

The Leeds Thunderbolt

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When the English Electric Company's School Project Competition was announced in 1967 I had a small group of enthusiastic Sixth Formers who were taking O and A Level Engineering Drawing. This seemed one way of bringing in something of a workshop background to the course and I decided a model steam locomotive would be suitable as this would encompass most aspects of a workshop course. None of the group had any elementary workshop knowledge and due to timetable problems all the work had to be in spare time.

I had almost completed a similar project at my previous School, in 5" gauge, and thought that 7¼" gauge would be more suitable as the increase in scale allows small errors to be less important. Only a small locomotive could be attempted, with size and cost in mind, apart from the sheer amount of work involved. A "Flying Scotsman" would have been very nice, but

We obtained a set of 3½" gauge drawing, from the "Model Engineer", and generally doubled it. Driving wheels were Bassett-Lowke castings, the other castings we made patterns for and had cast locally, some alloy parts were made in our shop furnace.

At that time we had no milling machine or large shaper so most of the heavy frame section (4" x ½" B.D.M.S.) was drilled round and "hewn" to shape. Several weeks work by one boy resulted in the side rods nearly finished when he discovered that he had made the overall length equal to the distance between the hole centres! — so those had to be cut and extra pieces brazed in. Much use was made of fabrication by welding and brazing whenever possible.

The end of the first year saw the bogie finished, the driving wheels turned and frames erected, with various parts such as the cab and smokebox roughed out.

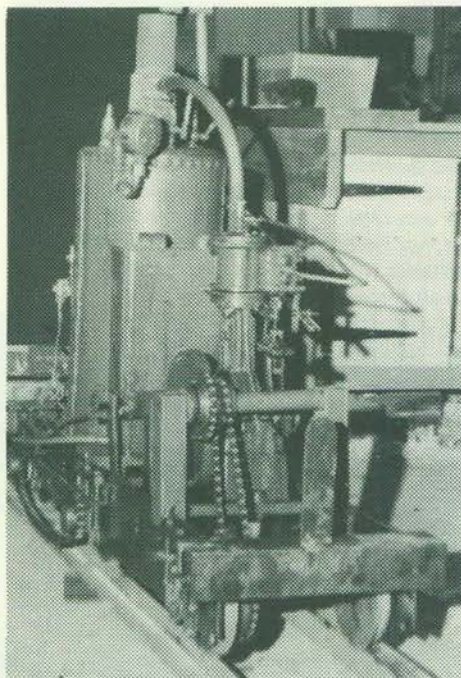
At this stage we discovered that the competition was for *finished* work only, so that was that, even so they did harden our

finished expansion links as a gesture of interest.

Work proceeded steadily throughout the following 3 years by which time the engine was reasonably completed.

During this period a younger group was attracted, and partly as a training exercise, and mainly to keep them out of the way of the seniors they were encouraged to make a very simple Sentinel type loco. This involved a vertical boiler (2nd hand) a rebuilt Stuart Turner vertical engine and lots of chain and sprockets. This actually ran and began our tradition of support of local charities by passenger hauling. They also made the portable track, a heavy task, from B.R. surplus point rodding. My attempts to get them to make the engine tender were not altogether successful, there is little glamour in a tender, and they knew that this again was really to keep them off the engine chassis which had

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Early 'Locomotive' Engine and Boiler re-built.

now reached a stage where reasonable accuracy of cylinder and valve gear building was necessary.

Even now the tender is really only a water cart though it does have a powerful hand brake.

The Insurance Company finally looked at the Second Hand boiler and discouraged us from running it any more! — but it had served its purpose for as this group matured so they were drawn into the loco project itself.

Perhaps at this stage I can pay tribute to the Bursar who encouraged us despite the cost. When the chassis was finally air tested he came and rode up and down the workshop sat astride the frame, and has remained our firm friend ever since.

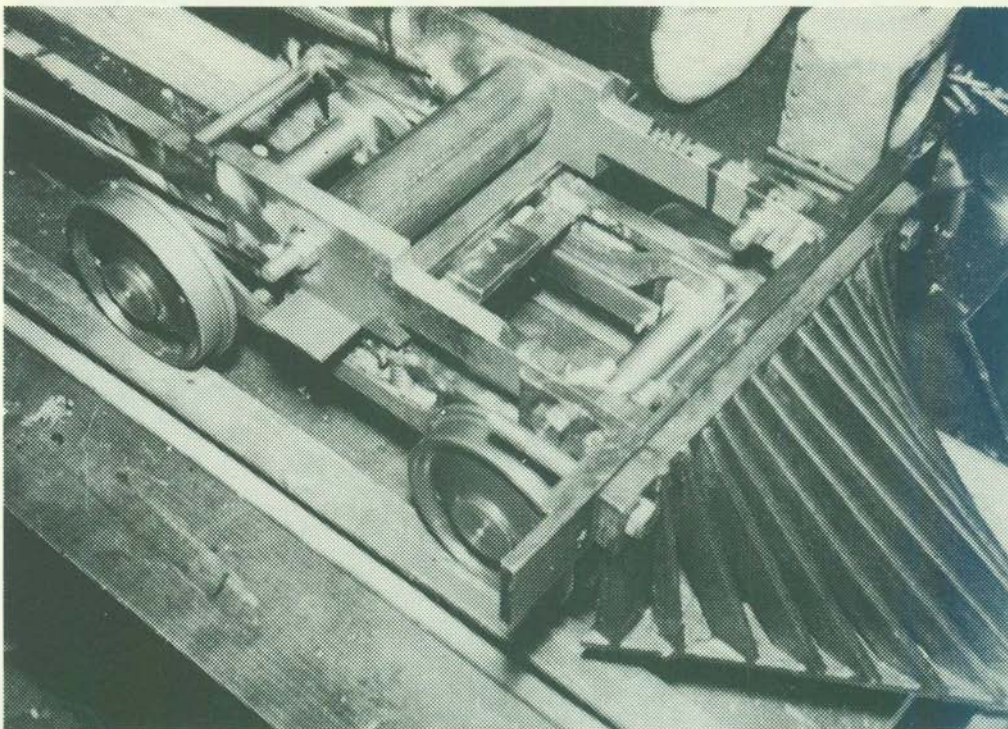
In year 4 of the project the problem of the BOILER loomed. We had a most

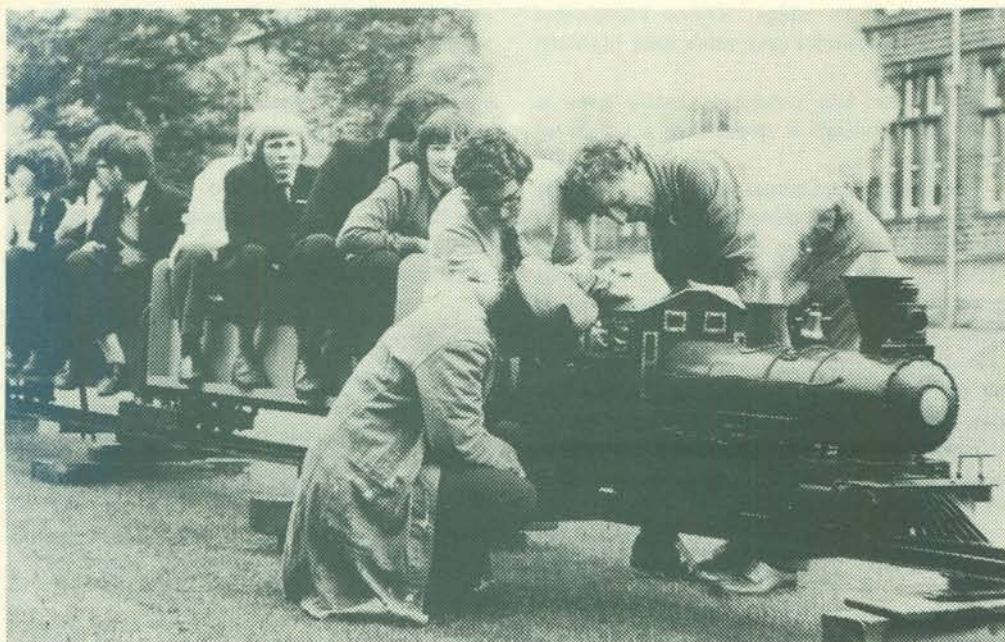
valuable gift of copper tube and plate from a parent, "he could not get 3/16", would 1/4" thick do!" Annealing, flanging and silver soldering over one cwt of copper in high summer proved an exhausting job, and had it not been for the tenacity of one of the group the boiler would not have been finished. A 2" oxy-propane nozzle was required, at one stage we used three bottles of oxygen in a week!

It is one job to make a boiler, it is another to get that vessel through a Vulcan Boiler Insurance test of 200lb per square inch for 30 minutes without any sign of leakage at all. This particular Inspector, an old Naval man, would come, shake his head and, "come back in a week."

Finally, however, we had the coveted Board of Trade Certificate.

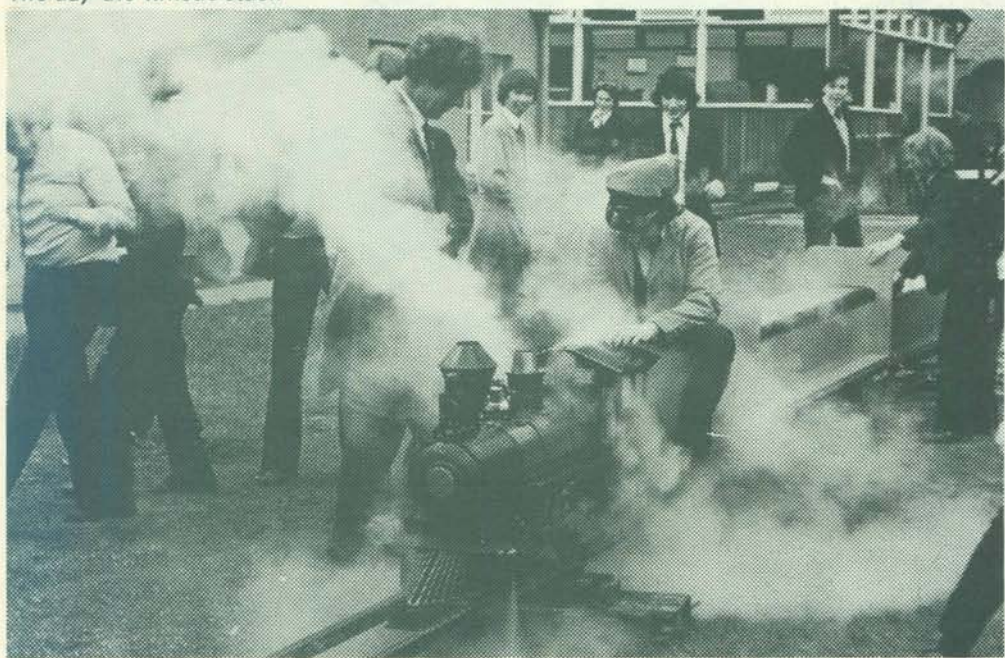
Bogie Finished





Fine Adjustments

The day the whistle stuck



To some eyes we might have made a "rough" engine (though probably the originals were similar in the American backwoods — no-one was convinced by talk of scale finish!) — but we had certainly a first class boiler.

The boiler fittings, but not the regulator, were bought as these would have taken a long time to make and we were anxious to be in steam and running.

After four years we now had an operable loco and tender, one small passenger truck and 80 yards of portable track. Since then we have added two new passenger cars, a saloon to go at the end of the train, signals etc.

During the last four seasons of operating the engine has been occupied most weekends, Easter to October, either with the portable track or on the continuous quarter mile circuit of the Wakefield Model Engineer (who have shown great interest in our efforts). The normal load is 15/20 youngsters.

Looking back teething troubles have been remarkably few, we have had three breakdowns, but on each occasion repairs were possible at the trackside, and running recommenced. For some time we had trouble in keeping the smoke-box airtight as the various sealing plates around the steam and exhaust pipe would vibrate loose, the resulting leakage leading to poor steaming. We visited a very exclusive well equipped society and found that one plate had disappeared altogether so we had to shunt round to a quiet siding and pack the opening with part of sir's overall. On another occasion at a very crowded gala, I was offered the chance to drive by my senior driver. This "offer" usually means the fire is out, no pressure and low water level, and this was indeed almost true, with a heavy load and a queue of children waiting. By sheer luck I observed that it was possible to look down the chimney straight through to the ground! — so again it was more overhaul before service

could be resumed.. We now have finally solved that problem.

Last year saw an overhaul of the chassis, new slidevalves, back axle bearings and a general clean up in readiness for the competition itself.

What of the group and what of the future? Perhaps the most important lesson they have learnt is that nothing is achieved without what an old colleague of mine called "stickability". In all successful projects boys are attracted and lose interest but with luck a small hard core of intelligent hard-working boys keep it together. As I said earlier had it not been for certain boys we should not have succeeded. Even though these particular boys are now at University or elsewhere they come back as frequently as possible, not just to talk and reminisce, but to be still active and responsible members of the group.

Several boys are attempting small locos in 7¼" gauge and may have the beginnings of a satisfactory hobby. We have recently taken over the unfinished project from my earlier School, and a small group of middle school have started a new boiler for this.

I failed to keep a total count of the hours involved though this must be in the region of four to five thousand, cost, possibly £200-£250 altogether, and a few grey hairs. Now perhaps I can get a little done at my own 7¼" engine!

I have expressed my thanks to the Bursar for his interest and financial help, we are also fortunate in having a Headmaster who encourages serious minority activities in the School.