



Full Paper

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On hypothetical fauna of the planet Venus: Responding the criticism

Abstract

The paper considers the arguments of the two studies^[4,7], which criticize the author's publications^[2,3] in which the detection of objects on the surface of Venus, hypothetically related to the presence of life on the planet was presented. In a detailed critique the author^[4] suggests that "the "strange stone"^[3] is a geological formation consisting of rounded angular fragments cemented by volcanic material, lava or tuffaceous material." The images shown in the article^[4] have nothing in common with a "strange rock" and are just a common geological material. They have neither a regular structure of the "owl", nor the peculiarities of its structure. The difference is so striking that it is hard to believe that a specialist in mineralogy can actually see something in common in these images, but can not see the regular structure of the "owl" that is not inherent to stones. Another critic^[7] compares the methods of transmitting images by radio link and suggests that differences in the images caused by the properties of the type of used modulation. It is shown that in^[7] instead of one and the same image, two different images (mistakenly or deliberately) were presented (obtained at intervals of about 87 minutes). Their time of registration was clearly indicated in^[3]. Differences in the content of pictures are related to the planet's surface, and not to the properties of the link. Along with the answers to the criticism, the article provides a new result, discovered by processing images from VENERA-13 lander.

INTRODUCTION: NEW UNUSUAL OBJECTS ON THE SURFACE OF VENUS

In articles^[1,2] images of unusual objects on the surface of the planet Venus were presented. Their properties can be considered hypothetically as possible signs of life on this planet. The paper^[3] came with the application of the 6 publications^[4-9], with the authors commenting both the article itself with images and physical possibility or impossibility of the existence of life in high-temperature and oxygen-free atmosphere of Venus with very high pressure at the surface. Venus conditions are radically different from the Earth's "normal physical conditions". The authors of papers^[4] and^[7] of the six comments follow a critical position in regard to the papers^[2,3]. Four other authors^[5,6,8,9] - support the validity of the experimental findings, and the leading authority in biophysics^[6] confirms that the possibility of life in Venus does not violent principles of biophysics. The current article discusses the critical comments to the articles^[2,3]. It has been shown that the similarity of images between given in^[3] and^[4], in fact, is absent. In the second critical work^[7], as a version

of the same picture different images are presented. Besides answers for critics, the current paper presents a new result - the object detected in images returned by the VENERA-13 lander, processed by modern method.

The only existing data about the planet's surface are the results of a series of soviet Venus landers, performed in 1975 and 1982. In television experiments on VENERA-9, -10 (22 and 25 October 1975), and VENERA-13, -14 (1 and 5 March 1982), totally about 40 panoramas (or their fragments) of the surface of Venus were returned^[10,11]. In the following 37 and 30 years no similar missions to Venus were made, primarily due to the extreme technical difficulty of the experiment. In this regard the old results have been re-examined, including panoramas not previously considered or regarded noisy and unsuitable for analysis. Some of the first results were given in^[2].

A number of unusual objects have been detected as a result of the new processing of the panoramic images. Published in the press soon after the mission, black and white (VENERA-9, -10) and color images (VENERA-13, -14) were based on a single or a combination of black-and-white and color-divided panoramic images. Besides

them there are other primary images. In papers^[1-3,12,13] an analyses of the images in order to detect any differences in the sequence of received panoramas was made (say, the appearance or disappearance of details of the image, or changing their forms) and to understand, what these changes are related to (e.g., due to the wind). Another sign of the wanted objects could be their special morphology, distinguishing them from the ordinary shape of surface details.

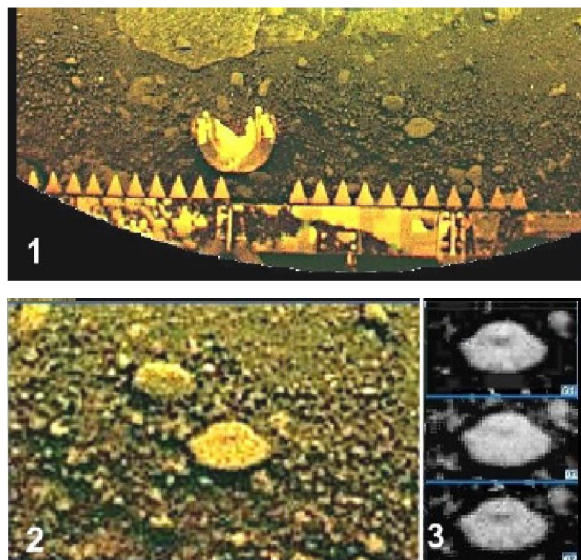


Figure 1 : (1) - A fragment of the VENERA-13 panorama undergo advanced processing (2012) with the geometric distortions corrected. (2) - An unusual feature in the same area of the surface was nick-named a “mushroom”. (3) - The results of the three options of images processing of the “mushroom” object.

One of the latest discoveries in the VENERA-13 results is shown in Figure 1. The left part of the figure shows a fragment of the Venus surface panorama (the landing site) in an advanced processing. After improving the image processing, several types of objects around the VENERA -13 lander have been found, presumably related to the fauna of Venus. In the total of 41 images returned from all the VENERA landers, 9 or 10 of unusual objects have been found.

The new object of unusual shape was nick-named a “mushroom” (Figure 1, position 2). By its regular radial shape it differs significantly from the stones scattered on the surface. Like the terrestrial mushroom its edges are raised above the surface for 2-3 cm, as seen by a shadow underneath. Hypothetically it can be attributed to living forms, probably to the flora, and namely to terramorphic flora. Due to the proximity to the lander’s camera a radial tent-like structure of the object is visible clearly. It measures as less than 10 cm. It should be remembered that the angular resolution of the VENERA-13 camera was 11' (for 1 pixel) that even in a near to the camera makes millimeters. Besides the color image that composed of three panoramas (picture, 2, center), the “mushroom” is seen

well at least in the six panoramas, which allowed, applying the group methods of processing, increasing the resolution (Figure 1, 3, processing versions 01, 02 and 03). However, the resolution still is poor. The “mushroom” is the third candidate to terramorphic habitants of Venus. Its radial gutter surface is very bright in comparison with stones. It is useful to specify the size of some specific details in the landing site. The moderate size of the “mushroom” is comparable to the distance between teeth on the turbulizator landing buffer (50 mm). The diameter of the detached semi-cylindrical white lid of the photometer is 200 mm.

OBJECT ‘OWL’ IN ORIGINAL IMAGES AND COMMENTARY IN THE PAPER^[4]

Two of the first objects discovered in the course of analysis were nick-named conditionally as a “Scorpion” (VENERA-13) and “Owl” (VENERA-9). Namely these objects were considered in critical articles^[4,7]. The following is answers for their critics. The VENERA-9 camera

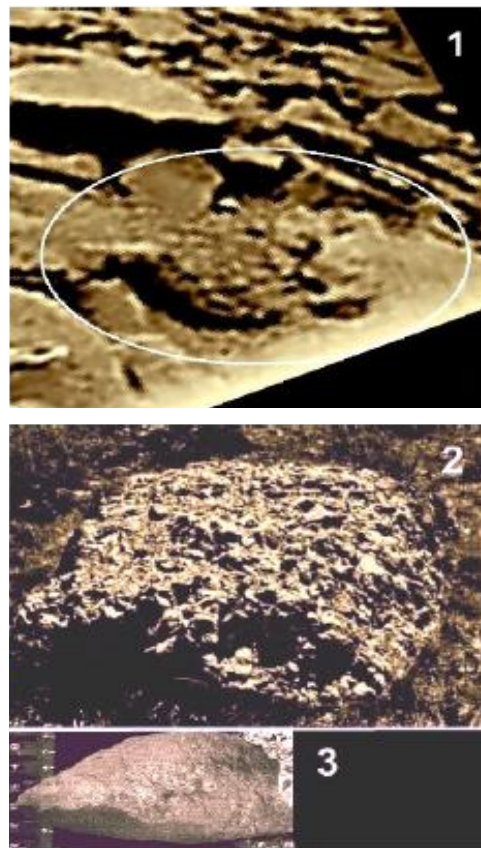


Figure 2 : (1) - The object “owl” is marked by the oval. The complex symmetric form (with respect to its longitudinal axis) of the “owl”, with a “tail” on its left, makes it stand out against the background of the rocky surface of the planet at the VENERA-9 landing site. Its size is about a half meter. (2) - A piece of volcanic breccia of 1-meter in size which, according to A.T. Basilevsky^[4], “is similar to the owl body”. (3) - A piece of lunar basalt that A.T. Basilevsky states, “is resembling the owl’s tail.” In both cases, the reader is encouraged to find their “similarities”.

was designed for black and white images. A resolution at the VENERA-9 and 10 panoramas was 21 arc min^[10]. Noises in the VENERA-9 panorama are virtually absent.

The “owl” attracted the attention of researchers immediately after receiving the panorama and was discussed as “a strange stone with a tail”^[14,15]. In 2003-06 the image of the object was improved significantly. Later, a detail-rich panorama was re-processed using modern means^[3]. The fragment of “strange stone” is shown in Figure 2, part 1, and is marked by an oval. Object is distinguished by its longitudinal symmetry. It is difficult to interpret it as a “rock” or “a volcanic bomb with a tail.” Position of its surface details and the direct “tail” shows a radial structure extending from its right side (“head”) and the obvious symmetry along the axis “head-to-tail.” Its “head” structure is complex, perhaps with a ledge above, as mentioned in^[14]. A part of the “head” could be a random combination of stones. The geometry correction lengthens slightly the object. The straight “tail” has a length of 13-16 cm, and the length of the object together with the “tail” is about 50 cm. The height of it is at least 25 cm. A shade under the body repeats completely the contours of all parts of the object, including the “tail.” The object is based on a thick “paw” at its right side.

In^[2,3] it has been suggested that in Figure 2 one could see a pattern of the fauna of Venus, because obviously a complex and highly regular morphology of the object makes it difficult to search for other explanations.

In his detailed critique^[4] for my assumption, my old colleague, Dr A.T. Basilevsky next considers the geological features of the VENERA-9 landing site. He believes that “the strange stone” or “owl”, is a “volcanic breccia: a rock composed of rounded angular fragments cemented by volcanic material, lava or tuffaceous material.” He illustrates an example of such structure by an image (Figure 2, 2) and concludes: “In pictures one sees the agglutinate pile of clastic breccias and their roughly rounded shape in large fragments and outcrops, which makes them similar to the body of “Owl” in the panorama VENERA-9.” Figure 2-2 and 2-3 are repeated from the paper of A.T. Basilevsky and are compared with the “owl” image. It is hard to believe that the authority of this level, which in the mineralogy for me Dr. A.T. Basilevsky always is, did find anything comparable in these images and cannot see the regular structure of the “owl”, that is not inherent in stones. Next A.T. Basilevsky says: “Thus, in our view, the object “strange stone”, also known as “owl”, may well be a random combination of rounded fragments of volcanic breccia (the body), adjacent at the right to a pile of small pebbles (as a head) and left leaning sphenoid fragments of basalt (as a tail).”

But the matter is that this protruding for 15 cm piece

(“tail”) is placed well above the surface, as seen in Figure 2-1 by shadow that the “tail” casts, together with lit areas of the stone beneath it. The statement (“A long piece of lunar basalt ... reminds the “owl’s tail”) seems to be very strange (in Figure 2-3 is repeated the photo from the article of A.T. Basilevsky). May be, for finding similarities, he uses some unknown to me visual optical instruments? The object in Figure 2-3 looks more like a shark.

The work itself^[4] is pretty sloppy. There are not only strange comparisons of images (shown above) and incorrect statements (shown below), but other inaccuracies, too. For instance, the page 404 of^[4] states: “as indicated by the on-board tilt-meter, the lander bent approximately 30° to the local vertical ...”. But in the book to which A.T. Basilevsky refers, in the article about the tilt-measurement, on the page 67 it states that the tilt-meter measured the angle 9°48' (not 30°!). It is placed in few pages from his own article. The erroneous statement about the 30°-slope is repeated in cited by A.T. Basilevsky’s his own articles, as prove of a large slope both of the lander and of the surface with a “geologically active talus.” We are not readers, we are writers. On the same page there are other factual errors, such as the camera resolution, given with the 12-times error. The angular resolution of the camera was $\alpha = 6.1 \cdot 10^{-3}$ radian (21'), which at a distance $d = 2$ m gives the size of $\delta = \alpha \cdot d = 12.2$ mm, not “less than 1 mm.”

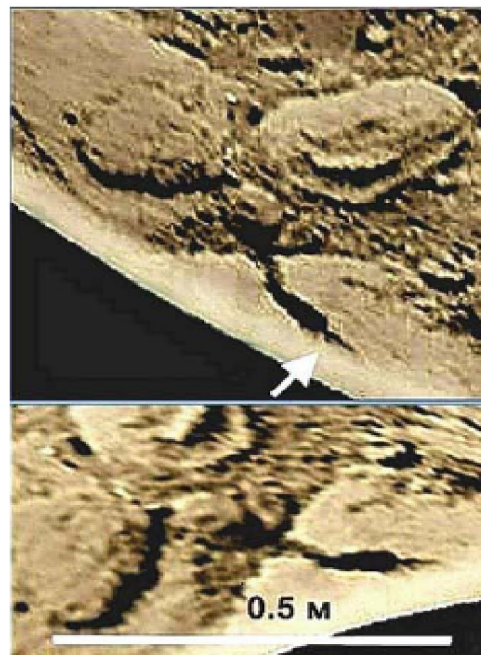


Figure 3 : From the point of planting buffer, marked by the arrow, on the stone there is a very dark trail that, expanding, goes down to the ground. The trail is left by a liquid substance of unknown nature (on Venus liquid water cannot exist). It is possible that the trail was left by a living organism wounded by the lander. Below - a fragment of photo plane which permits measuring the relative sizes of the scene details and map their location.

The second part of the critical paper^[4] concerns another object in the VENERA-9 panorama, that followed it for a distance of about 35 cm by very dark trail by thermodynamic reasons). The trail begins just at the landing buffer point, marked by the arrow in Figure 3, runs along the stone and down from it to the ground, expanding, and ends at the rounded object measuring about 11-18 cm.

The origin of the trail is unknown, but there was a “crazy” idea in^[3]: “One can make a guess about the origin of the trail, which starts directly from the landing buffer: here the object was partially crushed by the buffer and scrambled, leaving a dark trace from its damaged tissues. For terrestrial animals such a trace would be called “bloody.” (Thus, the first victim of the “Earth’ aggression” on Venus could be referred to October 22, 1975). Next there was a detailed discussion of the main goal of “the crazy idea”: what kind of stuff could be liquid on Venus... What A.T. Basilevsky writes is: “Ksanfomality BELIEVES that damaged “owl” was crushed by the impact of the landing buffer...”. Time, “suggests” means “believes”? As they say, “all means are good.” The very next A.T. Basilevsky interprets the trail as “just a gaping crack in the stone with a flat surface, within which this dark band is observed.” But, as seen in Figure 3, the track goes down from the rock, continues and expands on the ground. Does it follow that the soil has a “gaping fault” too? How could it be?

IMAGE ON THE PANORAMA V-13-1-6 BW, AS ANOMALIES IN THE RADIOLINK, ACCORDING TO A CRITICAL ARTICLE^[7]

Contents of the panorama V-13-1-6 BW was considered in^[1,2]. Its scanning began at the 87th minute of the mission, which lasted totally for more than 2 hours (with a guaranteed duration 30 minutes). Following discussions with the authors of the TV experiment, white dots in the image V-13-1-6 BW having the level of brightness close to saturation, are due to interference of elec-

tromagnetic origin, arising either in the overheating electronics or in transmission line <lander - orbital relay>. It could be explained as a short loss of the signal during few milliseconds. In eight previous panoramas such interferences were virtually absent, but at the 87th minute equipment was warmed dangerously. Images were transmitted in the negative, and the occasional loss of signal could lead to a “defect” in the form of the white point. By known methods of processing noises had been significantly reduced, allowing to detect an appearance (and disappearance in the next image) one of the most interesting objects, “a scorpion” (Figure 4).

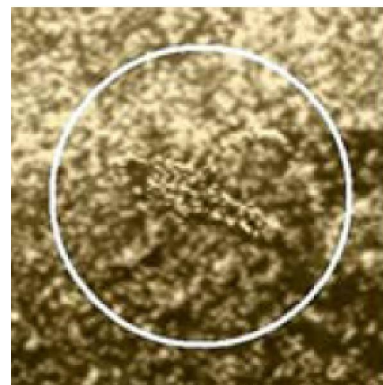


Figure 4 : The object “Scorpion” has appeared in the image V 13-1-6 BW about 90 minutes after VENERA-13 landing. In subsequent images, the “Scorpion” is missing.

The first assumption was that the regular structure of this correct form is a product of a of the lander’s destruction. But the VENERA-13 lander continued to work still for about full hour proving that the damage did not occur, otherwise the lander would be destroyed at once because of a catastrophic overheating. Analysis of the technical documentation indicated that all external actions (e.g., detachment of the photometer lids, drilling for ground pattern) were completed in significantly less time than 30 minutes. The assumption of the separated parts contradicts also the fact that in the subsequent image V-13-1-6 G the object is missing.

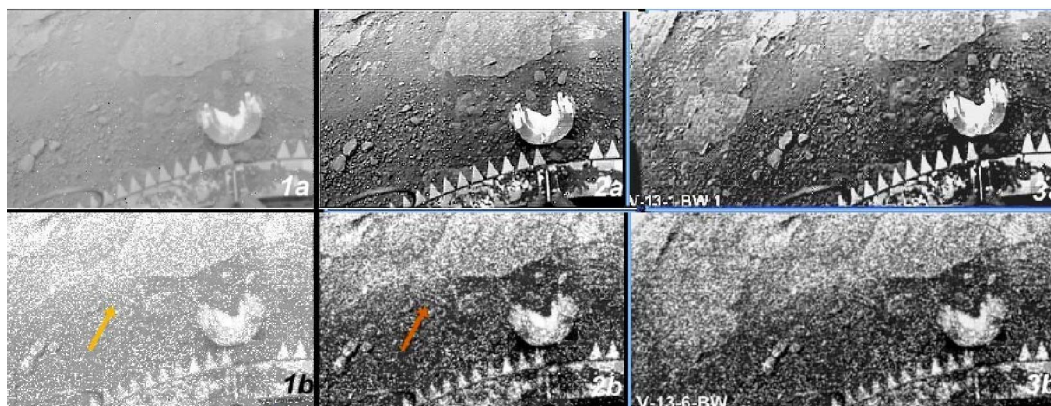


Figure 5 : (1) - A pair of foggy picture presented by D.P.Mitchell^[7] as one and the same picture; (2) - The same images after processing by the author’ system; (3) - Identification of the images as panoramas fragments V-13-1-1 BW (top) and V-13-1-6 BW (bottom) obtained during the time intervals 0-13 min and 87-100 min, respectively.

D.P.Mitchell^[7] considers the “Scorpion” to be an artifact. In his critical article he considers the different types of digital encoding of the signal transmitted from the lander to the relay and then from the orbiter to the Earth at two frequencies. He notes, “behind these terms the exact coding scheme” is not known, and the data storage system “could use an error-correction scheme ...”^[7]. Thus, D.P.Mitchell does not possess these information, nevertheless the images are compared “... apparently transferred using pulse code modulation” (ibid.). Perhaps D.P.Mitchell’s consideration could be of interest for a radio technique magazine. But in this paper it is appropriate to specify another thing.

The Figure 5, left, reproduces two images presented by D.P.Mitchell in^[7]. Differences in the content of images he explains as transmission defects. On the page 413 he writes: “One of the anomalous objects from^[2] in the form of “Scorpion” is indicated by the arrow (Figure 5, 1b). However, this feature is completely absent in the PCM transmission” (Figure 5, 1a). Text to the each his figure reads: “Image from spacecraft VENERA-13, presumably transmitted by PCM” and “The same part of the image from the VENERA-13 spacecraft, transmitted by a special scheme. The object “Scorpion” is marked by the dark arrow.” One could think that this is an error, not a fake: D.P.Mitchell compares two different panoramas taken with an interval of about 87 minutes as one and the same image!

The first thing that attracts attention - the top picture (Figure 5, 1a), where the original image of a very high quality is fogged for some unknown reason. If the im-

ages 1a, 1b would processed normally, as in^[1,2], the appearing fragments (Figure 5, 2a and 2b) are the well known panoramas as shown in Figure 5, 3a, 3b, that in^[2] designated as V-13-1-1 BW and V-13-1-6 BW, obtained in the time intervals 0-13 min and 87-100 min, respectively. One would assume that D.P.Mitchell^[7] mistakenly believes that it is one and the same image. However in^[2], commented by D.P.Mitchell, the timing of getting of each the panorama was given, so he could not say that he does not know the timing. The timing has been checked by Yu.M.Gektin, one of the authors of the TV experiment, who pointed out that the camera V-13-1 continued to operate even after the 139th minute (the “blue” panorama of the series 6). Hard to believe, but according to^[15] receiving the lander’s data by the orbiter’s receiver was stopped by the command sent from the Earth.

By the TV camera on the side were images V-13-1 were obtained, each of series (numbered 1, 2 and 6) consisted of black and white and full color-separated red, green and blue panoramas. The content of panoramas and time of their transmitting, in addition to the TABLE 1, presented in^[2], may be identified from the primary TIFF-image files, which D.P.Mitchell apparently keeps. Besides, differences between files V-13-1-1 BW and V-13-1-6 BW is easy to follow by the content of the first and second telemetry insets, as shown in Figure 6, which are known to D.P.Mitchell, too. Thus, differences in the content of pictures is related to events on the surface of the planet and not to the properties of the radio link. So the criticism^[7] is incorrect.

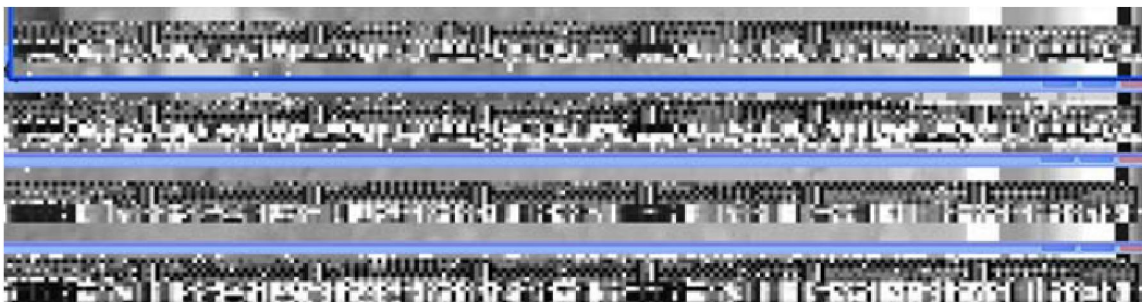


Figure 6 : Differences in contents of telemetry insets on the panoramas V-13-1-1 BW and V-13-1-6 BW. The inset #1 for the both panoramas respectively (shown above) and for inset #2 (down).

The primary image files were transferred soon after receiving, apparently, by A.T. Bazilevsky to the Brown University (Providence, New England, U.S.A.) and then got to D.P.Mitchell. It should be noted that during the preparation of D.P.Mitchell’s paper^[7], which, again, was strongly recommended by the A.T. Basilevsky, the authors reported to him about its impropriety, but to no avail. It remains to note that D.P.Mitchell not limited himself on the “Scorpion”. In^[1,2] details have been given on an object “black flap”. The “black flap” enveloped the measuring cone penetrating the crust of the ground,

and then disappeared. Given in Figure 7 images show that the “black flap” appeared only in the first panorama V-13-2-3 BW, immediately after penetration of the cone into the soil, and in the subsequent (V-13-2-4 BW and V-13-2-5 BW) panoramas it is absent. By an improved images Figure 7 one distinguishes even the structure of this strange object. Nature of the object “black flap” D.P.Mitchell tries to explain by appearance of shadows (cast by what?). Any reason, why the shadow fell solely on the cone, and where it went then, is not given.



Figure 7 : The object “black flap” appeared only in the first panorama V-13-2-3 BW, immediately after penetration into the ground the measuring cone hammer. In subsequent images (V-13-2-4 BW and V-13-2-5 BW) the «black flap” is absent. In the picture improved by a new processing one can even distinguish the structure of this strange object. In the images time of scanning is shown.

CONCLUSION

Together with the article^[3] six papers^[4-9] have been published commenting in detail both the the article itself and given images and the physical possibility or impossibility of the existence of life in the very special high-temperature and oxygen-free atmosphere of Venus. The authors of two of the six reviews^[4,7] take a critical position on the papers^[2,3]. Four other authors^[5,6,8,9] support the validity of the experimental findings, and the author of^[6] states that the possibility of life on Venus does not violent the principles of biophysics. The current article reviews the arguments of the two studies^[4,7] criticising publications^[2,3] in which the detection of objects on the surface of Venus, hypothetically related to the presence of life was presented.

The following conclusions have been made.

- In a detailed critique the author of^[4] believes that “strange stone, owl” described in^[3] is just a geological formation. However, the answer shows absence of any similarity of the rock shown in the paper^[4] and the regular structure of the “owl”. Also the critique remains unexplained why the trace that the author^[4] calls “a crack in the rock” continues on the surface of ground.
- The author of the second critical paper^[7] compares the methods of the telemetry and suggests that differences in images was caused by the properties of the type of used modulation. The author^[7] identifies, mistakenly or deliberately, as one and the same image, two different images obtained at intervals 0-13 and 87-100 minutes, despite that the papers^[2,3] cites instances of the observation time. It is shown

that differences in the content of pictures are related to the planet’s surface, and not to the properties of the radio link. This is illustrated additionally by the difference in the telemetry insets in the V-13-1-1 BW and V-13-1-6 BW files.

- Together with answers for critics the paper presents a new result of looking for hypothetical life on Venus found by new processing of the VENERA-13 images.

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