ELGYGYTGYN CRATER GLASSY BOMBS: FROM IMPACTITES TO TEKTITES.
E.P.Gurov, Institute of Geological Sciences, Academy of Sciences, Ukrainian SSR, 252054, Kiev, USSR.

The idea for the tektites origin as a result of impact melt ejecta from meteorite craters is recognized currently by most scientists (I-2). At the same time the conditions of tektites formation and transportation are not studied enough. E.C.T. Chao's words of I963 (3) remain actual in our days:"If meteorite impact is responsible for the formation of tektites, then the mechanics of impact, the environment of impact, the percentage of glass formed, and the character and distribution of impact ejecta are vital information necessary for the full understanding of the origin of tektites". The study of the yong meteorite craters' bombs is one of the ways of solving this problem. Recently the irghizites - the Zhamanshin crater bombs have been identified as the tektites (4). Before the age of Elgygytgyn crater was known (5-6), that impact site was proposed as a possible source of australasian tektites (7).

The glassy bombs in Elgygytgyn crater are spread in redeposited state on the inner and outer slopes of the rim. We selected for investigation I60 samples of glassy bombs with well preserved surfaces. All the bombs have an aerodynamical form of drops, cakes, ropes and some other forms. The size ranges from I-2 to I2-I5 cm in diameter, and the weight varies from 4-5 to 2097 g. The bombs are composed of the black or dark grey shining glass with the refractive index from I.502±0.003 to I.5I0±0.003. The chemical composition is close to philippinites and indochinites (3,8). The inclusions of lechatelierite, diaplectic quartz and diaplectic quartz glass with the coesite are present in some bombs.

Intersecting rough crack systems ranging in quantity from I to 3 are observed on the bombs' surface. The depth of the cracks is determined by the thickness of the glass cover on the melt surface in the moment of the cracks' formation. The traces of viscous flow of the melt are observed on the bottom of the cracks. The depth of the oldest cracks is about 0.5-0.7 mm, the latest cracks are 6-8 mm deep. They often intersect and dysplace the oldest ones. The extrusion of the viscous melt out of the cracks on the bombs' surface is observed in some cases. The absence of the rock particles intruded into the bombs' surface proves, that they reached the Earth's surface in the solid state or with a solidified glassy crust.

The traces of the atmosphere ablation on the surface of 8 bombs are visible. All the bombs were collected on the outer SW slope of the crater rim at the distance of I4 km from the center of the crater and 6 km from the rim crest. All the bombs have a flattened drop-like form, their size ranges from 40.0x 50.2x69.5 to 73.0xI03.8xII0.0 mm. The traces of ablation are expressed by the striated relief on the frontal and lateral surfaces of the bombs. The ablation surface of the bombs is similar to the surface of some tektites. The secondary melting of the bombs' surface is determined by the presence of ablation

FROM IMPACTITES TO TEKTITES

E.P.Gurov

on the inner surface of the walls of the cracks on the frontal part of the bombs. The shearing bubbles are represented on the surface of the bombs. The thickness of a secondary melted zone on the bombs' surface approaches approximately to I.5-2.0 mm. The experiments show, that the thickness of an ablation zone on the tektite surface of about 2.0 mm conforms to the velocity of tektite entrance into the atmosphere of about 5 km/sec. (9). According to these data, the velocity limit of the entrance of the bombs into the atmosphere is estimated to be 5 km/sec. To obtain such velocity the hight of the trajectory is estimated to be about I500 km and the time of the fell is to be about 8 min. The occurence of the bombs at the distance of I4 km from the crater center, where the melt was generated, defines of the subvertical trajectory of the bombs.

The most probable history of the glassy bombs formation is as following: I) ejecta of the melt out of the crater, 2) formation of the aerodynamically shaped bombs, 3) solidification of the surfaces of the bombs during the flight along the upward and downward trajectories, 4) ablation of the bombs due to the entrance into the atmosphere.

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