
Review

The UFO phenomenon has now been studied all over the world for over half a century. Such research is conducted primarily by associations of nonprofessionals, which unite numerous enthusiasts in many countries. Only in the United States, France, and the Soviet Union were government programs for investigating the nature of UFOs carried out. In the following article, the authors describe the history of the organization and pursuit of studies of anomalous phenomena at institutions of the Academy of Sciences and the Ministry of Defense in 1978–1991, and also the main results of these studies.

The Study of Unidentified Flying Objects in the Soviet Union

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In the mid-1970s, unofficial organizations in the Soviet Union concerned with “studies of the UFO problem” became more active, and this considerably boosted interest in the problem among the public at large. All sorts of conjectures on the subject were fanned by widely publicized lectures by domestic ufologists and numerous articles based on foreign publications. The country’s leadership bodies did not encourage discussion of the UFO problem in the mass media, though they did not forbid lectures at institutes, industrial establishments, and even military units. It should be added that the lectures drew packed halls. The lecturers (among whom F.Yu. Zigel’, an instructor at the Moscow Institute of Aviation, and V.A. Azhazha, a retired naval engineer, were particularly popular) encouraged their audiences to believe in the extraterrestrial origin of UFOs, although less extravagant hypotheses were also mentioned, such as underwater and even underground civilizations seeking contact with humanity.

The investigations of the UFO problem in those years actually only amounted to collecting diverse information about strange phenomena. The data collected were often of very questionable origin, distorted beyond recognition by repeated retranslation, or simply unverifiable. The connection between strange phenomena and the activities of extraterrestrial civilizations was simply postulated by the lecturers, and the analysis of observations or of measurements at “UFO landing sites” turned out, upon closer examination, to be, mildly speaking, incorrect. Because that was a time of the widespread acceptance in the world, including the Soviet Union, of scientific studies of possible extraterrestrial intelligent life, it was not too difficult to build

up a public belief in the extreme importance of UFO studies aimed at establishing contact with intelligent beings elsewhere in the Universe.

In due course, the press began to report observations of extraordinary light and optical phenomena in various parts of the country. A considerable number of reports describing various strange phenomena and requesting a scientific—or, simply, rational and logical—explanation of them began to gradually accumulate at the USSR Academy of Sciences and at the editorial offices of newspapers and magazines. The General Physics and Astronomy Division of the USSR Academy of Sciences appointed several researchers, headed by the scientific secretary of the division, V.A. Leshkovtsev, to work with the letters on this subject. Their task consisted of registering the reports received, consulting specialists in corresponding scientific areas, analyzing the data, and replying to the letter-writers.

Naturally, such a primitive approach to the organization of UFO studies could produce no appreciable results. It was then decided to set up a working group of scientists in a variety of fields and to establish a channel of prompt communications among institutes of the USSR Academy of Sciences, the Ministry of Higher Education, the Hydrometeorological Service, and, of course, the Defense Ministry, since such investigations had to be conducted in close cooperation with the military authorities. The formal cause of the establishment of the working group was the so-called Petrozavodsk phenomenon.

On September 20, 1977, in the early hours of the morning, people in the northwestern region of the Soviet Union observed an unusual, large-scale light phenomenon for several minutes. Its description, compiled from eyewitness accounts, appeared in the newspaper *Izvestiya* on September 23 in an item headlined “An Unidentified Natural Phenomenon”: “The inhabitants of the city of Petrozavodsk have witnessed an unusual natural phenomenon. On September 20, at about 4 a.m., a huge “star” flared up suddenly on the

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dark sky, sending pulsed shafts of light to earth. The “star” travelled slowly toward Petrozavodsk and, spreading over it in the form of an enormous “jellyfish,” remained suspended there, showering the city with a multitude of extremely thin beams, which produced the impression of pouring rain.

After a time, the beams of light vanished. The “jellyfish” turned into a bright semicircle and resumed its movement in the direction of Lake Onega, where the horizon was shrouded in gray clouds. In this shroud, there later formed a round rift that was bright red in the middle and white along the sides. The entire phenomenon, according to eyewitness accounts, lasted for 10–12 minutes.

The director of the Petrozavodsk Hydrometeorological Observatory, Yu. Gromov, told a correspondent of the Soviet news agency TASS that no analogues of this had ever been observed in nature before by the staff of the meteorological service in Karelia.”

This colorful event was witnessed by a wide cross-section of people: an ambulance crew, policemen, sailors and dockers of the Petrozavodsk lake port, servicemen, airport personnel, and even an amateur astronomer. The fact that people in Petrozavodsk did, indeed, observe an unusual light phenomenon thus aroused no doubt.

It soon became known that a similar picture in the sky was observed at the very same time in places quite distant from Petrozavodsk; for example, in Finland (Sodankyla) it was recorded on several photographs. Such an event could not be ignored or simply brushed aside, and the local authorities asked the Presidium of the USSR Academy of Sciences for an explanation of it. Parallel with this, the Academy of Sciences and the editorial offices of newspapers were flooded with letters from the people with the same question: what had occurred in the night sky over Petrozavodsk on that September night? The same question was asked in official messages addressed to the president of the USSR Academy of Sciences from several neighboring states in Northern Europe. They reflected concern whether the observed effects had not been consequences of some experiments in military technology constituting a hazard to the environment in the region.

Under the pressure of these circumstances, Academician A.P. Aleksandrov, President of the USSR Academy of Sciences, signed a letter addressed to L.V. Smirnov, a vice-premier and, at the same time, the chairman of the Military-Industrial Commission (MIC), requesting urgent consideration of the possibility of undertaking a comprehensive investigation of anomalous phenomena, like the “Petrozavodsk phenomenon,” with the extensive participation of organizations of the Defense Ministry and defense-oriented industries. In accordance with the procedures for considering such matters that were customary at that time, the chairman of the MIC instructed his deputy in charge of the Scientific and Technical Council (STC) of the

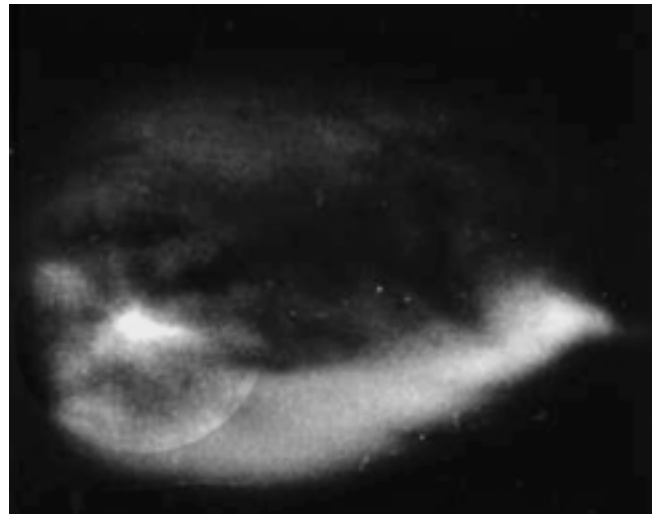


Fig. 1. A gas-and-dust cloud formed by the combustion products of the second-stage engine of the launch vehicle that lofted a *Molniya* satellite on August 27, 1982, from the Plesetsk cosmodrome. The photo was taken “in pursuit” about a minute after passage through the turbopause (altitude about 100 km). The streams of combustion products issuing from the engine form a cloud resembling a “jellyfish.” It expands at a rate of up to 2 km/s.

MIC Academician A.N. Shchukin to discuss the request of the President of the USSR Academy of Sciences at the next meeting of the council. Such a meeting took place in October 1977 in the Kremlin under the chairmanship of Lieutenant-General B.A. Kiyasov, one of Shchukin’s deputies.

In his opening remarks at the meeting, Kiyasov gave a brief resume of Aleksandrov’s letter to the MIC, which could be summarized in a single sentence: “The USSR Academy of Sciences can no longer ignore—nor can it explain—anomalous phenomena like that observed in Petrozavodsk in September 1977, and in this connection it requests that a comprehensive investigation of anomalous phenomena be undertaken, with the participation of organizations of the Defense Ministry and the MIC.” The STC members who spoke after Kiyasov supported the proposal of the Academy president and said that organizations of the Defense Ministry were likewise receiving reports from servicemen about observations of unusual phenomena, during which, moreover, there had sometimes been malfunctions of logistic technical facilities.

The result of the meeting was a decision of the STC recommending that the MIC include the integrated problem “Studies of Anomalous Atmospheric and Space Phenomena, Their Causes, and Their Effects on the Performance of Military Hardware and the Status of Personnel” in the state plan of defense-related research for 1978. The recommendation was accepted, and, during the very next updating of the current five-year plan of defense-related research, the MIC included in it two

aspects of the study of anomalous phenomena for 1978–1980:

- “DM Network”—studies of anomalous atmospheric and space phenomena, and of their effects on the performance of military hardware and the status of personnel (Defense Ministry), and
- “AS Network”—studies of the physical nature and development mechanisms of anomalous atmospheric and space phenomena (Academy of Sciences).

A state program of studies of the UFO phenomenon was thus launched in the Soviet Union in 1978 and continued without interruption for 13 years, until 1990. As for the meeting of the MIC Scientific and Technical Council in October 1977, which played such an important part in organizing the program, it was to be the first and last conference with such a high level of participation to be devoted specially to this problem. Twice subsequently, in 1981 and in 1986, five-year plans of defense-related research were approved that included the problem of anomalous phenomena. After the conclusion of the research program, the group of experts at the Academy’s Division of General Physics and Astronomy continued its work until 1996, and its task included analyzing reports from eyewitnesses of strange phenomena. At present, there are few such reports, but they too are subjected to expert analysis in the division.

It is noteworthy that it was not customary to use the abbreviation UFO in official documents—instead, the term “anomalous phenomenon” was used. This was done because the words “anomalous phenomenon” were more in keeping with the nature of the observed effects than were the words “unidentified flying object” and did not evoke associations with the hullabaloo over “aliens visiting the Earth in flying saucers.”

To mitigate the public’s reaction to the legalization of studies of the nature of UFOs it was decided to classify them. This was prompted by at least three considerations:

- the formal association of the research program with the classified plan of work on defense projects;
- the initially assumed high probability of the observed strange phenomena having their origin in military technology, and
- the possible military use (in the event of the successful solution of the problems formulated) of certain probable properties of UFOs—the absence of a radar target contrast, high maneuverability, etc.

Because of the classified nature of work on this problem, their coverage in the mass media was highly restricted: it was recommended that all publications on UFOs be submitted to the USSR Academy of Sciences for review (not to be confused with censorship).

By decision of the MIC, two centers of UFO studies were actually established in the country: at the Ministry of Defense and at the USSR Academy of Sciences. The dividing line between them were the sources of the

data. The Defense Ministry studied the observation results reported by the various arms of the service; the Academy of Sciences, the reports collected by research organizations, the Hydrometeorological Service, the editorial offices of newspapers and magazines, etc. Naturally, the aims pursued likewise differed. In the case of the military, one of the principal aims was to establish the possible effects of UFOs on the performance of military hardware and the status of personnel. If such effects had been detected, priority would have been given to studying their mechanism and dangerous consequences. The principal aim of the Academy, on the other hand, was to probe the physical nature of the development of anomalous phenomena, that is, to model the processes of the origin, visual manifestation, and disappearance of the effects, their relationship to physical conditions in the environment, and possible anthropogenic influences on nature. Obviously, these trends intersected and complemented each other to some extent, and only joint efforts could produce speedy and correct solutions to the problems formulated.

One of the central military research institutes, located just outside Moscow, was named as the main executor of the military section of the UFO research program. Its head, V.P. Balashov, a prominent specialist in radiation-caused and other injurious effects on military hardware, was appointed its scientific supervisor. A group of military and civilian specialists, which at various times numbered four or five people, was set up at the main institute of the Defense Ministry and did the bulk of the work of collecting the communications on UFO sightings, processing and analyzing them, and compiling reports. Naturally, the executors of the project also included other research organizations of the various arms of the service and scientific institutions of the military-industrial complex, some 15 bodies in all. Participation was strictly voluntary, and the contributions of these organizations to specific efforts to identify anomalous phenomena were likewise voluntary and, as a rule, very limited.

The man appointed to head the “academic” part of the UFO studies was Academician V.V. Migulin, a leading expert on the theory of oscillations, the propagation of radio waves, and radar, and the director of the Academy’s Institute of Terrestrial Magnetism, the Ionosphere, and Radio Wave Propagation, which was designated as the main organization in this effort. As in the Defense Ministry, a working group of four or five people (headed by Yu.V. Platov) was formed for the actual work on the project. The organizations involved in the work were academic institutes, and institutions of the Hydrometeorological Service and of higher learning. Their participation varied from collecting reports of UFO sightings to analyzing the data and constructing physical models of various classes of anomalous phenomena. The expenditures on the program consisted of the salaries of the specialists involved in it and travel expenses. The money came from the budgets of the par-

ticipating organizations—there was no special-purpose funding of the research.

It should be noted that the program for studying anomalous phenomena was one of, if not the least expensive defense-related research projects. The shortage of funds made it impossible to design or purchase additional special-purpose equipment or to stage specially designed experiments. As a result, part of the planned investigations, including those involving the formation of large-scale plasma structures in the atmosphere, were not carried out. The shortage of funds also affected research methods, which were actually confined to analyzing the data collected and constructing physical models of the phenomena observed. Only in a few, highly interesting cases did specialists travel to the locations of UFO sightings and were purposeful observations involving technical experiments conducted.

The research program was based on three fundamental principles. In accordance with these principles, anomalous phenomena were recognized as a real, objective fact, the researchers rejected any a priori solutions, and devoted themselves to prolonged and profound study of the problem. Although from the outset, we sought to avoid a prejudiced attitude to any of the hypotheses concerning the nature of UFOs, a certain priority was, nevertheless, attached to the theoretically plausible versions of their origin:

- UFOs are a product of human activity, that is, anomalous phenomena are of anthropogenic origin;
- UFOs are a product of natural processes that take place on Earth, in the atmosphere, and in near space, that is, anomalous phenomena are of natural origin, and
- UFOs are manifestations of the activities of extra-terrestrial civilizations.

The latter version, although the most intriguing, aroused little enthusiasm, but it would have been wrong to dismiss it outright.

A key role in organizing and carrying out the military section of the program was played by a document drawn up by the main executor of the Defense Ministry and approved by the chief of the General Staff of the Soviet Armed Forces in January 1980. The document, circulated among all military units in the form of a General Staff directive, contained instructions on all the main aspects of the implementation of the program of UFO studies. It identified:

- one of the central military research institutes of the Defense Ministry as the main executor of the program, charging it with the functions of a center for collecting, processing, and analyzing all the information concerning UFOs obtained in the forces;
- the military research institutes responsible for the fulfillment of the program in each of the five armed services and the procedures for their interaction with the central research institute responsible for the program as a whole;

- the procedures whereby the main executor of the program would receive the information from the individual armed services needed to identify UFOs, above all data on space rocket launches in the forces, and

- the rules for documenting a UFO sighting in the forces and the procedures for submitting reports in accordance with the urgency and importance of the information contained in them.

This directive, in effect, enabled the executors of the program for the study of anomalous phenomena to draw on the enormous observation potential of the Soviet Army. Every serviceman, wherever he was, unwittingly became a potential executor of the program, since, should he observe some inexplicable, unusual, or extraordinary phenomenon, he was duty-bound to report his observations in writing according to the prescribed form and submit these documents to his superiors. It can be said that this directive charged the army for 13 years with the duty of conducting mass observations of anomalous phenomena at troop deployment locations, that is, practically throughout the entire territory of the Soviet Union, which, after all, occupied close to one-sixth of the land surface of the Earth. It is doubtful whether anyone ever organized such a large-scale study, moreover practically without any investment of funds. Two channels were provided for transmitting information about UFO sightings. The first, routine channel was used in those cases where the observed phenomena caused no disruption of the activities of a military unit. But if there occurred anything extraordinary at the observation site, such as malfunctions of equipment against the background of the development of anomalous phenomena, the information about such events was urgently transmitted to the chief executor, bypassing all intermediate stages.

The similar collecting of observation data—true, not on such a vast scale—was organized at institutions subordinate, under the program, to the Academy of Sciences, above all, at stations of the Hydrometeorological Service (where the head organization was the Institute of Applied Geophysics). The emphasis in the work of the academic organizations was, however, on analyzing the conditions in which anomalous phenomena had been observed and on the physical mechanisms of their development. Specialists in atmospheric and plasma physics, geophysics, geochemistry, mathematics and other disciplines were enlisted in this work. This created the necessary prerequisites for collecting sufficiently comprehensive information about observations of various anomalous phenomena, for its objective analysis, and for constructing adequate models.

In the course of the work on the program over 13 years, some three thousand communications about the observation of unusual phenomena were received. Practically all the phenomena were analyzed and identified. Many of them were mass observations, with one and the same phenomenon being described by many

independent eyewitnesses. The term *mass observations* may be used wherever there are 7–10 reports about one and the same episode. In some of the largest-scale episodes—due to weather conditions, the duration of the development of the phenomenon, and many other factors—the number of descriptions reached 50 and more. During the project's duration as a whole, slightly more than 300 events, described as extraordinary or anomalous, were recorded. The number of phenomena recorded as anomalous was relatively small, probably because the reports collected were subjected to quite competent verification locally, and many of them were rejected immediately.

It is noteworthy that practically no UFO sightings were reported by military units stationed at proving grounds in their immediate vicinity. This is evidently due to the fact that the effects accompanying military technology testing and experiments are well known to specialists, but are seen as bewildering and anomalous by people uninformed about these areas of human activity.

Practically all the nighttime mass observations of UFOs were unequivocally identified as effects accompanying launches of space rockets or tests of aerospace technology. Such an identification included establishing that the observations of the unusual effects coincided in time with corresponding tests, that there was a spatial correlation between the possible area of the development of the phenomena and the location where the technical systems functioned, and that the observed phenomena corresponded to the mode of operation of the technical facilities. Significantly, effects accompanying space rocket launches may be visible at considerable distances (thousands of kilometers) from the launch site—this is due to the variety of operating modes of rocket engines and to the firing of spacecraft thrusters for orbit correction.

The principal mechanism responsible for the development of this class of phenomena is the scattering of sunlight on the gas-and-dust cloud formed by the products of fuel combustion. Conditions for observing such effects become especially favorable in twilight hours, when the rocket streaks through sunlit regions and the observer is on the nighttime side of the Earth. The configuration and dimensions of the gas-and-dust track of the rocket may vary within a wide range, depending on the altitude of the rocket's flight, the type of its engines, the fuel components, etc. Suffice it to say that in some cases, the characteristic rocket "track" may be many hundred kilometers wide across. Small wonder that the unusual character of the observed picture, the possibility of observing it over a huge territory, since it develops at altitudes of over 100 km, the absence of sound effects, and so on tend to baffle the lay observer.

Among the most interesting of these rocket effects is the already-mentioned famous Petrozavodsk phenomenon, which was caused by the launching of the *Kosmos-955* artificial Earth satellite from the Plesetsk

cosmodrome.¹ The mass observations of a dirigible-shaped object on a vast portion of European Russia on the night of June 14, 1980, were caused by the launching of the *Kosmos-1188* satellite from Plesetsk. About an hour later, the same satellite "left its mark" in another region of the globe: over South America. What observers in Russia saw was the gas-and-dust track left by the propulsion engine of the launch vehicle; observers in South America, the cloud produced by the acceleration engine of the launch vehicle during the insertion of the satellite into its scheduled orbit. Such phenomena were observed on May 15, 1981, when the *Meteor-2* satellite was launched; on August 28, 1982, when *Molniya-1* was launched; on July 3, 1984, when *Kosmos-1581* was launched, and so on. In some cases, anomalous phenomena were due to the launching of land- and sea-based ballistic missiles, rather than satellites. Incidentally, such phenomena have been noted fairly regularly in the Canary Islands, where they were caused by the test launches of missiles from American submarines.

The second most important class of phenomena perceived by eyewitnesses as UFOs corresponds fully to the term "flying object." True, this calls for a small comment: the objects appear to float or drift rather than fly in the atmosphere. It is to this class of phenomena that effects caused by the launches of balloons belong.

Sounding balloons—rubber envelopes about 2 m in diameter on the ground, with instruments suspended from them—are used extensively all over the world to study the state of various layers of the atmosphere and to conduct regular meteorological observations. They can ascend to altitudes of about 30 km, where their diameter increases to almost 10 m. They are launched regularly, and their range usually does not exceed 10–15 km from the weather station; for this reason their sighting, as a rule, evokes no consternation. Sometimes, however, surprising things occur.

On June 3, 1982, the country's antiaircraft defense command post received an urgent report from a regiment deployed not far from Chita, east of Lake Baikal, to the effect that an aircraft patrolling the border with China had detected an unusual object of spherical shape at an altitude of approximately 17 km and had prepared to attack it, but the object had suddenly disappeared. It was specifically stated in the report that the detected spherical object could not have been a meteorological sounding balloon, since weather balloons, well known to the personnel, were smaller in size than the observed object and never ascended to such altitudes. Because there were no buildings on the ground in the area of the plane's encounter with the object, except for a frontier picket and a weather station, it was decided to start inquiries at the weather station. A telephone conversation with its head revealed, first, that a

¹ Several additional effects that attended the Petrozavodsk phenomenon were due to the unsuccessful test launch of a ballistic missile conducted in the same region at practically the same time.

sounding balloon had been launched from that weather station at practically the same time as the patrol plane had encountered the unknown object, and, second, that the balloon's envelope had proved unusually strong and the balloon had ascended to an altitude several kilometers higher than usual. The last altitude registered on the basis of telemetered data had been 16 km.

A similar episode occurred on September 13, 1982, in an antiaircraft aviation regiment stationed on the Chukotskii Peninsula. Once again, an aircraft encountered an unknown spherical object at a high altitude, this time in the area of the Gulf of Anadyr', and then suddenly lost sight of the object. This episode differed from the previous one in that the meteorologists did not know the altitude reached by the weather balloon because the telemetry had failed at the very beginning of the flight. It is quite possible both balloons were from the same batch and had envelopes stronger than usual. Judging from these episodes, even experienced pilots can err in assessing the size of observed objects, the distance to them, and identifying them with specific phenomena.

Scientific research in the upper layers of the atmosphere is not conducted using conventional sounding balloons, but balloons that can drift for prolonged periods of time at altitudes of over 40 km. The flight duration record, established in 1970, exceeds four years, during which the balloon circled the globe more than 100 times at an altitude of approximately 35 km. Apart from balloons of classical spherical—or, rather, teardrop—shape, use is also made of balloons that are, say, tetrahedral, that is, have the shape of a regular pyramid. In 1977, the flight of such a balloon during the shooting of a film in the Baltic Republics caused a real panic among eyewitnesses. In some cases, cylindrically shaped envelopes are used, or double envelopes, which at a high altitude acquire the shape of a "doll." Tetrahedral balloons can attain 150000 m³ in volume, which corresponds to a typical size of about 110 m. Spherical balloons can be even more impressive: they have volumes of up to 500000 m³ and diameters of up to 150 m. It is simple to work out that even a medium-sized balloon, when viewed from a distance of about 100 km, will appear as an object of about 2 arcmin in size (about 1/15 the diameter of the full Moon). The share of the sightings of such UFOs is smaller than that of the effects that accompany rocket launches and amounts to 10–12%.

During the 13 years of work on the government program for the study of anomalous phenomena, only a few cases required the urgent consideration of circumstances associated with the sightings of UFOs and their likely interference with the activities of military units. In all such cases, the sightings were reported to the main executor not by the usual courier service, but in accordance with the schedule of urgent reports, that is, immediately and with notification of the highest mili-



Fig. 2. A dolphin-shaped UFO observed over a vast territory of the former Soviet Union on the night of June 14, 1980. This gas-and-dust cloud was formed in the upper atmosphere by the engines of the launch vehicle of the *Kosmos-1188* satellite. The cloud on the photo is about 250 km long.

tary authority. We, too, had occasion to participate in the investigation of such events.

The first such episode occurred on October 5, 1983, in a division of the strategic rocket forces stationed in the vicinity of the Ukrainian city of Khmel'nitskii. That day, from 6 to 10 p.m., many servicemen of the division and their families (up to 50 people in all) witnessed an unusual colorful light phenomenon. High above the horizon line in the northern direction, there appeared for a few minutes, then disappeared, and then reappeared bright luminous objects, whose shape resembled that of a dirigible. Some of the eyewitnesses claimed to have seen dark spots on them, resembling portholes, from which arched bright streams at times extended toward the ground. The event described, impressive as it was, would not have become the subject of an urgent report to Moscow had it not been for one circumstance. While this phenomenon was being observed, a signal light indicating a fault in the rocket launch system went on, on the control panel at the division command post. A few tens of seconds later, the signal light went out, just as spontaneously, but the duty crew remained uncertain whether the equipment was in working order. It was in this situation that the commander of the division took the decision to report urgently to the General Staff about the brief malfunction of equipment at the division command post, linking the malfunction to the appearance of unusual luminous objects in the sky over the division's disposition.

The chief of the General Staff, after studying the report, ordered that a special commission, including experts in anomalous phenomena, be dispatched urgently to the scene of the occurrence. The commission started work on the morning of October 6, and only two hours later, it established what the servicemen had seen the previous evening. A questioning of eyewitnesses helped to determine the direction (practically due north from the disposition of the unit) in which the strange phenomenon had been observed. The first note-

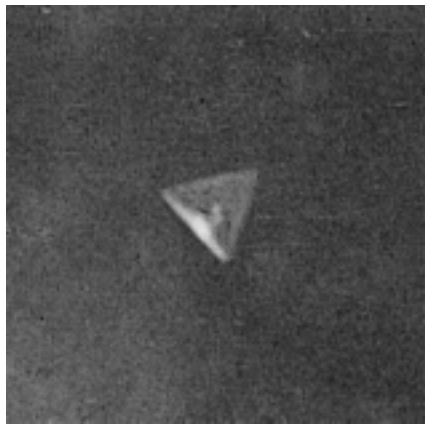


Fig. 3. A triangular UFO observed in the Baltic Republics in 1977. It was a high-altitude balloon of tetrahedral shape. Such balloons are made in France. They have a volume of up to 90000 m³ and can drift at altitudes of up to 40 km.

worthy potential source of UFOs in that direction turned out to be an aviation test range of the 26th Air Army in the Byelorussian region of Poles'e, about 400 km from the scene of the observations. An inquiry addressed to the Air Force command post made it possible to establish that exercises in dropping aircraft flares with subsequent conventional bombing, using optical bombsights, had been held there at the very time when the anomalous light phenomena had been observed. The flares had been parachuted from aircraft flying at an altitude of about 10 km, so that they had lit up a large area for 5–7 minutes. It was these light effects in the night sky over the Byelorussian test range that the servicemen of the rocket unit 400 km to the south had observed.

Practices in dropping aircraft flares were conducted at the Byelorussian test range several times a year, both in previous years and later, but it was only on October 5, 1982, that these effects were observed at a large distance from the range. The horizon line for the observers had passed more than 12 km above the range, so that the entire trajectory of the movement of the flares and the associated light phenomena had been “below the horizon.” This indicates that, at certain—probably, very rare—conditions in the atmosphere, there may develop effects of superrefraction. It remains for us to add that the equipment malfunction at the command post had nothing to do with the observed phenomena and coincided with them by happenstance. Nevertheless, it was this coincidence that was the impetus for the urgent investigation of this event.

Another episode tentatively unites several accidents in 1984–1987 that involved aircraft based at airfields of the Borisoglebsk air terminal in Voronezh Region. One aspect of these accidents was singled out: the presence in several cases of an unknown object in the zone of the flights that had involved accidents. The unknown object had been recorded on the screens of airfield radars and

had been observed visually by some of the pilots from the cockpits of their planes. The head of the Borisoglebsk military flying school, which was hit hardest by the accidents, asked that the commissions of inquiry into the causes of the accidents include specialists familiar with the UFO problem. Since no consensus has been reached on the role that the mysterious objects observed in the zone of the flights may have played in the accidents, these events will have to be regarded as unidentified.

In the foregoing, we have cited two causes of the sighting of UFOs: the flights of high-altitude balloons and the launches of rockets. These effects account for the greater part (over 90%) of the observed anomalous phenomena. Beyond a doubt, the proposed models are not the only ones possible, and we have no intention of defining these scenarios of the development of the majority of the observed strange phenomena as the only possible mechanisms. An adequately comprehensive picture requires the elaboration of hypotheses as diverse as the phenomena themselves.

The results of the work accomplished show that the overwhelming majority of the phenomena perceived by eyewitnesses as something anomalous are fully explicable. They are related mainly to human technological activities, which have been developing swiftly in recent decades, or to rare forms of natural phenomena [1–3]. One of the most important results, evidently, is not the identification of most of the observed phenomena, nor even the elaboration of physical models of their development, although, in our view, extremely interesting results were obtained in this area. What is most surprising is that—contrary to numerous descriptions of various types of contacts with aliens that have been collected by ufologists—the project, which drew upon the vast observation potential of army and civilian organizations, did not record a single report of a UFO landing, of contacts with UFO pilots, or of the abduction of people by UFOs. It may be that for some reason the territory of the Soviet Union was for at least 13 years closed to visitors from other planets, or else the hypothesis about the alien origin of UFOs is erroneous. Certainly, any earnest investigator of the UFO problem has to take this result into account.

In many publications on the UFO problem in recent years there have been repeated references to “secret files of the KGB,” “secret data on military operations to capture a UFO,” etc. The market today is flooded with video recordings from these archives. But, after studying them, one can only shrug them off. It is hard to imagine anything more absurd. As they say in English, “Somebody is fooling somebody all right.” This seems an apt description of the relationship between the authors of such publications and their readers. A relevant opinion has been expressed by the UFO investigator R. Cowen: “It is tempting to dismiss the charge made by UFO buffs that intelligence agencies have secret files on UFOs that they are reluctant to release.

Most such material, when it is made available, contains no revelations of alien visitations. But it undoubtedly does pay for such agencies to sift through UFO reports for any light they can shed on Soviet space secrets. To the extent that this process involves classified techniques, intelligence agencies probably and properly are withholding UFO information. Once again, a hard headed UFO study has shown that this seemingly goofy subject deserves serious research. UFOs are as real and significant as the secret space shots and other genuine mysteries that underlie reliable sightings" [4, p. 4].

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It is our pleasant duty to thank all the observers of anomalous phenomena who made it possible to carry out the government program of UFO studies. We also want to note the tremendous personal contribution of Academician V.V. Migulin and Lieutenant-General V.P. Balashov to formulating the tasks and scientifically supervising the research. A most active part in it was

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