

LIONSHEART

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A. G. M. MANCHESTER



Manchester failed to live up to its reputation as England's wettest city and the weather was fair for OLCO's visit. A number of our members know the Manchester Museum of Science and Industry quite well. Others were surprised to find just how extensive it is and how much there is of interest. The 'Planet' reproduction was prepared nice and early and shunting operations in the yard commenced with the battery electric shunter being assisted by 'Planet' as she came up to working pressure.

The battery electric was in the hands of museum volunteer Stewart Mulliner and Jan Ford drove 'Planet', accompanied by OLCO Chairman David Neish and OLCO Treasurer Geoff Wright. Eventually, 'Planet' made her way to the platform with two blue 1830 reproduction coaches, all the other rolling stock having been stabled clear of the running line.

The blue coaches are visually very effective with 'Planet'. The wooden superstructures were produced by museum volunteer Keith Battersby and these run

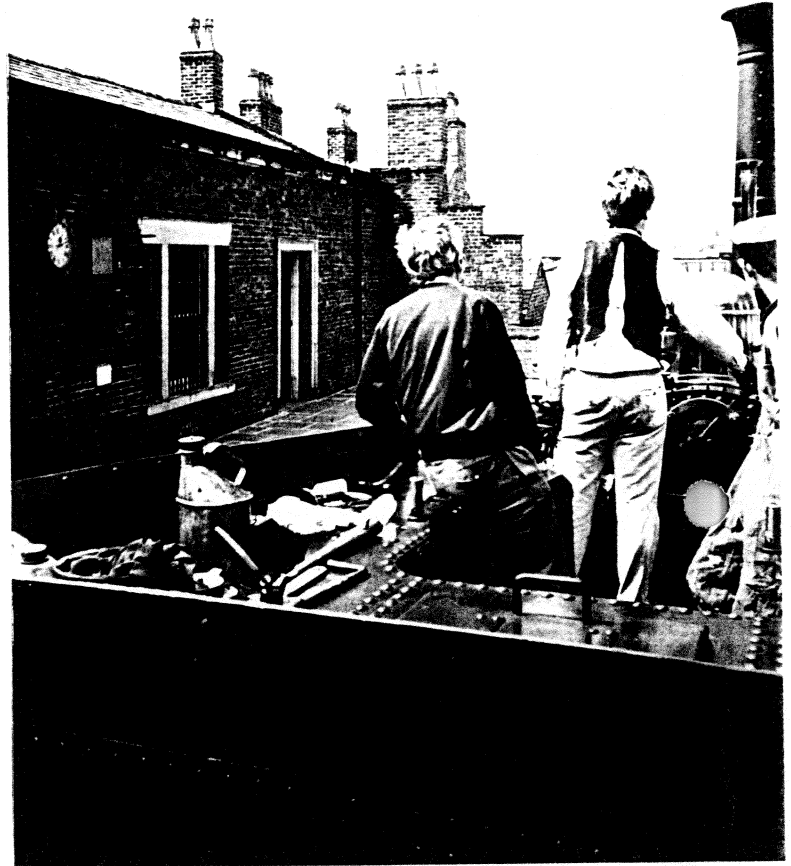
on ex-British Rail vacuum-fitted wagon underframes. The vacuum braking is used when coupled to 'Agecroft No. 3' or visiting locomotives. The museum workshops have also fitted air braking to these coaches. This is used (as a 1-pipe system) when coupled to the Museum's fireless steam locomotive 'Lord Ashfield' and (as a 2-pipe system) with 'Planet'.

Public train rides commenced with Jan Ford driving and OLCO members on the footplate. The working is complicated by the the reversal to reach the new extension line and the interesting valve motion on 'Planet', described below. Jan was heard muttering some distinctly un-ladylike remarks comparing the motion of the 'Planet' reproduction unfavourably with the Walschaert's gear on the 'Castle' she had driven a few days earlier. The train passes between original 1830 buildings and along the alignment of the first terminus of the Liverpool and Manchester, across Water Street and Stephenson's bridge over the Irwell, coming to a stand before the convergence of the Museum line with the adjacent British Rail line. B.R. drivers usually acknowledge a whistle from the Museum train, and the look on the faces of some of their passengers as they pass a complete 1830 train is quite something! Meanwhile, the fireman has got down, walked to the rear of the train, unlocked, operated and re-locked a set of hand points so that, when 'Planet' propels her two coaches backwards, it's on a different route.

This new extension (with horrendous 5-chain curves) leads behind the 1830 warehouse and next to the Granada Studios Tour site, coming to an end a few yards short of the Museum main building, Byrom Street Warehouse. The train then makes its way back towards the B.R. line, the fireman resets the road and 'Planet' propels the two coaches back along the main running line, back to the starting point. This makes for quite an interesting trip, often enlivened by the driver wrestling with 'Planet's' motion.

The museum has a number of interesting static railway exhibits, including a Beyer-Garratt, a Pakistan Railways broad gauge 4-4-0 and Isle of Man 'Pender'. This last loco has been sectioned, giving an excellent teaching tool but it's still a little sad that such a historic locomotive will never steam again.

Later in the afternoon, OLCO members moved to the historic White Lion public house. The meeting room was a little cramped and lacked a door, but a most stimulating Annual General Meeting was held.

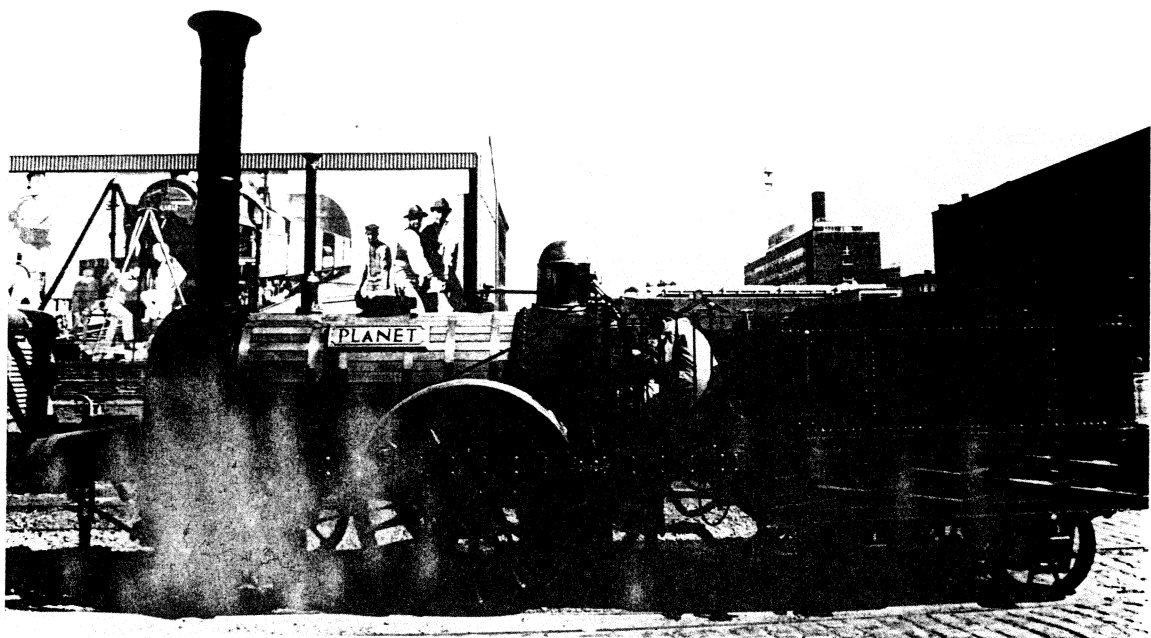


The Museum at Manchester is steeped in railway history. Above, Peter Gardner's wife captured 'Planet' passing the original 1830 station building, with Stewart Mulliner at the throttle and OLCO member Peter Gardner (left).

Opposite page, top: OLCO member Jan Ford at the regulator as 'Planet' gingerly propels her train onto the new extension. Stewart Mulliner (left) looks on as fireman Tony Groom (right) returns to the footplate, having operated the points.

Opposite page, bottom: A broadside view of 'Planet' earlier in the morning as Jan Ford (crouching on the footplate!) lights up. The building rear left is Granada's Baker Street set, decorated with a mural depicting views of the construction of the Liverpool and Manchester, 'Planet' and a 'Rebuilt Scot'.

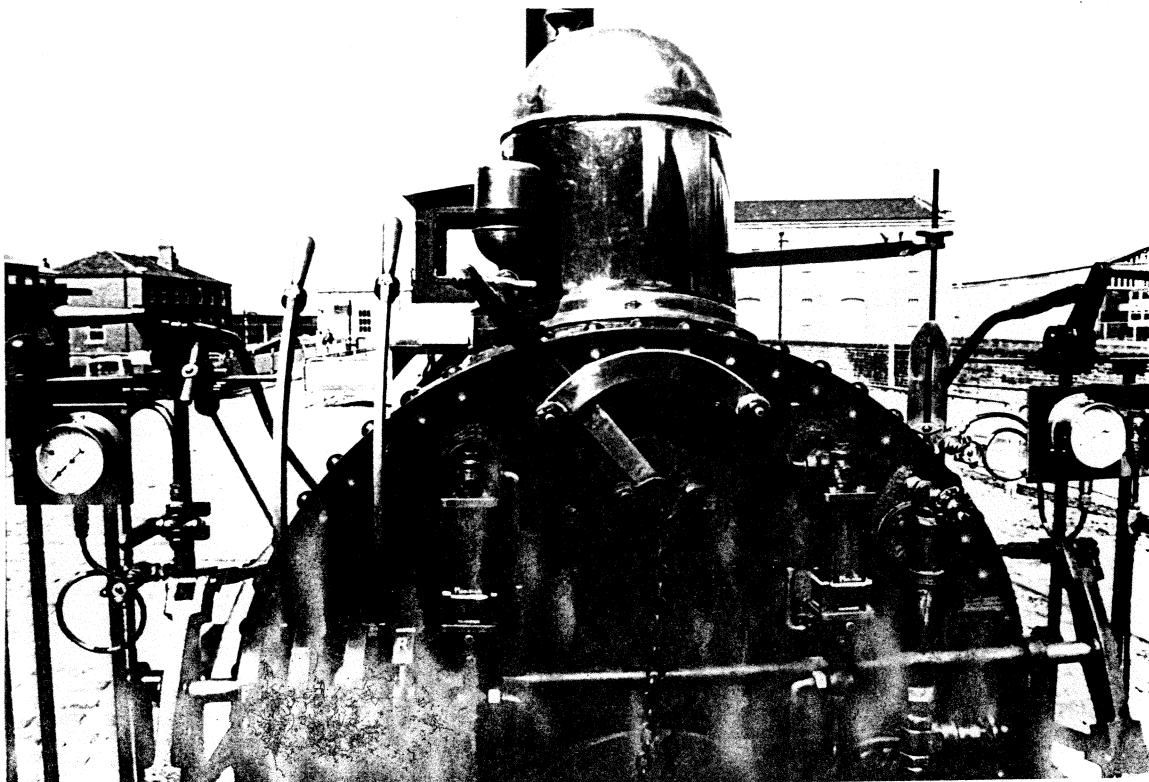
(All photographs courtesy Peter Gardner).





Above: OLCO member Charles Ashforth is also a Museum Volunteer at Manchester, and he can usually be found on the footplate of the massive 'Garratt' locomotive, surrounded by enthralled visitors. (photo: Jan Ford).

Below: 'Planet' footplate. Left to right, steam chest pressure gauge and relief cock, crosshead pump bypass cock, left valve locking lever, left and right valve setting levers, left water gauge, whistle, regulator, right water gauge, blower valve with injector steam cock below, right valve locking lever with air pump pressure gauge below. Most of these fittings were absent from the original 'Planet'! (photo: Peter Gardner).



The original 'Planet' had a 50 p.s.i. boiler (like LION which followed 8 years later). With the wrought iron plates available to the original builders, that was about the maximum reasonable boiler pressure. However, the reproduction 'Planet' design team decided to double the pressure of their reproduction to 100 p.s.i., to allow for the fitting of a non-prototypical injector and, I am told, a vacuum ejector (although, in the end, air braking has been fitted). Although the cylinders on the 'Planet' reproduction have been down-sized in proportion to the increase in nominal pressure, some problems have been introduced, due to the type of motion fitted.

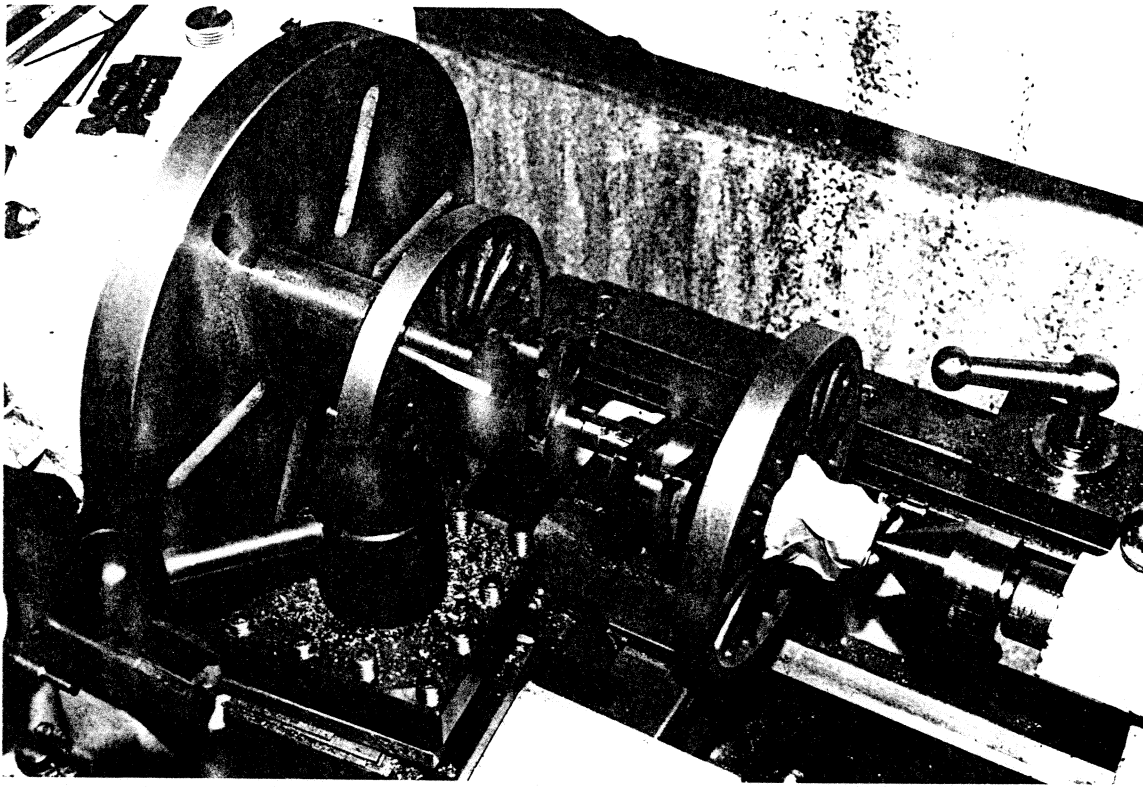
The original 'Planet' pre-dated the evolution of even the Gab motion used on LION. The 'Planet' reproduction has been set up with motion similar to that on the 'Rocket' reproduction. The cranked driving axle is provided with two 'slip' eccentrics fixed together and having limited transverse movement across the driving axle. The transverse motion is controlled from a foot pedal on the footplate. One eccentric controls the valve events for the left cylinder, the other for the right cylinder. Dogs allow each eccentric to locate in two different positions on the axle, according to whether the pedal has forced the eccentrics left or right. The one position is set to give the correct events for forward motion, the other for backward motion.

If the engine has been running forward, and the dog is disengaged by the foot pedal, it is not possible to engage the dog for reverse until the axle has rotated so as to bring the eccentrics into the correct position. If the engine has been stopped in forward gear, there must clearly be another means of moving the engine until the axle has rotated to the correct position for the reverse dog to engage. Two levers on the footplate allow the engine to be moved. There are two small valve locking levers mounted on the railing around the footplate, one on the driver's side, one on the fireman's side. Operating these disengages the valve rods from the two eccentric rods on the slip eccentrics. There are also two

larger, curved levers on the drivers side of the footplate, each connected through two rocking shafts to the valve rods. By manipulating these levers correctly, the driver can manually set up the correct valve events to move the locomotive. Once the driving wheel has turned so that the eccentrics line up with the dogs, it should be possible to use the foot pedal to engage the eccentrics with the dogs and then operate the valve locking levers so that the eccentric rods continue to impart the correct motion to the valves to sustain the motion. The two curved levers continue to rock back and forth as long as the valve locking levers are engaged and the engine is moving.

The engine is, of course, slide valved and is, like all early valves, unbalanced. With the regulator open and the steam chest full of live steam, the valve is pushed quite hard against the port face. Setting the valves manually from the curved levers with a 50 p.s.i boiler would have been, no doubt, an arduous task. At 100 p.s.i., it becomes positively Herculean. The regulator is stiff and reported to have little intermediate adjustment so, having opened it to start the engine, it's common practice to shut it again so that it becomes possible to move the valves manually against the falling pressure. But if the pressure falls before the locomotive has moved far enough to align the eccentric with the dogs, the process has to be repeated.

The fairly large 4'6" diameter driving wheels make 'Planet' rather weak on starting, adding to the driver's difficulties. Any wear in the dogs then makes the engagement of the dogs with the eccentrics less positive and introduces the risk that the engine, having started to move, will slip out of gear and stall. On the reproduction, the driving axle itself has noticeable transverse movement. This means that when the engine enters a curve, the axle is likely to shift sideways and this, too, can cause the dogs to disengage. All-in-all I think it's true to say that the reproduction has not proved universally popular with the crews at Manchester, although she is certainly visually appealing to visitors and represents a significant stage in the development of the steam locomotive.



A few issues ago I reported that I was carrying out a fairly major overhaul of my model, and hoped to give a description of some of the changes I made. Now that the engine has been tested I can make a start on describing the work.

The main areas of work can be roughly split into four areas:-

1. Wheels
2. Valve Gear
3. Water Pumps
4. Lubricator

Perhaps a little bit of personal history might explain why some of these areas needed work, some of which seems rather fundamental. As a small child I had always been inquisitive, with a reputation for taking things apart 'to find out how it worked'. What was more surprising was that I could usually put them back together in working order. Family holidays in Towyn working on the Tallylyn Railway gave me a full working knowledge of steam locomotives, particularly tall chimned ones. So it was not surprising that on my 14th birthday I applied to join the Rugby Model Engineering Society, this being the minimum age for junior members. Originally I wanted to build a model of 'Stepney' on the Bluebell Railway (a Terrier tank engine) but a kindly member suggested that this was a rather complicated design for a beginner. If I wanted an inside cylinder engine, why

not Titfield Thunderbolt? And so it was (I subsequently found that the reason for the suggestion was that said member rather liked Lion, but hadn't got time to build one himself!). Now aged fourteen and a half, I was keen, but not experienced. I wanted an engine that would run well, but didn't want to work to exhibition standard. Progress was steady, and by the time I was 18 I had a running engine, the first, and to this day the only, occasion a Junior Member has built a steam loco whilst still a Junior. The engine was basically built to the LBSC drawings, though with modified valve gear and a second water pump. The tender superstructure was built to dimensions from the full size one.

So much for the history, now to modifications.

1. WHEELS

As I was only about 15 and very inexperienced at the time I made the wheels and axles, they were not very accurately made. In fact the gauge was only correct on the trailing axle, with the middle at 4-7/8" and the front at 4-3/4"! The flanges were also to the old LBSC standard, with no root radius and perpendicular flange. This never really caused a problem, until one day about 3 years ago when I tried to run on a friend's ground level garden railway. At some turnouts the engine

would go through on the straight without problems, and at others on the curve, but nowhere was it happy on both directions! As it is a fairly major job to get the wheels out, nothing was done at the time, but now it was decided to correct things by fitting new steel tyres. The old flanges and about half the depth of tread were turned off, and the backs of the wheels turned off to the correct distance, taking care to keep them central to the axleboxes. As I didn't want to take the flycranks of the axles, the axleboxes had to be left on the axle. To prevent them filling up with cast iron dust, they were sealed to the wheels and cranks with masking tape. The axle was mounted between centres, and driven by a peg fixed to the faceplate and fitting between the spokes. The photograph shows the crank axle thus mounted and turned, and it may be possible to see the spacers inserted between the crank webs to take the thrust of the tailstock centre. These spacers were held in place with a drop of superglue.

The general rule for shrinking tyres on is to allow one thousandth of an inch per inch of diameter as the interference fit. In small sizes like this, I aim for between 1 and 1.5 thou per inch to allow for errors in measurement. Tyre rings were turned from flame-cut rings, roughed out on the big lather at my local club, and finish bored at home. A lip was left on the outer face to stop the wheel

dropping right through. Not having the dimensions of the full size tyres, I guessed the inside diameter and thickness of the lip. Since then John Hawley has provided a print of his excellent drawings for the wheels in LIONSHEART. The tyres were then laid on a couple of firebricks with a gap between them and heated up with a gas torch until they turned golden brown. Then fingers crossed and lower the wheel into the tyre, the crank and axlebox dropping into the gap between the firebricks. After a few seconds, the ring should grip the axle, which can then be lifted out of the way and the next ring positioned ready for heating. If you haven't done any shrink fitting before, or aren't sure of the measurements, the tyres can be heated until they turn blue, but it shouldn't be necessary to go hotter than this. If the worst does happen, and the tyre sticks halfway on, rush to the vice and squeeze the wheel and tyre together, working in stages round the periphery. This should save the situation (it has done for me in the past!) but if it fails, then you've got far too much interference and I suggest you let it cool down and then put it back in the lathe and turn the ring off and start again. I like to finish turn the tyres in situ, though some people complete the outsides before shrinking them on.

All being well, next time I'll describe the new bits I made for the valve gear.



Above: Mike Parrott (left), with his unmodified 'Lion', taking part in the Re-enactment at Llandudno in 1989. (photo: Jan Ford).



This years A.G.M. was well-supported by members, who welcomed no fewer than three senior members of National Galleries and Museums on Merseyside who had agreed to talk about the shock decision to 'stuff and mount' LION, rather than steam her again. We extend our thanks to Loraine Knowles, Jim France and John Keiron for 'braving the Lion's Den'. Chairman of A.R.P.S. David Morgan was also present, in his role as 'scourge of the museums'.

The minutes of the Ninth A.G.M. (published in LIONSHEART No. 30, June 1993, starting at page 6) were adopted.

Retiring Chairman David Neish, in a brief address, explained his aim of getting through the formal business at a trot so as to allow plenty of time for discussion.

The Treasurer's report and accounts were adopted and, based on funds in hand, the committee's recommendation to maintain the 95/96 membership fees at the same level as 94/95 was adopted.

The Chairman explained that both Mike Parrott (whose apologies for absence were entered) and Jan Ford were, under the constitution, ineligible to stand for election to the committee this year. The Chairman extended warm thanks to the retiring secretary for her contribution.

After some discussion regarding nominations, those standing were returned unanimously, giving the new committee as follows:-

David Neish (Chairman)
John Hawley (Secretary)
Geoff Wright (Treasurer)
Peter Gardner
(Modeller's Representative)
Vernon Smallwood
Charles Ashforth

Peter Servis announced that he was forced to give up the editorship of LIONSHEART for health reasons. Charles Taylor-Nobbs expressed the view that a simpler, regular newsheet with one professionally-produced edition per year might be the way forward. The Chairman expressed the thanks of OLCO for the standards which had been achieved.

The meeting then moved on to a general discussion of the decision not to steam LION again. The museum representatives elaborated on the thinking behind the issue of Jim France's letter (reported in LIONSHEART No. 33, April 1994).

The Museum's position is that LION's importance as a historic artefact precludes further steaming and the changes in structure which steaming would necessitate.

The museum representatives were closely questioned on this view by a number of members. Strong positions were taken by E. F. Clark and David Morgan. E. F. Clark took the view that there were plenty of locomotives older than LION, and historically more important. LION's uniqueness is her ability to be steamed, he stated. There was some discussion about the reliance upon the standards for the care of larger and working objects, on the basis that these had not necessarily been formally adopted as yet and were regarded as flawed by certain well-qualified interested parties. David Morgan explained that he had been instrumental in arranging the British Coal funding which had enabled the examination of 'Lion' and he felt that he, as representative of the sponsor, had not been adequately consulted prior to the major decision not to proceed with placing 'Lion' in steamable condition again.

Members queried whether the decision was final. John Keiron confirmed that the work being contemplated to place the engine in static display condition would not preclude a later decision to steam again. Loraine Knowles emphasised the importance of 'Lion' as an exhibit in the care of the museum. Jim France described how the actual decision had been made by the museum trustees, not by curatorial staff, and that the decision had been unanimous. David Morgan said that, nonetheless, he intended taking the matter further. David Neish, summing up, thanked the museum representatives for their candour and felt that, whilst regretting the decision, OLCO would still be supportive of the museum in helping to create the best possible static exhibition, if that was to be the way forward.

E. F. Clark asked if any special celebrations were planned for the Tenth Birthday of the formation of the 'New' Old Locomotive Committee. The Chairman replied that no specific activity had been planned, but agreed that the forthcoming LIONSMEET would provide the opportunity to mark the occasion.

The Chairman then closed the A.G.M. and the majority of those present were able to remain for the OLCO Annual Dinner which was, as invariably, a good-natured event.

To whet your appetite for this year's LIONSMEET, a final selection of photos by A. Hall-Patch from last year's event:

Top: Paul and David Andrew prepare 'Rocket'.

Centre: A. Neish on his father's 'Lion'.

LIONSMEET - FRIMLEY

..... only a few days to go

This year's LIONSMEET will be held at Frimley Lodge Park, near Frimley, on Sunday 14th August.

We're hoping that you'll make an effort to support this event which will be on a ground level track for the first time this year.

Full details were in the last edition of LIONSHEART. Remember, other early locomotives will be welcome to participate in the general running.

Even if we can't steam the 12" to the foot LION, we hope to see a number of 'Baby Lions' - and the 7-1/4" models are not so 'Baby'!

You're welcome, with your family or friends, if you've no model. You can still enjoy the company and the magic smell of steam, smoke and oil.

This is a good opportunity to meet the committee members and give them your views on the future of OLCO.

Our photograph (by Jan Ford) shows David Neish congratulating Bob Davies on his win in 1993. Who will be the winner this year? See you there!

Committee Member Peter Gardner has provided the following suggestions for accommodation:-

"Loganberry Lodge", guest house on A321, Mytchett Rd., very close to the track, next door to the "Miner's Arms".
Price: £15 - £20 B&B
Tel: 0252 544603

"One Oak" Toby Hotel on A325, Portsmouth Rd. near Camberley, 1.5 miles to track.
Price: £29.95 single, £53 double B&B, weekend rate.
Tel: 0276 691939

"Falcon Hotel" on A325, 68 Farnborough Rd. in Farnborough, 2 miles to track.
Price: £45 single £55 double B&B, weekend rate.
Tel: 0252 545378

By prior arrangement, one or two visitors may be able to stay on site with their caravan. If you are interested in this option, please contact Peter on 0252 541999 (evenings).



LIONSHEART

Our Newsletter has been going for almost 10 years, so we've trawled through the archives to remind you of some of the topics covered.

No. 1 July 1984: Reported on the inauguration of the 'new' Old Locomotive Committee at a meeting at the then Merseyside County Museum on 10-Jun-84.

No. 2 August 1984: Publicised LION's forthcoming steaming at Wroughton and discussed the idea of a replica LION.

No. 3 December 1984: Reported on LION's steaming at Wroughton, supported by OLCO members.

No 4 April 1985: Appeared with 'tabloid' format covering a host of model and prototype topics, including an analysis of LION's wheel material.

No. 5 July 1985: Revised format, describing the first AGM in Liverpool on 15-Jun-85.

No. 6 December 1985: Reported on the successful first LIONSMEET at Guildford on 25-Aug-85 and a brief report of Sans Pareil at Wroughton, supported by OLCO members.

No. 7 Easter 1986: Notes on Sans Pareil. Comments on wheel material composition. Further reports on Wroughton 1985.

No. 8 Summer 1986: Article on the Lion Pumping House.

No. 9 Winter 1986: Report on LIONSMEET at Daresbury and AGM at Armley Mills.

No. 10 Spring 1987: Advance notice of LION at Crewe.

No. 11 Summer 1987: Crewe Heritage Festival 1987 and visit of H.M. Queen Elizabeth on 24-Jul-87.

No. 12 Winter 1987: Report on LION (and LIONSMEET) at Dinting.

1988 was the Sesquicentenary Year, in which LION celebrated 150 years of steaming and LIONSHEART appeared in four specially-numbered issues.

1988 No. 1, Easter: Report on Eric Lindsay's 7.25" LION and work on LION at Dinting.

1988 No. 2, Summer: Birthday issue.

1988 No. 3, Late Summer: LION at Tyseley on 7-Aug-88.

1988/1989 No. 4, Late Winter: Relections on the 150th year.

In 1989, Peter Servis took over as editor and the present two-column format was introduced.

Summer 1989: Report on the Re-enactment and AGM at Llandudno.

Late Summer 1989: LIONSMEET at Cheltenham. 'Bellerophon' at Liverpool Road. 'LION, OLCO AND LB - AN AUTOBIOGRAPHY' by Len Belk.

Spring 1990: 'Lionpower' by Mike Parrott. The OLCO Constitution (since revised). 'LOCOMOTION - BEAMISH TO NAGOYA' by Barry Smith. E. F. Clark's address to the 1989 AGM.

January 1991: 1990 AGM Report. 'Lionsmeet 1990' by Mike Parrott. 'LOCOMOTION - BEAMISH TO NAGOYA' and 'LION - STILL AN ENIGMA' by Barry Smith. 'EARLY DAYS' by Len Belk.

July 1991 Issue 2: 'Lion leaves Liverpool' (for Dorothea).

September 1991 Issue 3: 'Lionsmeet at Falconwood'. 'EARLY DAYS' by Len Belk.

October 1991 Issue 4: Lion Survey report and report on 1991 AGM.

April 1992 Issue 1: 'Lion's Future - Decision Soon' report. 'Lionpower' by Mike Parrott. 'The Technical Editor's Smallpiece'.

May 1992 Issue 2: 'Valve Motions' by '41901'. 'A lighthearted look at relative values' by Geoff Wright.

July 1992 Issue 3: 'OLCO at Birmingham' and AGM report. 'The Technical Editor's Smallpiece'. 'Notes on early railway uniforms' by Alan McKirdy.

September 1992 Issue 4: Report on LIONSMEET at Chesterfield. 'LION - The questionable origin of her boiler' by C. E. Taylor-Nobbs. 'Steam in India' by Jan Ford.

January 1993 Issue 1: 'Planet' special edition.

April 1993 Issue 2: 'Lion Pumping Shed'.

No. 30 June 1993: Report on OLCO AGM at Whaley Bridge and visit to LION.

No. 31 September 1993: LIONSMEET at High Wycombe. The John Hawley Survey. 'Notes on a 7-1/4 inch Lion' by Geoff Wright. 'Lion Pumping Shed'.

continued on page 12

No. 32 February 1994: 'Lion Around' by Adrian Jarvis. The John Hawley Survey. 'Lion Pumping Shed'.

No. 33 April 1994: 'Lion's Restoration Cancelled'. 'Lion Around' by Adrian Jarvis. The John Hawley Survey.

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This is my last LIONSHEART editor. I'm having to reduce my involvements because of my health and, whilst remaining a member of OLCO, I'm giving up the editorship. Our magazine is a fairly modest affair - a few pages simply photocopied and with pictures a lot less clear than I would wish. And yet, you might be surprised at just how much effort even this requires from our editorial 'team'. A magazine is only as good as its contributors. Many thanks to the few stalwarts who have helped with letters, photographs, articles and researches into mentions of LION in all sorts of places. I'm sure every member has an anecdote, a photograph or a clipping which would be of general interest, so please send them in, care of the Secretary (see left for address). OLCO and LIONSHEART have each just had tenth birthdays. Many happy returns and good wishes!



A few years ago, J. Arthur Dixon published a series of 'Collect a Classic' postcards. No. 11 (with photography by Geoff Silcock) featured 'Lion', with the following caption:

"Shown at Didcot Railway Centre are two remarkable four-coupled engines, with a combined age of almost 290 years. On the left is Lion, built in 1838 for the Liverpool and Manchester Railway and today it is the oldest steamable locomotive in the world. The engine on the right is No. 5, which was constructed in 1857 for the Sandy and Potton Railway and is a resident of the railway centre."