



DICK'S LOCO COMPLETED AFTER 35 YEARS



A Simplex loco started by NDMES founder member and former president Dick Langford 35 years ago was handed back to the family on completion at a special presentation at the club run day on February 14.

Dick died while club president before he could complete the loco. So family friend Andrew Manning asked Dick's widow, Noeline, if he could complete the project. That was 18 months ago.

Andrew is pictured here on the loco with Noeline sitting next to

him and Dick's brother, Nick, from Dunedin, NZ, standing between them. The occasion was a double ceremony, for Noeline's son, Peter (standing just to the right of Noeline) married Makiko (fourth from left) the previous day. Makiko's parents, Shinobu (second from left, rear) and Kazuko Hara (fifth from left), travelled from Nagoya, Japan, for the wedding, as did Makiko's twin sister (third from left) and her two daughters (either side of her).

Also in the picture are Noeline's daughter, Kate, and granddaughter Claire (both seated next to Noeline) and Kate's husband, Colin (standing, centre background).

Other family friends are also in the picture. A full story on this and the club run day and more pictures are on page 3.

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The work, play and caffeine mix is just about right!

WE really have something going for us with the Tuesday work crew. Since the re-start after the holiday break, a steady 16-18 members have turned up and got involved in a myriad of projects, including grounds maintenance and clean-up, rolling stock maintenance and track fabrication.

But perhaps the best part of the “Dad’s Army” experience is the ambience and camaraderie oh so evident every Tuesday. It’s part of what makes our club what it is. Most of the crew are there shortly after 8am and then for the next half-an-hour or so, we chew the fat over coffee. Then it’s off to work on whatever, but we’re all back under the veranda by 10am for, you guessed it, more caffeine, cakes or cookies brought in by Stan Armstrong (he’s only the courier, wife Susan makes them) and sorting out some global issues!

After another flurry of work, say up to 75 minutes, we pack up and go home. As a regular member of the Tuesday crew, I think we have the mix just about right! No pressure, just enjoyable work at our own pace and good company.

But...while the Tuesday work days are going gangbusters, the same cannot be said of the Saturday work days, with only two present on February 20. Come on fellas, if you cannot make a Tuesday, surely you could put in an hour of two occasionally on a Saturday? While we generally have a good roll-up on public run days, only about a quarter of our membership is active on work days

Membership-wise, the year has started off well, with two new members welcomed into our ranks at the February members’ meeting and another three up for membership at the March meeting.

And our newest members have wasted no time in getting involved on a Tuesday, with Charles Coppack fixing up the wooden fencing around the picnic grounds and Ron Cassoti using his electronics expertise to work with John Martin,

President’s Report



by Tom Winterbourn

John Shugg and Denis on an integrated signalling system, covering all areas of the track. Our next big off-campus involvement is AMRA from June 4-6. After last year’s ordinary display, we will be back bigger than ever this year, restoring the train rides (with battery locos rather than gas-powered steam) and traction engines in steam. As this issue of the newsletter “went to press”,

negotiations were taking place between us, AMRA and the RAS on running the traction engines just outside the pavilion adjacent to our track and display stands – and providing rides for the public. This is in line with a suggestion made at the February members’ meeting. Nearer the time we will be seeking support from as many members as possible to help set up our AMRA involvement and then bring it back to Balcatta.

But before AMRA, I and at least one other member will be heading off to the AALS convention in Cobden, Victoria, from March 24 to 28. I went to the last convention there several years ago and was impressed with the organisation. The convention is held at the Cobden Miniature Railway Park, which is jointly operated by the Rotary Club of Cobden and the South Western Model Engineers. Back to NDMES and the first two months of the year has seen plenty of activity in the workshop, with major maintenance carried out on the club steam loco, including wheel profiling, a new suspension system and firebox works. And the “fab team” has made good use of their new toy, a band saw, in making up another triple switch, to be laid between the “main line” and the present triple switch to provide access to two more carriage storage lines. While we are not experiencing the frenetic activity of last year, with preparation for our 30th birthday, Sandgropers, etc., much is being achieved in our own quiet, relaxed way. Long may this continue. **Tom Winterbourn**

Calendar of Forthcoming Events

General Meeting	Friday	11 March	8:00 pm	
Club Run Day/ Night Run	Saturday	12 March	2:00 pm — late	(see page 7)
Public Run Day	Sunday	27 March	10:00 am — 2:00 pm	
General Meeting	Friday	8 April	8:00 pm	
Club Run Day	Sunday	10 April	9:00 am — 2:00 pm	
Public Run Day	Sunday	24 April	10:00 am — 2:00 pm	

February club run day a 'cracker'

THE club run day on February 14 marked a new level in support, with up to 30 members present.

The day was notable for two main reasons:

- ◆ After 18 months work, Andrew Manning has finished building a Simplex loco started by founder and former president Dick Langford and handed it over to Dick's widow, Noeline; and
- ◆ Boiler inspector Phill Gibbons gave a firing-up demonstration on the club steam loco and then provided driver training with former owner Paul James.

The Simplex loco "Evelyn", which was started by Dick while living in Hobart in 1980, was handed over in steam to Noeline, surrounded by 16 family members and friends, including her son Peter and new Japanese daughter-in-law, Makiko, married the previous day.

Andrew said Dick worked on the loco in "bursts", completing a running chassis, pressure tested boiler, cab and side tanks. But he passed away in August,



With Noeline, her son, daughter and granddaughter in tow, Andrew coasts down the bank towards the tunnel, driving "Evelyn".

2006, while NDMES president, before he could complete the project. Andrew offered to finish the loco for the family and collected the engine parts and materials in 2013. To complete the project, he had to make boiler fittings, complete bits and pieces such as water and oil pumps, plumb everything up and fit the boiler to the chassis. The completed loco was then painted and it has a current boiler certificate.

The steaming-up demonstration attracted about a dozen members. It was the first time a fire had been lit in the loco's firebox following completion of some fairly heavy maintenance by the Tuesday crew, again under Phill's guidance. The work included wheel re-profiling and a new suspension system (heavy duty rubber compound). While we have a number of members "qualified" to drive the loco, firing it up is a different matter. Steam locos have differences, such as copper and steel boilers and various size fireboxes, so different techniques need to be employed.

The day was also marked by three more prospective members signing membership application forms.

Here are some pictures taken on the day:

Right: Jaco De Lange gives the thumbs up as he passes on his 0-4-2 "Bridget". According to Jaco, the loco again ran "like a well-oiled Singer sewing machine!"



Wayne Dunn gets some practical experience driving the club loco, under the watchful eye of Paul James.



Members gather around as Phill explains the firing-up process.



Variety really is the spice of life!

No two public runs are the same, and that was certainly the case on February 28.

With perfect weather, five party bookings and good support from the general public, there was plenty of activity.

Those who came looking for a ride behind a steam loco were not disappointed, with six in operation – three each on the GLT and raised tracks. The day started with a driver briefing by DO Jim Crawford, who emphasised the importance of driving safely, particularly through the tunnel, and obeying signals. Sadly, there were two SPADS (signals passed at danger), one resulting in a derailment.

Jaco De Lange put Bridget to the test, hauling a carriage at a public run day for the first time and, as he put it, it ran all day “like a well-oiled Singer machine”! And yes, he did have a smile on his face. Dave Barlow, from Barrow-in-Furness, Cumbria, UK, dropped in and soon found himself behind the regulator of the club’s GLT steam loco. He is a member of the model engineers’ section of the Furness Model Railway.

Also visiting were members of Toodyay Miniature Railway who, by prior arrangement, wanted to check out our loco unloader. Before they left after lunch, arrangements were discussed for closer ties between the two clubs, with inter-club runs. Tanya Macarthur gave Steve Reeves “Ocker” a good workout, driving the battery loco all day, with a brief stop to change batteries! Similarly, Harrison Mills (CMR) drove Steve’s gas-powered “Blowfly” throughout.

Here are some pics from the day:



CMR visitor Harrison Mills helps Steve Reeves fire up Blowfly.



Tanya Macarthur and Paul James ready to leave the station on “Ocker” and “Bushfly” respectively.

Know your Society

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Big clean-up at the track for the 'Serpentiners'!

SO, we thought we had a problem with a build-up of leaf litter and twigs at the track, but spare a thought for our two Serpentiners who, after working at the big clean-up, faced a much more daunting task when they returned home.

After a four-hour stint cleaning up at Balcatta and then off-loading the club orange diesel and blue carriage following maintenance, Dave Robinson and Harry Roser headed home and into one of the wildest storms seen in the area for some time. And it was so localised it caught everyone by surprise, even the weather forecasters.

Dave said the following day: "We got home just after we were lashed by 100km hour winds and 50mm of rain in about 15 minutes.

"It was so heavy we were driving the last 3km in white-out conditions. We could only see about 25m in front of us at times and were about 300m from home when the worst of it stopped.

"The morning's clean-up (at the club grounds) was good practice for the leaves and branches we now have to remove, as well as the four or five large branches on our (home) track. At the north-west corner of the track, the water was lapping over the rail, so it was 100mm to 150mm deep there.

"We had a very big wattle tree blow over in our paddock about 60m from our house. No damage,

except the wattle tree lifted the fence out of the ground (when it came down). We spent the next two hours clearing trees off eight roads near us, then checked the property I look after. With the boundary fence down in three places, we had to shut the livestock away till we did some repairs this morning. Have a lot of tidying up to do.

"It was a very eventful afternoon after a very enjoyable morning (at the club)."

And Dave was spot on. The Saturday morning clean-up of our track was well-supported with over 20 members present and everything we set out to do was accomplished.

A late-running "Santa", in the form of appropriately-bearded secretary Paul Costall, arrived with the new band saw for the fabricators in the workshop – and they had it "unwrapped" and working in next to no time.

Several members, including new member Charles Coppack, bought along utes, flat-tops etc. to cart away the seemingly tons of vegetation littering the track and surrounds.

For morning tea, we had about a third of the membership seated in a circle under the patio awning enjoying each other's company. Way to go! And at the end of it all, 15 members "dined" at a very social BBQ and we were all out of the grounds by the time the threatened storms hit.

It was also pleasing to see some members present who, for one reason or another, cannot attend the weekly Tuesday or Saturday work days.



Right: A big branch lies across the tracks on Dave's Serpentine property.



For the record, those who were part of the big clean-up at the club on January 23 were, clockwise from the left: Andy Davis, John Turney, new member Charles Coppack, John Martin, Ray Bradley, Dave Robinson, Ian Huxtable, Clive Chapman, John Shugg, Andrew Manning, Meldon Bruce-Hall, Meldon's young sister, Tanya Bruce-Hall, Ken Cooper, Ron Collins, Gilbert Ness, Harry Roser (almost hidden), Steve Briggs, Paul Costall and George Palmer, with Tom Winterbourn behind the camera. Barry Pearce had left before the picture was taken, courtesy of a bump on the head when clearing leaves from under the bridge ramp.

Show & Tell

Phill Gibbons

In days gone by, high speed steel was the only cutting tool available. If you wanted to do a radius, then you ground a piece of HSS to the shape you needed, then used it to do the work.

One of the tools was ground to the profile of railway wheel flanges. Today, of course, all the tools are available with throwaway tips, with hundreds of profiles. Things change! I prefer to stick to the old ways, making my own tooling, so will go the way of the dodo I suppose!

Phill is pictured at the January meeting showing one of the HSS cutting tools he has made.



Andrew Manning

At the January meeting, Andrew showed the chassis of a Caradoc steam tractor he is making. It was described by John Haining in ME 1994.

It is his ideas of where a modern steam tractor may have developed. The model is 3in scale, will have pneumatic tyres, a two-cylinder double acting horizontal engine mounted at the front and a 200 diameter vertical boiler mid-chassis.

The other item Andrew showed and discussed was the VSD he is fitting to his Myford lathe. It has a single phase input, three phase output at 240V. A Delta wound three-phase motor is required.

John Martin

At the December meeting, John showed some wooden racks he made to store ER collets. Each collet has a tapered pocket labelled with both imperial and metric sizes.

He recently bought an ER32 collet holder with a set of imperial and metric collets, each packed in a plastic pouch inside its own little cardboard box. These were stored in a wooden drawer, initially in size order, but un-packaging for use, re-packaging after use and retaining size order became a real chore, so John decided labelled wooden storage trays were the answer with pockets bored to match the taper on the collets. He fabricated all the components and glued them together.



Paul Costall

Paul Costall showed the wrapper he has made for his 5in C38, which was built by fellow member George Palmer back in 1991. Paul bought it in 2010 as George wanted to buy a milling machine.

Paul ran the loco for a couple of years, but then it needed some major work. However, at this time he was busy building his Fowler traction engine, so the loco had to wait. Now the Fowler is finished, he's back on to it. The Belpaire wrapper had split so Paul decided to use a brass wrapper and make a new front plate and a new blackhead cover.

"I made the formers from 40mm mdf and used 1mm copper sheet," he said. "There was too much material to lose in the double bend so I snipped it out and silver soldered it back together. I then tinned all the joints and used the heat gun to melt the tinned joints together -- a trick I learnt from Gilbert (Ness). I smoothed the outside with lead wiping.

"The wrapper slides over the boiler and is held in place by the safety valves and the cab."

Show & Tell (cont)...



Phill Gibbons #2

In his second “Show and Tell” in as many months, Phill displayed wheels, cylinders, axle boxes etc. to coincide with an article in this newsletter by Gilbert Ness on fitting steel tyres on to cast iron wheels. Phill said the wheels he displayed were fabricated from K1045 steel for a fraction of the price of a casting and, of course, there’s no steel tyre to fit. The cylinders were brought in to show the progression from start to finish – and this will be the subject of a future article. The next article to be written for the newsletter by Phill will be on axles, axle boxes and crankpins.

Left: Members watch intently as Phill displays one of the cylinder castings he has machined, an easier and cheaper alternative to machining tyres, casting wheels and then having to shrink fit the tyres on to the wheels.



Paul James

Paul James displayed his recently completed 3½” gauge Highland Lassie four-axle tender at the December meeting and described some of the issues he faced during its construction.

‘Wilbert the tank’ is now leaving platform 1!

IN the UK, and possibly in mainland Europe as well, mainline railway companies are using vinyl wrappers on their diesel locos and multiple units to promote themselves or significant community events. It’s a lot easier and simpler than painting the rolling stock.

So, what’s this got to do with us?

Well, at the February members’ meeting, the president floated the idea of “theming” the club diesel shunter. At present, it is a useful, but nondescript loco, but “theme” it in the mould of “Thomas the tank engine” and it would no doubt be the most popular loco with the children at our public runs and be used to haul passengers.

The little petrol loco, made by Ken Austin, has sufficient power to haul two wagons and in its new guise would be a welcome addition to our running day loco fleet. Of course, we cannot call it “Thomas” because of copyright laws, but we could call it by another name not associated with the creations of Anglican cleric and railway enthusiast Rev. Wilbert Awdry.

So, we are putting the idea “out there” to see if some creative member wants to take the project on. If that is you, or you have some ideas on a name (what about Wilbert after Thomas’ creator?) or how the transformation can be achieved, please contact the president.

Night run planned for Saturday, March 12

FOLLOWING a decision at both the last members’ and committee meetings, we plan to hold a night run in conjunction with the next club run on Saturday, March 12 (instead of the usual Sunday club run day).

This is fun, but there are strict rules that must be obeyed.

The principal rule is that all trains must have a bright “white” light at the front of the loco, a red light at the rear of the train and effective braking on the loco/tender/riding car/carriage.

For those of you who have not driven at a night run, it is an exhilarating experience and knowledge of the track profile can be a big advantage!

There will, of course, be ample lighting in the steam-up shed, under the patio and in the station. So, why not come along and give it a go? Perhaps come for the club run, bring a hamper or BBQ and then stay for the night run.

Future night runs will depend on the success of this experiment.

Now this was a run with a difference!

THE first public run of the year on January 31 was like few others before it.

With perhaps less than 20 minutes before the scheduled start at 10am, there were about 30 members ready for the “off” and tables and BBQs set up in the picnic grounds - and not one punter in sight!

However, customers started to arrive in reasonable numbers, given the gloomy weather forecast. The rain did hold off, bar a sprinkle or two, and the trains were kept reasonably busy for about two-and-a-half hours.

Two GLT steamers and one diesel moved the bulk of the passengers, with a couple of steamers and a battery loco doing the honours on the raised track.

Junior member Meldon Bruce took upon himself to be a points operator, making it much easier for drivers to use the station by-pass line without stopping.

Some of the action later in the day is pictured here:



After retiring his 5" B1 “Klipspringer” early, Steve Briggs took over driving the 7 1/4" Black 5. Here he prepares to drop the fire at the end of the run.



Left: At the end of the day Paul Costall drops off the carriages before retiring “Firefly”.



Arron Nash drives Dave Robinson's diesel up the bank from the tunnel with a full load of passengers.



Shades of GWR tank engines working auto trains! Steve Reeves drives Blowfly in the centre of four carriages. He had picked up the first two after the failure of his battery loco.



Steve Reeves and Blowfly climb the bank out of the tunnel.

Allen's 'back to the future' foundry experience

FOR Allen Ward, it was a case of "back to the future" to learn some of the skills which were common-place in the 20th century, but which are today becoming increasingly scarce.

Allen recently completed a foundry course at Midland TAFE and to see his face when making a Show and Tell presentation on his work at the December members' meeting, he enjoyed every minute of it. He showed various items he cast using sand, but his pride and joy was the eagle he is pictured holding.

The UK railway preservation scene has similarly used "back to the future" principles in resurrecting boiling construction using techniques in serious danger of being lost forever.

Allen heard about a Basic Foundry Training Course in September and, having read a couple of books on the subject, decided to part with \$450 and enroll.

"Here was a chance for someone to show me a few of the secrets in a hands-on training where I didn't need to outlay a lot of money on equipment I may or may not need," he said.

"And, the best thing, to have someone show me how it is done safely."

Allen said Midland TAFE had built a completely new foundry workshop (three years old) with all the tools and equipment a foundry man could wish for. The course started in October. He paid the enrollment fee of \$450 and the course started late October. The instructor was Ken Scanlan.

Night one: After a brief instruction about the workshop and the safety aspects, the eight students selected a pattern and mixed sand (resin sand). Students carefully weighed a quantity of sand and mixed it with a Fenolic Resin and hardener. (The sand and resins were mixed in a mixing machine before heading back to the bench to form the moulds.

The formula was for a 20-minute mix, but it started setting after about 5 minutes so the trick was to move fast. With the moulds made and the vents and risers in place, it was time to seal the moulds with a special paint made of graphite and mentholated spirits and then set fire to the mould to burn off the meths before closing the two halves, ready for the pour.

The class didn't pour metal the first night because of time restrictions. This class was the first and only one to be held in the foundry workshop this year. In fact, no one had been in the workshop at all for the entire year!

Perth TAFE has only two moulder apprentices registered this year and both are flown to Queensland to complete their TAFE studies -- because it is cheaper than running a special course..

Night two: We made pouring cones to fit on top of the moulds and glued the moulds together with a special glue to prevent the metal from leaking during the pour.. The diesel-fueled furnace was fired up and aluminum ingots were placed in the crucible and melted down. The instructor then

Right: In the "Show and Tell" segment at the December members' meeting, Allen proudly shows one of the birds of prey he made at the foundry course.



dropped a special tablet in the pot and pushed it to the bottom. This caused the molten aluminum to bubble slowly and all the impurities rose to the surface.

The crucible was removed from the furnace and the slag drawn off the top of the pure Aluminum. Allen assisted with the pour, with the instructor on the opposite end of a long double handle with the crucible in the centre.

The pour was more of a splash, as the idea was to get all the metal into the mould before it had a chance to cool. After about 10 minutes, it was time to take a hammer to the mould and see the finished item.

Naturally, the cast item still had the riser and vents attached. After cooling in the quench tank there was time to cut off the risers and produce an almost finished product.

I made a "welcome plaque" which had decorative scrolls and they all turned out in fine detail.

Night three: This night was different because we were all making moulds from "green sand". Once again layers of the sand were packed over the patterns to form the "drag and cope", but this time the green sand mould was much softer and needed a lot more care in blowing out sand grains and just handling the sections.

Pouring the aluminum was the same, temperature at 750deg -780deg, but the real surprise was when the mould was broken open and detail of the casting revealed -- detail that resin sand casting cannot match.

Green sand also had the advantage of being recyclable. When the moulds are broken open, the green sand that remained is processed through a vibrating sieve, as someone sprays water through a misting bottle and the product is loaded back into the drum ready for the next mould to be made.

New loco workshop in business!

AND now it's a real loco workshop! With block and tackle attached to a roof truss, the club's steam loco was lifted off the track and placed on a workbench for some maintenance in the workshop-cum-carriage storage shed on January 12.

After the coupling and connecting rods and brake blocks were removed, the wheels were dropped and taken away by Phill for re-profiling.

For Phill's offsider, new member Bill Walker, it was a trip down memory lane, well sort of. Bill started his working life as an apprentice at the Crewe locomotive works of the LMS in the UK in the 1950s and here he is over 60 years later again working on a steam locomotive, albeit in miniature.

Bill worked on the Britannia Pacifics, which were built at Crewe from 1951. Now he is building a Britannia in 7¼ gauge.



Pictured above from the left are Ken Walker, Phill Gibbons, Bill Walker, Barry Pearce (partly obscured), Andy Davis and Steve Briggs (behind the loco).

With work completed in the workshop, the club steam loco was hauled by the club diesel shunter into the steam-up bay on February 9 for final adjustments after "heavy maintenance", in readiness for the following Sunday's firing up demonstration.

Pictured (left) around the loco (in 41-degree heat!) are, from left, Clive Chapman, Phill Gibbons, George Palmer (nearest camera), Bill Walker, Richard Turner and Paul James.



Easy entrance into model engineering

If you are a member looking for an easy entrance into model engineering – have we got an offer for you!

The club has a part-completed Speedy 0-6-0 tank engine for sale. We are inviting expressions of interest and offers, which will determine the price. In other words, the price is as high, or low, as anyone is prepared to pay!

The loco has a rolling chassis and most of the castings and parts have already been machined up. The copper boiler barrel is also included.

The highest offer may not necessarily be the successful one, as prospective buyer circumstances may be taken into consideration.

The loco package can be viewed in the upstairs meeting room at the clubhouse. Check it out and get your offer in to either president Tom Winterbourn, Andrew Manning or Phill Gibbons by the end of March.



The part-completed Speedy loco with most of the parts, nuts and bolts etc. needed for its completion. Check it out in the clubhouse meeting room.

Remember, if you take this project on with little or no previous model engineering experience, there's plenty of help and guidance available within the club.

Things are so different across the 'ditch'! By John Shugg

OUR friends across the Tasman have 30 or so model engineering clubs, scattered through both North and South Islands and all are affiliated to a peak body called the Model Engineering Association of NZ.

MEANZ is a "go-between" for the clubs with NZ governmental regulators and each club operating a miniature railway and open to the public has to register as an "amusement device", renewable every two years. And every locomotive capable of hauling passenger trains must be identified and photographed, along with the carriages, and duly registered.

On being granted AD registration, clubs need to give local councils their ADR approval to obtain written permission to operate.

Furthermore, loco owners wishing to drive at another club have to have the loco registered on the home club list as an "away visitor". It is a hobby bound up in red tape!

Anyway, with some vexing delays, all the clubs are gradually being registered, or re-registered, some for a number of times. As part of the process, each club has to arrange for a professional engineer to sign off on an audit, conducted by a MEANZ appointee from within the hobby, to confirm safe operations and that SMS documentation meets ADR requirements.

The NZ convention is held every two years and this year it was hosted by the Tauranga Model Marine and Engineering Club from January 7 to 12. And a very good job they made of it, too.

TMMEC had decided to build a mighty timber trestle bridge. It had approval from the City and some grant funding from several sources. The Trestle bridge was finally opened in November, 2014. I saw that track in December, 2014, and decided I must attend the 2016 Convention. In fact I was the first to register last April. The convention agenda included an address by Stuart Wright, an officer from NZ Worksafe, on the topic of



One of the TMMEC "diesels" taking the first of many trains carrying members of the public for the 1.3km ride on the Sunday morning.

Duplex SS Boilers. Some Kiwis say it is not stainless steel, but even Sandvik call 2205 Duplex a stainless steel.

There is now one new boiler with a design verification and this allowed Worksafe to issue a short-term ticket to the builder to permit its operation at the convention, but with no public passengers and subject to a final inspection by an approved organisation -- NOT the club boiler inspector. There will be a further inspection at 12 months, but a four-yearly re-inspection as in Code 4 may be shortened.

Very well-built traction engines and showman's engines were fired up. Several TE drivers joined a group driving up the road for lunch in Tauranga's CBD.

AALS president David Proctor attended, as did Les Mouat from AME. Also there on the Friday and Saturday were Richard and Josie Turner. They then continued their tour of both islands.

David and I were invited to judge some of the exhibits. It was an excellent display of all facets of the hobby, including an operating Gauge 1 track. The quality was very high, making for some challenges in judging, but we picked a detailed scale model of a Caterpillar D8 bulldozer as best in show. It was battery-powered and every control at the driver's position worked just as on the full-sized tractor.

To perpetuate the memory of a well-known NZ model engineer, the Les Moore Trophy is presented at each convention to the winner of a modelling challenge, the host club determining the rules. TMMEC chose a 1954 LBSC-designed steam powered fire engine, meths fired. The challenge was to run the engine for 20m to within 2m of a fire (five candles at various heights) and then put it out with the engine's steam pump. The winner received \$1000 for his club, the runner-up \$750 and third \$500. Two steam trucks were entered, but one withdrew as its steam pump refused to work. Easy judging for David and I. The winner from the Palmerston North club easily met all criteria.

All photos by John Shugg



The versatile battery-powered traverser, hoist, turntable (and sliding table top), with Dave Giles' Shay being moved.

Shrinking steel tyres on to a cast iron wheel

A WHILE ago I decided to have a go at shrinking steel tyres on to the driving wheels of my 5in gauge Duchess. The loco is being built to the drawings of Michael Breeze. The design provides the option of machining tyres or to run conventionally with cast iron rims.

My main reason for going down the route of providing tyres was the fact that the casting for the wheel was not wide enough to suit Michael's design. All other dimensions were fine – I suspect that the wheel castings I had were for another design (perhaps Clarkson's).

I started by cutting blanks out of 18mm thick plate. The only method available to me at the time was chain drilling, but after having used this method, a friend in the Southern Highland Model Engineering Society offered to cut out the tyres using oxy-propane. This resulted in a fair amount of grinding to remove the hard surface. The next job was to set up the rings in the lathe and machine them, such that they were just smaller than the cast iron wheel. Michael Breeze's drawing notes that the tyre bore should be 0.2mm smaller than the diameter of the wheel. I set up the tyres in the four-jaw chuck and played around with a dial gauge, until I was happy at the way it was set up in the lathe. I used a carbide-tipped tool to carry out the boring – this provided a pretty good finish. The machined tyres have a lip (0.8mm thick on the front), which allows the cast wheel to locate against something positive during the shrinking process.

Having prepared all six tyres, I waited until wife Marion had left the house on a shopping expedition. The electric oven in the kitchen was cranked up and I let two tyres at a time soak up the heat for about 20 – 30 minutes. The principle is that with the increase in temperature, the steel tyres expand radially.

Once they had expanded sufficiently to allow the wheel (larger than the bore of the tyres at room temperature) a very tight fit when the tyre returns to



by Gilbert Ness

room temperature. I did place the cast wheels in the fridge just to assist in getting them to contract as much as possible (not sure if this actually helped or not).

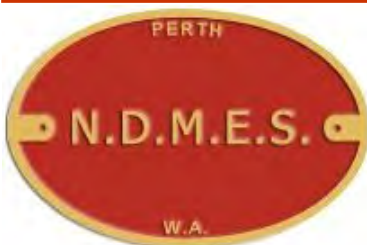
The cast wheels dropped into the tyres very well and within a very short time the tyres had contracted sufficiently to provide a really tight fit. To machine the cast wheels and subsequently the steel tread and flange profile,

I machined a plate which was fixed on to the faceplate of the lathe. This ensured a concentric location for each wheel. As with many of my adventures in the workshop, not all goes according to plan. I ended up with a couple of the tyres being a tight push fit on to the cast wheel without the use of the oven! I thought I would be able to save these tyres by using Loctite – surely there would be sufficient surface area to generate the adhesion required? But alas, when I started machining the tread and flange, the tyre started to slip on the wheel and I could hear the scrap bin beckoning!

I reflected on why I ended up with a few scrap tyres. When machining the cast iron wheels, I used an 8in micrometer. I had checked its calibration with the standards it came with, but I believe a source of inaccuracy I imported into the process was the use of a 200mm Vernier. As Ron Collins and Paul Costall have reminded me many times, a Vernier is "very near" when measuring and while it serves a purpose, I have since invested in external and internal micrometers.

To make replacement tyres, I used thick walled steel tube. Bohlars in Kewdale have a good variety of sizes. They even cut the rings to the required thickness, which sped up the process. I was very pleased to have tried, in miniature, a process which is used in the world of 12 inches to the foot. I would certainly opt to use steel-tired wheels on future locos I build or to replace worn cast iron wheels.

So have a go – if I can manage it, so can you!!



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