TECHNICAL INFORMATION REPORT

TIR-UFO "FLYING SAUCERS"

Centuri

Centuri Flying Model Rockets, Box 1988, Phoenix, AZ 85001

Many model rocketeers have tried rocket-powered flying saucers of their own design. It's a natural idea which has gone on since the hobby was invented over 20 years ago. While a few designs have worked well, most have not. Developing a practical model rocket-powered flying saucer is a formidable task as Centuri's R & D department found out when it set about creating a kit. To our knowledge the Centuri Alien Scoutship Flying Saucer is the first model rocket flying saucer in the world which meets all these technical requirements:

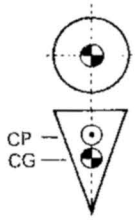
A. Requires only average skill to build and fly.
B. Flies in a safe and reliable flight path.
C. Gentle recovery, allowing repeat flights.
D. Made from readily available materials, requiring no exotic technology.
E. Most important, it looks like a flying saucer in appearance and flight.

As in the past, many rocketeers will want to design and launch their own versions of flying saucers. Our R & D department has prepared this brief TIR as a helpful guide to avoid all the blind alleys we explored in developing our kit. We highly recommend using the Centuri kit and this TIR as a starting point, for solid "hands-on" experience. We welcome any new flying saucer ideas or suggestions that meet the technical requirements explained above.

DYNAMIC STABILITY

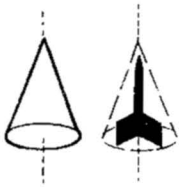
1. A model rocket flying upward thru the air may be compared to an object falling downward thru air. A falling piece of plain paper will not plummet straight to the ground like a rock. It tumbles and slips from side to side in an unpredictable and unstable flight path.

2. Now the paper is rolled into a cone shape. It will fall fairly straight, point first. This is partly because the shape has been given a "direction;" it is somewhat streamlined.

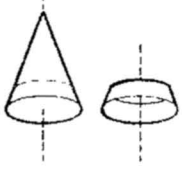


3. The cone's center-of-gravity (balance point) is ahead of its center-of-pressure (theorectical) point where all aerodynamic forces seem to converge).

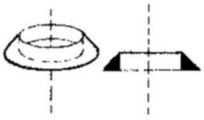
CP=Center of pressure.
CG=Center of gravity.



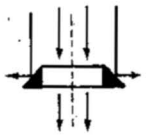
4. Most model rocket designs are based upon this cone. The upper portion is further thinned down, and the cone base becomes fins with lots of surface area. The rocket can now act like a weathervane: always heading into the airstream This is called Dynamic Stability.



5. The Alien Scoutship Flying Saucer dispenses with the entire forward section of the theoretical cone; it becomes a conical ring instead.



6. Structural bracing is added to keep the saucer shape from being flimsy. The center is left open to hold down the "frontal area" (surface presented to airstream).



7. In upward flight the saucer has air passing over and down thru itself. Air deflected off the slanted sides keeps the saucer level and steady.

8. If a force (such as a gust of wind) tilts the saucer, this sets up "force vectors," There is more pressure on the upper side because its surface is nearly facing the airstream. The other side has less pressure because it is nearly parallel. The saucer then oscillates back and forth until it is level again. We call this aerodynamic principle "lateral stability."

DESIGN TIPS

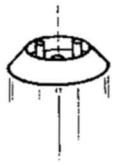
FRONTAL AREA: Keep down the amount of surface area which faces upward. One easy way is to simply have a huge hole in the center. Too much frontal area will create aerodynamic drag, preventing the saucer from flying to a satisfactory height.

WEIGHT: Higher flights can be made when the design uses extremely light materials.

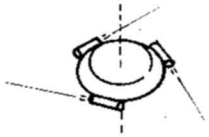
SIZE: Smaller sizes will fly higher. Example: a 12" diameter saucer has four times as much weight and frontal area as a 6" diameter . . .even though it is only twice as wide!

MATERIALS: Use only lightweight materials as explained in the Safety Code. Examples: paper, balsa, cardboard, thin plastic, styrofoam, paper plates, etc. Do not use metal pie-pans or any sharp edged materials.

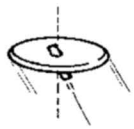
SPINNING: It's best to avoid having the saucer spin in upward flight because it decreases altitude and may cause too fast a recovery; the saucer would land on its edge, like a Frisbee.



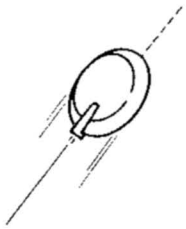
Using more than one engine (clustering) can cause ignition problems. If one engine fails to ignite, but the others work, the flight will be very crooked.



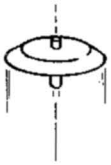
Engines on the perimeter cause spinning, clustering problems, and variances in the thrust. Very unstable, and can tear the vehicle apart.



An engine tilted in relation to the axis gives a serious aerodynamic imbalance. Very unstable.



An engine placed along the diameter gives very little chance for stability. Very large fins would have to be added at the rear, detracting from the saucer appearance.



RECOMMENDED TECHNIQUE: Use just one engine, placed in the center along the axis. Keep it at or above the vehicle's centerline for proper weight distribution.

FLIGHT TIPS

ENGINES: Use booster engines ("0" delay) in first test flights. Engines with a delay charge may still be functioning at touchdown. Boosters also produce less soot from the forward end, which keeps the model cleaner.

RECOVERY: Keep the design lightweight so that it descends gently. Avoid parachutes unless if you can find a way to keep them from tangling and ripping when the saucer flips over at peak of flight. You may want to add "landing gear" to avoid crunching the model at touchdown.

LAUNCH SITE: Fly well away from other people and dry grass during test flights. Choose a large, soft area to avoid damage to the vehicle.

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UFO'S – Have we been visited?

By Jeff Flygare

Science Fiction films like "Close Encounters of the Third Kind" and "Star Wars" have brought to everyone's attention the idea of life elsewhere in the universe. For many years people have reported seeing "flying saucers" and UFOs of all sorts. Some even say they've seen alien beings from these craft and have been taken for rides. While some scientists and government officials refuse to accept these sightings and experiences, the fact remains that new experiences are happening every day, to people everywhere. What are these strange encounters that continue to occur?

For many years the U.S.Air Force conducted research into UFO sightings under the code name Project Blue Book. While many occurrances were investigated, Blue Book's attitude generally was to try to explain away the UFOs in terms of everyday occurrances known to man. UFOs were explained as weather balloons, swamp gas, conventional aircraft, weather phenonmena and hoaxes. It is true that many reports were publicity seeking hoaxes and others were true cases of mistaken identity. However Blue Book was unable to explain hundreds of sightings which remain in the files as "unidentified".

The recent increase in interest in UFOs has caused a number of books to be published on the topic. These often deal with reports of UFOs taken from the files of Project Blue Book. Others have developed their own theories, not all of them sound or supportable, about extraterrestrial visitations. Some even claim that aliens visited the Earth centuries ago and supplied ancient man with the technology necessary to make the impressive structures of the past – like the Pyramids. Scholars have refuted these claims since they are often founded on misinformation and half-truths. Still there is a wealth of information about unexplained occurences involving UFOs.

Dr. J. Allen Hynek's book,[1] The Hynek UFO Report, describes many UFO sightings including many investigated by Project Blue Book, and offers a sober, scientific discussion of these reports. Unlike Blue Book's attempts to deny and refute the existence of UFOs and the efforts of many paperback experts to encourage belief in them, Hynek examines the evidence from a scientific position, keeping an open mind about the existence of UFOs. While it is true that there is no hard evidence supporting the existence of UFOs, the weight of circumstantial evidence continues to raise questions about the phenomenon of UFOs.

Hynek has devised a classification system which places UFO sightings into three categories labelled "close encounters". These categories are:

> *Close Encounters of the First Type: Close-up and clearly definable sighting of a UFO where there is no interaction between the UFO and the environment.*
>
> *Close Encounters of the Second Type: Close-up between the UFO and the environment. Physical evidence (burning, radiation, etc.) remain after the sighting.*
>
> *Close Encounters of the Third Type: Actual interaction with the occupants of the UFO.*

The classifications refer only to those sightings which involve a close-up viewing of the UFO. In addition there have been countless cases of UFOs defined as lights in the night sky, daylight discs and radar UFOs.

All of these sightings have explanations in the belief that our planet is being visited by space ships from outside the solar system. Scientists often discount the possibility of such visits, but are they really possible? What are the chances that there is life elsewhere in the universe, and if there is, what are the chances they have visited us?

It must be our assumption that for life to exist elsewhere it must have come about in roughly the same manner as it did on Earth. Our planet is similar in terms of most chemical processes to other systems in the universe, so we can assume a similarity in the development of life. Life originated here on Earth when a series of chemicals in just the right proportions were zapped by the electricity present in the atmosphere of early Earth. This step has been re-created by scientists in the laboratory. The chemicals started to bond together to form different kinds of proteins, the basic building blocks of life. From there, life developed gradually over many millions of years.

Scientists estimate that the conditions for life to begin exist on approximately 64 million planets in our galaxy alone. Our galaxy is only one of billions in the universe. Other scientists have estimated that the number of planets in our galaxy which have or have had intelligent, communicative beings is between 100 million (10^8) and 10 billion (10^{10}). Of these it is reasonable, and conservative, to estimate that the number active at any given moment is about one million.

This means that in our galaxy there are probably one million civilizations in various stages of development. Some may have developed the technology to communicate with other worlds (radio transmitters) as we have done here on Earth. The problem with communication is the great distances between civilizations. We have developed radio transmitters in only the last 50 years of our civilization. Radio waves travel at the speed of light; the first radio waves are now only about 50 light years from Earth. If a conversation were to take place between Earth and the nearest civilization (estimated at about 200 light years away), it would take 200 years for our message to reach that civilization and 200 years for their answer to come back. We certainly cannot expect a response to our earliest radio transmissions any sooner than 350 years from now, and that assumes that the civilization we contact has the technology to receive our message, decode it, understand it, and send a reply. We have no guarantee of that.

The possibility that other civilizations could visit our planet brings up the question of space travel over long distances. The theory of relativity dicates that nothing can travel faster than the speed of light (186,000 miles/second), so in order to travel these great distances other problems must be overcome. One is the time involved. Interstellar travel requires hundreds, sometimes thousands and millions of years. It is possible that other forms of life have developed much longer life spans than man, and they may be able to use a technique similar to suspended animation. Also time moves much slower for the occupants of a spaceship at high speeds (approaching that of light) than it does for an Earth-bound observer. See the table[2] below.

Speed of spaceship in terms of the speed of light (c). c = 186,000 mi/sec	Factor by which crew's time slows compared to Earth Time.	Number of years of crew time needed for a round trip journey to a star one hundred light-years distant.
0.9999c	70.712	2.8
0.98c	5.025	40.6
0.95c	3.203	65.7
0.90c	2.294	96.9
0.75c	1.155	176.4
0.50c	1.155	346.4
0.10c	1.005	1990.0

More important is the amount of energy needed. The energy requirements needed to travel near the speed of light (say at 0.98c) is roughly the amount of energy expended on all of the Earth at the present rate for 200 years! It would be necessary to achieve the complete annihilation of matter to achieve such a speed – something we just do not know how to do. It is not impossible that an advanced civilization has found the technology to do this, but the cost must be formidable.

So, the question remains, have we been visited? No one can be sure until these aliens set down in some public place, climb out and say hello to us all. The problems of them traveling here are enormous as we have seen. They are compounded by the fact that there is no way they could have known about us. We haven't made ourselves known to anyone outside our planet until the last 50 years. However, reports persist, in spite of efforts to write them off as people's imagination and encounters with a fourth, psychic dimension. They have sparked the imaginations of many people and will continue to do so until they are explained. The romantics among us like to think of them as beings from another world. Who knows-maybe they are!

1–Hynek, Dr. J. Allen, The Hynek UFO Report, Dell Publishing Co., New York 1977.

2–Abell, George, "The Search For Life Beyond Earth: A Scientific Update" in Extra-Terrestrial Intelligence: The First Encounter, Prometheus Books, Buffalo, NY 1976

AN ALIEN EMBLEM?

The Centuri Alien Scoutship FLYING SAUCER includes what has been reported as a possible authentic alien emblem. This design was first seen on April 24, 1964 by a Socorro, New Mexico policeman named Lonnie Zamora, as a red image upon the side of an apparent UFO. It has since been reported by other people, but its meaning is still unknown to us. To our knowledge the Centuri kit is the first use of an "authentic" alien emblem on a model hobby product. What do you think the symbol means?