

UFOs--WHAT ARE THEY?
(F.Yu. Zigel')

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(Prefatory Note. The publishing house of Hayka (Science) is preparing for publication a collection of scientific articles Naseleenny Kosmos (The Inhabited Cosmos) (chief editor, B. P. Konstantinov, Vice President Academy of Sciences USSR) in which along with consideration of such problems as the distribution of life in space, the habitability of the planets, communications with extraterrestrial civilizations, the mastery of the cosmos by mankind, space law, and other subjects, it is intended to give attention to the problem of unidentified flying objects (UFO). In the present article the editor-compiler of the collection Naseleenny Kosmos, Docent F. Yu. Zigel' discusses various UFO observations and attempts at explanation of them.)

Figure 1. This photograph was made in a park in New York of the object which you see in the center of the photograph a few seconds before it vanished. It is unidentified. According to sighters it was grayish-orange in color and, in addition emitted a yellow light. While the object was suspended in the air the man who took this picture, a professional photographer, was able to take this photograph.

The history of science covers thousands of year. During this period human consciousness has many times experienced deep shock as a result of a fundamental discontinuity in ideas. How many centuries were required for the now-evident idea of the sphericity of the Earth to win general acceptance! What scandalous absurdity did Copernicus endure from his contemporaries because of his hypothesis that the Earth moves. And the thoughts of Giordano Bruno about the limitless of space, and the geometry of Lobachevskiy, and Einstein's theory of relativity, the quanta nature of radiation and the fantasies of cybernetics? This is not all but no further examples are necessary since readers themselves can easily continue the list

of great discoveries which shocked the world-view of mankind.

Make an effort and imagine that all this very long history of science has suddenly been compressed in time and, so to speak, passed through human consciousness in the course of 10-15 years. But this example is not an abstraction but a reality. This is what will happen to us who live through the next decade in which the volume of scientific information, achieved in the process of cognition, will double. Our minds should be prepared for a fundamental break in many well-established notions.

Need we say that the lion's share of the coming discoveries will probably have to do with space, with that hidden, illimitless area which mankind has only begun to master? Let us put aside prejudice and so-called "healthy thought" which in the well-justified words of G. I. Naan, Academician of the Estonian Academy of Sciences "is the embodiment of the experience and prejudices of one's own time. It is a very unreliable guide when we are dealing with a completely new situation." It is just such a situation which has developed in connection with the problem of unidentified flying objects (UFO), often called "flying saucers."

First of all, does the problem actually exist? Are there really indisputable facts pointing to the existence and reality of UFOs?

More than two decades ago, in May 1946, evidence first appeared concerning strange disc-shaped objects, called saucers, which were seen both from planes and from the surface of the earth. Observers noted that many UFOs displayed enormous speeds and accelerations unbearable by terrestrial organisms. To the category of UFOs were assigned also puzzling fires in the night sky and mysterious illuminated spheres of various colors. Observers also reported flying saucers which changed intensity in color. It was noted also that in some cases the UFOs caused local magnetic fluctuations; in their presence the needle of a compass fluctuated wildly.

In the book of the American astronomy D. Menzel "O Letayushchikh tarelkakh (On Flying Saucers) (Publ House of Foreign Literature, 1962) there is a detailed descriptions of many UFO sightings and from the factual point of view one can easily inform himself about this matter from this book. Nevertheless we will present several undeniable facts in order that the reader may understand clearly about what we are talking.

Curious are the observations of Menzel himself who twice was able to see this puzzling phenomenon. On the first occasion during a trip by auto Menzel noted over Sacramento ^{Peak} two strange hazy saucers with faint pale-blue illumination. The saucers rapidly disappeared and reappeared "Unfortunately, I was forced to acknowledge," writes D. Menzel, "that I could not exactly explain this phenomenon." The second time Menzel and several astronomers at the Sacramento Peak Observatory "how suddenly in the sky there appeared a clear-yellow fiery sphere. It was at an altitude of about 100-130 km." Its identify has remained unknown.

Here is one of the first reports, made in August 1947. Two American pilots saw "a large dark cigar-shaped body, the shape of which was clearly outlined against the background of the night sky...It moved toward us and the plane barely avoided colliding with it by a sharp change of course. The dark object passed by. Attempts to pursue it were unsuccessful and after 4 minutes the mysterious object vanished. Other American pilots in July 1948 encountered a wingless "airplane" of cigar-shaped form. "This object," one of them reports, "flew straight at us, and we sharply veered to the left..Then the "pilot" of it, as though having suddenly noticed us and wishing to escape detection, pulled up the nose of his craft and vanished into a cloud, emitting backwards a tremendous shaft of alme such that our DC-3 shook from this powerful exhaust."

Several times American pilots attempted to attack UFOs but these invariably put on tremendous speed and, maneuvering strenuously, excaped pursuit. In some cases the pursuit ended with the crash of the pursuing plane as happed with Capt T. Mantel on 7 January 1948. Before the crash Mantel hastily reported by radio: "I am coming up to it...This thing is metallic in appearance and of enormous dimensions."

The famous American astronomer Claude Tombo (who in 1930 discovered the planet Pluto) late on the evening of 20 August 1949 together with his family observe the flight across the sky of strange rectangles illuminated with a pale greenish-yellow light. In Tombo's words "in all the several thousand hours of my life which I have passed in observing the night sky, I have never seen anything stranger or more surprising."

In 1965 and 1966 the number of UFO observations again increased sharply. Here are some examples of recent reports.

In January 1965 observers at the Antarctic research stations of Chile and Argentina noticed in the air a mysterious lighted object, the color of which changed from red to yellow than back to yellow, blue, white, and, finally orange. These

color changes, extending over several minutes, were accompanied by radio interference, though no magnetic storm was in process at the time.

In the same year UFO reports were received from England, France, Portugal and other countries. In the summer of 1965 above the airport of Canberra there appeared a soaring object which duty personnel at the field in the control tower saw perfectly clearly. It hung over the airport for about 40 minutes and disappeared only when a plane was sent up to identify it. Near Canberra, where is located the Tinbinbillskiy space tracking station, a mysterious object was noted not long before the station began receiving signals from Mariner 4. But with the appearance of the object unusual difficulties arose in the reception of the signals. It has been noted also that UFOs are most often observed in areas near the poles, the cosmic space over which is free from radiation belts.

For two decades UFOs have been observed not only visually but also on radar screens. In 1965, according to a United Press report, radar sets in Oklahoma recorded on the evening of 1 August four unidentified objects flying at great height. They passed over into the atmosphere over the states of Kansas and Colorado.

In Moscow in June 1965 an international colloquium was held on the microstructure of the atmosphere at which there was discussion of the nature of "angel-echo"--strange objects seen on radar screens. These are regularly observed by Soviet scientists working at the Central Aerological Observatory near Moscow. According to the report of Cand Phys-Math Sciences A. Gorelik, UFOs have been recorded on radar screens not only in the USSR but also at stations in the US, Australia, India, and Japan. It has been established that the mysterious flying objects cannot be insects, plant seeds, flights of birds, which sometimes show up on radar. They frequently moved against the wind and were observed in places where there are no birds or insects. The nature of these objects remains unknown to this day.

The reader is probably already wearied by the listing of facts and is waiting for generalizations, explanations, and conclusions. Let us attempt to provide them.

In the last two decades there have been many thousands of factually irrefutable reported sightings of UFOs. Reports have come from twenty countries and the "UFO phenomenon" must today be considered a worldwide one. Evidently this circumstance was one of the reasons why recently, for example in the US, as

well as in several other countries, the riddle of UFOs has become a scientific problem and highly-qualified specialists (astronomers, physicists, mathematicians, sociologists, and others) have been called upon to solve it.

The American professor J. Valley, who took part in the International Mathematical Congress in 1966 in Moscow, recently published three detailed scientific monographs on UFOs. These comprise a complete investigation of this interesting problem and although the author does not come down in favor of any particular explanatory hypothesis, the idea of a foreign-planetary origin of UFOs appears to him worthy of attention. The well-known American astrophysicist and director of the Dearborn Observatory, Prof. J. Haynek[?] writes in a preface to one of Valley's books that he personally, as an astronomer, "has long been convinced that UFOs cannot be waved aside as senseless... The UFO phenomenon is a global one and is attracting the attention of many intelligent persons. At private conversations many scientists told me of their interest in this problem and desire that it be thoroughly studied... The reports are not only strikingly similar to one another; they continue to come from perfectly respectable individuals and this requires the conduct of scientific investigations."

So, let us proceed to several explanations for UFOs.

First Explanation.

All reports about "flying saucers" and other UFOs are complete nonsense, fabrications and concoctions of careless individuals.

This point of view is a very convenient one because it requires no intellectual effort and nips the problem in the bud. However there is some truth in it notwithstanding.

In the clamor which was raised after 1947 around "flying saucers" were heard the voices of mystics and simple adventurers seeking to profit from a passing sensation. It is sufficient to recall the notorious Adamskiy who maintained that he had succeeded in travelling in one of the "flying saucers"--to Venus! Unscrupulous individuals by a simple photographic trick transformed a discarded cap into a secret "visitor from space." Rumors were spread to the effect that "pilots" from the "saucers" had been seen to land on the earth.. But none of this has anything to do with the matter.

Unfortunately, at almost all the turning points in the history of science new facts and ideas have been denied, as a rule, and declared to be nonsense. For example, before 1803

the fall of stones from the sky was denied by such great scientists as Lavoissier. According to the pronouncement of French academicians (1772) "the falling of stones from the sky is physically impossible," and this phenomenon "can in no way be reasonably explained." The objections of those who demonstrated the reality of meteorites were to be explained by anti-scientific delirium and stupidity, "unworthy even of refutation."

Second Explanation.

UFOs exist but actually they are not what they seem. An UFO is only an optical illusion connected with anomalous diffusion of light in the earth's atmosphere like a rainbow, or halo, caused by the sun or patches of light over water.

This point of view, sincerely put forward by D. Menzel in his book On Flying Saucers, has been widely accepted among scientists in the Soviet Union and abroad. But we must point out that the reading of Menzel's book involuntarily results in a feeling of deep disappointment since the author provides no convincing and scientific discussion of the phenomena. Therefore when Menzel's book is represented as a solid scientific work, as a circumstantial optical theory of explanation of UFOs, the opinion must be rejected as erroneous. The mystery of UFOs cannot be explained by means of atmospheric optics; the nature of these phenomena is clearly more complex than that.

Third Explanation.

UFOs are new secret flying craft of one of the terrestrial powers.

At first this point of view was very commonly held and militaristic circles in the USA hastened to spread rumors to the effect that secret Soviet craft were flying over the country. This absurd explanation, based on natural causes, later collapsed and no longer has any advocates.

Figures 2 & 3. Last summer passengers on an air liner flying between London and Manchester looking out the plane window saw a strange shape very close to the plane. One of the passengers was able to record the object on his movie camera. The film showed how against the background of the blue sky the unknown object changed its shape after a few seconds and then seemed to dissolve in

(Picture caption cont'd)

the air. In the opinion of British specialists the possibility of an optical illusion is practically excluded.

Fourth Explanation.

The UFO is an unknown natural phenomenon. The material world which surrounds us is endlessly diverse and complex. There is no doubt but what the non-understood phenomena of nature are immeasurably more numerous than those which have been studied and understood. Perhaps UFOs represent something new and unprecedented just as, let us say, radioactivity was to us at the end of the last century?

This position is unquestionably worthy of attention. It is a stimulus to the study of UFOs, and this is its greatest value today. Recently there was a report of a hypothesis to the effect that an UFO is plasma consisting of ionized particles of air and charged dust particles. The plasma hypothesis, clearly would explain the fluctuations of the magnetic needle of a compass upon the appearance of an UFO, and also the fact that persons who have seen UFOs have noted also the irritation of their eyes as though under the effect of ultra-violet light. But this new hypothesis can hardly be a full explanation of UFOs. You see, there are cases of UFO observations in clear weather also, when there were no electrical particles and plasma in the atmosphere. The shapes of UFOs, their strange movements, their many-colored illumination are in no way similar to the behavior of natural clusters of plasma.

Figures 4. & 5. These photographs were taken near Namur (Belgium) on 4 June 1955. The man who took them noted a grayish-colored object glistening in the sun and approaching at great speed but then suddenly slowing down. At that moment the first picture (Figure 4) was taken.

When the object had stopped a cloud of steam appeared around it. Then it raised itself above this cloudy patch, speeded up and quickly disappeared completely. Experts have concluded that the mysterious object was at an altitude of not less than 1,500 meters and that it had a diameter of at least 12 meters.

Fifth Explanations, Bordering on the Fantastic.

UFOs are flying craft from other planets which are surveying the Earth.

Obviously, the hypothesis of a foreign-planet artificial origin of UFOs is an extreme point of view and at first glance completely improbable. Therefore we have placed it last, as a sort of antipodes to the first explanation--unsubstantiated denial. However, since the problem of UFOs has still not been solved, various, including fantastic, points of view are possible.

"We are far from the outright rejection of the interplanetary hypothesis," so writes even such a convinced opponent of it as D. Menzel, "but before accepting it, we wish to consider other more natural speculations."

Protagonists of this point of view call attention to the enormous speed and acceleration of the UFOs, not achievable by contemporary terrestrial flying craft and beyond the ability of terrestrial organisms to endure. The fact that UFOs never land is taken as possible evidence of the availability of some extraterrestrial bases for UFOs. It is curious that the number of UFO observations increases regularly with the approach of Mars to the Earth. And this fact is considered an argument in favor of the foreign-planetary hypothesis.

Protagonists of the foreign-planet origin of UFOs have worked out detailed "theories" concerning the range of UFOs, the utilization by them of the energy of the Earth's magnetic field or the energy of ions in the upper layer of the atmosphere. But all such discussions still seem extremely speculative. And even the "foreign-planet" hypothesis itself, of course, required more solid confirmation.

The conclusion is clear: there exists almost everywhere a definite type of phenomenon, known under the name of the UFO phenomenon. The nature of this phenomenon has still not been unravelled and not one of the existing hypotheses can pretend to be the final answer to the problem. In such a situation the only correct course is clear--to subject the mysterious UFO phenomenon to thorough and careful scientific study.

From nature should be wrested still another of her secrets. You see, the epoch of the "applied" study of the sky has actually arrived.