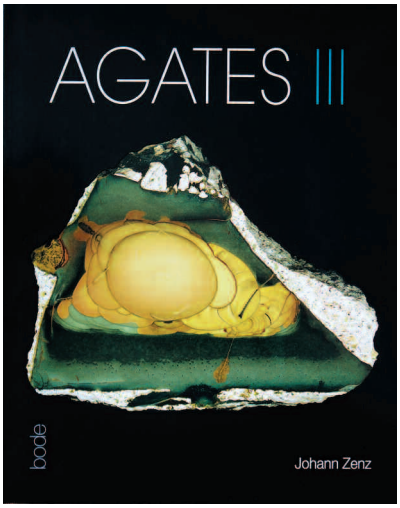
AGATES III – NEW BOOK by J. ZENZ



Zenz, J. Agates III. Lauenstein, Germany: Bode Verlag, 2011, 656 pp. 23x28 cm, about 2200 color photographs, 3.5 kg weight.

This hefty book is a fruit of labor of a whole team of text and photograph authors. It is a sequel and update for J. Zenz's Agates and Agates II that have already been reviewed in the Mineralogical Almanac (see MA 10/2006, p. 125 and 15-1/2010, p. 86). The tradition of their excellent design has got a prolongation in this folio.

The numberless photographs give a visual presentation of agate and jasper world abundance and diversity; some historical and geological data are given; the exiting process of agate collecting is shown. Small maps accompanying photographs detect the agate localities. Each caption mentions the locality, specimen size and basic features. The material is arranged in geographical order and hierarch sequence, from large regions (Europe, Asia) to localities usually named by the nearest town or village. Thanks to this arrangement, the book is always at service of a reader who is eager to look for a "*place where to go to collect agates*".

Unfortunately, there is nearly nothing in the J. Zenz's book about the wealthiest agate deposits of Russia. Only few agates, not the most interesting ones, from Nepa River and Yakutia are shown (though, the Agates II book contains a bit more complete list). China is only represented with three specimens; the localities are classified there.

Russia was more successful in the book another section dedicated to jaspers. This section occupies almost a quarter of the book total volume. Some interesting information is given here concerning Bashkortostan, Urals, Orsk, and Kalkan jaspers. As well, in the same section some Mexican cherts known on the market as "*imperial jasper*".

The last section is dedicated to personalia, a few dozens of the most active, mainly German and American, collectors of agates. This section also concentrates most interesting and beautiful specimens.

The vast introductory section (written by J. Götze) attracts special attention as the painful problem of agate genesis is considered here. The attempt to resolve this problem wholistically is undertaken with the figurative headline "Agate – fascination between legend and science". Unfortunately, some inaccuracies can be met yet in the short historical introduction. The author mentions, e.g., R. Liesegang's experiments with rhythmical diffusion in "silica gels". This may make a reader's to believe that Liesegang, as a matter of fact, synthesized an artificial agate and thereby unraveled the enigma of its genesis in nature. In reality, R. Liesegang, while busy with light sensitive materials for photography, has discovered the phenomenon of rhythmical diffusion in gelatine layer of a photographic plate, and this led him to the seeming analogy with agates. Namely in a gelatine layer of a glass plate but not

in a "potassium bichromate gel" as the caption for Fig 1.4 reads, the famous "Liesegang's Rings" were discovered.

The author assumes "that the agate nodule was initially filled with a polydisperse colloidal silica sol and/or amorphous silica gel". As is known, this hypothesis, as such, could not stand up to scrutiny since the voids inevitable at the crystallization of gel are normally lacking in many agates. The author's reference to some distribution of this void volume between the pores inside the agate body as well as possibility for a growing agate to receive additional silica from outside via diffusion through the same pores seems unpersuasive.

The author refers conducting channels and pseudostalactites to the "unusual forms and structures in agates". As a matter of fact, the channels are present in every agate, and this clearly testifies both their doubtless genetic role and necessity to clear the latter up. The author states further: "Formation of stalactites is also a rare anomaly in agates. It is known only from a few deposits worldwide... These stalactites grow downwards by formation of sequential layers one after another". One has to guess that pseudostalactites are meant here; this term was suggested yet by R. Liesegang and currently is accepted to designate crystallization products on membrane pipes. Such formations are not at all "rare anomaly" but pretty often occur in agates; though, chalcedony pseudostalactites are disposed in many cases not in an empty space but in chalcedony that later filled it. The statement that pseudostalactites only grow downwards is wrong too: many examples are known of their upward growth; merely those membrane pipes being heavier that the surrounding liquid mostly lay upon the chamber bottom and merge with it.

To resolve the problem of agate genesis, the author uses "a wide spectrum of advanced analytical techniques (e.g., trace-element and isotope geochemistry, microanalysis of structure and defects, etc.)" What lacks in this mighty armory is any attempt of ontogenic approach (which is, though, barely known in the West). Meanwhile, some literary references as well as borrowed illustrations (with the source not mentioned, somehow) show the author's knowledge of Russian agate literature. Just the ontogenic observations of pseudostalactites served evidence for formation of agates, at least some of them, from feeding solutions that were flowing through agate chambers being renovated through conducting channels.

The agate genesis is being disputed – unsuccessfully! – for more than two centuries, and every author is entitled to keep his own point of view. So these volunteered remarks by no means discredit the new masterpiece by J. Zenz. Every agate amateur will surely enjoy it both as the source of abundant information and as his library's wonderful adornment.

Boris Z. Kantor