

## The Faceter's Tale



The Brilliant Cut Calcite which is the subject of The Faceter's Tale

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First of all I should probably explain why this is a *faceter's* tale and not a *cutter's* tale. A gem cutter is an artisan usually working as fast as he can because time is money and gem setters will always be cutting corners off

emeralds and asking the cutter to put them back again! A faceter is an artisan with all the time in the world trying to produce an article of beauty, perhaps for a collector or a museum, and may be asked to facet anything, the rarer and more beautiful the better.

So, on with the faceter's tale.

The box arrived unexpectedly one Wednesday morning. Not that there was anything remarkable about that: I was in the habit of receiving parcels of mysterious gem material, strange bits of rock, and instrument invalids for repair, but this particular packet had the characteristic brown adhesive tape wrapping, the address label outlined in ink and the recorded delivery post office label telling me that it was from my old friend Nell. What could the dear lady be sending me this time?

The box was quite small but heavy. I struggled with the tape, as one does, hoping to retain the box for future use and succeeded in opening the lid. Inside was a plastic envelope packed in bubble wrap and an adhesive label stuck on the envelope which read 'Calcite. Tunguska, Siberia, Russia.' Inside was a perfect 23mm *cube* of crystal clear calcite, polished on two opposite faces and the optical axis marked on a face between these. To say that I was amazed is a gross understatement. The label was dated 29-3-94. Almost *ten* years old!

Now we all know that calcite doesn't come in cubes, that it cleaves all over the place and the only clear material free from flaws is Iceland Spar. And Iceland Spar was used with great skill for making Nicol polarizers owing to its high birefringence, and certainly not for cubes with two highly polished faces like the beautiful specimen lying in front of me. What had the Russian's been up to this time?

Having recovered from the shock of actually holding the cube, I glanced at the envelope again and saw that the label also said: "Please cut me a standard round brilliant as large as possible, with the c-axis

parallel to the table. Love from Nell."

This was too much. I went to the kitchen and made myself a strong cup of coffee, returned to the cube and gazed at it for a long time. We faceters do this most of the time you know, having learned the hard way to *look three times and then cut once*. You can't put it back again. It was becoming apparent that I must have been in a daze when I first glanced at the label because it also said, albeit written vertically along the edge: 'Please return any off-cuts'. "Off-cuts!", I groaned, "Off-cuts!"

This meant that the cube had to be *sawn*, not *ground away*, and sawing calcite with a normal diamond trim saw has usually resulted in the operator being put into a straightjacket.

Now it so happened that I had cunningly built a very sensitive saw for cutting fluorite, which operation has also sent many a faceter to his psychiatrist, so I dismissed this with a grin as a minor problem but I could hear Nell in my mind saying to herself: "That'll teach him to be so darn clever." Sinkankas writes, on page 253: '---easily developed cleavages in three directions cause much trouble during faceting. Grinding on diamond laps is unsuccessful, ----. Brilliant cuts should be avoided. Oxalic acid is poisonous and must not be used for faceting.' "Ha! Ha!"

Apart from having no intention of using oxalic acid except perhaps of administering it to Nell at a later date, I could see that she had challenged me to *un duel de faceter*, as our French friends would say. There were many pitfalls to avoid and I was not going to be beaten. I had seen a few very small yellow calcites, rather poorly faceted with rounded edges, so I stood a chance with rather poor odds I should imagine. There was much to consider, so I went to bed.

Now I am not a proud man, having read the biologist Huxley in my youth, who admonished us with:

'Amoeba has her picture in the book.  
Proud protozoan! Yet beware of pride,  
All she can do is fatten and divide!  
For she can neither read, nor sew, nor cook.'

So I sought information on how to deal with calcite from that masterpiece *Cutting and Polishing of Electro Optical Materials* by Flynn and Powell, pioneers in the working of ghastly crystal substances without which present day life would be impossible. Apart from warnings to avoid thermal shock, to use an indium lap with 3 micron diamond paste for polishing, and when considering the polishing of laser rods to remember a quotation from Shakespeare: 'There's a divinity which shapes our ends, rough hew them how we will' they seemed nonchalant about calcite. Physico-engineers will have their fun no doubt being near the mental condition I mentioned earlier.