

# LIONSHEART



Photo 1. Dave Forrest's finished wheels. Machined from solid.

Photo - Dave Forrest

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Photo 2. Jock Miller's Meehanite wheels. Photo – John Hawley



## Welcome to New Members

In this issue we extend a warm welcome to four new members:

Bob Arrowsmith, from Peterborough, joined in February.

David Scott, from Reading, joined in January.

Richard South, from Farnham, joined in January.

Barry Wheaton-Mars, from Lowestoft, joined in February.

**We welcome you to OLCO and hope that your membership will bring you benefits and items of technical interest. I look forward to meeting you (and current members) at forthcoming events – see Dates for your Diary on page 6. Perhaps you would care to contribute to these pages when you've settled in?**



## Cover Story – 1. Wheels from Steel Bar

Some people, like me, express the intention to build Lion, but then keep quiet about progress. I suspect that, again like me, they find it hard to make a start and we hear little or nothing more. Some start their Lion projects and make steady progress, with perhaps the occasional communication on how things are going. Others, some the subject of past Cover Stories, make spectacular progress, with some interesting developments in the areas of valve gear, fidelity to prototype and so on. Today's subject is no exception – and this time the subject under the spotlight is Lion's driving wheels. Dave Forrest wrote to me early in December last to say that he'd "...bought mild steel blanks and have started the painstakingly slow process of machining the wheels from solid." I asked him if the blanks were of flat plate or round bar, to which he replied "round bar blanks". The rest of his story runs thus: *(I've changed his photo numbers to agree with those shown here. – Ed)*

"It all started with four Bright Mild Steel blanks (Photo 3) 6" diameter x 3/4" thick. *(Dave's Lion is 5" gauge. – Ed)* I rough machined both faces with the blanks gripped in a four-jaw chuck (the only one I had which was big enough to take the blanks!!) and finished turned with the blanks located on a mandrel. The finishing cut on the tyre tread diameter was taken at the same setting to ensure all four wheels were exactly the same diameter.

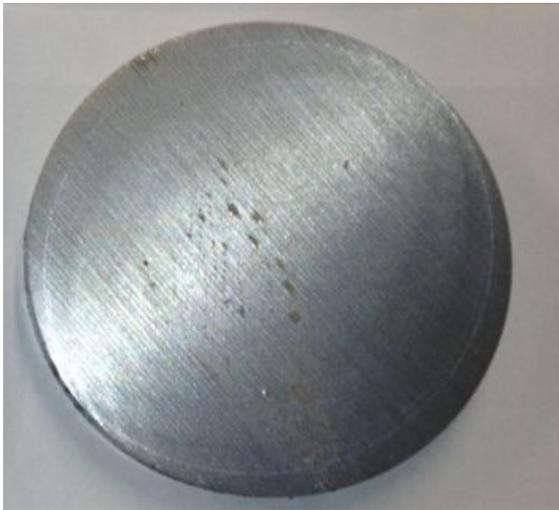


Photo 3. One of the steel blanks, as sawn from 6" dia bar ...



Photo 4. ... and as turned, though before boring.

Photo 5 shows the set-up on the rotary table for milling the spokes. I used four different sizes of cutter (8mm, 5mm, 4mm and 3mm) to gradually remove material to get the spokes down to the required 3.5mm width and close to the central hub. The spokes were then rounded-off on both sides with a 2mm radius cutter followed by hand fettling to remove any remaining cutter marks. The finished result is shown in Photo 1.



*Photo 5 (Left). The milling process. Must have been a lot of swarf Dave! This is the 18 spoke driving axle wheel. Note the good sturdy clamping arrangement. The fact that the recess has been turned front and back reduces a lot of the milling effort, besides reducing the risk of running the cutter into the round table below. Gently does it.*

It has taken me about 200 hours to complete all four wheels and the hardest part without doubt is the CONCENTRATION needed when machining the spokes. About 250 "indexes" of the rotary table are needed on the 18 spoke wheel (with roughing cuts and finishing cuts), any one of which, if taken in the wrong direction, would make a mess!!!

I used tungsten carbide cutters with plenty of coolant to try to prolong cutter life but even so, I still needed 2 sets of the cutters."

*(Well done, Dave. I've often thought of machining from solid for my Lion, but, as hinted at above, I've found it hard to make a start and you've heard nothing more since. – Ed)*



## Cover Story – 2. Wheels from Meehanite

During my recent visit to New Zealand I met OLCO member Jock Miller, whose work has featured in previous Lionshearts. He showed me the finished wheels for his 7¼” G Lion. Jock tells me the wheels were locally cast in Meehanite, a form of ductile cast iron. He is very happy with the quality of the castings and they look very good. Anyone else tried this material?

The wheel castings were made from patterns cast in aluminium (organised by Peter Holdaway, up in Blenheim, New Zealand) from original wooden patterns brought over from the UK by Alan Bibby. I understand the wooden patterns weren't perfect and required some remedial action in NZ in a very short time (since they were coming back home with Alan). I am thus not sure how closely they follow the accurate scaling of 'Big Sister'. Be that as it may, the finished product looks pretty good to me! The 'bumps' visible between upper right quadrant spokes in photo 2 on page 1 represent the tyre securing bolts on 'Big Sister'.



*Photo 6. The modified aluminium patterns. The three portions on the left are the flange, the central boss and the flangeless wheel. The dowels and their holes can just be made out. The item on the right is the assembled pattern, ie, with flange and central boss attached.*

*Photo John Hawley*

Jock informed me that he has modified the aluminium patterns quite considerably to facilitate the moulding process. Thus, instead of each wheel being a one-piece pattern, there are three patterns per wheel: a) the basic (flangeless) wheel, which is placed outer face up on a flat surface, the lower mould (the drag) placed over it and the sand rammed in. The drag is then overturned so that the pattern is uppermost; b) the flange, and c) the central boss, both of which are then keyed onto the inner face of the wheel pattern. The upper mould (the cope) is then placed onto the drag and the sand rammed into the cope.



### The Editor's Bit

Apologies: 'Coop. Addresses' at the head of the index on page one of Lionsheart 78 was a silly mistake. Sorry John!

The contact list seems to have gone down well, but I must apologise to some for the errors in it. Corrections are as follows:

- a) Geoff Brazendale sent me a charming postcard, noting that Bristol was the home of the Douglas motorcycle. Alas, that horizontally opposed twin cylinder motorcycle is a thing of the past, as are so many of Bristol's famous products. Sometimes I ... But that is another story. Oh, and he tells me his telephone number is: 01228 549445, (I think, but it was part obscured by the post mark!) I'm sure he'll make contact if that number is wrong;
- b) Roger Breakwell's telephone number is: 01644 430690 and not as stated;
- c) Dave Forrest wrote to say that he is really "DW FORREST", not merely "W FORREST";
- d) Tony Parsons' telephone number is: 01926 338572 and not as stated.

Also, we now have the new members noted in 'Welcome ... at the top of page 2:

Mr Bob Arrowsmith. Peterborough. Tel: 01733 770 906. Email: bob.arrowsmith45@googlemail.com.;

Mr David Scott. Reading. Tel: 01189 427 016;

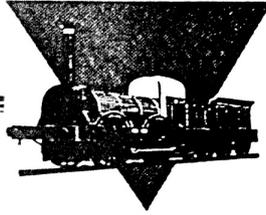
Mr Richard South. Farnham. Tel: 01252 713 150. Email: richard.south@mclaren.com.;

Mr Barry Wheaton-Mars. Lowestoft. Tel: 01502 502 152. Email: barry7@tinyworld.co.uk..

So, thank you, gentlemen. And readers, please update your lists.

I'm grateful to all contributors for sending in such interesting notes, pictures and comments for this issue. I've little to say personally, so I'll just let you get on with it. But first a few essentials ... 

**OLCO**



From:

OLD LOCOMOTIVE  
COMMITTEE

THE SECRETARY  
BREWOOD HALL  
BREWOOD  
STAFFORD ST19 9DB  
ENGLAND

**Tel: 01902 850095 (evening)**  
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**OLCO ANNUAL GENERAL MEETING, LIVERPOOL, SATURDAY 14th JUNE 2014**

The 29<sup>th</sup> AGM will be held at the Museum of Liverpool, Pier Head, Liverpool Waterfront, Liverpool, L3 1DG (website: <http://www.liverpoolmuseums.org.uk/mol/>), where 'Lion' is now on public display in the 'Great Port' Gallery.

Railway stations are at James Street (5 minutes walk), Moorfields (15 minutes walk) or Lime Street (20 minutes walk). Full details and details of buses are at <http://www.merseytravel.gov.uk/>.

Use the Museum of Liverpool website above to see a map of the area. Click on 'Your Visit'; 'Getting Here' and then 'Parking' for car parking details.

By courtesy of Sharon Brown, Curator of Land Transport, a Meeting Room will be made available for OLCO Members from 10.30am until 4pm. Please enquire at the Information Desk in the Foyer for directions to the Meeting Room. The Museum telephone number is 0151 478 4545.

The AGM itself will start at 1.00 pm.

Food is available at the Waterfront Café within the Museum. Alternatively, you may prefer to bring a packed lunch.

AGENDA

- |                                    |   |
|------------------------------------|---|
| 1. Welcome by Chairman             | 7. Election of Officers                             |
| 2. Apologies for Absence           | 8. Lionsmeet 2014                                   |
| 3. Minutes of 28 <sup>th</sup> AGM | 9. OLCO Website                                     |
| 4. Matters Arising                 | 10. Progress in distributing 'Lionsheart' by e-mail |
| 5. Chairman's Report               | 11. Any other business                              |
| 6. Treasurer's Report              |   |

Jan Ford (Miss) – Secretary

*(For the Minutes of AGM 2013, see LH77 Pg 4. Or I could send you a copy. – Ed)*



**Lionsmeet 2014**

We had Lionsmeet 2013 at Wirral Model Engineering Society early last August. I have nothing to report, since I was unable to attend (except for the evening meal – a very convivial affair) and no one has done a write up. Suffice it to say that this is an informal gathering of all lovers of Lion (and other early 19th century locomotives) of any gauge, whether possessing locos or not and whether steamable or not. Those that do can and those that don't can watch, ride, observe, discuss, question, etc.

Lionsmeet 2014 will be held on Saturday 23rd August at the Bradford MES at Shipley. (See <http://www.bradfordmes.co.uk>) Further details will be published nearer the time. Perhaps there will be an evening meal?

Lionsmeet organiser Andrew Neish tells me that the 2015 event will be held Guildford Model Engineering Society. He would like to hear from any Lionsheart readers with views on a date for the 2015 meeting to contact him directly. Whether it is a preference for a change to a spring or autumn meeting, or notification that you are otherwise engaged during a particular weekend in 2015. Andrew's contact details are:

E-mail: [andrew@neish.org.uk](mailto:andrew@neish.org.uk)

Postal address: 22 Chestnut Close, Liphook, Hampshire, GU30 7JA.

Phone: 01428 723 483.

Mobile: 07779 360 393

So, do please get in touch with him. It's your show!

For myself, I'm sad to see the old Lionsmeet format disappear, but then, having no Lion, I never took part and only organised a couple of events. It was competitive, yes. Stressful, yes. Fun, yes, except perhaps for the organiser. Alan Bibby did it for many years until 2012 and made a great success of it. However, there were sometimes problems in getting sufficient people to attend, acquiring dynamometer cars, etc. So, please keep an eye on the website for more information, get your Lions into some sort of

order (even if part built) and come along, whenever. In the meantime, below is the table of competition results from the very first Lionsmeet in 1985 until 2012, the final (so far) competition. Is that it, I wonder?

### Lionsmeet Results Table

Year	Venue	Hosts	No of Entries - Gauge	Winner	Winner - Work Done (ft lbs)	Distance (ft)	Owner	Second (Work/Distance)	Third (Work/Distance)	Time (Min)	Rail Mat	Dynamometer car loaned by
1985 Sunday 25 Aug	Guildford (Stoke Park)	Guildford MES	7 - 5"	David Neish	72810	8270	David Neish	John Rea 67680/7990	Keith Miller 54250/6550	10	Steel	Guildford
1986 Sunday 24 Aug	Runcorn (Daresbury Hall)	Warrington & District MES	4 - 5"	Dennis Gadsby	44150	6290	Dennis Gadsby	Jim Mercer 37250/4890	Mike Parrott 28660/4860	10	Alum	Guildford
1987 Sunday 30 Aug	Dinting (Nr Glossop)	Buxton & District MES	6 - 5"	Jim Mercer	42900	?	Jim Mercer	Dennis Gadsby 40300/?	Mike Parrott 36670/?	?	Steel	Guildford
1988 Sunday 11 Sep	Wroughton (Nr Swindon)	Portable track only, so no contest run										
1989 Sunday 27 Aug	Cheltenham (Hatherley)	Cheltenham SME	7 - 5"	Mike Parrott	45970	7360	Mike Parrott	John Kidger 36380/7190	Peter Taylor 36190/6230	10	Alum	Guildford
1990 Sunday 6 May	Runcorn (Daresbury Hall)	Warrington & District MES	6 - 5"	Mike Parrott	53190	7120	Mike Parrott	Richard Spencer 47570/7430	Jim Mercer 38350/6210	10	Alum	Guildford
1991 Sunday 25 Aug	Falconwood (London)	Welling & District MES	3 - 5"	Mike Parrott	64800	7620	Mike Parrott	David Neish 53250/6940	-	10	?	Guildford
1992 Sunday 30 Aug	Chesterfield (Hady)	Chesterfield & District MES	4 - 5"	David Neish	24765	5200	David Neish	Ron Broyd 21375/5600	Mike Parrott 18720/4850	10	Steel (Wet)	Pitkethly
1993 Sunday 15 Aug	High Wycombe (Holmer Green)	High Wycombe MEC	5 - 5"	Bob Davies	46665	5670	Bob Davies	Mike Parrott 33390/6670	David Neish 28950/6330	10	Alum	Guildford
1994 Sunday 14 Aug	Frimley (Lodge Park)	Frimley & Ascot Loco Club	2 - 5" 1 - 7 1/4"	Mike Parrott Peter Gardner	55304 54355	8000 5000	Mike Parrott Peter Gardner	David Neish 41245/?	-	10	Steel (Grd level)	Swansea
1995 Sunday 13 Aug	Sutton Coldfield (Little Hay)	Sutton Coldfield MES	3 - 5"	Mike Parrott	41370	14280	Mike Parrott	David Neish 39465/12280	Jon Swindlehurst 21465/11260	20	Alum	Guildford
1996 Saturday 17 Aug	Bristol (Ashton Court Estate)	Bristol SMEE	5 - 5"	Mike Parrott	112600	16230	Mike Parrott	Jon Swindlehurst 105420/15803	Bob Davies 69500/8220	20	Steel	Bristol
1997 Saturday 16 Aug	Peterborough (Longthorpe Hall)	Peterborough SME	1 - 3 1/2" 4 - 5" 3 - 7 1/4"	Bob Grimshaw Jon Swindlehurst Les Dalton	7163 30180 91335	5830 6900 6000	Bob Grimshaw Jon Swindlehurst Les Dalton	David Neish 21750/6160 John Dalton 83063/6845	Chris Parrott 14925/6350 Peter Gardner 44978/4050	10	Alum	Guildford
1998 Saturday 15 Aug	Cheadle Hulme (Stanley Green)	Stockport & District SME	1 - 3 1/2" 6 - 5"	B Grimshaw P Bainbridge	27533 47580	8170 9600	Bob Grimshaw Dennis Gadsby	Eric Hughes 46560/10340	Dennis Gadsby 32475/5990	15	Alum	Guildford
1999 Saturday 14 Aug	Swansea (Lower Sketty)	Swansea SME	5 - 5"	Geoff Wright	47040	6180	David Neish	David Neish 40785/5990	Three competitors retired	10	Steel	Guildford
2000 Saturday 12 Aug	Rugby (Rainsbrook Valley Railway)	Rugby MES	4 - 5"	Alan Bibby	80670	8760	Alan Bibby	David Neish 62715/7530	Jon Swindlehurst 54465/7700	10	Steel	Guildford
2001 Saturday 18 Aug	Leyland (Worden Park)	Leyland SME	4 - 5"	Alan Bibby	76455	6440	Alan Bibby	Jon Swindlehurst 58605/5470	David Neish 7140/1750	10	Steel	Guildford Note: Rain spoiled 2 final runs
2002 Saturday 17 Aug	Bromsgrove (?)	Bromsgrove SME	5 - 5"	Andrew Neish	34575	7690	David Neish	David Neish 34290/7420	Jon Swindlehurst 33330/7660	10	Alum	Guildford
2003 Saturday 16 Aug	Erewash Valley (Borrowash)	Erewash Valley MES	5 - 5"	Jon Swindlehurst	50490	6320	Jon Swindlehurst	Alan Bibby 41350/5860	Andrew Neish 34100/4690	10	steel	Guildford
2004 Saturday 7 Aug	Northampton (Lower Delapre Park)	Northampton SME	5 - 5"	Andrew Neish	40400	5950	David Neish	Jon Swindlehurst 38400/6470	David Neish 30900/4720	10	Steel	Bristol
2005 Sunday 7 Aug	Brighouse (Ravensprings Park)	Brighouse & Halifax ME	1 - 3 1/2" 7 - 5"	Geoff Cocking John Mills	13920 59800	?? 6960	Geoff Cocking John Mills	Jon Swindlehurst 55400/6420	Andrew Neish 45040/5790	10	Steel	Guildford
2006 Sunday 13 Aug	Southport	Southport MEC	5-5"	Jon Swindlehurst	29010	6182	Jon Swindlehurst	Bill Stubbs 16080/5100	Richard Spencer 14920/3659	10	Steel	Warrington
2007 Sunday 29 Jul	Bristol	Bristol SMEE	5-5"	Jon Swindlehurst	46300	7500	Jon Swindlehurst	John Mills 31400/5540	Bill Stubbs 23800/7210	10	Steel	Bristol
2008 Saturday 26 Jul	Butterley Park	Butterley Park MES	7-5"	Jon Swindlehurst	52500	6410	Jon Swindlehurst	Richard Spencer 50480/5620	Andrew Neish 49000/5500	10	Steel	Guildford
2009 Saturday 1 Aug	York	York SMEE	4-5"	Jon Swindlehurst	18400	6250	Jon Swindlehurst	Alan Bibby 14800/5710	Bill Stubbs 12200/3470	10	Steel	Bristol
2010 Saturday 31 Jul	Kinver	WMSMEE	4-5"	Andrew Neish	23871	?	David Neish	Jon Swindlehurst 21267/?	John Mills 21167/?	10	Alum	Kinver
2011 Saturday 30 Jul	Chelmsford	Chelmsford SME	4-5"	Jon Swindlehurst	59050	?	Jon Swindlehurst	David Neish 42779/?	Andrew Neish 38629/?	10	Alum	D Neish
2012 Saturday 11 Aug	Newport	Newport MES	4-5"	Jon Swindlehurst	55756	?	Jon Swindlehurst	David Neish 40200/?	Andrew Neish 36675	10	Steel	D Neish?
2013 Saturday 10 Aug	Wirral	Wirral MES		No Competition								

*Table 1. Lionsmeet results over the years 1985 to 2013*

Alan writes: 're the Lionsmeet distances run for 2010 - 12, we used Kinver's dyno car in 2010, and David Neish's LionsPower device in 2011 and 12, neither of which record distance run unfortunately. Getting hold of a reliable dyno car was one of the biggest problems in organising Lionsmeet in the later years, and I agree with John and Andrew that the event will probably be the better without the competition. It had become rather pointless as well as inhibiting running opportunities. Now we can just run as we wish and it will be a more sociable occasion.'



## Dates for your Diary

**National Model Engineering & Modelling Exhibition 2014.** Friday 9<sup>th</sup> to Sunday 11<sup>th</sup> May. Great Yorkshire Showground, Harrogate, HG2 8QZ. Visit the OLCO stand and have a chat.

Website: <http://www.theharrogateshow.com/>

**OLCO AGM 2014:** Saturday, 14<sup>th</sup> June at 1pm at the Museum of Liverpool, Pier Head, Liverpool Waterfront, Liverpool, L3 1DG. To find the meeting room, ask at the reception desk. The room is booked from 10.30am until 4pm. Light refreshments are available. Please make an effort to come along and see Lion in her new setting in this magnificent museum on Liverpool's historic waterfront. Also, meet fellow OLCO members. I look forward to meeting you there.

Website: <http://www.lionlocomotive.org.uk/agm.php>

**Bristol Model and Engineering Exhibition 2014.** Friday 15<sup>th</sup> to Sunday 17<sup>th</sup> August. Thornbury Leisure Centre, BS35 3JB. Visit the OLCO stand and have a chat with me and my helpers.

Website: <http://www.bristolmodelengineers.co.uk/Exhibition/exhib.htm>

**Lionsmeet 2014.** Saturday 23<sup>rd</sup> August at the Bradford MES track at Shipley. (Website: <http://www.bradfordmes.co.uk>).

Sat. Nav. N53.825837 W1.780944. Nearest Postcode BD18 3DD.

Website for OLCO: <http://www.lionlocomotive.org.uk/>

*(At the time of writing, the OLCO website was out of date, but keep an eye on it for details. – Ed)*

## But a Plea from your Editor

As noted in 'Dates for your Diary', there will be an OLCO stand at the Bristol Model and Engineering Exhibition on Friday 15<sup>th</sup> to Sunday 17<sup>th</sup> August 2014. I have offered to man the stand, but I really do need some help, both with models to display and with just being there to help look after our display. So please let me know how you can help. Write, phone or email me as soon as you can, so that I can let the organisers know that we're 'up for it'. If you have a model, finished or not, let me have details, especially gauge, insurance value, etc. If you can help man the stand, that would be great – just let me know which day(s). I can probably offer you accommodation.



## Readers' Letters

From John Coop

Lakefield, Ontario

*(This is just a funny and it contains expletives, most of which I've 'modified', but you'll know what's there anyway. John sent this in October last and I've thought for some time about putting it in. I apologise sincerely to anyone who may be offended by the language. Very important message though – Ed)*

A few pointers from your friendly neighborhood locomotive engineer.

Let's start with some DON'T's.

1) A train is really, really big. Can we all accept that? Not even your Ram/F350/Hummer/douche-mobile is a match for a locomotive. You say you have a Cummins diesel? Caterpillar? Detroit? Oooooooh. Well I have an EMD 567 on a bad day, and even its pathetic eighteen-hundred horsepower will pound you and your gleaming pickup into the fourth dimension, so please, stay behind the white line!

2) I hate blocking crossings. Seriously, I feel like a complete \*sshole when I stop a train in the middle of the road and leave two dozen motorists to ponder their lattes and ask what the hell I'm doing. The truth is, sometimes it has to be done, so don't honk at me, flip me off, or scream at me from the window of your Dodge Caravan as you're shooting a U. Instead, be patient and try to believe that there's a point to what I'm doing. It's called switching, and my conductor is depending on me to work slowly and not run his \*ss over. If you don't believe me, Wiki that s\*\*t.

3) Don't climb on the equipment. I hate to sound like your mother, but you're saving me a lot of paperwork and horrifying flashbacks by staying off the equipment. To you it might look like an abandoned train or a free ride, but when that b\*stard starts to move with you on it, there's a damn good chance you won't be able to hold on. As long as you're on Wikipedia, punch in "slack action" and see what comes up. Also, the romance of riding freight trains is total bulls\*\*t. They're really dark, really cold, really windy, and hobos are f\*\*\*ing SCARY.

4) Don't put s\*\*t on the tracks. It's dangerous to me and my conductor, and it's ten times more dangerous for you and everyone else on the ground. If you're wondering "can a train go over a rock?" the answer is YES. There's only one problem. You probably haven't wondered where the million shards of rock are going to go at four times the speed of sound, have you?

5) Stop whining about the horn. Countless accidents have been avoided because drivers missed the flashing lights but heard the horn. You'd have to blast Miley Cyrus and Lil' Bow Wow pretty f\*\*\*ing loud to drown out a five-chime, and often that's the only thing that saves people. Still, that's no reason to keep your stereo at eighty decibels as you're rolling through a crossing at sixty without looking both ways.

6) By and large, railroad cops are major douche bags, so when you're trespassing on railroad property, keep your head out of your \*ss. These guys didn't make it into the real police force, and they will ream your \*ss inside and out to make up for it. Also, walking on bridges and in tunnels is extremely dangerous. Ask yourself: If a train comes, where will I go? Trains are much wider than the rails they run on, so don't be fooled.

Now for some of the DO'S.

- 1) If you see a large object (like a garbage can or an F350) that's about to get love-tapped by a hotshot freight train, get in the clear. If the s\*\*t's about to fly at a railroad crossing, run to the side of the street that the train is coming from. That way you'll be behind the point of impact and you won't have to worry about catching that beautiful pickup and its over-confident driver square on your f\*\*\*ing shoulders. If you run away from the train you're just putting yourself in the line of fire, and the death toll could very possibly be two.
- 2) If the gates stay down and the lights stay flashing, stay where you are. I guaran-damn-tee there's another train coming, and speeding onto the tracks the moment the first train clears is a lot like celebrating a touchdown too early. WHAM.
- 3) When you're waiting for a train to pass, it's a good idea to stay back thirty or forty feet. Trains are operated by professionals, but often they're loaded by total \*ssclowns. I've heard some real nasty stories about payloads falling off flatcars and crushing people in their vehicles, or doors sliding off boxcars and ripping through everything in their path. It's rare, but s\*\*t happens!
- 4) Always report problems or suspicious activity. If you see a photographer with a radio scanner and a big-\*ss notebook, ignore him. We know that guy. But if there's a dude in street clothes working a crowbar through a signal box, hit us up and tell us what the deal is. Railroad crossings usually have signs with emergency numbers, or you can call the non-emergency number for your local fuzz. If an accident has already occurred or a life is at risk, call 911 instead. Pretty sure they have our number.
- 5) Last but not least, when you're inconvenienced by a train, remember that we're pulling for you! Trains are a great way to conserve fuel, reduce greenhouse gas emissions, and keep American jobs alive and green (*But you're a Canadian, John. – Ed*). Rail technology is the best solution to our energy crisis, and as the rail network grows in the years to come, it's important for everyone to stay safe.

Look, listen, LIVE.

*(Which reminds me – has anyone come across 'Dumb Ways to Die? It's an Australian 'game' which runs well on an iPad and is great fun for the kids. The subject is rail safety. – Ed)*

*(And another from John, this came just before Christmas. I put letters in chronological order – Ed):*

Just a couple of "chat" items. I have found over the last few months that I have drifted back into 3D CAD modelling more and more. It started with an interest in the cylinder layout of the Webb "Precursors" of the LNWR. I suppose there is a connection there with "Lion" Liverpool & Manchester into LNWR etc. To try and fathom another piece of Victorian mystery I applied 3D CAD modelling to whatever 2D paper drawings that have survived to try and get a better insight into what they did. Valve face in two planes for a start, one piece casting! Over the years I have used "Alibre" software which has morphed in to "Geomagic". I have just completed a 30 day evaluation trial of "Solidworks" It, SW, seemed a better bet because of it's universality since the claim is that SW has 80% of the market. I have visions of my 3D models being of use to someone such as the National Railway Museum (as a legacy) and Solidworks format seemed safer. Anyhow so far NRM are not interested. As a result I am staying with Geomagic since their capability is almost as good as SW for about 22% the cost. Most of the extra capability in SW is in libraries and productivity aids which don't apply to pre 1870s engineering.

Have a good trip to New Zealand, keep in touch and if you have the opportunity pass on my season's wishes to all "Lions".

Cheers – Coop. Psst: Lion may be a candidate for 3D modeling, we have discussed this before.

*(Yes, but you know the speed at which I get around to things! – Ed)*

**From Rich Garich**

**Succasunna, New Jersey**

... I was able to track down a set of drawings for the 1/8th Planet model in one of the London museums, but that came to a halt when I stopped working. Thought it probably best to practice on a Planet before moving ahead with Lion.

I have, however, allowed myself one treat - a 1901 power hack saw. All cast iron, with no cracks. It is a size #1 from the company and uses a 9" blade (another story in itself). Quite by chance, I also have a size #0 model from the same company - identical, but about the size of a shoe box.



Photo 7. Lafayette replica. The original was built in 1837 by the Norris Locomotive Works, Philadelphia, for the Baltimore & Ohio railroad.

*(I don't like the look of that wheel closest to the camera. Looks distinctly wobbly to me. – ED)*



Photo 8. Rich's 1901 Power Hacksaw

Photo – Rich Garich

Attached is a nice photo (*photo 7, above*) of the loco Lafayette, which is a functional 1893 replica made for the Chicago Exposition. The model was designed by H.J. Coventry, the US equivalent to Henry Greely or LBSC.

How did the Lionsmeet go?? (*Well, er. See **Lionsmeet 2014** on page 4 – Ed*)

Finally, yes, you do have to reset your clocks, (*I'd asked about time zones in the US. – Ed*) though cell phones do it automatically when you shut them off and repower. As a kid, my Grandmother lived on the "line" between two of the zones. My brother and I were able to watch a TV show on one set of channels, and, if a good show, able to watch it again one hour later. No need for VCR players!

Best regards and Happy Holidays

**From Jan Ford**

**Brewood**

Another amazing production! Dunno how you get so much support from modellers for some really good stuff. I haven't found any coverage of 'Lionsmeet' 2013 which I wasn't able to attend (the website didn't seem to help). Is it me? Good to see the Antikythera Mechanism getting more exposure

There are numerous free PDF writers, some of which have settings which control the output size. On various machines, we use Nitro PDF Creator 2 and CutePDF Writer. They both work well but I've never explored settings. (*Jan gave me this info in response to a query I'd made in the last Lionsheart, but I've not yet had time to suss out these PDF writers. – Ed*)

More importantly, enjoy your travels.

**From David Royle**

**Oadby**

Just a thought, have any of the members got any detailed drawings of the De Winton coffee pot type loco, as I have thoughts of trying to build one in 71/4". If so, they can send them to me at my email address as below.

Thanks for your help.

Best wishes, - David C. F. Royle, BA.MA.MSc.

Email: [davidcfroyle@btinternet.com](mailto:davidcfroyle@btinternet.com)



## **Reversing Levers**

Dave Forrest wrote in with the following query:

... I'm confused!! As far as I can work out according to the LBSC drawings I have, when the Reversing Lever is pushed forward it engages FORWARD gear and backwards to engage REVERSE. This seems quite logical to me but might not have been the convention on early locomotives.

My confusion arises because on your drawing for the "Crank Axle and Eccentrics" there is a note which states "...when Reversing Lever is pulled BACK into Forward Gear". I'm sure your drawing note exactly reflects real "Lion" but can't understand why the two (LBSC and real "Lion") should be different. Perhaps it's another LBSC "shortcut" because on his simplified Reversing Lever the Reach Rod connects ABOVE the pivot point of the Reversing Lever whereas on real "Lion" the connection point is BELOW the pivot point.

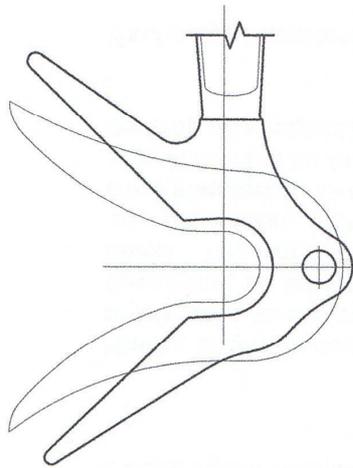
I appreciate this is but a small detail but I would be grateful if you would confirm the operating direction of the Reversing Lever on real "Lion" i.e. backwards for FORWARD and forwards for REVERSE.

*(I think Dave is referring to the LBSC drawing on page 758 of Model Engineer Vol 109. If so, we have a small problem straight away: On the LBSC drawing the Reach Rod connects BELOW the pivot point of the Reversing Lever whereas on real "Lion" the connection is ABOVE the pivot point. So, my apologies, Dave, for not spotting that error when I first read your email.*

*Anyway, the query is valid – why pull the lever back to go forward on real Lion? It is confusing and I'm sure many theories have been put forward as to why this is so. In reply I sent Dave a copy of my schematic of real Lion's valve gear, (Below) explaining that the 'Reach Rod' goes forward and down to the top of the 'Input Arm', which is keyed to the 'Weighshaft'. The 'Output Arm' is also keyed to that shaft, so, in effect, the Input and Output arms form a bell crank, pivoting on the weighshaft axis*

*As the 'Reversing Lever' (and reach rod) is pushed forward, that bell crank lifts the 'Long' and 'Short' Lifting Links, which, in turn, lift the upper gab fork (Gab R2 Fwd) out of engagement with the 'Rocking Arm Roller', whilst simultaneously lifting the lower gab fork (Gab R1 Rev) into engagement with the that same roller, thus placing Lion into reverse gear.*

*There is a lot of surrounding structure missing from that sketch (ie, the front axle, etc). I just wonder if the men who devised that layout decided that there was restricted space for the 'bell crank' and hung it below that axle. Similarly, there is not much space below the pivot of the reversing lever to permit the attachment of the reach rod below the footplate, thus achieving the 'sensible' arrangement of reversing lever relative to direction of movement of locomotive.– Ed)*



Shown left is the gab jaw for R1 (See also photo 2 on page 1). Lightly superimposed is the LBSC gab. The difference is striking. I've not yet investigated the positional relationship between the two, but that's one of my next tasks.

FIG 3. GABS. A REAL ONE AND THE LBSC VERSION

Notes: Lion is shown below in forward gear (reversing lever pulled back), with crank pin at 90 deg to cylinder axis.  
 Piston is moving rearward under influence of steam, which is entering the forward valve port.  
 Meanwhile, exhaust steam is exiting via the rear port.  
 Slide valve is moving forward to cover both ports.  
 Further forward movement of valve will uncover both ports, admitting steam via the rear port and permitting exhaust from the forward end of the cylinder.

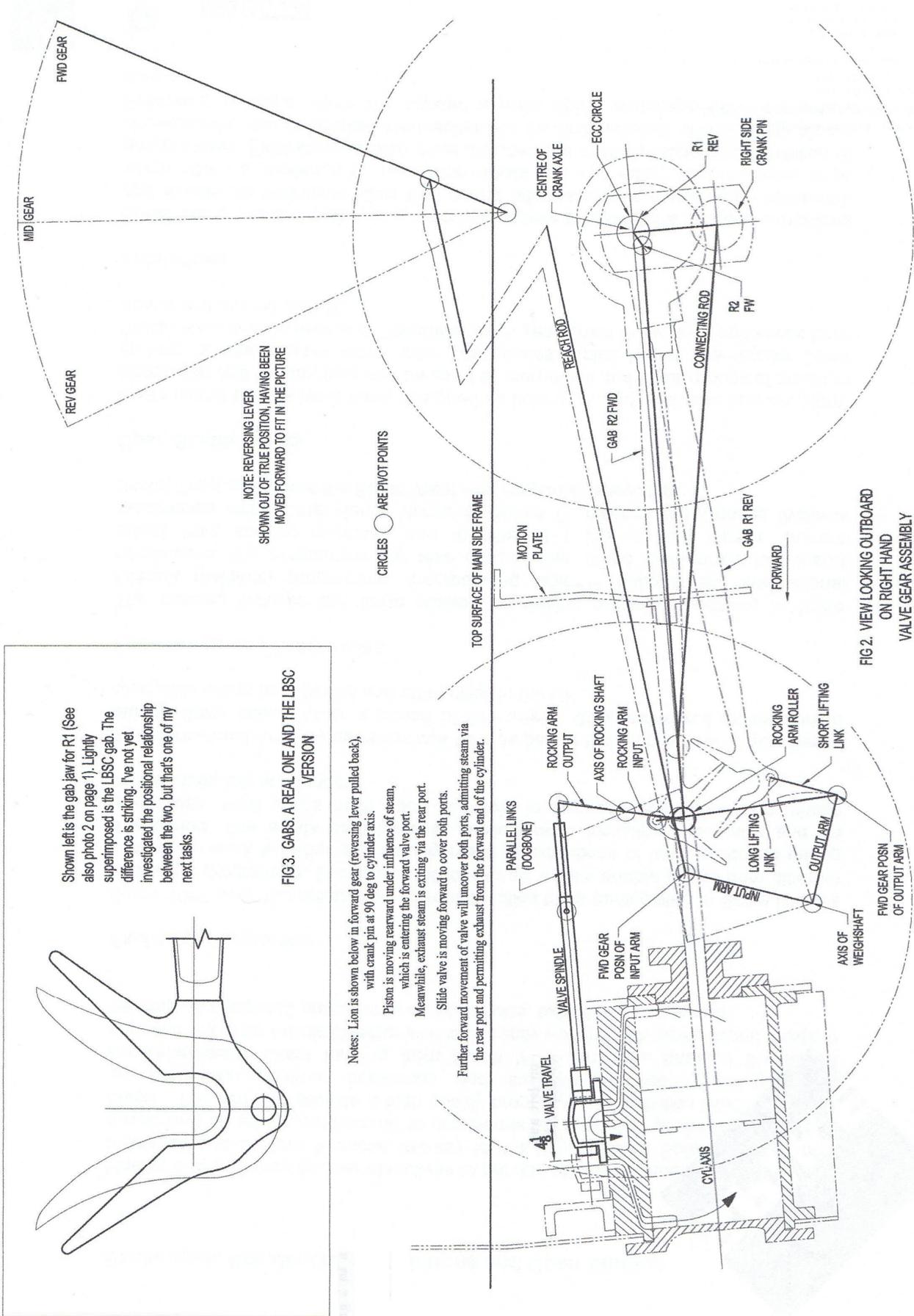


FIG 2. VIEW LOOKING OUTBOARD ON RIGHT HAND VALVE GEAR ASSEMBLY

Sketch 1. A Schematic of Lion's Valve Gear Layout. The front axle and other, non-valve gear items, are not shown.

(Whilst we are on the subject of reversing levers, Jon Swindlehurst sent the photo below to illustrate developments on his 7/4" Lion. There were pictures of this reversing lever in LH78, issued just before Christmas 2013. Now we see it attached to the chassis of his locomotive, which looks to be coming on well. (Photo 9, below) – Ed)

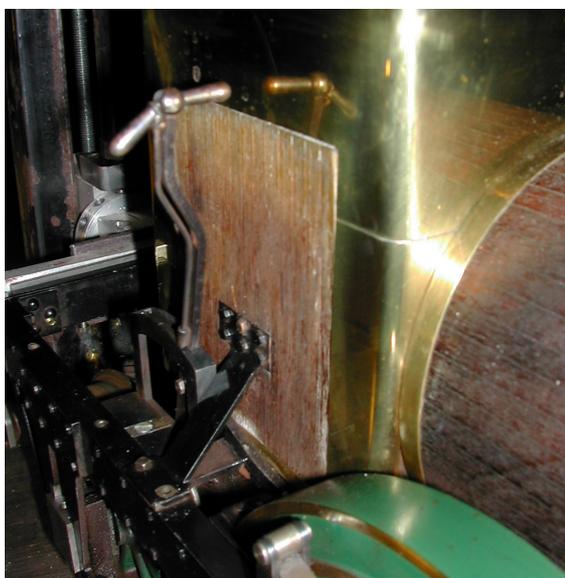


Photo 9. The Jon Swindlehurst reversing lever, installed and ready for action. Photo - Jon Swindlehurst

(Also, in that last issue, I commented that I'd seen a pretty good representation of the reversing lever before and on a 5" at that. Now Alan Bibby writes in to 'confess' that it is on his 5" loco (So, was Alan the first to do a 'proper' reversing lever?) – Ed)



Photo 10. Is this where it all started? Alan Bibby's 5" Lion sports a very presentable reversing lever. Photo – Alan Bibby



## Lion's Colour Scheme

Dave has also queried the true colours on Lion. Here are a few suggestions sent in by readers:

Alan Banks: 'As webmaster the only colours I know are those that one sees in the Museum. Knowing the group as I do there has probably been a great deal of speculation on colour. As far as I am aware the colour one sees is that decided at Crewe during LION's original restoration.'

May I suggest one joins OLCO and get access to the writings of the group since its inauguration. I am in the process of trying to get these online for members only. One could also write to our mag asking for advice from a wide range of knowledgeable folk.

In the mean time I will pass on your request to a few members. Also as LION was repainted by Liverpool Museums they probably have a colour spec available.' (Dave took Alan's advice: he joined OLCO and contacted the museum.)

Jon Swindlehurst: 'According to the 'Yellow' book the colour used on Lion is Brunswick green. This is a 'standard' colour and should be able to be mixed by most automotive paint suppliers. I had no trouble getting it in 1994 when I painted my 5"g Lion. Paint mixers today can do almost any colour. The only disadvantages being you will probably have to spray the paint and buy a min of 1/2 litre.'

Geoff Brazendale: 'I was looking at Lion's colour in Liverpool, reckon it's Royal Enfield Green on the tender! I shall be interested in other opinions by members. Don't forget the L.O.R. coach up the stairs. I went onto the very last train in 1956.' (L.O.R. = Liverpool Overhead Railway, well worth a visit when you come to the AGM –Ed)

Dave has received the following reply from the museum:

'The colours and scheme you require for you lion model are as follows.

Tender sides, cab sheets, splashers, locomotive wheel sets and tender wheel sets are all 26936 Titfield Flyer Mid Brunswick Green. This is only available from HMG paints or one of there stockists.

Smokebox, chimney, side frames, backhead plate, buffer beams, footplate internals and floor and inside of the tender are all BS satin Black. As are the wrought iron railings on the outside of the cab sheets.

The driving axle balance weights and spectacle frame of the slide bars are what we believe to be Ayres Red manufactured by Masons of Derby {still available from HMG}.

All other components are satin Black with the exception of the tender hand rails, those are finished in gloss black.

Hope this has been some use to you, and good luck with you model.'

Dave concludes by saying: I've confirmed with HMG Paints that they can supply all these colours in any of their paint systems but the most favoured one for models is "Railmatch Coach Enamel". The guy at HMG has been very helpful and provided several Product Data Sheets, Technical Specifications, etc. The only downside is the minimum quantity they will supply is 1 litre.

Hope this may be useful.

(So, there we have it. I think that subject can now be put to bed. Ed)

**However**, I must stress that, in making enquiries to the Museum of Liverpool, contact must always be made in the first instance to Sharon Brown, Curator of Land Transport & Industry. Sharon's contact details are:

Sharon Brown, Curator of Land Transport & Industry, National Museums Liverpool, Pier Head, Liverpool Waterfront, Liverpool, L3 1DG.  
Email: [Sharon.Brown@liverpoolmuseums.org.uk](mailto:Sharon.Brown@liverpoolmuseums.org.uk)



## Air Compressors

I hear every so often of builders who reach the stage where they are able to get their locos to turn over on 'xx' psi. That set me thinking – what sort of compressors do they have, since I've little knowledge of the subject. I suppose a compressor is a good way of getting early leaks and valve events sorted out, plus some running in done. However, compressed air is not superheated steam, having little in the way of expansive properties, to say nothing of the effect that heat alone has on things like lubrication and the thermal expansion of the assembly. To kick things off, I've done some initial asking around:

Alan Bibby writes: 'My workshop compressor is an Airmaster Tiger 5/12, 115 psi, from Machine Mart. Doesn't give the capacity, but I would guess maybe 5cfm. That has tested all my models over the years. You only need 40-50 psi at most for model testing but they usually come with a pressure regulator so you can set the pressure to what you like, and you need a reasonably big air tank.'

And Jon Swindlehurst sent me this reply: 'I have a small compressor that is only powerful enough to pressure an airbrush but it has no problem turning my 5" g lion over and registers about 2 psi on a gauge while doing so. If you put your finger over the outlet the press. rises to about 5 psi. When I tried it with the 7 1/4" g lion chassis it turned it over OK but was not very smooth and only registered less than 1 psi. From this, I suspect there was not enough volume being produced. Use of a reservoir may well overcome this problem.'

*(There's an interesting discussion on compressors here:*

<http://www.model-engineer.co.uk/forums/postings.asp?th=93715&p=1>, but I think most of it's pie in the sky! They have some funny ideas using drain pipes! Do the maths.

*Any ideas, folks? I'd love to have your comments. How would one go about calculating the compressor required? Is pressure everything – or is capacity more important? Obviously cylinders come into it: how many; swept volume; required RPM; free running or rolling road, perhaps with some form of loading; etc., etc. Over to you. – Ed)*



## Those Square Headed Bolts

In the last issue I gave a long list of all the square headed bolts I've been able to locate on Lion and her tender. I suggested three ways in which they could be produced, including one by which we could get them made commercially. However, I've had no comments back, so I assume you're all happy to make your own. 'Nuff said', as the Great Man used to say. *(Or did he? I can't find any in his Titfield Thunderbolt Series. – Ed)*



## New Zealand Snippets

I'm just back from an eight week trip to New Zealand. More or less straight off the plane I visited CANMOD at the Halswell Domain, Christchurch, South Island track of Canterbury SME. I'm not sure what CANMOD stands for, but the Canterbury Region is about 2¼ times the area of Wales and there were model boats, trains, traction engines – all the usual stuff, so I suppose it stands for Canterbury Models. However, it's much bigger than that. This was a gathering over several days in the southern hemisphere of model engineers from all around the globe – I met an Australian, an American, even a chap from Taunton, Somerset, just down the M5 from me. Perhaps I got there too early in my visit, but I recall very little of it now. I did offer to help, but, perhaps wisely, my offer was not taken up. Anyway, I saw lots of lovely locos, several of which were loggers, there was a Shay, a Climax and a Heisler. There were articulateds, diesel and electric outlines, including the German ICE, nicknamed 'The Snake'. The power boats certainly shook up the ducks on the lake close by. I can't do a report on the event, since I took little in and there was no catalogue listing the models or personnel. Anyway, it was a jolly good meet.

During my time there I saw bits of the South Island

railway system in the most unexpected areas, from Picton to Ashburton, Hokitika to Ngakawau and many places in between. Whilst staying in Blenheim, where Jen and I were royally looked after by Peter and Marg Holdaway, I was heartened to hear the occasional freight train running **across a roundabout(!)** in one of that town's main streets – in the middle of the night! It's good to see that all is not lost on the railway scene, though SI has no passenger services apart from the two scenic routes for tourists: The TranzAlpine (139 miles, 19 tunnels, 4 viaducts) over the Alps between Christchurch and Greymouth and the Coastal Pacific, 216 miles, between Christchurch and Picton. To say that these two journeys are a 'must do' is almost an understatement. The former climbs from the vast Canterbury plain to a maximum height of 2417 feet at Arthurs Pass before diving into the 5¼ mile Otira tunnel, opened in 1923, once the longest in the southern hemisphere (and the longest, when built, in the British Empire) down a gradient of 1 in 33. The Coastal Pacific (22 tunnels, 175 bridges) runs for many miles along SI's eastern coast. Being only 3' 6" gauge, these trains are not as fast as ours, but that narrow gauge permits of more weaving around along spectacular hillsides, gorges and coastal indentations. Here is a website with a short video of each, but ... – turn the sound off! (Nasty music):

[http://www.kiwirailscenic.co.nz/tranzalpine/?gclid=CNHepJups70CFQ\\_HtAodeF8ASw](http://www.kiwirailscenic.co.nz/tranzalpine/?gclid=CNHepJups70CFQ_HtAodeF8ASw)

Some of you may recall that I included a website some issues back in which a couple of KiwiRail locos went snow ploughing in Arthurs Pass. Well, here's a better view of it, including an interview with the driver. Pretty good stuff:

[http://www.nzherald.co.nz/national/news/video.cfm?c\\_id=1503075&gal\\_cid=1503075&gallery\\_id=126361](http://www.nzherald.co.nz/national/news/video.cfm?c_id=1503075&gal_cid=1503075&gallery_id=126361)

But, if you *really, really* can't sleep, try this: <http://www.youtube.com/watch?v=fal-hWrTrCw>. Christchurch to Greymouth cab ride, all 3 hours, 20 minutes and 10 seconds of it! There is some cab chat, but look at that scenery, especially after about an hour, when we start getting into the mountains. The white signs passing low down on the right are speed restrictions, I think, but I can't see any distance markers. How do they know where they are? Look how many people, houses, cars, etc. you see. I know it's a railway and not a road, but it gives you some idea of how sparsely populated New Zealand is outside the towns. Snoozing yet?



Photo 11. Turbine hall, Manapouri. 850MW; 200m below lake level; 2km spiral road tunnel; 1.4 million tons of rock; two 10km tail race tunnels; powers aluminium smelter 160km away.  
[http://en.wikipedia.org/wiki/Manapouri\\_Hydroelectric\\_Power\\_Station](http://en.wikipedia.org/wiki/Manapouri_Hydroelectric_Power_Station)



Photo 13. TSS Earnslaw on Lake Wakatipu. 330 tons, twin triple expansion engines producing 500HP. Built 1911 in Dunedin, dismantled, taken by rail to Kingston and reassembled for service on Lake Wakatipu. <http://www.nzmaritime.co.nz/earnslaw.htm>



Photo 12. Charming Creek walkway. The 3' 6" (NZ standard) gauge railway clambered up the valley of the rushing Ngakawau torrent and even crossed suspension bridges! The engineering of the line would have been simpler with a narrower gauge, surely?

<http://www.youtube.com/watch?v=yQU71X7FaxE>

Actually, this Youtube video shows a different part of the walkway, but is still an interesting film.

All photos by John Hawley



Photo 14. Things don't get thrown away that easily in NZ! This stationary engine boiler still gets warmed up for the occasional barbeque at Makarora, on the way to the Haast Pass, one of only four mountain passes in South Island.



## Editor's Contact Details

If you would like to contact the Editor on any issues raised in this newsletter, or for any other reason, the details are below: I'm always glad to receive your notes, comments, articles, pictures, etc. Please consider that all or part may be published, although I reserve the right to edit them. In descending order of preference they should be:

- typed on a computer and emailed;
- typed on a computer then printed and sent by post;
- typed on a typewriter and sent by post, or
- if you want to find out how desperate I am, try a good old fashioned handwritten letter.

Please run a spell checker over your computer work first though and always read through what you're sending, even if hand written, to avoid subsequent mis-understandings. I am not keen to receive contributions via floppy or CD

As for photos, the advantage of sending them by email is overwhelming – I can put them straight into the document, scale them, crop them and all sorts, getting a 'first generation' print. If you send a photo by post, then I have to scan it (losing quality) and possibly send it back, which I cannot guarantee. Photos which have been printed onto plain paper and sent to me don't really work, especially via the scanning process. When sending pictures, please include the photographers name, or details of the publication from which it was taken, so that I can bestow the proper accreditation.

Also, please, if you change postal or email address, don't forget to let me know. *Ed.*

Thank you for the many kind comments regarding LH. I'm sorry if I've not replied if you wanted one, but perhaps you could send me a reminder. If you've missed any recent issues, let me know. I may be able to reprint.

**John Hawley, Rock House, Downside, Backwell, Bristol, BS48 3DH.** Tel: 01275 472023. Email: [ringjph@talk21.com](mailto:ringjph@talk21.com)