

# Chopping to a Chopper

## A GEM Kit conversion by Smokey Bourne

For the benefit of those who dislike detailed articles I will commence by stating that the LNWR 4ft 6in 2-4-2T was a straight enlargement of the earlier 2-4-0T or chopper tank. The enlargement all took place aft of the rear spectacle plate and consisted of the elongation of the bunker, footplate, and frames by 4ft 5in and of course the addition of a pair of radial wheels. That is the essential fact but for further details read on.

I purchased the GEM 2-4-2T kit off the shelf together with a set of Romford driving axles for EM gauge, some  $\frac{1}{8}$ in bore packing washers and of course the Tri-ang motor. The worm wheel was forced off the OO driving axle with the aid of a small vice and a length of tube. Having done this it was found that the worm wheel was no longer a force fit and so the bore was tinned with the aid of the gas ring and some cored solder and then the axle was passed through the hole. The complete assembly was again heated over the gas ring and when cool proved to be one neat solid lump. Next the kit main frames were sawn off where they reduce in width behind the motor, and the whole chassis assembled as per directions in the kit, except that I did not mount the front pony wheels although I did fit both the spring and keeper plate. Running tests were carried out and I was delighted to find that I did not have to make any adjustments to any of the working parts. Next, one of the pony wheels was gently eased and twisted off its axle and three Peco washers slipped on to the axle which was then pushed through the chassis. Further washers were added to the other side of the chassis and the wheel pushed back on and eased until it was set at the correct back to back. This is a necessary practice for all EM gaugers but I would commend it to OO workers as well as it allows the keeper plate to be fixed while not under pressure and without fear that the glue will get on the axle or wheels.

I had by me some K's coal tank buffers and decided that I would use these on this loco and so the cast buffers were sawn off the buffer beams and  $\frac{3}{8}$ in holes drilled in lieu. This eased considerably the task of cleaning off the flash from the footplate/buffer beam unit of the kit which was the next task. I found the best means of removing the flash was to scrape it with a pen knife, the blade being almost at right angles to the flash, and afterwards finish off with files and wet and dry paper. When the footplate had been cleaned the shortened chassis was placed in position and the outline of the new end scribed on the underside of the footplate. The rear buffer beam was then cut off and the footplate then reduced in length by 4ft 5in or 17.5mm. On the top of the footplate and overhanging the rear end a piece of balsa wood was glued with Durofix, and then the buffer beam was glued in position using the balsa as a bridging piece. Three small pieces of balsa were glued under the footplate using the guide lines scribed there to form three sides of the formwork for the false frames. The fourth side is of course the buffer beam (see diag.).

The next stage was to clean up the two boiler halves which in my kit had some heavy flash on the sides. This was removed by scraping with the knife in panels working away from the boiler bands. The tank sides and sand box inserts were also cleaned and then the first mix of adhesive was made.

I had decided on the advice of my friend Bob Essery to use fibre glass as a bonding agent and had purchased the small Isopon pack which has the advantage of having both of the ingredients in tubes. The advantage of this material is that it fills as it glues and when it is set it makes a very sound joint. These advantages outweigh, I feel, the two disadvantages which are, it has almost no initial holding power, and it takes half an hour to set. The ideal solution is to work on two kits at once so that the setting time of the fibre glass is used preparing and bonding the other kit. This unfortunately is a little too expensive for my pocket and so the rest of this article is staged to coincide with the mixing of the fibre glass hereinafter known as "The Gunge".

A liberal application of gunge was applied to the boiler edges and the two halves located together. Further gunge was applied to the tank sides and the inserts pushed into this. The surplus gunge was filled into the formwork on the underside of the footplate making sure that it bonded to both the buffer beam and the footplate.

The bunker sides were then reduced in length by 17 $\frac{1}{2}$ mm and the coal rails cut from the bunker back, including removing the additional thickness on the inside of the bunker back. The flash was removed from other parts and time generally killed until the

gunge had gone off on the boiler and tank sides. The surplus gunge was then carved, filed and finally rubbed off with 200 grade wet and dry paper. At the same time the castings were also rubbed over with the wet and dry and any blow holes noted for filling with the next mix of gunge.

The second batch of gunge was mixed and used to fix both the smoke box saddle and the smoke box front to the boiler unit. The surplus was used to fill in the formwork again and more cleaning up took place until the gunge had set. When it had, there was some fairly heavy cleaning up to do blending together the various bits forming the smokebox, and after this was completed the footplate was taken in hand. The fibreglass bottom was filed down flush with the bottom edge of the buffer beam and then the formwork was cut away together with the bridging piece and all traces of the wood and glue removed with the wet and dry paper. The chassis was tried in the footplate and then the boiler unit tried in place. After making a few very minor adjustments the boiler unit and footplate were given a clean over with Duroglit, polished with a cloth, and then bonded together with the third mix of gunge.

While this mix of gunge was setting the back and two sides of the bunker were taken and the rib on the back of the bunker sides cut back slightly to receive the thickness of the actual back. A piece of balsa was cut to the same width as the back and the sides of the wood grooved to receive the ribs on the bunker sides. The back was then glued to the wood and when the next lot of gunge was mixed the sides were fixed to the back and the wood making certain that there was a liberal blob of gunge on the two top corners. I did attempt to fix these three parts piecemeal to the rest of the assembly but there was no reasonable means of securing them until the gunge started to set so I made this rib assemble in this manner, but of course at a later stage. If it is done at this stage it would save time during one of the setting periods.

The tank units were tried in position and a slight curve filed into the insert in the front corner until they fit around the boiler and then some gunge was mixed and spread over the various edges and the tank units set in position and left to set. This is of course the same mix that is used to fix the bunker together. There being nothing else to be done at this stage I went and watched television.

After cleaning up the tank sides I turned my attention to the bunker which was filed and rubbed down, taking care with the top corners to form the return to the beading in fibre glass left from the blobs previously mentioned. Next the brass rod which forms the large pipe on the offside was bent and the hole in the smokebox enlarged to receive it. With the same drill another hole was drilled in the cab front plate. I had decided not to use the split pin handrail knobs on this side and the holes in the boiler had been filed and rubbed down when I joined the boiler halves. The balsa wood was carefully carved out of the bunker unit and some more gunge mixed. First the cab front plate was fixed and then the bunker unit and then, with a match cut to a chisel point at one end, the surplus gunge was scraped away from between the boiler and the front plate on the near side where access is restricted by the cast pipe. This saved a lot of rubbing down later in what would be very restricted confines and because of the cast pipe it is all but impossible to view this section of joint anyway.

The next mix of gunge was used to fix the large pipe and the cab back only and when this had set and the joints rubbed down then the two steps at the bottom of the cab doorway were carefully cut away. On the prototype there was a balancing pipe rectangular in section from the bunker to the side tanks but the chopper did not have a bunker tank and therefore no balancing pipe. On the model they do aid considerably the locating of the various bits and so were left in until all the other bits had been located.

When the gunge had set and the joints had been rubbed down the whole loco was cleaned with Duroglit and odd stray bits of gunge removed. Everything being left as clean as possible before the fixing of the final details. The holes in the smokebox and boiler were drilled out and the handrails bent or straightened out of the wire provided and fixed with the split pins. These pins needed rebending around the handrail wire by squeezing them with a pair of pliers with the wire in position. All the handrail knobs were a tight fit in their holes so no other fixing was used.

The penultimate mix of gunge was now made and used to fix the six vertical grab rails, cab roof and boiler mountings. As I wanted the LMS version of the locomotive, I had previously sawn off the cast safety valve from its base, filed things true and then drilled and

mounted Ross pops. in the base. Of course, after the gunge had set I discovered that the mounting for the safety valve is too near the cab front, but it was too late to move it to its correct position, central between the cab and the last boiler band.

While things were setting a box was made out of 20thou Plastikard to fit the bunker top, consisting of a bottom, two sides and a back. On the outside of this box a representation of the coal rails was made in thick microstrip and these were cut and fitted to the curve of the bunker back.

The final mix of gunge was made and used to fix the plastic box, the vacuum pipes, guard irons and cab steps and this was left to set and then cleaned up. I did not bother to reposition the rear guardirons as they are mainly hidden by the cab steps. In fact I did not bother with a lot of little details but the standard which I hoped to achieve when I started was only that which would be achieved by a well made 2-4-2T from the kit.

The painting commenced with one thin coat of matt grey paint followed by one spray coat of matt black from an Aerosol and then the footplate, cab roof, smokebox and chimney were picked out with another matt black and the buffer beams bright red. As yet the loco is unnumbered as I would like to know a little more about the prototype before I make my choice.

**Prototype**

The Chopper tanks were originally built by LNWR for service in the Metropolitan area and as such were fitted with condensing gear. As originally built they had wooden brake blocks, no coal rails, half cabs, and 3ft 6in long chimneys. In due course they were found to have insufficient water capacity to continue with their duties and were replaced by the enlarged 2-4-2T. The displaced locos were then transferred to branch duties and gradually acquired full cabs and lost their condensing gear. Later coal rails were added

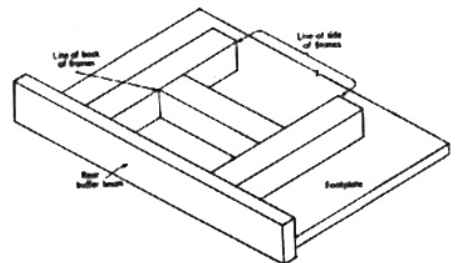
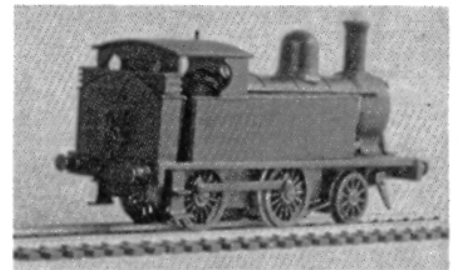
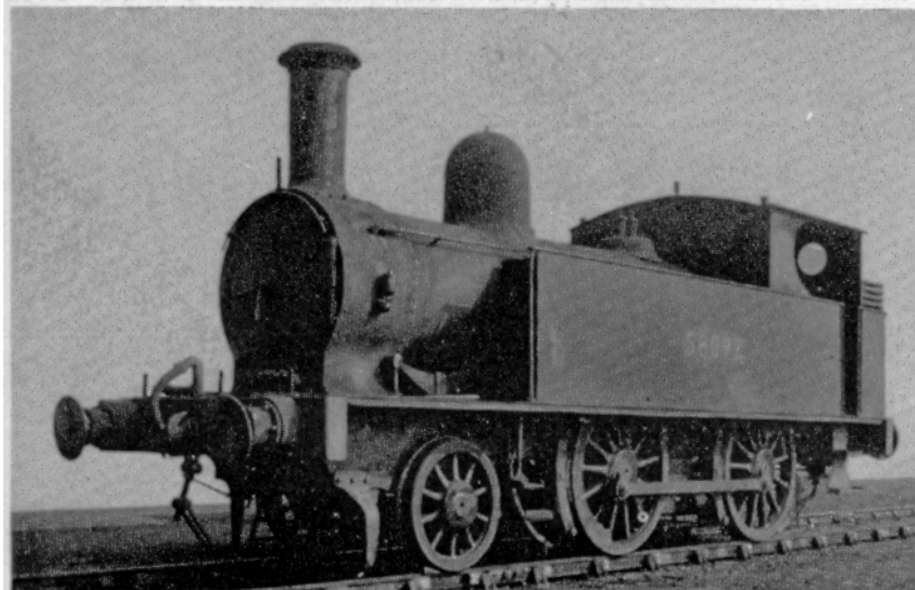
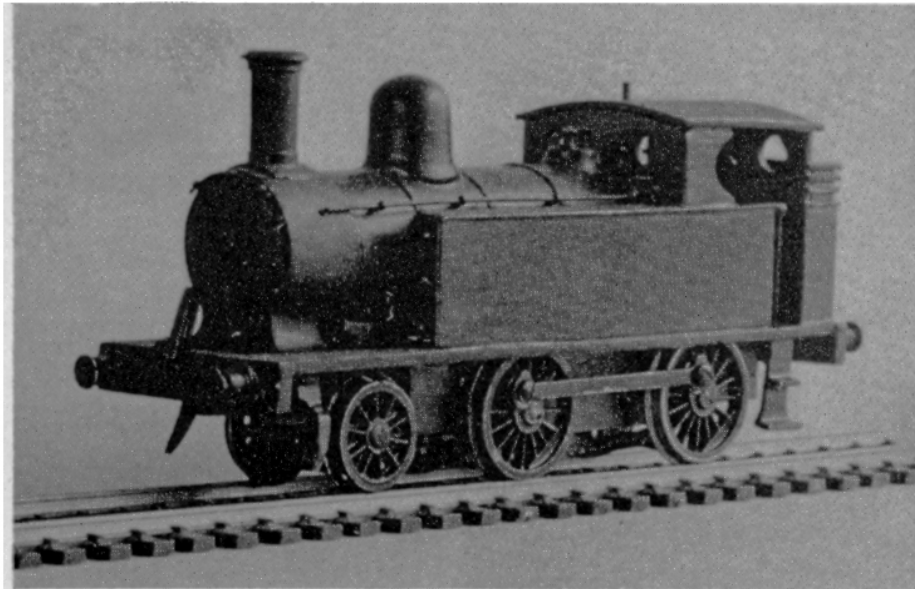
and it is fairly safe to say that these three modifications were completed by 1910. By 1923 the wood brake blocks had gone and the LMS seem to have installed Ross pop valves almost as soon as they laid hands on them. While still in the Norwestern era but after removal of the condensing gear, most if not all of the class received the 3ft 9in chimney. I have no idea what is on top of the side tanks—something for certain but not tank fillers as these were certainly located inside the cab.

Originally fifty were built between 1876 and 1880 and were unusual in that they all received numbers commencing 2200. Excluding those which were taken over by the LMS, they were all scrapped by 1900 but in 1905 five of the 2-4-2T's were cut down to 2-4-0T's and fitted for working on to trains around the Red Wharf Bay curve (LMS 6430-4). Whether these differed from the standard 2-4-0T I cannot say but probably not.

To date I can only say that 6428 seems to have spent 30 years on the Cromford and High Peak Line. The rest were probably used on very light branch lines or possibly restricted yards. A comparison of scrapping dates and branch closures may provide a few clues.

LMS			LNWR		
No.	No.	Scrapped	No.	No.	Scrapped
6420	2234	1928	6428	2278	1952
6421	2238	1925	6429	2280	1924
6422	2240	1936	6430		1932
6423	2243	1927	6431		1924
6424	2244	1930	6432		1929
6425	2247	1936	6433		1926
6426	2248	1925	6434		1930
6427	2252	1933			

\* Renumbered 1948 26428 and became BR 58092.



Two views of the completed conversion which were taken before the model was numbered.

The lower illustration shows a prototype locomotive No. 58092.

