



## NEWSLETTER

JANUARY 2007

Happy New Year Everyone,

I hope that you all had a good Christmas and you are ready for the challenges that 2007 will bring.

I'm sure all those of you who were at the last steaming of 2006 will agree that it was a fantastic day. The outdoor engines ran well all day including the pump in the headrace which proved to be quite an attraction. The beam engine started well and the public were genuinely interested in seeing the engine stop and start. Several new members rolled their sleeves up and helped out, Chris on the engine, David on the little engines and Hamish on the forge. The door took £1067, shop took £413, the forge £68 and there were donations of £39.10. All in all this was the largest amount taken on a normal steaming day, a brilliant end to the year.

Meanwhile work has continued, Richard Brown and Andy Aldridge collected the new burner for the boiler. An adapter plate was needed and Joe Curryer obliged. We still need a gasket between the burner and the adapter plate. Tony Simmons has been working on the control panel which I understand is now nearing completion. Marc Bickley is negotiating with Nolan Oils, they may have a tank that we can have. We still need to sort out the water treatment. A list of possible firms that could be contacted to help is being obtained but someone willing and able to take this forward would be much appreciated. If there is anyone out there who has any knowledge or interest in this area please contact Joy. We will be unable to run the new boiler without the correct water treatment. The aim is to have the boiler working for our next steaming in March.

At the last members meeting there was a general wish to continue activities

at the Mill. A sub-committee has since been formed to look at fundraising / available grants etc. Many of the grants would require the Society to raise a certain percentage first. To this end could everyone going to the Mill please sign in and record any work they do as this labour/work has a value. We can use the donated work value towards the percentage we have to raise, but we can only count it if it has been recorded.

Joy has been in touch with the Estate to let them know that we would like to start negotiations on the lease of the Mill. Meanwhile it seems that the Estate have applied for planning permission for the next stage of the development of the site.

WORK DAYS AT THE MILL ARE SUNDAY JANUARY 28<sup>th</sup> and SUNDAY FEBRUARY 25<sup>th</sup>. Please let Joy Brown know if you are able to come. It just means that the day can be organised to make the most of it.

NEXT STEAMING IS SUNDAY MARCH 18<sup>TH</sup> This means that there will also be a preparation day on Saturday 17<sup>th</sup> March. Please put these dates in your diary.

No, you didn't miss the Christmas Dinner because we are meeting up at the Gardiner Arms at Tackley on Friday 19<sup>th</sup> January. If you haven't already put your name down please let Marc Bickley know as soon as possible.

The article with this newsletter has been submitted by Tony Simmons. If anyone has come across anything interesting please send it in for the next newsletter.

See you all on 19<sup>th</sup> January at Tackley.

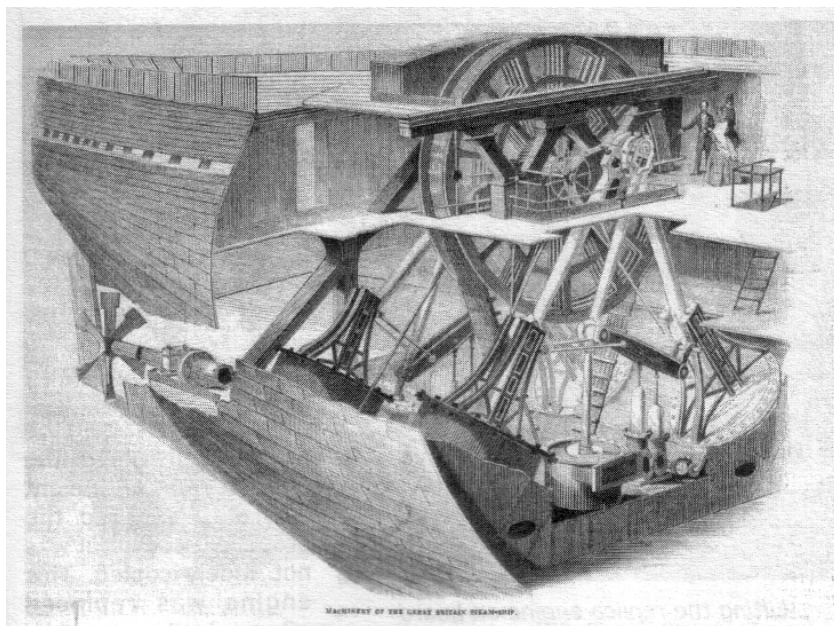
Deb Brown.

# SS GREAT BRITAIN'S NEW HEART

Chris Hodrien

As you are all doubtless aware, I K Brunel's groundbreaking iron-hulled, screw-propelled steamship Great Britain is preserved in her original building dock in Bristol. She was repatriated from the Falklands as a complete hulk in 1970 and has been undergoing painstaking restoration ever since.

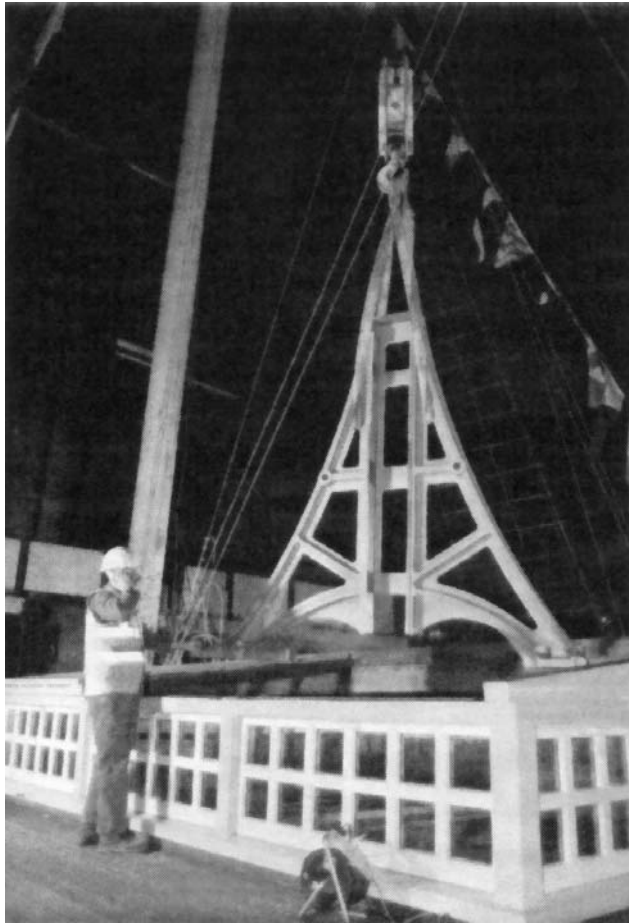
Last year saw the completion of a massive 4 year hull conservation programme costing £11.3 million. In her 160 year life, salt had become deeply ingrained into the ironwork so that the hull skin was corroding from the inside out. It was decided that the only way to save her was to keep the hull completely dry. This has been done in a very innovative way by sealing the dock with a glass roof on the original waterline, on which rests a thin layer of water to give the appearance of a ship afloat. A huge de-humidification machine has turned the whole of the space below into a giant drying chamber kept at 20% relative humidity, entered through a 2-door airlock to allow public access to the lower hull and the unique (replica) Brunel propeller and 'balanced' rudder. Meanwhile the hull has been fully repainted and re-gilded above the waterline, the main deck replaced and a full set of replica masts erected, while the cavernous interior spaces are now largely filled with replica cabins and lounges, transforming the inside and outside appearance. There is also a good display of the ship's working history and small artefacts in a 3-storey shore-side display hall (lookout for the engraving of the second, oscillating engine by Penn).



Original Times engraving of Great Britain's engine

The parts of the huge incomplete 50+ ton static replica engine have been removed from the ship, refurbished and modified by Heritage Engineering at Glasgow to create a complete motorised turnable replica engine. We can now report further significant progress on this major project. This high profile project in the Brunel Bicentenary year will help to put British marine steam firmly on the international map, and just maybe help the cause of a higher priority for steam against sail in British marine preservation official bodies, to offset the regrettable trend of the last 20 years. The development of the marine steam engine in all its

forms in the 19th Century was, after all, a unique and transforming contribution of Britain to world shipping development (with a little early help from our American friends).



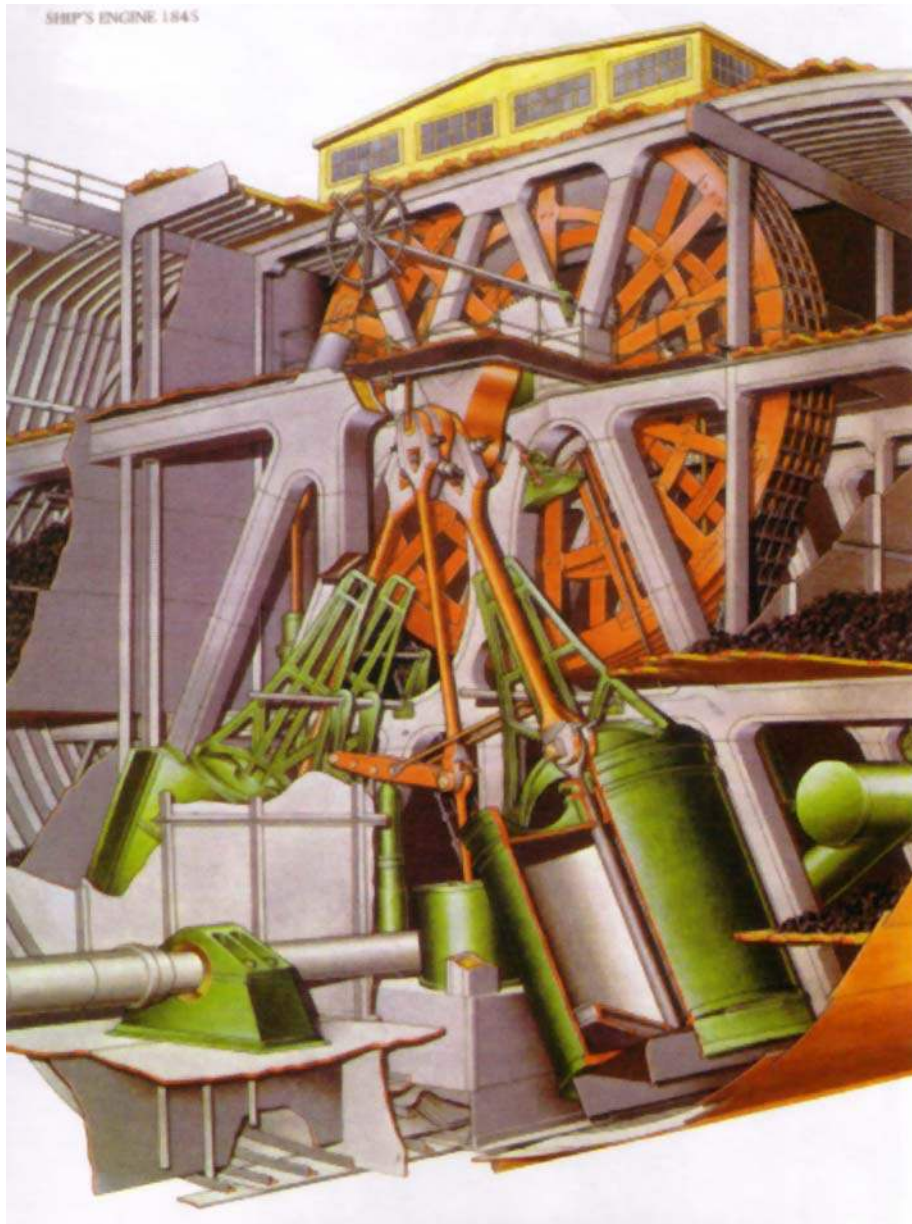
The original engine was an enormous 1000 hp cross-wise double-diagonal (steeply inclined - 60°) 2-crank machine with four 88" x 72" cylinders driving a huge overhead 18' diameter wood-lagged drum that drives down by 4 parallel chains to a 6' lantern (skeleton) drum on the propeller shaft running between the cylinders, giving a propeller speed of 53 rpm for an engine speed of 18 rpm. This was a very logical solution, for single screw propulsion, to the twin problems of lowering the centre of gravity of the massive engine weight and of gearing-up the propeller speed, but was not widely copied. This engine was replaced after only 7 years by a smaller 500 hp 2-cylinder gear-drive oscillating engine (82½" x 72") by John Penn to give more economical slower cruising for her revised 'sail + steam' service duty on the Australian emigrant run.

Lifting the replica engine on board  
SS Great Britain (The Bristol Evening Post)

The original engine operated at a pressure of only 5 psig supplied by one huge cross-wise 24-furnace rectangular tank boiler 31' x 34' in size just forward of the engine in a common space. The propeller shaft was in three sections, the central 61'8" long section being a hollow tube 31½" diameter. The vertical air pumps are also driven from the main crankpins via a grasshopper parallel motion, resulting in each pin carrying three connecting rods. The whole occupies three decks in the hull and will provide a spectacular sight in (slow) motion. By the use of modern materials (such as aluminium) and clever fabrication techniques, the weight has been kept down to only about 50 tons (the original engine was 340 tons!) to minimize the stress on the hull. Notably, all of the main motion rods are cunning hollow welded fabrications concealing much smaller bearing pins.

The engine's re-installation commenced on 31 January when the first parts were lowered in by a 50 ton crane in a dramatic and lengthy overnight lift).

The design brief included 're-creating the sounds and smells of a working engine'. This includes taped sounds of 'stokers shovelling' below, glowing artificial coals behind open furnace doors and a quite successful visitor-controlled simulated 'hissing' small steam pipe 'flange leak' using theatrical smoke.



Cut away drawing of the replica engine (SS Great Britain Trust)

After a massive and hectic large scale construction job in very cramped working spaces, the official opening by TV personality Jeremy Clarkson took place on 9 June, just in time for the main Brunel Bicentenary ceremonies. This was an apt choice, as Mr Clarkson had championed the cause of Brunel in the BBC's earlier Great Britons' TV series. Mr Clarkson stated to the assembled multitude that "the engine is the single most important part of the ship" - a little-quoted sentiment which I am sure we can all heartily endorse. Shortly after this, the engine featured in a reception on board for the Duke of Gloucester on July 5th to mark the Bicentenary of Brunel's birth and to kick off the commemorative 2-day conference.



The replica engine nears completion (The Bristol Evening Post)



Official opening by TV personality Jeremy Clarkson (Martin Chainey Photography)

Completion work was still in progress at the time of our visit on 15 July (e.g. valve motion eccentrics yet to be fitted) and the engine was not turning. There is already some good temporary display information around the engine control floor, including a very nice isometric cutaway line drawing of the engine room area.

The project has been funded mainly by £600K from the 'ReDiscover' fund. This £34 million fund, aimed mainly at hands-on' science displays, is a joint venture between the Millennium Commission, the Wellcome Trust and the Wolfson Foundation. Rolls Royce Aerospace has contributed additional funding and consultancy. It is pleasing to see some high-profile steam engine projects receiving funding from these major national funds.

The ship and engine has won the 2006 (British) Gulbenkian museums prize, continuing the trend of industrial museums winning this high profile award. They are now bidding for the European Museum of the Year Award, to be awarded in May 2007. In addition to the engine itself, visitors will be able to see an exhibition of photographs of the restoration project in the Baker Gallery of the adjacent dockside museum. This will run until March 2007. For more details and further press releases, see: [www.ssgreatbritain.org](http://www.ssgreatbritain.org).

This is a stunning project of international significance and we would recommend it to all ISSSES members.

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