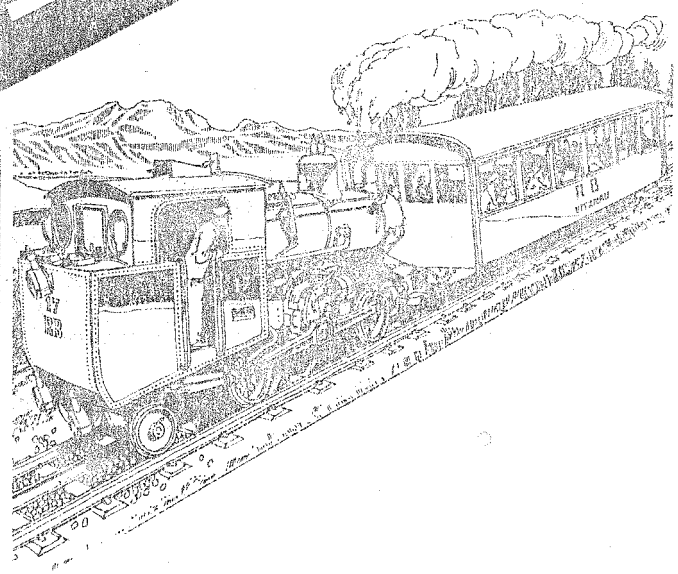
FOUNDED 1929

MAIDSTONE MODEL ENGINEERING SOCIETY

MOTE PARK

Maidstone Model Engineering Society

NEWSLETTER



BUMPER CHRISTMAS EDITION

CONTAINS NEW EXCITING ARTICLES!

UNEXPURGATED VERSION!

NOW....READ ON.....

Contents

INTRODUCTION

You will have noticed already that this newsletter is a huge size compared to usual. However, make the most of it as this is just a special Christmas offering and unless I am besieged with items (feel free!) for inclusion in the future, it will be back to the usual info, sheet . My thanks go to Graham, Jim, Ray and Roger for contributing the articles I know you will enjoy reading. No doubt they will be pleased to answer you direct if you have any questions to ask or points to discuss on what they have written.

So settle yourself down in a comfortable chair and enjoy the following.

May I wish you all an extremely Merry Christmas and a Happy New Year.

Sue x

SCRAPYARD MODEL ENGINEERING

Over the years that I have suffered from the insane desire to slave over a hot lathe, milling machine etc. to produce " models " which have varied from .25 cc diesel engines up to my present project which has great potential for an instant hernia by just looking at it, I have made great use of various scrap yards in the continual search for raw materials. During these searches I have always been surprised that the places have not been crawling with earnest individuals clutching 6" rules and lists of " bits required ".

At the risk of offending some of our conventional suppliers of materials I will now give you an idea of the Do's and Don't's of scrap yards and some of the " goodies " that can be discovered in them.

First and foremost do not imagine that the boss of the yard does not know what something is worth to him as " scrap " so bargaining in the Persian Market manner is usually out, and unnecessary anyway as everything will always be cheaper than buying it through the trade. Cheque books are out, all scrap yards only deal in " readies " and V.A.T. stands for " Very 'Ard Trade ".

Having disposed of the financial technicalities what is the potential? Well, over the years I have acquired a 10" shaper, swiss high precision tool and cutter grinder, 6" rotary table, tool post grinder, horizontal/vertical milling machine among the larger items. All these normally very expensive items have been acquired at ridiculous prices and have only neededlots of hard work to bring up to " as new " condition. As to materials, these are too numerous to mention but to give you some idea, my last two locos have not cost more than £50 each and this included the copper boilers.

When looking for materials - to get an idea of the identity of the material you are contemplating purchasing, try and determine the previous use of the material. For instance, very high grade cast iron for liners, pistons etc. can be found in the S.G irons that lots of modern car engines are now using for camshafts and crankshafts. These high tensile irons are very easy to machine and differ from conventional cast iron in that the free graphite flake in the iron, " the stuff that makes your hands dirty " is refined to a spheroidal form. This makes the iron much less brittle and therefore suitable for shock loaded components.

In looking for steels, this can be a very tricky area but some basics to remember are:-
Structural steels are no problem, i.e. channel iron, angle iron, black bar and strip can all be purchased with very little danger of getting hold of unusable material.
Scrap steel bar should only be bought on the basis of trying to identify it when you attempt to machine it, this particularly applies to the various stainless steels, and can lead to some hair - raising turning on the lathe, but if the stuff does turn out to be a " wrong un " you can always sell it back.
To obtain the more exotic steels look for the following items:
Any steel pressing will always be made from bending quality steel i.e. EN 2. The material will be suitable for flanging up shovels, clips, etc. requiring right angles, bends, and will save you the well known experience of spending hours marking out an item, sawing it out and then having it split on bending. Standard mild steels to spec EN 1, EN 3, EN 4 will be used for line shafting, machine shafts, studs etc. and mild steel will form the largest part of the scrap in the average ferrous department of a scrap yard.

In looking for higher tensile steels go to lorry and motor car back axles, usually EN 15 to EN24 ranges, these will turn well if low speeds are used, but can be hardened and tempered to give tensile strengths up to 100 tons/square inch. (Mild steel is usually up to 30 ton .) Vehicle springs, coil and laminated will be made from spring steel to spec EN 42 - EN 48. These can be softened for use by getting a really hot bonfire going, getting the spring red hot and leaving it in the ashes to cool, it will obviously have to be re - hardened and tempered after manufacture, but that is another story. Incidentally, this is a good dodge for softening, or annealing as it should be called, any hardened steel or even chilled iron castings that are difficult to machine. You can even kid the wife that you are tidying up the garden (ha ha!).

With regard to copper it is almost certain that anything you find in the way of tube and sheet to the dimension you require will be usable for boiler work (if in doubt let the boiler inspector have a look) but beware of mistaking corroded brass for copper, a quick scrape with a sharp knife will confirm the difference. But if it is in the copper pile it is very unlikely that the scrap yard man has made a mistake having been trained from the romper stage to identify copper, brass and lead at 100 yards.through the wrong end of a telescope.

If you are looking for brass bar and sections these are easily identified and it is very rare to find drawn bronze or gunmetal in amongst it, but if you do, buy it, because this is the proper material to make all your steam fittings from but it is not very good for bearings unless used with hardened steel shafts.

The material to obtain for bearings and also to use for built up cylinder blocks, fittings etc. is cast gunmetal. This can be found used for water valves and steam fittings or phosphor bronze which is used for machine bushes, feed nuts etc. But remember bronze and gunmetal cannot be bent or forged out as brass can, so the section you obtain must be lage enough to use.

Finally, scap yards can be dirty and somewhat dangerous places to work in so do not turn up in your Sunday Best and carpet slippers, do not just wander in and dive into the nearest 60 foot pile of scrap. Ask permission and mention the magic words" model steam engines " and you will be welcomed in the yard. Do be prepared to strip down or hacksaw off if necessary to obtain the object of your desire. The personnel in the yard are there to work for the boss, not for you.

Happy hunting, but get off my pile of junk!

Graham Kimber.

FLASHBACK

October 1st - Visit by Chingford Club

A good turnout by Chingford Model Engineers and their families despite the dubious looking weather, and many had a good run. They did have to shelter in the Clubhouse at one stage and their own is under construction. An enjoyable time was had by all.

We are sorry to learn recently of the death of one of their members, Percy Wood. He had worked hard to get his locomotive ready for the visit to Mote Park but on arrival unfortunately found he was unable to run, and was hoping for a trip to us next year. Our condolences go to his family.

October 7th - Extraordinary General Meeting and Auction

I seem to see a few faces at A.G.M.s and E.G.M.s that I never see at the club any other time. The motion that the annual subscription be raised from £2 to £5 was carried with effect from the 1984 subscriptions due January 1984. This increase means that the Club will now be nearly entirely self supporting. It was also decided that the fares for all passengers should remain at the level increased at the start of the 1983 season, that is ten pence for all classes of passenger.

The auction held afterwards was a great success with Jim Ewins being such a good auctioneer that some people doubtless got carried away by the spirit of it all and bought what they did not really want. There was also someone who, in the excitement of it all, was bidding against himself (and will remain nameless to save embarrassment).

October 23rd - Last Running Day

Quite a few members turned up and the weather was bright although it did start to get chilly as the sun went down.

October 30th - First Work Day

This date is only really conspicuous because of the absence of Club members present to do anything.

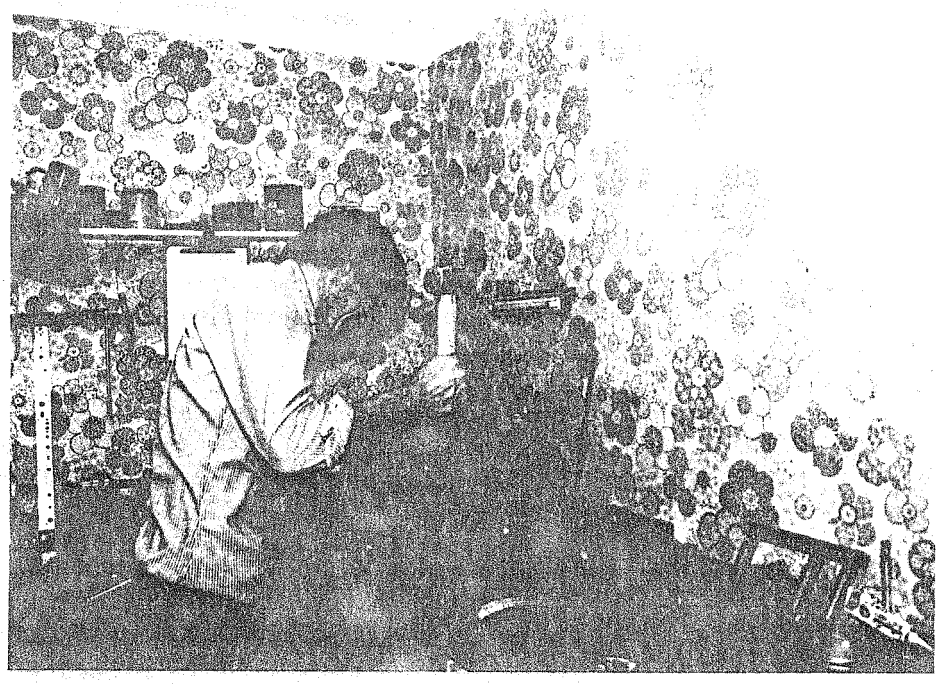
November 4th - Film Evening

Alan Garner from Canterbury gave us another slide show and talk on his holiday in South Africa, with many shots of the Beyer-Garretts that were running in the country.

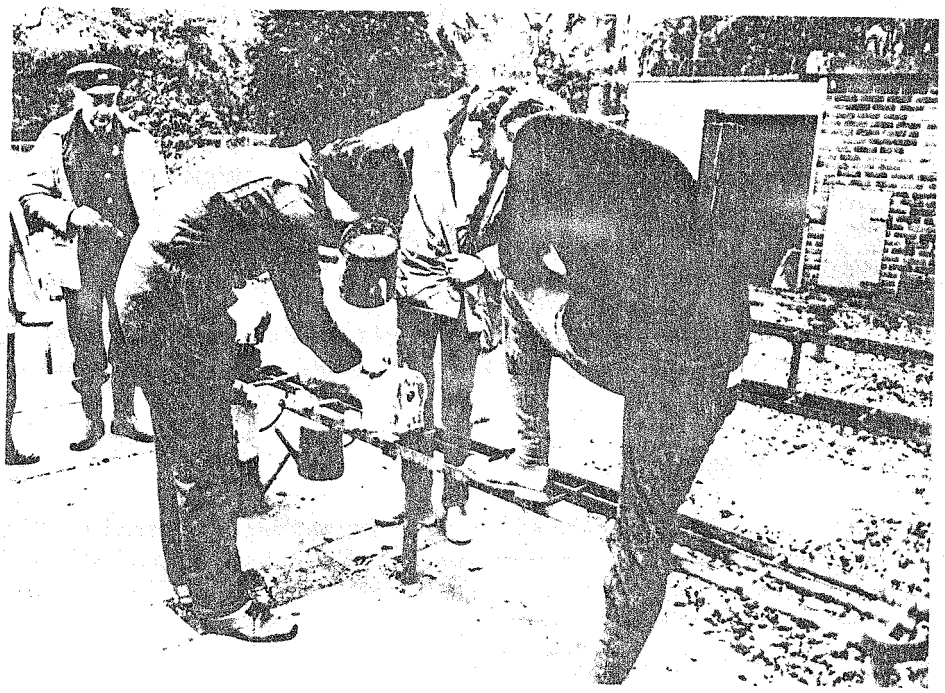
December 2nd - Video Evening

It was nice to see the Club film again (and Treasurer "Pyromaniac Pete" in his shorts!) and certainly the conversion to video has detracted nothing from the original film. Also shown were clips from "Swap Shop" when BBC TV visited Mote Park a couple of years ago, and shots of action at Beechurst and our own track.

The Club is intending to begin a video collection ready for future Club nights and if you have any videos that you think will be appropriate please let us know. Also our Hon. Sec. Martin Parham is able to convert films and slides to video, for Club showing. Please contact him if you think you have any items in this respect which you think the Society will be interested in.



Adrian Curr making a minor technical adjustment to his Enterprise chassis.



Adrian about to water test his Enterprise boiler, aided and abetted by Chris ~~Walliams~~ Williams, Robin Spencer and Jack Payne. A dry day but we all got wet!

MAIDSTONE MODEL ENGINEERING SOCIETY

LIST OF BOILER TESTERS

Members wishing to have a boiler tested by the Society, to the Southern Federation Test Standards MUST make a prior arrangement with one of the testers listed below and another Society member to act as witness to the Test.

Any boiler produced for a test must be fitted with a $\frac{1}{4}$ x 40 ME. male fitting to take the test pump.

The Society's boiler testers are as follows :

Mr C. Hayward, 110 High Street, Eastchurch, Isle of Sheppey, Kent.
Telephone : Eastchurch 668

Mr R. Holdstock, 171 Lower Glen Road, St Leonards-On-Sea, East Sussex.
Telephone : Hastings 51832

Mr G. Kimber, 4 The Stream, Ditton, Maidstone, Kent.

Mr F. LaRoche, 44 Groombridge Road, Welling, Kent.

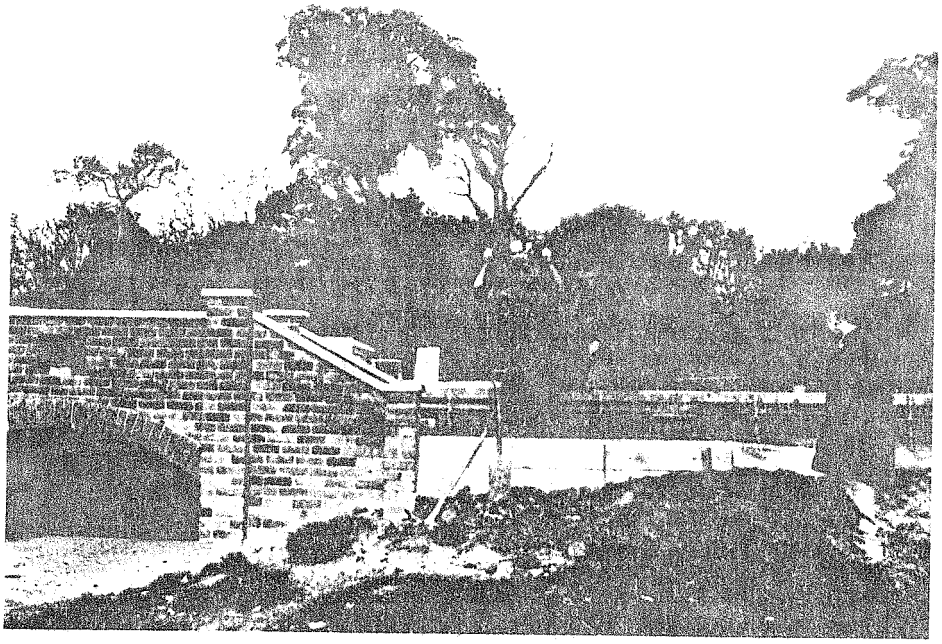
Mr N. Nicholls, 9 Heathorn Street, Maidstone, Kent. ME14 5AQ.

Mr M. Parham, Bramleys, Old Loose Hill, Loose, Maidstone, Kent. ME15 0BS.
Telephone : Maidstone 44175
(For the next few weeks also : Medway 374650)

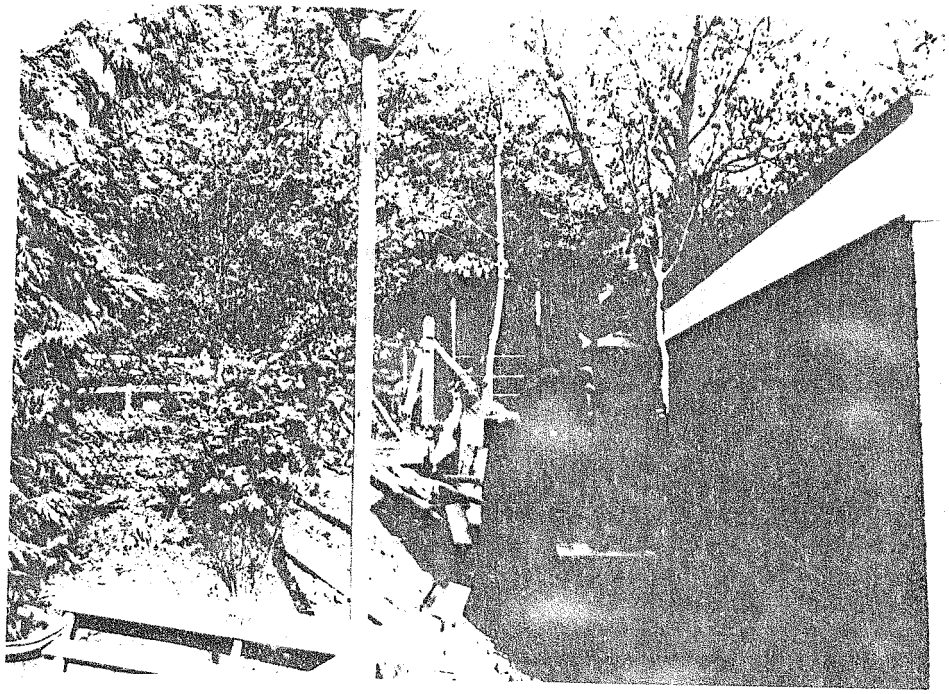
Mr D. Paterson, 1 Westlawn, Little Ivy Mill, Loose, Maidstone, Kent. ME15 0ET.
Telephone : Maidstone 43081

Mr A. Payne, 38 Oxford Road, Maidstone, Kent. ME15 8DJ.
Telephone : Maidstone 57545

DECEMBER 1983.

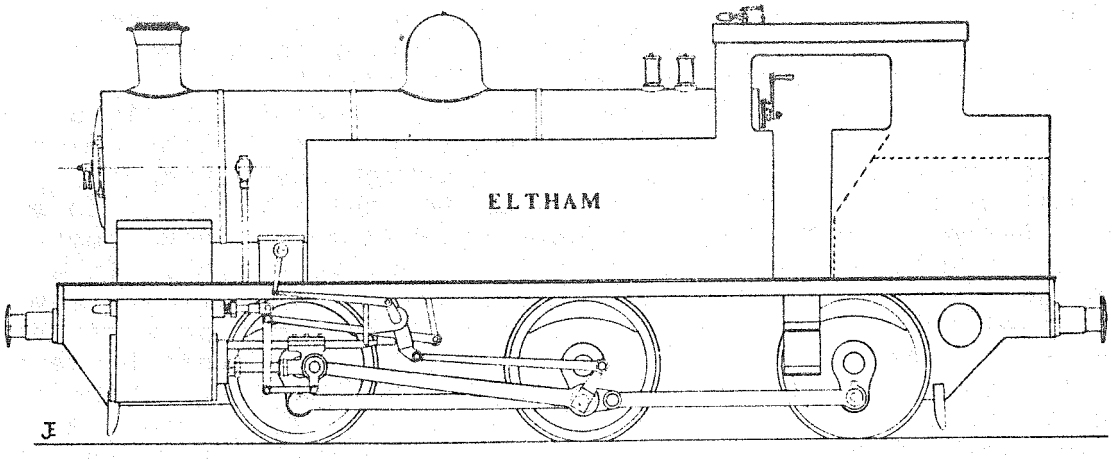


Chris and Jack shift earth to the bridge. Les Hulbert remains in his usual position while the work goes on around him.



Adrian, Robin and Chris try the steps to see if they can stand their weight (no dents so far).

The Choice of an Engine for Club Work
with
Suggestions for Improved Design
by
Jim Ewins



The majority of clubs which operate continuous tracks rely financialy upon the revenue generated by carrying the Public. Many club members who join in this operation succumb to the desire to have an engine suitable for this purpose. Thus the question arises as to what sort of engine to obtain or build. Often the individual is motivated by a certain prototype that has taken his fancy and after many years of effort or the expenditure of a large sum of money discovers when the engine is put into service that it never seems to be as satisfactory in operation as some others of relatively modest pretensions.

The majority of models are made to published designs and their suitability for any particular duty is rarely considered. This arises because of a lack of running experience on the part of their designers of the sort associated with continuous passenger hauling tracks. In speaking of design I do not mean only the technical requirements for good performance but I also include the convenience of the driver, ease of maintenance, ease of transportation and longevity. Published designs suffer from a conservatism which inhibits change and effectively holds the art as it was in the L.B.S.C. era. L.B.S.C. never operated on a track such as ours at Maidstone and under the conditions which prevail there on a Sunday afternoon. His designs therefore were not always good for this type of operation and were prone to wear out rapidly if subjected to too much of this use. For the past 25 years I have directed my attention to the problems mentioned above with the result that I have come to some pretty firm conclusions which members contemplating a new venture might like to consider.

One of these conclusions is that a tank engine is a lot more convenient than one having a tender both in use and during transport. Also tank designs lend themselves to the concealment of the ballast so necessary for the engine to give a good performance. A snag however is that tank water gets hot making the reliable operation of injectors uncertain but this difficulty does not occur if the design is one having a capacious bunker tank which can be kept separate from the side tanks. In addition a large bunker tank permits a good

space for the accommodation of coal thus contributing to a self-contained unit which is very convenient in use and compact for transport. Many years ago the Eltham society resolved to build a club loco and I was commissioned to produce a design the outline of which is reproduced above. It will be observed that this design complies with the requirements just mentioned and many will notice a distinct resemblance to the Simplex design. This is pure coincidence my design having pre-dated the Simplex by a year or two but the significant difference is in the bunker which in Simplex is so small as to be usless for either coal or water accommodation.

There are those who do not like tank engines, it is a question of " chacun à son goût" and if one has a long reach, does not mind carting two components around and having to connect up pipework at each run then the thing to do is to go for a narrow firebox tender design which does not have bogie or pony trucks to take away valuable adhesive weight. In a tank design weight carried otherwise than on the drivers can be offset by ballast (possibly in the tanks), but on a tender engine with narrow firebox the opportunity to include ballast is much more restricted. Why a narrow firebox then? Here we come up against the basic question of design which revolves around grate loading. This factor relates the size of the grate to the demand upon it by the engine and the load it is hauling. There many aspects of design which modify grate loading but generally speaking in a model the loading is too low for the most effective working of the engine, a situation which is evidenced by sluggish and unresponsive characteristics particularly in respect to sudden load changes. This effect is exacerbated in wide firebox designs and can only be overcome by making them very heavy and working them hard. My 9F with 42 square inches of grate area is like this and is only really happy with 2 tons or more behind the tender. At Maidstone as at most other tracks we do not operate regularly with this size of load and so our purposes are amply catered for with about 25 square inches of grate area. Thus the best prototype to model is either the passenger tank or the mixed traffic tender engine. Both have narrow fireboxes and moderate size driving wheels.

Over the years I have collected data on the performance of many model locos and have related this to the observed characteristics of them. More recently I have brought this information together and expressed it in the form of equations which enable one to design with greater certainty of producing a well balanced result. It is relatively easy to design a loco that blows off steam copiously and some people even manage produce designs which fail to keep steam. If an engine is well balanced it will do neither of these things because of the automatic effect of the blast mechanism. Members interested in more information on this subject will find it in Engineering in Miniature Vol 3 No 12 May 1982.

A source of disappointment for many new-comers to the hobby lies in the increasing number of simple 0-4-0 designs now available on the market. These have the merit that being simple they afford a means for the beginner to get an engine on the track in the shortest time and with the minimum of expense. They are not however eminently satisfactory for passenger hauling. The difficulty usually arises with them because of their small wheels and short wheelbase. The small wheels operated from cylinders which are too large usually result in overloading the grate and tearing the fire to pieces if modest passenger hauling is attempted. They are after all industrial or shunting type machines not suitable for the express passenger duty which their drivers try to emulate. Additionally because of their

short wheelbase they try to do the 'bucking bronco' act which is most disconcerting especially with the narrow gauge specimens with their excessive top hamper. The popular AJAX design by Mr Fred Stone comes into this catagory and it is significant that Fred produced an 0-6-0 version to overcome this trouble. Had he at the same time reduced the size of the cylinders and/or increased the grate area, though not producing an 'ACHILLES' never-the-less a satisfactory passenger hauler would have resulted. There are some who aver that the original design is wonderful,- but then some are easily satisfied! I personally have cut one of these engines in half and inserted some extra frame steel, an operation hardly likely to have been condoned by its owner if he had been satisfied with its performance!

Readers will have gathered from what I have said above concerning a balanced design that there is a critical relationship between the various parameters involved. This is indeed true although there is considerable latitude here. Mr Kieller said words to the effect that "It is a pity, in a way, that a model locomotive will 'go' even if it is badly designed and badly made". This is very true and accounts for the acceptance of many indifferent designs which 'go', by those unable to discern the difference between good performance and otherwise. Poor design shows itself in two principal ways. Either the engine fails to produce enough steam when it is wanted and the blower has to be used in desperation, or it is constantly blowing off resulting in spurious overloading of the grate with consequent clinkering and grate burning problems. If a design is well balanced neither of these effects takes place excessively when the engine is used on a load commensurate with its capacity. Of course, with varying traffic conditions engines are sometimes called upon to operate outside their optimum range and it is under these conditions that a variable blast nozzle is so valuable. By this device the blast mechanism can be tuned to allow for contingencies and also for different load conditions. Heavier loading demands a larger blast nozzle otherwise excessive steam will be produced with the consequences mentioned above. And again if one gets hold of a rotten bit of coal a sharper blast could get you out of trouble.

We are usually exhorted to practise what we preach and this is indeed what I have done with my last two locos. Lode Star has certainly lived up to its name by hauling a record load of 89children at the Chingford track and contrary to what we are told by the 'sour grapes department' did actually start this load. It is however in a sense something of a white elephant being too big for ordinary passenger track use. My latest design "Jimmy's Riddle" is a much more satisfactory tool for the sort of loads usually met at Maidstone and indeed at most other tracks. The Riddle was designed using the formulae mentioned above with some allowance for an expected improvement in efficiency attendant upon the situation of the engine in the smokebox. It has in fact a grate area of only 17 square inches with an adhesive weight of 180 lbs. A number of members who have driven the engine will know how simple it is to use. Provided that coal is put on to keep the firebox level up and similarly the injectors are switched on to keep the water level up the engine looks after itself. Incidentally one of the reasons for producing this design was to debunk the idea that a model needs to ape full size practice and use large long travel valves with lead, exhaust clearance and large ports connected by short large passages. The Riddle has just the opposite to all

these 'desiderata' and I have yet to hear anyone complain about the way it goes. The fact is that in a model loco the steam velocities are about 'scale' and the length of the various passages are also about scale thus the pressure drops through the various parts are, to a first approximation 1/144 th. of those occurring in the prototype and are therefore insignificant. What does matter however is the vital necessity to have dry or superheated steam at all points as it passes through the engine. The resistance of wet steam is so much greater than the dry stuff that no matter how large you make the passages etc there will be a significant or great backpressure with it. The proper course in designing a model is to make ports and passages as large as is convenient and compatible with good mechanical design, use plenty of superheat and leave it at that. No need to bother about streamlined passages swept junctions and Swindon valve events with lead and exhaust clearance, forget all this. It is better in designing valve gears for models to concentrate on equality of cut-off and release as between front and rear of the piston in order that the torque produced at the driving wheels comes in four (or six) equal pulses. The secret of the ability of Lode Star to haul such large loads depends largely on the valve gear design which in addition to satisfying the above criteria also embraces a novel modification whereby steam is admitted twice at every stroke with a near cut-off at about mid stroke. This produces a drop in pressure when slipping is most likely to take place. At each of these admissions the valves are only just cracked open for a short while,- so much for the necessity for large ports etc and all that pseudo Swindon rubbish. It is just not true that copying full size valve gear design when modelling a given prototype yields the best result. It does't. Full size locomotive engineers were pre-occupied with the valve events occuring at the commencement of the stroke and at short values of cut-off. We in the model world do better as indicated above by obtaining equality of release at larger values of cut-off We are not concerned with pre-admission produced by lead which full size designs need to keep up high and level admission pressures at short cut-off. Following full size practice for models is a fallacious operation dearly beloved by G.W. fanatics ('Little Churchwards' I call them) who do not understand the basic physics pertaining to model locomotives. They seem to believe that what Churchward discovered to be good for 4'-8½" is also good for 5". What did Churchward know about <u>model</u> locomotive design?

<u>Piecè de Résistance</u>

I read in the current number of the Model Engineer that according to Keith Wilson steam passages offer less resistance if they are deliberatly contorted. Elsewhere in the same issue I read that contortions in a safety valve seriously reduce its discharge characteristics. To a simple soul like me these conflicting statements leave me baffled and so contort my mind as to cause severe resistance to the discharge of normal analysis. No doubt in the fullness of time Prof. Wilson will elucidate.

WHAT'S HAPPENING NOW?

Despite the poor beginning to the working season, the Task Force, a small but intrepid band of labourers have been toiling away for the benefit of the Society.

The steps to the traction engine steaming bay have been completed, fencing commenced here and plans are underway for providing power, air and water to this area.

The bridge is currently under attention with major works in progress in an effort to stabilise the embankments each side and improvements to make that particular area of track less hazardous.

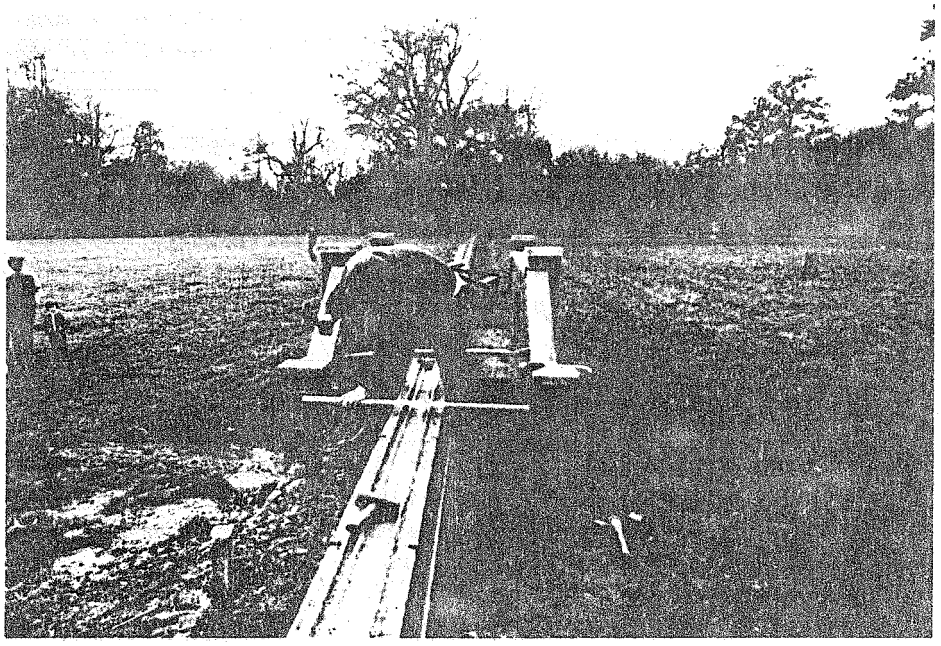
The workshop has not been neglected with our Vice Chairman ever on the lookout for suitable equipment to add to the machinery we already have. At present safety guidelines are being drawn up on the use of the workshop machinery which must be read and observed at all times for your own safety. The first and foremost rule is that there must always be a minimum of two people in the workshop while the machinery is in use - this of course makes sense. All the regulations will be displayed in the workshop as soon as they are completed.

The track has received some attention at the top bend and hopefully there will be no more spills. It is possible that next year we may have to think about beginning to replace beams, and the position will be monitored to check any deterioration that may occur with the rigours of winter and the summer season.

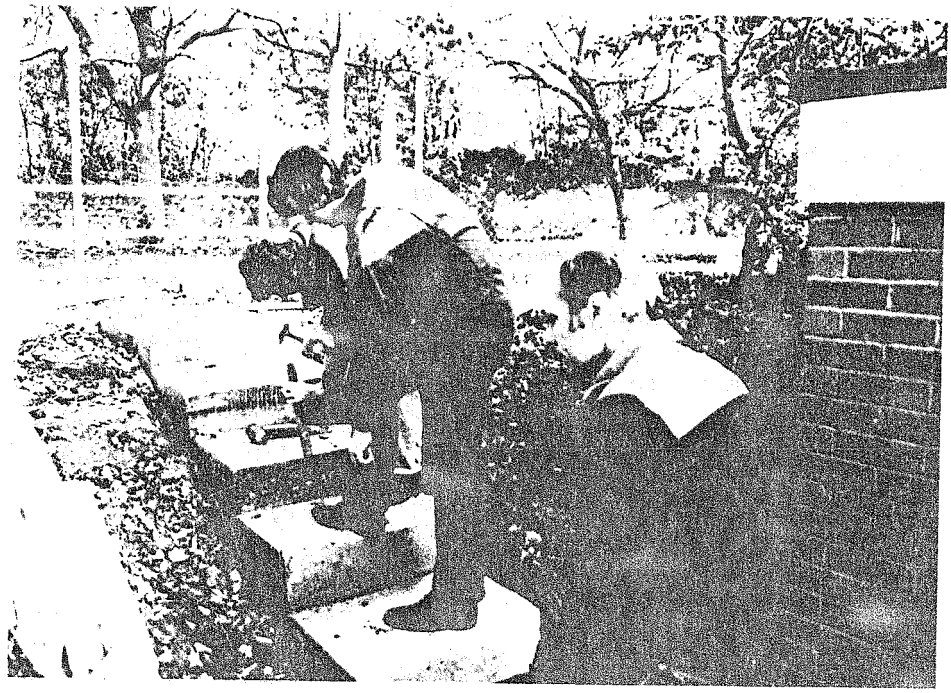
The Clubhouse shutters are in the process of being replaced with new ones being made and painted. The carpet tiles will hopefully have been cleaned by Christmas. The mug cupboard has fallen foul to woodworm and therefore given our Treasurer another excuse for a bonfire, so we now have a new cupboard. Otherwise the place looks very much the same but with added Christmas decor inside.

Do remember that on most Sundays throughout the winter months there should be work of some sort in course and all volunteers will be welcome and provided with refreshments. On the odd occasion there is no job available, just come and have a chat and a cup of tea.
It would be nice to see you.

Sue



Roger Stagg tries to ensure his Brittania will not get very far if it breaks away again. (see article "70036")



Work on the steps to the traction engine steaming bay. Adrian Gurr, assisted by Robin Spencer and Chris Williams, two of the staunchest members of the Club who have worked extremely hard this winter on the projects in hand.

Non Model Engineering Spot - Quiz for everyone

Your inert family are slumped around the room, having worn out all their latest acquisitions and with square eyes after too much Christmas TV. What they need is something to get the brain cells working again and this quiz is the cure. Pencils and paper all round, the questions to be read out only once by the appointed adjudicator, total time allowed two minutes - only a few seconds to answer each question as speed of wits is the point of the exercise. Anyone getting 10 out of 10 is a Smartass Alec. Ready? Go!

1. You have seventeen sheepand all but nine die, how many do you have left?

2. Your doctor prescribes three pills, one to be taken every half hour, how long do they last?

3. Divide thirty by a half and add ten.

4. You enter a darkened room with only one match. In the room there is an oil lamp, some kindling wood, and an oil stove. Which do you light first?

5. How many of each species did Moses take into the Ark?

6. You go to bed at 8pm, and set your alarm clock for 9am. How many hours sleep do you get? (the clock is not a 24 hour one).

7. Some months have twenty-eight days and some have thirty-one. How many months have twenty- eight days?

8. There are four houses built in a square. Each of their front doors face south, and each other. A bear walks by, what colour is it?

9. You drive a bus to Leningrad with twenty-five passengers on board. The bus stops at Pittsburg to drop off seven passengers and pick up five more. Fifteen miles further on you pick up a further three passengers and drop off one. You pass through Moscow seventeen hours later . What is the name of the bus driver?

10. There is a group of two hundred and seventeen pigeons sitting on a roof. Seven fly off and eight return. Twice as many as the ones that originally left descend on the roof, then a quarter of the new flock leaves along with forty-two of the original birds. A man comes along with a gun and shoots and kills two pigeons. How many are left on the roof now?

To see how the family got on, turn overleaf and peruse the answers.

Sue

QUIZ Answers:

1. Nine sheep are left.
2. One and a half hours (each pill lasts half an hour)
3. Seventy (not twenty-five !)
4. The match of course!
5. Moses did not take any animals into the Ark. Noah did.
6. One hour.
7. All twelve months have twenty-eight days.
8. The bear is white - it is a Polar Bear.
9. You - you are the one driving the bus.
10. There are no pigeons left on the roof - they all flew off when the man fired his gun.

Did any of the questions fool you?

FOR SALE SPOT

Model Engineer magazines dating from 1955 up to 1981 for sale.
If interested please contact Mrs Greaves telephone Newington 842673

It is perhaps not too early to remind you that subscriptions will be due and here below is your tear-off slip to use when sending your 1984 contribution to our Treasurer.

£5 per member.

I hereby enclose the sum of £..... being my/our subscription for 1984

From : (name and address)

To P.Roots Esq.,
97, Tonbridge Road,
Maidstone,
Kent.
ME 16 8 JN.

70036

In response to requests for Newsletter material, I have found myself persuaded to undertake the task of putting pen to paper by a certain young lady club member, by means of her persuasive techniques with the threat of withdrawing services dispensed in the form of mugs of steaming refreshment. In deliberation, therefore, having decided that Mills & Boon was perhaps not my forte, I elected to endeavour to answer some of the questions that have been frequently asked about the above loco.

Model engineering commenced duringg the tender years of happy school days spent at an establishment renowned for its output in engineers of the more full sized gender. Once advanced beyond filing, sawing and elementary turning stages, each sixth form was expected to participate in the construction of some completed project which was decided by means that either were not known, or have long since been forgotten, should be a 2½" gauge LMS style Pacific, the drawings I seem to recall produced by Bonds o' Euston, and the castings for which were executed after a fashion from patterns made in the Woodwork Shops and subsequently cast in the foundry in the basement. I can well recall that the wheels were so pathetic that a kindly head metalwork master obtained some commercially produced alternatives, presumably from his own pocket. Each student was allotted a specific task, and after 18 months the project reached the stage of fruition where it was actually fired and seen to run, albeit erratically, up and down the school's 10' of test track. I never saw the loco completed, or even in paint, and it is unlikely that I shall ever know what happened to it or to the others large and small that had been seen under construction in the 7 years spent there. Perhaps certain individuals in the Metalwork Department possessed a new loco every year!

Imagination was fired and I the individual elected to go forward in the field of structural engineering and interest waned for some time in favour of a far more expensive hobby that wore skirts. It is doubtful whether the incoming funds of £4.10s. per week before deductions could have to run to more than one hobby, therefore these interests were forced to take a back seat until marriage in 1964. A two room upstairs flat is not toally practical for a model engineer, although no doubt Adrian Gurr may disagree, and although the interest remained, the Model Engineer continued to drop through the letter box. A period developed with a hobby in aero modelling, more conducive to the premises available, although the removal of half an inch of virtually the only piece of furniture we possessed by miscalculation with the saw, was never particularly appreciated.

Commitments overseas, house purchase and an addition to the family, brought forth eventually a time when model engineering could re-commence in the form of '0' gauge locomotives and also a number in '00' gauge as well as some small road vehicles, but none gave the satisfaction that was required to get back into live steam. A move of home in 1977 brought me next door to someone running a precision engineering firm who, in his garage, kept a well equipped workshop of the machines with which he had started his business and the offer to use these firmly set the seal A number of sets of drawings were perused and the decision was taken to construct either a large proto type in 3½" gauge, or a medium size proto type in 5" gauge and eventually, with the assistance of the domestic engineer, a "nice looking" train was chosen, elected to be No. 70036, either the first or the last two numbers being my age at that time, although I now forget which.

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Three weeks later I was to find myself in a hotel in California and struck up a conversation one evening with a Mr. Saka, a late middle aged Japanese businessman. Discussions turned to interests, and a common chord was struck on the subject of model engineering, fortunately in his impeccable English. It appeared that Mr. Saka was the President of O S Engineering in Japan, well known as manufacturers of model aero engines, but that Mr. Saka was a keen model engineer and had begun 3 years earlier to manufacture a 5" gauge (4 3/4") Porter for the American market in three forms, (1) as a complete set of castings and steel, but with a completed boiler and cylinders, (2) as a complete bolt together kit and (3) as a finished working article. I was to ultimately understand that there was little market in the United States for options (1) and (2), in fact the majority of the production being for totally built working models, there being more interest in purchasing the goods and using them for pleasure than in the actual production. Later I was to learn that Mr. Saka had a keen interest in British proto types, and in particular to the Class 7 and Class 9 British Railways standards, and that examples of both of these had been built in proto type form and that consideration was being given to marketing both in the U.K. With interests aroused to the Britannia Class, an exhange of correspondence brought forth details of the proposed production which was to be available in options (1) and (3) only in the United States, and would not be available in the United Kingdom unless the market could be proven, and so it was that 3 months later I managed to secure, by way of a colleague in San Diego, the first option (1) kit for the OS Britannia.

Arrival was by way of Southampton Docks, in the form of three large and weighty cases, all of which were cleared through Customs with some difficulty. The cases were found to contain a vast quantity of polystyrene worms, together with considerable lengths of sheared steel pipe thoughtfully shrink wrapped in polythene, together with the boiler and the machined and partly assembled cylinders. The biggest and most noticeable absence was that of any drawings, in fact all that could be found was an extremely comprehensive parts list, together with a number of A 4 sheets showing assembly drawings and one general arrangement drawing, somewhat far from scale. There followed some two weeks of all the spare time opening the various sealed packages and examining the contents and comparing these with the detailed parts list, where it was found that major items of plate work, such as the main frames, were actually marked out by what appeared to be some form of photo etching process, but there was certainly far from adequate information to do very much more and certainly not to fix together the various components to the exploded assembly drawings utilising the mainly high tensile socket head screws used. Telexes to the other side of the world eventually brought forth by airmail A 4 sized drawings, dimensioned in millimetres, and instructions in a language that appeared previously only on postage stamps. So began the comparison with LBSC's drawings and the finding of the remarkable similarity between Mr. Saka's design and that of the 'Master'. It appeared that all might not be lost and that somewhere between the materials supplied, the peculiar drawings, LBSC's drawings and various works drawings, something could be produced.

Die castings and lost wax castings abounded for items such as motion brackets, spring hangers, spring buckles and the like, with either no need for any machining or machining being kept to an absolute minimum on many of the repetitive tasks. The main changes from the standard design were (1) lever reversing rather than screw (2) in boiler screw type regulator (3) twin axle pumps and (4) tender design actually visually matching the BR 1 tender in line with Martin Evans' completion of LBSC's Evening Star. Items provided pre-finished included case hardened axles, complete with roller races, cast steel coupling rods and

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eccentric rods and cast iron buffer and draw beams. Tools were provided comprising 2 nut runners, 1 set of toally useless pressed steel out-of-size metric combination spanners, 1 small cross head screwdrive and a set of taps only covering the various sizes of screw provided. These were to cause one of the major problems in being provided singly and in odd sizes of metric diameter, all to a constant .75 mm pitch, currently known as Japanese fine standard, for which replacements or dies or alternative screws have been unobtainable from any source or from the manufacturer.

Construction commenced in the usual way, cutting the main frames to the profile by hand, machining the stretcher castings in next door's garage. Rivet on the pressed brass horn blocks, machine and fit axle boxes, complete with roller bearings, and with the addition of large numbers of lost wax castings forming the spring hangers and compensating beams, together with phosphor bronze springs, a shape began to emerge. The wheels were turned up in the normal manner and Loctited to axles, trapping the roller bearings for ever and a day, with a prayer that we should not need to replace them. Pidgeon English instructions on the assembly drawings told us that the cylinder assemblies were precision made and sealed and should not require dismantling, but curiosity can get the better of one, and gave rise to a new discovery that in Japan a liberal application of swarf is obviously the approved lubricant.

No particular difficulty was experienced in the manufacture and assembly of the subsequent parts. Obviously much time was saved by items that were already marked out and machining much reduced in motion brackets, etc. by the high quality die castings, but when the time came to erect the boiler and frames it was thought prudent that despite the test certificate supplied, it could be as well to discover any problem at that stage and thence came the problem of plugging the various openings with their odd size diameters and even odder pitch, where it would not be appropriate to fill them at this stage with the various boiler fittings supplied. Cutting small screw threads on the lathe has not been my particular forte, and the attempts to produce suitable plugs showed that this was unlikely to be changing. The boiler was eventually pumped up with a number of fittings in place and the remaining holes filled with 9/32 x 40 plugs with substantial amounts of PTFE tape. Fortunately it proved sound.

Plate work was made substantially easier by the provision of a ready-rolled taper section for the boiler, pre-punched sections for the cab and rolled and folded plates for the tender sides, all in galvanised steel sheet, together with a variety of other sections of steel sheet, formed the remaining parts. For the one part that always seems to give problems, a die cast joint ring between boiler barrel and belpair fire box was provided, the wrappers secured around. Several visits and numerous photographs on the Nene Valley dealt with the fine details, plate work, hand rails, etc., etc. Four sets of smoke deflectors were made with varying dimensions before I was eventually satisfied that the proper frontal effect had been achieved, due to the smoke box length and chimney position being out of proportion to the original. It was around this time that an advertisement appeared in the Model Engineer talking of the OS Britannia kit and after making some enquiries, I learned that it was to be demonstrated on the Guildford track and on a somewhat wet and windy early summer Sunday I went to dirty my nose. Well, it went, but it didn't look like a Britannia, not just because of its gleaming bright boiler bands, but the front end was wrong and the rear end of the tender equally so. I was told that they now had a UK agent and were intending to import the kit in a bolt-together form ready to operate within less than 48 hours work and the price, oh well, they didn't know the price, or it appeared didn't want to discuss the price.

cont.

In early summer 1982, 70036 stood for the first time in the steaming bay at Mote Park under the scrutinising eyes of Graham Kimber and Jack Payne and fingers were crossed whilst the boiler was raised to 200 psi. All was well, so, suggested Graham Kimber, "Let's fire it up and try the safety valves". More than 20 years had elapsed since the firing of the matchbox size fire box of that 2½" gauge Pacific and I was, therefore, more than grateful for the help and assistance given by those club members who offered this novice their help, but they with all their expertise, good wishes and prayers, were unable to make more than 20 psi appear on the gauge. Expert's advice, blower not set right, petticoat pipe too short, blast pipe too high, Boadicea went back to the works. Advice was followed, triangles were drawn, a new petticoat pipe was made, the blast pipe was opened and lowered and the blower centred with a little more care, and 7 days later steam was raised without difficulty, the safety valves did their job and a boiler certificate was forthcoming.

Funny how much more difficult it is to keep everything going when running round the track, rather than running up and down 10' of it, and with a total inability to keep the fire going and a reluctance of the axle pumps or the injector to want to put water into the boiler, the run was abandoned after 3 laps for the ironing out of teething troubles. There have been many troubles on the water front. Injectors that Jack Payne could make work without difficulty took an instant dislike to me and served only as a medium for watering the lineside weeds, and twin axle pumps did nothing whatsoever until the discovery that the clack valves on the outlet side were reversed between them and even then could not keep up with the locomotive's phenomenal water consumption. When eventually it was decided to change the supply pipe from 5/32 to 3/16, a wad of cotton was removed from the pipe, seeming to the the cause as it now seems that one pump will need to be disconnected because of problems with priming under small loads. The provision of a very serviceable Don Young injector has ended all of the water problems and the previously much-used tender hand pump has been issued with its redundancy notice.

There are some things you do for which you should know bettter, and although according to the drawings, I should have known better than to manufacture a draw bar pin from brass. So it was, whilst the July 1982 Committee meeting was taking place, on a fortunately otherwise deserted track, Boadicea decided to show her paces. She sheared through the draw bar pin on the curve out of the station and, with an open regulator, departed up through the bridge with gusto. This was the first time I have known my abilities in regard to the 4 minute mile, but unfortunately she didn't know that and set off at substantially greater a pace to eventually herald a return to aero modelling on the return curve at the narrowest section. It was perhaps fortunate that we had had so much rain and that the landing after the several somersaults was relatively soft, the fire being thrown out in the process. Help, consolation and reassurance from Committee members was beyond any reasonable expectation. Damage appeared to be not more than superficial, although subsequent examination found that it was to be not quite the case. Re-building took some 6 weeks, but was at least able to take place in the seclusion of my own workshop, by then equipped. She was then able to go back into service during the autumn, giving a satisfactory performance.

cont.

A number of modifications have subsequently been made. Following a cracked tube a new super heater has been installed: locomotive braking has been incorporated: new drag beams fabricated from mild steel: the regulator changed: the timing altered marginally and during 1983 she has seen frequent Sunday action with 10 or more passengers. The limit of her power is set by adhesion on the top curve, particularly under damp conditions on the oily 3½" rail. This winter should see a change in the regulator complete to one visually nearer the proto type, using a slide valve in the boiler, but I bave decided against reverting to a screw type reversing, find this easier to use in quite a small cab. A larger gauge glass is being fitted, hopefully to cure the problem of air bubbles which has given rise to some rather peculiar water level indications. I fitted a steam brake on the loco, constructed to my own design and dismantled it earlier this year due to its refusal to release when turned off. As it has no practical value other than to keep the loco stationery when it is already stationery, I have therefore decided to stick with the hand brake only to give more room to deposit coal in thick layers on the footplate.

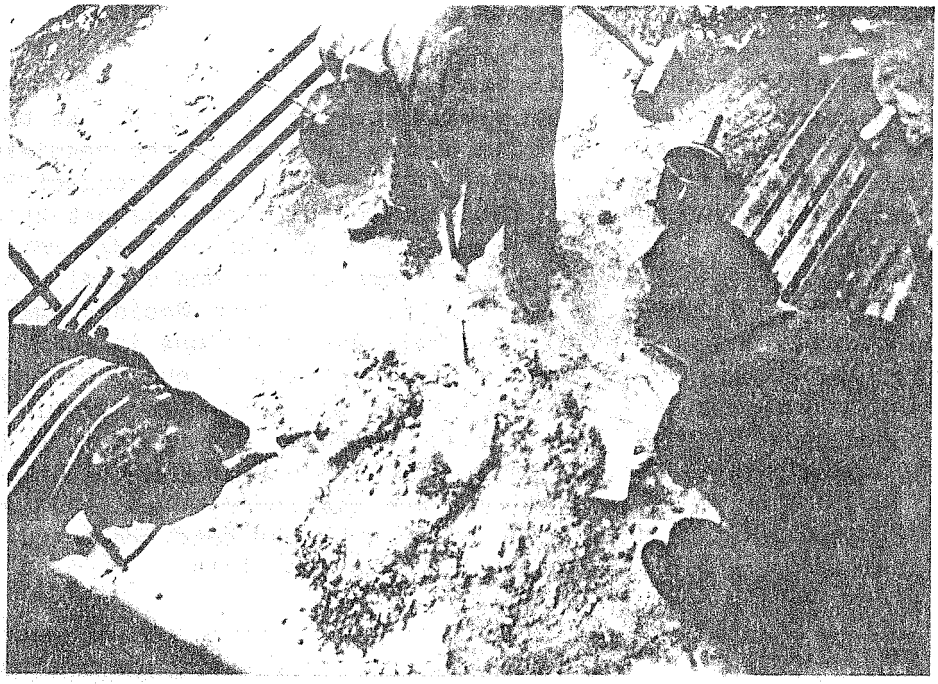
All in all, in retrospect it may have been easier to have actually built direct from LBSC's drawings, but who can tell. It did enable a quite successful working loco to be produced in 3 years and for it to be relatively good looking with its various lost wax finishings. It would be interesting though now to be able to compare its completion, and more importantly, its working characteristics with a completed model of the type that OS endeavoured to market, I understand unsuccessfully, in the UK last year. One must presume that they followed the various drawings, etc. that I managed to be in receipt of, which seemingly would not raise steam on UK coal. This could be more than coincidental, and asI understand it propane firing is the norm in Japan, and is much used in the United States, the draught becoming incidental. I did follow the track through from the UK distributors to their agent when trying to obtain new top feed connections after the July run away and learned there that as far as was known, only 8 had been sold in the United Kingdom at a price of around £4,000!!! but none of these were intended as working locomotives.

She is an interesting loco to drive, extremely hungry for coal and for water, but steams well with a deep fire and handles a good load, providing the track is relatively dry. Those who have driven both LBSC's version and this Anglo-Japanese hybrid have commented favourably upon its performance. I will conclude by saying I hope I have answered some of the many questions that have been asked of this one off as to why it does not look like the one that appeared in the OS advertising at last year's ME Exhibition. I will willingly try to answer any more that interested parties may have, but in the mean time, if you don't mind getting your face as black as riding behind Graham Kimber's Coffee Pot, or shovelling as much coal as is necessary to keep the Bug running, you are very welcome to give her a try.

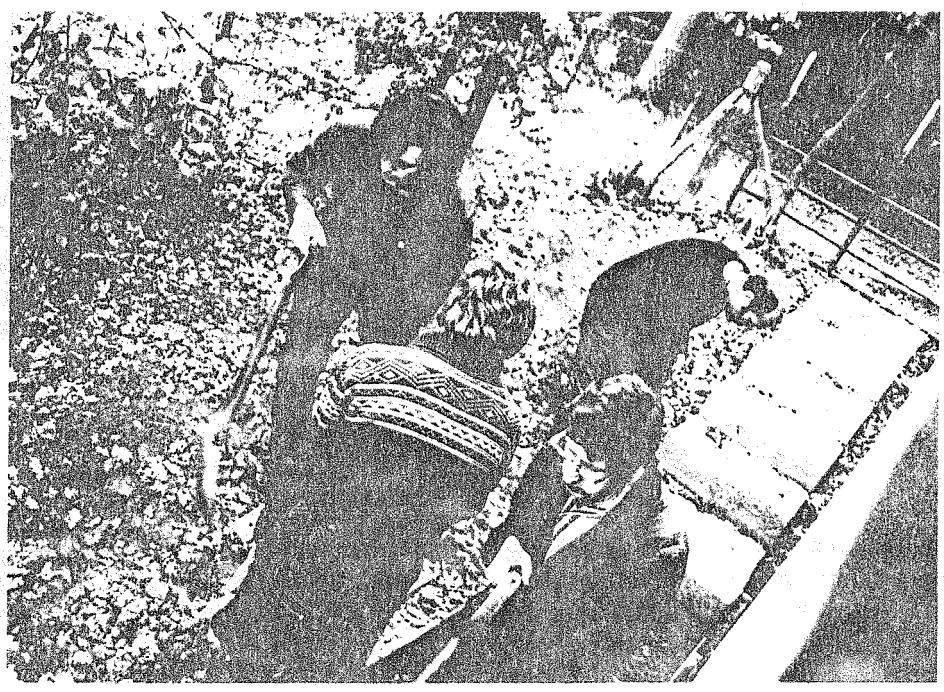
p.s.

The next offering is actually beginning to take shape in said workshop, and consideration is now actually having to be given to details, and anybody who can loan any close up details of Horwich Crabs, and in particular any photograph at all of No. 2845, I should be very grateful.

R. R. STAGG



Adrian, Jeff and Robin mixing concrete for the steps (strange angle due to photographer lying on coalshed roof).



The Final Step : Chris, Robin, Adrian and Jeff at work.

A TREATISE IN SUPPORT OF THE MODEL ROAD ENGINE

Christmas being a time for some members of the family to relax, they may also savour how well, or otherwise, their model performed during the summer or how well their present project is progressing.

Perhaps they will be in the happy position of deciding what next to make.

If you are in this euphoric state, a model road engine must be worthy of consideration. Firstly, they can be built in a much wider variety of scales and sizes; six reasonable scales multiplied by rollers, traction engines, tractors, wagons etc. gives a huge number to choose from. Additionally, a simple single cylinder traction engine to the multi - cylindered complex wagon adds a further dimension unsurpassed by a locomotive.

The most important advantage, assumingthat the builder does not just want to look at his or her creation, is that the road model will run anywhere, even the smallest garden being adequate to test and run the machine without an odd acre or two to build a railway so that one can run in orbit.

Fortunately Maidstone Society's " Constitution " calls for the encouragement of all types of model engineering and the steps (excuse the pun) taken recently illustrate the wider concept.

The new workshop and machinery, a project I was pleased to be associated with, are a great help to those who may need the help of large machines. Personally I have a larger capacity at home but many members have not and the Committee's efforts in this direction are much appreciated by many and will hopefully encourage some potential road model builders .

During discussions at the recent E.G.M. the Chairman was asked that the Committee consider ways that road engine owners could earn money with their engines.

There is an easy way to achieve this by attaching a trailer, filling it with children and making a charge. I have been doing this for some years for numerous charities, sometimes on behalf of M.M.E.S., sometimes not.

Members may be under the delusion that the high fuel consumption of the average road model is at the Club's expense. This is emphatically not the case. The only occasion I used the Society's fuel was on ' Marathon Day ' 1983 when the monies I accrued for charity were approximately thirteen times the cost of the fuel consumed.

Finally thank you Sue for your efforts in publishing a Bumper Newsletter and thanks to the Committee for encouraging the wider aspects of model engineering especially now that the Club will be financially viable from subscriptions.

Ray Milliken.

FULL STEAM AHEAD INTO 1984

1983

Monday December 26th - Boxing Day Run

As Christmas Day falls on a Sunday this year, I shall no doubt have to be restained from trotting to the Park as usual on that day. Rumour has it that weather permitting there may be an appearance of a steam lorry. Booze will be provided as an added incentive for coming and joining in the festivities. However, we must not forget the public running in the afternoon, the workers and refreshments required to help make the day a complete success. The more souls to help here the merrier.

1984

Friday January 6th - Bits and Pieces Evening/Natter Night 7.30 pm

Only a few people seem to bring any "bits" although everyone enjoys seeing them. Please, if you are constructing a model, bring something along, however small, as we all will be interested in seeing how you are getting along. Congratulations, advice or help - all three are always available here. So don't be shy, bring a "piece" with you.

Friday February 3rd - An Evening with George Barlow 7.30 pm

George has visited America again and so has an even bigger selection of slides to show and discuss with us. Be prompt for a good seat as these nights are always well patronised.

Friday March 2nd - Annual General Meeting 7.30 pm

Further details will follow later.

Sunday April 1st - First Running Day

As Easter falls rather late in 1984 it has been decided to start the public running on the first day of April. As mentioned in the previous newsletter, appointed traffic controllers/track marshalls should endeavour to meet their commitments in this respect.

Friday April 6th - Bring and Buy Sale 7.30 pm

It is time for you to tidy up your workshop. There must be something skulking that you do not have a use for (no, not that spider in the corner) , some nuts and bolts or that piece of metal over there.....you could do someone a good turn by bringing something along that you have but do not really need. Equally you may pick up just what you want that another soul has brought along.

Looking forward to seeing you all.

Sue