PROBABILITY OF EXISTANCE OF RICH GEM-QUALITY DIAMONDS DEPOSITS

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The known primary gem - quality diamonds deposits are placed in diatrems of Kimberlites and lamproites.

Since 1871 or since of moment of discovery of first Kimberlites diatrems in South Afrika all exploration of primary diamondiferous occurrences were oriented usually on the finds of explosive pipes.

The primary diamondiferous deposits are regarded as "traditional" diamonds hosts with grades of up to the first ct/t.

Attention should be paid to the fact that the explosive pipes usually contain the depth xenoliths of diamondiferous peridotites and eklogites. The diamond contents of the xenoliths is from 50 to 300 times (Kvasnitsa V.N., 1985), and in discrete case to thousands times greater than in Kimberlites.

The presence of the depth xenoliths supports the long - held concept that Kimberlites only act as suppliers and transport agents for diamonds to the earth's surface (T. Bonney, N.N. Sarsadskih).

The discovery of the pipe Argail-I in West Australia demonstrated that similar transport are lamproites.

The variety of magma serving as the transport agent confirms the xenolith nature of diamonds (Yu.L. Orlov, 1977; B.A. Malkov, 1978; B.A. Malkov, A.M. Askhabov, 1979; G.O. Meier, Kh.M. Tsai, 1978) in relation to magmatic formations performing this function. Hence there are grounds to suggest the probable existence of diamondiferous deposits represented by large erratic masses within the earth's mantle-primary diamondiferous peridotites and eclogites that are actually the parent source of diamonds. These deep mantle rocks, which occur at the same depth as diamonds and are transported with it in the form of large, erratic masses to the surface (described by N.V. Sobolev and others in 1986 as the diamond-pyrope facies), could form an entirely new unusual and extremely rich type of diamond deposit, without analogy among existing diamond occurrences.

The fact that very rich diamondiferous deposits can be found deep in the mantle, and sometimes within the earth's crust, was substantiated by research out in 1982 by V.V. Slodkevich, who discovered paramorphs of graphite in diamonds in stratified basic and ultrabasic rocks in the Beni-Busher pluton in Morocco. This discovery of apodiamondiferous octahedral graphite aggregates in primary intrusive garnet clinopyroxinites, which closely resemble eclogites by their mineral content, is unique. The size of the graphite octahedra or their intergrowths ranged from 0,5 to 7,0 mm, and the graphite makes up from 2-5 to 15% of the volume of the rocks; in other words, it acts as a rock-forming mineral in specific

zones.

Furthermore eclogites, analogous to the garnet clinopyroxinites in the Beni-Busher pluton, are known to occur as xenoliths in kimberlite pipes, and are saturated with plane octahedra of sharp-sided diamonds. The identification of native rocks, similar to the xenoliths in kimberlites in terms of mineral and structural features, encouraged V.V. Slodkevich to search for and establish a previously unknown type of diamond - bearing deposit - stratified plutons - that occur within the earth's crust.

The only problem is that diamond crystals in an erratic mass in the mantle, a stratified pluton or in fragments of these, should remain unaltered during the explosive, practically instantaneous ascent of kimberlite magma at the moment of formation of diamond pipes. In other words, the agent that transports mantle and crustal erratic mass material of native diamondiferous ultrabasic rocks to the surface must itself be explosive in nature, and must also be several times more powerful than the explosions that create kimberlite and lamproite diatremes. Evidence for such immense explosions occurs in the form of megabreccia that is found in the central and peripheral parts of giant astroblemes (giablemes), formed where some extra - terrestrial body has penetrated the earth's crust and upper mantle and created something similar to vast explosion pipes.

The search for deposits consisting of diamondiferous peridotites and eclogites, both in regions of megabreccia in Kazakhstan and elsewhere in the world, is a complex problem that requires a new approach, and the concept of impact - explosive tectonics proposed by B.S. Zeilik in 1991 provides a starting point for this task.

However, it should be pointed out that rich accumulations of diamonds in the mantle are not, apparently, a common phenomenon. For instance, the special assaying for diamonds on a 20 t sample of xenolith, peridotite and pyroxenite taken from kimberlite pipes in South Africa did not reveal a single stone, and hence N.V. Sobolev considers that "it is impossible to agree with the interpretation of the whole complex of deep xenoliths in kimberlites as being fragments of potentially deep diamondiferous intrusions". Nevertheless, an attempt to search for such deposits requires an adequate level of attention on two counts: their potentially high grades and the fact that no such search has yet been made.

An indirect indication of the existence of a similar types of deposit was the discovery of high - quality gem diamonds in placers in the Urals in 1829, and in Kalimantan, where the first discoveries date to the 6th - 10th Centuries. Primary sources have not been found in either of these areas, although massive occurrences of ultrabasic rocks are a common phenomenon.