking Two UFOs," *Douglas Aircraft, Inc.*, March 1956. (Also published in *J. Astronaut, Sci.*, 15, No. 1, 1968. Includes:
 - 3a: 1950--Interrogation of pilots of reported F-94's by Project Bluebook, probably identical to 2.
 - 3b: 1950--Two sources of weather data: "weather maps," and half hourly surface observation by Weather Bureau at Great Falls Municipal Airport.
 - 3c: 1955--Telephone conversation; R. M. L. Baker to witness I, March.
 - 3d: 1955--Correspondence; R. M. L. Baker to Col. D. M. Hamilton, Commanding Officer, Malstrom AFB, November.
4. Craig, Roy, Private communications--see also Dr. Craig's discussion of this incident in Section III, Chapter 1.
5. Ruppelt, Edward J. *The Report on Unidentified Flying Objects*, New York: Doubleday; Ace, 1956.

Case 48

Barra Da Tijuca, Brazil (Coast of Brazil near Punta da Marisco; near Rio de Janeiro)

7 May 1952

Investigator: Hartmann

Abstract:

This case has been presented as one of the strongest and demonstrably "genuine" flying saucer sightings. It contains an obvious and simple internal inconsistency, which is pointed out by D. H. Menzel and L. G. Boyd.

Background:

This sighting is described in considerable detail in "A.P.R.O. Special Report No. 1" (Fontes, 1961; ref. 1). According to this description, the two witnesses, one a press photographer and the other a reporter of *O Cruzeiro* magazine, were on a "routine job for their magazine." Dr. Fontes, a Brazilian representative of A.P.R.O., quotes a television discussion of the case by Fenando Cleto, described as a "high ranking employee of the Bank of Brazil" and a leading Brazilian UFO private investigator (ref. 1):

At 4:30 PM, [witness II] suddenly spotted an object approaching in the air at high speed. He thought at first it was an airplane he was facing [see photo no. 1]. . . . There was still something strange, he realized. That "plane" was flying *sideways*."

He shouted, "What the devil is that?" [Witness I] had his Rolleiflex at hand and [witness II] yelled, "Shoot"

[Witness I] grabbed his loaded camera and got five pictures in about 60 seconds, thus obtaining

the most sensational photographic sequence of a "flying disc." [Two of these photos are reproduced in Plates 28 and 29, kindly supplied by APRO].

Investigation:

Dr. Fontes' report (1) continues with Mr. Cleto's account of Brazilian Air Force analysis of the photos. Mr. Cleto stated that he had been "authorized" by Brazilian Air Force officials to show some of the Air Force documents on the case. Mr. Cleto stated that certain diagrams provided by the Air Force "demonstrated . . . the absolute impossibility of a hoax" by virtue of distances and altitudes depicted. These dimensions exceeded the limits for a small model thrown by hand. Dr. Fontes also states that the graphic analyses and photographs constitute "absolute photographic evidence that the unconventional aerial objects called UFOs or 'flying saucers' are real."

Diagrams, apparently hand-lettered, are presented in reference 1 as based on "results obtained by the Air Force's top photography experts who did the analysis of the photos, including also the data, calculations and estimations obtained in the methodical and exhaustive technical investigations made at the spot where the pictures had been taken." Among their tests, the Air Force analysts made photographs of a hand-thrown wooden model (later confusing the case because of resulting local rumors that men had been seen photographing obvious models). However, no satisfactory justification is given for the distances from observer to disk, indicated on the diagrams as being on the scale of several kilometers.

In general, the Colorado project has avoided cases outside North America because of the difficulty of obtaining first hand evidence. It is not instructive to go into further detail about the history of the Barra da Tijuca case, because the information is third-hand and channeled through individuals we have not interviewed. (Experience has shown that this is usually unsatisfactory).

Nonetheless, this case contains elements that must be taken into account in any general discussion of the UFO problem.

In spite of this case's presentation as one of the most convincing of all, with "*official documents . . . perspective studies and mathematical calculations . . . cold, scientific facts*" (Fontes emphasis), the case contains an obvious internal inconsistency that has still not been adequately explained. Menzel and Boyd (2) pointed out that on one of the photos, the disk is clearly illuminated from the left, while the hillside below appears to be illuminated from the right. They flatly label the case as a hoax.

Plates 28 and 29 show two representative frames of the series of photos. Plate 29 is the photo in question; the lighting of the disk is easily verified. Plate 30 is an enlargement of the hillside, and the palm tree as well as certain clumps of foliage appear to be illuminated from the right, in accord with Dr. Menzel's observation.

Dr. Fontes acknowledges this criticism, but states that "The solution is very simple. There are two broken leaves in the tree and one of them is in an inclined position while the other has fallen over the tree itself. These leaves are responsible for the 'wrong' shadow on the tree." This however, does not account for the additional clumps of foliage that also suggest the "wrong" lighting.

A map included in the Fontes report shows the Barra da Tijuca region. It appears from this map that the hills range clockwise for NW to SSW of the camera, while the sea stretches from WNW to SW. At 4:30 p.m. in May the sun, seen from this point near latitude 24° S, would be in the NW. The analytic diagrams based on the Air Force results show the sun at elevation $27\frac{1}{2}^{\circ}$ and show the UFO approaching from the direction of the sun, then moving off to the right. This would seem to be in accord with the photos: Plate 28 appears to be backlighted and there would be hills to the right of the sun. However, the map is not explicit enough to determine which hills are shown, and the lighting of the hills suggests they may be the ridge SSW of the camera (far left of the sun).

There is not enough information available to suggest whether the Air Force, in attempting to duplicate the photos with a model at the site, discovered or considered this problem.

Conclusion:

The objection raised by Dr. Menzel is supported by our independent enlargement of one of the frames (kindly provided by APRO).

This case is presented as an example of photographs which have been described as incontrovertible evidence of flying saucers, yet which contain a simple and obvious internal inconsistency.

Sources of Information:

1. Fontes, O. T. *APRO Special Report No. 1 - The Barra da Tijuca Disc*, (October, 1961).
2. Menzel, D. H. and L. G. Boyd. *The World of Flying Saucers*, Garden City, N. Y.: Doubleday, 1963.

Case 49

Tremonton, Utah

2 July 1952 (Wednesday)

Investigator: Hartmann

Abstract:

Witness I accompanied by his wife (Witness II) and their two children saw and made motion pictures of a "rough formation" of apparent point sources "milling around the sky." The visual observations and film are not satisfactorily explained in terms of aircraft, radar chaff, or insects, or balloons though the films alone are consistent with birds. Observations of birds near Tremonton indicate that the objects are birds, and the case cannot be said to establish the existence of extraordinary aircraft.

Background:

Time: About 11:10 MST ("MST" appears in early AF documents, ref 4).

Location: Seven miles north of Tremonton, northern Utah (41°50'N;
112°10'W)

Camera Data: 16mm Bell and Howell Automaster; magazine load; 3 in. f.l. telephoto lens on turret mount; f/8 and f/16; Kodachrome Daylight film; hand held; 16 f.p.s.

Direction of sighting: First seen in east, moved out of sight to west.

Weather conditions: Cloudless deep blue sky. Sun at altitude 64.5, azimuth 131° (Naval Observatory - ref 4).

Weather data from Corinne, Utah, about 18 miles south of the site, were obtained by Baker (1): Max. temp: 84°. Min. temp: 62°. No precipitation. A high pressure cell from the Pacific Northwest was spreading over northern Utah during the day. "The pressure at Tremonton would have a rising trend, the visibility good, and the winds relatively light."

Witness 1, with his wife and two children (ages 12, 14) were en route from Washington D.C. to Portland, Ore., driving north on State Highway 30 seven miles north of Tremonton (1,4a; refs. 2 and 3 incorrectly state the witness was in transit to Oakland, Calif.) The witness's wife called his attention to a group of "bright shining objects in the air off towards the eastward horizon" (1).

Sighting, General Information:

Approximately five weeks after the events, Witness 1 sent the following account to Project Blue Book (11 August; NT4-28/8310/177283; ref. 4a):

Driving from Washington, D.C. to Portland, Ore., on the morning of 2 July my wife noticed a group of objects in the sky that she could not identify. She asked me to stop the car and look. There was a group of about ten or twelve objects - that bore no relation to anything I had seen before - milling about in a rough formation and proceeding in a westerly direction. I opened the luggage compartment of the car and got my camera out of a suitcase. Loading it hurriedly, I exposed approximately thirty feet of film. There was no reference point in the sky and it was impossible for me to make any estimate of speed, size, altitude or distance. Toward the end one of the objects reversed course and proceeded away from the main group. I held the camera still and allowed this single one to cross the field of view, picking it up again and repeating for three or four such passes. By this time all of the objects had disappeared. I expended the balance of the film late that afternoon on a mountain somewhere in Idaho (See Plate 31).

This letter serves as the principal descriptive document in the Air Force file (4). According to a chronology by Col. W.A. Adams, Chief, Topical Division, Deputy Director for Estimates, Directorate of Intelligence, in a letter dated 8 Sept., 1952 (4), the next contact with Witness I was an intelligence officer's interview on 10 Sept., 1952.

In this second deposition, as recorded by the Air Force Intelligence officer, the witness establishes the following facts: "No sound heard during observation. No exhaust trails or contrails observed. No aircraft, birds, balloons, or other identifiable objects seen in air immediately before, during, or immediately after observation. Single object which detached itself from group did head in direction opposite original course and disappeared from view while still travelling in this direction.

The witness used a "camera [without tripod] pointed at estimated 70° elevation and [panned] arc from approximately due east to due west, then from due west to approximately 60° from north in photographing detached object...

"Sun was approximately overhead..Objects were at approximately 70° above terrain on a course several miles from the observer... Bright sunlight, clear, approximately 80°, slight breeze from east northeast approximately 3 to 5 m.p.h.

[In the witness's] opinion:...Light from objects caused by reflection. Objects appeared approximately as long as they were wide and thin [sic]. [All of them] appeared to have same type of motion except for one object which reversed its course. Disappeared from view by moving out of range of eyesight...Observer facing north [during bulk of observation]."

The key witness had been in the Navy 19 years with service as a warrant officer and had over 1,000 hours on aerial photography missions (4b). Baker states the witness had 2,200 hours logged as chief photographer. The witness graduated from naval photographic

school in 1935 (4b). He "does considerable ground photography" and "it is believed [he] could be classified as an expert photographer" (4b). Intrigued by his experience, the witness later accepted an "appointment as special Adviser to NICAP," acting in a private capacity (4, quoted from NICAP's "The UFO Investigator").

Investigation:

In 1955 R.M.L. Baker's analysis of the case, (1) gives substantially the same account, with the additional information: "When he got out, he observed the objects (twelve to fourteen of them) to be directly overhead and milling about. He described them as 'gun metal colored objects shaped like two saucers, one inverted on top of the other.' He estimated that they subtended 'about the same angle as B29's at 10,000 ft.' (about half a degree i.e. about the angular diameter of the moon)."

This data is a substantial addition to that recorded above. I have been unable to find any record of these statements in the Blue Book file supplied to the Colorado project (an inch-thick stack of nearly unsorted documents). The essence of Witness B's early deposition describes entities or "objects," apparently reflecting, bright, circular or spherical, at considerable distance. The indication of both his testimony and the film that he photographed captured (unresolved) objects nearly overhead, including one that retraced its motion above him, giving no suggestion that the objects could ever have been as large as half a degree even at close approach, or that Witness I ever clearly saw metallic construction saucer-shaped profiles. The witness's original letter of 11 August offers the film "for whatever value it may have in connection with your investigation of the so-called 'Flying Saucers' ", a phrasing which does not suggest he was convinced of the existence of extraordinary metallic craft at that time. Baker (private communication, 31 May 1968) indicates that the description in question was given in interviews about 1955. His memory may have become "set"

by this time, or affected by events such as the witness's service as a NICAP advisor in the interim.

The film contains about 1200 frames (1), i.e. about 75 sec. After roughly 20 or 25 sec., the Witness decided he was somewhat over-exposing the film, and changed the stop from f/8 to f/16, trying to increase contrast (4a). The objects were milling around, often in groups of two or three travelling together among the others. The films indicate that the objects fluctuated markedly in brightness.

The witness had the film processed and submitted it to his Navy superiors (1). The letter from the witness to Hill Air Force Base, Ogden, Utah, 11 Aug. 1952, transmits the film to the Air Force (4c). The Air Force ATIC Blue Book team was advised, and the variability of the objects suggested airplanes, but this idea was ruled out because the witnesses heard no engine noise, and a large distance would have indicated impossible speed (10 mi. indicated 1300 mph - ref 1). Balloons were rejected due to the large number of objects, the random milling, and the departure of one object in opposite direction from the others.

A favorite hypothesis was birds, but there was no strong evidence in its favor, and it was believed the objects were too far away (hence too fast).

Ruppelt (2) reports that after several weeks, "the Air Force photo lab at Wright Field gave up. All they had to say was, 'We don't know what they are but they aren't airplanes or balloons, and we don't think they are birds.'" Baker (1) quotes Mr. Al Chop (who was with ATIC) confirming Ruppelt's account: the ATIC group was convinced they were not airplanes, but could not rule out that the camera might have been slightly out of focus and that the objects were soaring birds.

The films were then forwarded at the request of the Navy to a group of Navy photo analysts at Anacostia, who had some ideas about how to study the films. The Navy group concluded that the UFOs were intelligently controlled vehicles and that they weren't airplanes

or birds. They arrived at this conclusion by making a frame-by-frame study of the motion of the lights and the changes in the lights' intensity. The analysts stopped short of identifying the objects as interplanetary space craft (2) although this implication was evidently present.

These conclusions were presented to the Robertson panel, which was meeting at this time (early 1953). Ruppelt reports (2) that there was some criticism of the Navy analysts' use of the densitometer, and that one of the panel members raised the possibility that while the key witness "thought he had held the camera steady...he could have 'panned with the action' unconsciously, which would throw all of the computations way off. I agreed with this, but I couldn't agree that they were sea gulls." The panel members' favored explanation of what was seen was white gulls which are known to inhabit the Great Salt Lake area. Ruppelt (2) concludes that he personally watched sea gulls later in San Francisco, circling in a clear sky. "There was a strong resemblance to the UFO's in the Tremonton movie. But I'm not sure that this is the answer."

R.M.L. Baker, Jr. made an independent analysis in 1955 under the auspices of Douglas Aircraft Co. He ruled out airplanes and balloons for reasons similar to those of the Air Force. In addition he argues against anti-radar chaff (bits of aluminum foil) or bits of airborne debris because of the persistence of non-twinkling "constellations," the small number of objects, and the differential motions. Soaring insects, such as "ballooning spiders" are unsatisfying as an explanation, as the objects were observed a short time from a moving car, indicating a considerable distance, and there were no observed web streamers.

Baker points out that since the tendency of the observer would be to pan *with* the object, not against its motion, the derived velocities are *lower* limits (unless the key witness panned with the group, not the single object). Thus the suggestion of panning could compound the difficulty with the bird hypothesis. Baker concluded that "no

definite conclusion could be obtained" as the evidence remains rather contradictory and no single hypothesis of a natural phenomenon yet suggested seems to completely account for the UFO involved.

Menzel and Boyd (3) dismiss the objects as birds. Their conclusion, however, is phrased in a way inconsistent with the facts: "The pictures are of such poor quality and show so little that even the most enthusiastic home-movie fan today would hesitate to show them to his friends. Only a stimulated imagination could suggest that the moving objects are anything but very badly photographed birds." This gives the totally wrong impression that the objects are difficult to identify merely because of poor photography. The objects may be birds though unresolved because of distances, but the images are small and relatively sharp, and lack of a clear identification cannot be ascribed to poor photography. (The films we have analyzed are those shown to the Robertson panel, which evidently did not consider the solution as being so obvious as is implied by Menzel and Boyd.)

The Tremonton case came at a time when members of several official groups were privately concerned with the serious possibility that "flying saucers" might exist in fact (cf.2). The Navy report (4), released by the U.S. Naval Photographic Interpretation Center (the earliest known copy is stamped "Dec. 5, 1952"), was prepared by a group inclined to accept unknown aircraft. For example, the report contains under "Discussion" the following statements:

In the analysis conducted, no attempt is made to explain the phenomena nor are the comments tempered by knowledge of present day science...Comments are as seen, as analyzed, and as computed; and as such, are partly at variance with the natural phenomena theories.

It is inferred in the Navy report that the objects are intrinsic light sources, not reflected light sources. This "opinion... is based on the time they can be viewed continuously on the film.

approximately 90 sec., and on the angle through which they can be photographed, approximately 60°. It is felt that if these images were reflected light, blinking would occur." This inference ignores the fact that the objects were "blinking," i.e. erratically changing brightness, a fact pointed out in a list of questions which the report was designed to answer.

The velocity was treated in the Navy report by analyzing the final part of the film, assuming the camera was stationary and the objects moving perpendicular to the optical axis. "...the only unknown in the determination of the velocity is the distance from the observer to the object. This was arbitrarily set at five miles." Though it is clearly stated that this is an assumption, this treatment apparently led to misunderstandings, as we will show.

The findings of the Navy report were summarized in a list of comments including the following statements.

1. It appears to be a light source rather than reflected light.
2. No bird known to be sufficiently actinic...
9. Velocity was computed to be 3780 mph for a shift of 1mm per frame if the object is five miles from the observer.

The sentences immediately following the last quote show that the actual measurements show an average displacement not of 1mm per frame, but of "0.1729mm" per frame. It is then stated that "on this basis the mean velocity is 653.5 mph." Again, it is still *assumed* that the distance is 5 miles.

This result, properly interpreted, is quite compatible with that of Baker (1), who gives 670 mph for 5 miles distance. At ten miles, the speed would be some 1,300 mph; however, Ruppelt (2) in 1956 states, "Had the lone UFO been 10 miles away it would have been traveling several thousand miles an hour." This incorrect judgment is attributed by Ruppelt to the Air Force analysts, but may represent an incorrect reading of the Navy report.

In February 1953, the month after the Robertson panel meetings, there was correspondence within Project Blue Book on the wording of a press release on Tremonton. Ruppelt (4) suggested that it be stated that "the images were caused by surfaces having good light reflective qualities, such as sea gulls..." He noted that though many experts "firmly believed the objects to be sea gulls or balloons," the Air Force could not prove that they were. Apparently, no complete release of its Tremonton analysis was made.

As much as the intrinsic ambiguity of the images, it was apparently (1) the existence of a report intimating intelligent control (however inappropriately), (2) ill-advised statements that very high speeds might be involved (3). The allegation that it could be and had been proved that spacecraft were involved, and (4) lack of serious response to his challenge made the Tremonton film a "classic" among flying saucer devotees.

An example of the distortion of the case in the popular press is an account in comic-book form, a copy of which is included in the Blue Book file that (while accurate in most other respects) shows the key witness photographing a series of large, disk-shaped objects of, one would judge, several degrees apparent size. Such subtle distortion makes the gull explanation seem absurd, and abets popular misconceptions.

Analysis:

Angular size, distance, and velocity. The angular size of the objects has been determined by Baker's microscopic measurements: (1) The angular diameters of images range from 0.0016 to 0.0004 radians (5.5 to 1.5 min. of arc). Assuming a "bird-size" reflecting circle of 8 in. diameter, these results would give distances of 415 - 1,670 ft., respectively. Their larger sizes are undoubtedly due to "flaring" and consequent overexposure of the images, substantiated by Chop's report (1) that they were very dense, "burned right down to the celluloid backing," and the Air Force analysts' report (4)

that when the objects dimmed sufficiently, they faded out entirely with no dark dot or silhouette being visible.

Therefore, the minimum distance compatible with the bird hypothesis is estimated to be about 2,000 ft. At this distance, the hypothetical bright reflecting 8 in. breast would subtend about 1.2 min. of arc, and a 2 ft. wingspan, 3.6 min., or about 0.1 the angular diameter of the moon. The human eye's resolving power is 1 to 3 min. of arc (1). As the camera was pointed about 70° elevation during the filming, it is doubtful that the objects ever exceeded these apparent sizes or that a better visual observation was obtained. The dimensions given are compatible with several gulls known in the region, such as the California and Herring gulls (1, 5). Many of these gulls have breasts much more highly reflecting than their wings. Consequently the fact that the wings were not resolved either visually or photographically is not surprising, since they were at the margin of resolvability. This problem would be all the more likely if the "gulls" were smaller or further away.

As noted above, the Navy's and Baker's angular velocity measurements give similar values. Baker's measurements of the single object, where it is reported and assumed that the camera was stationary, gave values of 0.01 to 0.07 radians per sec. Variations were attributed to camera jiggling. Values averaged over two sequences were 0.031 and 0.039 radians/sec. These correspond to linear transverse velocities (at 2,000 ft. distance) of 14-95 mph, with the averaged values being 42 and 53 mph. Since the objects were at a high elevation angle, the transverse velocity probably approximates the total velocity. Taking into account an additional positive or negative uncertainty due to possible residual panning motion, the indicated range of velocities is compatible with the bird hypothesis.

Baker also measured relative angular velocities of the objects in the cluster with respect to each other, finding values ranging from zero to 0.0065 radians per second. At 2,000 ft. distance, this corresponds to 0 to 13 fps or about 0 to 9 mph.

"Flaring" and light variations. As indicated by the Robertson panel (2), the Navy conclusion that no bird could reflect enough light to cause such images was unsubstantiated. While there was no periodic variation reminiscent of wing flapping, the "flaring" of the objects and their intermingling and erratic motions suggest soaring birds. One gains the impression that sometimes the two to four objects in one of the sub-constellations flare almost simultaneously, suggestive of grouped birds wheeling in flight. (This is difficult to establish visually, as the film was scratched and the image jerky. In this regard I performed no quantitative test.

Conclusions:

In favor of the hypothesis that the Tremonton objects were birds, probably gulls, we have the following arguments: (1) White gulls are known to be present in the area. (2) Bird-sized objects at a distance of 2,000 ft. would be on the limits of visual resolution, moving at about 45 to 55 mph east to west, with relative motions up to 9 mph; (3) Such motions are independently supported by the testimony that the objects overtook and were first sighted from a moving car traveling toward the NW. The objects were kept in sight until the car was stopped, and nearly a minute and a half of film exposed. (4) Baker points out that the departure of a single object from the group is typical of a bird seeking a new thermal updraft. (5) Variations in motion and brightness suggest wheeling birds. (6) The bulk of informed opinion among those who studied the film, both in and out of the Air Force, is that birds were the most probable explanation.

Arguments against gulls include the following: (1) The distances and velocities cited are on the margin of acceptability. If the gulls were slightly closer, they should have been clearly identified since their angular size would exceed 3 min. of arc; if they were slightly further away, their velocity would become unacceptably

high. This argument is considerably weakened by noting that somewhat smaller birds could be unresolvable but slow. (2) Arguments have been raised that the weather conditions would not be conducive to thermal updrafts that would allow long, soaring flights of birds. This is not a strong argument, however, since there is insufficient data concerning weather conditions. (3) No clear, periodic flapping is observed on the film. This is not critical, since there are erratic brightness fluctuations, and since the objects were evidently below the limits of resolution. (4) The strongest negative argument was stated later by the witness that the objects were seen to subtend an angle of about 0.5° and were then seen as gun-metal colored and shaped like two saucers held together rim to rim, but the photographs and circumstances indicate that this observation could not have been meaningful.

Although I cannot offer an expert ornithological opinion, it appears to me that the Tremonton objects constitute a flock of white birds. The data are not conclusive, but I have found nothing in the detailed Blue Book file incompatible with this opinion. The objects are thus provisionally identified as birds, pending any demonstration by other investigators that they could not be birds. There is no conclusive or probative evidence that the case involves extraordinary aircraft. On 23 August 1968 after completion of the above report, I had occasion to drive through Utah and made a point of watching for birds. The countryside near Tremonton is grassy farmland with trees, streams, and meadows. It was within 30 mi. of Tremonton that I noticed the greatest concentration of bird activity. A number of large gulls were seen, some with white bodies and dusky-tipped wings (rendering the wings indistinct in flight) and some pure white. About 10 mi. south of Tremonton and again about 20 mi. north of Panguitch (in southern Utah) I saw flocks of white or light birds at once distinctly reminiscent of the key witness's films. The birds milled about, the whole group drifting at about 20 or 30 mph

(I noticed no surface wind) and subtending 10° to 20° . The individual birds (in the second case) were not quite resolvable, yet appeared to have some structure. Sometimes pairs would move together and sometimes individuals or pairs would turn and fade out as others became prominent. As suggested by the key witness they appeared to require a telephoto lens for photography. They were not prominent, but distinctly curious once noted - a group of white objects milling about in the sky. (The only proof that my second group of objects, which I observed from a considerable distance, were indeed birds, was that I saw them take off.) These observations give *strong evidence that the Tremonton films do show birds*, as hypothesized above, and I now regard the objects as so identified.

Sources of Information

Baker, Robert M.L., Jr. *Analysis of Photographic Material*,
Douglas Aircraft Co., 1955.

Menzel, D.H. and Boyd, L.G. *The World of Flying Saucers*,
Garden City, N.Y.: Doubleday, 1963.

Peterson, R.T. *A Field Guide to Western Birds*, Boston: Houghton-
Mifflin.

Project Blue Book files

- a. Correspondence: Key witness to U.S.A.F., 11 August 1952.
- b. Interview between A.F. Intelligence Officer and key witness, 10 September 1952.

Ruppelt, E.J. *The Report on Unidentified Flying Objects*,
Garden City, New York: Doubleday; Ace Books.

Case 50

Fort Belvoir U.S. Army Facility, Va.

September 1957

Investigator: Hartmann

Abstract:

A black ring that became obscured by an opaque white cloud, reportedly witnessed by about 15 persons and photographed by the principal witness, is identified as the by-product of an "atom bomb simulation demonstration" on the army base.

Background:

Time: Approx. 9 a.m.

Position: Looking NNE past building T741, Fort Belvoir, Va.

Terrain: Gently rolling hills with scattered technical buildings, residential areas, and woods.

Weather Conditions: Exact date unknown; hence weather conditions unavailable. Photographs show scattered cloud cover.

Sighting, General Information:

Private X, who worked as a draftsman with Post Engineers (1), has given the following account of the visual and photographic sighting. He was in one of several buildings facing on a parking lot flanked by buildings T741 and T742 (1,3). Someone from the outside called for the men to come out and see the curious object approaching overhead. Pvt. X and several others came out in time to see a dark, ringshaped object approaching in the north. He ran to his car in the parking lot and got his Kodak Brownie camera (1,2,5).

Pvt. X thought the black ring "seemed solid," as opposed to being "like smoke" (2), although he also stated that it was not metallic, shiny, or dull, but very black with no reflection (1).

He estimated that the ring was about 60 ft. in diameter and five to six feet thick (2,5). He felt that it moved systematically faster than the clouds (1), and was "high above the treetops," but below the clouds (2). It did not stop or hover, but moved continuously (1) and horizontally (2). Standing in one spot as well as he can recall (1), Pvt. X took six photographs of the UFO (Plates 32 - 37). Between taking the second and third, the black ring began to be "engulfed in smoke" (2), though Pvt. X does not remember seeing how this happened; he believes he was distracted by winding the film of his camera at that time (1). Sources 1, 2, and 5 are in agreement with regard to the circumstances and description of the UFO (All three references resulted from interviews with Pvt. X.)

The duration of the sighting was estimated at not more than five minutes (1), with perhaps 30 - 60 sec. required for the black ring to become enveloped by smoke.

Roughly 15 men saw the phenomenon, and at least two photographed it (1). Pvt. X did not know any of these men personally, as he had recently been assigned to work in this building. Efforts to locate other witnesses were unsuccessful. After watching the cloud for a while, the men returned inside without waiting to see what became of it. There was a feeling at this time that perhaps the object represented some kind of secret test (1,2,5).

Investigation:

Pvt. X believed that the object was connected with some sort of test or experiment and that it perhaps should not have been photographed. As a result he made no inquiry or report at Fort Belvoir and did not have his photographs developed until a month after the incident when he had returned home (1,2,5). He notes, "I was only a private in the Army...the only thing mentioned was that it was strange and maybe someone was experimenting so we didn't tell anybody that we even took these pictures...I didn't want to get in trouble so when I came home I had the pictures developed then" (2).

Pvt. X had changed his residence five or six times since the photos were made and the original negatives have been misplaced. He still has the camera, a Brownie Holiday, purchased in 1957 (1). He showed the photographs to various friends, whose reaction was typically a mixture of joking and scoffing. Finally, in the spring of 1966, he showed them to a friend who sent the photographs to NICAP with an inquiry. Dr. James McDonald became interested in them in mid-1966 and called them to our attention. In view of the excellent photographic material we gave them a high priority.

With regard to the sighting Pvt. X has been an intelligent and interested advisor. His suggestions for locating other witnesses indicated a sincere attempt to be helpful in shedding light on the affair.

Photographic analysis. A preliminary analysis was carried out on this case on the basis of which it was regarded by us as potentially interesting. The early tests are briefly described as examples of the kind of analysis which allowed us to classify UFO reports as potentially important, verifiable, and/or explicable.

Consistency with observer's report. The photographs all overlap on a large tree whose complex foliage shows no parallax whatsoever, verifying Pvt. X's statement that all photographs were taken from one spot. This was later determined to be in the middle of the parking lot near Pvt. X's building. By overlapping and "blinking" the six exposures, motions of the background clouds could be followed from Plates 34-37. The numbering of the photographs was found to be consistent with the motion of the clouds. A montage showing the object and cloud motions in the six frames is shown in Fig. 5. It is significant that the relative spacings of both UFO and cloud positions are the same; this is an argument against a fabrication created by sketching an object on six photographs, because such a fabrication would require a certain sophistication on the part of the artist.

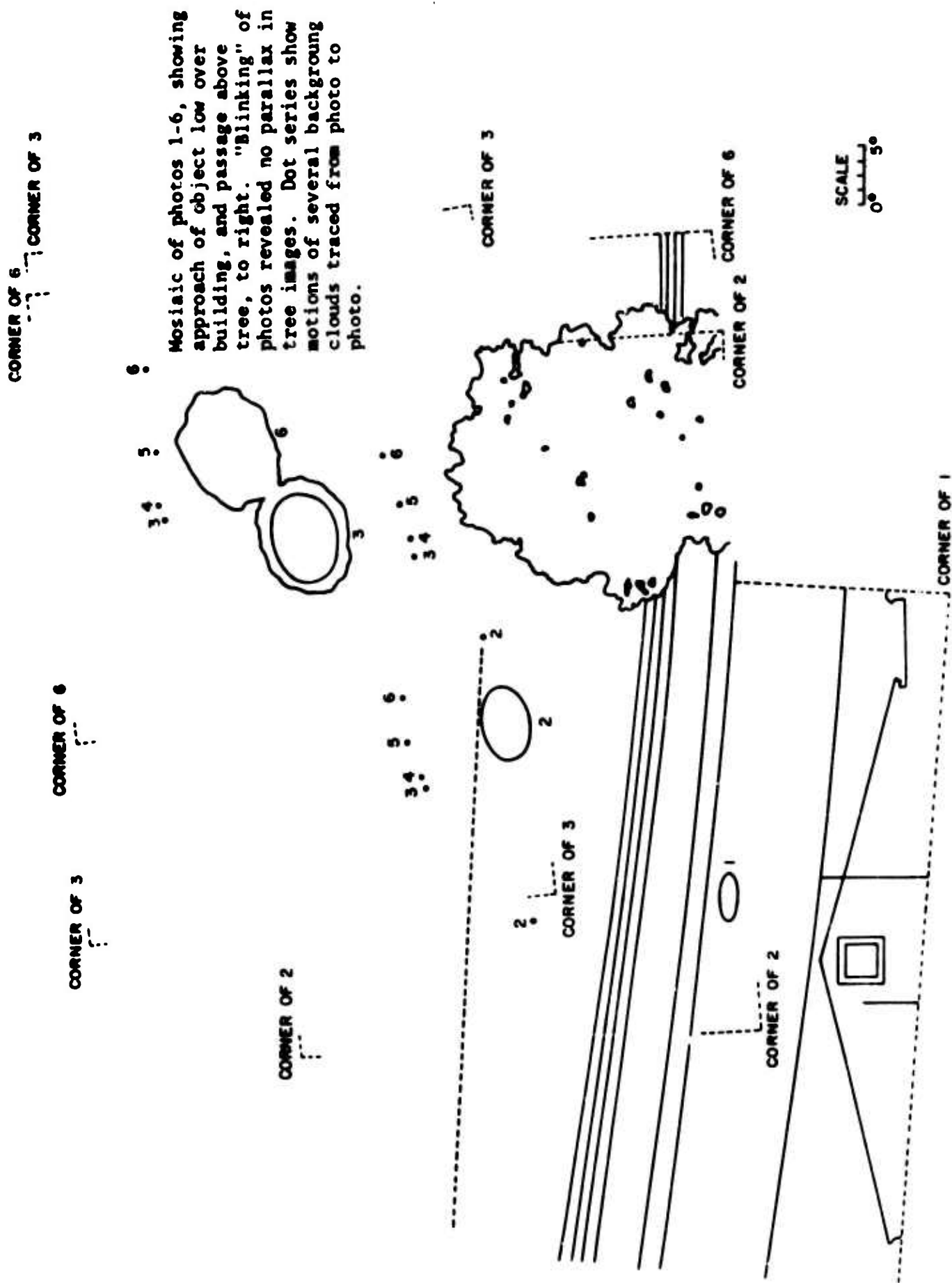


Fig. 5

The relatively long pauses after exposures 1 and 2, and the sudden burst of exposures 3 and 4, followed by the somewhat slower pair 5 and 6, are judged to be psychologically consistent with the sudden observation that the remarkable black ring was being enveloped, even more remarkably, by a white, misty cloud before exposure (3).

Geometric and physical tests; Inclination vs. altitude. If a flat disk or ring moves with its plane parallel to the ground (the mode of flight usually associated with "flying saucers"), the observed inclination angle (observer-center-rim) should equal the observed altitude. One initial hypothesis was that these photos could represent optical fabrication with an image drawn in on photographs made earlier. It was important to test the geometric consistency of the images with tests more sophisticated than might be expected of a hoaxer. Table 4 shows the results of these measures.

Table 4
Inclination vs. Altitude

<u>Photo</u>	<u>Inclination</u>	<u>Altitude</u>	<u>Pitch Angle</u>
1	19.9°	16°	4°
2	42.0	31	11
3	46.8	47	0
4	48.1	48	0
5	49.0	49	0
6	49.1	51	2

Only in Plate 33 does there appear to be a significant departure from level flight. From the apparent attitude of the ring in this photo it is judged to be out-of-level not only in the vertical plane of UFO observer, but in the vertical plane perpendicular to this. Nonetheless, it is concluded that the ring and disk-cloud can be described as oriented essentially horizontally, with some "wobble"-like perturbations.

Distance vs. angular size. If the linear diameter of the UFO is D and the angular diameter δ , and if its vertical height is Z and its altitude α , then (if δ is small),

$$\frac{\sin \delta}{\sin \alpha} = \frac{D}{Z}$$

if the UFO moves along a path roughly parallel to the ground. One has a subjective impression, both from the testimony and from the photos, that this was the motion in this case. Table 5 shows the results of measures of this sort (made with a millimeter scale on prints). It is concluded that within tolerances of 7%, the object did move on a path roughly parallel with the ground, although it may have been slowly rising and expanding.

Table 5

$$\frac{D}{Z} = \frac{\sin \delta}{\sin \alpha}$$

Photo	$\frac{\sin \delta}{\sin \alpha}$
1	.181
2	.170
3	.141
4	.147
5	.146

Illumination properties. Another item of evidence against an optical fabrication is the subtle consistency between the illumination of the cloud and the laws of physics. In Plate 34 when the cloud is first forming, it is tenuous. The optical depth is low, so that we can still see the dark ring inside quite clearly. The sunlight is coming from the upper right. If the optical depth is low, the sunlight must pass through the cloud with only moderate diminution. Hence, no strong shadows can be formed on the "dark" side of the cloud, as is shown by the photograph.

Plates 35 through 37, the cloud develops and becomes opaque. The dark ring becomes invisible, and a cumuloform structure can be seen. In Plate 37, the cloud is quite white and opaque, like a dense cumulus cloud. The optical depth is great; the sunlight must be absorbed and shadows must form. This is also shown by the photograph.

It is unlikely that had the prints been fabricated by using airbrush, the artist would have thought, even intuitively, to establish this consistency. This test, like the others, leads to the conclusion that the data are consistent with a real object becoming enveloped first in a tenuous, then in an opaque, cloud.

The fact that the six photos overlap lends interest to the case, relative to cases with markedly different backgrounds in allegedly continuous photo sequences. The rather subtle discovery of the cloud motions in the sky background confirmed that the photos were definitely taken in the order reported. The fact that the UFO spacings were consistent with the cloud spacings gives no support to the hypothesis of an optical fabrication with a drawn-in-image. The psychological consistency of the spacing of exposures adds credibility.

Finally, and perhaps most significant, the UFO was moving with a vector motion approximately equal to the background cloud vector motion; i.e. the directions and angular velocities were about the same. This at once suggested that the whole apparition was drifting with the wind, a conclusion consistent with the appearance of the smoky cloud.

Estimate of dimensions of UFO. Since the approximate velocity and height of the background clouds and the time intervals between photos are known, one can derive an approximate distance, hence size, for the UFO as a function of the UFO's height by using the observed cloud and UFO angular velocities. Although the exact date is unknown and therefore weather data were unavailable, we need only order-of-magnitude data, since the UFO dimensions are *a priori* quite unknown. A geometric model and estimated parameters

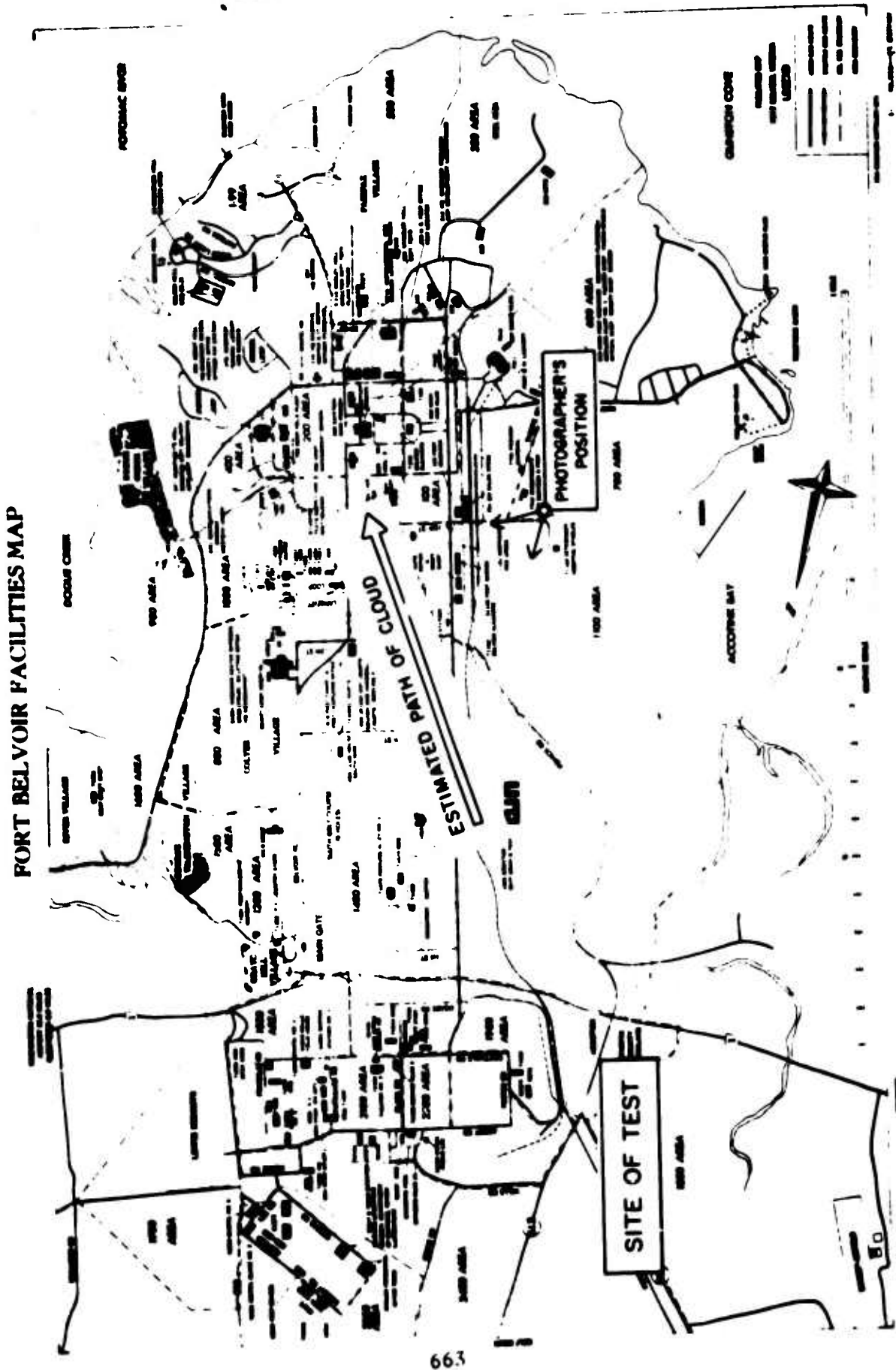
were used in this way to estimate the diameter and distance of the ring. The observation that the UFO drifts smoothly and in approximately the same direction and with the same angular velocity as the clouds makes reasonable an assumption that the UFO is at an appreciable fraction of the height of the clouds, and large and high enough to be out of the region of ground eddies.

With these assumptions, using 20 mph as the wind velocity at cloud height, and various reasonable values for cloud height and time intervals, the assumption that the object was higher than one-tenth the cloud height, allows a rough estimation of the ring diameter as 30 - 600 ft. Once again, the conclusion was that all the data are compatible with a large, unusual, real object.

The case had come originally through Dr. James McDonald from NICAP. Although we made no effort to publicize it, it was described in a magazine article by Ralph Rankow (1967). Rankow presented it as a complete mystery, but his article generated a letter from Jack Strong, graduate student at the University of Wisconsin, who said that he had been present at bomb demonstration tests at Ft. Belvoir, and described clouds from such tests. At this time the suggestion was not taken very seriously, as none of those involved imagined that such a phenomenon would be produced by an explosion.

Sergeant-Major A. I. Wagner, interviewed at Ft. Belvoir, immediately identified the pictures as showing a cloud produced by "atomic bomb simulation demonstrations" which were frequently carried out at Ft. Belvoir for visiting officials and military cadets. This identification was made without mention of such a hypothesis. Before the geometry of the situation was discussed, Sgt-Major Wagner showed a map of the base and the location of the bomb demonstration site. It was clear that the ring and cloud in the photographs were drifting radially away from this site (see Fig. 6).

NOT REPRODUCIBLE



Geometry of Ft. Belvoir sighting superimposed on a map of the base. Arrows from photographer's position show directions of photos 1 and 6.

Fig. 6

Sergeant-Major A. Husted further confirmed this and described the technique of the explosion. Five 55-gal. drums of gasoline, diesel fuel, TNT, and white phosphorus are arranged in a circle and detonated. The blast throws up a fireball enveloped in black smoke. The top of the mushroom cloud is a stable vortex ring, which ultimately drifts away. Depending on the weather and explosion conditions, this ring sometimes never forms at all and at other times forms a perfect, persistent circle. According to Sergeant-Major Husted, the white phosphorus produces a white smoke that eventually envelopes the black vortex produced by the diesel fuel. He estimated that the vortex occasionally held together as long as 40 min.

Strong, who believes he witnessed the same vortex that was photographed in this case, makes the following remarks: "I recall that the ring could be seen to revolve rapidly up to the time that the developing cloud had obscured details. By 'revolve' I mean, of course, motion about the centerline of the vortex [not around the vertical axis]. I don't recall the direction of this revolution, whether upward or downward through the center...This rapid rotation, along with the calmness of the air, probably had a lot to do with the great stability and symmetry of the vortex."

Photographs of one of the tests were obtained through Sergeant-Major Husted. Plates 38, 39, and 40 were made by Sergeant First Class James O'Dell and show the early stage of such a test, up to production of the independent black vortex.

The dimensions of the ring are estimated from the O'Dell photographs to be as follows: diameter $\sim$ 200 ft. for the fireball in Plate 38, and 260-300 feet outside diameter for the ring in Plate 40. From the angular diameters of about 6° in Plate. 32-37, and the estimated line-of-sight distance of 5,000 ft., a diameter of about 500 ft. is derived by the time the ring was passing near the witness. These figures are consistent with the expected expansion of the ring, and with the estimates made from the photographs (Plates 32-37) alone.

There are, on the other hand, some indications of possible fabrication of the photographs. Upon close inspection, Plate 33 reveals a set of radial scratches or striations around the outer and inner borders of the black ring. Each mark is of length comparable to the width of the ring; the pattern is reminiscent of iron filings near a magnet. It is conceivable that these marks represent a retouching of the original vortex ring to make it appear more regular and thus more puzzling. It is also conceivable that these are a natural step in the formation of white cloud. In view of the positive identification of the entire event and consequent irrelevance to UFOs, this question was not pursued further.

Conclusions:

In the light of identifications both by officials at Fort Belvoir and other technically competent observers familiar with the event, this case is considered positively identified as an atomic bomb simulation demonstration of the type commonly carried out at Fort Belvoir during this period.

The fact that this case did not come to light until nine years after it occurred because the witness was afraid of ridicule or possible reprimand for military security breaches testifies to the reality of the "hidden data" problem in UFO studies.

Sources of Information:

1. Hartmann, W. K. (24 May 1967), Telephone interview with Pvt. X.
2. NICAP file on Ft. Belvoir incident, consisting of correspondence and interviews with Pvt. X.
3. Hartmann, W. K. (21 Dec. 1967), Interviews with staff personnel, Ft. Belvoir, Va.
4. Klass, Phillip J. (1967), Miscellaneous correspondence with Hartmann regarding Ft. Belvoir incident.

5. Rankow, Ralph "The Ring-Shaped UFO," *Flying Saucers*,
No. 4, (Fall, 1967).

6. Correspondence between Dr. James McDonald and Jack Strong,
University of Wisconsin.

Case 51

Vandenberg Air Force Base, Calif.

5 December 1963

Investigator: Hartmann

Abstract:

During a daytime launch of a Thor-Agena rocket, several tracking cameras independently recorded a bright, star-like object apparently passing the missile. The object has been conclusively identified as Venus.

Background:

Time: 1.54 p.m., PST

Location: Complex 75-1-1, Vandenberg AFB, Calif.

Camera data: UFO clearly shown in films from site TS10, with a 16mm Mitchell camera using a 12 inc. lens (frame rate: 24 FPS). Two identical cameras with 6 in. lenses did not show the UFO. Certain other films are also alleged to show the UFO but were not examined.

Weather conditions: Deep blue sky with scattered thin clouds. On the film sequence that shows the UFO, the sky is clear, but from the other two sites, at that moment, thin clouds were present, through which the rocket was still clearly recorded.

Sighting, General Information:

The sighting was reported by R. M. L. Baker (1) as an example of an unidentified object with potentially discriminatory tracking data. Baker had received a copy of the tracking film through contacts at Vandenberg (2), and subsequently brought it to our attention.

Investigation:

The tracking camera films were supplied to the project by the U.S. Air Force, and a 16mm copy of the three sequences described above was examined. It was noted that at the moment the UFO is visible, the rocket was moving down in the sky on a southerly course toward the horizon. Clouds drifted upward across the screen as the

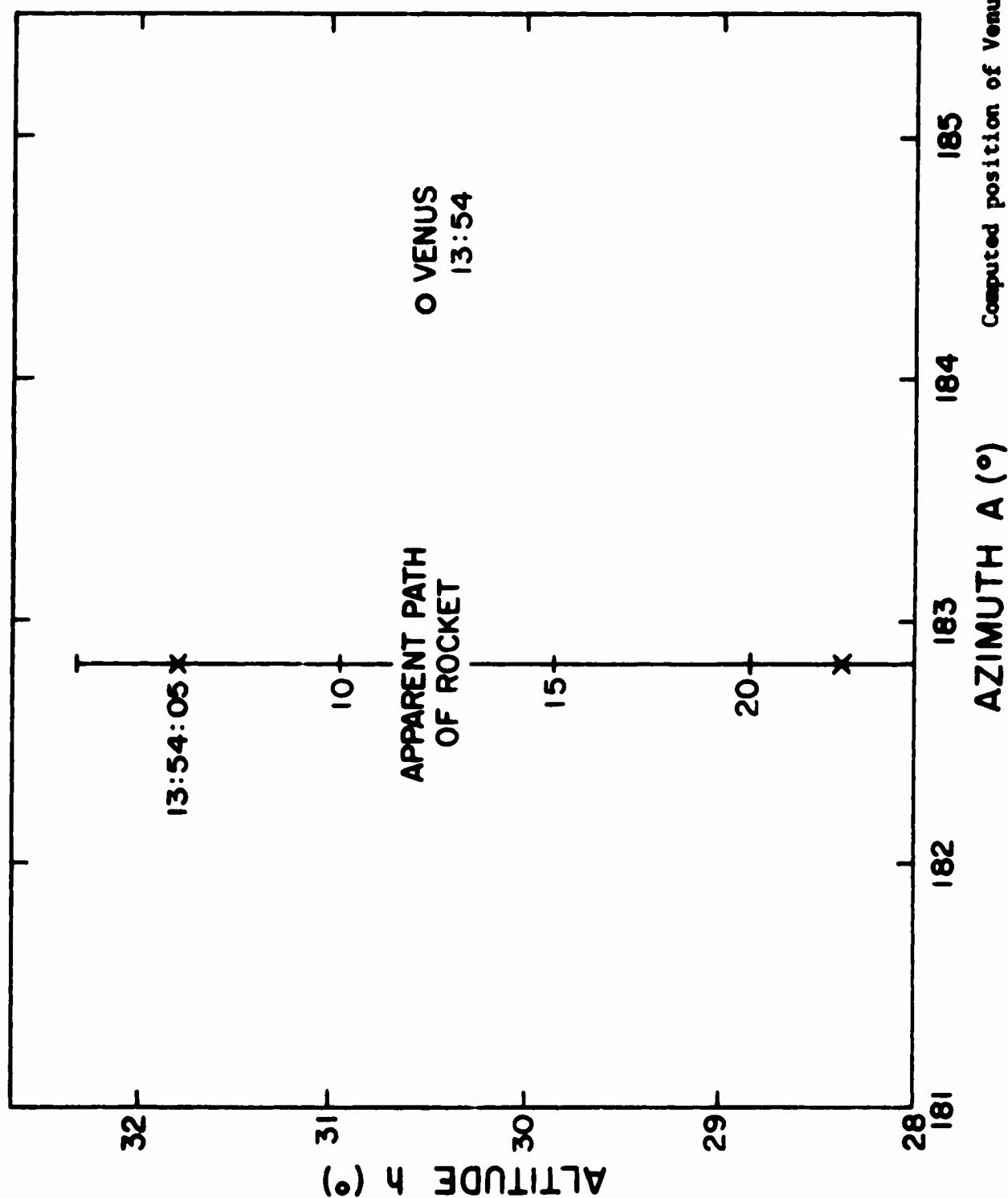
rocket passed them. The UFO had a similar motion, suggesting that it might be fixed in the sky, rather than "moving up past the rocket." This, plus the fact that the smaller lenses under poorer conditions did not record the object, in turn suggested the possibility that the object might be Venus, which reaches sufficient brilliance to be seen by the naked eye in a clear, daylight sky. Plate 41 shows a sample frame.

Classified tracking data made available (3) predicted the altitude and azimuth of the rocket as seen from "radar site 1," near the launch pad. From certain considerations related to the film, we know the absolute time of the passage of the UFO to within a few seconds, and the predicted tracking data gives positions at similar intervals. Fig. 7 shows a plot of the predicted path of the rocket, seen from "site 1" compared to the actual position of Venus. It can be seen that the rocket should have passed within 2° of Venus within a few seconds of the time that the UFO was observed. The predicted data can be taken as very accurate, but the actual position of the camera site TS10, some 5,000 ft. east of the pad, was probably east of "radar site 1," so that parallax would shift the rocket's path to the right by probably not more than 1° .

Conclusion & Summary:

At precisely the time that the UFO was recorded, the missile was less than 2° from Venus, and Venus was thus within the camera frame. The UFO image has precisely the properties expected for Venus. This compelling evidence leads to the conclusion that the "UFO" was Venus.

We have heard many allegations, sometimes detailed and more often apocryphal, of UFO's being "observed," "tracked," or "photographed" during rocket tests at military bases. Many such "sightings" have been reported at White Sands Proving Ground in the last 20 years. In most reports there is insufficient detail to be checked. This case, before the films were located, had all the earmarks of such a report: an "object" was recorded on several different,



Computed position of Venus and path of rocket across the sky. The UFO sighting is known to be restricted to the time interval of about ± 10 sec. around 13:54:09.

Fig. 7

independent cameras a mile or more apart. If assumed to have been near the rocket, the object would have been properly interpreted as very bright. A number of individuals had knowledge of the sighting, and therefore a number of rumors of an UFO passing near a rocket launched at Vandenberg could have been generated.

The analysis of this case leads to the suspicion, in the absence of better data, that most if not all such allegations may be based on similarly inconsequential circumstances.

Sources of Information:

Baker, R. M. L., Jr. *An Introduction to Astrodynamics*, New York: Academic Press, 1967.

Interview with R. M. L. Baker, Jr. (W. K. Hartmann and Roy Craig, 21 September 1967).

Classified Air Force Documents.

Case 52

Santa Ana, Calif.

3 August 1965

Investigator: Hartmann

Abstract:

While he was on duty a Traffic Investigator observed that his two-way radio had been cut off just before a metallic-looking disk allegedly moved across the road in front of him. He took three photographs of the object before it moved off into the haze and emitted a ring of smoke. He drove down the road about a mile and photographed the smoke cloud. The evidence regarding the object's reality is inconclusive and internally inconsistent.

Background:

Date: 3 August 1965

Time: Approx. 12:37 p.m. PDT (Early reports give the time as 11:30 a.m. PDT. This was later corrected to 12:30 on the basis of studies of telephone pole shadows (6,8). The observer had no watch (8).

Position: Myford Road, Santa Ana, Calif., approx 0.3 mi. SW of the Santa Ana Freeway, ENE of the Santa Ana U.S.M.C. Air Facility and within the flight pattern of the El Toro Marine Corps Air Station.

Terrain: Flat farmland.

Weather Conditions: Ground observer: No wind, "some haze overhead" (1). G.W. Kalstrom, Meteorologist-in-Charge at the Los Angeles Airport, wrote "We do not have an observational report from Santa Ana at 11:30 AM...but from surrounding reports it would appear that the sky was hazy and the horizontal visibility was between 2½ and 5 miles... reduced by haze and smoke. Earlier in the morning there had been low overcast conditions but these clouds had apparently dissipated leaving considerable haze." (2). The photographs suggest considerable haze or smog. The investigator visited the site on 9 September 1967 and found heavy smog, apparently comparable to that shown in

the witness' photographs, visibility was estimated at one to two miles.

The following analysis of weather conditions is an independent study by Loren W. Crow, consulting meteorologist, Denver:

SOURCES OF DATA

Hourly surface observations from--

El Toro Marine Base, Long Beach, Los Angeles, Burbank, Ontario, March AFB, and Norton AFB, California.

Early morning radiosonde and upper wind observations from--San Diego, August 3, 1965, and Santa Monica, August 3, 1965.

GENERAL WEATHER SITUATION

The general weather situation during the forenoon hours of August 3, 1965 in southern California was made up of a stable air mass with onshore flow of air during the daylight hours and a low level inversion near the coast.

The air flow during the early morning hours was a light drainage wind from the land toward the coast. The inland stations of March Air Force Base and Norton Air Force Base near Riverside and San Bernardino respectively remained clear in the drier air over these stations. Ontario remained clear but visibilities were less than three miles between 6 a.m. and 11:40 a.m. with a mixture of haze and smoke.

Ground fog and fog formed in the moist air at Burbank, Los Angeles International Airport and El Toro Marine Corps Air Station during the hours of darkness just prior to sunrise. Overcast cloud cover with bases measuring from 300 to 600 feet were most common for near the coastal stations until

after 8 a.m. when surface heating began to dissipate the cloud cover.

Between midnight and 4 a.m. the air flow at El Toro was from the east with velocities ranging from 2 to 4 mph. This was followed by a calm period lasting from 4:30 through 11 a.m. with only a brief period at 9 a.m. registering a velocity at 2 mph from the northwest.

At Long Beach the air flow was primarily from the east southeast between midnight and 6 a.m. It gradually shifted through southerly directions and developed an onshore flow beginning at 10 a.m.

The direction of air flow at Los Angeles International Airport was quite variable between midnight and 6:30 a.m. Velocities were generally less than 5 mph. with ten different directions being reported in this period. From 7 a.m. through midnight of the third, an onshore flow prevailed with the direction of flow being generally from 140° through 280° .

The dissipation of the fog and low cloud was directly related to the increase in surface temperature. Cloudiness would have disappeared earliest several miles inland from the coast and the cloudiness at any one point within 20 miles of the coastline would have gone from overcast to broken, then to scattered and finally to clear as heating took place near the earth's surface. Unfortunately, haze and smog increased and held surface visibilities to low values after the cloud cover had been dissipated by the warmer air.

The relationship between rising temperatures and the dissipation of cloud cover is well illustrated in the vertical cross sections shown in

Figure 8 for the four stations nearest the coast. The time period covered by these cross sections is from 5 a.m. through noon. At the approximate time of the UFO sighting (11:30 a.m.), scattered clouds were still being observed at Los Angeles International Airport. Scattered stratus clouds at 1200 feet had been reported at the Long Beach airport at 11 a.m. but were not observed there at noon. The record does not indicate *when* they were last seen but their final disappearance would have been some time between 11 a.m. and noon.

MOST PROBABLE WEATHER NEAR SIGHTING POINT AT 11:30 a.m., August 3, 1967

By 11:30 a.m. on August 3, 1965, all overcast cloud cover would have been limited to over-the-ocean or a very narrow belt of land area nearest the coast where the onshore flow of air could carry it before the heated land surface would cause dissipation. At the forward (landward) edge of the cloud mass the cloud cover condition would change rapidly from overcast to broken to scattered to clear. The small cloud parcels making up the scattered condition could have seemed to appear and disappear rapidly. The disappearance would have been caused by the change of state from liquid water to vapor as mixing with the surrounding warmer air took place.

The forward edge of the scattered cloud condition would have been limited to the coastal side of the Santa Ana Freeway and probably was at a distance of 4 to 8 miles from the sighting point. Surface visibility reported at both Long Beach and El Toro Marine Corps Air Station at 11 a.m. was limited to 5 miles. Thus, any clouds

which may have been sighted could only have had a rather vague outline as seen several miles away through the haze.

Sky conditions inland from the Santa Ana Freeway are believed to have been totally cloud free at this time.

Sightings, General Information:

Setting. On 3 August 1965 the witness, Traffic Inspector Tech 2 for the Orange County Road Department, Calif. (1) was driving SW on Myford Road in his official car, a Ford van bus (8,9), inspecting overhanging growth along the roadside. He proceeded SW on Myford Road, turned around and drove slowly NE, at about 5 mph along the right-hand shoulder of Myford Road, about 0.3 mi. SW of the Santa Ana Freeway (3).

Radio disturbance. At approximately 12:30 p.m. PDT (estimated P.E. $\pm$ 10 min.) the witness began trying to contact Orange Co. Road Maintenance headquarters by radio. According to the witness, about three words were received by base station "8" on East Fruit St. after which "The radio went completely dead (1)." An Air Force investigator later recorded notes that the witness stated "that he had attempted to use his two-way radio once or twice just before he sighted the UFO and could neither transmit nor receive any signal although the radio panel lights indicated that the radio was operational. Detailed questioning indicated that this definitely occurred before the UFO sighting and not during the UFO sighting (5)."

Both the witness' supervisor (4), and the Road Maintenance Superintendent were in vehicles (3,7c, 14h). The superintendent was located about 0.5-1.0 mi. from the witness on the Santa Ana freeway, and states that he heard the witness trying to contact station "8." He heard the transmission begin, but after about three or four words there was a complete, sudden, sharp cutoff. He stated that the sudden cutoff was unlike normal radio interference or disturbance.

The cutoff he heard could not have been produced by simply switching off the truck radio (7c). The Santa Ana FCC Facility reported no UHF or VHF interference on this day (5).

Visual and photographic sighting; description of object. The witness states:

At this time, I became aware of the UFO, however I thought it was a conventional aircraft...The UFO moved from my left to in front of me and momentarily hovered there. At this time I grabbed the camera (semi-automatic-Model 101 polaroid), from the seat of the truck and took the first photograph through the windshield of the truck.

The object then moved slowly off to the northeast. I then snapped the second picture through the right door window (window closed). This is when I saw the rotating beam of light emitting from the center of the UFO on the bottom side. [See below-WKH]

The UFO positioned itself to another angle of view and I snapped the third picture through the same side window as in picture two...

As the UFO traveled, it maintained a relatively level altitude (150 ft.) in relation to the flat terrain, however the UFO acted similar to a gyroscope when losing its stability. The UFO continued moving away slowly gaining altitude, tipped its top toward me slightly. It seemed to gain stability, then it increased its velocity (speed) and altitude more rapidly leaving a deposit of smoke-like vapor.

The smoke-like vapor was blue-black in color and circular in shape as though it had emitted from the outer ring of the UFO. This doughnut shaped vapor ring remained in the area in excess of thirty seconds. The UFO disappeared in a northern

direction toward Saddleback Mountain (this is known on the maps as Santiago Peak and Modjeska) (1).

Plates 42, 43, 44 show the three photographs in the order mentioned above. Although the above reference does not mention it, a fourth photograph (Plate 45), of the smoke cloud, was later produced by the witness. The earliest document mentioning this photograph is a report by the witness and a NICAP investigator (2), and a letter by a local member of NICAP (3), both dated 25 September 1965.

On the basis of more detailed questioning, as reported in the referenced documents, it has been possible to construct the following more detailed account of the alleged visual and photographic sighting.

The camera mentioned is standard equipment for Orange Co. Road Department officials, and has the following characteristics: F. L. 114 mm., variable aperture from f8.0 to about f42, picture format 3½ x 4½ in., shutter speed "unknown but variable," and black-and-white film, speed ASA 3000 (4). The camera is described as fully automatic, utilizing a built-in light meter which automatically adjusts shutter speed and aperture. The only controls are a black-and-white or color select and a shutter release button (4).

Doubts as to whether or not the witness could have observed the UFO, stopped his vehicle and taken three photographs within 15-25 sec. were resolved by testing such a camera. It was determined that an experienced man could easily take three photographs within 12 sec. (5).

In reconstructing the incident two years later an investigator, accompanied by the witness and several others in an identical truck and with an identical camera, concluded that with the seat in the appropriate position, the UFO in the first photograph would have been obliterated by the top of the windshield as seen through the camera's snap-up viewfinder, but not through the camera's lens. The witness then remarked that he had not sighted through the viewfinder but "shot from the hip (8)."

According to the witness, he picked up his camera, shot the first photograph through the front windshield, then slid two feet to the right and slightly to the rear in the front seat (6), and shot the two other photos through the close, right window. From the second to the third photograph, the UFO has moved to the left (approx N) and the witness has shifted correspondingly to the right, apparently to keep the object in sight and centered in the window.

The UFO then assertedly continued on in this direction, diverging to the right from Myford Road by about 25° (i.e. heading 65°) and fading in the distance due to the smog (14).

The witness told a Colorado project investigator that he is not sure if he saw the "smudge" of smoke before he started on down the road (7a). He thinks he restarted the truck before proceeding, but does not recall definitely that he ever switched off the engine (3). He believes that he did not see the UFO again after he became aware of the smoke (7a). Answering the NICAP report form question, "How did the object(s) disappear from view?" the witness replied: "Left the area--northerly direction (1)."

The appearance of the UFO can be judged from the photographs as well as from various accounts and interviews. The apparent angular size, judged from the first photograph, was about 2°.4. The witness estimated a diameter of 30 ft., thickness of eight feet (1,4), and distance of about 1/8 mi. (1,4), which corresponds to angular diameter 3°.5. The object was also described on the NICAP report form as equivalent to a dome at arm's length, i.e. about 2°.6 in angular diameter.

The object was sharply defined, with a reflecting surface of "dull gray" color, with the sun "reflecting from different portions of it as it wobbled (1)." It did not change color (1). It made no sound, although the witness noted that nearby helicopters from the Marine Corps Air Facility could be heard, and that their noise could have drowned out sounds the UFO might have made (1). The AF

investigation report described the color as "silver or metallic except for dark areas which appeared to be either whitish or metallic such as that which could indicate light reflection from a relatively slow-moving propeller or rotating blade. In Plate 43 there is a faint indication of such a line running from the center outward at a relative bearing of about 280°. Officials in the G-2 office at El Toro stated that the light line was clearly visible in the original (Plate 45) (see Fig. 9)." Heflin refers to this feature as a "light beam" in an accompanying sketch (1).

Asked if the bottom of the UFO appeared to have any type of structures, openings, or what might appear to be landing gear housings, the witness replied, "No! The only thing I saw on the bottom of the craft was a white beam of light emitting from the center and sweeping in a circle to the outer edge of the craft. The movement of the beam was similar to the sweep of a radar scope beam (1)."

A number of statements attribute a wobbling, unsteady motion to the UFO: The "object oscillated and/or wobbled (1), it "moved slowly off to the northeast...positioned itself to another angle of view...traveled further northeast and showed the upper portion of the craft (1);" it "momentarily hovered (1);" it "acted similar to a gyroscope when losing its stability...continues moving away slowly gaining altitude, tipped its top toward me slightly...seemed to gain stability, then increased its velocity...and altitude more rapidly (1)." On the NICAP report sheet, the witness suggests an airspeed of "300 mi. per hr. est. (1)," which apparently refers to the rapid departure of the UFO.

The report to NICAP states that the interval during which the disc-shaped UFO was visible was "20 seconds max. (1)." The AF report notes: "Observer estimated total period of observation to be about 15 sec. Based on a test of observer's ability to measure time, it is believed the duration of sighting would be closer to 25 seconds (4)."

The witness drove about a mile NE on Myford Road in the direction of the smoke ring, which would have taken him through an underpass

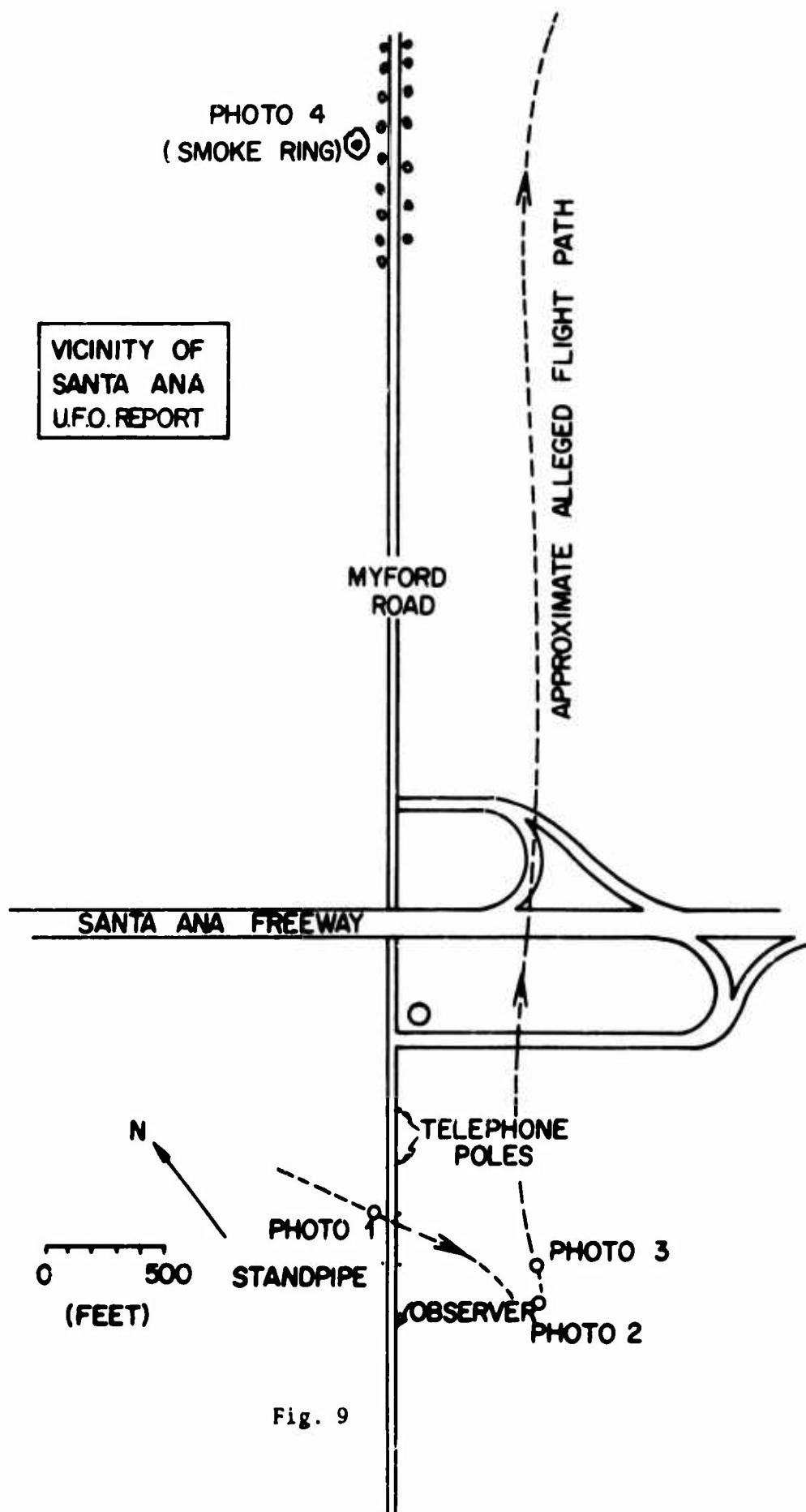


Fig. 9

beneath the Santa Ana Freeway (7a). He had seen the ring before crossing under the freeway (14), and the implication of his statements is that he began driving in that direction in order to get a better look at the distant "smudge." He "drove his car quite some distance closer to where the object had been--got out of his car and pointed the camera right up at the smoke ring (3)." At approximately the location indicated, on the left (NW) side of Myford Road, stands a row of orange trees with overhead telephone wires, consistent with the fourth photograph (Plate 46): apparently the observer was looking to the NW over these trees at this point (7b). The UFO had departed at an azimuth about 25° to the right of Myford Road, (i.e. about 65°); the smoke ring had drifted to the left (NW) across the road (14). (see Fig. 9). The NICAP correspondence contains the following remarks: "You will notice that the smoke ring picture shows a rather cloudy sky, and perhaps the finishing of the photo may have something to do with it (3)."

In an interview at the site 16 January 1968, the witness pointed out not only the above angles, but also that the smoke "smudge," as seen from the first position, had an elevation angle judged to be 8°. This gives an altitude of about 700 ft. The witness stated that the ring was larger in linear dimension than the UFO had been although he did not actually see it expand. When he left, it was still there, in the process of breaking up as the toroid expanded and dissipated (14).

After the sighting. The smoke ring was estimated to have "remained in the area in excess of thirty seconds (1)." Having described the smoke cloud and the disappearance of the UFO, the witness declared in his narrative, "At this time I contacted the Santa Ana Base Radio Station and asked them if they could now copy my transmission. They replied the copy was clear (1)."

The witness made no mention of his experience over the radio (7c). Later that afternoon, at the end of the working day he returned to the office, and showed his supervisor only the first three photographs,

not the "smoke ring (7c)." Another person states that the witness took him aside to show him the fourth photo, which he had left in the truck, but recollects that the witness probably did not show it to the others. He recalls that the witness said that "three were enough for one day" and that his story was already incredible enough (7g).

Radar results. "...A check made by the Marine Corps investigators indicated that no UFO was observed on the Marine Corps Air Facility radar at the time of the reported UFO observation (5)."

The "Facility" referred to by the Air Force investigator is a relatively small base within direct sight of the Myford Road site, but contains only a sporadically used training radar installation. Marine officials interviewed 15 January 1968, were unable to determine whether radar was in service 3 August 1965.

The Air Force investigator may have intended to refer to the surveillance radar, used in Air Traffic control at El Toro M.C. Air Station. Dr. J. E. McDonald and the Colorado investigator examined this radar, which has a four second sweep time and MTI filtering of ground clutter, such that only moving targets are displayed. It was quite clear that a UFO such as reported by the witness, though it would show up on the El Toro screens, would not be remarked by the routine operators. In the first place, it would appear as ground traffic; trucks on the Santa Ana freeway were clearly visible. Second, the entire area traversed during the first three photographs constitutes merely one radar "blip" diameter. Third, even if the UFO took off at moderate speed, it would probably be interpreted (if noticed at all) as a light aircraft. We were informed that no action would be normally taken unless it approached or endangered commercial or military aircraft, in which case only the larger aircraft, not the "light aircraft," would be contacted.

Numbering and sequence continuity of photos. Since Polaroid film packs carry numbering on the back, important confirmation for

the Santa Ana case could be found if any of the witness' associates could testify that the four photos were in a continuous sequence. Generally, none of them could recall noting the numbers. The witness, however, testified in 1968 (14) that the pictures had no numbers on the back. J. E. McDonald therefore corresponded with the Polaroid Corporation and received the reply that "the numbers indicating picture sequence...have never been omitted by deliberate design. If the Type 107 film pack in question does not have these numbers, a rare oversight in film manufacture is responsible (15)." However, the witness demonstrated to NICAP investigators from county road department records that there was film in use during the period of the sighting that lacked sequence numbers (15).

Chronology of Subsequent Events and Interviews:

3 August to 14 September 1965. A friend "convinced the witness that they should try to sell the photographs to *Life* Magazine (5)." With the witness' consent he called *Life* the afternoon of the sighting, (7g) and later sent the photos to the Los Angeles office of *Life* (5,12). According to the Air Force account, the Los Angeles office expressed interest and advised sending the photos to New York (5,9); the photos were sent by the witness's friend and returned two weeks later "without written comment...at about the same time the Los Angeles office telephoned the witness to say that the main office had declined to utilize the material 'because it was too controversial'...(5)." The NICAP account differs slightly: "After a period of one week the pictures were returned with a letter stating that the subject was too controversial to publish, however, they did state that the pictures were the best they had seen so far (1,5)."

During the first few days copies of the photos were requested by various of the witness' friends (5), and the witness let them take the originals to a photo service where copies were made (12).

"Time passed and apparently more copies of the pictures were made and handed out to various friends of friends, until most of Santa Ana was saturated with the UFO pictures (5)."

The witness loaned the original photos to his sister to show to a friend (9,12), who took them to an amateur photographer (6,12), who in turn made copies that were "poor but were not cropped (12)." According to the Air Force account, "one of these pictures was obtained by a druggist who then apparently showed it to a friend, a customer who worked for the Santa Ana Register (5)."

Possible Air Force Involvement in August, 1965. A document (10) entitled "Photo Analysis Report 65-48" was supplied to us by Blue Book. It carries the curious date "14 August 1965." The photographs were not public at this time, nor did the Air Force appear to be actively involved, since their first interview with the witness was on 23 September. One possibility is that this is a typist's error and should have read 14 October 1965, 12 days before the report was quoted in public as the Air Force analysis of the case.

This raises the possibility, then, that without the knowledge of any of the principals, the Air Force was involved in the case less than two weeks after it happened.

Officials of Project Blue Book informed the Colorado project in March 1968 that this question had been raised before, and that the Photo Analysis Report was in error, and that month should have read October.

15-18 September 1965. On 15 September the witness was interviewed by a reporter Frank Hall from the *Santa Ana Register* (9). According to Hall's recollection two years later the witness brought his three prints to the paper on the next day. These prints, the witness said, were not originals, but Polaroid copies of the originals which had been made by the witness' close friend (71). They were good copies in the sense that they filled most of the frame; the second showed

the "rotating light beam (7d)." It is not clear which copies these were. On Friday, the newspaper staff visited the site (7d).

The Air Force chronology states that on or about 18 September the *Santa Ana Register* borrowed the three original prints from the witness, returned them to him, and published an article with one UFO picture on 20 September 1965 (5). This account is compatible with the reporter's recollection, except that he believes the photos were not originals.

Chief photographer of the *Santa Ana Register* gives a similar account of the meetings with reporters (3): "The first photographs I saw...were copies of the originals...To me the photos looked clear, with all parts of the picture being in focus from the windows and [rear-view] mirror to the UFO and then farther on down the road to the cars...As far as I could tell the photos were authentic and had not been altered in any way whatsoever."

During the newspaper interviews, the reporter recalls, the witness suggested a polygraph test, but wanted the *Register* to pay the cost. The newspaper management, however, refused (7d). The Marine report carries this account: "During the interview with the *Register* reporter, the question was asked whether [the witness] would submit to a polygraph examination, concerning the UFO. He stated that he would...only if the *Register* or someone put up \$1,500.00 with no results guaranteed. [The witness] feels that from his experience as an investigator [sic] that the polygraph is not reliable enough and that if the examination turned out negative, it would endanger his job (9)." It is difficult to choose between these two accounts.

18 September 1965. The witness was "prevailed upon to allow the *Santa Ana Register* to make six sets of negatives from the original Polaroid prints. He watched while negatives were being made. These were cropped (12)." The NICAP chronology (12) dates this as 18 September. The reporter however, spoke of these pictures as the Polaroid copies, not the original prints (7d). Thus it is not at all clear

that the *register* negatives were made from the *original* Polaroid prints, although the witness insists that the negatives were made from his originals (14).

On the same day the El Toro Marine Air Station investigator then interviewed the witness at his residence (9,5).

20 September 1965. The *Santa Ana Register* carried an account of the witness' story with the first photo (5,1,12). *The Bulletin*, in Anaheim, also published at least one photograph (12). The Los Angeles NICAP Subcommittee first learned of the case on this day (12).

Two of the three photos were released by the *Register* to UPI (5).

The witness lent his prints to the Marine Corps investigator (12), who confirms that he did so without hesitation and without verifying the investigator's credentials or asking for a receipt (5). According to NICAP (12), these were the original prints. The Marine advised the witness "not to talk about his sighting (12)."

Among numerous telephone calls, the witness says he received two of special interest: one from a man who identified himself as a colonel attached to NORAD, the other from a man who identified himself as a representative of the Boeing Airplane Co. (5,12). The first caller allegedly asked the witness "to refrain from further comment until they have an opportunity to discuss the matter with him. A tentative date for the discussion [was] set for September 22--but no more was ever heard from the 'colonel' (12). The other man identified himself as an "engineer with the L.A. office of Boeing Aircraft... not representing Boeing, but personally interested, [he] asked that his name not be mentioned or the fact that he had phoned. He also suggested that it might be better if [the witness] did not talk about the case (12)." These calls are described in the same way in the Air Force report (5), though in less detail. Source (1) also describes the "NORAD" call, placing it between 18 and 25 September.

20 September to 21 September 1965. The witness received a number of calls in this period, in addition to the two described above. These included apparent hoax calls and two bomb threats (5). A letter came from a vice-president of McDonnell Aircraft, St. Louis requesting technical information (7f).

21 September 1965. The *Santa Ana Register* "reported that [the witness] had been 'muzzled' by the government. Dale Kindschy of the Public Affairs Office at NORAD's Colorado Springs headquarters said 'We can find no one in our organization who contacted [the witness.] This wouldn't normally be in our scope anyway.' Col. D. R. Dinsmore, Air Force public information officer in the Pentagon, said, 'We not yet confirmed that [the witness] was contacted by one of our people, but it would be normal procedure if they had (12).'"

The fourth (smoke ring) photograph. The witness mentioned the fourth (smoke ring) photo to very few people up to this point in the chronology. The witness indicated the UFO merely left the area, toward the NE. One reporter recalls his saying that it went off to the right of the road (7d). The Marine report, apparently based on the interview of 18 September (although not prepared and dated until 22 September) says merely that "the object accelerated eastward toward the Saddleback mountains...he lost sight of the object due to the haze and distance (9)." The report carries only the first three photos. It would appear unlikely that the Marine report would have omitted an incident so remarkable as the "smoke ring cloud" had it been mentioned during the interview of 18 September, or during the transfer of the photographs on 20 September.

22 September 1965. The Marine Corps G-2 investigators returned the original prints (5) and obtained a signed receipt of return (12).

Later in the evening according to the witness, (source 12 places it two or three hours after the photos were returned) "two men, claiming to be from NORAD, arrived at the witness' home and asked to borrow the original Polaroid prints. They showed identification cards identical in appearance to those shown to him by the El Toro Marines. The witness turned the photos over to them. These three original Polaroid prints have never been returned (12)."

The Air Force account of the witness' version of this incident on 23 September is substantially the same, except that the witness mentioned only one visitor: "...on the evening of 22 September a man

in civilian clothing visited his house, flashed an identification card, and announced that he was 'an investigator from the North American Defense Command.' [The witness] said that he did not examine the man's credentials closely but recalled that the man's I. D. card was in a special cardcase about 4" x 5" and that the single I.D. card appeared to consist of two sections--the upper half being orange or pink in color, and the lower half being blue or bluegreen in color in the dimness of the porch light. [The witness] stated that he gave the original prints of the photographs to this man, again without receipt (he being a trusting soul), and assumed that he would eventually get the pictures back."

On 15 January 1968, the witness insisted that there had been two men (14).

The original photographs are unrecovered. The fourth "original" was lent to a NICAP investigator and eventually misplaced. A later investigation by NORAD resulted in a denial that any official of theirs had visited the witness. The witness' description of the I.D. card was likened to a gasoline credit card (11).

Some time on 22 September apparently in the evening after the photos had been surrendered, a NICAP member interviewed the witness. Neither this investigator nor any other NICAP member ever saw the three original photos.

Comment on the "NORAD visitors." The fact that on the day following the alleged visit of the NORAD officers, an Air Force investigator would leave with the clearly recorded impression (5) that only one man had visited the witness is of special interest. Further, a NICAP report dated 25 September 1965, signed by the witness declares that "a man with a briefcase later called...and said *he* was...and that *he* would like to see...[The witness] agreed to loan the pictures to *him* providing *he* would...(2, my emphasis W.K.H.)."

An attempt to clarify this on 15 January 1968 (14) was made by asking the witness in essence 'Why is it that you are now clear on there having been *two* NORAD visitors, while on the very next day the

Air Force man came away with the idea that a man came up and flashed his card...?"

He immediately replied in effect that only one man showed his card. He repeated that there were two men, in their early thirties, but that one stood back while the other did most of the talking. Since two independent reports from the next three days clearly indicate one visitor, while the witness has since insisted there were two, the "NORAD episode is still regarded as open to serious question.

J. E. McDonald (15) has found an additional discrepancy concerning the "NORAD visitors. In 15 January 1967, discussions with Dr. McDonald and the Colorado investigator, the witness repeated that the I.D. cards shown him had no photographs of the bearers, although he described them as like those of personnel from El Toro Marine Corps Air Station. McDonald has learned from official sources that all I.D. cards carried photographs at this time. Indications are that if the two visitors did exist in fact, they were imposters.

25 September 1965. A letter dated 25 September to NICAP in Washington D.C. accompanying supplementary notes contained the first NICAP reference to the smoke ring photograph: "One item of interest is, that [the witness] retained what he calls his ACE IN THE HOLE. A fourth picture. This picture shows clearly the vapor ring that was left by the UFO. [The witness] asked me to keep this information in confidence the night of the interview, however, if nothing came of the mysterious phone call asking [the witness] not to speak, then I would be allowed to pass on this information with a copy of the picture (2)"

A Los Angeles NICAP official wrote to NICAP headquarters: "You will see that there is a *fourth* photo--the smoke ring. I don't know what [the witness'] motive was in holding this picture back in the beginning. Perhaps he thought it was unimportant--and as time went on and the furor began, he hesitated to complicate the situation further and cause more problems for himself. He seems to be sick of the publicity and this weekend is moving and getting a new telephone number."

"Blaring headlines (12)" in most local newspapers announce "AIR FORCE LAUNCHES COUNTY UFO PROBE."

Further comment on the fourth (smoke ring) photograph. We have already seen that (the witness) was allegedly somewhat hesitant in showing the smoke ring photo when he returned to the road department office on 3 August and that he did not mention the smoke ring in early talks with the Marines or the *Santa Ana Register*. During the early NICAP interview the presence of a fourth photo was not recorded, although the ring was apparently mentioned. During the Air Force interview, the witness not only did not mention the smoke ring or fourth photo, but gave a somewhat different description of the disappearance of the UFO. The Air Force account states: "Just after taking the third picture...[the witness] heard a vehicle approaching from the rear. Concerned that he might have parked in an awkward position, he turned around to see if there was enough road clearance for the vehicle to pass him. Noting that he was on the shoulder of the road, he immediately turned again to look at the UFO but found that it had 'disappeared into the haze' (5)." This is the only account that mentions a diversion by another vehicle. It has been suggested by a NICAP member that this was probably a falsehood. On 5 June 1967 (7a) the witness said he had been advised by NICAP to withhold information from the Air Force to this end. An attempt was made to check this discrepancy in more detail on 15 January 1968 (14) by asking if the incident about the approaching vehicle had been manufactured as a cover for the fourth photo, and the witness denied that he had fabricated any of the testimony to the Air Force. He did not remember any passing vehicle, however (14).

27 September 1965. The witness sought advice from County District Attorney, Kenneth Williams, regarding the harrassment resulting from the UFO report and publicity (12).

4 October 1965. NICAP headquarters received a preliminary report from their photo analyst, Ralph Rankow, supporting the authenticity of the sighting.

A Saturday in mid-October (7f). The witness, a geodetic engineer, and two NICAP investigators visited the alleged site of the smoke ring photo and "identified the part of the tree appearing in the lower left corner of the picture (7f)." Additional measures and photographs were taken for the purpose of establishing the geometry of the sighting (12).

Clearly, the first allegation is of extreme importance, since the existence of such a peculiar vortex smoke ring *above Myford Road*, if it could be established from photo four, would be strong evidence in favor of the UFO report. As can be seen in Plate 45, very few physical details (part of a tree and a wire), are available to confirm the Myford Road location of Plate 45. With this in mind, on 15 January 1968 J. E. McDonald, R. Nathan, the Colorado investigator, questioned one of the NICAP investigators in detail about the identification of the tree. It became quite clear that the witness had taken them to the site, and that they had come away convinced by the gross geometry that this was indeed where photo four had been made. This is easy to do: having picked one of the several trees as the one in the photo, one can pick the "spot" within a few feet, using the parallax of the tree and wire (Plate 46). However, it was also clear that the NICAP men and the geodetic engineer had not carried out the extremely critical procedure of comparing the tree, *branch by branch and twig by twig* with that on the photograph, and that on geometric grounds it could *not* be said that it was absolutely certain that the photograph was made on Myford Road. As the NICAP man has pointed out (7f), "trees along the road have since been trimmed back," and it is no longer possible to perform this test

17 October 1965. The U.S. Air Force released an official statement disputing the UFO's dimensions as estimated by the witness (12), reading in part: "The...evaluation...is based on enlargements made from copies of the original prints. Although it is not possible to disprove the size of the object from the camera information submitted, it is the opinion of the Air Force that the following is the true case.

The camera was probably focused on a set distance and not on infinity as the terrain background was blurred... The center white stripe on the road and the object...have the same sharp image. Therefore it is believed that the object was on the same plane as the center white stripe (or closer) to the camera and could not possibly be the size quoted in the report. Using the width of the road as a factor, the size of the object was estimated to be approximately one to three feet in diameter and 15 to 20 feet above the ground (3)."

The statement appears to be based on, and quotes almost directly from, an internal U.S.A.F. "Photo Analysis Report 64-48" requested by Project Blue Book (10). The only significant additional information in the analysis is a final paragraph describing an experiment to reproduce the Santa Ana photos. "A test was conducted by the FTD Photo Analyst and Photo Processing personnel with the results shown on the attached photos... The object seen in the photographs was a 9" in diameter vaporizing tray, tossed in the air approximately 8 to 12 feet high at a distance from the camera of approximately 15 to 20 feet. The result of the test shows a surprising similarity between the object on the test photography and the object on [the witness] photography (10)."

On 27 October 1965, Maj. Hector Quintanilla, Jr. of Project Blue Book, told the *Santa Ana Register*, that the Air Force had "classified it as a photographic hoax on the basis of extensive photo analysis (12)." Ralph Rankow, NICAP's photo analyst immediately announced strong disagreement with the Air Force analysis.

1 November 1965. On the basis of analyses by Rankow and Don Berliner (an aviation magazine photographer in Washington, D.C.) NICAP issued a press release calling the Air Force "hoax" classification "an insult to the intelligence of the public... [The witness] holds a responsible position and has suffered considerable embarrassment upon being accused of being a hoaxter, without evidence... We welcome independent analysis of the photographs by a qualified expert... Our own photographic advisers have found no evidence

trickery, but if some one else can find such evidence, we would like to settle the matter, one way or the other (12)."

9 December 1965. The *Santa Ana Register* quotes a letter from Air Force Col. William E. Poe to Rep. Alphonzo Bell (R-Santa Monica, Calif.) stating "We have not classified the photograph as a hoax (12)."

According to the witness, on 11 October 1967, during the period when our own investigation was beginning, an officer in Air Force uniform came to the witness' home in the evening and presented his credentials. Mindful of past experience, the witness studied them carefully. They gave the name Capt. C. H. Edmonds, of Space Systems Division, Systems Command. The witness reported this encounter within a few days to NICAP; he was sure about the rank and spelling of the name (14).

The man allegedly asked a number of questions, including "Are you going to try to get the originals back?" The witness claims that the man appeared visibly relieved when the witness replied "No." The "officer" also assertedly asked what the witness knew about the "Bermuda triangle" (an area where a number of ships and an aircraft have been lost since 1800's) (14).

This alleged encounter took place at dusk on the front porch. During the questioning, the witness says he noted a car parked in the street with indistinct lettering on the front door. In the back seat could be seen a figure and a violet (not blue) glow, which the witness attributed to instrument dials. He believed he was being photographed or recorded. In the meantime, his FM multiplex radio was playing in the living room and during the questioning it made "several loud audible pops (14)."

In order to investigate this report, NICAP sent a letter to "Capt. C. H. Edmonds," Space Systems Division (the office from which the original Air Force investigating officer had come), but received no reply. Robert Nathan, an independent investigator, phoned and talked to people who remembered the original Air Force investigator of 1965 but could not identify "Edmonds." Robert J. Low of the Colorado project obtained from the Air Force data on officers of similar name.

The list contained four "C. H. Edmonds," but none with the correct rank and spelling. All were of rather high rank and none should have had any connection with the Santa Ana case (14).

The significance of this report is still unclear but suggestive.

Other alleged inquiries. During an interview with the witness, 15 January 1968, he indicated that he believes his phone had been tapped, that many friends had reported they could not reach him on occasion, and that the phone company found that only *his* wires had been tampered with. He also stated that on three or four occasions his neighbors had advised him that men in military uniform had come to his door during the day, when he was not there.

Analysis:

Rather than recount in detail the long series of interviews, experiments, and questions that were involved in analyzing the Santa Ana case, only the value of the case in terms of the UFO problem and the possible reality of extraordinary flying objects will be considered here.

From the point of view of the Colorado study the principal question of concern is: *does a case have probative value in establishing the reality of unusual aircraft?* In a case like this, where both the observer and photographs *clearly* allege an extraordinary vehicle, a second question is, of course, automatically implied: does the case represent a fabrication or was the object a true unknown? But it is not in general our purpose to make a judgment on that question. We are concerned only with establishing evidence as to whether or not there exist extraordinary flying objects.

In that context, this case is equivocal.

In the course of my study I was able to simulate effectively the first three photographs by suspending a model by a thread attached to a rod resting on the roof of a truck and photographing it (Plate 47). Without assuming the truth or untruth of the witness' story this has led me to conclude that the case is of little probative value.

Conclusion:

The evidence for the reality of the UFO is not sufficiently strong to have probative value in establishing the existence of extraordinary flying objects. The strongest arguments against the case are the clouds in photo four and the inconsistent early records regarding the "NORAD" visitors. The photos themselves contain no geometric or physical data that permit a determination of distance or size *independent* of the testimony. Thus the witness' claims are the essential ingredients in the case. The case must remain inconclusive.

Although the authenticity of the UFO in this case is still open to question owing to internal inconsistencies in the early testimony, and inconsistency of the photographs and weather data, this case is still held to be of exceptional interest because it is so well documented. This is a result of early attention from the U. S. Marine Corps, the U. S. Air Force, NICAP and the press. Regardless of the existence or non-existence of extraordinary flying objects, this case supplies good documentation of the dealings between our society and a man who claims to have seen one.

Sources of Information:

1. NICAP report form and handwritten narrative, 22 September 1965.
2. File of miscellaneous documents supplied by NICAP including narrative report, 22 September through 17 December 1965.
3. File of miscellaneous correspondence supplied by NICAP including several narrative letters, 24 September 1965 through 11 January 1966.
4. Basic Report LAW AFR 200-2. Report to USAF based on interviews, 23 September 1965.
5. Narrative Report and Assessment. Report to USAF based on interviews, 23 September 1965.
6. Re-evaluation of shadow circumstances. Report to NICAP by NICAP investigator, 23 July 1966.
7. Hartmann, W. K. Miscellaneous telephone interviews and correspondence, 5 June 1965.

- a. Telephone conversation with witness, 5 June 1967.
- b. Visit to the site on Myford Road, Santa Ana, 9 September 1967.
- c. Telephone conversation and correspondence 28 September 1967; interview 16 January 1968.
- d. Telephone conversation 18 October 1967.
- e. Telephone conversation 22 November 1967.
- f. Correspondence 5 November 1967, and 25 November 1967.
- g. Phone conversation 11 January 1968.
- h. Interviews at El Toro Marine Corps Air Station, and others, 15 January 1968.
8. Nathan, R.
9. U. S. Marine Corps G-2 Investigation Report, El Toro Marine Air Facility, 22 September 1965.
10. Photo Analysis Report requested by Major H. Quintanilla for U. S. Air Force.
11. Letter from Chief of Staff, NORAD.
12. Chronology of Events, received by W. K. H. 13 November 1967. Prepared in 1967 and based on original NICAP files, 1965-67.
13. Crow, Loren W. Special report to Colorado project on weather conditions related to Santa Ana sighting, 4 December 1967.
14. Joint meeting in Los Angeles with witness and other interested parties, 15 January 1968; interview with the witness at Myford Road, 16 January 1968.
15. McDonald, J. E. Private communication; correspondence with Polaroid Corporation, 1968.
16. Vallee, J. and Vallee J. *Challenge to Science*, Chicago: Regnery, 1966, pp. 30, 43.

Case 53
North Eastern
Summer 1965
Investigator: Hartmann

Abstract:

Two photographs of a bright disc with a reportedly invisible but (in Plate 48) opaque, reflecting, and (in Plate 49) glowing "appendage" can be easily produced by hand-holding an illuminated model. There is no probative evidence for an unusual phenomenon.

Background:

Time: 11:30, E.D.T. (1)
Locale: Backyard in populated area; hilly terrain (1,2)
Weather: Hazy evening sky; bright moon; no wind noticeable (1).
Camera: Yashika 635 camera; Altipan 120 film (ASA 100); f:3,
focus infinity, six-second exposures(3).

Sighting, General Information :

The key witness was aiming his camera upward at an angle of roughly 30° - 45° , in a southwestern direction toward the top of a hill close to the house (2,5). As he prepared to take a time exposure, he noticed a "bright white", "self-luminous" object, "brighter than the moon or headlights" approaching from behind some trees on the horizon to the left (1). The object was seen nearly simultaneously by the key witness and his brother. The object moved "like an airplane would go" (5), "faster than a Piper Cub" (1), but then suddenly hovered. The key witness made a hurried exposure (Plate 48).

The object then drifted to the right, brightening somewhat (1). Again it hovered; the key witness had advanced the film and made a second exposure (Plate 49). Then the object "zoomed up" (1), or "rose at high speed and disappeared" (4), before a third exposure could be made. No sound was heard (1) The object, described as a "big, disk-shaped light", uniformly white, not reflecting; without a clearly visible surface (5), "solid, flattened on

bottom, was visible for about 30 sec.

The negatives showed an opaque, dark extension beneath the object in the first photo, and a bright, apparently transparent extension below in the second; the witnesses repeatedly stated that this was not visible to them at the time of the sighting (4, 5).

Investigation:

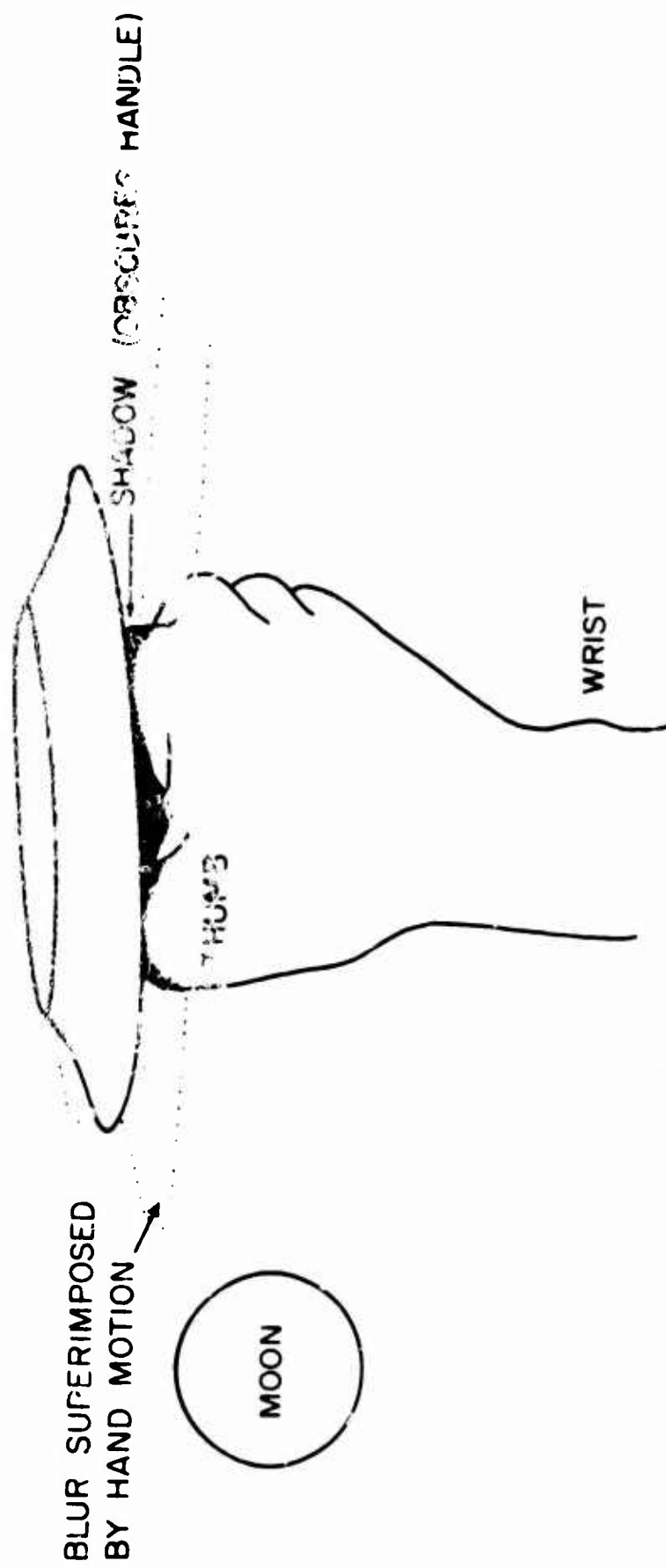
At the urging of friends the key witness presented the photos within a few days to the local newspaper. (3, 4). The newspaper staff made a careful study of the negatives, superimposing them, determining that there was no parallax in the horizon trees and no shift in position of the moon, but that the object was in two different positions.

Critique:

The similarity of the appendage of Plate 49 to a human arm and hand with knuckles, thumb, with shadows being consistently suggested is striking. Test photos (Plates 49, 50, and 51) simulating the originals were made in the following manner: A dish was held by a hand gripping a short handle which had been attached with tape to the bottom of the dish. The dish was illuminated by a flashlight and moved during the brief exposure. In the test simulation of Plate 48, the light was kept off the supporting arm, while in Plate 49 the light was played over the wrist and additional streaks were introduced by moving the illuminated hand across the field (after the dish had been removed). The test exposures illustrate the possibility of simile reproduction (Fig. 10) of: (1) the glowing, blurred disk (plate or model), (2) the opaque appendage in Plate 48 (unilluminated arm supporting model); (3) the glowing appendage with hand-like features (illuminated hand); (4) the transparency of the glowing feature (removal of the arm during the time exposure); (5) non-detection of continuation of appendage in densitometry (duration of "UFOs" presence = small fraction of total exposure time).

Conclusion:

The photographs have little value in establishing an extraordinary phenomenon.



Schematic diagram of Plate 51 and hypothetical reconstruction of Plate 48.

Fig. 10

Sources of Information:

1. NICAP Report form filled out by witnesses.
2. Correspondence between P. J. Klass and W. K. Hartmann.
3. Internal NICAP correspondence, kindly provided by NICAP.
4. Klass, P.J., *UFOs Identified* , New York: Random House, 1968.
5. Fuller, J.G., *Incident at Exeter*, New York: Putnam's, 1966.

Case 54

Gulfstream Aircraft, Huntsville, Ala. to Minneapolis, Minn.

11 March 1966

Investigator: Hartmann

Abstract:

An electronics specialist associated with the Marshall Space Flight Center, on a flight from Huntsville, Ala. saw and photographed an exceptionally bright, elliptical UFO. The object was lower than the plane and appeared to be at a great distance moving away from the plane. The object is inconclusively identified as a sub-sun on the basis of photographic evidence, though not all the testimony directly supports this.

Background:

Time: About 3:00 to 3:20 p.m. CST

Aircraft Position: En route nonstop from Huntsville, Ala. to Minneapolis, Minn. Altitude: 20,000 to 22,000 ft. Exact location unknown. (Source 1).

Weather Conditions: Partly cloudy below the plane; complete overcast above, with the sun not visible (1).

Photographic Data: Kodak Retina II, 35 mm Plus-X (2) black-and-white film (ASA 160); Xenon f2 50 mm lens (uncoated, perfect condition), focused on UFO during first exposure; exposure 1/500 sec at f16. Exposure meter General Electric PR-1, serial number J95126 (Source 1).

Sighting, General Information:

During a chartered Gulfstream Aircraft flight from Huntsville to Minneapolis, the witness, an electronics specialist for Marshall Space Flight Center observed from the rear left window an extremely bright object outside. Initially the object was estimated to be

about 15° behind the plane in azimuth and 5° below. The photographs, Plates 52-55 indicate a much greater declination below the horizon. The initial direction of the object was believed to be southwest of the aircraft, based on an *assumed* northerly heading, and was observed for approximately 20 min. (All descriptive material, Source 1).

Fifteen months after the sighting the object was described by the witness in a letter dated 13 June 1967, as follows:

Perfect ellipse with axes ratio of approximately 1:3, with the major axis horizontal (see Fig. 11). The edges were sharp and perfectly defined. Surrounding this ellipse was a brilliant halo which I noticed but did not study as much as I did the object. The brilliance made my eyes water and pain.

[The color was] overall brilliant yellow-orange, very much like the sun...The UFO always appeared the same, except diminishing in size, perfectly outlined with a halo. No other detail was seen. It did not change its flight line... The UFO was southwest of the plane at first and disappeared northwest of the plane. I am here assuming the plane was always flying on a north heading...

The distance could not be determined accurately, but I had a distinct impression at first that I was viewing something from $\frac{1}{2}$ to 1 mile away. Also the camera range-finder indicated a long distance but not infinity. I have had considerable experience in judging distance and elevations of airplanes and in photography. Later the UFO was much more distant, as shown in the film...

The UFO was viewed under several different conditions. At first it was slightly behind the plane, lighting the inside of the plane. I moved my head to see if it would affect the image. I cupped my hands around my face and on the pane. Neither of these changed the view at all. For

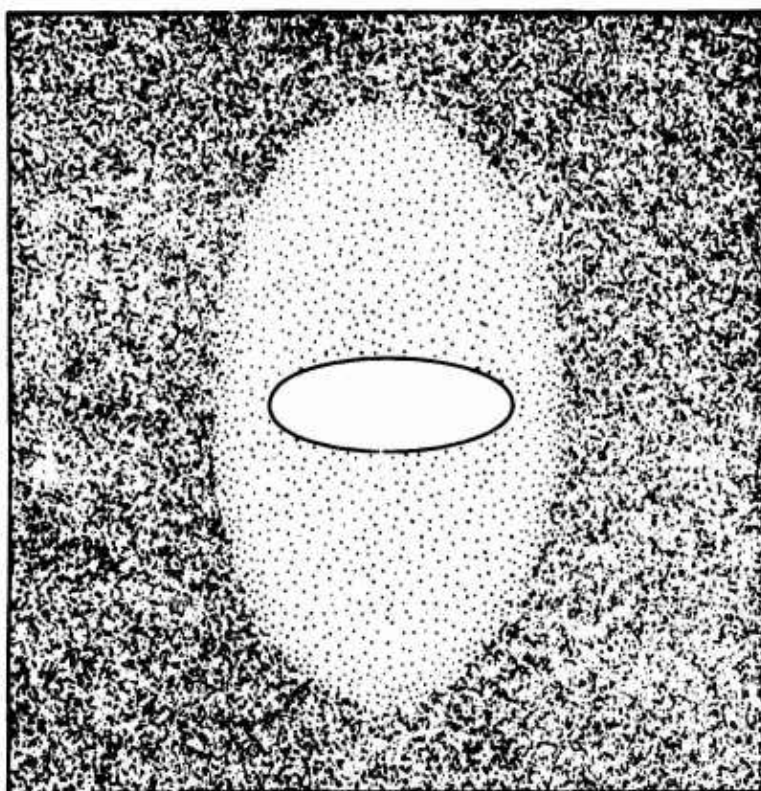


Fig. 11

Sketch of reported visual appearance of the UFO, after a sketch by the witness. The central horizontal ellipse was reportedly the brightest; the photos show only the halo.

the first picture (Plate 52) I backed about four feet away from the window...so as to frame the UFO with the window frame. This was to add perspective. The other pictures were taken through the window while the camera was held close to it. One of the other frames shows a small section of the left wing...

I was immediately shocked at the appearance of the UFO. It seemed too definite in outline to be a reflection, sun dog, or ice crystal image of the sun, even if the sun had been shining. I have often seen such natural phenomena, since I have studied meteorology, but pay little attention to them. This was different. It was just too bright to be natural, I thought. Remembering the often reported sudden disappearance or speeding up of UFOs, I expected it to do likewise. But it did neither. I had waited a few minutes after seeing it before I realized it might stay long enough for a picture. After the first one, I took the other three at about 5-minute intervals. The situation was embarrassing. I felt I should be able to explain the UFO but could not since the sun was not shining. Furthermore, I could not arouse interest in any of the other six or eight passengers, who were playing cards. Only one man, an engineer, even bothered to look at it, explaining it as a "reflection."

The witness considered and rejected several explanations of the phenomenon. He had seen and launched several kinds of balloons and had seen skyhook balloons launched; he was sure that it was neither a balloon, a plane, or "any other object I have ever seen" (1). His background includes varied experience in radio repair and electronics. He holds a B.S. in electrical engineering and has worked at Marshall Space Flight Center (Redstone Arsenal) since 1958. The witness has been very cooperative and articulate in supplying supplementary information on the sighting.

Investigation:

Of several scientific colleagues with whom the witness discussed the sighting after his return on 12 March, "a few insisted that the light on the pictures was a sun dog or a weather balloon even though I had insisted the sun was not out" (1).

The witness "did not report it officially because of the way witnesses have been treated." After showing the film to various other colleagues, including "Ph. D.'s and highly specialized scientists," the witness contacted Dr. J. A. Hlynek, and the case was subsequently brought to the attention of the Colorado project.

The similarity of the object to a sub-sun at once suggested an explanation. A photograph of a sub-sun provided by NCAR (Section III, Chapter 3, Plate 2) strengthened considerably the sub-sun hypothesis. Minnaert (3) describes this phenomenon as follows:

This is to be seen only from a mountain or an airplane.

It is somewhat oblong, uncolored reflection; the sun reflected not in a surface of water but in a cloud. A cloud of ice-plates, in fact, which appear to float extremely calmly judging from the comparative sharpness of the image.

Several objections and questions are raised by this hypothesis. The most serious objection is that (1) the witness stressed that the sky above the aircraft was so overcast that he could not see the sun. Considering the sub-sun hypothesis it is necessary to assume that the overcast was thin enough, especially during the first minutes of the sighting, to allow a bright image of the sun (even if diffused by overcast) to be produced by laminar ice crystals. A gradual increase in density of the overcast above the airplane would provide a natural explanation of the fading of the apparition and would not contradict the witness' belief in an overcast.

(2) The witness reported that the direction was initially southwest of the aircraft "15° behind" it, but that the UFO disappeared to the northwest. During an interval of only 20 min. the azimuth of the sun, and hence of the sub-sun, could not change

by such a large angle (though the motion of the sun would contribute a few degrees in this direction). These estimates were with respect to the plane and were based on the witness' *assumption* that the plane was flying *constantly* due north. Since the witness mentions that the initial southwest direction of the UFO was only 15° behind the plane, it is clear that "southwest" and "northwest" are not to be taken literally as 90° apart. Furthermore, Plates 53 and 55, which can be oriented by the wing, were made about 10 min. apart but indicate a shift in the UFOs position of not more than a few degrees. Therefore, a change in flight direction of 30° or less, would explain the apparent change in direction of the sub-sun. A change such as this would not necessarily be obvious, especially in overcast flying conditions. Since the course from Huntsville to Minneapolis is north-northwest, the view out of the left side would be west-southwest the approximate direction of the sun at 3:00 p.m., supporting the sub-sun hypothesis.

(3) The object was described as a "sharp and perfectly defined" horizontal disk with a vertical "halo;" but, the photographs do not confirm the horizontal ellipse. Although the major axis of the ellipse was sketched nearly as wide as the halo, microscopic examination of the original negatives and high density prints (Plates 56 and 57) give no indication of a central bright ellipse. Only the halo was photographed. Although the inner part of the halo is overexposed and evidently saturated, masking a possible small central ellipse, photographic evidence suggests that any flattened central disk was not as well-defined or as large as the testimony might suggest. An indication that the inner isophotes do not have as large a vertical ellipticity as the outer isophotes is evidenced by the fact that the images on the last photographs, when the apparition was evidently fainter, are more rounded. This may account for the witness' impression of a horizontal, flattened inner core. In all respects, the photographs of the witness appear to be similar to the sub-sun photograph supplied by NCAR.

(4) The object was so extremely bright that it was reportedly capable of throwing the exposure meter off scale, illuminating the inside of the plane, and hurting the witness' eyes. These observations apparently refer to the initial sighting, before the apparition dimmed (Plates 54 and 55). One might question whether a sub-sun could appear so bright. A sub-sun is literally a reflection of the sun; that is, its brightness could approach that of the sun itself, if the reflector were efficient enough. Ambient light over a cloud deck is already large, and a relatively small fraction of the sun's full brightness in an image reflected under especially good conditions could produce the reported effects.

(5) The apparent decrease of angular size would not be expected in a reflection of the sun. The witness interpreted this as a departure of the object: "Later the UFO was much more distant as shown in the film." The film shows only that the angular size of the "halo" and apparently the total brightness decreased. Since no clear, hard, disk-shaped core can be made out in the over-exposed central "halo," there is no photographic evidence for a decrease in angular size of a well-defined object or for an increase in its distance. The observed image sequence could have been produced by a gradual decrease in brightness; i.e. by obscuration of the overhead sun or by decreasing density or alignment of the reflecting ice crystals.

(6) The witness focused on the UFO and concluded that his rangefinder "indicated a long distance but not infinity." However, he "had a distinct impression at first that I was viewing from $\frac{1}{2}$ to 1 mile away." These two statements are inconsistent. In conclusion it appears that there are no significant and accurate data on the distance of the object in view of the difficulty of accurate focusing on ill-defined or very bright objects and of the inaccuracy of the registration of distance on many camera rangefinders.

(7) Finally, we must remark that the witness does not believe that the object was a sub-sun, regardless of evidence presented in the above argument. In spite of this subjective response, one can

judge the case only on the most objective data, i.e. the photographs and his most descriptive testimony. The witness makes no assertion that the object was artificial or solid.

Reflections appear to be ruled out as the witness cupped his hands around the window in order to study the moving object.

Summary and Conclusion:

In summary, the principal arguments in favor of the sub-sun hypothesis are: (1) The appearance is consistent with that of a sub-sun. (2) The azimuth is consistent, within the limits of the known direction of flight. (3) The elevation angle of the sun above the horizon must equal the declination of the sub-sun below the horizon; it is calculated to be approximately $30^\circ \pm 4^\circ$. Estimates of the declination, based on the known angular scale (photo height ca. 26°) and the estimated vanishing point of the clouds in the photographs (the horizon being out of the frame) place it in the range 28 to 33° . These figures are consistent.

The sub-sun hypothesis requires that the witness overstated the situation by insisting that "the sun was not out." An overhead cloud deck of not too great opacity may have led the witness to this assertion.

In spite of some questions raised by the testimony, the apparition can be inconclusively identified as a sub-sun. In view of the high degree of similarity of the photographed object with a sub-sun, it would be unwarranted to assert that this sighting constitutes evidence for an extraordinary or unknown phenomenon.

Sources of Information:

1. Report of the witness to Colorado project (13 June 1967).
2. Correspondence and telephone conversations between the witness and Colorado project (June - July 1967).
3. Minnaert, M. *The Nature of Light and Colour in the Open Air*, N. Y.: Dover, 1954.

Case 55

N.M. (Aircraft flight from St. Louis to Los Angeles over N.M.)

22 April 1966

Investigator: Hartmann

Abstract:

The pilot and passengers of a commercial airliner sighted a bright cloud-like object that was in view for several minutes. The pilot speculated that it was a flare experiment launched from White Sands Proving Grounds. The most consistent evidence is in accord with this. However, the case has the interesting, if dubious, distinction of having apparently been confused later by extraneous photographs and testimony given by a sailor, who was a passenger, to a civilian UFO investigator and enthusiast.

Background:

During the evening twilight, about sunset, American Airlines Flight 387 from St. Louis to Los Angeles was passing over Farmington, N.M., at an altitude of 33,000 ft. (1). The pilot announced to the passengers that he had spotted an unusual object outside the aircraft. A preliminary account of the sighting is best reported in notes taken by Witness 1 immediately after the incident:

....The pilot called our attention to an object off (at a great distance) from our left wing. It was early twilight. He said, "I have never seen anything like it before. Other planes in the area have also seen it nor can they identify it." We were at an altitude of approximately 33,000 feet and well above all clouds. The pilot moved our plane much closer. The pilot said, "It is entirely too high to be a cloud." It appeared at first to be a very bright cloud but there was a long rosy cloud-like tail behind it....Then later it appeared to solidify more and have a ring around it. It appeared in this form for perhaps only a minute then went back to the original form. After about seven minutes, it evaporated.

The pilot then said, "In all fairness we are now over New Mexico and it might be something from White Sands." He

laughed. "If anyone reports seeing an unidentified flying object, I will deny seeing it."

In the seat next to me sat a young sailor from Cleves, Ohio, who took a picture of it and said he would send it to me.

Witness I's notes go on to relate two UFO incidents recounted to her by the sailor, Witness II.

Investigation:

A year after the flight to Los Angeles (17 April 1967) Witness I was queried by Mr. L. H. Stringfield, a private UFO investigator.

She reported the following supplementary information:

Persons sitting on the left....for the most part looked out of the window. On the right side a few persons stood to look out the left windows, then everyone settled back to magazines and newspapers in a surprisingly short time. I think (Witness II) and I were the only ones in our section (First Class) who watched it until it disappeared.

The object, assuming it was a UFO, was covered by a jet-like vapor. To me it looked like a beautiful white cloud.... Either it was enormous and a great distance away or it was smaller and much closer than I realized. The cloud-like tail was rosy in color. It kept pace with us (10-15 minutes?) until it briefly solidified, then the vapor (cloud or whatever) stayed where it was and wafted away.

The sun must have been dead ahead. We were flying west/southwest....The pilot said, "Please look off the left wingtip if you want to see a flying saucer" (or maybe he said UFO)... We were in perfectly clear blue sky in the early twilight above the clouds. I thought whatever we saw was an "escaped" cloud, but the pilot said it was impossible to have clouds at our altitude.

The sailor, Witness II, was contacted in April 1967 by Mr. Stringfield, to whom he related the additional information that the pilot had checked with the "control tower" and found there were two other aircraft within 100 mi. These were evidently the planes that reported the object. Witness II stated that he thought the American Airlines plane might have been over Utah. The object was off its left (southern) wing. He described the object, according to Mr. Stringfield's notes, as "brilliant white phosphorous light; oblong, without definite contour, moving parallel to ship, same speed; one and a half minutes in view; disappeared forward and up at tremendous speed; UFO seemed to advance and retreat in flight without any change of light intensity or color" (3).

Witness II reported to Mr. Stringfield that he took "about four" photos, two of which were submitted. He used sunglasses, described as sunglasses for an acetylene torch, as a filter in his photographs (3). He had earlier told Witness I (2) that the "photo" (singular) did not "turn out". However, he subsequently claimed to Mr. Stringfield that he had done this to avoid publicity and that, furthermore, "there was a top-secret mission involved and he (Witness II) could not talk about it" (quoted from ref. 4 - not directly from Witness II).

Investigation:

On 16 January 1968, the Colorado project contacted the pilot of the airliner, who confirmed the event. He said that he saw one brilliant object which he thought was a sodium flare. This he reported to the FAA ARTC, which he said could not identify the object. The pilot said his position was over Farmington, New Mexico, and that the object was also seen from several aircraft north of him. He felt that the object was something fired from White Sands Proving Ground, about 300 mi. SSE of Farmington. It was the brightness of the object that led him to believe it was a sodium flare. He believed the flare was still in sunlight although the plane was already in shadow; he also recalled the tail extending from the object as described by Witness I.

It appears that an initially unidentified object was undeniably seen from Flight 387. The testimony consistently indicates that the object was distant and far above the commercial airliner; the pilot believed it was high enough to be illuminated after sunset. A quantitative,

order of magnitude estimate of the distance can be based on the fact that the object appeared to "keep pace" with the aircraft for a matter of at least 1.5 min. (Witness II), or 10 to 15 min. (Witness I). That is, the parallax was negligible for, say, 10 min. (Witness II's testimony is given lower weight; see below). At approximately 500 mph, the plane would have moved through a baseline of the order 80 mi. during this interval. Had the object drifted through $\leq 20^\circ$ parallax during this ten minutes, its distance would have been of the order ≥ 240 mi. This estimate is consistent with other sightings by other planes in a distance range on the order of 100 mi.

It should be noted that the position for optimum visibility of a high, illuminated cloud was at a considerable distance away, but not far to the west, so that the still-illuminated cloud was seen low in a twilight sky. A pilot more nearly beneath it might not have seen it during its few minutes of visibility.

The object described clearly had the appearance of a cloud. Witness I's sketch depicts a somewhat elliptical cloud (with traditional scallop-like outlines and a smoky tail extending upward to the right). The "ring" to which Witness I refers is shown in a second sketch as a streak or bar in front of the cloud. Because the object was suspected to result from an experiment launched from White Sands, the project requested information on this possibility from the Air Force. Col. Quintanilla, of Project Blue Book, informed us that (1) there was no record of any test on this date, (2) tests that could produce such phenomena (flares, etc.) were not rare in this southwestern area, and (3) systematic records of such scheduled tests are generally not preserved after three to six months. Verification of a flare experiment was therefore not possible.

The following data strongly suggest a high-altitude flare and/or rocket experiment: (1) large distance and altitude inferred by several witnesses and the order-of-magnitude calculation; (2) the tail, characteristic of exhaust train left by the vehicle carrying the "flare"; (3) bright light which attracted the pilot's attention; (4) rapid fading or "evaporation" in a matter of minutes (dissipation of emitted material or termination of illumination?); (5) pinkish color of tail suggests illumination by setting sun.

Highly inconsistent with these factors is a part of the testimony of Witness II. Other witnesses did not report the remarkable motions he described. His photographs, made with a Kodak 126 Instamatic with color film, (Plate 58) show not the cloud-like, slightly elliptical object of the other observers, but a highly flattened orangish ellipse with a sharp outline, against a black background. Witness I reported that Witness II took "a picture" of the cloud-like object, which he subsequently said did not come out. He reported four photographs and submitted two to Mr. Stringfield, who forwarded the negatives to the project. At this time, Witness II told Mr. Stringfield that he could not discuss the matter further because of a secret project. (If the implication is that he was associated with the project that produced the object, his presence on the commercial airliner would seem irrelevant; if another project is indicated, silence would be unnecessary.)

The photographer who prepared color prints from the two submitted negatives advanced a hypothesis that the photo was a fabrication. The blue-green object in the upper left (alleged to be the aircraft wing) was held to be a fluorescent light fixture; the orange ellipse, an electric lamp, seen from the side; and several other orangish light spots, reflections off a chair. The colors are consistent with this. This alleged wing appears to be entirely in the wrong position. (i.e., overhead; the top is defined by other scenic negatives on the film) for the wing of an American Airlines commercial airliner to be seen from the left side from a First Class seat. The "wing" is of brightness comparable to the reportedly very bright UFO. It appears that there is considerable support for the hypothesis that the photos in this case are extraneous.

Conclusion:

Evidence suggests that some type of man-made flare experiment or test was sighted by the pilot and passengers of American Airlines Flight 387, as the pilot speculated. The case was complicated by some inconsistent and apparently extraneous photographs for which there is evidence of fabrication.

Sources of Information:

1. Notes by Witness I, 22 April 1966.
2. Correspondence between Witness I and L. H. Stringfield.
3. Notes by L. H. Stringfield on conversations with Witness II.
4. Colorado project notes on conversations with L. H. Stringfield.
5. Conversation between the pilot and Colorado project personnel.

Case 56

North Pacific

Winter 1967

Investigator: Hartmann

Abstract:

This case involves two photographs of a disk-shaped UFO. The apparent time interval between the photos is inconsistent with the eight-second reported interval (which was based on careful restaging of the alleged incident). The report must be listed as internally inconsistent and therefore is not satisfying evidence for an unusual phenomenon.

Background:

Time: 3:45-3:46 p.m. PST

Location: Backyard of suburban residence.

Weather: Some rain earlier in the day, overcast (1). The observers reported wind as "north to south--16 mph" and "cloud cover at 2100 ft.," allegedly based on contact with the weather bureau (1). The weather bureau (2) data: for 3:40 p.m. ground winds were recorded as gusting up to 39 mph from the WSW with a squall line moving through; at 3:58 p.m. the winds were 14 mph from the SSW and clouds were scattered at 2100 ft.; broken at 2500 ft.; and overcast at 6000 ft. The conflict in reported wind direction between the witnesses' report and weather bureau may be due to their misunderstanding the reported direction, "210°," (from the SSW).

Camera data: Polaroid "Swinger" camera.

Sighting, General Information:

Witnesses I, II, and III were in the backyard when Witness III reportedly saw a disk-like object hovering above them and pointed it out. He continued watching while Witness I ran indoors and got the camera. Witness II immediately took the camera and shot the first

photo (Plate 59) as the object still hovered. His brother, Witness I tore off the exposed picture and held it as the Polaroid film developed.

At this point, the disk had begun to move. As soon as Witness II was able, he took a second picture (the last one on the roll) as the UFO moved off in the distance (Plate 60). The position from which this second photo was made was about five yards to the right of the previous photo. The UFO disappeared in the distance with a smooth motion.

The object was described as solid, of a definitely metallic, dull-grey color (3) estimated to have been as much as 25 ft. in diameter (1).

The witnesses took the photos to the local newspaper. The photos were later distributed by a wire service.

By restaging the entire sequence of events it was determined that the interval between the two photos was about eight seconds and not longer than ten seconds, the time required to make two rapid-sequence photos, and that the entire sighting lasted about 45 sec. This timing was held to be fairly accurate; i.e. to within about 25% (3).

Critique:

However, overlapping and blinking of the two prints indicated that, while the principal dark grey cloud mass beneath the disk in Plate 59 is probably the same as the mass over the church in Plate 60 it had considerably changed its form and the other clouds were not recognizably the same.

Parallax of the trees indicates a shift in camera position that is small compared to the distance to the tree. These reported positions were later measured to be about five yards apart, consistent with the photos. Plate 60 was reportedly taken from a position to the right of Plate 59 on a line nearly perpendicular to the direction of view in Plate 59. Since this position is not appreciably further from the trees, the considerable downward shift of the cloud is not related to parallax, unless the reported separation was incorrect in azimuth and in distance by a factor of about three.

Thus, the photos appear to be inconsistent with the testimony. The time interval and possibly the positions would have to be independently and simultaneously in error by factors of about three to explain the inconsistency between the photographed clouds and the testimony. In fact the downward (westward) motion of the main dark cloud, combined with the direction of winds aloft from the SW, inconclusively raises the possibility that the pictures were taken in reverse order from that reported.

The angular diameters of the object in Plate 59 and 60 are about $2^{\circ}.7$ and $0^{\circ}.82$, respectively. The elevation angles are about $24^{\circ}.6$ and $11^{\circ}.0$. If the boys' distance estimate of 0.5 mi. in Plate 59 were correct, the corresponding diameter of the craft would be 120 ft. (In Plate 60 at the estimated five miles, it would have to be about 380 ft., but we have already assumed that the five mile figure was erroneously large.) If one assumes a diameter of 50 ft. (compromising between the 25 ft. estimate and the 120 ft. result), the slant range distance would be 1100 ft. in Plate 59 and 3500 ft. in Plate 60; the corresponding altitudes above the ground would be about 460 ft. and 670 ft., indicating that the craft was not flying parallel to the ground.

Alternatively, if one assumed that the object was 12 in. in diameter, the slant ranges would be about 22 ft. and 70 ft.; and the altitudes would be about nine feet and 13 ft.

Conclusion:

Inconsistency between the reported eight-second interval and gross changes in cloud structure and position impair the usefulness of these photographs as evidence to establish the existence of "flying saucers" or other unusual phenomena.

Sources of Information:

- (1) Report form filed with Colorado Project.
- (2) Telephone conversation with U. S. Weather Bureau, McNary Field, Salem; 6 June 1967.
- (3) Interview with the three boys and the mother and father, 6 June 1967.
- (4) Letter from the father to Colorado Project, 27 March 1967.
- (5) Interview with Salem *Capital Journal* staff, 7 June 1967.

Case 57

Highwood Ranger Station, Alberta

3 July 1967

Investigator: Hartmann

Abstract:

The witness and two companions reportedly sighted and took two photographs of an object described as shiny, and approximately 25-ft. in diameter. The craft reportedly dropped a small object, which when recovered was reported to be composed of solder, aluminum, and magnesium. A report by the Royal Canadian Air Force implied substantial evidence that the sighting was authentic and that the object was, subject to certain assumptions, 40 to 50 in. diameter. Although the case was widely described, both in the press and by several investigators, as being exceptionally strong, examination of the original photographs and the circumstances indicates no evidence of probative value for the existence of unusual aircraft. Only the sworn testimony of the witnesses could be described as making this case more impressive than most others.

The key witness and his two companions were hiking east in the rugged mountain terrain when all three of them reported seeing an object approaching (1a, b, c).

The key witness is described as a salesman and one of his companions as a student ca. 16 years old (1,3). Various individuals contacted by the project, either involved in or investigating the case, remarked on the "quizzical" nature of responses of the principals to certain situations (see below), questioning in particular the key witnesses' and companions' actions. Reference (2) describes the "two observers" -- evidently the key witness and a companion as engaged in "gold prospecting." Reference (4) describes them as looking for a legendary lost mine.

Background:

Time: "At or about 6:30 P.M." (PDT?) (1a, 1b, 1c). Ref. 2 gives "approximately 1700 hrs."

Location: "Approximately 80 miles SW of . . . Calgary" (1); "approximately 30 miles W of Naton, Alberta" (2); "about 3 to 5 miles E of . . . Coleman-Kananaskis Highway" (1); "approximately 3 miles SSE of the Highwood Ranger Station" (2). Note: 80 mi. SW of Calgary would fall in British Columbia; it appears from the other data that the phrase should read approximately 50 mi. SW of Calgary.

Sightings, General Information:

According to the witnesses the object approached from east, and at a relatively close distance and passed out of sight behind some trees; it reappeared, hovered, and then was lost to sight to the south (1). There were scattered cumulus clouds with base level approximately 10,000 ft. above sea level (2, quoted from "Met Office"). The observers were at altitude approximately 5,000 ft. (2), where there were winds of 15 mph. (2).

When first sighted, the "craft" was at an altitude not more than 2,000 ft. and distance not more than 2 mi. (1a, b). It was gradually losing altitude (1a, b). According to the key witness in his deposition approximately eight months later (1a):

It was traveling toward us gradually losing altitude, passed in front of us, and as it passed slightly out of view behind some trees, it then reappeared and hovered in open sky, and something of a much smaller size fell from the craft.

One of the witness's companions reports in his deposition (1b):

It travelled towards us gradually losing altitude and at a distance of not more than $\frac{1}{2}$ mile it hovered for moments, at which time some object was seen to fall from the craft. The fallen object was possibly one hundredth (.01) the size of

the mother craft. At tree-top level the craft in question then disappeared from sight.

I am not sure at this point whether it became invisible, or dissolved, or merely sped out of sight at such a great speed that it was hard for the eye to follow. At any rate, it was moving away from us at a great speed when it disappeared from sight.

Photographs:

The key witness took the two photographs in rapid succession (2), and stated (1a) "I . . . took two pictures of this strange craft and swear, to the best of my knowledge, that there were no other humans in that area and that there was no camera trickery involved." See Plates 61 and 62. The key witness was using an Olympus PEN EE. The slide format was 18 x 24 mm. (half the standard 35 mm. format). The film speed was ASA 64, set 7 ft. to infinity (2).

Investigation:

In the initial report to the Canadian Department of National Defence, dated "Sept. 67," the object was described as "circular, shiny, aluminium, approximately 25 feet in diameter. First observed 2,000 to 2,500 feet above the altitude of the observer, banked and descended much lower, disappeared behind the trees moving south at high speed" (2).

One of the key witness's companions, whose deposition is most detailed, states:

No sound accompanied the sighting and no exhaust or colours of any kind were seen. What we saw was a disc-shaped object with a silvery tone to it, with a size that the Department of

National Defence in Canada described to be 35 to 40 feet in diameter with a depth ratio of 4 to 1. My guess as to its size would put it as certainly no bigger than that.

(Note: The depositions referred to are signed and carry the proviso: "And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath, and by virtue of The Canada Evidence Act.")

In the weeks following the sighting, the UFO report gained some publicity. A report containing the details was sent from the "Can Pers Unit, Calgary" to The Royal Canadian Air Force Headquarters, Ottawa, dated 7 Sept. 1967. Further data were received by the Canadian Air Force through a telephone conversation, 11-12 October 1967.

On 18 October 1967, a report was sent by the Defence Photographic Interpretation Centre of the Air Force to the Director of Operations of the Air Force. This report, by Major K. J. Hope (ref. 2), contained an analysis of the photographs.

The Canadian analysis was in the form of four tests. In "Exercise A" it was concluded that the cloud masses shown in the two photos were essentially the same, consistent with the quick succession of the photos and 15 mph. winds, and that *two* different photographs were taken on the site, consistent with very slight differences in foliage pattern in the trees. However, the possibility that the case involved "a photo montage combining a studio prepared UFO with each of two on-site shots" could not be "proved or disproved."

"Exercise B" used the camera characteristics to conclude that the fuzziness of Plate 62 could be due either to out-of-focus recopying or camera movement. The shutter speed of 1/25 sec. was consistent with, but did not prove camera motion.

"Exercise C" used meteorological data (clouds at about 5,000 ft.) to show that the alleged visibility of the objects at 2,000-2,500 ft. was credible.

"Exercise D" concluded that since the observation was made in a wilderness area that it was reasonable that no other reports had been obtained.

The Canadian report also concluded from the photographs that the object had a torus or possibly oblate ellipsoid shape, and that at about 2,000 ft. its diameter would have been 40-50 ft. and its thickness 11.5-14 ft. The two photos together indicated ascent or descent, in accord with the testimony.

The language of the report implies that since all tests were "passed," i.e., since the photos were in several ways consistent with the testimony, the case was very strong. Among the conclusions were the statements: "From statistical data supplied the object *has* a diameter of 40'-50' and *has* a depth of 11.5'-14' . . ." (WKH emphasis); "A review of all technical data, . . . indicated a very acceptable degree of compatibility. If the story and photographs are a hoax, then it is a well prepared one, that would require on the hoaxer's part knowledge of photography and possibly photogrammetry to support the written and verbal information Alternatively, the data supplied a most fortunate and lucky combination of circumstances to make a hoax realistic; . . . the four exercises . . . reasonably substantiate the observer's report, by both technical data and logic; . . . Conclusion: The findings arrived at above are supported by technical data"

At this time in the investigation (snow was already on the ground), one of the companions returned to the woods to locate the site and look for the object reportedly dropped by the UFO (3). He instructed friends to notify the authorities if he was not back within three days. (3) After one week, the key witness notified the local news media, instead of the police. When the companion emerged unscathed from the woods, he objected to the excitement and searches being conducted at that time by army and police (3). Dr. J. Allen Hynek, consultant to U.S.A.F. Project Blue Book, advised the Colorado project that a specimen or specimens brought out by the companion thought to be related to the sighting, were solder with particles of aluminum-magnesium alloy embedded in them (3).

Later investigators (3) questioned (without conclusive results) the motivation of the key witness in his handling of publicity, e.g.,

notifying the news media in preference to search authorities. Hynek, who later described the case (4) as being the closest he had come to fully documented, believable photographs, worthy of further investigation, studied the original slides in January, 1968. At this time, permission was obtained through a Montreal lawyer for the Colorado project to study the originals.

According to notes in the Colorado files (3), Hynek visited Calgary and interviewed the key witness and other persons involved in the case. This trip was made shortly after national disclosure of a photographic UFO hoax in Texas; Mr. Mike Adamson, of Calgary radio station, CKXI arranged at this time for lie detector tests to be given to the key witness and other companion who were both anxious to take such tests. These tests were to be at the expense of CKXL.

However, in a misunderstanding, Dr. Hynek left Calgary before such a test could be performed, and the radio station personnel, to whom the test was worthless without Dr. Hynek's participation in the resulting broadcast, canceled the test.

Analysis:

The analysis by the Royal Canadian Air Force reported above, is regarded as technically valid, although I believe that the interpretation attaches unwarranted credence to the case. In particular, the statements that a hoax "would require . . . knowledge of photography and possibly photogrammetry to support the written and verbal information . . ." and that "it would require a most fortunate and lucky combination of circumstances to make a hoax realistic" are too strong. It should be remembered that if a hoax were involved, the written and verbal information would be prepared *after* the photographs were taken, in accord with what the photographer thought he had "recorded" on film.

Certainly, the "Calgary" photographs do not require photogrammetric knowledge or sophisticated photographic experience to produce. In fact, the rapid panning and blurring of the second photo, and the pitch of the disk toward the observer are characteristic of photographs of hand-thrown models. In my opinion, it is basically this problem that makes the "Calgary" photos of no probative value in establishing the existence of

"flying saucers": the photographs cannot be distinguished from photographs of a hand-thrown model.

The R.C.A.F. report is reminiscent of the early U. S. Navy laboratory report on the Tremonton motion pictures: the report was prepared by a group that was inclined to believe in the existence of "flying saucers" and while the analysis was more or less valid, it did not warrant the conclusion, presented to the Robertson Panel, that possibly alien intelligent control was involved.

An important test passed by the photographs is that the background cloud patterns are identical, consistent with the statement that the photographs were taken in rapid succession. (The Salem case, for example, was classified as containing fatal internal inconsistencies when this test was not passed.)

Measurements of Plates 61 and 62 (on 8 x 10 enlargements) give angular diameters of 0°98 and 0°84, respectively. The key witness and his companion testified (attested to by the other companion) that the object was initially "no higher than 2,000 feet" (1a), and "first sighted at an altitude of not more than 2,000 feet" (1b), and losing altitude. The object had approached from a distance of "no greater than two miles" to "not more than one-half mile" when the pictures were made. A horizontal range of, say, 2,000 ft. would require an altitude of approximately 1,400 ft. to be compatible with the elevation angle of approximately 35° measured in the first photo. In the second photo, the UFO has dropped vertically downward to an elevation angle of about 14°, corresponding to an altitude of about 240 ft. These figures are consistent with the verbal testimony.

Using a line-of-sight distance of about 2,200 ft., the measured angular diameter of 0°9 corresponds to a linear diameter of 35 ft. The distance uncertainty results in a diameter uncertainty of perhaps 40%. Thus, the *verbal* testimony, combined with the photographs, indicates a linear diameter of 35 ± 14 ft.

After examination of enlarged images, I see no evidence to support the R.C.A.F. assertion that the object has a toroidal shape. Only the

blurred image (Plate 62) is pitched up toward the observer, and a light zone not quite centered in the dark disk can be interpreted as a highlight, as opposed to a central hole.

Dr. Hynek reported to the project that Fred Beckmann, of the University of Chicago, had studied the original slides with a densitometer and concluded that the image was a "real," photographic image, and that there seemed to be some haze in front of the object suggesting considerable range (See the similar analysis of McMinnville, Ore., Case 46). However, in view of the shiny nature of the surface, the clear presence of bright highlights, and the relatively high contrast of distant ground details, it would be difficult, in my judgment, to get a clear indication of enough scattering between the observer and the UFO to indicate a distance of the order of only 2,000 ft.

Conclusion:

The tests which could be performed were consistent in all respects with the verbal testimony. The tests included: (1) Time spacing of the pictures; (2) compatibility of reported range and altitude with measured elevation angle; (3) compatibility of reported size with measured angular size and reported distance. Characteristics of the reported "craft," assuming the reported distance, would be diameter 35 ± 14 ft. and thickness 8 ± 3 ft.

In spite of the internal consistency of these results, it must be stated that the photographs are also consistent with a hand-thrown model and that there is insufficient information content to rule out this hypothesis. Therefore, the case cannot be said to contribute significant evidence in establishing the existence of unusual aircraft.

Sources of Information

1. Statutory Declarations, 28 February 1968
 - a. By the key witness
 - b. By the first companion
 - c. By the other companion
2. Hope, Maj. K. J. (18 October 1967) "Photographic Analysis - Two Copy Colour Slides of Alleged UFO"
3. Notes on telephone conversations between Dr. Roy Craig (Boulder), Dr. J. A. Hynek, and others concerned with case. January - March, 1968.
4. Grescoe, Paul. *The Canadian Magazine*, 25 May 1968.

Case 58

Sonora and Camarillo, Calif.

1 November 1967 (Sonora); 27 December 1967 (Camarillo)

Investigator: Hartmann

Abstract:

Two objects photographed in unrelated incidents by Universal City Studios are judged to be real but of little probative value in establishing the existence of extraordinary flying objects. These objects can be attributed easily to airborne debris.

Background:

Time: 12:10-12:15 p.m. PST (S); 10:00 a.m. PST (C)

Location: On location near Sonora; Broom Ranch near Camarillo

Camera Data: 35 mm motion picture camera; 24 frames/sec; Eastman Color film processed by Techniscope; approx. f9; f.1. 30 mm (S) 100 mm (C);

Scene (from "A Man Called Gannon"): 59A-2, "A" Camera (S); 317A-5, "B" Camera (C).

Direction of view (both cases): eastward, elevation about 30° above horizon.

Weather conditions: Cloudless deep blue sky in both cases.

Sighting, General Information:

During the filming of a feature motion picture, "A Man Called Gannon," two lengths of footage, when developed, showed unidentified images drifting across the field of view. In neither case did any of the film crew or actors recall seeing an object. According to film company personnel, this was the strangest aspect of the case, because the cameramen habitually look for aircraft or contrails, especially in historical dramas. In situations where aircraft are filmed the

scene is immediately reshot, and the footage showing inappropriate detail is rejected. However, in these two cases the images were discovered only during the editing, when the processed film was being viewed.

The first case, shot at Sonora, Calif., 1 November 1967, showed a small bright source drifting slowly toward the top of the screen (Plate 63) at the very beginning of a sequence, while the camera slate is still being shown. The slate is removed and the scene shows only deep blue sky and the drifting object, which leaves the upper margin near the left corner after roughly ten seconds, before any subsequent action starts. The object is below or near the resolution of the film and resembles a wide-angle shot of the moon, except that the camera was stationary and the object is drifting.

The second case involves film shot on the Broom Ranch near Camarillo 27 December 1967. During a dialogue sequence the camera was focused on the head and shoulders of an actor who was astride a horse. The horizon is out of the picture. At this time a pale, circular extended object, which appears to be an out-of-focus image of a point source or a small bright source, drifts across the screen from the right edge to the left edge in roughly 15 sec. (The image does not reproduce well in black-and-white.) The object definitely appears to pass behind the actor as it is not visible against several dark portions of his clothing. Again, the camera was fixed, although there is a sudden offset to compensate for a movement of the horse. The shooting of this scene will not be cut from the final motion picture.

Investigation:

At my request, Mr. William J. Wade, head of the camera department at Universal Studio used his standard depth-of-field tables to check the depth of field in each case. These tables are based on a circle of confusion of 0.002 in. diameter. In the Sonora case, the camera was focused quite close (after the slate is removed and the UFO has disappeared, an actor jumps into the foreground). For a 35 mm lens at f8, focused

at 25 ft., the depth of field is 7 ft. 2 in. to infinity. Thus an object passing anywhere in the background would be in focus. This is consistent with the small, apparently unresolved, bright image. In the Camarillo footage, the longer focal-length lens had less depth of field. For a 100 mm lens at f8, focussed at 20 ft. (the approximate distance of the actor) the depth of field is 16 ft. 1 in. to 27 ft. 2 in.; at 25 ft. it is 19 ft. 2 in. to 36 ft. 8 in. This restricted depth of field is consistent with the image being badly out of focus, assuming that the object passed at a distance greater than some 30 ft.

There is no reason to suspect that any fabrication is involved. The officials with whom I spoke were helpful and appeared genuinely puzzled. There has been no evidence of any attempt to capitalize on the event. Had the studio wanted to fabricate an UFO, the facilities were readily available to create a much more vivid result.

Conclusion:

It is concluded that real objects were photographed in both cases, consistent with the camera geometry. The information content of the films is so low that the cases are of little value in establishing the existence of "flying saucers." In addition, it strains credulity to argue that a single film crew would unknowingly and accidentally photograph rare, extraordinary objects on two occasions occurring 56 days and approximately 275 mi. apart.

Alternatively, it is easy to argue that both objects may have been some sort of wind-blown debris, either natural, such as a bit of milkweed-type plant debris, or artificial, such as a bit of white tissue. A two-inch diameter white object at about 50 ft. distance would be consistent with the observations. The camera crew, checking for aircraft, would not have seen anything. The object would be in focus in the Sonora case, out of focus in Camarillo. In the Sonora photographs the object would subtend an angle of only $0^{\circ}2$ and show up as only a small bright source. During the shooting, the object would be unlikely to attract the attention of the camera crew, being neither "up in the sky" at infinity, nor in the region of focal interest.

Sources of Information:

Personal visit by W. K. Hartmann to Universal City Studios, Universal City, Calif.; personal discussions with Howard Cristie, Producer, and William J. Wade, Head, Camera Department.

Case 59

Lakeville, Conn.

January 1967

Investigators: Ayer, Wadsworth

Abstract:

Many unidentified sightings, principally of lights at night, were reported in the Lakeville area over several months. Most, including a photograph, came from a boys' prep school. Some of the sightings probably were aircraft lights, but no generally applicable explanation is apparent.

Background:

Various reports had indicated a wave of UFO sightings in the Lakeville area from about Thanksgiving Day 1966 into the spring of 1967; these emanated chiefly from a boys' prep school near Lakeville. On 20 September 1967, while the CU investigators were in that area, they visited the school and also obtained copies of State Police reports on some of the sightings.

Investigation:

From the police reports and investigators' interviews, 20 September 1967 at the school, it developed that a teacher and at least seven students had seen an unidentified object or objects on various nights from 12 to 23 January, and that one student had taken a photograph of it. The teacher described it as an elliptical object with two pulsating red lights on the sides, moving south in the western sky. His sighting was on 19 January, about 9:55 p.m. on a clear, cold night. The boys gave essentially the same description as the teacher, except one who reported erratic motion and hovering in various parts of the sky on several occasions.

The investigators learned also that a 12-yr.-old boy who lived near the school had made a Polaroid photo of a pattern of colored

lights that he had seen in the sky from the living room of his home on the evening of 24 January; but they were unable to interview the family or obtain the photo.

No practicable means of clarifying the visual sightings was available, so that the investigation reduced to examination of the photograph the student had made (Plate 64). The object was sighted about 9:00 or 10:00 p.m. on or about 23 January. According to the 17-yr.-old student, who was photographer for the school paper, others saw the object and called him; but it had disappeared when he arrived outside the dormitory with his camera equipment. He set up the camera on a heavy-duty tripod and aimed at the last observed position of the object. After about five minutes it reappeared, and he exposed the film for about seven seconds. The object was in view for about five seconds of the exposure, during which time it pulsated twice before it disappeared behind Indian Mountain. He immediately rewound the film, with only the one exposure on it, and developed. The exposed frame was torn in rewinding, apparently because it had become very cold and he did not wait for it to return to room temperature.

The object was seen in the western sky, north of Indian Mountain, moving south. The photographer described it as a "bright point of light" that blinked or pulsated irregularly. From his estimate of its location relative to the mountain, it was apparently a few hundred feet above the ground and at least 2.5 miles distant. The night was clear and very cold.

The camera was a Voightlander Ultramatic 35mm., with a 50 mm. Skopar f/2.8 lens. A Glanz-Samigon monocular was attached to the lens to give 7X magnification (the student photographer had prepared the combination after earlier sightings). The optical combination had a focal length of 350 mm., aperture f/8. The film was Kodak Tri-X, speed ASA 800; it was developed in D-76 diluted 1:1, at 68°-70° for 14 min., agitated ten seconds each half-minute for maximum contrast.

The Photograph:

The edges of the image parallel to the direction of motion are sharp, as confirmed by densitometer traces, indicating that the object was accurately focussed. Measurement of its diameter, together with the known focal length of the camera system, gives an angular diameter of about 7' of arc, more than one-fifth the diameter of the moon. This observation conflicts with the photographer's description of it as a bright point. In explanation, he stated in a letter dated 22 October 1967: "Because of the relatively poor quality of the optical system I was using, the images on the film are rather crude representations of the UFO. It was actually a bright point of light. The lens and possibly the film have diffused the image somewhat into circular form." Nearly all of such diffuseness would have to be attributed to the lens system, as the film was capable of rendering detail well under 1' of arc; and such serious aberration does not seem likely for the equipment he was using, if it was properly focussed. The photographer's judgment of the visual appearance of the object would have been influenced by its brightness and his state of accommodation, as well as his visual acuity.

The fact that part of the film frame is missing raises obvious questions as to authenticity. However, the rather jagged tear, with emulsion pulled off the film base in a sawtooth pattern, is characteristic of Tri-X film torn at a temperature of around 0°F. At room temperature it tears smoothly, leaving a nearly straight edge on both film base and emulsion. This observation obviously supports the statement that the film was accidentally torn while being rewound at low temperature.

It should be mentioned that the State Police report 25 January 1967 on the sightings at the school listed as exhibits "two photos of UFO taken on Jan. 19, 1967," at approximately 9:00 p.m. and approximately 9:10 p.m., both with five seconds exposure. The student photographer told the CU investigators that he had made only the one exposure.

If the photograph is indeed the image of a moving luminous disk, then it is a time-exposure showing a disk that was not uniformly bright over its area, and was either moving erratically or changing in brightness erratically, or both. However, these unsophisticated observations offer little basis for speculation as to the identity of the object or the authenticity of the photograph.

Dr. William K. Hartmann notes that "the image bears a strong resemblance to a slitless spectrogram of an annular emission-line source."

PLATES

The plates and legends following include not only plates in the case study section (IV) but all plates in the report.

LEGENDS

PLATE NO.

1. Lenticular cloud photographed in Brazil. Photo courtesy APRO.
2. Sub-sun. Photo courtesy NCAR.
3. Time "trail" exposure of the moon. Photo by author.
4. Reported "UFO" identified as a film defect. Palomar Mt. Photo courtesy Mrs. Z. Rungee.
5. Reported "UFO" identified as a developing defect. Pinawa, Manitoba. Photo courtesy of the witness.
6. Lens flare (upper right) caused by street lamp in photograph of Comet Ikeya Seki. Photo by author.
7. "Physically fabricated" UFO photo made by hand-throwing a spinning model. Photo by author.
8. "Physically fabricated" UFO photo - a suspended model. Photo by author.
9. "Physically fabricated" UFO photo. Nighttime time exposure of a model held by hand and illuminated by flashlight. (Cf. Beaver, Pa., case.) Photo by author.
10. "Optically fabricated" UFO photograph. Double exposure of elliptical lamp superimposed on a landscape. (Cf. El Guapo, Venezuela, case, APRO bulletin.) Photo by author.
11. "Optically fabricated" UFO photograph. Cut-out drawing superimposed on a print and recopied. Photo by author.
12. "Optical fabrication." Full moon in the midst of a sunset scene -- a physical impossibility. Image of moon (behind the observer) was reflected in a sheet of glass through which photo was taken. Photo by author.

13. Photograph taken from an orbiting spacecraft showing the luminous airglow layer above the earth illuminated by moonlight. At an oblique angle to the earth's surface the zodiacal light band is apparent as a conical band. The bright object near the apex of the zodiacal band is the planet Venus.
14. The airglow layer photographed from a rocket. The earth's surface is not illuminated by moonlight in contrast with the photograph in Plate 13. Just beneath the airglow layer are many stars and the solid earth can be delineated by means of city lights.
15. Auroral zone inclined to parallels of geographic latitude.
16. Sketch made by Gemini 7 astronauts of an auroral arch below the airglow layer.
17. A 100x (approx.) enlargement of Gemini 11. Frame 10, of Magazine 8. S66-54661.
18. A 100x (approx.) enlargement of Gemini 11. Frame 9, of Magazine 8. S66-54660.
19. Photograph of a Radar Evaluation Pod (REP) made by Gemini 5 astronauts.
20. The appearance of Agena as seen at distances varying from 25 to 250 feet.
21. A spectacular photograph showing the rendezvous of GT-6 and GT-7.
22. "Uriglow." Brilliant stars appeared when crystals formed from a urine dump at sunrise were illuminated by the sun.
23. McMinnville photo 1. Photo courtesy U.P.I.
24. McMinnville photo courtesy U.P.I.
25. Approximate apparent path of UFO. Photo by author at original site, June, 1967.

26. Enlargements of UFO images from photos 1 and 2.
27. Portion (about 1/3) of a frame (approx. no. 114) of the Great Falls motion picture. At bottom edge of frame are ventilator ducts on a nearby building.
28. The first Barra da Tijuca photo, reportedly showing the disk approaching. Photo courtesy APRO.
29. Barra da Tijuca photo 4. Lighting of the disk is clearly from the left, but details of the hillside suggest lighting from the right. (Cf. Plate 30) Photo courtesy APRO.
30. Detail of Plate 29. The palm tree and clumps of foliage indicate shadows on the left with incident illumination from the right. Photo courtesy APRO.
31. Typical frame from the Tremonton, Utah, movie. Black bars mark the top and bottom of the original frame.
32. Ft. Belvoir photo 1. The army private who took the photographs was called from his building to see the approaching object, which appeared to be a black, non-reflecting ring.
33. Ft. Belvoir photo 2.
34. Ft. Belvoir photo 3.
35. Ft. Belvoir photo 4.
36. Ft. Belvoir photo 5.
37. Ft. Belvoir photo 6.
38. Detonation of "atom bomb simulation demonstration" at Ft. Belvoir. Photo courtesy of the witness.
39. Black mushroom cloud produced by "atom bomb simulation demonstration" at Ft. Belvoir. Photo courtesy of the witness.
40. Stable black vortex ring detaching itself from mushroom column in "atom bomb simulation demonstration" at Ft. Belvoir. Photo courtesy of the witness

41. Frame from the Vandenberg tracking film. Rocket is moving away and down toward southern horizon. Only the bright exhaust is visible. The UFO, identified as Venus, appears to move upward past rocket. Width of field approx. 2°.
42. Santa Ana photo 1, looking NNE down Myford Road through front windshield of Heflin's truck. Santa Ana freeway about 0.5 km distant.
43. Santa Ana photo 2, looking out right window of Heflin's truck.
44. Santa Ana photo 3, looking out right window of Heflin's truck. Standpipe about 80 m distant.
45. Santa Ana photo 4, alleged to be looking NNW from middle of Myford Road, outside truck.
46. Alleged site of photo 4, showing match with tree and wire. (Cf. Plate 45.)
47. 4 1/2 cm (1 3/4 in) diameter Leica lens cap suspended on a fine thread a few inches outside van window, 16 January 1968. Copied from a Polaroid print.
48. The first of the two Case 53 photographs. Object reportedly approached from the left, then hovered. The moon is at the left.
49. The second of the two Case 53 photographs. The moon is at the right.
50. Attempted simulation of Case 53 photo 1, made by holding an illuminated object (blurred by hand motion). Moon at right.
51. Attempted simulation of Case 53 photo 2, made by holding a plate, illuminated by flashlight and blurred by hand motion. Moon at left.
52. Gulfstream Aircraft photo 1. The photos were made at about 5-minute intervals over a period of 20 minutes. Note reflection of window curtains.

53. Gulfstream Aircraft photo 2. The negative was inadvertently creased when a book was rested on it prior to receipt by the Colorado Project. This accounts for the diagonal streak through the image. Aircraft wing in upper right.
54. Gulfstream Aircraft photo 3.
55. Gulfstream Aircraft photo 4. Wing in upper right.
56. Enlargement of Gulfstream Aircraft Plate 53, printed at low density to show the structure of the outer halo. Scale is defined by the pattern of film defects and the grain. (Cf. Plate 53.)
57. Enlargement of Gulfstream Aircraft Plate 53, printed at high density to show the core of the bright object. While the core is overexposed, there is no evidence for the horizontal disk shown in Fig. 11 and reported visually. Scale is the same as Plate 56.
58. First of two similar alleged photographs of object seen from American Airlines Flight 387.
59. First photo of North Pacific UFO. Copyright Kenneth Baker 1967.
60. Second photo of North Pacific UFO. Copyright Kenneth Baker 1967.
61. First photograph of alleged UFO photo by the witness.
62. Second photograph of alleged UFO photo by the witness.
63. The Sonora, California, UFO. Arrow shows small, bright source which drifts toward top of frame on motion picture footage.
64. Polaroid photo of a pattern of colored lights made by a 12-yr.-old boy in Lakeville, Conn.
65. Time lapse photograph of PPI. Diameter of area covered is 300 nautical miles.
66. PPI presentation and location of targets from which radar echoes were received during the occurrence of a strong elevated duct.

67. Examples of radio interference.
68. Reflection echo during anomalous propagation conditions.
 - a. stratiform precipitation
 - b. normal ground clutter
 - c. anomalous propagation
 - d. reflection geometry

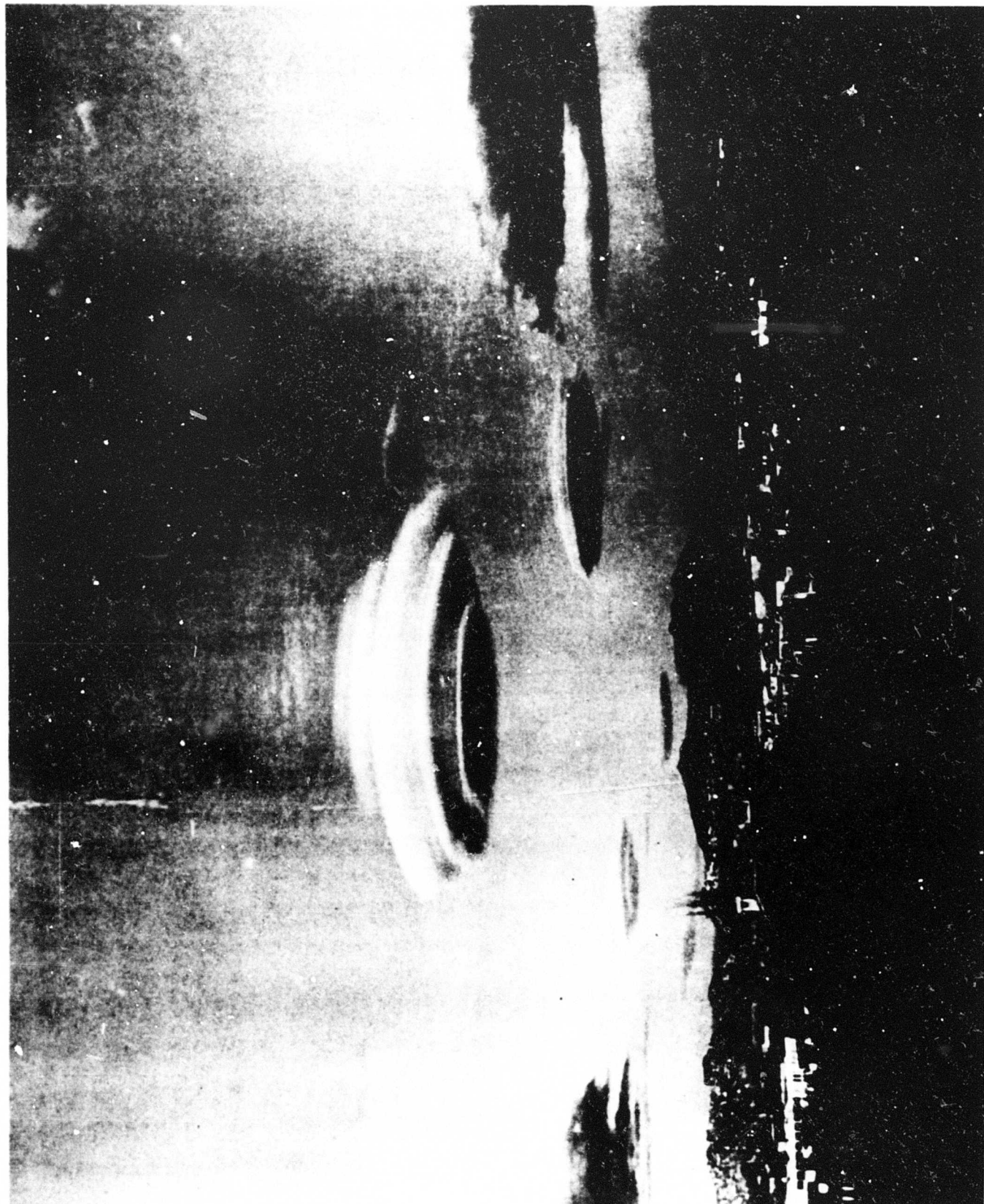
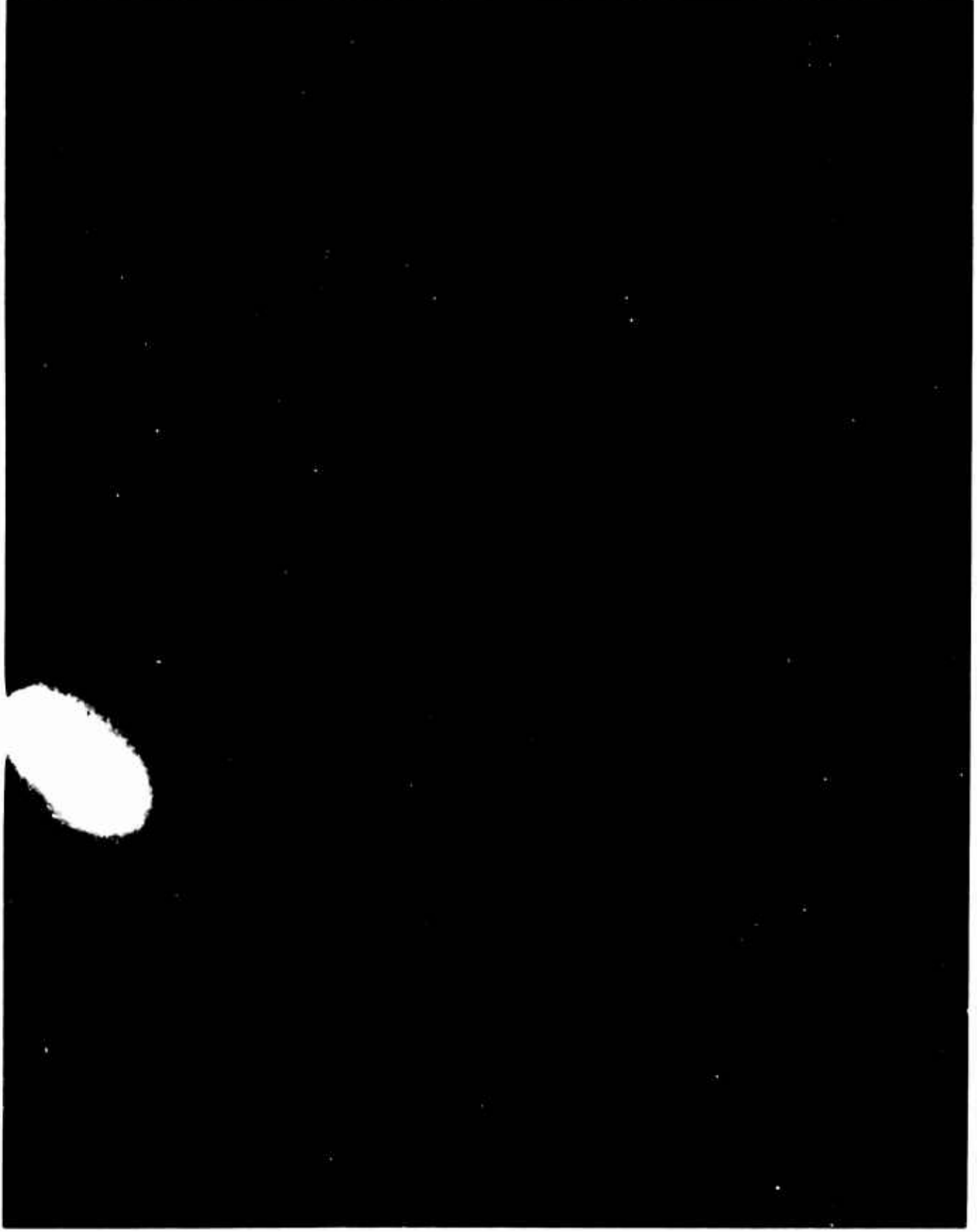


Plate 1



Plate 2



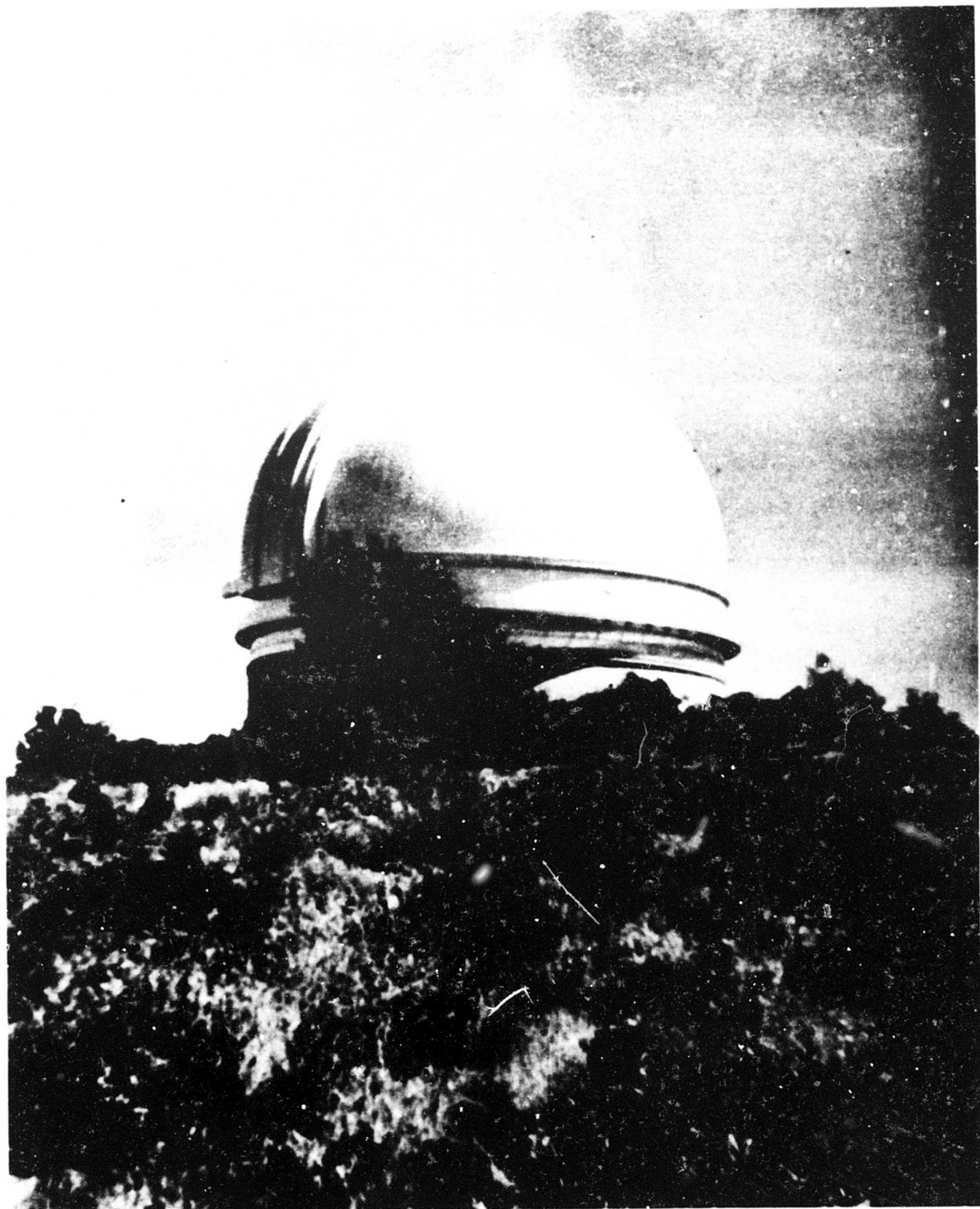


Plate 4

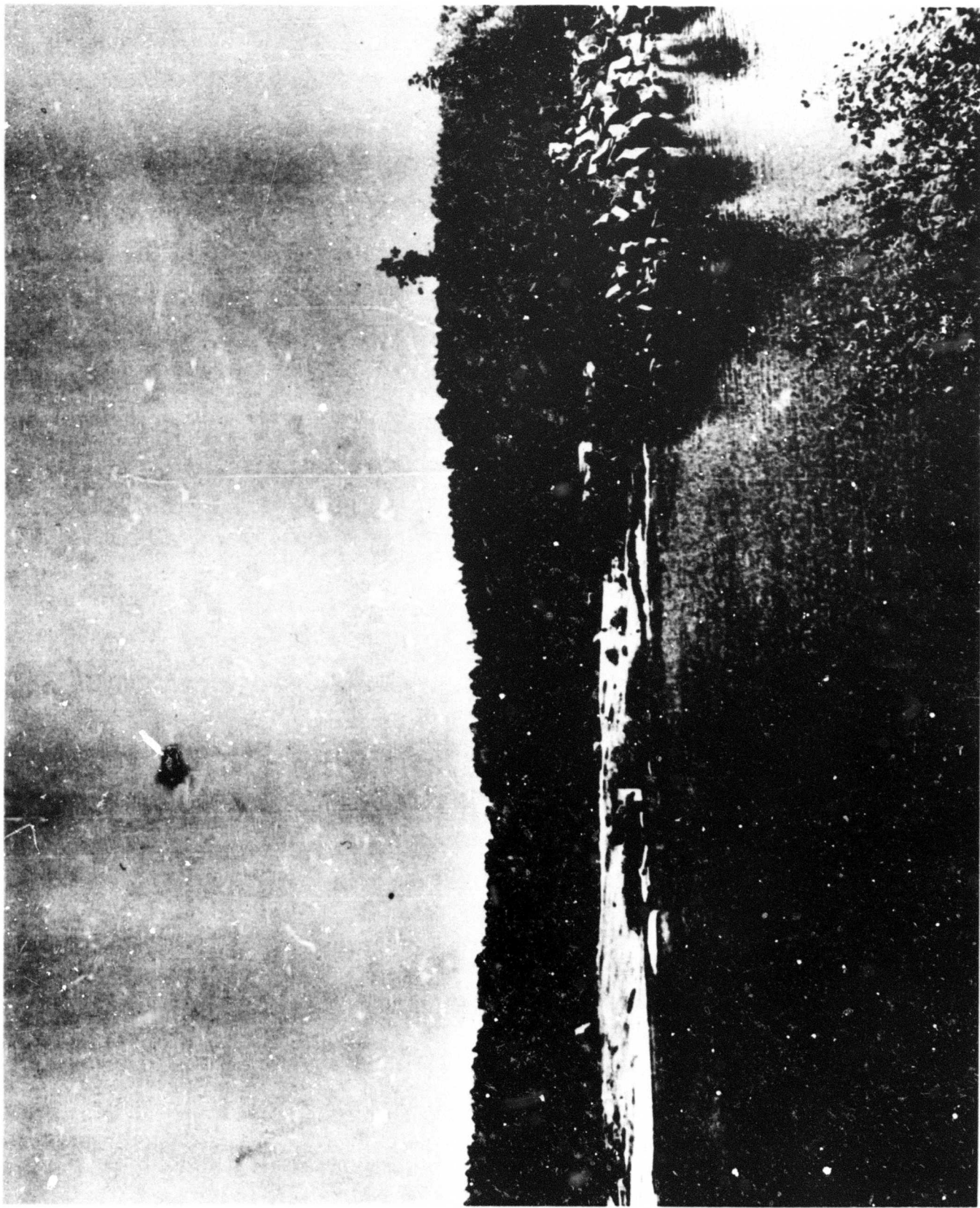


Plate 5

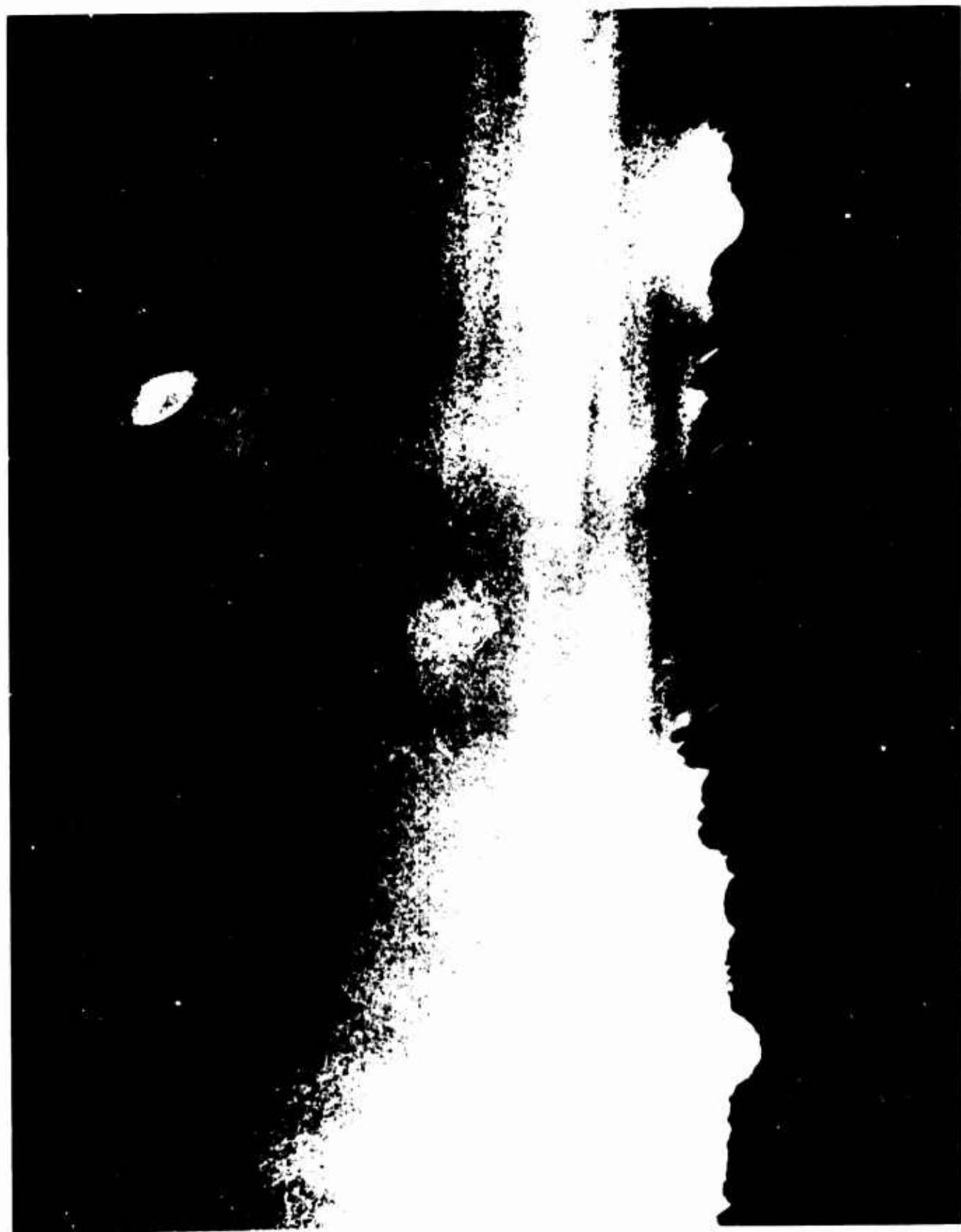


Plate 6

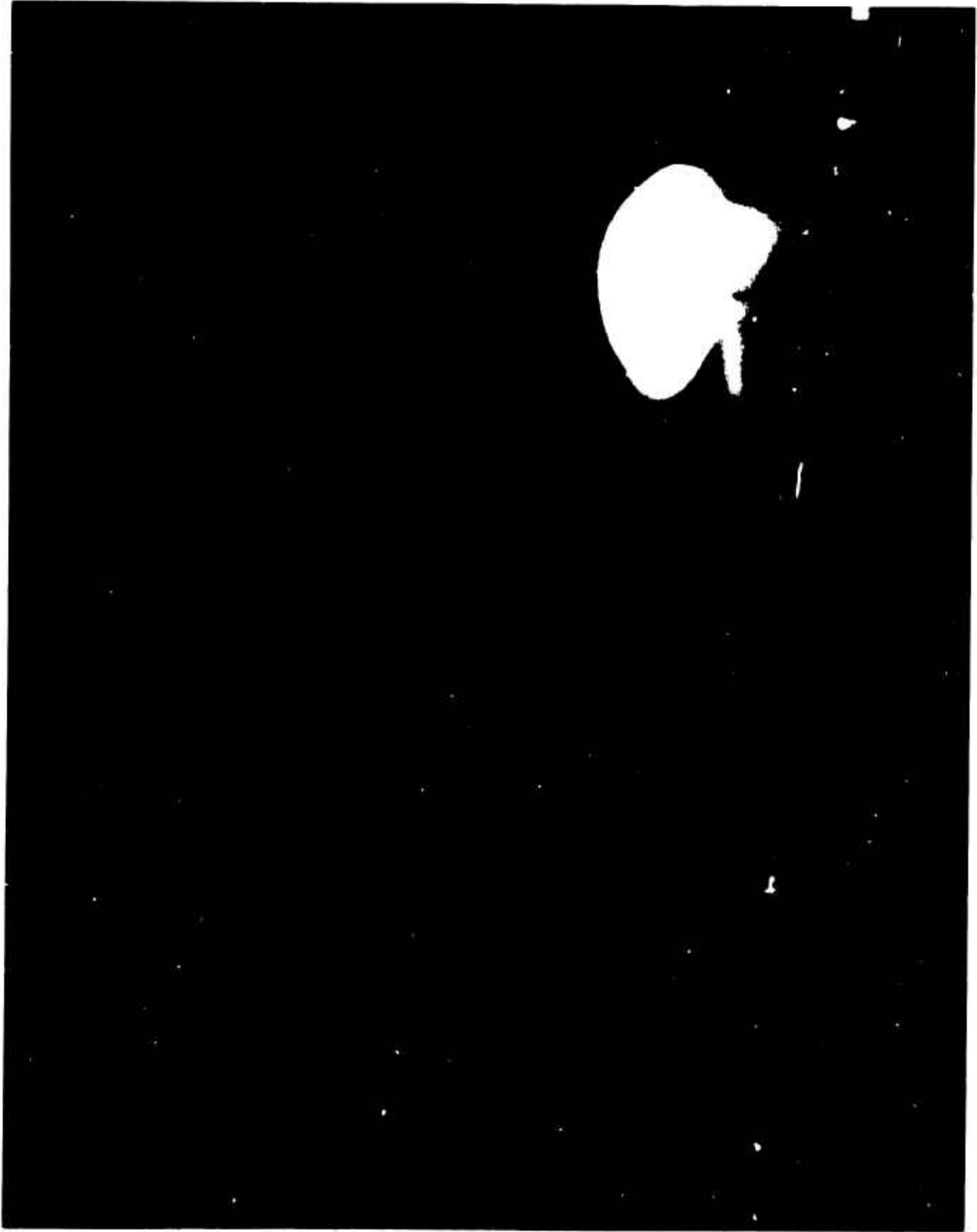


Plate 7



Plate 8

Plate 9



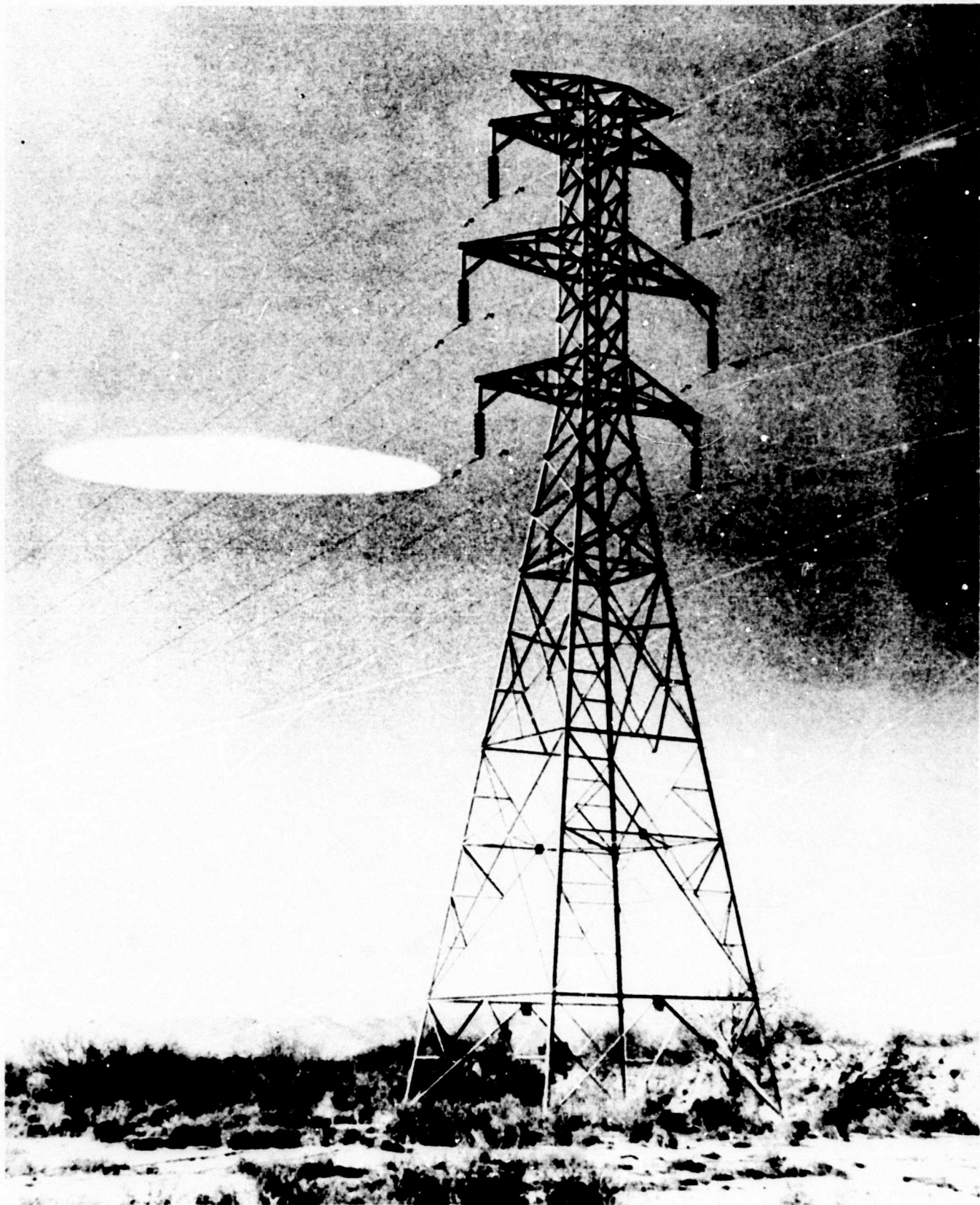


Plate 10



Plate 11

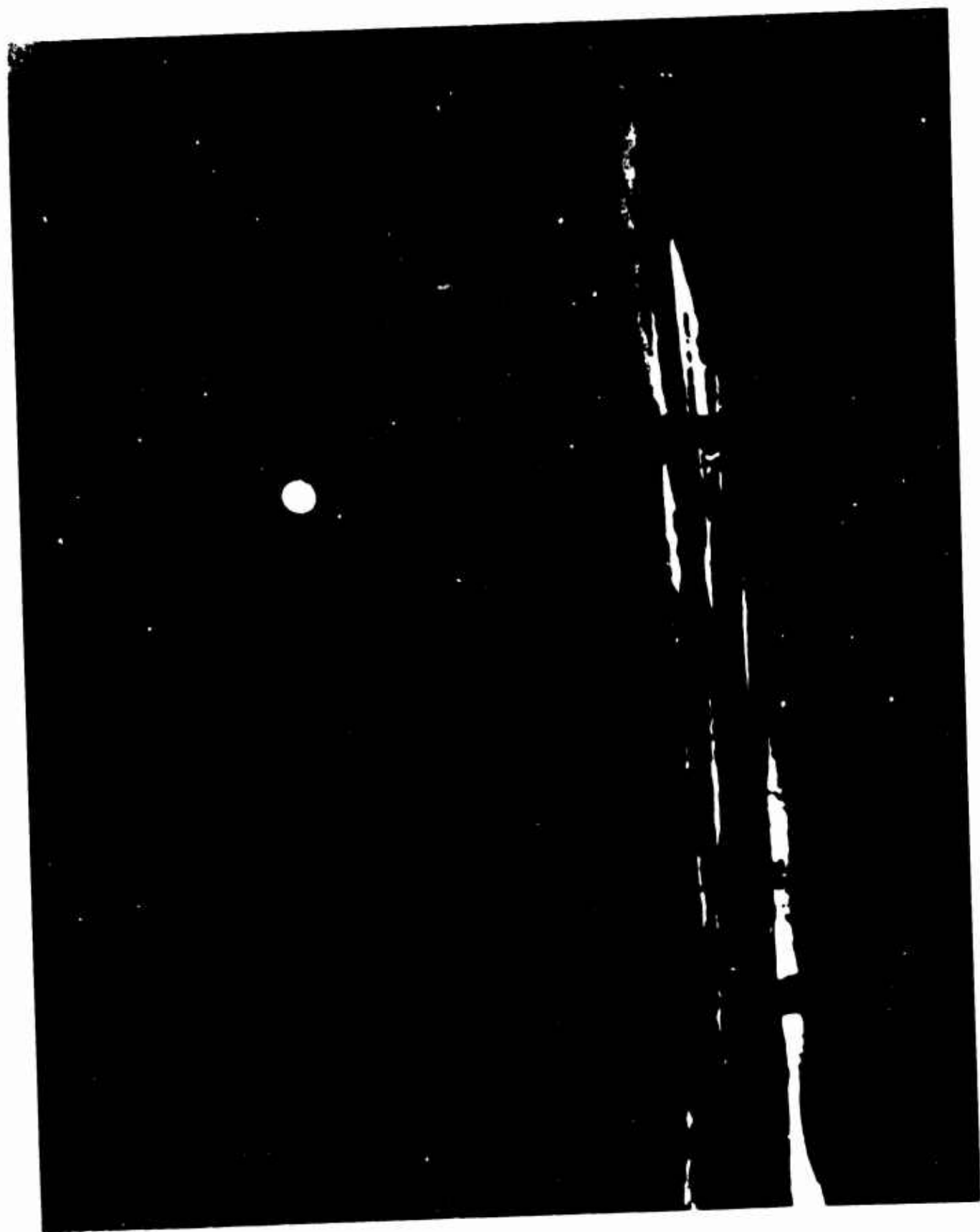


Plate 12



Plate 13

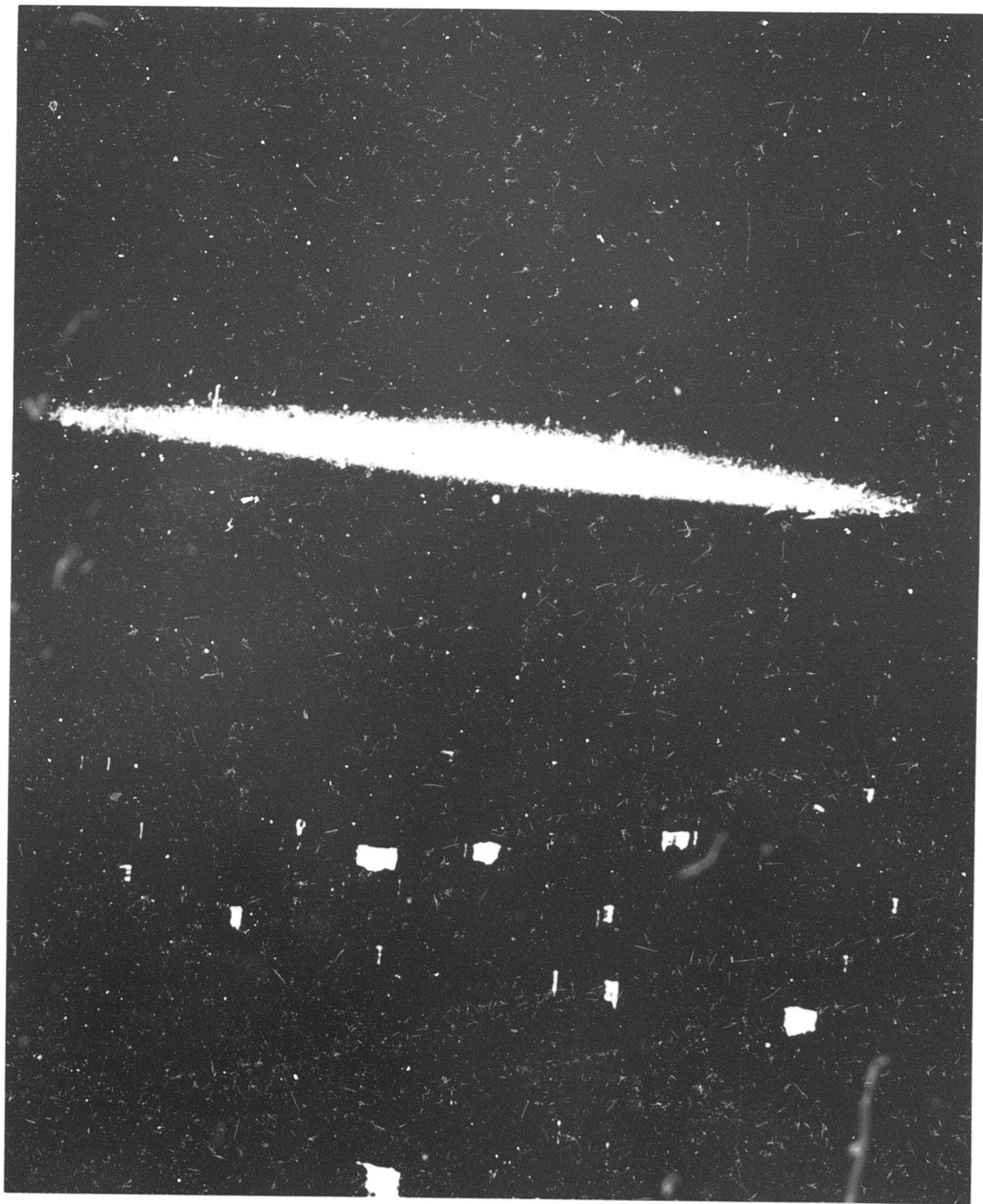


Plate 14



Plate 15

managed some light
sleep in relays. ECS
just about cool enough
and not much else.

General observation
Day time horizon



No stars visible on day time

Vega took 45 sec to go from
top of night glow to
complete occultation - bright
Air glow band

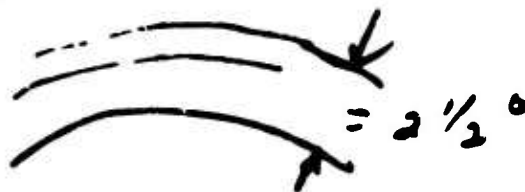


Plate 16

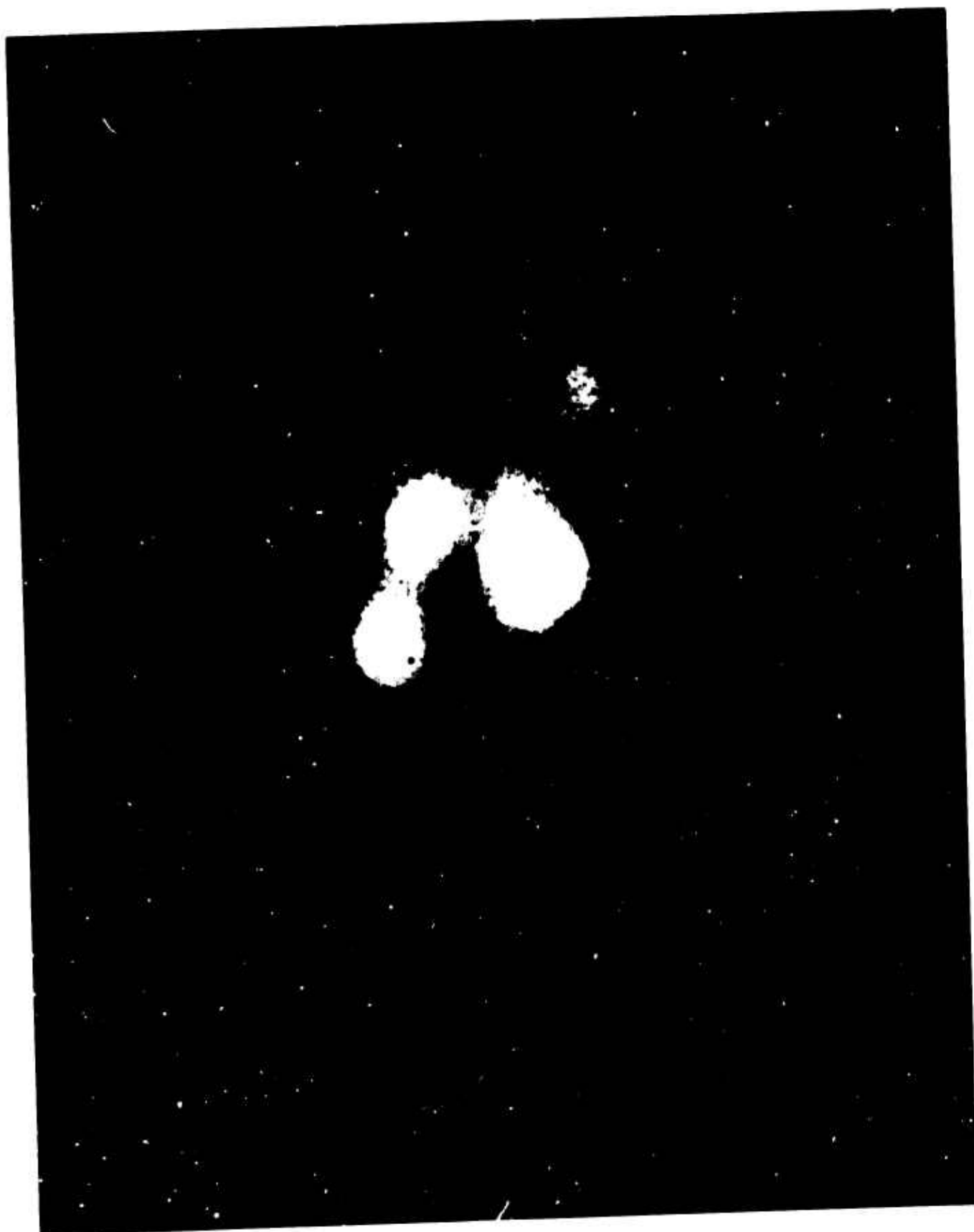


Plate 17

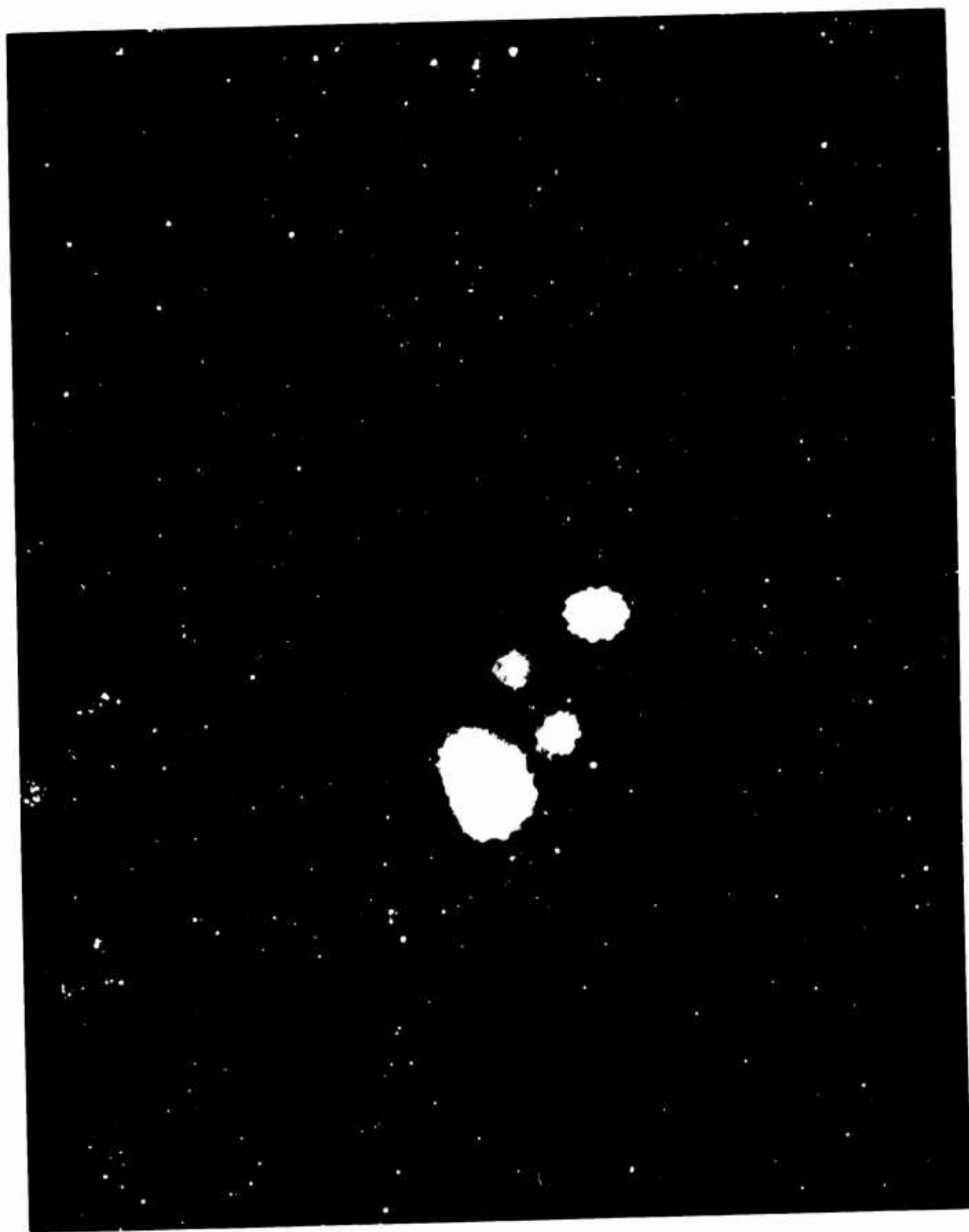


Plate 18



Plate 19

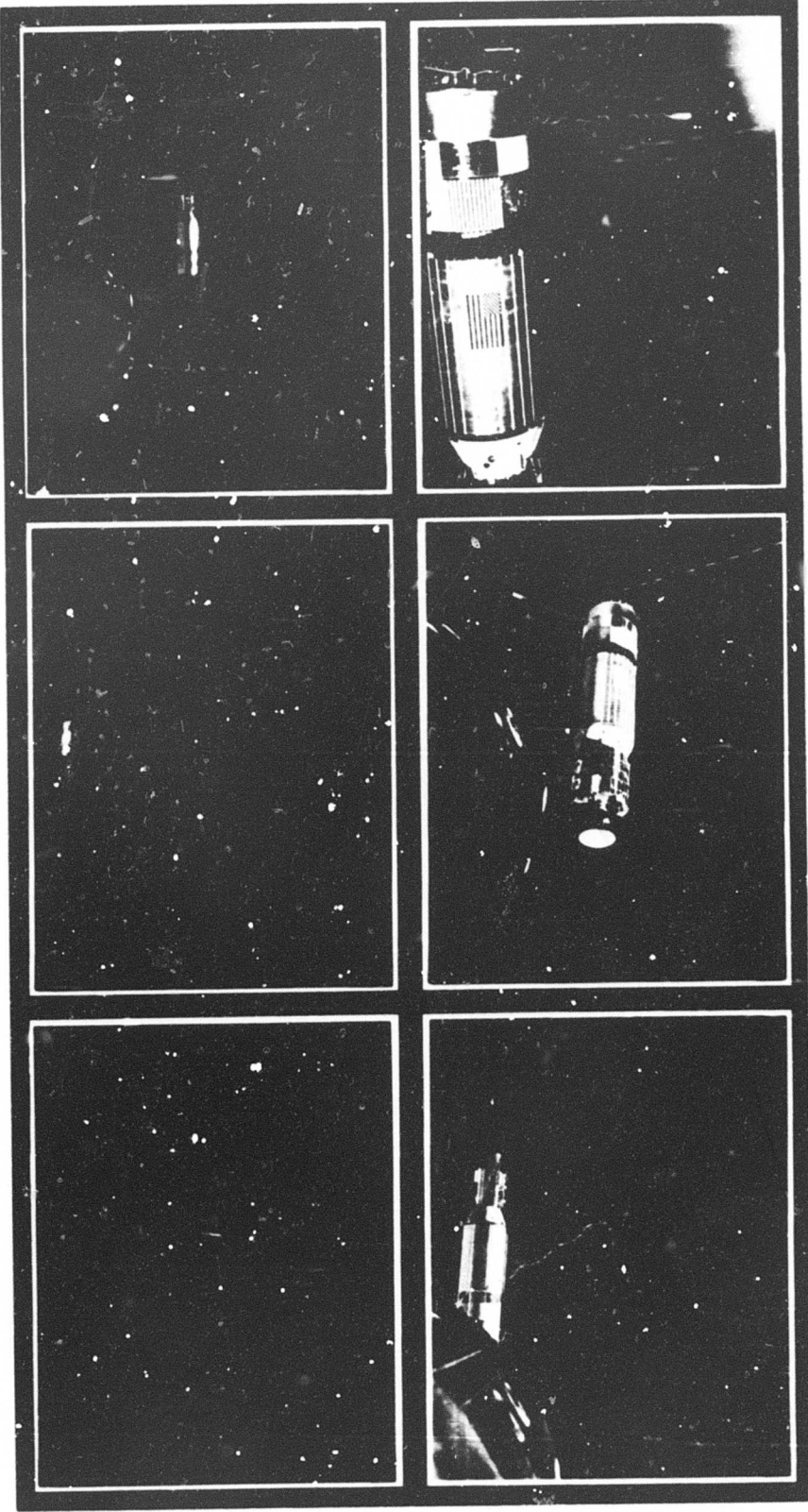


Plate 20



Plate 21

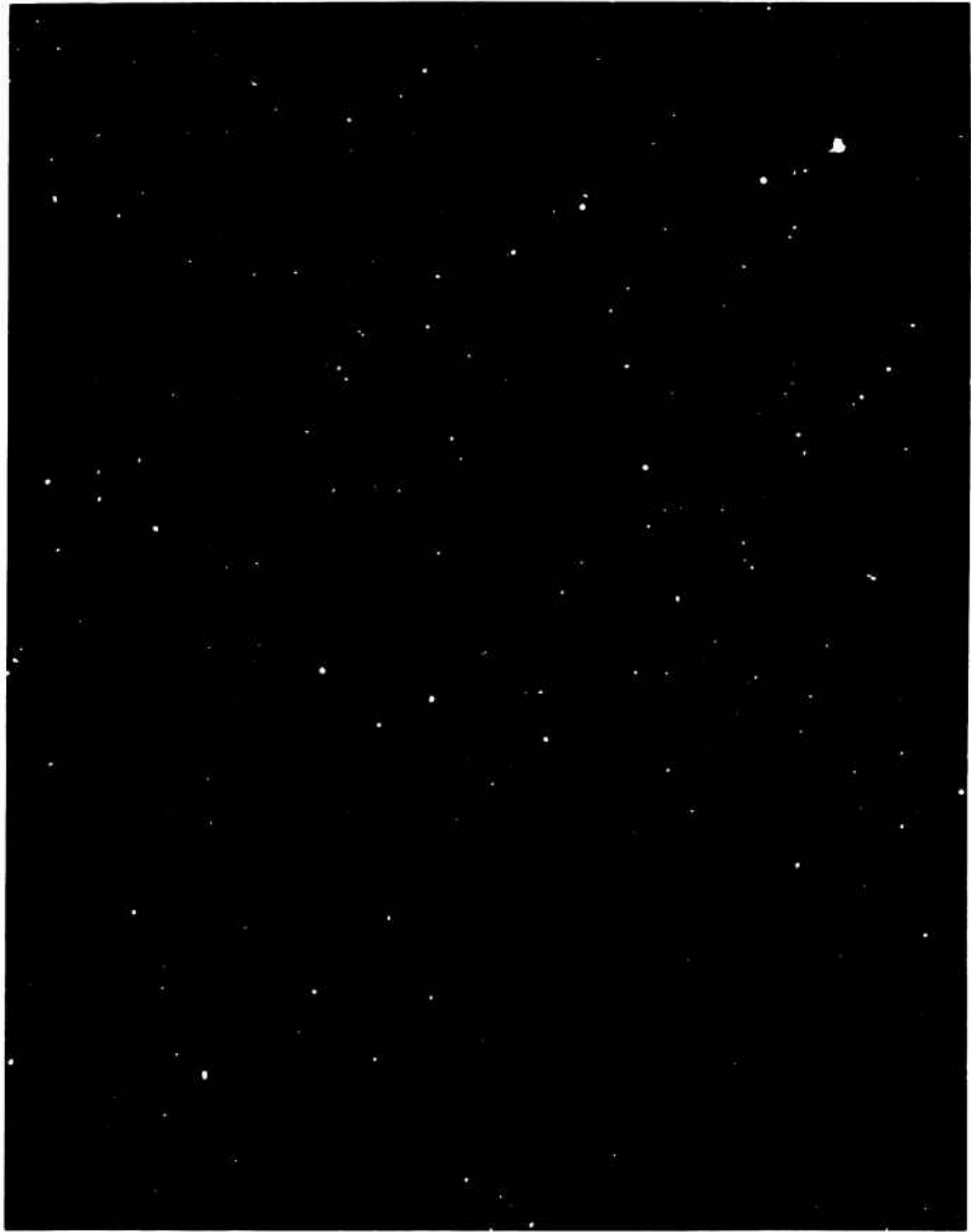


Plate 22

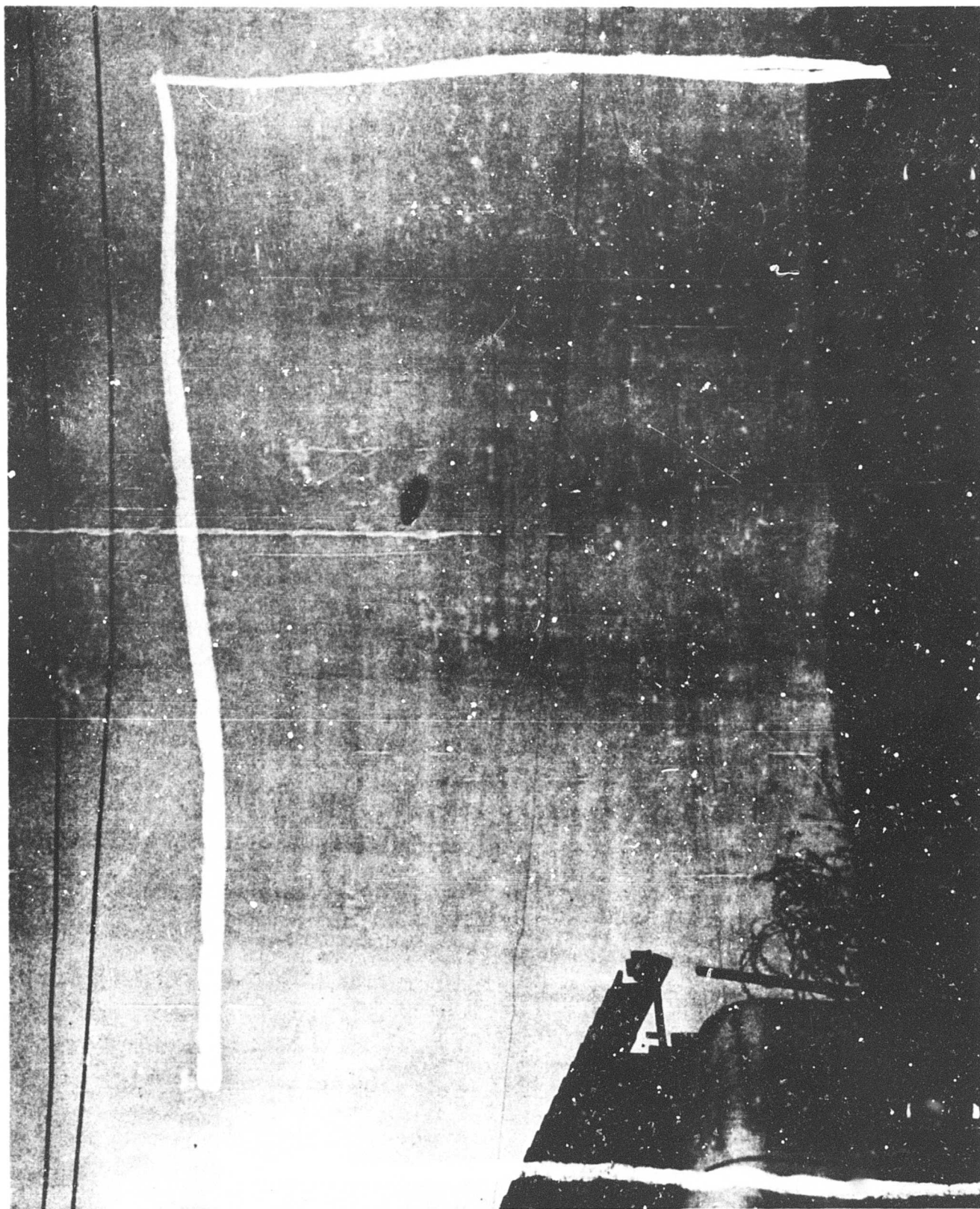


Plate 23

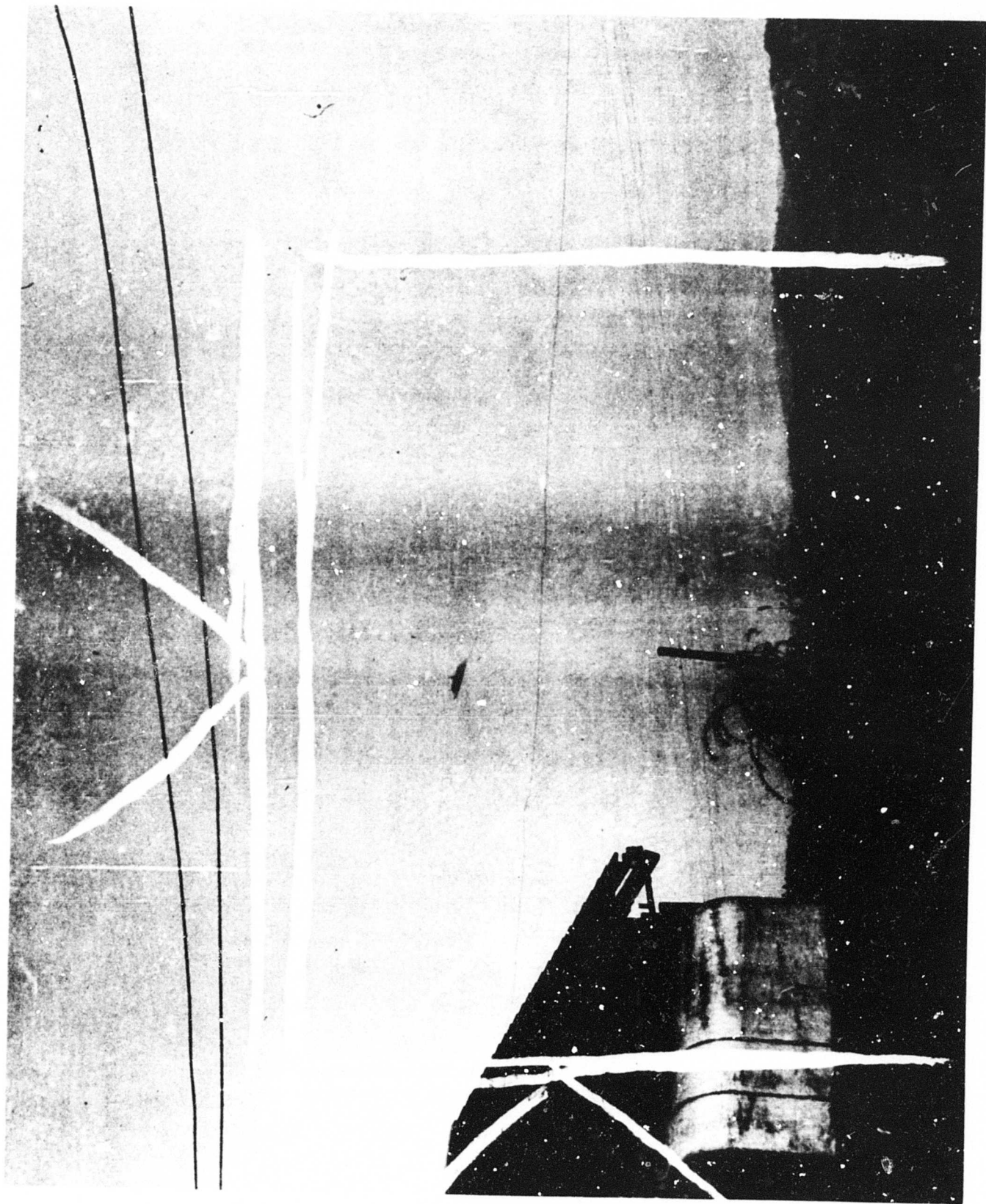
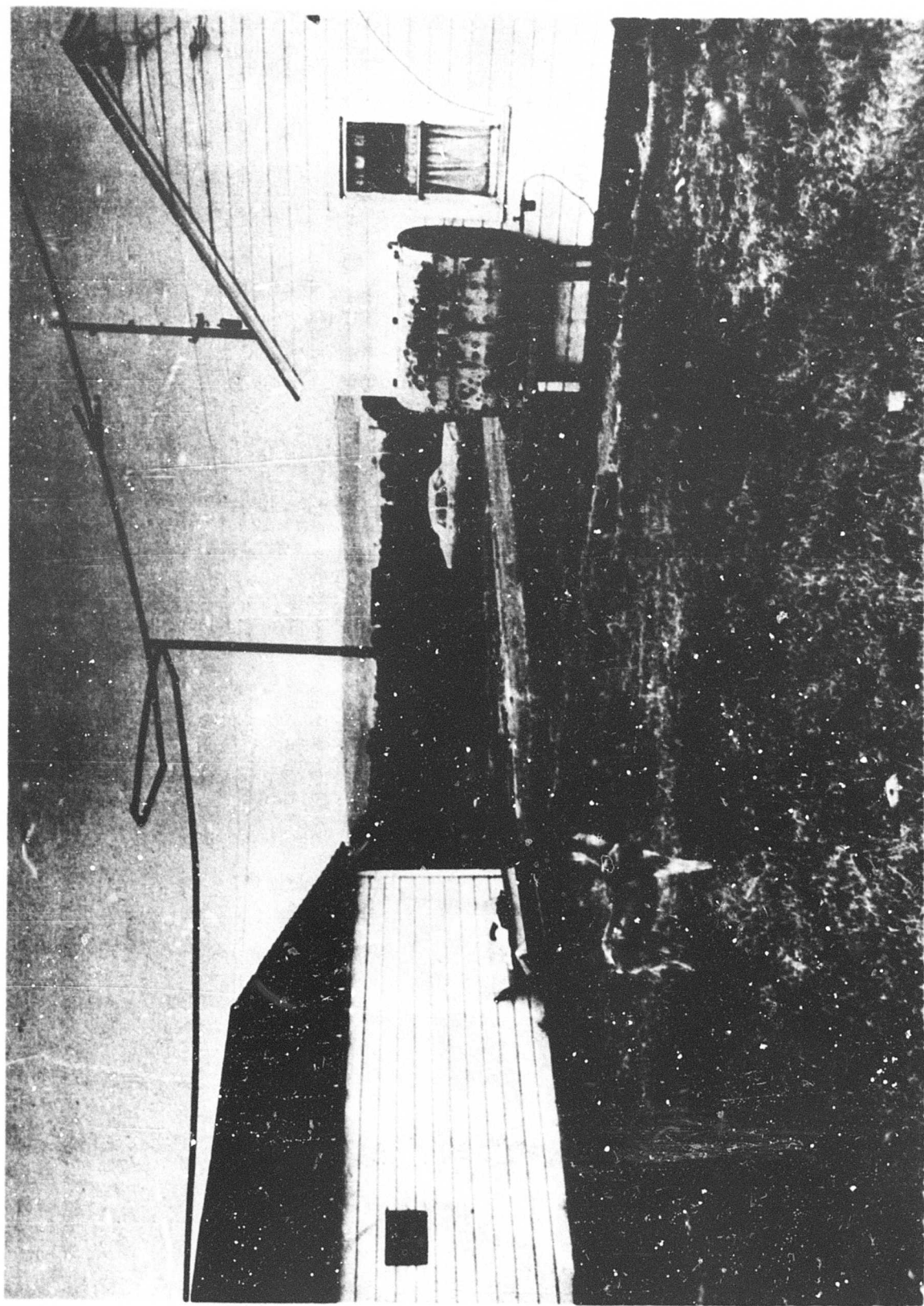


Plate 24



File 3
(Jan 1961)

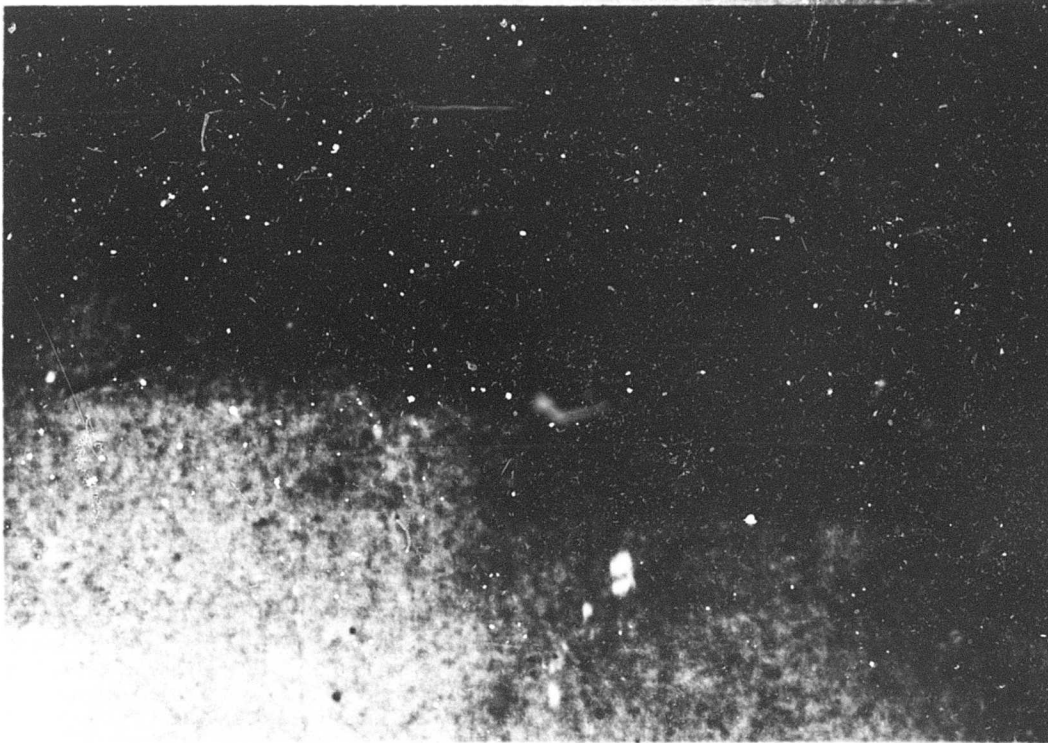
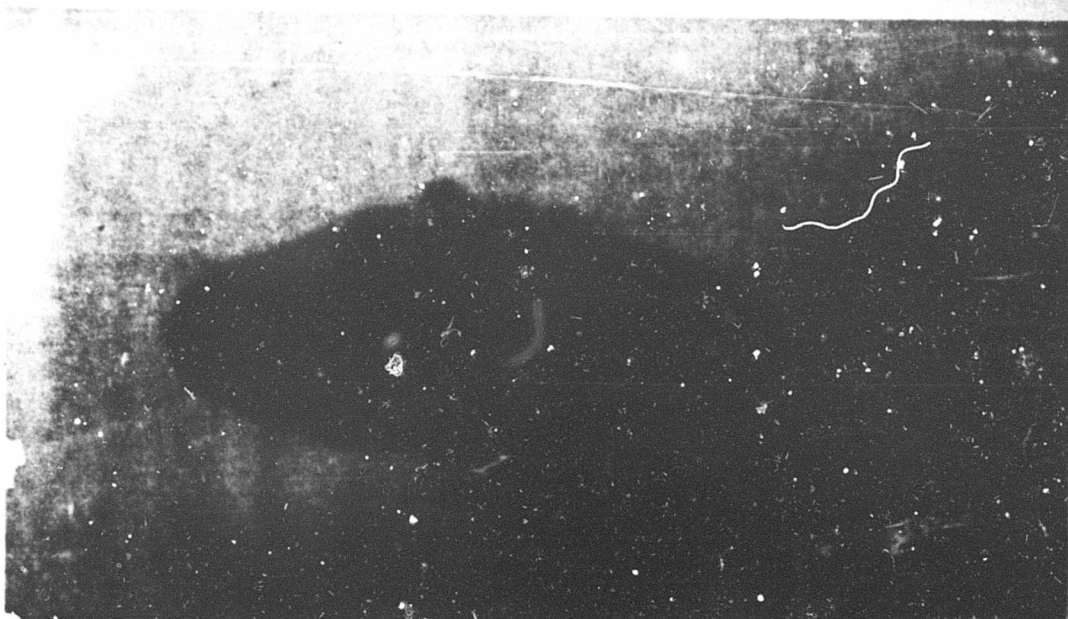


Plate 26



Plate 27



Plate 28



Plate 29



Plate 30

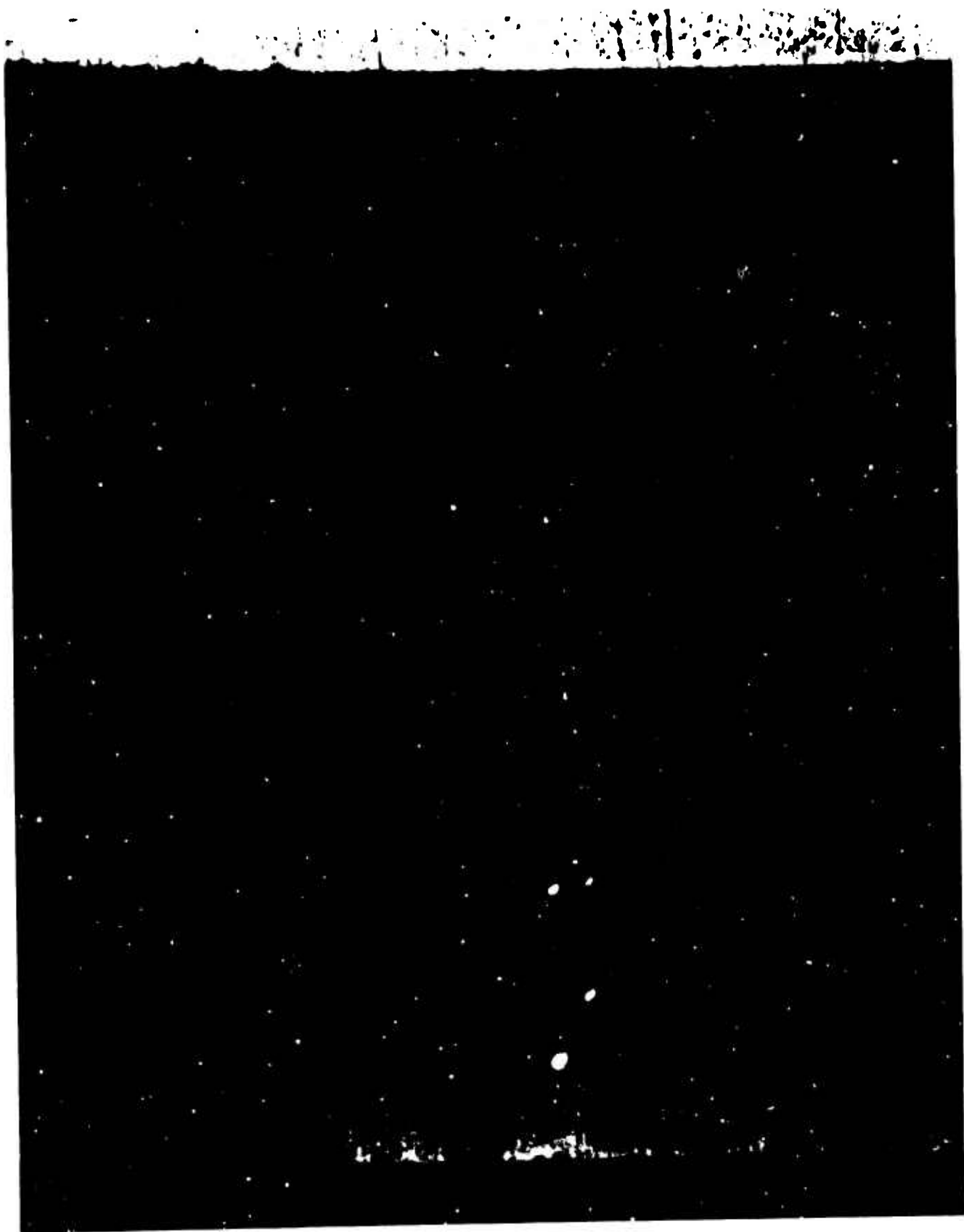


Plate 31

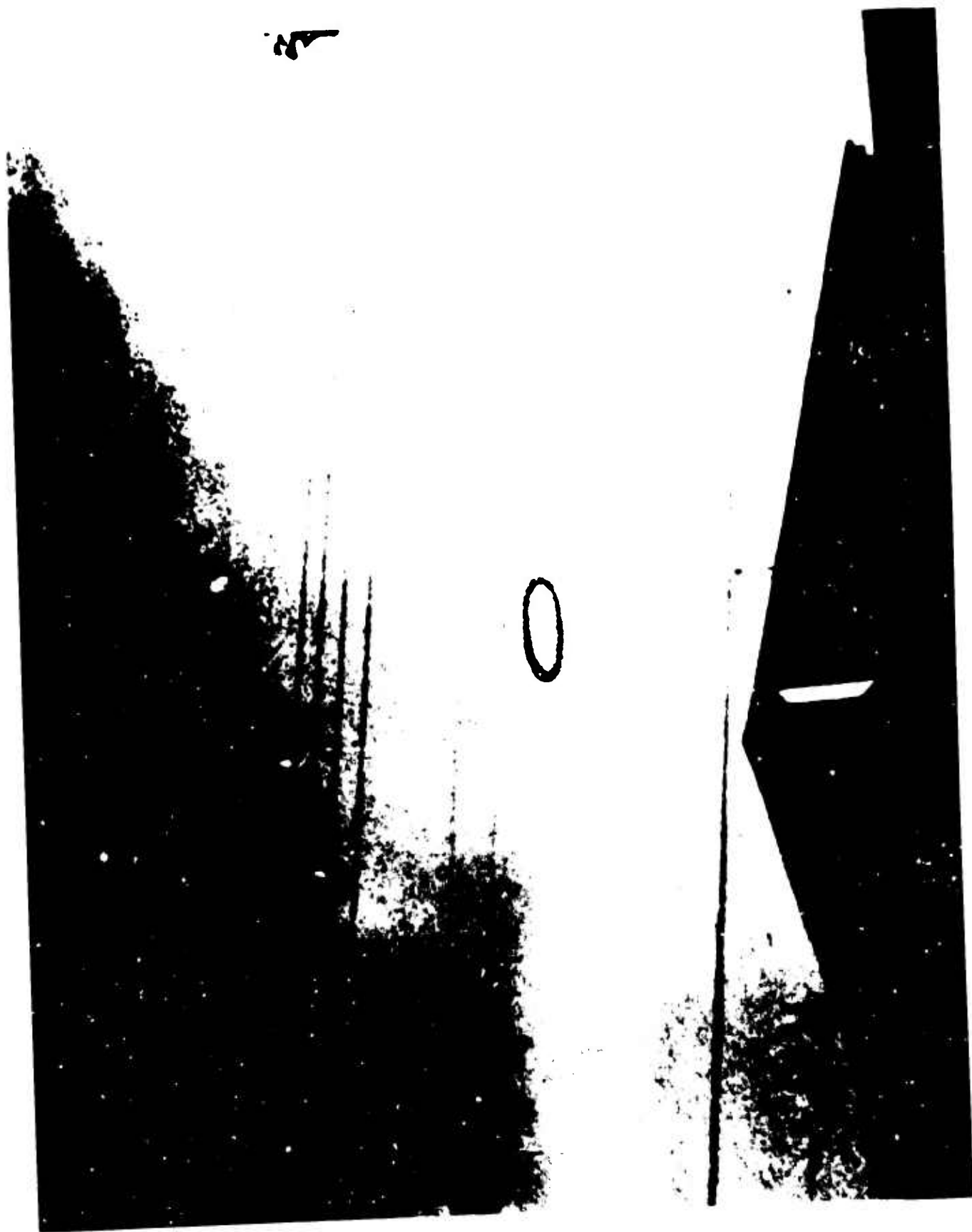


Plate 32

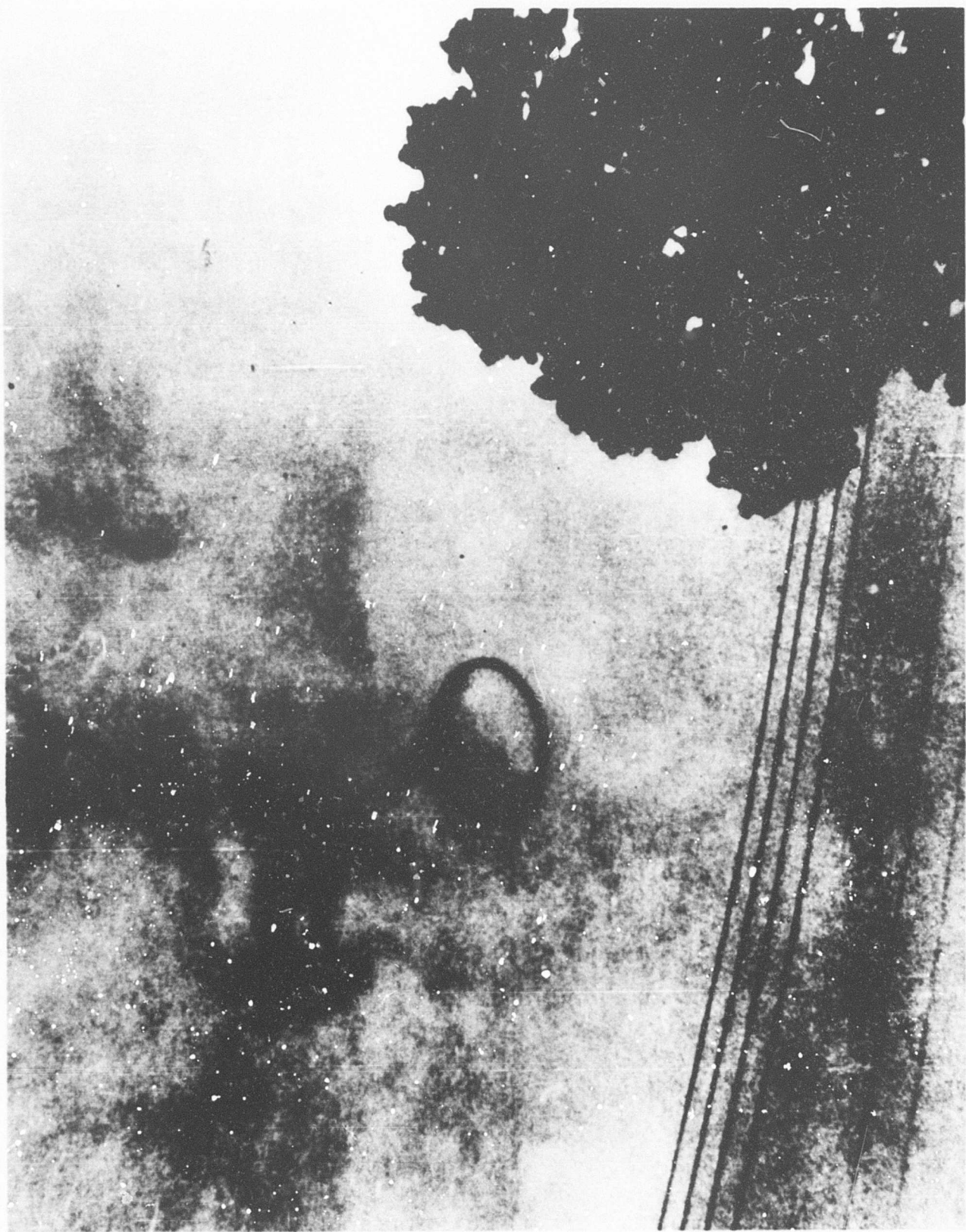


Plate 33

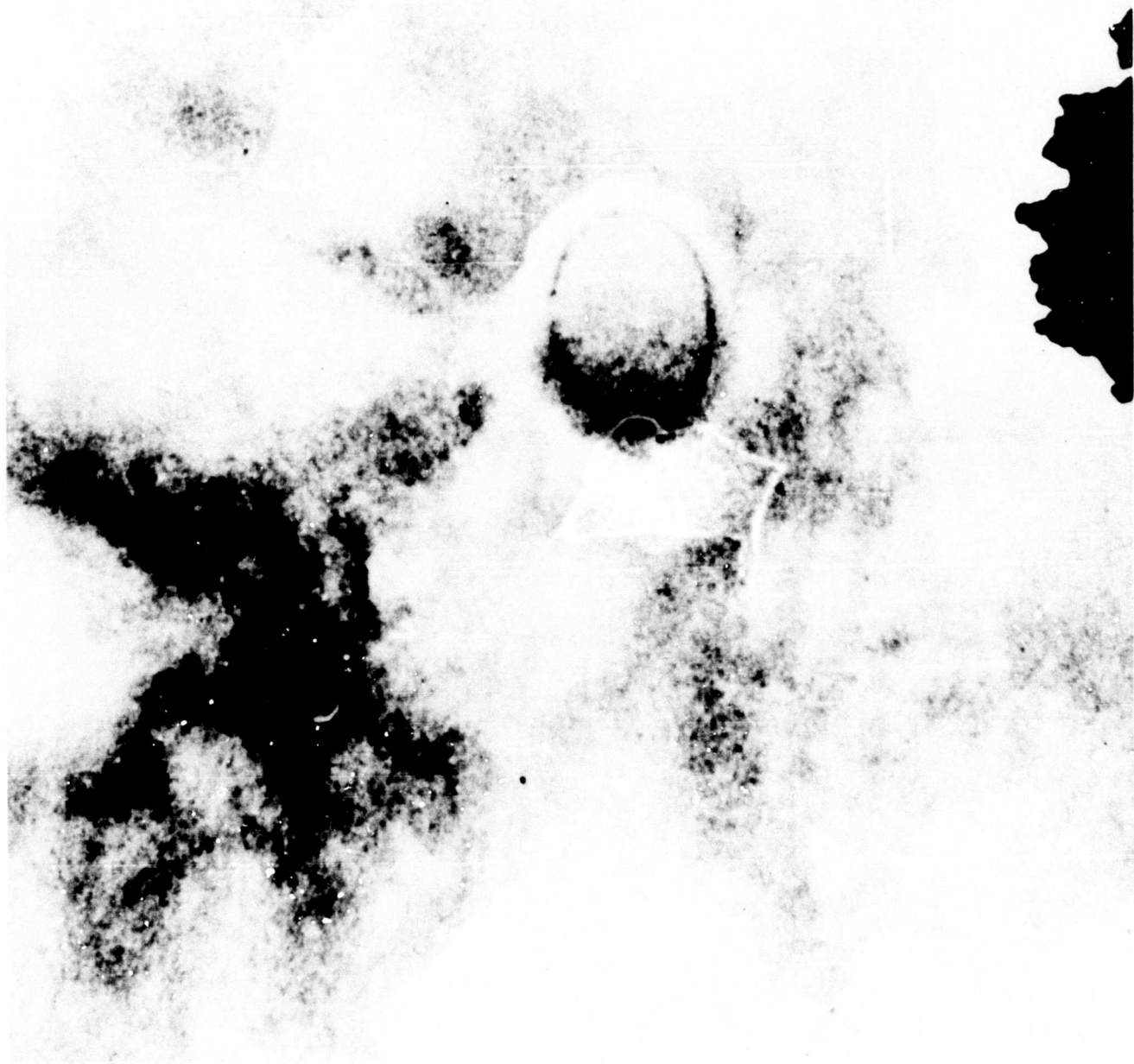


Plate 34



Plate 35



Plate 36



Plate 37



Plate 38



Plate 39



Plate 40

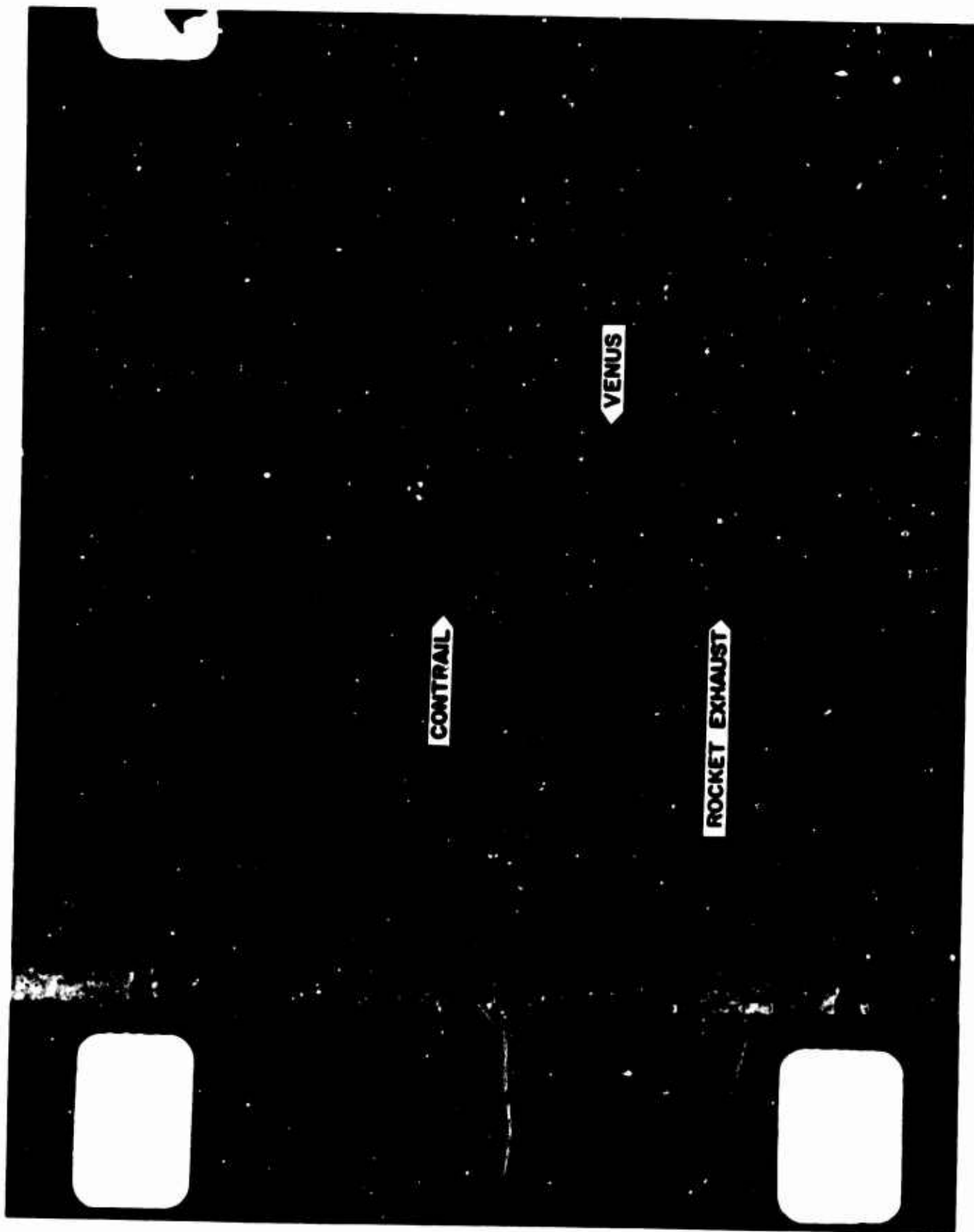
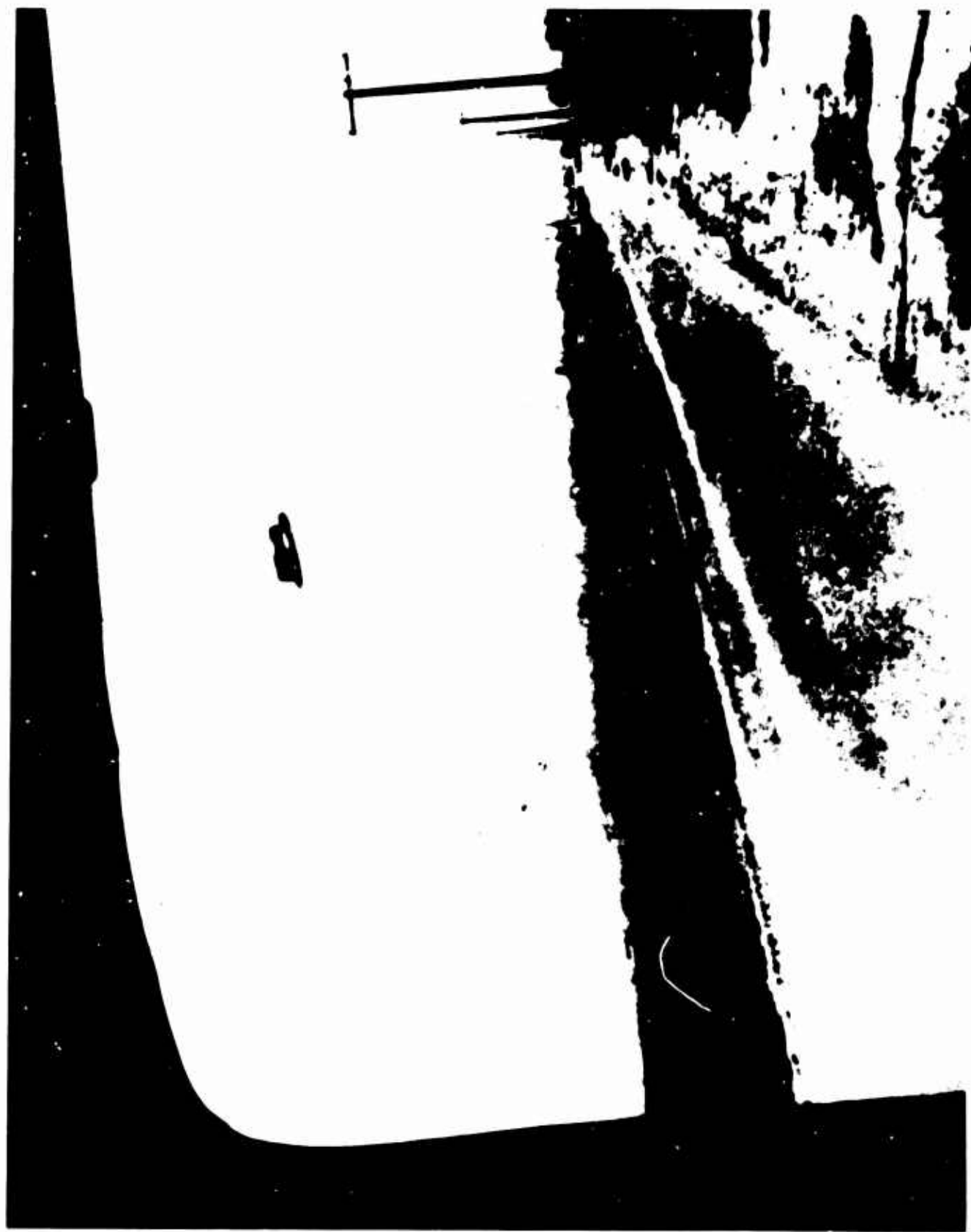


Plate 41

Plate 42



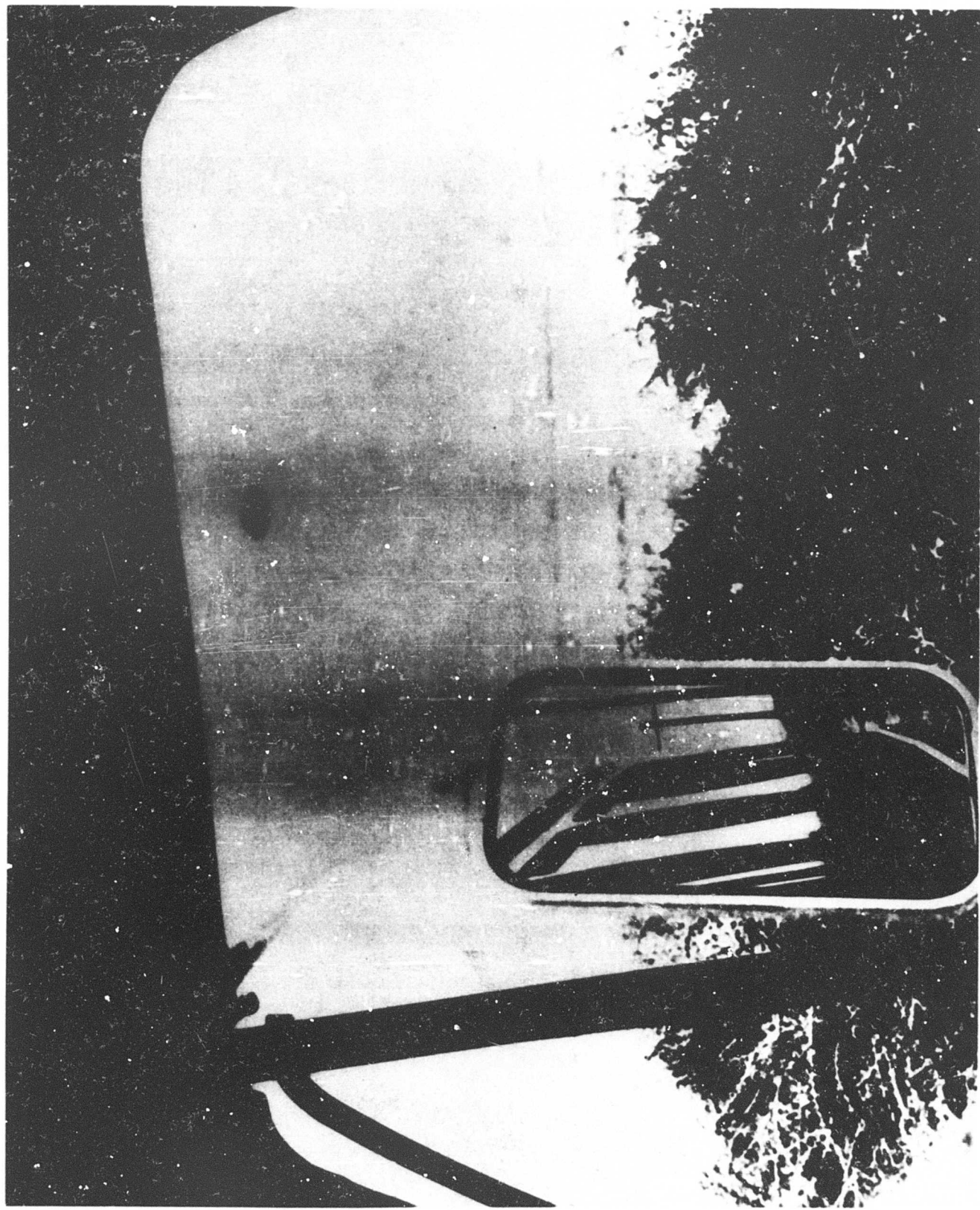


Plate 43

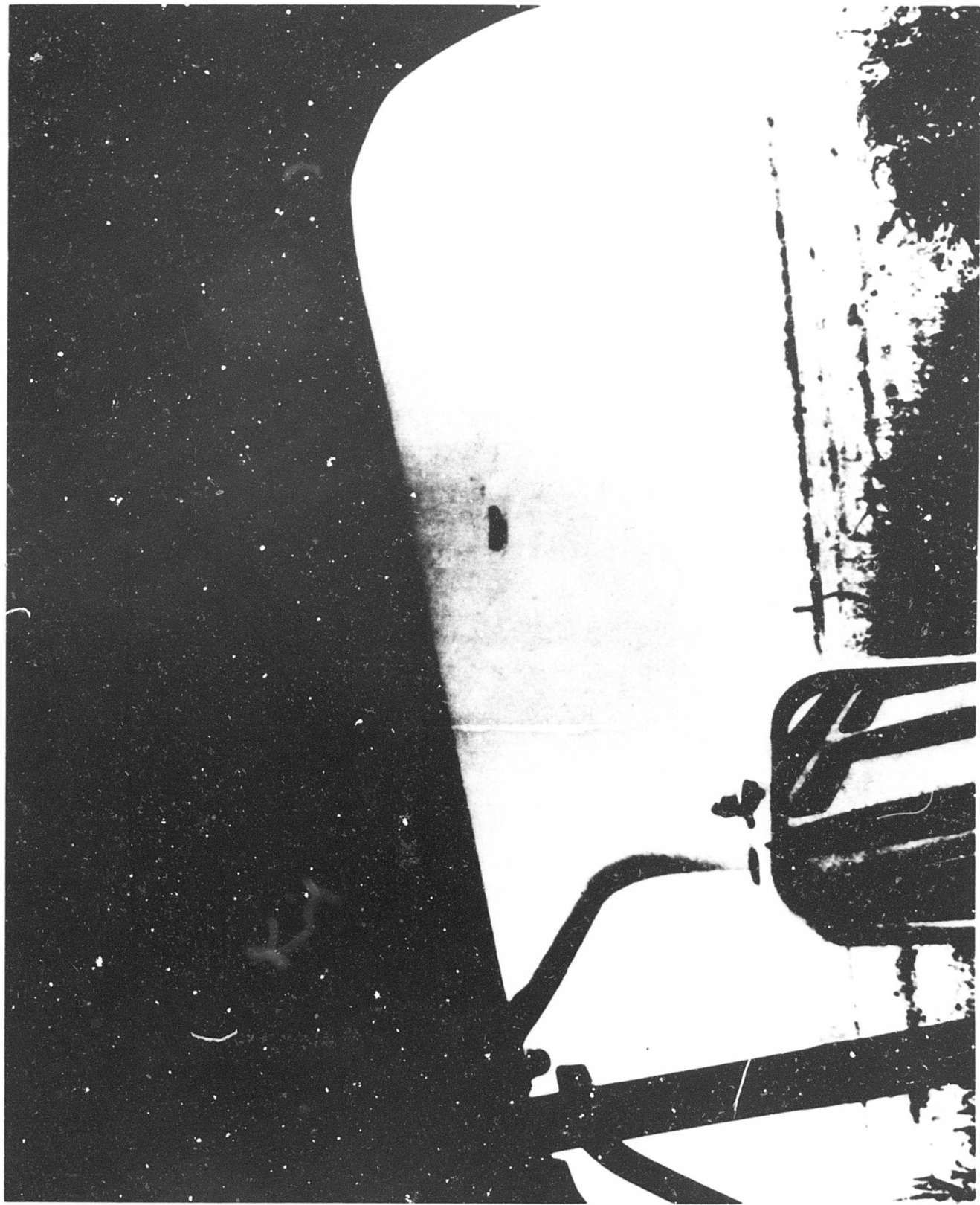


Plate 44

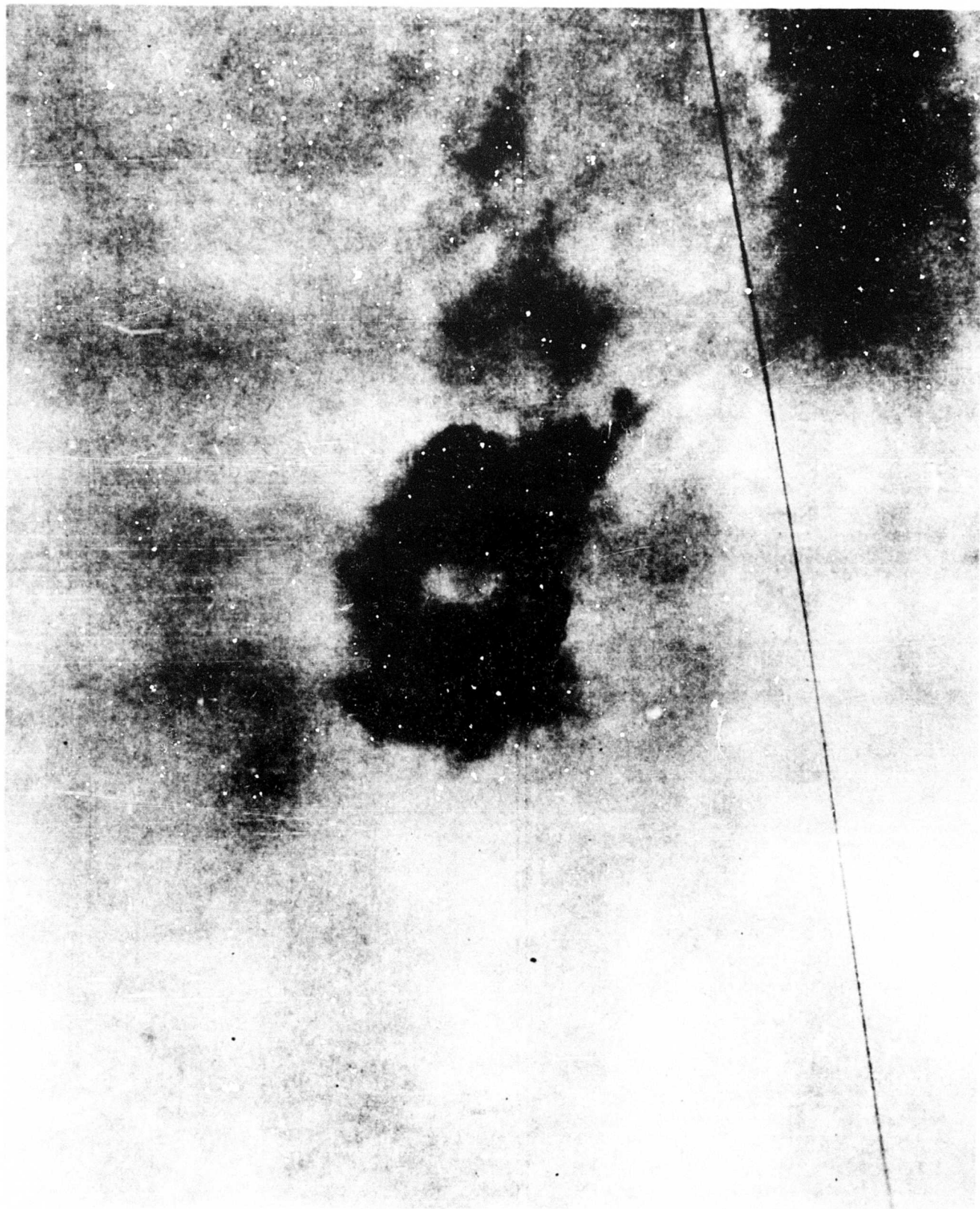


Plate 45



Plate 46

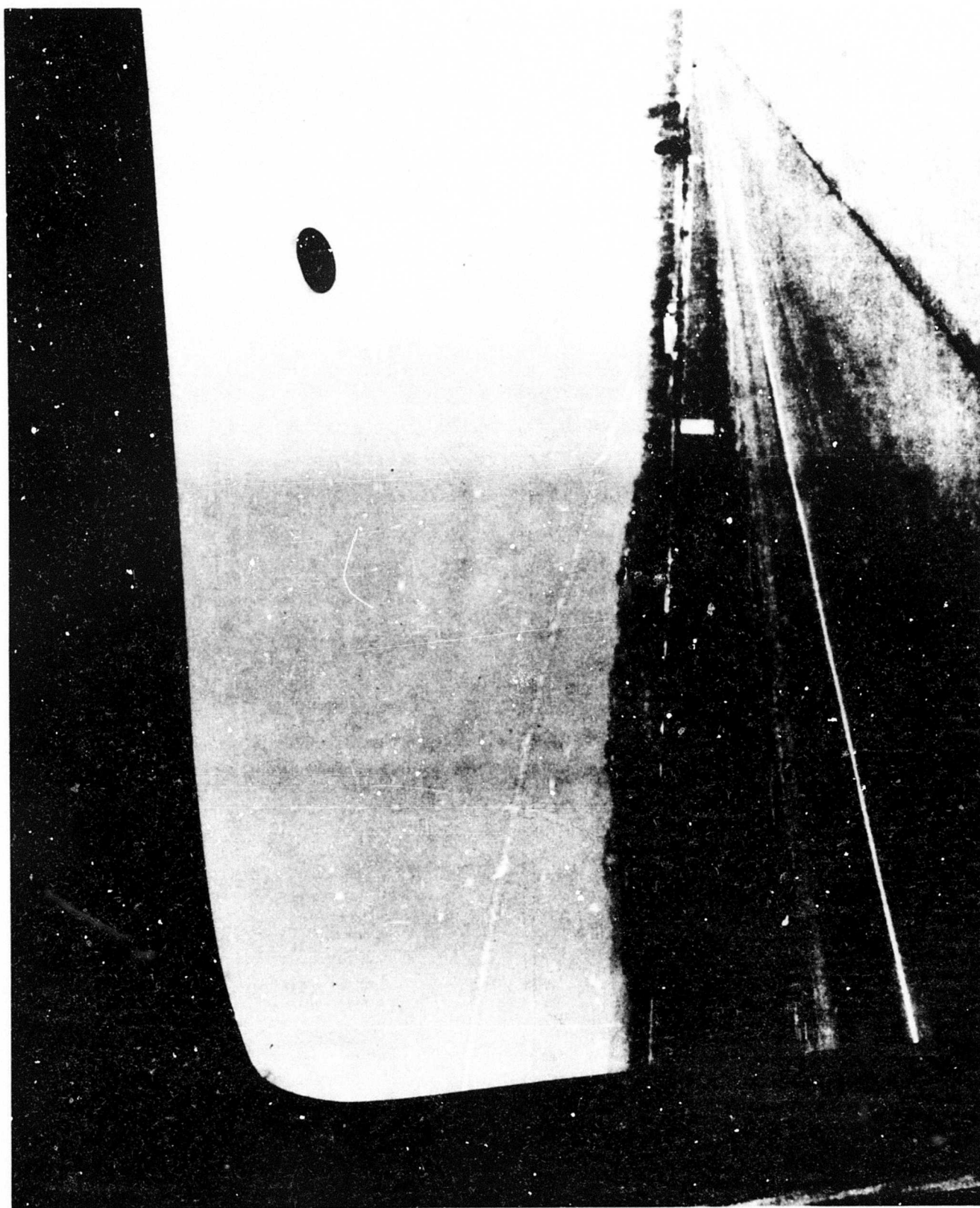


Plate 47

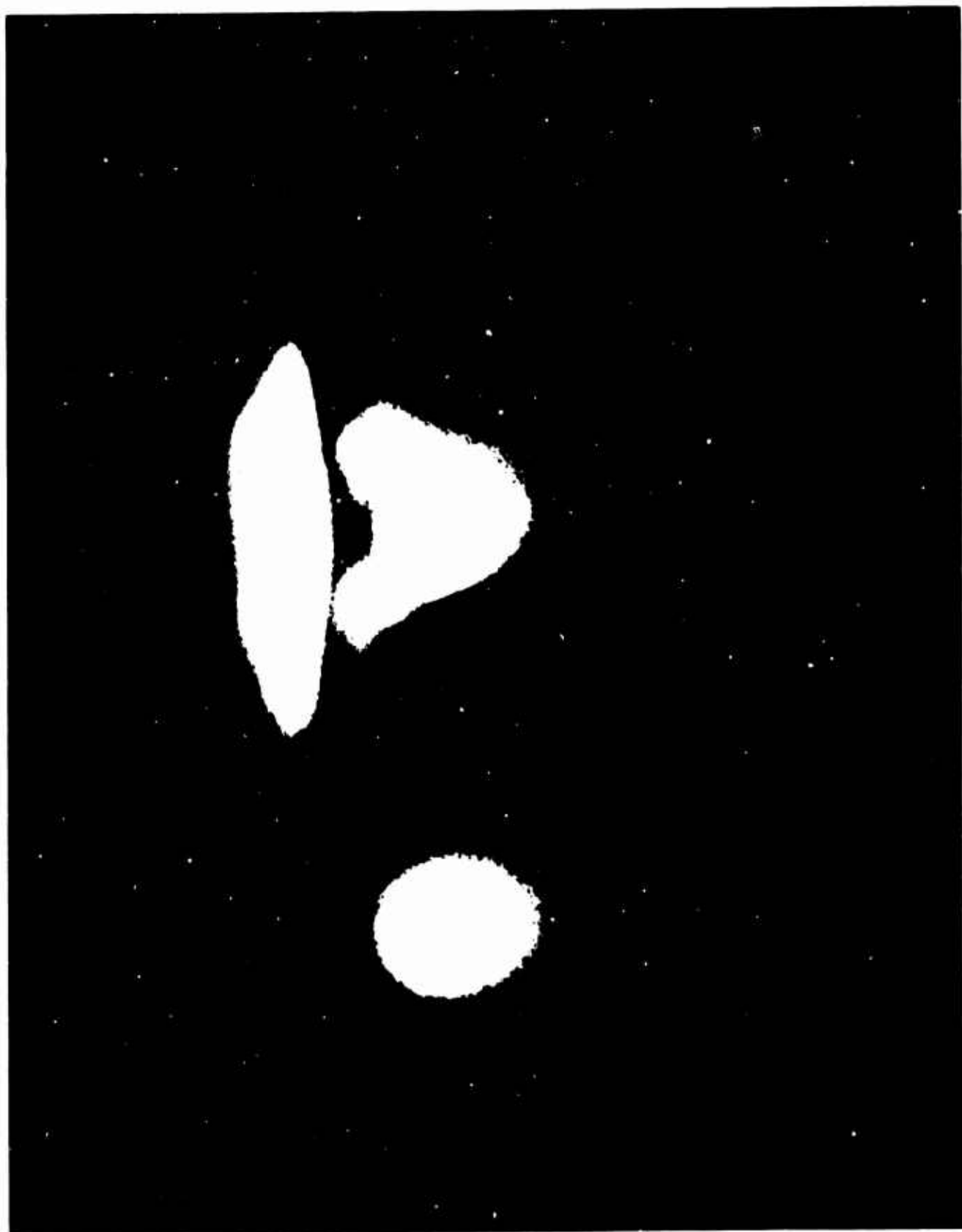


Plate 48

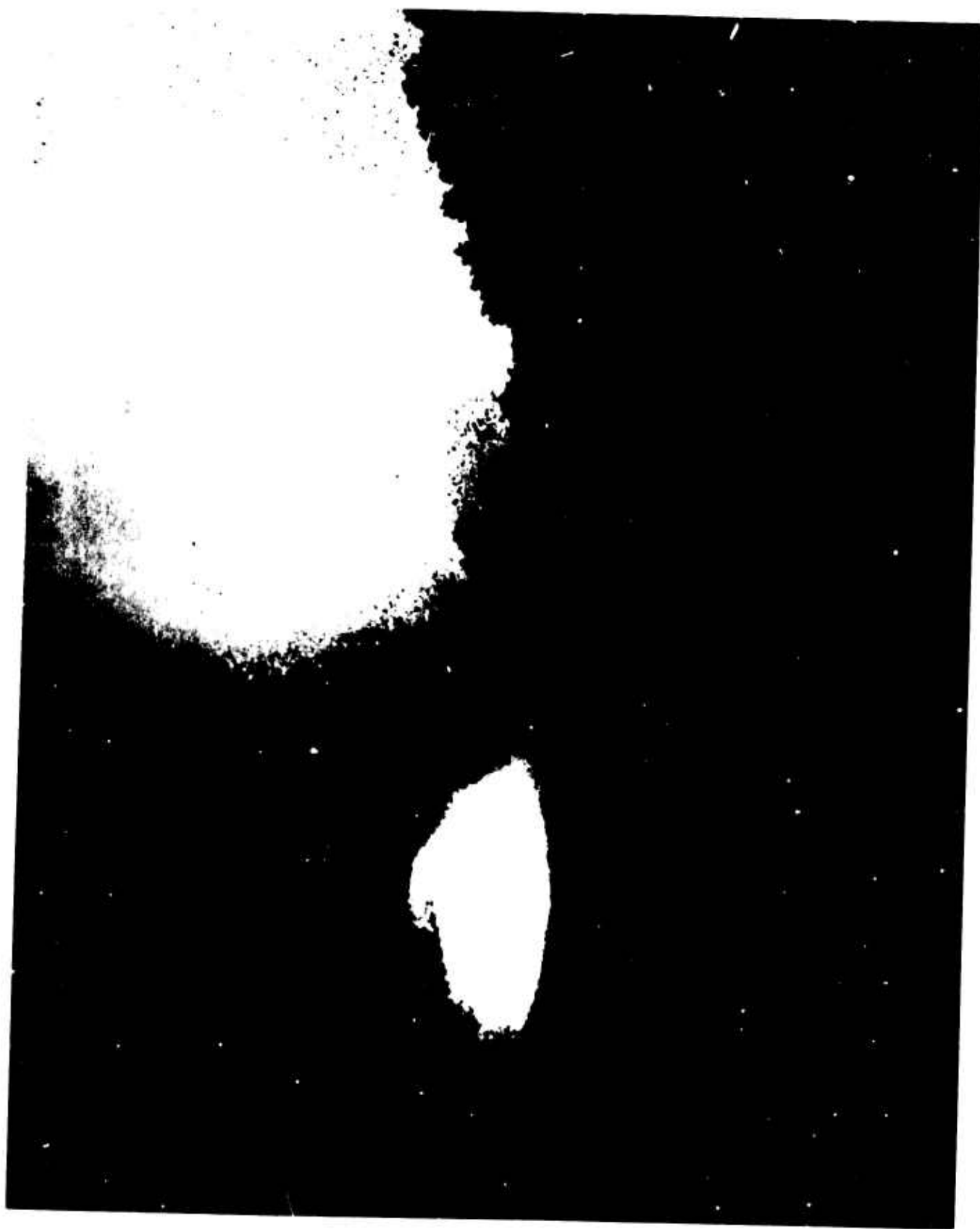
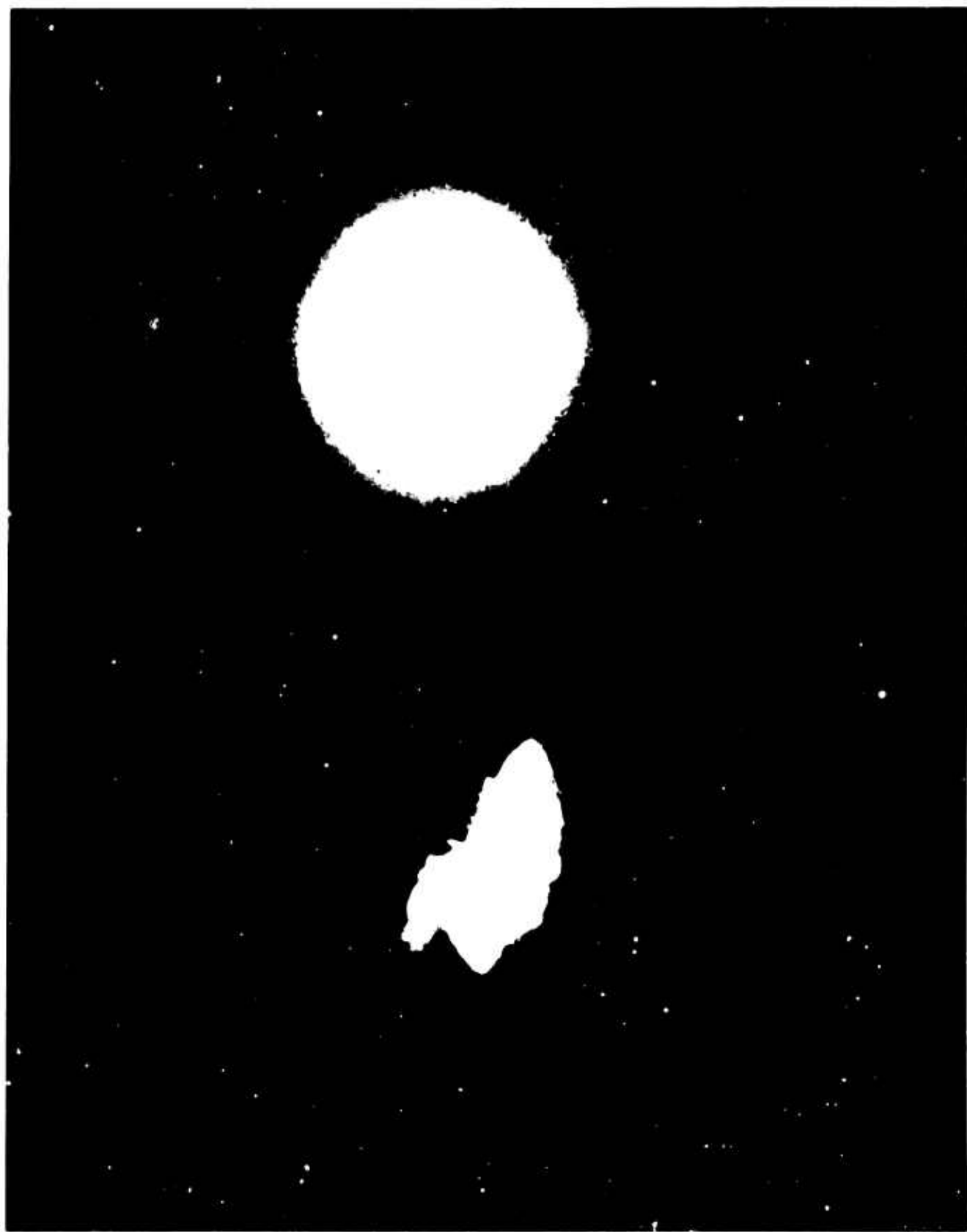


Plate 49

Plate 50



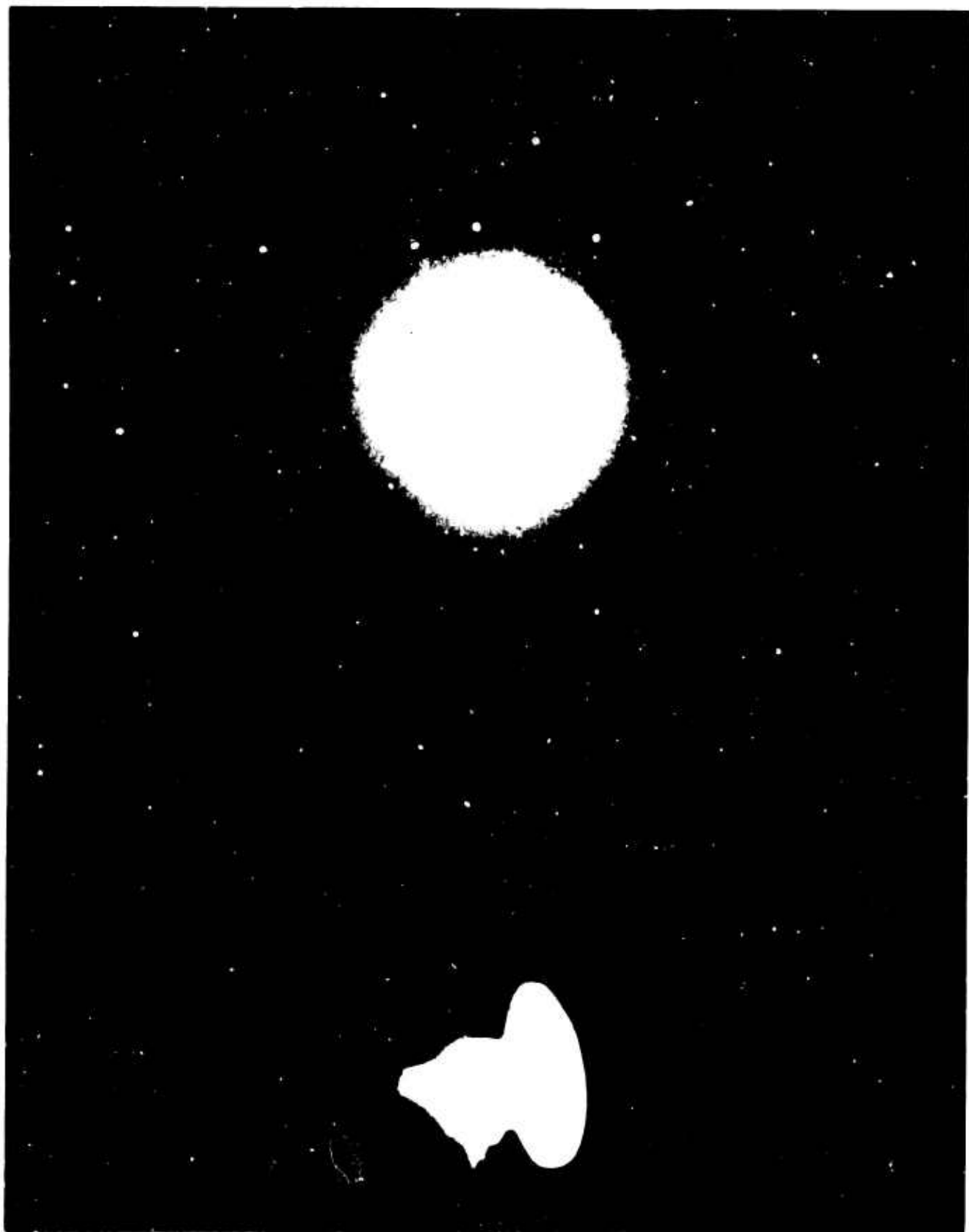


Plate 51

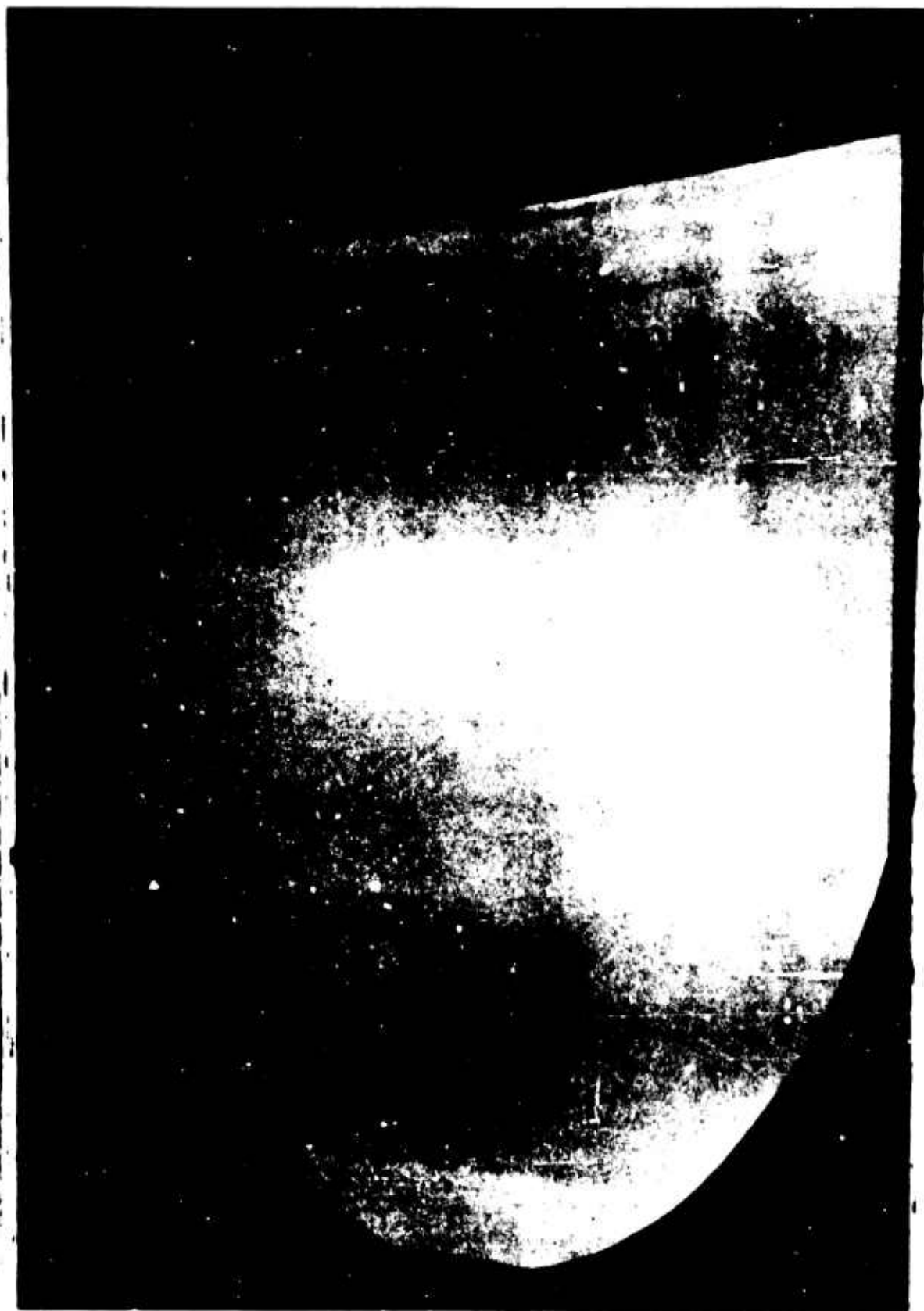


Plate 52

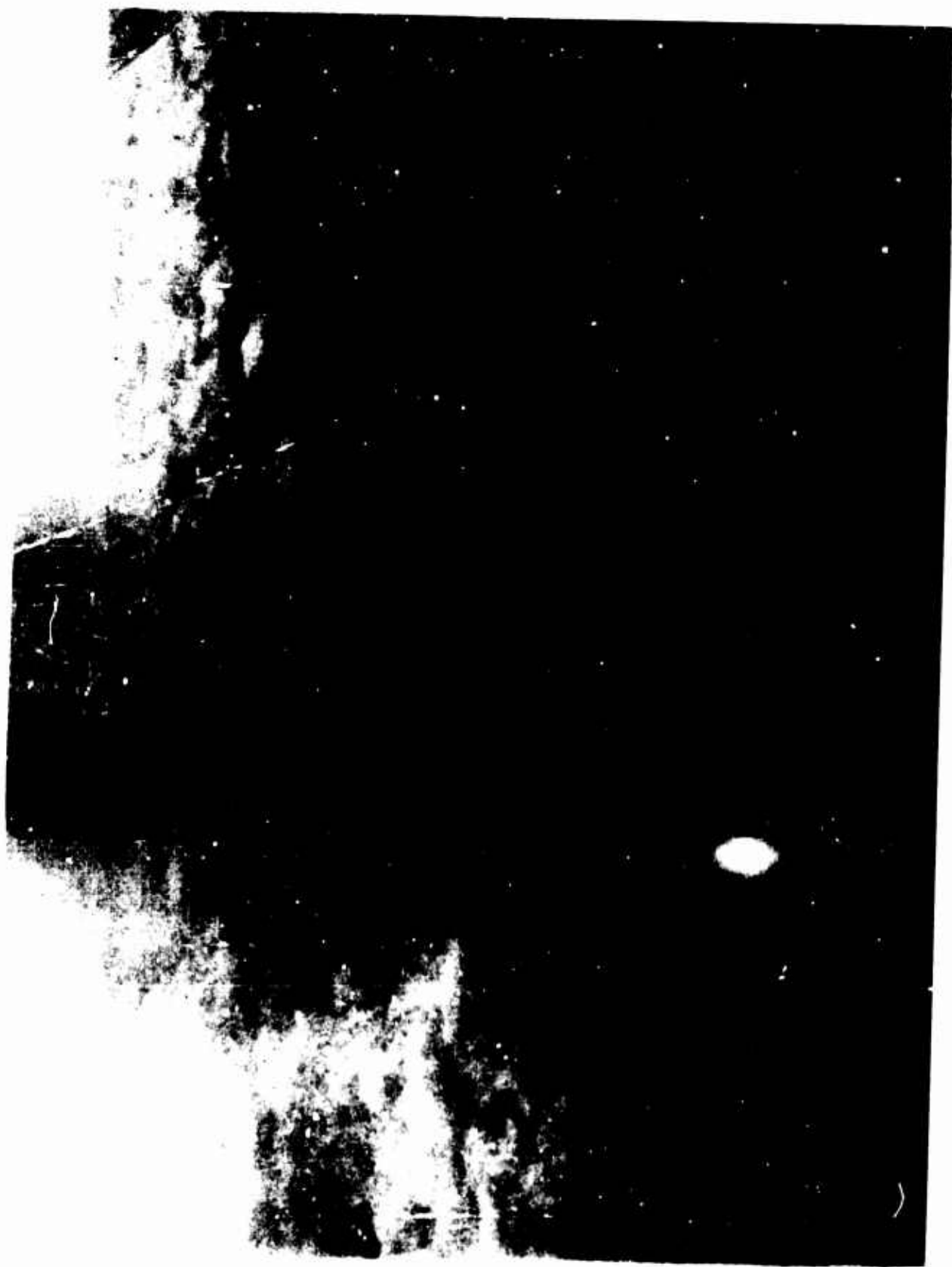


Plate 53

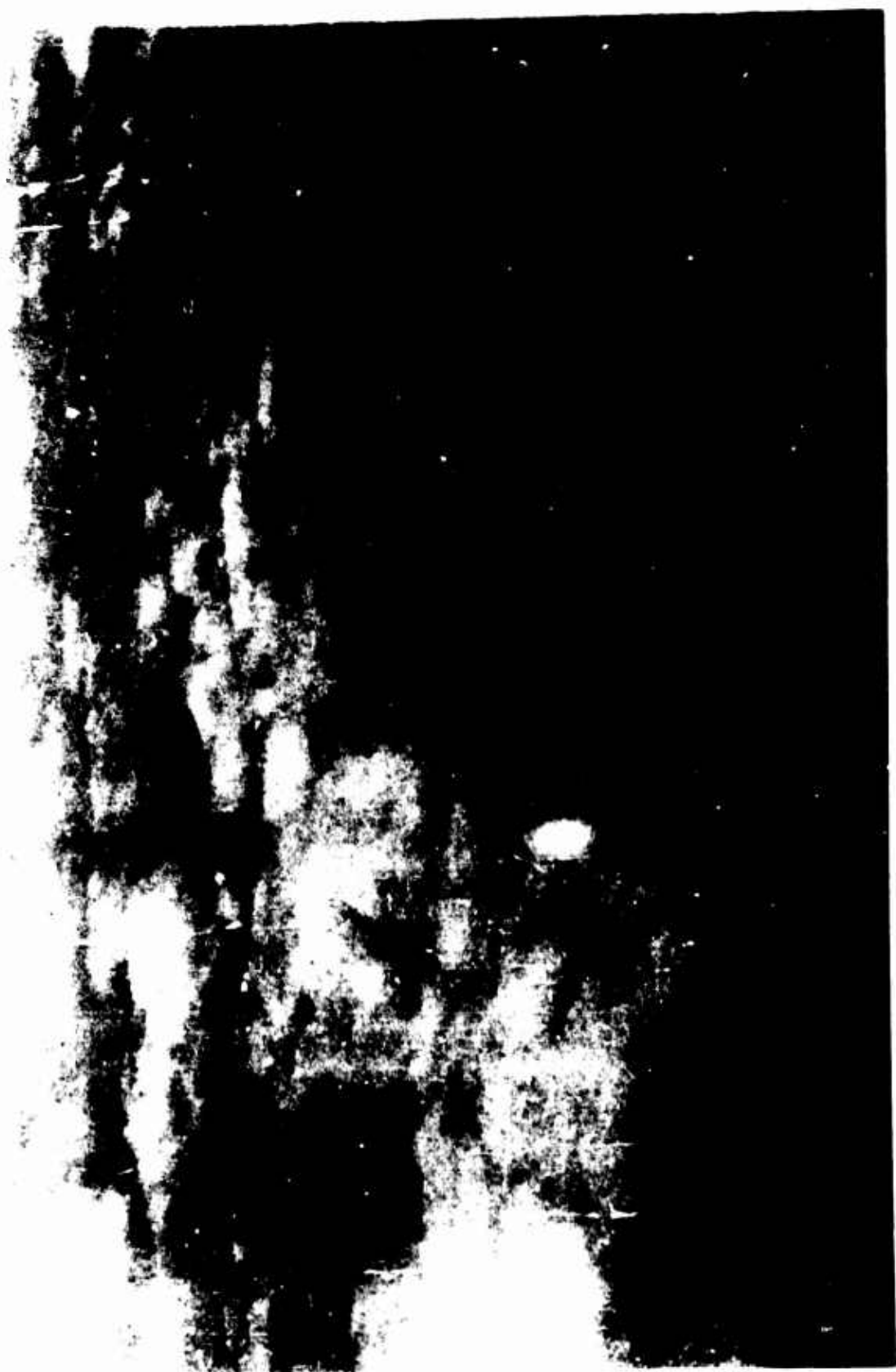


Plate 54

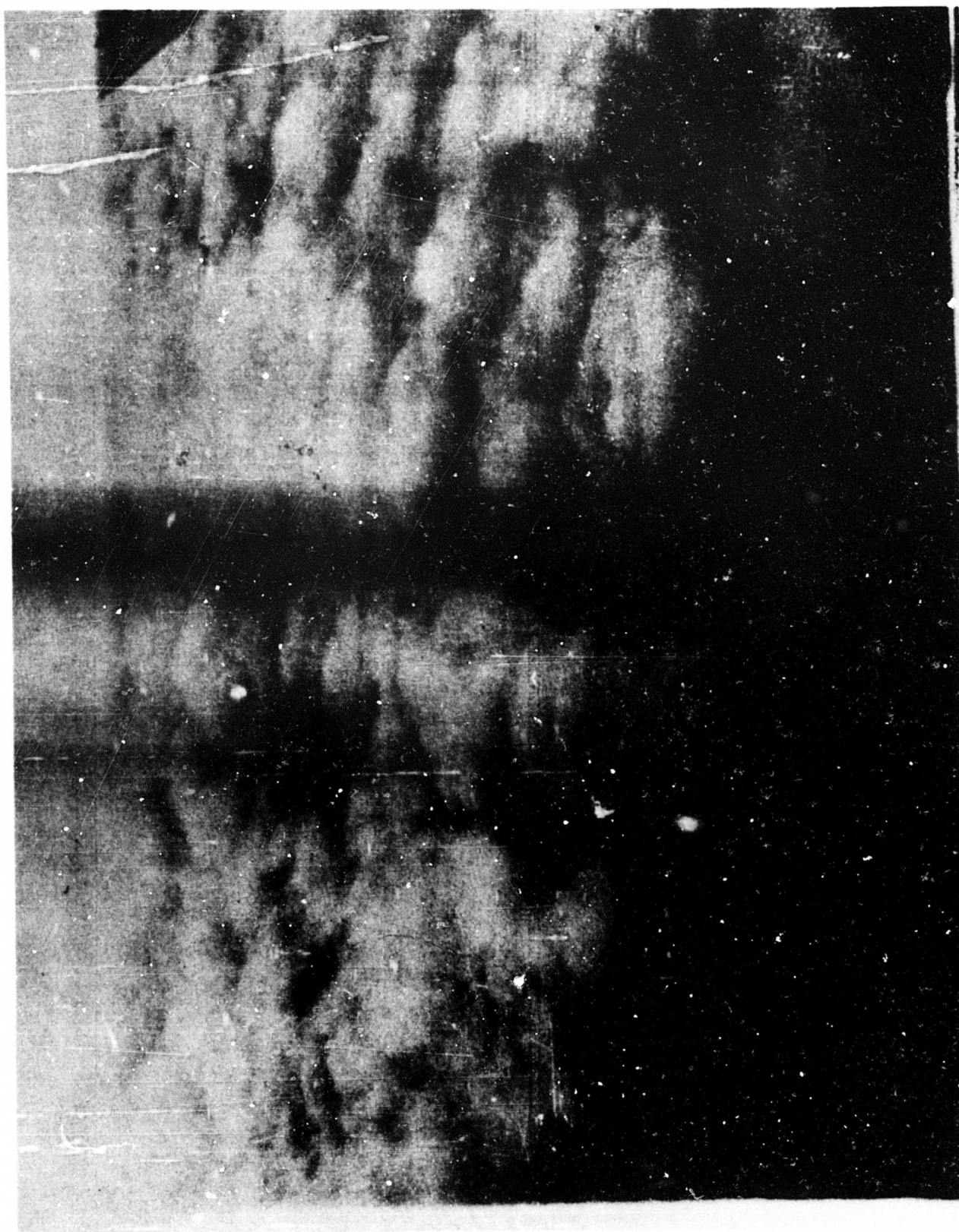


Plate 55



Plate 56

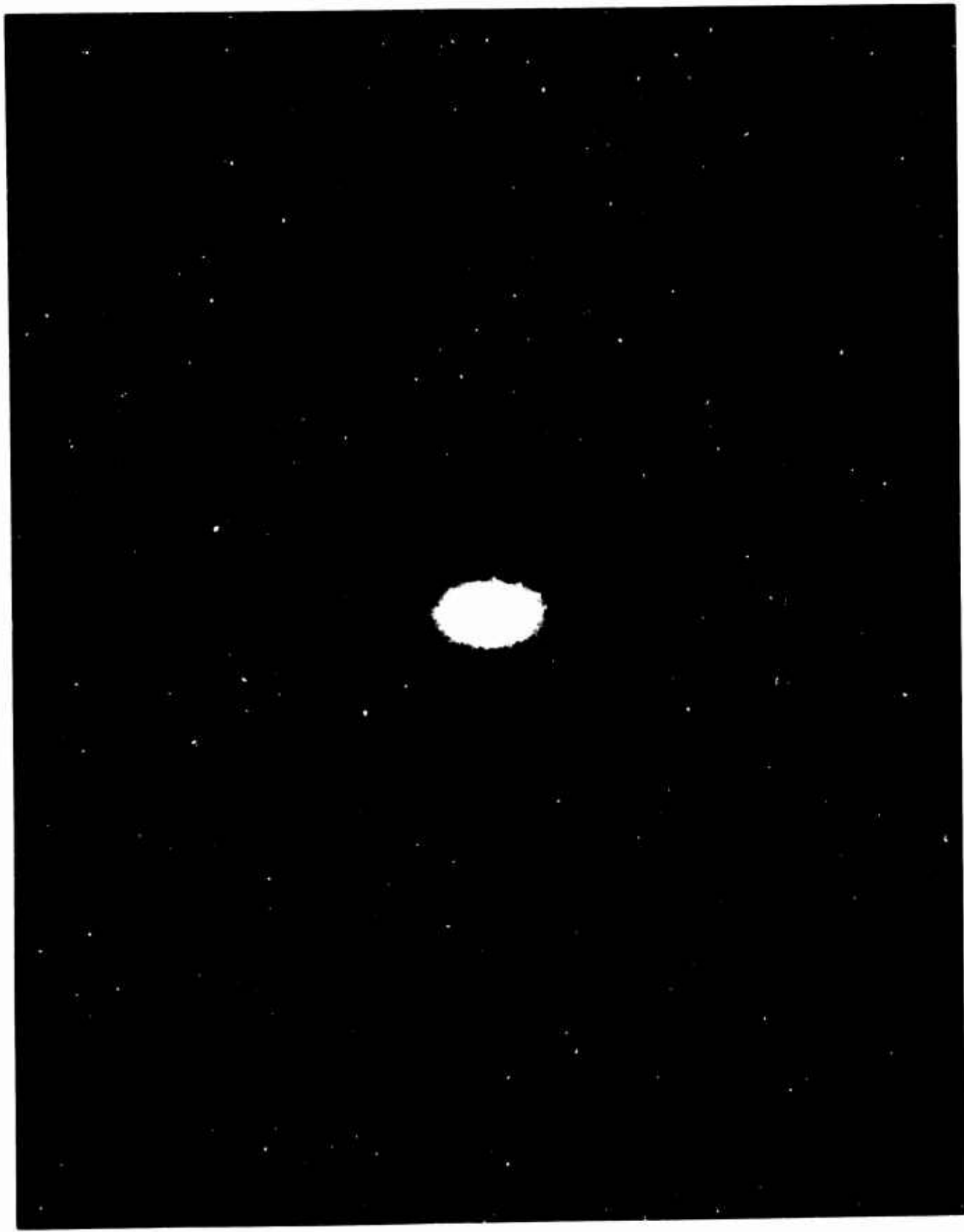


Plate 57



Plate 58



Plate 59



Plate 60



Plate 61



Plate 62



Plate 63

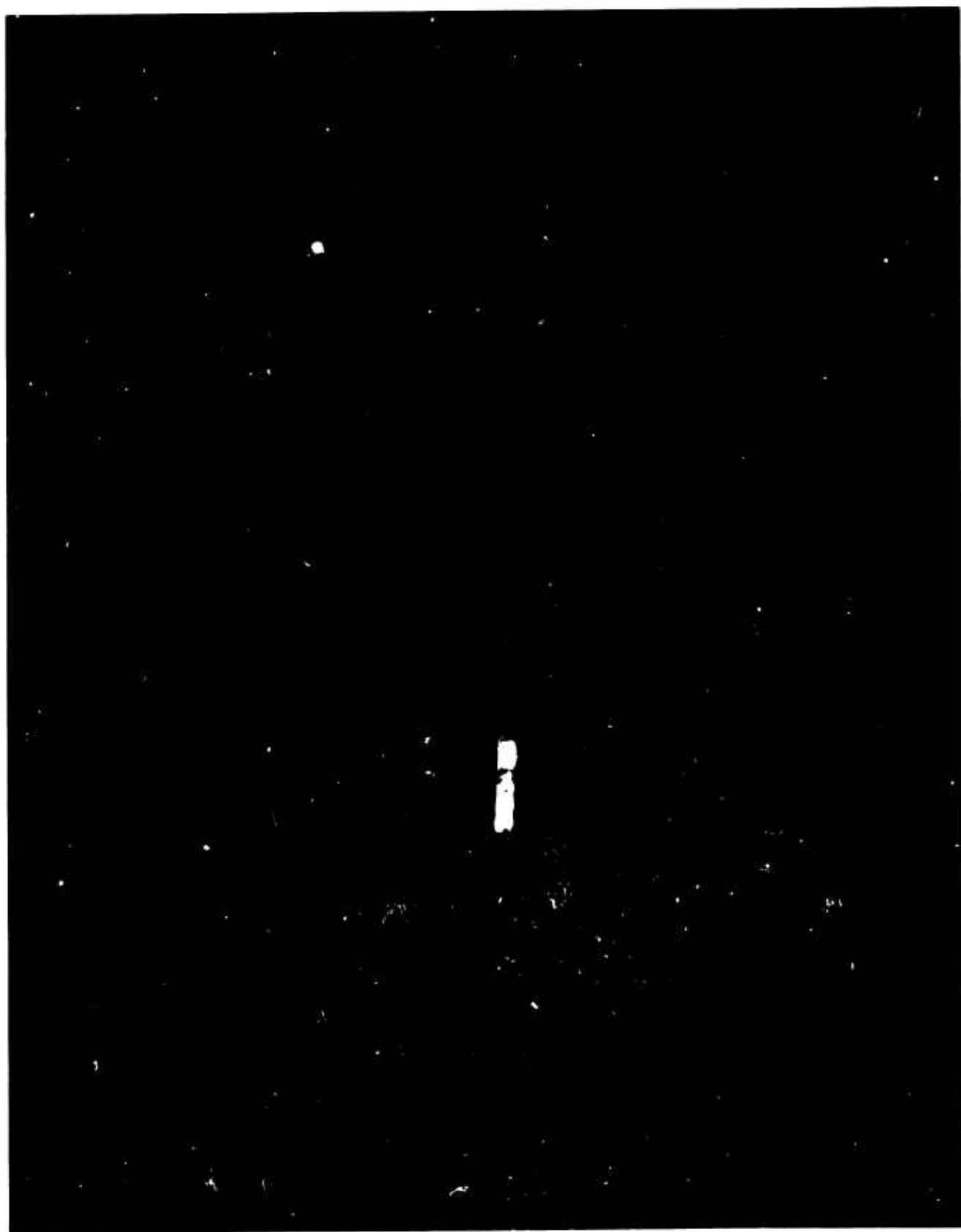
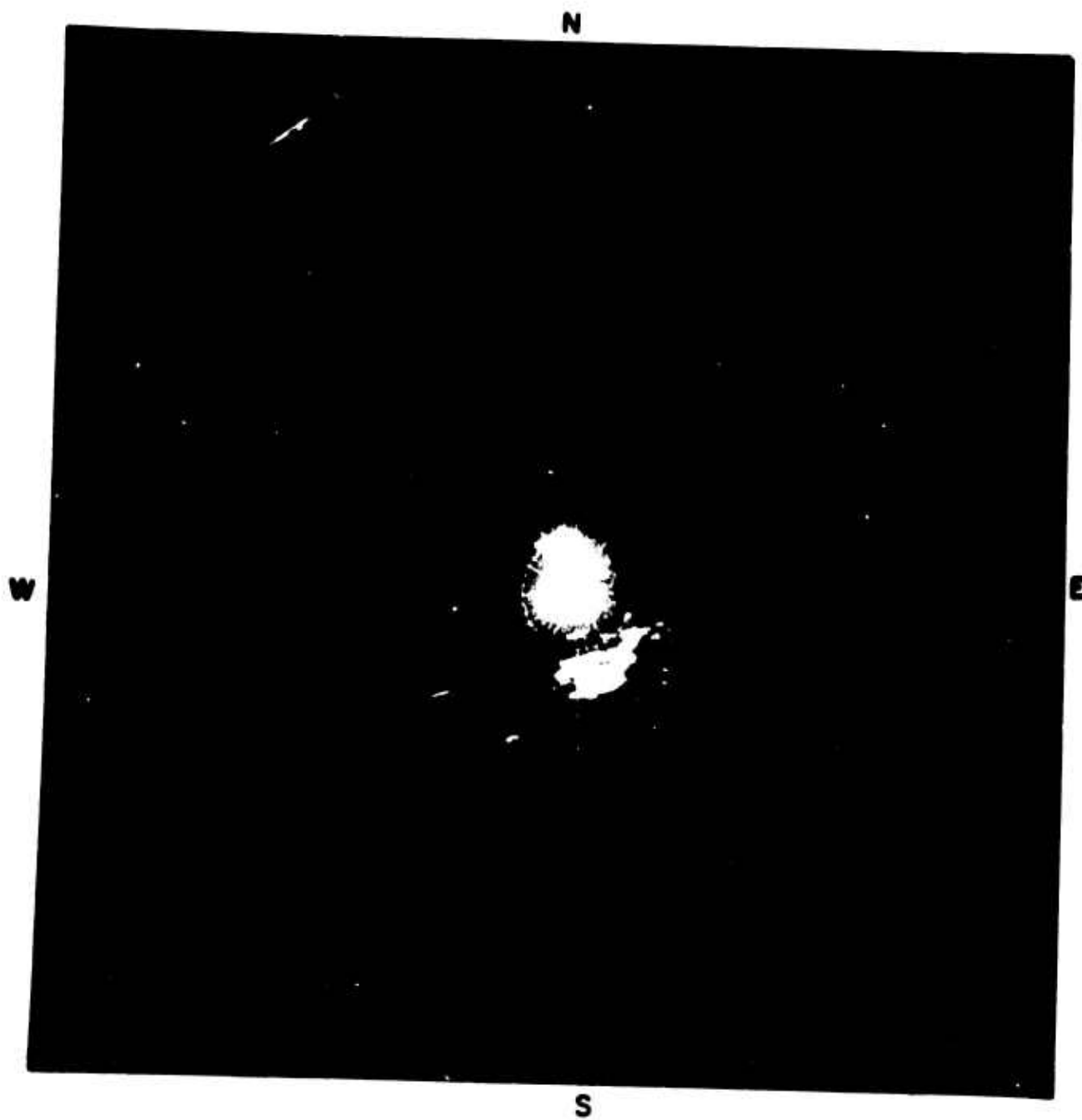
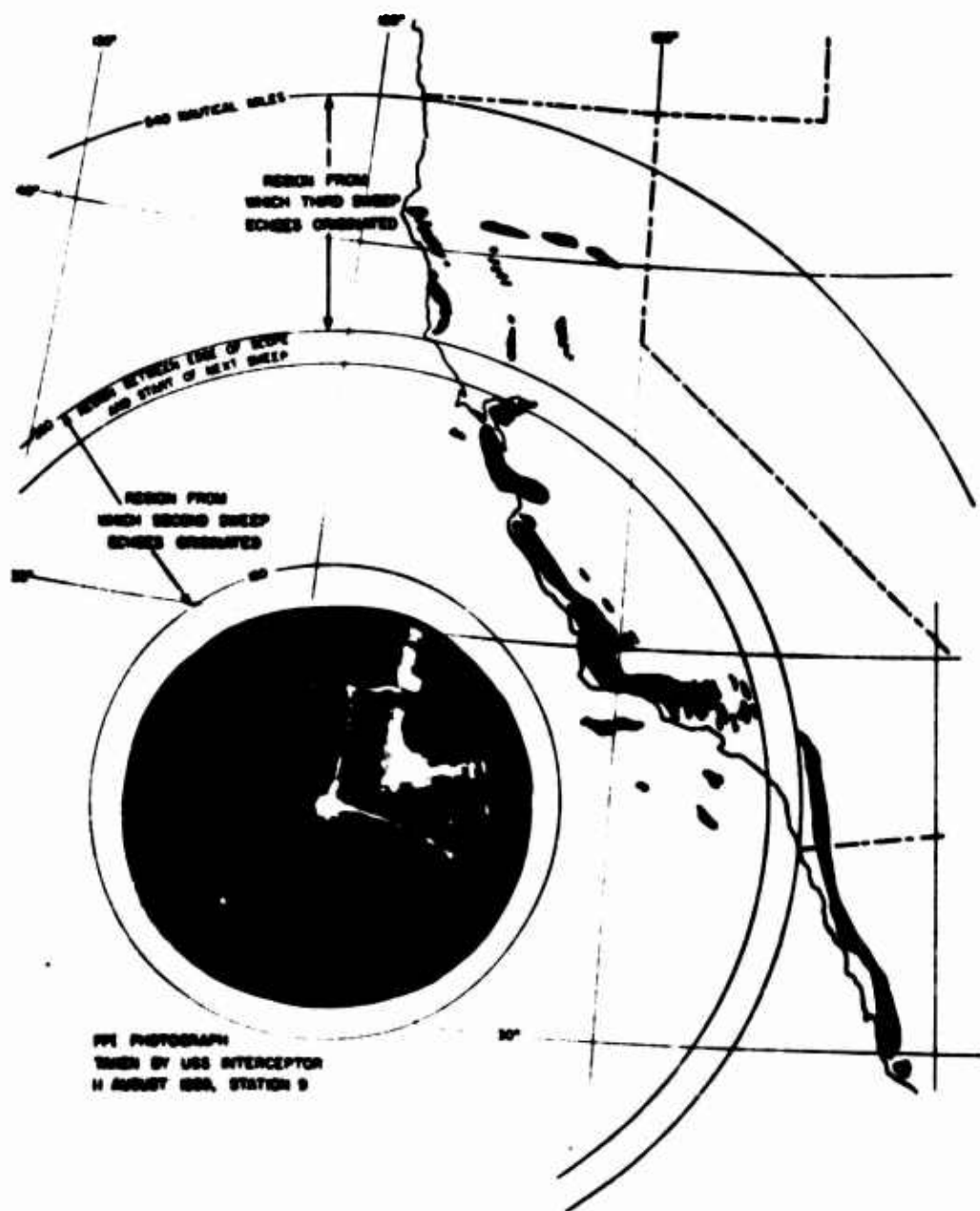


Plate 64



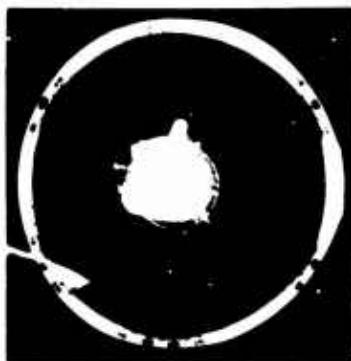
TIME LAPSE PHOTOGRAPH OF PPI. DIAMETER OF
AREA COVERED IS 300 NAUTICAL MILES



PPI PRESENTATION AND LOCATION OF TARGETS FROM WHICH RADAR ECHOES WERE RECEIVED DURING THE OCCURRENCE OF A STRONG ELEVATED DUCT



a.



b.



c.



d.



e.



f.

EXAMPLES OF RADIO INTERFERENCE

Plate 67



a. STRATIFORM PRECIPITATION



b. NORMAL GROUND CLUTTER



c. ANOMALOUS PROPAGATION



d. REFLECTION GEOMETRY

**REFLECTION ECHO DURING ANOMALOUS PROPAGATION
CONDITIONS**

Section V

Historical Aspects of UFO Phenomena

No study of UFO Phenomena would be complete without providing the historical and international context within which the present inquiry has been conducted. In the succeeding three chapters events leading up to 1947 are considered over the sweep of recorded history; the two decades of intensive UFO activity are reviewed; and the degree to which foreign countries are officially studying UFO phenomena is surveyed.

Chapter 1
UFOs in History
Samuel Rosenberg

In his summary of the work of the Colorado project, which appears as Section II of this report, Dr. Condon defines (at p. 13 supra) an UFO as follows:

An unidentified flying object (UFO, pronounced OOFo) is defined as the stimulus for a report made by one or more individuals of something seen in the sky (or an object thought to be capable of flying but seen when landed on the earth) which the observer *could not identify as having an ordinary natural origin . . .* (emphasis--SR).

Dr. Condon's definition accurately mirrors the persistent, tantalizing inconclusiveness of all UFO reports, modern and ancient. In this chapter this definition will be applied to the past from which a sampling of "UFO reports" gathered from various books and records is readily forthcoming -- so readily, in fact, that a report of all such sightings of mysterious objects which the observer "could not identify" would fill the entire space devoted to the project report as a whole.

The wealth of ancient "UFOs" is due to a basic fact about man's perception of his contemporary universe. A concentrated glance backward in time quickly reveals that throughout our recorded history (and presumably before that), mankind has always seen UFOs and reported "sightings" that remained unexplained even after examination by persons believed to be competent. Our earliest ancestor gazed earnestly into terrestrial and outer space to witness an infinite variety of phenomena and -- understood virtually none of them. In fact, his entire universe, both "external" to himself, as well as "internal," was largely outside of his comprehension. He had only the most rudimentary pragmatic knowledge and was totally unable to explain factually or conceptually whatever he plainly saw. In short, to him *everything was UFO*.

This in no way prevented him from interpreting what he saw or utilizing his interpretations in a manner that seems to have been convenient to the needs of his contemporary society. A reminder of the social consequences of the ancient attitudes toward "things seen in the sky" may therefore be helpful in dealing with present-day reactions to UFO reports.

We know some of early man's UFO sightings as sun, moon, lunar halo, stars, constellations, galaxies, meteors, comets, auroras, rainbows, wind, rain, storm, tornado, hurricane, drought; others as sunrise, sunset, mirage, phosphorescence, lightning, etc, etc. In modern times, inductive scientists have given us rational explanations for a great many natural phenomena, or they have asked us to suspend judgments of the still vast unknowable, pending further investigation. But our inveterate impatience persists.

Perhaps the most persistent and dramatic early UFO sightings of the species that has with characteristic self-importance designated itself as *Homo sapiens* (intelligent man) were the "heavenly" lights he saw whenever he looked upward or outward into space. Without knowing what they were -- and what wild guesses were made! -- man was still able to use the moving points of light for his navigating, hunting or migrating orientations. But our ancestors could not endure living without immediate explanations for all of the natural phenomena that surrounded them. So, in the absence of scientific explanations for what they saw, they conjured up other interpretations equally satisfying to them: the poetic, the dramatic, the supernatural, the mythological, and even the nonsensical, or comic. Any explanation was better than none at all, because man, a part of nature, abhors a (mental) vacuum. Indeed the need to establish orientation by means of hastily improvised hypotheses or fantasies appears to be a fundamental, almost instinctual biological adjunct.

Bits of the vast accumulations of intuitive rationalizations concocted by early man while he waited impatiently for more accurate answers, still continue to satisfy our craving for poetry, drama and

other imaginative story-telling. Francis Thompson wrote: "Man was able to live without soap for thousands of years, but he could never live without poetry." So for multimillenia we have had poetry and allegory and all sorts of remarkably ingenious supernatural fantasies standing in for crucially needed, verifiable factual truth. Sometimes the interim quasi-sciences have served us pragmatically and have led to positivistic science and to some degree of environmental control. But, on balance, it becomes painfully evident from reading history that hasty, premature, wrong explanations -- however pretty or ingenious -- have led only to more wrong explanations, to a crippling of correct analytical functioning, to the substitution of dogma for fresh research, to the stifling of debate, to punishment for dissent -- and to frequent disasters.

There were always some isolated scientific experimenters who worked in many fields (usually in secret), but they did not make much headway against the politically entrenched supernatural theoreticians and their *MIFOs* - *mistakenly identified flying objects*. It was not until the end of the sixteenth century that emerging nationalistic power-politics and the new mercantile and manufacturing demands of Western Europe made scientific methods highly desirable and profitable.

Before that, for hundreds of thousands of years, most human procedures were based on magical interpretations of environmental phenomena. From remote times, magicians and astrologers were consulted before any political or military decisions were made; and justice was administered according to magical formulæ. Until a moment or two ago in man's long history all natural phenomena were devoutly believed to be gods, angels, spirits, devils, fairies, witches, vampires, succubi and incubi; or omens of fortune, good and evil. What remains today as semantic residues, or charming fairy tales or myths, were once life-and-death formulations acted upon with the utmost seriousness. In many of the so-called "primitive" societies still extant, the magical interpretation of the world still prevails. Even today, most American newspapers print magical astrological predictions. In 1962, all governmental

business in India was suspended on the day when, for the first time in several hundred years seven of the major planets were lined up in conjunction. All of India heaved a collective sigh of relief when that fruitcake day ended.

In their book *Lure and Lore of Outer Space*, Ernst and Johanna Lehner (1964) have compiled an illustrated review of the cosmos as it was understood and visualized by earlier cultures. The Lehnners make it evident that the inventors of cosmic diagrams were convinced that their images of outer space were real and completely factual. Pseudo-explanations of the nature of the cosmos were at the very core of their religious and political ideologies; belief in them was mandatory and could be disputed only at the risk of imprisonment or death.

The Chinese evolved a celestial globe completely different from the Western concept in which our earth was surrounded by the *Four Supernatural Creatures* presiding over *The Four Quadrants of Heaven*: the *Azure Dragon* over the East; the *Vermilion Bird* or *Phoenix* over the South; the *White Tiger* over the West; and the *Black Warrior*, or *Tortoise* over the North. These four quadrants are enclosed by the *Pa Kua* or *Eight Diagrams*, representing heaven, water, lightning, thunder, wind, clouds, mountains and earth. They are encircled by the 12 zodiacal animals which, in turn, are surrounded by the 28 *Kung*, or constellations of the Chinese Heaven: the Earth Dragon, the Sky Dragon, the Badger, the Hare, the Fox, the Tiger, the Leopard, the Griffon, the Ox, the Bat, the Rat, the Swallow, the Bear, the Porcupine, the Wolf, the Dog, the Pheasant, the Cock, the Raven, the Monkey, the Ape, the Tapir, the Sheep, the Muntjak, the Horse, the Deer, the Snake, and the Worm. (Lehner, 1964).

These were some of the UFOs seen by the ancient Chinese. The Egyptians following the universal rule of interpreting UFOs in terms

of the technology of the time -- depicted interstellar vehicles as "barges of the Sun" carried on the "star-studded back of *Nut, the Heavenly Vault*." Later, cosmic UFOs 'seen' by the Greeks and the Romans (and inherited by us) resulted in a fascinating heavenly attic chockful of people, gods and goddesses, flora and fauna, mythological beasts, assorted seafood, furniture, equipment, and miscellaneous bric-a-brac. Here, from an American astronomical chart published in the 1830s, is a partial list of constellations that were visually extrapolated from a few randomly scattered points of light: *Peacock, Herschel's Telescope, Camaleopard, Bird of Paradise, Hadley's Quadrant, Sun Dial, King Charles' Oak, Phoenix, Andromeda, Perseus, Centaur, Water Snake, Dog, Lobster, Painter's Easel, Cross, Bear, Cow*. Most appropriately for this report, there were also three interstellar vehicles: *Argo Navis* (The Sailing Ship), *The Chariot*, and *Noah's Ark*. There are also other constellations in which Gods or Goddesses or beasts act as heavenly carriers: *Iris, the Goddess of the Rainbow*, for example, carried sinners to perdition.

The worship of the sun was endemic in antiquity. In nearly every religion the sun was the supreme deity and in some societies was even given the ultimate tribute of human sacrifice. To the Greeks he was *Helios*; to the Egyptians *Horus*. For a time, in the guise of the Persian God *Mithras*, he very nearly became the predominant deity of the Western world before Christianity finally prevailed. The Incas and most other American Indians regarded the sun as their principal deity and worshipped the dominant astronomical phenomenon that was blindingly visible to everyone, but never properly understood. The sun was a veritable UFO sighting of the first magnitude.

But the concept of the UFO sun as deity was not merely metaphorical. Its identity as god was declared to be irrevocably Truth and Dogma and was backed up by courts of law, police and armies. In theocratic states, an avowed disbelief in the theological explanation of the relationship of the sun to our earth was tantamount to treason and punished as such. On 1 July 1968, the Catholic Church announced "that it might revise its

censure of Galileo Gallilei for his heretical statement that, contrary to the official Catholic dogma, the sun did not revolve around the earth, but vice versa." (New York Times, 1968) The article in the Times appears cheek-to-cheek with another news story about some UFOs that turned out to be parts of Russian satellites that ignited as they re-entered the earth's atmosphere (see Section VI, Chapter 2). The juxtaposition of these two "news items" is not accidental: they are part of a persistent pattern of response to UFOs that have always been plainly visible to mankind - and misinterpreted.

In *The Rainbow*, Carl Boyer writes:

Anaxagoras, the friend and tutor of Pericles, found a popular atmosphere in Athens which was hostile to natural science; and, when he asserted that the sun, far from being a divinity, was nothing but a huge white-hot stone, he was jailed for impiety. Anaxagoras also courageously questioned the divinity of *Iris, the Goddess of the Rainbow*.

It seems that Iris has been a major UFO for many thousands of years, with a highly charged emotional effect upon those who witnessed the phenomenon. Some like the Hebrews, were delighted to see the rainbow, because they interpreted it as a sign of God's forgiveness of the few survivors on Noah's Ark after He had destroyed all other life on earth. But to the highly sophisticated Greeks and Romans, the rainbow was a terrifying sight because Iris was regarded as the harbinger of evil tidings. It was her special mission to come down to earth, after the storming thunder and lightning rages of Zeus, to inform men of their transgressions and to execute the penalties imposed by the Deity. Iris was ominously present after the great deluge of Deucalion, when Zeus decided that mankind was unredeemable and must be totally eliminated. His "final solution" was to be an extreme coldness that would freeze all humans to death. It was Iris who was sent to inform Menelaus of the elopement of his daughter, Helen of Troy, an act that started the Trojan Wars. Iris announced the tempest that

shipwrecked Aeneas. She severed the last slender thread that kept Queen Dido alive; and it was Iris who thereafter carried water from the River Styx and forced condemned sinners to drink. Shakespeare, steeped in Ovidian mythology, knew Iris well. In "All's Well" he called her "the distempered messenger of wet" and in "Henry VI, Part II," he had the Queen threaten the exiled Duke of Suffolk: "For wheresoe'er thou art in this world's globe, I'll have an *Iris* that shall find thee out." There was no escape from the rainbow messenger and executioner.

The trepidations of the Greeks, the Romans, and the Elizabethan English were shared by primitive ufologists the world over. Africa tribal lore regarded the rainbow as a giant snake who, seeking a meal after the rain will devour whomever he comes upon. In the Americas, the rainbow was also a hungry god, fond of indiscriminately ingesting water, cattle, and tribesmen, especially the youngest members. The Shoshoni Indian believed that the sky was made of ice against which the serpent rainbow rubbed its back, causing snow in the winter and rain in the summer. It is not recorded whether the Shoshoni's heavenly serpent thus relieved some drought, but other primitive descriptions of the rainbow reveal a very thirsty god indeed: Plutarch describes Iris as having a head of a bull that drinks the water of rivers and streams, while Ovid also depicts her as distinctly bibulous. Other explanations of the rainbow include the hem of God's garments (Greenland); a hat (Blackfeet American Indians); a bowl for coloring birds (Germans); a camel carrying three persons, or a net (Mongol); and, in Finnish lore, a "sickle of the Thunder-God."

Homer may have been the champion literary projectionist of Greece. He too saw Iris either literally or figuratively as a serpent. The Great Visualizer of modern times, however, is beyond any doubt Professor Hermann Rorschach. That compulsive spiller of ink is surely the twentieth century's patron saint of visualization. The doctor of ink and blot has convinced psychologists that whenever we look at something that is disorderly, meaningless, amorphous, or vague, we immediately project upon something else. And that *something else* is an image withdrawn

from our internal picture library and projected onto the shapeless blob placed before us. It seems that we cannot tolerate vagueness and insist on replacing it with *what we wish to see* or *what we dread seeing*.

Some experts insist, however, that we pretend to see something in order to be kind to the earnest psychologists who try to be helpful by showing inky messes to total strangers. During World War II, I was present as an observer when a brilliant young lieutenant was being tested. He did quite well until he was handed an enormous inkblot and asked to describe what he saw. He gazed at it dutifully for quite a while, then handed it back, and said: "It looks like an inkblot to me sir." He was disqualified for his flagrant anti-social response, of course, and it served him right! I also looked at the configuration, and there plainly visible was a lovely picture of an old woman dressed all in black, riding her monocycle down a deserted country road.

And, speaking of tests, in 1875, after conducting a long series of experiments, the eminent physiologist Dr. Francis Galton published his discovery that a surprising number of "entirely normal and reliable" Englishmen he had tested habitually saw objects, colors, forms, and vivid kinaesthetic patterns involving mixed image and color not seen by others.

I offer these digressions with the suggestion that a great deal of work still remains to be done on the visualizing characteristics of the so-called "normal and reliable" people who have made "sightings" of all kinds. I do this not to challenge the validity of all UFO 'sightings,' but to call attention to the possibility that not very much is known about the nature of visualization. It has been generally assumed that if a man is a respected member of a respected profession (like a commercial jet-pilot) he is *ipso facto* free of any visualizing aberrations, and that he always sees the world and its phenomena as nakedly, as honestly as my young lieutenant saw it when he declined to play the inkblot game.

It is therefore hardly surprising that strange objects and phenomena of all kinds have been chronicled and reported for about 3,500 years,

and for thousands of years previously as oral tradition in systems of religion, mythology, and folklore. The number of reports of "strange phenomena" have increased steadily with time, as increase caused by the great proliferation of journals and newspapers since their start in the seventeenth century. As the new media increased in number, they gathered and printed more and more reports of strange happenings that would otherwise have remained localized and been forgotten. The current great interest in UFOs has resulted in a ransacking of religious literature, mythology, as well as the old newspapers and journals for UFO-like sightings and their inclusion in the current UFO literature. With the help of another researcher, I have gone through many old sources in search of new significant "UFO" material, but have found that the ufologists have covered the ground quite thoroughly not hesitating to graft new interpretations on the old reports.

Led by the genius poet-investigator, Charles Fort (1874-1932), who for about 40 years assiduously gathered reports of "strange phenomena" from scientific journals and news media, the ufologists have ferreted out and compiled many hundreds of reports of "UFOs" that were seen before the age of aviation and rocketry.

The use of selected UFO books -- with frequent spot checks of their sources and veracity -- serves a double purpose. It enables us to read the "ancient reports" in them and -- this is nearly as important -- it permits us to see what the modern ufologist selects from the past and how he utilizes and interprets the evidence he has compiled.

Such compilations pose some serious problems for the reader not already convinced of the existence of UFOs. They inflict mental fatigue and anxiety after the reading of each "report" because one is inevitably led into the same brain-numbing round of unanswered questions: Does the alleged book or manuscript in which the report was found really exist? Where is it? Did the writer actually see the original document or is he quoting a secondary source? Is the version presented here a faithful copy of the original or an accurate translation? Is the "report" in question a factual honest report of something actually seen, or is it a poetic, metaphorical, religious, symbolical, mythical,

political, fabrication made legitimately within its own social context, but one that is no longer viable or meaningful to us now? If the "strange phenomenon" was actually seen, then, we ask: "Was this "light," or fiery sphere," "wheel of fire," or "flaming cross," or "cigar-shaped object" or "saucer" or "disk" seen by reliable witnesses? How reliable is the judge of their reliability? What did they actually see? Where did it come from? What was it made of? Who, if anyone or anything, was in it? And so forth, far, far, into the night. Inconclusiveness, the mental plague of ufology, invariably cancels out or suspends in mid-air the great majority of the fascinating reports and leaves the reader (*this* reader for sure) quite frustrated and disappointed.

It soon becomes clear that it would take years of fulltime research to track down and verify the thousands of "ancient" reports included in the nearly 1600 books and articles about UFOs. This means, then, that the general reader, who rarely ever bothers to verify what he reads, is merely given the option to trust or distrust the scholarly accuracy and motivations of the writers who offer him the impressive-looking lists of UFOs sightings. This becomes a very narrow choice indeed: one that is negotiable only in the arena of speculation provided by the writers who believe in UFOs. And, since to my knowledge, no one has written an impartial or objective book about ancient "UFO reports," the nature of the dialogue between an UFO author and his reader becomes that of a man convinced of the existence of UFOs and a reader whom he hopes to convert to his belief.

The strategy for UFO proselytizing is predictable. In book after book, the reader is assured that UFOs are not a sudden, modern manifestation but that there have been numerous reports of similar visitations "down through the ages." The author then proceeds to list the most impressive and authoritative-sounding of the "ancient UFO reports," stressing those that most closely resemble modern accounts of "spacecraft sightings."

He also seeks to create an aura of believability and respectability for UFO phenomena by quoting and re-interpreting "UFO reports from the

Holy Bible," from ancient Roman authors like Pliny The Elder, from Shakespeare, from Hindu religious texts, from "ancient manuscripts found in monasteries," or as in one notable example, from a "papyrus manuscript found among the papers of the late Professor Alberto Tulli, former director of the Vatican Egyptian Museum."

This is a legitimate procedure, of course, and we know that many important scholarly discoveries have been made in church archives, (to take that example) because in many periods in history, the church did chronicle and preserve records of important events. But the presentation of such prestigious ecclesiastical material is used in UFO literature in order to bestow an aura of sanctity upon all UFOs, ancient and modern; i.e., to make them respectable by association.

Thus, for example, *The Flying Saucer Reader*, edited by Jay David (1967) self-described as "an anthology of the best and most authoritative of the incredible but undeniable phenomenon of UFOs," begins with "evidence" from Biblical times; and a chapter written by Paul Thomas in (1965) in which he declares that the famous "miracle of Fatima, Portugal" (13 October 1917) was actually a flying saucer that was mistakenly identified as the Virgin Mary. The book also includes excerpts from two books in which the authors describe their fluent communications with "extra-terrestrial beings" with the aid of: (1) a ouija board using a pencil taped to a water glass, and (2) "mental telepathy."

For the true-believing ufologist, the Holy Bible is a veritable treasure-trove of sacred and profane UFOs. In Chapter 13, verse 21 of the *Book of Exodus*, ". . . the Lord went before them by day in a pillar of fire, to give them light; to go by day and night." Ufologists regard this as evidence that God sent a spaceship to guide the Israelites during their 40-year journey to the Holy Land.

The image from *Exodus* is repeated in the *New Testament* in the "Star of Bethlehem": According to *St. Matthew*, (2,9) "and, lo, the star, which they saw in the East, went before them, till it came and stood where the young child was." Though not regarded as an UFO, but a "star," it also behaved like some UFOs that start and stop.

There are, also, many "fiery chariots," "angels with wings," and "cherubim" in the New and Old Testaments, all of which have been claimed by the occultistic modern ufologists as UFOs.

The selected list of "ancient" UFO reports that follows is taken mainly from various books written by contemporary ufologists. They are all writers who believe "flying saucers" really exist, and who offer various speculations on their origin, mode of "flight" and significance.

213 B. C. "In Hadria an 'altar' was seen in the sky, accompanied by the form of a man in white clothing. A total of a dozen such sightings between 222 and 90 B. C. can be listed, but we have eliminated many more sightings because we felt that they could best be interpreted as misinterpretations of meteors or atmospheric phenomena." (Vallee, 1965).

218 B. C. "In Amiterno district in many places were seen the appearance of men in white garments from far away. The orb of the sun grew smaller. At Praeneste glowing lamps from heaven. At Arpi a shield in the sky. The Moon contended with the sun and during the night two moons were seen. Phantom ships appeared in the sky." (Trench, 1966).

100 B. C. "Pliny mentions the strange shields in *Natural History* Volume II, chapter XXXIV: 'In the consulship of Lucius Valerius and Gaius Valerius (about 100 B. C.) a burning shield scattering sparks ran across the sky at sunset from east to west.'" (Green, 1967).

742-814 A. D. "During the reign of Charlemagne, spacecraft took away some of the earth's inhabitants to show them something of the way of life of space people. These events are described in the Comte de Gabalis' *Discourses*." (Trench, 1966).

"However, when the space craft returned bringing back the Earth people they had taken away, the population were convinced that they were actual members of the spacecraft whom they regarded as sorcerers."

1270 A. D. Bristol England: "In *Otto Imperialia*, Book I, Chapter XIII, Gervase of Tillbury wrote about an aerial craft over a city. The craft caught an anchor in a church steeple and a occupant of the ship scampered down a ladder to free the device. The man was stoned

by a crowd and asphyxiated in the earth's atmosphere. The 'demon's body' was said to have been burned." This story is to be found in several UFO books, and is quoted here from *Let's Face the Facts about Flying Saucers*, (1967) by Warren Smith and Gabriel Green, President of the Almagamated Flying Saucer Clubs of America.

1561 A. D. "In Nuremburg, April 14, 1561, many men and women saw blood-red or bluish or black balls and circular discs in large numbers in the neighborhood of the rising sun. The spectacle lasted one hour 'and appeared to fall to the ground as if it was all on fire and everything was consumed amid a great haze.'" (Cited from a mediaeval text found in the *Annals of Nuremburg* by C. R. Jung).

7 August 1566 A. D. "People saw a crowd of black balls moving at high speed towards the sun, they made a half turn, collided with one another as if fighting. A large number of them became red and fiery and there after they were consumed and then the lights went out." (Quoted by Dr. Jung from the *Annals of Basle*.)

6 March 1716 A. D. "The astronomer Halley saw an object that illuminated the sky for more than two hours in such a way that he could read a printed text in the light of this object. The time of the observation was 7:00 P. M. After two hours the brightness of the phenomenon was re-activated 'as if new fuel had been cast in a fire.'" (Vallee, 1965).

There are hundreds of astronomical "sightings of strange lights," to be found in the modern UFO books. For example, Jacques Vallee, quotes the following from the *Journal of Natural History and Philosophy*:

I saw many meteors moving around the edge of a black cloud from which lightnings flashed. They were like dazzling specks of light, dancing and traipsing thro' the clouds. One of them increased in size until it became of the brilliance and magnitude of Venus, on a clear evening. But I could see no body in the light. It moved with great rapidity, and pasted on the edge of the cloud. Then it became

stationary, dimmed its splendor, and vanished. I saw these strange lights for minutes, not seconds. For at least an hour, these lights, so strange, played in and out of the black cloud. No lightning came from the clouds where these lights were playing. As the meteors increased in size, they seemed to descend . . ."

This observation was made by John Staveley, an astronomer, at Hatton Gardens, London, on 10 August 1809 and reported in the *Journal of Natural History and Philosophy and Chemistry*. (Vallee, 1965).

1820. Francis Arago, in *Annales de chimie et de physique*, wrote "concerning observations at Embrun, France: 'numerous observers have seen, during an eclipse of the moon, strange objects moving in straight lines. They were equally spaced, and remained in line when they made turns. Their movements showed a military precision.'" (Vallee, 1965).

"Lights in the dark of the moon" are considered to be UFO spacecraft by many ufologists. Fort cites many, and here are some:

November 1668. A letter from Cotton Mather to Mr. Waller of the Royal Society dated "at Boston, November 24, 1712" (now in the Library of Massachusetts Historical Society, Boston) refers to "ye star below ye body of ye Moon, and within the Horns of it . . . seen in New England in the Month of November, 1668." (Lowes, 1927).

1783. In *Philosophical Transactions* (Volume LXXVII) for 1787, the great astronomer reports a "bright spot seen in the dark of the moon . . . which seen in the telescope resembled a star of the fourth magnitude as it appears to the natural eye." (Lowes, 1927).

1794 In *Philosophical Transactions*, 1794, a total of seven letters in Volumes XXVI and XXVII, reporting "lights in the dark portion of the moon." The principal sighting was communicated by the Astronomer Royal, the Reverend Nevil Maskelyne, on the "observations of Thomas Stretton, who saw the phenomenon in St. John's Square, Clerkenwell London. In another letter to the Royal Society, a Mr. Wilkins reports his "sighting" in terms exactly like those used by many who claim to have seen UFOs. "I was," writes Wilkins, "as it were, rivetted to the

spot where I stood, during the time it continued, and took every method I could to convince myself that it was not an error of sight, including the testimony of one who passed and said it was a star." (Lowes, 1927). "I am very certain," he adds in his third letter, "of this spot appearing *within* the circumference of the moon's circle." Mr. Stratton declared that it was a "light like a star, as large as a star, but not so bright, in the dark part of the moon." (Lowes, 1927).

July 1868. In *Lo!* by Charles Fort, as quoted by Jacques Vallee (1965) "at Capiago, Chile, an aerial construction emitting light and giving off engine noise was interpreted locally as a giant bird with shining eyes, covered with large scales clashing to give off a metallic noise."

22 March 1870. "An observation was made aboard the 'Lady of the Lake' in the Atlantic Ocean. The object was a disk of light grey color. What appeared to be the rear part was surrounded by a halo, and a long tail emanated from the center. This UFO was viewed between 20° and 80° elevation for half an hour. It flew against the wind and Captain Banner made a drawing of it." (Vallee, 1965).

24 April 1874. "On the above date, a Professor Schafarick of Prague saw 'an object of such a strange nature that I do not know what to say about it. It was of a blinding white and crossed slowly over the face of the moon. It remained visible afterwards.'" (*Astronomical Register* XXIII, 206 quoted by Vallee, 19).

15 May 1879. "On the above date, at 9:40 p.m. from 'the Vultur' in the Persian Gulf, two giant luminous wheels were observed spinning slowly and slowly descending. They were seen for thirty-five minutes, had an estimated diameter of forty meters (130 feet) and were four diameters apart. Similar 'giant wheels' were seen the year after, again in May, and in the same part of the ocean, by the steamer 'Patna.'" Quoted by Vallee, (1965) from *Knowledge*, a journal.

This list of "strange phenomena" could easily be extended over hundreds of pages. The reader, if he wished, can consult the writings of Charles Fort (1941) and others. At the end of all this reading, he will probably find that the mysterious phenomena remain mysterious.

He can then exercise his option to believe that the strange phenomena reported down through the ages are reports of extra-terrestrial visitors from planets whose civilizations are infinitely older and superior to ours. On the other hand, his curiosity may be aroused in quite a different direction. The citations of "ancient UFO reports" by the ufologists have one hauntingly familiar common characteristic: the authors are uniformly highly uncritical of the authenticity of these reports, so much so that their presentations of them falls well outside the boundaries of normal scholarly skepticism.

Let us take as an example one particular "UFO case history" given credence and awesome attention in books by Vallee, Green, Trench, Desmond and Adamski, Jessup, and Thomas. The report is an alleged "observation made in 1290 at Byland Abbey, Yorkshire, of a large silvery disk flying slowly, a classical one and [one that] can be found in a number of books" (Vallee, 1965). Each of these authors quotes it from one of his colleagues but none has taken the precaution of checking on the "manuscript scroll that was discovered several years ago (1953) in Ampleforth Abbey in England.

After deciding to check on the "Byland Abbey sighting on 1290," I backtracked through the various books and read the complete transcript of the "Ampleforth Abbey UFO sighting of 1290" as it is given in Desmond and Adamski's *Flying Saucers Have Landed* (1953):

oves a Wilfred suseptos die festo sanctissorum
Simon is atque Judae asseverunt. Cum autum Henricus
abbas gratias redditurus erat, frater guidam Joannes
referebat. Tum vero omnes eccuccurerunt et ecce *res*
grandis, circumcircularis argentea disco quodam haud
dissimils, lente e super eos volans atque maciman
terrorem exitans. Quo tempore Henricus abbas adultavisse
(qua) de causa impius de . . .

"Mr. A. X. Chumley," who supplied the information, gives the following translation:

. . . took the sheep from Wilfred and roast them
in the feast of SS. Simon and Jude. But when Henry

the Abbott was about to say grace, John, one of the brethren, came in and said there was a great portent outside. Then they all went out and IO! *a large round silver thing like a disk flew slowly over them,* and excited the greatest terror. Whereat Henry the Abbott immediately cried that Wilfred was an adulterer, wherefore it was impious to . . .

Authors Desmond and Adamski comment: "What probably happened is that a flying saucer did, in fact, pass over Byland Abbey at the close of the thirteenth century and that the astute Abbott Henry seized the opportunity to admonish Wilfred for his carryings on, and the community for their lack of piety."

Then, in Paul Thomas's *Flying Saucers through the ages* (1965), we read the following: ". . . in Yorkshire, a flat shining disk flew over the monastery of Byland. (Translator's note: There are grave doubts on the genuineness of this. Two Oxford undergraduates admitted to me in 1956 that they forged this document for a joke -- *but there is nothing to prove that they really did so!*) (emphasis--SR).

After wondering why the translator did not, in the nine years between 1956 and 1965, seek to verify the ancient manuscript by means of a visit, letter or phone call to "Ampleforth Abbey", I began my own investigation. The British information Service in New York verified the existence of Ampleforth Abbey, now a Benedictine College, in York, England. Then, I cabled a friend, Mr. John Haggarty, in London, and asked him to verify the existence and contents of the "Byland Abbey manuscript." Haggarty cabled promptly:

HAVE CHECKED WITH COLLEGE STOP AMPLEFORTH
DOCUMENT A HOAX PERPETRATED BY TWO SIXTH FORM
BOYS IN LETTER TO TIMES (LONDON) REGARDS

Such a fabricated "UFO report" has been used for the greater glory of the new mythology in *Let's Face the Facts About Flying Saucers*, (Green, 1967).

The authors have offered their own enlarged and embellished version, of the "Byland Abbey sighting," complete with some nifty, monk-type

dialogue (not in the original fabrication); and some 'inner thoughts' of the monks -- also absent from the 'original.' They have even pinned the heinous crime of "sheephiding" on "Wilfred, the adulterer":

Brother John's Medieval Saucer

It was an early afternoon in October, A. D. 1250 (Jacques Vallee writes that it occurred in 1290), and the monks at Byland Abbey in Yorkshire, England prepared to celebrate the feast of St. Simon and St. Jude. Henry the Abbott had previously discovered that Brother Wilfred had hidden two fat sheep on the Abbey grounds. The abbott confiscated the sheep from Wilfred and their succulent carcasses were roasting over a roaring fire in the dining hall.

The brothers were in a jovial mood. "I wish thee would till the fields as willingly as thee would watch the mutton," one said to an eager friend.

"Black bread and cheese do not compare with mutton," answered his companion.

As the brothers assembled for their evening meal, they heard a noise in the doorway. Brother John stood in the doorway with a terror-stricken look on his face.

"What happened, Brother John?" inquired the abbott.

"I was walking towards the abbey from the fields and thinking about the roast mutton dinner. A strange noise overhead scared me. I looked up in the sky. A large silver plate is up there in the sky."

The monks forgot their dinners and dashed into the yard.

"There it is," shouted Peter.

"Mother of God!" said a brother.

Henry the Abbott and Brother John stepped from the dining room. A giant flying disk hovered in the sky and drifted slowly in the clouds. The monks were panic-stricken.

They fell to their knees with shouts of "Judgement Day", and " 'tis the end of the world" punctuating their frantic prayers.

The shaken monks turned to Henry the Abbott for clarification. "What does the appearance of this mean?" they inquired.

"Wilfred is an adulterer and must be punished," snapped the abbott.

A second "spot-check," made of one of the more spectacular "ancient UFO reports," has produced some fascinating results. It is the "UFO legend" offered by Mr. Frank Edwards in his *Flying Saucers -- Serious Business* (1966). In his opening chapter entitled "What Goes On Here?" Edwards, from a source not mentioned, gives us the following awesome account:

A chronicle of ancient India known as the *Book of Dzyan* is in a class by itself, not only because of its age, but because of a surprising account therein. The Book is a compilation of legends passed down through the ages before men were able to write, and finally gathered by the ancient scholars who preserved them for us.

They tell of a small group of beings who came to Earth many thousands of years ago in a metal craft which first went AROUND Earth several times before landing. "These beings," says the Book, "lived to themselves and were revered by the humans among whom they had settled. But eventually differences arose among them and they divided their numbers, several of the men and women and some children settling in another city, where they were promptly installed as rulers by the awe-stricken populace."

The legend continues:

"Separation did not bring peace to these people and finally their anger reached a point where the ruler of the original city took with him a small number of his warriors and they rose into the air in a huge shining metal vessel. While they were many leagues from the city of their enemies they launched a great shining lance that rode on a beam of light. It burst apart in the city of their enemies with a great ball of flame that shot up to the heavens, almost to the stars. All those in the city were horribly burned and even those who were not in the city---but nearby---were burned also. Those who looked upon the lance and the ball of fire were blinded forever afterward. Those who entered the city on foot became ill and died. Even the dust of the city was poisoned, as were the rivers that flowed through it. Men dared not go near it, and gradually crumbled into dust and was forgotten by men.

"When the leader saw what he had done to his own people he retired to his palace and refused to see anyone. Then he gathered about him those of his warriors who remained, and their wives and their children, and they entered into their vessels and rose one by one into the sky and sailed away. Nor did they return."

This would seem to be an account of an attempt by some extra-terrestrial group to establish a colony on Earth in the distant past. Like so many colonizing attempts by man, it appears to have ended in dissension and conflict. The most interesting portion of the story is the description of the great "lance that traveled on a beam of light," which bears a surprising resemblance to a modern rocket and its jet of flame. The effect of this so-called "lance" brings to mind a rather detailed picture of a nuclear blast and its catastrophic sequels. If

this is a mental concoction of some primitive writer, it is at least remarkable. If it is a reasonably accurate piece of factual reporting, then it is even more remarkable. Since it is unverifiable, we must at this late date classify it as "interesting, but unproved."

This most impressive, goosepimply account of extra-terrestrial colonists who once waged nuclear war on our planet and then left has only one thing wrong with it -- it is completely spurious.

To begin with, the so-called *Book of Dzyan* is not, as Edwards writes, "a compilation of legends passed down through the ages . . . and gathered by scholars who preserved them for us." The "Book or Stanzas of Dzyan" made their very first appearance in 1886 in the famous book *The Secret Doctrine*, written by the high priestess of Esoteric Theosophy, Madame Helene Petrovna Blavatsky (1831-1891). The stanzas are the basis of her preposterous Atlantean "Theory of Cosmic Evolution." An unauthorized biographer declares that: "the mysterious 'Dzyan manuscript' like the 'Senzar' language they were written in, seem wholly to have originated in Madame Blavatsky's imagination." (Roberts, 1931).

Madame Blavatsky's own account, and those of her disciples, or the origin and meaning of the "Dzyan Stanzas" quickly show that they were concocted for an "occult" audience with a very low threshold of mental resistance.

That the "Stanzas of Dzyan" exist only in Madame Blavatsky's *The Secret Doctrine*, or in commentaries written by her disciples is clearly stated in the foreword of the only separate edition of the "Stanzas" published by the London Theosophical Society in 1908:

For the information of readers into whose hands these *Stanzas* may now fall, it is desirable to give some brief account of their source, on the authority of the Occultist Madame Blavatsky who translated and introduced them to the world of modern thought. The following particulars are derived from Madame Blavatsky's *Secret Doctrine* and *Voice*

of *The Silence*; which Madame Blavatsky tells us form a part of the same series of long-concealed manuscript treasures in which the *Stanzas of Dzyan* belong.

Book of Dzyan is not in the possession of any European library, and was never heard of by European scholarship: nevertheless it exists and lies hidden, even from the enterprising war correspondent, in one of the mysterious rock libraries that the spurs of the Himalayas may yet contain. (emphasis--SR).

In her own inimitable style Madame Blavatsky adds: "In the Tsaydam, in the solitary passes of the Kuen-Lun, along the Altyn-Tag" [this "Tibetan" word sounds German: "Alten-Tag" or "olden days"--SR] whose soil no European foot has trod, there exists a certain hamlet lost in a deep gorge. It is a small cluster of houses, a hamlet rather than a monastery, with a poor temple on it, and only one old Lama, a hermit, living near to watch it. Pilgrims say that the subterranean galleries and halls under it contain a collection of books . . . too large to find room even in the British Museum" (Introduction to *The Secret Doctrine*, Madame Blavatsky).

The preface of the London Theosophical Society's edition of the "Stanzas" explains more about them:

The Stanzas of Dzyan . . . are written in a language unknown to philology, if indeed the word "written" is applicable to ideographs of which they largely consist, and this associated with the use of a colour system of symbology.

They are given throughout, in their modern translated version, as it would be worse than useless to make the subject still more difficult by introducing the archaic phraseology of the original with its puzzling style and words. The terms used were non-translatable into English, are Tibetan and Sanskrit, and . . . will frequently be a stumbling

block unless reference is made to *The Secret Doctrine* where the commentaries on the text will generally be found to supply the meaning (London Theosophical Society, 1908).

A thorough search of the *Stanzas* in Madame Blavatsky's books and those of her commentators has failed to divulge the enthralling "legend from the Book of Dzyan" quoted by Edwards. Now since the *Stanzas* exists only in *The Secret Doctrine*, and they, in turn, exist only "in the imagination of Madame Blavatsky," then the question arises: Where did the additional long account of "extra-terrestrial colonists" -- come from? It seems that Edwards had "been had" by one of his sources, and has innocently passed on to his readers a fabrication superimposed on a gigantic hoax concocted by Madame Blavatsky.

Then there is the "UFO sighting" sometime "during the reign of Thutmose III, (1504-1450 B. C.)," cited by Trench (1966):

Among the papers of the late Professor Alberto Tulli, former director of the Egyptian Museum at the Vatican, was found the earliest known record of a fleet of flying saucers written on papyrus long, long, ago in ancient Egypt. Although it was damaged, having many gaps in the hieroglyphics Prince Boris de Rachewiltz subsequently translated the papyrus and irrespective of the many broken sections he stated that the original was part of the *Annals of Thutmose III, circa 1594-1450 B. C.* The following is an excerpt:

"In the year 22, of the third month of winter, sixth hour of the day . . . in the scribes of the House of Life it was found a circle of fire that was coming from the sky . . . it had no head, the breath of its mouth had a foul odor. Its body was one rod long and one rod wide. It had no voice. Their bellies became confused through it: then they laid themselves on their bellies. . . . they went to the Pharoah, to report it . . . His Majesty

ordered . . . has been examined . . . as to all which is written in the papyrus rolls of the *House of Life*. His Majesty was meditating on what happened. Now after some days had passed, these things became more numerous in the sky than ever. They shone more in the sky than the brightness of the sun, and extended to the limits of the four supports of the heavens. . . . Powerful was the position of the fire circles. The army of the Pharaoh looked on with him in their midst. It was after supper. Thereupon these fire circles ascended higher in the sky to the south. Fishes and volatiles fell down from the sky. A marvel never before known since the foundation of their land. And Pharaoh caused incense to be brought to make peace on the hearth . . . and what happened was ordered to be written in the annals of the *House of Life* . . . so that it be remembered for ever.'

As I read, reread, and compared the "Tulli Egyptian papyrus" (c. 1500 B. C.) with the *Book of Ezekiel*, written about 900 years later (c. 590 B. C.), I became aware of a number of striking similarities between the texts. The most celebrated and oft-quoted of the ancient "UFOs" is "Ezekiel's wheel of fire, (*Old Testament, Ezekiel, Chapter One, King James Version*):

1: Now it came to pass in the thirtieth year in the fourth month, in the fifth day of the month, as I was among the captives by the river of Chebar, that the heavens were opened and I saw visions of God.

4: And I looked, and behold a whirlwind came out of the north, a great cloud, and a fire infolding itself, and a brightness was about it, and out of the midst thereof as the color of amber, out of the midst of the fire.

5: Also out of the midst thereof came the likeness of four living creatures . . . they had the likeness of a man.

6: And every one had four faces, and every one had four wings.

10: As for the likeness of the faces, they four had the face of a man, the face of a lion . . . and the face of an eagle . . .

13: . . . their appearance was like burning coals of fire, and like the appearance of lamps: it went up and down among the living creatures, and the fire was the fire bright and out of the fire went forth lightning.

15: Now as I beheld the living creatures, behold one wheel upon the earth by the living creatures, with his four faces.

16: The appearance of the wheels and their work was like unto the colour of beryl; and they four had one likeness; and their appearance and their work was as it were a wheel in the middle of a wheel.

17: When they went, they went upon their four sides: and they turned not when they went.

18: As for their rings, they were so high they were dreadful; and their rings were full of eyes round about them four.

19: And, when the living creatures were, the wheels went by them: and when the living creatures were lifted up from the earth, the wheels lifted up.

20: . . . for the spirit of the living creatures was in them.

The Book of Ezekiel consists of 48 chapters, most of which are devoted to Jehovah's bitter complaints about the immorality of his own people; and his lengthy tirades against all of Israel's enemies, *especially the Pharaohs of Egypt.*

29, 1: In the tenth year, in the twelfth day, the word of the Lord came unto me, saying . . . Prophecy against . . . Pharaoh, King of Egypt.

The "Tulli papyrus" and *Ezekiel* show so many exact similarities of style, language and detail *in sequence*, that one wonders whether, despite its alleged time priority, the "Tulli papyrus" may be taken from the King James version of the *Book of Ezekiel*. Or, if the "Tulli papyrus" is genuine, and its translation by Prince de Rachewiltz is accurate, then the *Book of Ezekiel* may have been plagiarized from the *Annals of Thutmose III!*

A tabulation of the similarities follows:

Egyptian	Ezekiel
"the House of Scribes"	"the House of Israel"
"was coming in the sky"	"the heavens were opened"
"it was a circle of fire"	"always referred to as wheel of fire"
"it had no head"	"heads with four faces" -- "everyone had four faces"
"It had no voice."	"I heard a voice that spake"
"Their hearts became confused through it: then they laid themselves on their bellies"	"When I saw it, I fell on my face."
"His Majesty ordered . . . written in rolls"	"and God spread a roll before me and it was written . . ."
"towards the south"	"out of the north"
"the brightness of the sun"	"and a brightness was about it"
"it was after supper"	"cause thy belly to eat."
This all takes place allegedly in Egypt during the reign of Thutmose III	"in the land of Egypt."
"Fishes and volatiles fell down from the sky."	"I am against Pharaoh, king of Egypt"
	29:5, 3: "thee and all the fishes: thou shalt fall upon the open fields."

These dozen sequential similarities are so remarkable and raise so many questions as to the authenticity of the "Tulli papyrus," that a cable was despatched to the Egyptian section of the Vatican Museum seeking more information about both the "papyrus" and the "de Rachewiltz translation." The reply follows:

Papyrus Tulli not propriety [sic] of Vatican Museum. Now it is dispersed and no more traceable.

The Inspector to Egyptian
Vatican Museum

(signed) Gianfranco Nolli

Citta del Vaticano 25 Luglio 1968

Skepticism being the mother of persistence, we nevertheless decided to trace it as far as we could. Dr. Condon wrote Dr. Walter Ramberg, Scientific Attache at the U. S. embassy in Rome. Dr. Ramberg replied:

. . . the current Director of the Egyptian Section of the Vatican Museum, Dr. Nolli, said that . . . Prof. Tulli had left all his belongings to a brother of his who was a priest in the Lateran Palace. Presumably the famous papyrus went to this priest. Unfortunately the priest died also in the meantime and his belongings were dispersed among heirs, who may have disposed of the papyrus as something of little value.

Dr. Nolli intimated that Prof. Tulli was only an amateur "Egyptologist" and that Prince de Rachelwitz is no expert either. He suspects that Tulli was taken in and that the papyrus is a fake

Do these startling coincidences or downright hoaxes mean that all such "ancient UFO reports" are fabrications? No, it does not. But they do indicate that the authors of at least seven UFO books have attempted to build up the argument for the existence of UFOs with

"case histories" taken from secondary and tertiary sources without any attempt to verify original sources, and that they orbit around each other in a merry-go-round chase of mutual quotation. If any scientist or scholar had behaved similarly, he would have long since been hooted out of his profession. My conclusion: all accounts of "UFO-like sightings handed down through the ages" are doubtful--until verified.

There is a positive side to all of this, however. The low-grade controversy generated by "devout believers in the existence of UFOs" (book ad in The New York Times) has attracted a great deal of attention on the news media of the world. A lot of rubbish about UFOs has been printed, and the entire field of speculation remains chronically inconclusive, but attention has also been drawn to a profound question: Are we alone in the universe? Is there life on other planets? And indirectly all of this has led to support and interest in governmental space programs.

But what of UFOs, ancient or modern? The best proposition I know for evaluating any hypothesis was offered 40 years ago by Bertrand Russell in *Sceptical Essays*:

There are matters about which those who have investigated them are agreed: the dates of eclipses may serve as an illustration. There are other matters about which experts are not agreed. Even when all the experts agree, they may well be mistaken. Einstein's view as to the magnitude of the deflection of light by gravitation would have been rejected by all experts twenty years ago. Nevertheless, the opinion of experts, when it is unanimous, must be accepted by non-experts as more likely to be right than the opposite opinion. The skepticism that I advocate amounts only to this: 1) that when experts are agreed, the opposite opinion cannot be held to be certain; 2) that when they are not agreed, no opinion can be regarded as certain by

a non-expert; 3) that when they all hold that no sufficient grounds for a positive opinion exists, the ordinary man would do well to suspend his judgments. These propositions seem mild, yet, if accepted they would revolutionize human life.

The revolution is not yet, but as a very ordinary non-expert and a card-carrying skeptic, I will begin it by regarding no opinion as certain.

References

- Blavatsky, H. P. *Stanzas of Dzyan*, London: London Theosophical Society, 1908.
- _____. *The Secret Doctrine*, London: London Theosophical Society, 1888.
- _____. *The Voice of Silence*, New York: E. B. Page, 1899.
- Boyer, Carly B. *The Rainbow*, New York: Thomas Yosalef, 1959.
- David, Jay. *The Flying Saucer Reader*, New York: New American Library, 1967.
- Desmond, Leslie and George Adamski. *Flying Saucers Have Landed*, New York: British Book Centre, 1953.
- Edwards, Frank. *Flying Saucers -- Serious Business*, New York: Lyle Stuart, 1966.
- Fort, Charles. *The Books of Charles Fort*, New York: Henry Holt & Co., 1941.
- Galton, Francis. *Inquiries into Human Faculty and its Development*, London: J. M. Dent and Co., 1908.
- Green, Gabriel. *Let's Face the Facts about Flying Saucers*, New York: Popular Library, 1967.
- Hynek, J. Allan. *Christian Science Monitor*, (23 May 1967).
- Lehner, Ernst and Joanna. *Lure and Lore of Outer Space*, New York: Tudor Publications, 1964.
- Lowes, John Livingston. *The Road to Xanadu*, Cambridge: Houghton, Mifflin, 1927.
- New Testament*, King James Version, *Book of Matthew*, 1604.
- Old Testament*, King James Version, 1604.
- Old Testament*, King James Version, *Book of Ezekiel*, 1604.
- Pliny, The Elder. *Natural History*, Vol. II, Chapter XXXIV, Cambridge: Harvard Press, 1962.
- Roberts, C. E. B. *The Mysterious Madame*, London: John Lane, 1931.

- Russell, Bertrand. *Skeptical Essays*, New York: Norton and Co., 1928.
- Thomas, Paul. *Flying Saucers through the Ages*, London: Spearman, 1965.
- Trench, Brinsley Le Poer. *The Flying Saucer Story*, London: Spearman, 1966.
- Vallee, Jacques. *Anatomy of a Phenomenon*, Chicago: Henry Regnery, 1965.
- Wilkins, H. T. *Flying Saucers on the Attack*, New York: Citadel Press, 1954.

Chapter 2
UFOs: 1947 - 1968
E. U. Condon

1. Initial Activity: Project Sign.

This chapter provides a concise historical account of the development of official and public interest in the UFO phenomenon, principally as it occurred in the United States from the initial sightings of Kenneth Arnold on June 24, 1947 to the present. It does not undertake to make a detailed study of the more famous of the past incidents, but merely to give a brief account of them as examples of the way in which interest in the subject developed.

The Kenneth Arnold sightings were accorded a large amount of newspaper publicity throughout the world. The most detailed account of the Arnold sightings is to be found in a book written and published by Arnold with the collaboration of Ray Palmer, a science fiction editor and author (Arnold and Palmer, 1952).

The Arnold sightings and the accompanying flurry of UFO reports occurred just before the Army Air Force was reorganized as the U. S. Air Force and made a part of the newly created Department of Defense.

In the first few months, the Army Air Force began to study UFO reports that came to its attention at the Air Technical Intelligence Center, (ATIC) located at Wright-Patterson Air Force Base near Dayton, Ohio. About the earliest formal action looking toward establishment of a study of flying saucers -- the term UFO was not coined until later -- was a letter dated 23 September 1947 from Lt. Gen. Nathan F. Twining, Chief of Staff of the U. S. Army to the Commanding General of the Army Air Force (Appendix R). This letter directs establishment of a study of UFOs. The new activity was given the code name, Project Sign, and assigned a priority 2-A in a letter dated 30 December 1947 from Maj. Gen. L. C. Craigie to the Commanding General of the Air Materiel Command (Appendix S).

Many of the attitudes which are held today began to be apparent almost at once, and many individuals in the public as well as in the military services began to adopt somewhat emotional positions. Some were ready to believe from the beginning that the UFOs were interplanetary or interstellar visitors, while others thought that UFOs were secret weapons of a foreign power, Russia being most frequently mentioned in this context. Still others tended to think that all UFOs were hoaxes or honest misidentifications of ordinary phenomena. Within the Air Force there were those who emphatically believed that the subject was absurd and that the Air Force should devote no attention to it whatever. Other Air Force officials regarded UFOs with the utmost seriousness and believed that it was quite likely that American airspace was being invaded by secret weapons of foreign powers or possibly by visitors from outer space. The time in question was just two years after the end of World War II. The period of difficult diplomatic relations between the United States and the U. S. S. R. had already started. Negotiations aimed at achieving international control of atomic energy had been under way for some time at the United Nations, but negligible progress was being made.

Four days after Arnold's sightings, an Air Force P-51 pilot saw a formation of five or six circular objects off his right wing while flying near Lake Meade, Nev. in the middle of the afternoon. That same evening near Maxwell AFB, Montgomery Ala., several Air Force officers saw a bright light that zigzagged across the sky at high speed and, when overhead, made a 90° turn and disappeared to the south. From White Sands Proving Ground in N. M. came a report of a pulsating light travelling from horizon to horizon in 30 sec. Reports poured in from many parts of the country.

On 4 July 1947 excitement was generated by the report of the first UFO photograph from Portland, Ore. This was later identified as a weather balloon, but only after the picture had been given newspaper publicity.

During World War II, the Navy had developed a plane designated as XF-5-U-1, and popularly referred to as the "flying flapjack," but this project had been abandoned. Nevertheless some thought that perhaps it was still being worked on and that this secret plane might be flying and giving rise to some of the UFO reports. This plane was never flown.

At the end of July 1947, the first tragedy associated with the UFO story occurred. It is known as the Maury Island Incident. Two Tacoma, Wash. "harbor patrolmen," declared that they had seen six UFOs hover over their patrol boat. A private citizen reported this to an intelligence officer at Hamilton AFB in Calif., claiming that he had some pieces of metal that had come from one of the UFOs.

As a result, Lt. Brown and Capt. Davidson flew from Hamilton to Tacoma and met the citizen in his hotel room at Tacoma. The citizen then told them that he had been paid \$200 for an exclusive story by a Chicago publisher, but that he had decided the story ought to be told to the military. The two "harbor patrolmen" were summoned to the hotel room to relate their story to Brown and Davidson. In June 1947, the patrolmen said, they sighted the doughnut-shaped UFOs over Puget Sound about three miles from Tacoma. The UFOs were said to be 100 ft. in diameter with a central hole about 25 ft. in diameter. One appeared to be in trouble and another made contact in flight with it. According to the story, the disabled UFO spewed out sheets of light metal and a hard rocklike material, some of which landed at Maury Island. The harbor patrolmen went to the island and scooped up some of the metal. They tried to use their radio but found so much interference that they could not communicate with headquarters three miles away. While this was happening, the UFOs disappeared.

The next morning, one of the patrolmen said, he had been visited by a mysterious man who told him not to talk. Photographs were taken during the encounter with the UFOs, but the film was badly fogged, the patrolman claimed.

During the interview between the harbor patrolmen and the Air Force officers, which occurred sometime after the event itself, Tacoma newspapers received anonymous tips about the interviews in the hotel room.

They returned to McChord AFB near Tacoma, and after conferring with an intelligence officer there, started the return flight to Calif. in the B-25 in which they had come. The plane crashed near Kelso, Wash. Although the pilot and a passenger parachuted to safety, Brown and Davidson lost their lives.

In the investigation which followed the "harbor patrolmen" admitted that the whole story was a hoax intended to produce a magazine story for the Chicago publisher. The alleged photographs could no longer be found. The men admitted that they were not harbor patrolmen. One admitted to having telephoned tips on the interviews with Air Force officers to the Tacoma newspapers. The Air Force officers had already decided that the story was a hoax, which was why they did not take with them the metal fragments alleged to have come from the UFO.

This case is presented in somewhat more detail in Ruppelt (1956). Another version of the same case is given in Wilkins (1954). *Life* acknowledged the UFO wave with an article "Flying Saucers Break Out over the U. S." in its 21 July 1947 issue. *Newsweek* covered the story under the headline "Flying Saucer Spots Before Their Eyes" in the 14 July 1947 issue.

The following year another case ended in tragedy when Capt. Thomas Mantell lost his life on 7 January 1948. He was attempting to chase an UFO near Louisville, Ky. This is the first fatality on record directly connected with an UFO chase (Ruppelt, 1955).

At 1:15 p.m. reports from private citizens were made to the Kentucky State Highway Patrol describing a strange, saucer-shaped flying object, some 200 - 300 ft. in diameter. Soon it was seen by several persons, including the base commander, at the control tower of Godman AFB, outside Louisville.

About this time a group of four F-51s arrived and the flight leader, Capt. Mantell, was asked by the base commander to have a look at the UFO. Three of the planes took up the investigation. Unable to see the UFO at first they followed directions from the control tower.

After a while, Capt. Mantell reported that he had found the UFO ahead of him and higher. He told the tower that he was climbing to 20,000 ft. The other two planes remained behind. None of the three planes had oxygen. The others tried to call Mantell on the radio, but he was never heard from again. By 4:00 p.m. it was reported that Mantell's plane had crashed and that he was dead.

Initially it was concluded that Mantell had been chasing Venus. The case was restudied by Ruppelt in 1952 with the assistance of Hynek, who concluded that the UFO was probably not Venus, because although the location was roughly appropriate, Venus was not bright enough to be seen vividly in the bright afternoon sky. Ruppelt's later study led him to the belief that what Capt. Mantell chased was probably one of the large 100 ft. "skyhook" balloons that were being secretly flown in 1948 by the Navy. Their existence was not known to most Air Force pilots. This explanation, though plausible, is not a certain identification.

Two other 1948 cases figure largely in reports of UFO sightings. On 24 July 1948 an Eastern Airlines DC-3, piloted by Clarence S. Chiles and John B. Whitted, was on a regular run from Houston, Tex. to Atlanta, Ga. At 2:45 a.m. they saw a bright light dead ahead coming rapidly toward them. They pulled to the left to avoid a collision. Looking back they saw the UFO go into a steep climb. The pilots described it as a wingless B-29 fuselage and said that the underside had a deep blue glow. Two other reports from the general vicinity at the same time gave a similar description.

On 1 October 1948, at 9:00 p.m. Lt. George F. Gorman of the North Dakota National Guard was approaching Fargo, N. D. in an F-51. The tower called his attention to a Piper Cub which he saw below him. As he prepared to land, suddenly what he took to be the tail-light of another plane passed him on his right, but the control tower assured

him no other planes were in the area. Chasing the light, he got within 1,000 yd. of it. It had been blinking but suddenly became steady and started to move rapidly with the F-51 pursuit. There followed a complicated chase in which Gorman had to dive on one occasion to avoid collision. Suddenly the light began to climb and disappeared.

Some months later, 24 January 1949, the Air Weather Service provided ATIC with an analysis which indicated that Gorman had been chasing a lighted balloon. This explanation is not accepted by Keyhoe (1953), who says that although the Weather Bureau had released a weather balloon, it had been tracked by theodolite and found to have moved in a different direction from that in which Gorman had his UFO encounter.

In late July 1948 an incident occurred of which much is made by critics of Air Force handling of the UFO problem. The staff of Project Sign, on the basis of study of cases reported in the year since the original Arnold sightings prepared an "Estimate of the Situation." This is said to have been classified "Top Secret" although "Restricted" was the general classification applicable to Project Sign at that time. The intelligence report was addressed to Air Force Chief of Staff, Gen. Hoyt S. Vandenberg.

According to the unconfirmed reports, the "Estimate" asserted that the staff of Project Sign were convinced that the UFOs were really interplanetary vehicles. This report never became an official document of the Air Force, because Gen. Vandenberg refused to accept its conclusions on the ground that the Project Sign "Estimate of the Situation" lacked proof of its conclusion. Copies of the report were destroyed, although it is said that a few clandestine copies exist. We have not been able to verify the existence of such a report.

Some Air Force critics make much of this incident. As they tell it, the Estimate contained conclusive evidence of ETA, but this important discovery was suppressed by arbitrary decision of Gen. Vandenberg. We accept the more reasonable explanation that the evidence presented was then, as now, inadequate to support the conclusion.

Project Sign at ATIC continued its investigations of flying saucer reports until 11 February 1949 when the name of the project was officially changed to Project Grudge.

The final report of Project Sign was prepared and classified "Secret" February 1949, and was finally declassified 12 yr. later. It is a document of vii + 35 pages officially cited as Technical Report-TR-2274-1A of the Technical Intelligence Division, Air Materiel Command, Wright-Patterson AFB, Ohio.

This report concludes with these recommendations:

Future activity on this project should be carried on at the minimum level necessary to record, summarize and evaluate the data received on future reports and to complete the specialized investigations now in progress. When and if a sufficient number of incidents are solved to indicate that these sightings do not represent a threat to the security of the nation, the assignment of special project status to the activity could be terminated. Future investigations of reports would then be handled on a routine basis like any other intelligence work.

Reporting agencies should be impressed with the necessity for getting more factual evidence on sightings, such as photographs, physical evidence, radar sightings, and data on size and shape. Personnel sighting such objects should engage the assistance of others, when possible, to get more definite data. For example, military pilots should notify neighboring bases by radio of the presence and direction of flight of an unidentified object so that other observers, in flight or on the ground, could assist in its identification.

Of particular interest even today, as indicating the way in which the problem was being attacked in that early period are Appendices C

and D of the report which are reproduced here as our Appendices D and T. Appendix C is by Prof. George Valley of the Massachusetts Institute of Technology who was at that time a member of the Air Force Scientific Advisory Board, attached to the Office of the Chief of Staff. Appendix D is a letter by Dr. James E. Lipp of the Rand Corporation, Santa Monica, Calif., to Brig. Gen. Donald Putt who was then the Air Force's director of research and development, which discusses Extra-Terrestrial Hypotheses. Historically it serves to show that the Air Force was in fact giving consideration to the ETH possibility at this early date.

A curious discrepancy may be noted: On page 38 of the paperback edition of Keyhoe's *Flying Saucers from Outer Space* (Keyhoe, 1954) there is given a two-paragraph direct quotation from the Project Sign report. However a careful examination of the report shows that these paragraphs are not contained in it.

2. Project Grudge. Early Magazine Articles and Books.

After 11 February 1949, the work at ATIC on flying saucers was called Project Grudge. It issued one report, designated as Technical Report No. 102-AC 49/15 - 100, dated August 1949, originally classified "Secret," and declassified on 1 August 1952. The report concerns itself with detailed study of 244 sighting reports received up to January 1949. Comments on individual cases from an astronomical point of view by Dr. Hynek predominate. About 32% of the cases were considered to have been explained as sightings of astronomical objects.

Another 12% were judged to have been sightings of weather balloons on the basis of detailed analysis of the reports made by the Air Weather Service and the Air Force Cambridge Research Laboratory. Some 33% were dismissed as hoaxes or reports that were too vague for explanation, or as sightings of airplanes under unusual conditions. A residue of 23% was considered as "Unknown."

Although the report was declassified in 1952, not many copies are in existence. We were supplied a copy by the Air Force for our work on this project. The report is discussed in some detail by Ruppelt (1956).

He implies that the investigations of the residue were incomplete and inadequate.

Examination of the record indicates that many of the reports were too vague for interpretation and that if anything, the Air Force investigators gave them more attention than they deserved. Two of the reports are reproduced here as a sample of the kind of material involved, and the kind of comment on it that was made by Air Force investigators:

Incident No. 40. 7 July 1947, 1600 hours, Phoenix, Arizona. One observer witnessed an elliptical, flat gray object, measuring 20-30 ft. across, flying 400-600 mph, spiraling downward to 2000 ft. from 5000 ft. then ascending at a 45° angle into an overcast. Observer ran into a garage where he obtained a Kodak Brownie 120 box camera, and snapped two pictures; one negative, and a print of the other, are contained in project files. The negative displays a small apparently flat object rounded on one end, and pointed on the other. The object appears to have a hole in the center. The image is in stark contrast with the background of clouds. From the print, the object appears to be jet black with sharp outlines. Four expert photographers concur in the opinion that the image is of true photographic nature. However, they disagree with each other as to the possibility of filming such an occurrence under the conditions described. Considering the object was gray as described, and at a distance of 2000 ft., it seems unlikely that it would appear pure black on the print. In subsequent correspondence to the reporter of this incident, the observer refers to himself as Chief of Staff of Panoramic Research Laboratory, the letterhead of which lists photography among one of its specialities. Yet, the negative was carelessly

cut and faultily developed. It is covered with streaks and over a period of six months, has faded very noticeably. An OSI agent discovered that a letter by this observer was published by Amazing Stories magazine early this year. In this letter he stated that he had been interviewed by two Federal agents, had given them pictures of "flying discs" and that the pictures had not been returned. He requested the advice of the magazine as to how to proceed to sue the Government. This individual is aware of the whereabouts of these pictures, but has never requested their return. There are other undesirable aspects to this case. The observer's character and business affiliations are presently under investigation, the results of which are not yet known. Dr. Irving Langmuir studied subject photographs, and after learning of the prior passage of a thunderstorm, discounted the photographed object as being merely paper swept up by the winds.

AHC Opinion: In view of the apparent character of the witness, the conclusion by Dr. Langmuir seems entirely probable.

Incident No. 51. 3 September 1947, 1215 hours, Oswego, Oregon. A housewife observed twelve to fifteen round silver-colored objects at a high altitude. No further information was submitted, therefore no conclusion can be reached.

The Grudge Report contains these recommendations:

1. That the investigation of study of reports of unidentified flying objects be reduced in scope.
 - a. That current collection directives relative to unidentified flying

objects be revised to provide for the submission of only those reports clearly indicating realistic technical applications.

2. That Conclusions 1 and 2 of this report, with sufficient supporting data be declassified and made public in the form of an official press release.

3. That Psychological Warfare Division and other governmental agencies interested in psychological warfare be informed of the results of this study.

In accordance with the recommendations, a press release announcing the closing of Project Grudge was issued on 27 December 1949.

A fuller statement of Conclusions and Recommendations is given on page 10 of the Grudge Report and is quoted here in full :

A. There is no evidence that objects reported upon are the result of an advanced scientific foreign development; and, therefore they constitute no direct threat to the national security. In view of this, it is recommended that the investigation and study of reports of unidentified flying objects be reduced in scope. Headquarters AMC will continue to investigate reports in which realistic technical applications are clearly indicated.

NOTE: It is apparent that further study along present lines would only confirm the findings presented herein.

1. It is further recommended that pertinent collection directives be revised to reflect the contemplated change in policy.

B. All evidence and analyses indicate that reports of unidentified flying objects are the result of:

1. Misinterpretation of various conventional objects.

2. A mild form of mass-hysteria and war nerves.

3. Individuals who fabricate such reports to perpetrate a hoax or to seek publicity.

4. Psychopathological persons.

It is, therefore, recommended that Conclusions 1 and 2 of this report, with sufficient supporting data, be declassified and public in the form of an official press release. This action would aid in dispelling public apprehension, often directly attributable to the sensationalistic reporting of many of these incidents by the press and radio.

C. There are indications that the planned release of sufficient unusual aerial objects coupled with the release of related psychological propaganda would cause a form of mass-hysteria. Employment of these methods by or against an enemy would yield similar results.

In view of this the Psychological Warfare Division and other governmental agencies interested in psychological warfare should be informed of the results of this study. These agencies should then coordinate in and provide further recommendations for public release of material relative to unidentified flying objects as recommended herein.

The remarks under B. and C., originally dated August 1949, indicate that the Air Force was aware of the public relations problem involved in the UFO situation. The Air Force was also aware that public concern with the problem could be used in psychological warfare. This was just two years after interest in the subject had been generated by newspaper publicity about the Kenneth Arnold sighting. The same kind of problem in a slightly different form was an important consideration when the problem was again reviewed by the Robertson panel in January 1953.

Even in 1968 opinion remains sharply divided as to whether or not the Air Force should have done more or less to investigate UFOs.

By 1950 magazine and book publishers had discovered that money could be made in the UFO field. The first major magazine article appeared

in the issue of *True* magazine dated January 1950. It was entitled "The Flying Saucers are Real," written by Donald Keyhoe. *True* magazine is an unusual place in which to announce a major scientific discovery, but that is what this article did: it unequivocally asserted that flying saucers are vehicles being used by visitors from outer space to scrutinize the earth. The 1950 Keyhoe article was the subject of a great deal of radio, television, and newspaper comment.

In the March 1950 issue, *True* extended its coverage of UFOs with an article entitled "How Scientists Tracked Flying Saucers," written by Commander R. B. McLaughlin, U.S.N. CDR McLaughlin came out on the side of Extra Terrestrial Hypothesis. Describing an UFO he had seen at White Sands, he declared, "I am convinced that it was a flying saucer, and further, these discs are spaceships from another planet, operated by animate, intelligent beings." *True* continued to establish its position by publishing a collection of seven UFO photographs in its April 1950 issue.

More serious interest developed in the news media. The *New York Times* (9 April 1950) published an editorial entitled, "Those Flying Saucers -- Are They or Aren't They?" and the *U. S. News and World Report* (7 April 1950) carried a story relating the flying saucers to the Navy's abandoned XF-5-U project. Edward R. Murrow produced (9 September 1957) an hour-long television roundup on the subject. In its 26 June 1950 issue, *Life* published an article on "Farmer [X's] Flying Saucer" based on the photographs taken at the witness' farm near McMinnville, Ore. (see Section III, Chapter 3).

The first three books on flying saucers also appeared in 1950. The smallest of these was a 16-page booklet by Kenneth A. Arnold entitled, "The Flying Saucer as I Saw It." Next there appeared a book by the Hollywood correspondent of *Variety*, Frank Scully, entitled "Behind the Flying Saucers" published by Holt and Co., New York. In the fall of 1950, Donald Keyhoe's first book, "The Flying Saucers are Real" appeared, published by Fawcett Publications of Greenwich, Conn. It was essentially an expansion of his article in the January 1950 issue of *True*.

A new field for book publishing had been established: each year since 1950 has seen the publication of an increasing number of books on the subject.

In accordance with policy decisions based on the final report of Project Grudge, the activity was discontinued as a separate project and ATIC's investigation of UFO reports was handled as a part of regular intelligence activities. Then, on 10 September, 1951, an incident occurred at the Army Signal Corps radar center at Fort Monmouth, N. J. An UFO was reported seen on radar travelling much faster than any of the jet planes then in the air. Later it turned out that the radar operator had miscalculated the speed and the "UFO" was identified as a conventional 400 mph jet airplane.

Before this explanation was discovered, however, the case attracted the attention of Maj. Gen. C. P. Cabell, director of Air Force Intelligence. He ordered a re-activation of Project Grudge as a new and expanded project under the direction of E. J. Ruppelt (1956). Ruppelt headed the new project Grudge from its former establishment on 27 October 1951, and later under its new designation as Project Blue Book in March 1952, until he left the Air Force in September 1953.

Starting in November 1951, Project Grudge and later Project Blue Book issued a series of "Status Reports" numbered 1 through 12. Numbers 1 through 12 were originally classified "Confidential," while 10, 11, 12 were classified "Secret." All were declassified as of 9 September 1960 but copies were not readily available until 1968 when they were published by NICAP.

The story of the Fort Monmouth sightings is told in Special Report No. 1, dated 28 December 1951, and is quoted in part here both for its intrinsic interest and as representative of the way in which the investigations were reported:

On 10 September 1951 an AN/MFG-1 radar set picked up a fast-moving low-flying target (exact altitude undetermined) at approximately 1100 hours southeast of Fort Monmouth at a range of about 12,000 yards. The

target appeared to approximately follow the coast line changing its range only slightly but changing its azimuth rapidly. The radar set was switched to full-aided azimuth tracking which normally is fast enough to track jet aircraft, but in this case was too slow to be resorted to.

Upon interrogation, it was found that the operator, who had more experience than the average student, was giving a demonstration for a group of visiting officers. He assumed that he was picking up a high-speed aircraft because of his inability to use full-aided azimuth tracking which will normally track an aircraft at speeds up to 700 mph. Since he could not track the target he assumed its speed to be about 700 mph. However, he also made the statement that he tracked the object off and on from 1115 to 1118, or three minutes. Using this time and the ground track, the speed is only about 400 mph.

No definite conclusions can be given due to the lack of accurate data but it is highly probable that due to the fact that the operator was giving a demonstration to a group of officers, and that he thought he picked up a very unusual radar return, he was in an excited state, accounting for his inability to use full-aided azimuth tracking. He admitted he was "highly frustrated" in not being able to keep up with the target using the aided tracking. The weather on 10 September was not favorable for anomalous propagation.

Here is a quotation from the report of another sighting at Fort Monmouth made the next day:

On 11 September 1951, at about 1330, a target was picked up on an SCR-584 radar set, serial number

315, that displayed unusual maneuverability. The target was approximately over Havesink, New Jersey, as indicated by its 10,000 yard range, 6,000 feet altitude and due north azimuth. The target remained practically stationary on the scope and appeared to be hovering. The operators looked out of the van in an attempt to see the target since it was at such a short range, however, overcast conditions prevented such observation. Returning to their operating positions the target was observed to be changing its elevation at an extremely rapid rate, the change in range was so small the operators believed the target must have risen nearly vertically. The target ceased its rise in elevation at an elevation angle of approximately 1,500 mils at which time it proceeded to move at an extremely rapid rate in range in a southerly direction once again the speed of the target exceeding the aided tracking ability of the SCR-584 so that manual tracking became necessary. The radar tracked the target to the maximum range of 32,000 yards at which time the target was at an elevation angle of 300 mils. The operators did not attempt to judge the speed in excess of the aided tracking rate of 700 mph.

It is highly probable that this is an example of anomalous propagation as the weather on 11 September was favorable for this type phenomenon. The students stated that they were aware of this phenomenon; however, it is highly probable that due to the previous sightings of what they thought were unusual types of aircraft, they were in the correct psychological condition to see more such objects.

Meantime the news media continued to give the UFO stories a big play. In August 1951, the incident now known to all UFO buffs as "The Case of the Lubbock Lights," attracted a great deal of attention (Ruppelt 1956).

In the closing months of 1951, Ruppelt arranged for the technical assistance of "a large well-known research organization in the Mid-West" for his reactivated Project Grudge. This organization was assigned the task of developing a questionnaire for formal interviewing of UFO sighters. It was also to make a detailed statistical analysis of the UFO reports on hand at that time and later.

At the beginning of 1952, public interest had reached a point at which the first of the amateur study organizations to function on a national scale was formed. This was the Aerial Phenomena Research Organization (APRO) of Tucson, Ariz., founded by Mrs. Coral Lorenzen. Its first mimeographed bulletin was mailed out to 52 members in July. In 1968 this organization claimed 8,000 members.

With the change of name from Project Grudge to Project Blue Book in March 1952 there soon followed a step-up in support and authority for UFO study at ATIC. The instructions to Air Force bases relative to the new level of effort are contained in Air Force Letter 200-5, dated 29 April 1952. Among other things it specifies that early UFO reports from the bases throughout the country are to be sent by telegram both to ATIC and to the Pentagon, followed by fuller reports to be submitted by air mail.

The big event of 1952 was the large number of reports of UFOs seen visually and on radar in the Washington, D. C. area during June and July. This was a big year for UFO reports elsewhere as well, the largest number on record having come to the Air Force during that year. Table 1 gives the number of UFO reports received at Wright-Patterson for each month from January 1950 to the present. Inspection of Table 1 shows the great variation of reports that exists from month to month and from year to year. It is not known whether these fluctuations

Table 1

Number of UFO Reports Received each Month by Project Blue Book.

(Sum of those received from Air Force Bases and those received directly from the public.)

	J	F	M	A	M	J	J	A	S	O	N	D	Total
1950	15	13	41	17	8	9	21	21	19	17	14	15	210
51	25	18	13	6	5	6	10	18	16	24	16	12	169
52	15	17	23	82	79	148	536	326	124	61	50	42	1501
53	67	91	70	24	25	32	41	35	22	37	35	29	509
54	36	20	34	34	34	51	60	43	48	51	46	30	487
55	30	34	41	33	54	48	63	68	57	55	32	25	545
56	43	46	44	39	46	43	72	123	71	53	56	34	670
57	27	29	39	39	38	35	70	70	59	103	361	136	1006
58	61	41	47	57	40	36	63	84	65	53	33	37	627
59	34	33	34	26	29	34	40	37	40	47	26	10	390
60	23	23	25	39	40	44	59	60	106	54	33	51	557
61	47	61	49	31	60	45	71	63	62	41	40	21	591
62	26	24	21	48	44	36	65	52	57	44	34	23	474
63	17	17	30	26	23	64	43	52	43	39	22	22	399
64	19	26	20	43	83	42	110	85	41	26	51	15	562
65	45	35	43	36	41	33	135	262	104	70	55	28	887
66	38	18	158	143	99	92	93	104	67	126	82	40	1060
67	81	115	165	112	63	77	75	44	69	58	54	24	937
68	18	20	38	34	12	25	52	41	29				

reflect a real actual variation in number of sightings by the public, or are largely the result made up of shifts in the propensity of the public to make reports. Attempts have been made to correlate the maxima with waves of press publicity, with oppositions of Mars, and with other events, but none have yielded very convincing evidence of a real association between the events. For an appreciation of the perils inherent in the statistical analysis of such data, the reader is referred to Section VI, Chapter 10 of this report.

On 19 August 1952 there occurred the case of Scoutmaster D. S. Desvergers in Florida, which Ruppelt, (1956) has called the "best hoax in UFO history." It is also discussed in Stanton (1966) and Lorenzen (1962).

The scoutmaster was taking three scouts home about 9:00 p.m., driving along a road near West Palm Beach. He thought he saw something burning in a palmetto swamp and stopped to investigate, leaving the boys in the car. As he drew nearer he saw that the light was not from a fire but was a phosphorescent glow from a circular object hovering overhead. From it emerged a flare that floated toward him.

When, after some 20 min., the scoutmaster had not returned, the boys summoned help from a nearby farmhouse. A deputy sheriff was called. When he and the boys returned to the car they found the scoutmaster emerging in a dazed condition from the palmetto thicket. His forearms had been burned and three small holes were found burned in his cap.

In the investigation that followed some grass near where the "saucer" had been was found scorched at its roots but not on top. How this could have happened is not clear.

According to Ruppelt's account, the scoutmaster was an ex-Marine whose military and reformatory record led the Air Force investigators ultimately to write his story off as a hoax.

News media and the magazines continued to build up interest in the flying saucer stories. Table 2 is a partial tabulation of the treatment of the subject in the major magazines of America.

Table 2

Partial list of UFO articles in major U. S. magazines in 1952.

<u>Magazine</u>	<u>Title</u>	<u>Date</u>	<u>Page</u>
<i>American Mercury</i>	"Flying Saucer Hoax"	October	61-66
<i>Collier's</i>	"How to Fly a Saucer"	4 October	50-51
<i>Life</i>	"Have We Visitors from Outer Space?"	4 April	80-82
	"Saucer Reactions"	9 June	20
<i>New Republic</i>	"New Saucer Epidemic"	18 August	49
<i>Newsweek</i>	"Korean Saucers"	3 March	44
	"Saucer Season"	11 August	56
	"Saucers Under Glass"	18 August	49
<i>New Yorker</i>	"Reporter at Large"	6 September	68
<i>Popular Science</i>	"Flying Saucers are Old Stuff"	May	145-47
	"How to see Flying Saucers"	September	167-70
	"Hollywood Builds Flying Saucers"	November	132-34
<i>Reader's Digest</i>	"Flying Saucers, New in Name Only"	July	7-9
<i>Time</i>	"Those Flying Saucers"	9 June	54-56
	"Blips on the Scopes"	4 August	40
	"Something in the Air"	11 August	58
	"Theology of Saucers"	18 August	62
	"Wind is Up in Kansas"	8 September	86

Project Grudge Report No. 6 reports the following concerning the public response to the 4 April articles in *Life*:

During the period of 3 April to 6 April approximately 350 daily newspapers in all parts of the United States carried some mention of the article and some mention of the fact that the Air Force was interested in receiving such reports.

It should be noted here that the conclusions reached by *Life* are not those of the Air Force. No proof exists that these objects are from outer space.

ATIC received approximately 110 letters in regard to the article. The letters are divided among those that offer theories as to the origin of the objects as well as those reporting objects. The letters offering theories comprise about 20 per cent of the total. Although it cannot be stated that the theories are incorrect, a majority of them cannot be further evaluated since they have very little scientific basis The writers of these letters ranged from mystics to highly educated individuals It has been reported that Life Magazine has received 700 letters in response to the article.

The subject was also beginning to attract journalistic attention in Europe, for example *France Illustration* of Paris published "Une Enigme Sous Nos Yeux" in its 5 May 1951 issue and "Scuccupes Volantes" on 4 October 1952.

Table 1 indicates that the number of UFO reports in 1952 was some eight times the number for the previous two years. The investigation, however, continued to give no indication of a threat to national security, and no "hard evidence" for the truth of ETH.

Blue Book Report No. 8, dated 31 December 1952, says that an astronomical consultant to the project had interviewed 44 professional

astronomers as to their attitude on UFOs. He found their attitudes could be classified as

	Number
Completely indifferent	7
Mildly Indifferent	12
Mildly Interested	17
Very Interested	8

The Air Force's astronomical consultant commented:

Over 40 astronomers were interviewed, of [whom] five made sightings of one sort or another. This is a higher percentage than among the populace at large. Perhaps this is to be expected, since astronomers do, after all, watch the skies. On the other hand, they will not likely be fooled by balloons, aircraft, and similar objects, as may be the general populace.

It is interesting to remark upon the attitude of the astronomers interviewed. The great majority were neither hostile nor overly interested; they gave one the general feeling that all flying saucer reports could be explained as misrepresentations of well-known objects and that there was nothing intrinsic in the situation to cause concern. I took the time to talk rather seriously with a few of them, and to acquaint them with the fact that some of the sightings were truly puzzling and not at all easily explainable. Their interest was almost immediately aroused, indicating that their general lethargy is due to lack of information on the subject. And certainly another contributing factor to their desire not to talk about these things is their overwhelming fear of publicity. One headline in the nation's papers to the effect that "Astronomer Sees Flying Saucer" would be enough to

brand the astronomer as questionable among his colleagues. Since I was able to talk with the men in confidence, I was able to gather very much more of their inner thoughts on the subject than a reporter or an interrogator would have been able to do. Actual hostility is rare; concern with their own immediate scientific problems is too great. There seems to be no convenient method by which problems can be attacked, and most astronomers do not wish to become involved, not only because of the danger of publicity but because the data seems tenuous and unreliable.

3. The Robertson Panel.

Some persons in the Defense establishment began to worry about the trend of public interest in UFOs from a different viewpoint, namely, the possibility that the military communication channels might be jammed with sighting reports at a time when an enemy was launching a sneak attack on the United States. On the other hand, there was the possibility that an enemy, prior to launching such an attack, might deliberately generate a wave of UFO reports for the very purpose of jamming military communication channels. The Central Intelligence Agency undertook to assess the situation with the assistance of a Special Panel of five scientists who had distinguished themselves in physics research and in their contributions to military research during and after World War II. The panel spent a week studying selected case reports and examining such UFO photographs and motion pictures as were available at that time. In mid-January, 1953, the panel produced a report which was classified secret until it was partly declassified in 1966 (Lear, 1966). The report is still partially classified to the extent that the names of some of the members are deleted from the declassified record of the proceedings.

The late Prof. H. P. Robertson of the California Institute of Technology served as chairman of the panel. He had been a member of the Mathematics Department of Princeton University from 1928 to 1947

when he joined the faculty of Calif. Inst. of Tech. In academic work he distinguished himself by his research in cosmology and the theory of relativity. During the war he made important contributions to operation research of the Allied forces in London (Jones, 1968). After the war he served from 1950-52 as research director of the Weapons Systems Evaluation Group in the office of the Secretary of Defense and in 1954-56 was scientific advisor to the Supreme Allied Commander in Europe.

Prof. Samuel A. Goudsmit, with Prof. George Uhlenbeck, discovered electron spin while they were young students in Leiden, Holland, in 1925. Soon after that both came to the University of Michigan where they developed a great school of theoretical physics which contributed greatly to the development of research in that field in America.

Goudsmit is best known outside of academic physics circles as having been scientific chief of the Alsos Mission toward the end of the war. This mission was the intelligence group that was sent to Germany to find out what the Germans had accomplished in their efforts to make an atom bomb (Goudsmit, 1947; Groves, 1962; Irving, 1967). Most of the post-war period he has served on the physics staff of the Brookhaven National Laboratory on Long Island.

Luis Alvarez is a Professor of Physics at the University of California at Berkeley and vice-president of the American Physical Society (1968).^{*} During World War II he was a member of the Radiation Laboratory at Massachusetts Institute of Technology where he made a particularly outstanding contribution in the development of a micro-wave radar system for guiding plane landings in heavy fog. The research then known as Ground Controlled Approach (GCA) was of decisive importance in the war. The location of the incoming aircraft is followed closely by the radar system on the ground whose operator instructs the pilot how to bring the plane onto the runway for a safe landing. In the latter part of the war he served under J. Robert Oppenheimer on the great team that developed the atom bomb at Los Alamos. In the post-war period, Alvarez

^{*}Alvarez was awarded the 1968 Nobel Prize for Physics.

has made many great research contributions in high-energy physics. At present he is engaged in using cosmic ray absorption in material of the Egyptian pyramids near Cairo to look for undiscovered inner chambers.

Lloyd Berkner, born in 1905, was an engineer with the Byrd Antarctic Expedition as a youngster in 1928-30. Most of the pre-war period he was a physicist in the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. At the beginning of the war he became head of the radar section of the Navy's Bureau of Aeronautics, and for a time at the end of the war was executive secretary of the Research and Development Board of the Department of Defense. In 1949 he was special assistant to the Secretary of State and director of the foreign military assistance program. While in the Department of State he prepared the report which led to the posting of scientific attachés to the principal American embassies abroad. From 1951 to 1960 he was active in managing the affairs of Associated Universities, Inc., the corporation which operates Brookhaven National Laboratory, and toward the end of that period was its president. In 1960 he went to Dallas, Tex. where he organized and directed the new Graduate Research Center of the Southwest. During most of his life he was a member of the U. S. Naval Reserve, and rose to the rank of rear admiral. The concept of an International Geophysical Year, (1957-58) -- the greatest example of international scientific co-operation that has yet occurred -- was his brainchild.

Prof. Thornton Page has been professor of astronomy at Wesleyan University in Middletown, Conn. since 1958. During the war he did research at the Naval Ordnance Laboratory, mostly in connection with design of underwater ordnance and operations research on naval weapons. This year (1968) he is vice-president for astronomy of the American Association for the Advancement of Science. In astronomy he has worked mostly on the atomic spectra of planetary nebulas.

The panel has been criticized for not having spent more time studying its problem. But in January 1953, the subject only had a

four and a half year history and it was really quite possible for a group of this competence to review the whole situation quite thoroughly in a week. The panel has also come under incessant fire from UFO enthusiasts because of its recommendations.

It might have been possible to put together other panels that would have performed as well, but it would not have been possible to choose one superior in scientific knowledge, background of military experience, and soundness of overall judgment.

The Robertson panel report was originally classified "Secret" and declassified in the summer of 1966. Because of its central importance to the UFO story, and especially because it has been the subject of many misrepresentations, we present here the text of its main conclusions, and in Appendix U the full text of the declassified report just as it was released to the public with the names of certain participants deleted.

1. Pursuant to request . . . the undersigned Panel of Scientific Consultants has met to evaluate any possible threat to national security posed by Unidentified Flying Objects ("Flying Saucers"), and to make recommendations thereon. The Panel has received the evidence as presented by cognizant intelligence agencies, primarily the Air Technical Intelligence Center, and has reviewed a selection of the best documented incidents.

2. As a result of its considerations, the Panel concludes :

- a. That the evidence presented on Unidentified Flying Objects shows no indication that these phenomena constitute a direct physical threat to national security.

We firmly believe that there is no residuum of cases which indicates phenomena which are attributable to

foreign artifacts capable of hostile acts, and that there is no evidence that the phenomena indicates a need for the revision of current scientific concepts.

3. The Panel further concludes:

- a. That the continued emphasis on the reporting of these phenomena does, in these parlous times, result in a threat to the orderly functioning of the protective organs of the body politic.

We cite as examples the clogging of channels of communication by irrelevant reports, the danger of being led by continued false alarms to ignore real indications of hostile action, and the cultivation of a morbid national psychology in which skillful hostile propaganda could induce hysterical behavior and harmful distrust of duly constituted authority.

4. In order most effectively to strengthen the national facilities for the timely recognition and the appropriate handling of true indications of hostile action, and to minimize the concomitant dangers alluded to above, the Panel recommends:

- a. That the national security agencies take immediate steps to strip the Unidentified Flying Objects of the special status they have been given and the aura of mystery they have unfortunately acquired;

- b. That the national security agencies institute policies on intelligence, training, and public education designed to prepare the material defenses and to react most effectively to true indications of hostile intent or action. We suggest that these aims may be achieved by an integrated program designed to reassure the public

of the total lack of evidence of inimical forces behind the phenomena, to train personnel to recognize and reject false indications quickly and effectively, and to strengthen regular channels for the evaluation of and prompt reaction to true indications of hostile measures.

Table 3 shows the number of cases studied by Project Blue Book in the years 1953-1965 and how the Air Force classified them.

So far as can be determined, little was done to implement the recommendations contained under 4a and 4b of the report of the Robertson panel. It would have been wise at that time to have declassified all or nearly all of the previous reports of investigations of flying saucer incidents such as those making up the bulk of the Project Grudge and Project Blue Book reports 1 - 12. In fact they were not declassified until 9 September 1960. Had responsible press, magazine writers, and scientists been called in and given the full story, or had a major presentation of the situation been arranged at a large scientific convention, such as at an annual meeting of the American Association for the Advancement of Science, they would have seen for themselves how small was the sum of all the evidence and in particular how totally lacking in positive support was the ETH idea. The difficulty of attempting to base a careful study on the anecdotal gossip which was the bulk of the raw material available for the study of UFOs would have been clear.

But secrecy was maintained. This opened the way for intensification of the "aura of mystery" which was already impairing public confidence in the Department of Defense. Official secretiveness also fostered systematic sensationalized exploitation of the idea that a government conspiracy existed to conceal the truth.

There are those who still cling to this idea of a government conspiracy to conceal a portentous "truth" from the American people. Soon after our study was announced a woman wrote me as follows:

Table 3

UFO Cases Classified by Categories by Project Blue Book, 1953 - 1959.

<u>Category:</u>	1953	1954	1955	1956	1957	1958	1959
Astronomical	175	137	135	222	341	221	144
Aircraft	73	80	124	148	210	104	63
Balloon	78	69	102	93	114	50	31
Insufficient data	79	102	95	132	191	111	65
Other	83	58	65	61	120	93	75
Satellite	0	0	0	0	6	13	0
Unidentified	42	46	24	14	14	10	12

Astronomical:

Meteors	70	92	79	88	179	168	100
Stars and planets	101	44	52	131	144	56	40
Other	4	1	4	3	18	7	4

Other:

Hoaxes, etc.	15	6	18	16	37	29	14
Missiles, rockets	2	1	1	3	2	6	14
Reflections	4	6	4	3	2	7	11
Flares, fireworks	1	4	8	6	8	3	5
Mirages, inversions	3	3	4	1	5	2	4
Searchlights	8	6	14	9	12	8	5
Clouds, contrails	6	3	2	1	9	5	3
Chaff, birds	4	10	3	7	3	7	1
Physical specimens	1	6	5	3	5	10	3
Radar analysis	15	7	1	3	27	3	8
Photo analysis	1	1	2	4	1	7	4
Satellite decay	0	0	0	0	0	1	0
Miscellaneous	1	7	4	0	9	5	3

Table 3 (cont'd)

UFO Cases Classified by Categories by Project Blue Book, 1960 - 1965.

<u>Category:</u>	1960	1961	1962	1963	1964	1965
Astronomical	235	203	136	85	123	246
Aircraft	66	77	68	73	71	210
Balloon	22	37	19	23	20	33
Insufficient data	105	115	94	59	99	66
Other	94	77	65	50	88	122
Satellite	21	69	77	82	143	152
Unidentified	14	13	15	14	19	16

Astronomical:

Meteors	187	119	95	57	61	101
Stars and planets	45	78	36	23	55	135
Other	3	6	5	5	7	9

Other:

Hoaxes, etc.	13	17	11	16	34	34
Missiles, rockets	12	13	9	13	7	10
Reflections	9	3	3	0	2	7
Flares, fireworks	7	4	3	3	7	4
Mirages, inversions	5	6	3	0	2	5
Searchlights	6	1	3	2	6	9
Clouds, contrails	4	5	4	5	0	1
Chaff, birds	7	5	7	4	5	12
Physical specimens	7	4	15	3	3	3
Radar analysis	6	9	0	1	2	6
Photo analysis	6	3	2	3	6	12
Satellite decay	0	3	3	4	3	8
Miscellaneous	3	4	2	4	6	13

Since your committee is using moneys appropriated by the people, it is your duty to level with the citizens of this country and tell the truth. Don't bend facts to suit the Silent Group. People are intelligent. Have faith in the adaptability of our citizens to take the truth. The public didn't collapse under the facts of A bombs, H bombs and the L bombs. It took our space program in stride. It adopted the use of "miracle" drugs. We, as citizens, can manage to live with the truth about saucers. DO NOT knuckle under to the censorship boys. If you want a place in history that is honorable --- report the truth to the public about UFOs, because millions of us already know and believe. I have seen "flying saucers". I have heard a man talk who has been to Mars and he can prove it, I'm sure. Of course the planets and stars are inhabited. Our government is acting like the small child who was punished for an act which endangered the lives of his brothers and sisters. Our government should be big enough to face facts as our citizens are able to face the facts. JUST TELL THE TRUTH. It is the easiest way and the only way.

Where secrecy is known to exist one can never be absolutely sure that he knows the complete truth. There is an ironic recognition of this fact in Lt. Gen. Nathan Twining's letter of 23 September 1947 (See p. 84) in which he acknowledges that consideration must be given to "the possibility" that UFOs "are of domestic origin -- the product of some high security project not known to AC/AS-2 or this Command."

We adopted the term "conspiracy hypothesis" for the view that some agency of the Government either within the Air Force, the Central Intelligence Agency, or elsewhere knows all about UFOs and is keeping the knowledge secret. Without denying the possibility that this could

be true, we decided very early in the study, that we were not likely to succeed in carrying out a form of counter-espionage against our own Government, in the hope of settling this question. We therefore decided not to pay special attention to it, but instead to keep alert to any indications that might lead to any evidence that not all of the essential facts known to the Government were being given to us.

Although we found no such evidence, it must be conceded that there may be a supersecret government UFO laboratory hidden away somewhere of whose existence we are not aware. But I doubt it. I do not believe it, but, of course, I can not prove its non-existence!

About half way through this study, a young woman on the editorial staff of a national magazine telephoned from New York to Boulder. She wanted my comment on a report that had come to her editor that the Colorado study was merely pretending to be a study of UFOs, that this was a cover story. What we were really doing, she was told, was to carry on a "Top Secret" study for the Defense Department's "Martian Invasion Defense Program (MIDP)," that is, a war plan for a response by our defense forces in the event of an invasion of Earth by the Martians. She wanted to know whether this was true!

I could only tell her, "If it were true, I think it would certainly be Top Secret; then I would not be at liberty to tell you about it. This being the case, if I tell you that it is not true, you do not have the slightest idea as to whether I am telling the truth or not."

Her problem was like that of the man who thought his wife was unfaithful. He set all kinds of clever traps to catch her, but he never got any evidence. From this he concluded that she was deucedly clever about her infidelity.

In 1953 the general level of suspicion and mistrust was pervasive. The new administration was re-opening old security cases. The whole system of security investigations was being elaborated. This was the peak year in the career of the late Senator Joseph McCarthy. This was the year that charges were made against the late J. Robert Oppenheimer, culminating in AEC denial of his clearance in the spring of 1954.

In this atmosphere all kinds of dark suspicions could and did take root and grow -- including the belief -- and the commercial exploitation of the pretended belief -- that the government knew much about UFOs that it was concealing, or that the Government was woefully ignorant of the real truth.

In 1956 the National Investigations Committee for Aerial Phenomena was founded by Donald E. Keyhoe, a retired Marine Corps major. As its director he now claims that NICAP has some 12,000 members. Although organized for the purpose of studying UFO cases on an amateur basis, a large part of its effort has gone into promulgation of attacks on the government's handling of the UFO matter. In October 1953, Keyhoe's second book appeared, *Flying Saucers from Outer Space* and soon was found on best-seller lists. Of it, E. J. Ruppelt commented, "To say that the book is factual depends entirely upon how one uses the word. The details of the specific UFO sightings that he credits to the Air Force are factual, but in his interpretations of the incidents he blasts way out into the wild blue yonder." (Ruppelt, 1956).

Here is how Keyhoe links the conspiracy hypothesis with the ETII:

Three years ago this proposal would have amazed me. In 1949, after months of investigation, I wrote an article for *True* magazine, stating that the saucers were probably interplanetary machines. Within 24 hours the Air Force was swamped with demands for the truth. To end the uproar the Pentagon announced that the saucer project was closed. The saucers, the Air Force insisted, were hoaxes, hallucinations, or mistakes.

Later, in a book called *The Flying Saucers are Real* I repeated my belief that the Air Force was keeping the answer secret until the country could be prepared. Several times officers at the Pentagon tried to convince me I'd made a bad mistake. But

when I asked them to prove it by showing me the secret sighting reports, I ran into a stone wall
(Keyhoe, 1953).

Another sensational book of this period was Harold T. Wilkins' *Flying Saucers on the Attack* (Wilkins, 1954). It is characterized by its publishers as "A book of facts that is more astounding and incredible than science fiction and which is an introduction to events that may dwarf our civilization. Has the invasion of Earth by beings from another world already begun? The most startling revelations yet made about mysterious visitors from outer space." Wilkins too professed to believe that the government was concealing these "astounding and incredible" facts from the people.

The late newscaster, Frank Edwards, found the Air Force's secrecy baffling and difficult to deal with. In *Flying Saucers---Serious Business* (Edwards, 1966) he recalled:

Through the Washington grapevine, various friends in the news business had told me that the Pentagon was very unhappy because I continued to broadcast reports of UFO sightings. By late 1953 the news services had virtually ceased to carry such reports; if they were carried at all it was on a strictly local or regional basis. The major leak -- and just about the only major leak in the censorship of UFO's---was my radio program.

Developments of this kind leave no doubt in my mind that a serious mistake was made in early 1953 in not declassifying the entire subject and making a full presentation of what was known, as recommended in the report of the Robertson panel.

Another major recommendation of the Robertson panel favored the launching of an educational program to inform the public about UFOs. If any attention was given to this proposal the effort was so slight that there was no discernible effect. But in any event such a program could hardly have been expected to be effective while the "aura of

mystery" continued because of continued secrecy surrounding much of Project Blue Book's activities.

Much of the attack on the Robertson panel report centers on the fact that the report declared that a broad educational program should have two major aims, "training and 'debunking'". Training would be broadly concerned with educating pilots, radar operators, control tower operators and others in the understanding and recognition of peculiar phenomena in the sky. The panel concluded that, "this training should result in a marked reduction in reports caused by misidentification and resultant confusion."

The word *debunking* means to take the bunk out of a subject. Correctly used, one cannot debunk a subject unless there is some bunk in it. Over the years, however, the word has acquired a different coloration. It now sometimes means presenting a misleading or dishonest account of a subject for some ulterior purpose. The critics of the Robertson panel insist that this latter meaning is what the group had in mind. That the earlier definition of *debunking* was what the panel meant is evident from the following statement explaining how the "debunking" would be carried out:

The "debunking" aim would result in reduction in public interest in "flying saucers" which today evokes a strong psychological reaction. This education could be accomplished by mass media such as television, motion pictures and popular articles. Basis of such education would be actual case histories which had been puzzling at first but later explained. As in the case of conjuring tricks, there is much less stimulation if the "secret" is known. Such a program should tend to reduce the current gullibility of the public and consequently their susceptibility to clever hostile propaganda.

So far as we can determine, no official steps were ever taken to put into effect the training and "debunking" recommendations of the

Robertson panel. A private effort was not to be expected, since such a program would not be commercially attractive and would conflict with books that were beginning to make money by exploiting popular confusion about the ETI and alleged government conspiracies.

In 1953, Donald H. Menzel, then director of the Harvard College Observatory published an excellent book (Menzel, 1953). It emphasizes the optical mirage aspects of the subject (Section VI, Chapter 3), and is generally regarded as "debunking" and "negative." Menzel's book never achieved a large enough market to be issued as a paperback and is now out of print.

By contrast, a book, by D. Leslie and George Adamski entitled, *Flying Saucers Have Landed* was published in 1953 (Leslie and Adamski, 1953). Best known for its full account of Adamski's alleged interview with a man from Venus on the California desert on 20 November 1952, it enjoyed widespread popularity in hardcover and paperback editions.

It is difficult to know how much of the UFO literature is intended to be taken seriously. For example, Coral Lorenzen's first UFO book was first published under the title, *The Great Flying Saucer Hoax*, but in the paperback edition it became, *Flying Saucers: the Startling Evidence of the Invasion from Outer Space*, subtitled "An exposure of the establishment's flying saucer cover-up." (Lorenzen, 1962, 1966).

The paperback edition contains an introduction by Prof. R. Leo Sprinkle of the department of psychology of the University of Wyoming. In this introduction, Prof. Sprinkle writes:

Coral Lorenzen has been willing . . . to describe her fears about potential dangers of the UFO phenomena; to challenge sharply the statements of those military and political leaders who claim that citizens have not seen "flying saucers;" and to differ courageously from those who take a "head in the sand" approach . . . She realizes that censorship is probably controlled at the highest levels of governmental administration . . .

It may be that the earth is the object of a survey by spacecraft whose occupants intend no harm to

the United States. However, regardless of the intent of UFO occupants, it behooves us to learn as much as possible about their persons, powers and purposes. Mrs. Lorenzen realizes that her present conclusions may not all be verified, but she is also aware that it may be too late for mankind to react to a potential threat to world security. It is to her credit that she has avoided feelings of panic on one hand and feelings of hopelessness on the other. She has demonstrated a courageous approach: the continuation of the process of gathering, analyzing, and evaluating of information, and the encouragement of the efforts of others to come to grips with the emotional and political and scientific aspects of the UFO phenomena.

Her book is largely taken up with vivid accounts of UFO incidents that are alleged to be factual and to support the idea of ETA, of actual visits to Earth of extra-terrestrial intelligences. A sample of the kind of material presented is the following condensation of an incident in Brazil which is said to have occurred on 14 October 1957 (p. 64 et seq.).

On that evening Antonio Villas-Boas was plowing a field with a tractor when an UFO shaped like an elongated egg landed about 15 yd. away from him. The tractor engine stopped and Villas-Boas got out of the tractor and tried to run away when he "was caught up short by something grasping his arm. He turned to shake off his pursuer and came face-to-face with a small 'man' wearing strange clothes, who came only to his shoulder." He knocked the little fellow down and several more came to the aid of the first one. They "lifted him off the ground and dragged him toward the ship," which had a ladder reaching to the ground.

There follows a description of the interior of the ship and of the way in which the unearthly visitors talked with each other which

"reminded Antonio of the noises dogs make, like howls, varying in pitch and intensity." He was forced to undress and to submit to various medical procedures, but then:

"After what seemed like an eternity to Villas-Boas the door opened again and in walked a small but well built and completely nude woman." There follows a description of her voluptuous, distinctly womanly figure.

"The woman's purpose was immediately evident. She held herself close to Villas-Boas, rubbing her head against his face. She did not attempt to communicate in any way except with occasional grunts and howling noises, like the 'men' had uttered. A very normal sex act took place and after more pettings she responded again . . . The howling noises she made during the togetherness had nearly spoiled the whole act for they reminded him of an animal."

Villas-Boas' clothing was then returned to him and he was shown to the UFO's door. "The man pointed to the door . . . then to the sky, motioned Antonio to step back, then went inside and the door closed. At this, the saucer-shaped thing on top began to spin at great speed, the lights got brighter and the machine lifted straight up . . ."

Meanwhile, back at the tractor, Villas-Boas consulted his watch and concluded that he had been aboard for over four hours.

Mrs. Lorenzen comments:

The above is condensed from a 23-page report which was submitted to APRO by Dr. Olivo Fontes, professor of medicine at the Brazilian National School of Medicine . . . My own first reaction was almost one of scoffing until I began to add up some important factors:

If an alien race bent on contact and possible colonization were to reconnoiter this planet, one of their prime tasks would be to learn if the two races could breed. To do this they would need a human subject. Either sex would be all right,

but it would be much more efficient to pick a male by some means. If a human female subject were used, the chances of no conception, or conception followed by miscarriage, would be great due to the considerable nervous strain of removing that female subject from her familiar surroundings to a completely foreign location and alien companions, and then literally subjecting her to forcible rape. It should be quite well known, especially to an advanced culture, that the psychological makeup of women, especially where sex is concerned, is considerably more delicate than that of her male counterpart. The ideal situation, then, would be for the experimenters to pick their own female subject whose ovulation period would be known beforehand and proceed exactly as the strange UFO occupants apparently did with Villas-Boas.

She says that it was not possible at that time to have Villas-Boas examined by a psychiatrist and that Villas-Boas has subsequently married and "does not care to dwell on the subject because of his wife's feelings in the matter. Preliminary examination by Dr. Fontes, however seems to assure us that Villas-Boas is stable, not a liar, and certainly not knowledgeable about certain information which he would have to have in order to concoct such a *logical* tale."

Mrs. Lorenzen's final comment is: "It is unnerving to me that, along with the thousands of sightings of flying, landed and occupied unconventional aerial objects, an incident such as the above could take place and not be objectively scientifically and logically analyzed because of *emotional predisposition!*" But in her account there is no indication of any corroboration: the story stands or falls entirely on the veracity of Villas-Boas.

Her book is a compilation of reported incidents of which the preceding is fairly typical. What is of particular interest for a scientific study of UFOs is that in many instances the investigations,

like that of the Villas-Boas case in Brazil, are carried out by a person having an advanced degree and an academic position. The next one in the book describes the case of some men who were bow-hunting on 4 September 1963 near Truckee, Calif. One of them became separated from the others and was chased up a tree by some "robots" also called "entities," who belched out puffs of smoke which would cause the man to lose consciousness. She writes:

He said he felt that the "robots" were guided by some kind of intelligence, for at times they would get "upwind" of him to belch their sleep-inducing "smoke."

After a harrowing night the man escaped and "dragged himself toward camp, finally collapsing on the ground from exhaustion."

In this case the APRO investigator who supplied the details to Mrs. Lorenzen was Dr. James A. Harder, associate professor of civil engineering at the University of California in Berkeley. Dr. Harder received his bachelor's degree from the California Institute of Technology, and his doctorate at Berkeley, served as a design engineer for the Soil Conservation Service, and served in the Navy during World War II. He was one of those who took part in a symposium on UFOs before the House Science and Astronautics Committee, sitting under the chairmanship of Congressman J. Edward Roush of Indiana (29 July 1968). In this congressional testimony, Dr. Harder said:

. . . there have been strong feelings aroused about UFOs, particularly about the extra-terrestrial hypothesis for their origin. This is entirely understandable, in view of man's historic record of considering himself the central figure in the natural scene; the extra-terrestrial hypothesis tends inevitably to undermine the collective ego of the human race. These feelings have no place in the scientific assessment of facts, but I confess that they have at times affected me . . .

Indeed, there are flying saucer cultists who are as enthusiastic as they are naive about UFOs---who see in them some messianic symbols---they have a counterpart in those individuals who exhibit a morbid preoccupation with death. Most of the rest of us don't like to think or hear about it. This, it seems to me, accurately reflects many of our attitudes toward the reality of UFOs---natural, and somewhat healthy, but not scientific.

In the second Lorenzen book, a considerably more detailed account of the Truckee, Calif. incident than the first one is given including this comment:

At present the preliminary interviews by a qualified psychiatrist have been made preparatory to either sodium amytol or hypnotic trance questioning. We feel that Mr. S. [the man who was up the tree] may have information buried at a subconscious level which may shed considerably more light on the whole incident. We are reasonably certain that the whole incident took place and was a true physical experience, and therefore the trance questioning will not be done to attempt to discredit him in any way.

4. Regulations Governing UFO Reports.

Initially Project Blue Book operated under instructions set forth in Air Force Letter 200-5, issued 29 April 1952. This provided that telegraphic reports on UFOs were to be sent promptly both to Blue Book at Wright-Patterson and to the Pentagon, and followed by a more elaborate letter reporting the details. Experience showed that this procedure was unnecessary when applied to *all* UFO reports, so a simpler procedure was authorized in Air Force Regulation 200-2, classed under "Intelligence Activities" and continued in force with minor changes until it was superceded by AFR 80-17 on 19 September 1966 and AFR 80-17A on 8 November 1966. The new regulation classes the activity under "Research and Development" (Appendix B).

This regulation establishes the UFO Program to investigate and analyze UFO's over the United States.

Such investigation and analysis are directly related to Air Force responsibility for the defense of the United States. The UFO program provides for the prompt reporting and rapid reporting needed for successful "identification", which is the second of four phases of air defense --- detection, identification, interception and destruction. All commanders will comply strictly with this regulation.

Critics of the Air Force have made much of paragraph 2c of AFR 200-2, entitled "Reduction of Percentage of UFO 'Unidentifieds'" which says:

Air Force activities must reduce the percentage of unidentifieds to the minimum. Analysis thus far has explained all but a few of the sightings reported. These unexplained sightings are carried statistically as unidentifieds. If more immediate, detailed, objective data on the unknowns had been available, probably these, too could have been explained. However, because of the human factors involved, and the fact that analyses of UFO sightings depend primarily on the personal impressions and interpretations of the observers rather than on accurate scientific data or facts obtained under controlled conditions, the elimination of all unidentifieds is improbable.

Critics of the Air Force have tried to read into this paragraph an exhortation that investigation is to result in common-place identifications at all costs, not excluding that of stretching the truth. But reasonable people will read this paragraph as a straightforward instruction to Air Force personnel to take the job of investigation seriously, without making shortcuts, in an effort to arrive at an accurate understanding of as many UFO reports as possible. Honestly read, there is nothing in the wording which rules out ETH, that is, the possibility of identifying an UFO as a visitor from outer space is not excluded by the instructions given.

Critics have also attacked AFR 200-2 and the similar provisions in AFR 80-17 for the fact of its centralization of public relations in the Secretary of the Air Force Office of Information. The relevant section of AFR 80-17 states:

B-4. Response to Public Interest. The Secretary of the Air Force, Office of Information (SAF-OI) maintains contact with the public and the news media on all aspects of the UFO program and related activities. Private individuals or organizations desiring Air Force interviews, briefings, lectures, or private discussions on UFOs will be instructed to direct their requests to SAF-OI. Air Force members not officially connected with UFO investigations will refrain from any action or comment on UFO reports which may mislead or cause the public to construe these opinions as official Air Force findings.

Critics have charged that this provision imposes censorship on UFO reports. But reasonable people will see in such a provision an arrangement designed to minimize the circulation of wild stories and premature reports before an investigation is completed. At the beginning of our study, we found certain elements of the news media extremely willing to give us their cooperation. One Denver newspaperman was willing to stand ready at all times to take us to various places in his private plane. In return he wanted us to give him a full account of what we were doing as we did it, before we had a chance to check and evaluate our field data. Of course, we could not accede to such an arrangement.

AFR 80-17 contains one exception, but one which is frustrating to newspapermen who are trying to build up a spot news story: It is Section 5c Exceptions:

In response to local inquiries regarding UFOs reported in the vicinity of an Air Force base, the base commander may release information to the news

media or public after the sighting has been positively identified. If the stimulus for the sighting is difficult to identify at the base level, the commander may state that the sighting is under investigation and conclusions will be released by SAF-OI after the investigation is completed. The commander may also state that the Air Force will review and analyze the results of the investigation. Any further inquiries will be directed to SAF-OI.

These provisions reflect the traditional conflict between authorities who are responsible for carrying out a careful investigation without premature and irresponsible publicity, and the representatives of the news media who wish to have a live story while the news is still hot. At such a time nothing can be more frustrating to a reporter than to be told that one has to wait for the completion of an investigation. It is also true that these rules could actually be used to keep the public from learning promptly about a real visitor from outer space if one should appear, but in practice the Air Force has not sought to "control the news" in this way, and the restraint required by the regulation has usually resulted in the release of more accurate information than was available before the promulgation of AFR 200-2.

Another regulation which includes UFOs in its scope and which has frequently been used as a basis for criticizing the Air Force' handling of UFO reports is Joint Army Navy Air Publication-146. For example, Frank Edwards (Edwards, 1967) commented that Air Force personnel are reminded of severe penalties for "making public statements without approval!"

JANAP-146 is not a classified document. It has been issued with various revisions over the years. The copy we have is JANAP-146 (E), the revision that is dated 31 March 1966. Its title is "Canadian - United States Communications Instructions for Reporting Vital Intelligence Sightings." It is issued in the United States by the Joint Chiefs of Staffs. In its Letter of Promulgation it says that it "contains military

information and is for official use only," but it also explicitly says, "Copies and Extracts may be made from this publication when such are to be used in the preparation of other official publications." On that basis a discussion of some of its contents is presented here.

Section 102a defines its scope in these words: "This publication is limited to the reporting of information of *vital importance* to the security of the United States of America and Canada and their forces, which in the opinion of the observer, requires very urgent defensive and/or investigative action by the U. S. and/or Canadian armed Forces."

Reports made from airborne or land-based sources are called CIRVIS reports; those from waterborne sources, MERINT reports. The relevant section on security for CIRVIS reports is as follows:

208. Military and Civilian. Transmission of CIRVIS reports are subject to the U. S. Communications Act of 1934, as amended, and the Canadian Radio Act of 1938, as amended. Any person who violates the provisions of these acts may be liable to prosecution thereunder. These reports contain information affecting the national defense of the United States and Canada. Any person who makes an unauthorized transmission or disclosure of such a report may be liable to prosecution under Title 18 of the US Code, Chapter 37, or the Canadian Official Secrets Act of 1939, as amended. This should not be construed as requiring classification of CIRVIS messages. The purpose is to emphasize the necessity for the handling of such information within official channels only.

JANAP-146 lists the categories of sightings which are to be reported as CIRVIS reports as follows:

- (a) Hostile or unidentified single aircraft or formations of aircraft which appear to be directed against the United States or Canada or their forces.
- (b) Missiles.
- (c) Unidentified flying objects.

- (d) Hostile or unidentified submarines.
- (e) Hostile or unidentified group or groups of military surface vessels.
- (f) Individual surface vessels, submarines, or aircraft of unconventional design, or engaged in suspicious activity or observed in a location or in a course which may be interpreted as constituting a threat to the United States, Canada or their forces.
- (g) Any unexplained or unusual activity which may indicate a possible attack against or through Canada or the United States, including the presence of any unidentified or other suspicious ground parties in the Polar Region or other remote or sparsely populated areas.

The presence of item (c) in the list can be interpreted to signify that the presence of UFOs in the sky space over and near the United States and Canada is officially regarded as information of *vital importance* to the security of the United States and Canada, but such an implication is totally misleading. The essential thing about an UFO is that the observer does not know what it is. For this reason alone it *may* have defense significance. Since in military matters especially it is better to be safe than sorry, it is quite appropriate that observers be explicitly notified of their obligation to report UFOs, that is, *all* puzzling things, rather than take a chance on their not being significant.

Provision is made in JANAP-146 for the prompt transmission of cancellation messages. If something has been seen, but is later identified by the sighter as having no defense significance, it is important that the defense headquarters be notified at once.

Air, sea and land surveillance activities are conducted continuously to guard against sudden hostile activities. JANAP-146 provides for the transmission of reports on suspicious circumstances to proper authorities for analysis and appropriate defense action. It would be most unwise

that the military response to such circumstances be publicized, nor for that matter should the circumstances themselves be a matter of public knowledge.

5. Orthoteny, the "Straight Line Mystery."

The mid-1950s also produced an attempt to find statistical regularities or a "pattern" in UFO sightings. Aime Michel (1958), a French journalist who has studied and written about UFOs, believed that he had found a pronounced statistical tendency for the places where UFOs are reported within a short time interval such as 24 hours to lie on a straight line, or more correctly, on a great circle on the earth's surface.

To describe this supposed tendency he coined the word "orthoteny" in 1954, deriving it from the Greek adjective "orthoteneis," which means stretched in a straight line.

He first noticed what seemed to him a tendency for the locations to lie on a straight line with regard to five sightings reported in Europe on 15 October 1954. These lay on a line 700 mi. long stretching from Southend, England to Po di Gnocca, Italy.

Another early orthotenic line which has been much discussed in the UFO literature is the BAYVIC line which stretches from Bayonne to Vichy in France. Six UFO sightings were reported on 24 September 1944 in the location of the ends and along the line.

When Michel first started to look for patterns he plotted on his maps only those reports which he had described as "good" in the sense of being clearly reported. Later he decided to plot all reports, including the "poor" ones, and found the straight line patterns in some instances.

A peculiarity of the supposed orthotenuous relation is that the appearance of the UFOs in these various reports along a line may look quite different, that is, there is no implication that the sequence represents a series of sightings of the same object. Moreover the times

of seeing the UFOs do not occur in the order of displacement along the line, as they would if the same object were seen at different places along a simple trajectory.

Continuing his work he found other cases of straight line arrangements for UFO reports in France during various days in 1954. At this time there were an unusually large number of such reports, or a French "flap." But not all reports fell on straight lines. To these which clearly did not he gave the name "Vergilian saucers" because of a verse in Vergil's Aeneid, describing a scene of confusion after a great storm at sea: "A few were seen swimming here and there in the vast abyss."

Without understanding why the locations of UFO reports should lie on straight lines, this result, if statistically significant, would indicate some kind of mutual relationship of the places where UFOs are seen. From this it could be argued that the UFOs are not independent, and therefore there is some kind of pattern to their "maneuvers."

The question of statistical significance of such lines comes down to this: Could such straight line arrangements occur purely by chance in about the same number of instances as actually observed? In considering this question it must be remembered that the location of a report is not a mathematical point, because the location is never known with great precision. Moreover the reports usually tell the location of the observer, rather than that of the UFO. The direction and distance of the UFO from the observer is always quite uncertain, even the amount of the uncertainty being quite uncertain. Thus two "points" do not determine a line, but a corridor of finite width, within which the other locations must lie in order to count as being aligned. The mathematical problem is to calculate the chance of finding various numbers of 3-point, 4-point . . . alignments if a specified number of points are thrown down at random on a map.

Michel's orthoteny principle was criticized along these lines by Menzel (1964), in a paper entitled, "Do Flying Saucers Move in

Straight Lines?" This triggered off a spirited controversy which included a number of papers in the *Flying Saucer Review* for 1964 and 1965 by various authors.

The most complete analysis of the question to be published to date is that by Vallee and Vallee (1966). They summarize their work in these words:

The results we have just presented will probably be considered by some to be a total refutation of the theory of alignments. We shall not be so categorical, because our data have not yet been independently checked by other groups of scientists, and because we have been drastically limited in the amount of computer time that we could devote to this project outside official support. Besides no general conclusion as to the non-existence of certain alignments can be drawn from the present work. The analyses carried out merely establish that, among the proposed alignments, the great majority, if not all, must be attributed to pure chance.

The point is that while the straight-line theory, as far as we can say, is not the key to the mystery, a body of knowledge has been accumulated and a large edifice of techniques has been built, and this development reaches far beyond the negative conclusion on the straight-line hypothesis.

As matters now stand, we must regard as not valid the work on orthoteny and "the straight-line mystery."

6. The O'Brien Report and events leading up to it.

In the years from 1953 to 1965, interest in UFOs or flying saucers continued to fluctuate. APRO had been founded in 1952, and NICAP was incorporated as a non-profit membership organization in 1956. In addition various local organizations flourished for a few years. Newspapers and magazines of large circulation seem not to have had a consistent policy toward the subject. More and more, but not always, they tended to make fun of flying saucer sightings. Not many of the press stories achieved national distribution by the wire services and many of those that did were handled as humorous features rather than as serious science.

As Table 1 shows, the number of UFO reports reaching Project Blue Book was well under a thousand for each of these years except for 1957 when the number was 1,006. Officers at Air Force bases and the small staff of Project Blue Book continued to investigate these reports to determine whether the things seen constituted a defense threat. In no case was a threat to national security discovered, a result consistent with that reached by the Robertson panel in 1953.

At the same time there continued to be published a considerable number of popular books and magazine articles. Most of these continued to insist that some UFOs really indicate the presence on Earth of visitors from superior civilizations elsewhere in the Universe.

Some of the books contain some rather startling assertions for which, however, no proof or corroboration is given. For example in *Spacecraft from Beyond Three Dimensions* (Allen, 1959) opposite page 98 is a full-page photograph showing two men holding hands with a miniature man about three feet tall, and carries the following caption, "A 'saucer crewman' very much like the moon man (or spirit) described by Swedenborg in his writings about the inhabitants of different planets of the solar system with whom, he stated, he had conversations. This photograph is from Germany (note trench coats and North European types), but the 'saucer crewman' is from a UFO that crashed near Mexico City; the corpses were sent to Germany for study. Was he based on Luna?"

The author of this book is employed by a major aircraft company in the Pacific North west. We got in touch with him, seeking more

specific information about the alleged crash near Mexico City, and about the circumstances of sending saucer crewman's corpses to Germany. Allen offered to give us additional information but only at what to us seemed to be an exorbitant price, considering that there was no indication of the validity of any of this story.

UFO enthusiasts are not one great happy family. They consist of a number of antagonistic sects marked by strong differences in their belief. Some of the schismatic tendencies seem to be related to personality clashes. One of the greatest points of difference between the groups is their attitude toward "contactee" stories.

Some writers, of whom George Adamski was a pioneer, have published detailed stories giving accounts of their conversions with visitors from Venus and elsewhere. Some have published accounts of trips in flying saucers, either involving high speed travel between points on Earth, or actual visits to other planets (Fry, 1966). Other writers heap scorn on those who believe in such contactee stories.

There is a particularly wide spectrum of attitudes to be found among UFO enthusiasts with respect to the late George Adamski. A periodical called *UFO Contact* is dedicated to his memory. The editor of *UFO Contact* is Ronald Caswell, 309 Curbers Mead, Harlow, Essex, England. It is published by IGAP, which is the acronym for "International Get Acquainted Program" at Bavnevolden 27, Maaloev, SJ, Denmark. According to an editorial announcement this organization was founded by Adamski in 1959. Of the periodical the editors say:

His hope was that as many as possible would discover the truth of the present age and turn to face the time to come -- to learn to accept, through conviction, the fact that we are all citizens of the Cosmos and children of the Cosmic Power whose Laws run through the entire cosmos. These Laws we can learn to comprehend through study and understanding of the "Science of Life" brought to our attention by the presence of friendly visitors from other worlds . . .

We shall try to detect any and every move in the direction of that truth which we have accepted, but which is not yet officially accepted or recognized in broader circles:

1. People from other worlds in our system are visiting our planet.

2. People from other worlds are in contact with certain political and scientific circles in East and West.

3. People from all walks of life, official and unofficial, all over the world, have been contacted by people from other worlds; such contacts have been kept secret so far.

4. The philosophy brought to the world by Mr. George Adamski is considered an aid in helping to understand the truth of our origin and our future destiny.

The magazine will make no attempt whatsoever to fight anyone, in spite of any action which might be launched against it. Only the truth, whatever its guise, will be brought to bear, to allow each to decide for himself what he can and will accept in this wonderful world on his march forward to new experiences.

In sharp contrast, is the comment about Adamski in the second of the Frank Edwards' books (Edwards, 1967):

The first and foremost among them [the contactees] was a fellow named George Adamski. He was a man of meager scholastic attainments, but he made up for that shortcoming by having an excellent imagination, a pleasing personality and an apparently endless supply of gall.

George established the ground rules for the contactees which they have dutifully followed. He was the first --- and he showed that there was considerable loot to be made by peddling tales of talking with space people. George instinctively realized that everything had to be pretty nebulous; he knew that details would be disastrous.

Prior to becoming associated with a hamburger stand on the road to Mt. Palomar, George had worked in a hamburger stand as grill cook. With this scientific background he wrote, in his spare time, a document which he called *An Imaginary Trip to the Moon, Venus and Mars*. He voluntarily listed it with the Library of Congress for copyright purposes as *a work of fiction*.

That was in 1949.

His effort did not attract many customers but it did attract the attention of a lady writer who saw gold in them there space ships. She made a deal with George to rewrite his epic; she was to furnish the skilled writing and he was to furnish the photographs of the space ships.

This lady brought the finished manuscript to me for appraisal and she brought with it a clutch of the crudest UFO photographs I had seen in years. I declined to have anything to do with the mess and she left my office in a bit of a huff.

In its revised form it told a yarn of how George had ventured into the desert of southern California, where he met a "scout ship" from which stepped a gorgeous doll in golden coveralls. She spoke to him with a bell-like voice in a language he did not understand, so they had to resort to telepathy, or something

similar, to carry on their conversation. And then, as she prepared to leave him, she tapped out a message in the sand with her little boot. George realized that she wanted him to preserve this message (it was terribly important) and, having a pocket full of wet plaster of Paris (which he seemingly always carried with him on desert trips), George quickly made a plaster cast of the footprint with the message, which he eventually reproduced for the educational advancement of his readers, who were legion.

Of the numerous photographs which embellished the book let it be said that some of them could not have been taken as claimed. The others were crudely "simulated," as the Air Force put it charitably.

But for me the payoff was the alleged photograph of Adamski's "scout ship" in which he allegedly took a trip to Venus and returned. The picture as shown in his book was taken either on a day when three suns were shining---or else it was a small object taken with three floodlights for illumination. After eight years of patient search I finally came to the conclusion that his space ship was in reality the top of a cannister-type vacuum cleaner, made in 1937. I doubt that many persons are traveling through space in vacuum cleaner tops.

Adamski communicated with me frequently. When he was questioned about the title of "professor" which he used, he explained that it was just an honorary title given to him by his "students," and that he never used it himself. George was evidently forgetful, for the letters he sent to me were always signed "Professor George Adamski."

But this congenial con man sold a jillion books to those who were eager to believe that somebody from

space was crossing millions of miles of the trackless void for the dubious privilege of conversing telepathically with former hamburger cooks. Adamski toured this country on the lecture circuit; then he branched out into Europe, where he even arranged a private confab with the Queen of The Netherlands, a maneuver which stirred up quite a bit of comment for the Queen, very little of which was favorable.

The bogus professor followed his first book with another volume but it did not meet with the ready acceptance which the public had granted his first offering. For one thing, some of his "witnesses" to his alleged meeting with the golden girl from a distant galaxy had changed their minds about both George and his story. And perhaps more importantly, several other contactees had rushed into print with yarns of having ridden in space ships and of having conversed with the operators thereof.

The remainder of Frank Edwards' Chapter 7 deals with other contactee stories in a similar vein.

During this period the UFO literature became very large indeed. It would require too much space to deal with it in detail. An excellent guide to this material is provided by a bibliography published by the Library of Congress.

By the early 1960s the pattern for UFO books and magazine writing had become quite clearly established: the text consisted of a stringing together of many accounts of reported sightings with almost no critical comment or attempts at finding the validity of the material reported, mixed with a strong dash of criticism of the Air Force for not devoting more attention to the subject and for allegedly suppressing the startling truth about visitors from outer space.

On the evening of 3 September 1965 a number of sightings were reported at Exeter, N. H. which were made the basis of a brief article

in the *Saturday Review* for 2 October 1965, and later of a book, *Incident at Exeter* by John G. Fuller (Fuller, 1966a). The following year Fuller wrote another book, *The Interrupted Journey* (Fuller, 1966b) which dealt with the case of Barney and Betty Hill, who claimed to have been taken aboard a flying saucer while driving through N. H. This story was told in condensed form in *Look* magazine.

Probably the greatest furor in 1966 was generated by the Michigan sightings early in March. These occurred near Dexter, Mich. on the night of 20 March and near Hillsdale, Mich. on the next night.

These sightings received a great deal of newspaper publicity. They were investigated for the Air Force by Dr. J. Allen Hynek, who suggested in a press conference the possibility that they might have resulted from burning swamp gas. This possibility has been known for years although it would be extremely difficult to obtain the kind of definite evidence that would make this possibility a certainty with respect to this particular case.

The swamp gas possibility has become the butt of a great many jokes and cartoons in the popular press. Although it is not established as a certainty, it seems to be quite genuinely a possibility. Here is the exact text of the Air Force press release that was issued as a result of study of these sightings:

The investigation of these two sightings was conducted by Dr. J. Allen Hynek, scientific consultant to Project Blue Book; personnel from Selfridge Air Force Base, Mich.; and personnel from Project Blue Book office at Wright-Patterson Air Force Base, Ohio.

In addition to these two specific cases, there has been a flood of reports from this area both before and after March 20 and 21. The investigating personnel have not had the time to investigate all of these. It has been determined, however, that in Hillsdale, over and above the sincere and honest

reporting by the young ladies at Hillsdale College, certain young men have played pranks with flares. It has also been determined that the photograph released yesterday through press was taken on March 17 just before sunrise near Milan, Mich., and have nothing to do with the cases in question. The photograph clearly shows trails made as a result of a time exposure of the rising crescent moon and the planet Venus.

The majority of observers in both the Dexter and Hillsdale cases have reported only silent glowing lights near the ground--red, yellow, and blue-green. They have not described an object. The only two observers who did describe an object have stated that they were no closer than 500 yards--better than a quarter of a mile away--a distance which does not allow details to be determined.

Witnesses have described glowing lights--lights that seem to move but never far from a definite place or lights which suddenly disappeared and popped up at another place. The locale in both cases was a swamp. In both cases, the location of the glow was pinpointed--in Dexter it was seen between two distant groups of people and at Hillsdale it was seen in a swampy depression between the girls and the distant trees. It was in both cases a very localized phenomena. The swampy location is most significant.

A swamp is a place of rotting vegetation and decomposition. Swamps are not a province of astronomers. Yet, the famous Dutch astronomer, Minnaert, in his book, "Light and Colour in the Open Air," describes lights that have been seen in swamps by the astronomer, Bessel, and other excellent observers.

The lights resemble tiny flames sometimes seen right on the ground and sometimes rising and floating above it. The flames go out in one place and suddenly appear in another, giving the illusion of motion. The colors are sometimes yellow, sometimes red, and sometimes blue-green. No heat is felt, and the lights do not burn or char the ground. They can appear for hours at a stretch and sometimes for a whole night. Generally, there is no smell and no sound except for the popping sound of little explosions such as when a gas burner ignites.

The rotting vegetation produces marsh gas which can be trapped during the winter by ice. When the spring thaw occurs, the gas may be released in some quantity. The flame, Minnaert says, is a form of chemical luminescence, and its low temperature is one of its peculiar features. Exactly how it occurs is not known and could well be the subject of further investigation.

The glowing lights over the swamps near Dexter and Hillsdale were observed for 2 or 3 hours, and they were red, green, and yellow. They appeared to move sideways and to rise a short distance. No sound was heard except a popping sound.

It seems entirely likely that as the present spring thaw came, the trapped gases, CH_4 , H_2S , and PH_3 , resulting from decomposition of organic material, were released. The chemistry book by Sienko and Plane has this to say: "In air, Phosphine PH_3 usually bursts into flame apparently because it is ignited by a spontaneous oxidation of the impure P_2H_4 . The will-of-the-wisp, sometimes observed in marshes, may be due to spontaneous ignition of impure PH_3 which

might be formed by reduction of naturally occurring phosphorus compound."

It has been pointed out to the investigating personnel by other scientists in this area that in swamps the formation of H_2S and CH_4 from rotting vegetation is common. These could be ignited by the spontaneous burning of PH_3 .

The association of the sightings with swamps in this particular instance is more than coincidence. No group of witnesses observed any craft coming to or going away from the swamp. The glow was localized and Deputy Fitzpatrick described the glow from beyond a rise adjacent to the swamp as visible through the trees. He stated that the light brightened and dimmed such as stage lights do--smoothly and slowly--and this description exactly fits the Hillsdale sighting also. The brightening and dimming could have been due to the release of variable quantities of marsh gas.

The disappearance of the lights when people got close with flashlights or carlights would indicate that the glow seemed bright to dark-adapted eyes. The night was dark and there was no moon. The Hillsdale girls kept their rooms dark in order to see the swamp lights.

It appears very likely that the combination of the conditions of this particular winter (an unusually mild one in that area) and the particular weather conditions of that night--it was clear and there was little wind at either location--were such as to have produced this unusual and puzzling display.

On 28 September 1965, Maj. Gen. E. B. LeBailly, who was then head of the Office of Information of the Secretary of the Air Force, addressed

a letter to the Military Director of the Air Force Scientific Advisory Board in which he said:

The Air Force has conducted Project Blue Book since 1948. As of 30 June 1965, a total of 9,265 reports had been investigated by the Air Force. Of these 9,265 reports, 663 cannot be explained.

Continuing, he wrote:

To date, the Air Force has found no evidence that any of the UFO reports reflect a threat to our national security. However, many of the reports that cannot be explained have come from intelligent and well qualified individuals whose integrity cannot be doubted. In addition the reports received officially by the Air Force include only a fraction of the spectacular reports which are publicized by many private UFO organizations.

Accordingly, it is requested that a working scientific panel composed of both physical and social scientists be organized to review Project Blue Book -- its resources, methods and findings -- and to advise the Air Force as to any improvements that should be made in the program to carry out the Air Force's assigned responsibility.

As a result of this formal request, a group was set up under the chairmanship of Dr. Brian O'Brien which was known as the "Ad Hoc Committee to Review Project Blue Book." This group met on 3 February 1966 and produced a short report of its findings in March 1966.

The persons who served on this committee are as follows:

Dr. Brian O'Brien, now retired, received his Ph.D. in physics at Yale in 1922. He served as director of the Institute of Optics at the University of Rochester from 1946 to 1953, and as vice president and director of research of the American Optical Company from 1953-58,

after which he became a consulting physicist. He served as chairman of the division of physical sciences of the National Research Council from 1953-61, as president of the Optical Society of America in 1951-53, and received the President's Medal for Merit in 1948.

Dr. Launor F. Carter, psychologist, received his Ph.D. from Princeton in 1941. After holding various teaching and research positions he became vice president and director of research of the Systems Development Corporation of Santa Monica in 1955. He has been a member of the Air Force Scientific Advisory Board since 1955.

Dr. Jesse Orlansky, psychologist, received his Ph.D. in 1940 from Columbia University. He has been a member of the Institute for Defense Analyses since 1960 specializing on problems of behavioral science research for national security.

Dr. Richard Porter, electrical engineer received his Ph.D. at Yale in 1937, after which he joined the staff of the General Electric Company, where he was manager of the guided missiles department from 1950-55. He has been a member of the Space Science Board of the National Academy of Sciences since 1958 and chairman of its international relations committee since 1959.

Dr. Carl Sagan, astronomer and space scientist, received his Ph.D. from the University of Chicago in 1960. Since 1962 he served as a staff astrophysicist of the Smithsonian Astrophysical Observatory in Cambridge Mass., until the summer of 1968 when he joined the faculty of astronomy at Cornell University. He is a specialist in the study of planetary atmospheres, production of organic molecules in astronomical environments, origin of life, and problems of extra-terrestrial biology.

Dr. Willis H. Ware, electrical engineer, received his Ph.D. from Princeton University in 1951. Since then he has been head of the computing science division of the Rand Corporation in Santa Monica. He is a specialist on problems related to the applications of computers to military and information processing problems.

The report of this committee is brief. It is printed in full below:

I. INTRODUCTION

As requested in a memorandum from Major General E. B. LeBailly, Secretary of the Air Force Office of Information dated 28 September 1965 (Tab A), and SAB Ad Hoc Committee met on 3 February 1966 to review Project "Blue Book". The objectives of the Committee are to review the resources and methods of investigation prescribed by Project "Blue Book" and to advise the Air Force of any improvements that can be made in the program to enhance the Air Force's capability in carrying out its responsibility.

In order to bring themselves up to date, the members of the Committee initially reviewed the findings of previous scientific panels charged with looking into the UFO problem. Particular attention was given to the report of the Robertson panel which was rendered in January 1953. The Committee next heard briefings from the AFSC Foreign Technology Division, which is the cognizant Air Force agency that collates information on UFO sightings and monitors investigations of individual cases. Finally, sightings with particular emphasis on those that have not been identified.

II. DISCUSSION

Although about 6% (646) of all sightings (10,147) in the years 1947 through 1965 are listed by the Air Force as "Unidentified", it appears to the Committee that most of the cases so listed are simply those in which the information available does not provide an adequate basis for analysis. In this connection it is important also to note that no unidentified objects other than those of an astronomical nature have ever been observed during routine astronomical

studies, in spite of the large number of observing hours which have been devoted to the sky. As examples of this the Palomar Observatory Sky Atlas contains some 5000 plates made with large instruments with wide field of view; the Harvard Meteor Project of 1954-1958 provided some 3300 hours of observation; the Smithsonian Visual Prairie Network provided 2500 observing hours. Not a single unidentified object has been reported as appearing on any of these plates or been sighted visually in all these observations.

The Committee concluded that in the 19 years since the first UFO was sighted there has been no evidence that unidentified flying objects are a threat to our national security. Having arrived at this conclusion the Committee then turned its attention to considering how the Air Force should handle the scientific aspects of the UFO problem. Unavoidably these are also related to Air Force public relations, a subject on which the Committee is not expert. Thus the recommendations which follow are made simply from the scientific point of view.

III. CONCLUSIONS AND RECOMMENDATIONS

It is the opinion of the Committee that the present Air Force program dealing with UFO sightings has been well organized, although the resources assigned to it (only one officer, a sergeant, and secretary) have been quite limited. In 19 years and more than 10,000 sightings recorded and classified, there appears to be no verified and fully satisfactory evidence of any case that is clearly outside the framework of presently known science

and technology. Nevertheless, there is always the possibility that analysis of new sightings may provide some additions to scientific knowledge of value to the Air Force. Moreover, some of the case records, at which the Committee looked, that were listed as "identified" were sightings where the evidence collected was too meager or too indefinite to permit positive listing in the identified category. Because of this the Committee recommends that the present program be strengthened to provide opportunity for scientific investigation of selected sightings in more detail and depth than has been possible to date.

To accomplish this it is recommended that:

A. Contracts be negotiated with a few selected universities to provide scientific teams to investigate promptly and in depth certain selected sightings of UFO's. Each team should include at least one psychologist, preferably one interested in clinical psychology, and at least one physical scientist, preferably an astronomer or geophysicist familiar with atmospheric physics. The universities should be chosen to provide good geographical distribution, and should be within convenient distance of a base of the Air Force Systems Command (AFSC).

B. At each AFSC base an officer skilled in investigation (but not necessarily with scientific training) should be assigned to work with the corresponding university team for that geographical section. The local representative of the Air Force Office of Special Investigations (OSI) might be a logical choice for this.

C. One university or one not-for-profit organization should be selected to coordinate the work of the teams mentioned under A above, and also to make

certain of very close communication and coordination with the office of Project Blue Book.

It is thought that perhaps 100 sightings a year might be subjected to this close study, and that possibly an average of 10 man days might be required per sighting so studied. The information provided by such a program might bring to light new facts of scientific value, and would almost certainly provide a far better basis than we have today for decision on a long term UFO program.

The scientific reports on these selected sightings, supplementing the present program of the Project Blue Book office, should strengthen the public position of the Air Force on UFO's. It is, therefore, recommended that :

A. These reports be printed in full and be available on request.

B. Suitable abstracts or condensed versions be printed and included in, or as supplements to, the published reports of Project Blue Book.

C. The form of report (as typified by "Project Blue Book" dated 1 February 1966) be expanded, and anything which might suggest that information is being withheld (such as the wording on page 5 of the above cited reference) be deleted. The form of this report can be of great importance in securing public understanding and should be given detailed study by an appropriate Air Force office.

D. The reports "Project Blue Book" should be given wide unsolicited circulation among prominent members of the Congress and other public persons as a further aid to public understanding of the scientific approach being taken by the Air Force in attacking the UFO problem.

Soon after it was received by the Secretary of the Air Force, the report was referred to the Air Force Office of Scientific Research for action.

On 5 April 1966, the House Armed Services Committee held a one-day hearing on the UFO problem under the chairmanship of the Hon. H. Mendel Rivers of S. C. The transcript of the hearing is printed on pp. 5991-6075 of the "Hearings by Committee on Armed Services of the House of Representatives, Eighty-ninth Congress, Second Session."

During this hearing, Air Force Secretary Harold Brown made the first public announcement of the O'Brien Committee report. Secretary Brown commented: "Recommendations by the Board are presently under study and are expected to lead to even stronger emphasis on the scientific aspects of investigating the sightings that warrant extensive analysis."

He further said :

Although the past 18 years of investigating unidentified flying objects have not identified any threat to our national security, or evidence that the unidentified objects represent developments or principles beyond present-day scientific knowledge, or any evidence of extra-terrestrial vehicles, the Air Force will continue to investigate such phenomena with an open mind and with the finest technical equipment available.

Later in his testimony he commented further on his own views about the O'Brien committee recommendation in these words:

I believe I may act favorably on it, but I want to explore further the nature of such a panel, and the ground rules, before I go ahead with it. I don't want to have a group of people come in for just one day and make a shallow investigation. They have to be prepared to look into a situation thoroughly if they are to do any good.

Concluding his testimony he said, after pointing out that 95% of the reports are being explained:

This does not imply that a large part of the remaining 5%, the unexplained ones, are not also of this character, but we simply have not been able to confirm this because we don't have enough information about these sightings. It may also be that there are phenomena, the details of which we don't understand, which account for some of the sightings we have not identified. In certain instances, I think a further scientific explanation is a possibility. Therefore we will continue to develop this approach.

Dr. J. Allen Hynek, UFO consultant to the Air Force since 1948, was also a principal witness. In his opening statement he said:

During this entire period of nearly twenty years I have attempted to remain as openminded on this subject as circumstances permitted, this despite the fact that the whole subject seemed utterly ridiculous and many of us firmly believed that, like some fad or craze, it would subside in a matter of months. Yet in the last five years, more reports were submitted to the Air Force than in the first five years.

Despite the seeming banality of the subject, I felt that I would be derelict in my scientific responsibility to the Air Force if I did not point out that the whole UFO phenomenon might have aspects to it worthy of scientific attention . . . Specifically, it is my opinion that the body of data accumulated since 1948 through the Air Force investigations deserves close scrutiny by a civilian panel of physical and social scientists, and that this panel should be asked to examine the UFO problem critically for the express purpose of determining whether a major problem really exists.

In the discussion which followed, the Hon. William H. Bates, Congressman from Mass. returned to the question of visitors from outer space asking,

But Secretary Brown, you indicated no one of scientific knowlege in your organization has concluded these phenomena come from extra-terrestrial sources?

To which Secretary Brown replied,

That is correct. We know of no phenomena or vehicles, intelligently guided, which have come from extra-terrestrial sources. I exclude meteors, which do come from extra-terrestrial sources.

Asked the same question, Dr. Hynek replied:

This is also my conclusion. I know of no competent scientist today who would argue the sightings which do puzzle intelligent people. Puzzling cases exist, but I know of no competent scientist who would say that these objects come from outer space.

Asked by Congressman L. N. Nedzi of Mich. about the relation of UFOs to extra-terrestrial visitors, Hynek said:

I have not seen any evidence to confirm this, nor have I known any competent scientist who has, or believes that any kind of extra-terrestrial intelligence is involved. However, the possiblity should be kept open as a possible hypothesis. I don't believe we should ever close our minds to it.

Congressman Bates introduced into the record a letter received from Raymond E. Fowler, chairman of the NICAP Massachusetts Subcommittee, which with its numerous attachments occupies pp. 6019-6042 of the hearing record. In addition to his NICAP affiliation, Fowler describes himself as a "project administrative engineer in the Minuteman Program Office for Sylvania Electric Products, Waltham, Mass."

Fowler wrote the committee in part as follows:

I do want to put myself on record as supporting the claims and views of NICAP and others which indicate that congressional hearings on the matter of UFOs are long overdue.

I feel that the American people are capable of understanding the problems and implications that will arise if the true facts about UFOs are made known officially. The USAF public information program and policy, as directed by the Pentagon, of underrating the significance of UFOs and not releasing true, pertinent facts about UFOs is not only a disservice to the American people now but in the long run could prove to have been a foolish policy to follow. After years of study, I am certain that there is more than ample high-quality observational evidence from highly trained and reliable witnesses to indicate that there are machinelike solid objects under intelligent control operating in our atmosphere. The aerodynamic performance and characteristics of the true UFO rule out manmade or natural phenomena. Such observational evidence has been well supported in many instances by reliable instruments such as cameras, radar, geiger-counters, variometers, electrical interference, physical indentations in soil and scorched areas at landing sites, etc.

I am reasonably sure that if qualified civilian scientists and investigators are able to come to this conclusion, that the USAF, supported by the tremendous facilities at its disposal, have come to the same conclusion long ago. However, present official policy deliberately attempted to discredit the validity of UFOs and a wealth of data and facts are not being released to the public . . . It is high time that the real facts about UFOs are released. A public information

program should be inaugurated that presents facts. I am urging you to support a full congressional open inquiry on the UFO problem.

Although Fowler's letter strongly implies that important information is being withheld, it does not affirm a belief that UFOs are extra-terrestrial visitors.

7. Initiation of the Colorado Project.

Responsibility for the implementation of the recommendation of the O'Brien report was assigned to the Air Force Office of Scientific Research (AFOSR) by the Secretary of the Air Force. In doing so, he gave them latitude for further study of the specific details of the recommendations and decision to depart from the exact formulation given in that report. As a result of study within that office, it was decided to concentrate the project in a single university rather than to make contracts with a number of universities.

Recommendation B was incorporated into AFR 80-17 which replaced AFR 200-2. This was made effective 19 September 1966.

The staff of the AFOSR studied the question of which University to invite to take on the study, and also took counsel on this question with a number of outside advisers. As a result of this inquiry in the late spring and early summer of 1966, they decided to ask the University of Colorado to accept a contract for the work, and in particular asked me to take on the scientific direction of the project.

This request was made to me on 31 July 1966 by Dr. J. Thomas Ratchford of the scientific staff of AFOSR, who was introduced by Dr. W. W. Kellogg, associate director of the National Center for Atmospheric Research and at that time a member of the Air Force Scientific Advisory Board.

This request was unwelcome for a variety of reasons. I was planning to write a new book on the theory of atomic spectra and in fact had started on it. This was to replace one written more than thirty years earlier with Dr. G. H. Shortley (Condon and Shortley, 1935).

Despite its age it has been the standard work in the field for all those years but naturally is now quite out of date. I had at last arranged things so that I could do this writing and regarded it as the most useful professional activity in which I could engage before retirement.

Although I knew only a small fraction of what I now know, I was aware that the UFO subject had had a long history of confused and ambiguous observational material making a truly scientific study extremely difficult if not impossible. This would make the subject unattractive not only to myself but to scientific colleagues on whom one would have to call for help. Moreover, all of them were engaged in scientific work that was more to their liking, which they would be reluctant to set aside.

I had some awareness of the passionate controversy that swirled around the subject, contributing added difficulty to the task of making a dispassionate study. This hazard proved to be much greater than was appreciated at the outset. Had I known of the extent of the emotional commitment of the UFO believers and the extremes of conduct to which their faith can lead them, I certainly would never have undertaken the study. But that is hindsight. It may nevertheless be of value to some scientist who is asked to make some other UFO study in the future to have a clear picture of the experiences of this sort which we had.

These objections were met by counter-arguments in the form of an appeal to patriotic duty. A good deal of emphasis was placed on the shortness of the task, then envisioned as requiring only fifteen months.

I objected to the selection of myself, mentioning the names of various scientists of considerable distinction who had already taken an active interest in UFOs. To this the reply was made that these individuals were essentially disqualified for having already "taken sides" on the UFO question.

After several hours' discussion along these lines, I agreed to discuss the matter informally with a number of colleagues in the Boulder scientific community and, in the event that enough interest was shown in such preliminary conversations, to arrange a meeting at which

representatives of AFOSR could present the story to a larger group and answer their questions. From this would come an indication of the willingness of some of them to take part in such a project if it were set up.

At this stage there was also the question of whether the University should allow itself to be involved in so controversial an undertaking. Several members of the faculty had grave misgivings on this score, predicting that the University might be derided for doing so.

In preparation for the meeting with AFOSR staff which was set for 10 August 1966, Robert J. Low, then assistant dean of the graduate school, wrote some of his thoughts in a memorandum dated 9 August 1966 which he sent to E. James Archer, then dean of the graduate school, and T. E. Manning, vice president for academic affairs.

The Low memorandum has acquired undue importance only because a copy was later stolen from Low's personal files and given wide distribution by persons desirous of discrediting this study. Portions of it were printed in an article by John G. Fuller (Fuller, 1968) which misconstrues it as indicating a conspiracy on the part of the University administration to give the Air Force a report which would support its policies instead of those being advocated by NICAP.

Commenting on Fuller's article, Low wrote in July 1968,

The suggestion that I was engaged, along with Deans Archer and Manning, in a plot to produce a negative result is the most outrageous, ridiculous and absurd thing I ever heard of. My concern in writing the memo, was the University of Colorado and its standing in the university world; it was a matter of attitudes that the scientific community would have toward the University if it undertook the study. It had nothing to do with my own personal outlook on the UFO question.

Nor did it represent official policy of the University, since it was, at most, a preliminary "thinking out loud" about the proposed project by an individual having no authority to make formal decisions

for the administration, the department of physics, or any other university body. Indeed, one of the proposals Low makes in it runs exactly contrary to the procedure actually followed by the project. Low proposed "to stress investigation, not of physical phenomena, but rather of the people who do the observing -- the psychology and sociology of persons and groups who report seeing UFO's." It should be evident to anyone perusing this final report, that the emphasis was placed where, in my judgment, it belonged: on the investigation of physical phenomena, rather than psychological or sociological matters. It should be equally obvious that, had the University elected to adopt Low's suggestion, it would have hardly chosen a physicist to direct such an investigation.

I will, for purposes of record, go a step further in this regard. If nevertheless the University had asked me to direct this study along psychological and sociological lines, I would have declined to undertake the study, both on the ground that I am not qualified to direct an investigation having such an emphasis, and because in fact the views in the Low memorandum are at variance with my own. But the fact is that I was not aware of the existence of the Low memorandum until 18 months after it was written. This was long after the project had been set up under my direction, and, since I knew nothing of the ideas Low had expressed, they had no influence on my direction of the project.

The 10 August meeting lasted all day. At the end, it seemed that there was enough faculty interest to go ahead with the task for AFOSR. During September 1966, details of the proposed research contract were worked out in conferences between Low and myself and the staff of AFOSR. The contract was publicly announced on 7 October 1966, with work to start as soon after 1 November as possible. Because of other commitments, I could devote only half-time to the work. After 1 February 1968, I devoted full time to the project.

The O'Brien report had stressed the importance of using psychologists as well as physicists on the staff. Dr. Stuart Cook, chairman of the department of psychology, accepted appointment as a principal investigator on an advisory basis but could devote only a small fraction of his time to the study because of other commitments. In a short time he

made arrangements for the project to have the part-time services of three of his professors of psychology: Drs. David R. Saunders, William B. Scott, and Michael Wertheimer. Saunders had worked on machine statistics in relation to problems in educational psychology. Scott's field was social psychology. He made some useful initial contributions but soon found that his other duties did not permit him to continue. Wertheimer is well known as a specialist in psychology of perception. He worked with members of the field teams and has contributed a chapter to this report (Section VI, Chapter 1).

The initial staff also included Dr. Franklin E. Roach as a principal investigator. Roach is an astronomer who has specialized in the study of air glow and other upper atmosphere optical phenomena. He was at the time near retirement after a long career with the National Bureau of Standards and the Environmental Science Services Administration and so was able to devote full time to the project. His experience was valuable as including a wide range of working contacts with the astronomers of the world, and also as a consultant with the NASA program which brought him into working relations with the American astronauts.

Low was able to obtain a leave from his position as assistant dean and assumed full-time appointment as project coordinator. Besides administrative background, he brought to the project a wide general knowledge of astronomy and meteorology derived from some twenty years of work with Walter Orr Roberts on the staff of the High Altitude Observatory of the University of Colorado, and later with the National Center for Atmospheric Research during its formative years.

Announcement of the project received a large amount of newspaper attention and editorial comment. This was natural in view of the long history of UFO controversy, even extending into Congress, which had preceded the setting up of the study. Possibly the most prescient of comments was an editorial in *The Nation* for 31 October 1966, which declared, "If Dr. Condon and his associates come up with anything less than the little green men from Mars, they will be crucified."

The project's investigative phase ended on 1 June 1968, and the task of preparing a final report of the project's multifarious activities began. The results of those labors are presented here.

It seems hardly likely, however, that we have said the last word on this subject. Indeed, as this report is prepared the Library of Congress has announced publication of UFOs, an annotated bibliography. Prepared for the Air Force Office of Scientific Research (OAR), and scheduled for publication in 1969 by the U.S. Government Printing Office, the bibliography contains more than 1,600 references to works on the subject of UFOs. It will be offered for sale by the Superintendent of Documents.

Private organizations or government sponsored groups may well undertake to do more work on UFO phenomena, either in the name of science or under another rubric.

Meanwhile, the Scientific Study of Unidentified Flying Objects was brought to a definitive close when, on 31 October 1968, this final report on its researches was turned over to the Air Force for review by the National Academy of Sciences and subsequent release to the public. We thank those of the public who communicated to us their experiences and opinions. However, as the study is now at an end, it would be appreciated if no more UFO material is sent to the University of Colorado.

References

- Adamski, George. *Inside the Space Ships*, New York: Abelard-Schuman, 1955.
- Allen, W. Gordon. *Spacecraft from Beyond Three Dimensions -- a New Vista of the Entirety from which Emerges the UFO*, New York: Exposition Press, 1959.
- Arnold, K. E. and R. Palmer. *The Coming of the Saucers: a Documentary Report on Sky Objects that Have Mystified the World*, Boise: K. A. Arnold, 1952.
- Bloecher, Ted. *Report on the UFO Wave of 1947*, Copyright by Ted Bloecher, 1967 (no address).
- Condon, E. U. and G. H. Shortley. *The Theory of Atomic Spectra*, New York and London: Cambridge University Press, 1935.
- Edwards, Frank, *Flying Saucers -- Serious Business*, New York: Lyle Stuart, 1966.
- _____. *Flying Saucers -- Here and Now!* New York: Lyle Stuart, 1967.
- Fuller, John G. *Incident at Exeter*, New York: G. P. Putnam's Sons, 1966a.
- _____. *The Interrupted Journey*, New York: Dial Press, 1966b.
- _____. "Flying Saucer Fiasco," *Look*, 32: 58, (14 May 1968).
- Goudsmit, S. A. *Alsos*, New York: Henry Schuman, Inc., 1947.
- Groves, L. R. *Now It Can Be Told*, New York: Harper and Brothers, 1962.
- Guieu, Jimmy. *Les Soucoupes Volantes Viennent d'un autre monde*, Paris: Fleuve Noir, 1954. English edition: *Flying Saucers Come from Another World*, London: Hutchinson, 1956.
- Heard, Gerald. *The Riddle of the Flying Saucers*, London: Carroll and Nicholson, 1950.
- House Committee on Armed Services, the transcript of the 5 April hearing occupies pp. 5991-6075 of the printed record of this committee for the second session of the Eighty-ninth Congress.
- Keyhoe, Donald E. *The Flying Saucers are Real*, London: Hutchinson, 1950.
- Irving, David. *The Virus House*, London: William Kimber, 1967.

- Jones, R. V. "The Natural Philosophy of Flying Saucers," *Physics Bulletin* 19, (1968), 225-230, (reproduced as Appendix V).
- Keyhoe, Donald E. *Flying Saucers from Outer Space*, New York: Henry Holt, 1953.
- Lear, John. "The Disputed CIA Document on UFOs," *Saturday Review*, (3 September 1966), 45-50.
- Leslie, Desmond and George Adamski. *Flying Saucers Have Landed*, London: Werner Laurie, 1953.
- _____. *Flying Saucers Have Landed*, New York: British Book Centre, 1953.
- Lorenzen, Coral. *The Great Flying Saucer Hoax: the UFO Facts and Their Interpretation*, New York: William-Frederick Press, 1962. Paperback edition titled: *Flying Saucers: the Startling Evidence of the Invasion From Outer Space*, New York: New American Library, 1966.
- McDonald, James. "Are UFOs Extraterrestrial Surveillance Craft?" talk given before the American Institute of Aeronautics and Astronautics, Los Angeles, (26 March 1968).
- Menzel, Donald H. *Flying Saucers*, Cambridge: Harvard University Press, 1953.
- _____. "Do Flying Saucers Move in Straight Lines?" *Flying Saucer Review*, 10, 2, (1964), 3.
- Michel, Aime. *The Truth About Flying Saucers*, New York: Criterion Books, Inc., 1956.
- _____. *Mysterieux Objets Celestes*, Paris: Arthaud, 1958. English edition: *Flying Saucers and the Straight-line Mystery*, New York: S. G. Phillips Co., 1958.
- Ruppelt, Edward J. *The Report on Unidentified Flying Objects*, New York: Doubleday and Co., 1956.
- Scully, Frank. *Behind the Flying Saucers*, New York: Holt, 1950.
- Stanton, L. Jerome. *Flying Saucers -- Hoax or Reality?* New York: Belmont Books, 1966.
- Vallee, Jacques and Janine. *Challenge to Science -- The UFO Enigma*, Chicago: Henry Regnery Co., 1966.
- Wilkins, Harold L. *Flying Saucers on the Attack*, New York: Citadel Press, 1954.

Chapter 3
Official UFO Study Programs in Foreign Countries
Harriet Hunter

Over the years since 1947, there have been many UFO reports originating in countries other than the United States. In fact, although America dates modern interest in the subject from the summer of 1947, there were 997 UFO reports that reached the Swedish government from private citizens in that country during 1946. Paralleling the developments in America, there has been some open official interest on the part of governments of other countries, as well as amateur organizations devoted to the study of UFOs, and popular books published in other countries and in other languages than English.

We made efforts to learn about the activities conducted officially on the UFO subject by other governments, strictly from the viewpoint of determining whether scientists in those countries had a program of UFO study from a scientific point of view or whether they were recommending to their governments that UFOs be studied for their scientific interest.

There is always the possibility that other governments are carrying on study programs that are classified. No effort was made to learn anything that was not freely and openly available.

Canada

Dr. Craig visited Dr. Peter M. Millman in Ottawa on 13 June 1968. Dr. Millman's major responsibility is as Head of Upper Atmosphere Research of the National Research Council of Canada, but he also manages the study of UFOs in Canada. Until the spring of 1968, the study of UFO reports had been handled by the Department of National Defence in Canada; it was transferred then to the National Research Council. Very few field investigations are carried out; emphasis is mostly on the maintenance of a central file of the reports that reach the government from the public.

According to Dr. Millman, the Defence Research Board of the Department of National Defence in Canada formed a committee in April 1952

giving it the name Project Second Storey. It reviewed the situation with respect to UFO reports to determine whether the government should undertake large-scale investigations of the reports. Dr. Millman, at that time with the Dominion Astrophysical Observatory, was chairman of the committee, which held regular meetings over a period of a year. During this period, the Committee developed interview techniques and filing procedures for sighting reports. It recommended that the situation did not warrant a large-scale official investigation of unidentified aerial phenomena.

Project Second Storey became inactive after 1953. Sighting report files were maintained thereafter by the Department of National Defence. Particularly puzzling events were investigated when it appeared that data results of scientific value might be found. As of 1968, the file (called the Non-Meteoritic Sighting File) is maintained in the Upper Atmosphere Research Section of the Radio and Electrical Engineering Division of the National Research Council in Ottawa. The file is open to public inspection, but witness names are held in confidence, unless they have given permission for their release. In 1967 there were 57 reports and 37 in the first five months of 1968,

Dr. Millman has studied the files covering reports over a period of 20 years, concentrating his attention on the hard core of unexplained cases. He favors continuing compilation of reports on an international basis using uniform reporting forms in all countries.

Project Magnet, established in December 1950 was headed by Mr. Wilbert B. Smith of the Telecommunications Division of the Canadian Department of Transport who was officially authorized by the Deputy Minister of Transport for Air Services to make as detailed a study of the UFO phenomena as could be accomplished within the framework of existing Canadian establishments. The report issued by Mr. Smith did not represent the official opinion of the Department of Transport or the Second Storey Committee, and in this respect is not a part of the official study of UFOs in Canada.

England

The UFO problem is handled in England by a division of the Ministry of Defence in London. Colorado project coordinator, Robert Low met with its

director on a visit to London in August 1967. Sighting reports from the public are routed to the Ministry of Defence whose central switchboard operators direct them to this office. The Royal Air Force assigns one man to work with this office on UFO matters. In a letter to this project dated 9 June 1967, it was said ". . . . our investigations of reported UFO sightings are of a limited nature and are conducted on a low priority basis. Moreover, the bulk of recent sightings have been established as either earth satellite vehicles, space debris in orbit or manifestations of meteorological or other natural phenomena."

Sweden

Official responsibility in Sweden for handling UFO matters has been assigned to the Research Institute of National Defence, Avdelning 2, Stockholm 80. Dr. Tage O. Erikssohn is in charge of this activity. He was visited by Low during the summer of 1967, and the Colorado project has had additional correspondence with him.

Dr. Eriksson receives sighting reports and maintains a file of them. He has the responsibility of deciding whether a report warrants investigation. He told Low that almost all reports up to 1963 were investigated and were found to be caused by natural or man-made phenomena. Since then reports are not being routinely investigated.

Asked about published reports that the Swedish Air Force had investigated a case in which an UFO allegedly crashed in Spitzbergen in 1955, Dr. Eriksson replied: "I can assure you that this is not the case. Neither the Air Force nor the Research Institute of National Defence has at any time taken part in an investigation of a crashed UFO in Spitzbergen or elsewhere."

Soviet Union

News stories appeared in the American newspapers in early December 1967 stating that the U. S. S. R. was establishing a governmental project to study UFOs (*New York Times* 10 December 1967).

According to these reports, the study was already under way under the direction of Prof. Feliks Zigel of the Moscow Aviation Institute and a retired Major General, Porfiry A. Stolyarov, of the Soviet Air Force.

Condon wrote to Zigel to explore the possibility of cooperation between the reported Soviet and Colorado projects. Condon's letter was transmitted to Prof. Zigel as an enclosure with a letter from Dr. Frederick Seitz, President of the U. S. National Academy of Sciences, to Academician M. V. Keldysh, President of the Soviet Academy of Sciences for subsequent transmittal to Zigel. The letter was mailed on 16 January 1968; as of 31 October 1968, no answer had been received. One attempt was made to stimulate a reply by discussing the matter with a Soviet member of the staff of the Outer Space Affairs Group at United Nations headquarters. He said he would write informally to a member of the Russian space research team to find out what is being done. Nothing further has been heard from this source. The U. N. official was of the opinion that no UFO study was being conducted in the Soviet Union.

Low met with Mr. U. Bogachev, First Secretary of the Information Department of the Soviet Embassy in Washington to express additional interest in cooperation in the study of UFOs and was courteously received; no further contacts were initiated in view of the lack of a reply from Zigel.

Pravda for 29 February 1968 carried an article on UFOs signed by E. Mustel, corresponding member of the A. N. U. S. S. R., D. Marynov, president of the All-Union Astronomical and Geodetic Society, and V. Leshkovtsev, Secretary of the National Committee of Soviet Physicists. The article **emphasizes** that study of American sightings in the past has provided natural explanations for most of them.

It concludes with these statements:

No one has in his possession any new facts that would substantiate the reality of "flying saucers." They are not seen by astronomers who attentively study the skies day and night. They are not encountered by scientists who study the state and conditions of earth's atmosphere. They have not been observed by the Air Defense Service of the country. This therefore means that there are no grounds for reviving the nonsensical long-buried rumors about secret trips to our planet by Martians or Venusians

Because of the high incidence of reports on "unidentified flying objects" on the pages of our press and in television broadcasts, the "flying saucer" question was discussed at the U. S. S. R. Academy of Sciences. The Bureau of the Department of General and Applied Physics of the Academy heard a report by Academician L. A. Artsimovich at a recent meeting about current UFO propaganda. It was characterized as "anti-scientific" and Artsimovich noted that "these fantasies do not have a scientific basis at all; the observed objects are of a well-known nature."

Denmark

The project had no direct contact with the authorities in Denmark, but in response to an inquiry, Prof. Donald H. Menzel of Harvard received a letter dated 25 April 1968 from Captain K. G. Konradsen, writing for the Minister of Defense which says:

Some years ago, the public showed considerable interest in unidentified flying objects, and reports on sightings which were presented either to the police or to military authorities were at that time thoroughly examined by the Danish Defence Research Board. The findings were, most reports being incomplete, that further investigation generally was impossible. In those cases, in which it was possible to investigate and reconstruct the observations, they turned out to be sightings of aircraft or of atmospheric or astronomic phenomena. In several cases the reports were intentionally false.

Today, Danish civilian and military authorities do not consider unidentified flying objects of any special significance. No effort is made officially to inform the public of possible reported sightings. Of course, the newspapers from time to time bring news

of "mysterious" and "supernatural" occurrences in the air, but special circumstances are necessary to bring about an official investigation . . .

Other Nations

The cooperation of the Department of State was enlisted to seek information about UFO programs of the governments of other nations. On 11 April 1968 the following airgram was sent to various American embassies over the signature of Secretary of State Dean Rusk:

The University of Colorado, acting under contract to the U. S. Air Force, is desirous of being informed if host country Governments, or Universities, or other organizations acting as contractors thereto, have, or are conducting, any studies on UFOs. The University of Colorado is not interested in studies made by UFO hobby clubs or UFO buffs. If serious study has or is being given to this subject, the Department would appreciate being advised by May 15 if mission knows of the name of the agency conducting the work, and whether it could be described as a substantial or only a modest effort.

Replies informed us that in Australia the Director of Air Force Intelligence maintains sighting files and is responsible for investigations should they be deemed necessary. In New Zealand there is an informal arrangement between the Air Force Meteorological Service and the Department of Scientific and Industrial Research to collect reports for six months and then decide on the next step.

In Greece a report file is maintained by the National Meteor Service of the Greek Ministry of National Defense.

Countries in which it is known that no governmental activity concerned with UFOs is being carried on are: Argentina, Austria, Belgium, Brazil, Colombia, Finland, France, Ireland, Italy, Japan, Mexico, Netherlands, Norway, Portugal, Spain, Switzerland, and Venezuela.

The project is indebted to Dr. Donald H. Menzel for much of the information presented in this chapter regarding official activity -- or in most cases, inactivity -- in foreign countries.

United Nations

Since UFO reports are received from observers in all parts of the world, it has been suggested that UFO studies might be undertaken by the United Nations. Such suggestions have come from, among others, Prof. James E. McDonald of the University of Arizona, who has discussed the matter with the working staff of the U. N. Outer Space Affairs Group.

Subsequent reports in the press that the U. N. was taking up the matter of UFOs led to the issuance of a statement dated 29 June 1967 by C. V. Narashimhan, Chef de Cabinet. It follows:

It is not correct that the Secretary-General requested Dr. McDonald to come to New York City to confer with him. Dr. McDonald wrote to the Secretary-General requesting an interview and the Secretary-General agreed to see him on 7 June. Unfortunately, on that day the Secretary-General was preoccupied with meetings of the Security Council and Dr. McDonald only saw the Chief of the Outer Space Affairs Group and his colleagues. It is also not correct to say that the Secretary-General personally believes in the existence of UFOs. I hope this makes the position clear.

Replying to another inquiry on 5 July 1967, Marvin Robinson, scientific secretary of the Outer Space Affairs Group, declared that "the United Nations Committee on the Peaceful Uses of Outer Space has never discussed the subject of unidentified flying objects nor requested any study or report on this subject."

Since confusion about possible United Nations interest in the UFO question continued, Condon wrote on 6 March 1968 to Peter S. Thacher, counsellor on Disarmament and Outer Space of the U. S. Mission to the U. N., and later visited him in New York. The confusion seems to have arisen from the fact that there are two different U. N. entities: the Committee

on Peaceful Uses of Outer Space, and a subsidiary body called the Outer Space Affairs Group. It was the latter body with which McDonald met. In a letter dated 18 March 1968, Thatcher writes:

As to Dr. James McDonald's presentation, it is completely correct that he did not make any presentation at any time to the UN Committee on Peaceful Uses of Outer Space. The committee consists of 28 representatives of states members of the General Assembly and is the outgrowth of a committee which was originally created in 1959. Having been thoroughly involved in the work of the committee since its origin, I can assure you that at no time has any representative on the committee suggested serious consideration of UFOs, nor to my knowledge has there been any corridor suggestion along these lines of the sort that might take place before any formal proposals were made

From informal conversation with members of the Outer Space Affairs Group I understand that Professor McDonald sought to convey a statement on the subject of UFOs to the Secretary-General and was referred to this group The letter from Professor McDonald was not given any circulation and would not have come to any attention outside of the secretariat if it had not been through your letter and my subsequent inquiry. Therefore, Professor McDonald can correctly say that he has submitted a statement to the Outer Space Affairs Group, but this action is of itself not very meaningful

Thus, from the available evidence it would appear that there is no active official interest in UFOs in the United Nations.

Section VI

The Scientific Context

The contributions in this section are by specialists who are eminent in their respective disciplines. They endeavor to supply as completely as possible the background of scientific knowledge in their fields as it is judged to be relevant to the study and understanding of UFO phenomena.

Chapter 1

Perceptual Problems

Michael Wertheimer

Perception plays a role in the report of any unidentified flying object. Someone perceives -- i. e., sees, hears, feels, etc. -- something, and it is his conclusion concerning what it was that he perceived that results in an UFO report.

This chapter is devoted to some well known principles of perception, with special reference to how they apply to the processes that result in UFO reports. Basic accounts of perception and further details on the matters considered here can be found in such standard texts as Bartley (1958), von Fieandt (1966), Dember (1960), Beardslee and Wertheimer (1958), Gibson (1950), Forgus (1966), and Boring (1942). Lively, brief introductions to general problems of perception have been written by Hochberg (1964) and Leibowitz (1965).

Our discussion in this chapter is organized around the physical, physiological, psychological, and social sequence of events that eventuates in UFO reports. This sequence of events usually begins with some actual distal physical event (an energy change or source some distance away from the observer), resulting in the transmission of energy to the observer's sense organs. The energy that arrives at the observer's sense organ, the proximal stimulus, is encoded into neural events, producing sensations which are combined into percepts and finally into cognition. By this process, the observer becomes aware that there are some particular phenomena having particular characteristics taking place in some location at some particular distance and direction from the observer.

A report eventuates from this sequence only if the observer's cognition is such as to produce in him the conviction that what he has experienced should indeed be reported.

Since most of the observations reported in connection with UFO phenomena are visual, we shall consider each of the foregoing steps in terms, primarily, of the processes of visual perception.

1. The Distal Event

An actual, physical event usually precedes the report of an UFO. Chapter 2 of Section VI discusses in detail some of the distal events that could give rise to UFO reports. In section 4 below, reports that arise despite the absence of any stimulus exterior to the observer are considered. For the purpose of the present discussion, however, we need emphasize only the fact that the distal events that give rise to UFO reports always involve the transmission of some form of energy. As we have pointed out earlier, that energy is usually in the visible spectrum.

2. Transmission Processes

The energy is transmitted from the distal source and arrives at a sense organ, where it produces a proximal stimulus in the form of an energy change to which the sense organ is attuned. But the energy arriving at the sense organ is not an exact copy of the energy that left the distal source. It is attenuated and distorted, and often is an incomplete version of the original (Brunswik, 1956). If, like most energy sources, the transmitted or reflected light obeys the inverse square law, the energy arriving at the sense organ is far weaker than at the source. Further, the characteristics of the medium through which the energy is transmitted distort and disrupt the energy. For example, mist, ground fog, smoke, rain, snow, fog, dust, temperature inversions and discontinuities, and other atmospheric phenomena

can cause gross attenuation. They can also distort the energy by selectively filtering out or modifying certain components.

Turbulence in the air and peculiar temperature inhomogeneities can produce major distortions in the transmitted energy before it becomes a proximal stimulus (Minnaert, 1954). Intensity, "shape," color, direction, and other attributes can all be grossly altered. Atmospheric turbulence phenomena can, for example, cause distant mountains seen across a heated desert to shimmer and to change their shape eerily in an amoeba-like fashion. Other well known kinds of mirages, discussed in detail in Section VI, Chapter 4, are superior and inferior mirages resulting from sharp temperature inhomogeneities in the air.

Other modifications of transmitted energy occur when the energy passes through glass, plastic, the exhaust of a jet, over a heated surface, etc. before reaching the observer.

Frequently the transmitted energy is so modified by the characteristics of the medium through which it has been transmitted that the proximal stimulus is far from an exact replica of the energy that left the distal energy source.

5 The Proximal Stimulus

Aside from the foregoing phenomena of attenuation and distortion, the proximal stimulus itself may be quite impoverished. It may be difficult to tell, from the proximal stimulus alone, what the characteristics of the distal object actually are (Brunswik, 1956). Ambiguity occurs, for example, in size and distance estimation. A nearby, small object will cast the same image on the retina as will a larger, more distant one. UFOs are frequently observed under conditions providing no frame of reference from which distance and size may be inferred. Without such a clear frame of reference, judgment of size and distance is extremely difficult or impossible. Thus, an

unknown, vaguely defined object in the undifferentiated sky can appear to be of any size or at any distance, depending on the inferences made by the observer. If he assumes the object is the size of an automobile, he will infer its distance in terms of that size. But if he assumes that it is the size of a teacup, he will infer that it is much closer to him. Even if the object is within a few yards of the observer, distance and size judgments can be grossly inaccurate for lack of a frame of reference, because the retinal image alone does not typically (and especially in the case of UFOs) supply enough information to the observer to permit determining whether it has been cast by a huge, very distant object, by a medium-sized one at a moderate distance, or a small one close by.

A typical example of this ambiguity is found in the reports of witnesses to the re-entry of fragments of the Soviet satellite, Zond-4, on 3 March 1968 at about 9:45 p.m. EST. Three witnesses reported seeing a single object traveling at "tremendous speed" at an altitude of "not more than 2,000 to 5,000 feet." The witness quoted is the chief executive of a large U. S. city. Another group of witnesses to the same event reported that "it was at about tree-top level and was seen very, very clearly and was just a few yards away." They estimated that it was 175-200 ft. long. A private pilot saw more than one object moving at "very high speed" and estimated the altitude at 30,000 ft. An airline pilot and his crew reported the objects as "heading in a NNE direction at high rate of speed & above 60,000 feet altitude." The observers were actually looking at several pieces of satellite debris entering the atmosphere at an altitude of about 100 mi. and at a speed of about 18,000 mph (Sullivan, 1968).

Estimates of speed are just as ambiguous as estimates of size and distance, as the foregoing demonstrates. The retinal image, and the successive changes in it, can be the same for a small, near object moving slowly as for a large, distant object moving rapidly. Apparent

speed depends upon relative displacement within a framework, rather than upon absolute displacement across the retina (Brown, 1931).

The characteristics of motion are also inherently ambiguous, especially if the moving object is unfamiliar. A proximal stimulus that is actually rising could be produced by an object rising and receding from the observer or one rising and approaching him. Its actual path could be perfectly horizontal, if it is above eye level and is approaching the observer. It could even be an object whose actual path is descending if the path is one that will eventually pass over the observer's head. Still other distal stimulus movements could produce the same proximal stimulus.

Changes in the size of the proximal stimulus are also ambiguous. They could be due to approach or recession of the object, or to changes in its size while remaining stationary. An object whose proximal stimulus is gradually growing can actually be receding from the observer, if the retinal image is growing faster than it would shrink because of recession alone.

Nor does the shape of the proximal stimulus unequivocally represent the shape of the distal object. Many different distal objects could cast the same shaped retinal image simply because at a given orientation they present the same cross-section. Conversely, except in the case of a sphere, a given distal object can produce many different shapes of proximal stimulation. Consider a flat disk. In different orientations to the observer, it could look like a vertical line, a horizontal line, a slanted line, a cigar-shaped object in various positions, a circle, or many forms of ellipses.

4. Neural Encoding: Sensation

It is clear from the preceding that what is physically available to the observer, the proximal stimulus, is by no means an exact, information-filled, unambiguous replica of the originating event, the

distal energy source. The distortions we have considered so far are purely physical; precise instruments would register them in a way that is comparable to the way in which human sense organs register them. With our discussion of sensation, we enter the skin of the observer, and must consider physiological and psychological events that occur inside him.

When the proximal stimulus reaches the cells of a receptor that is sensitive to the energy contained in the stimulus, the cells transform the light, sound, heat, etc. into impulses carried along nerve fibers. The impulses travel from cell to cell into the center of the brain, the thalamus, and thence to the outer layer of the brain, the cerebral cortex. A sensation depends upon the messages arriving at higher sensory center in the brain in combination with other events simultaneously occurring in these centers.

What actually goes on in the sensory areas of the cortex depends on many things. Thus whether a dim light is actually seen is a function of how dark-adapted or light-adapted the eye is. If one comes into a dark movie theater from a bright, sunlit street, at first he can barely, if at all, make out the seats and the other people, but after some time in the dark, things that were previously invisible to him become visible. Conversely, if the eye has been in the dark for some time a moderately intense light will appear so bright as to be blinding, and it may be impossible to tell what the light source is, even though it would be readily recognizable to the light-adapted eye. Clearly the sensation produced by a particular proximal visual stimulus varies greatly with the state of adaptation of the eye.

Second, the observer's state of alertness can affect how and even whether he will sense a given stimulus. If he is drowsy, fatigued, tired, intoxicated, dizzy, ill, or drugged, he will be a less sensitive, less accurate, more error-prone instrument for detecting stimuli. Spontaneous discharges in the sensory centers of the brain may be

interpreted by him as distal events, even though there may be no corresponding proximal stimulus. In addition to these physical conditions, states of extreme tension or anxiety can also produce not only reduced alertness but an enhanced tendency to misinterpret or distort sensations.

Third, concomitant sensory events can modify sensations. A loud noise, absorption in a book, concentration on a TV show, etc. can make one less likely to notice something else. In fact, one stimulus may actually inhibit the neural events produced by another. In a now-classic experiment, investigators recorded the bursts of neural activity in the auditory nerve of a cat whose ear was stimulated by clicks; when a caged rat was placed before the cat, impulses in the auditory nerve stopped, even though the clicks still continued at the same rate and intensity (Hernández-Peón, 1958).

Fourth, various sensory anomalies can modify sensation. A sizable proportion of the population is color blind to some degree; many persons are nearsighted, or farsighted, resulting in fuzzy contours, while astigmatism results in various shape aberrations. Then there are the phosphenes, or entoptic phenomena: visual sensations produced by pressure on the eyeball, or from such other conditions as spontaneous neural discharges within the eye. One can obtain brilliant, brightly-hued floating shapes intentionally by closing one's eyes and applying moderate continuous pressure to the eyelids with one's fingers - fascinating swirling abstract designs will result, with ever-changing brilliant colors.

Fifth, there are several kinds of afterimages, or images that persist after the stimulus originally producing them has ceased. In a positive afterimage the sensations are the same as those in the inducing stimulus, while in a negative afterimage they are reversed. If, in darkness, a bright light is flashed in the eye the afterimage of the light can be seen floating eerily about, moving as the observer's

eyes move, for as long as a minute or more. The image can hover, dart here and there, and change apparent size, depending upon where one happens to cast it. The color typically changes as the image gradually fades. The color can range through the whole spectrum, and typically alternates between the color of the original light and its complement. Negative afterimages are more common than positive ones, and are produced by staring for a time at a particular place in the visual field. The characteristics of the negative afterimage are opposite to those of the inducing stimulus. Thus where the original stimulus was white, the afterimage is black; where it was black in the stimulus the image is white; where the stimulus was red the image is green; where the stimulus was blue the image is orange-yellow; and so on. Negative afterimages fluctuate like positive ones, fading in and out. The longer the inducing stimulus was stared at and the greater the contrast in the inducing stimulus, the longer the afterimage persists. The apparent size of afterimages, both positive and negative, depends upon the distance to the surface upon which they are projected: the farther away the surface, the larger the image appears to be.

5. Perception

Perception is the process of identifying the distal object. The observer interprets the neural inputs as due to some object, assigning it particular characteristics, such as distance, direction, shape, color, etc. The amount of interpretation that the observer must employ to arrive at the final percept depends in part upon the clarity, the lack of ambiguity of the input. Thus the letters on this printed page are reasonably clear and unambiguous; there is an ample frame of reference, and the distal stimulus is clearly structured: the observer can obtain a fairly accurate percept of what the distal stimuli actually are. But if the perceptual framework is impoverished, as is true of most conditions under which UFOs are reported, then the perceiver must engage in much more interpretation before he arrives at a percept.

Typically, perception results in a clear, categorical conclusion about characteristics of perceived objects, even if the input is logically, geometrically or optically insufficient to specify these characteristics unambiguously. For objects in the sky, again, especially unfamiliar objects, shape, size, distance, direction, speed are all basically indeterminate in the proximal stimulus, and yet the processes of perception work in such a way as to give each a particular value in any given case.

Apparent shape depends upon the orientation of the object to the observer. Size, distance and speed depend upon each other in a complex way: an observer's automatic assumptions concerning one of them determine to a large extent how he will perceive the others. Apparent direction of motion depends upon a reference frame; thus clouds, for example, will typically appear to be moving at right angles to a reference line such as the roof line of a house or the part of a window frame one concentrates on while looking through the window at the moving clouds.

Apparent motion can be induced in an actually stationary object in a number of ways. The moon may appear to be moving while the clouds partly covering it seem to stay stationary. The landscape may seem to move in a direction opposite to that to which the eye was previously exposed, as when one sits in a train which has just stopped, or looks at the hillside next to a waterfall after staring at the waterfall a while. Normally a single object in a completely unstructured field will soon appear to move, even though it is actually stationary. This phenomenon, autokinesis, is frequently studied by experimental psychologists who ask subjects to report on the appearance of a pinpoint of light in a completely dark room. A light going out typically seems to shrink as it does so. A light that goes on as another is going off can, under proper time and space conditions, be made to look as though the light that went off had moved to the place where the light went on.

The angular elevation, or apparent location above the horizon, of objects is generally not estimated very accurately at all. The difference from 0° or from 90° of angles near the horizon or near the zenith tends to be substantially overestimated¹. Anything that is more than 45° or even 30° above the horizon is often reported as overhead.

Colors are sometimes perceived by interpretation only. The dark-adapted eye is insensitive to color, yet the grass still is perceived as green, a banana as yellow. There are also phenomena of color contrast or color induction: a small piece of gray paper on a strong green background takes on a reddish tinge; on a strong blue background it will take on a yellowish tinge. The same piece of gray paper looks appreciably brighter on a black background than on a white one.

In general, for just about all perceivable characteristics, perception typically works in such a way that the percept, as the perceiver is aware of it, is considerably clearer, less ambiguous, and less vague than the actual physical proximal stimulus warrants.

6. Cognition

One's judgment, conviction or belief about the actual identity and meaning of something, that is, one's cognition of it, are very much affected by mental set, expectation and suggestion. Every observer is ready to perceive reality in a certain way. The observer's sets and expectations arise from his experiences, opinions, and beliefs, including those derived from suggestion. The observer who looks for faces in cloud patterns or leaf patterns can find them easily. Setting oneself to see the letter "e" on this page makes the e's more salient, more noticeable. You probably were unaware just now of the pressure of the shoe on your left foot until it was mentioned in this sentence. What one notices, pays attention to, responds to, and how one interprets it, what it means to one, are deeply affected by one's attitudes, past experiences, opinions, and beliefs (Bruner, 1947; Dember, 1960; etc.).

The influence on cognition of all these internal factors is especially strong in impoverished stimulus situations such as those under which UFO reports typically are generated. The observer's personality, his rigidity, absolutism, skill in scientific thinking, interest and belief in UFOs, readiness and ability to consider alternative interpretations of what is perceived, etc. substantially affect the observer's conclusions, typically without his being aware of this influence.

7. The Report

Whether the observer makes a report, and, if so, to whom and in what form, varies with the individual and with the situation. A frightened observer, or one who is oriented toward authority, is more likely to make a report than one who is unconcerned, or who does not know to whom to make a formal report. Once the observer has decided to make a report, the way in which he is questioned can substantially affect its content. The amount of detail and even the details themselves, can be much affected by the manner and form of questioning by the recipient of the report. Open questions (e. g., "Tell me what you saw.") result in less distorted answers than do closed questions (e. g., "Did you see it for longer or shorter than ten seconds," or, "You don't mean to tell me that it actually hovered, do you?"); interviewer bias can greatly influence the respondent's behavior (Rosenthal, 1966). Testimony is known to be quite unreliable especially under the pressure of leading, direct questions, a hypercritical or incredulous interrogator, or one who insists upon details about which the witness' memory is fuzzy. Memory of the percept like cognition, is subject to the distorting effects of motivation, personality, set, suggestion, etc.

8. An Evaluation

UFO reports are the product of a long chain of events, from distal stimulus through to the final reporting; at every link in this chain

there are sources of distortion. Details of specific reports, are, by the very nature of the processes of human sensation, perception, cognition and reporting, likely to be untrustworthy. Thus any report, even those of observers generally regarded as credible, must be viewed cautiously. No report is an entirely objective, unbiased, and complete account of an objective distal event. Every UFO report contains the human element; to an unknown but substantial extent it is subject to the distorting effects of energy transmission through an imperfect medium, of the lack of perfect correlation between distal object and proximal stimulus, and of the ambiguities, interpretations, and subjectivity of sensation, perception and cognition.

References

- Bartley, S.H. *Principles of Perception*. New York: Harper, 1958.
- Beardslee, D. and M. Wertheimer, (Eds.). *Readings in Perception*. Princeton, N.J.: Van Nostrand, 1958.
- Boring, E.G. *Sensation and Perception in the History of Experimental Psychology*. New York: Appleton-Century-Crofts, 1942.
- Brown, J.F. "The visual perception of velocity", *Psychol. Forsch*, 14 (1931), pp. 199-232.
- Bruner, J.S. and C.C. Goodman. "Value and need as organizing factors in perception", *J. Abnorm. Soc. Psychol*, 42 (1947), pp.33-44.
- Brunswik, E. *Perception and the Representative Design of Experiments*. Berkeley, Calif.: Univ. of California Press, 1956.
- Dember, W.N. *The Psychology of Perception*. New York: Holt, 1960.
- von Fieandt, K. *The World of Perception*. New York: Dorsey, 1966.
- Forgus, R.H. *Perception: The Basic Process in Cognitive Development*. New York: McGraw-Hill, 1966.
- Gibson, J.J. *The Perception of the Visual World*. Boston: Houghton-Mifflin, 1950.
- Hernandez-Peon, R., H. Scherrer, and M. Jouvet. "Modification of electrical activity in cochlear nucleus during 'attention' in unanesthetized cats", *Science*, 123 (1956), pp. 331-332.
- Hochberg, J. *Perception*. Englewood Cliffs, N.J.: Prentice-Hall, 1964.
- Leibowitz, R.W. *Visual Perception*. New York: Macmillan, 1965.
- Minnaert, M. *The Nature of Light and Colour in the Open Air*. New York: Dover, 1954.
- Rosenthal, R. *Experimenter Effects in Behavioral Research*. New York: Appleton-Century-Crofts, 1966.
- Sullivan, Walter. "Rocket Re-entry Termed UFO" *Denver-Post-New York Times*, 2 July 1968.

UNCLASSIFIED

Security Classification

DOCUMENT CONTAINS DATA R & D

Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified

1. ORIGINATING ACTIVITY (Corporate author)		2A. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
University of Colorado Boulder, Colorado		2B. GROUP	
3. REPORT TITLE SCIENTIFIC STUDY OF UNIDENTIFIED FLYING OBJECTS, Volume II			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Scientific Final			
5. AUTHOR'S (First name, middle initial, last name) Edward J. Condon			
6. REPORT DATE January 1969	7A. TOTAL NO. OF PAGES 515	7B. NO. OF REFS	
8A. CONTRACT OR GRANT NO. F44620-67-C-0035	8B. ORIGINATOR'S REPORT NUMBER(S)		
9. PROJECT NO. 9730 61102F	9B. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) AFOSR 69-0026TR		
10. DISTRIBUTION STATEMENT This document has been approved for public release and sale; its distribution is unlimited. The copyright notation on the inside cover of each of the three volumes of the report does not prohibit the unlimited distribution thereof by reason of the provisions in contract F44620-67-C-0035 by and between the U. S. Government and the copyright holder.			
11. SUPPLEMENTARY NOTES TECH, OTHER		12. SPONSORING MILITARY ACTIVITY Air Force Office of Scientific Research (SRO) 1400 Wilson Blvd. Arlington, Virginia 22209	
13. ABSTRACT This report contains the results of a scientific inquiry into the phenomena of Unidentified Flying Objects. This volume (Volume II of 3 volumes) contains: (1) Case Studies During the Term of the Contract, (2) Photographic Case Studies, and (3) Historical Aspects of UFO Phenomena.			

DD FORM 1473

Security Classification