

1. **Stilbite** "flower", intergrowth of bow tie shaped crystals. Width 5 cm. Jalgaon District, Maharashtra, India.

Stilbite, cavansite.
6 cm wide.
Wagholi, Pune District, Maharashtra, India.



## A ZEOLITE HARMONY

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Specimens and photos: Boris Z. Kantor

eolites are my favorite minerals. There are a lot of zeolites: the IMA Commission on New Minerals, Nomenclature and Classification has approved more than 100 species. Most of them are of no special aesthetic value; but some – one can't merely take his eyes off of them. My first questions as a newcomer to minerals were addressed just to the zeolites. Where is their immaculate sculpturesqueness, their exquisite delicate colors, their noble pearly luster from? But only years later I became able to notice, among all this charm, both splitting and curvature and a lot of other "irregularities" that make a mineral to be really beautiful and elegant creating remarkable harmony.

Being an amateur and collector, I am mostly interested just in this kind of zeolites. As in a human life, their harmony is for a good reason, indeed. The mineral harmony is also a riddle proposed to me and challenging: settle it yourself! A mineral's existence in its native element is a constant and complicated adaptation to the volatile circumstances. How does the mineral manage to save and even enhance its aesthetics on this long and laborious way? To read this riddle, to restore this complicated history, to understand what was happening with the mineral a long time ago, how originated this harmony – this is the most interesting for a mineral lover. The scientists jokingly call this "guessing by the ontogenic method". Which, oftentimes, gives valuable and important results. And here are my unriddled – by myself! – beauties that are also excellent photographer's models. Pretty zeolites are surprisingly photogenic, especially when accompanied with their elegant mineral attendants.

Zeolites occur all over the world in various deposits; however, a specific place belongs to the finds from the Deccan traps of the state Maharashtra, India The check roll of the local zeolite species is not very long; but they are the very same minerals. Their history began about 65 million years ago with hundreds of volcanic lava eruptions that one after another covered a vast territory with 2000 meters rock mass. When the liquid lava was erupting, the vapors and gases dissolved in it getting freed from high pressure rushed upwards in bubbles and united but above a crust of already hardened lava intercepted their way. The lava was solidifying and transferring into a rock, basalt. As to the hollows sealed within it, they became ideal crystallizers. The crystals of zeolites and accompanying minerals grew there from solutions that impregnated the rock and assembled in the hollow.

Separate finds of zeolites in the Deccan traps were yet reported since the beginning of the 19<sup>th</sup> century. The first sensational find is dated 1851 when the British colonial authorities undertook the railway project from Mumbai to Pune (Ottens, 2011). The tunneling disclosed numerous hollows with big shiny crystals sparkling in the miner lamps' light like diamonds ("Innumerable are the dia-





17. **Scolecite**, **chalcedony**. 3.7 cm. Chandanapuri, Samganer, Ahmadnagar District, Maharashtra, India.

18. **Mesolite**. 5 cm. Lonavala, Pune District, Maharashtra, India.

19. **Mordenite**. 2 cm. Calisgaon, Jalgaon District, Maharashtra, India.

20. **Mesolite** with **apophyllite** small crystals ovegrown. 5.7 cm. Lonavala, Pune District, Maharashtra, India.

21. **Natrolite**. 5 cm. Pune District, Maharashtra, India.









22. **Okenite** balls to 2.5 cm. Mumbai District, Maharashtra, India.

23. **Calcite** twinning. 4 cm wide. Nashik District, Maharashtra, India.



24. A fragment of calcite intricate twinning (*see Fig. 23*).

Snow white bundles of scolecite needles occurred in the vicinity of Wagholi, Pune district, in nice combinations with pale green apophyllite and yellowish stilbite (Fig. 16). Near Chandanapuri village, Ahmadnagar district, the specimens were found of reddish orange scolecite with colorless and translucent chalcedony grown over the ends of needles (Fig. 17).

When narrating of beautiful zeolites, it is impermissible to overlook their remarkable escort. In the trap hollows **okenite** occurs (Fig. 22). Its snow white balls, "warm and fluffy", are made up of thinnest radial fibers and resemble cotton. The fibers are soft and pliable; there is a questionable opinion that an okenite ball may be clasped in a fist, and after you relinquish hold, the ball returns to its initial state. **Calcite**, accompanying zeolites, like everywhere prepares surprises for collectors – rare crystallographic forms and their combinations, specific twinning (Figs. 23, 24) etc.

The Wagholi Quarries produced the world's best specimens of rare and very beautiful mineral cavansite (by Ca, V, Si – symbols of composing chemical elements). **Cavansite**, sometimes with overgrown calcite crystals, usually associates with white stilbite, often as X-shaped intergrowth of the 2 or 3 bow tie shaped split crystals of deep blue color (Fig. 25) whose size does not commonly exceed 2.5 cm. The bundle (fan like) form of the cavansite splitting occurs more rare. The rare cavansite dimorph **pentagonite** occurs in long prismatic crystals (Fig. 26) of the nearly same sizes.





 Cavansite with overgrown calcite crystals.
6 cm. Wagholi, Pune District, Maharashtra, India.

26. **Pentagonite**. 17 mm tall. Wagholi, Pune District, Maharashtra, India.