A Wagon for the Garrett.

by Clive Cook.

The accompanying photographs chart the progress of my son Alistair's G.C.S.E. project – a wagon to grace the rear of our 4" scale Garrett. The intent was to replace the hastilly converted garden trolley which, no matter how carefully we tried to camoflage its origins, always looked like a garden trolley. The new 'wagon' was conceived as a good idea and sanctioned when I was off my head on opiates in early 2010 (treatment for two blown discs). It occupied what spare time Alistair could muster and as much of my spare time as was necessary to keep pace with his progress. Drawings were my responsibility, woodwork was Alistair's and the metalwork was a combined effort. My involvement with the latter had been sanctioned by the Examination Board.

This is not a blow by blow account of the engineering involved, we all know the effort that goes into a project such as this, purely a pictorial diary with the odd aside thrown in.

What was anticipated would be a fairly straight foreward exercise (we had, I considered, a reasonably equipped workshop), necessitated some peripheral actions that were not on the original agenda.

Springs! The wagon would require leaf springs and various other bits of bent metal, a forge would be needed. This is where ebay came into its own, a vintage forge complete with anvil, anvil stand, tools, tongs, hammers, hardies, fan speed controller, quench tank and 11" diameter chimney spigot was up for auction. A bargain, the only down side, given that we reside in East Cambridgeshire, was its location – just the other side of the Humber Bridge on the outskirts of Hull.

It was a clear, dry, sunny morning in July when I added Hull to the itinerary of a planned trip to Birmingham. The cast iron wheels for the wagon had been delivered to Birmingham some three or four weeks earlier to have vulcanised rubber tyres applied. Birmingham? Because quotations invited for the same work from more local establishments brought forth figures 4 times those of the well known provider of such things in what was, until 1965, my home town.

A busy day as a round trip of about 420 miles was involved, with a trailer in tow. Hull's a long way when you're limited to 60m.p.h. by a trailer but the weather was fair and I only had myself to worry about so little to no stress if you ignore the empty fuel tank whilst going through Lincolnshire on the return leg. The County appeared as empty as the fuel tank and devoid of petrol stations.

The vendor of the forge was, quite sensibly, at work when I arrived but had "organised two mates to sort things out". While his wife and I completed the transaction the vendor's mates were *en route* and when they arrived the room went dark – they were huge, no nonsense, Yorkshiremen. "How d'y want it put'n int trailer then?" was a question that wouldn't necessarily have been a problem under normal circumstances but I wasn't confident that these guys would share my sense of humour and so I was careful. "On its side will be terrific if you can?" seemed a reasonable response and it was one that galvanised these two hulks into immediate action. The forge was carried Sedan Chair style using two pieces of 3 x 2 as handles, the anvil was cradled like a baby in two enormous arms and walked down 'back passage' by one of the 'mates' and the tools, thoughtfully collected together in two sacks which had been knotted at the neck, carried one in each enormous hand by the other 'mate'.

Like a tornado it was past in a moment and the deed was done, as they went to leave I offered them a 'drink' each and the response brooked no argument. "We don't need payin, he's a mate, we'd do anything for 'im – see ya" and they were gone. His wife waved me off and disappeared into her mid terraced house, which saved me some embarrassment. The narrow street had cars parked down both sides and had been truncated by some type of development at the far end making it a cul-de-sac without the benefit of a hammer head or turning point. Reversing the car and trailer was an option but the road was long and ended at a fairly fast dual carriageway – not a manoeuvre to be recommended without a 'Banksman'. So it was that I applied all my abilities to turning in a gap between the parked cars much to the entertainment of some youngsters, whose football match I'd rudely interrupted.

Once home, what I lacked was two local mates made in the mould of King Kong! Needless to say the forge and its accessories remained in the trailer until my back was deemed ready for any form of lifting and Alistair was available and willing.

The 'finished' wagon made its public debut at our club site on Sunday 3rd April 2011. Finished that is if you ignore the absence of the under-slung tool box and a braking system, 'embellishments' that will be added in the fullness of time.

Did it pass inspection? Generally the answer is yes, there are a handful of minor points that the really critically eyed might notice but would do well to keep to themselves. When viewed in context, it is the product of a relatively young pair of hands, the wagon complements the engine, is a fair piece of joinery, pleasing to the eye and above all – functional.

Whilst helping to staff the club station during an impromptu running session on Sunday 3rd, we were asked if we gave rides behind the traction engine. Always ready to separate willing punters from their cash I replied in the affirmative, explaining that the wagon didn't have seats and due to rabbit and mole activity it would be a fairly rough ride. The payload grew as we escorted the enquirer across the tracks to the waiting traction engine and wagon. Behind him there came a very attractive young lady and a man of 'great stature', the former not really dressed to sit in a truck but obviously very keen to enjoy the experience, the latter "fulfilling an ambition of a lifetime" apparently! I have to admit to feelings of some apprehension as the unexpected group piled into the wagon, making themselves comfortable with improvised cushions, provided by a fellow club member, in the form of rolled up cloths and towels found, I assumed, in the ticket hut.

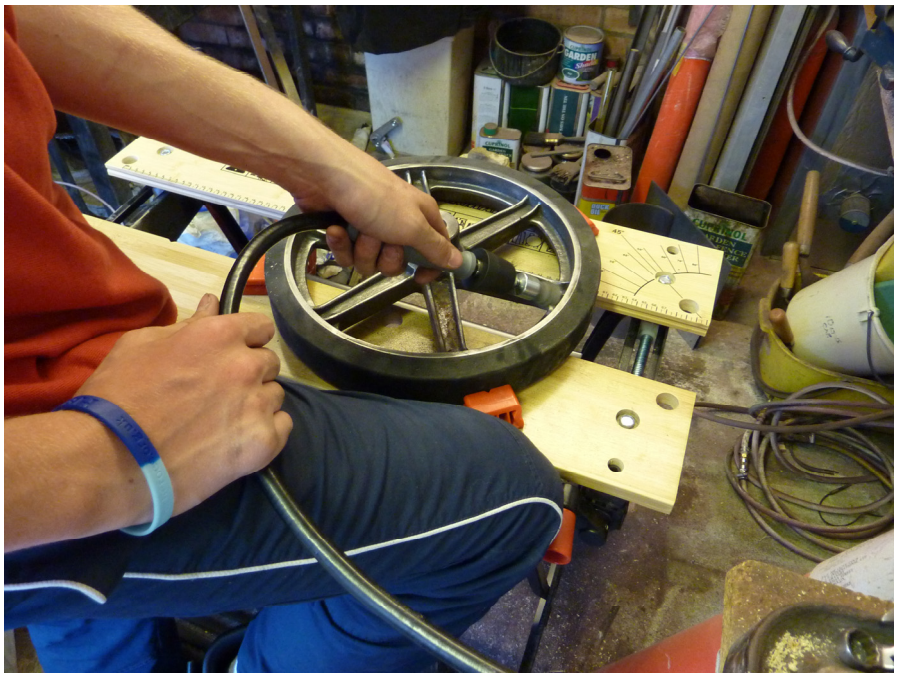
As I applied a round or two of coal to the firebox and waited for the pressure to rise from 80 to120 p.s.i. I reflected on the pulling capabilities of the engine on soft ground, the load behind the drawbar and the springs beneath the wagon. The four springs, each comprising 11No. 40 x 3mm M.S. leaves, were fabricated on the basis of full size details scaled 1:3, cursory reference to published structural steel data and what 'looked right'.

After two steady circuits of the club field I described my initial concerns to the group as they accepted my offered, coal blackened hand to aid their exit from the wagon, over the sides. "Well" said the gentleman of great stature, "I've just been doing a rough calculation in my head and estimate that between us, not just me, you have had a combined load of about 280kg say 5.5cwt. So you can consider your son's new wagon to have been successfully weight tested"!

Three very happy customers, £3 in the club coffers and a successful maiden voyage - what more could one ask?

Above – It was the 3rd of May 2010 before the drawings were sufficiently advanced for Alistair to make a start. Aware of the enormity of the task ahead, his dad had procured the English Ash in planed lengths of 44 x 66 mm section, both to ease the workload and speed the progress.

Above – By the 10th May the frame was coming together and by August the bed, including the planking, had been completed. The latter held in place with 230off 20mm x 8 countersunk brass screws all screwed in by hand and finished with their slots in line with the grain. 3 coats of yatch varnish followed. It was a very impressed dad that upon assembly of the four external members, noted that the diagonals were within a millimetre of each other – some pretty accurate mortice and tenon joints there then.



Left - The vulcanising process played havoc with surface of the cast iron wheels and these had to be cleaned off, using the flexible drive connected to the drill press. Wheels are a tricky component to clamp safely and so Dad invested in a 'Workmate'. Should have bought one years ago but had always 'managed'. Wouldn't be without it now!

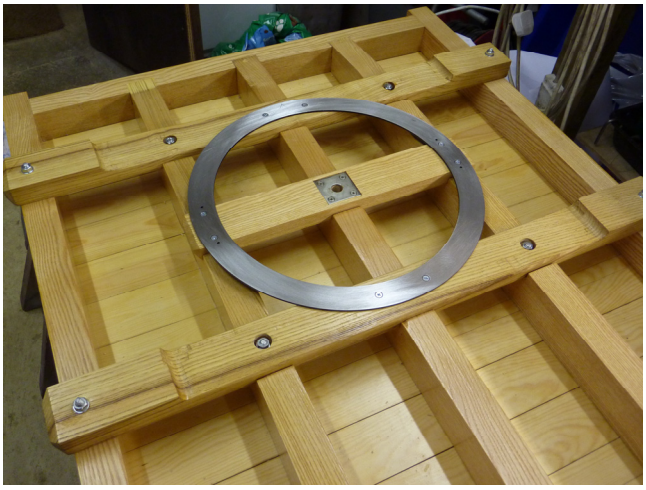
Right – The forge had been retrieved from the trailer and installed in the workshop early in October. The 11" diameter spigot on the cowl required a flue transition box to connect it to the 115² chimney. The chimney had been incorporated into the workshop when built, back in 1996, in anticipation of some form of combustion chamber. A manual damper is incorporated to keep the birds and draughts out when the forge is not in use. Alistair is caught about to light the kindling under the coke nuts for the first time, while his dad contemplates the probable results of same.

Above – The chimney capstone records the build date. It was to be 15 years before it saw smoke and to our surprise smoke did in fact rise through the flue system…….

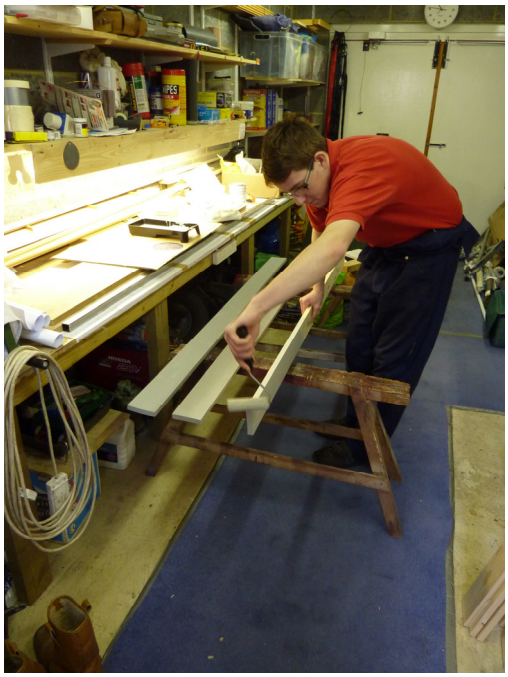
Above Left – Not <u>all</u> of the smoke went up the flue, at one point, the only way to check the fire in the forge was to crawl in along the floor. We waited for the sound of incoming fire appliances, convinced that someone must have made the call but as the stack effect kicked in all was well and the visit from the local retained brigade never materialized.
Above Right – Alistair heats his first piece of 'iron', the resultant 'apprentice piece' was a very passable poker for the log grate, complete with looped handle, full twist and 'cock's spur'.

Left – As we headed towards Christmas 2010, assembly was advancing apace. This is the view you would get of the under-frame if ever run over by the ensemble. Alistair had been obstructed in the meantime as his dad needed some space to fabricate elements of Alistair's bedroom conversion, from young man's sleeping quarters to Passion Palace but that's another story.

Right – The fifth wheel is attached to the main frame.



Left – The forecarriage, along with the other half of the fifth wheel, is attached. It pivots on a 20mm king pin.



Left – Early January 2011 and Alistair applies primer to the planks that will eventually form the sides and ends.

Right – Dad's not been slacking, we now have a former for the springs. When we purchased our MIG welder all those years ago it was never envisaged that we would be welding 8mm steel one day. It was, therefore, a little under-rated for this task resulting in some welds on this former being a little globular! The welds held, the former did its job and now festers beneath the forge ready for the next project that needs springs.

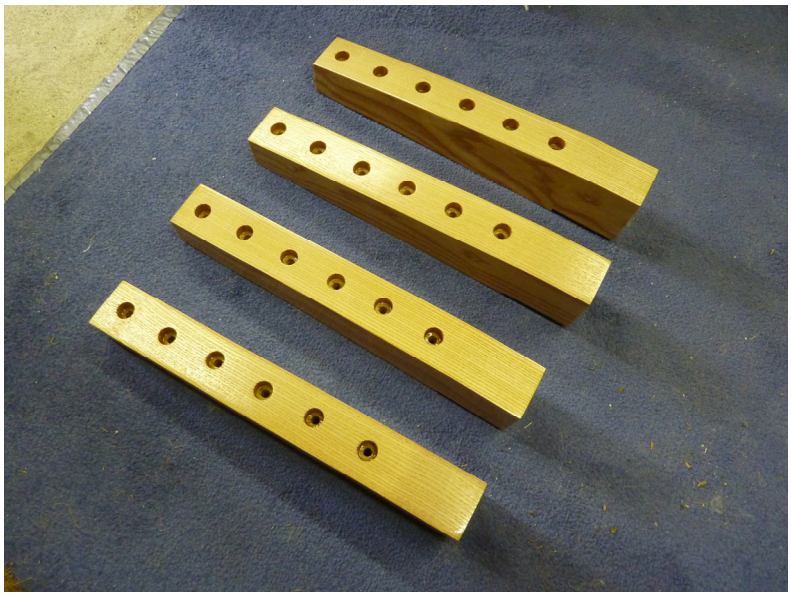
Left – Leaf number 1 takes shape. This really was a 2 man, 4 hand task but produced exactly what we were looking for.

Only 43 to go.

Left – A full set of 11 leaves, all to be cleaned, drilled, bolted and painted.

" ALISTAIR"!

Right – Back to the carpentry, the sides and ends receive two coats of Dark Grey undercoat. It's now early February 2011.



Left – The buttress ties are formed, drilled, counter-bored and given the varnish treatment.

Left – Alistair carefully drills the end panels ready to accept the M6 carriage screws that will secure the buttress ties prior to them receiving their top coats of paint.

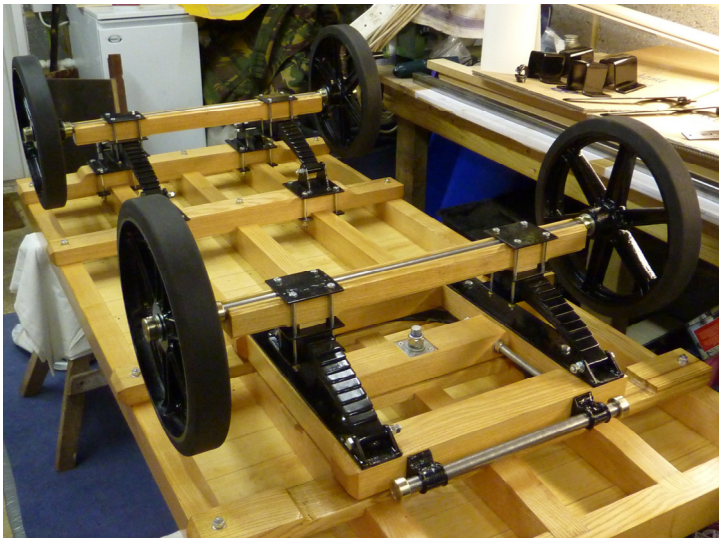
That hand drill he's using was given to me as part of a job lot of surplus workshop equipment in 1970. It's a Desoutter, one of a long lived range of electrically driven implements developed and marketed by this firm who were better known for supplying the automotive and aircraft industries with pneumatic rotary tools at the time (and since, they are still going strong as is the drill). The cast alloy body of the drill features on the front of the manufacturer's 1937 catalogue although I suspect that ours is much younger than that. Compact, slow revving (800rpm) with a 5/16" chuck and good for use on 240Volts AC or DC, I'd be lost without it and it has outlasted at least five of the more popular makes I've had over the years.

Right – 22nd February 2011 and the spring hanger assemblies are mounted onto the chassis.

Left – Early March 2011 and the springs are fitted to the hangers. What we have now is basically a kit of parts to assemble, the really hard work is over.

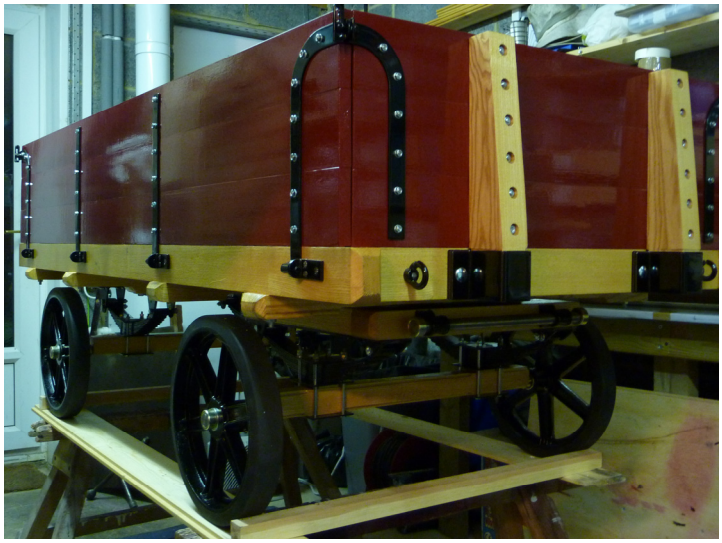
Right – By mid March the drawbar is fitted and we're on a roll.

Left – Close up of the towing hitch, necessary for the bowser which is the next project – the 80ltr. tank is made, it just needs a chassis, springs, axle and wheels!



Left – Mid March and the wheels and axles are in place. The base assembly is ready to stand on its own four wheels.

Right – So it does and the sides go on!



Left - You can almost hear the concentration as the vinyl 'signwriting' is applied. Each section comprising two sets of letters, cream on black shadowing, makes the task even more stressful as the backing adhesive only has to touch another surface and it 'bites'.

Above – Complete with rear oil lamp, number plate and safety chains, the finished article stands in the club field warmed by some early season sunshine and waits for Alistair to raise steam in 'HILDA JUNE' the Garrett it was built to run behind.

APRIL 3rd 2011 - A PICTURE THAT JUST ABOUT SAYS IT ALL