

Sydney Live Steam Locomotive Society

Anthony Road, West Ryde, N.S.W.

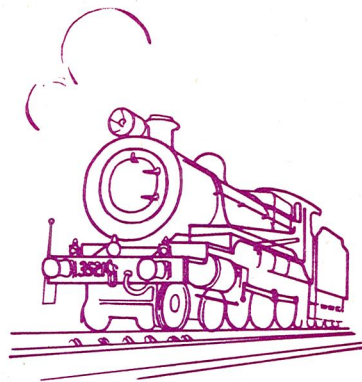
Newsletter
Correspondence.
The Editor,
P.O. Box 124.
West Ryde, N.S.W.
2114.

'Newsletter'

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Editorial.

You will be able to notice an improvement in the appearance of this issue of the Newsletter. Since I took over the job of Editor the only means of reproducing the Newsletter was to use my school's Gestetner duplicators and rely on Reg. Wood to produce any pages of photographic reproduction and to supply the letter-heads for the front page. The two duplicators the school owns are now rather old and need very careful handling to produce a worthwhile finish. It was always a relief to see the last sheet of the last page come off the machine without any problem.

Just before the August school holidays the school became the owners of a Multilith offset printing machine, second hand. Second day back at school this term two other members of staff and myself were instructed in the use of the machine. With the help of some advice from some experts and a few hours practise I felt that I was well on the way to mastering the art of offset printing. As my father, grandfather and great grandfather were all in the printing profession I could claim some inherent ability in the field I suppose.

I hope that the following result will meet with your approval. So long as I remain at my present school I should be able to produce a newsletter somewhere nearer the quality we had when Reg. was performing the task.

John Lyons.

The Club House.

This important venture has been the topic of much discussion during the past few months. Attached to this Newsletter is a letter prepared by our Treasurer John Hurst. In this letter John sets out the various aspects that we are, or, should be aware of. It is hoped that each member will read the letter carefully and give a great of thought to the means by which the undertaking will be financed.

John would like your replies as soon as possible so that he is able to report back to the Society without any undue delay.

Wedding Bells.

Congratulations and best wishes to Neil and Patricia Campbell who were married on the 30th. September from all the members of the S.L.S.L.S.coop.ltd.

Apprentice of the Year.

One of our members, Ian Ramsay, was recently named Apprentice of the Year for 1977. Ian is a toolmaking apprentice with Plessey Australia Pty.Ltd., at Meadowbank. Congratulations Ian.

Invitation Day.

The second inter-club running day for 1977 is to be held at the grounds of the Hornsby and Districts Model Engineering Society on Saturday 29th. October.

The important details are as follows. Grounds open at 8 a.m. running into the night. Bar-B-Q facilities will be provided, morning and afternoon teas will be arranged, the club house will be open for our use.

The track caters for dual 5" and 3 1/2" gauge ground level. Hydraulic hoist for unloading locomotives, 12 volt D.C. blower supply and compressor on site. Lights needed for night running, have your boiler certificate.

Location. Roughly half way along Mid-Dural Rd., Galston, a sign will be displayed opposite the gate. For further information, Bob Farquhar, phone: 476 2534.

The H.&D.M.E.S. are looking forward to this day as it is the first chance to show their club.

B.R. Class 9F 2-10-0 "STANRAY2" Written by Stan. Childs.

In 1961 Reg. Wood directed my attention to an article in PRACTICAL MECHANICS by LBSC on a 3½" 'Evening Star' which had just started as a serial. We were both smitten with a desire to build one each, but as Reg. was busy with a Hielan' Lassie, and I was running a one man business without time to spare for a hobby, the project was put on the shelf for the time being.

The original Evening Star was a BR Class 9F 2-10-0 and was so named because it was the last steam locomotive built in the U.K. and at Swindon. It was numbered 92220. The last steam locomotive made at Crewe was also of the same class and numbered 92250 and it was the only BR loco. to be fitted with a Giesl Oblong Ejector Front End. Having read of the good results obtained by this Ejector, I decided to model it on my engine; so I asked my brother-in-law, Ray Bremner, who was then residing in London, to try the BR for photos and drawings of the engine and ejector details. He was able to get photos but not drawings from BR. He then called at the office of the Railway Gazette, where he was given the address of the inventor, Dr. Ing. Giesl-Geslingen. In reply to Ray's letter, the Dr. very kindly forwarded a print of the installation in 92250 made to scale of 1½" to 1 ft., also copies of Ejector Articles which had been published in the Railway Gazette. At the 1963 Convention held at West Ryde, both Reg. and I received a fresh impetus after seeing the splendid behaviour of an 'Evening Star' by Stan. McEwan of Geelong. But it was not until April, 1965 that I was able to make a start and, by the end of May, 1966 all wheels, axles, axle boxes and coupling rods were in position in the frames; the tender frames were also complete with wheels, axles and boxes. In between times I re-designed the layout and details of the valves, valve liners and valve spindles to reduce the volume of the steam passages between valves and cylinders. The final clearance volume is 5% of the total volume. The exhaust outlets were placed outside the cylinder block, just as they were on the prototype. These outlets and the steam inlets were all fitted with 7/16" o/d. pipe spigots arranged to enter O ring joints placed in the inside of the engine frames, so that all the exhausts joined in the form of letter H, having a riser in the middle leg for the Ejector nozzle. The two steam supply inlets were connected by union elbows to the superheater outlet header. The H frame of the exhausts formed a very rigid cross member between the cylinders, because flange joints at the ends of the H legs were secured by setscrews at the O ring junctions. Although the exhausts meet together, this arrangement does not seem to affect the beat, naturally Giesl is softer, but the exhaust beats are audible. With this method of connection, it is possible, by disconnecting valve and con. rods, also the six bolts holding the cylinder baseplates to the frame, to remove the cylinder assemblies without undoing the steam or exhaust unions. This method was used by Mr. K.E. Wilson on his 7¼" MOGUL; see M.E. 1966, and it gave me the confidence to use it. I reversed the locations of the O rings by placing them inside the frames. Having witnessed the contortions of owners when trying to couple up union joints inside smokeboxes, I decided on a smokebox split horizontally on the diameter; the top half to carry the door ring and door. It is held together by twelve 6BA screws arranged six aside. The top half drops over a spigot on the lower half and a sealer, like a thin Plasticine is used and it makes an air tight joint. This type of box has proved to be of great benefit when working on the gear within the box. Two types of draft or baffle plates have been tried and one of them was so effective in producing a self-cleaning box, that it emptied the contents all over me. (Full face safety goggles will have to be bought). All drive axles were made as per LBSC serial, which means that all axle boxes on those axles can be cleaned from inside out by oil pumped through holes in the centre of each axle. Each drive axle box also receives oil during running, by drip feed

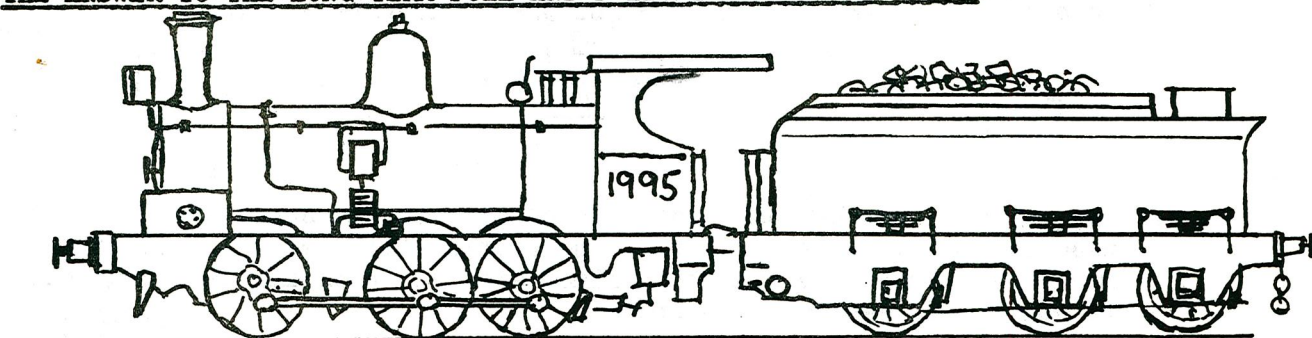
B.R. Class 9F 2-10-0 "Stanray 2" cont.

from two supply feeders, having five outlet pipes each, placed above the middle axle and secured to the frames. Oil to the cylinders is fed by the usual eccentric driven oscillating pump. The cylinders and pistons, being of best gunmetal, the pistons were packed with 3/16" sq. graphited asbestos. The piston valves were machined from 'Meehanite' bar (kindly supplied by George Farkas), and lapped in with carbon molydisulphide to instructions given by Don Young in the M.E. Each valve has three labyrinth grooves 0.017" wide by 0.015" deep at each end, and although easily moved by hand, they are steamtight. The valve rods have been made with a fixed shoulder at the valve gear end against which the valve bobbin is held in such a way, by two locknuts, that will allow the bobbin to revolve with the minimum of end play.

to be continued.

An extract from the Institute of Mechanical Engineers Journal. Courtesy of Ray Lee.

THE ANSWER TO THE LONG TERM FUEL AND POLLUTION PROBLEM - 1995.



This is a picture of a "cloud" engine, so named because it runs on fluffy white stuff just like clouds or mist. It was re-invented by a plumber who noticed one day that the white stuff coming out of his Mother's kettle looked just like the stuff the old tugboat Wonga used to run on. The machine itself was found under a rubbish heap covered in old gas stoves, rusty iron bedsteads and smouldering mattresses.

It was all fixed up by cleaning off the rust and giving it a coat of paint. To make the 'clouds' it was necessary to heat up the water (that wet stuff that is found in any tap) to do this, you have to burn a fuel in the 'boiler'. The fuel can be rags, bits of wood, old socks, in fact anything, even old newspapers. But the best fuel is called KO-AL; this is shiny black stuff that you dig out of the ground (true) it is plentiful and can even be picked up in the streets in some places, when it burns it makes a lovely black smoke that when inhaled cures whooping cough, asthma, boils, carbuncles, and certain types of venereal disease, and when it falls on the ground it vitalizes the soil.

This machine will spell the doom of those strangely complicated poison gas pumps now in use, with their voracious appetite for that rear and smelly liquid fuel that the nasty men at the refineries cut off the supply of every X-MAS and Easter Time.

The big advantage of the 'cloud' engine is that even a not very bright, trained ape can fix it up, and what's more an even bigger dill can learn to drive it.

1977 Convention, Returning Home.

by John Hurst.

The boys left for home on Monday and on Tuesday morning we went to Adelaide airport at 8 a.m. The completing of the flight plan should have taken about an hour but with the weather rapidly changing for the worst four plans were drawn up before one was acceptable. We left about noon to fly to Melbourne via the inland rather than the coast as we had first intended.

We arrived at Swan Hill about 2.30 p.m. to refuel. There was a mechanical problem that took an hour to fix and then to get the petrol. There was nobody about but there was a telephone number to ring. On ringing I was told where to find the key to open up the bowzer, help my self, work out the cost, return the keys and leave the money with it, trusting lot. With the bowzer switched on no petrol, so pull the thing apart and prime it, still no go, reprime and this time we are lucky. After all

contd. over.

Returning Home. contd.

the problems we stayed in Swan Hill overnight.

Thursday and we head for Lilydale, a suburb of Melbourne, with the weather forecast 'no trouble at all'. However as we progress things change, at Shepparton all well and we turn towards Melbourne but by Seymour the weather is only fair. Flying towards Kilmore Gap the weather looks lousy but we get through the Gap and head for Lilydale with the Yan Yean Reservoir in sight only to see it disappear in a few minutes. Heading back towards the highway and some open country we fly into the Essendon Airport control zone and when called on to identify ourselves we do so and are guided into Essendon some 30 miles from where we wanted to go.

We left Essendon on Saturday morning touching down at Wagga and then on to Bankstown thoroughly enjoying the scenery one does not see from the road. I wonder what we shall do till the next Easter Convention.

(practise instrument flying. Ed.)

Frame Assembly.

by Alan MacKellar.

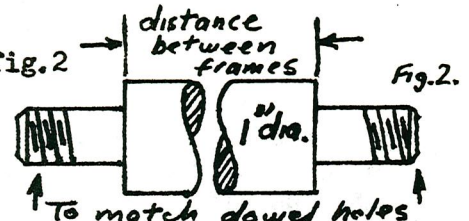
A method of frame assembly to ensure accuracy where only average workshop equipment is available.

1. When the frames are been marked out make provision for two dowel holes close to each end of the frames $5/16"$ or $3/8"$ diameter. fig. 1

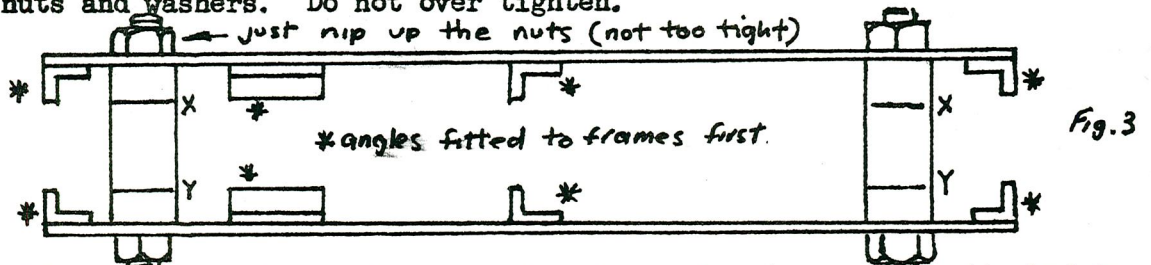


* $5/16"$ or $3/8"$ Reamed
16 or 8 h

2. Bolt frames together and insert dowel pins in the holes provided. These pins need only be a light tap fit. The frames will then be machined in the normal manner. (hornblocks finish machined etc.) When all machining and drilling is completed, separate the frames.
3. Turn up two distance pieces BETWEEN CENTRES as per fig.2. Accuracy is called for in machining these pieces. The end pieces should be a nice push fit in the dowel holes, and the distance between the shoulders should be exactly the same on both pieces.



4. Assemble frames on distance pieces (as per fig.3) and nip the assembly up with nuts and washers. Do not over tighten.



5. The buffer beams, bogie stretchers and various stays can now be attached to the frames. At this point the usual method of assembly is departed from. All angle pieces for fitting to buffer beams, stretchers, etc., are attached to the FRAMES FIRST. The buffer beams etc., are then attached to the angles already fitted to the frames. With average care the result will be an assembly which will be perfectly square in all respects. This method of construction lends itself to an all riveted assembly although equally applicable to rivet and bolt or all bolt.

6. When the assembly is complete remove the distance pieces by cutting through at points X and Y (fig.3) and removing the dowel portions. Where extra lugs are provided for dowel holes, these can now be removed by hacksaw and file.

It may be noted that the accuracy of the entire assembly is almost entirely dependant on the accuracy of the distance pieces.

p.s. Where a hole is provided in the frames for a reversing shaft in the case of outside of outside valve gear loco.s , a third distance piece may be used if desired.

Special Note. Soft Drink Prices.

Repeating the message from the April Newsletter soft drinks will be 25c to members and 30c to the public.

D.C. TRACTION FOR MODEL LOCOMOTIVES. Part 2. Mike Tyson.

The use of shunt field motors for my model of a N.S.W. 46 Class Locomotive is due to three main factors.

1. No re-winding of the generators used as Traction motors
2. Required regenerative braking
3. Remote control of reverser. (light duty contactor)

The mechanics of isolating the fields and insulating the armatures from the manufacturers Earth return system present no problems, and were required to suit the control system I wished to use.

As previously described, the speed control of a shunt wound motor can be a combination of armature and field voltages, and to achieve this many systems are available.

I found, by experience, the use of voltage contractors and a maximum and minimum field setting were more than satisfactory for model locomotive work, the main points to consider are the maximum current rating of the armatures and the "Saturation" of the field poles.

A standard 12 volt 27 amp. car generator has a field saturation point at 15 volts and armature saturation at 30 amps, with an armature resistance of 0.2 approx. ohms, and field resistance of 6 ohms, rated H.P. 330 watts.

The limiting factor of any motor is the mechanical output expressed as H.P.

$$\text{as } \text{H.P.} = \frac{\text{T.} \times \text{R.P.M.}}{5250} \quad (\text{T. torque})$$

(a constant)

$$\text{T.} = \frac{\text{H.P.} \times 5250}{\text{R.P.M.}}$$

Electrical input power as expressed as H.P. =
E.I./746+ losses (Limited by battery life)

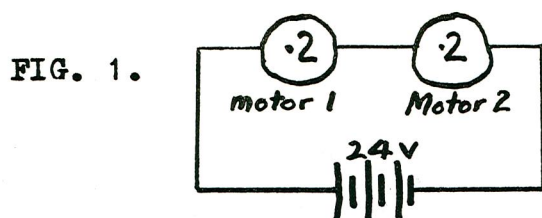
This value is the starting force of each traction motor and as it is produced by the interaction between the two magnetic fields of a motor, the torque of a series motor decreases as the armature current is reduced due to back E.M.F. With a shunt motor, by keeping the field constant and "feeding" the armature with a series of voltages, i.e. 6v. 12v. 18v. 24v. you are able to retain the torque of a shunt motor over a limited speed range. To further increase speed, you can reduce the field, this will naturally increase your torque, and is only used when the locomotive is running at a reasonable speed.

It is important to note that the starting effort (drawbar pull) is directly proportional to the physical size of the motor, as the gearing involved determines the final efficiency of the unit.

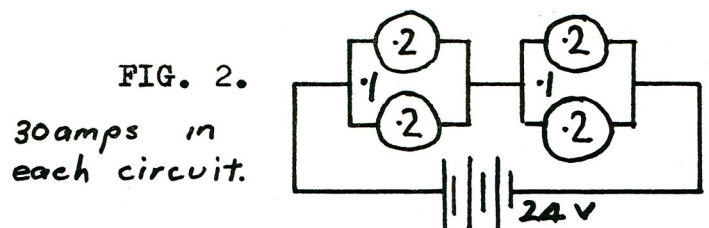
Electrical losses in a motor circuit, ignoring mechanical friction of the bearings are due to the internal resistance of the circuit, this includes battery resistance, cables, brushes, armature. To overcome some of these factors, I used starter motor brushes, heavy cables and armatures in parallel.

Example: Volts loss due to resistance of armature.

Two armatures in series 24v applied. Four armatures in series parallel.



$$\begin{aligned} \text{I.R. drop motor 1} &= 30 \times 0.2 = 6\text{v} \\ \text{I.R. drop motor 2} &= 30 \times 0.2 = 6\text{v} \\ \text{total volt loss} &= 12\text{v.} \end{aligned}$$



$$\begin{aligned} \text{I.R. drop unit 1} &= 30 \times 0.1 = 3\text{v} \\ \text{I.R. drop unit 2} &= 30 \times 0.1 = 3\text{v} \\ \text{total volt loss} &= 6\text{v.} \end{aligned}$$

The electrical wiring system used to keep the current down to a max of 30 amps. per motor unit is, I feel, not for this article, maybe the subject of a further item if warranted by the Editor.

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Answers to the questions I am often asked about 4613, how long do the batteries last ?

At maximum drawbar output of 3 H.P. 1.08 hrs. continuous
Rating 80% eff.

At minimum drawbar output of 0.7 H.P. 4.1 hrs. continuous
Rating 80% eff.

Batteries are 6v 130 amp/hr X 4

Maximum speed 7 mph with 4000 lb. load. 1 in 80 grade

Air compressor 30 cubic ins/min.

Blower motor two speed

Building time - two years (not finished). Steam on, Mike Tyson.

Locomotive News.

Maurie Haynes had his 5" gauge N.S.W.G.R. C 30 T under steam and running on the last club running day. Jim Hyde's 3 1/2" gauge C 38 class is progressing well with the boiler and smokebox now mounted on the chassis.

Norm Potter is well underway with the construction of a 5" gauge 'Metro' tank as recently described by Martin Evans in Model Engineer.

In the narrow gauge field Graham Sharp is hoping to have his 5" gauge 'Puffing Billy' ready for the next convention and we have seen some parts of Peter Dunn's 5" gauge, 3" to the foot locomotive. These will both be rather impressive locomotives.

Future Events.

October 29th. Inter-club day, H.& D.M.E.S. see page 1.

November 5th. First Saturday. The Blue Mountains Railway Society have been invited to join us for our club running day and stay on for a B.-B.-Q., bring your own meat and liquid needs. Running, 10 a.m. till you run out of coal.

November 18th. Friday night, 8 p.m. Barry Glover, I.L.S. will show film of his recent live steam adventure in Japan. The venue for this event will be :- West Ryde Scout Hall, Wharf Rd., Melrose Park. The hall has facilities for supper and a refrigerator, bring a plate and/or your choice of liquid refreshments. Other clubs are most welcome to attend.

December 6th. S.L.S.L.S. coop. ltd. Meeting. NOTE : NEW MEETING PLACE
1st. Yaralla Sea Scouts Hall, south west corner of the Ryde bridge. This Hall will be the meeting place of the Society till December 1978.

December 10th. Colo Vale. This Saturday has been set aside for a day at Colo Vale. People may camp over night and we are welcome to continue running on Sunday.

December 17th. Christmas Running Day and Party. Please see the form attached to this Newsletter referring to the Christmas party, return the form as soon as you can to Elizabeth or Barry Tulloch, or members of the Board. Parents or grandparents are responsible for a small wrapped gift (\$3) for each child. Santa Claus will arrive at about 3 p.m. and all members are welcome to stay on and enjoy a bring - your - own B.B.Q. tea together.

April 1978. Australian Miniature Locomotive Trials. Hosted by S.S.M.E. Luddenham.

Duty Roster.

Nov. '77. B.Hurst, B.Tulloch, A.Eyre, L.Thompson, J.Hyde, T.McMurray, C.Wear, M.Yule.

Dec. '77. W.Edgecombe, P.Brotchie, S.Childs, G.Floyd, R.Bremner, J.Logan, G.Esdaile, B.Donovan.

Jan. '78. T.Arney, C.Gunning, R.V.Wood, R.G.Wood, J.Esdaile, E.Esdaile, G.Farkas, M.McAulay.

Feb. '78. W.Richards, I.Ramsay, J.Ranford, T.Geraghty, D.Jones, W.Sandberg, J.Hagan.

For Sale

3 1/2" gauge NSWGR C 3812, current boiler certificate, built in 1971 and given a tone up for the 1977 locomotive trials. (best 3 1/2" loco.)

Maurie Haynes, 7 Tergur Crescent, Caringbah. 525 7285.

Also at the above address. 6 X 4 steel box trailer, reg. July 1978, needs some attention.