

TESSERAE ARE NOT ALTERED PLAINS, VENUS. A.L.Sukhanov.
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As a result of general mapping of the northern hemisphere (I) the conclusion has been made that tesserae respond differently to tectonic stresses than lava plains.

1. Arachnoids - complex volcano-tectonic constructions with peculiar radial/concentric patterns (2) are seen only on lava plains mainly in close association with ridge belts and areas of their branching. Simple angular or augen "crater-grabens" are seen on their place on tesserae: they have "parquet" floor or are filled with lavas and are outlined by specific "rampart" furrows (46-47°N, 87°E; southern Tellus). It is as if tesserae material prevents the development of typical arachnoids.

2. Almost all ridge belts are also developed on lava plains or along tesserae borders. Only two ridge belts wedge into tesserae between large tesserae blocks slid apart (Kottraway Chasma on Tellus and southern extension of Semuni Dorsa). There are also two cases where ridge belts being cut by the edge of tessera are replaced inside the tessera by linear relief more subdued and less oriented than the ridges of the belts (Ananke Tessera, NE edge of Fortuna Tessera), and there are also belts that disappear completely inside the tessera as if being overlapped by it. It is clear that the formation of belts inside tesserae meets with difficulties (be the belts compressional or extensional).

3. Different types of plains transform gradually one into another, but tesserae blocks usually have angular "brocken" outlines even if they are at about the same level as surrounding plains. Some "torn away" blocks are shifted aside from the main tessera massif, leaving behind break-off rear bays filled with lavas (3): such blocks seem to move independently as autonomous bodies (fig. 1).

There are no gradual transitions or intermediate varieties between tesserae and plains. Some lavas that cover the margins of tesserae are deformed resembling tesserae (SE edge of Fortuna Tessera, NE edge of Laima Tessera, summit of Maxwell Mt.), but these weak deformations look different from full-scale tesserae deformations. Some elevated lava banks are dissected by fissures (Sigrun Fossae, Ulfrun) but they remain lavas and do not turn into tesserae. Lavas on Beta dome are crossed in places by two sets of fissures (radial and concentric to the summit) but these sharp fissures are also different from relatively smooth ridges and furrows of tesserae. There was not found anywhere the example of lava surface transformed into typical "parquet" surface of tessera: at most lavas can be turned into subparallel folds (Lakshmi surrounding, eastern slopes of Bell).

4. Lava plain surface is simple and uniform, be it stripes between ridge belts, regional slopes, graben floor or plateau. The tesserae patterns are extremely changeable. If some slab is broken away from the main tessera its surface pattern is intensively transformed (block at 62-65°N, 30-40°E), if the regional slope slightly increases the tessera pattern changes immediately, and it is usually seen that the modern deformations

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are superimposed upon the different (earlier) pattern (SW part and the center of Tessera Fortuna). The general impression after thorough mapping is that tesserae change patterns under very weak changes of tectonical stresses.

These characteristics of tesserae can be explained by the increased thickness of the crust under them (4) or by their specific composition (5,6). Both ideas can be used for points 1,2, but points 3,4 are difficult to explain by the variable thickness of uniform crust: intermediate thickness would be expressed on the surface in transitional zones from plains to tesserae, and the thin (weak) plain crust would be deformed into "parquet" even easier than the thick crust of tesserae. So it seems that tesserae material is different from basalt one and have lower melting point: as a result it becomes mobile and changes patterns more easily than basalts nearby, and semy-melted layer at tesserae bottoms enables them to move autonomously. At the same time tesserae material makes sort of screen for surface manifestations of arachnoids and ridge belts typical for plains.

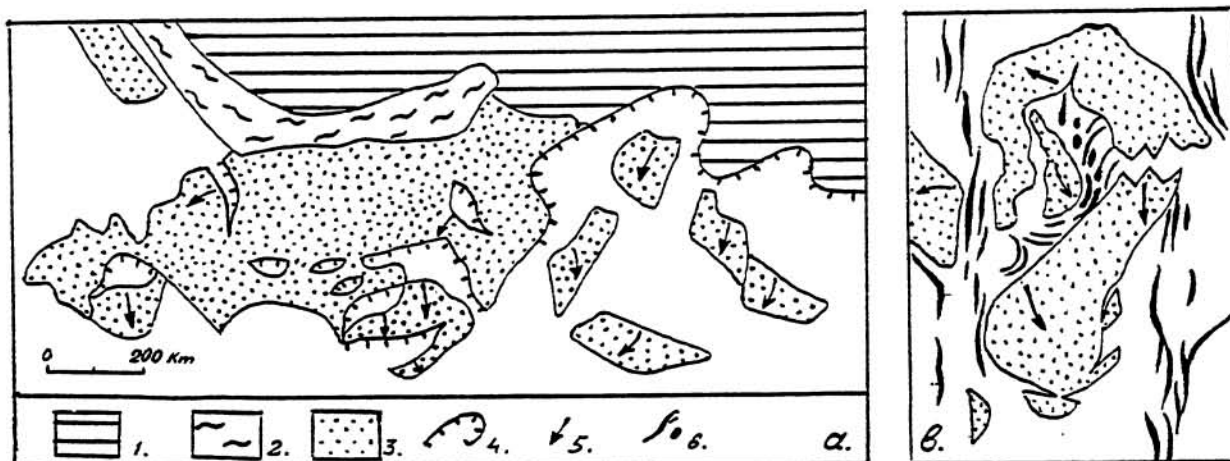


Fig.I. Autonomous tesserae blocks: a - Clotho Tessera, b - Virilis Tessera; 1 - Lakshmi Planum, 2 - Danu Mt., 3 - tesserae, 4 - break-off scarps, 5 - directions of movements, 6 - ridges and domes.

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