Caley Coaches

'True Line' kits in etched brass

0141-772-5537

e-mail: jim@caley.com

Jim Smellie,
15 Tay Crescent,
Bishopbriggs,
Glasgow, G64 1EU,
Scotland U.K.

Caledonian Railway 57' Stock.

Building instructions covering CC1-8.

CC1	D122A	Corridor Brake 3rd.
CC2	D112B	Corridor Composite.
CC3	D124	Corridor 3rd (queen post underframe)
CC3a	D124	Corridor 3rd (angle-iron underframe)
CC4	D121B	Non-corridor Composite.
CC5	D119B	Non-corridor Brake 3rd.
CC6	D118	Non-corridor 3rd (queen post underframe)
CC6a	D118	Non-corridor 3rd (angle-iron underframe)
CC7	D115A	Lav. Brake Composite (queen post underframe)
CC7a	D115A	Lav. Brake Composite (angle-iron underframe)
CC8	D111A	Corridor Brake Composite.

Part 1 General

1.1 Read the instructions and identify all the parts.

1.2 Soldered construction is recommended. I use a 25W Antex iron with CARR's 188 solder and CARR's green label flux. White metal parts can be joined to brass with low melt alloy (as sold for white metal kits) if the brass is first tinned with the above solder. Note that it is often easier to tin small parts before they are removed from the fret.

1.3 Some parts will need to be glued (e.g. the roof vents) and either Superglue or Epoxy is recommended. Thixofix Contact Adhesive is useful for finally fixing the roof in place as it allows time for everything to be lined up before going off.

1.4 You will find the following tools useful :-

a) Soldering iron & solders as outlined in 1.2 ,
b) Fibre-glass brush and refills for cleaning the brass prior to soldering.
c) Craft knife or large scissors for removing parts from the frets ,
d) Needle files for filing off the remains of the tags ,
e) Small, cheap paintbrush for applying either the flux,
f) Needle in a pin-vice, used like a drill, for gently enlarging small holes,
g) Pair of Blacksmith Models 12" long bending bars - very useful for making the longer folds.

1.5 A half-etched line is provided where you are required to fold up parts. Unless otherwise stated by the specific instruction, this line goes to the INSIDE of the fold and all folds are at 90°.

1.6 Before tinning any parts clean them with the fibre glass brush.

1.7 Thoroughly clean the model using an old toothbrush and warm soapy water after EVERY work session.

1.8 There are a several long folds required in this kit and they are best made by clamping the part concerned in bending bars (or between two metal plates in a vice) with the half-etched line just showing and then using a steel rule to push the free side of the part over.

Part 2. Bogies

2.1 The bogies are compensated using torsion bars and mounted on the coach via press studs which also form part of the overall compensation system. The bogies are easily demountable and should you wish to run your coach on more than one gauge of track (eg OO & P4), a spare set of bogies (ref. CB1) can be fitted with wheels for the other gauge and swapped as required.

2.2 Remove the mounting plates (part A) and fold up. Fold down the half-round stabilising tabs on **one** plate only. Tin the half-etched circles and solder on the male halves of the press studs taking care they are central. The mounting plates can now be stored until part 3.6.

2.3 Similarly remove the central bolster (part B) and fold up. Enlarge the etched holes on the end tabs to clear the torsion wire. Tin the half-etched circles and solder on the female halves of the press studs.

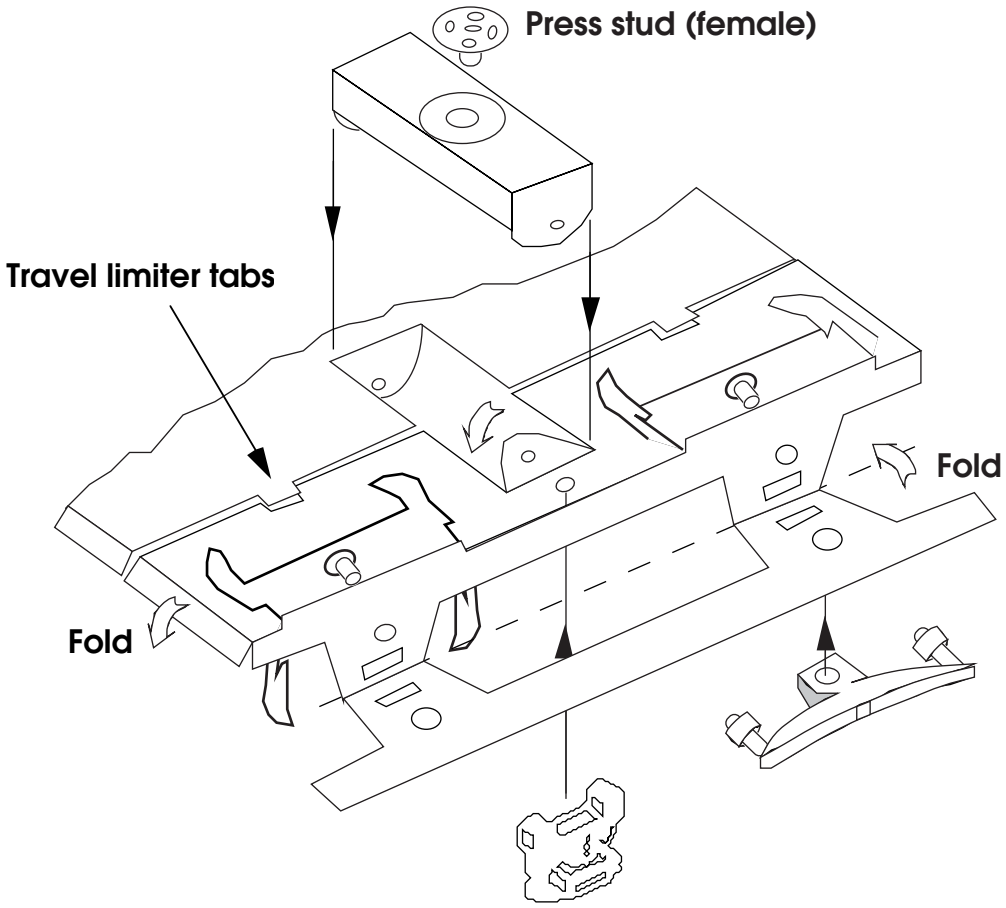
2.4 Press out the rivet detail on the outer sideframes from behind. I have found a slightly

blunt map-tack most effective for this.

2.5 Fold the sideframes at 90° to the bolster and fold down the ends. Reinforce with a fillet of solder.

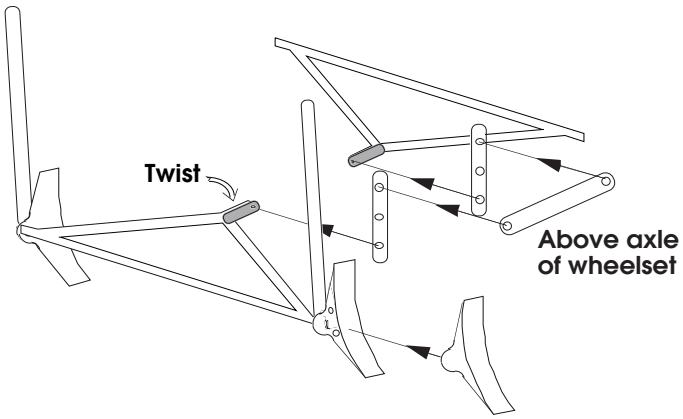
2.6 Tin the sideframes, fold the inner and outer sideframes together making sure the bearing holes align and sweat together. Solder the bearings in place.

2.7 Open out the hole in the bolster pivot to just clear the torsion wire and fold down the pivot and brake shoes. Fold the tilt limiter tabs up or down as shown in the drawing to about 15°.



2.8 Take one half of a bogie, thread on the torsion wire followed by the central bolster. Cut the wire about 4mm proud of the bolster and add the other half bogie. Make sure everything is level and solder the wire **only** to the sideframes, **not** to the central bolster. A smear of CARR's Solder Mask on the ends of the bolster may help. Repeat for the other bogie.

2.9 Assemble the brakegear as shown in the drawing. Put the brake shoe detail on the inside for OO/EM, outside for P4.



2.10 Add the castings carefully with low-melt alloy or your favourite glue.

2.11 Footboards can now be fitted as shown in the G.A. drawing. Note that in LMS/BR days, the footboards were progressively removed from 'non-brake' ends.

2.12 Clean up and paint the bogies.

2.13 Insert the wheelsets.

Part 3. Floor and Solebars

3.1 Identify and remove the main floor unit from the fret.

3.2 Fold up the long flange at each side to which the lower body will later be attached. Use one of the interior bulkheads as a guide to the angle of the fold.

3.3 Fold up the tabs to which the ends will later be attached.

3.4 Press out the rivet detail on the brackets and fold up the solebar footstep fixing brackets and locate the solebar footstep tabs into the slots in the solebars, brackets to the top of the step. Solder in place.

3.5 Take the solebars and fold to "L" shapes, locate the tabs into the slots in the floor and solder in place.

3.6 The bogie mounting plates should be soldered onto the floor using the etched lines as a location guide.

3.7 Tin the side and end location tabs.

Part 4 Body

4.1 Each end is assembled from two layers. On each inner end bend the lampirons and steps (or train alarm gear lugs) forward at 90^{o} such that they will pass through the slots in the corresponding outer end. On the outer ends, press out the rivet detail from behind as per section 2.4. Tin the outside of the inner ends and the inside of the outer ends.

4.2 Solder the inner end with steps lightly onto the location tab at the end of the floor with

two large projections - the bottom steps. It should be able to swivel in a vertical plane until the sides are fitted. Fit the outer end over all the projections and sweat to the inner end. Repeat with the other end parts at the other end

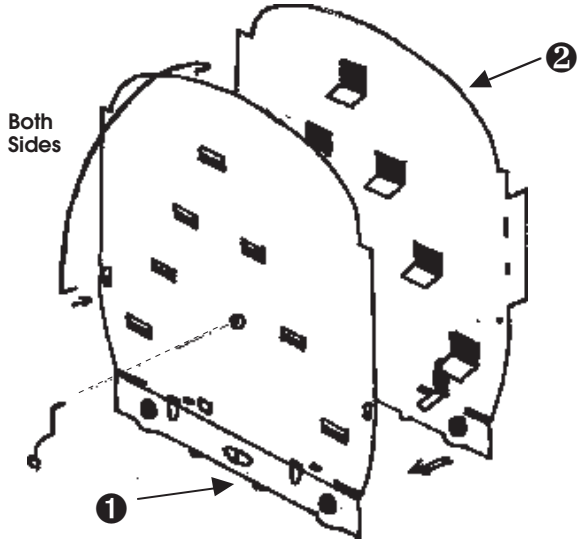
4.3 Use a thin piece of scrap brass as a spacer and fold the lamp irons up parallel to the body.

4.4 Bend the side location tabs to the rear.

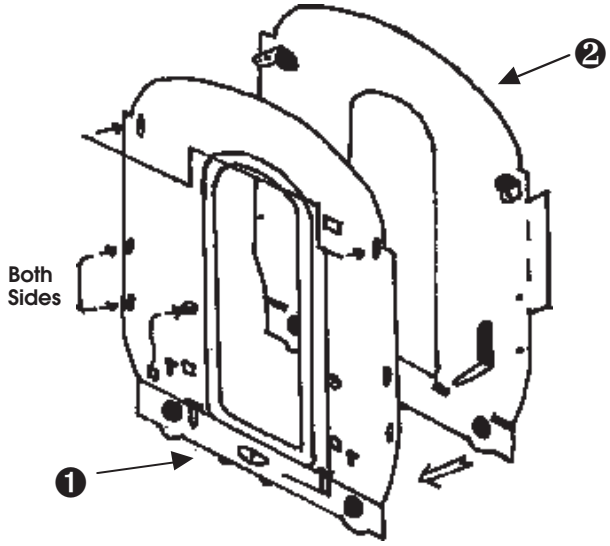
4.5 Make up (from brass and wire) the jumper cables and train alarm gear and fit to the ends.

4.6 Fit the handrails on the end without steps.

4.7 Drill two 0.45mm holes to take the lower ends of the handrails on the ends with steps. The upper end of these handrails locate on the roof and so are among the last parts fitted.



Non-corridor step end



Corridor alarm gear end

4.8 Take the sides and remove any parts from inside the window frames, remembering to dress the tabs.

4.9 At each door score the continuations of the door edges onto the lower body side using a straight edge and LIGHT pressure with a sharp knife.

4.10 Form the tumbleholme in the lower body sides. Lay the bottom edge of the side on the edge of a 12" rule with the inside facing up, take a length of central heating or similar pipe and lay it on the coach side and roll gently from the waist towards the bottom. This should produce a nice even tumbleholme.

4.11 Tin the inside of the lower body side and ends.

4.12 Take one side, noting at which end the alarm gear goes (it's marked on the inside of the side), and solder one edge to an end, adjusting the end until vertical.

4.13 Solder the bottom of the side to the locating tab. I find this easiest to do while pressing the very bottom of the side against the edge of a piece of wood.

4.14 Solder the other edge of the side to the other end, adjusting as required.

4.15 Repeat 4.12 to 4.14 with the other side. You will not be able to adjust the ends this time but they should be in alignment.

4.16 Solder the ends more firmly to the underframe.

4.17 Fold up the small tabs which you fitted through the ends at stage 4.2 and secure with a little solder.

4.18 On lavatory stock, solder the lavatory window ventilators in place on the outside of the body.

4.19 Take the roof and file small recesses in the flange which sits inside the body to clear the ends. Check the fit of the roof. If necessary dress the tops of the ends with a file, until a good fit is achieved.

4.20 The basic body is now complete !

Part 5 Angle-iron Underframe (CC1, CC2, CC3a, CC4, CC6a, CC7a & CC8)

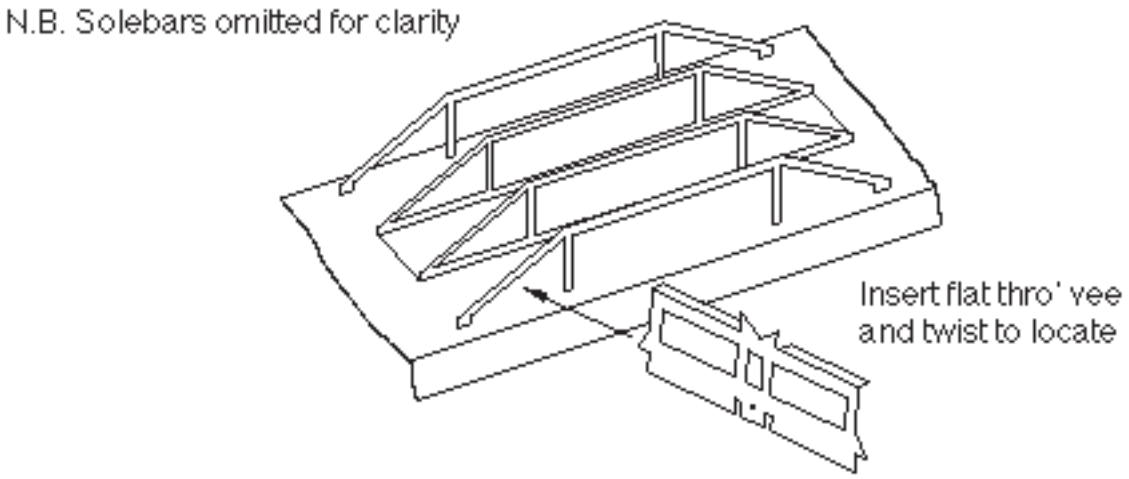
5.1 Fold down the outer truss rods from the floor.

5.2 Remove the inner truss rods from the fret and fold up. Tin the central spine where it will fit to the floor.

5.3 Locate the tabs of the inner truss rods in the slots on the floor and solder together. Note that the central pair have 'ears' which can be twisted in order to hold the parts together while you solder.

5.4 Take the truss rod cross braces and fold their flanges.

5.5 The cross braces are fitted by sliding them through the triangular cut-outs in the truss rods and pivoting to a vertical position, the central truss rods engaging in the cut outs during this operation. Solder to both the inner and outer truss rods.



Angle-iron underframe

Part 6 Queenpost Underframe (CC3, CC5, CC6 & CC7)

6.1 Measure the width over the bottom of the solebars and cut two lengths from the H section brass to suit. Solder them across the solebars in the positions indicated on the drawing.

6.2 Use the drawing as a guide and bend two lengths of 0.66mm wire to shape for the truss rods. The central section is 40mm long; leave the ends slightly overlong for the moment. If desired, the knuckles in the truss rods can be simulated from wire insulating sleeve.

6.3 The queenposts are to be found on the etch adjacent to the battery boxes. The central portion wraps around the wire truss rod with the half etch to the inside. Tin the portions either side of the half etch, wrap round the truss rod at either end of the central portion and bend over the top flanges. Position the queenposts on the outer ends of the H girders and solder the queenposts together and to the H girders.

Queenposts

6.4 Check the positions of the outer ends of the truss rods, adjust as required and solder to the back of the solebars after trimming. Note that you may have to locate the ends inboard from their true positions to allow the bogies enough side play on underscale curves.

Part 7 Fittings

7.1 You now have to make a choice of period as the brake system was changed from Westinghouse to Vacuum in about 1933. See the prototype information notes.

7.2 Dealing firstly with the Westinghouse fittings, these are supplied as a two part lost-wax casting which is assembled as follows :-

a) Remove the base frame from the sprue and drill the previously centered mounting hole on the frame cross piece $^{1}/_{32}$".

b) Pass the peg on the reservoir into the hole and solder together.

c) Solder the (dummy) mounting brackets of the cylinder to the 'L' pieces of the frame.

d) Cut the reservoir and cylinder away from the sprue.

Solder to the floor of the coach in the indicated position, the smaller cylinder goes nearest the solebar.

7.3 Moving now to the vacuum brake, two sets of 'V' hangers and cylinders were fitted one in the position previously occupied by the Westinghouse equipment and the other diagonally opposite.

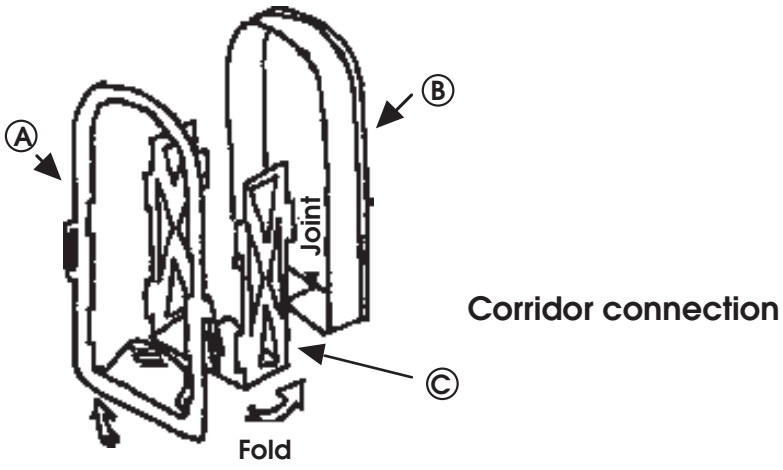
7.4 On the angle iron underframe fit the two V hangers into the slots in the floor, fit the cylinder and make the operating rod from wire. On the other underframe, the two V's fold up from one piece.

7.5 Fit handles made from wire to the battery box fronts and fold the sides round (N.B. :- etched side goes to the **outside**), solder each to a battery box base and then fit to the underframe at both sides.

7.6 There are now five brace rods to be fitted between each battery box base and the coach floor. Pass a wire through each hole in the coach floor and the corresponding hole in the base, solder top and bottom and trim the wire.

7.7 Fit the dynamo in the indicated position.

7.8 On the corridor stock, make up the corridor connections as shown in the sketch. Orientation of the front plate (A) is important, fold the chequer plate down to the inside of the front plate. Shape part B using A as a guide and solder the three large tabs on C on to it after trimming the bottom to suit. A fits onto the small tabs on B as shown.



Corridor connection

7.9 Fit the buffers, steam heat and brake pipes to the coach ends. The screw link couplings should now be fitted if required.

Part 8 Interior

8.1 In the majority of cases the etched interior parts are tabbed such that they can only locate on the floor in the correct position but, due to space limitations on the etch, it has not proved possible to provide all the compartment bulkheads. Make the deficit from brass or plasticard using the etched parts as a guide.

8.2 On the corridor stock bend the corridor partitions to shape using the floor plan as a guide.
i.e. make a right angle bend between the last compartment and the lavatory and then bend the lavatory wall back to an angle of about 45° at the next etched line such that the end of the wall can be soldered to the coach end clear of the gangway.

8.3 Fit the supplied interior parts together and then solder them to the floor.

8.4 Fit the other bulkheads as required.

8.5 Cut seats to length and fit. You may prefer to fit these after painting.

Part 9 Roof

9.1 Using the roof plan as a guide, drill holes in the roof for the ventilators and fit by glueing.

9.2 Make the lavatory fillers from wire and scrap brass and fit.

9.3 On several of the coaches there are external electric cable ducts. If necessary (see drawing), make up the ducting from plasticard and fit.

9.4 Mark the position of the rainstrip on the roof and glue 0.020" x 0.020" plasticard strip in place. Car lining tape could be used if preferred.

9.5 At the step end of the roof drill two 0.45mm holes for the handrails.

Part 10 Final Assembly

10.1 Paint body, underframe and roof according to period, line and letter. (See painting and prototype notes).

10.2 Fit the door and grab handles as indicated on the drawing.

10.3 Glaze the windows using the supplied Cobex.

10.4 The roof need not be glued to the body unless desired as it should spring into place.

10.5 Fit the handrails at the step end of the coach.

10.6 Reattach the bogies.

Part 11 Painting **by Peter Tatlow**

(Note that while this section deals with the LMS livery many of the points covered can be applied to any livery - Jim Smellie) .

I would suggest that the kit is completed except for the door handles, grab irons, plastic interior fittings and glazing. Thoroughly clean the metal work to remove all trace of soldering flux and grease, and dry off.

To achieve a satisfactory crimson lake it is important to apply a brown base coat. I have used a red oxide car spray, but something browner might be more appropriate. Follow this with crimson lake. Spraying is obviously the preferred method and , if adopted, 'little and often' is the motto to avoid runs. On completion of the lake a coat of gloss varnish should be applied.

Before commencing the lining, it is necessary to lay the coach body on its side and fix it, perhaps with masking tape, to prevent any tendency to move during the delicate operation of lining out. Top and bottom of the coach should be laid blocks of wood or books upon which to rest a straight edge just clear of the coach side. Better still, if you intend lining out a number of coaches, is to have a purpose made open topped box just large enough to accommodate any of your intended coaches.

The gold or yellow is applied by means of a draughtsman bow pen to the full width of the actual or painted panelling. You will not achieve this in one stroke and several side by side should be put down until the desired width is arrived at. The full width of gold or yellow line is suggested because it is easier to achieve and subsequently one can concentrate on fitting the black line down the middle of the broad line. For the gold colour I have used Humbrol's 'Metal Coat' satin gold, which, once thoroughly stirred, is a suitable consistency straight out of the tin. Alternatively Precision Paints produce a brass paint recommended for gold lining. The yellow and black lining can be a suitable modeller's paint or artist's goash let down, if necessary, to a consistency found to be satisfactory by experience applied by bow pen again. This consistency needs to be as thick as possible so long as it will still flow on a test piece from the pen. Another method for black is to use draughting ink in an appropriate size of stylus-type of drawing pen. Minor errors can be corrected by the delicate use of a fine brush, OO or less, afterwards. If the process becomes a complete disaster, the beauty of a metal kit is that you can remove all the paint with paint stripper and start again ! That is why I omitted the plastic interior parts. Hopefully you will be satisfied when another quick coat of gloss varnish is advisable before painting the underframe and ends/end details black. Apply the transfers and fix with another coat of varnish.

After this one is free to complete the coach as per section 10.

Part 12 Prototype Information

The 57' stock represents a most complicated period in the history of Caledonian Railway coaching stock. First introduced in 1912, they were built right up until the end of the Caledonian's separate existence in 1923. As with any stock built over such a period there were many differences in detail and the onset of the first World War and its financial difficulties only serves to complicate the picture. The original stock was fully paneled, 8'8" wide (corridor stock only, non-corridor was always 9'0" wide) and ran on underframes with shallow round bar and queenpost trusses and 10' wheelbase bogies. This evolved over the years to a simplified style of panelling, 9'0" width, an underframe with deeper trusses, and 8' wheelbase bogies. In about 1922 the whole style of underframe changed to angle iron trusses.

The coaches in the range all represent postwar vehicles and are, in the main, the final types built. Two styles of panelling and two styles of underframe are, however, represented in the range. All are 9'0" wide and run on 8'0" wheelbase bogies. If anyone knows the whereabouts of drawings for the earlier stock I would be only too pleased to hear from them as I would love to produce some of them at a later date.

When built all the coaches were fitted with Westinghouse brake equipment only. In about 1933 the LMS undertook a large programme to convert all such stock to vacuum brake which it had adopted as standard at the grouping. The LMS coaching stock list dated 31/12/33 indicates that all the coaches, with the exception of 15523 (D118), were fitted with vacuum brake only at that date.

In the section dealing with the individual diagram of your kit, vehicles marked + were running with their 2nd LMS number by 31/12/33. Peter Tatlow has suggested that the percentage renumbered by that time is far higher than is general for other LMS coaches pointing to a recent visit to a carriage works (St. Rollox?) for some attention, most likely the conversion of the brakes. All of the others (still with 1st series numbers) must have been dealt with prior to the introduction of the renumbering scheme.

Part 13 C.R. Livery

Although many of these carriages only appeared late in the life of the C.R., photographic evidence indicates all were delivered in C.R. livery which was purple brown with off-white panels at waist level and above. Although most of these carriages do not have panel mouldings above the window line, it was C.R. practice to 'paint on' the mouldings. i.e. the edges of the upper panels were painted purple brown to match the waist panels. The edges of all the mouldings (including those painted on) were lined with a single yellow line, while the outside edges of the coach sides and bottom were given a thin red line. Lettering was gold, shaded to the right and below in red, with white highlights. The positioning of the insignia was a little variable but can be generalised as follows:-

a) The class was written in full on the door waist panel.

b) The C.R. coat of arms appeared twice on each side, usually centrally on the lower panel between the two outermost doors at each end.

c) The CR Co. monogram appeared once on each side, roughly in the centre of the lower body side but it could be located in either of two places :-

i) On the door to the right of centre when looking at the coach.
ii) On the centre of the panel between the two doors flanking the centre line of thecoach.

d) To add to the confusion the locations of the coach number and the company initials were inconsistent. They were always placed on the waist panel with the number always appearing once and C·R either once or twice. It would appear (from rather limited evidence) that the company initials were meant to appear twice on corridor vehicles and once on non-corridor vehicles. There were exceptions to the rule, perhaps especially on Pickering built stock, and where more information is available it is included in the section dealing with the individual diagram of your kit.

When new the roofs were white. This, of course, would quickly weather to a grey/black in service. Underframes and bogies were black.

Part 14 LMS Livery

Soon after its inception the LMS adopted the old Midland colour of crimson-lake for its coach livery. All raised beadings were painted black and edged in a $^{3}/_{8}$" gold line in the case of corridor stock, or a $^{3}/_{8}$" pale yellow line in the case of non-corridor stock. It is thought that the LMS carried on the C.R. tradition of painting on the panels above the window line. Ends were crimson-lake with steps etc. picked out in black. Roofs were generally painted lead grey above the rainstrips and black between the rainstrips and cantrail but again this

would soon assume an overall muddy grey colour in service.

The insignia was applied in gold leaf transfers with the letters LMS (3" high) in the waist panel as near to the coach centre line as possible. The coach number appeared twice in the waist panel towards each end of the coach. It is unlikely that the LMS emblem was used on these coaches. Class was designated by the figure '1' or '3' (8" high) on the doors.

The foregoing describes the initial LMS livery but many changes took place before the demise of the LMS and are tabulated below. Remember, however, that coaches were only due for repaint about every 7 years and that in the late 30's and during the war it was quite usual only to 'touch up and revarnish'. Therefore an individual coach would not sport every change and it is quite possible that some coaches ended the war still fully lined out.

1923-8	As described.
1928	LMS now placed towards the left-hand end and the number towards the right-hand end.
1933	Coaches renumbered using plain gold transfers. Roof colour specified as metallic aluminium.
1934	Full lining discontinued. Coaches lined with a single $^1/_2$" yellow line just below the cantrail and $^1/_2$" yellow line just above the top of the windows. The top section of the waist moulding would be painted black and edged with $^1/_2$" yellow lines. Note that the yellow for both lining and insignia is now a chrome yellow.
1936	End colour specified as black.
1940	Form of the class designating 3 changed to a flat top version.
Wartime	Roof colour specified as grey and lining discontinued.
1946	Simple lining reinstated but in straw yellow.

The HMRS now produce the ex-P.C. Models excellent range of LMS transfers which are recommended.

Reference: LMS Coaches, an illustrated history. Jenkinson & Essery (OPC, 1977)

Part 15 BR Livery

It is thought that most corridor coaches would have received the BR crimson and cream livery but that none survived long enough to be repainted in the 1957 maroon livery.

The crimson and cream livery was lined yellow/black along the waist at the junction of the colours with the yellow against the crimson. Sometimes a crimson band was applied to the top of the coach side and when present this was lined at the junction with the cream in a similar manner. Whether any of these coaches were given the band isn't known.

The non-corridor stock would have been painted crimson all over, devoid of any lining. Roofs were grey, underframes and ends black.

The coach number appeared in small yellow letters and figures towards the right hand end of the coach. Class figures were now only on first class doors. The guard's door was usually marked as such in small letters in the waist panel of the door.

No information, other than some lettering (which is given in section dealing with the diagram of your coach), is currently available about liveries once the coaches had passed to departmental and other uses. Once again anyone who can help is invited to get in touch so that I can update the next printing of this section.

Part 16 Acknowledgements

My thanks are due to Alistair Wright for the artwork and design, Niall Ferguson and Duncan Burton for the prototype and numbering information, Peter Tatlow for the painting notes and further prototype information, Robin McHugh for patternmaking, and to everyone 'in the trade' for making parts and advice available to me. I must also thank you for buying the kit!

These instructions were wordprocessed in WriteNow II and diagrams/box labels drawn in SuperPaint II on Apple Macintosh equipment.

Other items in the *Caley Coaches* range

A wide and varied range of locomotives coaches and vans is now available to help the modeller of the later Caley years and of the LMS/BR in Scotland. Please send an S.A.E. for my latest list.

Jim Smellie.