

# INDIAN MINERALS of the DECCAN TRAPS

Green Apophyllite with Mesolite from Poona, velvety white okenite puffballs from Bombay, water-clear Apophyllite from Jalgaon, pale golden Powellite from Nasik, and intensely blue Cavansite and Pentagonites from Wagholi are the paragons of Indian basalt minerals. These and other fine minerals have been mined in vast quantities since the 1970's. Only a few regions in the world have produced in such a short time such great numbers of superb mineral specimens as has the Deccan trap region in India.

Over the years the amygdaloidal cavity minerals from this region have often simply been called "zeolites," and the locality given simply as "Poona." Certainly zeolites, of which the commonest representatives are heulandite and stilbite, are an important group among the amygdaloidal-cavity minerals, but this locality also produces equally significant nonzeolitic minerals, such as apophyllite, okenite and calcite, which are members of other silicate groups or of other chemical classes. For the great majority of these mineral specimens, the actual localities are far from Poona. The total area of the Deccan Traps is about 500,000 square kilometres, and even the region where specimens have been found measures fully 250,000 squares kilometres. The quarries at Bombay, Nasik and Jalgaon have delivered far more collector-quality specimens than the occurrences of green apophyllite at Poona.

## **Mining**

## **Background**

India is a vast and densely populated country with a history of mining going back to ancient times. Most of this history, more or less until the 20th century, has centred on gem materials. India was the "Brazil" of its day for many centuries, pouring out a constant flow of beautiful gemstones readily absorbed into the jewellery of European society. Indian gems, therefore, constitute the lengthy prologue to Indian mineralogy, leading up to the rather late-blooming appreciation for zeolitic cavity minerals.

The minerals of the Deccan basalts are not found in mines for which exact historical data are available, but in quarries and other excavations (such as for wells, ditches, roads and railway tunnels). Because of the immense extent of the mineral-bearing basalts, well-developed crystals in cavities must surely have been observed in earlier centuries during the excavation of building materials. But, since these crystals (unlike gemstones) had no intrinsic value, very few reports of discoveries have been recorded.

Since the beginning of the 1970's, with the globalization of interest in mineral collecting, the cavity minerals of the Deccan basalts have enjoyed a remarkable rise in popularity. They can now be obtained in qualities and quantities far surpassing anything available in earlier times. Large quantities of the delicate crystals can only be preserved undamaged through careful manual work, and yet are still offered at reasonable prices.

## **Quarrying and Trading**

The large quantity of mineral specimens from the Deccan basalts which appears on the market may give the impression that cavity minerals occur almost inexhaustibly at all locations, but such is not the case. Basalt used in the construction of roads and dams should be firm and non-porous; this "black rock" is the type preferred by quarry operators. Zones rich in amygdaloidal cavities are avoided, although the minerals hiding in them, because of their value as specimens, provide an additional occupation to many people. The quarries of Jalgaon ceased normal commercial activity when their waste piles had reached 4 meters deep; but, given Indian

economic conditions, the high returns from the sale of minerals ensured continuing profitability. It is thanks to skilled collecting and trimming that so many beautiful specimens come onto the market from the Deccan basalts. Unfortunately, excessive repair and even manufacture of specimens has also become commonplace. The so-called "runners," more than the quarry workers or the dealers, are responsible for recognizing and preserving minerals. They get their name from the fact that they all run a kind of race to find and acquire interesting pieces after each blast. Almost entirely, it is their enterprise that we have to thank for the fact that new, interesting occurrences are continually discovered, and that the minerals are properly handled and packed.

The runners regularly visit all working quarries in a given area—in important areas like Jalgaon, Nasik or Bombay they are almost always present—and monitor other exposures such as wells and building foundation sites. They make quarry workers aware of the value of mineral specimens, and advise on promising zones in which to watch for them. The runners buy specimens as free-lance middlemen, sometimes even from cavities not yet collected out. They compete with each other intensely, and decisions about prices usually are reached immediately. For very rare or exceptional specimens, the runners often are not able to decide on a purchase price without consulting their dealers; they need information about going prices on the market, and may also need a cash advance, since they seldom have large sums on hand. Most runners work in groups. While one or two of them remain on site, a third takes recently collected stock to Bombay, Nasik or Poona to offer to the dealers. Specimens purchased are roughly sized and packed at the quarries. Raw, unrefined cotton (which is readily available and cheap), as well as newspaper, is usually used as packing material.

Collectors often do not know that the well-composed specimens that they see on the market have not weathered out of the rock in that form, but have been "prepared" from large slabs by painfully exacting handwork. Such preparation can become a craft in itself; at the Kurar quarry a group of workers and runners specializes in the creation of okenite-puffball specimens. No modern tools are available. Valuable and shock-sensitive pieces are crudely trimmed and sawed; then, to conceal the saw marks (which collectors don't like) the matrix plates are worked over again with hammer and chisel. Matrix specimens are usually sculpted into an ovoid shape to minimize weight and shipping cost.

It is pleasing and gratifying to see so many extremely delicate specimens that have been shaped so sensitively. Unfortunately, however, it has been the fate of other specimens to be repaired extensively, including having broken-off crystals reattached with glue, or even to have been assembled completely from scratch. Unfortunately, most of the people involved in collecting and marketing these specimens have relatively little scientific knowledge or interest. Even dealers with some geological education may be uncertain about identifying species. Therefore, interested collectors and scientists in other countries must undertake mineralogical studies and document the results. To the dealers in India, the only really interesting minerals are those that will generate good profits; there is almost no collecting or study of the minerals from a scientific viewpoint.

Most of the quarries near large cities have been worked for many years. Runners and dealers know the rocks of these quarries and their characteristic minerals well, so most specimens from these exposures can be attributed to the correct localities. For many

specimens the dealers may simply cite merely "Poona" as the locality, and for most of the specimens this is false. One has to be content with general locality attributions such

as Bombay, Poona or Nasik, as opposed to precise locations.