

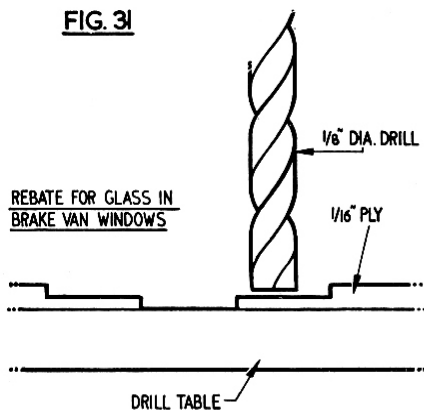
CONCLUDING HOW TO BUILD FREIGHT VEHICLES IN 4 mm. SCALE

by NORMAN DALE

WE will now turn our attentions to flush boarded vans, The L. & Y. meat and refrigerator vans are typical examples. For the body of this type of van I use $\frac{1}{8}$ in. ply, not vee'd for the sides, and the van ends also of $\frac{1}{8}$ in. ply which required to be planked or vee'd. As the sides will be covered with 1 mm. planked ply, due allowance must be made when the internal blocks are made. A glance at Fig. 29 will tell you what I am trying to say. The $\frac{1}{8}$ in. plys are glued to the blocks as in the fish van. Leave for about one day to let the glue set really hard, then a start on the sides can be made. Anyone who has done a little marquetry will understand when I say proceed as in marquetry. I first stuck in place the corner posts made of 2 mm. \times 0.040 in. Plastikard (6 in. \times 3 in.), then followed the top and bottom rails, middle rails and then the door framing and stiles. All this was in 0.040 in. Plastikard, cut as usual by my safety razor. It was easy to cut my 1mm. planked ply to fit the openings and make my louvres complete in their frames to drop into their respective openings. The louvres were only required for the meat vans.

Fig. 29 in previous instalment

FIG. 31



After the other sides were done it was a simple matter to rub each side on a sheet of very fine glasspaper to level everything up. The reason for the choosing of these two types of van is that the joint made by the boards to the framing is covered with a half round moulding. After a lot of thinking had gone on around this problem, a solution was found, at least so I thought. A jig was made consisting of two 2 in. \times 8 in. wood-screws screwed into a piece of wood. A van was laid on its side and a fine thread stretched between the screws. The van was carefully adjusted till it was in place with the thread over a joint between boards and framing. A dab of the solvent and it adhered to the Plastikard framing. After allowing it to set it was

cut and there we had a good representation of the moulding.

It had slightly bedded itself into the Plastikard, and all I had to do was cut and lift off any unwanted pieces. This stretch-and-stick procedure was repeated fourteen times for one side. After each piece had had its unwanted bits removed, I found that there were forty separate pieces of moulding on each side of a meat van. They looked good so on I proceeded with the other sides as I was making two meat vans. These done, on I went with the refrigerated van, two again, these had sixteen pieces when cut.

Well, thought I, that's one problem nicely tied up. Strapping was stuck on and I thought I had better give all four vans a coat of thin shellac to seal everything. Well, at the end of half an hour the wife was packing her bags ready to leave home. Yes, I had really exploded. All this thread had suddenly developed stiff hairs sprouting out like a famous stage and T.V. comedian's hair does. A few evenings' work all wasted. On coming back to earth I gave the job another good "weighing up." I decided to try fine wire of some 0.008 in. thick. It was

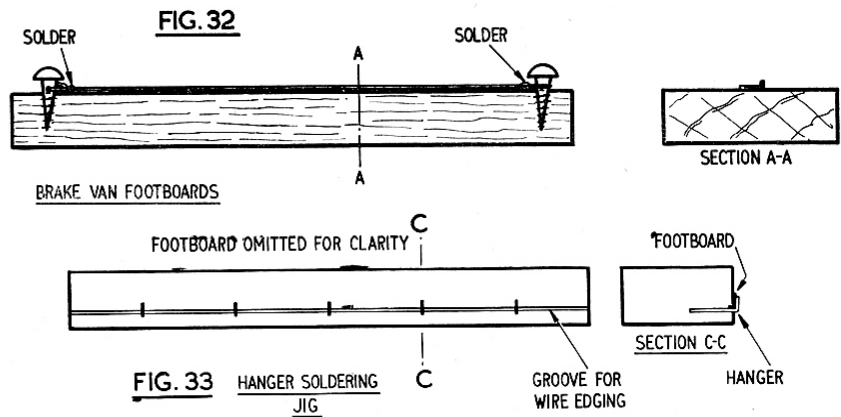
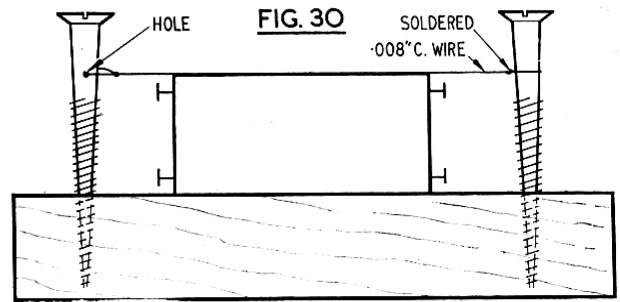
tion. You will after a time look down on these kit bashers with pity: they will never know the real feeling of achievement.

Brake vans

A few words on brake vans may be well received. First the duckets, I make them of metal, soldered up. First one side is made of about 0.015 in. brass or nickel silver all correctly filed to shape. This must be minus the thickness of the metal we are going to use for the outside cover. Three more bits of metal slightly oversize are cut and the whole four pieces are tack soldered together. By careful filing the other three can be got to the shape and size of the first one.

The narrow slit of a window can now be marked out on the two outside ones. By drilling a series of holes and the use of a needle file the windows or lookouts will soon be brought to size in all the four pieces.

When you are satisfied, unsolder them with a dry soldering iron. A piece of wood is then required slightly smaller in shape and size than the ducket sides. It is stuck to a bit of hardboard. After it



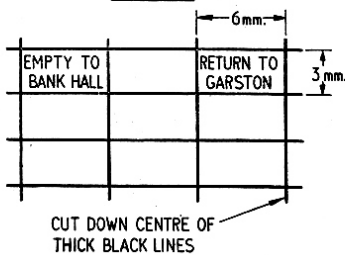
copper wire. Using the same jig I soldered the wire around one screw to itself and threaded it through a hole in the other screw; a touch of solder also fastened this end as well. By turning the screw containing the hole, the wire was stretch taut enough to allow it to be fixed like the thread to the Plastikard. Yes, I did the whole job again so that my meat vans have now eighty separate pieces of fine wire as moulding on each van (Fig. 30).

I quote all the above for the benefit of our young beginners. Never give in; there is no such word as impossible. Get in and master the job, the kit buyer only buys his kit because he lacks confidence. Every problem you overcome will give you more and of course more determina-

has set we can use our No 45 saw to saw a couple of cuts the width of the ducket. It is an easy matter to insert a couple of the ducket sides in these cuts. A piece of 0.018 in. nickel silver is now cut for the cover; it can be a little too wide. This is bent and flexed over the shape of the sides. A liberal amount of solder is run on the inside of the ducket sides. The outside wrapover cover can be smeared with flux on the underside and held in place with a small bit of dowel (cherry sticks will do). A touch with a hot iron and within a minute you can lift out your ducket all nice and clean. A few minutes with a file and you have a ducket that looks correct. You will be able to see right through the windows as they are not just blocks of wood.

The windows on the ends of any brake van need to be cut and filed accurately for them to look right. When we remember that in our scale a quarter of an inch equals 0.003 in. one has to be most careful that such small openings are spot on size and moreover dead square. If the window linings are made with Plastikard with a sill piece just overhanging the boarding, the appearance will be vastly improved. Now as I generally use $\frac{1}{8}$ in. ply for my vans the windows would want almost a window frame or lining a scale five inches. In order to bring this oversize thickness down to size, I reduce it to half. This I do on my drilling machine, using a $\frac{1}{8}$ in. drill flat first and then a very slight backing ground off.

FIG. 34



as with our half-round moulding jig. Also it is as well if the screws are spaced a little wider than the length of our proposed footboard.

The wire I have used for the last three of my brake vans has been 0.014 in. copper wire. This is No 28 swg cotton-covered wire without its cotton. When painted this wire gives me an edging about $1\frac{1}{4}$ in. high, I would rather be a little undersize in these details than the reverse.

To make our footboard, we shall have to tighten one screw to wind in the slack wire and push the footboard under the wire. Apply some flux to both wire and strip then follow with the solder and iron. You will get a perfectly straight edge that only needs the attention of a file for a few minutes before you have a perfectly strong footboard. These boards still need to be fixed to the van with correctly spaced hangers. The hangers I make out of our old friend 0.020 in. pin wire duly flattened and bent to size.

The chief trouble in the fixing is to keep the hangers to their spacings whilst they are being soldered to the underside of the footboard. This I overcome by making a small jig (Fig. 33). The jig is just a small piece of wood with the hanger centres marked with a fine hole

all sizes of the plates with black indian ink. This is done on a piece of thin white card about 0.006 in. thick, and I always mark out more than is required. I find it difficult to write so small, so that a few attempts are required before I am satisfied. If the writing is too small, a few wavy lines may pass in 4 mm. By cutting down the centre of the black lines we shall get a black edging round our plates. The pen is then carefully passed along the edge of the card and the white cut edge will disappear. The illusion is created that the black beaded edge appears to be raised above the white plate. The plates on my L. & Y. meat vans measure up to be 1 ft 6 ins or 6 mm. X 3 mm. in 4 mm. scale. Inside the black edging I managed to get Fig. 34; needless to say there were several attempts.

Well, that just about completes the constructional part of this article. A few words about my painting experiences may help you to achieve better finished models. I often note how we are advised to sieve our model paints through a silk or nylon stocking—that is of course when the wife is not about—but my experience is that an old handkerchief is much better (again when the wife is not about). A most useful aid to painting and lettering is a 3 in. diameter magnifying glass. The glass is on an adjustable stand, so that any ordinary goods vehicle is seen to perfection under it. This is a great help when the painting of strapping and corner plates of a different colour to the body are required.

I find that I have not the gift for painting the larger letters, but can make a passable job of the smaller ones—say in the $\frac{5}{64}$ in. or $\frac{1}{8}$ in. range. With this knowledge of my limited capabilities I have purchased a few stencils. The ones I use are made by Uno, and are numbered in sixteenths so that U.C.4 gives me a good 18 in. wagon letter. A special pen is wanted for these stencils and some white waterproof drawing ink; thin poster white will do. After the stencil has been used it is necessary to square out the rounded corners made by the pen. A mapping pen and the magnifying glass is used for this job.

The smaller hand-written letters I do in poster paint because it is so easy to remove and start again without damaging the main paintwork. I have used my tongue many times to remove some small badly-formed letters. This method cleanly and quickly removes the offending letters and after all poster paint I find is very palatable!

Now in order to use these stencils easily and accurately I have made a special jig (Fig. 35). This jig has the vehicle fixed to its base by a thin screw into the base of the vehicle. I have fixed a piece of tinplate under the wheels to stop the flanges digging into the wood. Up one side of the vehicle is an adjustable-height straight edge. This enables me to forget about the height of the letters to be written. All I have to do is concentrate on the letter spacing and keep the ink flowing. The straight edge is made adjustable by virtue of thin washers and wood screws at each end. I generally make a small pencil mark at the base of the letters and if possible at the extreme right hand corner. This mark is easily picked up when the stencil is laid on top. If the smaller stencils are used for full words the spacings of the

TABLE OF EQUIVALENTS

F/SIZE	SCALE - INS.	F/SIZE	SCALE - INS.
1/4"	0032	6/4"	0820
1/2"	0065	6 1/2"	0853
3/4"	0098	6 3/4"	0885
1"	0131	7"	0918
1 1/4"	0164	7 1/4"	0951
1 1/2"	0197	7 1/2"	0984
1 3/4"	0229	7 3/4"	1017
2"	0262	8"	1049
2 1/4"	0295	8 1/4"	1082
2 1/2"	0328	8 1/2"	1115
2 3/4"	0360	8 3/4"	1148
3"	0393	9"	1181
3 1/4"	0426	9 1/4"	1213
3 1/2"	0459	9 1/2"	1246
3 3/4"	0492	9 3/4"	1279
4"	0525	10"	1312
4 1/4"	0557	10 1/4"	1345
4 1/2"	0590	10 1/2"	1377
4 3/4"	0623	10 3/4"	1410
5"	0656	11"	1443
5 1/4"	0689	11 1/4"	1476
5 1/2"	0721	11 1/2"	1509
5 3/4"	0754	11 3/4"	1542
6"	0787	12"	1574

SCALE - 4mm. = 1ft.

drilled at the marks. A fine saw cut will enable the edging wire to sit down. It is only necessary now to drop each hanger into each hole before soldering up. The use of solder paste will be a help here so as not to unsolder the edging.

You will realise just how easy it is with brass solebars to solder the hangers complete with footboards to the van. Here is a proper looking footboard made to scale but yet strong. I myself have come through the glue and card stages with paper staples for hangers. You cannot beat metal and solder for these jobs, especially when they are in such a vulnerable spot.

There is perhaps one other detail which I should mention. This is the various cast iron plates to be seen on any goods vehicle. The rectangular ones are quite easily made: I mark out the over-

With this drill and machine I have what we call a "routering" machine. The table is set and locked when the drill is the required distance from the table face. This distance is of course the thickness of window framing we require. By routering about $\frac{1}{8}$ in. bigger than the window opening, we shall also make a rebate for the glass to be fixed into (Fig. 31). This idea should be useful if I ever decide to use $\frac{1}{8}$ in. ply for coaches. The coach side would be strong whilst the window reveals could be the correct size.

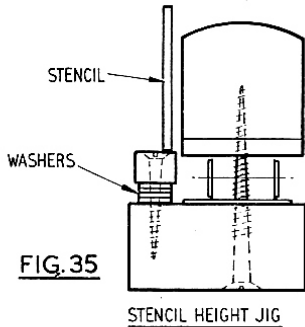
A further point on brake van windows is that the glass nowadays is almost the last job of all to be fixed. My last brake had a semi-detailed interior, and in order to be able to have it so I only used one thin block to fasten the sides and ends to. The corners were strengthened with bits of $\frac{1}{8}$ in. square wood kept, as with my other vans, a little short for the roof former to drop down to. This was of course dropped in after the interior was finished and complete with paint. This interior painting was taken through the window opening and the linings painted white like the interior. When the "glass" was stuck in place the roof former could also be stuck into place. With this method I got nice clean windows and no tedious painting to be done with a "one hair" paint brush. The roof former is covered like the other vans with Plastikard and painted last of all.

Footboards

The only remaining troublesome item on a brake van as an extra to an ordinary goods van is the footboards. They have caused a few headaches in the past, but now I have the job all nicely "tied up." For the actual footboard I use $\frac{1}{8}$ in. X 0.010 in. brass strip, which whilst being wide enough for the widest of footboards can be quickly filed narrower if required. The edging of the back edge of the footboard is made of wire stretched tight between two wood screws (Fig. 32)

stencil letters will serve as a useful guide. You will also be well advised to have a tin of water at your side to place the pen in if it is to be left for a short while. The hole is so small that it soon cakes up otherwise.

With everything on the vehicle finished the only job left to do is to spray the whole vehicle with fixative. This is a preparation made by Rowney, Winsor & Newton and Reeves; it is a kind of very thin, almost flat, varnish. After being treated with this fixing liquid a vehicle can be handled many times without being soiled by finger marks. Once again it pays to do a whole batch at one filling of the spray gun.



As a conclusion I would like to pass on a few hints to help make your modelling to be more enjoyable.

One of the most important things in this game—or in fact any other hobby—is your patience. Your spare time is short enough, but say you do manage to find a spare hour. Right, says you, I will do so and so, and you get out the tools and the model, start tinkering about and drop the only 10 BA nut in the house. Find it? not you; one minute gone. No nut. Five minutes gone. Still no nut. Carpets moved, chair moved; no, the nut has vanished, and so has your patience. Before you can settle down to do something else the spare hour has gone too. All this can be avoided if, apart from having a stock of 10 BA nuts, you wear a white apron. Sit up to the table or bench with a apron forming a pocket in your lap. That 10 BA nut would have been back on the bench inside two seconds, all for the price of a joiner's white apron, and you would still be calm and collected. I understand that watch-repairers have their leather apron fastened to the bench edge and they tie the apron to themselves on sitting at the bench.

Another aid I have already mentioned is my watch-maker's glass on a stand. Personally I find it most difficult to work with the glass held to my eye. I mean of course with both hands left free. The little gadget I made many years ago is to me a much better arrangement. The glass is held tight with a fluorescent tube clip which in turn is fixed to the $\frac{1}{4}$ in. rod. This of course is in addition to my 3 in. diameter magnifying glass mentioned earlier. The watch-maker's eye glass is more powerful: very handy for splinters in one's fingers.

Something else I have been doing for years is noting down anything I may need and where it is available. I keep it all in an indexed pocket book. This enables me to go right to the book or magazine which contains the information required. Once again my patience and

time have been saved. I also keep another indexed pocket book where I keep notes made about every new modelling job and the methods used. This, needless to say, is another time-saver when a repeat job crops up after a few months.

Just a random opening of this book tells me that some tail lamps I made recently required $\frac{3}{8}$ in. \times $\frac{1}{8}$ in. nickel silver for the bodies and that a 0.050 in. brass nail had its head cut off and was inserted through the body of the lamp for easy fixing. Otherwise, casting my mind back, about three hours would have passed before I finally got what I wanted in tail lamps. It is now there in the pocket book for an immediate start, when more tail lamps are required.

Turning up another page, I note that to straighten fine wire quickly is easy. All that is required are a couple of steel blocks with, if possible, ground surfaces. Place the wire between them and just push one block over the other. The wire will be perfectly straight in seconds. Yes,

that book is a real time-saver.

After reading many articles about making models and being "left in the air" over many details, I have endeavoured to help the beginner. In my efforts I trust that he will be able to follow every move. If he can make a few wagons or vans after reading all this, I shall be very happy to learn that my time has not been wasted in "preaching the gospel." That is all for the present. I will pass on any more wrinkles I come across—that is, of course, with the Editor's permission.

The inches to thous. table of equivalents I have included is one which I made up for myself quite a number of years ago. I had to have it when I started making wagons from scratch. I must add that I have no connection with any of the suppliers of materials mentioned in this article other than as a very satisfied customer. Now after years of building up my confidence I can start "courting" my new love—loco building in EM gauge.

THE YNYS GWYNTOG PROJECT

Continued from page 408

side being vertical as a part of it will also be part of a warehouse wall, but on the other side having a slight backward slope. Fig. 5 shows this, and the fillet strip round the edge of the water level board to glue the bottom of the wall as well. The upright wall rests against a strip for the same purpose.

I then put in the water. No, not from the tap; the baseboard leaks. The method was to make a rather soft mixture of Polyfilla and paint it on with a brush, working very quickly. Whilst this was still wet, I screwed the bridge down into place, and then with the Polyfilla still moist, worked it up with a paint brush, forming a rippled surface, well disturbed as at this point the river force meets the effect of the tide. I used a sable brush constantly dipped in clean water.

Finally, the track was laid. This is flat-bottom nickel silver TT rail and no sleepers. I laid the track direct to the baseboard, glueing it down with Pafra cement and inserting Peco track pins at intervals. I thoroughly checked every bit of the track as it was laid. The points were built up *in situ*, the stock rails being filed to take the tips of the moving rails. I could write a chapter on how to build the points, but you will be far less bored and probably follow the method more easily for yourself if I simply say copy the pattern of construction of the "Gem" universal point. Instead of the tie across the moving blades to operate from the lineside, I have fitted a solid brass tie with a spigot in the centre going down through the baseboard. The pivot is formed by a screw and washer in the trailing end, thus in

case of trouble, the whole moving portion can be removed from the base by undoing this screw. The point is operated by a lever on the side of the baseboard which is connected by a bowden cable to a bell crank pivoted on a screw under the base and up to the point. Two thin strips of spring copper are soldered to pins either side of the spigot, so that when the point is thrown one or the other of the strips are in contact with the spigot. These are wired into the circuit to form a switch, thus ensuring definite electrical contact even if the moving rails fail to properly touch the stock rails.

Having laid the track and tested it, in all the ways of which I could think, including running feather light plastic chassis at speed through the points without derailment, I laid in second lengths of rail to form a tram style track across the bridge, and filled in the centre with Polyfilla which was later scribed in blocks. This was repeated at the level crossing. Road surfaces were built up to rail level and "boards" laid between the rail at accommodation crossings; Polyfilla was then blobbed between the rails and against the outside of exposed rails to resemble the "overgrown" effect I was after. With the bit of filler I had left over, I filled in any odd gaps or joins in the rest of the baseboard, and now I was almost ready to start the colouring.

Almost, but not quite, for I cut a piece of $\frac{3}{8}$ in. hardboard to face up the front of the baseboard. The top edge of this is cut to the profile of the landform, and will be repeated all round the front of the layout for neatness. Another sheet was cut for the backdrop, the height is 11 in. above the base frame; this is governed by the fact that I am using commercial sky paper 22 in. wide and cutting it in half.

