



Smokebox

The Newsletter of the **Bedfordshire Area Group** of the
Association of 16mm Scale Narrow Gauge Modellers

From the Editor

From famine to feast. Not one, but three accounts on modelling matters in this month's **Smokebox**. Thanks to Ken and Jim for putting finger to keyboard and eyeball to viewfinder. Both articles are in my view interesting reads and I hope you feel likewise. I've contributed the third with a summary of installing R/C and sound in Chattenden, which I referred to last month.

By the time you read this, those of you who are members of the Association, need actively to renew (as opposed to letting Direct Debit shoulder the work) **and** have an email address will have received a renewal invitation (planned for Wednesday 26th January). I do hope you've acted on it promptly. Please don't approach me with cash or a cheque at the next meeting because I'll politely turn it down. If I accept either, I have to find a way to pay it in (the Association banks with HSBC and the nearest branch is in Milton Keynes), plus I then need to notify Warners so that they can apply the renewal. Anyway, my days of being Membership Secretary are numbered as those who follow Shed Notices on the Association's web site will know.

What will I do with newfound free time? Ken's article has resulted in me adding something to my projects list and another Regner kit arrived in the first few days of the New Year, so it will readily be consumed. Then there's the projects started last year still to be completed. My ambitions keep exceeding the time available in which to satisfy them, but this may resonate with some of you. Plus, the W&L reopens at February half term and I'm rostered for three midweek days. Hopefully this is the year I swap sides. Time will tell.

Alan, **Smokebox** Editor

Our layouts – Track Man's report

The following report will be presented at the AGM but **Ted Robinson** has provided it in advance so that members can read and digest it and be ready to comment, if they wish, at the AGM

EATON DOWNS

The *Eaton Downs* layout has been up and running in its revised arrangement, albeit in its minimalist form, since the group started meeting again in August last year after the Covid restrictions were eased. I think that it is fair to say that it has been generally well received by members if the feedback is anything to go by.



Assembly is straightforward and quick, although the fishplate connections at board joints are fiddly, but it seems that folk are becoming more familiar with it; their main advantage being smooth, reliable running. Those on the 32mm lines are soldered in pairs to a stretcher bar, and I made the mistake of aligning them so that the ends were in line – they would be better slightly

staggered so that one rail can be inserted and then the other. It's a task on my 'things to do' list which seems to be growing rather than shrinking; how did I ever find the time to go to work?

I have several niggles with the layout as it stands which I intend to address over the next few months:

1. The reverse curves at both ends of the two 32mm gauge loops are too tight and need easing; a relatively straightforward exercise, but it does mean that the layout will not be available if it were to be undertaken during a monthly meeting. Not a problem for the 32mm gauge runners as Ridgmont can be set up as in pre-pandemic times, but without Carol & Graham's Prayle Grove layout there wouldn't be a 45mm line to run on at that meeting.
2. Some individual rails have the tendency to slide along their sleeper bases which increases the effort to engage the fishplates at the board joints. This will be resolved by inserting brass pins or screws adjacent to the rails and applying a touch of solder to restrain the rails.
3. Some of the corner boards are showing signs of sagging. The concept of a brace has been designed using a thick ply batten on its edge, but they have yet to be made.
4. The formation of the original layout had a lifting section to aid access to the centre. Bob and I have a design for converting the 'legless board' and it will require a robust arrangement to replace the fishplates at its ends.
5. Upstand edges are intended to be fitted to the straight boards to provide a continuous barrier around the whole layout; the ply for this has yet to be purchased.

Four boards have been retained from the original formation so that the layout can be enlarged. One possible formation will increase the width of the space available in the centre by 4 feet. The boards need some attention before track laying commences, and it is hoped to start this in the spring. We have sufficient 45mm gauge track but will need to purchase (probably) two boxes of Peco 32mm, some new toggle catches and tin of stain/preservative, all to match the existing.

I am putting forward a budget estimate of £300 to cover the extension of the layout.

RIDGMONT

Ridgmont hasn't seen the light of day since before the covid lockdowns started in March 2020. It is essential that it is erected and used on a Sunday gathering if only to remove the cobwebs, spider droppings and hopefully, nothing else! It is also essential that it is used to see what maintenance work is needed on the track and 'fixed' scenery.

From the Chair

One year on and its AGM time again. But what a difference the year has brought. After lockdowns and restricted meetings to an almost "normal" situation where we can once again meet and run trains and, hopefully, breathe mask free in the near future. Our AGM will be held in the main part of the hall, but with good spacing and obviously no trains running – I hope this will allow concentration and focussed minds! Don't forget to bring a mug, tea and coffee will be provided. We will have a limited number of printed copies of the financial statement and last year's minutes for those members who do not have access to the internet – so please remember to refresh your memory if you have my AGM email.

I am disappointed to report that our invitation to the G1MRA 75 anniversary show at Bicester has been cancelled. The organiser cited lack of funds to support our attendance. I don't know what to make of this turn of events, particularly as members spent some time sorting out the extensive details required by G1MRA prior to the cancellation.

We look forward to seeing you at the AGM, 6th February, 12:00 noon – don't forget!!

Bob, Chairman

Meeting Dates

I've listed those for the first half of the year only. There is some uncertainty about whether the current wave of Covid infections will bring about further restrictions, but if they don't, this is when we will meet. **Please note that the start time is 10.30 with close at 16.00.**

- Sunday 6th February (our AGM will take place at this meeting)
- Sunday 6th March
- Sunday 3rd April
- Sunday 1st May
- Sunday 5th June

Building a Darjeeling NDM-6

Ken Reade describes building an NDM-6 from a "constructor's aid" kit from Worsley Works

At the beginning of 2021 I ordered a Darjeeling B Class which was delivered a couple of months later.

Then I thought about building a NDM-6 as a companion to run with it.

The first step was to order a Worsley Works set of etches for the body. These arrived and work commenced. As these are sold as a "constructor's aid" and not a kit, so you get most of the bodywork and some chassis parts but no chassis. Here's a link to their web site, though note that the pictures of the loco body are of the 4mm scale model:

http://www.worsleyworks.co.uk/Garden-Rail/Garden_Rail_Darjeeling_Railway.htm

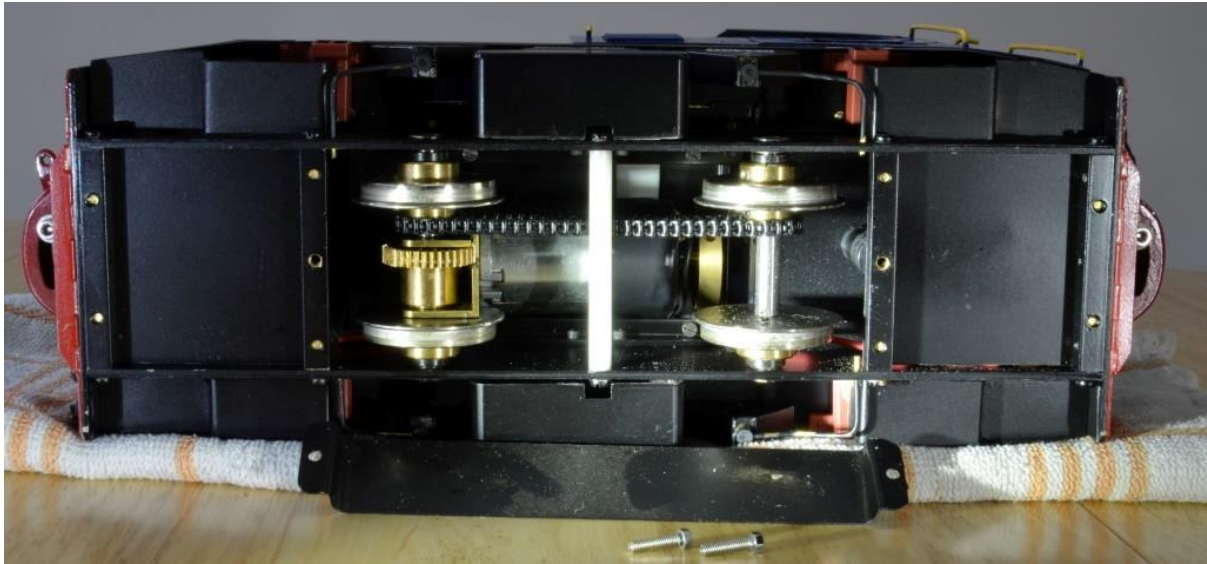
The first job was to build a chassis using 1/16" mild steel with Roundhouse spacers and wheels. Due to the lack of room between the wheels (32mm) I ended up by machining both inside wheel bosses off and fitting new bosses to the outside of the wheels. I also had to make a false floor and side frames of brass to provide a base to solder the chassis detail to.

The chassis is powered by a MCS motor/gearbox and chain driving to the rear axle. I was going to use two motors with

bevel gears but opted for the former method (<https://www.msmodels.co.uk/motor-gearboxes>). Two 7.2 volt NiCad battery packs are fitted inside the chassis at either end to provide the power.



1. The planned motors (behind the chassis) and the motor used (in front).



2. Drive arrangement installed. You can see why Ken had to machine off the Roundhouse wheel bosses to fit both the gearbox and chain drive inside the wheels.

The body went together well with no filing to make the parts fit – very accurate! I used a London Road RSU (<https://traders.scalefour.org/LondonRoadModels/various/soldering-materials-and-tools/>) for most of the body assembly supplemented with a micro blow torch / soldering iron.

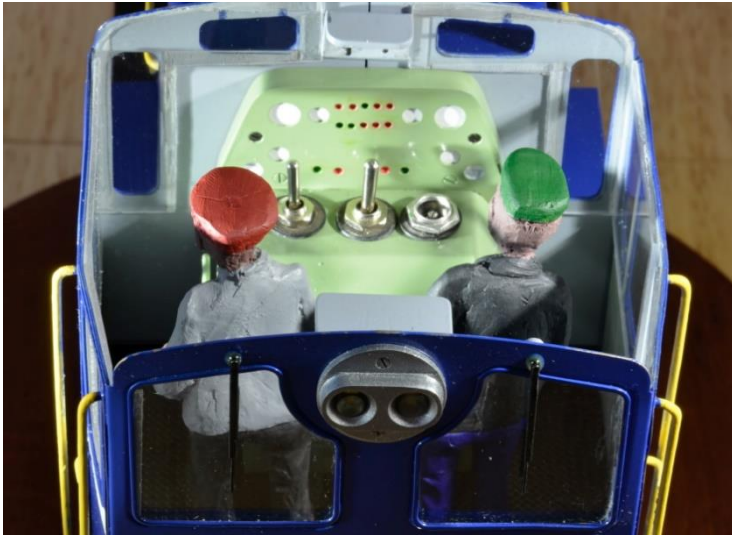


After assembly and checking it was time to strip it down and paint it. I opted for the original Darjeeling colour scheme as these engines are only some twenty years old.

Final assembly was completed and the electronics / wiring fitted. All the electronics were supplied by Fosworks (<https://fosworks.co.uk/products>) and consists of receiver, ESC with directional lighting (5 LEDs at each end) and sound card all housed in the body.

The last things to fit were the transfers supplied by IP Engineering (<https://www.ipengineering.com/dickies-decals-darjeeling>). The name was changed from Maverick to Delta, an Indian engine built during the lockdown...

The detailed cab interior – very impressive



The completed model – I do hope Ken brings it to the February meeting!



Southwold delights

Jim Elliot describes building the Southwold Railway's iconic Clemison coaches

For many years I have had an interest in the Southwold Railway for two reasons, the very attractive Sharp Steward locos that ran on it and the Clemison under framed coaches that it used. Also, photos show it to be a delightful narrow-gauge railway with lots of innovative ideas a little bit different to most other narrow-gauge lines. A while ago I decided to build a train, a loco and a couple of coaches based on those that ran at Southwold, it would not be scale. Being based gave me plenty of scope for some of my ideas and construction a lot easier.



The loco was going to be 2-4-0 coal fired, but the front axle was going to cause all sorts of problems, so it ended up as a 0-4-0. The boiler being my own design produced steam, but not very well so after many trials plan B was put into action. Right from the start of the idea I had decided that if it did not run well then it would be converted to gas firing. An extensive rebuild was needed with new frames as it was going to be inside frames but still an 0-4-0. From the running board up, I had based it on the Southwold 2-4-0 Sharp Stewart.

With the loco finished I started on two Southwold based coaches with Clemison under frames, virtually the sole reason to build them. Ever since I first came across Mr. Clemison's design I have been fascinated with it and wanted to have a go at building one. From the 1870s coaches were getting longer and out growing 4 wheels and bogies at each end were being fitted. James Clemison noticed this and the very strong and ridged and subsequently heavy frames that were needed to support the length of the body. He came up with the idea that if the coach could be supported in the middle the frame would not have to be so strong and thus lighter.

He came up with the design of a frame with a pivoting single axle at each end and a sliding axle in the middle attached to each end axle through a linkage. The sliding middle axle allowed the coach to go round quite sharp curves typically found on narrow gauge. It was taken up by quite a few railways abroad and at home including the Southwold for both coaches and freight wagons. Reading accounts of those on the Southwold they seem to have been quite successful but passengers had one big complaint, the sliding middle axle was very noisy inside the saloon.

Looking at various drawings of the design the biggest problem to sort out was the position of the pivot of the linkage between the axles. Drawings showed that the pivot centre line ran on the centre line between the rails, the same centre as the front and rear axle pivots, This point determined where it was in relation to the distance between the axles. For my models I worked it out to be a ratio of 2 to 3, the distance between the axle centre lines was divided by five. The link centres made at twice this measurement for the front and rear links and 3 times for the centre link. I hope you can



understand because I am struggling to explain it in writing so I hope the photos of the underside of the frame makes it clearer. I built the chassis's from 10 x 1mm brass angle from B & Q, Brandbright

supplied the axle guards and I found Walsall models supplied some very good, spoked cast iron wheels. When the chassis were finished and run around a piece of curved track I had screwed to a board I could see that the linkage pivot centre was not far off track centre line, good enough for me.



The linkage bars on the front and rear axles as they move describe an arc and the centre axle describes a straight line, using a bicycle chain link for the coupling compensated for this and works very well. Knowing that our tracks tend to undulate a bit I made the centre axle none-weight bearing, it slides on 1.5 mm plate which ran in 3.5 mm slots, that gave it plenty of up and down movement to allow for any bumps in the track, or so I thought. The first time I ran them at a Reading group member's garden line a problem occurred regarding the centre axle. There was a track high spot where the line ran onto a bridge at the top of a gradient. When the coach went over this there not being enough up and down movement on the centre axle, the front axle was being lifted clear of the track. The coach was pivoting on the centre axle and as the front axle came back down onto the rail was derailing. I remedied this by machining off the guide slots for the centre axle, this gave it over 5 mm of up and down and cured the problem.

The Southwold coaches when first supplied had open end balconies with some fine fancy iron work. Later this was removed and the ends were enclosed to give better weather protection. I decided to build my models with the later enclosed ends, I do not mind admitting that I did not want to make at all the railings and fancy bits. It would have taken quite some time and would be rather prone to damage. The next thing to decide was the livery, it was a choice of cream, the colour they were when first supplied to the railway or maroon, the colour they were painted when rebuilt with enclosed ends. I decided that as they are only based on the Southwold coaches I would paint them cream, being a little bit different. The bodies were built using 3, 1.5 and .8 mm plywood with 2.5 mm Obichi for the seats. I managed to find some 1.5 mm square and 1.5 x 3 mm hardwood strips for the external beading. Researching and building them was a very interesting project and I hope the photos of the axle linkage show clearly how it works.

Breathing new life into an elderly diesel

In November Bulletin, Mike Riley advertised a number of locos on behalf of the widow of a deceased member. I bought one of them, the green Baguley diesel. The prototype has called the W&LLR home for over 50 years. The loco has been much modified in its time on the railway, the most noticeable change being the replacement of the original side entry to the cab with rear entry via steps carried on an extension to the body over the rear buffer beam. Less obvious in a re-engine, which moved the exhaust in front of the cab from its original position at the front of the bonnet, followed later by a replacement gearbox (from a BR DMU), which meant that the engine needed to be shifted forward and the bonnet extended to the edge of the front buffer beam.



My model is of Chattenden after the alteration to cab access and being re-engined. The model as purchased was and still is green. This is one of five colours that the loco has worn during its time at the W&L, they others are a warmer shade of green, which was the colour on delivery from the Admiralty, the green which my model wears, which to my eyes has more blue in the pigment, the same deep red as Joan wore, the light blue which Joan wore before the more pleasing red and finally, the black that she's in today.



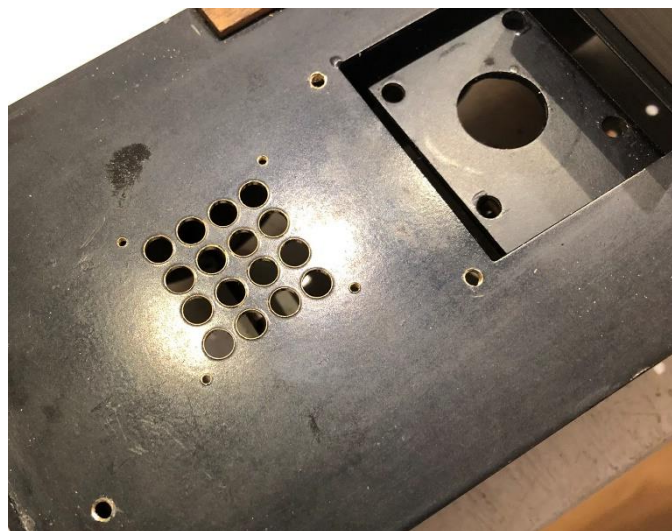
The electronics and batteries were life expired and anyway the loco was manually controlled, so I discarded everything under the bonnet except the motor. This has a double reduction [epicyclic gearbox](#), also know as planetary gear, between the motor and the bevel gear transmitting the drive to the middle axle. The reduction units were identical, one on top of the other, but one was worn. I took the motor to Al's Hobbies in Wolverton mainly to ask if they'd ever seen one, because I couldn't find it on the internet. Unbelievably they had a second-hand motor with the same gearbox, albeit was a single reduction unit. I was able to take the gearbox from this motor, install it in the existing unit, so retaining the five-pole motor and maintaining the double reduction. What a stroke of luck, which cost the princely sum of £20.

The electronics came from Roundhouse and are the same as fitted to their NDM-6. The Electronic Speed Control is their Locoglyde, which supports a decent sized motor and includes directional

lighting. It powers the receiver. The sound card is Mtronics, as is the switch unit to start and stop the engine and sound the horn. I'm 99% sure that Mtronics make the ESC too. R/C is a Spektrum DX6i and AR6100 receiver, which I had to hand. The battery is a 10-AA cell Strikelite unit, which outputs 12.9v when fully charged, suitable for ESC, sound card and motor. I thought when I wrote my editorial last month that the ESC and sound card would need different voltages. Based on the instructions they did, but a call to Mtronics established that the sound card would work on over 13 volts, so the need for a voltage regulator went away. Just as well – space ended up tight under the bonnet.

I had fun and games installing the R/C. When the ESC is switched on, it detects the stick position of the chosen channel on the transmitter to which the receiver is bound and sets this as the midpoint for forward/reverse. I used the throttle channel initially, which on the AR6100 receiver has a fail-safe position (as do all the others but read on). This is ¼ of full throttle, not the ½ way, i.e. the midpoint that I had set the transmitter to. It also can't be altered (it can on other receivers in the Spektrum family). Because the speed controller is powering the receiver, the receiver starts in its fail-safe position, which is what the speed controller detects. The result is little stick movement in one direction and too much in the other. The solution is to use a different channel which has mid-stick position as the fail-safe. Or a different receiver, but the AR6100 is very small, reasonably priced and widely available. I believe that the MacFive works in much the same way, so it might behave in the same way if the receiver had a fail-safe on the selected channel.

I needed to drill holes in the brass apron at the point where I would mount the speaker. Marking and drilling the apron was difficult because it was already part of a loco and not detachable. To ensure accuracy, I marked a bit of scrap aluminium and secured it to the apron using the mounting holes I'd already drilled and tapped for the speaker. I didn't drill them full size, I started with a 3mm drill and gradually opened out to 4.5mm once the scrap item was secured to the apron. The attached pictures show the process and the result. I would never have



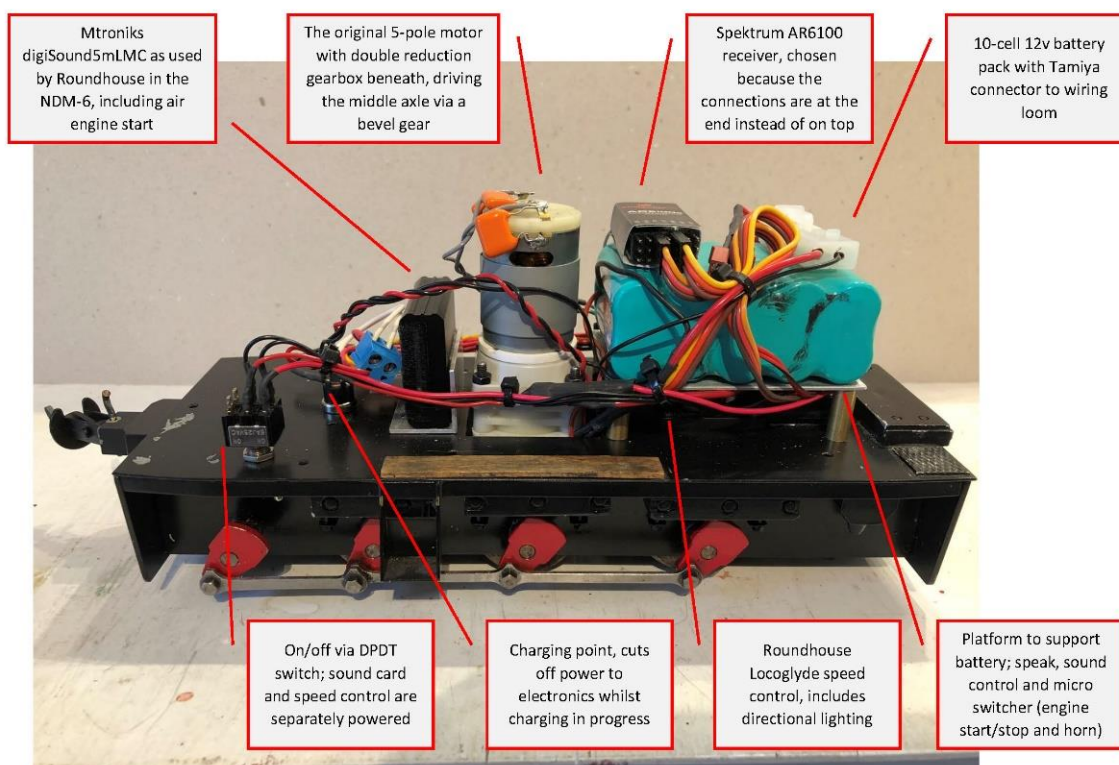
achieved that kind of consistency without separating the apron from the chassis (it's soldered on...).

The only other fiddly job was making new headlights covers for the LEDs I needed to use instead of the original bulbs. The existing ones had the lamps too close together and they weren't level either. My method for achieving consistency was to turn two collars, 5mm I/D and 7mm O/D, then silver solder these together with a 1.5mm filet of brass between them. I used a bit of bar to hold them firm against the side of the grate and heated them gently to prevent them moving. Once cleaned up, I soft soldered them to a piece of 1mm flat brass, cut roughly to size. I then clamped each, one at a time, to the vice in the mill, holding the edge of the sheet with the sides of the collars resting on the top of the vice jaw. I carefully milled the top of the brass level (a 1/4mm at a pass) and to the depth I needed to overlap the collars, then inverted the piece and did the same. At this point the plate was of uniform



depth and the collars were equidistant from top and bottom. I finally took the piece to the drill press and drilled through from the back, opening out holes in the front of the brass plate. The result is evenly spaced, level, uniform sized holes for the lamps.

There was just enough room under the bonnet to get all the components in and leave space for a detailed cab, which is a project for later this year.



Since completing this work and prompted by Ken Reade's account of building his NDM-6, I've visited Worsley Works web site and found that this have recently released a body for Chattenden as she is now, i.e. with the bonnet extended right the way to the front edge of the buffer beam. This is designed for an Accucraft Baguley chassis, though it isn't quite correct for the W&L loco. These were available as bare chassis but have probably all been sold now, however, I think I could marry together Ken's use of an MSC motor and the chassis design from my own loco. Another project looks like it will join the apparently never-ending list...

Sales & Wants

Please note that a table will be placed at the back of the hall for members to place any items they have for sale.

This space is waiting for you advert!