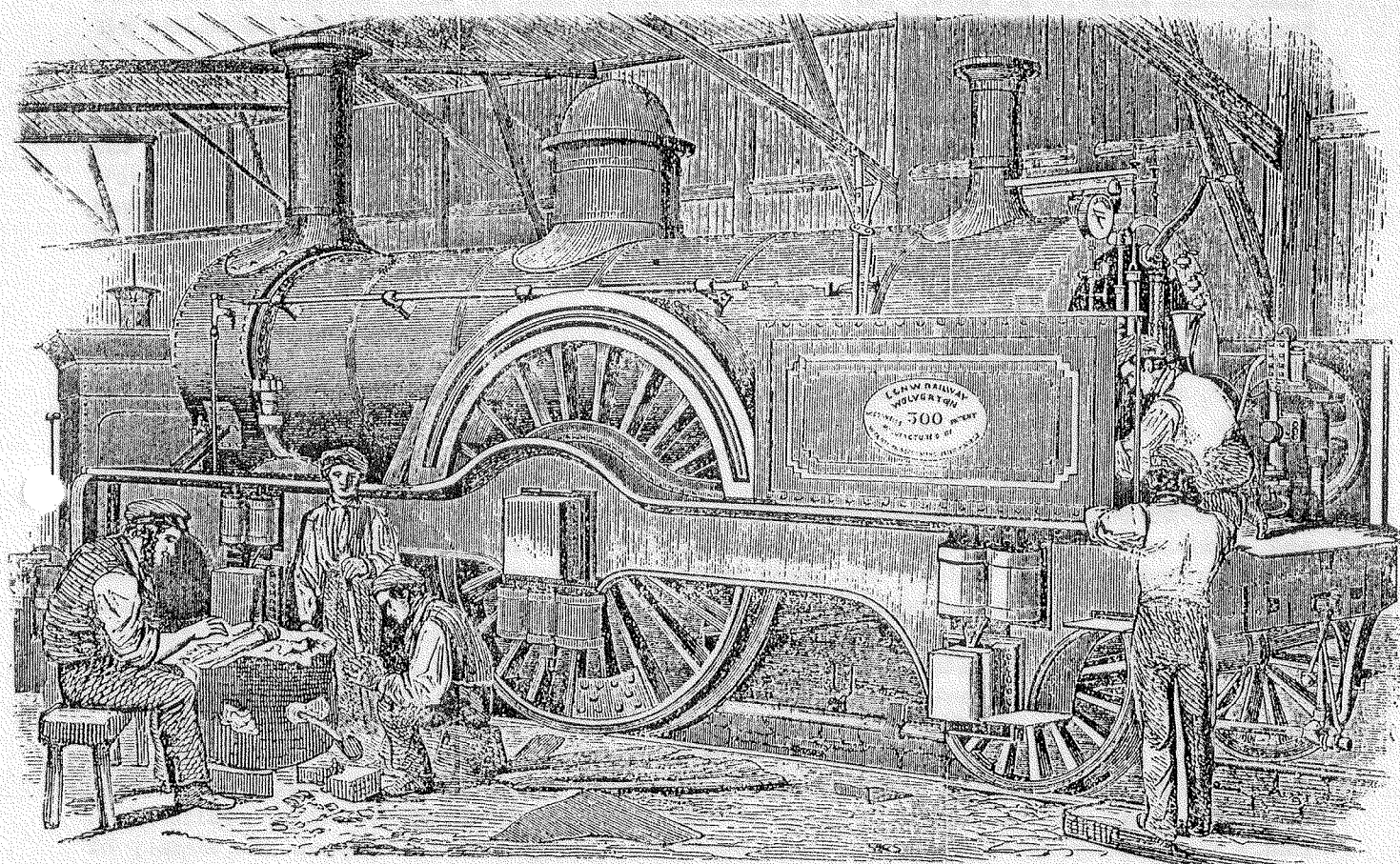


MAIDSTONE
MODEL
ENGINEERING
SOCIETY.



NEW EXPRESS ENGINE FOR THE LONDON AND NORTH-WESTERN RAILWAY.

NEWSLETTER

- Winter

1990.

A SURPRISING PEEP INTO THE PAST

Our front cover on this issue depicts one of the " New Express Engines on the London and North-Western Railway " taken from The Illustrated London News of December 18th 1852. Make a special note of that date as the following accompanying description reveals some quite astounding advanced thinking by Mr McConnell the C.M.E. of the company at that time.....

" The magnificent new engines now worked on the London and North-Western Railway for the express trains are of the largest class of passenger engines yet introduced upon the narrow gauge. They combine several important improvements, which have recently been patented by Mr McConnell, the locomotive engineer of the company.

From the admirable proportions of all the parts, both of engines and tenders, they retain a beautiful and symmetrical appearance, not withstanding the great power and strength of the working portion. The cylinders which are compactly arranged inside the framing, are of 18 inches in diameter, with a 24 inch stroke. The pistons, which are of wrought iron, forged solid with the rod, are, with increased strength, at least one-third lighter than when compared to those constructed on the ordinary principle; while the very rapid reciprocating motion of this part of the machine makes any reduction of weight a matter of importance. This will be better understood when it is known that it makes a difference in this instance of not less than 40 tons per minute on each piston when travelling at a rate of 60 miles per hour.

The driving wheels are 7 feet 6 inches diameter, and the axles are hollow - a mode of construction which ensures greater soundness in the manufacture with the advantage of increased strength, and a reduction of fully one-third of the weight. The bearing springs and buffers are of india-rubber, prepared by an improved process rendering its elasticity uniform, and remaining unaffected by any changes of temperature.

The more peculiar improvement introduced into the construction of these engines, however, consists in the arrangement of the boiler and tubes; this a portion of the firebox is continued, or rather projected, into the barrell or circular part of the boiler, and forms a recess or chamber for the more perfect combustion of the gases evolved from the fuel in the fire-box, into which a further supply of air is admitted through hollow stays employed for the support of the combustion chamber, and communicating with the external atmosphere. Owing to this projection, the tubes traversing the boiler are much shorter than usual, but, although the gases pass off at a higher temperature, a more intense heat is generated by the same quality of fuel; thus, affecting great economy in the use of coke. Experiments have been made with anthracite coal, which has been found to answer perfectly, making this improvement of great importance where coke cannot be procured, unless at an extravagant price. The application of a surcharging vessel, which has been introduced into the smoke-box for the purpose of heating and drying the steam, adds a vast amount of force to its action, and greatly reduces the consumption of fuel. Not less than 50 per cent of elastic force being obtained by this application. Small steam pumping-engines are fixed upon the foot-plates to keep up the supply of water to the boilers at all times. By this means the necessity of running out on the line, for the supplying of water in the boiler, is obviated.

Bourdon's pressure gauge is an appendage of great convenience to the driver, by its indicating the actual pressure of steam in the boilers.

Altogether, these engines may be considered an important step in the progress of locomotion upon railways "

So there we are - it is surprising to learn that right back in 1852 we had attempts to produce lightweight pistons, hollow axles, combustion chambers and hollow stays. Perhaps most surprising of all - the obvious understanding of the value of superheating. The india-rubber springs really were perhaps a bit much, but how the Victorians loved to talk about " improved " methods of manufacture!

No water gauge is shown on the back head of the engine, but this may well be just the artist's error as G. Drysdale Dempsey's book " The Locomotive Engine ", first published in 1857, described and illustrated a quite conventional 3-cock water gauge - without any protector of course - and goes on to mention that " to afford an additional means of ascertaining the height of the water in the boiler, two gauge-cocks are fixed in the side of the firebox, one being 4 inches above the other, and the lower one 1 inch above the top of the internal fire-box. " Incidentally, he also describes the lead plug as " an additional security against any accident arising from the water being suffered to get too low in the boiler. "

All this - nearly 140 years ago.

Don Paterson.

LANDMARK FOR SOME? A MYSTERY FOR OTHERS?

The disappearance of brickwork on the railway by Turkey Mill on the A20 Ashford Road by Mote Park.

This structure was in fact to stop smoke from passing engines getting into the lofts at Turkey Mill, which were used to dry paper.

It was the South Eastern and Chatham Railway; Turkey Mill Viaduct.

The railway was enclosed by a solid brick wall on the "Up" side of the line and was covered by a light iron slated roof. Farthest from the mill, on the "Down" side of the line the wall was perforated with round openings for ventilation purposes, which also afford passing views of the adjacent scenery?

As a matter of interest, until 1911 Turkey Mill had six coal fired boilers of their own. Even when we only had two Lancashire boilers (when the wind was right) the cricketers at Mote Park used to complain that we were the cause of soot spots on their whites. We often 'laid' a smoke screen across their pitch when we 'clinkered out'!

The roof over the brickwork became in need of repairs, when British Rail took over from the Southern Railway. A compromise was reached between B.R. and Turkey Mill, a new roof or a coal siding!

We (Turkey Mill) had the coal siding, which we used about six times!

You can still see the coal shute at the Mote Park side of the railway, but the siding has long since gone. You can also see the road from the shute down to the Mill (which cost the Mill £1000).

I hope you find the landmark or mystery explained.

A.H.W. (JACK) PAYNE.

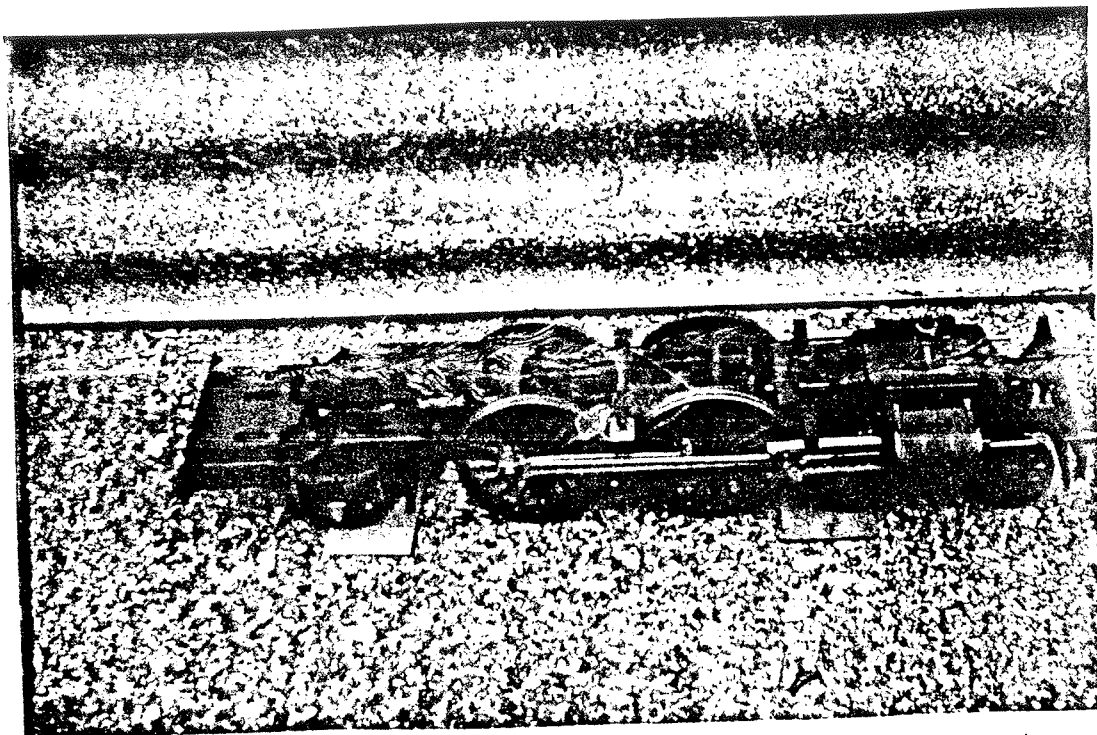
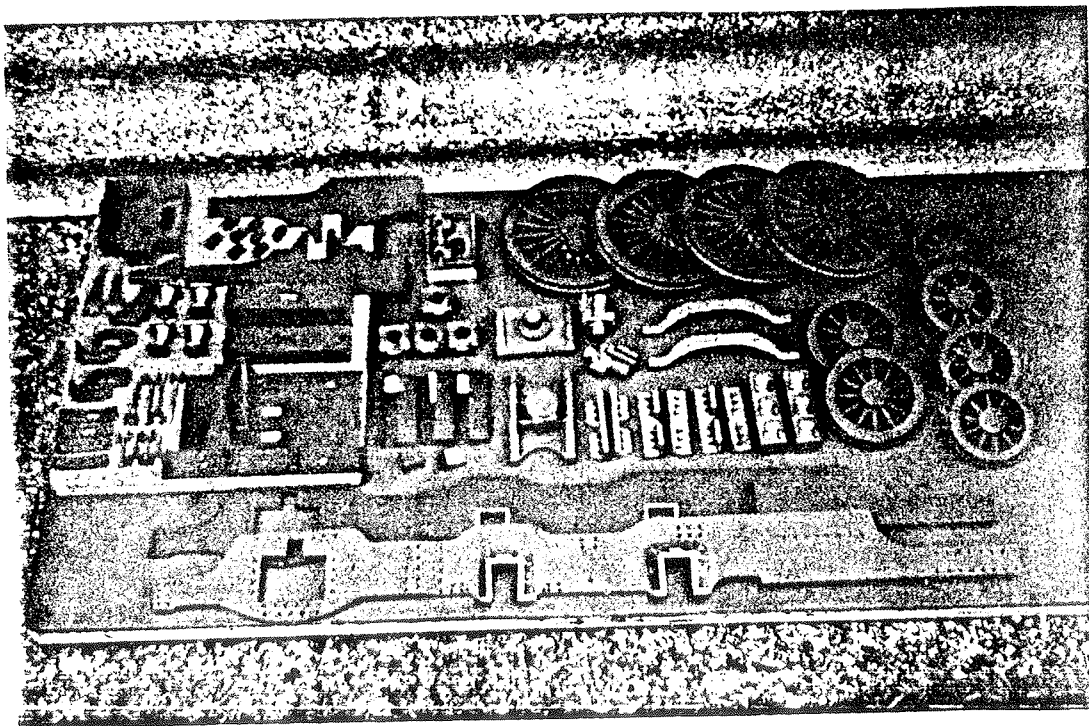
*****FOR SALE*****

Ian Playfoot (non member) telephone Tenterden 3622 has written to us asking if anyone is interested in a 5" gauge Jersey Lily. He has started two, pictured below, and wishes to sell them as they are now.

Photo no. 1 shows various bits and pieces, several parts for the tender, namely axle box horns and hand pump castings, two drag boxes and buffer beams. There are no rear axle boxes, horns or bogie. Current catalogue price of castings total £207 including V.A.T.

Photo no. 2 shows the chassis to which he also has boiler, cab, smoke box, and running boards, but these are not painted.

Any offers anyone? Please contact Ian direct.



MAIDSTONE MODEL ENGINEERING SOCIETY - BOILER TEST CERTIFICATE REGISTER.

THE FOLLOWING BOILER CERTIFICATES ARE VALID AS AT 01/01/1991 :-

NAME	MODEL	EXPIRES
MR P. CARPENTER	5" GAUGE 0-6-OT SIMPLEX "W. NORTON"	15/09/92
MR N. F. CLARK	5" GAUGE 0-4-OST SWEET PEA	09/09/91
MR N. F. CLARK	5" GAUGE 2-8-4T "DHOLPUR"	07/07/92
MR N. F. CLARK	4 1/2" SCALE BURRELL TRACTION ENGINE	11/08/91
MR N. F. CLARK	5" GAUGE 0-6-0 BUTCH	13/10/92
MR A. F. COPPINS	5" GAUGE 0-6-OT "EVA MAY"	08/04/91
MR C. E. P. DARLEY	5" GAUGE 0-4-OT "BAUDOT"	18/11/91
MR F. DEEPROSE	5" GAUGE 0-4-0 "POLLY 2"	14/01/91
MR D. DELLER	3 1/2" GAUGE 0-6-0 ROB ROY	23/09/91
MR D. W. FIELD	3 1/2" GAUGE 0-4-0 "TICH"	09/06/92
MR T. FRISKEN	MINNEAPOLIS TRACTION ENGINE	07/07/91
MR T. FRISKEN	3" SCALE ATKINSON LORRY	06/10/92
MR T. GREGSON	5" GAUGE 0-6-OT BUTCH	22/07/91
MR T. GREGSON	5" GAUGE GWR 2-6-2T	30/06/92
MR T. GREGSON	3" SCALE ATKINSON STEAM LORRY	30/06/92
MR T. GREGSON	3 1/2" GAUGE CONWAY 0-4-0	11/08/92
MR A. E. GURR	5" GAUGE LNER 2-6-2T	08/04/91
MR R. HILL	5" GAUGE 0-4-OT NARROW GAUGE	28/10/91
MR R. P. HOLDSTOCK	5" GAUGE 0-4-OT "SALLY"	27/05/91
MR R. P. HOLDSTOCK	5" GAUGE 2-4-2T "LOUISA"	25/08/92
MR L. HULBERT	VERTICAL STATIONARY	15/09/92
MR G. KIMBER	5" GAUGE 0-4-0 "COFFEE POT"	08/07/91
MR N. KING	5" GAUGE 0-4-OST SWEET PEA	30/04/91
MR N. KING	3 1/2" GAUGE 4-6-0 DORIS No. 4771	08/07/91
MR P. KINGSFORD	5" GAUGE 4-4-0 MAID OF KENT	17/03/92
MR F. A. LAROCHE	5" GAUGE 2-6-0 "GROOMBRIDGE"	11/08/92
MR J. LEWIS	5" GAUGE 0-4-0 SWEET PEA	26/05/92
MR A. D. LEWIS	5" GAUGE GWR 0-6-0 PANNIER TANK	26/05/92
MR R. J. LINKINS	5" GAUGE 2-6-0	07/07/92
MR K. P. LINKINS	5" GAUGE 0-4-OT "JOAN"	30/06/92
MR P. MARTIN	5" GAUGE 0-6-OT SIMPLEX	24/06/91
MR T. NEIL	3 1/2" GAUGE 2-6-0 MARINA	27/05/91
MR J. OSBALDSTONE	5" GAUGE GNR 2-8-0 "CONSOLIDATION"	11/03/91
MR M. N. PARHAM	5" GAUGE GWR 0-6-OT 1500 CLASS SPEEDY	08/04/91
MR M. N. PARHAM	4 1/2" SCALE ROAD ROLLER "BARBARA"	01/07/91
MR M. N. PARHAM	5" GAUGE 4-2-2 STIRLING SINGLE	22/07/91
MR M. N. PARHAM	5" GAUGE GWR 2-8-0 No. 2889	20/05/91
MR M. N. PARHAM	3 1/2" GAUGE 0-6-OT ROB ROY "DOROTHY"	23/11/92
MR D. S. PATERSON	5" GAUGE 4-4-2T ADAMS TANK	15/07/91
MR A. H. W. PAYNE	5" GAUGE LMS 4-6-0 RED FIVE No. 5020	15/04/91
MR A. PROBYN	5" GAUGE 0-4-0 "DIXIE"	26/05/92
MR E. PURSEY	3 1/2" GAUGE NE 4-4-0 "MISS TEN TO EIGHT"	16/09/91
MR E. PURSEY	5" GAUGE LMS 0-6-OT	16/09/91
MR L. RYE	5" GAUGE 0-4-0 "PEGGY"	26/05/92
MR R. R. STAGG	3 1/2" GAUGE 4-6-2 BRITANNIA "BOADICEA"	10/06/91
MR C. THORNDYCRAFT	5" GAUGE 0-6-0 SPEEDY	19/08/91
MR B. WHITE	3 1/2" GAUGE JULIET 0-4-OT	31/08/91
MR J. A. WINSER	5" GAUGE 2-6-0 "LOCKWOOD"	24/06/91

SUE'S SPOT

AND *PAST* *PRESENT* *AND* *FUTURE*

We have a nice bumper edition for Christmas I am pleased to report. Following my note in the summer edition there was little to print for autumn - was this because of my threat to unveil the Chairman in all his glory in a future copy if you didn't oblige? You called my bluff, I will not do it! My heartfelt thanks to all those who have contributed to this issue and PLEASE let me have articles at any time....closing date for the Spring 1991 edition is Sunday March 31st so let me hassle you all now!

Summer seems so long ago now with lots of sunshine so more drought, which is still ongoing unless we have an extremely wet winter. I remember a happy time of outings every weekend to various tracks (more fodder for Club Trek : Voyages of the L.N.E.R. Enterprise. This I will save for the next newsletter). Visits this year were to :

Southampton Open Day, track by the river, steaming as the boats sailed by.

Welling Open Day, track by Falconwood Station, whistling as British Rail went by.

Harrow Weekend, steaming into the early hours of Sunday morning.

Sutton Saturday, roast dinner en route, round the track, then round the barbecue.

Tonbridge Open Day, pub lunch then afternoon steam up.

I.M.L.E.C at Guildford, how I'd like to enter one year!

New Romney , gosh it was such a hot day I wilted when I wasn't driving.

Bracknell Open Day, not a huge affair but nice to be there. Lastly,

Birmingham Weekend, for the National Locomotive Rally (yes, that's me again in the December edition of Engineering in Miniature).

After Xmas Enterprise will be consigned to the workshop for a strip down, rebuild and repaint. Plenty of nagging will be required to get it ready in time for Easter, this I will find very hard to do of course.....but I digress.

The Club also had outings to Bill Best's Bredgar Railway, to Drummond Randall at Biddenden (that was a lovely day - thanks especially to Jenny Randall for taking the trouble to feed us - what yummy cakes!) and to the Leeds Castle Classical Concert (no trains at all here!!).

Maidstone Model Engineering Society did its bit for charity this year as usual, and a bit more - £150 to Cancer Research, £243 to the Telethon, and £25 to the Maidstone Hospice as rain (!) actually prevented us running that day. Open Day was another successful day, lots of visitors, locos and food. Romney came and visited us at the end of September and were treated to a Battle of Britain Air Display over the Park.

So it was a superb sociable summer and has been a good year for us, I hope it has been for you too.

Now turn over for what's to come.

DIARY DATES 1990 INTO 1991

Wednesday December 26th 1990 : Boxing Day (Booze-Up) Run.

The Clubhouse will be open from 11 a.m. as usual.
Escape the relatives, or bring them with you!
We may be a bit short of locomotives so please
come along if you can.

Friday January 4th 1991 : Video Night at 7.30

Friday February 1st : Guest Speaker (he doesn't appear to be home at
the moment for us to ask him, but never fear,
someone will appear!) 7.30 again.

Friday March 1st : Annual General Meeting.
Prompt at 7.45 please - you dont want to miss it!

Sunday March 31st : First Public Running Day of the Season.
Easter Sunday and the first day of British
Summer Time.

Friday April 5th : Friday Night George - George Barlow looks Back.
He has around 270 slides for this show of 1990.

So that is the line up for the next few months. I hope we hear from lots of other clubs of their open days and events this summer, it is nice to hear what others are doing and to have the chance to go and visit other tracks. I am reluctant to desert the Park on most Sundays, but a Saturday trip out as well keeps me away from the housework all the weekend, which is fine by me! Have loco, will travel (and all drives gratefully accepted).

Winter work progresses in the meantime, so all volunteers on a Sunday are welcome, refreshments provided, maybe bacon butties and hot dogs, if you're lucky, as well a cuppa. We've just finished digging out and putting in a new drain behind the workshop and coalstore. The last two winters have seen these buildings flooded out by an underground spring surfacing - ironic when you think how dry the summers have been, this problem will hopefully now be cured. We now have the materials to put up and then paint a decent fence at the back of the compound. Also, the installation of concrete pillars as track supports continues as an ongoing matter - not that our railway is in danger of collapse anywhere, but these will see it still standing for a good few years yet. So we can always occupy anyone who comes down, or just come for a cuppa and a chat. After all, we have a super club, super track and super facilities compared to many, so let's make the most of it all.

I hope winter finds you all cracking on in the workshop with a few new locos to run in 1991. We should see the Club Locomotive running in the near future and operational for the 1991 season, the bodywork is now being completed. How about a name for it? Any ideas, anyone? A prize for the best suggestion!

Just a few reminders to all loco owners. Obviously an up to date boiler certificate must be held before a locomotive is run on our track. Exceptional vigilance is required when running, there is always the risk of obstructions being put on the track and we must take extreme care when the public are around. (Hence my article on the Perfect Passenger later on). Here endeth the lesson!

Well, that's it for now then. Don't forget those articles for the next edition! His Nibs and I wish you all a super Christmas and a great New Year - and Happy Steaming.

Sue X.

ADDICTION TO SMOKING WITH STEAM

We all burn our fingers when dabbling with 3.5 and 5.0 inch gauge steam railway locomotives. This is because we are not always able to see what we are doing as our hands get in the way - we do things like missing the fire hole with a shovel full of coal when the engine moves to the side - then at the end of an enjoyable couple of hours running round Mote Park track, we get off the driving trolley with back ache and legs that have gone stiff, but we still feel great and come back for more but I have still wanted to try something bigger, and after reading an article one evening in a railway magazine I decided to try to take the plunge and try a larger scale ... so that I could actually get onto the footplate of a locomotive using hands instead of fingers. The gauge was 4.7083 feet - yes, the standard gauge railway size - it's the one schoolboys dreamed of driving when I was a young lad.

In the hope of making my dream come true I contacted Clive Groome, who is an ex-Southern British Rail fireman driver in the days of steam on the main line. Because of his love of steam he runs courses on basic enginemanship on the Bluebell line in Sussex. The course was arranged and the big day soon arrived. At Sheffield Park Railway Station I met Clive and the rest of the blokes on the course. I don't know what I felt nervous anticipation at the size of the locomotives or the excitement of a small boy on Christmas Eve. The introductions, signing the safety regulations and booking on were soon over, then on went the overalls and the course got under way.

The next two days were spent in the library and around the locomotive shed learning about the theory and getting the knowledge one needs to find one's way around a steam locomotive. It seemed daunting, but with excellent instruction from

■ Clive it all soon started to gel. A start was made with the heart, the boiler, covering the grate, ashpan, combustion, steam generation and the smoke box. Handouts came regularly on the different topics - we had to add little bits called answers, and by the end of the course we had quite a collection. We did have tea breaks, also visits to the loco shed to look at and inspect different locomotives. On one of these the course ended up in the firebox of 35027 Port Line - it is possible to get through the fire box door using the right technique - even those of more portly build managed it.

Each time we got near a locomotive one of us would have to check and explain to Clive what we were doing to ensure the engine was safe that is hand brake on, reverser in mid gear, drain cocks open, regulator and valves closed, also water in the boiler by bobbing the water in the sight glass (this is done by opening and closing the taps a certain way). The cramming continued into the workings, using a model to explain the movement, operation, positions of Stephenson's and Walshaerts valve gear in relation to the crank, eccentrics, and piston. When an engine moves it has to stop, with a little help from wonderful things called brakes, either steam, vacuum or combination. We were shown how to create and use them correctly, also how injectors work and how to operate them to put water into the boiler. On a locomotive oil has to reach all the moving parts (most of which can't be reached by the human hand) - these also require a regular supply of oil while the locomotive is in use, so the workings of mechanical and steam lubricators do their little bit. Also the capillary actions of worsted wool tail trimmings that put a controlled flow of oil down pipes to bearings, axle boxes, horn boxes and any other little bits that need oil. We had briefly but thoroughly covered everything between the front and back buffers. The answers on the handouts were checked. Everyone on the course could look at a driving axle from the outside (without peeping between the frames) from the position of the crank and explain the positions of the big ends and eccentrics, then advise at what angle the expansion links lay, which port would take steam according to the reverser being in forward, mid

or reverse. We had been assessed as being safe to be turned loose on a locomotive. Each of us had at odd times practised slinging couplings up and uncoupling, breaking and remaking brakes of the loco while doing it.

The next day started early as we had to start from cold and to bring the locomotive to life would take about $2\frac{1}{2}$ hours. We had been allocated a 0-6-0 North London tank locomotive, ex-B.R. number 58850 and painted black - it has two outside cylinders, with inside Stephenson valve gear, and weighs about 60 tons. Preparation starts with cleaning the grate, inspecting it and the inside of the boiler for damage and leaks, then onto the smoke box and ashpan. When clear and in good order the grate can be loaded with wood and about 8 cwt of coal, with rags soaked in paraffin. The last rag is put in on the shovel after being lit with a match and, when well alight, it is placed in the centre of the grate. Once the fire has got hold, front and back dampers are opened fully and one can see large amounts of black smoke emitting from the chimney. Now to oil up the engine. One can see the oil boxes up top along the side of the engine which are easy - these were left until last. Fitted with a black plastic sack which has a hole in the bottom for your head to go through and one in each corner for your arms, you go down the ash pit with a light and oil cans. Anyone who says oiling up is easy has not had to fill up the mechanical lubricator at the back of the smoke box with steam oil. This is done by climbing up between the expansion links and chassis cross member. Having opened the lubricator box using the fingers of the left hand over the lip of the box you gauge the level of oil with the fingers. The oil can handle is held in the fingers of the right hand ^{and} with the can balanced on the right arm you pour the oil in until it is $\frac{1}{2}$ inch from the top. Next comes the valve gear which is hard enough as all the oiling points are on the top, as they are gravity fed, but can be nearly impossible if the eccentrics are in the wrong position. You get to know what the last crew were like - a good crew will always leave the cranks at the bottom in the front and back angle (bottom half of the wheel) as this leaves the eccentric straps all in a good position to get at the oiling points of this large array of sculptured metal. By the time you have finished working underneath, you begin to feel the heat of the fire. As you emerge from the depths of the ash pit, you get rid of the remains of the black sack and continue with the top oil boxes, coupling and connecting rods, brake hangers, etc. By this time the fire needs to be checked, it should be starting to glow and the pressure gauge will show around 20-50 lbs of steam - water level ^{in top} half of class - the smoke from the chimney is not so black and going up vertically. The fire is spread out to ensure even burning all over the grate and more coal shovelled on giving an even spread with a bit extra under the door. While waiting for the pressure to come up, the paintwork and cab are given a clean using an oily paraffin rag.

Well, the pressure is up to 260 lbs, it blows at 280lbs, the fire is glowing white hot, the safety valves blow, the front damper is closed and the rear one adjusted with the blower to keep the pressure at about 260 lbs. Both injectors are tested to ensure that they will both put water into the boiler. The paintwork is gleaming in the sunlight, the 60-odd tons of engine is standing ready to go along the shining strips of steel. The three man crew are all dirty with black oily hands, dirty streaked faces with radiant smiles from ear to ear, the smell of burnt coal and steam is strong in the air - even the instructor, Clive, had managed to get dirty he had pitched in when he thought he was needed.

Well after a chat on the dog and bone (telephone) with the signalman, to confirm we were ready to start the day's planned movements, clearance was given. The hand points were thrown by the third man, I was on the shovel

(fireman) for the first part of the day, and we would rotate between the three of us. A North London tank is a right-hand drive engine, so as fireman I checked that the left-hand side of the engine was clear, and shouted this to the driver. I wound off the brake, the driver released and put the reverser into reverse, gave a blast on the whistle, gently opened the regulator. A large amount of steam was blown out of the draincocks, hitting the ground, bouncing back and forming a lovely white ground-hugging cloud, a chuff and a ball of smoke and steam was exhausted from the chimney. At the same time a creaking and groan came from the depths of the engine and it started to go backwards leaving a trail of steam along the ground. We crossed all the siding points and out onto the main line. When we arrived and stopped the driver gave a short blast on the whistle. Each movement of a steam locomotive is signalled before the start and at the end with a blast on the whistle, so everyone is aware of its location and impending movement. The driver and fireman are responsible to check their respective sides of the engine are safe (no-one in the way), and they have signals for the route before the engine can move. The ground signal changed, giving us a route into the station, all clear, a blast on the whistle and forward we went into the right-hand road of the station, to get water. While moving I did some firing, shovelling across the middle and back, checked the pressure 265 lbs, adjusted the back damper to about halfway. We stopped by the water hose, I applied the hand-brake, climbed off the engine, pulled the water crane round to the side of the engine, climbed up onto the side tank, undid the filler cap, put the canvas hose into the tank, and signalled for the water to be turned on. The sound of rushing water came, the hose vibrated, the water cascaded into the tank. There is a transfer pipe between the tanks so the engine can take water from either side. The transfer pipe is of a smaller diameter than the filler hose, so for the last part the water flow is reduced to ensure both tanks are full.

The running plan for the day was coupling, uncoupling, shunting, stopping and starting within the station area. My turn as fireman was not going to include a lot of shovelling, as we moved off to the sidings to collect a brake van I topped the boiler up with water. The water supply is separate from the injector - first turn water cock on full, then turn the injector cock on, listening for the injector to pick up while moving back to check and adjust the water supply. Water can be heard being forced down the pipe and into the boiler, the water cock is closed until none is being wasted onto the ground via the overflow. When the water is well in the top half of the glass, the steam and other water cocks are closed. The brake van was collected and placed in the platform road near the halfway point, its brakes fully applied and uncoupled. Now the object of the exercise is to run the loco round the station loop and put the front of the loco's buffers up against the buffers of the brake van, without moving the van or causing the loco to come back off the buffers. While firing, I had been trying to watch what the other member of the course was doing and the mistakes he made, as I did not wish to make the same Boo Boos. The firing was not hard but required close and regular attention, to ensure the pressure was between 260-280 lbs, keep the water level in the top half of the glass, also keep the fire glowing white hot, by using the dampers, (normally just the rear one), the fire box door, and feeding coal into the firebox. Locomotive grates slope towards the front, with the movement of the loco this causes the fire to move forward. Therefore most of the coal is shovelled into the back and middle with just the odd few to the front. Also coal is heaped up in the back centre just inside the fire door. I did not have any problems

In controlling the boiler pressure and fire, I managed to spot any holes forming in the fire and filled them with fresh coal. If these holes form, the rush of cold air through the grate makes a sound like buzzing bees. This would have caused Clive, the instructor, to say something to draw my attention to the

problem. The driver shouted across "hand brake on" - as we came to a stop I wound it on hard. My first hour turn of firing went in a flash now the driving - the crew rotated round.

I move over into the driver's side of the cab, check the positions and get the feel of the controls. The start signal drops giving me the road, I shout across to the fireman "clear, brake off", I put the reverser into full forward gear, make a brake, "O.K. - 21 inches of vacuum". I check the right-hand side of the engine "all clear". The fireman shouts back "O.K.", I give a blast on the whistle, then snatch the regulator handle open, and close it back to halfway. A loud chuff comes from the chimney, a creak and groan, the feel of the engine as it starts to move forwards. I snatch open the regulator a little further and close it back about halfway again, the engine accelerates away smoothly. I snatch the regulator open again and, leaving it open, the speed builds up to about 7 miles per hour, I release the reverser and move it back to about 60% cut off. The engine moves down the platform and out the end of the station. I adjust my speed by closing the regulator as we approach the point onto the main line. We cross the point, I fully close the regulator, apply the brakes gently, bring the engine to a stop just past the signal, and hold it on the brake, giving a short blast on the whistle. I put the reverser into reverse, the signal drops giving me the other platform road. I shout to the fireman "clear", back comes "O.K.", my side of the engine is O.K., a blast on the whistle and off we go, passing through the station and repeating the sequence at the other end. As I come back onto the platform that I started from I can see the brake van standing in the middle of the road, I close the regulator and gradually adjust the speed by rubbing the brake down to a walking pace. As the distance between the engine and brake closes I use a fixed point to judge my position in relation to it, the front of the engine hides my view of the brake van. I ease my speed on the brake, I hear a light clunk, fully apply the brake and hold it. Clive says "back around". The procedure is repeated until I am coming down the platform bunker first towards the brake van. I am closer to the brake van but can see less of it, so I have to use a fixed point to judge my position, the speed is adjusted about right, I hear a light clunk, apply the brake fully and hold it. Clive repeats himself. Back round I go. It is repeated time and time again. Finally, Clive says "You got the hang of that all right. Change around".

Well, I was on cloud nine - yes, as high as a kite. I don't touch the funny weed or take drugs. I pinched myself and it hurt, so I was not dreaming. I had actually done it, driven a real full-sized steam locomotive. Like all good stories more was to come, later that day and tomorrow.

NORMAN KING.

6.12.90

TO BE CONTINUED.

HOW TO BE THE PERFECT PASSENGER?!

(N.B. Any resemblance to any member of the public living or dead is entirely intentional. Of all such incidents mentioned below only some are slightly exaggerated and all have happened at some time. It's sad but I hope this account will make you smile nevertheless.)

The best time to arrive is at five past five on a Sunday afternoon when we run until five o'clock. On finding the gate closed you can then start to complain loudly "I've come all the way from Outer Mongolia and travelled days just for a ride and you're closed! We're only here today so cannot possibly come back next week" until some kind-hearted soul takes you round. If you actually arrive during the running period then obviously you don't join the back of the queue. You ignore all the warning signs, as after all they were only written for people who want to read. So you troop gaily through the steaming bays with a couple of screaming brats (your little darlings) in tow who have to put their fingers on everything and then try to join the queue at the front. You then get directed to the back of the queue and fight your way through the crowd muttering that "they should have put signs up or something". You then are so busy watching the world around you that you don't keep up with the queue unless constantly reminded by those behind you.

When you get to the ticket office, never offer anything less than a twenty pound note. If there's not enough change then you can always say you will come back later and pay after the ride, when you've been to the ice cream kiosk, but conveniently forget to return. When your train comes along, moan that it's the wrong one, you wanted the steam/ diesel/red one. Make sure you clamber onto the trolley by treading on the running board first so that you tip it one side and risk breaking it. Engage the driver in inane conversation e.g. if a steam locomotive ask "Is it electric?" and if it is a diesel "Where does the coal go in?" Such comments always go down a treat. Seat your kiddie with large ice cream immediately behind the driver so they can wipe this over the drivers back from time to time. Your other kiddie can sit behind you and immediately start bawling its head off when seated and cannot be pacified.

Still, once the locomotive starts moving the last thing you want to do is sit still and quiet and peacefully enjoy the ride, good grief, whatever next. No, you whistle and shout and scream, bounce up and down and sway to and fro. When admonished by the driver you may be tempted to call him a miserable old *** who should **** off. Reach out to touch the bridge as you go over it oh dear you've dropped something and the driver will have to reverse so that you can get it. Off we go again, see if you can touch hands with the people on the train coming down the track on the other side oopsadaisy we nearly all fell over. That driver really is the most miserable *** can't the council employ someone better? Can't it go any faster? Still, you're coming into the top bend now so all lean over to one side, the best way to meet the ground rapidly, engine and all. You might of course already have prepared the top bend by putting stones on the track to see how the engine will cope, you love disaster movies. However, your driver is quick-witted and his language is getting as good as yours. Deny all knowledge of an obstruction on the track and remember to camouflage it next time. Going out of the bend the ground is slightly higher and so you can drag your feet along and try and slow the train down - oh no, that ***** miserable old *** is hollering at you again. You arrive back at the station, attempt to get off before the train has stopped and upset everyone - well, you were only enjoying yourselves! Oh dear youngest appears to have wet himself on the seat, never mind. You then troop through another No Entry sign, get turned back and bump into the next lot of people trying to disembark. What? Well, maybe just another ride then.....

Let me be honest, nearly all the public are super people who appreciate their rides. This article was written in remembrance of the few we'd rather not see!

Sue

CHAS TV

I have just acquired a small cctv camera which I hope to use in amateur radio but it has come without a fixing bracket.

This is where having engineering as a hobby has advantages over many other of my radio amateur friends who would have to go out and buy a suitable bracket. I hope in the next few weeks to have made a variety of brackets to be used in the study, the workshop, and I hope also to make a fully portable Amateur TV Station that can ride round with me on the loco and send pictures back to the station so some special bracket arrangements will be necessary there.

Such an activity would be quite legal as I hold a full amateur radio license and with the facility of a mains video recorder the pictures could be recorded.

As with building a loco, building an amateur TV station has taken several years and just to make the camera work required a complete strip down and rebuild having first obtained the circuit manual which has been needed.

Unlike most home videos there can be no sound as the system cannot cope with both at the moment, but I shall be working on that too!!!

Kind regards to all and I hope to be down at the park more next year....

Charles Darley.

<<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>>

We welcome the following into the club:

Derek Field	of East Malling, a Dairy Shift Manager, interested in steam locomotives and constructing a Tich (or two).
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Geoff Gregson	of Maidstone, retired, interested in railways, road vehicles and fairground vehicles.
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Stephen Hall	of Chatham, a salesman, who is also constructing a Tich.
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Robert Mannering	of Maidstone, a charge hand machine setter, who is building a Simplex.
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Stan Senior	of Maidstone, a retired surveyor, who is building a Rob Roy and is interested in 'O' gauge locomotives.
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<<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>><<<<NEW MEMBERS>>>>

A SOUTHERN RAILWAY 0-8-OT Z CLASS ENGINE

in 5" gauge with a

Novel Valve Gear

by J. Ewins

Steam engines driven by pistons need to have the admission and exhaust of steam controlled by some form of valve gear. In the case of engines having piston or slide valves the movement of the valve aimed at by all the usual valve gear designs is that of Simple Harmonic Motion. However, because of various perturbations brought about by such factors as die slip, link slip and rod angularities the final motion at the valve is distorted. In the present gear none of these effects occur the final motion being pure simple harmonic motion. Simple harmonic motion is depicted in fig.1 which shows an eccentric of a locomotive revolving in an anti-clockwise direction at a uniform rate. By dropping a perpendicular from the eccentric centre onto the horizontal centre line the point P is obtained which moves back and forth horizontally as the eccentric revolves. The motion of P is said to be simple harmonic. It is a feature of this motion that as the point P moves past the centre it is travelling at its maximum velocity but with zero acceleration whilst at the extremities of its movement its velocity is zero and its acceleration at its maximum value.

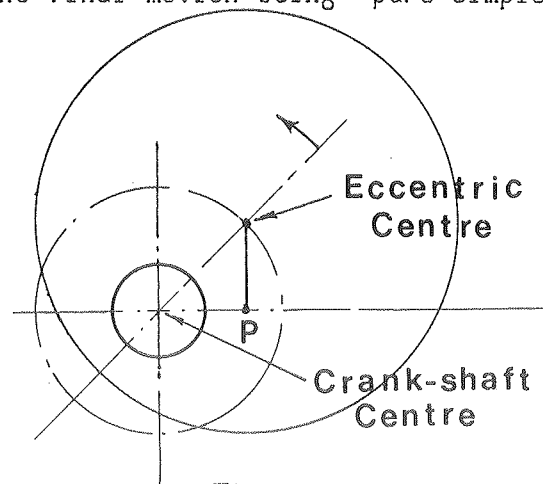
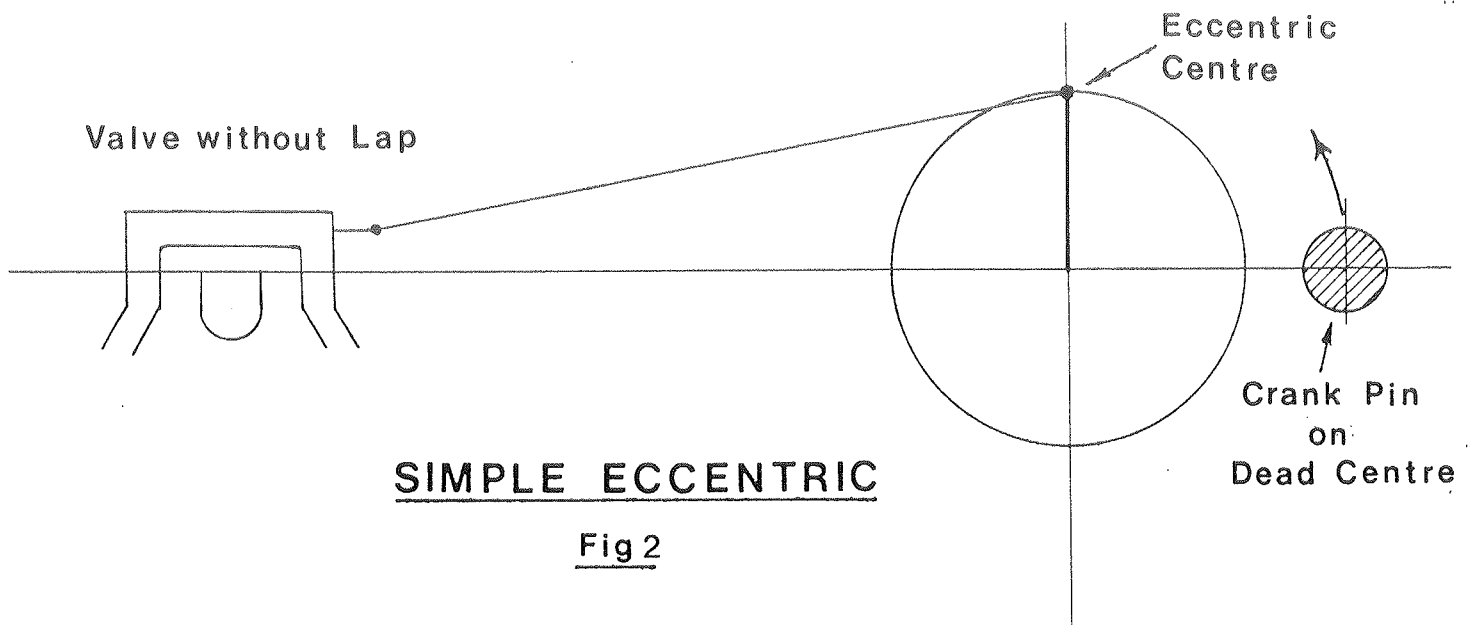


Fig 1

In the case of a normal reciprocating engine the simplest and nearly perfect form of harmonic valve gear is that of a simple eccentric placed at 90 degrees to the main crank as shown in fig.2.



Here the eccentric rod moves with almost perfect simple harmonic motion and the valve also but since this has no lap the port opens immediately the main crank leaves the dead centre position and remains open until the next dead centre position i.e. 100% cut-off. In addition there is no seal between exhaust and steam chest in the position shown and these two effects lead to a very wasteful use of steam.

Fig. 3 shows how these defects can be overcome by advancing the eccentric and providing the valve with lap. This results in the steam being cut off before the end of the stroke and the lap provides a seal between exhaust and live steam at all times. The snag here is that the cut-off is a fixed amount and is determined by the amount of lap in relation to the total valve travel. Valve gears in which the cut-off can be varied provide for a variation in the angle of advance but this cannot be achieved by simply moving the eccentric with respect to the main crank as the lap would also have to be varied. Radial valve gears achieve the necessary advance by combining two distinct motions to give rise to a third motion which is equivalent to an eccentric of variable angle of advance which is often referred to as the "Equivalent Eccentric".

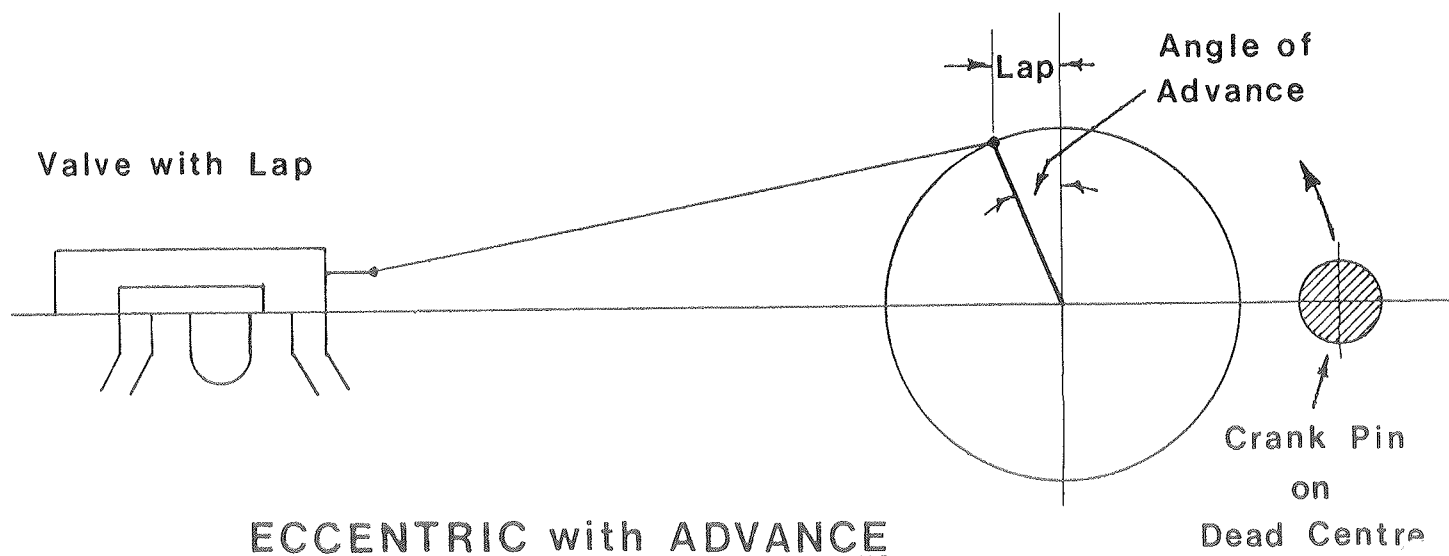
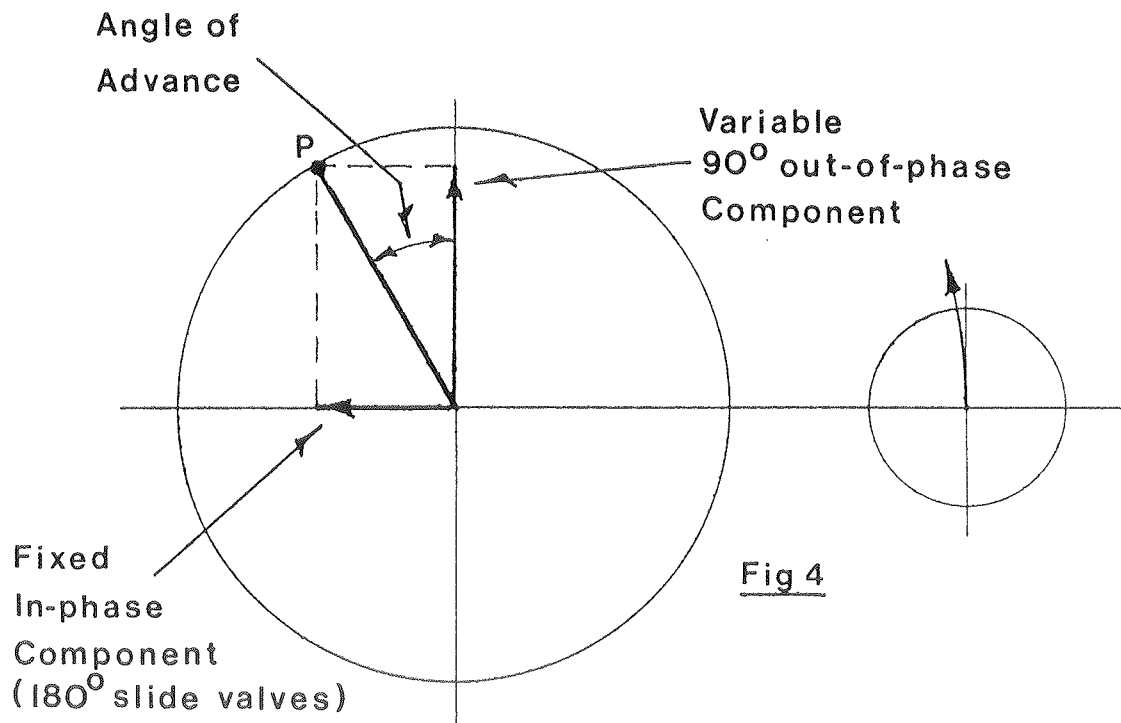


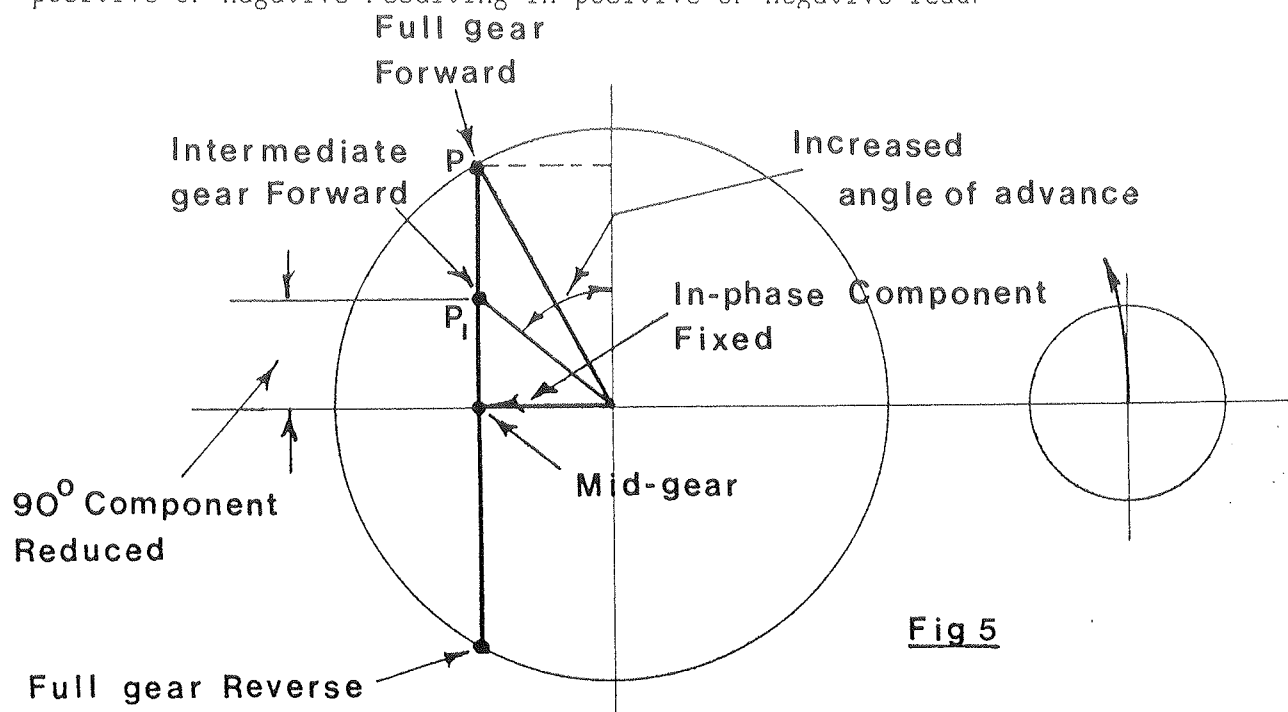
Fig 3

The way this is brought about is depicted in fig. 4 which may be conveniently related to the Walschaerts valve gear in which the in-phase component is that derived from the crosshead whilst the 90 deg out-of-phase component comes via the return crank which is placed at 90 deg. to the main crank. When such a gear is 'linked up' the component from the return crank is reduced by moving the die nearer to the trunnion whilst the component from the crosshead remains constant. Fig. 4 indicates how the position of point P with respect to the main crank results from combining the two separate motions. Actually the arrows shown are rotating vectors (phasors) and the diagram shows the situation 'frozen' with the crank at the dead centre position. Fig. 5 is fig. 4 repeated but with the addition of the point P_1 obtained by using a reduced 90 deg component. It will be seen that for any intermediate position the points P, P_1 , etc will lie on the chord shown and furthermore if this is continued across to the other side of the centre line

the valve events will be such as to cause the engine to go into reverse. It will also be observed that when the 90 deg component is reduced to zero, only the in-phase component remains and the amplitude of this is ordinarily arranged to correspond with the lap so that the valve just does not open at each dead centre position of the main crank.



It is fairly common practice however to provide slightly greater amplitude to the in-phase component which causes the valve to open at the dead centre position by an amount called the 'lead'. The lead may thus be defined as the difference between the in-phase component and the lap, and this may be either positive or negative resulting in positive or negative lead.



From the above it will be seen that in order to produce a perfect valve gear i.e. one delivering perfect simple motion to the valve spindle an output pin located at the points P, P₂, etc must transmit its horizontal component to that spindle. This is simply done by the mechanism of a 'scotch crank' as shown in fig. 6.

A further refinement can be provided by causing the output pin to be adjusted not through the path of a chord of the circle but in a curved path so that the in-phase component can be made to vary as the gear is linked up. It has been found beneficial in the past in full size practice for the lead to increase towards mid-gear in order that at short cut-off positions the aggregate valve opening is increased thus helping to keep the admission line on the indicator diagram horizontal. It is doubtful if much can be gained from this in model practice but for the sake of completeness this feature has been incorporated in the present design.

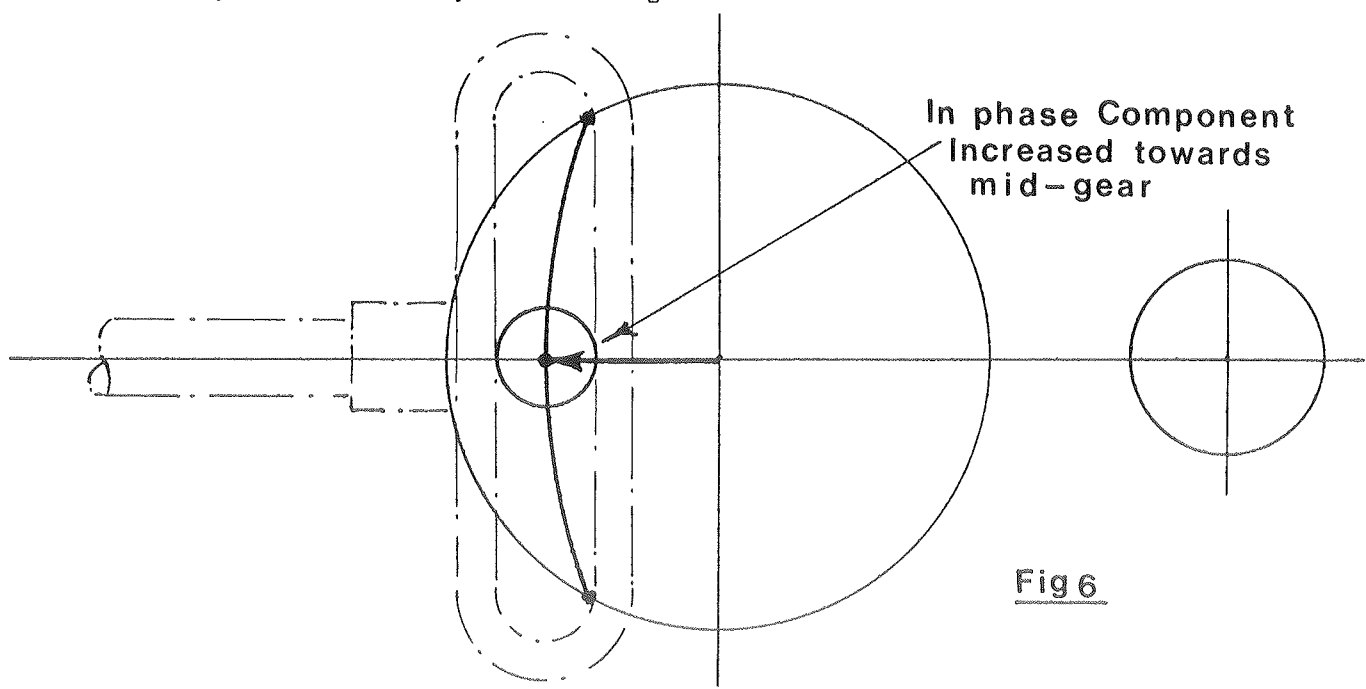


Fig 6

So much for the theory. How can this be realised in practice? In my model I have arranged for a transverse assembly to be gear driven one to one from the second pair of coupled wheels this assembly being situated behind the first pair. This assembly shown in fig 7, consists of a concentric arrangement of a central spindle each end of which carries a pinion which meshes with a rack attached to a die block running in a channel which performs the function of the chord shown in fig.4. These dieblocks on either side carry the output pins which project away from the assembly and drive the scotch crank shown on fig. 6. If the central spindle is rotated with respect to the outer member the dies on either side will be moved along the chord thus linking the gear up or reversing it. As indicated earlier I have chosen to replace the straight chord with a curve in which case the 'racks' become sections of a large spur wheel. It will be observed that once the central spindle has been adjusted to the required cut-off and direction there is no relative movement between this and the outer member and therefore no wear can take place. In order to bring about this relative movement the central spindle is provided with three helical grooves into which project pins from an outer ring.

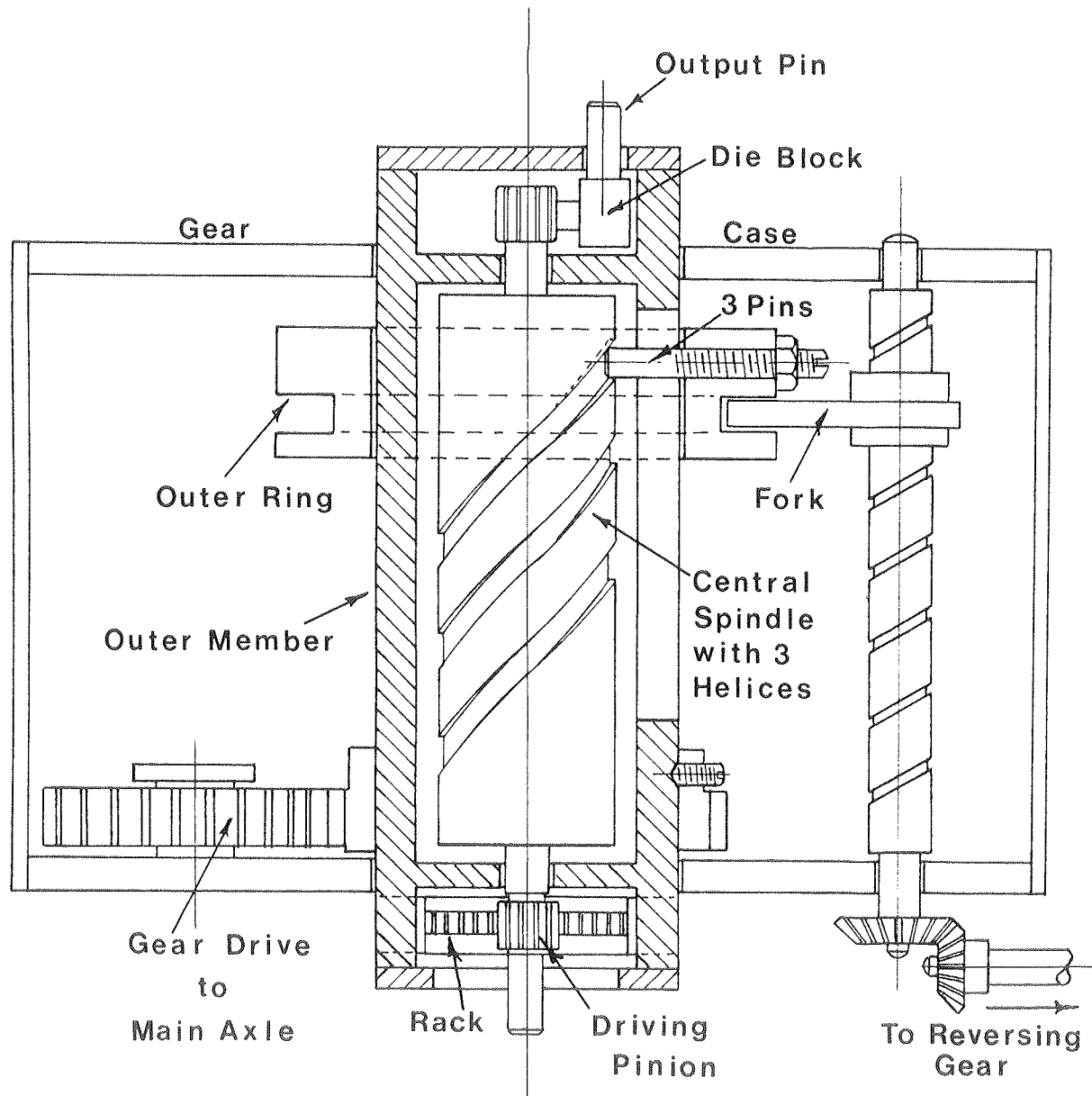


Fig 7
(Diagrammatic only)

These pins have to pass through slots in the outer member which are parallel to its axis. Transverse movement of the outer ring thus rotates the central spindle with respect to the outer member as required. The outer ring is moved transversely by a fork which itself is driven by a transverse screw coupled to the reversing gear. In my model I have arranged that the drive from the second driving axle is through a gear box containing the above mechanism and mounted on the axleboxes so that it slides vertically up and down with the springing. This arrangement produces no error in the output since vertical motion of the output pins cannot affect the scotch crank motion. One could visualise alternative arrangements whereby the transverse assembly could be mounted directly on the mainframes and driven from a suitable axle by a carden shaft operating through bevel wheels. Such arrangements would however produce minute errors due to the action of the springing whereas the method I have chosen contains no intrinsic errors.

The engine has now been run for one season and as one would expect the beats sound perfectly even in both forward and reverse. It will link up to around 20% continuing to run quite smoothly. Generally it behaves similarly to the rest of my engines which is not surprising since the overall design routine was the same as I have previously applied. Members who have driven it will no doubt have noticed this. I doubt if the novel valve gear has had

any significant effect on its performance as compared with my other engines all of which have conventional valve gears albeit carefully designed. One trouble which continues to manifest itself is associated with the piston valves which are made from the P.T.F.E. material loaded with ceramic called "Fluososint". The expansion coefficient of this material is relatively high compared with metals so that allowance needs to be made during manufacture. This I did by heating the bobbins up whilst in the valve bores to check that they had not seized when the temperature was at a level which I had previously recorded on other engines. In spite of this I now find that when cold one can operate the reverser quite freely but when hot things become very stiff. Clearly I should remove the bobbins and shave something off their diameters but I am reluctant to do this in case their steam tightness is impaired it being perfect at the moment. This tightness only shows up when the engine is stationary. The greatest efficiency I have yet recorded during simulated I.M.L.E.C. tests is just over 2%, which is somewhat better than with my other engines. I believe that this greater efficiency is largely due to the greater adhesive weight I have been able to achieve by building in 100 lbs of lead ballast. Previous tests I have conducted on my track which has alloy rails showed that there can be as much as 30% covert slip i.e. slip which occurs without being evident (as opposed to overt slip). This covert slip represents work done warming up the rails instead of being recorded by the dynamometer so the true efficiency of the engine is therefore correspondingly greater than that recorded but of course the efficiency of the engine as a hauler of trains remains as that recorded. This effect shows up in recent I.M.L.E.C. results where heavy engines have been doing so well and raises the question of whether artificial ballasting of models is permissible. Another aspect of efficiency is that associated with grate loading which is the horse power output relative to the size of grate expressed in Draw-bar Horsepower per Square Foot of grate area. During the test cited above the average value was 4 DBHP/Sq.Ft. which fits in with the value for the best performers at I.M.L.E.C. over the past few years which has been between 4 and 5. Regarding the pros and cons of added ballast to increase efficiency my feeling is that if it can be achieved unobtrusively one may as well take advantage of the improved performance which follows particularly in regard to the greater hauling capacity during normal passenger service on club tracks.

Another development I have tried on the "Z" is that of automatic water control to the injectors. Having experimented at length to produce injectors which will pick up their water from below even under the most adverse conditions I like to take advantage of this and up until now have achieved this automatic effect by arranging the water supply from a constant-head tank below injector level. Whilst I have fairly well managed this there have been occasions when the water supply has fallen short of that necessary to satisfy the injector. If one strives for 100% reliability in this area any additional complication must be viewed with distrust. With a view to tackling this problem from a different angle I have experimented with a steam controlled water valve of the type shown in Fig 8. which is approximately full size. Here a diaphragm is subjected to steam pressure on one side by being connected to a tee piece in the steam pipe to the injector. The other side of this diaphragm pushes against a rod which in turn contacts a spring loaded ball which it forces off its seating allowing water to flow freely. Previous attempts to do this have resulted in heat from the steam supply passing to the water thus limiting the capacity of the injector to handle warm water. In the present design this has been virtually prevented

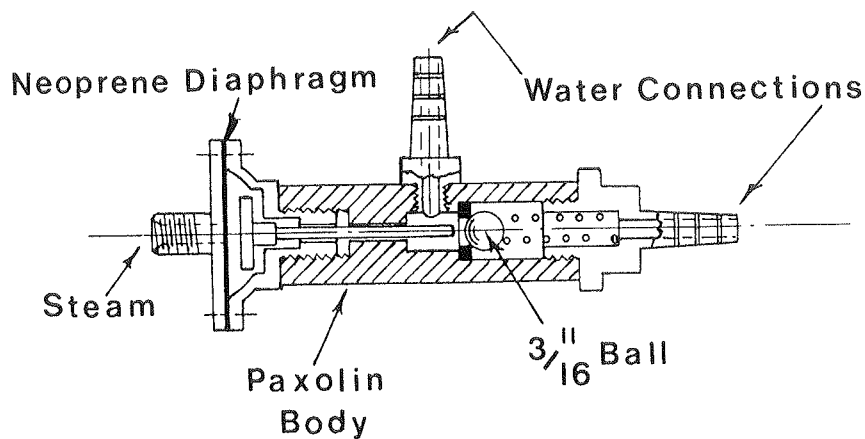


Fig 8

by the use of the Paxolin distance piece between the water and the steam diaphragm. So far this arrangement has worked out satisfactorily after initial trouble with the ball seating which originally was directly onto the Paxolin instead of onto the brass insert as shown. One has to be careful when introducing fresh arrangements like this not to be too enthusiastic until time has proved them. So often one sees accounts in the literature leading one to believe that this or that is perfect when in fact it is no more than a half baked idea. I have seen quite recently ideas which I have tried years ago and have found wanting. Among such items we see "O" rings and various plastics which suffer deterioration at the temperatures encountered in the steam locomotive. Clearly those advocating them have not allowed sufficient time for them to prove themselves. In the above water valve design there is the possibility that the Neoprene diaphragm may suffer from the heat transmitted from the steam pipe, only time will tell.

The Z class took me just under two years to complete it being what I call a "quicky" built in order to try out my valve gear idea. Since completing it I feel at loss when going into my workshop after the intense activity of the past two years (limiting my club activity incidentally), so I must think of something else to make. Having a 7 1/4" track in my garden my thoughts turn to a loco to run on it. I like to build something different each time and not having built an engine with Stephenson's valve gear perhaps an engine using this would be nice. A S.E.C.R Class H perhaps?

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In the summer, we boys were allowed to ramble over the North Downs with a few sandwiches and a bottle of water laced with lemon sherbert. A healthy day out in the country taught us a lot about the natural world and its inhabitants - not to mention the odd gamekeeper! We often came back laden with blackberries, hazelnuts, chestnuts or mushrooms. Our collection of the latter was always regarded with suspicion. Sometimes an extra find would be a moorhens or partridges egg - although we were warned never to rob a birds nest.

"You're putting it on your rhubarb? Funny, we put custard on ours!"

On polling days we would gather outside, awaiting the arrival of voters who were brave enough to wear rosettes declaring their support. Those on 'our' side were cheered, the others were booed. This produced a lot of ill-feeling and many thick ears!

As I've said cars were few and far between - I remember vividly that those with a hood had a back window the size of a postcard. Petrol was 1/3d a gallon - about 7½p. Punctures you mended yourself, using large tyre levers to remove the tyre, although split rims became available. The tyre on a circular carrier was bolted to the wheel. Vulcanisation of the repaired patch came later. Cars carried gas lights - a generator contained carbide onto which water dripped, producing a gas which was led by pipe to the lamps. When the lamp was opened, one stuck one's nose in, and only on the smell of gas was the match lit. Well, you could run out of matches!

Our first house in Maidstone had a big cast iron lift pump alongside the kitchen sink for pumping water from an outside well. Piped water came later. A copper in the corner had a fire under it, lit on Mondays which was wash day. This also provided water for baths - carried out in a tin bath in front of the living room fire.

Lighting was by gas, a very fragile mantle producing a whitish light. Later came electricity, which was a boon except in wet winters, when the lights would suddenly fail and we knew then that the Electricity Works at Fairmeadow had been flooded by the Medway. This was long before the Grid System was installed.

In the winter we boys organised concerts in a large empty shed. One of our lads, keen on electricity arranged lighting, and on Saturday nights local children were encouraged to attend our concerts! We gave displays of magic charma and recitations - charge 1d. Refreshments were available - sherbert in water! Shadow plays were popular - particularly of operations. The patient, having been tranquilized by a large mallet, had an extraordinary collection of intestines removed, such as sausages, alarm clocks etc. One little girl went home convinced she had swallowed the pen-knife! This gave a lot of trouble in explanations to her family. One irate father lectured us when he found his son ( our mate ) purloining his wife's corsets to take part in our shows. We also made an Epidiascope, which threw pictures from books and photographs onto a screen - similar to the old magic lantern. A professor, suitably dressed in Father's hat and coat, and wearing a wig of Mother's rug wool gave lectures on his visit to the moon, showing alarming pictures of the animals he had encountered up there. This was about 1926 - all disproved many years later by NASA!

As far as we children were concerned, Christmas did not start in July, as now. Parents probably started early, but it was only when a week away that things seemed to get exciting. Boys wanted Hornby Trains - girls, dolly and pram. We boys were sent out to get holly and greenery for decoration. At home we made paper chains. Coloured strips of paper glued as links to form the chain were very colourful, and were forerunners of the garlands one buys ready made. Chinese lanterns were hung around the rooms. These were colourful, collapsible cylinders which had a small candle inside - very pretty. Even the Christmas tree had small candles on it, in little tin candle holders. Everyone was brought up to be wary of naked flames - so fires were not all that common, although occasionally a paper chain would come unstuck and fall across a candle. Prompt action soon dealt with things like that. Christmas was the one time of the year that we were able to enjoy things that were unobtainable during the year. Oranges, muscatels and almonds, sugared almonds, dates, figs, tangerines, marshmallows and lots more. Christmas dinner had to be thought about. Some families kept a rabbit, cockerel, a goose or even a turkey and fattened them during the summer for the 'happy' day! But, of course, these sometimes became family pets and no one could bear to eat them.

Neighbour to Father " You mean you're going to have that turkey for dinner on Christmas Day? "

Father "We certainly are! He's going to sit right next to me! "

There was no refrigeration, so butchers had to clear stocks by Christmas Eve, before the three day holidays. A walk down Week Street and High Street late on Christmas Eve would produce a leg of lamb, joint of pork or even a bird for 2/- ( 10p ).

Money was scarce, when isn't it? We did carol singing to help our funds. Parents had paid into a Tontine Club during the year. The share-out just before Christmas was a joyful event, reminding us that the day was getting near. You could send a Christmas card unsealed for 1d and 1½d if sealed. Post Offices closed at 8 pm at night. Cards were delivered on Christmas morning - eagerly awaited that postman was!



Plucking the chicken or turkey was a messy itchy job - stirring the Christmas pud. was better especially putting in the right amount of silver 3d bits for luck.

On many nights our bedroom window was covered with Jack Frost patterns. I remember that when crystal radio sets became popular we'd all gather at 3 pm on the day to hear King George V speak to us. Live !!! not recorded weeks before!!!

As Christmas Eve grew darker, we'd all have a bath in the tin bath in front of the fire, clean pyjamas of course, and then the last clamber up to bed before the great day. And often in a final glance at the gas light across the street, the first, silent white flakes would be drifting down, and we knew it would be a Wonderful Christmas.

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Subscriptions are now due for 1991. Please complete this slip and give or send it to our Treasurer Peter Roots.

I enclose herewith the sum of £.....( £5 or £2-50 for retired members ) being my subscription to Maidstone Model Engineering Society for 1991.

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