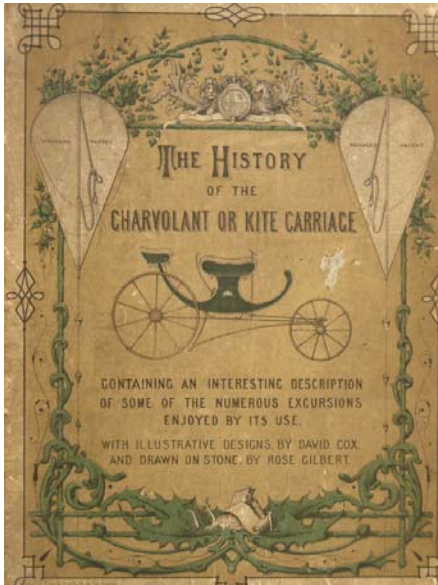


Aeropleustics—Paul Chapman

Aeropleustics – or a buggy good time in Bristol



Alistair McKee came around to see me just before Christmas. Alistair works for the BBC and had been put onto me as a source of information on George Pocock who, in the early 1800s, practiced the art of aeropleustics in and around Bristol. We had a little rummage around my collection of old kite stuff and

turned up a copy of the kite patent by Viney and Pocock, as well as the two classic Pocock books of 1827 and 1851 and various other stuff that included authentic instructions on building the kites and kite carriage. The 1851 book is particularly scarce. In it you will find the account of a race between three buggies from Bristol to Marlborough (one with a crew of 6 and the others with three in each buggy). This was reproduced in *'The Kiteflier'* for October 2006. Alistair's project was to make a replica of Pocock's system and then to test it. This seemed a big challenge, particularly in respect of making an historically accurate replica since the patent only shows a side view of the power kite, while the plate in the books shows a plan view, but with no details of the sticks. The 'how to make it' book tells you how to make the sticks, but still fails to show the kite framework. Then Alistair threw me a helping hand. We were looking at my stocks of hard laid hemp and fine cotton cambric when he said that the cambric looked about right. "How do you know?" "Well, the one that I saw was a bit like that". "WHAT?" So then he told me about the kite skins.

It took a couple of weeks to get through Christmas before getting the chance to see the Pocock kite skin. When I arrived it was already carefully laid out on a bed of acid free paper ready for inspection. And in a box alongside there was another identical example! The buses in Bristol are a bit like this; as rare as hen's teeth and then two turn up at the same time. Anyway, back to the kite skin. The skins (both of them, as they are identical) have never been made up into kites. From the size of them they appear to be either pilot kites or the Pocock Patent Portable juvenile kite since the main power kite for the charvolant was much bigger. The juvenile kites are advertised in the 1851 *'History of the Charvolant or Kite Carriage'* so my guess is that these are likely to

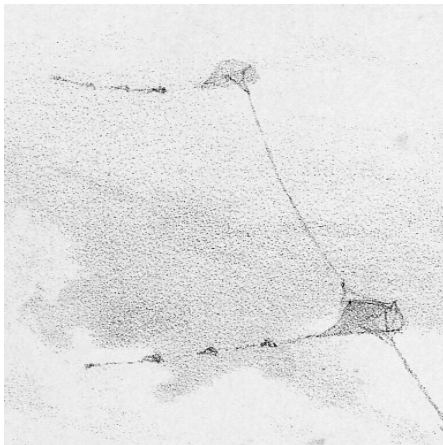


be from about that time. The indigo coloured fabric is almost certainly lightweight closely woven linen. The face has a shiny mercerised type of finish. It is unlikely that the fabric would have been specially made, so I would think that it is some sort of linen umbrella fabric. The skin is made in two halves and sewn together. The big Lion and the Unicorn crest image was applied afterwards. It is likely that this would have been a woodblock. The crest image on the kite is different from that shown in the Pocock books; both the lion and unicorn appear somewhat inebriated! My sketchbook from the visit shows that the finished kite would be 70" tall and 47" across the wingtips. There are 1.5" wide hand sewn seams around the slightly bow headed top and 1" seams along the bottom edges. These seams leave gaps at the corners to allow for fittings and fixtures. There are no signs of bridle fittings.

It is my guess that the upright stick (the straighter, made from straight grained Central American lancewood) connected to a hinge at the top. The hinge formed the centre of the 'bender' sticks that sleeve into the top sleeves. The hinge itself would open to about 240 degrees or so. There was also a spreader stick that connected across the bender. There is no gap in the bender sleeve to take a spreader connector, so the only place that this could have connected was from wing-tip to wing-tip (as described in the making instructions, but different from the common belief that the spreader would act like an umbrella spreader). The spreader would control the bender from bowing back too much under wind pressure. I also have a feeling that the sleeves also carried a hemp outline string that would connect the sticks to the skin, and then be then tied at the bottom of the kite. This would then allow the kite to be trued up.

The time for flight-testing and filming came on Sunday 11th January. The site was on the buggy beach at the Uphill end of Weston-super-Mare. The wind gods decided to make up for weeks of freezing temperatures and no wind; the anemometer showed a 15 to 25 mph gusting breeze. The men from the BBC were delighted that we had a proper kite wind! Alistair had arranged for the replica to be made by

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Prop Inventor and Science Presenter Marty Jopson. Marty has a workshop in Leeds and had received copies of all my paperwork so I was intrigued by what would emerge from the BBC's white van. So was Dom Early because he had been

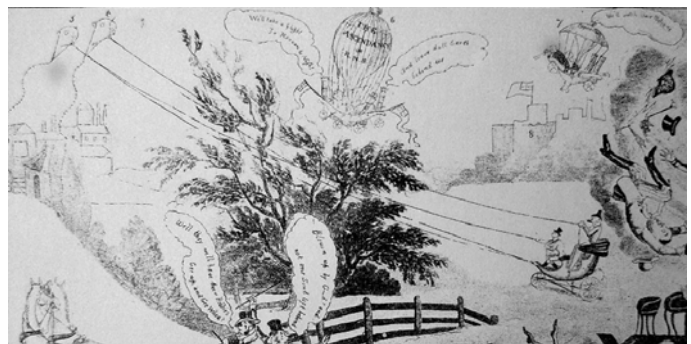
volunteered as aeropleustician for the day. In the event Marty had made a 'proof of principle' system. As he explained it, it would be something like the sort of thing that Pocock could have experimented with, had he had the advantage of modern materials. The buggy was a short-coupled affair – a cross between a wheelchair and a go-cart scavenged from old pram parts. The kite itself was of genuine colour and a good 10 ft tall, but it was made from a nylon fabric. The straighter and spreader were 8mm glass rods while the bender was a rather insignificant 3mm carbon (or glass) rod. The tail, as specified by Pocock, was a series of vented cone cups. Marty had not had time to make a pilot kite so Dom quickly arranged one.

The wind was really too severe but the team persevered. The pilot was launched but was pretty much overpowered. And then the big kite was ready for testing. Marty had replicated the original control system that comprised a lead line from the head of the kite. Attached to the lead line was a ring that carried another line that ran to the rear of the kite. The kite incidence angle can be adjusted by using the lower line (in Pocock's system all the lines were housed in a drag reducing sleeve). Control to either side came from light lines that ran from the wing tips, through the ring and then down to the aeropleustician. In Pocock's day there would be two steersmen, one for pitch and the other for steering. Luckily Dom is an experienced buggier so he could do the work of two men.

After a little fettling it was time to squeeze Dom into the charvolant and let him loose. And, given the strength



of the wind, we were amazed by the sight of the aeropleustician zigzagging in a downwind direction. Although I was only the observer at this stage I did



manage to get some video. What seemed interesting was the behaviour of the pilot kite. This is simply a single line kite whose only function seemed to be to keep the power kite up. What would happen when the power kite was manoeuvred, say to the left? The pilot would initially be streaming downwind but then would drift across to add its mite to the power kite. I suppose it acted as a damper to the system. The top speed of Marty's proof of principle charvolant



was nothing like the 20 – 25 mph of George Pocock's kite carriage. Neither did it carry a load of up to 16 cheering schoolboys. But it worked! And afterwards Dom hitched up a trailer to one of the modern kite buggies and individually sandblasted the entire TV crew. Broadcast on BBC1 *Inside Out* on Wednesday 21st January at 7.30pm. Can also be seen at <http://tinyurl.com/dbk9mr>