Vol 23 No 147 November 2006

THE BULLETIN

For the members of the Model Railway Society of Ireland in its forty-third year

Head of steam

At about the most junior position at the UK Cabinet table sits the Minister of Transport, but usually each incumbent does not hold the job for long. Indeed a long list of non-entities has rotated through this ministry, staying on seat for a year or so, before consignment to historic obscurity. However, Ernest Marples was a name that sticks like a gumboil in the memory. Ernie had enjoyed a successful career in the road construction industry and he came into the job in the late 50's at a critical time. There was never any question of impropriety in his decisions but there was also never any doubt where his sympathies lay in the competition between the road and rail lobbies for scarce public funding.

This was a sadly emotional period for rail enthusiasts. The hopes of a new dawn as embodied in the 1955 Modernisation Plan had been neatly scuppered by the ASLEF strike of that year. Traditional rail freight users had been forced to seek other means of moving their goods and had found road services to be fast, convenient and cheap. British Railways, obliged by the government to buy new motive power from indigenous manufacturers, acquired a heterogeneous diesel fleet that was plagued with reliability problems. Railway infrastructure was still tatty and run-down by the depredations of World War II. Passenger numbers were falling and so were railway revenues. Closures were ever more likely, culminating in the Beeching Report.

In many ways Dr Beeching's analysis was correct. Unfortunately, his brief to assess how to rationalise the rail system was too narrow. It would have been of far greater national benefit to have investigated how to improve all transportation. This might have advanced the cause of that still elusive integrated transport system. On a more mundane plane, we enthusiasts watched what was happening with feelings of sorrow, and occasionally of extreme anger. By courtesy of Messrs Bachmann, this latter emotion has been re-kindled in 2557's breast.

The idea of developing an entirely new fleet of standard steam engines in the early 1950's had a certain logic. Steam power was cheap and easy to construct. Maintenance was straightforward although the manpower to do this work was becoming ever scarcer. The notion of combining best design practises into a uniform fleet of locomotives had some advantages. On the other hand, whether 999 such locomotives were really needed while pre-nationalisation types were still being built was questionable (the last GWR design 0-6-0 pannier tank appeared as late as 1956). Certainly we spotters tended to take "the standards" for granted, being much more interested in looking out for a "Duchess", "Streak" or "King" – that is until the very last standard class appeared. There is no doubt that the 9F 2-10-0's were in a category of their own. Britain had long waited for something better than a heavy freight design that had appeared as long ago as 1903 and now it had arrived. The 9F's were easy to maintain, powerful and with excellent route availability. They were fast too – which seemed remarkable given a particular feature that is discussed elsewhere in this issue.

Endowed with all the capacities that should have guaranteed the 9F a long and successful life – just as was enjoyed in Germany by 2-10-0's into the early 1980's – they were condemned to a criminally short career. Introduced in 1954, the last of their number was completed in March 1960 yet by 1968 they had all been withdrawn. They could have easily and economically soldiered on for another 10-15 years alongside or in preference to their inferior diesel replacements but this did not suit the modern image that BR was pursuing. (The Chinese have just committed a similar folly with their superb Class QJ 2-10-2's, in pursuit of a nationwide "modern image" in advance of the 2008 Olympic Games).

The history of the 9F is one of senseless, callous waste that still makes 2557 very angry. Bachmann has certainly done the memory of this noble class proud in the excellence of its latest offering.

… and while on the subject of Bachmann-inspired emotions, their announcement of three new brass models of 0-6-0T's in No 1 Gauge has once again revived plans to abandon O Gauge (for recreational purposes) in favour of the optimal scale. Like the man said, 2557 can resist everything but temptation…

Addition to stock

Many congratulations to Anita and Tony Mirolo on a new allocation to their depot – a son, Leo.

2557

Realistic speed

by 082

The issue of realistic speed raised by 2557 is interesting. While his point is valid, I will say that I differ with him on some issues as I have personal experience of what is being discussed. Once I invited a certain guest to run his BR Class 08 loco on my layout. While initially I welcomed this guest running his loco on my layout, the manner in which he ran it was a demonstration of unrealistic speed as well as my guest's childish temperament. The 08 ran around the oval track like Jeremy Clarkson test driving a Ferrari on a racetrack for Top Gear. As a genuine enthusiast I was disgusted by how my guest ran his loco. Needless to say it was the last time he was invited to run his loco on my layout. It was obvious that all he wanted to do was play at high speed choo-choos rather than to allow his 08 to perform at a realistic speed.

To put speed on club layouts in context, a couple of issues need to be considered. Layouts in the clubrooms are not on public display therefore allowing members to test locomotives, rolling stock and railcars in unrealistic formations, especially that which has been newly acquired. The Lewis Line especially performed a valuable role in allowing members to assess haulage capabilities of locomotives. A couple of years ago, 082's model of 208 River Lagan hauled a rake of 12 HO scale BR Mark 2's there. While in terms of scale and liveries, this combination was unrealistic, it allowed me to assess the haulage capability of my loco as well as seeing how it and HO scale Mark 2's perform in service. I achieved a satisfactory results as well as creating a spectacle which fascinated fellow club members. On another occasion, I recall a CIE K1a Woolwich mogul operated by one who may be regarded as the clown of the loco building class. This loco realistically lumbered along hauling about 20 (four-wheeled) wagons loaded with coal and other freight. The speed of this train really captured the manner and atmosphere of a 1950's heavy goods train on the Dublin-Cork line. Trains operating on the Dundalk layout have often performed at realistic speeds such as those that date from the early 1990's before upgrading of the Dublin-Belfast line. It seems daft that trains should be operating at unrealistic on the Lewis Line and Richmond-on-Merton considering risk of derailment and the effect this has on other operations of the former.

Up until its closure, the Lewis Line performed an important role in facilitating club members, especially those who have no layouts at home – the club's raison d'etre. However, despite several improvements this layout was hampered with controllers which could have been at best temperamental. Often these banjaxed controllers resulted in three and probably only two lines of four in service, frustrating members' efforts in operating trains at realistic speeds. While these controllers were a problem, it was with the Big, Big Train Set that this really took the biscuit. The Big, Big Train Set is a test track under Richmond-on-Merton which consists of several tracks of various gauges laid on a surface painted grey, having no scenery which could detract from the running of trains in an unrealistic manner. The purpose of a test track is to test stock independent of constraints found on a layout such as signalling, operating practises and scenery. 082 recalls operating his model of an 8100 Class DART on Wrexham and District Model railway Club's test track without any qualms whatsoever. This begets the question: What is the present situation with the Big, Big Train Set? It appears that this test track is now disused.

The main reason is the lack of controllers. Frequently time was wasted in trying to connect the single controller to the appropriate track. Despite there being several gauges including a gauge incorporating 21 mm track, only one controller was allocated to this layout. If realistic speeds are sought then surely this layout requires more controllers. It is disappointing that this is so considering that with additional controllers an eclectic range of trains of various scales, ears and companies could operate there by adding to the diversity of operations that makes the club such an interesting place to attend.

It is appreciated that 1970's Lima and Hornby pancake motors do not perform as realistically as present day 5 pole motors, especially with acceleration and deceleration but realistic speeds are still attainable with such.

It is almost a cliché on the real railway that to operate trains frequently there has to be investment in infrastructure. This is definitely so with club layouts. To achieve realistic speeds decent controllers (with possible provision for DCC) are needed. This is especially so on the Big, Big train set which is a white elephant. As a disused test track it is the present Navan-Kingscourt line in model form. When the controller situation is resolved, realistic speeds can be attained and track capacity better used. This should also hopefully result in more model trains running and greater member satisfaction.

And on anniversaries…

It was said that 2004 was an important year for railway anniversaries and in research, another has come to light. In 1904 the Dublin & south Eastern railway (or Dead Slow and Easy Railway) opened its final stretch of line connecting New Ross to Waterford. This enabled through services to operate from Dublin Westland row to Waterford. A restaurant car was introduced on this service, the first on the D& SER system which operated on up and down mail trains. The Waterford Mail became the first train in these islands with catering for all three classes until the abolition of third class by the D& SER in 1922.

This year, 2006, will see the fiftieth anniversary of the closure of Clontarf Halt station on 3/9/56. This Halt was located just north of the bridge over the Howth Road; the stationmaster's house is still there.

Practical guidance notes

Frictional factors (2): Secondary transmissions

In the early 1960's, Triang produced a memorable brace of plastic-bodied OO Gauge 4-2-2 steam locomotive models. As in the prototype, they ran smoothly but when asked to haul more than two coaches, it was a case of "oh, dear". Single drivers have always been notoriously bad at starting a train and climbing hills, although often impressively fast once under way on level track. In the case of the Triang models, nothing could be done to improve haulage power as the chassis fitted tightly within the slim body and there was nowhere left to add weight. These examples graphically illustrated the poor adhesion factor deriving from a single driven axle.

On a steam engine, power is transferred from the primary axle to the other driving axles by means of coupling rods and this is precisely how steam outline models operate. Thus provided that power is delivered to the primary axle from the electric motor through the medium of a properly engineered gear box, then passing the power on through the secondary transmission by means of the coupling rods is straightforward. Even so, scratchbuilders approach this aspect of the running gear with care. Effectively, the chassis is usually built around the coupling rods with the crank pin holes therein being used as a guide for accurate alignment of the driving axle holes. This is another area where investment in properly machined components pays dividends. Some manufacturers produce milled rod sets in nickel silver. They can be expensive but they do give the assurance of accuracy and thus minimisation of frictional resistance.

The alternative is to drill the axle holes in the frames first and then to cut, file and drill coupling rods from raw metal strip. However this is time-consuming and the end result can be prone to poor alignment and thus binding.

Many etched brass kits provide coupling rods that come in two or three layers of the brass of the gauge adopted for the body parts. The rod must then be built up by process of lamination i.e. sweat soldering the layers together. Having never built an etched brass loco kit, I cannot speak from experience but in the event of error, this process seems to promise a less than satisfactory result. I would prefer to cut, file and drill my own rods, or better still, acquire ready milled nickel silver rods.

Outside motion i.e. cylinders and connecting rods, with or without outside valve gear, obviously presents more complexity. However, the possibility of these components creating significant friction is minimal provided that alignments and clearances are correct. The valve gear etc is really just going along for the ride, playing no active role in the secondary transmission process. If clearances are incorrect, the main risk is that motion will catch and stop the model altogether.

Thus the secondary transmission issue in steam engine and in its model counterpart is solved by elegantly simple means. Careful manufacture and assembly of the relevant components should ensure successful operation. If only the situation with traction models was so amenable of easy resolution!

Early on in the Triang story, four wheel traction bogies were powered by double shafted motors that drove both axles through worm and sprocket. By the standards of the time, these worked quite well and this configuration turned up in the Southern EMU, various Transcontinental Diesels and that gruesome "Dock Authority" shunter. However a generic problem emerged with the model of a Class EM2 Co-Co overhead electric locomotive No 27000 – how to transmit power to all three axles on a six wheeled power bogie. Triang circumvented the issue by creating a Bo-Bo bogie with the central wheels being represented by solid plastic mouldings attached to the bogie frame. The lower part of the wheel tyre and flange did not appear at all so as to provide sufficient clearance above the rail.

This was a neat, if hardly accurate, way of avoiding a significant problem with traction bogies. Put simply, there is rarely enough room to accommodate a large motor, gear box, and secondary transmission within the volume prescribed by the bogie frames. A further constraint is the need for the bogie centre to be attached by means of a pivot to the mainframe and/ or body superstructure.

To circumvent this problem, traction modellers often scratch or kit build the body and install proprietary bogies. Usually this is satisfactory but there are drawbacks in the search for accuracy. This configuration is reminiscent of the compromises of the 50's and 60's where a reasonable white metal bodyline kit was supported by a dimensionally inaccurate and comparatively crude proprietary running chassis. With current scratch/ kit-built traction models, it is not unusual to see some beautifully finished bodies but below the waist, the whole effect is spoiled by bogie units that simply do not belong. In OO, the RTR coverage of prototypes is quite extensive so the risk of glaring errors is reduced; in O Gauge, reliance is often placed on bogie sets from such models as the Lima Class 33, which have been around for some years and are now getting long in the tooth. As these bogie sets wear out and spares become scarcer, many traction modellers might have difficulties in keeping their fleets on the move.

Being responsible for maintaining an O Gauge traction fleet, I have spoken with several manufacturers about this problem. It seems that while generally acknowledged by the trade as a key issue, no one has yet come up with a motor/ gear/ gear box combination that has widespread application. One manufacturer of high quality gearboxes believes that he has a solution but is unwilling

to invest in the requisite tooling unless he can secure a suitably large order from one of the major kit producers.

For all the progress made in recent years, this is an area where the hobby seems to be lagging. Proprietary manufacturers, particularly American, seem usually to employ spur gears for secondary transmission purposes. However spur gear alignment can be tricky. This is a job for precision engineered mass production methods but not really practicable for many modellers using home workshop facilities.

A local modeller, well-known to many of us, when faced with the challenge of making power bogies tried a number of different methods. He finally came up with a system that used a large body-mounted double shafted can motor that drove carden shafts linked by home made universal joints to both bogies. Power was transmitted through worm gears mounted on both bogies connected to a sprocket that turned a sub-shaft which connected through straight-cut gears with the axles. By this clever system, up to four axles could be driven (on a Co-Co, the centre axles were idlers) but there were difficulties. With so many gears and linkages at work, ensuring that everything remained properly aligned was a continuing maintenance commitment. A large motor was essential because of the amount of internal frictional resistance that could be created. A straight-cut gear train can be very noisy in operation. Suitable straight cut gears are increasingly hard to source in small quantities at acceptable prices. Also, there was a need to lubricate often (lubrication will be discussed further in later instalment).

An alternative system, which is still under development, has been to use a single powered bogie. The other bogie is an idler, used for electrical pick-up and to provide an element of weight counter-balance. The power bogie is constructed in the conventional manner using brass plate frames and spacers, and is fitted with a central pivot attached to the mainframe on a cross-stretcher within the body sides. The motor and gearbox is located vertically inboard of the bogie frame, and hung on the inside axle. With this set-up, operation is smooth and quiet, the remaining drawback being that with only one powered axle, we are back to the single driver situation with hopeless adhesion.

Secondary transmission is achieved by means of Delrin sprockets mounted on all axles and connected by Delrin chain, with no increase whatsoever in noise levels but a vast improvement in adhesive qualities. Delrin looks like plastic but before anyone turns up their noses, they should consider the following factors. Firstly, it is one of those modern composite “wonder” substances like Teflon which has unusual qualities of strength and resistance. Secondly, a leading manufacturer of top quality etched brass kits has adopted Delrin chain drive to connect the motor with the primary driving axle on steam outline models.

Finally I have, albeit unwittingly, tried to destruction test this material. A jammed bearing led to a serious motor burn out on a Class 141 Bo-Bo. So serious in fact that smoke was emitting from every orifice and that 15 minutes later the brass bogie frame was still too hot to touch. Rectification required a new motor and fresh bearings, but 400 miles on, the same Delrin chain and sprocket combination continues to work with undiminished efficiency.

The biggest drawback so far encountered with this system is that space in the gear box is cramped. The Delrin sprocket perforce is very close on the axle to the brass sprocket that engages with the worm. Delrin is a self-lubricating substance which works best when ”dry” whereas the conventional steel worm and brass sprocket need to remain “wet” to avoid gear-stripping.

Chain drive still seems to be in its infancy in our hobby, and there is no doubt that Delrin will be viewed with suspicion in some quarters. However, I am now fully “sold” on its advantages and believe that it offers an effective means of reducing friction (and noise), and of minimising some of the difficulties of secondary transmissions in traction, and perhaps also steam outline, models.

(Anyone doubting the potency of chain as a transmission medium might reflect on the performances of those two remarkable products of pre-war motoring – the 3 wheeler Morgan and the “chain gang” Frazer-Nash…)

Next time, reflections on driving wheels and electrical pick ups.

Any views and comments from members on the topics raised in this series will be welcome.

Irish Railway Signals

Research has suggested that very little has been published about Irish railway signals, despite the individuality applied by various companies and marked differences in some practises as compared with the UK. During the recent Guildex at Telford, enquiries at the stand of the Signalling Record Society revealed that this body has limited information in its files on Irish signals – basically only on the Midland Great Western. There would be an interest in recruiting an Irish correspondent on this subject. This seems to be fallow ground for the historian. Anyone interested should contact Reg Instone, 21 Whitemoor Drive, Shirley, Solihull, West Midlands B90 4 UL; Telephone 0121 744 9088.

On the singular unimportance of driving wheel diameters

Perhaps the most successful and longest lived standardisation program ever was that initiated by G. J. Churchward at Swindon in 1902. A key feature was that all future locomotives were to use only four different sizes of driving wheels – diameters of 4' 1½"; 4' 7½"; 5' 8"; and 6' 8 ½". The smallest diameter was actually used on only one class of 11 locomotives (44XX) although this was found on many older tank engines. The other diameters could have sufficed for virtually all the 2000 plus GWR locomotives built after 1902 but Churchward's successors just had to tinker, leading to unnecessary exceptions.

The Halls of 1924 used 6' because of their mixed traffic role; the later Granges intended for similar duties reverted to 5' 8" and were superior performers because of improved front end design. The Class 54XX 0-6-0 passenger tanks used 5' 2" (an old GWR standard diameter) quite unnecessarily; later versions reverted to 4' 7½" with no adverse effect. The Class 48XX 0-4-2 passenger tanks also had 5' 2" – and worked trains up to 70 mph. The King Class 4-6-0s used a reduced diameter of 6' 6" to help lift the nominal tractive effort above the magic 40,000 lbs level – great for publicity but otherwise irrelevant except in increased equipment cost. The County Class 4-6-0 used 6' 3", apparently just because its designer wanted to be different.

Down the years endless effort was devoted to variations in driving wheel sizes in search of the optimum combination of power and fuel efficiency. This was no better demonstrated than by Robinson on the Great Central Railway. Between 1901 and 1921, he introduced no fewer than 24 different classes which between them used different driving wheel sizes: 3' 6"; 4' 8"; 5' 1"; 5' 2"; 5' 4"; 5' 7"; 6' 1"; 6' 7"; 6' 8"; 6' 9". Except for the two smallest, they were used on a bewildering array of mixed traffic and express locomotives with 4-4-0/ 4-4-2/ 4-6-0/ 4-6-2T/ 2-6-4T wheel arrangements. These classes were uniformly elegant, uniformly extravagantly liveried, and (except for the Director 4-4-0s) uniformly disappointing performers.

This tweaking of wheel diameters was the result of Robinson's continuing and ultimately fruitless attempts to get these engines right. At the time, the "correct" diameter was seen as the key to success. Actually, constricted and convoluted steam passages at the front end and inadequate draughting through poor ashpan design below the firebox meant that these engines would for ever be throttled in their attempts to perform well.

It is a sad fact that in the external combustion engine, typically only about 5-6% of the energy released through the combustion process is actually transmitted into power at the driving wheels. Anything that can be done to increase this percentage by improvement of the thermodynamics of the whole will have a startling affect on performance as did Chapelon prove with the large SNCF express locomotives. So later did L.D. Porta also prove with his amazing modified Class 25NC 4-8-4 of South African Railways, the legendary No 3450 *Red Devil*. Time and again earlier eminent engineers had messed around with driving wheel sizes to try to improve efficiency. Sadly, they were actually looking in the wrong place for the source of their problems.

Though there were widespread misconceptions about diameters, the importance of the *number* of driving wheels was long appreciated. Towards the end of the steam story, ten-coupled designs became dominant. The Russian Class E 0-10-0 numbered over 10,000 while the wartime German Class 52 Kriegslok 2-10-0 eventually reached over 8,000. The world's last major operating steam class, the Chinese QJ 2-10-2 was built in extensive numbers and only recently (prematurely) retired. (Apparently 30 of these locomotives have been given to North Korea – is that closed country to be next Mecca for the enthusiast)?

Nor was Britain to ignore the attractions of 10 coupled power. Following the success of his wartime "Dub-D" 2-10-0, Robert Riddles included a 2-8-2 heavy freight design in his range of standard classes for British Railways. Quite late in the planning phase this was changed to a 2-10-0 – the famous class 9F, the much loved "space ships". Intended for slow-moving freight, it was soon found that these locomotives were no slouches and they were readily rostered for passenger working. It was only after reports appeared in the *Railway Magazine* and elsewhere about 9Fs exceeding 90 mph that the authorities stepped in and unreasonably stopped all the fun. What could the pen-pushers remote from the action in BR's "Kremlin" know compared with the men who actually drove the things?

The 9F was a free-running engine with superb front end design and a well-planned ashpan that allowed excellent draughting. The all-round excellence was underlined by the fact that the ten examples fitted with Franco-Crosti boilers of the type that had revolutionised Italian locomotives (always notably "woolly") were poor performers compared with the standard production version.

Most significantly, the 9F's driving wheels were of a mere 5' diameter, scotching once and for all the belief that smaller wheels prevented higher speeds. Indeed it has been suggested that still faster speeds might have been possible, had the ashpan design been made even better by exploiting the greater volume available by *reducing* the driving wheels diameter to 4' 6".

.

Clontarf 2006

For some of us, this Clontarf seemed to start a long time ago with the decision to try to improve layout quality. Early on there seemed to be plenty of time in hand but delays enforced by the windows saga (and perhaps complacency?) meant that there was much to be done in a short period. Without help from the Lewis Line team, some of us would have been in real trouble – the O Gauge section stands ready to repay that debt.

And it was not just with layout refurbishment. Suddenly on the Friday night, members who had previously shewn only fleeting interest in 7 mm stood up and were counted. The job of setting up the layout suddenly became that much easier. Thank you for all that help.

These co-operative efforts demonstrate just what can be achieved by a group of committed individuals working together in harmony – what a club is really all about. Of course an event like this is more than building, and erecting layouts. Spare a thought for those in charge of ticket sales, those with the exciting task of manning the doors, he who put up the excellent directional signs, and all the unacknowledged heroes who did so much behind the scenes. Now for the less good news.

While working in the Library of the Irish Railway Record Society on the evening of Tuesday Oct 31st, I could not help overhearing a discussion about Clontarf. The consensus seemed to be that the general standard of layout appearance had greatly improved and Dundalk/ Drogheda came in for honourable mention. On the other hand, there was much adverse comment about the poor quality of running. From my own observations, this criticism was fully justified.

We hear a lot about “rights” these days but rather less about “obligations”. An enormous amount of planning and hard work goes into mounting an exhibition. Those of us who enjoy the fun part of running layouts depend heavily upon the efforts of other members who work away at a multitude of menial and tedious tasks. For all this effort, we have a right to charge Joe Public for the entertainment we jointly provide.

In so doing, those who run trains assume **obligation**s such as:

- operating consists of locomotives and stock that have prototypical authenticity
- providing reliable locomotives
- providing motive power back-up to cover for failures
- ensuring that trackwork is smooth and level
- using only stock with couplings that couple and stay coupled
- operating stock that does not persistently de-rail
- ensuring that the layout is properly wired and not prone to short-circuits
- having a full understanding of DCC and being able to operate it without problems

A public show is not the time and place to test whether equipment will function properly. It is not the forum in which to place a train on the track and hope that with a wing and a prayer it will do the job. We have other facilities for such work – they are called club nights.

Granted there will always be unexpected breakdowns but the diverse range of problems and their consistency suggests that too many of us went to this exhibition ill-prepared and with a vague hope that somehow it would be all right on the day.

Any single locomotive on display should be capable of operating continuously and trouble-free for 17 hours. At 1.5 mph (the standard formula), this equates to a distance of 25 miles which is nothing for a modern, properly built, and competently maintained model. Likewise, consistent derailments at curves and turnouts spoke volumes for sloppy workmanship or for equipment that is inaccurate or inadequate.

This Society is in a remarkably strong financial condition for an organisation of its size as was clearly evident from the data presented at the recent AGM. Clontarf has been the biggest single source of that considerable wealth. Poor operating performances at that venue are simply not acceptable. In being sub-standard, we have failed in our obligation not only to the public but also in our obligation to those members whose models were not on show but who worked so hard in a multitude of other tasks.

It is the editorial policy of this publication to focus on technical issues and not to comment on the society’s administration. However, from a technical standpoint, there are some serious questions to be addressed. It is the duty of the Committee to institute a searching and rigorous enquiry in to what went wrong, why, and what measures will be taken to prevent recurrence.

Annual general meeting

This year’s proceedings seemed to be discharged much quicker than on previous occasions (thank goodness…). Our thanks to the outgoing committee for their efforts on behalf of all the membership, and our best wishes to the new incumbents.

Gresley's specials
Part 4 – Intermediate locomotives

This review so far has looked mainly at Gresley's famous "big engine" policy as applied for express and heavy freight work. However his penchant for one-off developments was also evident with medium sized power. Once again we are looking at tender locomotives for during his tenure with the LNER, he introduced but one tank design – the 2-6-2s of Class V1/ V3.

The continuing financial constraints under which he laboured meant that Gresley had to "make do and mend" to greater degree than his peers on the other three main British railways. In the early days of the LNER, to his credit he took great interest in successful designs of the constituent companies other than those of his native Great Northern. This resulted in construction of more Great Eastern design B12 4-6-0s for the old Great North of Scotland system (which had previously never seen a six-coupled tender engine), and more Great Central 4-4-0 "Directors" for the North British lines. The B12s were well received but the Directors were never really popular with Scottish enginemen. The former were used as guinea pigs for experimentation with ACFI feed water heaters as an alternative to the more conventional injectors. The ACFI equipment was cumbersome and unsightly with a pair of cylindrical drums on top of the boiler, giving the basis for the nickname of "hikers" for these engines.

Gresley was noted for his modification of pre-grouping types and this was never more apparent than with a pair of North Eastern 4-4-2's of Class C7 – Nos 727 and 2171. The old NER had used four coupled express locomotives to great effect but by 1931, heavier trains were really beginning to stretch their adhesive capacity. In that year, Gresley modified these two locomotives in an intriguing way. He removed the trailer trucks of the engines and the leading axle of the tenders and substituted a bogie powered by a booster. Because the bogie supported both engine and tender, an articulated configuration resulted making for a 4-4-4-4 wheel arrangement (they were re-classified C9). The booster was only engaged at lower speeds i.e. on starting and climbing hills. The arrangement was reasonably successful but suffered from crews who were not experienced in operating boosters. Also, increased numbers of Gresley pacifics meant that these engines were required less for heavy passenger duties. The pair was withdrawn in 1942/43; they are best remembered for a curious "snake-like" riding motion resulting from their highly flexible and most unusual wheel arrangement.

Although there were plenty of other examples, space only permits mention of only one more of Gresley's steam specials, which was sadly his very last design. His class V2 2-6-2 had proved a powerful and effective mixed traffic design and in 1941, shortly before his untimely death, Gresley's Class V4 2-6-2 appeared. This was a scaled down version of the V2 and the last design with the hallmark conjugated valve gear operating three cylinders. Intended for lighter duties, No 3401 *Bantam Cock* was soon followed by No 3402, never named but always unofficially known as "Bantam Hen".

The V4 was exquisitely proportioned, a delight to behold, and unquestionably an anachronism in the dark year of 1941. The 3 cylinder layout combined with the elegant lined apple green livery strongly suggested that Gresley was out of touch with the demands and stresses of wartime operating reality. A railwayman best summed up the V4 in the words "a Rolls Royce of an engine built to do a Ford's work". The pair lasted until 1957.

The LNER was nothing if not forward looking and by the 1930's had initiated several electrification schemes. These were mainly concerned with suburban routes but the most spectacular involved heavy freight and passenger services over the Manchester-Sheffield- Wath line through the Pennines by way of the notorious Woodhead Tunnel. This was a very difficult stretch of railway and electrification was seen as essential.

What was to become Britain's first electrified main line required heavy engineering works, including the boring of a new Woodhead Tunnel (actually a pair of single line bores). Although work started in the late 1930's, the War stopped the project and its completion was did not take place until June 1954.

Nonetheless, Gresley completed prototype Bo Bo electric locomotive No 6701 in December 1940. Capital availability was major constraint, enforcing the use of four wheel power bogies which proved to be a major mistake. Even with a heavy axle loading of 22 tons, weight transfer on starting was a significant problem resulting in wheel slip and loss of adhesion on the leading bogie.

No 6701 was painted apple green and exhibited at York in February 1941 alongside the brand new *Bantam Cock.* Then she underwent some trials on the Manchester-Altrincham suburban line before storage at Doncaster until 1947. Then she was lent to the Dutch Railways where she was nicknamed "Tommy" after the British soldiers that had liberated Holland. On return to Britain in 1952 she was formally named *Tommy.*

A further 57 of the type (Class EM1) were built by BR for the new Woodhead electric route, with modifications resulting from operating experience in Holland. *Tommy* lasted until 1970 while the remaining Class EM2's were withdrawn on closure of this line in 1981.
Next time – an appraisal of Gresley's Specials

Narrow gauge themes – 8

County Antrim

Four independent companies were responsible for a quite extensive network in Antrim. These lines were among the earliest narrow gauge railways in Ireland, dating from 1871, and were notable for being built as commercial enterprises rather than with government assistance as was commonplace elsewhere. Two lines centred on Ballymena were built to exploit mineral deposits while the separate Ballycastle railway operated as a feeder branch connecting with the broad gauge at Ballymoney. The fourth concern was a 4 mile private railway operated by the Glanariff Iron Ore & Harbour Company; this had opened as early as 1872 and was the first company to operate 3' gauge steam engines in Ireland. This concern closed in 1885 and the locomotives were acquired by the Londonderry & Lough Swilly Railway which was then being converted to narrow gauge.

The history of the other three companies was rather convoluted. Suffice for our purposes that in due course they came under the control of the Belfast & Northern Counties Railway and thus part of the LMS Empire. Later still, Ulster's Terrible Affliction took control which meant a short residual life for such an individualistic non-motorbus form of transport.

The early locomotive of these companies were very interesting. The Ballymena, Cushendall & Red Bay Railway acquired three 0-4-2 saddle tanks by Black Hawthorn, the only motive power owned during that company's independent existence. The Ballymena & Larne Railway relied on Beyer Peacock for its motive power. There were three pretty little 0-6-0 side tanks and also the only 2-6-0 saddle tank to run on the Irish narrow gauge, a powerful locomotive nicknamed "the Bruiser". The remainder of the fleet comprised a pair of 2-4-0T's that was very similar to the famous Isle of Man railway locomotives. The separate Ballycastle Railway had three outside cylindered 0-6-0 saddle tanks from Black Hawthorn and a pair of large 4-4-2T's from Kitsons. The latter were large, powerful, impressive to look at and pretty hopeless at work as the Ballycastle Railway was steeply graded and they lacked adhesion.

In 1892, Beyer Peacock produced a pair of engines for which narrow gauge in Antrim is best known. These were 2-4-2 compound tank engines. Three more were later built at York Road works and they served as principal motive power right through to the closure of the network. In 1931, the LMS took one of the 2-4-2T's in hand and radically rebuilt as a 2-4-4T, a unique wheel arrangement for Ireland – and just about everywhere else! In this form it had more power but was not markedly any more successful. It was almost as if even at this late stage, the operators of Irish narrow gauge continued to dedicate their efforts to providing the modelling community with interesting and diverse challenges.

The 2-4-2T's seem to exert a particular fascination and charm. They are reputedly one of the hardest Irish prototypes to model and their mystery is enhanced by an apparent non-availability of drawings. The last survived until 1954 and it would have been an excellent preservation candidate had the scrapman not got to it first.

Quite apart from the interesting range of locomotives operated there were other features of this network that deserve attention. At Ballymena, the connection with the broad gauge meant dual gauge trackwork, a feature that always provided for fascinating modelling opportunities. However, having tried and having failed, the writer can confirm that it is not for the faint hearted (he gets enough stick from his fellows in the O Gauge section about his poor back-to-back modelling standards without doubling or trebling the risk with three rails).

Another interesting aspect was the running of boat trains from Larne for which a rake of corridor coaches was built – the only vehicles to have this feature on the Irish narrow gauge. The quality of coaching stock varied widely on the Irish narrow gauge with some vehicles resembling mobile hen houses. These however were some of the very best and in due course they migrated to the County Donegal Railways. The remnants of one coach have been preserved and it is to be hoped that restoration to former glory may one day be achieved.

Mention of Donegal reminds that this northward trek along 3' byways must soon come to an end. However it is only fitting that the best and juiciest should be left until last…

The train now scheduled…

For those of a southern persuasion, the Hornby LSWR M7 0-4-4T is now in stock…together with the Bachmann 9F Evening Star*…also from Bachmann the Mark II coaches have arrived in BR and more importantly in Irish liveries…and to control it all, the DCC control sets from Hornby are expected shortly…and there are rumours that the Bachmann Class 141 is coming early next year*

Loco building classes

It is intended shortly to offer a new series of classes on Wednesday nights. Any masochist thinking about signing up is recommended to study the "rules of engagement" published in *The Bulletin* for May 2006. Participants from the last course are welcome; for them instruction will focus on building tenders and tackling locomotives with outside cylinders.

Railway poetry(5): *Nostalgia*

In the early 1950's, C. Hamilton Ellis wrote a marvellous book *The Trains We Loved*, an exuberant celebration of Irish and British railways in the pre-1923 era. He graphically talked of the amazing variety of liveries and styles then found in locomotives and rolling stock, and complemented his prose with an excellent array of black and white photographs. More than that, he was an accomplished artist and he added beautiful prints of his oil paintings that shewed deep, rich colours and lining applied by master craftsmen – light years away from today's two part, spray on, plasticized gaudiness.

Gilbert Thomas in his *Nostalgia* set about describing that golden era. Poetry is wonderful for using words sparingly to paint graphic mind pictures. The skilled poet's economy is so welcome in today's era of mis-spelt, ungrammatical twaddle but Thomas had a real challenge in describing the dazzling diversity of those days. He certainly succeeded in *Nostalgia*:-

You loved them too: those locos motley gay
That seemed as permanent as their own way?-
The Midland "lake", the Caledonia Blue;
The Brighton "Stroudleys" in their umber hue;
North Western "Jumbos", shimmeringly black,
That sped, shrill-whistled on their "Premier" track;
And all a forest's tints of green – G.C.,
G.N., G.W., L.T.S., H.B.,
South Western, Highland, "Chatham": many more
Both on our own and on the Emerald shore?

He then turned to some of the less glamorous parts of the railway system by asking:

Did you, beneath a sooty Oldham sky,
Think dour the Aspinall's of L and Y.,
Or, in the gloom of the Five Towns, admire
The cheerful, sturdy, red North Staffordshire?

And then swept on to review what could be found in country areas:

Do you remember how the Suffolk sun
Gleamed on a blue Great Eastern "Hamilton"?
In Wessex did you keep slow company
With the "tanks" (royal) of the S. and D.,
That waited as it seemed, for crack of doom
(While they performed strange rites) at Templecombe?
Across the Fens and Broadlands did you reach,
And come – in course of time – to Cromer (Beach)
Behind a khaki M. and G.N.J.,
And was the "pea soup" to your liking – say! –
Of the N.B. that took us over Forth
On our first wizard journey Further North?

Before he went into some specifics:

The Johnson "singles", Drummond 4-4-0s!
Were ever engines lovelier than those?
What treasured names they bore – Sir Francis Drake,
Swallow, Lysander, Lady of the Lake,
Courier, Gladstone, Glowworm, Lorna Doone,
Titan, Apollo, Jeanie Deans, Typhoon…

Which was followed by an appreciation of their trains:

And in their wake what rainbow splendour ran:
The bronze-green of the Cambrian;
G.N.S. red and white; North Eastern "plum";
"Salmon" that struck one young observer dumb
At grim old Waterloo; the varnished teak
That, North or South, was never far to seek,
But had for apogee East Coast Joint stock
That left King's Cross each morning, ten o'clock –
Though many held this did not equal quite
The West Coast purple-brown and (spilt-milk) white

Those Furness trains – red, white, and blue – at Grange?
The "orange" touch at Liverpool (Exchange);
At Central the dark oak of Cheshire Lines?
Or – what the memory most of all enshrines:
The crown and consummation of our dreams!-
Those great "joint" hubs where many colour-schemes
Converged to hold us under such a spell:
York, Cambridge, Perth, or Carlisle (Citadel)?
The high "bird-cages" of L.C. and D.?
Those dismal Broad street arks one used to see
Above one ere (in hardly prouder state!)
One trundled up the bank at Bishopsgate?...

Then turning to the lesser undertakings:

Those little Emett lines which "also ran"
Saucily mocking at the march of man –
Ffestiniog, Southwold, Wantage, Isle of Wight,
Lynton and Barnstaple, East Suffolk Light.

So far the work contains reference to all major companies bar one (except in the briefest way possible). This is rectified in the rousing, closing verse:

Yes, I remember but I will not flog
My muse to furnish the whole catalogue.
"Each to his choice". Although my youth was bred
Amid the comfortable Midland red,
And though for long, wherever I might roam,
M.R. to spelled certitude and home,
Yet all my exiled (expletive deleted*) blood took fire*
When – a small boy, in snowy starched attire –
I first changed trains at Bristol (Temple Meads).
Awhile my tastes were fickle; but the seeds
Sown there have proved the stubbornest by far;
Upon my heart is graved –

- and I will leave it to you to read the whole poem to confirm what was graved.

Of tools and materials

Michael Doolan writes: *In defence of the hexagon nut, the split pin (technically the cotter pin) is not designed to secure the hexagon nut in place. The nut for this job is called a castellated nut. As you torque it up to the correct pressure, the nut has gaps in the top to allow you to fit the split pin and lock the nut in place. Just a few words on nuts and bolts, or sets as they are known in the trade.*

The hexagon nut is secured in place by fitting a spring or star washer next to the fitting you are trying to secure. If you are fitting a nut only, use a lock nut. This has a plastic collar in the top. It cuts its own thread as you fit it and it will not come loose. But remember, in the trade it's a "one-use" fit.

Car wheels are fitted using a taper nut or bolt. Correctly torqued, they won't come loose and go on clock ways on for the ordinary man or woman in the street to change a wheel themselves. If you are using a single nut and spline to hold the wheel, then you will left handed threads on the side opposite the rotation. Most commercials over a certain weight (and all the products of Rolls Royce-Bentley under it – Ed.) *also use the left-hand thread method. Look at the nut and you will see the letter L stamped on it.*

To secure a hexagon nut you can use tab washers. These are used where major damage would be done if the component came adrift e.g. the fly wheel or main shaft in a gear box. The reason the NCT want to see your nuts is when the wheel is changed the wheels studs can be over-tightened causing the thread to stretch. The stud can come loose and be lost, or the head of it can break off. As most people never check the wheels nut, this can go unnoticed. Hope this clears up some of the mystery surrounding the humble nut.

Editor's response: This column draws on practical experience and observation wherever possible. The reference to cars and the NCT etc was as a simile to illustrate the endemic weakness of a fixing where the prevailing direction of the rotational movement of a nut and bolt (or set) will tend to loosen the fit.

While Michael's comments on castellated and plastic collared nuts are not disputed, *The Bulletin* is directed on technical issues towards the world of 1:43.5 and smaller. If Michael knows of a source of castellated nuts etc that are practicable on 6/ 8BA in this arena, I would be most interested.

Of course the split pin is not designed to secure a hexagon nut, but so what? This method works well, and most importantly is readily reversible and reusable (unlike the plastic-collared lock nut). One of the joys of modelling is adaptation. We exploit a plethora of materials (and tools) in roles for which they were never conceived.

The notion of correct torque pressure to retain a wheel nut in place must be one of the motor industry's best kept secrets. I once received a car from a professional mechanic where the four wheels nuts were finger tight. At the other extreme, I found that all four single nut/ spline wheel fixings on another car (left and right hand threads) could not be moved. It took a main dealer the best part of half an hour to get them undone. This was on an ex-factory car. Further comments from Michael or any member on this subject are welcome.

Tail lamp

In the world of marketing, adoption of a trade name as the generic description of an item is a rare and ultimate accolade. Thus "Singer" was used for any sewing machine. Vacuum cleaners are generically referred to as "Hoovers". We use "Bic" when asking for a ball point pen. In parts of Africa, every motor bike is called a "Honda". How about "Crampton"?

Thomas Crampton was an early locomotive engineer and rated by Daniel Gooch during his short stay on the GWR as a very clever fellow. Much given to innovation, he addressed the problem of creating express locomotives which were then deemed to need large driving wheels but fitted with low slung boilers. The latter feature was desirable to keep the centre of gravity low to cope with uneven and badly laid track. Crampton's solution was to build locos with 4-2-0 and 6-2-0 wheel arrangements where the boiler was carried over the front bogie and ahead of the large driving wheels. In fact the footplate was usually located between the driving wheels. The result was ungainly and the type developed a slightly unfair reputation for unsteadiness and a capacity to break rails. Cramptons thus enjoyed limited acceptance and they were soon replaced by other types.

Remaining undaunted, Thomas was one of those English engineers who moved on to help build the first French railways (which is why SNCF still drives on the left while other continental railways and the roads use the wrong side). Cramptons became popular in France and were widely used; indeed an example is preserved at the French NRM at Mulhouse.

So widely accepted was the type by the French that for many years, the idiomatic expression to catch a train was "prener le Crampton".

