



May 2003

## NDMES Easter Club Run

### Inside this issue:

<b>April Meeting</b>	<b>2</b>
<b>Easter Club Run</b>	<b>3</b>
<b>President's Report</b>	<b>3</b>
<b>Workshop Hints</b>	<b>4</b>
<b>Wanted etc...</b>	<b>4</b>

### Your Committee

President Ron Date	9246 2835
Vice President Dick Langford	9408 0081
Secretary Andrew Manning	9446 4825
Treasurer John Martin	9448 8843

### Committee Members

Doug Baker	9341 1630
Phil Gibbons	9390 4390
Steve Reeves	9354 1395
John Shugg	9246 9549

### Safety Officer

David Naeser	9375 7785
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### Publicity & Events

Jim Crawford	9276 5464
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### Newsletter

Jim Clark	9446 5870
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**NDMES**  
**PO Box 681**  
**Balcatta 6021**  
**Western Australia**



Easter Saturday at the NDMES track site in Balcatta was a great day. The relaxed atmosphere was a change from our more regimented public running days and provided a chance for some of our member's smaller locomotives to burn some char.

The day started with the clubhouse building gang continuing their good

Phil Gibbons and Ed Brown prepare Ed's WAGR DD Class loco in the steaming bays.

Photo: Dick Langford

work for a couple of hours—plumbing, brick paving and preparing for the workshop entry concrete that will be poured soon. Then Clive Chapman started the track action

*(Continued on page 3)*

### CALENDAR OF EVENTS

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<b>General Meeting</b>	Club Meeting Room Vasto PI, Balcatta	8:00 pm	Friday 9 May
<b>Club Run Day</b>	Club Track Site Vasto PI, Balcatta	11:00 am—3:00 pm	Saturday 10 May
<b>Public Run Day</b>	Club Track Site Vasto PI, Balcatta	11:00 am—3:00 pm	Sunday 25 May
<b>General Meeting</b>	Club Meeting Room Vasto PI, Balcatta	8:00 pm	Friday 13 June
<b>Club Run Day</b>	Club Track Site Vasto PI, Balcatta	11:00 am—3:00 pm	Sunday 15 June

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## April General Meeting

Minutes of Meeting by Andrew Manning

The April General Meeting opened at 8:00pm with the President Ron Date in the Chair. There were 22 members and 1 visitor present: **Kaye Raebel**

**Applications for membership** — Ken Cooper and Peter Jennings, both prospective members, have attended several meetings.

**MINUTES** — of the February meeting were read. Ron Date moved Minutes be accepted as read. Seconded B. Lawrie. Motion carried. Matters arising from the Minutes. - Nil

### CORRESPONDENCE IN —

1. City of Stirling (CoS) — second instalment of building completion grant.
2. Report on condition of trees on the site by arborist.
3. CoS letter acknowledging our letter of thanks to CoS for Palisade fencing.
4. AALS Safety Committee — David Naeser accepted as a competent person, given registration No. W005.
5. Letter from AMRA asking for nominations for members to assist with our display. It will be necessary for each member to have a personal entry name tag. Steve Reeves is co-ordinating.

### CORRESPONDENCE OUT —

1. Letter to AALS — Donation of February run-day takings to Peter Cox, who lost everything in the Canberra bushfires.

**TREASURER'S REPORT** was presented.

**GENERAL BUSINESS** — A minutes silence was observed to mark the passing away of **Jim Thompson**.

**Duty officers:** **Phil Gibbons** volunteered for Saturday 19<sup>th</sup> and **Brian Lawrie** for public run day Sunday 27<sup>th</sup>.

**Requirements for new members:** The discussion paper prepared by **Dick Langford** had been circulated with Steamlines. The subject was opened for discussion.

**Doug Baker** gave some background to the move towards more formal guidelines and in particular to have the members at a General Meeting make the decision on new members, and not the Committee.

**Russell Dunn** presented some legal comments on the discussion paper and in particular the issues with seeking references from other societies.

There was a good general discussion arriving at the conclusion that we should split the decision between guidelines for admission to be further developed in light of meeting input, and immediately adopt the General Meeting voting to admit new members.

The following motion was moved by Russell Dunn: **"That new members are to be elected by secret ballot at a advertised General Meeting. A simple majority being required. The names of applicants**

**to be considered at the respective General Meeting are to be advised to members in the issue of Steamlines published in advance of the Meeting."** Seconded J. Shugg. Motion carried by show of hands.

**Mike Rogers** moved that the guidelines be further developed by Dick Langford and interested parties for further review by the Committee and General Membership. Seconded B. Lawrie. Motion carried. Bruce Weir-Smith cautioned that we should keep guidelines as simple as possible.

**Duty roster for members:** **Andrew Manning** introduced the idea of the roster as a method of giving a greater number of members the opportunity to get involved with Society activities. The roster is an invitation to participate.

The following motion was moved by Andrew Manning: **"That the roster be adopted. Members accepting to go on the roster are requested to arrange their own replacement if they are unable to make the rostered day."** Seconded J. Martin. Motion carried by show of hands. The draft roster is to be circulated with Steamlines for members to review and feedback to Andrew Manning any changes or withdrawals.

**AMRA** — Will be on 31<sup>st</sup> May, 1<sup>st</sup> June and 2<sup>nd</sup> June. **Ian Allison** will prepare a roster.

**MODEL ENGINEERING** — **George Palmer** displayed a fabricated cab and chassis for his 5" 422 diesel. George also showed wheels machined from steel offcut blanks available from DiCandello's at \$1.

**Milton Smith** — showed photos of his very detailed tender on the track.

**Doug Baker** — Samples of the 10 track limit switch assemblies he has made up. He has concerns that the "Dick Smith" brand limit switches may not last.

**Stuart Martyn** — 'Speedy Gonzales' on a test stand running on air. Great job, great color!

There being no further business the Meeting was closed at 10:15pm.

Andrew Manning

## AMRA Weekend

Just a further reminder that the AMRA exhibition is on the long weekend at the end of this month, Saturday 31 May to Monday 2 June, as noted above.

This is traditionally a big weekend for our Society, with the portable track in action all weekend and a large model engineering display. If you can help out with exhibits or on the stands or train rides, please contact Steve Reeves or Ian Allison.

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## Easter Club Run Day

*(Continued from page 1)*

driving his 5 inch gauge Great Western "Metro" 0-4-2 tank locomotive. Soon, other locomotives were also steaming around the track. Ed Brown steamed his finely detailed 5 inch gauge Western Australian Government Railways DD class tank locomotive and David Naeser steamed his 3.5 inch gauge 4-6-4 South African railways tank locomotive. Both locomotives ran smoothly for many laps of the track.

Steve Reeves brought his pretty little blue "Tich" along, but unfortunately, didn't steam it. "Tich" lives up to its name; it really is small. It is a 3.5 inch gauge LBSC design based on typical 0-4-0 industrial locomotives. Its riding car and matching brake van did get a run though, behind Phil Gibbons' 2.5 inch Purley Grange. This lovely little locomotive is another LBSC design based on the Great Western Railway's "Grange" class. It is a joy to drive, and is quite capable of pulling a driver around our track, probably on steeper gradients than those the GWR expected its full size Granges to handle.

## President's Report

The building completion edges closer and closer. The detail work is very time consuming, with our 'old blokes' filling in at all kinds of skills they either never had or have long forgotten.

Due to the current building boom, tradesmen are either very hard to get or are charging like brain surgeons, so more D.I.Y. efforts from the crew will probably be the solution.

Visitors to the site may notice the attractively patterned paving along the track side of the building, done by Dick Langford and Ray Shersby. John Shugg has done a hard day or two's work to prepare the ramp/loading dock on the north side for concreting. We have an excellent quote for this job thanks to John Italiano. Plumbing and electrical will be completed shortly when our contractors can spare the time. A recent visit from the council was satisfactory on the whole, with only minor details to be attended to.

The April Public Run Day was a lovely day with a moderate but happy crowd and a good time was had by all. Mike Rogers was off-colour and couldn't attend, so we had to make do with three trains of two riding cars each. We managed to cope quite well with no customer complaints and no incidents, thanks to Duty Officer Brian Lawrie and Ernie Redford at the Station. Enquiries from the public indicate that the canteen will be a goer in the near future.

**Ron Date**

**article & photos by Dick Langford**

Firing Purley Grange, with a shovel made from a piece of  $\frac{5}{8}$  inch diameter copper pipe, and a firebox about 30mm wide and 100mm long is a real challenge. David Naeser and I ran quite a few laps with it. It just purred along, provided you fired it often with a little pea-sized coal. It's an engine where the fire conditions and the boiler water level change by the minute so you have to watch what is happening all the time.

Dennis Lord's 3.5 inch gauge Atlantic "Maisie" also had a good run. This beautiful 4-4-2 wide firebox locomotive runs as well as it looks. It is another LBSC design, based on a Great Northern Railway prototype. The first miniature live steam locomotive that I had the pleasure of driving was a similar "Maisie" on the Hobart Miniature Live Steam Society's track, way back in the late 1970's, so seeing Dennis' engine in steam brought back some memories for me.

We had a few visitors – Keith Watson from Castledare and his English friend, Steve Parry; two visitors from Toodyay; some friends of Ed Brown's, and our learned Secretary Andrew Manning's father, Garth and daughter, Hillary.

Lots of time was spent throughout the day in the steaming bay and around the station chatting about model engineering and other related topics. It was 5pm when I finally got home after a great, relaxing day. If you missed this great day, I recommend that you make sure you come along and join in the next one.

**Dick Langford**

*More photos from the Run Day appear on page 4.*

Dick Langford  
lays paving  
bricks alongside  
the club house.

Photo: Ray  
Shersby





Northern Districts Model Engineering Society Inc.

Track Site:-  
Vasto Place  
Balcatta  
Western Australia

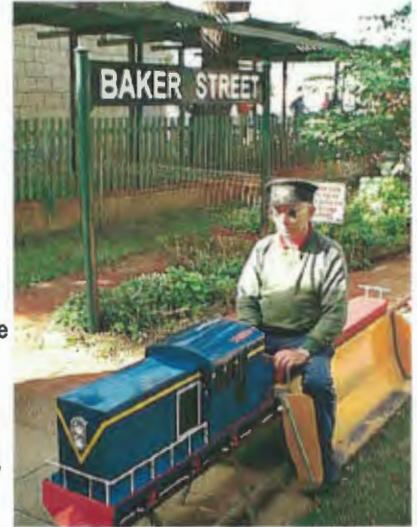
All correspondence to:-  
PO Box 681  
Balcatta  
Western Australia 6021

<http://www4.tpg.com.au/users/jimclark>

## Easter Run Day (continued)...



Left: John Shugg tops up the water tank with Steve Reeves at the controls of Ron Date's loco.



Right: Dennis Lord with the "Diesel" waits to move into the station to pick up passengers.

Photos: Ray Shersby

Right: Dennis Lord and his 3.5 inch gauge Atlantic "Maisie" had a good run in perfect Autumn weather.

Photo: Dick Langford

Below: Andrew Manning's father Garth and daughter Hillary behind David Naeser on his 3.5" gauge South African Railways tank loco.

Photo: Dick Langford



## POSITIONS VACANT

**Multi-skilled People** — There's still some finishing work on the interior/exterior of the new Club House.

Also track maintenance, trimming, clearing etc.

Contact Ron Date for more details, or just come on down to the track site.

## WORKSHOP HINTS

Have you experienced H.S. end mills wearing away your hard earned money, getting blunt quicker than your bank balance can recover? Well try this: Go to Carba-Tec in Ledger Road, Balcatta and buy a Tungsten tipped parallel router bit 12mm dia.x 25mm long.

The shank will be 1/2" dia as carpenters haven't discovered metric yet. No worries — buy a collet 12mm-13mm and it will close on 1/2" OK.

Put the speed up and away you go, rip into those castings and mild steel and forget about wear. The only downside is the flutes are straight and vertical, so on deep work, side cutting must be gentle to avoid chatter but a good finish still can be obtained.

The collet will always be useful, and the cutter will outlast any end mill. Perhaps the tungsten carbide grade might not be hard enough for alloy steels but if you don't try you will never know.

**Tony Jones**

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# Humphrey Pump

Article by Doug Baker

Invented by H.A. Humphrey 1868 - 1951

In the very early 1960's my brother and I were invited on a holiday for a week by a neighbour to visit a relative of his who lived in Barmera. I can remember that at the time, to me this was the great adventure, as I was in my early teens and it was the first trip away from home without my parents. I didn't really know anything about Barmera, Cogdobra, or the Humphrey pump. I don't believe I had even heard of Cogdobra or the pump at that stage, but what I was about to be exposed to was a life experience that I have never forgotten.

I remember the first introduction to the pump being early in the morning when we set off with Mr. Harris (the relative from Barmera), as he was in charge of the pump and he set everything operational. When we arrived the pump was dormant but the machinery looked so huge and so complicated (well that is how it seemed to me), I couldn't help but be impressed. There were enormous bellows in the ceiling space that fed the gas that fuelled the pump and a trembler ignition coil in a polished wooden box from a Model T Ford that ignited the gas for the cycle to start. It is reasonable to admit that my only specific interest in the pump at the time was the lake that fed the pump, as it was alive with Yabbies and Marron. The fact the pump was there to provide irrigation water to the riverland orchards was somehow not very important.

Out the back of the building and almost in the open were the gas producers. I can't remember how many there were now, but I do remember huge piles of timber being cut to feed the furnaces. It is in the latter years that I have taken an interest in the actual workings of the pump as it has been restored back to a working condition. The principle of how the pump works is fascinating to me and I hope to you as well.

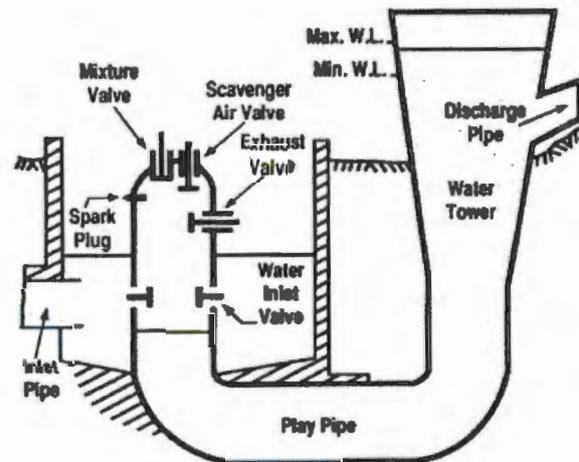
The design of the pump is a large U shaped pipe closed at one end allowing a free fluctuating water flow within the pipe. The pump is an internal combustion pump in which the explosive force of flammable gases acts directly on the surface of the water that becomes the piston. Apart from some simple operating valves and interlocks there are no other moving parts.

The diagram opposite shows the three main parts of the pump:

- (a) The combustion chamber, fitted with an exhaust valve, gas and air mixture valve, scavenge air valve and spark plug;
- (b) The water suction chamber, and valves, and
- (c) The playpipe, which is connected to an elevated tank and outlet pipe.

## OPERATION OF THE PUMP CYCLE

The starting procedure is with all valves closed and the pump full of water to the outlet. A charge of combustible gas and air is pumped into the combustion head by a compressor and is fired by closing the ignition circuit manually. The spark plug ignites the gas mixture and the beginning of the four strokes is initiated.

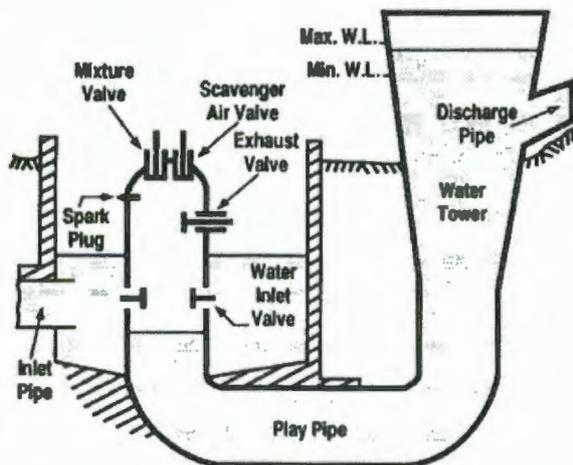


### FIRST OUTWARD STROKE

In the first outward stroke, the energy of the ignited gases forces the water downward with an accelerating velocity. The rapidly moving column of water causes a partial vacuum in the combustion chamber end of the playpipe and opens the exhaust valves inwardly. The water inlet valve opens, admitting an inrush of water into the playpipe, filling the pipe to the same head of water as in the sump.

The lightly spring-loaded scavenger air valve opens due to the reduction of pressure, allowing air to be admitted into the space above the exhaust valve. The exhaust valve prevents the return of burnt gases from the exhaust pipe by means of an interlock operated by pressure within the combustion head. The exhaust and scavenge air valves are released on combustion and the gas mixture valves are locked closed. A portion of the outgoing water column spills into the receiving basin, starting a syphoning action in the outlet discharge pipe.

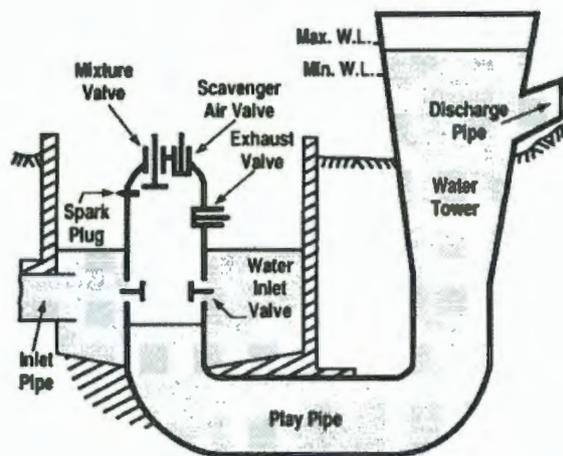
At the end of the first outward stroke the forward motion of the water column stops and gravity causes the water to flow back towards the combustion head, driving the exhaust gases through the open exhaust valves until they are forced shut by the water. At almost atmospheric pressure, the spring loaded water inlet and scavenge air valves close when the



FIRST RETURN STROKE

chamber pressure increases. The returning water column, having gained considerable momentum, compresses the scavenge air inside the combustion chamber, creating a cushion.

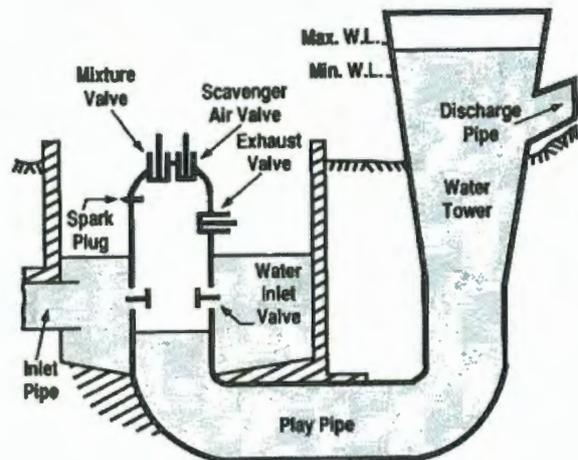
The cushion pressure being considerably higher than that of a static head becomes equal to the mass of the rapidly moving water column. The pressure operates the interlocking mechanisms that lock the exhaust and scavenge air valves, and simultaneously releases the latch from the mixture valves.



SECOND OUTWARD STROKE

The compressed air cushion now expands driving the water column outward again, until atmospheric pressure is equalised, as the water head becomes level with the exhaust valve. If it were not for frictional losses in the playpipe, the water would be driven out to the same position occupied prior to the commencement of the first return stroke.

The outward movement of the water column generates a partial vacuum again and the water inlet valve opens admitting water into the playpipe. A portion of the water column at the outward end once again overflows into the receiving basin. The gas mixture valves, being the only ones free to operate, allow a new charge of explosive gas and air to be sucked into the combustion chamber.



SECOND RETURN STROKE

The second outgoing impulse of the water column being spent starts a return flow again, and with all valves closed the new charge is compressed and fired automatically at maximum compression. A plunger operates a switch supplying voltage to the ignition system. Providing that the correct timing parameters and gas mixture are established, the four cycles will continue with a regular pendulum action of the water column.

The design of the Cobdogla Pumps differs from the original experimental model, in that multiple valves and spark plugs were installed in place of the single ones. The combustion head is dome-shaped and the delivery tank is replaced by an inverted conical tower, from which water is syphoned to the receiving basin. The operation is however identical to the original design. The multiple valves open and close as one, and the multiple spark plugs ensure a complete and sudden detonation of the entire explosive charge.

**Doug Baker**

**ACKNOWLEDGEMENTS:** Much of the information is taken from a paper by Mr. J.L. McLauchlan, an Associate Member of the Institution of Engineers, and presented to the Adelaide Division in March 1932, and taken from a booklet from The Cobdogla Steam Friends Society Inc.

The Barmera National Trust, P.O. Box 472, Barmera South Australia 5345. Phone: 08 8588 2521

Further info can be found on the Web at:

<http://www.fortunecity.com/greenfield/bp/16/hump.htm>