



NORTHERN DISTRICTS MODEL ENGINEERING SOCIETY (PERTH) INC.

March — April 2019

A great birthday, despite the 'cloud'

UNFORTUNATELY there was something of a dark cloud hovering above our grounds on February 17 during our 34th birthday celebrations, but that didn't stop those members and guests who attended having a thoroughly good time.

The cloud was courtesy of our "friends" next door, who ensured we had no access to the rear of our property over a right-of-way issue. And this after we changed the date of our celebrations to accommodate the BMX club in its staging of one of their events!

The BMX club's actions unfortunately led to the cancellation of the main attraction, the appearance of two "quads" built by Stu Martyn and his friend Reno. The Quad was the original motorised four-wheel vehicle with bicycle-like tyres, built by Henry Ford in his kitchen in 1896 (He had to cut a new doorway to get it out of the kitchen!).

There are only four "quads" in Australia with two in WA. The models built by Stu and Reno are more advanced than Henry Ford's original, with modern carburettors, brakes, variable speed drive, either through a gearbox (Reno's), or by using the mechanics of the old sun, planetary, annulus gearing (Stu's). The drive was engaged by tensioning a flat leather belt over a suitable pulley!

Also cancelled was any form of traction engine display, as we were unable to get the machines to the rear of our premises, although we did have two



A very relaxed setting for lunch under the trees.

More photos on page 4

vertical boilers with stationary engines on display, provided by Lyall Austin and Paul James.

Our official guests were City of Stirling councillors Adam Spagnolo and Karlo Perkov, who witnessed with great interest the shenanigans of those next door!

But this aside, those members and visitors, some from Geraldton and Toodyay plus AMRA, had a thoroughly good time although there weren't too many locos operating on the GLT and raised tracks. There was, however, some activity up at the garden railway, despite the access difficulties.

The food, it has to be said, was excellent, with a choice of pulled beef and chicken and salads, plus bread rolls and baked tuna for the vegetarians. Sweets were in the form of pavlovas, cheesecakes and ice cream.

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Mark Bowring took the opportunity to clock up numerous laps driving the big Westrail loco.

Changing times

AS you may already know I have decided to step down as president of the club, and from the committee to have more time to devote to my hobbies. There is a lot of work involved in this presidential role, as there was in the role of secretary, and after four years of myself and my wife working sometimes up to 40 hours per week for the club, we feel it is time to have a little rest from these duties.

I may stand for re-election for committee duties later, once refreshed. Of course, I will still be around the club, especially with the Tuesday group, working with the members and helping to maintain the grounds.

Over the last two months there have been lots of events and issues to deal with. The BMX lockout is worrying us all at the moment, so much so that I have written a separate article on this (*see page 3*).

The birthday party was a great success with 70 of the expected 80 guests turning out to celebrate the occasion, with approximately 10 extra making the final total 80 guests in all (*see lead story on page 1*). It was good to catch up once again with our VIP guest Councillor Karlo Perkov, who came once before to a Public Run Day with his daughter.

Another VIP guest who kindly attended was Councillor Adam Spagnolo, together with his sons. This was a return visit for Adam, as he was involved with the club at its very start in the 1980s. Both councillors took the time to discuss and view the gated areas that form part of our access dispute with BMX and the issues arising from it.

The birthday party was a success particularly because of the many members who tidied the grounds on the day before the event, and also cleaning and arranging the tables and chairs. In the background we had a team of ladies who prepared the food for the day, and these included Eileen Briggs, Sue Armstrong and especially Sue Smith who organised who would bring what food, planned the delicious menu and prepared a variety of meats, biscuits and desserts for the entire day.

Peter Smith and Charles Coppack served the food with grace and charm to our guests, although I was not sure who was the Maître d'. A very successful event that strengthened the bonds of friendship and the sharing of hobbies with the community and other organisations such as representatives from AMRA, Batavia Coast, Toodyay and the SWMEA.

Within days of the party, I heard of the sad passing of Councillor Andrew Guilfoyle, who was a great friend of the Club (*see page 10*). He and his wife Rina

President's Report



By Steve Briggs

and his children attended several of our functions over the years, and he was due to attend our birthday party on the Sunday, but sadly passed away on that day. Andrew had a philanthropic calling for others and our thoughts go out to his widow Rina and his children at this sad time.

As I leave the committee I am reflecting upon our wonderful club. Yes, we have rules, but we also have facilities, and lovely gardens. However, our greatest strength is the very clever members who create magnificent models.

We have wives, partners and girlfriends who support us as we make these creations and it would be lovely to see them at the club more often. Let's come together with our families to enjoy these beautiful grounds and these glorious models more often. So why don't we all bring a plate and a drink or two and come together on our members' run days. Let's see some of the members who don't often come to members' meetings or club run days, and let's have a great family outing, a good catch up, and make use of what we have worked so hard for, and get those engines steamed up.

Steve Briggs



Birthday party guests queuing up for a fine dining experience!

Photos: Steve Briggs



Right: Part of the working model display at the club's 2019 birthday party.

Our 'right-of-way' denied

AS many of you would now know, the neighbouring BMX club has locked the gates leading to their car park, thus denying us access to the rear of our premises. Their stated reason for doing so is on the perceived basis that NDMES members had not always closed and locked the gates when accessing the rear of our premises in the past.

As president, I placed a message on the notice board in our club room emphasising the importance of ensuring the main BMX gate was locked and I also advised the next members' meeting of this.

At our January public run day, we were dismayed to find our rear gates had been chained and the lock changed without any reference to us, preventing us from accessing our emergency gate.

The following Tuesday we had booked a Stirling City Council front-end loader and a large truck to remove garden waste from the rear of our property. We had also arranged for a BMX committee member to open the gates to allow access. However, on the day we found a large amount of rubbish propped against the rear access gate, making it impossible for the garden waste to be retrieved. This also inconvenienced the council workers, who had to access our site via the rear gates at the Men's Shed.

Discussions with the BMX club were unfruitful, so we were left with no alternative but to approach the council for help in resolving the issue.

I also visited the council's Planning Office to seek advice on our "right of way" access. I was advised the whole of Vasto Place and Delawney Reserve were council property and all locks and fences belonged to the council and were not to be changed. We advised the BMX club of this, but access was still denied.

We were concerned at this point about the impact this would have on our 34th birthday celebrations. This concern was realised, as has been described in the birthday party report (*see page 1*).

Further site meetings between ourselves, the BMX club and the City of Stirling have failed to reach a solution.

City of Stirling Councillors have also had the opportunity to view the site access issues, and they have assured us they will pursue the issue further to help resolve the impasse.

We are now awaiting feedback from the Council, which could take some weeks as it will involve researching the two leases, insurance and planning regulations.

It is to be hoped a resolution can be found soon for, at the moment, we are "landlocked", like Switzerland, with no access through the rear of our premises. **Steve Briggs**

Meeting on Sunday March 10

DON'T forget that this month there will be a Special General Meeting to approve and adopt the Model Rules of Association and the associated Bylaws that were tabled at the last General Meeting on February 8.

A Notice of Special General Meeting was sent to all members on February 9, followed by copies of the relevant Rules of Association and Bylaws that will be voted on at this SGM.

It is important to the future of the society that the new Rules of Association are adopted by members and lodged with the Government before June this year, so please make the effort to attend if you can and cast your vote.

This meeting will be to simply adopt or reject the Rules and Bylaws as tabled, there will be no further discussions about the contents at this time.

The SGM will take place at the club rooms at 11:00am. It will be combined with the usual club run day and a short General Meeting will follow the SGM, before getting back to the member's run day activities.

As well as the opportunity to run locos, have a chat with fellow members and partake in a BBQ lunch, there will be a display of boilers and stationary steam plant, so if you have something you'd like to run, or a part completed project, please bring it along to show.

NOTE: There is no meeting on Friday March 8.

Committee re-arrangements

VICE-president Andrew Manning will be acting in the role of president until arrangements can be made to fill the vacancy on the committee left by Steve Briggs's decision to step down from the role.

Under both the current rules and the proposed new Bylaws, in order to qualify for election to the position of president, an ordinary member must have served as a committee member for at least one full year.

The committee is also able to recommend the appointment of an ordinary member to fill a position on the committee that has become vacant.

The filling of a casual vacancy on the committee must be approved by a majority vote of members at a general meeting. In the meantime, for society matters please contact either vice-president Andrew Manning (acting president) or secretary Paul James.

NDMES 34th birthday party (cont...)

(Continued from page 1)

There were also plenty of soft drinks and tea/coffee available. All this was served in the pergola with guests seated in the picnic grounds under the shade of the trees and in perfect weather. So, thanks must go to the team who provided the food.

While the BMX community tried to rain on our parade, the only dampener was of our own making – the lawn sprinklers came on briefly mid-way through that most enjoyable lunch!

Article by Tom Winterbourn, photos by Jim Clark



Right: The operating steam plants of Lyall Austin (left) and Paul James (right).



Left: The BMX action in blocking the rear gates meant those with gauge 1 locos, carriages and wagons had to wheelbarrow their prized possessions from the main gate to the garden railway! Jim Gregg looks on as "light engine" operations took place on the garden railway, with no heavy locos or rolling stock able to be used.

Calendar of Forthcoming Events

Special & General Meeting	Sunday	March 10	11:00 am	Note changed date and time!
Club Run Day	Sunday	March 10	9:00 am — 2:00 pm	
Public Run Day	Sunday	March 31	10:00 am — 2:00 pm	
General Meeting	Friday	April 12	8:00 pm	
Club Run Day	Sunday	April 14	9:00 am — 2:00 pm	
Public Run Day	Sunday	April 28	10:00 am — 2:00 pm	

Know your Society

President	Andrew Manning	(acting President)	president@ndmes.org.au
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	Phill Gibbons	9390 4390	
	Steve Reeves	9354 1395	
	Noel Outram	9525 1234	
Librarian	John Martin	9206 2325	
Birthday Bookings	Paul Costall	9572 1385	
Driver Training	Phill Gibbons	9390 4390	
Safety Compliance Officer	David Naeser	9276 8709	
Newsletter Editor	Jim Clark	0407 988 746	jimclark@hardwareandsoftware.com.au
Website			www.ndmes.org.au
Society On-site Phone Number	9349 0693		
Society Grounds and Track Site	Vasto Place (off Balcatta Road), Balcatta		
Postal Address	NDMES, PO Box 681, Balcatta 6914, Western Australia		

Building a steel boiler at home

(continued from Jan-February 2019 issue)

Now we start on the plate work. Briggs boilers will need 5 pieces of plate: a front tube plate, a rear tubeplate (this is cut in half to give the backhead as well), a crown sheet and a couple of crown plate risers.



Steve Reeves' inner firebox plates tacked in place ready for welding.

6 x 3 foot sheets. Try and get a few people interested so that you can split the cost.

Now the good news! One of our members Peter Harding works for a water cutting mob called Intracut (contact pete@intracut.com.au) who charge very little for programming from your drawings and can, for a little extra, cut your weld preps as well (see article below). I believe this is well worth the few extra dollars.

Your firehole ring and dome parts come from the Steel Store (Beete St in Welshpool) and the bolts for my

Full firebox boilers will need 10 pieces plus the strips to make the foundation ring.

These must all be cut from boiler plate which is now becoming a bit rare. Indeed, we had to ship ours from the Eastern States as full



Engineering Matters with boiler inspector Phill Gibbons

and anode holes and tap them. One important note: if

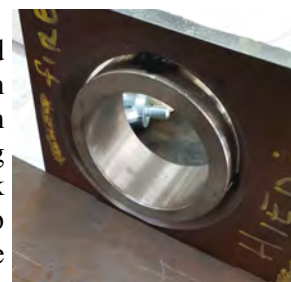


Above: Steve Reeves' firebox after the plates have been fully welded into place.

dome came from Atom Supply (Mackay St, Kewdale).

I used Allen head cap screws which are all 8.8 strength — if you are using something else look for the “8.8” stamp on the head of the bolt.

When we have collected all the pieces, we can drill and chamfer all the stay holes, drill the washout



Above: Firehole ring

and anode holes and tap them. One important note: if there are tapped holes near a weld (as shown above) you must make a copper plug to fit neatly in the tapped hole to prevent it being welded up.

To be continued next issue...

Right: A tapped hole for a washout plug close to the weld will need a copper plug.



Article by Phill Gibbons, photos by Steve Reeves

The process of water jet cutting

Waterjet cutting is the process of cutting material using high pressure water. For most materials there is also an abrasive, usually garnet, added to the water stream. We have cut everything from thin rubber, wood, plastics and fibreglass and of course aluminium and steel, right up to titanium. The main benefit of water cutting is that it does not use high temperatures so it does not alter the nature of the material.

This ‘simple’ explanation hides a multitude of technical issues including nozzle size and abrasive type. The speed of cutting varies according to both the thickness of the material and the hardness of the material. For thick tool steel or some ceramics it can seem that the cutting head barely moves.

While some machines have the ability to cut bevels, waterjets can only cut through a material, and not to a depth. To cut plate with a bevel for weld preparation actually consists of two cuts, one for the outer shape and then a second cut for the bevel. Out of laser, plasma and machining operations, water cutting is the most costly.

The full process is as follows: The client produces either a DXF file (preferred) or a drawing of the part to be quoted. This is then modified or drawn up by us to suit the control software to produce the tool path. This is checked for the cutting time to produce a quote. When the quote is accepted, the part(s) are nested to the required material, either provided by us or by the client. Finally, the code is sent to the waterjet machine, the material is put on the bed of the machine and weighted down to stop movement, and the part is cut.

We have two waterjets, a 6.1m x 3m bed machine and a 3.5m x 1.5m bed machine. Each machine has slats on the bed on which the material rests, spaced around 50mm apart so cutting small parts means tagging them so they remain connected to the main sheet. In fact all parts are usually tagged to prevent movement while being cut. This means that the outer profile of the piece often needs a little finishing by the client. The waterjet can also cut holes of around 2mm diameter or larger.

Peter Harding (Intracut, 33 Raymond Ave, Bayswater)

Some early club history

This article was taken from an email circulated to members by Steve Reeves in January. Together with some historical photos supplied by Steve, who is a founding member of NDMES, it provides some insight into the club's inception and early days of operation.

The Club's beginnings: The Northern Districts Model Engineering Society was formed out of the need to create an environment where model engineers could get together with like minded people who wanted to do the same things in an active environment.

This may sound obvious, however at the time there were not many clubs that were prepared to do this. There were only miniature railways, which were started by model engineers, but then turned away from model engineering in favour of just running trains. So the model engineers created their own clubs. Two model engineering clubs did exist at one time, but neither wanted to have a permanent site like ours.

NDMES still exists today because of the permanent site with plenty of activities available for members.

Selection of the Site: Some members may be unhappy with the size of our site, wishing it was much bigger, perhaps twice the present size. We foundation members spent quite a bit of time on the selection of a suitable site. The City of Stirling Council gave us many choices of places to look at. These were short listed down to 6 with the final choice being the one we have now.

The criteria was to have a building where we could meet that would have room for a library, workshop and meeting hall. The grounds should be small enough so that the facilities provided, such as railway lines, could not outgrow the capabilities of those who would look after it. It needed to be just big enough so that it would be within the capabilities of 6 or 7 people over the age of 60 to look after.

Also, we wanted to make a statement to the other clubs that we were not going to be just another miniature railway. The grounds are too small and the curves too sharp to cater for this type of activity on a large scale.

This is why we have what we see today — it is a legacy inherited from the decisions made by the foundation members. This is why there is not enough space to store member's locomotives on site. We can only work with the resources we have. As a founder member I still feel this was the right thing to do.

Early operations: Although there are 6 listed founder members, by the third function, membership of NDMES had grown to 17 people.

The first outing of the portable circular track was at Bob Burgess' grandchildren's school fête at Bassendean Primary School. Steve Reeves is seen on the far right in the following photo driving Bob's 3½" gauge 2-6-4T.



The Karrinyup Shopping Centre paid for this track, which was tested here before we took it to shopping centres. We would then earn several thousand dollars for two school holiday weeks' work with this track, using Doug Baker's 3½" gauge 4-6-2 'Lord Forrest', Steve Reeves' 5" gauge 4-6-2 'Helen' and Doug's battery loco, which was later rebuilt by Lindsay Adams into the blue club battery loco that we have today.

Milton Smith won the competition to drive the first train on the site elevated railway (photo at right). He chose 'Lord Forrest' as the engine to drive.



Notice how sandy the site was when we first got it.



Peter Goddard is seen (left) driving his 3½" 'Doris'. He was the club's first "Make things man". Doug Baker came up with the ideas and Peter made them happen.

In the background is another foundation member, Reg Barltrop.

Lindsay Adams took over from Peter as the "Make things man". His Simplex 'Waratah' worked hard. The meeting room has been named after him. Once again a very valuable member who is missed very much by all who knew him.

This photo (right) shows Geoff Evelyn and his newly built NSWGR C38 in 3½" gauge. He was



the clubs' first gardener. Geoff's Wood is named after him. He put so many hours into the gardens, and left us a wonderful legacy. *Article and photos by Steve Reeves*

Notes from the Boiler Group

THE number of boilers either completed or under construction by members in the Boiler Group continues to grow steadily. Garth Caesar is presently building what is probably the smallest boiler built here to date, for a 45mm Gauge 1 loco. We'll feature some photos of this soon.

At the other end of the scale, Phill Gibbons continues to amaze with his industrious progress on the chassis for his 7¹/₄" Mallet locomotive (which he has built largely freelance from some photos).

Also impressive is his large steel boiler, now complete, clad and resplendent in a dark midnight blue colour — see photos.

These are certainly interesting days!

Jim Clark



Above: A trial fitting of the boiler onto Phill Gibbons' new loco. That is a big beast!

Photo: Bill Walker



Above right: Lyall Austin successfully completed a steam accumulation test and received his Boiler Ticket at a January Boiler Group day. (His steam plant has since seen quite a few hours of action, including at the recent birthday party, see page 1)

Photo: Jim Clark



Above: Those who attend the Boiler Group days will be familiar with the activities of the C & C Foundry. A selection of home-grown patterns and castings for inspection on the morning tea table. *Photo: Steve Reeves*



Right: A fishy story! "I had one this long but it got away..."

Phill Gibbons (right) shows Jim Clark his completed steel boiler, now clad in stainless steel sheet.

Photo: Bill Walker



Tip of the month

THE other day I was Aralditing some lagging and as usual could not find a clean disposable surface to mix up the glue. As luck would have it, there was a roll of gaffer tape lying nearby, so I tore off a strip, stuck it to the bench and mixed the glue on that.

When finished I just pulled off the tape and threw it in the bin — simple! Then Ron pointed out that if doing a big job I could lash out and use two strips of tape...

Thanks to Phill Gibbons for this handy tip.



And here are the alchemists at work! *Photo: Bill Walker*

The Pilbara Sundowner

THIRTY-plus years ago, in the hot and barren Pilbara landscape, two members of our society were setting goals never before, or since, achieved. The key word was “Sundowner”, which to most Sandgropers represents a cold one at the end of a hot day.

But the Pilbara Sundowner was far removed from this — it was a railway carriage which opened up rail travel across the Chichester Range in true pioneering fashion. Perhaps I’m waxing a little too lyrical here, but the story I am about to tell is true.



The Sundowner (left) was an observation/parlour car which originally found fame as the “Silver Star” on the streamlined Chicago, Burlington and Quincy

Railroad’s General Pershing Zephyr train, which ran between St Louis and Kansas City in the 1930s and ’40s. It was built by E.G. Budd in 1939 in stainless steel with air-conditioning and a fully-fitted kitchen within a diner-parlour-observation car. It was gifted to the then Mt Newman Mining Company (MNM) in Port Hedland by AMAX Iron Ore Corporation (a partner in the original joint venture with BHP) to celebrate the first 100 million tonnes of iron ore railed from Newman to Port Hedland in 1974.

It was renamed “Sundowner” and was used for special trains along the MNM railroad between Port Hedland and Newman and at weekends to allow MNM employees in Newman to visit Port Hedland, just over 400km away, for a weekend. A similar service was provided for Port Hedland employees to visit Newman on alternate weekends. The train service was run by the MNM railway until a proposal was made by the Port Hedland Railway Society to run it. Society members acting as train manager/conductor had to pass a “rules and regulation” examination and the payment for service would be equally divided between the society and the member on duty.

I was publications officer in the MNM Public Affairs Dept. at Port Hedland and one of the founding members of the Port Hedland Railway Society. Most of the society members worked in the Railway Dept. and a number of drivers were active in the society.

As an aside, the 5” Springbok loco now owned by Steve Briggs, and formerly owned by Andrew Manning, was then in my ownership and accompanied me from Melbourne to Port Hedland in January, 1981. It subsequently found itself “stuffed and mounted” in a specially made glass cabinet atop a wooden frame and displayed in the Railway Department foyer.

But, enough of the historical stuff. My involvement



Dressed for a Christmas Special with Santa and period costumes aplenty under the hot Pilbara sun! Photos: Tom Winterbourn

with the Sundowner came about in 1983 through the good graces of the railway and one William Walker (Bill Walker to you), then Rolling Stock Maintenance Superintendent at MNM, later to become BHP Billiton. He assisted the Railway Society to take over the running of the Sundowner.

It was a case of “give an inch...” and, again through the good graces of the railway (and Bill) we co-ordinated the first passenger service down the Goldsworthy Mining Company railroad, to the Goldsworthy township (112 km from Port Hedland) and, later, on to Shay Gap (165km away). At the time, Goldsworthy and BHP were two separate entities (now its all BHP), so Bill negotiated with his counterparts at Finucane Island to have a Goldsworthy loco available at the “crossover” (where the MNM line crossed the Goldsworthy line near the port) to take over from the MNM loco which hauled the Sundowner from Port Hedland. The MNM Alco locos were too heavy for the lightly laid Goldsworthy track.

Whereas MNM’s continuously-welded track was laid to carry the heaviest trains in the world, with an axle loading of 35 tonnes, the jointed Goldsworthy track, with joints staggered, produced a rolling effect, with the car dipping from one side to the other in transit.

On these trips, the Goldsworthy people laid out the red carpet for the mainly Railway Society members, with great food and trips to the two mine sites at Goldsworthy and Shay Gap.

But we had much more fun with the Sundowner, with special trips down the MNM railroad to line camps, principally Redmont, while Christmas trips with Santa were held on a couple of occasions, with the ladies dressed in full Victorian-style dresses and the men in formal top hats and tails — some in rugger shorts and boots! A fully dressed Santa was also on board (mostly me) – and when we alighted down on track to stretch our legs, the mercury was generally in the 40s.

(continued on page 9)

The Pilbara Sundowner (cont...)

When the Bicentennial Exhibition came to Port Hedland in 1988, our use of the Sundowner reached a whole new level! The railway had a programme for the MNM locos to be rebuilt in Perth and this meant some low-loaders heading empty in one direction or the other. So, when it was known the Bicentennial Exhibition would be visiting Port Hedland, arrangements were made to utilise the low-loaders to pick up two “borrowed” ex-NSWGR carriages from the Pilbara Railways Historical Society base in Dampier, convey them to Port Hedland and use them with the “Sundowner” to make up a three-car train to bring Newman employees up to Hedland to visit the exhibition. Bill arranged the carriage relocations and, as then Senior Public Affairs Officer – Newman, I co-



Tom (right) with friends Fergy and Lyn Moffatt and Judy Evans enjoy a glass of wine after a meal on one of the Sundowner trips.

ordinated the daily manning of the train and took bookings. Prepared meals, courtesy of MNM, were served in the “Sundowner” for all passengers. The journey and meals were all gratis.

Railway society members were rostered as train managers and support staff and the passengers were brought into the “Sundowner” car en-route, in shifts, through the corridor coaches for their meals.

The planning of this unique service soon caught the attention of railway enthusiasts in Perth and the eastern states, resulting in several visitors also booking a trip.

While Bill didn’t travel on many of our trips, he was the all-important person who signed off on the various logistics. Those were heady days and it is fair to say this sort of nonsense would not be tolerated by BHP today.

In 2010, the Sundowner became the Silver Star Café in Port Hedland’s Courthouse Gallery Gardens cultural precinct, after it made one last trip to Goldsworthy in June, 2005, in association with the 35th annual running of the celebrated Pilbara Black Rock Stakes. This was a night-time wheelbarrow race (too hot in daytime) for teams and individuals with each barrow conveying 11kg of iron ore over the 122km from Goldsworthy to Port Hedland. The race ended in 2010, as it was then deemed too dangerous with the increasing traffic on the road.

Footnote: It should be pointed out that, in between his Sundowner activities, Bill Walker did manage to efficiently carry out his main duties of supervising the running of what was arguably the world’s biggest and most advanced heavy haul railroad!

Article and photos by Tom Winterbourn

The role of Run Day Duty Officer

One of the positions that we need to have filled on public running days is that of Duty Officer. The DO is in overall charge of the operations on the day.

It is a responsible task, but not particularly hard. However, without a DO we are not able to run for the public on a public running day.

There are certain tasks that have to be done for the run day and the DO must see that these have been done or delegate somebody to do them. The DO is not the person who has to do everything, but only has to see that all opening and closing tasks are done. These are not too complex and a list of tasks is provided to assist the DO as part of the daily sheet.

It requires the DO to be observant, keep an eye on the action and to rule on operational questions, such as whether a driver is qualified to drive, decide when a train may come onto the line (there may already be too many trains, for instance) and make a ruling if there is any argument on operational matters or non-compliances

with the AALS and club procedures.

Many old hands find the job a pleasant day working with fellow club members, and the club will train any members interested in taking on the role. Harry Roser was recently seen training new accomplice Peter Smith, who has since enjoyed his first solo DO duty.

If you are interested, please speak to any committee member or club officer who will be pleased to welcome you to the ranks of Duty Officer — or talk to Peter Smith... he’s now an accomplished DO.

At a recent club meeting a Power Point presentation was shown summarising the duties of the Duty Officer and illustrating a few of the tasks to be done. If you would like a copy, please contact David Naeser at dnaeser@iinet.net.au or by phone: 0423 088 703.

I am sure that you will find nothing too difficult there! (And sorry, we can’t provide a top hat and tails for the role...)

David Naeser

Society loses a good friend

DR. Andrew Guilfoyle, a great champion of community life and a good friend of our society, departed this world prematurely on February 17.

He had been one of two elected Hamersley Ward representatives on the City of Stirling Council for over five years and during that time he visited us many times. But he also knew from around the time of his election to the council in 2013 that he had a rare incurable cancer and it was this which resulted in his untimely death, aged 53.

Andrew leaves behind his wife of about 20 years, Rina, and children Samuel, Luke and Lily.

At his funeral service in Our Lady of Good Counsel Catholic Church in Karrinyup on February 22, friend and Innaloo-Karrinyup parish priest Fr Nicholas Perera praised Andrew's work for the church and community, saying he had faced his challenges with "courage and perseverance".

Andrew was an academic, with a PhD in community psychology, and at one time was departmental head of psychology at Edith Cowan University, of which he was also an associate professor. He had a keen interest in environmental issues.

It was while at university that he met his future wife, Dr Rina Cercarelli, who just happened to be his psychology lecturer at that time. Later they were to meet again and this led to their marriage.

Andrew made many visits to our Balcatta grounds, as an official guest or to bring his children along for a ride on the trains. He was an official guest at our previous 30th birthday celebrations in 2015, at our Sandgropers Gathering in 2017 and at Christmas functions (always bringing along mince pies).

He was also invited to our 34th birthday celebrations on February 13 but, unbeknown to us, he was too ill to



In happier days, Andrew Guilfoyle and wife Rina (at right) seated with Eileen Briggs (at left) on the "top table" for dinner at the Sandgropers Gathering at Balcatta in November, 2017.

Photo: Tom Winterbourn

attend and died later that night.

Andrew intervened on our behalf when we had issues with the council and, as president, I always found him very approachable and he gave generously of his time and expertise.

He will be missed not only by our society but by his many friends throughout Perth's north-western corridor. An indication of his popularity was the 400-plus mourners at the funeral service.

This service was followed by cremation at Karrakatta Cemetery and then a reception to celebrate his life, hosted by his family and the City of Stirling.

The society was represented at the funeral by Steve Briggs and Tom Winterbourn and flowers were also sent on behalf of the society.

Tom Winterbourn

Anyone interested in a second-hand mill/drill?

I am considering upgrading to a bigger, beefier milling machine, so I'm wondering if anyone out there is interested in buying my old Hafco RF30 mill/drill?

My machine has 12 speeds from 125 to 2140 rpm (belt drive) and the spindle is 3MT. It runs off a standard 240V single phase outlet. It has been retro-fitted with an Easson 3-axis Digital Readout (DRO) and a halogen work lamp, and comes complete with a metal stand. All in good condition.

The nearest current equivalent is the Hafco HM32 mill/drill available from Hare & Forbes.

If you're interested, please contact Jim Clark at: jimclark@hardwareandsoftware.com.au or by phone 0407 988 746 for more information.



Heat and Temperature Principles

THE information in this short series of articles was accumulated and written by Noel Outram to train Oil and Gas and Oil Refinery operators on the principles of heat and temperature and how it affects them in their workplace. References to the Oil and Gas industry have been removed, however the principles apply just as well to steam plant in model engineering.

This information is readily available and has been covered in different ways in model engineering magazines. I have just put it into a format that is relatively easy to comprehend. Article by Noel Outram

Measurement of heat:

Temperature is an indicator of the intensity of heat but has nothing to do with the quantity of heat. Temperature is the useful tool by which we can determine the amount of heat energy that a substance possesses. Several systems are used for measuring temperature e.g. degrees Celsius, Fahrenheit and Kelvin.

Heat is a quantity of energy which will flow from one mass to another because of a temperature differential between the masses. *Heat always flows from the high temperature mass to the low temperature mass* no matter how small the temperature difference or how great the difference in masses.

In cold weather or a rain storm a pipe or vessel cools because the heat inside the pipe flows from the relative warm inside to the lower temperature outside. The cold from the outside does **not** flow into the pipe.

Since heat is a form of energy, it can also be measured, and heat transfer in furnaces and boilers can be quantified. Heat energy is measured in the form of Joules/kg.

Heat transfer rate is calculated as Joules/kg/sec and expressed as watts (W) or mega watts (MW)

For example the heat transfer into a stream can be deduced if the flow rate and the temperature change can be measured. (e.g. $1000\text{kl/hr} \times 20^\circ\text{C} \times \text{constant} = \text{MW}$ energy transfer rate).

Heat energy represents a store of useful work as a quantity.

Effects of heat:

The effects of heat upon a substance are:-

1. Rise in temperature. When heat energy is added to a material, the temperature rises.
2. Change of state. Heating solids will change them to liquids and eventually to gases. Cooling gases changes them to liquids and eventually to solids. This changing of form between gas, liquid, and solid is known as a change of state. Gases, liquids, and solids are different states of matter.
3. Change of size. As liquid changes state into a gas a rapid expansion occurs, e.g. water to steam has a 1,600 fold increase in volume.

4. Chemical change. The striking of a match illustrates how the mechanical friction of rubbing the match head is changed into heat energy which in turn starts a chemical reaction which gives off flame and more heat. Thermal cracking is a refinery example of a reaction caused by high temperature.

5. Electrical Energy. Two different metals welded together can convert heat energy directly into electrical energy. This is how thermocouples work.

Types of heat:

In the heating and cooling of gases, liquids, and solids, several different types of heat are found.

Sensible heat is the heat that is put into a material with no change of state and always shows up as increased temperature. For example, heating air in the home with a natural gas heater or heating water in the gas hot-water system are examples of sensible heat, since in the first example the air started and ended as a gas, and in the second the water started and ended as a liquid.

Latent heat causes a change of state - from solid to liquid, or liquid to gas. The word latent means 'hidden'. Latent heat is 'hidden heat' because it does not cause a change of temperature. When a solid changes to a liquid, the temperature does not change, as when ice melts. The heat involved in this case is called the latent heat of fusion (melting).

The heat necessary to change a liquid to a gas is the latent heat of vaporisation. This same amount of heat must be removed from a gas for it to condense to a liquid and is called the latent heat of condensation. Usually the latent heat of vaporisation (or condensation) of a material is large compared to its sensible heat.

Specific heat — for most practical purposes, specific heat is the energy needed to raise the temperature of a specific quantity of a material by 1°C .

Although the latent heat of most substances is large compared to sensible heat, the heat needed to raise temperature or to vaporise a material will vary widely from substance to substance. For example, the heat required to raise the temperature of 1 kg of water 1°C is 20 times the heat required to heat 1 kg of silver by 1°C . Specific heat is measured in units of energy per mass per degree, i.e. Joules/kg/ $^\circ\text{C}$.

This ability of water to hold more heat than most other liquids within a specified temperature increase is one reason why water is used extensively for cooling, e.g. in car radiators. Water also has particularly a high latent heat of vaporisation, and this latent heat energy remains in the steam, available to do work as it cools.

Having defined the terms and covered some basic principles, next time we will look in more detail at their application to steam plant and model boilers.

(to be continued in future issues...)

Building the steam launch "SOKAY"

I have been looking back over some of my projects and came across a couple of articles relating to building my steam boat "SOKAY". They were originally published in a Horseless Carriage Replica (HCR) newsletter, back when I was a member of this association. HCR are based in the USA and are interested, mainly, in building horseless carriage replicas.

Stu wrote: I built this little steam engine and boiler (photo below left) back some time ago when I was into steam appliances and between HCR projects, as a chance to build something different.



It looked a lot better when finally installed in the hull (photos left and bottom). I'd rather have been building something with rubber tires on it but this aberration had to do for the moment.

Since I built it all from out of my head and not using any drawings (so what's the difference from my usual approach I hear you say! - none, it works for me), progress was relatively slow.

(Length 1200, beam 320, draft 70 mm)



So no one was tempted to touch the wet paint before it had ample time to dry, I assigned two guardians to watch over the hull...

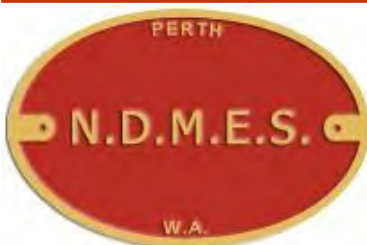


It's starting to look more like a real floating 'Gin Palace' every day, as I've now fitted seating in the cabin as well as window curtains! Check out the hand rails — Aussie built for Aussie conditions: stops drunks falling overboard!!

I decided to use the heater element and gas bottle from a portable cooker unit, and to build a boiler much bigger than required, to power the vessel. With the larger boiler I didn't then need to run the heater while the boat was on the water, and the larger sized boiler then gave me enough quantity of stored steam to run the boat, without the heater going, for about 45 minutes, which I reckoned was long enough to have a play with the boat on the water, and not have to worry about the electronics related to the radio control gear giving up the ghost while the boat was out of my reach!

The boat performed better than my expectations using the neighbour's pool for the test run. It has now sat in the shed, gathering dust and cobwebs ever since! **Article and photos by Stu Martyn**

Left: The biggest problem I encountered was to work out how various bits could come apart easily to allow access to components such as radio control gear, batteries, LPG storage bottle, reserve boiler water, etc.



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