



ANCIENT SKIES

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THE ENIGMA OF THE TUNGUSKA "EXPLOSION": A FEW STEPS TO SOLUTION

BY DR. VLADIMIR V. RUBTSOV*

In the sunny morning of June 30, 1908 a luminous space body of unknown origin flew over Central Siberia, moving generally to a north-westerly direction. The body was seen in many settlements of the region, its flight being accompanied by thunder-like sounds. Although this region is only sparsely populated, and systematic gathering of the eyewitnesses' testimonies started rather late (in the 1920s), we still have got by now some 500 written accounts which contain more or less detailed descriptions of the flying object. Its shape was mostly described as roundish, spherical, or cylindrical; its color as red, yellow, or white. There was no smoky trail, so typical for large iron meteorites, but many witnesses saw behind the body vivid iridescent bands looking like a rainbow.

When flying at 7h 13m 35s of local time over the area with the coordinates 60° 53'N, 101° 54'E, not far from the Podkamennaya Tunguska River, the body exploded, the TNT equivalent of the effect being 10 to 40 megatons. The explosion was accompanied by a bright flash and a powerful blast. I would like to cite here an account of Mr. B. Semenov who lived then in the little trading station Vanavara, some 70 km to the southeast from the epicenter of the explosion. In 1927 he recalled:

"I sat on the steps of my house, facing the north. ... Suddenly the sky in the north split apart and there appeared... a fire that spread over the whole northern part of the firmament. At this moment I felt intense heat, as if my shirt took fire. I wished to tear up my shirt and throw it off, but at

this moment the sky shut and a powerful strike threw me down from the steps... At this moment I fainted, but my wife ran out of the house and helped me to get up... After the stroke there started a very loud knocking - as if stones were falling from the sky..."(1)

The sound of the explosion was heard as far as 1200 km from the epicenter, and within 200 km there were broken windows which faced northwards. Its seismic wave was recorded in Irkutsk, Tashkent, Tbilisi and Jena. The shock wave of the Tunguska explosion leveled more than 2000 square kilometers of the forest. Over an area of some 200 square kilometers vegetation was burnt by the flash. After that there started a major forest fire.

Some six minutes after the explosion there began a local magnetic storm, closely similar to geomagnetic disturbances following nuclear explosions in the atmosphere. It was detected by the Magnetic and Meteorological Observatory in Irkutsk. The storm lasted for four hours.

By the morning of July 1, 1908, over a considerable part of Eurasia were noticed intense atmospheric anomalies - mesospheric (silvery) clouds, bright twilights, very long solar halos, etc.

Even from this short and simplified description of the Tunguska phenomenon, one can see its real extent. The more interesting seems the lack of any serious reaction to it in science of those days. Although some scientific journals discussed the strange atmospheric anomalies, no attention was in fact paid to the extraordinary event that had taken place in Siberia. Yet some local Siberian newspapers did publish eyewitness accounts, and the journalists supposed that a huge meteorite had fallen in Taiga.

In this connection, we should give his due to the Director of the Irkutsk Magnetic and Meteorological Observatory, A.V. Voznesensky, who immediately realized that the curious earthquake recorded by the instruments of the Observatory had something to do with the fiery body described in the newspaper reports. After processing the seismograms, he established approximate coordinates of the "meteorite" fall: 60° 16'N, 103° 06'E, as well as its moment: 7h 17m 11s of local time. Taking into account the imperfection of the instruments he used, accuracy of these results is worthy of admiration. Unfortunately, they were not published until 1925.(2) For more than a decade the Tunguska "meteorite" was in fact forgotten.

When I defined my description of the Tunguska fall as "simplified", it was not just a figure of speech. In reality, even now, almost 90 years after the event, many important details of the phenomenon remain obscure. We do not know for sure how many bodies participated in it, nor how many explosions took place. It is even not clear whether we can use here the word "explosion" in its proper sense, but rather it would be better to carefully use the ex-

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pression "an explosion-like energy release". The real level of intricacy and anomalousness of the Tunguska phenomenon was perceived only after many decades of active investigation in this region.

At first, however, the situation seemed more or less clear. In 1921 information of the Tunguska fall came to light anew, when an expedition of the Russian Academy of Sciences, aimed at gathering data about various meteorites and led by L.A. Kulik, visited Central Siberia. To Kulik there was no question that it had been a huge meteorite, either iron or stone, and therefore several well-equipped special expeditions were subsequently sent to the site.

Immediately after discovering the area of the leveled forest, it was established that at the epicenter of the explosion the trees were still standing upright and there was no sign of a meteorite crater. However, no real significance was attached to these facts. There was just a little shift from the idea of a single meteorite body to that of a meteorite shower, which had to arise from destruction of the initial body due to air resistance at some altitude above the Earth's surface. Respectively, the forest was supposed to be leveled by the ballistic wave of the collapsed body. L.A. Kulik mistook thermokarst holes for meteorite ones, and nobody should throw a stone at him for this mistake: being a really eminent specialist in meteorites, he looked for a meteorite, not for something else.

Nevertheless, as time passed, some scientists began to feel, rather intuitively, that the meteorite hypothesis had serious weak points. In spite of intensive search for remnants of the meteorite body, there was not found even a milligram of its substance. In the early 1930s, F.L. Whipple supposed that the Tunguska body had in fact been the core of a small comet; V.I. Vernadsky put forward a hypothesis about a cloud of cosmic dust; and I.S. Astapovich assumed that the Tunguska body had ricocheted off the lower layer of the atmosphere.

But it was the Soviet engineer and science fiction writer, Alexander Kazantsev, who understood in 1945 the real importance of the "first Tunguska anomaly", the overground character of the explosion. He advanced the hypothesis of an extraterrestrial spaceship that had met with disaster due to a malfunction at the final stage of its space voyage. The author of this hypothesis subsequently recalled that he had been much impressed by a description of the nuclear explosion over Hiroshima and its similarity to the Tunguska explosion. In certain respects the latter does resemble nuclear ones, but it was ascertained only 20 years later, and so one cannot but admire Kazantsev's deep insight.

Specialists in meteoritics at once raised objections to such a "fantastic" idea. Thus, a team of the most distinguished Soviet astronomers wrote in 1951 in the popular-science journal, *Science and Life*: "There is no question that immediately after the meteorite fall, ... a crater-like depression formed where now the Southern Swamp exists. ... It was relatively small and soon became inundated with water. In subsequent years it was covered by silt and moss, filled with peat hummocks and partly overgrown with bushes. The dead trees standing upright can be seen not at the center of the catastrophe, but on the hillsides which surround the hollow. ..." (3)

However, this theory was laid to rest by the work of the first post-war Tunguska Expedition, organized in 1958 by the Committee on Meteorites of the USSR Academy of Sciences, which led everyone involved in the discussion to agree that: the Tunguska space body had in fact exploded in the air and therefore hardly could have been a usual meteorite.

Thereafter the number of anomalies discovered at the site of the Tunguska explosion began to grow steadily. The hypothesis of a thermal explosion, according to which the Tunguska space body was a meteorite or the core of a small comet that explo-

ded as a result of the rapid deceleration in the lower atmosphere, met with difficulties. Unable to assimilate the facts, as early as 1962 the Committee on Meteorites got rid of the affair, turning it over to the Commission on Meteorites and Cosmic Dust of the Siberian Branch of the USSR Academy of Sciences. The problem of the Tunguska phenomenon was, so to speak, exiled to the place of its birth.

In reality, it was the Interdisciplinary Independent Tunguska Expedition (IITE) that became the center of the Tunguska studies. It was not the only research body in this field, but its role can hardly be overestimated.

The IITE is a kind of informal scientific research institute aimed at thorough studies of the Tunguska problem. It was formed in 1958 in the Siberian city of Tomsk, initially under the leadership of G.F. Plekhanov and consisted at first of a dozen specialists in various scientific disciplines, mainly physicists and mathematicians. A few years later the "core" of this informal institute involved about 50 scientists. Some 100 specialists per year took part in the field-work on the site, and no less than 1000 researchers in various "formal" institutes all over the country analyzed the collected materials. At present the head of the Expedition is Dr. N.V. Vasilyev, a Member of the Russian Academy of Medical Sciences. The IITE, as well as some other research bodies, performed a huge amount of the work. Its main empirical results can be set forth as follows:

1. The area of the leveled forest has peculiar contours (something like a gigantic butterfly) and a complex structure. In general the forest fell strictly radially, but near the epicenter there are local deviations from the radial pattern, which permits the assumption of the existence there of at least two or three subepicenters. The combination of the "butterfly-like" shape of the area with the general radial pattern of forest falling suggests that the Tunguska body consisted of two different parts: an "explosive" and a non-uniform "shell", which gave rise to peculiarities of the shock wave shape. (4)

2. The axis of symmetry of the fallen forest field (or, more exactly, "a 'corridor' of axially symmetric deviations of vectors of the forest falling from the dominating radial pattern") (5) is directed at 81°W of the true meridian. It is interpreted as the imprint of the ballistic wave of the Tunguska body at the final stage of its flight, that is immediately before the explosion. It is essential to note that this wave was rather weak, levelling none of the trees and just introducing some little deviations in the radial pattern of forest falling. The latter was in itself fully due to the effect of the shock wave. This points to the fact that the speed of the Tunguska body at the final stage of its flight was relatively low. A.V. Zolotov has estimated this speed at 1.2 kilometers per second. (6)

3. The zone of the radiant burn of trees is also "butterfly-like" in shape, its axis of symmetry approximately coincides with the "ballistic" one. Besides, it is somewhat extended along the path of the Tunguska body; it appears that the latter was moving and exploding (or at least emitting powerful electromagnetic radiation) over the last 20, or so, kilometers. (7) This is not in good accordance with the strict radial pattern of forest falling, and therefore we should probably assume that the source of the flash was not identical with that of the shock wave. The radiantly burned vegetation is arranged patchily, that is, areas thermally seriously damaged and areas free from any thermal influence are intermittent. A workable model, explaining this peculiarity, would be a host of powerful "thermal rays", not just an isotropic fireball.

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4. There is no astrobleme in the region of the explosion, nor any substance that could be identified with that of the Tunguska space body. The meteoritic dust that was found on the site does not differ from the usual background fall of extraterrestrial matter. Yet some local geochemical anomalies have been discovered at the epicenter of the Tunguska explosion. The soil is enriched with rare earths (mainly ytterbium), as well as with barium, cobalt, titanium, and some other elements. (4 & 5) There were also found substantial shifts in isotropic compositions of carbon, hydrogen and lead.

5. A complex set of serious ecological consequences has been revealed in the region of the explosion. These are: first, a very fast restoration of the forest after the catastrophe and accelerated growth of trees (both young and those which survived the incident); second, the sharply (in 12 times) increased frequency of mutations in the local pines. Both of these effects tend to concentrate towards a "corridor" of the Tunguska body path. As many other anomalies in this region, the genetic impact of the phenomenon is also of patchy character. There was also discovered a rare mutation among the natives of the region, which arose in the 1910s in one of the settlements nearest to the epicenter, Strelka-Chunya. (5)

6. Directly under the path of the Tunguska space body, thermoluminescence of minerals has substantially increased. This can have been due to hard radiation, emitted in the course of the flight, and possibly, at the instant of the explosion.

The six facts discussed above are an essential part of empirical data gathered by the Tunguska investigators during the past decades. They are well-established, and no model of the phenomenon may ignore them. What is more, any conception that does ignore these facts cannot be considered as serious and scientific. Needless to say, the facts can be interpreted variously, depending upon diverse theoretical schemes through which we look at them. At the same time, some important features of the phenomenon can be directly inferred from the empirical information we have got. Unfortunately, we do not have all the necessary information to set up on its basis a complete model of the Tunguska phenomenon, let alone a convincing theory explaining it.

Now, what conclusions can be made on the basis of the empirical data which were outlined above? What do we know about the Tunguska phenomenon and what do we not know?

First, the main explosion occurred in the atmosphere, at an altitude of 5 to 7 kilometers. It was due to the internal energy of the body, not to the energy of its motion. Concentration of this energy approached that of nuclear explosions, and no less than 10% of it released as the flash. This suggests some kind of nuclear reaction, but what kind it is remains unknown. No firm evidence of such a reaction has been found in soil and vegetation in the region of the explosion. However, this assumption is backed by the following facts: the local magnetic storm that started after the explosion; increased thermoluminescence of the minerals at the epicenter; and, certainly, the genetic mutations in local pines. It is not improbable that we are dealing in this instance with a novel type of nuclear reaction.

Second, apart from the "main" explosion at a relatively high altitude, there were a number (three or four) of "additional" low-altitude and, probably, low-power explosions. This is borne out both by fine structure of the fallen forest field and by testimonies of some eyewitnesses who found themselves in the immediate vicinity of the epicenter. (8) Incidentally, the fact that these witnesses have survived at the epicenter of 10 to 40 megaton explosion seems to favor the highly anisotropic character.

Third, the Tunguska space body consisted of some

sort of "explosive substance" and a "shell", resembling thereby an artificial construction. As A.N. Dmitriev and V.K. Zhuravlev note, the shape and structure of the fallen forest field can be easily explained if we assume that the shell had symmetric zones of increased and reduced strength of material. Another workable model would be a cone-shaped mass of explosive having cumulating hollows and a detonator in its forward part.

Fourth, what path the Tunguska body followed through the atmosphere remains to a large extent unclear. Immediately before the explosion it was moving almost exactly east to west. The witnesses' testimonies that were collected in the 1960s do in fact bear out this variant. Yet the witnesses' testimonies gathered in the 1920s suggest with equal likelihood that the body might have arrived from the south or "at best" from the south-east. This evidence cannot be easily rejected since it was obtained shortly after the event. Attempting to find a way out of this deadlock, F.Yu. Zigel in 1966 suggested a possible maneuver of the Tunguska body at the final stage of its flight. However, the eastern variant of the path has been traced as far as the Lena river. This casts doubt on the possibility of a maneuver at least for this body. So, it can be assumed that there were several bodies moving from different directions towards more or less the same final point.

Fifth, what was the fate of the Tunguska body (or bodies) after the explosion? The hypothesis of a "ricochet" of the body, put forward in the early 1930s, was rejected, in particular, because the researchers understood well that the Tunguska space body had no chance of surviving such a powerful explosion. It may be so, but nonetheless the imprint of the ballistic wave on the fallen forest is observed even beyond the epicenter, approximately in the same direction as before it, and therefore some part of the body (or just one of the bodies) might have continued its flight after having taken this "fiery bath".

From all the aforesaid it follows that the intricacy and complexity of the Tunguska phenomenon far exceeds the limits of the simplest models still existing in popular-science and even in scientific literature. It certainly appears that the basic tendency of the results obtained during the years of Tunguska investigations favors the artificial nature of the Tunguska space body and at least the unconventional character of its explosion. The technogenious hypothesis is thus coming to the fore in the Tunguska studies. But of course, it does not have to be limited by its initial version - that is, by the hypothesis of an accidental crash of an extraterrestrial spaceship. It might well be that it was not accidental.

When working in the mid 1970s with A.V. Zolotov and his team, I developed the so-called "battle model" of the Tunguska phenomenon. According to this model, there happened in 1908 an aerospace battle between two or more alien spaceships, after which one of them survived and flew back to space. Of course, I do not mean this is the final solution of the Tunguska mystery, but as a working instrument this model seems to be helpful. Whether or not it is correct remains to be seen.

Of course, an accidental fall of an ancient starship, after millions of years of its space wanderings, cannot be fully ruled out either. In this connection, I would like to note that the usual reaction of many scientists to the technogenious hypothesis of the Tunguska phenomenon ("it is impossible", "it is highly unlikely", etc.) is not in fact rational. Alexey Arkhipov, working in our Research Institute on Anomalous Phenomena, recently attempted to calculate the chance that an extraterrestrial artifact may fall to the Earth. It has turned out that even for rather conservative estimates of the

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number of civilizations in the Galaxy, this chance is not too small. A number of finds which were, and still are, rejected as "pseudometeorites" may fall into this category. "Multicolored bolides" that had been from time to time observed before 1957, could also be extraterrestrial artifacts. It is well known that for "normal" meteors multicoloredness is not typical, due to their chemical homogeneity. On the contrary, artificial satellites, being chemically heterogeneous, usually burn in the atmosphere with fires of diverse colors.

It is interesting to note that recently a very unusual meteorite fell to Earth not far from the city of Kharkov, in the Ukraine. On May 15, 1994 at 8:45 PM a white bolide flew over the Kursk, Belgorod, and Kharkov regions from the north to the south and a meteorite fell at 40 km to the south-southwest from Kharkov. An expedition of the Kharkov University Astronomical Observatory found there a crater 4 meters in diameter and 1.5 meters in depth, evidently of explosive origin. There were discovered metallic debris of very strange shape and composition. Logically, the fallen body could have been either a meteorite, or an artificial satellite. Judging from their shape, the fragments obviously are of an artificial device. The largest of the debris is a threaded tube 50 cm long, some 2 to 3 cm thick, and which was, before the explosion, some 10 cm in diameter. So, not a meteorite.

The chemical composition of the fragment is as follows: iron 99%, copper 0.3%, nickel 0.04%, titanium 0.02%; There was no magnesium or aluminum. Thus, again, not a meteorite, but not a spacecraft either. There cannot be iron spacecraft. Artificial satellites and space stations are made of titanium, magnesium, aluminum, beryllium - not of rusty iron! I must confess that the closest parallel for this object would be a fragment of an old starship from the well-known movie serial "Star Wars".

One of the scientific papers on the Tunguska phenomenon was titled: "Tunguska Meteorites Fall Down Every Year"(9). Its author meant that loose meteorite bodies rather often enter the atmosphere of our planet, exploding there. He assumed that the Tunguska space body had been just a big, loose meteorite. You can judge for yourself whether this hypothesis corresponds to that intricate and complicated picture of the phenomenon which we now see as a result of the tremendous work of hundreds of dedicated researchers in the USSR (now CIS). But the title of that paper may have a further meaning: it is not improbable that debris of extraterrestrial spaceships fall to the Earth more or less regularly, but we ignore the character of their remnants. If in the near future the mystery of the Tunguska "meteorite" is solved, then perhaps we will take a different view of the world we live in and understand that our solitude in the universe is just an illusion.

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RAVES IN THE CAVES

A recent survey by Cambridge University's Archaeology Department has concluded that the swirling, spiral designs found at many neolithic sites in Britain and Ireland were the product of psychedelic hallucinations. (London Sunday Times January 28, 1996) The three-year study compared the patterns to the "op art" of the 1960s and to the shapes drawn by drug-takers under controlled experiments, and found many similarities. British scientists now believe that Stone Age man was indeed "stoned"! Analysis of further images across Europe is expected to take place early next year.

What a worrying development! All the experts need do now is to prove the existence of "magic mushrooms" in ancient South America, Egypt and Mesopotamia and all the ancients can be dismissed as a load of drug-crazed hippies. Perhaps they will even convince us that the Pyramids and other fantastic constructions are a figment of our imagination! Alan F. Alford, 34 Shire Ridge, Shire Oak, Walsall, WS9 9RB ENGLAND.

COMMENTS ON MICHAEL A. CREMO'S ARTICLE ON FORBIDDEN ARCHEOLOGY IN ANCIENT SKIES 22:4:

1. I have read avidly Michael Cremo's article and I concur fully with him on the age of planet Earth and of the extreme age of millions of years for those who came here. I know for a fact that the Sioux history alone goes back 4 million years when the very first Sioux, a Dakota, set foot on this land. I also saw a spike nail that was imbedded in coal that had been taken from a seam that was a half mile deep underground. I am 93 years old and have actually seen many odd things. I still give lectures at universities, to Boy Scout groups and others and I know that when it comes to ignorance, it was handed out to the so-called professors. Chief White Wolf-Sioux, Janet Shuty's Residence, 104 Monaco St., Port of Call, Butler, PA 16001 USA.

2. This article is incredibly amazing. It is very lucid and clear with a great deal of supporting evidence. If man has been existing in his present form for millions of years and co-existed with Ape-like creatures but did not evolve from them, then it is quite possible that the dates given for the world's earth-shaking events, such as the Garden of Eden, the building of Egypt's pyramids, Noah's Ark, the Ark of the Covenant, and others, must have taken place much earlier than thought. Rustum D. Patel, No. 2 K.R. Irani Bldg., Katrak Hall Compound, Katrak Rd., 122 Depot Lines, Saddar, Karachi, PAKISTAN.

3. "What a revelation by Michael A. Cremo!" George Scott, Pomona, Queensland, AUSTRALIA.

NOTE: Mr. Cremo's book Forbidden Archaeology and the abridged version, The Hidden History of the Human Race, are available from Torchlight Publishing, P.O. Box 52, Badger, CA 93603. Tel. 209-337-2200. Fax. 209-337-2354.

ERICH VON DANIKEN's new book in English, The Eyes of the Sphinx, can be ordered from ARCTURUS BOOKS, INC., 1443 S.E. Port St. Lucie Blvd., Port St. Lucie, FL 34952. Tel. 407-398-0796. Fax. 407-337-1701. ARCTURUS will operate the bookstore at the 24th Anniversary World Conference of the Ancient Astronaut Society at the Sheraton Plaza Hotel in Orlando, Florida on August 3-8, 1997.

FINAL CALL FOR THE SOCIETY'S MEMBER EXPEDITION TO PERU FOR MAY 14-JUNE 1, 1996. For reservations, Telephone 847-295-8899, or Fax 847-295-0868.

It is with deep sorrow that we announce the death of MAURICE CHATELAIN, author of Our Cosmic Ancestors, one of the greatest books in our field.