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ACA NEW ZEALAND BRANCH AGM and TECHNICAL PRESENTATION

12 members and associates enjoyed a catch up over drinks and finger food at the New Plymouth Sportfishing and Underwater Club on March 30.

It was followed by the AGM and the technical presentation by Susanne Rawson (Heritage Preservation & Field Support (HPFS) Solutions - www.hpfsolutions.com) entitled 'Heritage Conservation of Metals in Aotearoa New Zealand: Case Studies'. The latter two were also attended online by several members.

At the AGM the new ACA NZ Branch President Ry

Collier, standing in for the outgoing President, Matt Vercoe, who was attending remotely, summarised the President's report, the finance report for the 2021 year, and announced the new Branch Committee and officers - listed in the ACA NZ Bulletin.

The ACA Executive Officer, Emmanuel (Manny) Pimentel gave an update on initiatives being taken by the ACA headquarters, including investing in staff and administrative systems, improvements to ACA training courses and training for lecturers to deliver AMPP (NACE/SSPC) courses. *Continued on page 2*



Speaker Susanne Rawson



ACA NZ Branch President Ry Collier

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ACA NEW ZEALAND BRANCH AGM and TECHNICAL PRESENTATION

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Susanne's talk ran through some of the interesting projects she has managed and been involved with throughout her career.

These include the H.L. Hunley, which in 1864 became the first submarine to sink an enemy ship. Raised from the sea floor in 2000 the Hunley was inspected and cleaned up for preservation, and is preserved in a water tank.

The USS Monitor was an early ironclad warship and one of the first with a rotating gun turret. In 2002 the

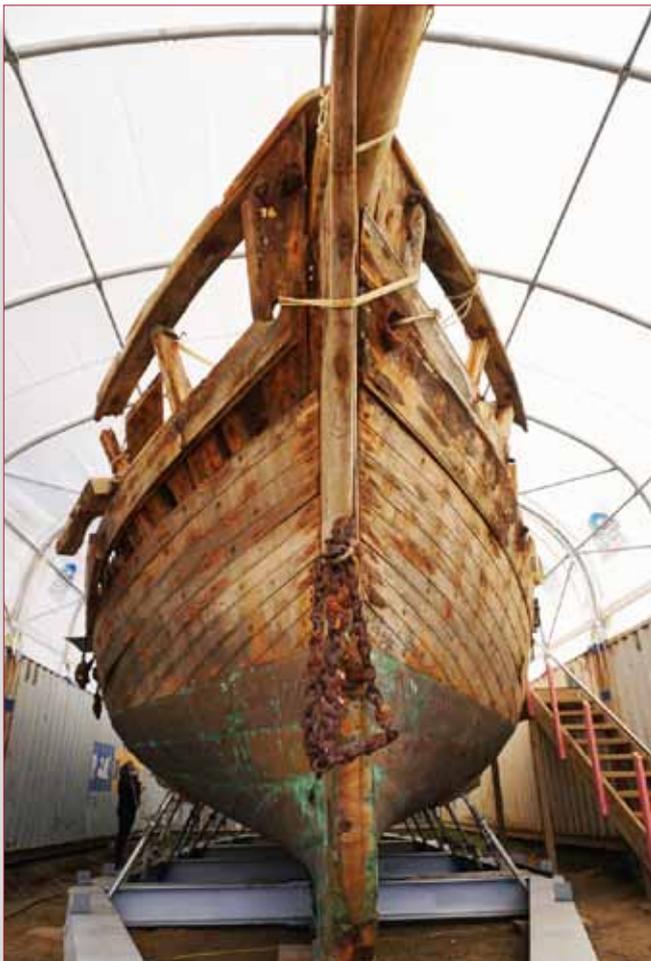
turret and other parts of the Monitor were raised from the seafloor. The Turret is preserved in a water tank with cathodic protection applied to it. The conservators had wanted to remove some of the eight layers of iron plates to clean out the salt and other corrodents that would have leached in, but did not due to concerns that the plates would spring back to their original shape.

The Daring wrecked near the south head of Kaipara Harbour in 1865 in a storm. After discovery in shifting sands in 2017 the ship was removed and preserved by a charitable trust and is now in Mangawhai, where it was originally built (see <https://www.facebook.com/Daring-Rescue-2223514351213180/>). Many challenges are being overcome to preserve what remains.

The Daring has a kauri hull, originally clad with Muntz metal (a copper/zinc alloy) to protect from ship-worm. The kauri hull has been found to be in relatively good condition, the pohutakawa structure is not as good. Conservators are concerned about iron oxide leaching into the wood and catalysing sulphur into sulphuric acid. The ship is being kept wet to preserve its wood structure while decisions are made on permanent preservation. Susanne asked for the audience's opinion on options for preserving the ship.

In Antarctica Susanne worked on Captain Scott's hut, and Shackleton's Cape Royds huts, which being near the shore are affected by chlorides, and preservation is made difficult due to the remote location.

In NZ Susanne has also worked on preservation of cannon, including one at Founders Heritage Park in Nelson that is thought to be the old time cannon for Nelson's port. Preservation has been hampered by uncertainties about its history. One older resident does remember it as the time-cannon, and also recalls children being allowed to stuff it with rags and firing it - one group getting in trouble for adding rocks and breaking several nearby windows. Susanne led a discussion on options for removing the existing, non-original, coating and replacing it with an appropriate permanent coating.



The Daring at Mangawhai

Q
&
A
CORNER



Older ACA NZ members have probably seen a number of situations that may never have made it to a textbook.

If you have a question you'd like clarification on, email it to the Editor at lesboultonrust@gmail.com. We'll pose it to our panel of experts who will answer it in another Bulletin, so everyone can improve their knowledge.

Q:

Is it worthwhile replacing 300 Series nickel-stainless steels with low-nickel 200 Series stainless steels?

& A:



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Because of the war in Europe, the price of nickel has increased and so has the cost of nickel-containing stainless steels such as AISI 304 and 316 grades. Due to this and consequently the increase in prices for nickel-stainless steel grades, choosing lower grade stainless steels can be a popular option for end-users to consider when specifying and designing new plant and equipment. However, this approach to material selection is not sound practice.

End-users and some mills may be contemplating the replacement of AISI 300 stainless steels with AISI 200 alloys. This stainless steel option was taken by some mills and end-users about a decade ago when nickel prices increased to very high levels. The 200 Series stainless steels replace the high nickel (Ni) content in the 300 Series alloys with cheaper manganese (Mn). Manganese addition has the same metallurgical effect in austenitic stainless steel production as does the addition of nickel.

However, the effect of the high-Mn low-Ni option is to lower the corrosion resistance property of an austenitic stainless steel. An outcome of this material selection option is often that newly fabricated plant and equipment made from a 200 Series stainless steel suffers from premature corrosion in service – early life plant failures can occur.

Research has shown that the high-Mn stainless steels do not perform as well as the high-Ni stainless steels in corrosive service. In addition, the Life Cycle Costing approach to material selection favours the selection of high quality alloys such as the 300 Series stainless steels over the cheaper 200 Series alloys, even though the capital cost of choosing 300 grade alloys is likely to be higher.

Submitted by Les Boulton

UK MEMORIAL SCULPTURE REFURBISHED

In the Pukeahu National War Memorial Park in Wellington stands ‘Whakaruruhau,’ that was built by Weta Workshop (Weta) for the UK High Commission and unveiled by Boris Johnson in 2017.

The Ministry of Culture and Heritage (MCH) describe it as follows:

“At almost five metres tall, the design takes the form of two of the United Kingdom and New Zealand’s most iconic trees. The trunks of a Royal Oak and a Pōhutukawa intertwine to form one single leafy canopy, where leaves from both trees merge to create a sense of shelter - giving the memorial its name. Standing at the plaque, between the branches a silhouette of a single soldier can be seen, representing the union of two countries who stood side by side and those millions who served in times of conflict, resolution and peace.”

Unfortunately, the original artistic coating applied to the tree trunks, fabricated from 3mm sheet steel built over an internal structural steel frame, was unsuitable protection against the combination of Wellington’s corrosive marine environment and run-off from the bronze canopy above. Weta with Triple R Engineering have recently removed the previous coatings and applied a long-life coating system donated by Dulux. This consisted of a zinc-rich primer, a MIO epoxy intermediate coat and a gloss polyurethane finish (designated as a PUR5 system in AS 2312.1). Application was complicated by trapped water leaking out through porous welds that required sealing, but the refurbishment was carried out to a high standard



befitting this prestigious monument that took 13,000 hours to create¹. The photo shows the UK Memorial after removal of the containment structure in April 2022 in time for Anzac Day commemorations.

ACANZ members assisting MCH and Weta with the refurbishment were Bill Koelman (ICC), Willie Mandeno (MCL) as consultants, with Mark Delport (Triple-R) and Kevin Hokopaura (Dulux) also contributing to a successful project.

1. <https://mch.govt.nz/pukeahu-park/uk-memorial>

Submitted by Willie Mandeno

ACA TARANAKI DIVISION AGM

The Taranaki Division AGM was held in March 2022 and resulted in the continuation of the division committee. Dustine Botha of NZ Corrosion Services adopts the chairperson role and remains a representative on the NZ branch committee. Michelle Magrath of CCE is the division secretary. Other volunteers are available to support the division, and we still welcome new members. Please contact acanz.mail@gmail.com if you are interested. The team summarised the year’s activities at the meeting and hosted the NZ AGM in New Plymouth on 30 March 2022

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We look forward to hearing from you.

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C&P 2022 will comprise a program of keynote presentations and technical papers under a range of industry streams, integrated with an exhibition that will showcase products and services of the corrosion mitigation industry.

Only a month to go - we can't wait to see you face to face in Newcastle!



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