



# WATERY SAUCES Oldies and Boldies

Newsletter No 102

August 2023

NEWSLETTER OF THE WATER RESOURCES RETIREES ASSOCIATION

## Annual General Meeting

The Annual general Meeting of the Water Resources Retirees Association will be held on 27 April in the Community Meeting Room in Brisbane Square Library.

Attendance was somewhat disappointing, with only 14 coming, despite the incentive of a subsidised lunch. President Chris Robson delivered his report (which can be found on our website) and Treasurer Gary Corbett reported on the finances of the Association. Elections were held which resulted in all the retiring officers being returned unopposed. There were no volunteers to fill the vacancy caused by the untimely death of Bruce Pearce, so it was resolved that the returning committee would seek to recruit another member.

There was some discussion on maintaining the level of interest from former employees that was generated by the Q100 events of last year. There was also some discussion on how to manage memorabilia, both as written or verbal records or artefacts.

Following the meeting, the attendees enjoyed a convivial luncheon in a restaurant under the old Treasury building. This brought back nostalgic memories to those members who had worked in that building in a previous life.

## From the Editor's Chair

*Twenty years ago, Bernie Credlin phoned me to ask if, as he was no longer able to continue in the role, I would be prepared to be the editor of the WRRRA Newsletter. As I wrote at the time, "I am happy to do this, though obviously I would have preferred different circumstances for the change." I was duly appointed, and my first issue was a Bernie Credlin Memorial Edition.*

*I have continued to serve since then under nine Presidents, four Secretaries and four Treasurers. Under the constitution, the Editor is appointed, not elected, and will hold the office until he resigns or is sacked. To date, neither party has chosen to exercise an option, so ...*

*until next time, au reservoir.*

**Ian Pullar, Editor**

## Committee Meeting

Committee meetings are held, per kind favour of SunWater, in one of the meeting rooms in their building in the Valley. At the meeting held in May, we were joined by Tony Clarey who had volunteered to fill the vacancy on the Committee. A hearty welcome to Tony! A brief biography of Tony can be found on page 2.

The meeting rooms carry the names of dams that were built by SunWater or its predecessors, the Water Resources Commission or the Irrigation and Water Supply Commission. On this occasion, the allocated meeting space was in the Teemburra Room and that brought back memories for me.

Back in the 1990s, the dam site was being investigated by Project Planning (or we may have been called Infrastructure Planning) and I went to the Mackay Region with RE Peter Gilbey to front a number of public meetings to explain the process. Naturally these meetings are always attended by supporters who are keen to get a reliable water supply and those who are apprehensive/incensed at possible resumption of their properties. On this expedition, we were further handicapped by the decree from Treasury that the days of cheap water were over and from now on users would have to pay (closer to) the real cost of supply. There was no formula and the Treasury officers had declined to come along to explain. This meant that our potential supporters were considerably reduced in number. The word about having to pay got around, and by the time we got to our third meeting, we were aware of people out the back of the hall plucking chooks and boiling tar (metaphorically). Obviously, we escaped unharmed or we wouldn't be here today. Teemburra Dam got built and presumably the users pay.

WRRRA welcomes New members  
Ian Holmes, Peter Summers and Bruce Bass

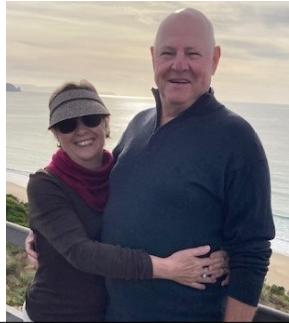
The Management Committee is developing plans for future activities that could include a tour to the Granite Belt, a visit to Fort Lytton, a day trip to North Stradbroke Island and more technical sessions. Notice will be given by the usual means.

## New Committee Member – Tony Clarey

Tony was born in Brisbane and educated at Brisbane State High School and the University of Southern Queensland. He joined the then Irrigation and Water Supply Commission in 1974 on a surveying cadetship just in time to help clean up the mess that was the Rocklea depot after the floods.

The next five years were spent assisting with, and then carrying out, investigation surveys throughout Queensland, some sites becoming projects, and some simply memories: Pittsworth, Millmerran, Thanos Creek, Urannah, Proserpine, Awoonga, Fitzroy River, Proston, Burdekin Falls and Hells Gates to name a few. There was time spent on construction projects too, Wivenhoe, Glenlyon, Bundaberg and Fairbairn, and time misspent in Brisbane. (If there is nothing to do, clear out!)

After graduating in '79, he was sent to Boondooma as the assistant surveyor on the dam site and to carry out the surveys for the construction of the Tarong Pipeline. His partner Susan and he were one of the first non-married couples to be provided with a staff house on a construction project (an initiative that caused some ripples amongst the folk on site). Following the completion



Tony and his wife Susan

of the Dam and pipeline in '83, and marriage to Susan, he was transferred to the Burdekin Irrigation Area as part of the investigation and design team, and then with the construction project. There were many trips away to the Burdekin Falls, Peter Faust Dam and Awoonga Dam where he served as replacement surveyor on construction of these assets.

In 1991 he, his wife and two children decided that they would move back to S.E. Qld to be closer to family and to educational and employment opportunities. Tony had begun studies toward a double degree in Human Resource Management and Accounting back in '86 and completed these in 1992 as his career with the Qld Water Resources Commission came to an end.

He relocated to the Gold Coast and joined a small survey practice as a project surveyor. The practice grew and carried out the surveying for projects such as Pacific Pines, Sanctuary Cove, Varsity Lakes and other numerous estates and high-rise developments including Q1. He took on Project Management roles, eventually becoming a Director and Partner in the firm. The firm continued to grow through a significant merger and now had offices state-wide and was a target for a much bigger fish. He and the partners eventually agreed to sell and Tony took on the Survey Manager role of the re-branded firm on the Gold Coast, committing to staying for three years. Ten years later, in 2022, he retired, and every minute he is with his grandchildren, travelling with his wife, reading, playing golf or mowing the lawn, he is glad that he did.

## Mid-Year Luncheon

After a break of several years, the Association was again able to host a luncheon, although this was not without its problems. A new venue had been found through the efforts of Treasurer Gary Corbett and a booking had been made for 14 June at the German Club in Vulture Street. The requisite 30 members were recruited and all was set to go. But at the last minute, because of a death in the family, the Club was forced to cancel the booking. So then followed a scramble to find a date when both co-patrons would be able to attend. A new date of 5 July was settled upon, although this meant that five of the original starters (including President Chris Robson) were unable to attend..

But two more starters were found and the function was duly held on 5 July.



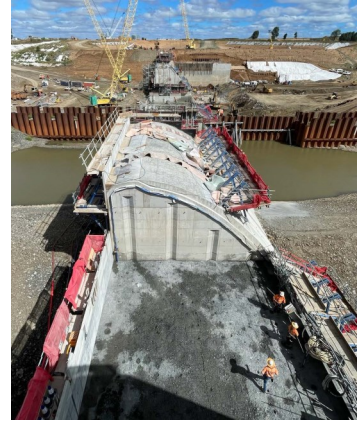
Host Greg Claydon addressing the diners: (clockwise from front centre) Geoff Eades, Doug Flanders, Lynette Brigden, Denise McMahon, Peter McMahon, Greg Claydon, Linda Dobe, Daryl Brigden, Gary Corbett, Glenn Stockton, Greg Munck, Kev Devlin and Tony Clarey.

Before the meal was served, both co-patrons addressed the group to give us some insights into the activities most of us are glad do not directly involve us.



Glenn Stockton, CEO of Sunwater, spoke to a powerpoint presentation. Fortunately for readers of this Newsletter, Terry Loos took notes which give a good summary of Glenn's address.

- Sunwater is a modern business that supplies water, upgrading its assets to current best-practice standards and designing new assets for the future.
- Its main current project is Rookwood Weir on the Fitzroy River. This is projected to be completed by the end of 2023. There have been delays. The construction program allowed for one or at most two inundations during construction. There have been six.
- A fascinating aspect of the project is the large number of associated works needed i.e. mainly roads, and bridges. The weir will have a fish and turtle way, (right bank) and Sunwater is also working with Rockhampton City Council to retro-fit a fishway on the Rockhampton Barrage.
- The alluvial formations on the left bank have required a lot of attention.
- There will also now be a pipeline constructed from the weir to augment the water supply to Gladstone.
- Total cost of the project is \$569M. They have a 230 person camp and other workers are bussed in.
- At Coolmunda Dam, it has been found necessary to lift out and replace the variable counter weights in the wall. This has required bespoke construction techniques. It would have been easier with an empty storage but the dam has been continuously full for the last 18 months.
- There was some flooding in Inglewood downstream on MacIntyre Brook in late 2021, but this was not related to the operation of the dam.
- The left bank of Clare Weir has failed previously (undermining) and has again needed reinforcement. Sunwater installed several rock-filled bags using a helicopter. They will repair the bank more thoroughly when the Burdekin River ceases to flow.
- Paradise Dam is now operating at the reduced level of -5.8m. The plan is now to restore the dam to its original capacity (an extra 300 000 ML) The D/S training walls and the apron will be extended. The secondary spillway needs lots of work.
- Burdekin Falls Dam is to be raised by 2m. It also needs to be strengthened. If it weren't for the raising the strengthening would have been achieved by anchoring. Now the two objectives are to be combined. The extra 2m would hold another 500 000 ML. The saddle dams (4km) need to be raised.



Rookwood Weir



Rookwood Weir



Coolmunda Dam



Paradise Dam



Linda Dobe, Acting Director-General of the Department of Regional Development Manufacturing and Water also addressed us on the activities of this newish department. Again, Terry took notes.



- DRDMW has a total staff of around 700, of which 550 are in the Water component, with around 350 in their 19 regional offices.
- The regional offices are doing all the water planning (for river basins). Six water plans are out for review at the moment. They also do all the water monitoring.
- Community and stakeholder groups are much more actively involved in Water Plan reviews these days.
- The water planning process now includes information on Indigenous cultural values and makes specific reserves for water use for Indigenous economic purposes.
- More than a dozen project feasibility studies are underway including water supply options for agricultural uses, critical minerals and hydrogen projects.
- These feasibility studies led to major projects such as: Rookwood Weir; the pipeline from Rookwood Weir to Gladstone; the pipeline from Toowoomba to Warwick.
- Five Regional Water Assessments will identify the best investments to deliver water to each region.
- H/O is also working on a methodology to modernise customer understanding of what their entitlements really mean, coupled with providing them with better data via telemetry in MDB.
- Measurement of water use has been improved through metering and telemetry. This rigor has been driven by the Commonwealth's scrutiny of the rivers in the Qld component of the MDB as they regulate the states.
- A greater emphasis is now placed on climate change in water modelling. In simple terms this modeling is showing similar rainfall patterns but higher temperatures, hence greater evaporative losses.
- DRDMW also is putting a big effort into urban water management. They have just secured budgetary funding to undertake a major review/scan of all regional urban WS and S schemes (focusing on the smaller schemes). The ToR for this project is yet to be developed. This scan will look at water supply security, drinking water and sewerage infrastructure risks and council capacity to deliver. The extent to which it will look at the cost of implementing the ADWG Health-Based Targets; and the STP effluent quality performance is yet to be decided. The scan will also cover the 17 Indigenous communities' WS and S schemes.
- The department's role for drinking water service provision is one of regulation plus support when issues / risks arise, in addition to strategic policy.

After the addresses, Greg Claydon presented each of the co-patrons with a memento of the occasion. 2023 marks 140 years since the appointment of John Bailey Henderson as the first Hydraulic Engineer, which launched the State involvement in the management of water resources. Gary Corbett had produced the certificates, a copy of which is reproduced on page 5  
Diners were, as usual "entertained" by Terry Loos's trivia, some of which can be found on page 13.

## Theodore Centenary

WRRRA has been contacted by members of the Theodore community to inform us that plans are being formulated to celebrate the Theodore Centenary on 28-30 June 2024.

The locals also asked if we could shed light on the local belief that the town of Theodore was designed by Walter Burley Griffin. We believe that this is highly unlikely, though the Theodore plan could have conceivably been influenced by Griffin's designs of Griffith and Leeton.



## An Urban Myth?

We recently stayed in a B&B in Warwick. In the course of conversation with the owner, I mentioned that I had worked on Leslie Dam as a student 60 years ago. "Then is it true," she asked, "that the bodies are buried in the concrete?" She meant, of course, the three McCulkin women, murdered by Vincent O'Dempsey who had worked on the dam. According to her, there is a strong local belief that the bodies will never be found because they are encased in the concrete.

I thought back to the conditions under which the concrete was poured with a large number of workmen involved and could not imagine how three bodies (or even one) could have been entombed. But unlikely as it seems, perhaps it could have been possible. And why spoil an urban myth with facts?



# 1883-2023

## MANAGEMENT and DEVELOPMENT of QUEENSLAND's WATER RESOURCES

ON 1 FEBRUARY 2023

The Water Resources Retirees Association - whose membership represents those who have worked in 'water' as we know it- sought to reflect back 140 yrs to

**1 FEBRUARY 1883, when JOHN BAILLIE HENDERSON was appointed Queensland's first Hydraulic Engineer.**

Henderson's initial brief from the Colonial Treasurer was simple - 'to supply public roads and stock routes and to attend to the needs of the graziers on the western plains'.

*Being a member of a wider global scientific community (as well as the state's first water resources engineer), 'Hydraulic Henderson' understood the need for an understanding of local climate variability to inform all decisions involving not only development of the state's water resources but also to avert any temptation to make uninformed decisions on urban floodplain development - adding substantially to his brief.*

*Henderson's strong advocacy for collection and use of hydrologic data for use across all three water user sectors ensured that responsible 'management' of the resource was factored into all aspects of 'supply', something which has held true to this day and given cause for Henderson to be acknowledged as a **TRUE WATER RESOURCES PIONEER**.*

### HYDRAULIC ENGINEER'S DEPARTMENT.

Hydraulic Engineer : J. B. Henderson, M. Inst. C.E., and Mem. Inst. Mech Eng.

Accountant : F. C. Lea. Correspondence Clerk : E. Irving Dickson.

Clerk : W. Hamilton. Junior Clerk : W. M. Bryce. Draftsmen : F. Weber.

Overseer in charge of American Boring Machinery : J. D. Arnold.

Overseers of Districts : W. M. Mackinnon, J. Hargreaves, and J. M. Haig.

Overseer of Boring : William Carter. Surveyor : F. G. Renon.

Overseer in charge Steam Scoops : J. Ball, and D. Raby. Clerk Western District : James Orr..

The Hydraulic Engineer's Department was to be the predecessor of the Irrigation and Water Supply Department, formed following passage of the *Irrigation Act of 1922* and appointment of the state's first Irrigation Commissioner - Archibald Partridge.

On 18 Oct 2022, the Association celebrated 100 yrs since passage of that Act, a significant milestone along this 140 year journey. **And the rest they say is history!**

**IN APPRECIATION OF YOUR ON-GOING SUPPORT AND PATRONAGE OF OUR ASSOCIATION**

**Chris Robson (President)**

Water Resources Retirees Association

#### MORE READING:

A Peoples History of the Water Resources Commission and its Predecessors (I Pullar; M Cook)  
John Baillie Henderson - A Hydrologist in Colonial Brisbane (M Cook)



## Vale Bruce Ronald Pearce 31-1-1944 to 20-3-2023

Bruce was born in Crows Nest. He attended the one teacher Pechey State School in his primary school years. For the first couple of years he walked from home across the paddocks for some two kilometres to attend school. When his brother Ross commenced school, they double-back rode their pony "Queenie" to school around the road.

Bruce undertook his secondary schooling at Brisbane Boys College as a boarder. He then went on to undertake a Science Degree majoring in Geology while residing at Emmanuel College at the University of Queensland.

After graduating, Bruce joined the then Irrigation and Water Supply Commission Groundwater Branch in January 1966 as a hydrologist. After working for only six weeks in Head Office, he was transferred to the newly formed Central Queensland Regional Office in Rockhampton where he spent the next seven years providing groundwater advice to landholders and was involved in the Fitzroy Basin Land Development Scheme providing groundwater supplies for the newly developed settlers blocks.

It was while in Rockhampton that Bruce met Jennifer and they were married in September 1970. They were the proud parents of three children and enthusiastic grandparents to four grandchildren.

In 1973 Bruce transferred back to Head Office in Brisbane, and was involved in several major groundwater investigations in the Isaac River, Proserpine, Atherton Tablelands, the Iwasaki Resort Development at Yeppoon and the Mount Larcom Limestone mine development.

For a period in the early 1990s he became involved in the application of satellite and airborne remote sensing techniques to investigations of both surface water and groundwater resources which included comprehensive land cover mapping used in groundwater modelling and in flood mapping studies throughout Queensland. A highlight of this period was the opportunity to fly in a NASA C-130 aircraft carrying a Landsat 5 prototype scanner on a mission around Australia assessing its performance in various mining and topographical landscapes, over the Lower Burdekin region to assist in interpretation of the underlying complex geology in the area.

Following this, he joined a multidisciplinary team set up to investigate the extent and impact of dryland salinity throughout the state. He was Project Leader for the Hydrogeological Investigations Project under the National Action Plan for Salinity Water Quality. Under this program, some 420 new monitoring bores were constructed throughout the State mainly to monitor water levels and water quality trends following extensive land clearing.

For the following ten years he managed the Department's drilling rig operations and was Project Leader for the State Government funded investigations program into the potential for Sedimentary and Fractured Rock Aquifers to provide sustainable groundwater supplies to local authorities, urban use and industry in times of prolonged drought. He was also involved in major investigations into the impact of large scale open cut mining developments on surrounding groundwater supplies.

Bruce retired from the Department of Science, Information Technology and Innovation in September 2015, four months short of fifty years service. Even upon retirement, Bruce's passion for hydrology didn't cease as he continued to participate in a number of committees and initiatives. Bruce was a member of the Water Resources Retirees Association and between 2021 and 2022, he came up with the idea to commemorate 100 years since the passage of the Irrigation Act of 1922 and the formation of the Irrigation and Water Supply Commission. Bruce was able to rally the water resources community together to celebrate at six locations throughout the state.

During the later years of his working life, Bruce and Jennifer took the opportunity to use up his extensive accumulated long service leave and travelled the world both by organised bus touring and by cruise ships. They embarked on a 104 day round the world cruise in 2009 and also undertook several cruises to South East Asia including Singapore, Thailand, Vietnam, China and Japan and also Alaska and Canada. COVID put an end to cruising, so recent holidays were local and the passion for long distance train travel within Australia commenced.

Bruce served as a member of the St Pauls Presbyterian Church Management Committee for more than 30 years and it was during this time that he was appointed a Presbyterian Church representative on Emmanuel College Council in May 1989. On Council, he served in various positions including Chair of the Building and Grounds Committee, Deputy Chair of Council, Recorder and Deputy Recorder. In 2009 he was elected as an Honorary Fellow of the College. He retired from Council early in 2021 when the Presbyterian Church ceased its role in governance of the College, having served for 32 years.

Bruce had a passion for gardening and moving to Samford allowed him to finally plant his orchard which he had dreamed of doing. Many hours were spent tending to his garden and eating the many fruits and vegetables grown. Bruce could often be found sitting on his John Deere mower enjoying his acreage.

With the passing of his brothers, responsibility of the family farm near Crows Nest, passed to Bruce. He was proud of his childhood home and would spend countless hours planning improvements to both the property and the house. In the past few years, he renovated the bathroom, ran underground power to the property, commenced a program of weed and pest control, repaired the roof and painted the house.

This tribute was provided by Bruce's family. An additional tribute can be found on page 7.



## FROM OUR IWS / WR COMMUNITY AROUND THE STATE

Bruce, less than a year ago, you brought so much enjoyment to our community by tracking down as many as possible to come along to state-wide 'Get-Togethers' that you and a few offsidiers were organising on behalf of the WRRRA, to commemorate the 100<sup>th</sup> anniversary of the passage of the *Irrigation Act of 1922* – and the birth of our community. A wonderful idea on your part but something requiring considerable effort and commitment.

For us as a close-knit community, these 'Get-Togethers' were indeed special as they enabled many to re-connect with others they may not have seen for years – and also to catch up with you.

Little were we to know that last year would be the last time that many of us would be catching up with you – and that this year, our community would be shaken by the news of your passing – something that no-one saw coming.

So we would like you to rest in peace knowing that your recent selfless efforts in bringing our community together will always have a special place in our hearts – it is a fitting legacy for which you will be long remembered.

**THANK YOU**



## WRRRA Visit to Ipswich Little Theatre

20 July 2023

**Peter Gilbey**

The invitation to visit Ipswich Little Theatre for lunch and an interpretative tour came about through the link provided by our own editor Ian Pullar and his wife Helen who are long term members of the Ipswich Little Theatre Society (ILT).

The address centred on three main themes – the History of the Theatre, the History of the venue, (which was once an incinerator for the disposal of garbage), and the role the Theatre plays in the Ipswich community.

As can be seen from the photograph, the building in which the theatre is housed is a magnificent building (which is the only Walter Burley Griffin designed building in Queensland) and was extensively modified internally by the society to meet the needs of the Theatre Group, which encompasses not only the plays it presents on a regular basis, but also associated activities, including meals and tours of the facility.



The work required to rededicate the building was undertaken by ILT without significant external funding support and was accomplished after the decision was made not to destroy the incinerator during the 1960s when its use as an incinerator was no longer required.

Without the intervention of ILT this building would have almost certainly been lost – it was indeed fortuitous that ILT needed a new venue at that time, as their old venue was no longer available.

ILT has added to the original structure through the development of adjoining facilities which are utilised by a number of sub-groups as well as the building of a cov-

ered courtyard with attendant facilities for the provision of meals and other services to patrons.

Members of WRRRA unable to come on the tour are encouraged to visit. You will be amazed at what has been achieved by Ian, Helen and the other volunteer members of ILT. Those of us who went on this occasion certainly enjoyed ourselves.



The WRRRA group enjoying lunch.



Ian and Helen performing *Grounds for Divorce* written by Ian.

## A Journey Down the River

**Terry Malone**

(Ex Senior Engineer Bureau of Meteorology, Sunwater and Seqwater)

Starting in 1972, I spent my formative years as a cadet and then a junior engineer with the Metropolitan, Water, Sewerage and Drainage Board (later Sydney Water). During this time, I worked in fields of water supply, sewerage, geotechnical investigations, construction and finally in dam design hydrology for Woronora Dam. It was this last activity that got me interested in floods.

After a couple of years with consultants doing small drainage designs, I landed a job in the Hydrology Section of the Bureau of Meteorology in Sydney at the beginning of 1986. The Hydrology Section was responsible for flood forecasting and flood warning for the whole of NSW.

August 1986 saw my first experience of operations for major floods in the Georges and Nepean-Hawkesbury and, boy, was it an awakening! The flood monitoring network consisted mainly of manual rainfall and river height observers who would ring though their observations every three hours. In the Flood Warning Centre (FWC) these were manually recorded on log sheets. Flood forecasting methods were very limited, to unit hydrographs and peak stage relationship. The recorded rainfall observations were input into a HP9835 computer on another floor on the BoM office. Unit hydrographs were then run on this computer, compared with recorded water level observations and a prediction made. Run back up to the FWC, compare the results with peak stage relationships and make a decision about the forecast heights at key gauges. Then began the hard part; compiling the flood warning!

Each warning was hand written with a carbon copy. When it was in its final form it was passed to the communicators who would type it up on a telex machine and distribute it to a predetermined address list.

I remember both of those floods quite well. The Georges was the first time in 30 years since 1956 that there was a big flood and a lot of people and property were impacted. Part way through the event, I remember being quite pleased that the model seemed to match the recorded water level at Liverpool reasonably well. That is until an engineer from the then Public Works Department rang into the FWC to tell us that the gauge was under reading and that our predictions were too low. Lesson one; you can't necessarily rely on recordings from automatic stations.

I don't recall too much about the Nepean-Hawkesbury flood except it was the largest for about a decade. At that stage the floodplain between Penrith and Windsor was largely rural residential.

These two floods ignited a passion for flood hydrology which remains to this day and I resolved that I wanted to be party to improving flood forecasting in Australia.

At the beginning of 1987, I was lucky enough to attend the short course in hydrology at UNSW, run by such luminaries as David Pilgrim, Tom Chapman and Ian Corderoy. The course was attended by about 20 students with half from Australia and the other half from overseas. Not all were tertiary educated. I recall two hydrographers from Nepal. They were amazed when the Australians amongst us pulled out calculators to assist in our computations. At the same time, I recall being in awe of these guys who had to walk four days into the mountains, carrying all their gear on their backs, to service remote river gauges. In those short three months we all worked very hard but we also found time to party as most of the students lodged on campus or nearby.

Following a 1986 review, BOM was funded to expand their flood forecasting presence from Queensland, NSW and Victoria into every other state and territory (except ACT who were still serviced by NSW). I opted to move to Tasmania to establish the first Hydrology Section in the BOM's office in June 1988.

In April 1988, before I left Sydney, flooding happened again in the Georges and Nepean-Hawkesbury. Nothing much had changed in terms of flood monitoring networks since 1986 but by then, AROS (Automated Regional Operations System) had been installed in NSW. This system meant that models could be run in the FWC and the warnings typed on the system were distributed automatically. No more going up and down stairs to run models. This was a bigger flood in the Georges and Nepean-Hawkesbury than 1986 and the rainfall also extended into the Shoalhaven and Molonglo Rivers. In those days, the operational team consisted of one flood engineer and one or two tech officers. We only operated two shifts per day but we were run off our feet.

Moving from Sydney to Hobart, I soon realised that I had to divide by 10 what I had experienced in NSW. The section only consisted of myself and one technical officer; I was responsible for policy and service development and the tech officer for maintaining the flood warning network. By this time, telemeters which could be interrogated by computer were being introduced but we still relied on the same methods for flood forecasting. We also had to cover two shifts per day in big floods of which there weren't too many.

Much of the flood warning service was provided to farmers who grazed stock on the river flats and had pumps adjacent to the lower parts of rivers and streams. In my three and a half years, Tasmania had little inundation of urban areas.

*Continued next page*



## A Journey Down the River (continued)

I do recall one flood in the Derwent River with some mirth. A flood warning had been issued on a Thursday for areas in the lower Derwent. On Friday afternoon I received a call from an irate farmer who asked how high the river at Macquarie Plains, (about 40km from Hobart), would reach. My reply of about 5 metres was met with derision with words to the effect that “you shiny bums down in Hobart don’t know; you can’t see the 6-metre mark.” I went through my calcs again and was convinced that the 5 metres was right so I hopped in the car and drove up to Macquarie Plains. Turns out we were both right; the flood water was just over the 5-metre mark and the 6-metre numeral had fallen off. Because he could only see the 7-metre marker, he assumed that the water level was above 6 metres. Lesson one updated; you can’t necessarily rely on manual observation at river height stations either.

Life took an interesting twist in November 1988. The Australian Counter Disaster College held a residential workshop on floods of the previous few years in the eastern states. Practitioners and academics from around the country gathered to discuss best practice for flood warning. David Ingle (Dingle) Smith, an academic from ANU, displayed one of my early Georges River warnings on the overhead projector and then proceeded to tear strips off it. He was right (what did a forecast peak height and the term major flooding mean to members of the public) but we became good friends afterwards.



Australian Counter Disaster College

### Wivenhoe Tours

Brisbane Open House conducted tours of Wivenhoe Dam on 15 and 16 July. These were so popular that they sold out as soon as they were advertised.

Attendees reported that the tours were exceptionally good, and included the opportunity to walk through the gallery. It is to be hoped that there will be repeats of the event.

My only other vivid memory of Tasmania was trying to service a rain gauge at Story’s Creek in the upper reaches of the South Esk River in mid-winter. It was freezing and trying to undo the grub screws with bare hands was a tortuous experience.

In July 1991, BoM commissioned me to write a report on the floods of April 1990 in Queensland (Charleville), NSW (Nyngan) and Victoria (Gippsland). By this stage I had grown a little restless in Tasmania, particularly having seen what my mainland colleagues had to deal with the previous year. I had also applied for the head of hydrology in NSW as my old boss had retired. Flying into Sydney, I was taken aback by the winter smog that sometimes settles in the Sydney basin and the choked Sydney roads. Fortunately, the interview panel could not convene so I headed north to Brisbane to continue my report.

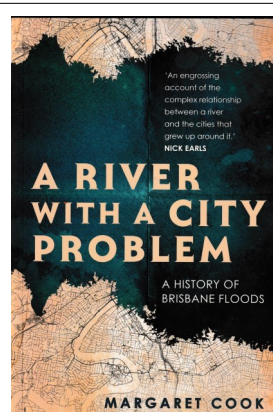
The work that the Hydrology Section had done in Queensland really impressed me and had laid solid foundations for improving the flood forecasting system. After a few days I think I found my spiritual home. It was then that I had to return to Hobart to convince my wife and kids that Brisbane was the place for us (well, me at least).

We left Hobart on 17 December 1991 with snow still covering Mt Wellington. We had a wonderful time in the short three and half years in Hobart and still have good friends amongst the folk there. We stopped off for a family Christmas in Sydney and arrived to a hot steamy Brisbane in early January 1992. My wife immediately wanted to return to her mother and a more temperate climate!

*...to be continued.*

*I’m just so grateful to have received this article from Terry, who was one of the operators (along with Rob Ayre, John Ruffini and John Tibaldi) of Wivenhoe Dam during the 2012 flood event. They were the authors and presenters of the Monroe Oration earlier this year which describes that event. We can look forward to a continuation of Terry’s story -Ed.*

A second edition of Margaret Cook’s *A River with a City Problem* has been published by University of Queensland Press. The book has been updated to include extensive material on the 2022 South East Queensland floods.



## How Times Change

David Dempster

I commenced my career as a technical officer in the IWSC dealing with underground water. I later graduated and took up a position as hydrologist with the department at Bundaberg. Occasionally I am 'leant upon' to use my groundwater knowledge as a consultant.

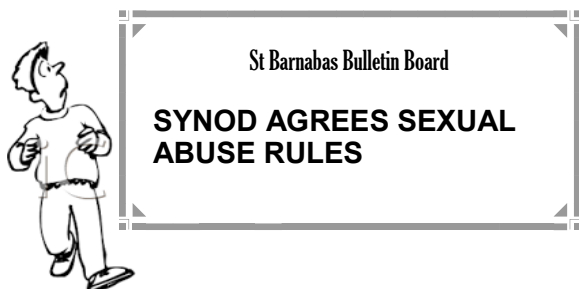
Of recent times I was assisting a large local company investigate and prove up groundwater supplies in a previously unexplored area. Test holes were drilled, production bores constructed and 24-hour pump tests carried out.

The company employed a well-known engineering consultancy firm to design layouts etc. One of their hydrologists queried the pump test results, to the point of wanting to re-test the irrigation bores. This was an affront to my professional integrity. I pointed out that the testing had been carried out to AS 2368-1990 standard; re-testing was not required.

The hydrologist (a person in their 20s) then queried the method of determining the rate of flow in the test, as there was "no battery" in the measuring device.

I took delight in explaining the intricacies of the orifice tube – a device which was industry standard when I joined the IWSC in the 1960s.

*Thank you, David, for this lovely piece. I'm so glad you had a win. — Ed.*



### Answers to Terry's Trivia on page 13

1. (iv) Vietnam 2. (i) gaslighting 3. (iii) 27 days 4. (vii) Artemis 5. (i) South Africa 6. (iv) USA 7. (ii) Netherlands 8. (iv) 16% 9. (iii) China 10. (iii) Argentina 11. (i) Pirelli 12. (i) throbber 13. (ii) Linseed

$\sqrt{-1}$   $2^3$   $\Sigma$   $\pi$

... and it was delicious!

(just in case you missed it, i 8 sum pi )

## Surveying: by ChatGPT

Tony Clarey

Over the weekend I was having lunch with my son and his children and mentioned that I was now helping out with the Water Resources Old Boys Committee and that I was the only surveyor on that committee. My granddaughter then asked "What is a surveyor?". (This followed some discussion on AI and ChatGPT). I told her that surveyors measured distances and angles to find out where things are and where other things should be.

My son then turned to his phone and asked ChatGPT, "Explain surveying to a six year old." He then paused and added, "in Shakespearean verse". A couple of seconds later this was the response. I was amazed and terrified.

*Hark, young one, I shall unravel a tale,  
Of surveying, a noble quest, without fail.  
Picture, if you will, a land, vast and wide,  
With hills, and meadows, where rivers abide.*

*Surveying, dear child, is a wondrous art,  
To measure land, each and every part.  
With tools in hand, surveyors do embark,  
To map the earth, and make their mark.*

*They use a compass, like a guiding star,  
To find direction, no matter how far.  
With chains and ropes, they measure the land,  
Lengths and angles, they understand.*

*They count their steps, and pace the ground,  
Marking boundaries, that must be found.  
A theodolite, a marvelous device,  
Helps them measure angles precise.*

*With pencils and papers, they draw their maps,  
Showing mountains, valleys, rivers, perhaps.  
Their work reveals the lay of the land,  
To help builders, and all understand.*

*Surveyors, young one, are like bards of old,  
Telling stories in lines, both brave and bold.  
They bring order to nature's wild expanse,  
With measurements and numbers, they dance.*

*So, dear child, surveying is a skill,  
To measure and map, with a quill.  
And with their knowledge, they unfold,  
The secrets of the land, untold.*

*The wonderful anecdotes on this page are indicative of the lives our members must lead. If only they would share their experiences more widely, the world would be an even better place. — Ed.*



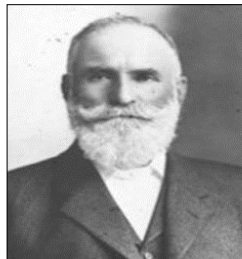
## A Water Pioneer – Stuart Murray

*My daughter Margaret Cook is currently working with a team from Griffith University on projects relating to the Murray-Darling. In the course of her work she has been aware of the contribution of Stuart Murray who, along with Alfred Deakin, is credited with being the pioneer of the Australian water industry. Readers may recall that when the Queensland Government was setting up the Irrigation and Water Supply Commission after World War II, they imported Victorian expertise through Fred Haigh etc. She thought to share information with me because of my family connection. My Great Grandfather, William Pullar (engineer), migrated from Scotland with Stuart Murray and married his sister Jessie. My father was given the name Stuart which became my middle name and my brother was named David Murray. My son is Stuart James Murray Pullar. I thought readers might be interested in the Stuart Murray story - Ed.*

Stuart Murray (1837-1919) was born in Dundee, Scotland. Educated at Dundee High School, he studied engineering for two years at Madras College, St Andrews. Attracted by gold, he went to Victoria in 1855 and continued his studies privately, qualifying with distinction as a land and mining surveyor, architect and civil engineer. After settling in Kyneton he practised these professions. For six years he was government mining surveyor in Daylesford, and in the early 1880s shared in a contract to construct the St Arnaud-Donald railway but lost financially. He also surveyed mining leases, settlements in northern Victoria under the Land Acts and for the Water Conservancy Board. He thus acquired valuable knowledge of the colony and a dedication to water conservation, sparked off by the sight of a settler's child crying for water in a dry summer.

The 1881 Water Conservancy Act established rural waterworks trusts for stock and domestic purposes. The largest project was the United Echuca and Waranga Waterworks Trust in 1882 with Murray as its engineer.

In 1884 Alfred Deakin appointed Murray secretary of the royal commission on water supply. It led to the epoch-making Irrigation Act of 1886 which restricted riparian rights of land-owners by vesting in the Crown the sole right to the use and control of practically all surface waters, and provided for certain national works and for loans to trusts for promoting irrigation undertakings and for reorganization of the Water Supply Department, then attached to the Department of Mines. Murray recommended as essential to all planning of water resources a comprehensive system of river gaugings. Appointed engineer-in-chief of the new department in 1886, he introduced the system and put Victoria years ahead of European countries in this field and was later made *Chevalier du Mérite agricole* by the French government.



Under the new legislation, ninety trusts were soon operating extensively but they ran into difficulties through the farmers' reluctance to pay for water. By 1899 a Relief Act had written off three-quarters of the trusts' liabilities, and in 1904 under the direction of George Swinburne, minister of water supply, new legislation was drafted and embodied in the 1905 Water Act. Control of irrigation development by local trusts was removed except for Mildura and centralized under a new instrumentality, the State Rivers and Water Supply Commission, set up under the Act which also, as urged by Murray, vested in the Crown the beds and banks of all streams despite opposition from landed interests. Although over retiring age, he was appointed chairman of the new commission in 1906-08.

Between 1886 and 1908 Murray had planned and supervised such major water conservancy works as the Goulburn-Waranga National Channel (Stuart Murray Canal), the upper Coliban reservoir supplying Bendigo, Laanecoorie Weir on the Loddon, the Little Coliban reservoir supplying Kyneton, the storage basin on the Kow swamp, intake works from the Murray River and an outlet aqueduct known as the Macorna Channel; he also had charge of Geelong's water supply and was supervising engineer of the works subject to government control. His greatest work was the Goulburn Weir, of which he was co-designer, with the Waranga storage and its channels.

In 1902 as Victoria's delegate to the interstate royal commission on the River Murray he was mainly responsible for the monumental report outlining development of irrigation and navigation on the river system, thus providing a basis for the interstate agreement reached in 1915. In 1909 he advised the South Australian government on river improvement works and was consulted by the New South Wales government on Sydney's water supply and Burrinjuck reservoir.

Murray was said to have advised or been active in all his professions of mining surveying, land surveying, municipal and water supply engineering. He was a member of all four boards, the founding 'father' of the Victorian Institute of Surveyors in 1874, a member of the University of Melbourne's faculty of engineering and of the Institution of Civil Engineers, London. After retirement he was busy with public affairs in Kyneton and translated French works on engineering and viticulture. In 1859 he had married Elspeth Stott from Aberdeen; they had ten children. A lifelong Congregationalist, he died at his home, Mornington, Kyneton, on 12 April 1919 and was buried privately, survived by three daughters and by three sons, two of whom were surveyors in the Water Supply Department.

From the Australian Dictionary of Biography.

# HEALTH *and beauty*

## Good Treatments

Good news for Peter Gilbey and his mates. A research team led by the University of South Australia has found golfers with osteoarthritis experience lower psychological distress and better general health than the general public.

The same was true of golfers without the chronic degenerative condition.

Researchers said the amount of walking required in golf kept participants active. From a mental health point of view, playing golf is recommended.

And research by Washington University in St Louis concluded that taking a sleeping pill before bed helps stave off Alzheimers by reducing the build-up of damaging proteins in the brain. A study found the amount of amyloid beta protein was 10 to 20 per cent lower in subjects who had been given high doses of an insomnia drug over two nights compared to those given a placebo. Levels of another Alzheimer's-linked protein, hyperphosphorylated tau, were 10 to 15 per cent lower.

## It All Depends on How You Look at It

On average women outlive men.



More women than men die of old age.



## Exercise those Brain Cells

Q. If Tom's age plus Dick's = 34  
and Tom's age plus Harry's = 42  
and Dick's age plus Harry's = 24  
How old are Tom, Dick and Harry?



Hieronymus Bosch  
1450-1516  
**Fall of the  
Damned into Hell**

*Stop pushing, will  
you! We'll all get  
there in the end.*

## Improving the Health System.

*A Sydney friend sent me this. – Ed.*

*My cousin's daughter, Cathy, took her father-in-law, Pete, to A & E after he had a fall.*

RECEPTION: (to Pete) Can you use the iPad to check in?

PETE: No I can't.

RECEPTION: (to Cathy) Well, you're here with him. Just pretend you're him and check him in.

CATHY: (to Reception) I could do that, but I'm talking to you now so can't you just check him in?

RECEPTION: NO, sorry. We're really meant to encourage people to use the new iPad system.

*So Cathy attempts to check him in but there is no option on the system for "old person who has had a fall." So back to reception to say there's no description for his injury/ailment.*

RECEPTION: Just select the most similar option you can find instead.

*So Cathy selects "slipped on ice" despite the fact that it is 28 degrees outside. The system then presents a series of tick a box options. He has a small cut for which there is no option, so she decides on "bleeding profusely" although he is not. And sure enough, within minutes Pete was triaged straight through as top priority given the seriousness of his injury as judged by the iPad algorithm.*

*Pete was checked over, patched up and sent home. He has made a full recovery.*

## Answer to last Issue's Teaser

Alan used Bill's ball and Colin's bat.  
Bill used Colin's ball and Doug's bat.  
Also, Colin used Doug's ball and Alan's bat  
And Doug used Alan's ball and Bill's bat.



## Auto-Correct

A Priest, a Rabbit and a Pastor walked into a bar. The bartender asked the rabbit what he going to drink. "I've no idea," said the Rabbit. "I'm only here because of auto-correct."

In the last edition, I commented on the perils of auto-correct. Here is a true story. When Shayne Neumann was first elected for the Federal Member for Blair, his maiden speech to Parliament complimented the work of Ipswich Little Theatre and named some of the key office bearers including Treasurer Jan (Janice) Paterson. But, thanks to the intrusiveness of auto-correct and predictive text, she is forever recorded in Hansard as January Paterson.

Recently I read in a book published in England, a reference to a Booker *Prise* and later to a *citisen*. An editor's note in the end pages led me to believe that a valiant attempt had been made to find and replace all the offending *izes* inserted by auto-correct.

## Choice

I recently read in an otherwise well written book ... *bangers and mash, fish and chips, chicken curry. I select-ed fish and chips as the lesser of three evils*. And I wondered two things: why would he have chosen the second best dish? And were the bangers the best or the worst of a bad lot?

## The Oxford Comma

Purists, of whom I am normally one, insist that in a list of a number of items, commas are used to separate them except there is no comma used before the and and the last item. For example, *I had a meal of entrée, soup, main course and dessert*.

However, the editors of Oxford University Press insist on using a comma before the penultimate item where it is needed for clarity. For example, compare *The girl idolised her parents, the King and Lady Gaga* with *The girl idolised her parents, the King, and Lady Gaga*. The editors of Oxford University Press would certainly be right to avoid any aspersions on the King's behaviour.

Similarly *meet Mary, a dancer and an acrobat* and you meet one person whereas in *meet Mary, a dancer, and an acrobat* you meet three.

A homophonic limerick

### Liszt and Learn

Once Anna, a young annalist,  
wrote a list of the works of Franz Liszt,  
but an old analyst,  
who's a Liszt specialist,  
says the Anna list's no special list.

## A Sign of the Times

In an office:

**After tea break, staff should empty the teapot and stand upside down on the draining board.**

## Terry's Trivia (from the Mid-year luncheon.)

Answers on page 10..

1. The 'Dong' is the currency of: (i) Laos; (ii) Cambodia; (iii) Thailand; (iv) Vietnam; (v) Bhutan.
2. In the US, manipulating someone into doubting their sanity is called: (i) gaslighting; (ii) fantasizing; (iii) scamming; (iv) grifting; (v) spitballing.
3. The Sun rotates every (i) 365 days; (ii) 24 hours; (iii) 27 days; (iv) 2 years; (v) 0.
4. The NASA program to go back to the moon is: (i) Zeus; (ii) Poseidon; (iii) Hera; (iv) Demeter; (v) Aphrodite; (vi) Athena; (vii) Artemis; (viii) Apollo; (ix) Ares.
5. Kruger National Park is in: (i) South Africa; (ii) Rwanda; (iii) Congo; (iv) Kenya.
6. Einstein died in 1955 in: (i) France; (ii) Switzerland; (iii) England; (iv) the US.
7. 'Old Zeeland' was: (i) Denmark; (ii) Netherlands; (iii) Sweden; (iv) Scotland.
8. What percentage of body weight is skin: (i) 2; (ii) 4; (iii) 8 (iv) 16; (v) 32.
9. The top of Mt Everest is on the border between Nepal and (i) India; (ii) Tibet; (iii) China; (iv) Bhutan; (v) Mongolia.
10. The Iguazu Falls is on the border between Brazil and (i) Chile; (ii) Bolivia; (iii) Argentina; (iv) Paraguay; (v) Uruguay.
11. The tyres for all Formula 1 cars are supplied by (i) Pirelli; (ii) Michelin; (iii) Goodyear; (iv) Dunlop; (v) Bridgestone; (vi) Hankook; (vii) Firestone.
12. The rotating graphic that shows a computer program is still loading is called a: (i) Throbber; (ii) Spinner; (iii) Fan; (iv) Rotator; (v) Propellor.
13. Oil paints have an oil base of (i) Peanut (ii) Linseed; (iii) Grapeseed; (iv) Olive.



"Does you wife ever just answer the question?"

# Book Club

*Lessons in Chemistry* by Bonnie Garmus.

Elizabeth Zott is an American research chemist in the 1950s who is paid less than her male colleagues and whose superiors have no qualms about claiming her findings as theirs. Through circumstances, she finds herself employed as the hostess of a cooking show, but she refuses to conform to the housewifely image of a house dress and apron in an artificially beautiful kitchen. Instead she tells it as it is: "Take a pinch of sodium chloride." In spite of the Producer's worst fears of her failure, the show becomes a great hit with women (and incidentally with many men).

But she is not content to be a TV cook when her ambition is to solve the technical problems she wrestled with and to conquer her unfair treatment.

This is wonderfully entertaining book, highly amusing but warm-hearted with well developed three-dimensional characters. Her daughter, Mad, is a one-off special. This very cleverly plotted book leapt to the top of the best-seller list overnight. I'm not surprised. I thoroughly enjoyed it.

**Ian Pullar**



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I sometimes find I am looking for a quick, engaging read- something that uplifts you with its charm or poignancy. I have stumbled on two such small books recently – Claire Keegan's *Small Things like These* and Jessica Au's *Cold Enough for Snow*.

Claire Keegan's book is set in Ireland in the weeks before Xmas. It centres around a coal and timber merchant, Bill Furlong, who struggles to make ends meet during Ireland's economic hardships in the mid 1980s. He becomes the protagonist who takes on the authority of the church in a small compliant community and in doing so, reveals what a Christian heart is.

Claire Keegan also wrote *Foster*, the novel upon which the movie, *The Quiet Girl*, was based. An evocative moving tale of a young girl sent to relations during a difficult passage in her parents' life. A deep probe, but oh so subtly presented, as to what are the qualities of a good parent.

Jessica Au's slim novel is set in Japan where a mother and daughter are holidaying. It is an intriguing experience to read this book where so little happens but so much is raised at a deeper level for contemplation. The daughter, while visiting the art galleries and tea houses and strolling along the canals and through the forests (all beautifully described with Au's imagery), observes her mother closely. Her mother's response to this environment and the journey itself opens a window for her daughter to understand her mother and appreciate how her life has moulded her to be the woman she is. In the closing sentence, the daughter tenderly bends down to retie her mother's shoelace. This gesture appropriately sums up the nature of the book where deeper sentiments are shown in small daily acts. This book is somewhat haunting and requires the reader to delve below the surface to grasp the larger issues that the author is addressing.

Both books are quick reads. One has a charming tale and the other, the power to unsettle and generate deeper thought. Their common theme is to raise what comprises compassion and kindness at different stages within our lives.

**Judy Ferrier**

