EVIDENCES OF EASTWARD DISPLACEMENTS ON THE SURFACE OF VENUS.

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For the last few years a number of evidences for probable existence of mechanisms of plate tectonic /3,4,7,8/ and hot spots /1,2,5/ on Venus are discussed. However,one can observe some natural phenomena features of the surface structures indicating their eastward displacemnts. A system of these features is rather difficult to explain in terms of above-mentioned tectonic processes.

Our review of these natural phenomena begins whith one of the unique structures on Venus. This is Lakshmi Planum. Here one can see a clear-cut prominence in the eastern part of this structure(see Fig.,fragment 1). Its displacement to the east is emphasized by right-slip fault. Fortuna Tessera occupies a vast space further to the east of Maxwell Montes. A system of surface elements (ridges and grooves) of this region form in some places U- and V-shaped features, stretched to the east (see Fig., fragment 2). These features may indicate a tendency to the movement of the surface layer of Fortuna Tessera in the eastward direction/6/.The evidences of the movement in south-east direction can be observed on Laima Tessera (see Fig., fragment 3). They are recognized by elongated,drop-shaped depressions. The centers of these depressions are transfered to the east and to the south-east. Here one can find flow-shaped features which indicate the surface layer movement of this tessera in the south-east direction /6/. A circular structure of Nephertiti Corona is to the north of the dome-like uplift of Bell Regio (see Fig.,fragment 4). An asymmetric form,a system of grooves in the west and a system of ridges in the east, a stretch to the east of the circular structure - all these indicate a one-side displacement of Nephertiti Corona.Similar evidences of the movement are observed at structural elements of Tusholi Corona (see Fig., fragment 5). Here, ridge surroundings are recognisable at the eastern side of the circular structure.But there is none at the western one.It may evidence for the movement of this structure to the east.And another circular structure of elliptical form is found to south of Nepheli Dorsa (see Fig., fragment 6). It stretches in the west-east direction. The observed system of arched, swell-shaped features indicate one-side extension in the east direction. A successive displacement of the centers of some circular structures may be seen whithin a fan of ridge belts (150°-250°E).In two cases the west semicircules of the surface features are cut by the eastern circular structures which are better pronounced in morphology (see Fig., fragment 7 and 8). It evidences that the observed centers of the circular structures are displaced relatively to each other in east direction. It should be noted, that these circular structures are younger than the ridge belts according to the geological relationship. Further over a zone of the ridge belts one can observe a center displacement of volcanic structures. For example, the younger volcanic dome of Ashtart is displaced to the east relatively to the older volcanic dome of Brigit (see Fig.,fragment 9). In this place it's possible to determine the value of displacement, which is 70 kilometers here. Further to the east we come back to the same structure where our observation began, namely Lakshmi Planum. All above-mentioned examples speak for horizontal displacements of the surface structures to the east (these places are shown at the map by arrows).

It should be noted that the observed displacements of surface structures are found neither in one narrow latitude interval nor in one narrow longitude interval.They spread over the area surveyed by Venera 15/16. Such distribution of the enumerated features at the surface structures allows to believe that these phenomena are not accidental. And they appear to reflect the natural phenomenon of a single process which envelops the whole surface layer of the planet. Unfortunately,it is impossible to connect these displacements of the surface with some interval of time. However, if all the observed displacements are result of a single process, it must have occured after the formation of ridge belts. This supposition arises from the relationship between the above-mentioned circular structures and the ridge belts. These structures cut the ridge belts and they are evidently younger features.

A common tendency of the displacements of these surface structures to the east and their distribution in the whole area of the Venera 15/16 survey are difficult to explain by the mechanisms of spreading and tectonic hot spot. So, side by side with the possible existence of spreading and hot spot tectonic processes on Venus one more global tectonic process may be suggested. Its nature is unclear yet. Though, it's possible that it is connected whith some outer facts.

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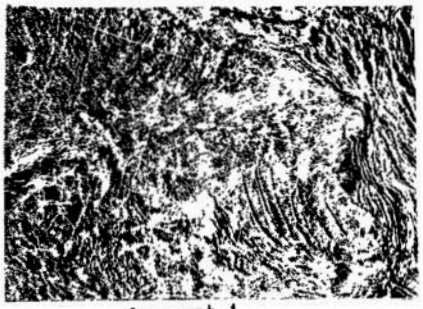

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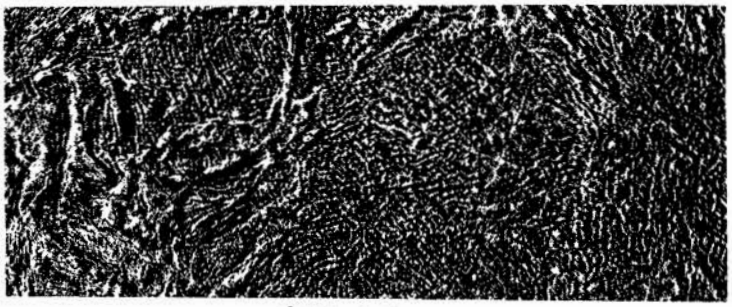

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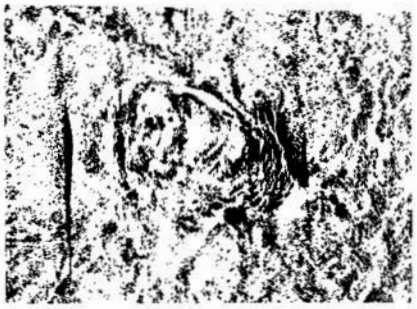

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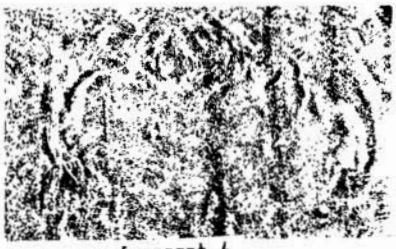
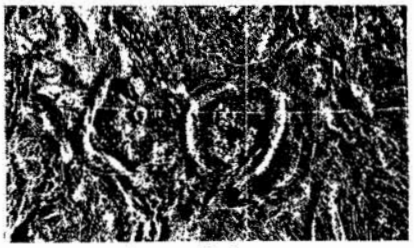


fragment 6

fragment 7



fragment 8

fragment 9