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Global Asymmetry of Large Forms of Hermean Relief

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The crater mare with sizes of its internal part about 1000 kms and an external rim about 2000 kms is revealed on side of Mercury remaining unknown after imaging from the «Mariner 10» mission in 1973-75. Research was carried out by new method of ground based astronomical observations and their data processed by special programs. On the sizes reaching ½ diameter of Mercury, this is the largest crater mare on planets of the Earth group. The presence of global scale formations of relief in 200-330 ^{o} W interval of Hermean longitudes changes existing hypothesis that the "continental" character of a surface may be attributed to the whole planet.

I continued my short exposures observation of Mercury at the Mount Bigelow Steward Observatory of the University of Arizona In 2003 December. Unstable weather prevented accumulation of a large number of images, which are essential for a successful processing. Nevertheless I managed synthesis of images gathered at 62^{o} phase (December 4/5, 2003). As seen in Fig. 1, the part corresponding to the northern gap in the Mariner-10 mosaic represents a large “mare-type” formation with a dark interior portion and a rather complex bound. The scale of the formation is about 800 to 1000 km. A huge bright pentagon crater is centered at 10^{o} W, 12^{o} S.

The large formations rather indicate a law producing an asymmetry of global distribution of large forms of relief on Mercury. For certain degree a global asymmetry of large elements of relief is inherent also to Mars, the Moon and is well defined on the Galilean satellites of Jupiter.

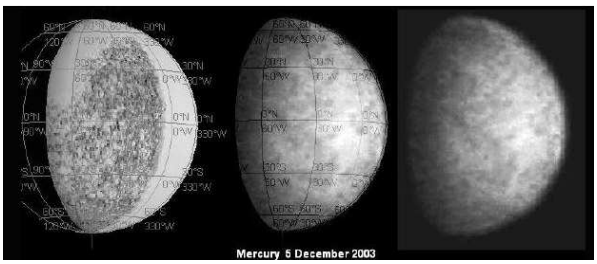

Figure 1: Comparison of the MARINER-10 data with an images synthesized by the new ground based method.