CHEATING "FATHER TIME"

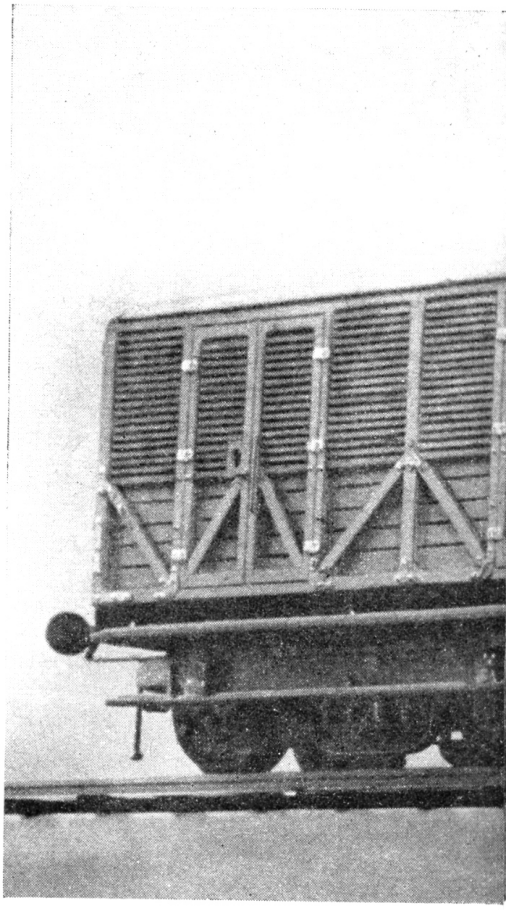
by JIM WHITTAKER

Manchester M.R.S., Historical M.R.S.

WHEN one is approaching the "middle forties" before being seriously bitten with the railway modelling bug, it is rather important to devise, if possible, quick and simple methods of manufacture, if a reasonable stud of vehicles and a layout are to be acquired, particularly if one wants to build from scratch and incorporate most of the prototypes' detail.

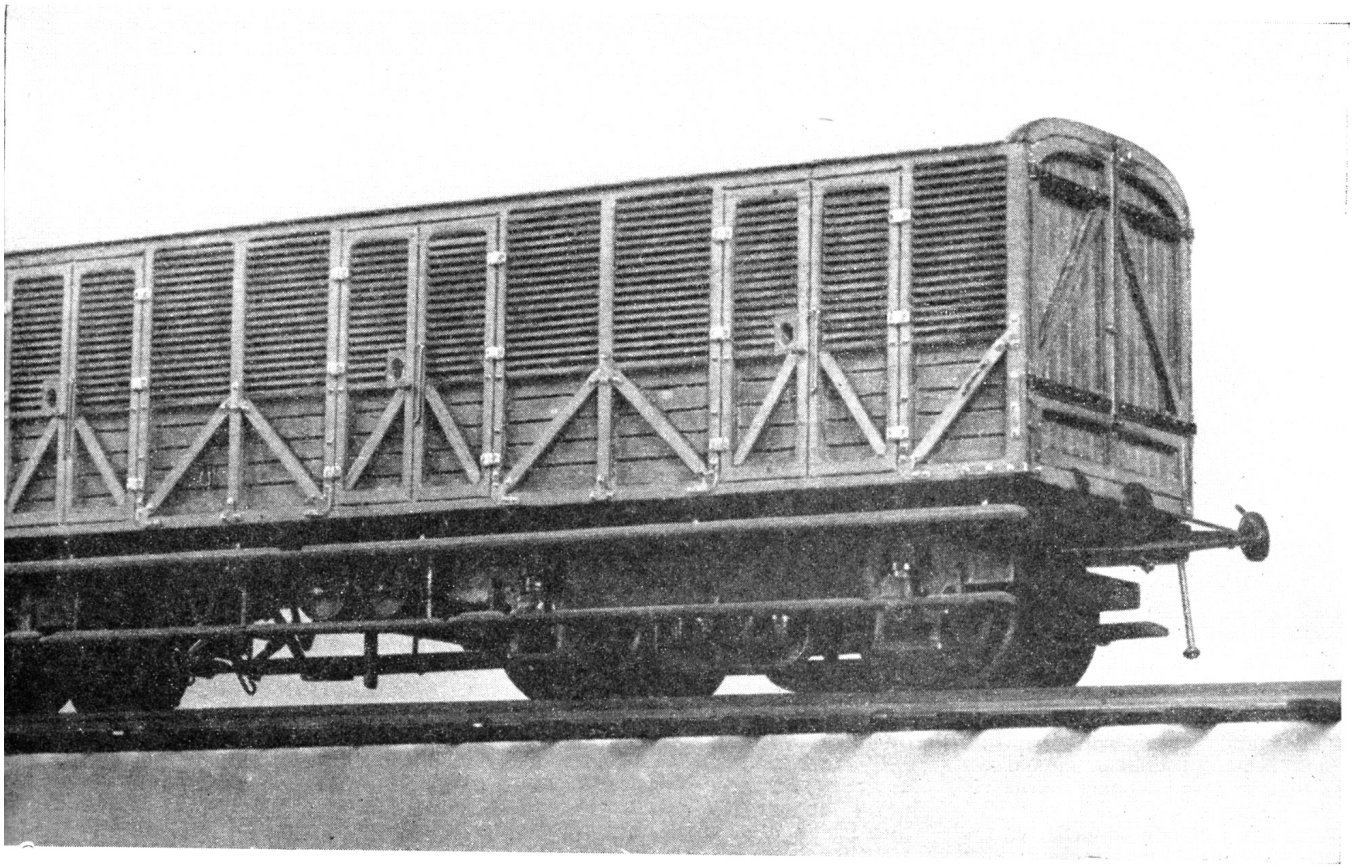
Working on this basis, I have now reached the stage where this continual searching for improved methods (directed not only towards saving time, but also better standards of finish) has become quite a pleasurable aspect of the hobby in itself and as it is mainly a "thinking out" or ideas problem, it can be practised any time one feels in the mood, either in the lunch hour or travelling to and from work, etc. Being a member of a lively model railway club also, of course, helps considerably, as nearly every member has a different approach to a particular problem and by merely having a chat about it, one can frequently get a new "slant" on how to tackle the job. When a new method or technique is finally developed successfully (incidentally, careful choice of materials can play an enormous part in facilitating production if you'll think about it) all the hard slogging and previous failures are soon forgotten in the realisation of yet another victory against the arch enemy—Father Time. It is hoped that some of the recent problems encountered in building a rake of G.W.R. Siphons will serve to illustrate what might be done by trying out new ideas.

I have long wanted to model these vehicles, particularly the 40 ft Bogie "F" and the 28 ft 6 in. 4-wheel "C" (alas no longer with us as prototypes) but have always been put off by two major difficulties, i.e. the production of reasonably accurate louvres and the large number of assorted shaped frame plates and the dozens of hinges on each body. Recently, however, the louvre problem was solved by a brilliant idea from Mr Hodges of Cardiff, who no doubt will be giving details in a future issue of the "M.R.N." and I was thus encouraged to tackle the remaining problems of plates and hinges, etc. See Figs (1) to (9) for samples of some of these components which are common to most G.W.R. Siphons. As quite a large number of nearly every shape are used per vehicle, it was obvious that the main difficulty would be to maintain consistency of shape and size for each one and from this it was not difficult to deduce that the use of metal punches shaped as required would be the best line of attack. However, in these small sizes, the making of a proper female die to suit the punch was absolutely beyond my limit of skill, so it was a question of just having to find a way round this difficulty somehow. (Perhaps it should be mentioned at this stage that the metal strip from which these shapes and other components would be punched, would vary between .004 in. and .010 in. thick for 4 mm. scale.) Eventually, after several false starts, quite reasonable results were obtained with simple shapes like Fig. 1 by the use of a plain block of hard rubber as the bottom die and simply hitting the punch through the metal strip with a hammer on to the rubber die below. On other more complicated shapes, however, it was difficult to get a nice clean stamping free from heavy burrs, particularly at areas marked "X" on Figs 2 and 3, where obviously the hard rubber die wouldn't penetrate. After many hours of experimenting and trying to improve the punch itself, it was clear that something harder than rubber was required for the bottom die and eventually a sheet of ordinary $\frac{1}{16}$ in. thick lead sheet was tried out. The results gave me a per-



Siphon F showing 9 ft volute Bogies not often seen in model form

A view of the workbench under normal conditions, i.e. one big, untidy, "pile-up" of tools which have to be searched for as required. This is on the debit side of Cheating "Father Time"

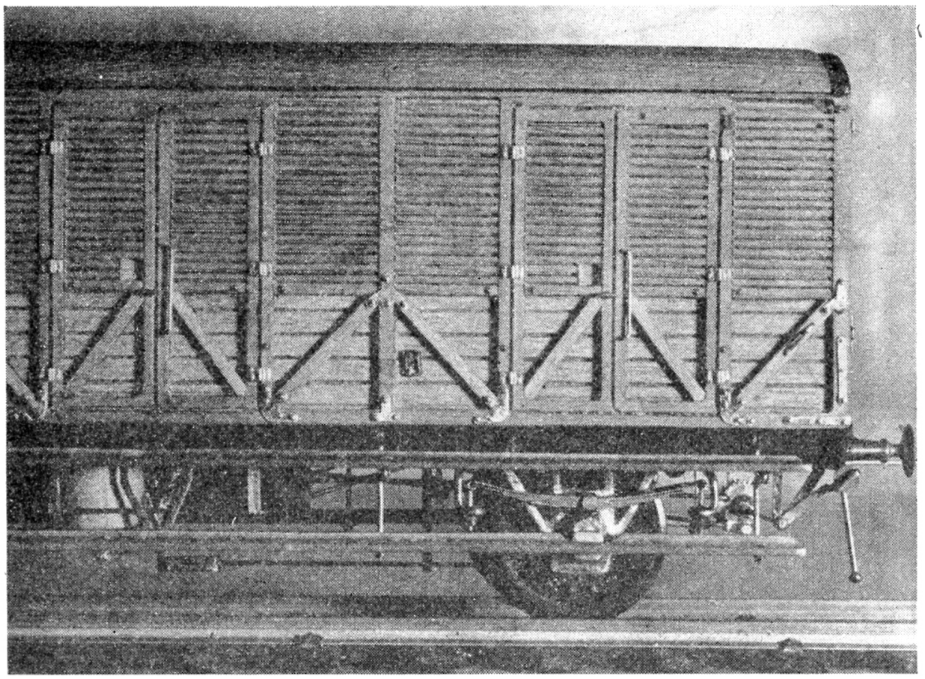


PICTURES BY B. MONAGHAN OF DIDSBURY

manent "glow" for at least a couple of weeks, particularly as I gradually realised the much wider field of application which was possible. Once the punch has been made, the stampings can be produced at the rate of about 15 a minute, and a piece of 6 in. × 6 in. lead sheet is sufficient to "house" hundreds of these awkward little shapes. After using both sides of the lead sheet, it can be melted down in a flat tin lid for re-use, thus avoiding predatory excursions at midnight and generally keeping the "overhead expenses" to a minimum. The stampings are, of course, pressed into the lead sheet to a depth of about .020 in. to .030 in. according to the force of the hammer blow. To remove them quickly and without damage, the lead sheet is simply bent into the shape of a letter "U" and the stampings will then drop out quite easily. The few reluctant ones can be "pricked out" with a needle. If they cannot be removed quickly and simply, you are hitting the punch too hard. Incidentally, if the particular stamping requires rivet detail, these can be "pricked in" with a needle or whatever you prefer, whilst the stamping is nesting firmly in its recess in the lead, which enormously speeds up this rather tedious operation. This method is used for the smaller sized rivets, but for the larger ones I remove the blank stamping from the lead sheet and emboss the rivets with a Beeson rivetting punch, holding the stamping with tweezers. It may well be possible, of course, to suitably "doctor" the punch so that the rivets are embossed simultaneously with the punching out of the stamping, but this has not yet been tried out. It is possible, however, to achieve a "blank and bend" in one operation in the form of the door hinges (see Fig. 9). There are six of these hinges per door and eight doors for each bogie siphon, so it was essential to eliminate the separate bending operation if possible and Fig. 10 shows the design of punch used.

It should be emphasised that I am no toolmaker or tool designer and although new and quicker methods are continually being sought, I really dislike making tools and jigs and my efforts to date bear testimony to that fact in the form of crude blocks of wood and odd bent nails, etc.! These particular punches can, however, be made in half an hour to two hours, according to complexity of shape and should be within the capabilities of most modellers who can handle a saw and file with determination. The material used for the punch is ordinary mild steel rod and in 4 mm. scale, $\frac{3}{16}$ in. dia. rod will accommodate most of the shapes required.

First, the end of the rod is painted with marking out ink and the shape of the required "blank" then marked out carefully with a scriber in the usual way. Using a fine-toothed piercing saw blade and a rough and smooth file as required, generally remove the surplus metal so that the punch appears as in Fig. 11, which, of course, is the punch for shape shown in Fig. 1. Providing the face of the punch is reasonably flat, the final use of a smooth file gives a sufficiently good finish to obtain a nice clean stamping, free from noticeable burrs. Using a stone to get a better finish on the punch produces little or no improvement to the stamping and, suprisingly, the punch does not appear to need hardening. (Several hundred stampings have been obtained from some punches without apparent wear). In fact, as I dislike working in mild steel, particularly filing and sawing, the more recent punches have been made from hard brass and the results are just the same as regards finish, though it has not yet been convenient to find out how the



This detailed photograph of the Siphon C body, etc., shows the hinges, platework and general body work

punch stands up to continual use. Using brass, of course, cuts down the time to make a punch by nearly half.

There is a certain " knack " in the actual blanking operation which is soon acquired with a little experience The punch, which is made approx. 3 in. long for ease of handling, is struck a short, sharp blow with the hammer (not necessarily a heavy blow, though don't be frightened of hitting it) and the stamping appears all nice and tidy in the lead sheet below. If done correctly, it's a case of " every egg a bird " as the saying goes and on the more complex shapes, it is difficult to suppress a kind of mild form of gloating exultation, as the stampings appear almost mysteriously in the lead sheet and at a really impressive speed. It is essential to do this punching operation on a solid foundation—otherwise the stamping will not break away from the metal strip from which it is being punched, and the lead sheet will then be full of empty indentations. The kitchen step was found to be the best foundation of all in producing practically burr-free stampings and before commencing, the lead sheet should be lightly hammered down, so that it really rests flat on the step.

I do not know how other modellers go on, but I always lose a lot of these small parts at the assembly stage—they invariably flick out of the tweezers and most efficiently vanish for all time. (My wife claims that I spend half my modelling time crawling round the dining room carpet armed with a 100 watt lamp, usually to find some component I lost a week earlier but never the one I've just lost!) All this has now changed, at least as regards stampings, as I just nonchalantly pick up another one from my " stock " knowing it will take much longer to search the floor than punch out another one.

Wherever possible, of course, it is an obvious step to try and make one punch produce more than one shape, and for the six differently shaped plates or gussets common to most G.W.R. Siphons (see Figs 1 to 6) it is possible to manage quite effectively with only three different punches, e.g. Figs 5 and 6 (of which only two each per vehicle are required) are produced from Fig. 4 by simply cutting off the left or right hand " leg " with scissors, as required. Fig. 3, of course, is simply Fig. 2 turned through 90 deg.

The materials used for these stampings vary according to circumstances. For the above plates, which lie flat on the vehicle, .005 in. thick aluminium is used, which takes paint quite well and can be very effectively stuck to the wood body, the latter operation being most important with so many pieces per vehicle (nearly 100 in fact). Where soldering is involved, however, .005 in. copper or soft brass strip is an obvious choice and an example of this is the " either side " brake handle, fitted to many G.W.R. freight vehicles (see Fig. 12 for developed shape and Fig. 13 for final shape after bending). These handles are awkward things to make, especially if one wants them the same size and shape for every vehicle and it was understandably one of the first selections for trying out the new technique for punching out " queer " shapes. Although it involved a rather more difficult and larger punch than usual, results were up to usual standard, even using the rather thicker material of .010 in. brass, which was preferable for purposes of strength. The .010 in. material still permitted the subsequent bending operations (five bends per handle—see Fig. 13) to be done simply and expeditiously with ordinary tweezers, and if greater strength is still needed, this can be obtained by stroking (i.e. " tinning ") the back of the component with a soldering iron—after bending of course. If you wish to try out the basic method for yourselves, a suitable punch for a first effort is that used for punching out the blanks shown in Fig. 14 which, in fact, represent the block of wood found on most prototype freight vehicles to which the destination label is clipped.

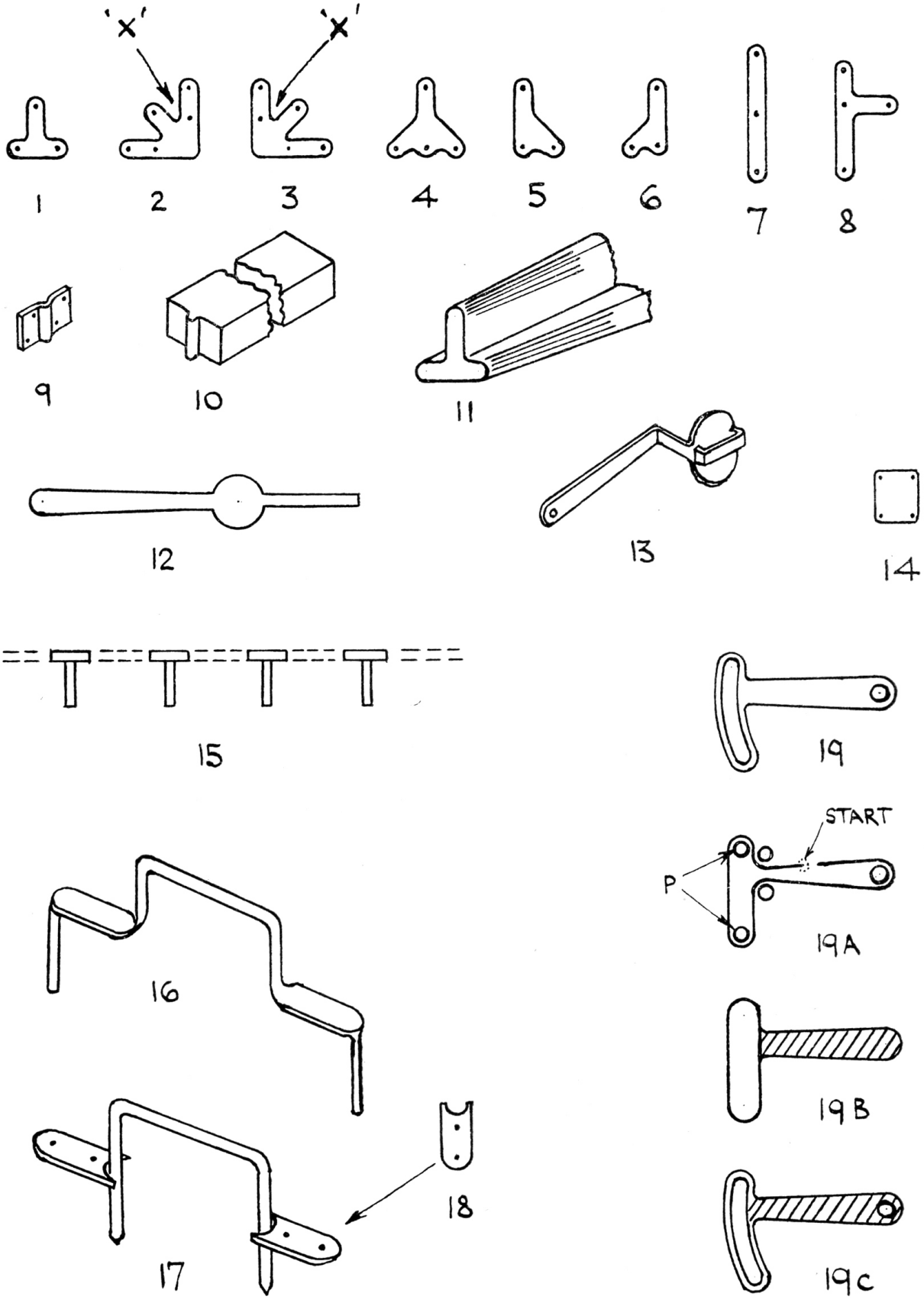
As hinted earlier, the glueing of all these bits and pieces to the body of the vehicle, involving, as it does, metal to wood, is quite a problem, both in time taken and in permanency of the job. Most modellers, I imagine, detest bits dropping off with handling, particularly after painting and it was considered that this ever recurring problem was well worth a full and proper investigation. The method eventually adopted is based on Evostick (usual disclaimer) which is generally accepted as a first class medium for sticking metal to wood, but which I had previously rejected on account of the near impossibility of using it in tiny quantities (i.e. due to " stringing " difficulties). This problem was eventually overcome by a very simple method and since being adopted, not a single body item has been lost. The procedure is really confined to three main points, viz:—

(1) Pre-heat the Evostick in its tube before use and it really must be hot. This makes it more fluid and less subject to " stringing."

(2) Apply the Evostick with a nicely pointed wooden toothpick, picking up just sufficient quantity for the job and wiping the toothpick absolutely clean each time before re-loading.

(3) As the Evostick in the tube nozzle starts " thickening up " during use, remove it thoroughly with a matchstick to allow the warmer and more fluid Evostick from inside a clear passage up the nozzle without coming into contact with the cooler and already setting Evostick accumulating there.

TO BE CONTINUED IN SEPTEMBER M.R.N.—HAVE SHEET OF SKETCHES HANDY FOR READING PART 2



APPROX. SCALE:- 4 TIMES FULL SIZE FOR 4mm VEHICLES (EXCEPT FIGS. 16, 17, & 18, WHICH ARE NOT TO SCALE).