

Website <https://www.epsom.u3a.nz>

**MEETING PLACE**

**Royal Oak Bowls, 146 Selwyn St, Onehunga**

10am on the 2<sup>ND</sup> Thursday of most months

# NEWSLETTER

June 2024

Next meeting

10-12noon

Thursday, 13 June 2024

I would like to talk a little about travel in this newsletter. This is due to the fact that many of our members seem to be travelling overseas. The desire to see more of New Zealand as we did in the last two years seems to have changed. We now want more of the world while we are able to.

Why Travel? Like climbing mountains - because they are there. There is a saying that travel broadens the mind. Does this apply to you? As a result of travelling, what kind of world view do you have? Has it changed due to travelling? How do you view/relate/communicate with other people on planet Earth? How do you view the world in its "hot" mood? 2023 was the hottest year for over two millennia if we believe science and ring growth on trees.

Just lately I've been reading about the polar explorer Ernest Shackleton. When he was asked why he went exploring, he answered "*I believe it is in our nature to explore, to reach out to the unknown.*" This is a great answer and is what U3A nearly always does to gain further knowledge for human betterment. But there is much more about travel.

There are many journeys where travel is very different. Like some of our members saying farewell to spouses, partners, family and friends. And always we need to support them in every way we can. (What I do speaks so loudly I cannot hear what you say.)

There is the travel journey of inward spirituality; i.e. what is life all about? Why me? What can I do?

There is the physical travel journey to explore the unknown mentally and spiritually and on these journeys only leave goodwill and footprints behind.

We also travel to broaden our horizons, to grow, develop and to learn. This is what we do in U3A to increase our understanding of people and our environment. In other words, to change as a result of our learning and our surroundings. But how much do we do in reality? A little, some or a lot?

Travel and learning without action can easily be a pointless exercise into self. So why do we travel? To broaden our minds. The answer must be more than the common reply. "*Well I guess I haven't traveled that much to be that broadminded.*"

May we learn from our travels and our understanding to be warm, caring and responsive human beings to everything around us, both human and physical.

*Duncan*

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**Interest Group Assistant**

Bill Hagan - 021 611 247

**Guest Speaker Organiser:**

Laraine Holdom - 624 4454

**Legal Advisor**

Mike Matson - 022-630 7968

**Newsletter**

Jeanette Grant - 638 8566

**Greeters:**

Don Buchanan - 620 7572

Ngaire Mune - 624 0226

## INTEREST GROUP CONVENERS

**Appreciating Performing Arts**

Shirin Caldwell - 630 1662

**Architecture**

Brian Murray - 021 026 68396

**Art Appreciation**

Kaye Buchanan - 620 7572

**Big History**

Emily Flynn - 021 0902 5094  
Christine Keller Smith - 021 140 9021

**Book Chat**

Helen Holdem - 021 260 3510

**Current Affairs**

Shirley McConville - 622 3542

**Fabric & Fibre Crafts**

Charmaine Strang - 027-4177 556

**Famous & Infamous Group**

Gary Preston - 021 297 3087

**Foodies**

Graham Gunn - 027 445 0929.

**Garden Appreciation**

Betty Townley - 626 6673

**Introduction to Family History**

Bryn Smith - 027 280 5235

**Latin**

Phyllis Downes - 630 5867

**Lunch Club**

Shirley McConville - 622 3542.

**Medical Matters**

Diana Hart - 021 284 4402

**Music Appreciation**

Carleen Edwards - 624 6298

**19<sup>th</sup> Century History**

Helen Holdem - 021 260 3510

**NZ History**

Kaye Buchanan - 620 7572

**Philosophy**

Jocelyn Hewin - 634-1552

**Recreational Drawing**

Grant Coupland - 638 7496

**Scrabble**

Joslyn Squire - 021 168 0680

**Te Reo Maori**

Jenny Whatman - 027 353 2487

**Te Reo - New Beginners**

Bill Hagan - 021 611 247

**Travel**

Diana Hart - 021 284 4402

**Walkers & Talkers Group**

Don Buchanan ph:620 7572.

<p><b>SPEAKER REPORT By Joanne Hand</b></p>	<p><b>“Modern Slavery: How it Impacts NZ and the work of Hagar NZ”</b></p> <p>This presentation covered what Modern Slavery is and how it happens; how it impacts NZ and the work of Hagar to prevent these human rights abuses. Joanne works for Hagar New Zealand, a global Christian charity engaged in intensive trauma recovery and empowerment services for women and children survivors of slavery, trafficking and abuse. Hagar began in Cambodia in 1994, and it aims to stop and support some of the 50 million people enslaved globally, and referrals to Hagar and related support services can only cover about 10% of this number. Hagar also works with the Tear Fund and the Lift organisation, who are lawyers who help prosecute traffickers.</p> <p>Hagar’s approach is to provide support for the ‘whole journey’, reaching those who need long term trauma informed care, including education and employment opportunities. They have regional support offices in Australia, Hong Kong and New Zealand. They also engage in prevention activities, and help build the capacity of governments and social service structures in the nations they work in. Joanne shared a ‘survivor story’ of trafficking issues for a Vietnamese woman who was a home caregiver and ended up in China after being abducted and drugged. She eventually escaped back to Viet Nam with nothing, and through Hagar’s support went back home, went back to school and developed an interest in raising chickens and other animals, and she now raises her own goats.</p> <p>New Zealand now has a downgraded Tier 2 (was Tier 1) international rating regarding global standards in areas such as our employment standards for migrant groups as well as importing products from factories and farms dealing in slave labour overseas. Joanne sees the main issue now for NZ, drawing on research from the University of Auckland (2016), is that there is much to do in coordinating different services through the government appointed coordinating agency (MBIE), as well as working with community agencies (Salvation Army, Tear Fund, CAB to name a few). The challenge is about reaching out to develop structural and systemic change, with a view to engage more fully with Hagar’s trauma informed model.</p> <p><i>Bill Hagan</i></p>
<p><b>SUBSCRIPTIONS INFORMATION</b></p>	<p>The 2024 Epsom U3A subscription is \$50 per person.</p> <p>This should be paid into our <b>ASB bank account –</b>  <b>12 – 3067 – 0204618 – 00</b></p> <p>Please enter <b>subs</b> in the “code” section and your <b>name</b> in the “reference” section in order for us to have a record of your payment.</p>
<p><b>MAIN SPEAKER</b> Laurence Melton, Emeritus Professor, Faculty of Science, University of Auckland.</p>	<p>His subject will be ‘Genetic Engineering: CRISPR is improving our world’</p> <p>This is one of the most important scientific breakthroughs of the 21st century so far. It has the potential of curing many serious diseases such as cystic fibrosis, Huntington’s disease, haemophilia. Cures for sickle cell disease and thalassaemia have already been developed. Further, it is being used to breed crops and animals to deal with climate change (e.g. cows that fart less, produce more milk and cope with rising temperatures).</p> <p>Laurence Melton was training as an electrician’s apprentice but thought it would be more exciting to change to chemistry. An MSc in Chemistry at the University of Auckland was followed by a PhD in carbohydrate chemistry at Simon Fraser University in Canada and a Postdoc at Marburg, West Germany on human glycolipids.</p> <p>Until recently he was an Editor for <i>Food Chemistry</i>, the world’s leading food research journal.</p>
<p><b>INTEREST GROUPS</b></p>	<p>The new beginners Te Reo Māori group will start on June 10th and run for 10 sessions with tutor, Susan Sotheran. After this, we are hoping the members may be able to join the other group. Call Bill Hagan (021 611 247) for further details if you wish to join the new short course.</p>
<p><b>2024 MEETING DATES Thursdays, 10am</b></p>	<p>13 June    11 July    8 August    12 September    10 October    14 November AGM</p> <p><b>NB Always wear your name badge</b> and be seated ready at 10am</p>

## A NEW WAY OF GOLD 'MINING'.

A new method for recovering high-purity gold from discarded electronics is paying back US\$50 for every dollar spent, according to researchers – who found the key gold-filtering substance in cheesemaking, of all places. This food industry by-product is whey, the watery portion of milk that separates from the curds when making cheese. Here, the researchers turned this dairy waste into a matrix of protein amyloid fibrils they used as an adsorbent to selectively remove gold from e-waste.

Under acidic conditions and high temperatures, the whey proteins were denatured – the destruction of the protein's structure into a looser, more random one – causing them to aggregate into nanofibrils in a gel. The gel was dried and formed into a sponge.

The researchers extracted the metal parts from 20 old computer motherboards and dissolved them in an acid bath to ionize the metals or separate them into positive and negative ions. When the protein fibril sponge was placed in the metal ion solution, the gold ions stuck to it. While other metals – copper and iron, for example – were also absorbed by the sponge, gold was absorbed far more efficiently.

After absorbing the gold ions, the protein fibril sponge was subjected to heat, reducing the ions to flakes which eventually melted down into a gold nugget with a mass of around 500 mg. Analysis revealed that the nugget was made predominantly of gold (90.8 wt%), with copper and nickel contributing 10.9 wt% and 0.018 wt%, respectively. The findings demonstrate the high purity of the nugget, corresponding to 21 or 22 karats.

In their paper, the researchers demonstrated their method's commercial viability. Including both source material procurement costs and the energy costs for the entire process, the total cost of recovering 1 g of gold from e-waste was 50 times lower than the value of the gold recovered.

And the method is better from an environmental standpoint. Using conventional activated carbon to recover 1 g of gold from e-waste would produce around 116 g of carbon dioxide, whereas the protein fibril sponge's carbon footprint is lower, resulting in approximately 87 g of the greenhouse gas. The main reason for the higher environmental impact of using activated carbon is its higher energy consumption during production, predominantly due to non-renewable fuel sources, coupled with a lower adsorption capacity than the sponge.

Previous attempts to extract gold have all had their drawbacks, such as scalability.

## MIXING SAIL AND STEAM AGAIN?

An age of greener, more efficient shipping may be in the offing as a specially modified 43,000-tonne bulk freighter completes a six-month sea trial using a combination of diesel engines and a set of high-tech automatic sails to catch the wind.

Mixing sail and power isn't a new thing. In fact, it goes back to the very first steamships when shipmasters weren't particularly keen to rely on a cranky, half-experimental portable steam engine to cross the ocean. Even today, all but the smallest sailing boats have some sort of auxiliary power for manoeuvring in close quarters or making passages when the wind isn't blowing. As engines improved, ships became the behemoths we know today, and shipping schedules became as tight as my budget, sails gradually disappeared from commercial ocean traffic, but the wind propulsion never disappeared entirely. Sails may never come back as the primary means of propelling a ship, but the promise of a way of supplementing power with wind as a way to cut fuel consumption and reduce toxic emissions has always been attractive, so long as it doesn't rely on acres of canvas and huge crews of sailors hauling on sheers.

Operated by MC Shipping Kamsarmax and chartered by Cargill, Singapore-flagged Pyxis Ocean was retrofitted with two WindWings developed by BAR Technologies and carried out an extended six-month sea trial beginning in August 2023. During this time, it sailed across the Indian Ocean, Pacific Ocean, North and South Atlantic, and passed Cape Horn and the Cape of Good Hope.

The WindWings aren't the sort of canvas sails that you see on old pictures of the Cutty Sark. Instead, they are solid, foldable sails made of steel and glass fibers and stand 37.5-m (123-ft) tall. Their purpose isn't to replace the conventional diesel engines, but to provide supplemental propulsion as the ship sails into areas with favourable winds and currents.

They also don't require much of any minding. A simple red/green traffic system on the bridge tells the crew when to activate or inactivate the WindWings. Once online, they respond automatically to changes in the wind and trim themselves for optimum speed. This allows the diesels to be throttled back without the ship slowing down. This allowed the Pyxis Ocean to save the equivalent of three tonnes of fuel per day with a reduction in carbon dioxide emissions of 11.2 tonnes (the equivalent of removing 480 cars from the road for the extent of the voyage) and a general savings of 14%.

## ORIGINS OF THE ASSEMBLY LINE

At the start of the 18<sup>th</sup> century, Switzerland perfected a new approach to watch assembly – known as *établissage*. If traditional watchmaking relied on small collections of skilled artisans passing items between different workshops, and Britain's unofficial watch trade relied on cottage industry workers, *établissage* brought a larger number of workers under a single roof, known as a manufactory.

Here labour was organised as a production line with specific chainmakers, springmakers, wheel cutters and pinionmakers working alongside each other. Although the techniques and equipment were much the same as those used in traditional manufacturing methods, the *établissage* method dramatically streamlined production under the management of a single firm. It was highly efficient and as a result manufactures could create large numbers of watches. Where Britain's largest workshop could produce a few thousand watches a year, a Swiss manufactory could produce 40,000. This completely revolutionised the industry. As a result of *établissage*, European watch production rose dramatically over the course of the 18<sup>th</sup> century, reaching an estimated 400,000 a year in the last quarter – and possibly more...

These watches made no contribution towards the accuracy or reliability of the watch, nor were they technically or aesthetically innovative, but they were cheap – and that's what makes them interesting. For the first time since their invention, a way had been found to make watches affordable. By the end of the 18<sup>th</sup> century they were becoming an increasingly common accessory among even wider social groups.

From '*Hands of time; a watchmaker's history of time*' by Rebecca Struthers, 2023.

## CHILD'S TOY BECOMES A GENERATOR

Scientists have converted a children's "drinking bird" toy into a tool that generates usable amounts of electricity. The generator could one day be utilized to power a wide variety of small electronic devices, both indoors and outside.

First of all, just how does an unmodified drinking bird (aka dipping bird) work?

Well, its vacuum-sealed body consists of two glass bulbs linked by a glass tube, one bulb forming the head and the other one forming the tail. The head bulb incorporates a protruding beak and is covered in an absorbent fabric, whereas the tail bulb is bare. The body is mounted on a set of plastic legs that serve as a teeter-totter-like fulcrum, and it's filled with a volatile chemical called methylene chloride – some of that chemical is in a liquid state, and some of it's in a vaporous state.

A glass of water is placed in front of the toy, set at a height that allows the bird's beak to dip into the liquid. The user starts by pushing the head into the glass, allowing its fabric covering to draw water in via the beak. Once the head is released, the body swings back to an upright (vertical) orientation, thanks to the weight of the liquid methylene chloride in the tail.

As the water evaporates from the fabric, it produces a cooling effect inside the head bulb. This causes the methylene chloride vapor in the head to condense into a liquid, so it runs down into the tail. Because the pressure in the lower body is now higher than that in the head, the liquid methylene chloride is forced back up the tube and into the head.

As a result, the toy's centre of balance is shifted to the point that its body tilts forward, dipping its beak into the glass so that it can take up more water. At the same time, a clear passage is opened between the head and the lower body, equalizing the pressure. The liquid methylene chloride then runs back down, allowing the process to start again ... and to be repeated over and over.

Led by South China University of Technology's Prof. Hao Wu, a team of scientists recently took one of these toys and added two disc-shaped triboelectric nanogenerator modules to either side of it. These devices harness the triboelectric effect, in which certain materials become electrically-charged when they're rubbed against one another – it's what's responsible for the static charge that occurs when you're combing your hair.

The whole rig is thus known as the drinking-bird triboelectric hydrovoltaic generator, or DB-THG.

In lab tests conducted at a room temperature of 24 °C (75 °F) and a relative humidity of 20% ± 5%, it was able to operate for 50 hours using just 100 mL (3.4 oz) of water. It also achieved a voltage output of up to 100 volts, which was sufficient to power devices such as calculators, temperature sensors, and 20 linked LCD screens.

The scientists are now developing a purpose-built successor to the DB-THG, which should deliver much better performance than the existing modified toy. "*The drinking bird triboelectric hydrovoltaic generator offers a unique means to power small electronics in ambient conditions, utilizing water as a readily available fuel source,*" said Wu. "*I still feel surprised and excited when witnessing the actual results.*" A paper on the research was recently published in the journal *Device*.