

DRAFT OF ARTICLE FOR AUGUST AIR INTELLIGENCE DIGEST

((It is suggested that items inclosed in double parenthesis be omitted from the article in order that it might be declassified from restricted to unclassified. In this manner the article could be used as press release if necessary.))

I. IN THE WILD BLUE YONDER -- WHAT?

No recognition manual prints the picture of a blinding orange light or a whirling disc, yet reports of the sightings of these ~~strange~~ flying objects come in with increasing regularity.

Many times in recent months, the question has been asked: "Why has the USAF renewed its interest in unidentified aerial objects?" The project was dropped as a special priority project in 1949, but it has continued since then as a normal intelligence function. USAF intelligence has nothing to sell except facts, and to pin down the facts in this matter is like pinning down Kilroy.

It is quite understandable why a great many people take a dim view of the study of "flying saucers". The whole subject is so fantastic that anyone studying the pattern of the reports received by the USAF soon finds himself in an atmosphere of "Alice in Wonderland" fantasy. And yet, facts do exist: reports are coming in with increasing frequency, and the persons who see these objects are sincere and in most cases mature and competent people. The sighters are, generally speaking, convinced beyond the shadow of a doubt that what they have seen is real. However, they are sometimes sensitive about discussing the matter, for fear of being thought to be off their rocker. This regrettable attitude on the part of the public has been engendered largely by the fanciful, and occasionally sarcastic, coverage

that has been given the subject in the public press. Fantastic or not, it is desirable that USAF personnel report aerial objects that they can not identify. Such reports are considered important and are always given serious consideration.

"But why", you ask again, "is the Air Force interested in a subject so ethereal?" The ether is the natural habitat of the Air Force, which is charged with the control of the air in the defense of the United States. Hence it becomes imperative that, until such time as all sightings can be explained, alertness is maintained. Of the more than 1200 reports now on file at the Air Technical Intelligence Center, ^{20%} 15% cannot be satisfactorily explained or identified. This does not mean that ^{80%} 85% of the objects reported can be unquestionably identified. Some can be. Others can be identified well enough to be put in the "very probably identified" category. Others are disregarded, due to the nebulous nature of the information received. The unexplained ^{20%} 15% have been examined, the sources and contents of the reports have been evaluated and, to date, no explanation has been found for them. It may be that as more experience is gained, solutions will be found. In addition to the ATIC analysts already charged with evaluating these reports, negotiations are being completed to obtain the services of consultants in the fields of physics, nuclear physics, astronomy, and psychology to assist in the analysis of the reports.

The truth is that objects are flying over the United States which have not been identified. Strange things in the air have been reported for centuries, but this does not preclude the fact that the object reported yesterday or 2000 years ago may have been a mirage, while tomorrow's object may be a new weapon. These objects may be natural phenomena, balloons, high-flying

friendly aircraft, (or, since they are as yet unidentified, global missiles or space ships from another planet.)

It should be stressed that USAF intelligence has no indications that any foreign nation has a super-weapon capable of flying anywhere in the world at will, nor that craft from outer space are coming near our planet Earth. It would be foolish, however, to say that either is impossible, no matter how highly improbable it may sound. Fifteen years ago, the atomic bomb was highly improbable.

((The impact of the atom bombs on the entire world is well known, and it immediately posed a problem to any nation that held dreams of conquest. It would seem natural for a nation with the apparent plans of the Soviet Union to use any means possible to negate the leadership strength that possession of the bomb has given the U. S.))

((It is possible to suppose that UAOs might be a Soviet propaganda weapon, in which case, they could be either 1) planted fakes or 2) a clever use of natural phenomena designed to create mass hysteria. If this be true, it has been as miserable a failure as the balloons upon which the Japanese placed so much reliance during World War II.))

((If UAOs are being used for propaganda, it would be reasonable to assume that the USSR would choose first to frighten pro-American nations in Europe with the appearance of a radically new weapon, to compensate for the atom bomb. To support this theory, it will be remembered that strange objects appeared over the Scandinavian countries in 1946. The objects observed there were reported to have unusual range and unusual performance characteristics.

When these incidents subsided, strange objects were reported to be flying over the U. S. The hypothesis here is that the Soviets could be attempting to frighten both the European nations and the U. S. by a new device that they hope will be construed to mean that the Soviets are far ahead of the rest of the world in technical know-how.))

The above theory, however, runs into one big stumbling block. If these objects are weapons or advanced types of aircraft, they are, of necessity, man-made. How is it then possible that, in the four years that the USAF has been studying UAOs, not one has crashed? Man-made devices are not infallible.

To recapitulate, the USAF will maintain an open mind and study all UAO reports until enough information has been gathered to explain the unexplained ^{20%} 15%. By continually receiving reports, devising further methods of evaluating them, and collating them with other reports, a continual watch is being kept.

II. UAOs over USA

United States Air Force Headquarters continues to receive an increasing number of reports about weird objects in the sky. These reports - carefully checked at the Air Technical Intelligence Center, and when possible, evaluated - range from balloons to unidentified aerial objects of all conceivable shapes, sizes, speeds, and motions.

The dramatic scope of the subject of unidentified aerial objects has piqued America's interest for years. In this atomic age there is fascination in the weird and unknown, since man's inventions themselves approach the incredible. The public press has nurtured and sustained our interest in UAOs ((whenever it could find the slightest excuse to keep the story alive.))

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Since the USAF has been keeping books, over 1200 UAO sightings have been reported. Many of these reports have come from trained and experienced U. S. Weather Bureau personnel, USAF rated officers, well-qualified civilian pilots, technicians associated with various research projects, and, in one case, a group of professors from a Texas university.

Of these sightings, enough remain that cannot be explained by any known cause to justify the USAF in continuing to pursue its investigations.

On 24 June 1947, Kenneth Arnold, a businessman of Boise, Idaho, reported seeing a chain of nine saucer-like objects whipping in and out of mountain peaks at 1,200mph, near Mount Rainier in the state of Washington. Mr. Arnold, who was flying his private aircraft that day, was so impressed that he contacted the press and the incident was played up across the country. Because of the wide publicity this sighting received, many persons consider this the first UAO sighting. ((Nothing could be further from the truth.*))

Sightings

There can be no attempt, in this article, to cover all the sightings on file at the Air Technical Intelligence Center. Generally speaking, the configuration of these objects fall into three categories: 1) balls of fire, 2) disc-shaped, 3) roughly cigar-shaped.

Naturally, the most important thing that could possibly happen would be for the USAF to come into possession of one of these objects, if objects they be, but next to this in importance is pictorial coverage of the sightings. Few pictures are available, with the exception of obvious hoax shots, for most people do not go about with a camera cocked to catch a breath-taking flash in the sky.

*See the article "Pre-1947 UAO Reports", beginning on page _____.

One of the best pictures was taken in 1947. On 7 July, William Rhoads of Phoenix, Arizona, saw a disc circling his locality just at sunset, and took two pictures. These pictures, showing a disc-like object with a round front and a square tail, have been examined by experts, who state that they are true photographic images and do not appear to be caused by dirty lenses or imperfections in the emulsion. (See page _____.)

On 10 July 1947, Woodruff, a Pan-American Airways mechanic, reported a circular object flying at a high velocity, paralleling the earth's surface and leaving a trail which appeared as the "burning-up" (Mr. Woodruff's words) of a cloud formation. The sighting occurred near Harmon Field, Newfoundland. Two other persons also saw the trail, which remained in the sky for about an hour, and it was photographed by another PAA employee. The resulting photographs support Woodruff's observation as far as the long-lasting vapor trail is concerned. See page _____.

Death rode on a "saucer" when, on 7 January 1948, a National Guard pilot, Capt Thomas Mantell, was killed while attempting to chase an unidentified object up to 30,000 feet. While it is presumed that this pilot suffered anoxia, resulting in a crash, his last message to the control tower was: "It appears to be a metallic object . . . of tremendous size . . . directly ahead and slightly above . . . I am trying to close for a better look . . ." This sighting was at Godman Air Force Base in Kentucky and was one of the first to be reported from that area.

Lubbock lights

Skipping years and many sightings, we arrive at one of the most puzzling cases to date: a series of sightings over Lubbock, Texas. The high

professional standing of the persons who made these observations makes this case especially worthy of note. The observers were all professors of the Texas Technical College at Lubbock: W. I. Robinson, Ph. D., in Geology, but also well versed in all fields of science; A. G. Oberg, Ph. D., professor of Physics; and Prof. W. L. Ducker, head of the Petroleum Engineering Department.

On the evening of 25 August 1951, these men were sitting in Dr. Robinson's garden. It was a clear, mid-summer night, and the men were scanning the skies, counting and discussing meteors as they flashed into view, when suddenly there appeared, in the northeast, a swiftly moving semi-circle of lights. The savants were astounded by the phenomena and decided they would watch carefully for another appearance of this object or objects, and, if it occurred, would attempt to analyze its characteristics.

In about an hour, their watch was rewarded. This time they were ready. One man looked while the others acted as timers. The bluish-green lights were clearly and plainly visible but not brilliant. The individual lights varied in intensity, and each was somewhat larger in appearance than a star. Each of the two flights that night consisted of a series of lights in an accurate V formation which covered about 10° in the sky. The men estimated that the two flights were identical in size, shape, velocity, and course. There was no sound associated with either ghostly passage.

During the week following the first sighting, the original group witnessed five flights between the hours of 9 and 12 p.m. By this time the story had hit the newspapers, and several other people had reported similar

sightings. The most startling incident occurred when the Lubbock Morning Avalanche printed pictures of the flying "What-Is-Its". These pictures were taken by Carl Hart Jr., an amateur photographer and freshman at Texas Tech. ((The negatives have been examined by experts of the Photo Laboratory at Wright Air Development Center and cannot be disproved or declared a hoax.))

Through the week, the men had discussed their experiences. Several characteristics seemed to them outstanding. Perhaps the most amazing was the apparent schedule upon which the objects were operating. The first appearance each night was so close to 9:20 p.m., that observers spoke of it, in railroad parlance, as "old 9:20". The lights never gradually came into view or gradually disappeared. They were suddenly there -- then, just as suddenly, gone.

The group was confident that the angular velocity of the object was 30° a second -- this they determined from measurements of several flights. Stop watches and protractors were used to measure time and angles.

On 1 September 1951, the original group of three met again in Dr. Robinson's garden and were joined by E. R. Heineman, professor of mathematics, and Dr. E. F. George, professor of Chemical Engineering.

Once again, at about 9:20 p.m., a flight came over. It was similar to previous flights, but rather more irregularly grouped. On through the evening, at fairly regular intervals, four more flights moved across the sky from North to South. And then at 12:17 a.m., the most unusual sighting was observed. This flight passed directly overhead, flying very low, in the general direction of North to South, and was seen by every member of the group.

Dr. Robinson observed that in the case of this flight, an irregularly shaped yellow light appeared in the rear. The formation included dark diffuse areas, and the arc itself quivered or pulsed in the direction of its travel.

Each object had an angular magnitude that would be the equivalent of 12 inches across at a distance of 30 or 40 feet, and in violent agitation.

This was the first sighting that Mr. Heineman, who had been skeptical about the whole thing, made. The sighting was so low and so spectacular that he was really jolted, and apparently showed it, for the group jokingly dubbed it "Heineman's Horror". The flight had the appearance of a group of 12 to 15 pale objects in the shape of a quadrant of a circle, producing a pale-yellow blinking light and moving noiselessly.

The professors claim 12 "official sightings." This is their own term, as they would not recognize any sighting that was not witnessed by at least two of their group. They do not completely accept the photographs taken by Carl Hart, and state that, had they felt it possible, they would have made every effort to take photographs themselves, but that the objects moved too fast. They have also taken into consideration the aerial activity that was taking place over the SW United States at that time -- the much publicized "Green Fireballs". They attempted to tie up the two, but could find no association between the fireballs and the flying objects that they had seen.

((How green are the fireballs?))

((The reported green fireballs that flashed across the skies of SW United States in great numbers during 1948, '49, and '50 are still a matter

of great conjecture. They were thought by some scientists to be meteors. Dr. J. Kaplan of the Scientific Advisory Board is one such scientist, but he qualified his belief: "The daytime 'fireball' incidents are completely baffling. No meteor would persist for as long as thirty minutes. (EDITOR'S NOTE: The daytime incident of 27 March 1949 lasted more than half an hour. This duration is much longer than any recorded genuine meteoric incident.) The characteristics of the nocturnal green fireballs, of relatively the same height and having no sound, are ones which are difficult to observe without very careful instrumentation as to their (height).))

((Dr. Lincoln La Paz, director of the Institute of Meteorites, University of New Mexico, Albuquerque, made a comprehensive study of the fireballs and felt that they were not meteors. Dr. La Paz stated: "Most of the reports of 'green fireballs' state that they appear to move in horizontal paths, throughout its entire extent, to the plane of the horizon. Such persistent horizontality stands in the sharpest contrast to the downwardly concave paths traversed by genuine meteorites, when these penetrate deeply into the atmosphere of the earth.))

((("In the case of genuine meteorite falls, with luminous paths terminating even at heights considerably greater than those at which the real paths of the green fireballs are situated, the observed luminous phenomena are always accompanied by extraordinarily violent noises. No noises whatever have been observed in connection with any one of the horizontally-moving green fireballs.))

((("The anomalous greenish luminous phenomena show a curious association with well-known meteor showers, although none of these annual meteor showers normally produce extremely bright green fireballs. The relationship cited

might indicate an attempt to render the green fireballs less conspicuous by causing them to appear only when there is a background of considerable natural meteoric activity."))

Now "Blue Book"

The study of unidentified aerial objects by the USAF was first assigned the name of Project Sign; this was later changed to Project Grudge; recently the name Project Blue Book has been assigned to it. In order to support Project Blue Book, several conferences have been held with members of a research organization. The highly qualified members of this organization were given access to the USAF files on the project. After a study of the information available, they decided that there are enough reports that cannot be explained to warrant a detailed investigation. Several other engineers and scientists have been contacted and their opinions are much the same.

Still they fly

And so the unidentified aerial objects remain in the realm of the unidentified. There remain practically armed camps of opinion: those who say it is all silly witch-hunting; those who keep an open mind; and those who will fight to the death to defend the validity of "those things that fly." The answer, if there is one, will eventually materialize, and the USAF will not be caught napping. Until that time, it places itself in the "open mind" category.

BOX

Flying pie-pan

UAO hoaxes have been almost non-existent in recent years, but Air Force files still contain records of some of the early hoaxes. A typical

incident took place in Shreveport, Louisiana, in July 1947. The papers played the story big, and it was a two-day sensation. Mr. H-----, of Shreveport, decided that he would stop by a used-car lot on his way home from work and try to find a bargain car. As he stood looking over the prospects, he heard a loud whirring and, looking up, saw a bright, silvery disc, which appeared to him to be spitting fire and smoke. It dropped, with a crash, in the street. He rushed over, retrieved the object, then contacted Barksdale AFB.

The thing was crudely made and so obviously a hoax that Barksdale personnel were able to thank Mr. H----- and assure him that it was the work of a practical joker. The next day a very red-faced gentleman admitted that he was the maker of the saucer. He was employed by an electrical firm whose building was next door to the used-car lot. The saucer-maker had planned the episode as a joke to be played on his boss. He had launched the thing from the roof of the building and, true to plan, it had actually landed near his employer's car. The pay-off was that his boss paid no attention to it, but Mr. H----- did and the joke backfired.

IS THERE A SIMPLE, NATURAL EXPLANATION?

Astronomical, meteorological, and light phenomena, or simply failure of observers to recognize familiar objects in the air for what they really are, may explain many reported UAO sightings.

It is midnight. A luminous body, seemingly as bright as the sun, streaks across the sky. It emits sparks and puffs of smoke, and trails what appears to be a long, fiery exhaust. The object then disappears with a series of flashes, and, shortly after, a fearful roar and earth-shaking explosions are heard. Only one man witnesses this event. Never having observed anything so awesome in the skies before, he is convinced that he must have seen an interplanetary space ship.

Perhaps he has. It will never be possible to say with absolute certainty that he cannot have seen an extra-terrestrial vehicle. There are no other witnesses to the incident and, therefore, by the rules of evidence, no one competent to controvert conclusively his conviction that he has seen space travelers in transit. ^{Probably} Chances are, however, if he were more familiar with astronomical phenomena, he would identify his UAO as a more conventional visitor from space -- a meteorite. What he has seen and heard tallies very closely with the frequently observed and startling phenomena of light and sound that often accompany the fall of meteorites. Over 100 million meteors fall daily

One hundred million or more meteors come racing into the earth's atmosphere daily at speeds of 100,000 miles per hour, to meet their doom under the force and tremendous frictional resistance encountered at such

velocities. Those which partly survive the friction of the earth's atmosphere and fall to the ground, frequently with the startling light and sound effects reported by our observer, are called meteorites. Unusually brilliant meteors are called fireballs. These often leave luminous trains that may persist as long as an hour after the fireball itself has disappeared. Daylight meteors frequently do not appear luminous, but do leave a trail, and often no noise is heard. Sometimes meteors explode in mid-air. These are called bolides.

Of the meteors which fall daily, about 25 million are visible to the naked eye, most of them appearing as the familiar "shooting stars" that occasionally dart across the sky at night. Yet very few of these are ever found, for it is probable that most meteors are a body no larger than a pinhead. One no larger than a golf ball may appear as bright as the full moon. Small wonder, then that meteors and their derivatives suggest themselves as likely explanations of many UAO sightings.

Another astronomical phenomenon which may provide an answer to some of these sightings is the recurrent brilliance of our nearest planet, the familiar morning and evening star -- the planet Venus. It outshines all celestial bodies except the sun and the moon, and, near the times of its greatest brilliancy, it is plainly visible to the naked eye even at midday, when attention is directed to it. It outshines Sirius, the brightest star, by fifteen times. Venus, when as bright as this, and shining through interstices in the clouds, could easily give the effect of a flaming object with a tail -- a description featured in many UAO reports. So could Mercury, or the red planet Mars.

Scientific analysis of all UAO reports received to date indicates that almost 40% may be attributed to failure of the observer, for one reason or another, to identify such astronomical phenomena. Additional astronomical and other phenomena of the skies which may be included in this category, although, at most, they explain only an occasional sighting are: 1) zodiacal light (the glow along the zodiac of sunlight reflected by meteoric material); 2) zodiacal light's counter glow, known as gegenschein; 3) the ghostly beams and curtains of light of the aurora borealis and aurora australis, seldom seen in our latitudes, but which are common enough near the magnetic poles; 4) illusory effects of clouds and light in connection with such familiar celestial bodies as the sun and the moon; and 5) ball lightning.

Nothing mysterious about many UAOs

Another 35% of UAO sightings may be attributed to misinterpretation of objects no more mysterious than weather balloons, aircraft, and even commonplace things like birds and wind-borne bits of paper. All normal, intelligent people from time to time mistake some more or less familiar object for another object. These errors arise chiefly from inability to estimate size, speed, and distance. It is not possible to estimate accurately such characteristics of small bright objects against the sky unless the object is first identified. This is doubly true at night. Small objects may occasionally be borne to great heights by strong winds. It would be impossible to estimate the distance, size, and speed of such objects, and it would be easy to fail to recognize them.

The best guesses as to the non-astronomical objects which elicit many UAO reports include reflections of the sun from distant aircraft, running lights on aircraft, searchlights on clouds, flares, and the previously mentioned wind-borne objects. Best guess of all in this category, however, is balloons - weather, research, and even old-fashioned carnival balloons.

More than 10% of UAO reports may reasonably be put down to balloons which are released on routine synoptic ascents by the Air Weather Service, the Navy Aerological Service, or the United States Weather Bureau. In addition, U. S. Army units and other public and private institutions, such as universities, make weather balloon observations.

Pibals are released for observation of winds aloft at almost every airport in the United States that has regular military and airline traffic. They rise at about 600 feet per minute, and because of their comparatively small size, just 30 inches in diameter, they are difficult to see above feet. Therefore, they probably account for only a few UAO sightings. RAOBS look like discs at 85,000 feet

More likely stimuli to UAO reports are instrument-carrying balloons -- rawinsonde and radiosonde (RAOBS). RAOBS are six feet in diameter at release, but they inflate to twenty to twenty-five feet before they burst at altitudes ranging up to 90,000 feet. If weather conditions are ideal, they can be seen with the naked eye at altitudes up to 85,000 feet. At this altitude, they can definitely take on the appearance of flying discs. All the sites in the United States where scheduled instrument balloon releases are made are shown on the map on page _____.

RAOBS carry lights at night, a fact which may account for some instances when pilots attempted to chase UAOs during hours of darkness. Such conditions could have produced a loss of orientation on the part of the observer. Movement is always relative. If the only outside point of reference is a point of light, and both the object and the observer are moving, it is practically impossible for the observer to separate the two motions. It is difficult enough to fly a good pursuit curve on another aircraft in broad daylight, for example, let alone to close on a solitary, moving light at night.

Another type of balloon figuring in the UAO picture is the kind used in connection with Project Skyhook. These weird plastic bags, which ascend to heights of over 100,000 feet, are shown in the photo at right. They are flown from mobile launching sites, sometimes singly and sometimes in clusters. Ballasted to float at fixed altitudes, they carry radio transmitters so that they may be tracked by means of very-high-frequency direction-finding equipment for the duration of their flight over the United States, or until either their ballast or their batteries are expended. However, these, as well as the less spectacular balloons, may be lost and wind up in the UAO files.

It has been suggested that some UAOs, especially those where the object was described as cigar-shaped, might actually be guided missiles. This appears to be an unlikely explanation. These missiles are launched at only three locations throughout the United States: 1) Point Mugu, north of Los Angeles, Calif.; 2) White Sands, Ariz.; and 3) Patrick AFB, Cocoa, Fla.

Firing is conducted out to sea and over controlled test ranges. Since all unauthorized persons are shooed out of the area, there would be no one likely to turn in a UAO report.

After eliminating UAO sightings attributable to the astronomical and the non-astronomical phenomena considered in this article, together with the hoaxes, discussed on page _____, plus those reports lacking sufficient evidence for investigation -- after all this, approximately 15% of UAO sightings remain bona fide UAOs. That is, the evidence suggests no ready explanation.

Trick of temperature - inversion and refraction?

One possible explanation has been advanced by the Harvard astrophysicist, Dr. Donald H. Menzel. (See Look, June 17, 1952, pp. 35-39.) As summarized by Time, June 9, 1952, pp. 54-56, the kernel of Dr. Menzel's hypothesis follows:

"Normally, the atmosphere grows cooler as altitude increases, but under some conditions it may contain layers of warm air with cold air below them. These are called 'inversions.' They occur in all climates but are commonest in deserts, where both the ground and the air get very hot in daytime. As soon as the sun sets, the ground cools off, radiating its warmth into the sky. The air for a few feet up grows cool by contact with the cool earth, but the air a little higher stays warm. . . . The warm air overhead turns downward the light from bright objects, such as street lights or auto headlamps."

Temperature inversion and refraction, as propounded by Dr. Menzel, is familiar to most of us as motorists when we see the mirage which looks like shining water in the road ahead. Other inversions occur when a warm layer of air hangs several thousand feet up. A pilot flying just above this

layer, especially if its power to divert light is increased by dust, may see below him the displaced image of the sun, the moon, or even a brightly lighted cloud. The image may be distorted by waves in the inversion, and a whole formation of objects may then appear to be in rapid motion.

Reflection and refraction theories as natural explanation of UAO reports are questioned by authorities like Dr. Ronald Ives, the Cornell geophysicist, who is an outstanding authority on mirages. Dr. Ives points out that the reflectivity of temperature disparities in the air is so slight that it reduces the intensity of the light source to a negligible degree -- far less bright than the brilliantly luminous objects that have been so frequently seen.

Most UAOs can be explained with some degree of certitude. Dr. Menzel or someone else may have the answer to all, some, or none of the unexplained 15%.

OTHERS MIGHT BE SPACE SHIPS

CRAFT FROM OUT YONDER COULD BE DISCS, SPHERES, OR BIG V-2s WITH WINGS

It is just possible that some of the unidentified objects may be space ships from another planet. The idea of space travel is no longer the fantastic subject it was in the years before World War II. In the USAF's study of unidentified objects, space ships have been given serious consideration.

Although we do not know what a space ship from another planet will look like, we do know approximately what a space ship built on Earth will look like.

Willy Ley, the rocket expert, says the ship will look like a large rocket — like a V-2, but taller. Its height will be 10 to 12 times its largest diameter. It will have short wings, placed far back. The wings will be either sharply swept back, or will have a delta configuration. Such a ship will have an atomic power plant. Thrust for take-off will be provided by a chemical booster, to avoid making the take-off area radioactive, and the atomic power will be used shortly afterward.

However, a transport from another planet might have the shape of a sphere, or a disc. For travel through the Earth's atmosphere, the sphere would not be nearly as efficient as a thin disc. The sphere could have tremendous strength, but its aerodynamic characteristics would not match those of the disc. In the vacuum of outer space, however, the shape of a space ship would not affect its space at all.

If the unidentified objects are space ships from outside the Earth's orbit, the strange behavior of some of them (hovering, flying in jerky

bursts of speed, changing direction at high speed, spinning, and accelerating suddenly to high speeds) can be explained only by 1) a source of power unknown to Earthlings; 2) materials possessing greater strength and greater ability to resist heat than any now known on Earth; 3) physically superior beings or robots capable of withstanding enormous G forces --or; 4) a new, radical means of overcoming or screening gravity.

Two possibilities: Mars and Venus

Space ships could come here from either Mars or Venus. Other planets in the solar system are considered poor prospects for life to exist. Because of the climatic and atmospheric conditions believed to exist on Mars, it is thought by astronomers that a race of intelligence beings would be more likely to be found on that planet than on Venus. Mars has a rare atmosphere, nearly devoid of oxygen and water, and its nights are much colder than our Arctic winters. The atmosphere of Venus appears to be cloudy, and apparently consists mainly of carbon dioxide with deep clouds of formaldehyde droplets. Venus seems to have little or no water.

Despite these environmental characteristics, it is possible that intelligent beings exist on both planets. Such beings could be types whose body chemistry, size, appearance, and basic requirements for maintenance of life are entirely different from our own.

When Mars is nearest Earth, it is about 35,000,000 miles away. When Venus is nearest Earth, it is about 26,000,000 miles away. Venus is nearly as large as Earth; Mars is smaller than Venus.

Space ships might come from other solar systems

Arguments such as those applied to Mars and Venus need not necessarily apply to planets orbiting stars other than our sun, according to J. E. Lipp, of the Rand Corporation.

Many planets outside our solar system may have the environmental characteristics of Earth. The existence of life on planets which have the "right conditions" is not only possible, Lipp firmly believes, but inevitable. He assumes, for the sake of his argument, that man is "average", and thus that half the beings on such planets are ahead of us in knowledge, and have reached various levels of space travel experience. Conceivably, as Lipp suggests, among the myriads of other solar systems in space, one or more races of intelligence beings on planets far removed from our solar system HAVE discovered methods of travel that we could regard only as fantastic. Yet, the greater the astronomical distances that would have to be traversed by space travelers to reach our Earth from outside our solar system, the slighter the chance that space travelers would ever find this planet. The galaxy we are in has a diameter of about 100,000 light years, and a total mass of about 200 billion times that of our sun. Other galaxies, at distances up to billions of light years, have been photographed, numbering several hundred million and each containing millions of individual stars. A race of superior intelligence, unless it occurs frequently in outer space, would not be likely to stumble upon Planet III of Sol, a fifth-magnitude star in the outskirts of our local, or Milky Way, galaxy.

CAPTIONS for SOME OTHERS MIGHT BE SPACE SHIPS

BREAKING ELLIPSES. Space ship coming to Earth might execute several ellipses as shown in order to reduce speed for landing. Drawing is to scale, except that atmosphere (broken circle) is four times too deep.

VII PRE-1947 UAO REPORTS

Early--meaning pre-1947--reports are rich and varied, and fall consistently, like modern sightings, into three categories: luminous balls; saucer-shaped objects; cigar-shaped objects.

EDITOR'S NOTE: TIME, in a recent article, mentioned the celebrated "airship" reported seen in 1896-97 by thousands of people from Oakland, Calif., to Chicago, and printed part of a clipping about it from the New York HERALD of 11 April 1897. READERS DIGEST, in an article in its July 1952 issue, "Flying Saucers Are New in Name Only," mentioned reported UAO sightings in 1913, 1904, 1897 (the same one mentioned by TIME), 1882, and 1870. These references gave a superficial impression that TIME and READERS DIGEST had extensively researched the subject of early UAO sightings. These eminent magazines, however, for all their reputations for thoroughness and their large research staffs, barely scratched the surface of this rich and extraordinarily interesting subject.

It is rather widely believed that the now-famous "Arnold Report" of 24 June 1927* was the first UAO report. Actually, reported UAO sightings go way, way back--well over a century and possibly to Old Testament days. Almost all "early sightings," as they have been short-titled by the Air Force, fall into the same main categories that the modern sightings fall into: luminous balls, saucer-shaped objects, or cigar-shaped objects.

The AIR INTELLIGENCE DIGEST requests its readers to make their own evaluations of these early reports. Were they - as many modern sightings have turned out to be - illusions, mistaken identifications, or hoaxes?

* See third paragraph of the article, "UAOs over USA," page _____.

Or were they real, and of terrestrial origin? Or real, and of celestial origin, possibly transplanetary or even transstellar?

There are many hundreds of reported early sightings on record, but, after careful screening, the DIGEST has selected for presentation only those discussed and/or reproduced (see accompanying artwork) in this article.

A large percentage of the early reports were in the form of letters to such sober and reputable journals as the London Times; Scientific American; Nature; American Meteorological Journal; U. S. and Canada Monthly Weather Review; l'Astronomie; Astronomische Nachrichten; London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science; The Observatory--Monthly Review of Astronomy; etc. This proves, if it proves nothing else, that the witnesses were deeply moved and excited by what they saw -- or thought they saw. M. Lincoln Schuster wrote in his introduction to the book, "A Treasury of the World's Great Letters": "When any person has a soul-shaking experience, he usually can--and frequently does--write a letter about it."

"Ezekial Saw de Wheel,"

Zechariah saw a "roll"

The AIR INTELLIGENCE DIGEST will not quarrel with readers who dismiss as far-fetched any interpretation of the Biblical quotations below as references to 1) a disc-shaped UAO and 2) a cigar-shaped UAO. These quotations are presented solely for whatever significance, if any, that DIGEST readers may read into them.

The wording of the well-known reference in Ezekial is: ". . . a whirlwind came out of the north . . . a fire unfolding . . . and a brightness was about it, out of the midst thereof as the color of amber . . . it sparkled like the color of burnished brass . . . like burning coals of fire, and like the appearance of lamps . . . the appearance of the wheels was like unto the color of a beryl (greenish-blue) . . . as it were a wheel in the middle of a wheel".

Less familiar is a passage in Zechariah: "Then I turned, and lifted up mine eyes, and looked, and beheld a flying roll . . . the length thereof (was) twenty cubits, and the breadth thereof (was) ten cubits." "Roll," in Biblical terminology, usually meant the parchment rolls then used for books. In some translations, the phrase "flying book" is substituted for "flying roll" in the foregoing passage. Converting cubits into feet, Zechariah's "flying roll" measured 30 by 15 feet.

12 January 1838

Extensive controversies raged among astronomers during the 1700s about numerous small objects observed near Venus. Were they optical illusions? Satellites of Venus? A planet between Venus and Mercury? These telescopically observed objects probably have no connection with UAOs, although some commentators, notably Charles Fort, have tried to establish such a connection. We are possibly on firmer ground in quoting a brief reference in the 1877 Report of the British Association for the Advancement of Science, ". . . a report that at Cherburg, France, on 12 January 1838, was seen a luminous body, seemingly two-thirds the size of the moon. It seemed to rotate on an axis. Central to it there seemed

to be a dark cavity". The similarity of this earliest dated UAO report to many modern sightings is immediately apparent.

Nature: 1880, 1893

The magazine Nature, subtitled A Weekly Illustrated Journal of Science, reported an unusually interesting sighting in its 20 May 1880 issue. The item on "remarkable phenomenon observed at Kattenau, near Trakehnen (Germany)" described "an enormous number of luminous bodies" which "rose from the horizon and passed in a horizontal direction from east to west. They moved through space like a string of beads, and shone with a remarkably brilliant light." Some were estimated to be "the size of a walnut," others resembling "sparks from a chimney," and, in connection with these estimates of size, it is important to bear in mind that apparent size and real size are two very different things, especially as applied to celestial phenomena.

In the 25 May 1893 issue of Nature appeared the much-quoted sighting report of the "unknown lights of Japan". This stated that "the globes altered in their formation . . . and . . . took the form of a crescent or diamond, or hung festoon-fashion in a curved line".

See, and compare, the material on the modern "Lubbock Lights" sightings, on page _____ of the article, "UAOs over USA."

London Times

On page _____ are reproduced some of the more interesting letters and news items about UAOs that appeared in the great Times of London from 1848 to 1869. An 1870 letter to the Times is our cover picture this month.

Why UAO reports, in all their varied, strange, and sometimes wildly extravagant forms should have poured in on the ultra-conservative Times ("The Thunderer") is a mystery as challenging as that of the UAOs themselves. The serious treatment the Times gave these reports, however, is gratifying to look back on, since, in the 1800s, they must have been even more incredible--seeming than they are in today's age of supersonic flight, radar contact with the moon, and atomic fission.

Here are some selected quotations from Times UAO reports:

"There they shone with a bright flickering light until about 10 o'clock, when they moved, making a slight curve westward. The speed with which they migrated was prodigious." (1848).

". . . a most extraordinary appearance in the sky this evening, which has quite frightened the superstitious here. At 7:20 a brilliant red light appeared to the south by east, about half-way between the zenith and horizon . . . its shape was oblong . . . in about 15 minutes it rose to the zenith." (1859).

"This (to me) extraordinary object . . . floated steadily away, northwest by north . . . threw no rays in any direction . . . and was in my sight, from first to last, about three minutes." (1867).

"A falling star would never have remained so long visible in the telescopic field." (1870).

Philosophical Magazine to
Monthly Review of Astronomy

The so-called "Auroral Beam of November 17th, 1882," was the subject of a 20-page article in The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, and one of the 26 observers of this

amazing phenomenon was none other than the Astronomer Royal. It was described by various observers as "spindle-shaped," "a cigar-ship," "torpedo-like," "weaver's shuttle," and, more specifically, "a bar of yellowish light, with a 'dark something' before the bar and a dark streak where it passed". The compiler and collater of the observations, Mr. J. Rand Capron, wrote: "A primary question is whether the 'beam' was really and truly a part of the auroral display, or a 'meteor,' 'meteoroid,' 'cometary body,' or something allied to any of these, in contra-distinction to an 'auroral beam'". The Observatory - Monthly Review of Astronomy, commenting on the Capron article, spoke of the phenomenon as "unusual and striking, not to say awe-inspiring," but the Observatory editor, Dr. E. W. Maunder, Fellow of the Royal Academy of Science, held that it was an auroral, rather than a meteoric, manifestation. In other words, nobody, not even the best scientists of the day, could figure it out.

"That airship"

Unquestionably, the most famous and most baffling American UAO was the "airship" which, first reported over Oakland, Calif., on November, 1896, finally appeared, according to thousands of observers, including many reputable scientists, over Chicago. The Oakland Tribune of 23 November 1896 led off its goggle-eyed story: "That a huge airship has been hovering over Oakland for the last few nights has, in the minds of many, been conclusively proven". The dispatch said further: "The ship resembled a huge bird in its outlines and seemed to rise and fall in its course." In its 11 April 1897 issue the New York Herald in a dispatch headlined "THAT AIRSHIP NOW AT CHICAGO", wrote: "For weeks, reports have been coming in from various points

between here and California regarding an airship . . . men of unquestioned veracity declare the moving object was an airship . . . some declare they saw two cigar-shaped objects and great wings . . . Chicago and her suburbs are intensely interested, and the subject is almost the sole topic of conversation."

Monthly Weather Review: 1904, 1907

The U.S. Weather Bureau's Monthly Weather Review, in its issues of, respectively, March 1904 and July 1907, printed two of the most mystifying early-sighting reports on record. They were headed "Remarkable Meteors" and "A Possible Case of Ball Lightning".

The author of the 1904 report was Lt. Frank H. Schofield, U.S.N., who stated that he saw "three somewhat remarkable meteors" at $35^{\circ} 58'$ North— $128^{\circ} 36'$ West, which "appeared near the horizon and below the clouds, travelling in a group from northwest by north (true) directly toward the ship . . . As they approached the ship, they appeared to soar. . . ." (EDITOR'S NOTE: To call meteors which soar "somewhat remarkable" was the understatement of the century.)

The 1907 report was by William H. Alexander, official weather fore-caster of Burlington, Vt., who wrote about an "explosion so sudden, so unexpected, and so terrific that it startled practically the entire city of Burlington." He quoted Bishop John S. Michaud who, at the time of the incident, was standing in conversation with ex-Governor Woodbury of Vermont at the corner of Church and College Streets. Bishop Michaud, after describing the "most unusual and terrific explosion," said: "I observed a torpedo-shaped body some 300 feet away, stationary in appearance and suspended in the air about 50 feet above the tops of the buildings. Although stationary

when first noticed, this object soon began to move, rather slowly . . ."
Mongolia: 1927

In the book "Altai-Himalaya," by Nicholas Roerich, painter, traveller, and mystic, the author wrote that, in Mongolia in 1927, his party saw "something big and shiny reflecting the sun, like a huge oval moving at great speed. Crossing our camp, it changed its direction from south to southwest. We even had time to take out field glasses and saw quite distinctly an oval form".

Interesting . . .

HQ USAF evaluates with only one word these early sightings which it has carefully searched out, sifted, and presented here for your inspection. They are, undeniably, interesting. No other evaluation is, in fact, possible, from knowledge now available. Perhaps only the UAO future --if and when it finally brings us comprehension of this great, challenging mystery in our skies --will enable us to correlate the UAO present with the UAO past.

CASE HISTORY OF A UAO

Investigators at ATIC first check to see if a UAO is 1) an aircraft, 2) an astronomical body, 3) a balloon; after this routine, each sighting requires a separate and unique course of action.

In mid-July, as this is written, Air Technical Intelligence Center at Wright-Patterson Air Force Base is being swamped with UAO sightings. Reports are coming in at the rate of double that of a year ago. In the two weeks preceding this writing, ATIC's Aerial Phenomena Branch has received 60 such

reports. The reports include such interesting ones as that from two Pan American Airways pilots who reported seeing "eight-glowing red-orange discs" flying 1,000 miles an hour over Norfolk, Va.

There is no doubt that UAO publicity - now increasingly widespread in the public press - has resulted in many of these reports. Project Grudge in 1949 pointed to a correlation between publicity and the number of UAO reports. Today, the same trend is apparent. It's a snowball effect. A sighting receives wide publicity; this results in more reports; these receive publicity; they result in still more reports.

Publicity can be good

Perhaps some of these reports are, as Project Grudge hinted, a "mild form of mass hysteria," sparked by publicity. Yet, the officer in charge of the Aerial Phenomena Section feels that the current large number of reports can be viewed in another light. He believes that in the past some qualified observers who have sighted UAOs failed to report them, due to fear of ridicule. Many of the current reports, he believes, simply reflect a knowledge that the Air Force is genuinely and seriously interested in anything and everything that goes on in the atmosphere above us. This new attitude has also come about through publicity. He also believes that intelligence officers should know the investigative procedure at ATIC, so that they will understand that their reports are given serious consideration. A typical investigation can be summed up in the story of a typical sighting:

At about eight o'clock on the morning of 3 April 1952, four civilian Air Force pilot instructors stood at the airport at Benson, Ariz., observing a cadet cross-country flight. One of the instructors noticed a

"star-like" object motionless in the sky and called it to the attention of the other instructors. They immediately took steps to secure data with the equipment at hand. They wheeled a T-6 around to head toward the UAO. This gave them the magnetic bearing. Sitting in the cockpit, a pilot sighted over the canopy to get a rough-and-ready estimate of the elevation.

One instructor then took off in a T-6. He climbed to 12,000 feet, but the relative size of the object did not change. This indicated that the object was very high. Then, after 52 minutes, the object suddenly disappeared.

When ATIC received the "FLYBERT" report on this sighting, an officer first checked to see if any other reports correlated with this one. Occasionally, ATIC receives a number of reports on, say, a meteor or fireball and the various reports fit together like a jigsaw puzzle (this explains why ATIC wishes intelligence officers to send in all reports).

First-phase investigation

In this case, there were no other reports. The officer then began his investigation's first phase: to check whether the object could have been 1) a high flying aircraft, 2) an astronomical body, 3) a balloon. He found that B-36s had been flying in the area at the time of the sighting, but he quickly eliminated them as an explanation. Mathematics showed him that a B-36, even flying high enough so that it could not be recognized, would have flown through such a wide arc in 52 minutes that the change in bearing would have been readily apparent.

ATIC is staffed with highly-qualified engineers and scientists. The Center also has an "on-call" contract with scientists and engineers representing such fields as nuclear physics, metalurgy, psychology, mathematics, and chemistry. The investigating officer in this case asked the consulting astronomer for Project Blue Book to determine whether an astronomical body could have caused the sighting. The astronomer concluded that no astronomical body which could have been seen in daylight had been in the portion of the sky where the object has been seen. Venus, a previous offender, had been too near the sun to have been seen.

A likely possibility

While the astronomer was checking, the officer began his study of balloons, a likely possibility for any object that remains stationary for from five to 60 minutes. He knew that he would be able to check this possibility with reasonable accuracy. "Piball" balloons that are not tracked are seldom reported as UAOs, because of their small size. Large, instrument-carrying balloons are tracked.

The officer checked his map (see page ____.) of U. S. locations where such balloons are launched. He wired stations near Benson AFB asking whether they had a balloon in the air at the time, and, if so, the general path the balloon took, the bearing from the station, and the altitude at which it had burst. His replies were negative, except from Davis-Monthan AFB, at Tucson, ____ nautical miles ____ of Benson. The Davis-Monthan balloon had travelled southeast of Tucson, had reached calm air at about ____ feet altitude, then had risen vertically until it had burst at ____ (time.

The officer plotted the location of his balloon during the last part of its flight. The bearing of this plot from Benson Airfield was the same as the bearing the pilot instructors had reported. The angle of elevation was within 10 degrees of that estimated by the observers - close enough when you remember the rough-and-ready method used by the instructors.

EVALUATION: This UAO was marked down to reflection of the sun from Rawinsonde balloon flying _____ slant miles away from the observers.

Intelligence officers can quickly see, from this story of the UAO sighting at Benson, the value of requested information (see inside front cover). In some instances, for example, a balloon-launching station might lose contact with a balloon. If the reporting officer includes winds aloft as high as they are recorded, it speeds up the investigation. The possibility of the UAO being identified as an aircraft is dependent on the data in the wire from the reporting officer. It is difficult to obtain data on aircraft flights in the area of the sighting several days after a report is made. The "fix" on an object at the beginning and end of its flight is among the data that the astronomer uses.

A report of an unidentified radar return is handled as a special case. All such sightings are referred to the electronics branch of ATIC. The officers at ATIC look forward to receiving radar scope pictures with reports of radar sightings. A special electronics questionnaire is in the mill.

Some are not so easy

The sighting at Benson was comparatively easy to solve. Others are not. The now-famous case of the Lubbock Lights* was investigated for weeks

* See page _____, in article
"UAOs over TESAF"

and was submitted to several scientists and specialists for comments.
The case is still open, the investigation still continuing.

Each UAO that does not yield a tangible result is handled as a special case. It requires a separate and unique course of action. The only SOP is that the investigating officer must dig.