


 <p><b>Rotary</b> Club of Hamilton District 9780</p>	<p><b>District Governor: Ray Herbert</b>  <b>Assistant Governor: Lorraine Wilson</b>  <b>President: Leo Cummins</b>  <b>Tel: 035741223.</b>  <b>Email: leocummins46@gmail.com</b>  <b>Secretary: Bob Penny.</b>  <b>Tel: 0355711823</b>  <b>Email:</b>  <a href="mailto:rotaryhamilton9780@gmail.com">rotaryhamilton9780@gmail.com</a></p>	
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## WEEKLY BULLETIN 11 MONDAY SEPTEMBER 18<sup>TH</sup> 2017

<b>MEETING 3890</b>	<b>MEETING 3891</b>
<b>MONDAY September 25th 2017</b>	<b>MONDAY October 2nd 2017</b>
<b>Chair: Willis Duncan</b>	<b>Chair: Rose Howard</b>
<b>Program: Jenny Clark...report on Uganda</b>	<b>Program:</b>
<b>Cashier: Glenn Howell</b>	<b>Cashier: Willis Duncan</b>
<b>Bulletin: Tony Wark</b>	<b>Bulletin: Kevin Safe</b>
<b>Bar: Rose Howard</b>	<b>Bar: Rose Howard</b>
<b>Fines: Richard Beks</b>	<b>Fines: Raffle \$1 a ticket</b>
<b>Set up: Noel Howard</b>	<b>Set up: Bob Penny</b>
<b>Coming Dates</b>	
<ul style="list-style-type: none"> <li>• 3 Peaks Festival - October 21<sup>st</sup></li> <li>• Dunkeld Races - November 18th</li> </ul>	

## REPORT OF MEETING NO. 3889

**Chairman, Bob Penny**, opened the meeting with Rotary Grace, Loyal Toast and then handed over to **President Leo Cummins**.

### **Announcements:**

- Inductions: Peter Milburn, PHF 20/9...48<sup>th</sup> President. Ian Black, PHF & Sapphire, 23/9...57<sup>th</sup> President.
- At the board meeting we renewed Honorary Membership for G.Handbury, P Cook, C Cook, S Herrmann, K Brand & R Lawson.
- The future direction of the Club was discussed.

### **Reports:**

Secretary - Bob - RC Ballarat South Raffle, police award, shelter box purchase

Treasurer – Glen, Club finances.

Events/ Fundraising - Peter; Coles BBQ/ where to send any profits? Harness racing Mon 25th?

Dunkeld 3 peaks Oct 21st

**Reminders:** There are still a couple of people who haven't done their questionnaire, so could you please do this and get it to Leo asap?

## **Bulart Land Management Group - Leo Cummins for Rotary 18/9/17**

We are a group of landholders near Cavendish, based mostly on the local fire brigade area.

We had a 10-year association in the 1990's with the Geology Dept. of Ballarat University to look at dryland salinity in the area. This involved getting Landcare grants to support students working with our landholders doing postgraduate studies. The whole project was supervised by Peter Dalhause from the university.

At the time, salinity on the Dundas tablelands was a worsening problem and really due to European pastoral development, however a look at the historical documents shows that this was a false assumption, because:

- 1) the first maps show that some of the streams were already salty when the first squatters came.
- 2) poor water quality in summer was noted in letters by these first European settlers
- 3) Salinity only started to become a problem as the size of the properties decreased. The early settlers found the Dundas tablelands to be poorer quality land than some of the other nearby land. These original properties were large and run at low stocking rates so the stock were able to roam and find good water. These low stocking rates were required by poor pastures and probably did not impact too heavily on tree regeneration as well. These early stock were mostly shepherded probably also relieving pressure on parts of the landscape.

The School inspector, Bonwick, toured the area in 1857 and noted the Harrow, Balmoral, Cavendish areas were considered quite poor country. Potatoes had to be carried up from Portland to Harrow and the Harrow area could not muster enough students for a school. Cavendish was noted as a small township between the Black swamp and the Grange. "It is very liable to floods, it is surrounded by dreary swamps and sandy wastes and has no land sold about it, this is no loss for agriculture is impossible. To relieve this cheerless aspect there is an excellent national school in the place which boasts of being the largest boarding school in the west".

We can perhaps conclude that European settlement did not cause salinity because it already existed, however the intensification of grazing on smaller properties due to closer settlement schemes and possible because of fertilizer and improved pastures from the mid 30's onwards lead to the better recognition of these salinity problems.

Tree clearing by Europeans in this region at least, was probably not the cause of salinity and a look at both pre, and post European settlement gives further clues.

- 3) The pre-European tree landscape was dominated by Banksias which have virtually all gone. There were also plenty of gums, she-oaks, wattles and box. In the current landscape, Red Gums are the main species remaining and they are in decline. There is quite a bit of effort going into repairing this but it is a massive job both for red gums and the other species. Remember the Cavendish Red Gum Festival 13th & 14th April next year!

- 4) This pre-European landscape was developed by aboriginal firestick farming. Edward Curr in 1883 noted that by the use of firestick farming "it may perhaps be doubted whether any section of the human race has exercised a greater influence on the physical condition of any large portion of the globe than the wandering savages of Australia" This opinion has been further developed in Bill Gammage's book "The Biggest Estate on Earth"

- 5) Within 5 - 10 years of pastoral activity, the aboriginal population declined and firestick farming finished.

- 6) Of particular interest is the change in the estimated number of red gums per hectare. During the earliest decades of European settlement there was a massive increase in the number of red gums, relative to previous and later time periods. This is believed due to stopping firestick farming. There are estimates that the pre-European tree cover was probably fairly stable at around 5 red gums per hectare due to over 1000 years of this firestick farming. The disruption caused by the pastoralists happened immediately and the tree population built up towards 25 per hectare over the next 60 - 80 years and then declined drastically. You can see the potential for red gum regeneration on the Cavendish road just out of Hamilton looking east where some gums have been fenced off and protected from sheep. During the period 1920 - 1950 there was a massive decrease in the number of red gums per hectare mostly due to sawmilling contracts.

Moving on to the geology of the region as it might contribute to the salinity;

The Rocklands Rhyolite, our base rock at Bulart was probably laid down by eruptions 400 million years ago. There was a sea level rise 15-30 million years ago, when the Dundas tableland was under the sea.

Marine fossils have been found at Englefield and in the old Boral quarry to confirm this. The sea level then retreated about 3 million years ago when the Bulart region along with the Dundas and Grampians ranges were probably a peninsula. The sea levels dropped further during the last ice ages and the Dundas tablelands uplifted probably less than 3 million years ago.

This sort of geological history probably explains why the ground water in the region is similar in chemical composition to sea water. The age of the landscape and the deep weathering of the rock over millions of years has allowed for the accumulation of plenty of sea salt. The fact that bores of different depths on the Dundas all have similar composition indicate that the whole groundwater in this area is connected through fractures in this base rock. It is also worth noting that much of this ground water is of marginal quality.

By measuring the water height in many bores at the same time it is possible to get an idea of how this ground water is moving (FIG 3). Another interesting question about the groundwater flow can be ascertained from the long-term streamflow gauge on the Glenelg at Balmoral. This must be interpreted due to the development of Rocklands within this period. The figure shows the trend line in streamflow over 60 years (Fig 4). This has been adjusted for the short-term influences of climate (IE. current rainfall). The streamflow is a combination of direct run-off and groundwater base flow into the stream. Clearly streamflow started to decline in the 1900's and has been in sharp decline for 50 years. If the tree cover was having a major impact on groundwater then the expectation would have been that streamflow should have increased during the most active period of tree removal from the 1920s but this did not happen.

When we started this work, tree planting in recharge areas was seen as the essential tool for reducing salinity. This conclusion was imported from other areas where it had been shown to work. But in the Bulart region, the salinity problem probably has not changed much due to white settlement and will probably not be solved by tree planting. It is a problem of geology and the underlying rock. The Uni people concluded that waterlogging and lateral movement of water through the upper layers of soil plus the salt coming up from deeper underground, may be accounting for the increased salinity in some of the valley lines and not due to groundwater recharge. Agricultural improvement should be directed to improving soil structure, increasing root growth and decreasing waterlogging, perhaps through agricultural drainage.

This shows how important it is to do the appropriate research and not jump to conclusions. Tree planting is however still essential for Carbon capture/climate warming abatement, shelter and biodiversity.

*Where is the water on earth?*

*97% in the sea (saline)*

*3% freshwater → 30.1% groundwater*

*→68.6% glaciers and icecaps*

*→1.3% surface and other freshwater*