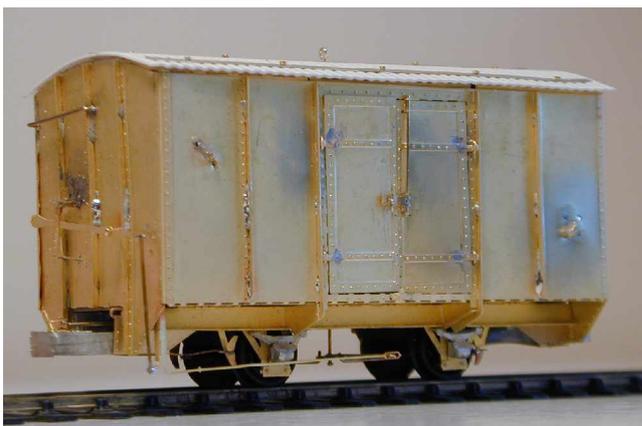


habit of rooftop riding, or whether it was deliberate is not known. Now fit the roof – it should be a push fit, without further fixings.

29. It only remains to add a few final trimmings. A wooden handle block to the outer end of the brake lever can be made, either with wood and superglue, or Milliput. A small platform above the brake rack was common, so **Part 27**, can be folded over on itself and soldered on top of the rack. There should also be a handrail on one end. This should be between the 3rd and 4th rivet down on the left hand side, and just past the centre rib. Bend up a length of wire and solder on the inside.
30. A final touch – if you are using prototype couplings – is to fold the elongated link (**Part 28**) on itself and secure with solder. Clean it up and fit it at one end. No pin is provided, as it was thought that a bent paperclip might do this job. The steel pin can then be positioned, or slipped out with a magnetic pole.
31. The wagon should be cleaned up (a 3% solution, by weight, of caustic soda in water, will neutralize the flux residues) and prepared for painting. For the DHR, at least in post war years these wagons were painted iron oxide red, and later a brown colour. Details of wagon numbers and liveries are quoted in *Darjeeling Wagons*, and there is further information in *Halfway to Heaven* (both available from the DHR Society). Transfers will shortly be available. Finally an article by K. Walker and David Churchill appeared in *Continental Modeller* about these wagons, pages 96 to 99 in March 2002.

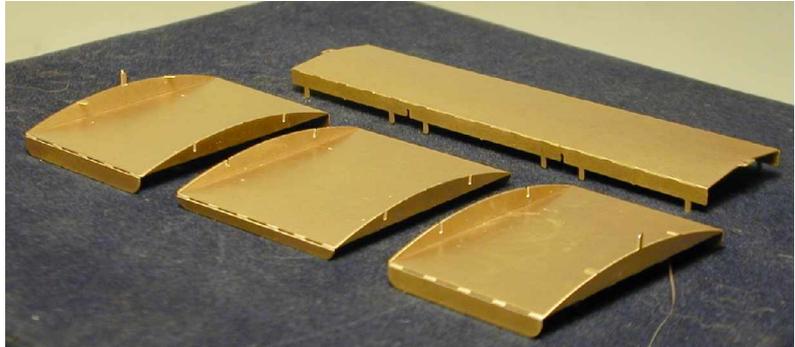


I am indebted to David Churchill of the Darjeeling and Himalayan Railway Society for information and photographs of the prototype wagons.

MODEL RAILWAY DEVELOPMENTS

23. The other end of the pull rod locates with the horizontal beam (**Part 22**) under the wagon. This in turn hangs from a vertical pivot consisting of a further pin soldered into the floor. Soldering this vertical pin to the lever makes things a lot easier to control. The height at which this lever is mounted has to be such that the two pull rods on the brake beams are below and do not foul the axles.

24. The roof consists of a spine **Part 23**, and 3 ceiling sections. The middle one, **part 24** is slightly narrower to allow for the doorframes. Note also that the outer sections (**Parts 25**) line up with the double slots to match those of the centre section.



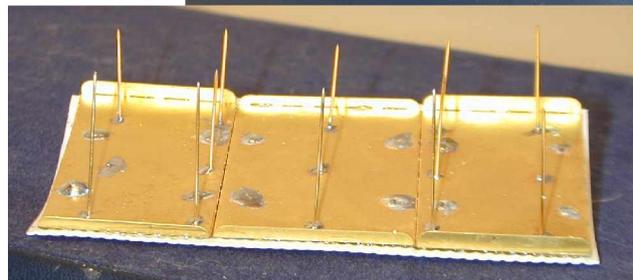
25. The 3 tabs at the end locate inside the spine. Solder up the tabs beneath and run a fillet of solder around the top ends of the spine.



26. The corrugated plastic roof covering is now glued onto the top of the spine with lots of 5-minute epoxy. While curing (allow at least half an hour, preferably over night) the roof should be secured by some sort of jig. I found that a W-shaped safety rule was just the right thing – which is about the first use I have made of it in 50 years. The photograph is not too clear, I'm afraid. The rule is underneath and a strip of wood holds it in place with rubber bands.

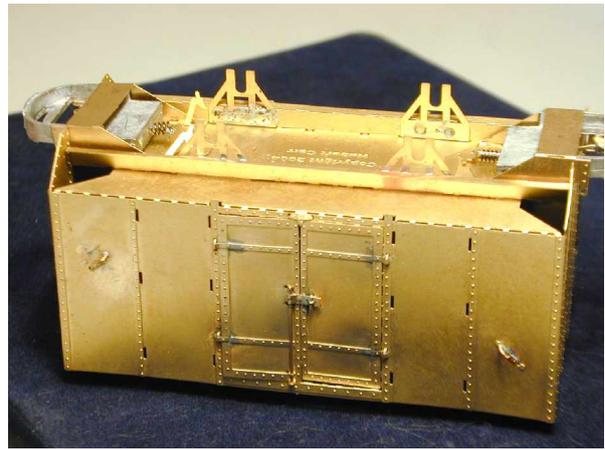


27. The corrugated iron is held on with straps (**Parts 26**) and 5 bolts each. The central one has an eye for the emergency brake cord. After positioning the strap, drill right through the roof at one end. Set a pin in position and solder it from beneath. Then fix the other end, and finally the three central holes. However the middle pin can be made up from an offcut pin, bend it round a suitable former or round nosed pliers, and solder the inside end of it too.

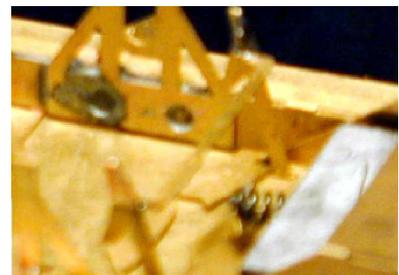


28. Cut away the pins and trim the roof to have an overhang of about 1½ mm all round. Many vans had the end folded down, but whether this was the result of the popular

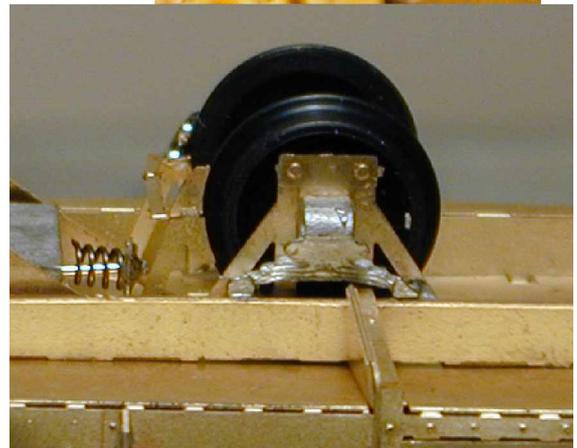
19. Place the chassis unit in position and slot the 8 tabs up through the holes in the floor. Pressing the chassis tightly to the floor, bend the tabs over so as to secure the chassis. The coupling assemblies are now added at each end. To make this easier bend the long tab on each side out slightly, and ensure that the rear tabs go through their slots and do not just bend over. Flatten the tabs within, and when everything is right go round with the flux brush, and dabs of solder – you can be more generous here.



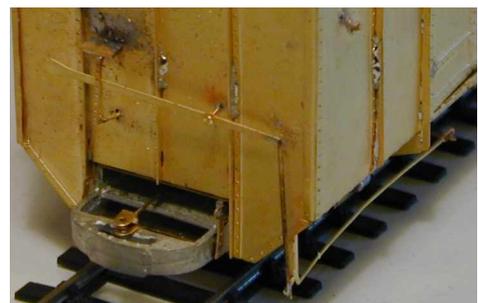
20. The brakes should be folded up from the chassis, and the beam with bottom blocks (**Part 19**) is engaged with the upper blocks and the ‘hangers’. To do this it is easiest to bend the lower shoes just a bit, and then hold the beam with pincers while you fold up each shoe, and solder on the inside.



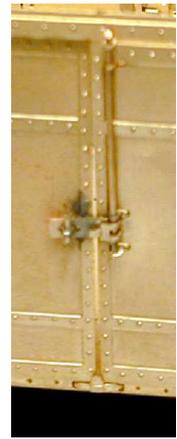
21. The wheelsets are next. But before you fix these, check the axlebox castings, there should be ears on the sides, but some castings also have a bit of flash on the curved part of the box, which should be smoothed off. It is always good practice to check the bearing hole with a 2mm burr, or drill. Place a brass bearing on each end of the axle, and holding them on between finger and thumb, slip the bearings down the slots in the W-irons. Take the bridle, or keeper (**Part 20**) and drop it over the bearing so that the flat edge is horizontal below the bearing. Put a drop of superglue on the end of the bearing and place the cast axlebox/spring in place. Repeat this on the other side, and for the second axle. If there is any doubt about the security of the assembly then a drop of superglue at each end of the spring casting should secure it.



22. Next comes the brake assembly **Part 21**. The flange to the crank support is folded to make an angle section, and is soldered so as to hang vertically from within the body. The length between the crank and the handle is twisted through 90 degrees. However this may be found to be rather unconvincing so it is suggest that you cut it out and use a bit of wire for the link instead. The brake lever slips between the racks and a pin is used as a pivot for the lever. Solder the pin within the body.



11. The staple (**part 7**) is folded back on itself, and then the ends are folded out to make a tee. This is positioned in the left hand door, and fixed with another fine wipe of solder at the back.



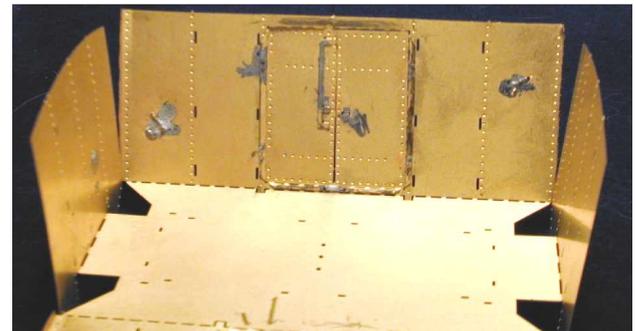
12. The guides for the locking bar (**Part 8**) are fitted to the other door and the hasp (**Part 9**) is placed over the staple and a length of wire (or one of the pin offcuts) is threaded through the guide at the top of the doorframe and each of the guide holes and trapping the hasp. This is quite a tight fit which is why the pinpoint makes it easier to thread the bolt in – or you could substitute a smaller diameter of wire. Fold the hasp over the bolt, and if necessary wipe some solder onto the slot in the hasp to fix it to the bolt. Trim off the excess wire.

13. The door locking plate at the bottom (**Part 10**) can now be fitted. But if you want be able to open the doors, you will have to fit the separate bracket (**Part 11**) and use the loose wedge (**Part 12**).

14. The inner brake rack (**Part 13**) is folded and the tails passed through the end of the van. The outer rack (**Part 14**) may be trimmed and soldered over the first to make a double rack in which the brake lever will fit later.



15. Now fold up the ends, and then the sides so that the corner plates overlap the ends. Working round from corner to corner solder the tops with a small dab of solder (making sure that the two parts are level with one another as the floor can distort). Then run some flux up the inner corner and follow with a tinned iron. Do not use a large dollop of solder, or try to form a fillet. This will only bleed out and spread over the details on the outer face of the model.



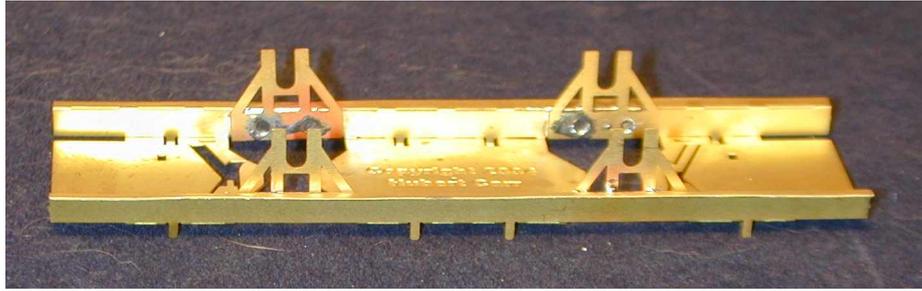
16. Now the vertical ribs (**Parts 15**) can be fitted starting with those on either side of the doors. These are handed, and should first be folded so as to take the form of a square angle section with the 'triangular' plate folded up from the lower edge. They are aligned so that the top of the angle matches with the flange of the etched strap on the body.



17. These and the other ribs are fitted by means of the double tabs through the sides. The tabs are bent to either side on the inside of the van. It is easiest to do 3 or 4 at a time, including those on the ends (**Parts 16**) and the side (**Parts 17**) and then securing them with a dab of flux and a touch of solder. Again beware of allowing the solder to bleed through to the front.

18. **Parts 18** form the end ribs on either side of the buffing block. The triangular part with holes in it folds behind the end plate, so that when the edge flange is bent up, it represents stiffening angle behind the end plate. Use the holes to introduce solder between the pieces.

drop a wee bit of solder into each. Holding each guide in turn with a file/scraper etc. touch the iron on each until you can see the solder puddle within the hole. If necessary, fine tune the angles of the bends to ensure that all is square. It is worth checking with the wheels and bearings that they will fit, as they might require a slight outward spread.



6. Now place the main body etch (**Part 5**) face down on a firm (not hard) surface such as MDF. Press out the rivets around the edges and in the panels, using a pointed tool such as a scriber, working from the back. Don't forget the 2 rivets for the brake rack on one end, and those for the door hooks on the outer side panels.

7. A hook is formed by bending a short length wire to just over 90 degrees and threading it through the lower hole. Holding it carefully so that the exposed hook is about parallel with the body and in line with the raised strip, apply flux and solder at the rear. Trim off the excess wire from the back and reduce the size of the hook at the front, as necessary.

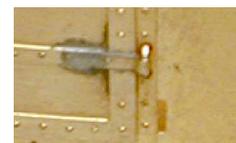


8. Fold the corner angles over the edge of the mdf. Line up the edge and fold with gentle spread pressure from you finger, finishing off by pressing home with your thumbnail. Using anything harder will take out the rivets. The sides, top and bottom of the doorframe should be folded back on themselves.

9. Bend out the locking bolt eye at the top of each door and position one door (**Part 6**) so that the strapping tails sit between the pairs of holes in the side of the doorframe. Using the wire provided bend over a length of about 2mm at one end, and holding the wire on the inside of the bend, with fine pliers, bend it over to form a square hook, the legs of which are spaced the same as the holes in the door frame. Now thread this wire through the holes so as to form a staple over the strap. Turn the component over whilst holding the door in position and flux the wires. Quickly apply the tinned soldering iron to the wires so that you fix them but not allow the solder to bleed through and reach the door.



10. Turn the component back and fold the strap around the staple to form a hinge. Note that there is a rivet head on the strap. Flux the end of the strap away from the hinge hold down it down with the tip of a screwdriver, file or whatever comes to hand and touch the tinned iron to the end of the strap and the door beneath. The solder should flash between the two and stop where they part to form the hinge.



Repeat seven more times until the doors are all in place and swinging freely. However don't worry too much if one or more hinges have failed – the only photograph which I have found in *Halfway to Heaven*, or the *Darjeeling Mail* showing an open door, is a crash scene involving an older type of van.

inner knuckle (**part 2**) is made up with another pin through the centre hole.

2. A further pin is passed vertically between the knuckles and is soldered to one knuckle. In order that the whole lot does not solder up solidly, slip a piece of paper between the parts of the joint and then push the pin through this. Whilst the 2 parts may be alternated, it is better to squeeze one end with pliers, or in the vice so that it fits between the other part. After soldering (a quick touch with a solder laden iron onto the pre-fluxed pin) cut the pin off and file down to a smooth neat joint.

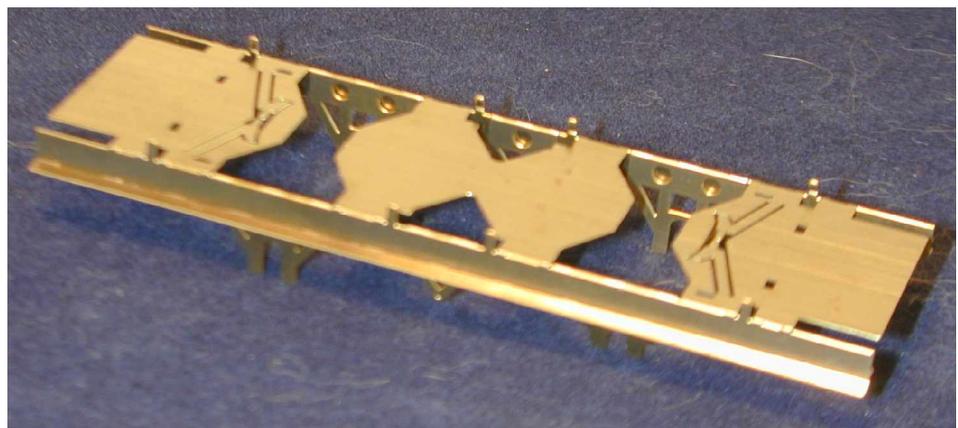


3. Drill the buffer casting with a hole of about 0.8 - 1mm dia, in the centre of the inner upright panel, and fit the coupling. You could add a short spring (a short length of old ballpoint pen spring) and with a washer, or offcut of brass secure it behind the buffer casting. As before do not rely on solder alone, but bend the pin so as to form a mechanical anchorage.

4. **Part 3** has 3 rivets on each side which need to be pressed through the indentations with a scribe, (needle in a pin vice, or old school compasses). The buffer casting is wrapped with **part 3**, using a smear of rapid epoxy glue between them, and clothes pegs to hold them while it sets. Repeat this for each end of the vehicle.



5. The chassis (**part 4**) is folded up, or down as shown. At this stage it is better not to fold the brakes down as they are too vulnerable,



but it is worth just pushing them down a bit to make them easier to fold later. Note which way the folds go. With etched groove uppermost, fold the edge down on each side. This is best done along the edge of a piece of cleanly cut mdf (medium density fibreboard), using a scalpel handle or steel ruler. After doing both edges, turn the etch over and bend the solebars down on each side, leaving the 8 tabs sticking up. Finally bend each of the axle guides down on the inside of the frame. With the solebar held down along the edge of your bench, flux each of the four holes against the solebar, and

Instructions for the Assembly of the DHR steel 4-wheel Van



Contents: 1 No. large etched brass sheets of 10 thou brass, and 1 smaller one.
2 No. axles of 10mm dia disc wheels to 16.5 mm gauge
4 No. brass bearings
4 No axlebox castings
2 No. buffer block castings
29 No. brass lacemaker's pins
200mm 0.6 dia brass wire
Corrugated plastic roof

The kit provides a coupling based on that used by the DHR. This consists of a slotted link which is held by a removable pin to a short bar. This will swivel on a spring from a cross-member beneath the wagon. The buffing block is made from a piece of steel channel curved around and fixed between the solebars on each side. This has a rubbing plated riveted to the face and a curved slotted plate above to reinforce the channel. On the model, this assembly is now represented by a casting with fabricated links. If you wish to fit automatic couplers such as Kadee, then these should be fitted to the castings, at the appropriate height, and you should skip to paragraph 4 below.

1. The first job is to make up the coupling and to fit it to the buffer casting. **Part 1** is folded up, without cutting the side strips off, and a brass pin is threaded through the centre holes. The pin should be bent at right angles before it is cut off at the second knuckle. It is suggested that the pin is bent after making the first fold, but that the second fold should then be made at each end before soldering. It is then locked with solder at both ends after which the side strips may be removed. Remember the whole train will be pulled through this link. The

