

THE OCCASIONAL NEWSLETTER OF THE OLD LOCOMOTIVE COMMITTEE

LIONSHEART

Number 54

April 2003



**Secretary Peter Mountford gets stuck-in, polishing Lion at the 2002 AGM.
While Jan Ford and Charles Taylor-Nobbs read all about it
(Surely, they should know all about it anyway!)**

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Editorial:

by Bill Stubbs

Welcome to this edition of *Lionsheart*, I hope that you enjoy it. My thanks to those of you who passed kind comments on the last edition, they were most encouraging. In this one you will find, besides the View from the Chair, and notice of the forthcoming AGM, some articles which I had to hold over last time. My apologies to the authors who have been waiting, but many thanks for their contributions.



Our Resident Experts always welcome any technical contributions from members !

First Expert: "What do you think Alan Bibby means by talking about Lionsmeat?"

Second Expert: "I think it's the stuff he wants in his sandwiches when he's going to Erewash Valley, near Derby, for this year's Lionsmeet. It's going to be on Saturday 16th of August and we'll be told how to get there in the next *Lionsheart*".

First Expert: "It sounds like it will be a good event, what happens?"

Second Expert: "Course it'll be good. Good company, lots of Lions of all sorts of gauges running around in steam, and also part-built ones and bits and pieces, all well worth watching. I go every year".

First Expert: "I can see you like Lions. Would you say you have a pride of Lions?"

Second Expert: "Yus, you could say that, besides the grub should be good".

View from the Chair

by John Hawley

Welcome to the latest edition of Lionsheart. I am sure you will all join me in congratulating Acting Editor Bill Stubbs for the last issue, a very readable effort. As ever, though, Bill needs material to work with, so don't be shy in forwarding anything you have which may be of interest to our readers. Details of how to submit items for publication will be found as you read on. I hope you enjoy the articles and news items and are able to set aside some time to attend one of our gatherings later in the year.

Lionsmeet

There are notes about Lionsmeet elsewhere in this issue. Suffice to say that I look forward to meeting you there and am confident that as usual, we shall witness an interesting and fiercely fought competition. So, all of you with Lions in working condition, please come and take part in this event. Those of you who are building or otherwise unable to run are welcome anyway. Bring your bits, half-built models and so on, including models of prototypes built before 1851. These can go on display and will give rise to lots of interesting discussions, I am sure. Lionsmeet is a fairly fixed formula by now and I am confident that in the capable hands of Alan Bibby it will run like clockwork. (Sorry to mix technologies, perhaps I should say that Lionsmeet will go like a train!). Anyway, the success of the day is in your hands. Do come and join us.

The Bristol Model Engineering and Hobbies Exhibition

As last year, there is a clash of dates, our own Lionsmeet falling on Saturday 16th August and the Bristol Model Engineering and Hobbies Exhibition being on the same weekend, ie on Friday, Saturday and Sunday 15th – 17th August. (The reason for the clash is that both events were fixed at about the same time. Each involves contacts, committees, diaries, bookings and so on, so once made, a date is not easily changed).

For last year's exhibition I made up a last minute display of what little exists of my 7 ¼ inch gauge Lion, a bunch of application forms and nothing else. The montage was placed on a table with no supporting publicity or OLCO member in attendance.

This year, however, we have been offered a stand for OLCO. It is time we went on the offensive and let the world know who we are and what we do. So, my time during that weekend will be split between Lionsmeet and the exhibition. I am sure that either would run perfectly well without my presence, but I think I have a job to do at Bristol and it is always a pleasure to attend Lionsmeet, which is as much a social gathering as a competition. So, I shall be putting in an appearance at both events, I hope (and traffic conditions permitting).

For the exhibition though I would welcome ideas and help. I could put my paltry bits on show again, though since little or no progress will have been made by then there is no great point. We need complete models of Lion, any scale, (any offers to bring down the big one from the Museum of Science and Technology in Manchester?), work in progress, things to sell, manning and so on. So, volunteers please. The Bristol show threatens to become an annual event, so it would be encouraging to get off to a good start.

We have a display table space of 6 feet 6 inches x 8 feet, giving plenty of room for even a complete 7 ¼" gauge Lion, (about 50" long), plus perhaps, one in build. It would be nice to get other gauges as well, so do I hear any offers? By the way, has anyone weighed a Lion model, complete with tender, but empty of water and coal? Weights may be useful to me when considering table loading.

Please ring or e-mail me with suggestions for display, offers of help and perhaps, items for sale. (We still have some OLCO stock of course, but part finished models, full sets of relevant magazines in good condition and so on are always welcome). When offering a model for display, please quote the gauge, weight, value (for insurance purposes) and any comment of interest. Also, think about how are we going to get it to Bristol and back (I may be able to help).

My contact details are: tel: 01275 472023 or e-mail: 'ringjph@talk21.com'.

The exhibition is to be advertised in the usual model engineering publications, but a flyer is included with this news letter for your information.

Subscription Renewals

Yes, March 31st comes around all too quickly. Not everyone is up for renewal this time of course, since some take out five year membership. A form, for the appropriate members, giving details of subscription renewal will be found included with this issue.

Mind you, apart from having to fork out the very reasonable fee for OLCO membership, this is a pretty good time of year. At last the bitter cold and dark of winter is seen to be lifting. We have thrushes in our garden for the first time in years, we have frog spawn galore, and were delighted to spot a tree creeper on 19th February, the first we've ever seen in our own garden. Spring is in the air and the Boat Race and the London Marathon are soon due. Those events are my true portents of spring.

I hope you will join us again for another period of membership and I look forward to meeting you at some time during the year, most likely at one of our events, the AGM perhaps, or Lionsmeet or even the Bristol Exhibition.

The Lionstyre Talks

Some of you may have attended the talk on Lions tyre, either in London on 9th January 2002 or in Leeds on 18th February this year. I have to admit straight away that I somehow gave rise to an error in dates in the last issue of *Lionsheart*. That for the most recent talk was given as 11th February when it should have been the 18th. When I became aware of the discrepancy I phoned around to anyone I thought likely to attend to warn them. I sincerely hope that no one was inconvenienced and offer my unreserved apologies for the slip.

Anyway, to all those who didn't manage to get to either meeting, you missed a darned good talk. To an outsider it might appear that there is little you can say about an old railway locomotive's tyre, but when you settle down and listen to this, or any other subject given by experts, delivered with enthusiasm, it is surprising what can be learnt.

I think we owe a vote of thanks to quite a number of people:

Bernard Champness, of OLCO and The Newcomen Society, who worked tirelessly (tyrelessly ? Ed.) to set up the date and venue in Leeds;

John Liffen of the Science Museum and Chris Hammond of Leeds University, both of whom did a great deal of work on seeing that the detailed arrangements for various aspects worked smoothly.

Our President, E F Clark and Dr Paul Shelton of the School of Science and Technology at the University of Teeside, who jointly gave the talk.

Dr J K Almond and Philip Heward, who carried out a lot of the early research into the tyre.

OLCO members David Neish and David Wainwright, who generously transported and displayed their model Lions at the respective talks and made themselves available to answer questions before and after the talks.

Sharon Brown and Justin Garside-Taylor of the Museum of Liverpool life, who were kind enough to bring a section of tyre from Liverpool to illustrate the London talk. This was a fairly lumpy bit of kit, weighing in at a hefty 80lbs and was conveniently mounted on a trolley for ease of movement.

Lionscolour

I've had a few enquiries about Lion, kindly passed on to us by Sharon Brown, Curator of Land Transport and Industrial Collections at the Museum of Liverpool Life. The queries included one regarding the paint colour. It's a very valid question, but does anyone have a definitive answer? We have red, green and black (and of course, the natural colours of the non-ferrous parts). Black may seem easy and it appears to be gloss, but for the rest, over to our readers. This should provoke some debate amongst you. The specification for 'Big Sister' would be useful for our records, but I really need practical and currently-available paints for present day modellers.

My thanks to Sharon, keep them coming.

A Broad Gauge Freight Locomotive

by Alfred Lloyd

Introduction: This is not a construction article, but a feasibility study into how much of the existing materials, such as castings, for the 3½ inch gauge Lion (Titfield Thunderbolt) could be used in making a realistic broad gauge engine. As there are several examples of passenger locomotives in various gauges, a freight engine would be something of a novelty.

My preliminary investigations revealed that the most suitable engine would be the first six-coupled engines the GWR purchased. These were part of an order for 20 *Firefly* class passenger locomotives built by Nasmyth Gaskell & Co. An amended order required 4 engines to be altered to the 0-6-0 wheel arrangement. These engines were: *Hercules*, *Sampson* (sic), *Goliath* (sic) and *Tityos*. They were classified as the *Hercules* class.

These engines were unique in a number of ways:

1. They were the first and last six-coupled engines to be purchased by the GWR, all subsequent engines were built by the company.
2. They were the only six-coupled broad gauge engines to have outside frames and fly cranks.
3. The boilers being the same as the *Firefly* class engines had haycock firebox crown plates.

This all seemed to fit in well with Lion (Thunderbolt) so the drawing board was dusted off for an exploratory 'doodle' as follows:

The Engine

No photographs exist and the only drawing of this class was published in the Locomotive Magazine in 1901 and that was only a side elevation. This gave me room for considerable speculation as to the shape of components in the other elevations. There is a drawing of the *Firefly* class locomotive 'Centaur' in A.L. Ahron's book 'The British Steam Railway Locomotive 1825-1925' on page 46. This was one of the engines ordered from Nasmyth Gaskell and is a reasonable source of information.

The wheels were 5 feet diameter with 16 spokes, presumably without balance weights. The 18-spoke wheels for Lion would not look out of place unless you are a purist.

If ¾ inch to 1 foot scale is adhered to this makes the 7 foot gauge equivalent to 5¼ inches. This would allow the use of extra long bearings on the axles in adapting the wheel spacing to suit 5-inch gauge track.

The outer frame details are taken from Mike Sharman's Broad Gauge Volume, plan 14, which appears to be an enlargement of the Locomotive Magazine illustration and plan 49. Further details were taken from Alan Prior's book '19th Century Railway Drawings', page 26.

On the model, frame construction would be different from that of Lion. A wooden centre could be incorporated or, if preferred, replaced with metal. The latter would make the frame stiffer and heavier. Similar construction could be used on the buffer and drag beams.

On the original the inner frame which housed the cylinders and driving mechanism was attached to the buffer beam at the front, and to the boiler throat plate at the rear. It would be better to carry the inner frame through to the drag beam each side of the boiler and to incorporate an expansion support for the boiler.

Inside Mechanism

The inner frame side plates need to be spaced more widely in plan and deepened to accommodate the cylinders, spectacle plate, crosshead guides and valve-gear supports.

The axleboxes are the same as the Lion design but incorporate thicker inner bosses to make up the scale variation of rail gauge. Springs are similar to Lion but with the centres of the supports widened, and the camber and number of plates reduced. It would be difficult to arrange an acceptable sprung dummy casting which gave adequate vertical movement to the axlebox.

Axles should be larger in diameter between the wheels as on the 5-inch gauge Lion.

With extra space available a much more robust crank axle can be incorporated with wider eccentrics giving more bearing area whether gab gear is used (as shown on the drawing) or the slip-eccentric alternative.

There should be sufficient thickness of metal on the eccentric strap castings, but if not it would be relatively easy to silver solder a thickness of bronze plate to one side of the casting before machining.

It will be necessary to provide a more substantial pivot support for the rocking lever to take into account the increased offset, and the 5-inch gauge unit would fit in well if modified to the required offset.

Eccentric rods as on Lion would be suitable, but, as the cylinder to crank axle centres are greater, a pair of plate links pivoted either side of the rocking lever and attached to the valve spindle crosshead would be an acceptable way of making up the difference.

Arranging the connecting rods, crossheads, guide bars, and boiler feed pumps would be the same as on Lion but with extra-long front guidebar supports to make up the centre difference.

As the cylinders centre distance is greater, a special cylinder casting is required; although it should be possible to cut the Lion casting centrally parallel to the axis of the cylinder bores and silver solder a bronze insert in place before machining. Alternatively the unit could be fabricated.

Both the steam chest and cover plate would also be special, but these could be fabricated – being relatively simple in shape and construction. The positions of the steam and exhaust connections will be located differently. Cylinder end covers are identical to Lion, as are the valve components, only extra-long valve rods are necessary.

The cylinder lubricator can be positioned under the footplate, operated by an eccentric on the driving axle in the space between the inner frame and the inside face of the wheel.

Outside Mechanism

Coupling rod ends follow the Lion design, only the centre-distances require alteration plus the provision of a knuckle joint on the coupling rod end attached to the crank axle. Flycrank proportions could be the same as the Lion component, but with a reduced throw.

The outer frame members will be entirely different as shown on the accompanying drawing

Boiler

This is larger than the Lion design and fits well inside the envelope except for the height of the firebox outer dome which needs to be reduced in height. The suggested profile is shown on the drawing.

Internal construction should be the same as on the Lion design.

Backhead fittings to be the same, although some rearranging of positions will be necessary as the firehole door may need repositioning, and there is only one safety valve.

Editor's Note:

Although Alfred states that this is not a construction article, it makes me want to start cutting metal! However, since I've been living in deepest Devon, I've been informed that the Broad Gauge was actually 7 feet and ¼ inch. But I won't quibble with Alfred.

I have reproduced Alfred's drawing, but due to scaling problems you will have to get out your rule and calculator – try the front elevation which shows the track gauge.

Better still, contact Alfred on 0116 2777954, I'm sure he will be pleased to help.

Also, I have talked to John Hill in my local (Tiverton) Model Engineering Society as he is very interested in Broad Gauge matters. He has given me a leaflet describing the activities of the Broad Gauge Society which was formed in 1980 to promote research into, and the modelling of, the Broad Gauge Railways (it wasn't unique to the GWR). If you wish to get in touch with them, the address to write to is:

The Honorary Membership Secretary, 8 Finches Park Road, Lindfield, Haywards Heath, West Sussex, RH16 2DN. They have a website at www.broadgauge.org.uk

Safety Valve modifications to a 5-inch gauge Lion

by Ian Kemp

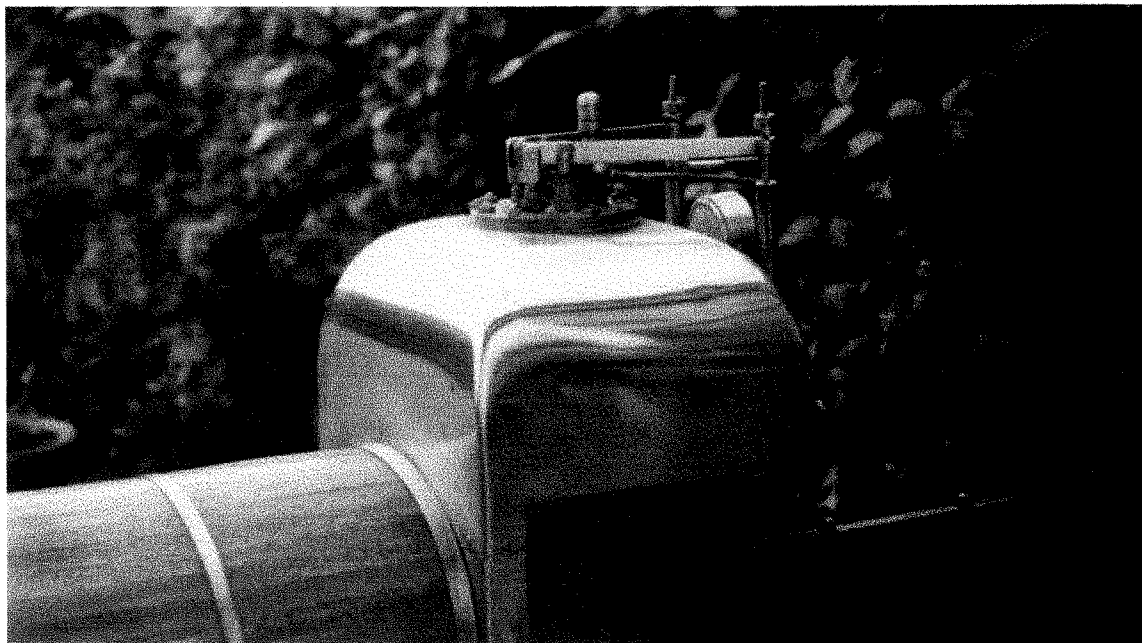
I decided to build a Lion for two reasons: first and foremost because I greatly admired the beautiful model built by fellow club member, the late Jim Mercer, and secondly because my other two locomotives were becoming increasingly difficult for me to transport, (LBSC's Pansy and Martin Evans' Princess of Wales). The Lion was completed about four years ago and apart from an initial problem with a leaking superheater, has performed much as expected.

However, as a contributor pointed out in a recent issue of *Lionsheart*, the Salter safety valves can at times be temperamental and in my case this certainly was so, despite work on the spring size, etc., etc. A judicious opening of the fire-door to reduce boiler pressure was sometimes necessary. Boiler testing can, by the same token, be more than usually time-consuming, and a satisfactorily stable 10% maximum overpressure under full blower, etc. was not always easy to obtain. Since I had built Lion to be my routine running locomotive on Club days and I wished to let other Club members drive it, I felt the need to do something, preferably without spoiling the appearance too much.

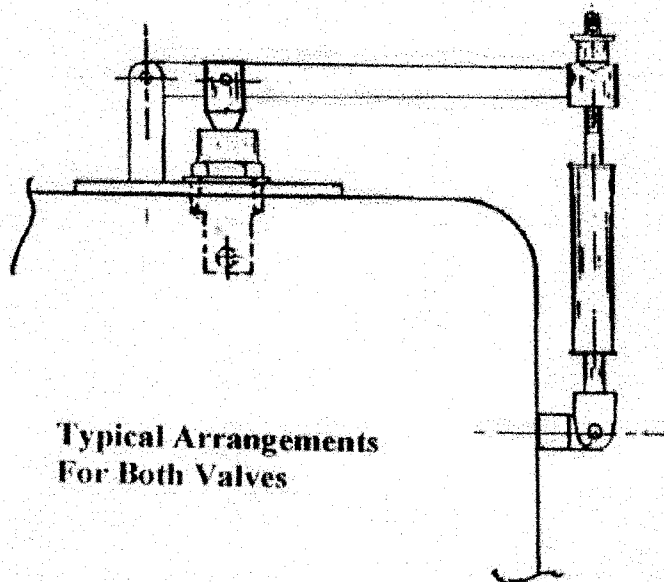
My Lion boiler was built to the conventional design as is shown in the photograph attached. The haycock is not part of the pressure vessel and was made by forming 18g brass sheet, cut from a card template, round a hardwood former and silver soldering the joints (my attempts to braze the joints failed, but after a time the silver solder is hardly visible). The haycock fits onto the top boiler flange as shown. The modifications to the safety valves are shown in the drawing attached. The essential point is that two conventional safety valves are built into the top cover (5/16 x 32 thread; the cover is 5/32 inch thick gunmetal). The stems of the conventional valves work in (ample) clearance holes in the Salter gear with the ends shaped so that they do not obstruct the steam exit holes, as shown.

Thus the Salter gear is retained but does nothing apart from look authentic (to most eyes anyway!). This has all worked out satisfactorily for a year now; the locomotive has performed well and routine boiler testing is straight-forward.

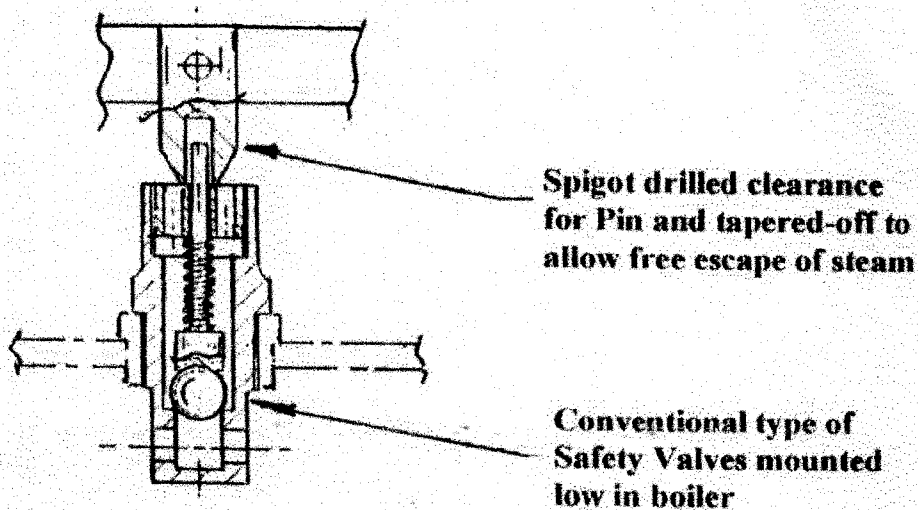
I would like to thank Henry Wood of WDMES for the drawing.



Ian Kemp's Safety Valves and Haycock



Typical Arrangements
For Both Valves



Spigot drilled clearance
for Pin and tapered-off to
allow free escape of steam

Conventional type of
Safety Valves mounted
low in boiler

Twice Full Size

Safety Valve modifications for 5 inch gauge *Lion* using conventional valves with dummy Salter mechanism to simulate original design

Editor's Note: Due to reproduction processes, take care if scaling-off Ian's drawing.

On a personal note: I've recently refitted my safety valves much as Ian's design, with dummy Salter gear. The main difference being that I machined my 'manhole cover' from a thick lump of bronze, tapped right through 5/16 x 32 for a separate seating for each valve. Following a note in one of the magazines about screw threads near the ball causing poor operation, I redrilled the lower portion to a greater diameter in order to leave a plain portion above the screwed-in seating. The results were very good with a smart action, holding the pressure just a few psi above the red line, then closing cleanly just below the line. Thank you Ian, for the scheme, our boiler inspectors love you!

LION, LION, glorious LION **by Bill Stubbs**
(with apologies to Flanders and Swan)

Some members of OLCO were meeting one day,
At a venue in Manchester fair,
They'd dressed in their overalls, some dull and some gay,
For 'twas the appropriate wear.
They'd brought tins of Brasso and polishing cloths,
The roof to the rafters it rang,
They worked on the oiling, so proud of their toiling,
And as they all worked they all sang . . .

LION, LION, glorious LION,
There's nothing quite like her and her ancient iron.
So polish and clean her,
Spray 'Mr Sheen' there,
We'll continue to preen her, our glorious LION.

The chairman and his mates were working quite hard,
To show all the others the way,
To polish and clean her, the best you have seen her,
For this was the A G M day.
Secretarial matters were soon left in tatters,
But it didn't matter a hang,
For soon she was shining, the dirt was declining.
And as they all worked they all sang . . .

LION, LION, glorious LION,
There's nothing quite like her and her ancient iron.
So polish and clean her,
Spray 'Mr Sheen' there,
We'll continue to preen her, our glorious LION.

So come all you OLCO-ites to our A G M,
In Manchester city so fine,
And come in the morning, I give you due warning,
You'll work hard to get her to shine.
Old LION is the object of all of our joy,
The noblest of locos, no doubt,
We've dusted and linished, we'll soon have her finished,
And as we all work we will shout . . .

LION, LION, glorious LION,
There's nothing quite like her and her ancient iron.
So polish and clean her,
Spray 'Mr Sheen' there,
We'll continue to preen her, our glorious LION.

OLCO Annual General Meeting
Saturday 7th June 2003

The 19th Annual General Meeting
is to held in Meeting Room 3,
Main Building, The Museum of
Science and Industry, Manchester,
at 3.15 pm.

The official notice of the meeting by
Peter Mountford is enclosed with
this edition of *Lionsheart*.

Please do make every effort to
attend.



● **STEAMING AHEAD:** Bill is now putting the finishing touches to his Lion locomotive

The Lion sleeps no more

A TIVERTON man has continued his long labour of love building a model steam engine, despite suffering a heart attack.

Bill Stubbs started building the model 20 years ago, but his career and then a serious heart attack followed by a triple heart bypass operation prevented him from working on it for a number of years.

Bill's model is that of the famous Lion locomotive that he first saw as a teenager in his native Liverpool. Now 65-year-old Bill is putting all his energies into completing the Lion and expects to finish it in two months.

Bill, chairman of the Tiverton and District Model Engineering Society, said: "After the bypass operation, I felt as good as new."

This flattering picture of your acting editor turned up in my post from John Hawley.

When the members of the Tiverton & District Model Engineering Society were seeking some land for our permanent track in 1997, I did a public relations piece for the local papers – this was a follow-up by a couple of the papers, a bit of sub-human interest. We were successful in buying a piece of glorious Devon and today (at time of writing) I was helping to install the 'chassis' for a flexible point. Heigh-ho, a model engineer's work is never done, even if it does involve shifting tons of earth and mixing concrete!

It Couldn't Happen Here ! (or could it?)

extracted from '7 ¼ News' via Charles Taylor-Nobbs

Once upon a time, a British company and a Japanese one decided to have a competitive boat-race on the River Thames. The Japanese won by a mile. The British firm became very discouraged by the result and morale sagged.

Senior British management decided that the reason for the crushing defeat had to be found, and a project team was set up to investigate the problem and recommend appropriate action. Their conclusion was that the Japanese had eight people rowing and one person steering. The British team had one person rowing and eight people steering.

Senior management immediately hired a consultant company to carry out a study of the British team's structure. Millions of pounds and several months later they concluded that: "There were too many people steering and not enough rowing".

To prevent losing to the Japanese the next year's team structure was changed to:

Four Steering Managers, three Senior Steering Managers, and one Executive Steering Manager.

A performance and appraisal system was set up to give the person rowing the boat greater incentive to work and to become a key performer.

The next year the Japanese won by two miles.

The British company laid-off the rower for poor performance, sold all the oars, cancelled all capital investment for new equipment, and halted development of a new boat. They also granted High Performance awards to the consultants, and distributed the money saved to senior management.

Editorial Tailpiece:

I hope that you have all enjoyed a good read. As usual with all editors of newsletters, I would appeal for articles, news, dates of forthcoming events, pictures and photos. *Lionsheart* wouldn't be the same without members' contributions. Please keep them coming.

I compose this in Microsoft Word software, which will also accept some other formats including straight text files. You can send them to me on disk, e-mail, or on paper - even in good old-fashioned hand writing!

My details are: F W Stubbs, 6 Rippon Close, Tiverton, Devon, EX16 4HF
Tel: 01884 243309
e-mail: w.stubbs@ukf.net

Many thanks – Bill Stubbs

Diary Dates Reminder:

OLCO Annual General Meeting.	Saturday 7 th June
Bristol Model Engineering and Hobbies Exhibition	15 th , 16 th , 17 th August
Lionsmeet	Saturday 16 th August