

Virtual Work on the Table 08-Aug-2021

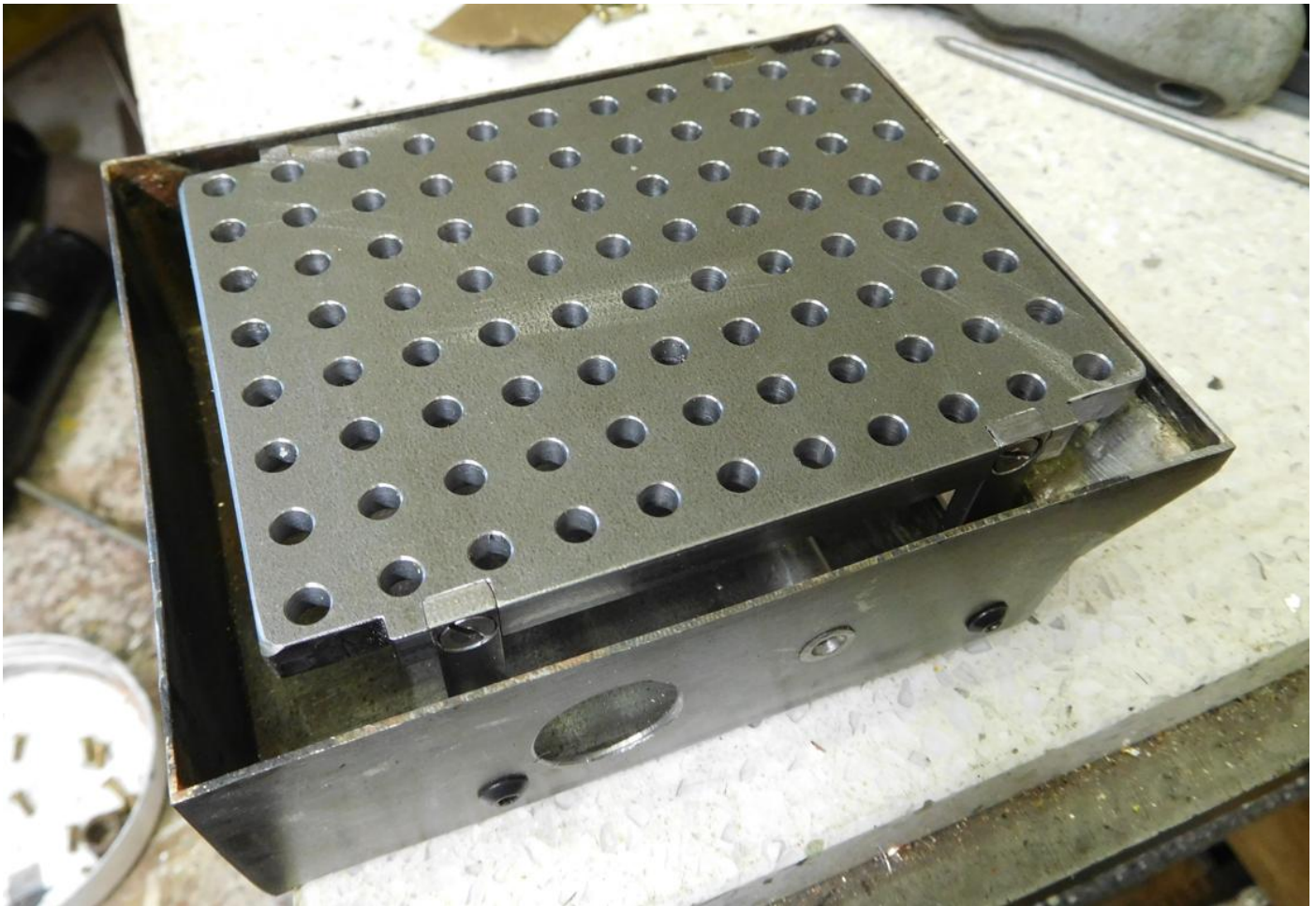
What is it?



Quick brush-off of the swarf and a blow with the blow-gun... It's a Rosebud grate for *Ashey*! I used the DRO to coordinate drill all the holes, the positions of which were worked out on an Excel spreadsheet that somebody had kindly put on the Interweb Thingy. (You specify the size of your grate, the % value of airflow [15% in this case], the hole diameter [4mm], and it works out all the X-Y coordinates for you. If anybody wants a copy, let me know.)



Finished grate and ashpan. Why a Rosebud? I didn't have material for a conventional grate!



Next item on the agenda was to make four spectacle glasses for *Ashy's* cab. Round ones, 33,5mm in diameter and 0,5mm thick glass. Yes, glass, **not** plastic. Plastic melts when hot (such as when you park a hot pricker too close to one, and they scratch too easily. And they don't look quite right. Mica (as recommended by LBSC) is just silly, as it's virtually opaque. For *Edward Thomas* I had been able to source round glasses (free samples) from a firm in London who earn their living making Instrument Glasses; we dealt with them when I was at work. The rectangular-with-rounded-top ones for *Cudyll Bach* had been quite difficult, but I had persevered with the usual "score with a glass cutter, break along line, throw the shattered fragments away and try again" method until I got four usable ones.

For *Ashy* I discounted the idea of obtaining a piece of round glass bar, turning it to 33,5mm diameter in the lathe and parting off half-a-dozen slices 0.5mm thick, as perhaps the optical quality of them might be less than satisfactory....

I'd bought a box of 100 or so 50mm x 50mm x 0,5mm glass (as used in 35mm slides) some while ago for the spectacle glasses for *Cudyll Bach*. This was fortunate, as I reckoned that the attrition rate cutting *Ashy's* round glasses from square ones would be high until I'd worked out how to do it. No prizes for predicting that one, Nigel...

Glass is funny stuff... it's a supercooled liquid, so in a thousand years or so, the spectacle glasses on *Ashy* will be thinner at the top and thicker at the bottom as the glass flows under gravity – they've seen this effect in Medieval (and earlier) glass in churches.

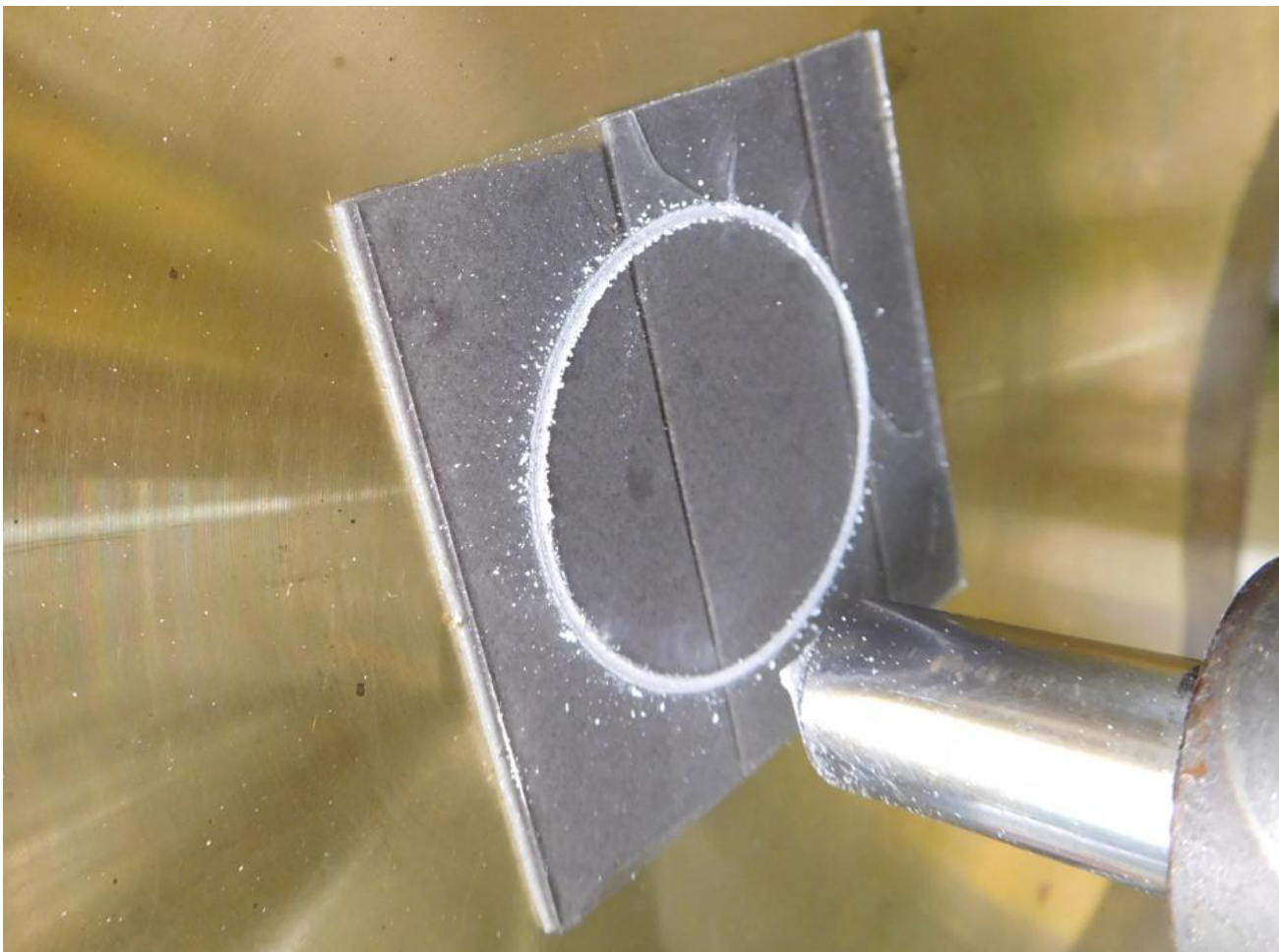
YouTube has a couple of examples of chaps casually cutting circles in glass, so it was obviously really easy. Not in 0,5mm glass, it isn't! The chap I saw scribed his circle with an Appliance, then scored diametrically from the centre of each side *almost* up to the scribed circle, and then applied his little "break back" pliers to the straight cuts. Bing! The correct pieces broke off as he did this four times, to end up with a lovely circle of glass.

But how to score a circle in the glass without his wizzo tool? Aha! I have a lathe!

Scoring the 33,5mm circle on glass would be simple, I thought. I popped a grinding-wheel-truing diamond tool in the toolholder, stuck the glass to my "shellac chuck" with double-sided tape, and off we go. Looks OK:



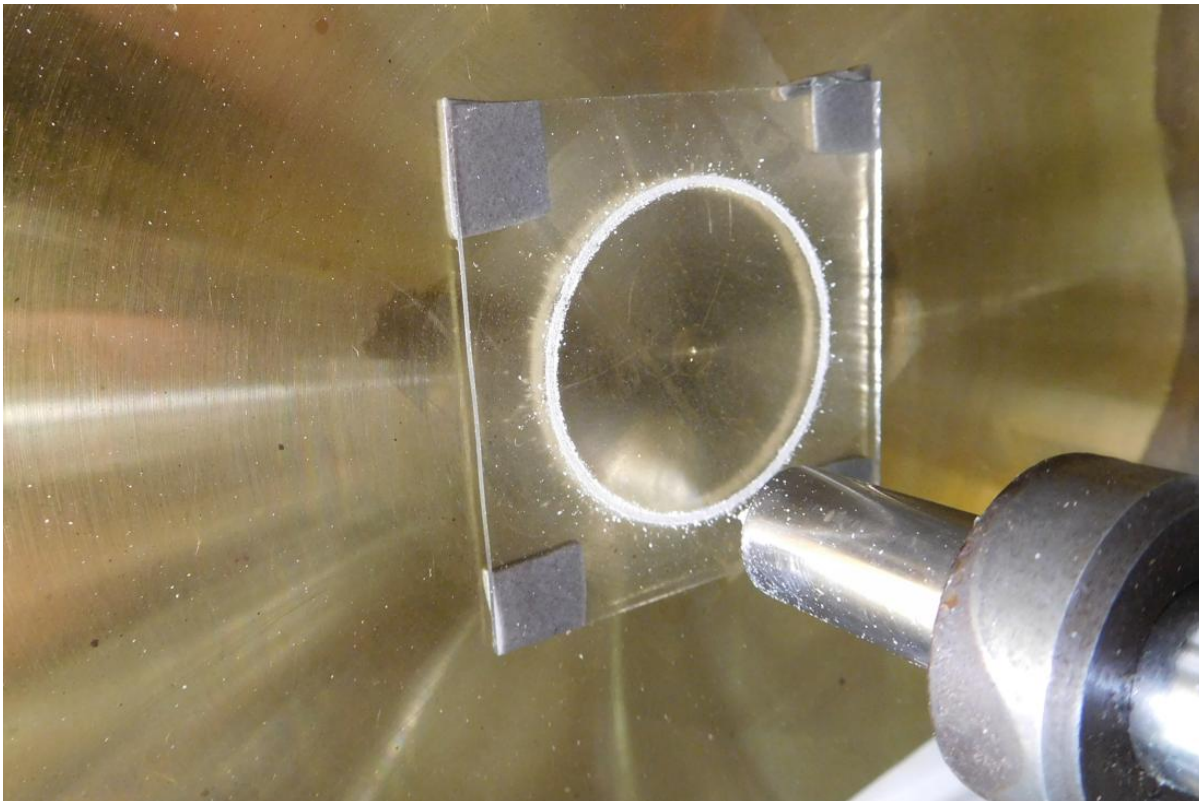
Great! It had started to crack already outside the scored line. Just need to remove it and complete the process. Should only take ten minutes to make all four. Cracked it!



An unfortunate choice of phrase, as I found when I removed it from the chuck. You stupid boy. You hadn't thought this through, had you, using all that tape?



That's what you need – a lot less tape!



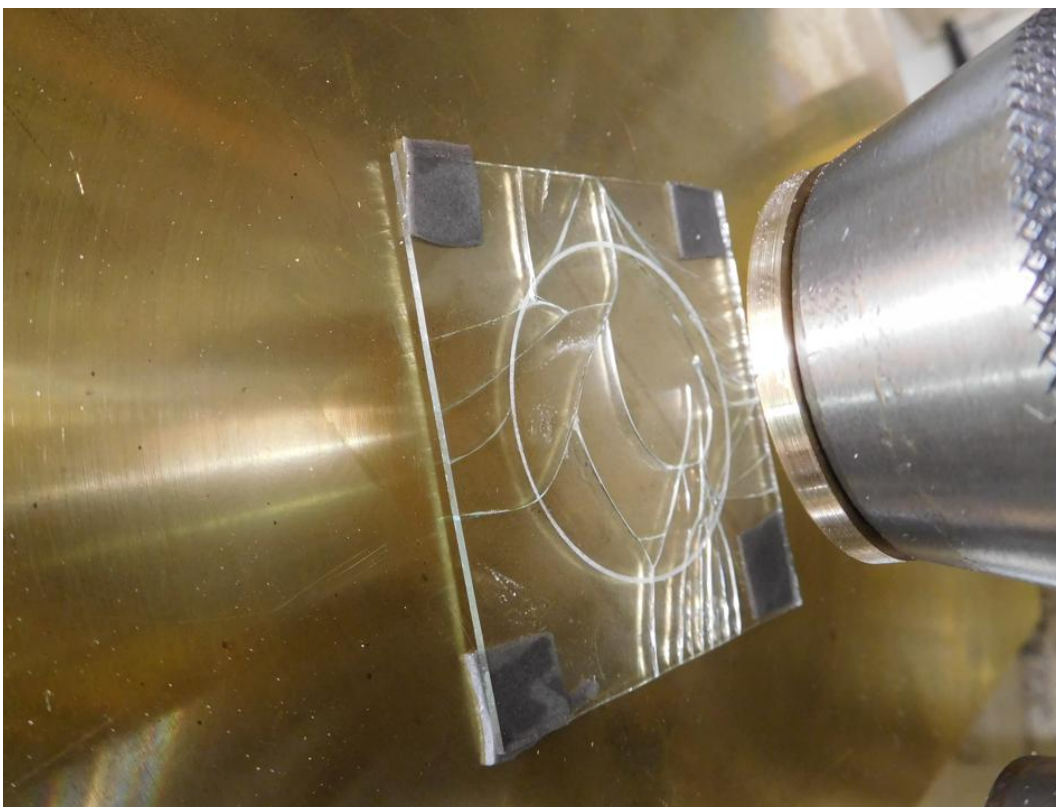
Next operation, remove it from the "chuck" and break it around the scored line. Yes, the scored glass came off the chuck in one piece this time.

The breaking part went well. Pity the breaks weren't in the right place, though!



Next I had an idea. The YouTube chappie had “worked” the score a bit before commencing breaking, so I applied a purpose-made brass affair held in the tailstock chuck to see if I could deepen the score – or even – hopefully - just pop the glass out. (The brass is slightly smaller than the score line, I assure you; it's the wide-angle lens wot done it!)

Erm... No. That doesn't work if you apply too much pressure.



The next one slipped as the area of double-sided tape was *just* inadequate and so it moved and got scored in too many places!



I never used the brass tool again. Next one was stuck on with a *bit* more tape and the groove formed. Once removed from the chuck I had scored it with a conventional (carbide) glass-cutter as shown, and was carefully breaking bits off:



I nibbled away the final bits of the outside. And then:

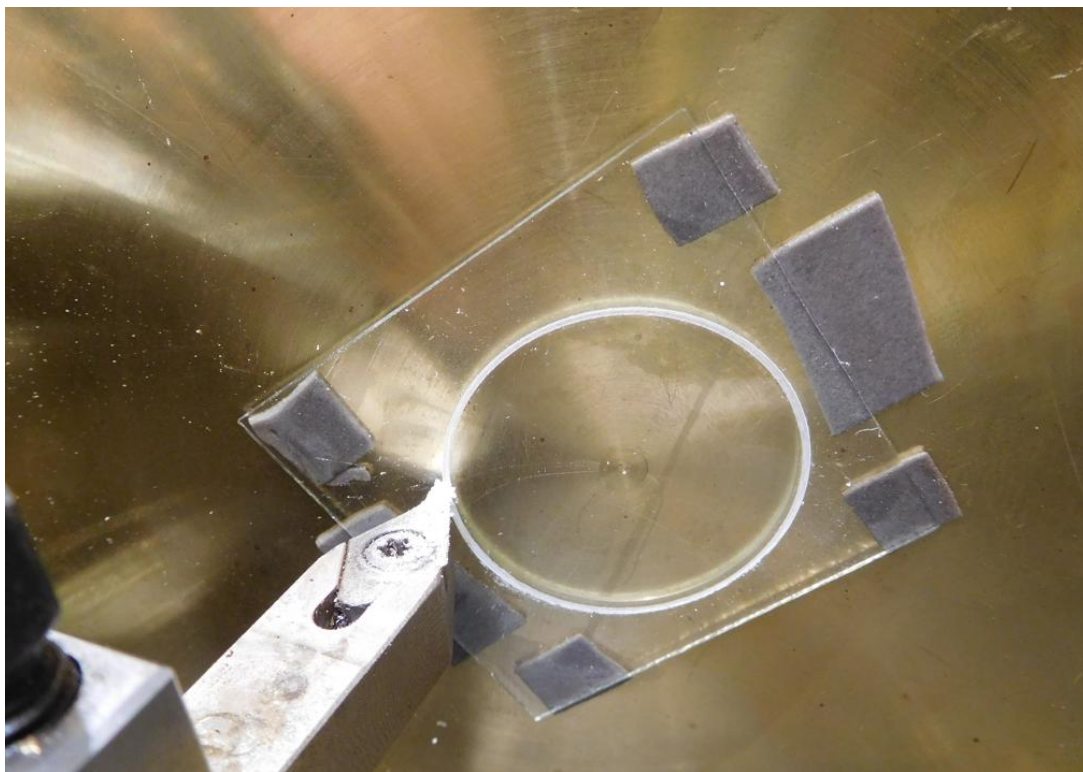


Another one... More swear words, gloom, and drooping shoulders...

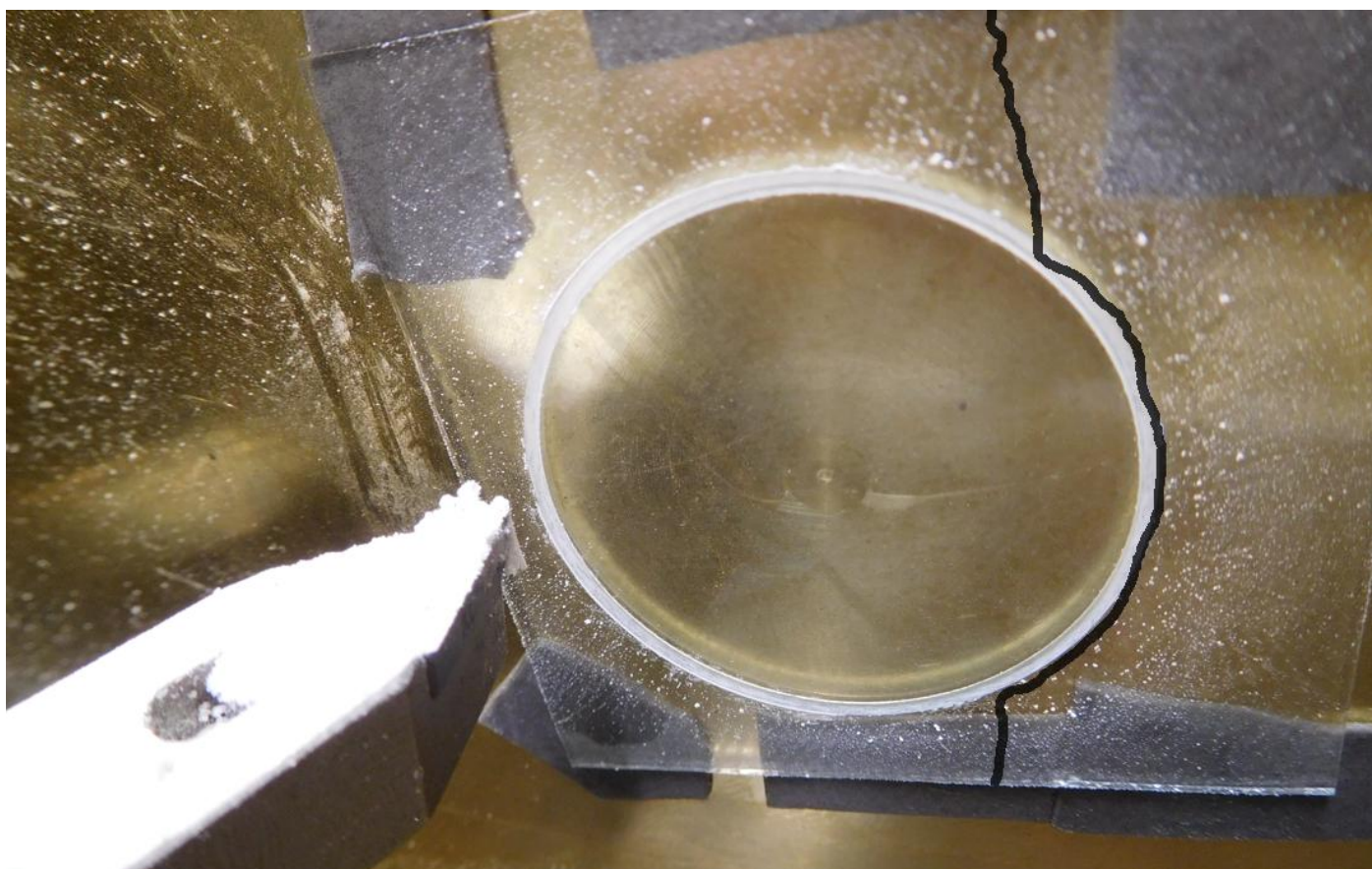


I did eventually get two successfully made by this method – but the win rate was fairly low, perhaps 1 in 10. The YouTube method of scoring diametrically from each edge and break-back tool snapping was much worse; the glass just snapped neatly in half each time, right across the round bit. I never thought it would work!

The glass-cutter I had been using for the straight cuts had a carbide cutting point. Carbide, eh? Wonder if I could score it with a nice sharp carbide lathe tool and just keep going until it simply trepans the thing out? (100RPM, taking it very carefully, applying a bit of cut and waiting until it stopped cutting before advancing the tool again.)



First one I tried cut about 60% of the way through and then the glass broke – but neatly around part of the groove. It came off the chuck OK in its two pieces, but I don't have an actual photo of that one so I've drawn what the crack looked like. The remaining bits broke off easily and I had a round glass!



I had cut over half-way through the next one – maybe 0,35mm deep – and I removed it in one piece from the chuck, and simply snapped the bits off with my fingers. (The tasteful green colour in my fingernail is a residue of some coriander that I had chopped up for our dinner tonight – a chicken tikka – in case you wondered.)



So snappy, snappy around the edge of the deeply-scored glass, just using fingers:



Then the edges were smoothed off with a diamond file. Some of you may remember many years ago that chappie flogging those diamond files with three different grades of blade at the London and Midlands exhibitions (Sigh – remember them?) I'd bought one – they were quite expensive, being US made, but I have never regretted that purchase.



Dah! Dah! Four plus two spares! One of the earlier-made ones has a small bit missing, but it's a spare, and the missing part will hopefully be hidden when assembled into the spectacles anyway. That's a loose glass fragment under the bottom middle one, not a shark's fin sticking out of it...



I never actually got to trepan one completely out on the lathe; I chickened out each time I thought it had gone deep enough and just removed it, snapped the edges off, and filed them smooth.

So that's how I made my round glasses.

Nigel