

THE STAGES OF THE NATIVE DIAMOND DEPOSITS FORMATION  
(SIBERIAN PLATFORM)

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The proposed scheme of diamond-bearing rocks formation and intrusion takes into account the next:

- the ancient age, heterogeneity, polychronity, high-pressure condition and safely conditions of the coarse-crystalline diamond;
- depletion of the maternal lithosphere, propinquity to garnet-peridotite and eclogite;
- high fluid-saturation, low viscosity, compressibility and solidus-liquidus parameters of magma, that diamond-containing xenoliths carry out;
- ability of the lamprophyric magmas for separation from substratum in 1 % -melting condition;
- turbulent conditions of diamond lifting in aggressive environment;
- the conditions of the eclogitic barrier overcoming, "avoid" the Sobolev's rule, overcritical thermodynamical gradients;
- chain chemical reaction of retrograde boiling effects and hydration-dehydration processes;
- natural diamond concentration million-repeated decrease in comparison with its concentration in productive deep xenoliths;
- mechanisms of block movements, taking into account sphericity of the Earth and deep spreading conditions.

Modelles are based on measureable prognostication criterions, S.Taylor and S.MacLennan's constructions, concerning the continental crust sedimentary chronicle, on the modern presentations about tectonosphere, summarised facts in structure of the Siberian platform and concrete diamond-bearing diatremes of the West Yakutia. The adduced schemes are static. They illustrate the structural and substantial evolution of diamond-containing sub-

stratum in the main periods of modern lithosphere formation on the ancient platforms.

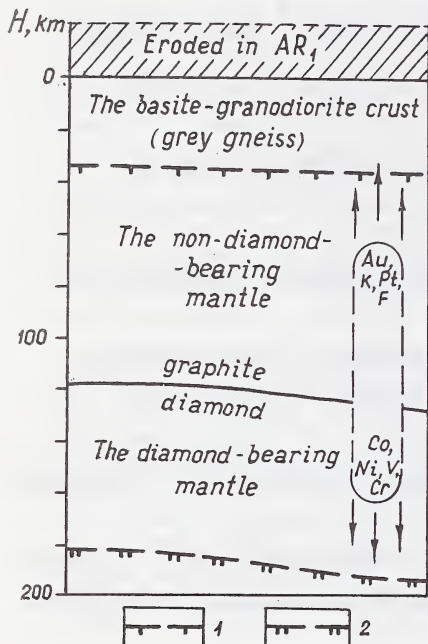
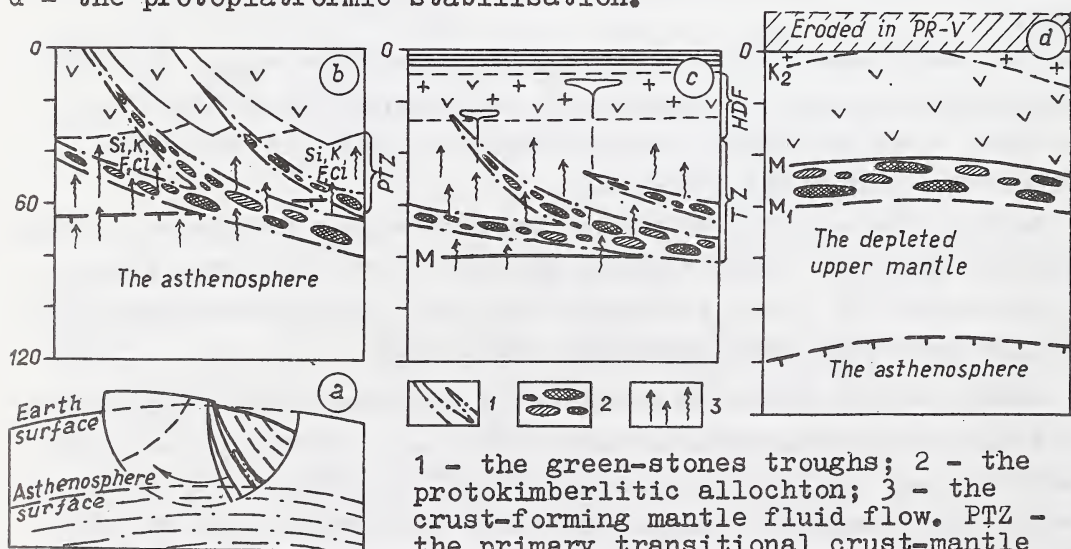


Fig. 1. Stage 1 - diamond-forming. The tectonosphere conditions are in the stage of gray-gneissic crust consolidation and diamond formation. Asthenosphere surfaces: 1 - in AR<sub>1</sub> beginning, 2 - in AR<sub>1</sub> the end.

Fig. 2. Stage 2 - protokimberlitic. It's the AR<sub>1</sub>-lithosphere breaking, new growth of the crust in green-stone belts, fluidisation, diamond-containing substratum protrusions a - mechanics of the evstatic splits and listric faults formation;

b - the origin of the green-stone belts, that are by eclogite and peridotite protrusions breaking;  
c - the sedimentary-metamorphic layer formation;  
d - the protoplatformic stabilisation.



1 - the green-stones troughs; 2 - the protokimberlitic allochthon; 3 - the crust-forming mantle fluid flow. PTZ - the primary transitional crust-mantle zone; HDF - the hydration-dehydration-fluidisation zone.

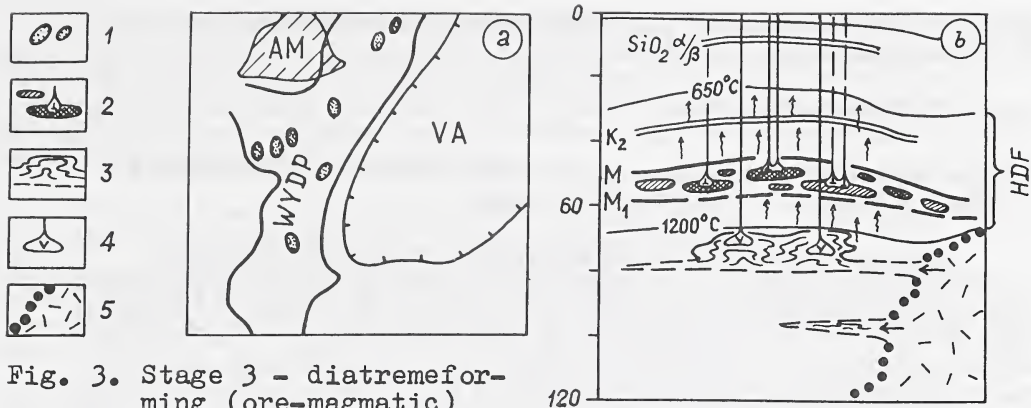


Fig. 3. Stage 3 - diatremeforming (ore-magmatic)

a - correlation West Yakutian diamond province (WYDP) and Vilyuian asthenolens (VA); b - the lithosphere condition on the kimberlite-forming stage. 1 - the known kimberlitic fields; 2 - the reservoirs of magma selective smelting from coesite-containing rocks; 3 - hot non-depleted mantle substratum; 4 - the basitic magma reservoirs on the before-kimberlitic stage. AM - Anabar massive.

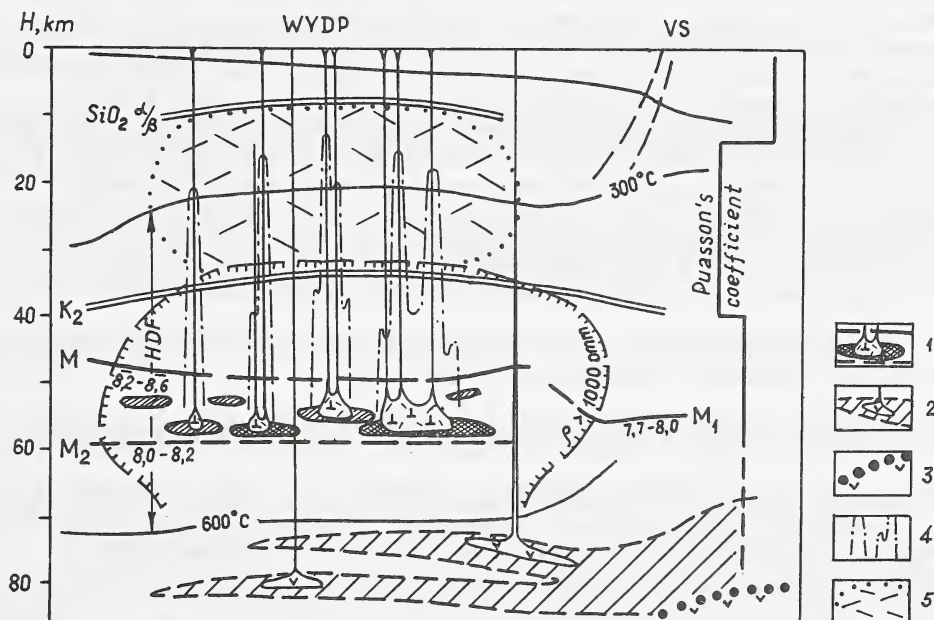


Fig. 4. The modern condition of the lithosphere in West Yakutian diamond province (according to V. Nikulin and V. Suvorov)

1 - mosaic field of protokimberlitic substrate with coesitic eclogite lenses and kimberlitic palaeoreservoir; 2 - hardened asthenospheric substratum with eclogised palaeoreservoir; 3 - the asthenolens surface; 4 - the overreservoir highly conductivity zones; 5 - seismic anomaly. VS - Vilyuian syncline.