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UFOs: What to Do?

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PREFACE

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INTRODUCTION

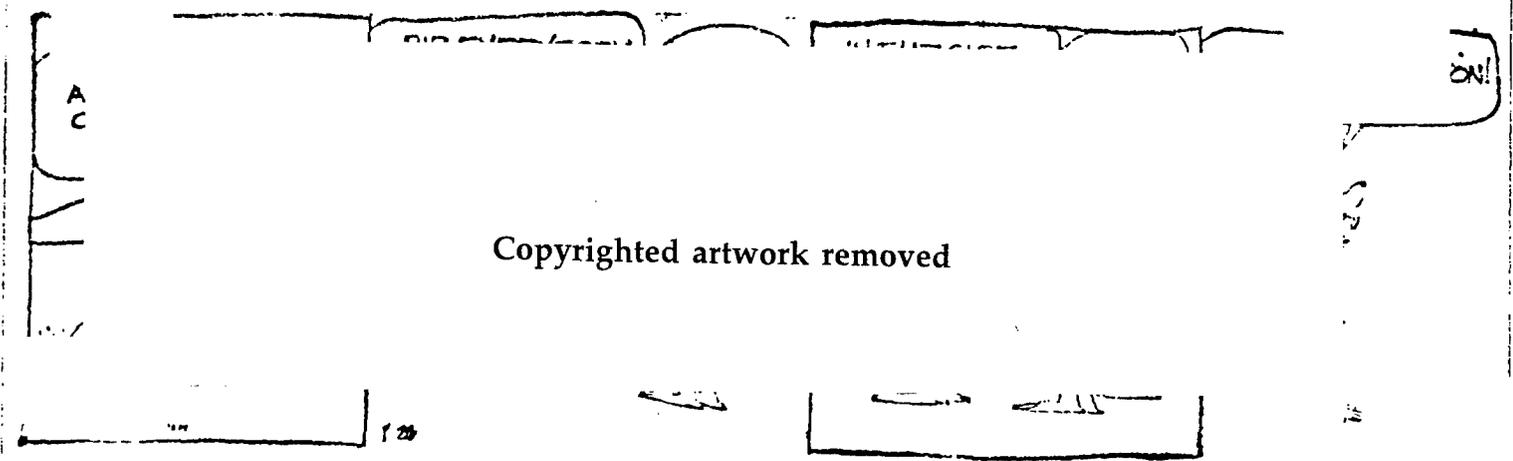
Common sense is the quintessence of the experiences and prejudices of its time. It is a most unreliable advisor when one is confronted with a perfectly new situation.

Gustav Naan

UFOs -- unidentified flying objects, or flying saucers as they are often called -- have been on the mind of the public for at least the last 22 years. For a number of reasons, we know little more about them now than we did at the outset. There exists a great amount of misinformation about the phenomenon not only in the minds of the public, but among educated groups such as scientists as well. It is the purpose of this series of essays to describe various aspects of the phenomenon, make clear my prejudices and the reasons for them, and to suggest a means of proceeding on this interesting and potentially very significant problem.

But first, a few words about the term UFO. J. A. Hynek, an astronomer having continuous involvement with UFO study for over 20 years, defines UFOs as "any reported aerial or surface visual sighting or radar return which remains unexplained by conventional means even after examination by competent persons. This definition...specifies neither flying nor objects."⁽¹⁾ I would agree, but would prefer to replace "or radar return" with "or instrumental observation" and "even after examination by competent persons" to "even after competent examination by qualified persons." This, then, is the definition I have adopted in the five essays that follow.

PART 1: UFOs -- HISTORICAL ASPECTS



Those familiar with the UFO literature are aware that reports of sightings did not begin with Arnold's sighting in 1947, but that phenomenology much the same as is reported today can be found in documents going back to the earliest times. Vallee⁽²⁾ gives a sampling of this; B.L.P. Trench⁽³⁾ has made a more thorough study and reports on the research of others able to study the original documents.

What was reported? Luminous discs, shields, globes and elongated objects in the sky, sometimes alone, sometimes in large numbers. Occasional descriptions of interactions with the observers are also mentioned, including landings, and seeing and communicating with occupants. The latter events especially were almost always interpreted in a religious context. A recent example is the repeated appearance of a typical UFO phenomenology at Fatima, Portugal on six successive months in 1917. The October 13 phenomenon was the best reported and was witnessed by a crowd of about 70,000 persons, including a number of scientists, reporters, atheists, and agnostics, as well as faithful Catholics. One of the scientifically curious was Dr. A. Garrett of the University of Coimbra. Rain, which had been falling that day, ceased and the crowd looked up to see the "sun" now visible through the heavy clouds. Professor Garrett wrote, "...I turned toward this (sun) which was attracting all eyes and I could see it like a disk with a clear cut edge, with a vivid rim, luminous and shining, but without hurting one. The comparison I have heard at Fatima with a disk of dull silver, does

not seem to me exact. It was a clearer, more vivid, richer color and with shifting tints like the luster of a pearl. It was not at all like the moon on a clear transparent night, for one saw and felt it like a living star. Nor was it spherical like the moon, nor did it have the same quality of lighter and less light. It looked like a burnished wheel cut out of mother-of-pearl. Nor could it be confused with the sun seen through a fog -- there was no fog... This disc spun dizzily round. It was not the twinkling of a star: it whirled round upon itself with mad rapidity... The sun, preserving the celerity of its rotation, detached itself from the firmament and advanced, blood-red, towards the earth, threatening to crush us with the weight of its vast and fiery mass. These moments made a terrifying impression."⁽⁴⁾ The relationship of the old phenomenology to religion are discussed by Thomas.⁽⁵⁾

An example of earlier celestial displays of interest is illustrated in Figs. 1 and 2. These are broadsheets from Nuremberg (1561) and Basel (1566), respectively. The psychologist, C. G. Jung, provides an analysis of the contents of the woodcuts in his interesting book.⁽⁶⁾ Reference 7 has a very interesting reproduction of a fourteenth century fresco in a Yugoslavian church.

The modern period of the phenomenon began with a widely publicized sighting made by Kenneth Arnold in Washington state in 1947. A study by Bloecher of north american reports over the four week period bracketing the Arnold sighting lists 853 events, including 38 sightings made before Arnold's heavily publicized sighting.⁽⁸⁾

Because the early reports seemed to suggest airborne craft of unusual appearance and kinematics, the problem came to rest with the newly organized U.S. Air Force. Initial fears were that the country was being overflowed by advanced foreign aircraft, possibly on intelligence missions. The latter was suggested by the large number of sightings from the White Sands, New Mexico area and from the vicinity of the Hanford, Washington atomic plant.

Serious inquiry proceeded for a few years without any positive results. A number of supposedly knowledgeable people spoke out pointing out the sporadic nature of the sightings, and that since the reported

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Fig. 1 -- Nuremberg Broadsheet, 1561



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Fig. 2 -- Basel Broadsheet, 1566

Both Broadsheets from the Wickiana Collection,
Zurich Central Library

kinematics were inconsistent with current physical theory, the UFOs were not likely to be from a foreign power. Further, they argued, no other planets in our solar system were believed to support life -- certainly not intelligent life -- and since even the nearest star was over four light years away, the hypothesis of extraterrestrial origin was simply unacceptable from the scientific point of view.⁽⁹⁾

The Air Force investigative effort worked as follows:⁽¹⁰⁾ Whenever a sighting was made, a report was to be made out and turned in to the Air Force at base level. The report was forwarded to Wright-Patterson AFB, Ohio for study. If the report was interesting enough, follow-up inquiry was made. By 1952 the number of reports coming in was so large that the CIA was concerned that an actual attack on the country might not be immediately recognized. A panel of scientists was then convened in January 1953 to study the available evidence and see what conclusion could be reached about UFOs. After seven days of hearing evidence and discussing the matter it was concluded that there was only circumstantial evidence of the extraterrestrial hypothesis. The panel recommended a broadened study effort with full disclosure of investigations. In order to unplug the military intelligence channels, however, the CIA recommended that, since the UFOs apparently posed no threat, the Air Force should debunk UFO reports and try generally to discourage public interest in them, in the hope that they would go away.⁽¹¹⁾

It was the CIA's recommendation, apparently, that was made policy, for the investigative procedures used since 1953 have been vestigial and the handling of the subject by the authorities tended to make witnesses look ridiculous. In spite of the unfavorable publicity accorded witnesses, reports persisted, and no doubt in response to official behavior several civilian study groups were formed to receive reports and investigate sightings. The most successful of these groups is the National Investigation Committee on Aerial Phenomena (NICAP). NICAP's membership is well dispersed geographically and acts to learn as much as possible from sightings. The large number of scientific and technical personnel in the NICAP membership aids the quality of their evaluations. A summary of characteristics of the UFO phenomenology published by NICAP

in 1964⁽¹²⁾ contains 575 reports that were extensively checked by NICAP for accuracy.

A series of sightings in 1965 and 1966 received considerable public attention and after the poor public reception given the official explanations, the Air Force felt compelled to contract for a 15 month (later stretched to 18 months) scientific study to be performed at the University of Colorado under the leadership of E. U. Condon, a highly respected physicist. The Condon Committee is due to complete investigations at the end of June 1968; its report will be reviewed by the National Academy of Sciences (presumably to validate that the study was indeed the objective pearl of the scientific method that was desired), and is expected to be made public in October 1968. Unfortunately, the dismissal of two members of the Committee in February 1968 resulted in publicity suggesting that the study was not, in fact, objective. It remains, therefore, to see the final report to determine the worth of the study.

In the meantime, the respectability accorded UFOs by the \$500,000 study contract permitted a considerable amount of scientific interest to surface. Astronomer Hynek has made a number of public statements on the basis of his long involvement as a consultant to the Air Force; atmospheric physicist James E. McDonald has turned his attention full time to the subject, and a number of scientific and technical journals have printed some dialogue - notably Science, the AIAA Journal, Bulletin of the Atomic Scientists and the Journal of the Astronautical Sciences. It is also noteworthy that the University of Toronto has recently formed a UFO study group.

Even the Soviets, who previously refused even to discuss the subject now admit to having a study group with good qualifications. The USSR Academy of Sciences still holds to the orthodox scientific view that UFOs are a nonproblem, however, using the same arguments we heard so long. These arguments are just as invalid in the USSR as in the USA.

It therefore appears that the subject is slowly and finally being regarded as a fit subject of scientific inquiry. It is hoped that enough scientists will acquaint themselves with the subject so that progress can finally be made.

(Reference 13 is a good account of how the UFO phenomenon was treated in the U.S. and is recommended to those wondering how science came to consciously ignore the subject.)

PART 2: UFOs -- ASTRONOMICAL ASPECTS

The astonishing thing would be if they did not exist.

Jean Cocteau

We saw in Part 1 that the historical aspects suggest an extra-terrestrial explanation to UFOs. While it has not been established that the contemporary phenomena are extensions of the historical, there does seem to be a continuity in the descriptions of the phenomena described. We shall therefore look at contemporary astronomical knowledge and theories and ascertain the likelihood of the existence of other highly developed life forms.

To begin with, the observable universe -- that is, the distance to which we can observe luminous objects -- is several billion light-years in radius (a light year is the distance light travels in a year at a rate of 186,300 miles per second. The sun is 8 light minutes from the earth. The next-nearest star is 4.2 light years away). Within this vast volume we find hundreds of millions of galaxies. Our own (Milky Way) galaxy is similar to many of those we see at great distances. It is a lens-shaped assemblage of some 100 billion stars having a diameter of about 100,000 light years. The sun is but one of its component stars, and lies about 30,000 light years from the center, close to the plane of symmetry.

Now let us just consider the stars in our own galaxy -- specifically excluding those in neighboring or distant galaxies. We would like to estimate the number of stars having planets roughly similar to the Earth. From the statistics of stars within 15 light years of the sun we find that only about one-third are single, the rest binary or multiple. Since planetary orbits are often unstable in multiple systems (depending on the details of the configuration) we will say that only 30 billion stars in our galaxy now have a dynamical environment that permits planets to exist around them. Will these stars have planets? We cannot state with assurance that they will; however, current knowledge supports the theory that planetary formation is a natural adjunct to formation of the star itself from the interstellar gas cloud.

We would therefore expect about 30 billion stars to have one or more planets. Now, we can reject certain classes of stars as candidates for habitable planets, because their lifetimes are too short (these are stars of high mass). Others can be rejected because of variability in light output, a characteristic that would make evolutionary development of life much more difficult. In fact if we select only those stars similar to the sun (whose peak of radiation energy coincides with a region of terrestrial atmospheric transparency) we have only a few percent of the total -- about one in 30. Therefore, we would expect about 1000 million suitable solar type stars exist. Of these, it is estimated by various astronomers that 200-600 million have planets at about the right distance and have been around long enough that life forms as developed as our own could exist. Implicit in further discussion are the assumptions that:

1. Planets and/or life evolves to a mutual compatibility;
2. The life force, whether spontaneous or otherwise, is such that whenever the environment is favorable, life will exist;
3. Our own history of past evolution and development is neither slow nor fast, but average and typical for life forms. (Ours is the only example available and no one has yet demonstrated that the "average" galactic life form should be any different.)

Now let us turn momentarily to time scales. The sun and earth are on the order of 5 billion years old. We might define modern man as being about 5000 years old (Stonehenge is 4000 years old) -- just one millionth of the earth's age. The age of science is certainly not more than 500 years, so our scientific and technical development has thus far occupied only one ten-millionth of the earth's life span. We expect the sun will burn another 5 billion years before significant changes in its brightness occur. Now the age of the galaxy is between 5 and 10 billion years; therefore among the 200-600 million stars we would expect to have acceptable planets, some would be older than the sun, some younger (for star formation is still continuing, even though at a lesser rate than in the galaxy's early history) and some the same age. It should be clear from assumption (3) and the example of our own

development, that among the populated planets those younger than the sun would be peopled by beings very much behind us technologically, while those on older planets would be extraordinarily advanced (remember our progress of 500 years and note that some planets could be as much as a few billion years older). Indeed, we would be surprised to find someone else at just our stage of technical development. For the purposes of this paper, we can ignore both the multitude younger than ourselves and those at our point of development. Even so, we are left with the possibility of 100,000,000 planets in the galaxy having life forms very much advanced from us. (This number would be reduced significantly if life forms destroyed themselves soon after reaching our stage of development. This is a philosophical point on which I am optimistic -- I believe the majority of races will learn to survive.) If these stars are uniformly distributed in the galactic disk, the average separation will be about 10 light years.

The usual scientist's reaction at this point is, well, even if the assumptions are correct and this number of advanced civilizations does exist, contact is still impossible because of the speed of light limitation of the theory of relativity. An excellent example of this kind of reasoning can be found in Ref. 14. My reply is that such a statement would appear to be shortsighted. For the moment, let us ignore the possibilities of overcoming the long time of travel by suspended animation and the like. Recall that our own physical theory has been developed in only 500 years. What can we expect in the next 500? Or 1000 or million or even billion years? I suggest that if a way to circumvent the speed of light restriction is possible, it has already been found by someone in our galaxy. (I haven't the faintest idea how this might be done and I fully agree that our own experimental data appear to accurately confirm the existence of this limitation.) If it has been discovered by one, we certainly would expect it to be used; if no other planet's inhabitants independently discovered the means, it makes little difference for such a thing could be taught by the discoverer. Thus we may conclude that it is very likely that at least one, and probably many of the 100 million advanced planetary populations is capable of interstellar travel.

The next question is, of course, have any of them been here? That question cannot yet be answered definitively. Without knowing what kind of phenomenology extraterrestrial visitors might exhibit, I will fall back on my scientific, mechanistic attitudes and say it makes sense to look for some kind of vehicle or spaceship. It appears that the class of phenomenology called UFO reports may contain, as a subset, actual observations of such craft. We shall now turn to the reports to see when and where things are seen and by whom and what phenomenology, if any, is revealed by the reports.

(Further information about the astronomical and biological possibilities are in Ref. 15, whose principal defects are (1) the authors' uninformed rejection of UFO phenomenology as being relevant to the subject under discussion, and (2) their meek acceptance of the speed-of-light restriction as a universal truth. References 16 and 17 provide more detailed and more technical discussions of some aspects of the problem.)

PART 3: UFOs -- THE CHARACTER OF REPORTS

Any collection of reports of unknown aerial sightings by the public will include a large percent of noise - sightings of something explainable. The reports are made because the appearance falls outside the range of the observer's experience, and the observer believes it is sufficiently anomalous to warrant the attention of authorities. Thus, any large collection of reports will include descriptions of aircraft, balloons, spacecraft, astronomical objects, atmospheric effects and the like. Often the practiced and perceptive analyst can recognize the stimulus, particularly if he has access to records of aircraft, balloon, and satellite movements, meteorological data and astronomical phenomenology. Recognition of stimulus is aided by a high quality report which is as quantitative as possible and which shows the observer to be able to differentiate between observation and interpretation. Of course a number of reports will be so lacking in details that no conclusion can be reached about what was seen. These are of little use; they may, however, serve as corroborating evidence to another, higher quality, report and should not, therefore be rejected. The really interesting class of reports is that reporting phenomenology which is clearly extraordinary. The observer's qualifications may be such that the report is not only highly credible but is articulate and quantitative as well. It is this subclass of reports, variously estimated at 5 to 20 percent of the total, that offer hope of our learning what is going on.

Hynek considers two parameters of reports, credibility and strangeness, and suggests that the investigator really needs only to be concerned with reports having high strangeness and high credibility. The physical scientist is in a position to evaluate strangeness, the social scientist should be able to provide some measure of credibility. Hynek also comments on a number of beliefs about UFOs and reports stating, ⁽¹⁸⁾ among other things, that most reports are made by people who previously never gave much thought to UFOs; that reports are not always vague; and that well educated, well trained, reliable, stable people also contribute reports. These conclusions have been reached by most people who have taken the trouble to collect and investigate reports first hand.

To illustrate the character of reports, I will quote several narratives from the literature. (Narratives, of course, are just the beginning of any report. Quantitative information, usually not given in the narrative must be obtained by careful interview of the witness.) The first is taken from a collection of 160 reports by Olsen.⁽¹⁹⁾ It was originally made to NICAP.

Date: 24 April 1962

Place: Springfield (Delaware County), Pennsylvania

First witness, J. A. Gasslein, Jr. (Lt. Colonel, USAR Ret.) reports:

"Time: Approximately 1945 hours, weather: clear, cloudless, medium blue sky, visibility good.

"My wife was driving her mother home following the latter's visit to our home. They had driven around the block to higher ground when my wife's mother looked out the car window and saw a large object. It was moving slowly and silently in an east-to-west direction at not over 50 ft. above street level. (Determined by the proximity to and relationship to the size of the Cape-Cod-type bungalows over which the object was passing.) My wife then plainly saw the object herself.

"Anxious to have me see the object, my wife quickly drove the car back to our house and attracted my attention. I had been working in the basement. I ran out of the house and up the street for a view. By the time I saw it, the object appeared to be about a quarter to a half-mile away, moving in a westerly direction. I saw it as an object smaller at the top than at the base, seemingly suspended in the air at an angle of about 45 degrees from my position, and giving off colored lights. I know that the object was not any kind of conventional aircraft or balloon.

"Having had the advantage of a closer viewing than I, my wife describes the object as follows..

" 'The UFO appeared to be about the size of one of the Cape Cod houses over which it passed, which would make it approximately 30 ft. in diameter and about the same dimension in height. It was circular, surmounted by a dome giving off flashes of green light. The center section rotated a series of square shaped "windows", each giving off a brilliant white light. The base section was somewhat saucer-shaped,

curved upward. Shafts of white light were directed downward from the base.' Unfortunately, my wife cannot recall if the exterior was metallic in appearance. In any event, the object had a well-defined outline. Again, it moved silently. There was no evidence of occupants of the UFO.

"Approximately 20 to 25 minutes following the first sighting described above, the following sighting occurred:

"Returning from taking her mother home, my wife drove the car into our driveway alongside the house, headed westward. In the rear of our home was a wooded park area. My wife walked down the driveway to enter the house. Coming up the driveway was a neighbor friend, a young lady 20 years of age. In a tone of astonishment, she called my wife's attention to the park area, from which was emerging an object of the same description as outlined above moving easterly at low level -- not over 50 ft. above ground level, as judged by the trees in the area -- the UFO proceeded relatively slowly and without sound. It was approaching the rear of our home and adjacent properties.

"Again, my wife called me from the basement. By the time I got outside, the object had made a 90 degree turn northward and was proceeding parallel to the backs of the houses in the same line as ours. It was perhaps 150 - 200 yards distant. My observation of the characteristics of the UFO tallied with my wife's and the young lady's. Each of them independently made a pencil sketch within a few minutes after the sighting, and the sketches were substantially alike.

"All told, there were at least 15 persons in the vicinity who acknowledged seeing the object at about the same time as the sightings made by my wife and myself."

Another witness, P. T. Scattergood, reports:

"Around 8 (p.m.) I stepped out the front door, facing south and saw a brilliantly lighted object low in the southern sky. At first I took it to be a jet taking off from Philadelphia Airport, which is in that general direction. But I could hear no engine noise and it was traveling too slowly to be a plane. Also it did not have the usual blinking lights.

"It appeared to have a row of yellowish lights (which I took for the windows of the "jet") with a clear green light at the top. As I

watched, the row of lights appeared to be obscured as though a large paddle-wheel were revolving and blotting them out, beginning with the rear lights and proceeding forward. Since the object was moving west, I saw the right hand side of it. The periodic appearance and disappearance of the lights was perfectly regular. The top green light was constantly visible. I stood on the pavement and watched the object sail leisurely to the west until it disappeared behind some trees. The observation probably lasted from 5 to 10 minutes."

This report has the desirable features of the UFO being seen by a number of people (about 15) of which two actually made reports. (Hynek estimates the number of sightings to be about 10 times the number of reports turned in). Other desirable aspects of this sighting are that it was made during daylight; that it was near enough that some details of its configuration were observable; and, it was visible long enough to allow the observers to consider "explanations" as they watched it.

The second example is reported by James F. McDonald in T. Bloecher's book on an intense period of UFO activity in 1947. The report was made 20 years after the sighting to Prof. McDonald for the reasons given at the end of the quotation.

"Mrs. Olavick was in her kitchen at 2101 East Hawthorne Street, Tucson, while Mrs. Down was out in the back-year patio. Suddenly Mrs. Down called her out excitedly, and both proceeded to observe what had caught Mrs. Down's eye. The time was just after the noon hour; Tucson's skies were completely cloudless. Somewhat north of their zenith lay an unusual, isolated, "steamy-fleecy" cloud at an altitude which Mrs. Olavick found difficult to estimate, though she recalled that it seemed lower than average for that time of year (thus, perhaps at or below 10,000 feet, say). No other cloud was to be seen in the sky. In and out of the cloud moved a number of dull-white disc-like objects that rose and fell in an erratic manner, occasionally disappearing into or above the unnatural cloud. She said that these objects were round in planform but were not spherical, for they frequently tipped a bit, exploding a flattened-sphere form. She estimates that they watched these objects cavorting near the cloud for perhaps five or six minutes before the entire group suddenly disappeared within the cloud or perhaps above it.

"After a minute or so, as she now recalls it, a new object, perhaps three of four times as large as the little objects, came out of the cloud on its east side. After it emerged, the small objects began to emerge also, taking up a V-formation pattern behind it. The V comprised a line of four-abreast just to the rear of the large object, then a line of three-abreast behind that, and finally two-abreast in the rear. Thus the point of the V was to the rear (in the sense of the emergent and subsequent motion). This formation permitted the first accurate count of the small objects, nine in all. No sooner had the last pair emerged than all ten objects shot off to the north-east, climbing out of sight in a time that she thought was probably two to three seconds. She does not recall what happened to the cloud after the ten objects departed.

"I (McDonald) have spoken with Mrs. Olavick several additional times, following her first call. Her account was presented in an unembellished manner, and her descriptions were carefully framed, specifying just which parts had become less distinct in her memory. But the basic vividness of her memory of this observation she stressed repeatedly. I had to explain that it was by no means clear that the objects she saw were identical with those reported by Kenneth Arnold two months later. When I queried her as to why she had not reported them, she pointed out that she and Mrs. Down were entirely convinced that they had been fortunate enough to witness some new American military vehicles about which the general public had not yet been informed. Later she heard of the "flying saucers," and she and Mrs. Down, when they rejoined their husbands in mid-summer in Iowa, told them about their own observation. The husbands, she recalled, made such a joke of it that they ceased mentioning it.

Again we have a daytime sighting of several minutes duration, with two witnesses. As is often the case when the phenomenon appears mechanical, it was interpreted as some secret government development. Ridicule of the sighting by family members and friends (if not by authorities) is frequently mentioned as a reason for delayed reporting of sightings.

A third report is taken from a paper Prof. McDonald presented at the 12 March 1968 Canadian Aeronautics and Space Institute Astronautics Symposium, Montreal.

"At about 5:15 a.m., PDT, on the morning of July 4, 1967, at least five witnesses (and reportedly others not yet locatable) saw an object of unconventional nature moving over Highway 5 on the edge of Corning, California. Hearing of the event from NICAP, I began searching for the witnesses and eventually telephone-interviewed four. Press accounts from the Corning Daily Observer and Oakland Tribune afforded further corroboration.

"Jay Munger, operator of an all-night bowling alley, was drinking coffee with two police officers, James Overton of the Corning force and Frank Rakes of the Orland force, when Munger suddenly spotted the object out the front windows of his bowling alley. In a moment all three were outside observing what they each described as a dark gray oval or disc-shaped object with a bright light shining upwards on its top and a dimmer light shining downward from the underside. A dark gray or black band encircled the mid-section of the object. When first sighted, it lay almost due west, at a distance that they estimated at a quarter of a mile (later substantiated by independent witnesses viewing it at right angles to the line of sight of the trio at the bowling alley). It was barely moving, and seemed to be only a few hundred feet above terrain. The dawn light illuminated the object, but not so brightly as to obscure the two lights on top and bottom, they stated.

"Munger, thinking to get an independent observation from a different part of Corning, returned almost immediately to telephone his wife; but she never saw it for reasons of tree-obscuration. At my request, Munger re-enacted the telephoning process to form a rough estimate of elapsed time. He obtained a time of 1-1.5 minutes. This time is of interest because, when he completed the call and rejoined Overton and Rakes, the object had still moved only a short distance south on Highway 5 (about a quarter of a mile perhaps), but then quickly accelerated and passed off to the south, going out of their sight in only about 10 seconds, far to their south.

Paul Heideman, of Fremont, California, was driving south on Highway 5 at the time of the above sighting, along with a friend, Robert King. I located Heideman and obtained from him an account of his observation made from a point on the highway north of Corning. He saw the light from the object, and had veered east (a turn not seen from the more restricted viewing point of the bowling-alley parking lot). Heideman said that, when first seen, it lay almost straight down Highway 5, serving to check the estimate of the other observers that the object lay only a few city blocks to their west.

The weather was clear, no haze, no wind, according to the witnesses. Munger's concise comment was, "I've never seen anything like it before." He estimated its "diameter" at perhaps 50-100 ft, and its vertical thickness as perhaps 15-20 ft, with some kind of edge (band) perhaps 5-10 ft thick. No sound was ever heard. Overton stated to me that he had no idea what it was, but that "there was no doubt it was a craft of some sort."

The next example is from a report I personally investigated. It occurred in the area where I was reared; the observers are known to my family; I am familiar with the natural phenomenology of the area.

Date: 10 October 1966

Place: Near Newton, Illinois

First witnesses: Mrs. A (she prefers not to be publicly identified because of the reaction of friends and neighbors).

Time: 5:20 p.m.

"Mrs. A was in her kitchen preparing supper; five of her children were playing outdoors. The children shouted to her to "come out and see the silent plane". She writes "I glanced out the south window and there it was coming into sight just south of our 72 foot silo moving very slowly from east to west. It was about 35 feet high. My first thought was that it was a plane making an emergency landing, but when I saw it in full view, I knew it was no plane, not like anything I have ever seen. I hurried outside to join the children in the yard. It

continued to move in a straight line to the west. We could see it clearly as it drifted over a 50 by 100 foot machine shed being built at the time [the workers were, however, in the fields this day]. It appeared to be larger than our car, and was more oval. There was a bluish glow around the ends, top, and bottom of it. It (the glow) wasn't bright, since it was daylight yet, but more like a low cloud, haze, or fog; or a mixture of bluish-grey tiny bubbles floating along around it. The object was seen clearly. It was blue in color and appeared to be made of metal. You could see [longitudinal] seam lines. There was one black window. I thought they (assuming someone was in it) could see out but we could not see them. I kept looking for someone to peep out and wave, but don't recall seeing or feeling anything at the time. There was a brownish-gold design on the lower back half. A raised part was on the top near the back which was noticed by all the children. It moved very quietly, making no sound at all except for a whirling or vibrating sound for 1 or 2 seconds as it drifted on toward the west... We followed it down the yard and lane, continuing to watch it as it was 300 feet, then 200 feet from the north and south gravel road and the REA electric line which is on the west side of the road. We were talking together, all very excited about what it was, where it came from, if there were people in it, and if it would rise to clear the electric line. It did; it rose so quickly and was out of sight in just a few seconds. Our eyes could not follow it fast enough. This was certainly a fantastic thing."

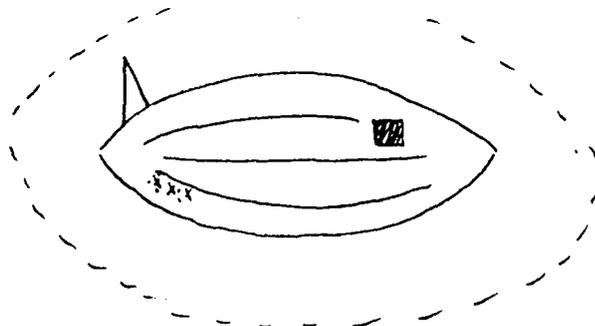
The questionnaire, a lengthy correspondence, an interview in June 1967 and other checking produced the following details:

Meteorology: Clear, warm, dry weather, cloudless.

Astronomical: Moonset 3:51 p.m. EST

Sunset 5:29 p.m. EST

UFO: Prolate spheroidal shape as shown below.



The surface appeared to be non-specular, like dull aluminum or metal, and blue, the color probably deriving from the self-luminous halo. Longitudinal seams were apparent, but no rivets or such were seen. The black rectangle was assumed to be a window and appeared to be recessed. It was not shiny, but "like the dark of night." The surrounding glow was partly opaque, yet self luminous. It was darker than the sky and extended about 1/4 the object's length in all directions. The halo was particularly opaque at the ends of the object, obscuring the underlying parts. The design at the lower rear looked like a pattern of crosses and dots like (1) or (2)



Mrs. A says the glow obscured the design and in any case her attention was fixed on the "window". The only sound heard occurred when the UFO was nearest the unfinished shed, being constructed of a wooden framework covered with ferrous sheets. It is possible that some sheets were caused to vibrate. No electromagnetic effects were noted (TV was off) and no electrostatic or other effects were noted by Mrs. A or her children. As the UFO disappeared, Mrs. A was just looking along the road for a car; two of the children said the UFO pitched nose-up and as it went up a light or flame of orange color was seen at the rear.

Enough angular data was provided from building and landmark placement and sizes that it is possible to estimate the size of the metallic portion of the UFO at 16 to 20 feet in length, seen at a distance of 150 to 300 feet. Its linear speed was about 4 to 8 miles per hour, based on the above distances and timings obtained by re-enactment. It was visible for 4 minutes. Angular size was 2 3/4" at arms length.

In an effort to quantify the colors somewhat, a Nickerson color fan was used by the witnesses to select the colors most nearly like those on the UFO. The color selections were made independently in direct sunlight with the color fan held in front of a white field. The colors given were

Metallic surface

Mrs. A.	7.5 PB - 7
Child 1	2.5 PB - 8/5
Child 2	7.5 B - 3/5

Glow (The color of "grayness" was not uniform)

Mrs. A.	5 PB - 8/5
	2.5 PB - 8/5
Child 1	5 PB - 7/7
Child 2	2.5 PB - 6/8

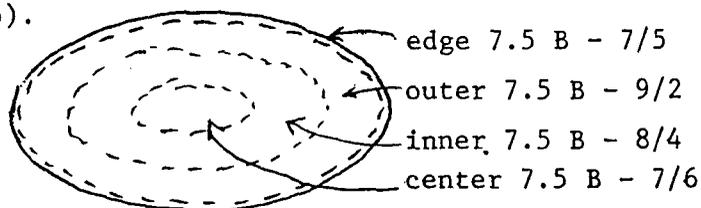
Orange flare on ascent

Child 1	5 YR - 7/11
Child 2	5 YR - 7/11

Second event: Same day, 6:30 p.m., sky is now dark. Location is in town of Newton, Illinois, about seven miles north west of first event.

Mrs. B was walking down the steps of a friend's house toward her car. "As I started down the steps my eyes were drawn by something in the south eastern sky. I stopped a moment and saw very clearly a luminous bluish object moving quite rapidly from east to west. It seemed to be rather low in the sky, but at night it is difficult to judge distance either as to how high it was or how far away it was. It did appear larger than a full moon, but instead of being round it had a definite oval shape. I would say an elongated oval. There was no sound that I could detect, and while it appeared to be blue and purple, there was also a whitish glow in it. The outline of the object was very distinct. I watched it until it disappeared behind some trees and a house a little less than a block from me."

Further correspondence and discussion brought forth the following information: The major axis of the oval was horizontal; its path was not perfectly horizontal, but somewhat undulatory. Its color was brightest and whitest at the center, becoming more blue and darker toward the edges. Mrs. B. estimated the colors as shown below (Since the interview was conducted in the evening, the color fan was illuminated by an incandescent lamp).



In itself, this last report, which describes a sighting of 15 to 20 seconds duration, contains insufficient information to come to any conclusion. However, when put alongside the earlier report there is the possibility of a relationship -- could these be reports of the same thing seen under differing conditions of illumination? We'll never know positively but the suggestion is quite strong.

As far as Mrs. A's sighting is concerned, we have obtained enough data from follow-up inquiry and on-site investigation to rule out known airborne craft, meteorological, and astronomical phenomenon. Yet the observations are sufficiently detailed to give us adequate confidence that some sort of machine was present, behaving in a very extraordinary way. Some parts of the object are similar to other reports (the effervescent glow, the orange color on acceleration, the very black "window" (which sounds like a black-body absorber)). Other parts are unusual -- the UFO's prolate spheroidal shape and the pattern (although seeing the pattern would require the observer to be quite close). The original correspondence and data sheets on Mrs. A's sighting run to over 40 pages. In correspondence and interviews over a period of 8 months no substantial inconsistencies could be found. The geometric data, particularly, are so intricately related that it is most unlikely that the witness could have fabricated a story so well. In addition, acquaintances made it clear that Mrs. A. is not prone to story telling and that "she is too busy to dream up such a tale". Mr. A, who returned from the fields that evening found the household still considerably agitated four hours after the event. He said he had no idea what it was his wife and children saw, but he obviously treated the sighting seriously for he went to considerable trouble to comply with a request to measure the sizes and locations of each building and tree on the farm.

It is this kind of sighting - the kind which is clearly inexplicable in contemporary terms, which causes me (and other interested persons) to take the whole subject so seriously. Hynek suggests that it is just this kind of sighting that often goes unreported, because the witness -- especially if his education or training are appropriate -- knows that what he saw was unambiguously extraordinary. And machine-like. A number of such reports were belatedly made after the University of

Colorado study effort got underway. Apparently the witnesses waited for the respectability the UOC study brought to the subject. It is hoped that the scientific and intellectual climate will change to the point where witnesses, particularly those having the best qualifications, can feel free to report sightings and know that they are being taken seriously.

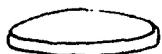
Not all reports are visual reports only. An example of a photographic observation studied in detail is given in reference 20. Here, a 16mm movie of two objects sighted in the daytime provided the analyst enough information to conclude that no known phenomena could have caused the images. This report is, hopefully, the first in a series of instrumented sightings carefully and adequately studied.

PART 4: UFO'S - PHENOMENONOLOGICAL ASPECTS

Since I have made a first hand study of only a dozen sightings, the phenomenology described in this section will necessarily be based on descriptions of reports collected by others, particularly NICAP, APRO, UFOIRC, and Vallee. There is, unfortunately, no central file of reports accessible to the interested scientist, although large numbers of reports are in the hands of the organizations mentioned above. (The extensive Air Force files are of very limited use, from what I can tell, because of the extremely inconsistent quality of investigation.) In an unfortunate number of cases the report consists of little more than a narrative. My experience with the Newton sightings suggests that quantitative information is available if the investigator takes the trouble to personally make an on-site study. True, it may not be the quality of an instrumented sighting, but enough quantitative data are available to permit meaningful study of sighting reports.

NICAP's document "The UFO Evidence" contains a summary of patterns in appearance and behavior as determined from cases they had studied through 1963. Regarding appearance, the most common type is a disc shape, followed by spherical, oval/elliptical, cylindrical, and triangular. The breakdown of NICAP's 575 cases goes as follows

Disc	26 %	149 cases
Round	17 %	96 cases
Oval/elliptical	13 %	77 cases
Cylindrical	8.3%	48 cases
Triangular	2 %	11 cases
Other (Radar, light source, not stated)	33.7%	194 cases



Obviously, there may be some mis-classification within the first three groups because of projective effects.



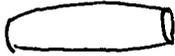
Discs may be coin-shaped or lens shaped (double convex).



The domed disk is plano-convex, (sometimes double convex) with a smaller radius bulge atop the convex side. The



saturn disk is a sphere or oblate spheroid with a thin ring projecting from the equator. Similar objects are



seen without the equatorial ring also. Another subset are the hemispheric variety, sometimes with a small protrusion at the apex and usually seen with the flat side down. All the above mentioned objects are generically oblate with the axis of symmetry usually seen oriented vertically. Another group are prolate, having the major axis horizontal, usually. This includes the elliptical (football) variety, the triangular or tear drop variety, and the cylindrical or cigar shaped species.

Reported colors depend strongly on the luminous environment.

NICAP finds that of the 253 cases of daytime observations where color is stated, the results are

Silver or metallic	34.8 %	88 cases
White	32.0 %	81 cases
Specular	13.4 %	34 cases
Gray	7.5 %	19 cases
Black	12.3 %	31 cases

It should be noted that a few reports exist suggesting that the brightness of the object first thought by the observer to be reflected sunlight, was in fact self luminosity, as ascertained by the geometry, presence of clouds and the like.

In the dark-sky observations, the outline or shape of the UFO is often not seen. What is seen is a light or series of lights, sometimes extremely bright. Luminous rays are also reported, going up sometimes (particularly from domed discs) downward (from hemispheric types principally, also from discs) and from one UFO to another (spherical types). The luminous column is usually not divergent. Excluding these interesting rays, the reported colors of UFOs seen at night are, for 162 cases

Red	38.3 %	62 cases
Orange	15.4 %	25 cases
Yellow	17.3 %	28 cases
Green	13.0 %	21 cases
Blue	16.0 %	26 cases
Purple	0	0

Brightness and color changes are also noted, and while the sample is small (82 cases) NICAP found the following: Of the 25 cases showing a change in brightness, 23 of the changes occurred at the moment of a velocity change (a change of either magnitude or direction). Concerning the change of color, 23 cases showed a color change related to acceleration. While the supporting data are not conclusive, it appears that the spectral shift is to the red upon acceleration.

It should also be noted that UFOs reported at night have only a star-like appearance unless very close. Distant UFO's sometimes turn off and on. When closer to the observer, reports often indicate a number of lights, located at the top and around the rim usually. Sometimes the lights flash on and off or change color rhythmically. Several cases have been reported of the UFO flashing its lights in response to the witness flashing hand or vehicular lights. In other cases the lights winked off with the approach of another car or an aircraft, only to turn on again when the vehicle had passed.

While practically any luminous behavior could be produced by someone with sufficient time and money, kinematic behavior at odds with experience or, preferably, at odds with Newtonian behavior are suggestive of non-terrestrial origin.

A common kind of motion is called oscillation by NICAP and is subdivided into "wobble on axis" (frequently described also as fluttering, flipping, and tipping); pendulum motion on slow ascent, hovering and decent (also called "falling leaf motion"); and occasionally a side-to-side oscillation observed as the UFO proceeds horizontally. These motions are most often performed by discs, although examples of similar behavior by other forms also exist.

The last class, that of violent and erratic maneuvers, most clearly lacks an explanation from current physical theory. Using terms like bobbing, erratic, jerky, zig-zag, dark, and shot away, witnesses describe motions involving high angular accelerations and velocities. A number of radar observations appear to substantiate this anomalous behavior. Among the 40 cases showing such characteristics, NICAP finds that 28 percent were reported by scientific or other appropriately experienced personnel.

Variation of Sightings with Time

It appears that the UFO phenomenology has been with us from the earliest times. In the last twenty-five years, however, there seems to be a drastic increase in the number of sightings. It is practically impossible to estimate the number of world-wide sightings because of the lack of suitable data collection means. In the U.S., the principal depositories are currently the Air Force, NICAP, and APRO. It is estimated that currently these sources together receive about 2000 reports per year. Since only about one sighting in 10 is reported, the number of sightings is about 20,000. But of these, 80 to 95% are not interesting, leaving us with "only" 1000 to 4000 worthwhile sightings per year for North America.

In addition to the background of reports more or less constantly flowing in, occasional periods of intense activity are also noted. One such period was October 1954 over most of France. NICAP lists a number of these "flaps". Sometimes they are very localized, covering only a small portion of a state for a period of a few weeks.

APRO concludes, on the basis of the reports available to them, that the patterns of appearance follow phases - atomic test areas and installations in the late 1940s and early 50s, rivers, reservoirs and bodies of water in the late 50s and early 60s and now electrical distribution systems. Convincing evidence to support this hypothesis has not been published; however, if the hypothesis were true it would certainly raise a lot of question.

McDonald and others suggest that reports of the last few years show more sightings of objects at low altitude (or landed) and more sightings made from urban areas (in the 40s and 50s sightings were generally inversely correlated with population densities).

Interactions with the Environment

Interactions of UFOs with the environment produce a kind of believability that pure visual observations will never do. Some examples of interaction are cases showing electromagnetic disturbances in practically every kind of device -- radio, TV, auto ignition, aircraft electronics, compass, magnetometer, magnetic automobile speedometer, etc. NICAP lists 106 examples. NICAP also lists 81 cases of radar

tracking of UFOs, most of which were simultaneous with visual sightings, and a number of which involved use of interceptors. Among the physiological effects noted are burns, temporary paralysis, prickling sensation, and eyes irritated as by ultraviolet light. A number of witnesses claim to have observed landings; depressions in the ground and damaged vegetation usually result. At a landing site in France, only weeds grow in a nine foot circular area where a disc was seen to land two years ago, despite efforts to replant.⁽²¹⁾ At another landing site, French railway officials calculated that a weight of 30 tons would be required to make the depressions found in some railroad ties where a UFO was reported to have landed.

While most UFO's are silent, some have made sounds described as hissing, rushing, swishing, humming, whirring, whining, droning, like thunder, like shotgun, and a series of staccato explosions. In the past the absence of sonic booms from supersonic UFO's bothered many scientists; it appears now that that problem might be overcome by surrounding the craft by a corona discharge (which incidentally would be a luminous blue glow around the object).⁽²³⁾

I will purposely not comment much on occupants, except to say that there are a few (very few) reasonably reliable and carefully investigated reports of UFO occupants. For the time being, I would prefer to concentrate on reports of the objects, however, as the frequency of reliable occupant reports is so low. I have no bias one way or the other along these lines. If UFOs are of extraterrestrial origin, they may or may not be "manned". If manned, one should expect an occasional appearance. Readers more interested in this aspect of UFOs are referred to reference 24.

In summary, we see a wide, almost exasperating range of reported phenomenology. By careful interviews with witnesses and analysis of a large number of reports the significant patterns in phenomenology should appear. If the UFOs are a new manifestation of nature, they should exhibit some patterns of appearance or behavior which would aid in identifying and predicting them. If of extraterrestrial origin and intelligently guided it may be possible to anticipate appearances. This will be discussed in the next and final essay.

PART 5: UFOs -- HOW TO PROCEED AND WHY

We are so far from knowing all the forces of Nature and the various modes of their action that it is not worthy of a philosopher to deny phenomena only because they are inexplicable in the present state of our knowledge. The harder it is to acknowledge the existence of phenomena, the more we are bound to investigate them with increasing care.

Laplace

Laplace's remarks are certainly as true and significant for us today as for his contemporaries. In the preceding essays I have suggested that there exists a class of phenomena rather widely occurring today (and perhaps since earliest times) that is elusive, puzzling and often at variance with known scientific and technical experience. What are we going to do about it? What should we, what can we do about it?

J. F. MacDonald suggests that the UFO phenomena lie somewhere in the following categories of explanation:

1. Hoaxes, fabrications, and frauds. Report files contain examples of these; investigators believe about 5 percent of all reports made are in this category. Detailed study, however, usually uncovers such reports.
2. Hallucinations, mass hysteria, and rumor phenomena. Present understanding of psychology does not admit many of the significant reports to be explained in this way.
3. Misinterpretations of well known physical phenomena (meteorological, astronomical, optical, etc.). By far the largest percentage of reports fall in this category. Study by an experienced investigator can usually identify these.
4. Poorly understood physical phenomena (rare electrical or meteorological effects, plasmas). Certainly a distinct possibility in a number of cases, it is a category worthy of careful study. Some of the most interesting cases, however have sufficient observational detail to eliminate this possibility (I am referring to reports of unambiguously machine-like objects).

5. Advanced technologies (test vehicles, satellites, reentry effects). Again, some reports can be attributed to this cause, but most cannot.

6. Poorly understood psychic phenomena (psychic projections, archetypal images, parapsychological phenomena, etc). It is difficult to comment on this possibility because of the current lack of knowledge of parapsychology. While a (small) number of UFO reports do exhibit aspects of parapsychological phenomenology⁽²⁵⁾, general relationships have yet to be convincingly demonstrated. Reference 6 deals with this explanation.

7. Extraterrestrial probes. A possibility commonly held by the public and commonly rejected by scientists. Prof. McDonald believes a number of sightings are best explained by this hypothesis.

8. Messengers of salvation and occult truth. This explanation is listed because of the nature of certain reports (particularly "contact" reports -- reports involving communication of UFO occupants and the witnesses) and because of the historical aspects of the phenomenology. See reference 5 for elaboration.

Perhaps, to play it safe, an additional category should be listed:

9. Other

Clearly, the explanation of UFOs will interest someone. Psychologists have an interest in 1, 2, 3 and 6; theologians in category 8, scientists in 4 and 7. Therefore, whatever the explanation, it is a problem of at least average interest. If, by chance, the explanation is 7, or even 8 (and possibly 6) the value to society would be profound and significant. In this sense, an identification of the phenomenon would be a task of highest potential urgency.

How might it be done?

Because of the transient nature of UFO's we cannot expect to have the interested scientist rush to the spot to make his own observations. Reports so far accumulated, however, show that UFO's sometimes appear frequently in certain areas for a short period of time (a so-called "flap"). One characteristic of the flap is a larger percentage of sightings of objects at low levels than one normally obtains. If the reporting and analysis system were responsive enough, men and instruments

could be dispatched when a flap was recognized with a reasonable hope of making first hand observations. I would therefore suggest the following:

1. Organization of a central report receiving agency, staffed by a permanent group of experienced UFO investigators and having on call specialists in astronomy, physics, optics, atmospheric physics, psychology and the like for application when needed.

2. This agency should be readily and instantly accessible to the public for the purpose of reporting. (Witnesses should be able to turn to someone other than the press to make reports.) Report forms could be made available in Post Offices, for example. More urgent reports could be made by toll-free telephone lines. (Radio amateurs have recently begun cooperating with NICAP to provide an alerting system.) Because many sightings are made at night when most services are closed, the local police office should be prepared to receive reports of sightings. Experience indicates that witnesses usually turn first to the police, particularly if the UFO was close or if the witness was frightened. Such a local "data center" would be very useful for identifying flaps and could possibly serve to dispatch personnel to an area of interest. Care must be taken to properly inform the officers involved about the aims of the project and requests for assistance should be made in such a way as to minimize additional police work. An awareness of the problem by a dispatcher or desk sergeant might be sufficient to draw attention to a developing situation. An interested local scientist could then be notified, perhaps in time to make an observation. Hynek also suggests that the police carry cameras in their cars should they become involved as observers. This advice obviously applies to all interested persons.

3. A loose organization of interested scientists should be available to investigate reports in their local areas. A good start toward this has been made by NICAP. It is important that investigations be made rapidly and by properly qualified people.

4. The press should be encouraged to report sightings accurately and in a non-sensational manner. Suitable reporting would encourage other witnesses to come forth.

5. Existing sensor records could be examined for anomalies, particularly if visual reports are made nearby. Since we don't know what to expect, it is difficult to say what is needed; however records of electric, magnetic and gravitational fields, radioactivity, optical and radio frequency anomalies would be a logical place to start. Radars could also contribute, if they are designed for general purpose use. As it is, most current radar detection and tracking devices are designed to ignore anomalous objects.

After a few years' operation in this mode, it should be possible to study the resulting report statistics to draw generalities about appearance and behavior (such as was done in Part IV) and most importantly to anticipate times and locations of appearances. Only when this is done will it be possible to instrument sightings and therefore obtain the objective data so badly needed. If the explanation is #4, some environmental correlations are bound to occur. For #7 it is possible that appearances could be anticipated, if we are clever enough; for #6 and #8 we will likely not be able to anticipate appearances.

Certainly the conclusions drawn by NICAP from reports in their file are startling and, if valid worthy of considerable scientific effort. It would be much more convincing if data could be collected worldwide and if the most interesting reports could be intensively and completely investigated. I believe current reports justify the expanded data collection and analysis effort.

A REPORT FORM

In order to acquaint the reader with the kind of information solicited on report forms, a copy of the form developed by the University of Colorado study group for its work is reproduced. It is considerably better than most other forms, and it is understood that considerable effort was expended in the psychological aspects of the form.

It is my opinion that little will be learned from study of sightings reported on such forms. They should serve as initial sources of information on which to decide whether field work is desirable. It is the field interview by the interested scientist that will determine the witnesses capability of observation and will permit the scientist to extract the maximum amount of information from the observer. It is regrettable that the scientists laboratory is so large, but only by such first hand study will we be able to get enough information to anticipate appearances.

PLEASE PRINT CLEARLY

Location of Sighting: _____	Date of Sighting: _____
Name of Observer: _____	

UNIDENTIFIED FLYING OBJECTS PROJECT
UNIVERSITY OF COLORADO
202 Woodbury Hall
Boulder, Colorado 80302

Area Code 303, 443-2211, Ext. 6762



UFO SIGHTING REPORT

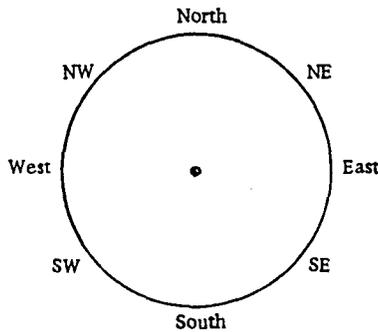
1. PERSONAL ACCOUNT

In your own words, Please describe the incident as it happened. (If additional pages are needed, be sure they are numbered.)

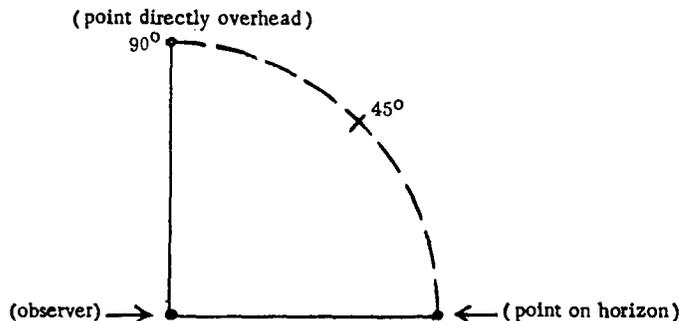
Note to observer: In filling out this form, please be as complete and accurate as possible. Some of the information asked for may not apply to your sighting or may be unavailable to you. In such cases, please indicate.

II. ENVIRONMENTAL SITUATION

1. What was your exact location when you observed the UFO(s)? (Include the name of the city or town you were in, or the distance to the nearest city or town.)
2. What was the date? _____
3. How long did you observe the object(s)? Hours: _____ Minutes: _____ Seconds: _____
 From _____ A.M. _____ P.M. _____ ZONE (When FIRST seen)
 To _____ A.M. _____ P.M. _____ ZONE (When LAST seen)
4. Assuming you had stayed in one place, what is the longest time you COULD HAVE OBSERVED the UFO(s)?
 Hours: _____ Minutes _____ Seconds: _____
5. How did you first happen to notice the object(s)?
6. What had you just been doing?
7. A. In what direction did you FIRST see the Object(s)? (Indicate this in the diagram by drawing an arrow from the center of the circle (observer's position) to the point on edge representing the object's position. Label this point No. 1.
 B. In what direction did you LAST see the object(s)? (Indicate by drawing a second arrow labeled No. 2.)



8. Estimate the MINIMUM distance and altitude of the object(s) from you and how you determined this measurement.
 a. distance: _____ b. altitude: _____
9. Estimate the elevation (in degrees) of the object(s) in the sky. Mark position on the dotted line in the diagram. If elevation of object changed, please mark BOTH highest position and lowest position.



10. Did you observe the object(s) through any of the following? (Circle) Include information on type of equipment: model, type of film, filters, etc. (See question number 45.)
- | | |
|-----------------|-----------------|
| a. eyeglasses | f. binoculars |
| b. sunglasses | g. telescope |
| c. windshield | h. theodolite |
| d. windowpane | i. still camera |
| e. movie camera | j. other |
11. Was object(s) observed by radar? _____ If so, where was the radar located? (Give name(s) of radar operator(s) and information on speed and flight path(s), if available.)
12. Please describe weather conditions and type of sky; i.e. bright daylight, nighttime, dusk, etc. Were stars or moon visible?
13. Was there any wind? _____ If so, please give direction and speed as accurately as you can.
14. What was the position of the sun and/or the moon in relation to object(s) and to you? (Please explain.)
15. Briefly describe the type of terrain in the area.
16. Did you see any conventional aircraft in the area immediately before, during, or after the incident? _____
17. Please list any airport, military, governmental, or research installation(s) in the area. Are there any other unique features or landmarks (either natural or manmade) in the vicinity? _____ If so, please describe.
18. Sketch or include a map of the area, labeling north, your position, the apparent course or position(s) of object(s) and any other important landmarks. (Please use separate piece of paper for sketch and attach to this report.)

DESCRIPTION OF OBJECT(S)

19. Were you able to see the object(s) clearly? Please describe any limiting factors.
20. Did you see more than one object? _____ If so, how many? _____ Make a sketch showing formation and position changes
21. Did the objects all appear to be similar to one another? _____ If not, describe the differences in question #22.
22. Please give a detailed description of the object(s), including shape, color, lights, surface features (if any), etc. Sketch the object(s) in detail according to your description.

23. If only lights were seen, did they seem to maintain fixed positions relative to one another? In other words, could they have been attached to a solid object? Please explain.
24. Did object(s) leave any physical evidence of its presence (i.e. burns, radioactivity, disturbed ground, wreckage, other)? Please describe.

Were any samples taken? Yes No

By Whom? _____ Where to? _____

Was any analysis done? Yes No By Whom? _____

Please summarize results if known. If report is available, please attach copy.

25. Did object(s) make any sound? _____ If so, what kind?
26. Did object(s) produce heat? _____ If so, please explain.
27. Did object(s) produce an odor? _____ If so, please describe it.
28. Did object(s) appear to be solid or gaseous? _____
29. Was object(s): (circle one) a. fuzzy or blurred? b. like a bright star? c. sharply outlined
30. How would you describe the brightness of the object(s)? (Circle one)
- | | |
|--|---------------------------------------|
| a. brighter than the sun? | e. same brightness as the background? |
| b. brighter than the moon? | f. darker than the background? |
| c. brighter than any star (or planet)? | g. other (explain)? |
| d. brighter than the background? | |
31. Was the object(s): (circle one)
- | | | | |
|-------------------|-----------------|----------------|-----------------|
| a. self-luminous? | b. dull finish? | c. reflecting? | d. transparent? |
|-------------------|-----------------|----------------|-----------------|
32. (Circle the items which apply and DESCRIBE as clearly as you can.) Did the object(s):
- | | |
|--|------------------------------------|
| a. appear to rotate (as a whole or in part)? | f. leave any visible trail? |
| b. change shape? | g. drop anything? |
| c. change color? | h. separate into parts or explode? |
| d. change brightness? | i. disappear and reappear? |
| e. give off smoke or vapor? | j. appear to affect any animals? |
33. Did the object(s) appear to affect any mechanical or electrical devices (i.e. automobile engine, headlights, radio, T.V., appliances, clocks, watches, etc.)? _____ If so, please explain in detail. (include make, model, transmission type if automobile, etc.)

34. Can you describe the interior of the object(s) in any way?
35. Do you have any reason to believe the object(s) was occupied? If so, please explain.
36. What was the APPARENT size of the object(s) compared with the following familiar objects?
 (Note: The moon is the same size as a pencil eraser (1/4") held at arms length) Please check the appropriate boxes.
 THE OBJECT WAS THAN

smaller	same size	larger	familiar objects
			than a. faint star
			than b. bright star
			than c. object half as large as the moon
			than d. the moon
			than e. dime at arm's length
			than f. nickel at arm's length
			than g. quarter at arm's length
			than h. half-dollar at arm's length
			than i. an orange at arm's length
			than j. other object at arm's length: PLEASE SPECIFY ()

37. What would you estimate the ACTUAL size of the object(s) to be (measured in feet along its greatest dimension)?

III. MOVEMENT OF OBJECT(S)

38. In what direction was the object(s) traveling? _____
39. Describe the movement of the object(s), including the path(s) and nature of motion (i.e. steady, wobbling, waving, jerky, etc.). Did it (they) move significantly with respect to background of stars or landscape? Sketch path(s) showing orientation of object (s) in sky.
40. Did object pass in front of or behind any fixed physical objects such as trees, clouds, mountains, buildings, etc. Describe any notable relationships to such objects if observed.
41. Can you estimate the speed of the object(s) _____ How was this determined? _____
42. Did the object(s) disappear while you were watching? _____ If so, how? _____

- 43. Please give names and addresses of other witnesses, if any. Indicate relationship of witnesses to you, if it exists, and whether their sightings occurred before, during or after yours.
- 44. Have you seen other objects of an unidentified nature? _____ If so, use separate forms or attached pages to describe these sightings.
- 45. Please enclose photographs, motion pictures, news clippings, notes of radio or television programs (include time, station and date, if possible) regarding this or similar observations or any other background material. IF PHOTOGRAPHS OR MOTION PICTURES ARE ENCLOSED, BE SURE TO INCLUDE ALL INFORMATION ON CAMERA TYPE, FILM TYPE, FILTERS, CAMERA SETTINGS, WHERE DEVELOPED, ETC. ORIGINAL NEGATIVES ARE NECESSARY FOR PHOTOGRAPHIC ANALYSIS. If you wish to have items returned to you, please indicate.
- 46. Have any other groups or individuals interviewed you? If so, please give names and date of interview.

Please give the following information about yourself:

FULL NAME: _____ AGE: _____ SEX _____

ADDRESSES _____ TELEPHONE - HOME _____

BUSINESS: _____

PLACE OF EMPLOYMENT: _____

OCCUPATION:

EDUCATION:

MILITARY SERVICE:

SPECIAL TRAINING OR EXPERIENCE:

You may use my name in connection with this report:

Prefer my name kept confidential:

Date of filling out of this report: _____

Signature: _____

BIBLIOGRAPHY

1. Christian Science Monitor, May 23, 1967
2. Anatomy of a Phenomenon, J. Vallee, Ace Books, Inc H-17
3. The Sky People, B. LePoer Trench, London, Neville Spearman, 1960.
4. The Meaning of Fatima, C. C. Martindale, S. J., P. J. Kenedy & Sons, New York 1950, p. 77.
5. Flying Saucers Through the Ages, Paul Thomas, Neville Spearman, London, 1966.
6. Flying Saucers - A Modern Myth, C. G. Jung, Harcourt, Brace & World New York, 1959
7. Sputnik, January 1967 issue, p. 174
8. Report on the UFO Wave of 1947, Ted Bloecher, 1967; Available from NICAP, 1536 Connecticut Avenue, NW, Washington DC 20036
9. Bloecher, pp. I-9, 10, 12
10. The Report on Unidentified Flying Objects, E. J. Ruppelt, Ace Books, Inc. G-537
11. UFO's: Greatest Scientific Problem of Our Times? J. E. McDonald WFORI, Suite 311, 508 Grant Street, Pittsburgh, Pa., 15219
12. The UFO Evidence, NICAP, 6536 Connecticut Avenue, NW., Washington D.C., 20036, 1964
13. Flying Saucers: Hoax or Reality? L. Jerome Stanton, Belmont Books B50-761
14. "The Physics and Metaphysics of Unidentified Flying Objects", William Markowitz, Science, 15 Sept. 1967
15. Intelligent Life in the Universe, J. S. Shklovskii and Carl Sagan, Holden-Day, Inc. 1966 (San Francisco)
16. Habitable Planets for Man, S. H. Dole, Blaisdell Publishing Co., New York, 1964
17. Interstellar Communication, Edited by A. G. W. Cameron, Benjamin, New York, 1963
18. Science, 21 October 1966, letter by J. A. Hynek, p. 329
19. The Reference for Outstanding UFO Sighting Reports, T. M. Olsen, UFO Information Retrieval Center, Inc., Box 57, Riderwood, Md. 21139

20. Observations of an Anomalistic Phenomenon, R. M. L. Baker, Journal of the Astronautical Sciences, January/February, 1968
21. Flying Saucer Review, 14, 1, January/February, 1968, cover and pp. 6-12.
22. Vallee, p. 109
23. Aviation Week and Space Technology, 22 January, 1968, p. 21
24. The Humanoids, special issue of Flying Saucer Review, 49a Kings Grove, Peckham, London, S.E. 15, England (1967)
25. An interesting example appears in the July, 1968 issue of Science & Mechanics, starting on page 30
26. A highly recommended collection of recent views on this subject are contained in the Symposium on Unidentified Flying Objects, Hearings Before the House Committee on Science and Astronautics, July 29, 1968.

RAND

Margaret E. Schumacher

Director
Publications Department

June 21, 2000

Kelly D. Akers
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Defense Information Systems Agency
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Dear Ms. Akers:

Pursuant to your letter regarding Document Number AD B223765, *UFOs: What to Do?*, the report is available to the public from RAND and should not be considered restricted. I have enclosed the document per you request.

If you have any further questions, please call me at 310-393-0411 Ext. 6505.

Sincerely,



Margaret E. Schumacher
Director, Publications
RAND

MS:tg

Encl.

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