

A museum shapes up from the vast Raman collection

Raman Research Institute Trust starts documenting the collection of gems, minerals and stuffed birds that aided the Nobel laureate in his study of optics

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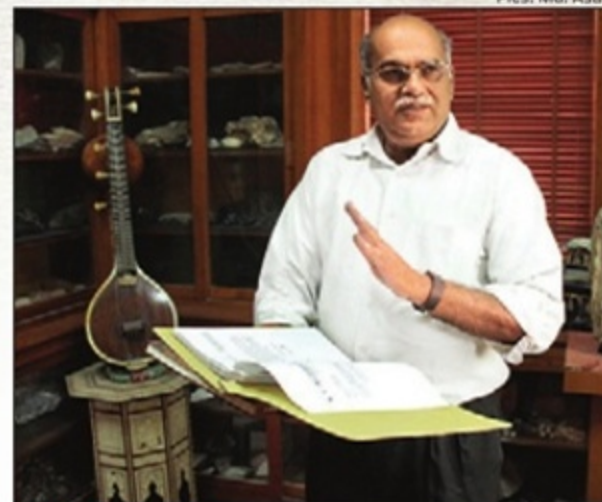
In 1951, the Darjeeling Natural History Museum shipped 250 dead butterflies to Bengaluru with a note from curator JA Hulbert: "Prior to opening, a wad of cotton wool soaked in acetic acid should be put in to the box to preserve the colours." Hulbert put in the line because he knew that the recipient, CV Raman, was chasing colours. In fact, the parcel came all the way from the Himalayas in response to Raman's letter stating that "the origin of the brilliant colours frequently exhibited by them has long been of interest" and he wanted to investigate it thoroughly.

Colours fascinated Raman, the first Asian Nobel laureate in Physics in 1930. He got hold of anything from

SUNDAY BEST

minerals, gems and fossils to dead birds and beetles from all over the world to study optical structures that produce colours in nature. A few colleagues from the Raman Research Institute are beginning to catalogue the vast collection and create a museum in memory of the man whose 127th birth anniversary was on Saturday.

While some of the exhibits have been identified, many remain in glass cases and boxes, just as they were left behind by the scientist after his death in 1970. "We will get geologists and wildlife experts to identify them and prepare an inventory," says K Krishnama Raju, secretary of the Raman Research Institute Trust that manages the collection. He and retired staffer-turned-curator PF Sasikumar have ensured that nothing has changed except



IN THE SPOTLIGHT: K Krishnama Raju (above) of the Raman Research Institute Trust and a few others have begun cataloguing gems, crystals, minerals and butterflies. The collection also includes a veena and a tabla, about which Raman wrote research papers



lights and wall plaster in three rooms in the main complex that houses the collections.

Krishna says the provenance of many objects could be gleaned from the correspondence in the years following the setting up of the institute in 1948. Two fossils that occupy pride of place in the main room were procured from Thiruvakkara in Puducherry, possibly from the area that is now the National Fossil Wood Park. There are sizar stones from Rajasthan, topaz from Ural in Russia, opals from Mexico, and semi-precious stones from China and Australia.

Most items were procured by Raman himself as is clear from his extensive correspondence with Chinese ambassador Yuan Chung-hsien to Jaipur jeweller Rajroop Tank. Sometimes, Raman travelled to select the pieces. "When the Chitradurga mine shut down,

he rushed to collect a rainbow-coloured rock (hematite)," says Krishnan, who has located letters from the period.

Raman was 60 when he started the institute after being forced to resign the Indian Institute of Science's directorship. "I don't think any youngster can match his energy," says Krishnan. Probably, the scientist didn't have much choice, being strapped for funds. For some years there was no equipment or even electricity at the institute, writes S Ramaseshan, his nephew and scientist, in *CV Raman: A Pictorial Biography*. "Raman arranged his famous mineral and crystal collection and commenced his researches on the colour and iridescence of minerals and gems," writes Ramaseshan. He also wrote to heads of museums, universities and project engineers of PWD and railways.

In came crates that included birds and butterflies with their "blue

The Raman Effect: Raman and KS Krishnan found that the wavelength of light changes when a beam is deflected by molecules. It was the blue waters of the Mediterranean that set Raman on this Nobel prize-winning discovery. He showed that the colour of the sea was due to scattering of sunlight by water molecules

iridescence." One NG Pillai, who procured a batch of brightly plumed fairy bluebird and kingfisher from Kerala, exclaimed that "you have in mind a peacock in full train [as] the focus of your bird exhibits!"

Soon, worthy work started coming out. "It is remarkable how much information he could extract by just sending a beam of light into a gem and observing the scattering. This led him on to his classical papers on the optics of heterogeneous media," writes Ramaseshan.

Visitors started gifting and the collection became an object of "popular attraction" in Raman's own words. The Chinese ambassador was so pleased that he presented an eagle carved from coal procured from Fushun, a mining city in north-east China. Friends like Mrinalini Sarabhai, wife of scientist Vikram Sarabhai, sent stones that she found while holidaying in Kashmir.

Eventually, Raman had to write to people saying that there was no space, especially for stuffed birds. Over the years, the number of visitors dropped, though Sasikumar remembers meeting Nobel laureates Joseph Taylor Jr and S Chandrasekhar. Schools sometimes bring students after getting permission from the Trust.

The collection is so eclectic that it could appear puzzling. For instance, a veena, symbol of a young Raman's beautiful paper on harmonics and his love for music, is in the same room as the infamous board: "The institute is not open to visitors. Please do not disturb US." The board came much later, when a deeply unhappy Raman tried to insulate himself from the Indian scientific establishment that seemed to be dominated by bureaucrats.

Krishnan says the work has just started. The plan is to link research papers to the exhibits so visitors get a complete picture at one go. That would be the perfect Raman effect.