How we make
FOX TRANSFERS

We thought that now would be a good time to present a step-by-step exposé on the production process required to make Fox Transfers. It could be argued that it's overdue: the last time we revealed ourselves in detail was in the summer of 1991 when Dave Lowery - the Editor of Your Model Railway magazine - visited us in our home in Leicester and compiled a largely photo-sequence of our operations.

Since then, a new generation of railway modellers has grown up and many old-stagers have returned to the hobby either on retirement or following the departure of children from the nest.

'If it ain't broke, don't fix it' tends to be a good mantra to follow and as a picture is often worth a thousand words, we have adopted a similar photo-presentation, with extended captions, to that which Dave adopted nineteen years ago. As there is quite a lot involved, Part 2 will be published in FT36, which is likely to make its appearance early in 2011.

Please note that we have had to separate the captions from the images for reasons of reproduction costs; images and captions are, however, cross referenced numerically.

The first stage is the most difficult, in some respects. And certainly the hardest to represent photographically. That is: precisely which transfers should we make that will have sufficient appeal to enable us to recoup our costs and thereby enable us to produce more transfers? Every transfer sheet which does not sell reduces our ability to expand our range. Given that the railway companies have originated millions of graphic elements over the last 175 years or so, it is obvious that a small business like ours cannot reproduce more than a small fraction of them, particularly when you consider that we have eight scale ranges - from 2mm/N to 7.25 inch - AND FULL SIZE to contend with.

FoxTails

HOW WE MAKE FOX TRANSFERS
THE EXPOSÉ OF THE CENTURY

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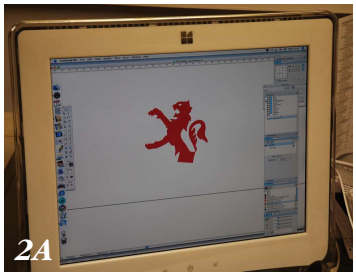
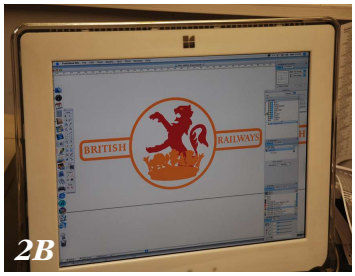
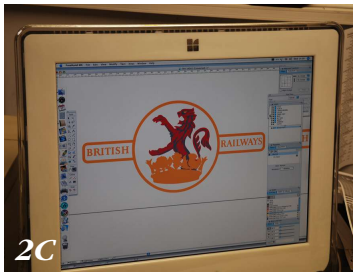
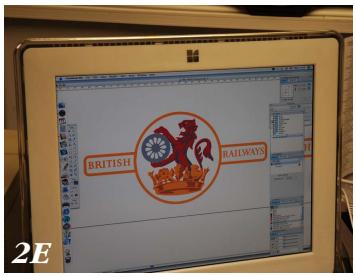
Two of our full-size crests, used in the restoration of old locos. Left, the Great Western Railway twin-shield, with the heraldic arms of London and Bristol - the two original terminii of God's Wonderful Railway. Right, the Caledonian Railway crest. Both on show in our works. A pair of our GWR crests can now be seen on Class 57 57604 PENDENNIS CASTLE refurbished and re-liveried this summer to celebrate the 175th anniversary of the founding of the GWR.

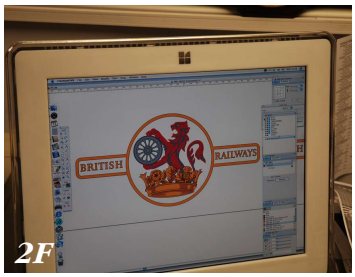
1: Research: We've got to give the old twit something to do to justify his existence



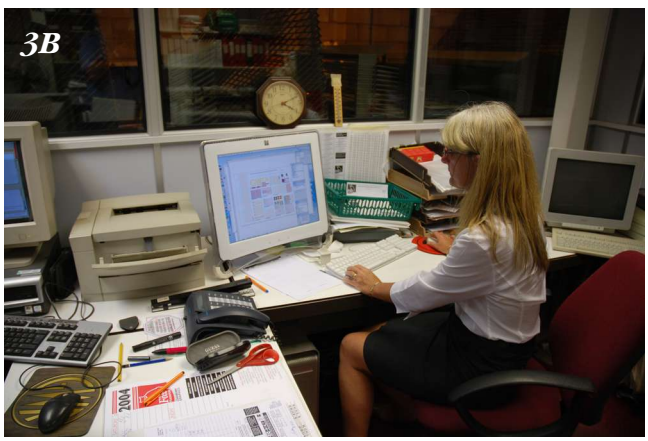




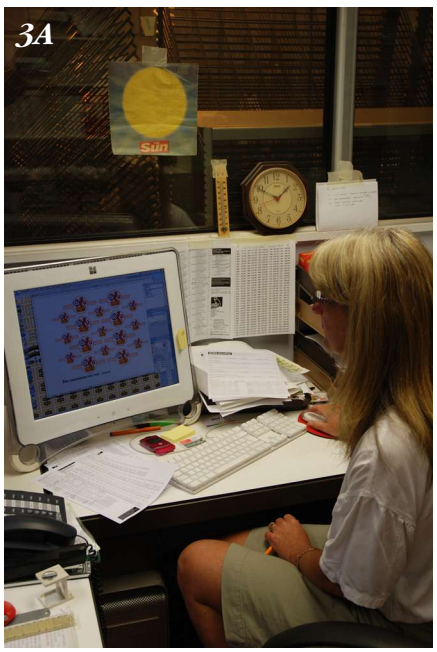


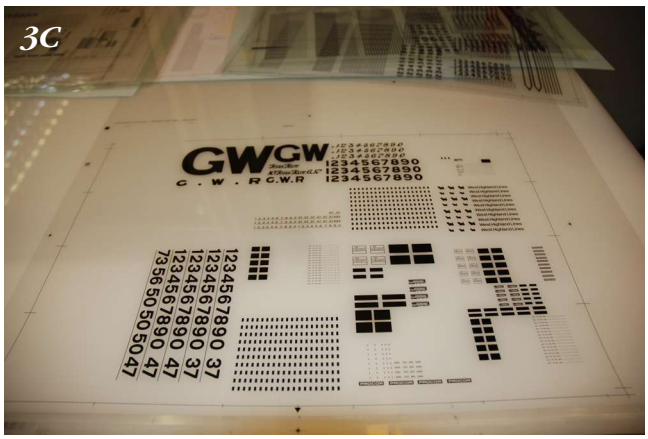


2: Artwork origination: This shows the incremental make-up of the later (1956) British Railways tender/tank crest with colours suitably modified to aid on-screen identification.



3: Production sheet preparation and film output: Lynda in 'Starship Enterprise' - Mistress of All She Surveys!





Obvious 'givens' are both British Railways tender graphics - the early 'Cycling Lion' and the heraldic 1956 crest; plus the original BRITISH RAILWAYS in its various forms; and the British Rail modern image 'double arrow' symbol. Numbering for locomotives, coaching and freight rolling stock follows on, as does a representative range of linings, especially for locos. By which time you have already committed yourself - certainly in our case - to well over three thousand different sheets.

1: Once the decision has been made, the research swings into action. Hardly an appropriate description of what can often take months to complete. We have a sizeable library of railway tomes, numerous drawings and photographs. For modern image material 'field trips' involving photography and measurement of actual locos, coaches, multiple units and freight vehicles used to provide us with all the basics. Nowadays, the reproduction fees required by some of the privatised railway companies, the short lives of most liveries and the activities of the ready-to-run manufacturers make this area a less-than-viable proposition.

2A-H: Planning the content of each sheet is vital to ensure we get the appropriate quantity of each image included - never an easy task when you're involved with numerals or some alphabets! Each image then has to be created on our Apple Mac system. As each colour which you see on the finished transfer sheet has had to be printed separately, this requires the creation of artwork for each colour element or layer. When each layer has been completed it will be combined with its fellow layers and sized as required. Crests can be particularly time-consuming - and therefore expensive - sometimes requiring of up to 19 or 20 pieces of artwork, films, stencils and print runs. Lynda shows us the sequence of these operations.

3: When the individual sheet artwork has been completed, it is combined with other sheets which, where possible, comprise items to be printed in common colours in an effort to contain production costs. A film with black images on a clear, transparent ground is then output for each printing colour.

4: Having checked the output film (black image on clear ground - see item 3c in FoxTails 35) it is now married to a sheet of red, photo sensitive, film in a vacuum frame and exposed to Ultra-Violet light for a pre-determined time. The red film when developed creates a negative of the original film and this is processed in a chemical bath to produce a clear image on a red ground. The film is then washed to remove any trace of unwanted red coating in the image area.

5: The screen material is affixed under tension in an alloy frame which fits onto the printing machine. This can be seen in 6B with a layer of yellow ink which has been squeegeed across the screen (or stencil). The red film is then transferred to the printing screen and positioned on the mesh where required. (The type of printing we practice is known as Screen Process Printing - Silk Screen Printing in days gone by - but the use of silk for making the screens was superceded by man-made fibres many years ago.) The red ground coating of the film is dried onto the screen and the clear carrier film removed. The areas around the images which are not required to print any images are then painted out using a blue opaquing solution, ensuring at the same time that the tick (registration) marks required for guillotining the finished, printed sheets, are retained. Blue opaque is then employed to fill any errant 'holes' which may have appeared in the preceding stages - often a delicate and time-consuming operation.

6: The printing paper must be hand-positioned precisely on a vacuum bed which sucks the paper down evenly each time to ensure correct registration of all the printing colours. The image on the transfer paper is created by the passage of the squeegee over the mesh forcing ink (which has been flooded onto the mesh - see 6B) through the minute holes in the areas left clear during the preparation of the screen (see 5B) and onto the paper below (see 6C). This whole procedure is required for every colour required on a transfer, whether it be a large lining set measuring many centimetres or a minute segment of a crest less than a millimetre across. No wonder, then, that the process is unsuitable for creating 'one-off' sheets (for which we would recommend our waterslide DIY paper).

7: As each sheet comes off machine, it is carefully stacked in a drying rack (see 7) and left for 24 hours to dry naturally. The amount of ink deposited on each sheet in depth terms makes the process ideal for transfer production, giving a vastly superior depth of colour to all other printing processes, especially necessary when a transfer is to be laid down on a dark or dramatically contrasting surface.

When all the colour runs have been completed - anywhere between 2 and 20 different colours or shades being required, particularly in the case of full-size crests - the sheets are allowed one final drying before being gathered, guillotined as required and checked for faults. And then stored in our temperature controlled stockroom, ready for call-off by our customers from all around the word.

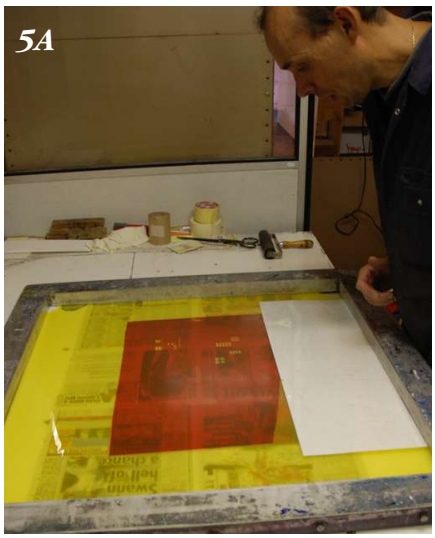
4 : Exposing and developing the printing film/stencil


4A

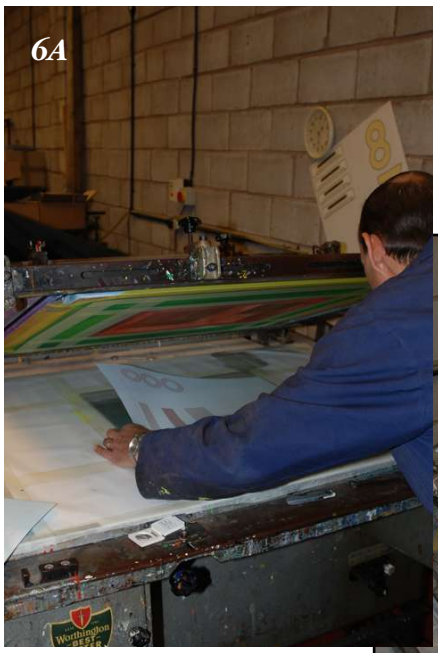

4B

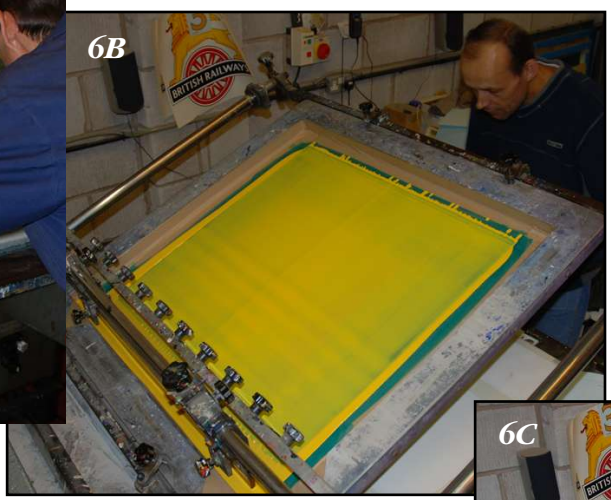

4C

5 : Preparing the printing screen


5A

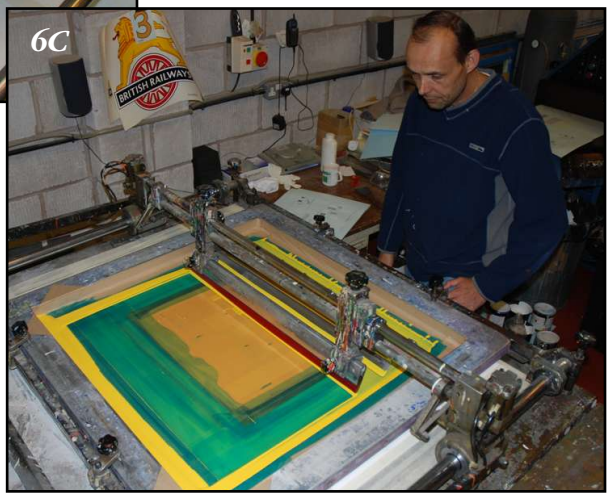
5B


6A



6B

6 : The printing process



6C

7 : Drying racks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