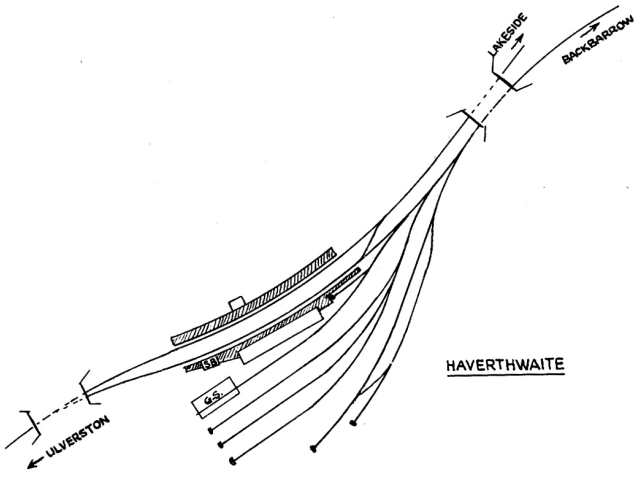
Haverthwaite

(Change at Ulverston, Furness Railway)

A fine scale EM gauge layout

Ross Pochin

Photographs: Brian Monaghan



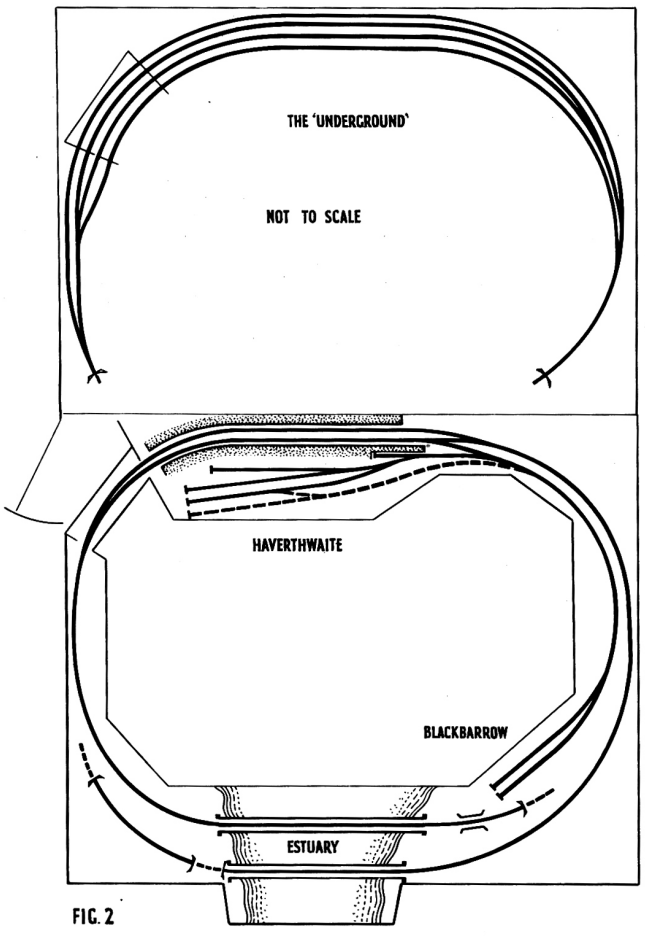


FIG. 2

A model railway layout is a very personal thing. It reflects the particular facet of the hobby that most interests the individual modeller. It can be based on a prototype station, a branch or part of a main line. It can be modern or period, for continuous running or terminus to terminus, for time-table running, block operation, and so on.

The optimum is conditioned by the amount of space, time and cash available; by skill, workshop facilities and the sympathy of the "powers that be".

For this reason it seems wise to start a description of a layout with a statement of its concept, its required function and the limitation imposed by circumstances.

My own prime interest is the reproduction in miniature of the locomotives and rolling stock of the Furness Railway in the period 1850 to 1896. Basically, therefore, I wanted a layout that would be, first of all, a test track and later a scenic parade ground for my models.

Haverthwaite, midway between Plumpton Junction and Lakeside on the Windermere Branch of the Furness Railway, was chosen as a suitable prototype for several reasons. It was a passing station on a single line branch. It had an interesting industrial sub-branch to Backbarrow Iron-works which justifies goods and mineral shunting operations in a compact yard. Its buildings – station house, signal box and goods shed – are eminently model-worthy in yellow brick with blue brick string courses and some rather florid chimneys and gables.

Originally it was intended that the model Haverthwaite should be strictly to prototype in station layout, traffic working and stock. But, like most modelling projects, compromise crept in and anachronisms occur. Certain locomotives that never appeared on the branch in real life operate in model form.

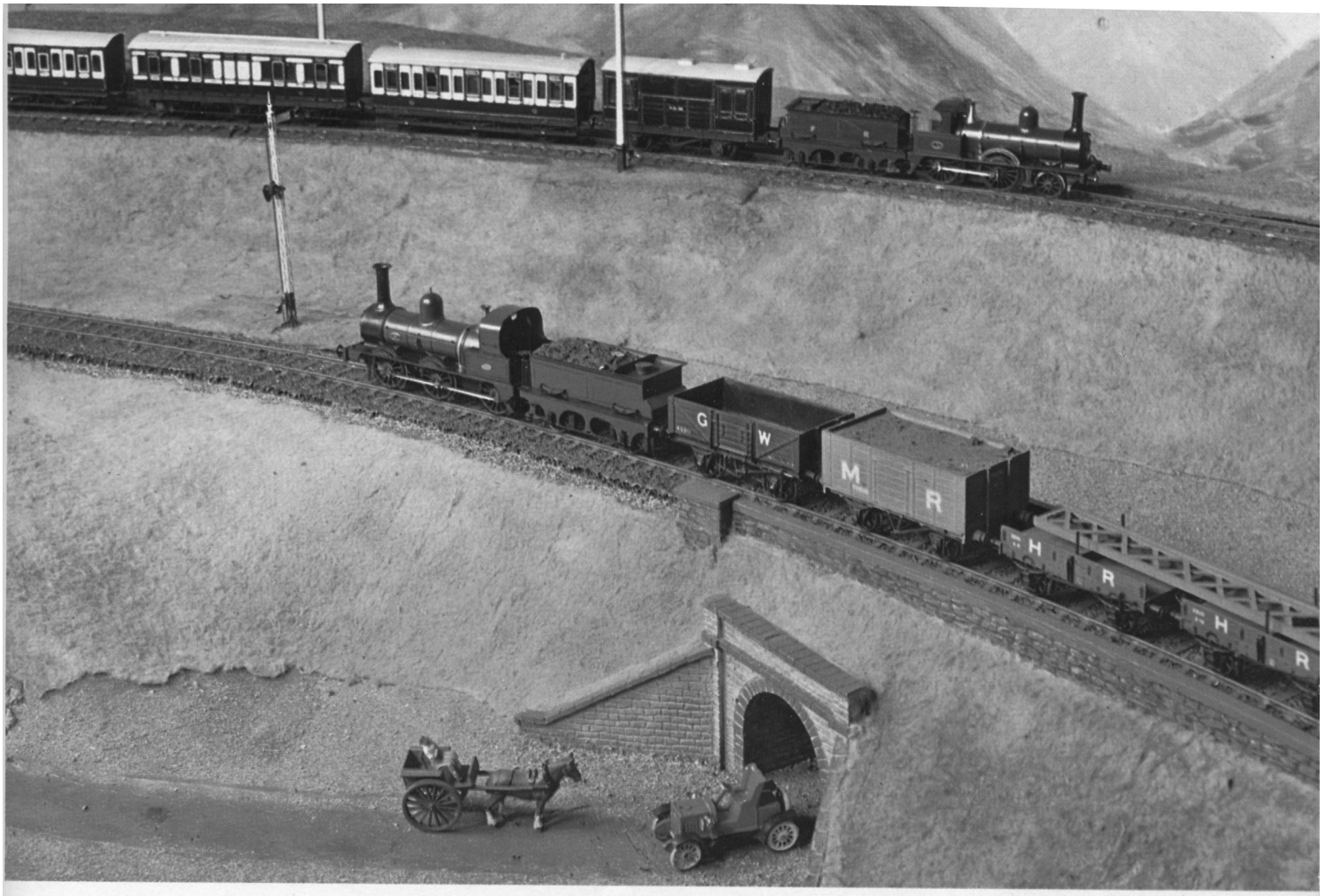
And, because I am always being diverted from scenic modelling by a new urge to build stock, the layout is decorated by scenery for about one third of its circuit.

Standards

In recording the technical standards governing the planning of Haverthwaite I am constantly reminded how much I and my fellow EM gaugers of the Manchester MRS owe to the pioneer work of the late Alex Jackson: 18mm gauge, 24V motors all fitted with flywheels, split-axle 2-rail current collection, high resistance rheostats, Manchester Profile wheels, Alex Jackson auto-couplers and his form of track construction of which more anon. Ruling curves are 4ft radius plus and the ruling gradient is 1 in 60.

Opposite. Top: Furness Railway 2-4-0 No 4 heading a passenger train from Lakeside to Ulverston passes the Haverthwaite advance starter signal. The "Sharpie Goods" No 55 is coasting down the bank towards the storage sidings.

Bottom: The 2-4-2T No 73 crossing the estuary on an up local. The Furness Railway converted several 2-4-0 tender locomotives to tank engines for branch line workings.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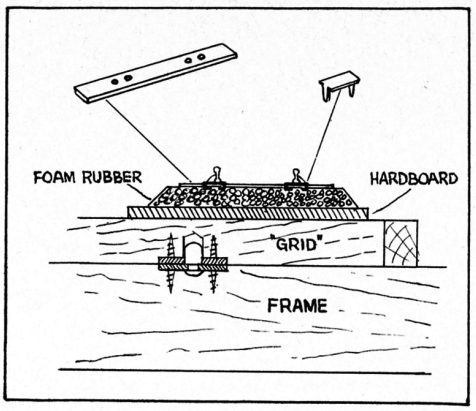


Layout Plan

The prototype Haverthwaite station layout is shown diagramatically in fig. 1. The station is situated on a shelf in the Leven Valley with a short tunnel at each end. The Backbarrow sub-branch runs parallel with the branch line through the eastern end tunnel before diverging to the Ironworks sidings.

The station layout has five sidings with a run-round road which fan out from the Backbarrow approach road and also an end loading bay at the eastern end of the up platform.

The model Haverthwaite occupies a space of 13ft 6in by 11ft 6in and the station layout had perforce to be shortened and the yard reduced to three sidings plus bay. However it is planned to add the run-round road of the prototype as shown by the dotted line in fig. 2.

The Backbarrow road is used as a shunting neck and any running round has now be done via the station.

The basic geometry of the layout is that of a figure eight folded over on itself. Leaving Haverthwaite, a down train runs parallel with the Backbarrow line on an easy curve, coasts down a 1 in 60 bank, across the river on a 4-span steel bridge based on that over the River Esk, through a short tunnel and then via a deep cutting into the "underground". This houses four long roads lying directly under the station.

Emerging from this "underground", the train ascends another 1 in 60 bank, over the trestle viaduct based on the original Leven viaduct and round into Haverthwaite again. (To the astonishment of the passengers! This is where they got in!)

The four roads in the "underground" are each divided into two sections and normally hold five trains out of sight and protected from dust. The outer of the four roads is usually kept clear for through running. The "underground" can also be used as a fiddle-yard if required.

Baseboards

The framework is constructed from seasoned 3in by 1in timber. The outer stringers are screwed to the wall and the legs supporting the inner stringers are secured to the floor with angle brackets. The actual baseboards, except on the estuary side, are removable. These take the form of grids of 2in by 1in seasoned pine with trackbeds of hardboard pinned and glued in position. Despite the oft-quoted advice never to use hardboard, some of the track has been in operation for over fifteen years with no trouble from warping or twisting.

Each grid is located by a steel socket at each end which drops on to steel dowels in the main baseboard members.

The grids were made to be removable to facilitate track-laying, wiring and the maintenance of points and point motors if required.

Track

Track is laid in nickel-silver rail, some of which dates from pre-World War 2. Consequently there is a noticeable and regrettable difference in rail section between certain "lengths" of the track.

The rail is soldered to tin chair-plates clenched into pre-punched sleepers of leatherboard soaked in shellac and baked. This again is an Alex Jackson system who made hand-operated press tools to produce chair-plates and sleepers. See fig 3.

Assembly is done in a jig which holds sleepers and rail in place while soldering. For straight lengths both rails are soldered at one setting. For curves, only one rail is soldered to chairplates. This is then removed from the jig and pinned to a board at the required curvature and the second rail soldered on.

All the points are "custom-built". An accurate drawing is prepared which has all the sleeper centres and lengths marked out. The sleepers and crossing timbers are then pinned to the drawing and the pointwork assembled using a track gauge at all stages of soldering.

Furness Railway "Neddie" No 82 as built by Sharp, Stewart in 1873 for banking duties. She has strayed onto the Lakeside Branch to work the local goods.

Track and points are mounted on a ballast bed of sponge rubber. Early construction used ex-RAF material which functioned as sound insulation in aircraft. Newer track is mounted on hessian-backed foam rubber carpet underlay. The rubber is cut to the shape of the ballast bed and the edges bevelled. The upper surface and edges are then daubed liberally with black Bostik, the track or points pressed into place and the whole then smothered in ballast. After a few moments the surplus ballast is tipped off and a heavily-weighted board placed on the track until the Bostik has set.

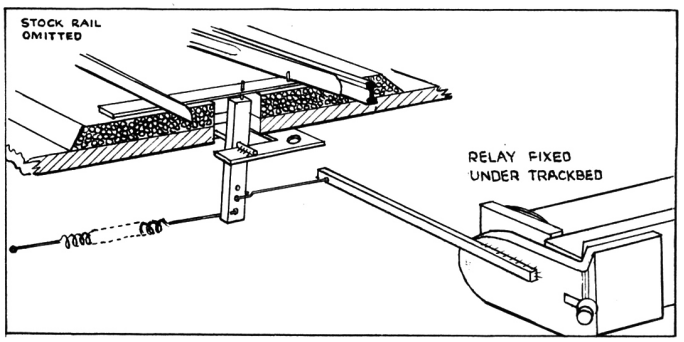
Ballast is grit from a beach in Wales. Alex is reputed to have made a safari equipped with a micrometer to locate the source of grit of the correct scale size. Proprietary ballast of cork granules has also been used but lacks the conviction of grit.

Track is loosely pinned to the trackbed, through the rubber, ever 9in or so except at points and at the ends of baseboard grids. The result is a quiet, resilient track on which derailments are very rare.

All the points are operated electrically. The motors are ex-RAF Post Office type relays. In early post-War years I collected a bucket full from a dump and bought them for sixpence a pound. Happy days!

The relays are converted quite simply to operate points and have the advantage that their contacts can be used to switch feeds to live crossings and to interlock with signals.

The conversion consists of soldering a gain-stroke arm (a piece of rail) to the clapper and connecting this to a rocker under the track-bed. The arrangement is shown in fig. 4. With relays of 800/1000 ohms resistance on 24V feed one can leave the points over indefinitely without overheating.



Electrics

Power is supplied from a home-built rectifier unit giving 24V dc smoothed with four 1000 mfd condensers. The controller has a wire-wound rheostat of about 800 ohms with centre off position. This gives a very smooth gradation of control and, in conjunction with the flywheeled motors, really slow running when required.

The track is sectioned as shown on the layout plan and connections between the removable grids are by multiple plugs and sockets.

Up to now, operation has been on the "one-engine-in-steam" principle but plans are afoot for a simple system of cab control with three controllers.

The lever frame is two ex-RAF bomb release switchboxes somewhat modified. These control all sections, points and signals.

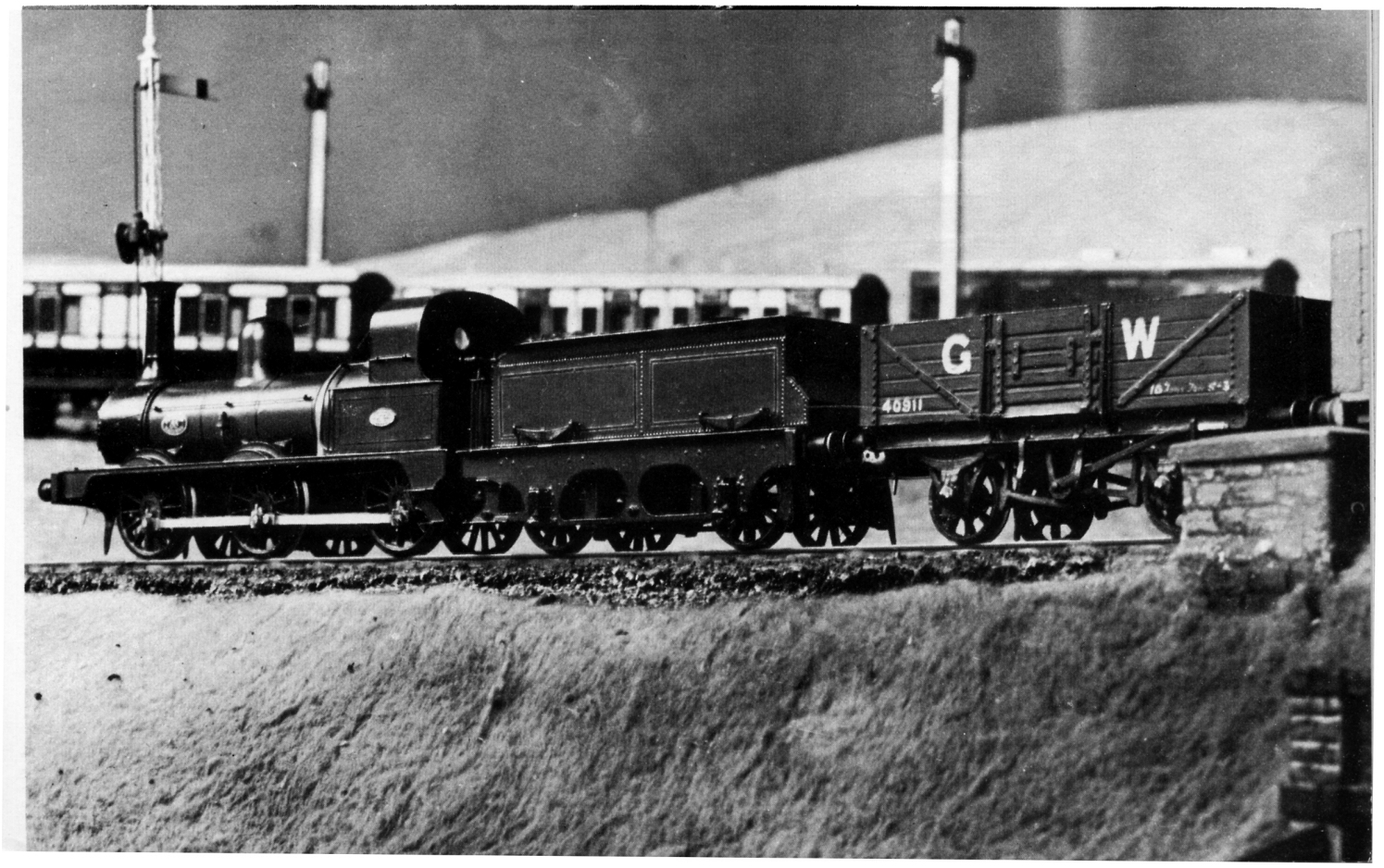
In order to avoid disasters when the two bridging sections across the door are removed, the adjacent approach roads in each direction become dead.

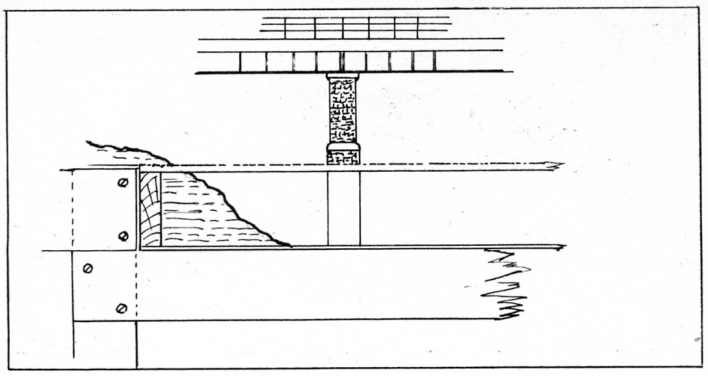
Scenery

The scenic aspect of the layout is only partly realised and extends over the estuary section and its approaches. Even here finishing touches are needed in the shape of lineside fences, telegraph poles, etc. Haverthwaite station has only achieved its down platform and shelter. The fate of the station buildings is a lesson to us all. The model was started working to a drawing which was published some years ago. Much of the work was done when it was discovered that the doors would only allow scale midgets to enter the building.

Consequently several trips were made to Haverthwaite armed with camera, tape and notebook. A reasonably accurate drawing has now been made of the main station house and signal box. Official drawings of the goods shed and platform shelter were borrowed from Laurie Ward and were transcribed to 4mm scale. And now a word of warning about official drawings. Check them against photographs. The builder of the platform shelter had his own ideas about the detail as is shown in the drawing of this item.

Furness Railway "Sharpie Goods" No 55 as originially built without brakes on the loco. There was a smell of roasting wood as the crew screwed down the tender brakes when coasting down banks.





Fields and embankments are formed by gluing strips of card longitudinally to section profiles of hardboard. Several layers of brown paper were gummed overall and topped off with dyed surgical lint.

Dry stone walls were simulated by gluing narrow strips of sheet cork edge-on to the lint and coating them with Pyruma. This was scored when partially set to represent the stonework.

Cliffs and rock cuttings were modelled in a mixture of Polyfilla and sawdust with brown powder colour added. When dry, the rockwork was painted in greys, browns, greens and yellows to taste.

The water of the estuary is a sheet of rippled plate glass, the result of a fortunate accident to a partition in the office. The bed of the estuary is set 4in below the surface of the water and coloured to represent mud, sand and rock. The cliff, shoals and piers of the bridge are modelled below water level giving a realistic liquidity to the setting. (fig. 5).

The central part of the background to the estuary is part of a pre-War LMSR poster. The rest of the background is all my own work in oils on hardboard.

The plate girder bridge is built of wood with shellaced card facings for the girders and webs. The viaduct is constructed on two wood battens, supported on piles of wood dowelling and with lattice girders of card. Handrails in each case are from the ship modellers end of the shop.

Motive power and rolling stock

The Furness locomotive stock is all hand-built and, excluding No. 16, based on the original Sharp, Stewart drawings. It consists of:-

No. 4 2-4-0 *Sharpie.* The top link passenger loco.
No. 16 0-4-0 Fairbairn *Coppernob.* Ready for the paint shop.
No. 37 2-2-2WT for local and branch line services.
No. 53 0-6-0 *Sharpie Goods,* vacuum fitted. (ex Woodhead shops)
No. 55 0-6-0 *Sharpie Goods* as built. Hand brake on tender.
No. 73 2-4-2T as rebuilt from 2-4-0
No. 82 0-6-0T *Neddie Banker.* (body by outside contractor)

Other motive power occasionally strays onto the line from its neighbour the L&NWR in the shape of an 0-6-2 "Coal Tank" (ex Jackson shops), an 0-6-0 Special Tank and a Rail Motor (underframe and motor bogie by Jackson).

My pre-occupation with loco building is evident in the relatively small stock of passenger vehicles. These comprise nine 6-wheelers, three 4-wheel passenger brake vans and a horsebox. In addition to the Furness stock there are also six L&NWR vehicles and a Midland coach to represent excursion traffic to Lakeside.

Goods stock is a mixed bag of pre-Grouping company and private owner wagons, some highly improbable for Haverthwaite and out of period, but leavened by a train of thoroughbred Furness wagons and vans. Three Furness goods brakes suffice for the present freight traffic.

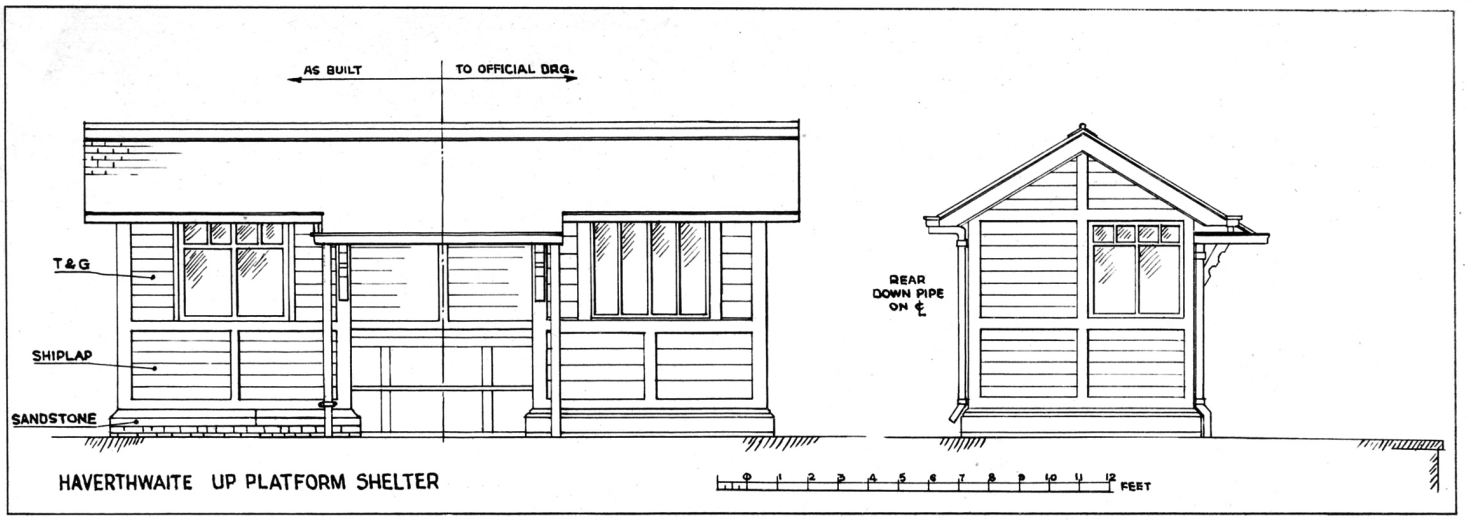
All goods vehicles are fitted with Alex Jackson auto couplings. Passenger stock, except for brake vans and horse box, is normally ranged in rakes with an auto coupling at each end. Some locos have an auto coupling at tender or bunker end only.

Haverthwaite is now dismantled and awaiting re-erection near Haverfordwest – a long way from Furness territory. It is not proposed to make any major alterations to the layout which serves its purpose admirably. The next job, after re-erection, is to make a fresh start on Haverthwaite station buildings. But I realise that I shall probably be seduced into making more and more stock. And this is going to raise the same problem as traffic on to-day's roads – too many vehicles to the mile!

However, having collected over the years some hundreds of photographs and drawings of Furness prototypes, the urge to build more rolling stock is strong.

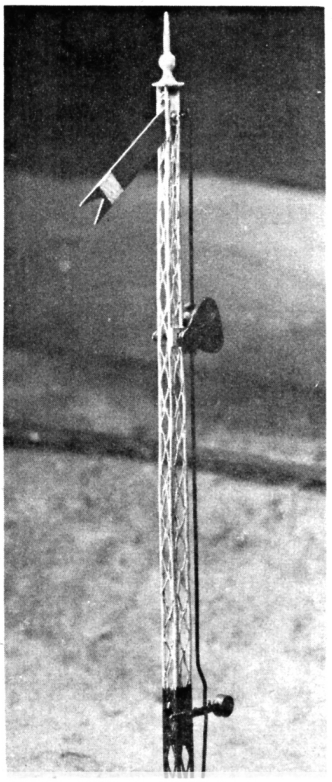
But does it matter? Not to me. The model railway hobby is for fun and Haverthwaite suits me fine.

A model of Furness Railway Horsebox No 25



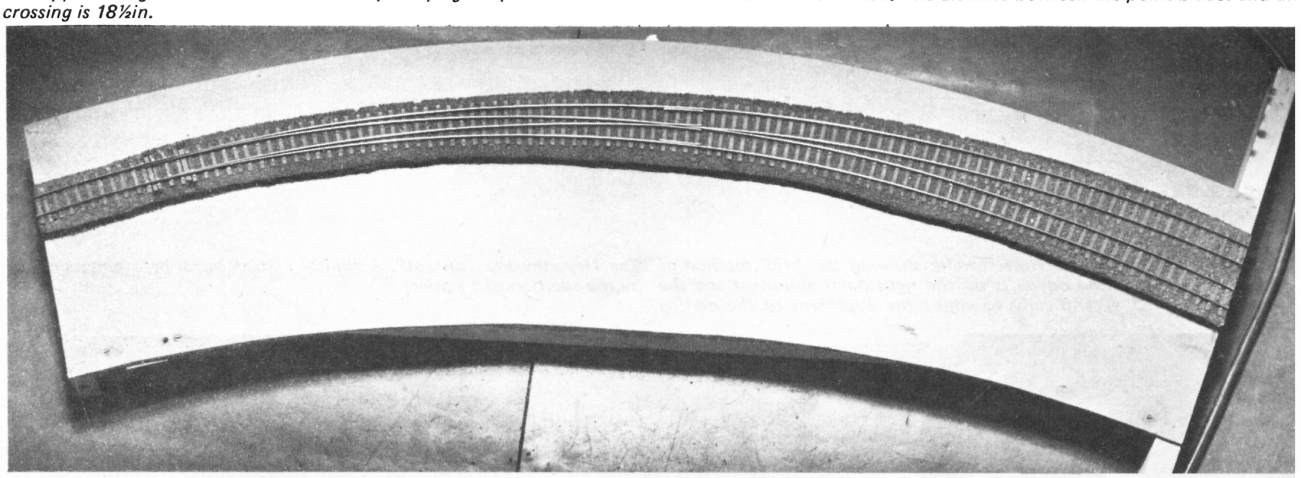
The "Underground" below Haverthwaite showing the 'grid' method of construction. A locating dowel is on the right hand abutment and the wheel is mounted eccentrically to adjust the alignment of the mating section.

The Haverthwaite "distant". A typical vintage signal before modernised by the addition of a ladder.

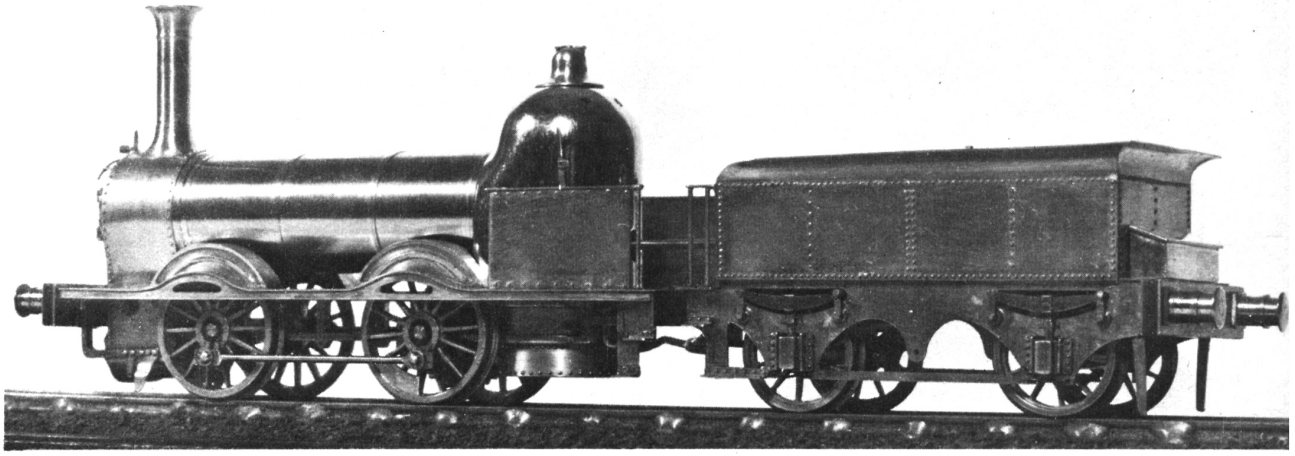


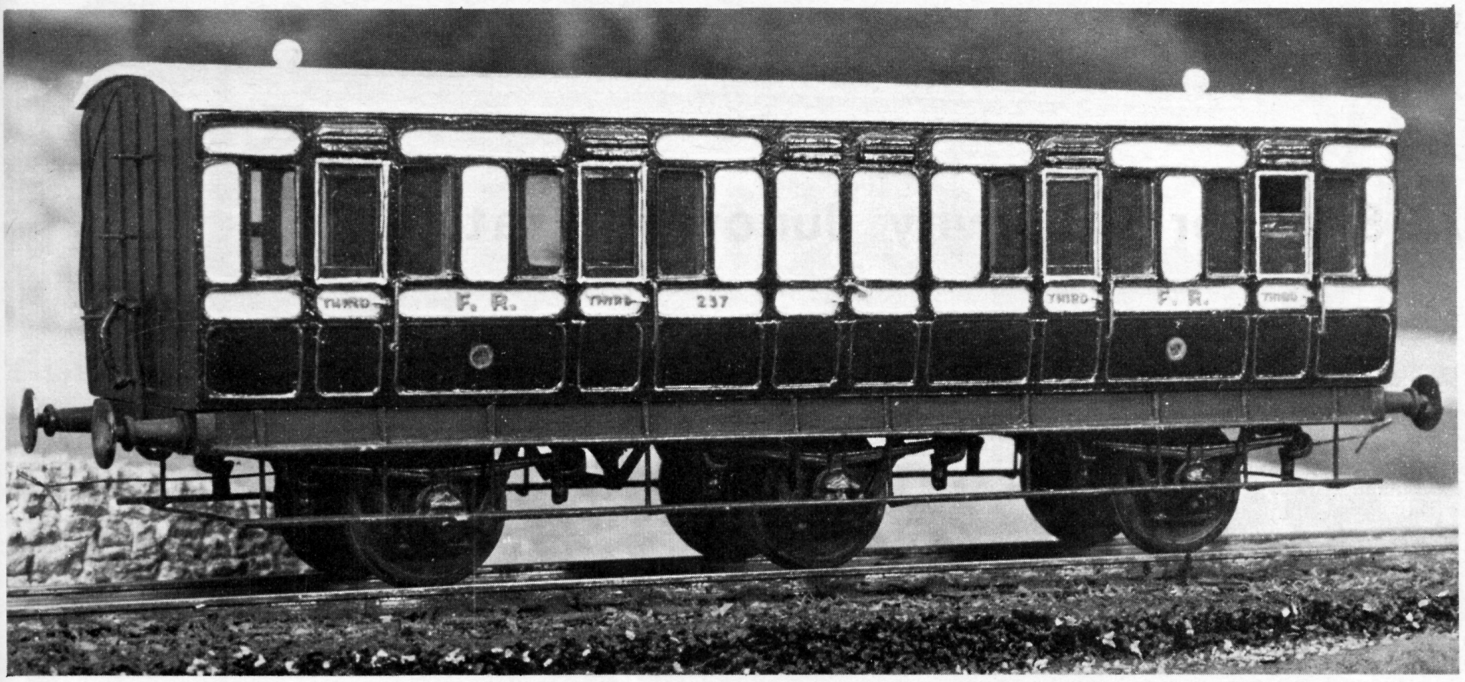
Models of the standard 10ton goods brake van and a 6-wheeled plate wagon.

The upper lifting section across the doorway carrying the point at the entrance to Haverthwaite station. The distance between the point blades and th crossing is 18½in.



Handbuilt Fairbairn "Coppernob" No 16 under construction. The motor, with flywheel, is in the tender and drives rear loco wheels by a cardan shaf





A "Coffin" coach, nicknamed because it conveniently carried mourners and the deceased. The model has a modified form of Cleminson wheelbase.

The models of the "Sharpie Goods" and No 55 and the 2-4-0 No 4 crossing two bridges.