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This PYE valve radio is now a constant workshop companion — a restoration project in waiting

ADDICTION

I don't want to downplay addiction because it can indeed be a terrible curse that ruins lives. However, if you're reading this, I suspect your addictions – if you have any – are not life-threatening; they are likely more of a threat to your bank balance or marital harmony.

As a sheddie, we all have a few addictions, that's for sure. Sheds; tools, of course; and the obsessive desire to finish projects are just three examples. I mean, some people even have an addiction to chocolate! What's the actual point of that?

My own addictions aren't too numerous – maybe just three, I hope. However, I do have one major addiction: valve radios. I'm definitely addicted to them.

I still have the family radio we bought in the mid 1960s. After we built our new home, we decided that everything in the house should be new – no old chattels from our old ex-farmhouse home. The shiny new radio took pride of place in the centre of the house so that its broadcasts could be heard from every room.

When I got home from delivering the morning paper on my bike, the radio was always there with that warm valve sound and a cheerful announcer to warm my chilled young bones. Our family PYE radio has remarkably never needed repair or maintenance and has been my constant workshop companion, supplying me with world news or summer cricket games as I work on projects.

My addiction kicks in when I start looking at Trade Me to see what radios are for sale – fatal territory. I'm easily seduced by those warm wooden cabinets and glowing station screen bulbs. "Ooh, that's a nice colour! Cool knobs! So retro! I haven't seen one of those before! Great condition …" and so on.

I'm somewhat alone in my family with this addiction, and some think it's a bit odd that I'm enchanted by these vintage radios. Like many addicts, I tend to keep most of my collection out of sight; there's only so much room to stash these beauties, and being discovered might not end well for me.

I must admit there's a degree of relief when a fantastic radio on my watchlist reaches a price that makes it easy for me to let go. *As a closet radio saviour,* I think to myself, *I don't have to save this one; another enthusiast has stepped up to the plate. Good on ya, mate!*

Phew.

But hang on … look at that stunning Majestic radio that's just been listed. Wow!

NB. We hope you enjoy part one of our new series on restoring vintage radios on page 54

Greg Vincent
editor@theshed.nz

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With simple tools, you can make some surprisingly easy and beautiful items

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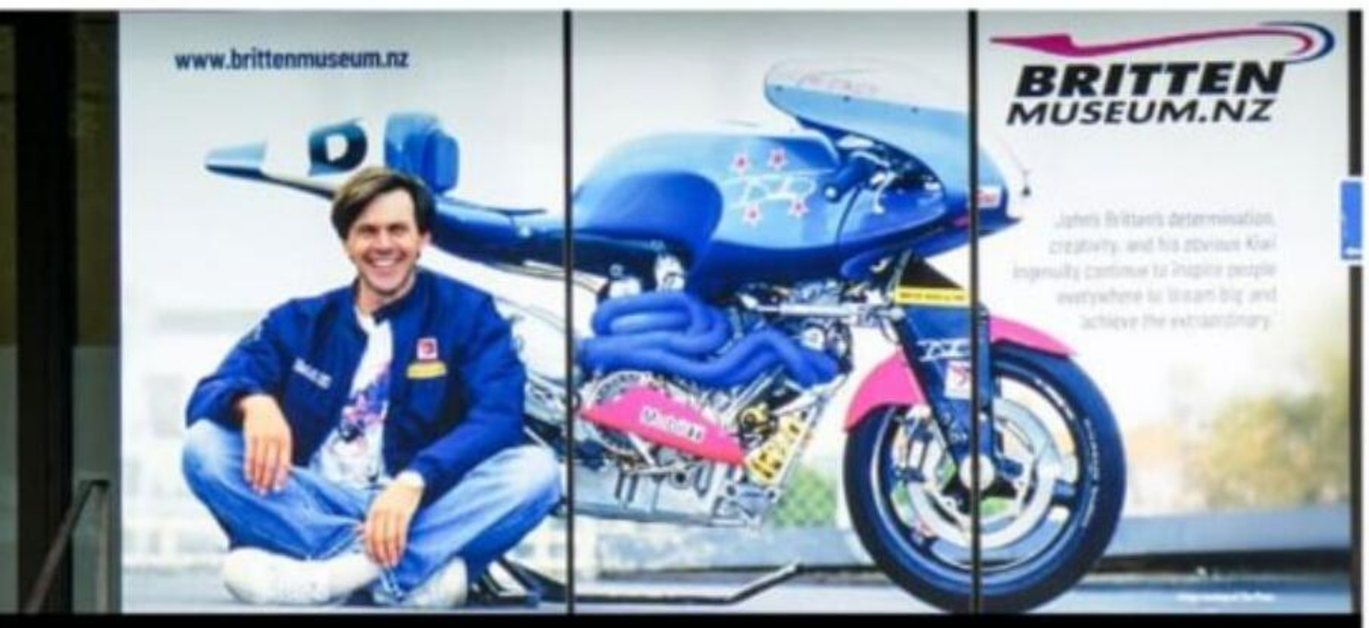
A new approach to utility benches



66 Britten Museum – a fitting tribute

Ritchie Wilson visits the new museum dedicated to this much-missed Kiwi legend

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HONING AN EDGE

By Jason Burgess | Photographs: Jason Burgess

Hayden Scott's road to crafting Damascus blades has been a journey of self-discovery, from ambitious teen working the boning tables of the Balclutha freezing works to chef Al Brown's right-hand man. Now, with over 25 years of experience using knives, he has found his calling: hand-forging the finest blades for cooks all over the world from his backyard sheds in the Waitākere Ranges

Hayden Scott

Former CEO of Coffee Supreme Al Keating (left) with Hayden and Al Brown at a pop-up event called 'Popped Culture' in 2016

Al and Hayden with US hip-hopper Action Bronson, during filming of Action's *F*ck, That's Delicious* TV show, 2016

When knife-maker Hayden Scott traded his kitchen whites for a blade-smith's apron and turned his knife-making hobby into a shed-operated business, he says that it was an impulsive choice, but one he needed to make. Today, his Champion brand kitchen tools are shipped all around the world, from Brisbane to Bulgaria, and he is still pinching himself.

He confesses, "I can't believe I am doing this. It blows my mind."

Look, and feel

Hayden's MO is pure number-eight wire; his expression is elemental. His goal is to create sleek and functional cutting tools, while also showcasing the story of the materials – and his processes – in every blade. Often, he works with what is at hand, embodying both his punk aesthetic and DIY building processes, as well as the natural environment that surrounds his shed. Each Champion blade features a hot-stamped image of a greyhound in full flight – a homage to the retired racing greyhounds that he and his partner Janel adopt.

With over 25 years of experience working with blades – from freezing works to high-end restaurants – one could say that he was already qualified before he began. As a chef, Hayden says that he instinctively knows how a knife should look and feel. He does not use a ruler or a plan, as knife proportions are common. He says, "I'm trying reinterpret these forms … It's intuitive. There is a clear intention about what I'm doing. I think a lot about what I'm making, who I'm making that for, and how I can communicate that." ▶

"I can't believe I am doing this. It blows my mind"

"It's really important for me to keep challenging myself, learning new things, difficult things. It teaches you a lot about yourself"

A younger Hayden in his kitchen days

Just make it: the top shed

Love a doer

Hayden grew up in Balclutha surrounded by farmland and a practical family: his mum made the family's clothes, Dad was a chippie, an uncle built airplanes, and another uncle was a fitter and turner.

Hayden and his brother were often left to their own devices, usually with a pocket knife in hand. He remembers, "I always had a project on the go. What have we got here? What can I make from this?" Huts and bows and arrows led to hovercrafts with electric motors, and later to bicycles, motorbikes, and furniture restorations.

His Uncle Russell was a real inspiration, a builder who knocked together a Jodel airplane, which Hayden fondly remembers flying around Otago in: "I was in absolute awe that someone could build something like that, at home."

His fitter and turner uncle, Allan, rebuilt motorcycles. He had to dig out a cellar under his house to store his vast collection of vintage ones. "He was always in there with his overalls on, working on them," Hayden recalls. "Growing up around people like that was really motivating."

The works

Leaving school, Hayden went to study cookery at Polytech.

He wanted to travel, and the freezing works in Balclutha was his only ticket out. It paid well, but it was a test – a full-time night shift – showing up to do something he did not want to do. At the works, he learned to knuckle down; be disciplined; and most importantly, maintain a knife. "You have to keep your knife sharp; otherwise, you will fall behind," he says.

After a season there, he embarked on a culinary odyssey, which took him from Dunedin to Edinburgh and on to Vancouver before returning home again. It would not be long before he landed a dream job with TV chef Al Brown, a role that would last for 15 years.

"Back in Dunedin, I was working 70 hours a week, and we were not enjoying the city. We packed the car one day and moved to Wellington. I knocked on the door at Logan Brown. I knew it was a great restaurant, and I knew I wanted to work there. I give that advice to young chefs: Don't look for who is hiring; they are often trying to fix a problem. Go where you think you can add value and where you will get a lot out of working there. That changed the trajectory of my life."

The Al Brown effect

By the time Hayden landed a position at Logan Brown, co-founder Al Brown was already a silent partner.

His book *Go Fish* had been published, and Al needed someone to work his test kitchen so he could continue writing, presenting to camera, and taking care of business. Hayden says, "I always ▶

Using the linisher to get a good edge

The forge shed

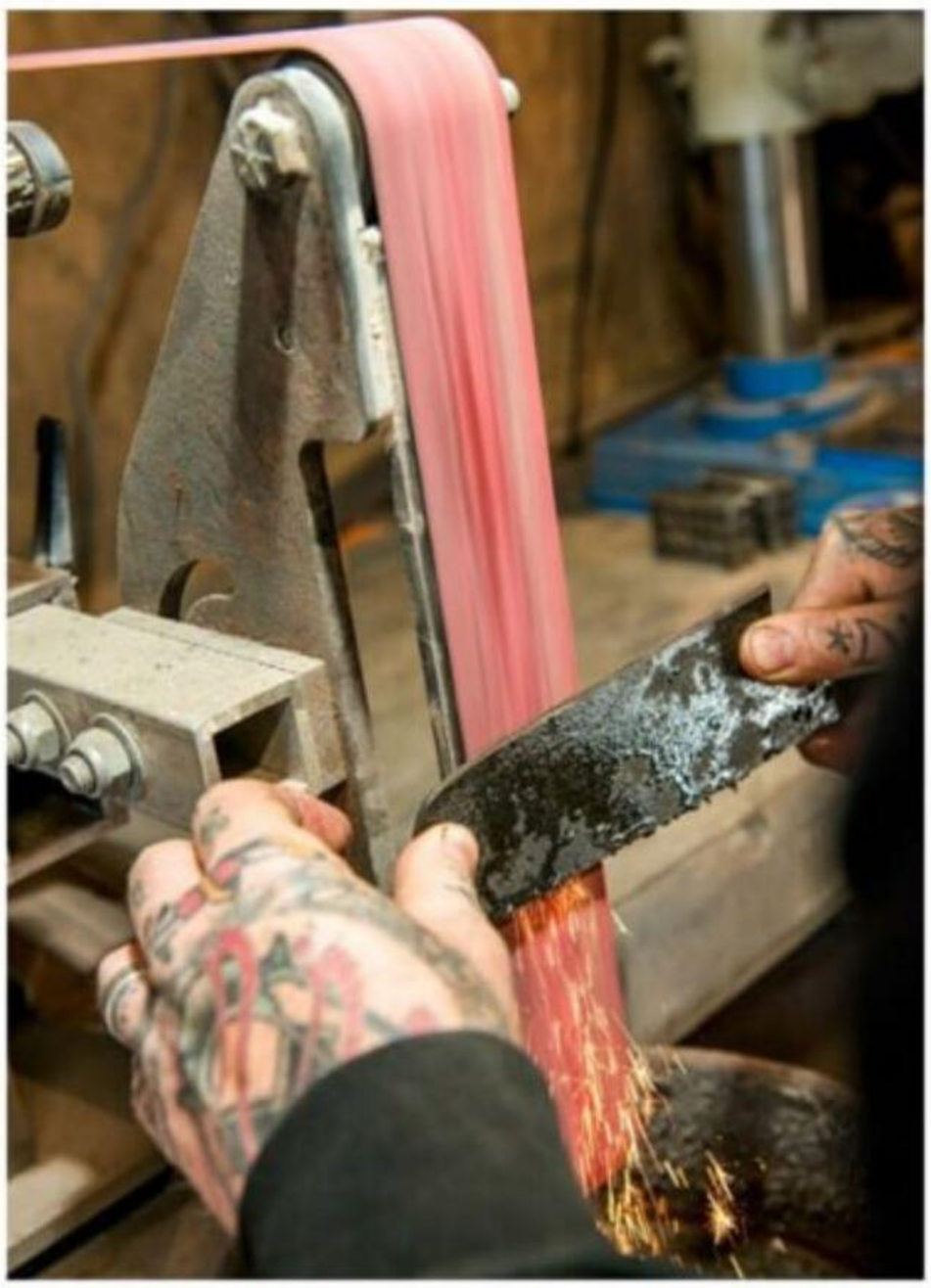
got on well with Al when he came to the restaurant. One day, he invited me over to his test kitchen. It was a wonderland. I thought, *WOW, this is incredible*. He encouraged me to apply to come work with him as a chef. It was an opportunity that I jumped at."

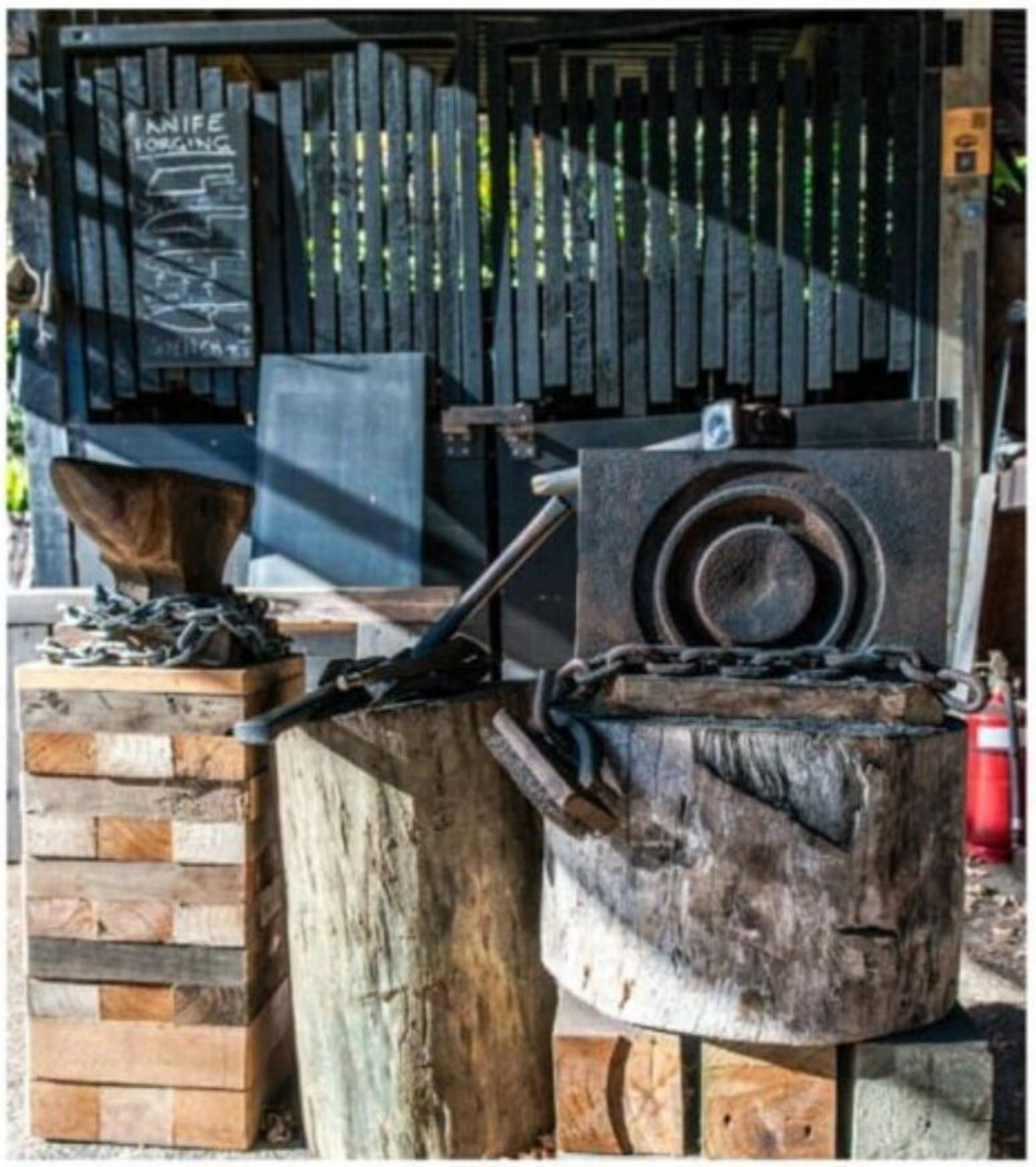
As Al continued publishing and making TV shows. Hayden worked behind the scenes, helping with everything from recipe development to restaurant openings and staging special events around the world. "I was always there, to make sure he had everything he needed when he needed it, raw and prepped ingredients, equipment, and staff," he says.

Hayden calls it his apprenticeship in creating your own brand: "Watching Al succeed, I learned a lot, not just about cooking but how to grow a small business."

A Champion business

When he started his Champion brand, Hayden says, "I worked hard to lay the foundations. I am self-taught and invested a lot of time in learning and doing, building it up slowly over the years, and plotting it out. When it was time to go it alone, all the administrative stuff was taken care of, all I had to do was get to work. The more I could make things, the more skills I would develop ▶





Hot stamping his greyhound logo

A new power hammer: “I couldn’t make something like this; they are quite complex. It is amazing, makes making Damascus so much faster”

Salvaging

With a magpie’s sensibility, Hayden sees potential value in raw materials that others might overlook. He believes that every salvaged element comes with its own provenance, which adds a layer of story to his finished pieces. Working out how to use an uncommon steel or the decay and burls in timbers keeps him engaged with the process. Hayden calls it ‘adaptive thinking’: “There is no path to follow. I like figuring it out, and being tested by weird things.

“Free material means you can play around a little. I began forging with old bandsaw blades, leaf springs, coil springs, and tool steel saw blades. The more I got into it, I started to understand all the variables of steel. I sometimes incorporate recycled steel as a way to add a layer of history to a blade, but when you use mysterious steels, it is guesstimation, with more variation in the outcome. When I am forging a high-end kitchen knife, I don’t want to take a chance with the outcome, so I use premium, known knife steels.”

“As a chef, Hayden says he instinctively knows how a knife should look and feel”

Waste not: putting away a used sheet of blanks for Hayden's affordable Everyday range

Blackboard drawings for his knife classes

Blanks awaiting some customisation and finishing

A boning knife with a pōhutukawa burl handle and crushed W-pattern

> “When you learn how to make things yourself, you know you can fix them too”

and the more potential I had to grow.”

Hayden’s sales are derived from his website via Instagram, and he manages all aspects of his business from accounts and communications to stock photography and filming from his iPhone. As knife sales are often a one-off purchase, he also offers a range of affordable production knives, operates a mobile sharpening service and runs small-group knife-making classes, which are popular with students from all walks of life. He admits, “I might not be the greatest knife maker in the world, but I enjoy sharing what I know and how I feel about and use knives. People enjoy connecting with that.”

The first cut

While hand-forged multi-layer Damascus knives are his signature sellers, his hobby began with a Victory knife blank. “The blank,” he recalls, “was given to me by Michael Bernard. He is a sharpener and all-around good guy. He said, ‘See what you can do with this.’” With an angle grinder, a flapper disc, some files, and a few pieces of brass and wood from a friend’s farm, Hayden shaped a

Feather-pattern billet

In the world of pattern steel, stylistic choices are limitless; skilled knife-makers can stretch and pull all kinds of designs through scorching metal.

From mosaics and organic-looking twists and swirls to reductive patterns, it can be a wildly creative, if an incredibly physical, process, with an ever-present element of uncertainty to the end product.

There is a discernible aesthetic in the patterns that Hayden fashions; he says the feather pattern is as complex and as high risk as any motif to make. “Every time you do a forge weld, it potentially won’t work. You could get a bad weld, things don’t stick together the way they should, you can’t tell; you can’t inspect it – at 1100 degrees it’s a block. You never really know until the very end. When it works, the sense of achievement is off the charts; it’s like slaying the dragon. A victory for yourself.

“There is a lot of time and material invested for this not to work out. Hardening knife steel is stressful to the material. There are so many variables. Humans always want to be in control, but you have to let go of that. As much as I want this to work out, that is not up to me; it’s up to the material and whether I have done enough. Did I lay the work out correctly as I know to? Have I followed all the appropriate steps for this to work out? The material tells me if I have or haven’t. That can be a bitter pill to swallow. But then I always learn something valuable if things don’t work, either something about myself or my process. I’m at peace with that. Risk is time invested and material lost.

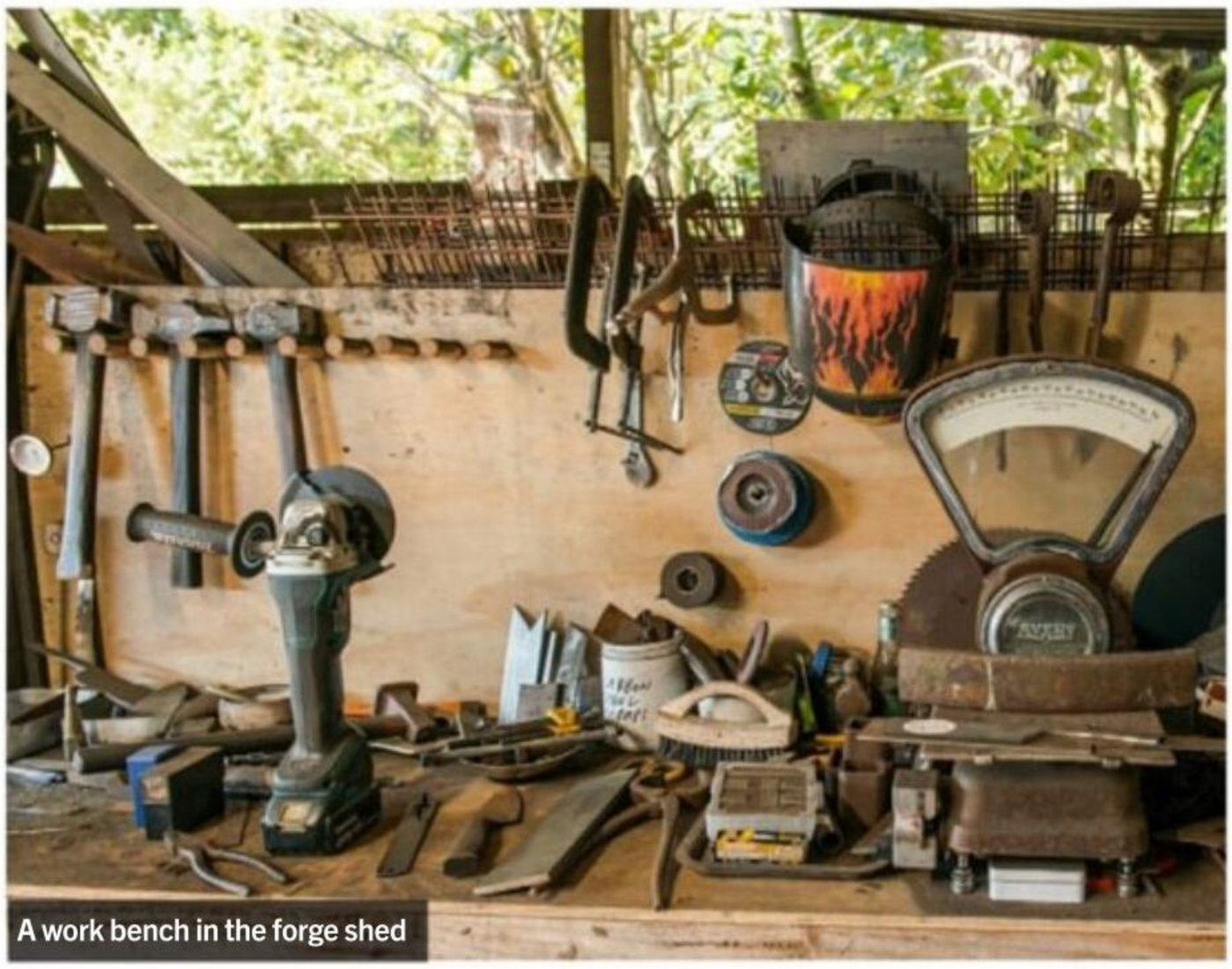
“I make a stack of alternating steel, with carbon steel for dark contrasts. Each contrasting material is a weld. If you look at a feathered-pattern knife, you see areas where it might not work; when it does work, it is an absolute triumph because the obstacle is enormous. For a kitchen knife, getting high hardness is always the goal – better edge retention. Heat treating – you are trying to make things the best that you can. These things should not be hidden away in cupboards; things have no value if they are not enjoyed daily. There are three opportunities a day to enjoy kitchen knives.”

An oxidised, 180-layer, raindrop-pattern chef’s knife with ebonised pūriri handle

An outdoor fire burns for atmosphere and winter tea breaks

"Even when I know I have 200 holes to drill . . . I approach it with gratitude"

An old sheet of blanks for a fire grill



A work bench in the forge shed

A woodworking bench in the top shed

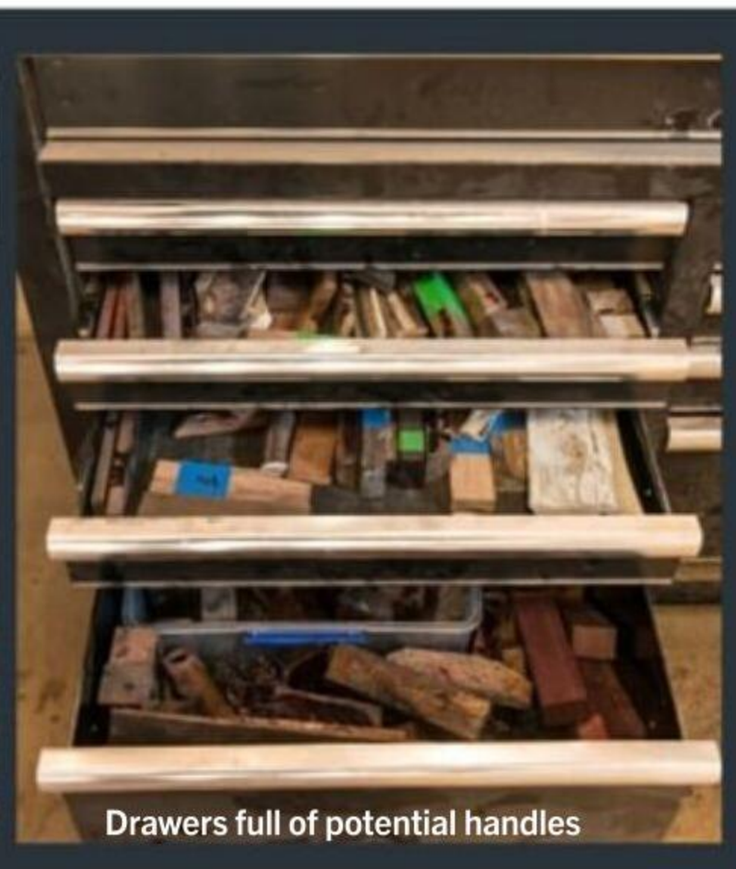
A vintage blacksmith's vice

handle and made himself a functioning knife. "People saw the blade and thought it was cool and asked if they could get one," he says. Friends and fellow chefs took notice, and thus he began making knife-blank knives for the next five or so years.

Tooling up

By the time he had worked through his final sheet of blanks, the process was becoming repetitive. Hayden knew he wanted to create his own blades to grow. His inspiration for Damascus came ▶

Experiments in spalting



Drawers full of potential handles

Timber treatments

Hayden stabilises and shapes all the timber used in his handles.

It is a time-consuming process, but he achieves the effects that he wants and ensures that each handle is unique. He says, "I'm looking for spalting, rotting, and interesting stuff. When things start decomposing, the colours change. Obviously, the structure changes, but you can mitigate that by stabilising, so you get all this interesting material that people have probably never seen before."

Before he shapes the handle, he kiln-dries the timber until there is no weight or moisture left. Next, he draws oxygen out of the cells by placing the wood under liquid resin in a vacuum chamber. The vacuum pulls the oxygen out, and when it re-pressurises, the cell is saturated with liquid resin, which fills the wood to the core. He further bakes the timber to activate the resin and cure it. "This changes the wood," explains Hayden. "The density improves; it's about three times the weight. The resin is water-resistant, and the timber is more heat-resistant than natural wood. In a kitchen environment which is hot and wet, using stabilised materials for the handles gives them longevity. The strength and durability are remarkable."

Inspiration is never far away. Hayden hunts out branch and tree-fall in the bush around him and is always thankful to an arborist friend who delivers him unusual timbers. He says, "Part of why my works stand out as being different is because I'm actively seeking out things I have never seen before and trying to work them into the finished product. It's fun. It's the joy of making these things. Nature turns out beauty that I can only try to recreate. That is exciting. It's really important to keep challenging yourself, learning new and difficult things. When you fail, you figure things out; it teaches you a lot about yourself. The great thing about knife-making is it tests your thinking and lets you know very quickly where you are at and how capable you are."

A freshly forged carving fork awaits finishing

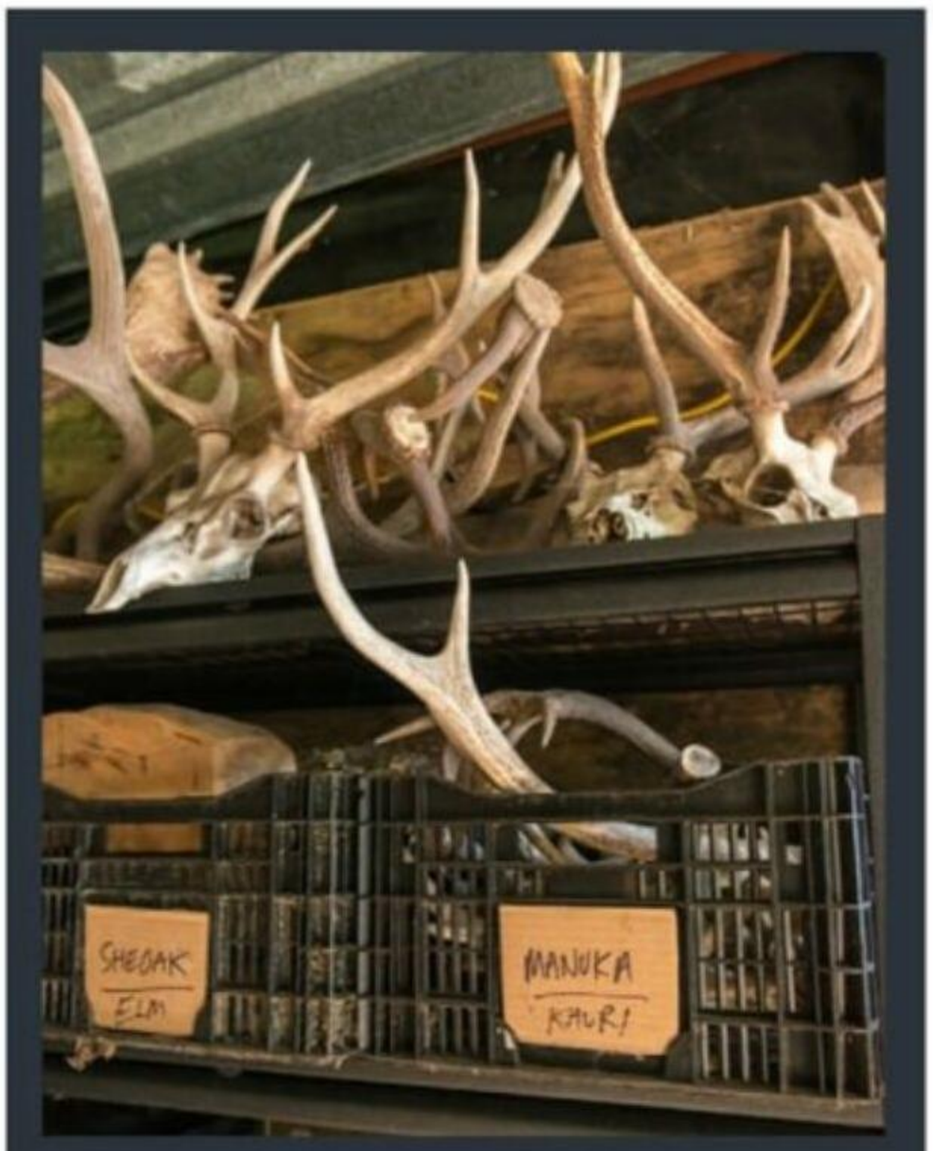
Forging blanks

Blanks in the forge

A freshly stamped logo

The Champion brand stamp

“Hardening knife steel is stressful to the material; it will tell you where it’s going wrong”



Antlers

On a shelf at the back of the forge, a tangle of deer antlers spills out from various boxes. “We did a lot of that [hunting] with Al,” Hayden says. “We’d butcher them, and I’d collect antlers for handles. Amazing material. Beautiful things. Some people look at them and see death, but it’s a regenerative resource. Deer drop them every year.”

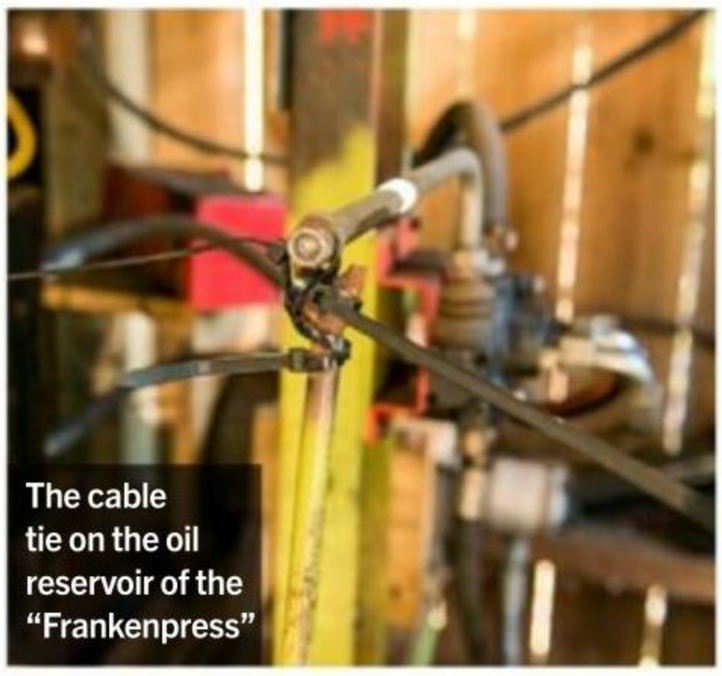
Antlers provide just the right kind of mental and process-driven hurdles that Hayden likes to take on: “It is a fun, challenging material to use because they are never square. No straight piece ever, so you have a problem to solve. It smells terrible … Dirty work, but it’s beautiful. I forget how bad they are to work until I start another one. I just did 10 steak knives in antler, two days of cutting, grinding, and sculpting antler. The dogs loved it; they know when I’m using antler – it’s on me when I go inside.”

“I enjoy sharing what I know and how I feel about and use knives”

while on location in Tasmania with Al, where they visited a knife-maker forging knives from bandsaw blades. To start this next chapter of knife-making, Hayden bought a MIG welder and taught himself how to weld, then made his own forge – essentially a repurposed 9kg gas bottle. He scored an old die block from TradeMe for his anvil and started forging blades. He was in his element, learning new skills on the fly – mostly from YouTube.

To create his maiden Damascus, Hayden employed a fly press, which was so labour-intensive that he questioned whether he wanted to make another. ▶

An Everyday chef’s knife, laser-cut carbon steel with hand-treated pūriri handle



The cable tie on the oil reservoir of the "Frankenpress"

He had no funds to buy a hydraulic press, so he set about converting an old log splitter with no ram that he had been given. He swapped a knife for a hydraulic ram. "I knocked up a press using scrap – a 'Frankenpress' – using a bearing press frame from an old hot rod dude. I cable-tied the oil reservoir on to test it; it started squishing things fine, so that's when I went straight to knife-making. The tank is still cable-tied on. It doesn't look pretty; it just has to squish hot metal, track straight, and operate. It has a 20-ton press that works better than an entry-level press.

"When you learn how to make things yourself, you know you can fix them too. I don't let a lack of finances limit me. The pursuit of these dreams and ideas is rewarding in itself."

The Frankenpress

It's a short commute from home to happy place

Hayden says, "I have ambition to do big things. I want to showcase what I'm passionate about. Monetise the thing I love to do. Keep creating and sharing when I can and do the stuff which is really important to me, like connecting with people"

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AYRBURN CLASSIC 2026 DAZZLES

A spectacular celebration of classic motoring

By Quinton Taylor | Photographs: *New Zealand Classic Car* magazine

A dazzling display of more than 600 rare, classic exotica descended on the tranquil lakeside setting and terraces of the Ayrburn Precinct near Queenstown for the 2026 Ayrburn Classic, a celebration of motoring through the decades.

The event also celebrated 40 years of the Ferrari Owners' Club in New Zealand with a stunning display of more than 60 examples from all decades of the marque.

Southward Car Museum's workshop head, John Bellamore, was delighted to receive the Best in Show award for the museum's restored 1955 Ferrari 750 Monza (see *New Zealand Classic Car* Issue No. 403 for the full feature on this amazing car), a stellar time capsule of New Zealand motor racing history.

"We are thrilled to be here, and what a location. It's a great show," a beaming John said as he prepared to display the Ferrari under its own power to the audience gathered in The Dell.

Jaw-dropping sight

Ferrari club president Jonathan Rankin was full of praise for the venue and turnout of cars. He singled out a memorable moment on their trip down the South Island to the classic car enclave of Geraldine at a manned school crossing with Ferraris driving through the town, creating a jaw-dropping sight for the children who had probably never seen these cars before.

The event also donated proceeds from the Friday night charity run to local charities, part of a hugely successful three days of an unmissable event now growing in status internationally.

Organisers now have the task of working through feedback and preparing for 2027. Put this on your bucket list and book your accommodation for the weekend of 20 and 21 February 2027 now!

Enjoy a video of some of the action from the 2026 Ayrburn Classic:
youtube.com/watch?v=dyWfQOuY2X0

"I COULDN'T BE HAPPIER. I SAID EARLIER, IT'S MY FAVOURITE WEEKEND OF THE YEAR; I JUST HOPE IT IS THE FAVOURITE WEEKEND OF LOTS OF PEOPLE WHO COME HERE. IT'S JUST SUCH A GOOD BLAST, THE WHOLE THING. EVERYONE HAS A GOOD LAUGH; BEAUTIFUL CARS, A BIT OF WINE, LOVELY FOOD, GREAT COMPANY – WHAT MORE COULD YOU HOPE FOR?"

– CHRIS MEEHAN, CEO WINTON, NEW ZEALAND

THE SHED ONLINE

What's happening online at theshed.nz?

Every week, we upload new content onto The Shed *website to add to the hundreds of articles and videos already on the site for readers to discover, learn from, and enjoy. Some uploads of the past few months include:*

The ultimate man cave

A sculptor's massive studio is a sheddie's dream
https://theshed.nz/the-ultimate-man-cave/

Create your own parrot-beaked pliers

Curved jaws make this handy jeweller's tool
https://theshed.nz/create-your-own-parrot-beaked-pliers/

A life in harmony

A series of chance events has led to a career making specialist instruments
https://theshed.nz/a-life-in-harmony/

On the move

A mounted stock crate is straightforward to make and surprisingly versatile
https://theshed.nz/on-the-move-2/

GOOD RETURNS FOR EXCESS SOLAR POWER

Hi Rusty,
In your solar power article [Issue No. 125], the author said he got 13c for every kWh he sells back to the retailer. You might like to tell him we get an average of 17c credit from our retailer, Ecotricity, 30 per cent more. 21c during peak hours, 7 to 9am and 5 to 7pm, 16c at other times. In winter, Ecotricity sells us power at 20c a kWh.

We don't produce any power at peak times during winter, but we sell lots of it in summer, and last year we stayed in credit with Ecotricity until July. Over July, Aug., Sept. we paid about $800. That was all we paid for the whole year.

We live at Ohakune at an altitude of 600m, and I'm retired and running a heat pump during the day and evening in winter.

From the 1st April, our lines company will also be paying 4.6c for power exported at peak times in winter. So anyone in a rural area here could erect a wind turbine and get 25.6c a kWh on windy winter evenings. I don't know if all lines companies are doing this.

Cheers,
John A

LETTER OF THE MONTH

We have a new fan

Hi,
I picked up your magazine from my local library because it had a minibike on it. I think it was Issue No. 117. I loved it. I have read Issue Nos. 119, 116, 118, and 117. I love your magazines so much.

When my library is open tomorrow, I am getting out the whole catalogue. The stories are so engaging and interesting that I have given my dad a couple. Now I know what to get him for his birthday. Thank you for creating such an interesting magazine and filling it with so many interesting stories.

Sincerely,
Sebastian Marinkovich

Ed. replies: Thank you, Sebastian, for your kind praise, and so pleased you and your dad are now regular readers. Welcome.

Some help with the AJS light switch

Hi Greg,
I am contacting you in an effort to help Peter Barton with his AJS restoration. He seems to be having trouble understanding the selector switch mounted on the headlight. (Aug.–Sept. issue [No. 122]) and again mentions it in the latest issue (No. 125).

The switch has two functions. One is to control the small headlight and tail-light on low and turn on the main headlight on high. Power to the tail-light is maintained through an internal connection to terminal 5 (as shown on his drawing). The horn and dip switch is a separate unit mounted on the handlebars, which he has.

The second function is to control the charge rate from the generator. On low, a resistor is in the circuit as only the small lamps are going. When high is selected, the resistor is bypassed to allow full charge while the headlight is on.

The switch shown in the Aug.–Sept. issue does not have the contacts or resistor which mount on the stud above the selector cam at the back of the switch.

Please forward this to Peter, and don't hesitate to contact me if I can help in any way. Are there any Lucas mag/dyno 1929 people in Auckland that you know of?

Steve Place

PS. Love the mag, you really do a great job.

Peter Barton replies: Thank you, Steve, for the information; it solves a problem that has been nagging at me for some time. Good luck with the mag/dyno.
Cheers,
Peter

Would Bruce like a painting?

Hi,
My name is Cathy Radford, and I have been reading your latest mag. I really enjoy them. Anyway, I particularly liked the article about Bruce Aldridge and his amazing sculptures [Issue No. 125], especially the horse and dog.

I myself am an artist too. My passion is oil painting, and I have recently done a painting of a Kaimanawa stallion. I will paint anything, though, and I have also painted a staffy dog.

I was just wondering if Bruce would be keen to view some of my work. Going by the pics in your mag, one can tell he likes art.

If he likes my work, he might like me to do a painting of his horse or dog.

Could you possibly pass on this information to him, and if he's at all interested, he is more than welcome to contact me either by email or text.

Also, I really liked your article about solar panels, as I have always wanted to go solar. This article was very informative. So thank you for that. I think your mag is the best magazine money can buy.

Very kind regards,
Cathy

Ed. replies: Thank you, Cathy. I hope Bruce commissions a painting from you and shares it with us. Your details have been forwarded to him.

Can you solve my magneto issues?

Hi Greg,
Great last issue, really well put together and a joy to read.

I am really enjoying Peter Barton's article on rebuilding his AJS and wondered if you could pass on a question I have?

I have 11 English motorcycles littering my tiny workshop, and I am restoring these when time and money permit. Two of these motorcycles are Matchless 350s, G3ls models, very, very similar to Peter's bikes. Now I have come to a halt due to the very high cost to rebuild the magnetos.

Seems the cost to overhaul a magneto is nearly the same cost as the price of the bikes when I bought them, therefore restoration has come to a halt.

I had thought about a new electronic alternative, and there are makers in the UK that sell these, but those, too, are in the very high hundreds of New Zealand dollars or just beyond the realms of common sense.

I wondered if you could ask Peter how he was going to overcome the sad state of Lucas's magneto non-sparking in this modern age. Years ago, we called all Lucas products, 'The Prince of Darkness', as they failed with regular, but always unexpected, times. I'm looking into making up my own CDI electronic unit and wondered if he had done any work in this direction yet.

Also, the article on the AJS restoration is very long, and I wondered if the editorial team had thought about publishing these long articles as a standalone unit, perhaps spiral-bound and laminated for use in a workshop, etc., instead of just trying to copy pages from a magazine, perhaps another income stream for you. Just an idea.

Many thanks and best regards,
Bryce Clifford

Peter Barton replies: I am very lucky to have a magneto which I think is OK. It gives me a good spark (at the plug) when I turn it with a drill, and there is very little sparking at the magneto points, meaning that the condenser (capacitor) is OK. At the moment, I have not yet started the bike, due to other problems (see my article). Hence, I have not investigated magnetos further.

I wonder if you have checked components within the magneto, like for example whether the condenser is shorting, whether the windings are broken or shorting, whether the magnets are sufficiently strong? Considering different components in turn, it might turn out to be a problem which can be DIY fixed. I have seen web items on DIY rewinding, but I don't have any references to any.

To avoid buying a new or reconditioned magneto, one approach could be to embed a small magnet (from say Jaycar) into a small hole drilled into the exhaust timing gear. Then use that to ultimately generate a spark (as well as driving a tachometer, via Arduino or similar, which is what has occurred to me).

Good luck,
Peter

Ed. replies: Great idea for combining all the parts of the AJS restoration, Bryce. We'll look at doing that when the restoration ends.

Using your electric car for storage

Good article on 'Going Solar' [*The Shed* Issue No. 125].

If people are considering buying an electric vehicle, make sure it has vehicle-to-grid capabilities. A much cheaper alternative for battery storage.

Mike Rathbone

MAKING A DUST EXTRACTOR

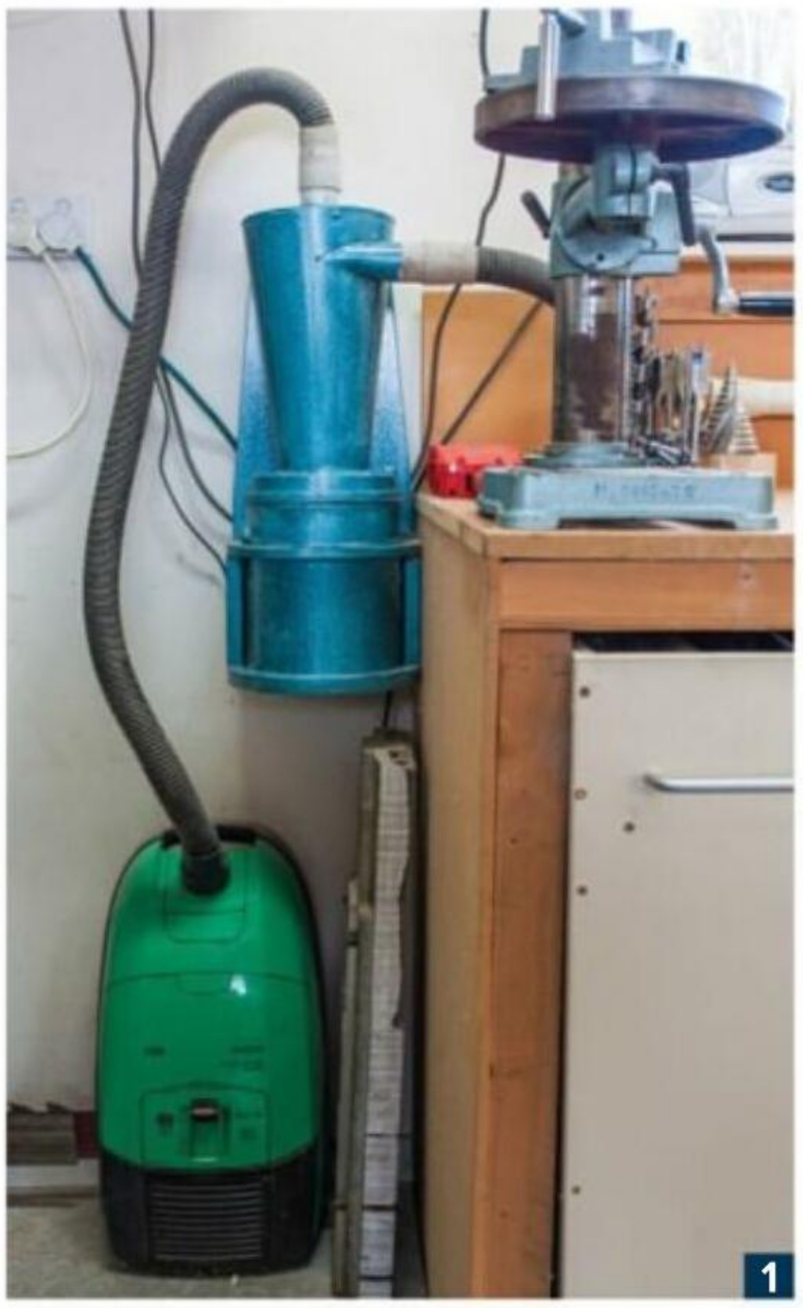
Mini cyclone and vacuum systems are a workshop essential that will help to keep the peace

By Des Thomson | Photographs: Juliet Nicholls

In any workshop, dust is a health hazard and an annoyance, but when your workshop has direct access to the house, it also becomes a matrimonial issue. My workshop takes up two bays of a three-bay attached garage, so it is very important to keep everything clean so workshop debris does not end up being carried inside.

To keep dust under control, I have fitted each of my woodworking machines with its own mini cyclone and vacuum system **(Image 1)**. This means that when I need to move machines about to create a workspace, the dust collection continues to work.

Cyclones are very effective at removing both large and small dust particles. The cyclones that I have made easily collect sawdust from the saws, as well as fine dust from sanding or gib stopping. When attached to an ordinary domestic vacuum cleaner, the dust bag in the cleaner will last six months or more. In that time, I will have emptied the 10-litre dust collection pail many times.



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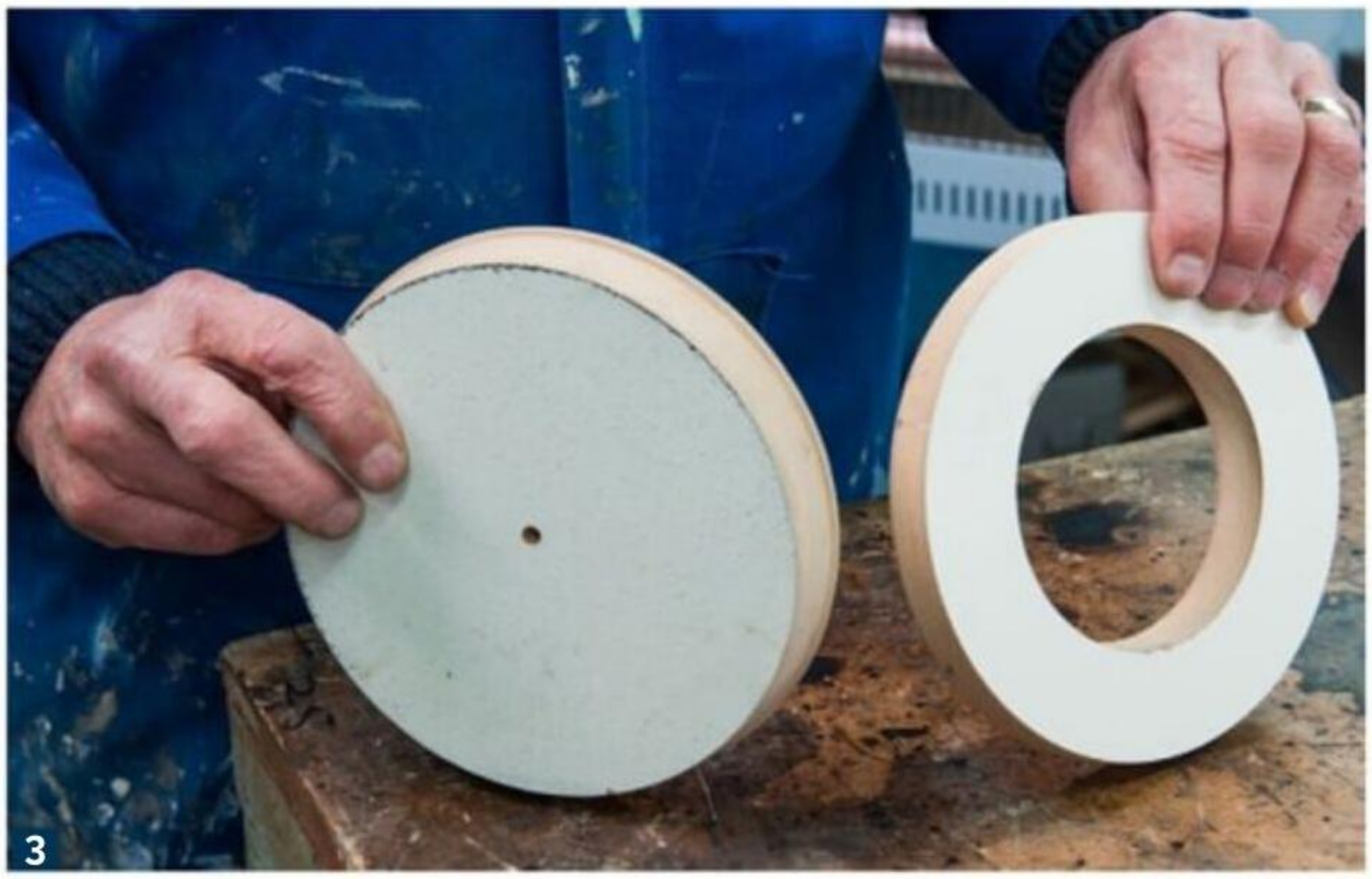
You can buy commercially made cyclones which fit directly onto a 10-litre plastic container, or you can easily make your own. In this article, I will cover the four main aspects of building an effective system.

Cyclone design

There is a lot of very good information on the net about cyclone design. When I made the large cyclone for the Halswell Menzshed (featured in *The Shed* Issue No. 76, Jan/Feb 2018) **(Image 2),** I got the design from the website of Bill Penz (http://billpentz.com/woodworking/cyclone/). He has a spreadsheet where you input the values, and it will then give you the full development patterns for the sheet metal.

The proportions of my small cyclones are based on the approximate size of the



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> “If you approach a roofing manufacturer that rolls roofing iron, you can get off-cuts for next to nothing”

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commercially available Dust Deputy cyclone separator. Mine is 300mm high, 175mm at the top, and 100mm at the bottom. The dimensions are not critical.

The top and base can be made from 16mm MDF or ply **(Image 3)**. These can be cut using a jigsaw or turned in the lathe, depending on what equipment you have available. I made mine on a lathe and left a small lip on the top edge of the top disc. The sheet metal of the cone comes up to this and makes a neat joint. Make the top and base before starting on the sheet-metal cone.

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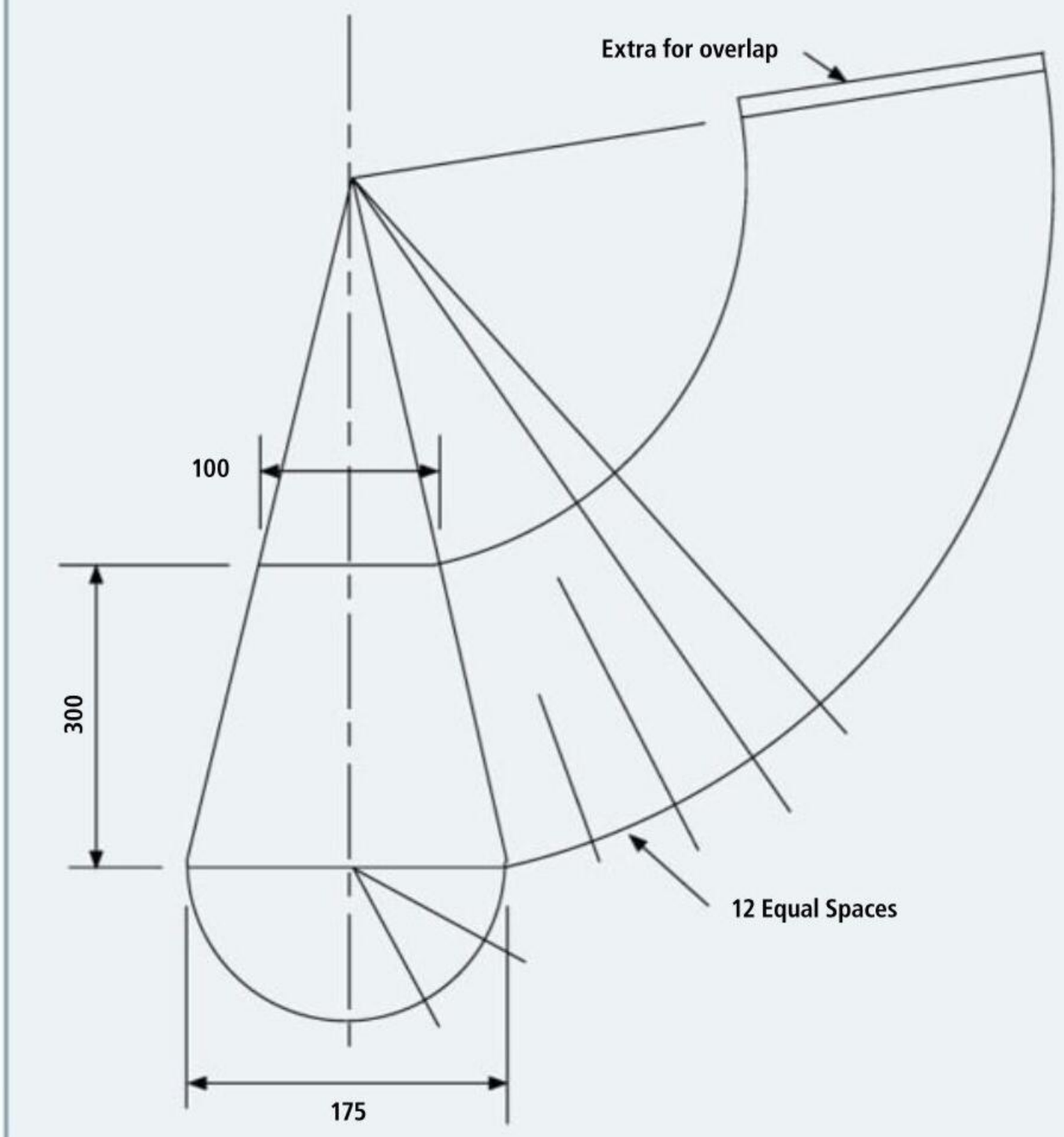
Making the cone

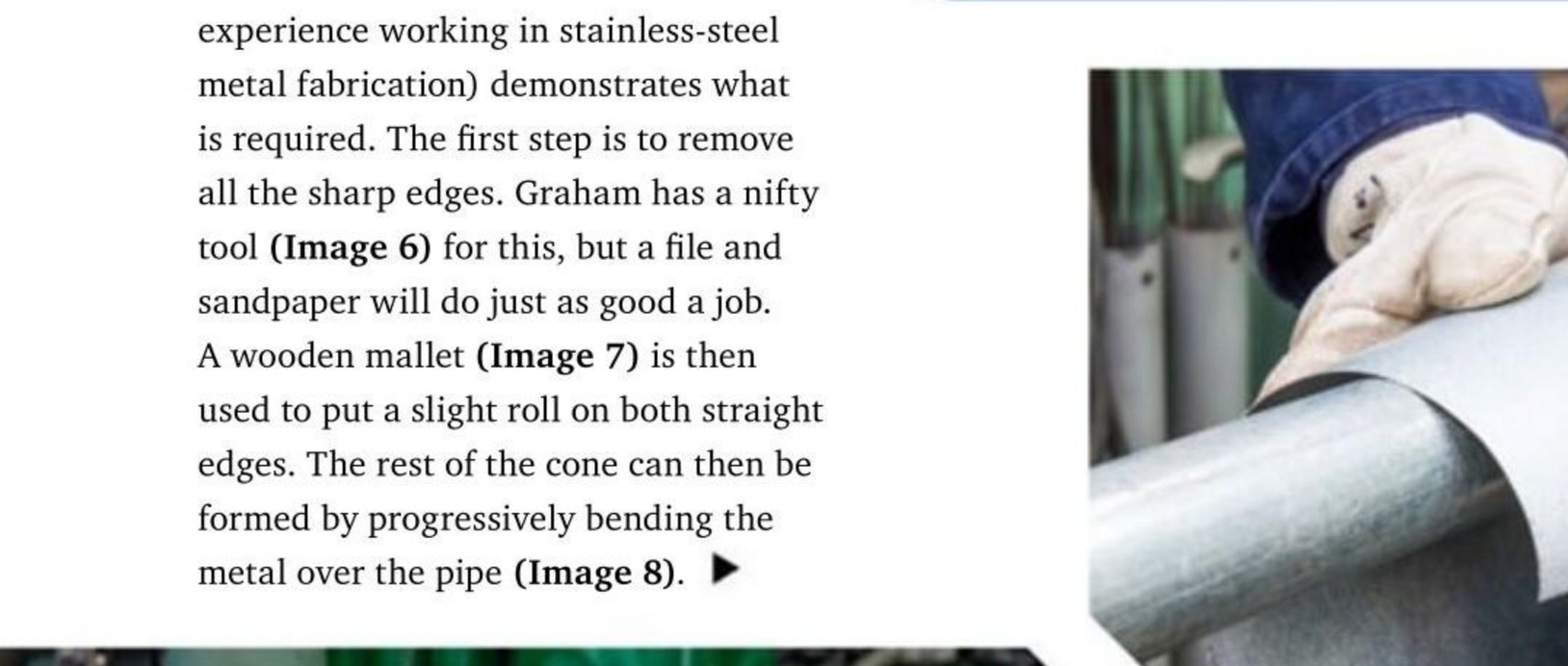
I used 0.6mm Zincalume for the cyclone sheet-metal cone. This is much easier to form into shape than Colorsteel. If you approach a roofing manufacturer that rolls roofing iron, you can get off-cuts for next to nothing.

You can mark out the development of the cone **(Image 4)** directly onto the sheet, or do it on cardboard so you have the pattern for reuse. If you have never done sheet-metal development before, there are some good resources on the net. A flat-top cone is called a 'frustum'. A nifty calculator that will give you the development dimensions is available on Craig Russell: Software Engineer & Writer's site (http://craig-russell.co.uk/demos/cone_calculator/). You need to add an extra 15mm along one straight edge, so you will have enough overlap to enable pop riveting of the joint.

If you have a small set of sheet-metal rolls, you could roll the sheet metal, but it is just as easy to form it around a length of scrap pipe held in a vice **(Image 5)**. Graham Wheal from the Halswell Menzshed (with 52 years of experience working in stainless-steel metal fabrication) demonstrates what is required. The first step is to remove all the sharp edges. Graham has a nifty tool **(Image 6)** for this, but a file and sandpaper will do just as good a job. A wooden mallet **(Image 7)** is then used to put a slight roll on both straight edges. The rest of the cone can then be formed by progressively bending the metal over the pipe **(Image 8)**. ▶

How to draw the development of the cone

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"A flat-top cone is called a 'frustum'"


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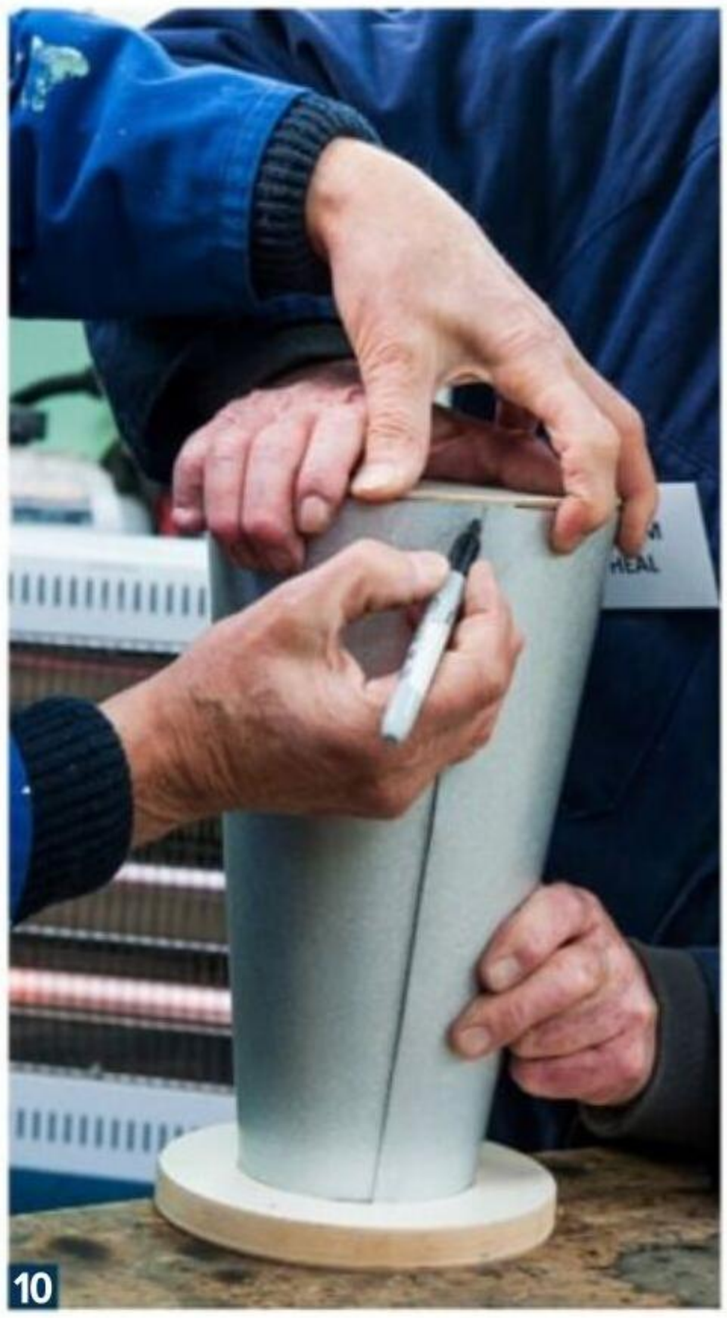
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“Don’t be concerned if it is not too neat – a paintable silicone sealant is used to get a nice external fillet”

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Attaching the cone

The next step is to insert the cone into the bottom ring of the cyclone and mark the edges of the join **(Images 9 and 10)**. Do the same with the top. When you have done this, clamp the edges of the sheet to the marks and drill to hold it all together with four or five pop rivets **(Images 11 and 12)**.

The base can now be attached by drilling and screwing. I use small wood screws for this **(Images 13–15)**.

The elliptical hole for the 40mm inlet pipe could have been worked out on the development and cut before forming the cone, but there is another way. Take a length of pipe and, by eye, mark a radius on the end which matches the curve of the cone. Cut the pipe with tin snips to get a good fit to the cone, and then use it to mark the ellipse on the wall of the cone **(Images 16–19)**. The hole can now be cut out using tin snips **(Images 20–22)**. If you take small cuts, the job goes easily. Don't be concerned if it is not too neat – a paintable silicone sealant is used to get a nice external fillet. ▶


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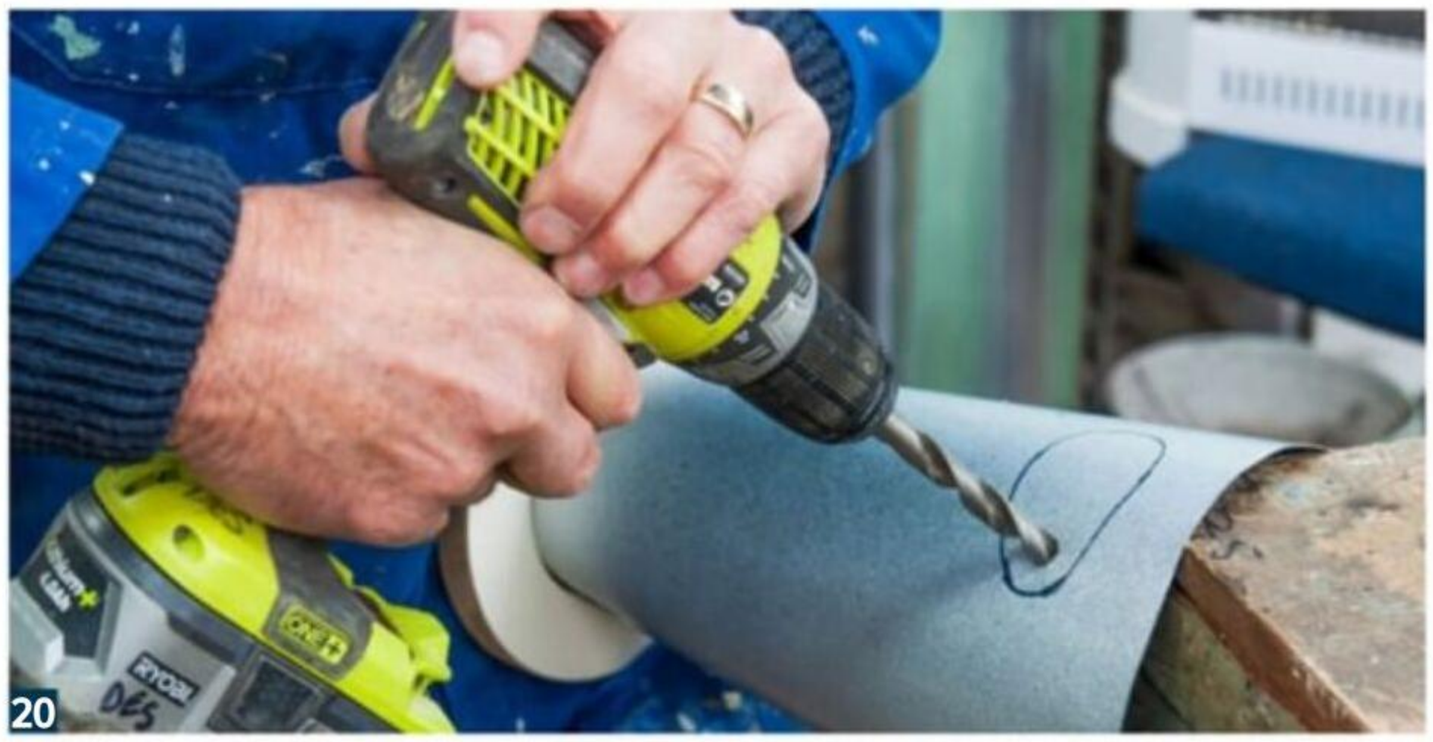
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Fitting the inlet pipe

It is now time to fit the inlet pipe. With tin snips, make several 12mm long cuts in the end of the plastic pipe **(Image 23)**. The strips can now be heated with a hot air gun and bent back with pliers to form tabs that can be pop riveted to the cone **(Images 24–26)**. Don't be concerned if some break off. All you need is sufficient to be able to get two or three pop rivets in place.

The inside of the cone where the inlet pipe enters can be smoothed over with silicone or body filler **(Images 27–31)**.

The outlet pipe leading to the vacuum cleaner hose is fitted to the top plate next. This needs to extend into the body of the cyclone by 100mm. It is fixed by short screws into the top plate. Leave 20mm extended past the top **(Images 32 and 33)**.

The top can now be fixed in place with three or four screws, and all the joins finished with a nice fillet of body filler or paintable silicone **(Images 34–36)**.

You now have a cyclone that can be fitted to any 10-litre plastic bucket, four-litre can, or specially made box. I have found that it is not necessary to have any soft seal between the cyclone and the dust collection bucket. I use a ply ring **(Image 37)** to position the cyclone base in the right spot, and the vacuum holds it down.

Hoses

I have three vacuum cleaner hoses that can be joined together as required. Making the push-fit connectors for each end of the hose is easy. ABS pipe is thermoplastic. If you heat it and form it into a new shape, it will retain that shape when it has cooled. To make push-fit ends, I have turned up a simple


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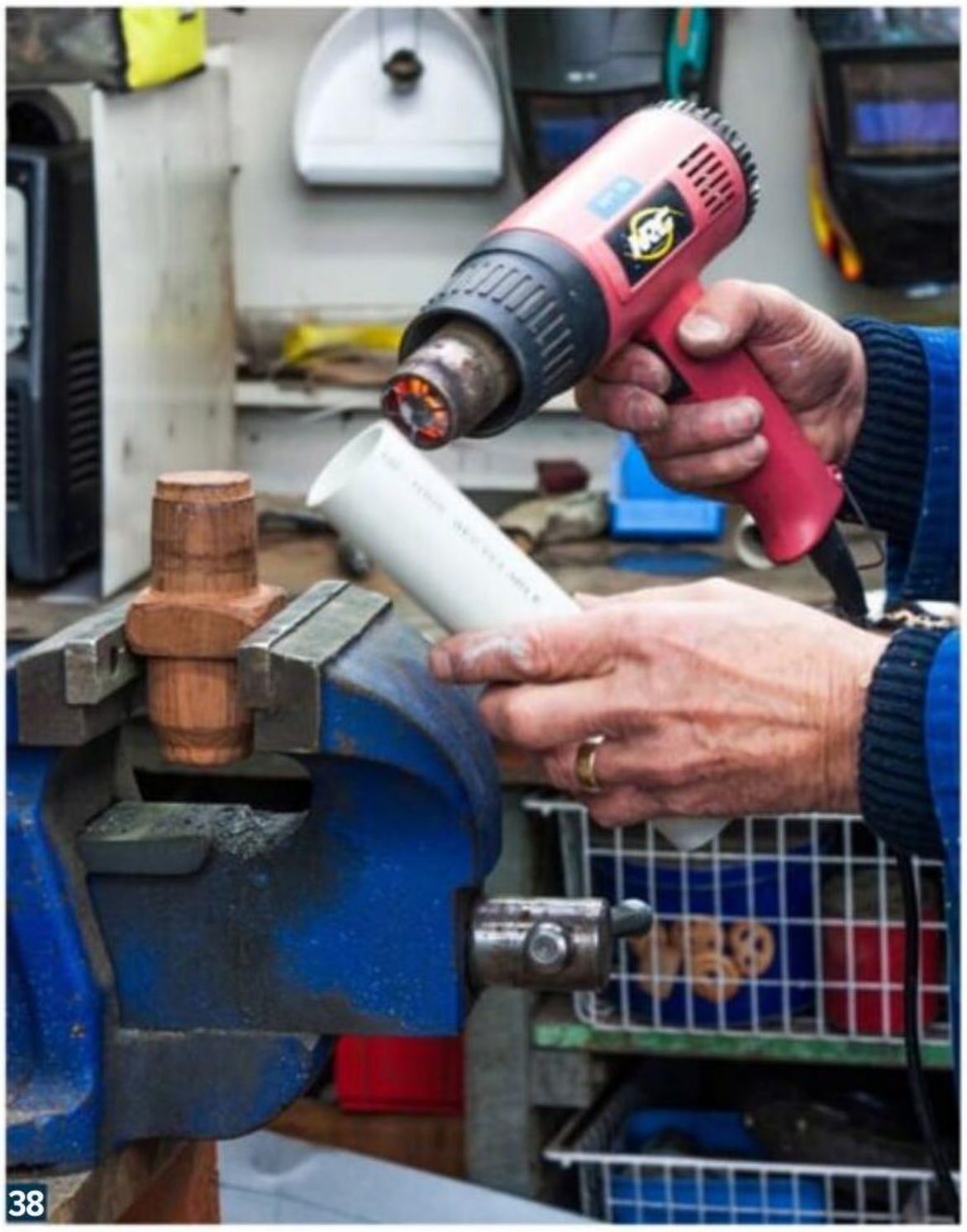
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“If you take the time to make a cyclone dust collector, you will wonder how on earth you managed without it”


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wooden former **(Images 38 and 39)** to push into the heated pipe. The die expands the heated pipe so that it will easily slide over the outside of another piece of pipe **(Image 40)**. Connecting these joiners to the vacuum cleaner hose is done in the same way. Simply heat up the end of the joiner and push it over the vacuum tube **(Images 41 and 42**). As it cools, it will shrink to form an airtight seal.

Vacuum cleaner

Any old vacuum cleaner will work. Check out your local recycling centre or simply let friends and family know you need an old one for the workshop. I have been given two that were considered useless by the previous owners. With a new bag fitted and the filters blown out, they work perfectly because there is such low air resistance through the cyclone.

Using the cyclone

Now that you have all the components made, there are several options for using the cyclone. The first one that I made was a mobile unit. The body was made from 12mm scrap ply. Under the handle, I mounted a double power point with a long extension cord wired in. The vacuum cleaner plugs into the power point, leaving one spare for plugging in whatever power tool I am using at the time. It is very good for collecting the dust from cutting MDF panels with the skill saw or when using the orbital sander. I have modified the dust collection ports on both of these tools **(Image 43)** so that vacuum hoses will fit. I use this all the time for general cleaning in the workshop.

My cyclone

A wall-mounted cyclone collects dust from my disc sander and drill press (Image 1). A 40mm pipe runs the length of the workbench with slide gate outlets at each machine. I used a four-litre tin can to collect the dust. This will last several weeks before needing to be emptied.

My homemade bandsaw and saw-bench **(Image 44)** each have a cyclone and vacuum cleaner that start when the saw is turned on. Because of the limitations of space on the table saw, I made a rectangular dust collection bin out of 10mm scrap ply.

If you take the time to make a cyclone dust collector, you will wonder how on earth you managed without it.

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THE Shed

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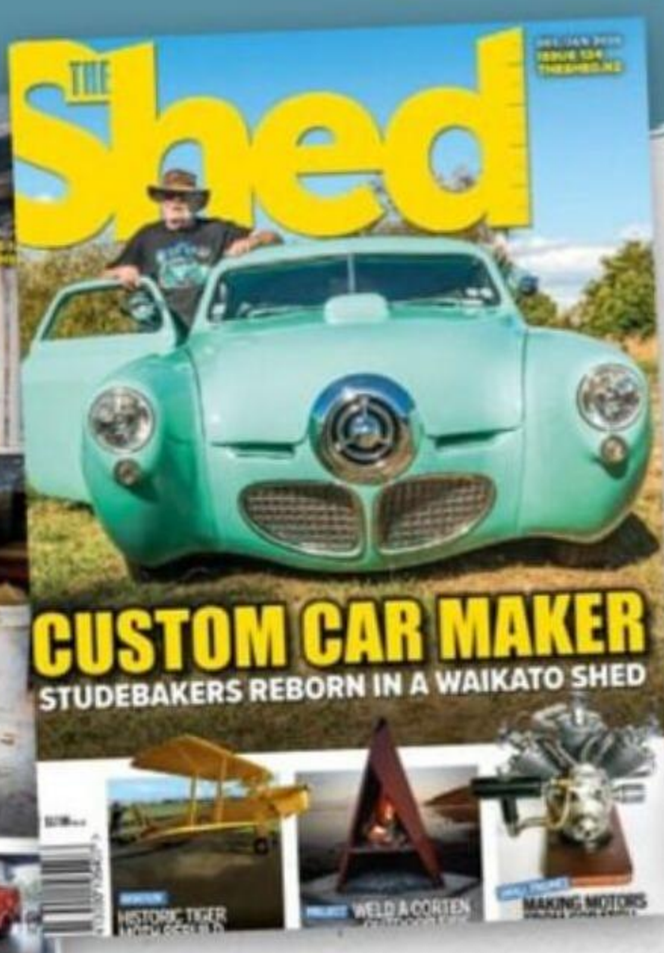

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Project: build a workshop bench

NEW APPROACH TO UTILITY BENCHES

By Jude Woodside | Photographs: Jude Woodside

Now that Jude's new shed is completed, it's time to start on some projects. First, some simple and sturdy wooden benches using affordable macrocarpa

You don't need perfect timber

> "The advantage of this design is that it doesn't require good, straight timber"

Every shed needs a utility bench, and most sheds usually have one or two.

It's a place where things can be worked on or stored. I have built a few recently, and I have developed a simple process that makes the task quite easy and results in a sturdy workshop asset with space for storage.

The advantage of this design is that it doesn't require good, straight timber. In fact, I often buy very cheap, knotty second- or third-grade timber from my local sawmill, which specialises in macrocarpa. I can get long lengths, but they are rarely straight or twist-free. Sometimes I can get relatively straight pieces, or I can find 3m or so in a 4–5m length. For the most part, you can usually find enough pieces of around a metre that are relatively straight.

Design

The design relies on a number of piers made of six pieces of 100x50mm timber, nothing longer than 900mm. In fact, I usually cut it at 900mm and resaw it to 840mm to trim the ends flush. For really gnarly stuff, I might even flatten it on the thicknesser or saw.

The ideal height for a workbench is best determined by the height at which your wrists can lie flat on the surface, or, if you are planning to use the bench as an outfeed table, the height of your machinery. Determine what material you will use for the top, and extract that thickness from the height you have determined, and that will be the height of the piers.

I aim to make all my benches 875mm, the same height as my table saws. The uprights (stiles) are cut to 840mm and 470mm for the cross pieces (rails). Then they are simply sandwiched together

Rough-cutting timber to size, avoiding the biggest knots, to find the straightest bits

Refining the cut. I like to recut both ends to get square

Building a jig to make the piers

Nailing the pier elements

The finished pier

and nailed. If you are using macrocarpa, like me, you have to be a little careful here because it has a tendency to split if nailed too close to the edge. It's not a major issue since, for the most part, those areas won't be seen. For mac and other hardwoods, it isn't a bad idea to drill a hole first; I'm usually too impatient for that. I nail the top rail to be flush with the top of the stiles and the second one about 50mm above the floor. I have found it helps if you use two nails on each rail on one side and only one on the other. The first two nails help to make the frame as rigid as it will be, so the additional nails are simply risking more splitting. If you are using pine or other timbers, it's probably not a problem.

Options for multiples

If you have many to make, as I do, it helps to make up a jig.

The jig is simply some 100x100mm or similar material located at the intersections of the rails and stiles. In my case, I used some offcuts of laminated timber. They came from when I lowered my workbench to match the table saw height. They are simply screwed to a board and can be used to hold the pieces in place with the aid of a few clamps.

Once the piers are assembled, it is simply a matter of measuring your space

and determining the spacing you want for the piers. Over 3m, I go with roughly 1500mm centres. In this case, I made the bench 2650mm, so I put the middle pier at 1300mm. There is a three-phase switch in the way, and I needed the corner for something else.

Lay it all out on the floor

I lay out the piers on their top ends on the floor at their set distances and simply nail the lateral to the top on all three piers.

Doing it on the floor, which is relatively flat, is far easier than mucking about with clamps. Do the other side at the same time, then clamp some timber supports to the rail and attach the lower laterals. In my case, I use a 25x100mm piece for the outside lower rail.

The inside one is sized according to

> "For really gnarly stuff, I might even flatten it on the thicknesser"

I like to assemble them on the ground to keep everything square and parallel

The outside rail is smaller than the rest to make it easier to stand close. The back lateral is smaller to accommodate the wall skirting

Attaching the bench to the wall

where it fits in relation to the wall. I have installed skirting boards around the edges of my shed to keep dust, water, and other liquids at bay. As the skirting is about 70mm, I usually cut the inside lateral to be above the skirting yet still level with the rail. It means I have to rip 20mm off the inside lateral to make it fit. It must be parallel to the front lateral, as the lower shelf has to attach to both.

Time to install

Now you can position the bench in place and fix it to the wall if necessary.

Once in place, then measure up the top. I use Triboard offcuts, which are 35mm thick, but MDF or plywood, ideally plywood, would do. The Triboard is 600x1000x35mm. The top overhangs the edge by 50mm to allow me to use clamps or fix a vice to the bench.

I like to screw the top in place and either oil it or apply some other finish to protect it. Screwing it in place means I should be able to replace the top in years to come.

To complete the project, I fixed a plywood shelf attached to the lower rails. This also helps to stiffen the whole assembly. It makes a great place for your tools, or you could add drawers. In this case, I also added a bit of skirting to the back to protect the wall.

The result

It might not be flash, but it is a quick and efficient method of building a sturdy bench.

For the record, this bench used roughly 21m of 100x50mm macrocarpa. I paid $3.50 per metre for the timber. The Triboard offcuts I was given, so I have no idea of their cost, but you get a 2400x1200mm piece from local merchants for around $80, which will build two benches.

> “It makes a great place for your tools”

The frame in place

Attaching the lower shelf

Fitting the top

The finished bench after oiling

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TRIUMPH

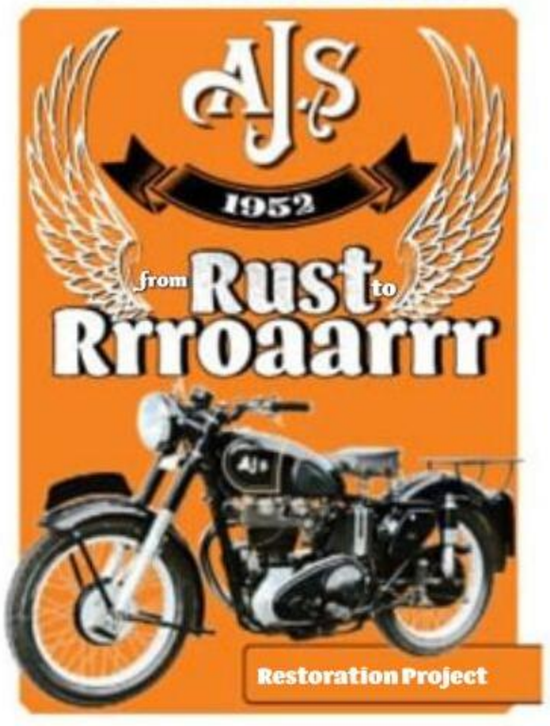
FOR THE RIDE

The ‘AJS’ 500 motorcycle, as it was at the end of the last article, Part 8

RESTORING A 1952 AJS

Part 9

Problems aplenty for Peter again, but he soldiers on regardless … Kick-starter splines give him big issues, and there is the oil supply, the gearbox, and some tin panels to attend to. Now, did that engine start or not?



By Peter Barton | Photographs: Peter Barton

My last article (*The Shed* Issue No. 125) on the ongoing saga of the ‘1952’ AJS 500 rebuild ended at the point where I described jumping on the kick-start lever – no electric start, of course.

My start attempt was unsuccessful; the lever lost its grip on the kick-start pinion and just spun around, and furthermore, the return spring had no tension to get the lever back into position. However, I’m heartened that the cylinder compression must be good; look on the bright side of life.

This article has a lot of descriptions about how I have tried many things but not got very much further on the project. The story would be misleading if it seemed that things went well. I want to thank those who have contacted me

The starter pinion pokes out from the gearbox outer casing; prior to starting its misadventures

The pinion looks badly mashed; a result of the starter lever grinding around

The starter lever has very poor splines

> "I'm heartened that the cylinder compression must be good"

Nickel plating the pinion – an attempt to build up around the splines

through *The Shed* and given me great advice; it is heartening.

I've likened this rebuild to a Snakes and Ladders game, but with plenty of snakes and no ladders. This kick-starter issue, a snake, meant that I would have to remove the outer cover of the gearbox (yet again) in order to tension – that is, reset – the spring, and also to fix up the lever-to-pinion grip. From previous assembling (see Part 3 in *The Shed* Issue No. 120), I knew that there could be issues putting the cover back together – many parts in both the kick-start and the gear-change mechanisms, which could slide out of position. And so there were. But first, the kick-start.

Kick-starter issues

The kick-start lever and the pinion shaft have matching splines machined (broached) into them, so that the lever slides onto the pinion. Then it is clamped.

The (39??) matching hills and grooves should lock the lever and pinion together securely and be ready for my energetic jumping.

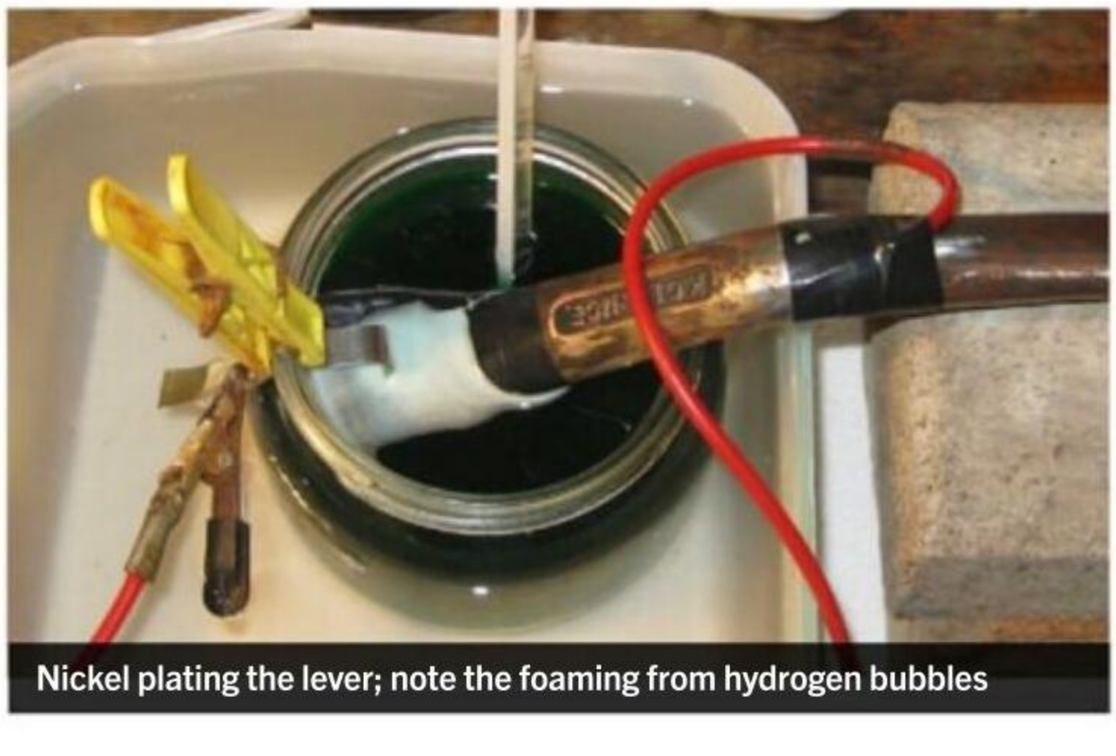
Why did I have a failure? Possibilities. The splines on the pinion look badly, recently mashed (my start-up attempt?). Those in the lever look blunt. Perhaps I had not sufficiently tightened the clamp before attempting the kick-start. The lever splines may have been too blunt to begin with anyway. The two items might have had rubbish in their grooves. Finally, if I had pushed the lever too far onto the pinion shaft (and the un-grooved part of the pinion does poke out beyond the gearbox case), then the lever grooves would have been beyond their intended mates on the pinion. All these reasons come back to carelessness on my part.

Re-broaching

I don't have any gear for broaching on the two bits.

So, as the next best thing, I ground back the sides of a hacksaw blade so it would make a rough V-shaped cut. Using this, with a fine triangular file plus a magnifying glass, I got better-looking grooves and with no rubbish. When I pushed the two parts together, but without clamping, they still felt a bit too loose.

Of course, as I file out the grooves on each piece, they will get looser on each other because the average diameter of the grooved shaft will decrease, as the average diameter of the hole in the



Nickel plating the lever; note the foaming from hydrogen bubbles

Shiny new nickel inside the lever (from the Watts bright nickel solution, but it's not strong enough)

"In an old-school way with an engineering ball peen hammer"

The spring being fitted to the pinion, with suitable tension

kick-start lever will increase. The spline spacing on each piece will become increasingly mismatched.

I decided to electroplate some nickel onto each of the surfaces to the point where the two parts, unclamped, slid together with some resistance. I used a tank Watts bright nickel method. These tasks went well, I thought.

Gearbox case reassembly

Now, to reassemble the gearbox outer case.

I tried to install it with the bike upright, but gravity worked against me. I could tension the kick-start spring and hold the pinion gently in position with vice grips, and a clothes peg through the oil filler hole to hold the clutch lever away from fouling. However, it seems just about impossible to align the gear-selection pieces, pawl, etc., when

Pinion, outer gearbox case, and return spring

Pieces in place, but the gear selector cannot go in with it assembled this way

the gearbox is in the bike, in an upright position, even when heavily greasing the parts to make them stick.

The grease (and the outer case itself) then continually obscured the timing marks used to correctly locate the gear selector during reassembly. These marks consist of a small stamping next to a tooth in the steel of the selector shaft, and a second mark on a tooth of the pawl gear. I had even put a small dot of white paint on both marks to make them more visible. Annoyingly, as well, bits kept sliding.

A different tack

Plan B. Handlebars, tank, and seat removed. I laid the bike gently (not in a fit of bad temper) on its side and removed surplus grease from around the gear-selector pawl.

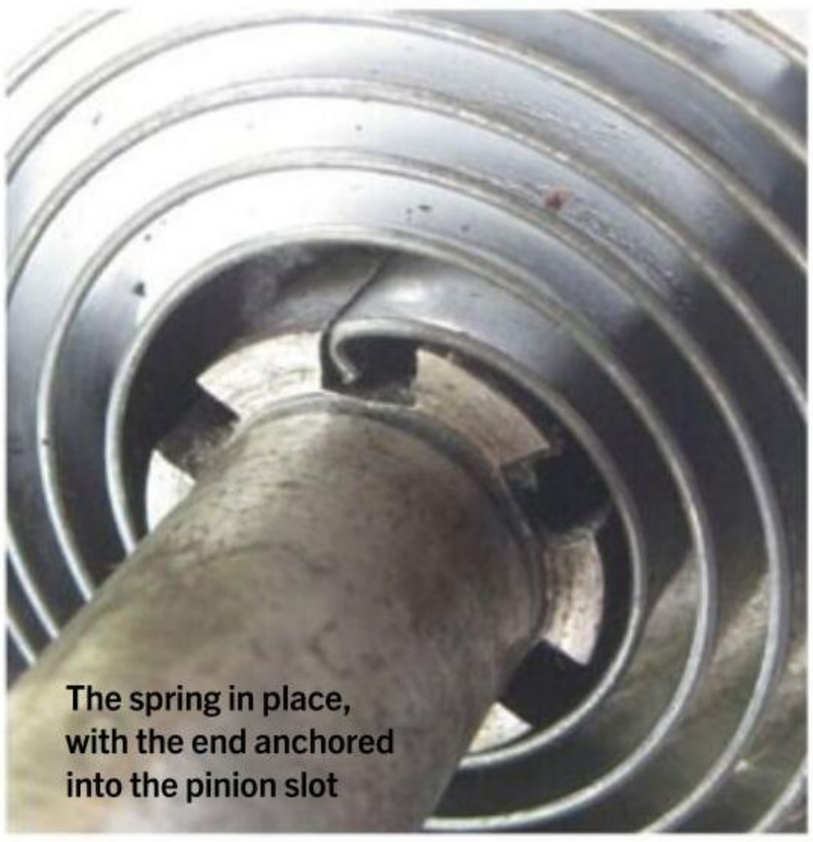
First, cutting a replacement brown paper gasket for the gearbox cover (in an old-school way with an engineering ball peen hammer), then eventually – assembly success. (I didn't have to remove the primary chain, clutch, and then the gearbox, all of which would have been Plan C.)

I've watched *Wild Heroes* on TV, vets operating on unconscious animals, and I have to say that I felt like a mule saviour.

Time to pick up the bike and set it back on its stand. I'm in my eighth decade, and with a bad back, this was an achievement, I can tell ya. Handlebars,

Laying the bike on its side for gravity assistance. It looks a bit like a wounded animal

A closer view of the gearbox, on its side. White 'timing' marks can be seen



The spring in place, with the end anchored into the pinion slot

Grease to 'hold' bits in place, but this attempt was unsuccessful. The white dot has to line up with the mate whose white edge is only just visible

Another view of the gearbox on its side

Gasket in place; use gasket-maker polymer, or grease to hold in place

Above: An old way of making a paper gasket: lay over the surface, tap metal edges gently, and they'll cut the shape. Do the bolt holes first, and then the reverse-insert bolts to hold it all in place

A view of some (better?) teeth in the starter lever

The broken oil junction

tank, and seat replaced. And yes, the kick-starter seemed to work well, and there was good compression. (But read on, more on this later.)

Sorting the oil system

Time to land on another interim snake, of course.

Before starting the motor, I had to get the oil system done. A small oil pipe union (pot-metal) had previously fractured, and I had joined it using a two-part epoxy weld compound (see Part 8).

I went to tighten it slightly, into its steel sleeve, and it broke again (poor adhesion to the metal; the epoxy itself stayed intact). I therefore bought an intact union (second hand from a specialist AJS supplier), but the problem then was getting the broken, old, threaded pot-metal fragment out of the steel part of the compression fitting. (This steel sleeve, a bit like an elongated

“I couldn’t get onto the broken bit using pliers or vice grips”

Glueing the broken piece

nut, had a nice bit of my DIY nickel plating on it.)

I couldn’t get onto the broken bit using pliers or vice grips. I put a stud remover into it, and then broke that as well. Now I had a jammed, broken threaded part plus a broken stud remover all inside the sleeve. Time for a break (pun intended) from the work; when the tension rises, walk away for a while. Have a nap.


Broken again; could not get a suitable grip to unscrew the fragment. Note the DIY nickel plating – good from a distance


The stud remover breaks as well

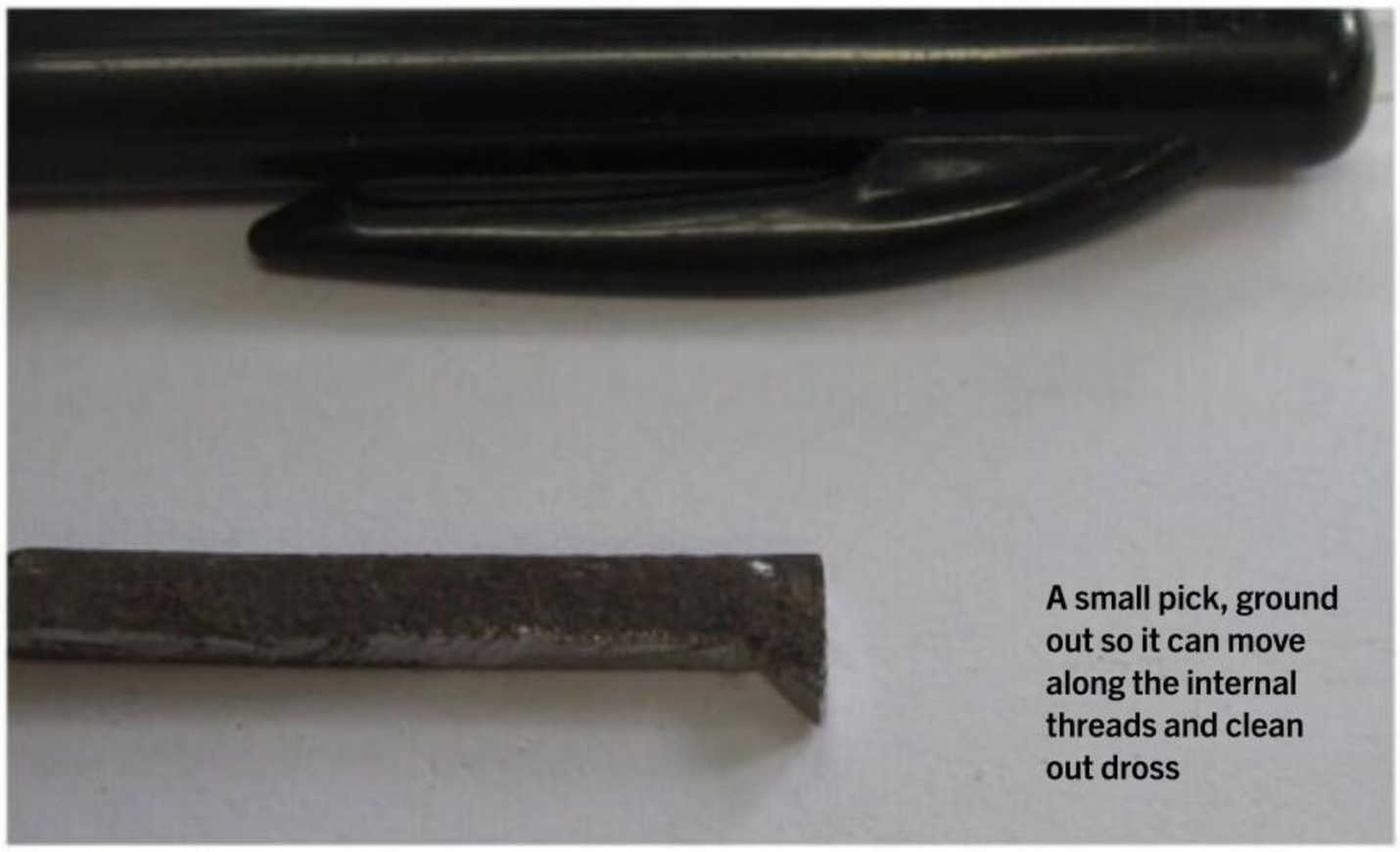
A final solution

As a last desperate measure, I decided to melt out the (lower melting point) pot-metal, which (in theory) should not adhere to the steel – that is, leave the internal steel threads clean.

A hand-held gas burner (Tradeflame TF/Ultra Gas) provided enough heat to get the steel sleeve red-hot (it would be hot enough to braze steel), and indeed the pot-metal flowed out with the broken stud remover and the soldered gland at the end of the copper oil pipe.

Slag remnants in the steel threads came out with a little homemade steel pick and a lot of picking. My DIY nickel plating on the sleeve is now badly discoloured, but time is pressing … ▶


Melted-out pot-metal and stud remover bit. DIY nickel plate munted



A small pick, ground out so it can move along the internal threads and clean out dross

> "It seems a bit too brutal and contrary to the spirit of rebuilding"

The gland at the end of the oil pipe (all copper) had to be re-soldered. Done, with a cooler LPG flame. After all this, I wasn't too sure how oil-tight the system would be, although the important mating surfaces looked OK. Upon advice, I have put plumber's thread seal tape onto the compression surfaces of the system. Time will tell.

Clear polythene tubes temporarily completed the oil system; these oil tubes do not have to withstand much pressure, and I would be able to see what was happening. Later on, proper oil tubes will be installed. For ease (i.e., no compression), the spark plug was removed, and I kicked over the engine a few times. Oil circulation OK. No immediate oil seeps.

Morale booster

I put the spark plug back in. For a first indication that the rebuild was on track, which would be a morale booster, I decided that just a few 500cc throbs

The bike goes onto its side a second time

would do. Spark ignition timing lever to fully retarded. Starter fluid into the carburettor. No petrol in the tank just yet. A wee bit of throttle. A couple of energetic jumps. No firing. And then the starter lever slid around on the pinion. Some nickel flakes are showing around the area.

Bike on its side again, gearbox outer case off again.

Push-starting the bike on a sloping piece of 80kph road outside my gate raises some obvious safety issues, and a sloping part of my driveway may have medical implications for me. No tyres yet anyway. And then it may not start.

Time to consider some other options. Welding the pinion and lever together would certainly teach them a lesson, but it seems a bit too brutal and contrary to the spirit of rebuilding (although subsequent removal of the gearbox case would still be possible, if necessary).

Buying second-hand replacement parts could be on, but they seem rare, and I'm told that "they all do what yours have done". New parts from England would cost me about $300 and take a fair bit of time to arrive. Drilling the lever, filing a flat on the pinion, and then inserting a tapered cotter pin (pushbike pedal method) could lock the two together and work, at least for a time.

The best job, of course, would be to put new steel onto and into the two parts, then turn and drill, and broach the pair again – that is, almost a new start. Sadly, this is outside my financial and sheddie resources.

More plating onto the pinion; a different electrolyte. Note the foaming from the hydrogen

More plating onto the lever

Try, try again

However, I felt that the next best thing was to make a second, more careful attempt at fixing the original. Deeper V-shaped grooves, sharper ridges, and a better type of nickel plating, which should not flake off so easily. I visualise doing this and achieving a perfect result.

The nickel-plated surfaces will have to withstand shear forces on the built-up ridges, which fit into the opposite valleys, as torque is applied from the kick-start lever. The website substech.com (a great site for researching many materials) has a recipe for a hard nickel electroplate using nickel sulphate, ammonium chloride, and boric acid.

This is a bit different from my Watts bright nickel recipe; maybe it will work better. I don't have ammonium chloride (which is ammonium plus chloride), so I used a mixture of ammonium sulphate (a fertiliser) and sodium chloride (common table salt). Otherwise, much the same method.

Take three

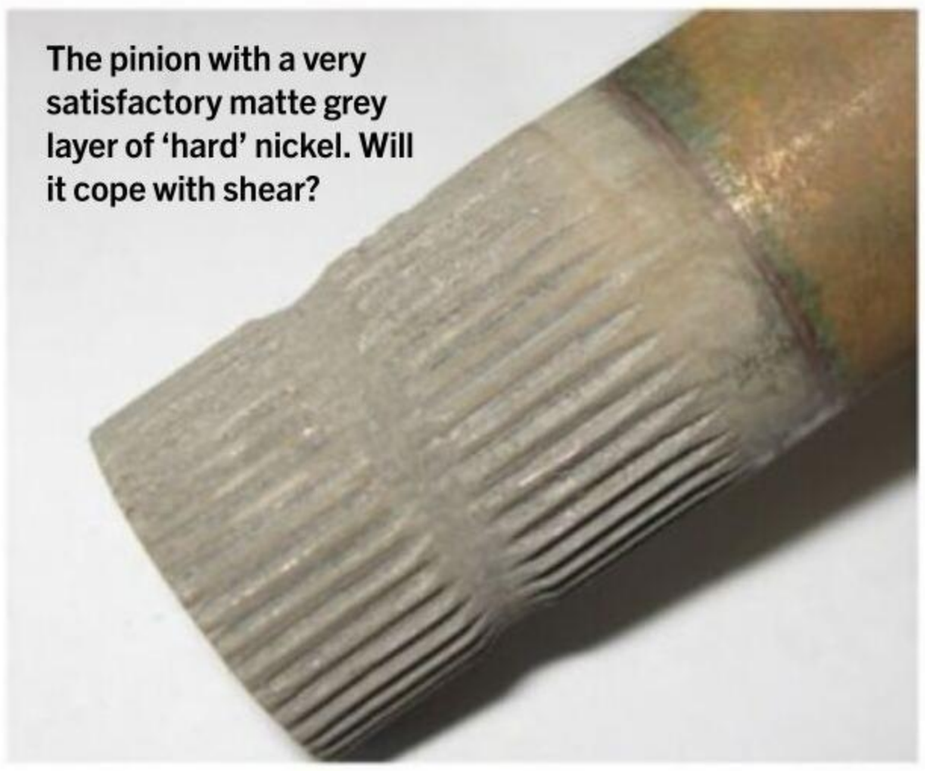
I tried the plating but got a lot of gas (hydrogen) coming off the splines within the kick-start lever. The result was a matte brown appearance, powdery, and a brown sludge at the bottom of my plating tank; not too good. ▶

Hand broaching with a fine file. The candle is used to put smuts onto the steel, to keep track of the cuts. I also wore double spectacles to magnify the task

The pinion splines. Masking tape plus soot to keep track of progress

Pinion and lever ready for yet more plating action

Nickel tape and nickel sulphate crystals recovered from evaporated washings will be used for another electroplating



The pinion with a very satisfactory matte grey layer of 'hard' nickel. Will it cope with shear?

The two pieces, having both been hard plated once. More to come. Note the shiny nickel crystals misplaced on the right side of the lever hole. A problem?

Another angle

I think the problem occurred because I used salt as the chloride source. The sodium content is interfering with the attempts to put nickel onto the (cathode) splines.

Start again; third attempt

This time, I tweaked the (already tweaked) recipe by using a little hydrochloric acid (spirits of salts; i.e., hydrogen chloride) instead of salt. I began, though, by buying a new set of micro files, and one of the files (described as a 'knife file') had a profile like a narrow V, similar to what the original broaching looks like.

Traces of the original machining could still be seen on each piece. These guided my file and hacksaw blade work. So that I could see better what I was doing, I taped two spectacles together to get higher magnification. I passed the work surfaces through the top, sooty part of a candle flame from time to time to reduce shininess and keep track of progress. Time to electroplate.

I think I need to build up the surfaces by about 0.3mm, with correctional filing now and then. With a current of about 0.2A (recommended for the area of plating), I calculate that I would get about 0.5-thou thickness (0.013mm) of nickel per hour.

At the time of writing, it is still an ongoing process, doing the work session by session. There is now very little hydrogen coming off, after an initial burst. I'm getting a good matte grey colour, and the pieces have less slop as they are pushed together.

Tinware restoring

Tinware, such as the primary chain cover, rear chain cover, and speedo can, have to be fixed up.

There is rust, and also some small dents. A rust converter / primer liquid, followed by filler and sanding (the usual tedious process) meant that they could be painted, and I used the usual satin-black epoxy from a spray can. Hanging the bits on wires from a clothesline

Bits of tinware have been sanded and rust-treated

Progress with bog: application and sanding

Spray painting with bits suspended by wires from a clothesline

Knee rubbers for the petrol tank: one has been attacked by oil during the bike's 50-year storage

'AJS' tin badges for the fuel tank. Which models/ years had these, I wonder?

> "I'll go and look through the storage boxes, but I feel that this is the only one I've got"

outside, the weather was not too hot or windy, and there were few insects about.

A disappointment with the tank knee-rubbers. When pulling them out of storage, I found that one had got oil on it from another bike part, and over time, the rubber had dissolved. No practical alternative to buying a replacement (second-hand?) one. Can I just get one for the right-hand side of the tank, or do they have to come in pairs only, I wonder?

I have a pair of pressed steel AJS badges to go onto the tank. I wonder if they are prewar, although my tank has appropriate threaded holes. The raised lettering is silvery, and I'd like the background to be the shade of blue which is often used for AJS. Transfers for the gold striping and AJS logo on the tanks are available (I think), but I would like to try a little DIY signwriting, one day.

The speedometer can, recently painted (satin black, of course), gets its innards installed. I assumed that I could connect the rebuilt speedo to its cable, so I could put a drill on the other end and test how it all works.

Unfortunately, the inner cable is missing one of its ends: another hassle for next time. I'll go and look through the storage boxes, but I feel that this is the only one I've got.

Coming up in Part 10:

Kick-start issues continue; a trial start if possible. I'll get some tyres (appropriate, old-style, of course). There will have to be a focus on getting that throbbing motor and some movement. Cosmetic stuff plus electricals will have to slide down the list.

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SCAN ME

With eight valves, this luxury radio delivered domestic radio, shortwave, aviation, and even the police

RADIO SAVIOUR

By Chris Hegan | Photographs: Chris Hegan and *The Shed*

Radios once connected us to the world, much like the internet does today. For children of that era, radios had a magical quality that captivated our imaginations for decades. We were enchanted by their sounds, mysteries, and beauty of valve radios. Meet Peter Walsham, a lifelong fan and dedicated saviour of these gems

A century ago, a great transformation took place across the world.

In the 15 years following the Great War, radio broadcasting went from a specialist activity engaged in by geeks to, by the end of the 1920s, something that the majority of households in the developed world accessed via at least one radio receiver. This began the age of modern media – constant entertainment and up-to-the-moment news had arrived.

In the 21st century, now deep in the digital age, where all information, including sound, gets broken down into data, all ones and zeros, an age in which every recorded noise is a reconstituted simulacrum of itself, there is a growing appreciation of the audio technology of the last century. Musicians and recording studios are shelling out big bucks for new valve amplifiers.

The sound you hear from a valve radio is not decoded data. It is the sound itself, its waves reproduced as variations of the amplitude or frequency of the radio carrier wave. The valves introduce distortions which are mostly harmonics, audible and pleasing to the ears. It's real, and we can hear that. Restoring a vintage radio brings all that back home.

With that in mind, I take a ride to Pukekohe, to the home and workshop of one of the country's few full-time radio restorers, Peter Walsham.

Tackling the job

I spend a fascinating day with Peter, a man with half a century of radio knowledge under his belt.

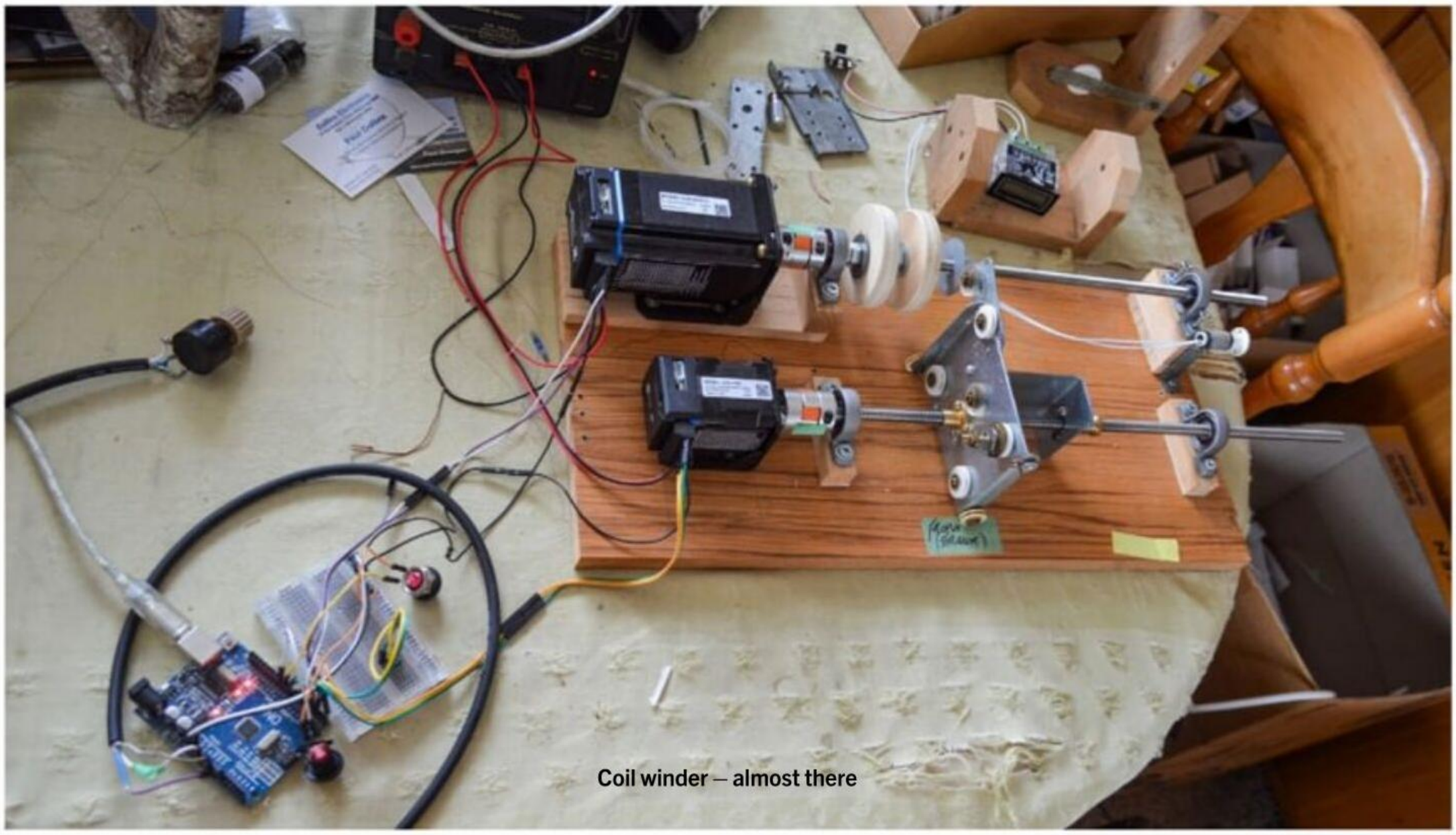
His superb and ever-growing collection of vintage radios and many thousands of radio parts fills his house, where we pass an agreeable if challenging afternoon discussing the history of radio production and broadcasting in New Zealand, whilst looking into the workings of the radio that he is currently working on for a client.

Peter is a man obsessed with radios. ▶

They and their components occupy every shelf, every room, every spare space in his clean but swamped house. His kitchen table is a workspace for an ingenious machine that he is building to wind coils, a desperately needed innovation because the number of people in New Zealand who can still wind a radio coil has dwindled to a very low count, and doing it by hand is time-consuming and expensive.

In front of the couch in his living room, in the space where a family dog might normally snooze, is a rank of boxes overflowing with glass and metal valves. ▶

Miles of wire, components galore



Coil winder — almost there

Brightening up the living room

Childhood fascination with radio

His fascination with radios goes back to his childhood. He remembers listening to the radio and, burning with inquisitiveness, turning it around to peer inside.

“I quickly discovered that those glass glowing bits were hot!” he laughs. “I still have that radio.”

His interest kicked up a notch or two when Radio Hauraki started its broadcasts from the Hauraki Gulf, just outside the legal three-mile limit.

“I found that really exciting,” Peter says. “Not just the music, which I loved and none of the legal stations would play, but the whole idea that they were pirates, although I was too young to understand the politics of it.

“For Christmas in 1968, my parents gave me a Philips kitset. You could build up to 20 different models from this set of parts. With an antenna, it picked up all the Auckland stations, but it didn’t pick up Hauraki. I built some of the other kits, but I built the one that used the most parts, a three-transistor radio, over and over again. Then it packed up. The book that came with it had no fault-finding, nor were there any spare parts. I asked Dad for help, and he referred me to someone at his work.

“I called Mr Armstrong, and he said

1933 model 944 Atwater Kent

> “He was a stickler for the law, and they were pirates”

to bring it around. He found out quite quickly that a transistor had blown. He told me it could have a number of causes. I could have hooked up the battery the wrong way around, or wired the transistor the wrong way round, or shorted out this or that. Put a wrong part in.

“He happened to have some spare transistors in one of many tobacco tins, and it worked. I was so happy. He must have detected something in me, because he invited me around the next Saturday to work on a project. He had this chassis sitting on his bench. ‘I’ve acquired this,’ he said, ‘and between us I reckon we can get it going.’

“Well, he was being kind, because I had no idea. So he got it going, and then he said, ‘It’s yours.’ I was thrilled because it picked up Radio Hauraki, which my kit wouldn’t. Monty, or Mr Armstrong as I called him, had no time for Hauraki. He was a stickler for the law, and they were pirates.

“It had no case, but Dad and I made a box for it, and that became the radio I listened to all the time.”

Bitten by the bug

“I started going around to Monty’s place every Saturday afternoon,” Peter continues.

“He was a radio ham, with an antenna

“I still have that radio”

Art-deco 1954 Mullard Meteor

Seven-valve 1935 Gulbransen

wire going the length of his garden. I was warned never to touch it while the transmit button was pressed. RF power can be very high, and the burns can be severe, going deep into the skin.

"In 1973, I left school and started at Mervyn Legg Ltd as an apprentice radio and TV serviceman. But really, I wanted to be a sparky. My schoolwork wasn't that great, and I hadn't been good at maths, which you needed to get an electrician's apprenticeship. But I had worked my way through book after book that Monty had pressed upon me. Mostly, they were 30 or 40 years old, which I think fuelled my interest in old radios.

"So I got my trade certificate in Radio & Associated Electronics. I didn't take it further because I still wanted to be a proper electrician. Arcs and sparks, the stuff that bites. And machines, and radios, and TVs weren't machines. I finally got a job as an apprentice electrician, doing a lot of work with electronically controlled machinery, particularly irrigation pumps. Because of my trade certificate and School Certificate, which I had, I only had to do a year, and I got certified as an electrician.

Starting my own business

"After a couple of years," Peter says, "I was able to acquire a radio and TV service company in receivership.

"It came with retail premises, but I very quickly worked out that I couldn't do the repair work and man the shop. I'd be working on some problem that was a headscratcher, and in walks Mrs Brown wanting batteries for her torch. I'd come back to the repair and would have completely lost the thread of what I was doing. So I shut the shop.

"Now I was doing radio and TV repairs, TV mostly, as well as electrical work. And once again, it became apparent that I couldn't do both. I couldn't do an urgent repair if I was wiring up a house on a deadline.

"By now, it was the early '80s, and

FANCY OWNING A RADIO MUSEUM?

Back in *The Shed* Issue No. 78, we featured the epically nostalgic vintage radio collection of Graham and Val Hawtree in Whanganui.

Because Graham's first love is for the antique cabinets rather than the electronics, each set shows off his considerable skill in treatment and restoration. These beautiful radios were produced in the glory days when the radio was not just an appliance but a treasured piece of furniture housed in a well-crafted wooden or Bakelite cabinet, often much larger than the electronics inside, with rich acoustic qualities.

Being so well-made before the notion of planned obsolescence cursed the industrial world and polluted the planet, many are still around, and the Hawtrees have acquired thousands of them.

Graham has spent years battling borer, replacing shellac and veneer, restoring these beautiful devices, but those years have added up. The time has come for Graham and Val to think about the future of more than 700 fully operational vintage radios, along with a small, limited-range AM transmitter which ensures that, regardless of the future of broadcasting in New Zealand, those radios will always be able to be demonstrated working – for instance, with recordings of Winston Churchill's speeches or an episode of *Life With Dexter*.

There is no doubting the appeal to New Zealanders and tourists of all ages – at a recent vintage weekend in Whanganui, the museum received some 450 visits.

The oldest radio in the collection is a 1923 Atwater Kent set that has no cabinet; the working parts sit on a wooden plinth called a 'breadboard'. Vintage record players, including a couple of pre-1920s Edison cylinder phonographs, are another feature of the collection.

To arrange a free visit or to discuss purchasing the collection, go to vintageradiomuseum.co.nz.

the government dropped all the import controls that had been in place since the war. Virtually overnight, New Zealand radio and TV manufacturers went to the wall, so I got out of that business and went full-time into electrical. But I continued moonlighting, doing radio and TV repairs and never stopped."

Restoring a radio

I ask him how he goes about restoring an old radio.

"There are parts that I replace as a matter of course, nearly all parts in fact," he tells me. "Wax-paper capacitors will be faulty. In fact, virtually all capacitors will be faulty." He turns to the set on his bench, which he is repairing for a client. ▶

Early electrolytic capacitors leaked

Empty, but it stays

Peter demonstrates the device that he made to copy a concave dial cover

"This Columbus, made by Radio Corporation of New Zealand, would be the epitome of their designs," he says. "When restored, they go exceptionally well. This is a 1949 model. Radio Corp. of New Zealand serial numbers are a good indicator of their age. The first digit is the year it was made. They started in '33 or '34. The valve types tell me it isn't a '30s radio, and it certainly isn't from the late '50s, so it has to be 1949."

Peter could give a similar account of virtually any vintage New Zealand radio that might turn up.

"Back in the '70s, when we were repairing radios," he says, "we would often substitute valves because of availability. It wouldn't noticeably affect the sound, and if it worked, the customer was happy. But restoring an old radio that, in the not-too-distant future, will be 100 years old, any value the radio has will be based on how close

"The valve types tell me it isn't a '30s radio"

it is to the original, apart from the new parts I have to put in. So I have become a lot more particular about trying to put something close to the original parts in."

For this reason, when he is replacing the electrolytic capacitors, which are found in an aluminium can on the chassis, he will solder the new capacitors under the chassis and leave the empty can in place.

How much does a restoration cost?

"First question I ask people with a radio they want restored is, 'How much do you want to spend?'"

He is clear that he is no longer in the radio repair business. He takes the time to clarify a client's intentions, taking on those who want to see a vintage radio restored to something close to its original condition. This might be achieved with a few hundred dollars, but can easily exceed $1K or more.

"These days," he affirms, "I like to keep the set looking as original as I can, and that takes time."

He can still buy new-old-stock valves – valves made years ago but never used – from the States, Australia, Ukraine, and elsewhere, but at a cost.

"If people want a set of new valves, it's going to cost them $250–300 for a five-valve radio," he says. "I cannot do it at an hourly rate."

Courtenay with replacement dial cover

Finding a way

"Dial glasses are one of our biggest obstacles," says Peter.

"Early Radio Corp. radios had hand-painted dials. Apparently, they had one woman who was extremely accurate with a fine brush. She had to write backwards because the paint was inside the glass.

"For this Courtenay, from Radio Corp. in the '30s, I had to replace the dial glass cover because it was cracked and yellowed. As you can see, it is a dish shape. So I made a mould, put some plastic film between these two rings, stuck it into the oven at 100 degrees with this hose sticking out, and sucked on it as hard as I could."

The shortwave dial shows stations from all over the world. ▶

The challenge – with Peter's help, this writer is going to explain how to restore this Philco radio

Peering into the unknown

Only £13/19/6. Not £14. Some things never change

"I've had people ask if it converts the broadcasts into English. Perfectly seriously. They're so used to digital electronics," he says.

Radios to avoid

It is hard unless you understand radios to tell if a radio is badly designed or might have something unusual that might pose a challenge to restoration. Most New Zealand radios were made to a high standard, unlike some foreign sets that lacked transformers and were inherently dangerous. As a general rule, avoid AC/DC sets that run on both mains and batteries, including a Philips made in New Zealand.

This last matter is now of particular interest to me, because a day spent with all these beautiful vintage radios, hearing Peter describe his approach to restoring them, makes up my mind.

The Shed wants a story about restoring a vintage radio, and now I think the best way to write that would be to find an old set and restore it myself. Or that is what I tell myself. In truth, I have caught a dose of the bug that has driven Peter Walsham for most of his life.

The bug bites

I have absolutely no idea how any radio works, much less one that runs on old glass valves.

So I set my sights on a simple, later-period valve radio and go looking on TradeMe. Within a week, $43 has made me the owner of a non-working Philco 401 Nevada four-valve radio, made in New Zealand in the early '50s by the Dominion Radio & Electrical Corporation under licence from the Philco Radio Corp., USA.

If I can get that working, I will move on to a vintage console set with more valves and shortwave capability, such as the popular and beautiful Columbus or Courtenay models.

Steve Dunford's impressive The NZ Vintage Radio Project website yields not only a photo of my Philco Nevada but the manufacturer's brochure and published and downloadable schematics. First job: find out what all those symbols and squiggly lines mean. I'm off to a racing start.

Next issue: I hope, with Peter's help, to show you my shiny restored Philco Nevada in prime working condition with a step-by-step account of what I did to make it go.

"I've had people ask if it converts the broadcasts into English. Perfectly seriously"

A stunning bedside Majestic radio, restored by Peter

The bonus with this model is that it has a radiogram input, allowing an iPhone, etc., to play music through the valve electronics. What a clash of technologies, a phone playing Spotify via a valve radio

BMW'S FLAGSHIP TECHNO SHOWCASE

BMW's 840 Ci flagship coupe provides superb comfort and equipment packaged in a stylish body, with grand touring performance and surprisingly competent handling for its size.

When BMW first unveiled its flagship grand tourer at the 1989 Frankfurt Motor Show, the automotive world blinked twice. Sleek, low, and impossibly modern for its era, it combined drama with a sort of purposeful understatement. This silhouette still looks striking today, long after its peers have faded into obscurity.

Initially offered with a range of engines, the model that you're reading about is the V8 iteration, featuring a four-litre eight-cylinder heart under its long bonnet and a smooth five-speed automatic at the back. It wasn't about blistering sprint times so much as effortless velocity. There was power on tap, sure, but the way it delivered thrust felt unhurried and measured – the automotive equivalent of a deep exhale on a long drive.

Also in this issue:

Shelby Almac 427SC, Bert Govan's Jaguar, GM v. Mopar Hemi, Volvo P1800, Rover SD1 Vanden Plas, Chrysler Charger, Mustangs, The Pope's classic cars, Ford Galaxie, Saker, BMW E30, OSCA racing memories, vintage Fords, Holden FE/FC, classic novelty radios, Ford Ranchero, 1968 Lincoln, classic racing reports, book reviews, classic car news, and so much more ...

Exterior of the Britten Museum, Christchurch

A FITTING TRIBUTE

By Ritchie Wilson | Photographs: Ritchie Wilson

The John Britten story is now one of Kiwi folklore: a bloke in a shed with skills and passion who took on the world and won. Ritchie gives us insights into the man and his creations, and visits the new museum dedicated to our much-missed legend

Almost exactly 30 years ago, celebrated racing-motorcycle designer John Britten died at only 45.

It was widely appreciated that New Zealand had lost a hugely significant figure. In his workshop, he and a handful of friends had built, virtually from scratch, a series of racing two-wheelers which had vanquished bikes built in the very well-funded racing departments of major motorcycle manufacturers. He had done what many a sheddie has dreamed of – surpassing professionals at their own game.

Had he lived, what might he have achieved? Could he have perhaps become the Enzo Ferrari of the motorcycle world?

BMC carried on

After John's death, the Britten Motorcycle Company (BMC) kept going, successfully racing the bikes around the world and producing a few new ones from parts.

These final Brittens sold for high

prices. It wasn't obvious which direction the BMC should take, and once a path forward was agreed, securing adequate finance proved impossible. With the delivery in 1998 of the last of the Britten V1000 bikes, BMC's only activity was sporadic maintenance of customer bikes. The team drifted apart. Its base in Christchurch's Carlyle Street, where most of the bikes had been built, developed, and maintained, was sold in 2006, and the patterns, jigs, moulds, and spares, along with unsold early Britten bikes, moved into storage.

One part of the BMC which continued was the sale of Britten merchandise: clothing, DVDs, posters, and models. At first, this was sold from the offices of Brittco, the property development company started by Bruce Britten, John Britten's father. Recently, Craig Roberts, for many years the manager of the local Honda dealer Casbolts Motorcycles, has taken charge.

John worked during office hours for Brittco and then for many, many hours with his team building motorcycles. He had started at Brittco in 1983 after cutting his hair and buying a tie. John would regularly buy generic motorcycle bits from Casbolts and so came into contact with Craig Roberts, and they became friends. Casbolts started to sell Britten merchandise, and this continued after John's death.

Put into storage

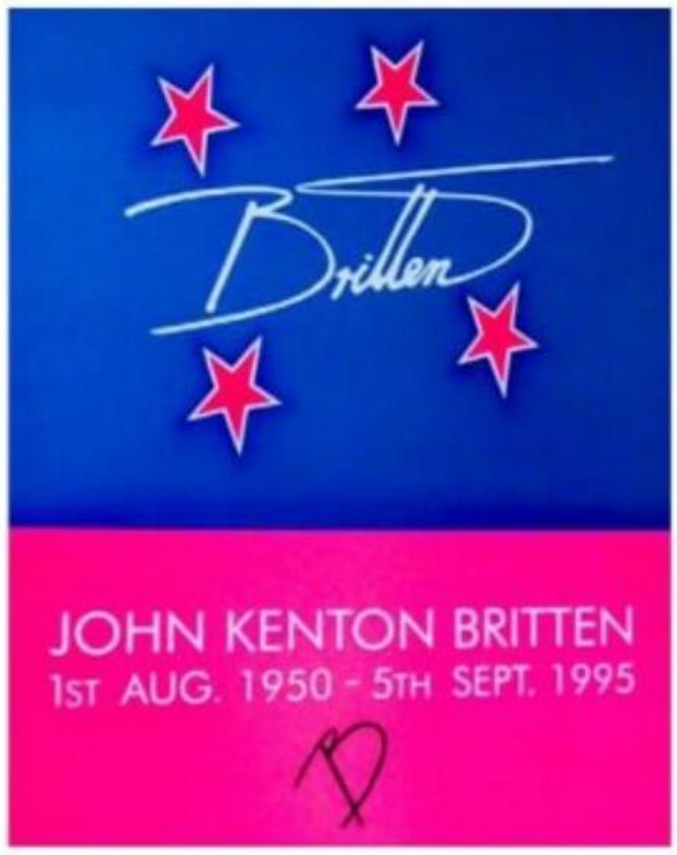
Apart from complete bikes, most of the stuff from Carlyle Street – the patterns, jigs, moulds, and spares – was moved into the basement of the old State Insurance Offices, a building owned by Brittco.

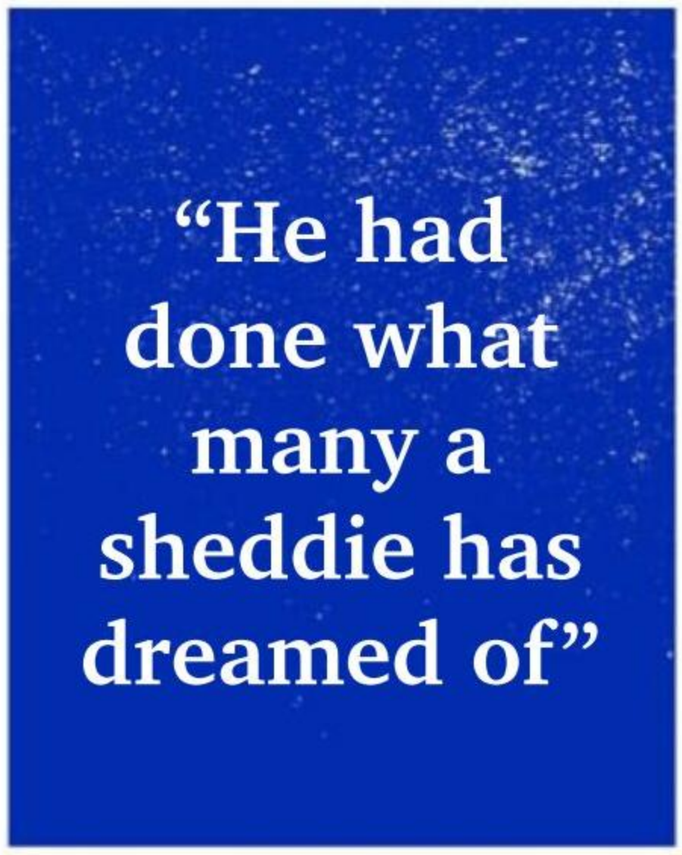
Unfortunately, this was flooded during the Christchurch earthquakes, and much of the material suffered water damage. It was then transferred to a shipping container on the farm owned by Eileen Yates, the Brittco office manager.

Some things, like the moulds for the composite bodies and wheels, eventually ended up in Craig Robert's three-car garage, where he worked on restoring them.

The unsold bikes' trajectory was different. Before the Christchurch earthquakes, they were displayed in the

The museum's reception desk in bright 'Britten pink'. The top surface is faux carbon fibre

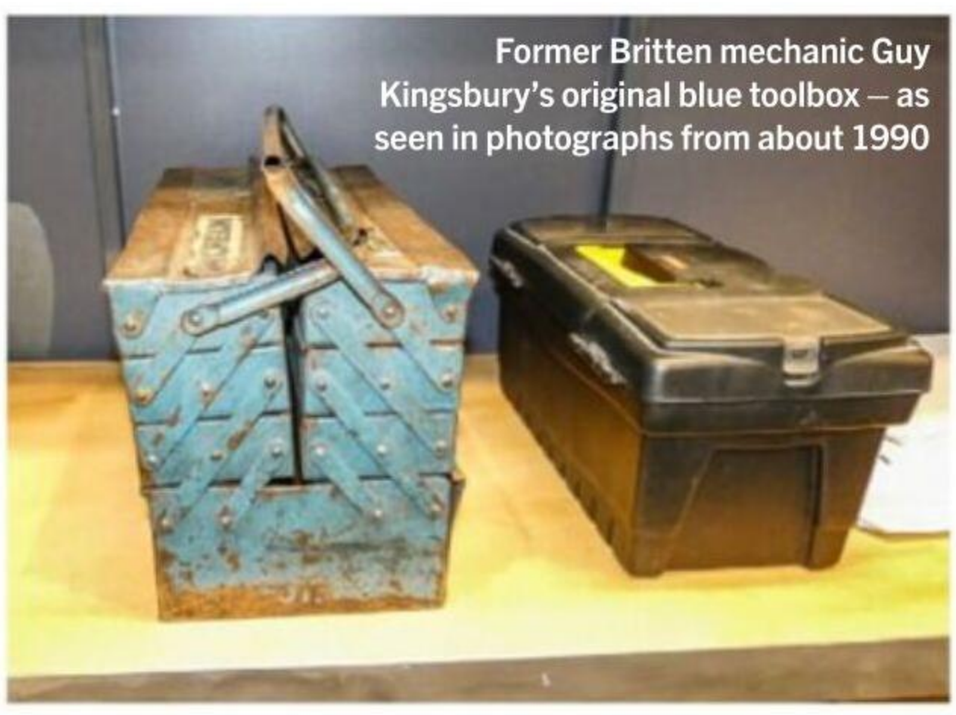


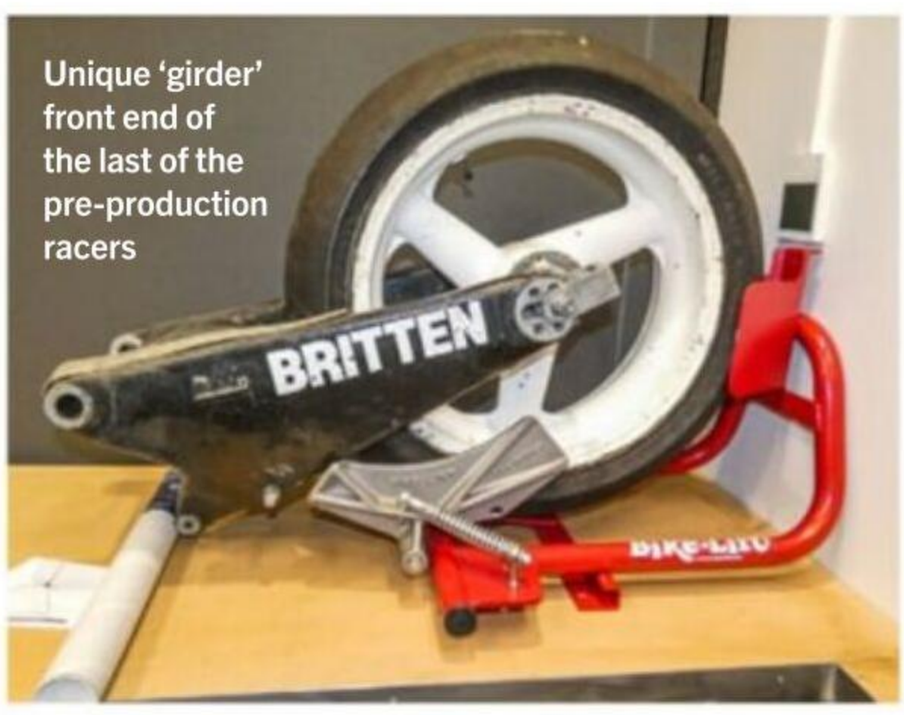


A 1/12-scale laser-cut model of a Britten V1000 on sale at the museum

Museum's workshop area evolving

Craig Roberts holding a set of John Britten's racing leathers


Former Britten mechanic Guy Kingsbury's original blue toolbox – as seen in photographs from about 1990



Unique 'girder' front end of the last of the pre-production racers

Brittco offices near Cathedral Square, along with a customer's Britten V1000. In the 2010 earthquake, the building suffered some damage. It was then red-stickered, indicating it was too dangerous to enter. The BMC had to hire an engineer, who escorted Craig and Eileen into the office and supervised the extraction of the bikes and what merchandise, models, and papers could be salvaged during a short window of time. The bikes were moved a few hundred metres to another Brittco building, which had suffered little damage.

A second disaster strikes

At the beginning of 2011, another major earthquake struck, centred much closer to the city centre, causing widespread devastation.

Craig says that the roof of *The Press* building fell on top of the Brittco offices. The bikes were then inaccessible because the whole of the central city was declared a Red Zone, closed (by the New Zealand Army, complete with New Zealand Light Armoured Vehicle [NZLAV] infantry fighting vehicles) to the public, with only authorised persons, such as structural engineers, allowed in.

The BMC again had to hire engineers to extract the bikes. There is an amusing photo of a policeman, stationed in the Red Zone, sitting on one of the bikes after they had been loaded onto a trailer. The three bikes were then first stored at Jade Software Corporation and then at Casbolts. Before the earthquakes, Craig had salvaged the second Britten bike from the Carlyle Street basement and

had repaired and refitted components which had ended up in the State Insurance building and other places. Craig was able to identify parts of the bike because many were painted a distinctive colour. Some things had to be obtained elsewhere, including the 18-inch racing slicks. These tyres had become obsolete and so were hard to come by. One was donated by a Britten fan, and the other was swapped for a Britten part. The bike now looks complete, but doesn't run. It is missing its brakes and the engine's connecting rods and valves.

In 2015, Tom Sturgess, a wealthy motorcycle collector, established a motorcycle museum in Nelson called 'New Zealand Classic Motorcycles' (NZCM). The first four motorcycles built by John Britten and his team were displayed there for a short time. When the NZMC closed, many of the bikes, including the Brittens, were moved to Classic Motorcycle Mecca, part of the Bill Richardson Transport World museum complex in Invercargill.

The Britten bikes

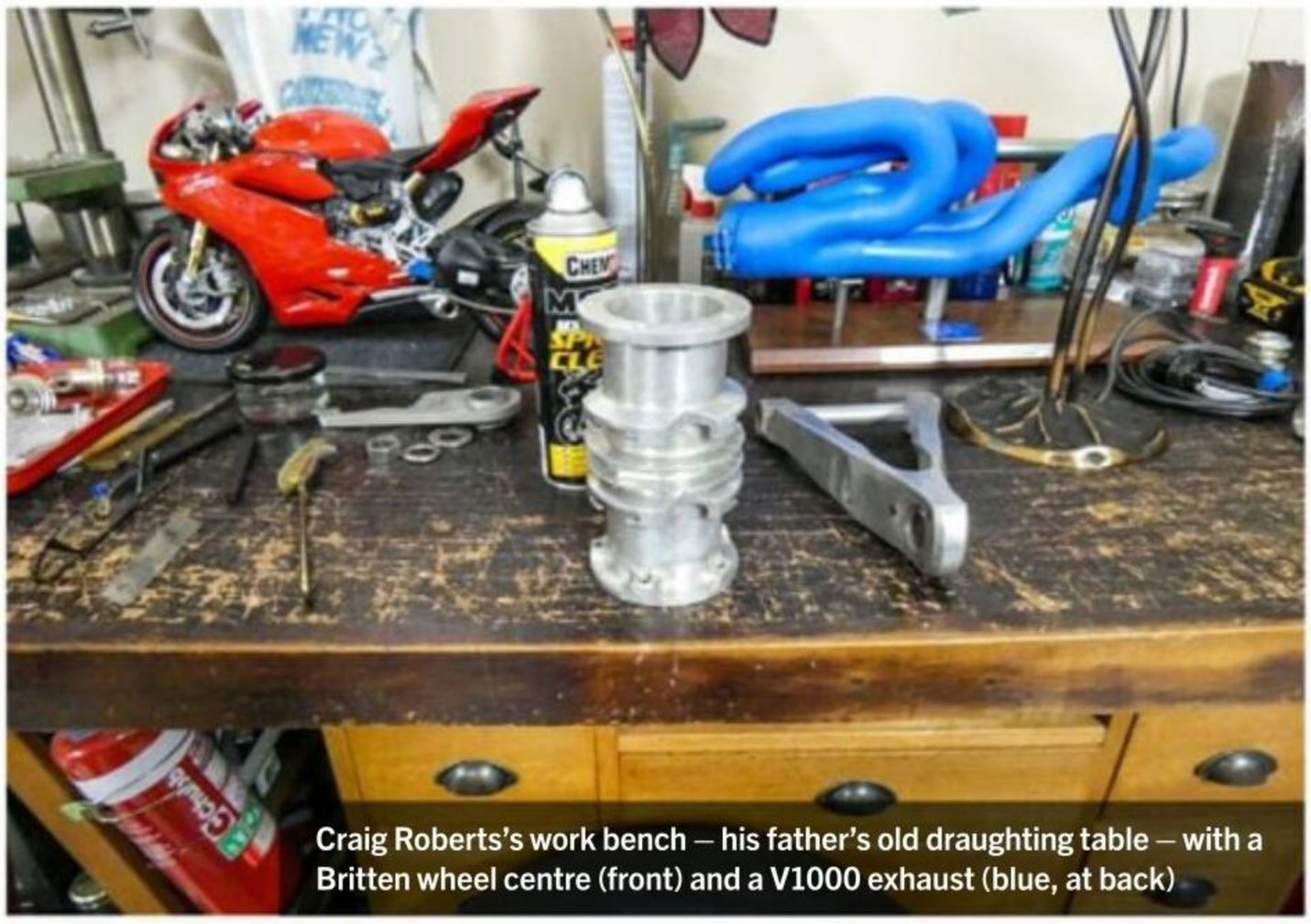
The bikes made by John Britten fall into two categories: the four pre-production bikes, which contain a progressively increasing proportion of original John Britten-designed components, and the 10 production bikes, which, with only a few exceptions, were sold to customers around the globe.The first production bike, the "Cardinal" Britten, was jointly owned by the Britten family and Sir Gil Simpson, another Christchurch-based tech entrepreneur, who was n early

Craig Roberts with a glass lamp from the Matai Street stables

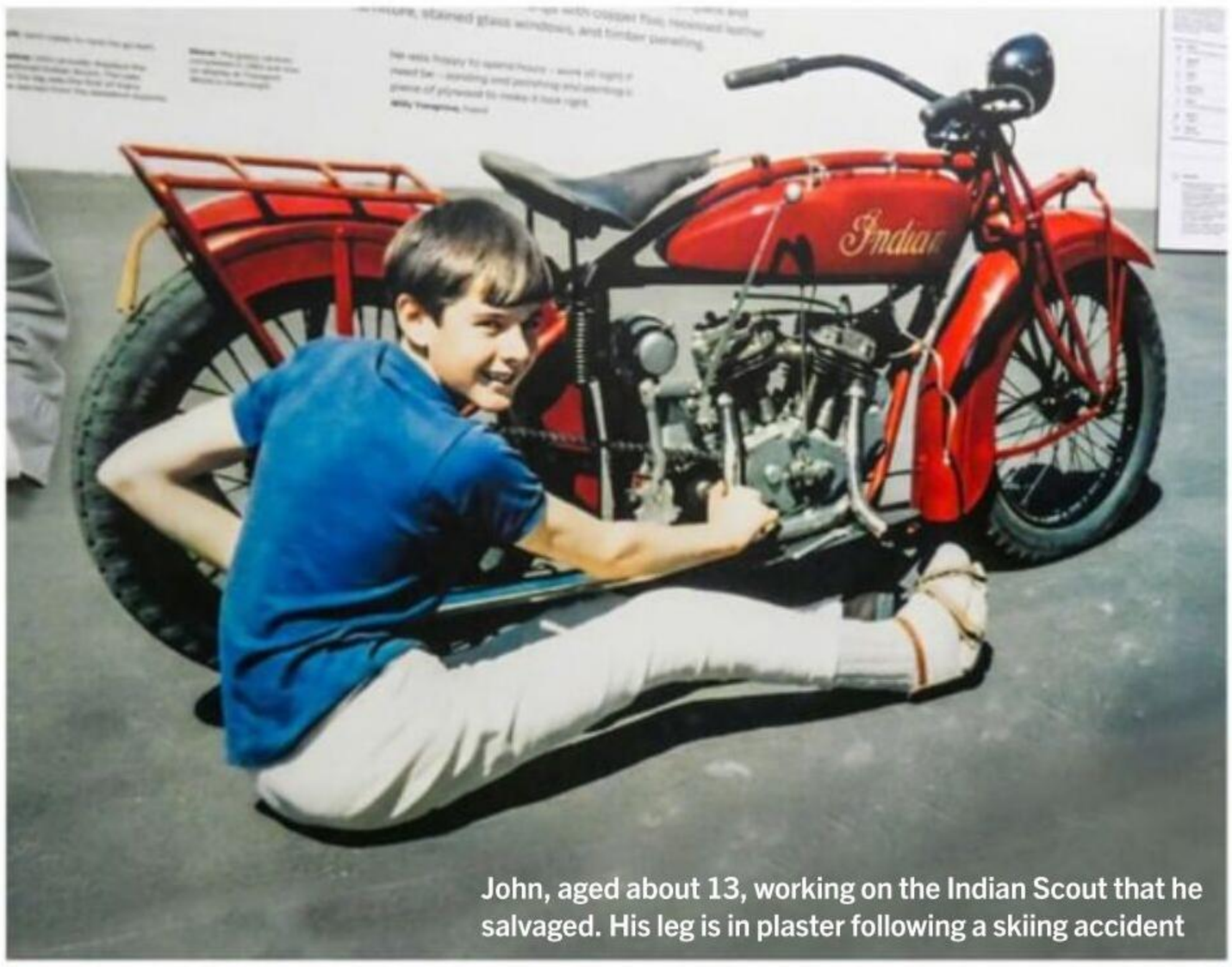

Carbon-fibre bits


Carbon-fibre wheels and moulds


Mould for carbon-Kevlar monocoque



Craig Roberts's work bench – his father's old draughting table – with a Britten wheel centre (front) and a V1000 exhaust (blue, at back)



John, aged about 13, working on the Indian Scout that he salvaged. His leg is in plaster following a skiing accident

1927 Indian Scout V-twin displayed at the museum

sponsor of the bikes. It is now wholly owned by the BMC. The third V1000 made is owned by Te Papa, Museum of New Zealand, and is on permanent display in Wellington.

Two other production bikes are now in New Zealand.

Three mates buy Ducatis

As a young lad, John Britten had rescued and restored a 1927 Indian Scout motorcycle, found on a friend's family's farm, using tools from his father's workshop. Perhaps significantly, the Indian had a V-twin engine.

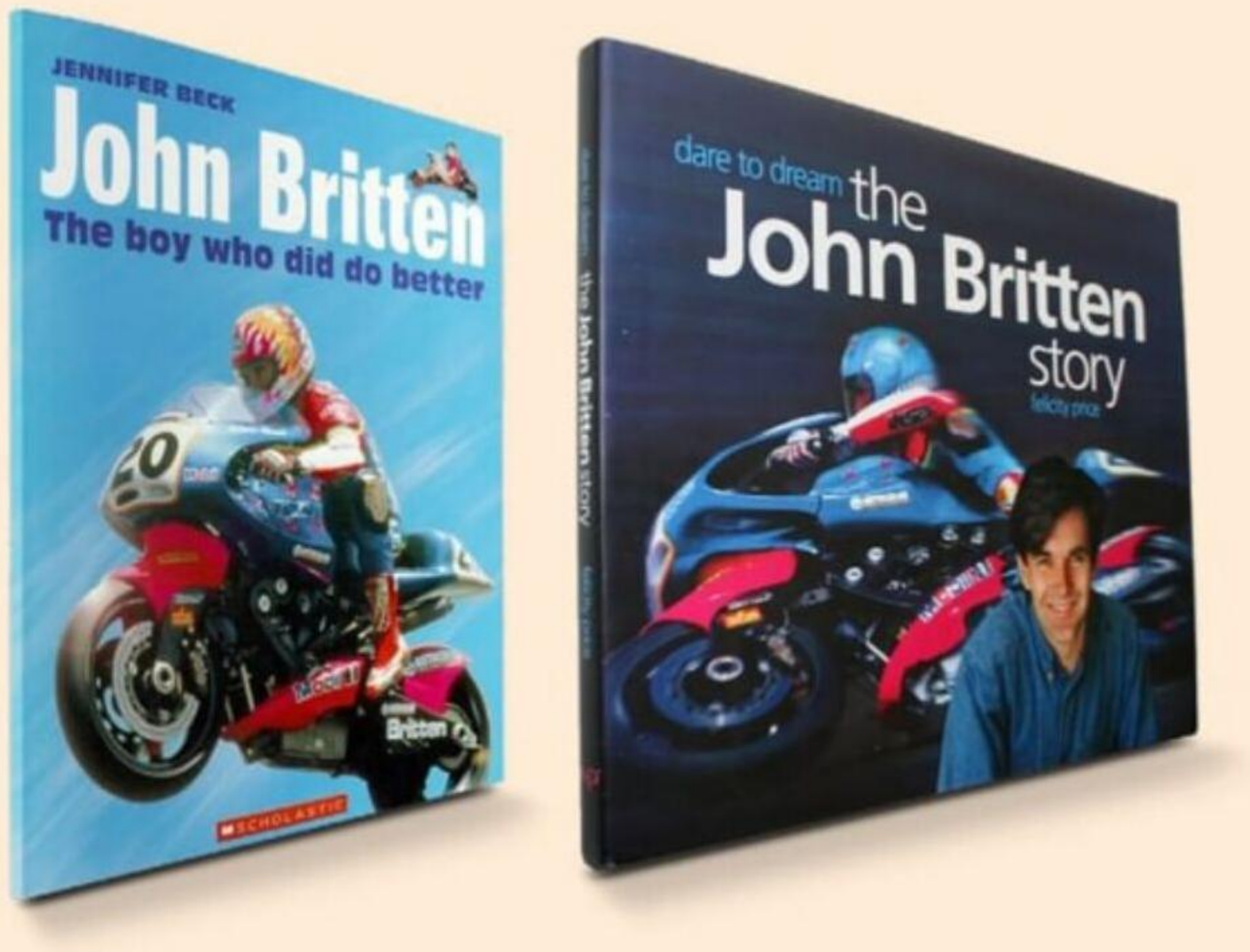
During a year in London in the 1970s, John saw and admired Tiffany-style glass lampshades which had become fashionable. On returning to Christchurch, he had started to make them in the evenings, after working at his day job as a designer. John, who had formidable personal charm and strongly preferred not to work alone, managed to rope friends into helping him make the lampshades.

One of these friends was Roland Logan, who John intermittently employed to work on the large Mona Vale stables building in Matai Street, Riccarton, which John had bought and was converting into a dwelling. The other, Mike Brosnan, lived nearby and worked on the lamps after his day job as a mechanic.

In 1980, the three scraped up enough money to each buy a bevel-drive Ducati from Australia, where the bikes were considerably cheaper, something a few of their friends also did, exploiting a loophole in the regulations. Eventually, the customs authorities caught on and, much to John's delight, staged a rather farcical 'raid' on the stables.

The Ducati, with its V-twin engine and fabled desmo valve gear, was the bike to have. They routinely raced the powerful machines on quiet country roads but found that they were uncompetitive when raced at the racetrack against the technically superior Japanese bikes. Other bike owners faced the same conundrum, and so, in 1982, John and his friends became foundation members of 'BEARS' – British, European and American Racing.

JOHN BRITTEN BOOKS



Two John Britten books

There are several books written about John Britten.

One is a prize-winning children's book, which focuses on John's dyslexia, called *John Britten: The Boy Who Did Do Better* (2004), by Jennifer Beck. Kirsteen Britten's cousin, Christchurch novelist Felicity Price, wrote *Dare to Dream: The John Britten Story* (2003), and author of several motorcycling biographies Tim Hanna wrote *John Britten* (2003).

A 30th-anniversary edition of *The John Britten Story* is being produced in time for the opening of the Britten Museum. It has an extra chapter on the last 23 years. A hardcover edition of Tim Hanna's book was published in the US in 2024. Second-hand copies of Felicity Price's original book commonly change hands for about $150.

The Hanna and Price books are both excellent and quite different. The first is 500 pages of dense type with many long quotations from surviving participants. It tells a detailed story of multiple disappointments and some devastating tragedy, interspersed with moments of great joy.

Price's book has much more on the Britten family and a large number of superb photographs. The full-page monochrome picture of John taking a corner at speed on his 1947 Triumph Tiger 100, taken by the late Colin Simpson, a friend and confidante of John's, is particularly moving.

Both books make much of John's outstandingly reckless derring-do. Skiing, jetboating, mountaineering, and hang-gliding were all tried, but it was motorcycle racing, which had the attractive combination of extreme danger, close camaraderie, and very large, worldwide audiences, that appealed to him the most.

There was, of course, another side to John. One of his children recalls that he always had a pencil in his hand and was continually sketching designs on odd bits of paper, bubbling over with ideas.

An article on the kitset models of the Britten V1000 will be in *The Shed* Issue No. 127.

Thanks to Craig Roberts and Allan Wylie for the loan of books.

The BEARS

BEARS organised a programme of racing for bikes of non-Japanese origin around New Zealand, which attracted very large crowds of enthusiastic spectators.

Soon the concept had spread to Australia and then worldwide. John raced an elderly Triumph Tiger 100 in the first BEARS races and then decided to join Mike in building a more competitive racing motorcycle powered by a hotted-up Ducati V-twin engine. The bike had a triangulated tube frame (well ahead of its time), magnesium wheels, aluminium rear swing arm, and a glass-fibre body. Mike had designed the frame, and John had designed the swing arm and body. Mike had bought the Ducati 900 Darmah engine and gearbox for a very reasonable price from

The first Britten with a Ducati engine, with a frame designed and made by Mike Brosnan and a fibreglass shell designed and made by John Britten. Note the 'Britten' signature

The first motorcycle constructed at John Britten's workshop in the Matai Street stables. John made the body

The first Britten with a Britten engine. Two were made – the other is in pieces and is going to be reassembled in the museum's workshop

The Cardinal Britten – the first of the production V1000s in the distinctive electric blue and hot pink livery

the New Zealand Ducati agent at the time, Ned Knewstubb, and accumulated the go-faster bits while working in the UK for a spell. John made the fibreglass body in the workshop wing of the old stables. He had some experience with fibreglass, having made ski boots out of the material.

Mike took full ownership of the bike when John sold him the body. He raced it pretty competitively in BEARS races for about five years. At the bike's launch party (John adored parties), the bike carried the Britten name, which Mike later removed. John was sufficiently upset about this to write him a letter (not a small task for John, who was dyslexic) asking that the name be reinstated, which Mike happily did.

The second Britten

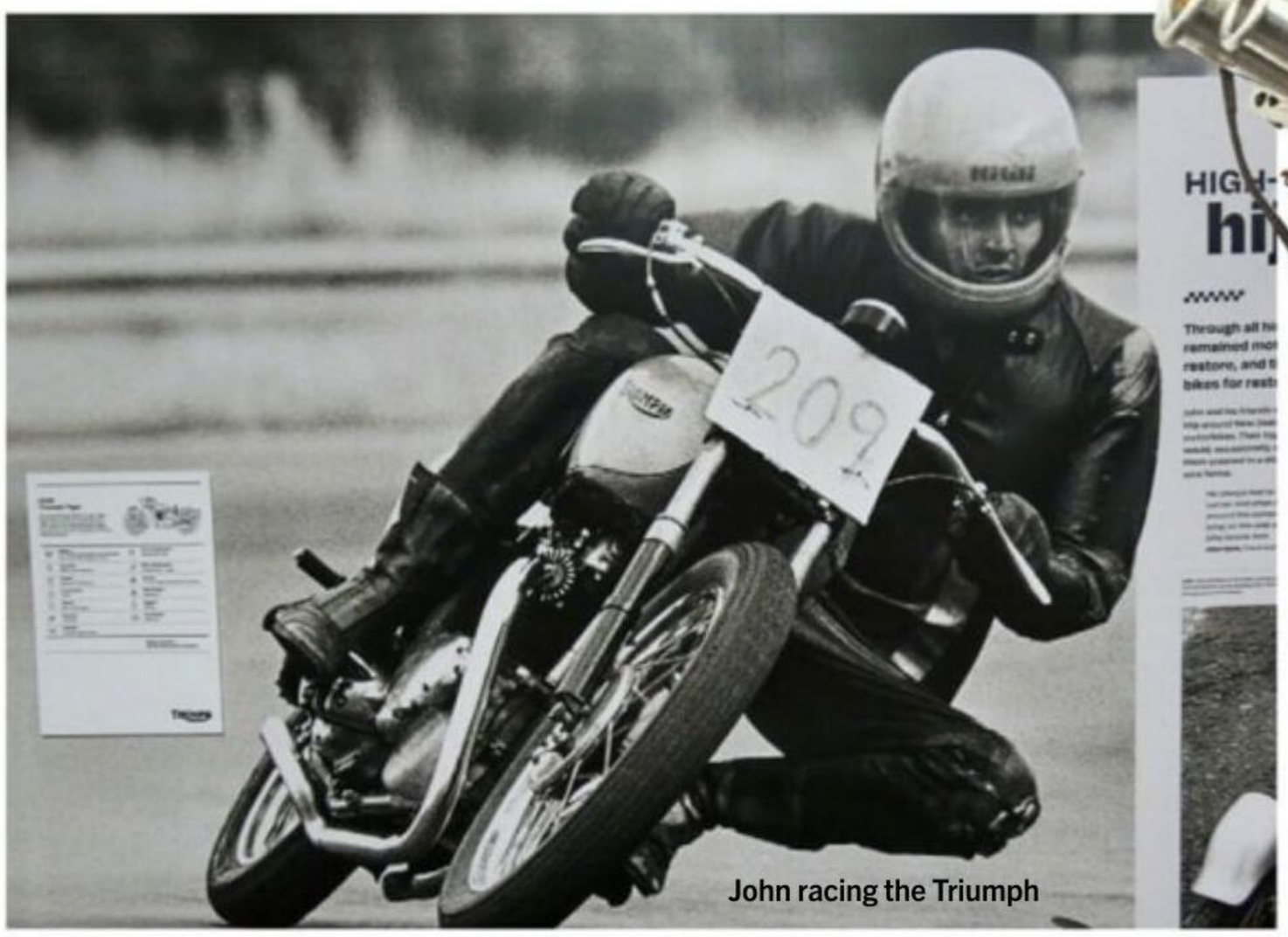
This first bike was successful enough to encourage John to design a second, using a Denco speedway V-twin engine, designed by Colin Lyster and made in Christchurch by Bob Denson's Denco Engineering company.

The bike's body incorporated the fuel tank and was made from a carbon fibre–Kevlar composite, which was cutting-edge technology. John had been given advice about the material's strength from the designers of the New Zealand America's Cup yacht KZ7, the 'Plastic Fantastic', which, famously, was also made of the material.

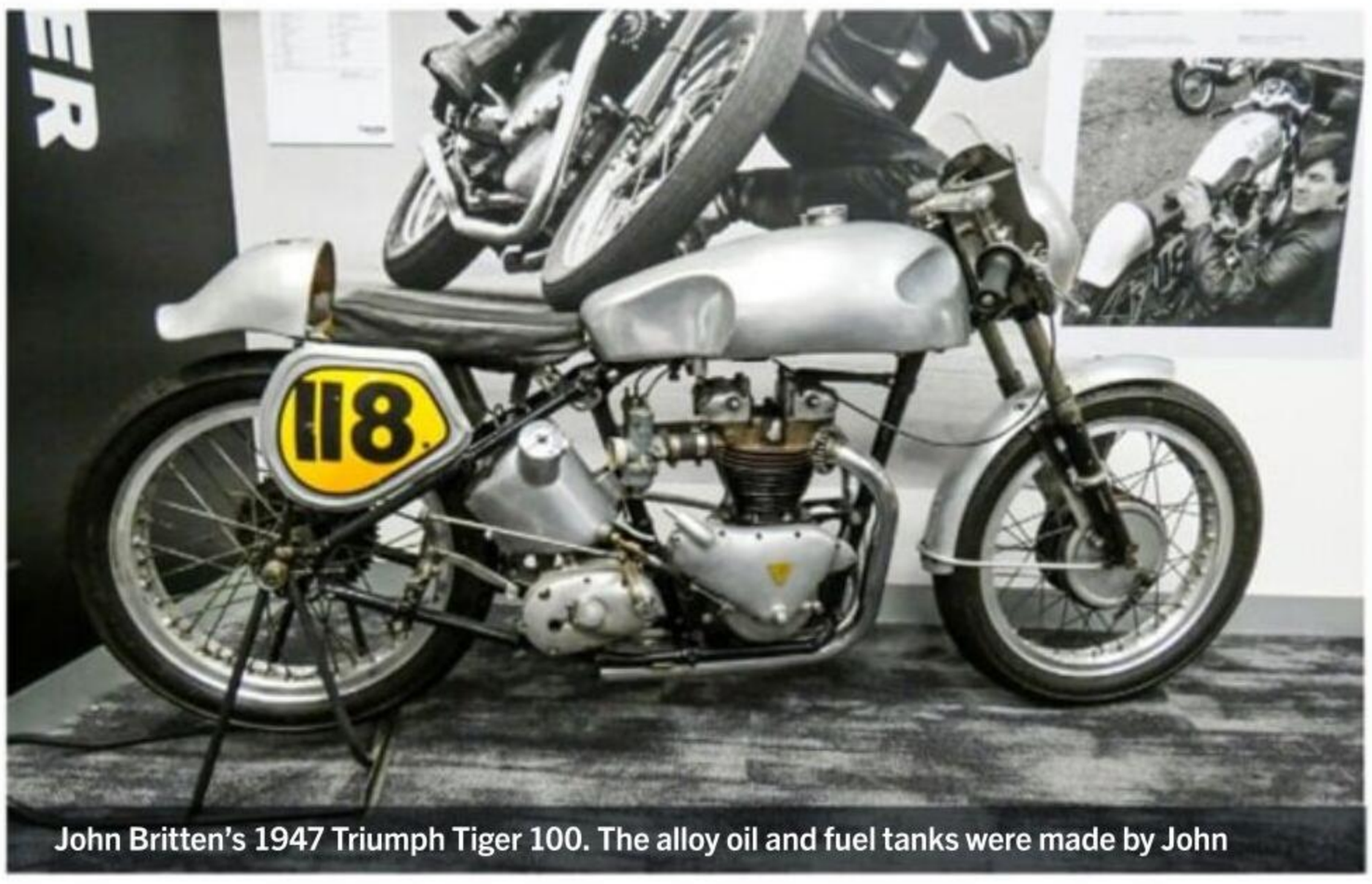
The body incorporated airfoil sections designed to increase downforce on the front wheel and, in turn, improve the grip of the front tyre, improving cornering. The engine was air-cooled and ran on methanol, but didn't perform as well in a road-racing machine as it had done at the speedway. Various significant modifications, including redesigning one of the heads, were made to improve the engine's breathing, but it never ran very well on petrol, so it wasn't suitable for 'Battle of the Twins' (BotT) racing in the US, which was by now John's ambition.

There was real talent around

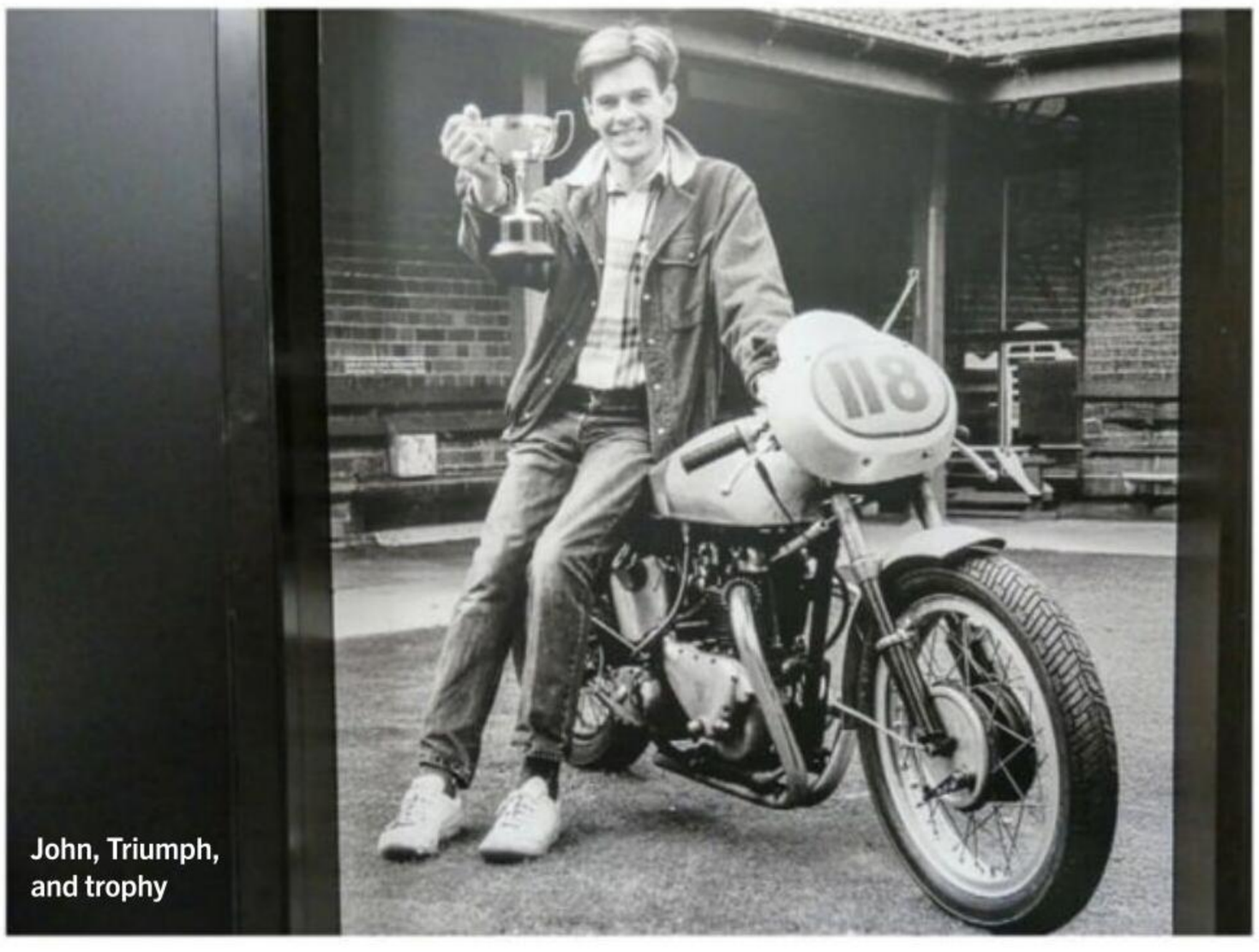
What the Denco engine had demonstrated, however, was that Christchurch had businesses and skilled machinists such as Denco's Rob Selby, ▶



John racing the Triumph



John Britten's 1947 Triumph Tiger 100. The alloy oil and fuel tanks were made by John



John, Triumph, and trophy

Photo Craig Roberts

THE BRITTEN SINGLE

When John Britten was desperately ill, the team at Carlyle Street made urgent efforts to finish a single-cylinder motorcycle engine that he wanted to serve as the basis for a new, simpler Britten. The all-aluminium 600cc engine had a six-valve head and a rotary throttle.

The complete engine and some parts are displayed at the Britten Museum. John had ideas of a road version going into production. He was also going to investigate making a version of the engine to power a light aircraft, and there was talk of using the single-cylinder engine in a very low-cost small car, which may have got as far as a scale model being made.

The Denco-engined Britten. Note the absence of the brake rotors and callipers

Pre-production bike and engine. The bike is in the colours of the Don Knit company

who could produce the high-quality components required to make a racing engine.

When the modified Denco engine broke a gudgeon pin, the bike was banished to the Carlyle Street building's basement, where it languished for 20 years, being occasionally picked over for parts such as brakes, before being rescued by Craig Roberts.

The prolonged attempts to get the Denco engine to perform to its potential had been a perhaps necessary learning experience during which John had attracted a team of talented collaborators.

The next bike John designed was informed by the experiences with the two earlier ones. A pair of bikes were made which had water-cooled petrol engines that were specially strengthened to carry suspension loads. These were designed and made in-house by the Britten team. The swing-arm rear suspension; wheels; and a load-carrying, abbreviated body were all made of a carbon-Kevlar composite.

The two bikes had a horizontal radiator under the rider's seat and, most unusually, a girder front suspension rather than the forks almost universally used by motorcycle manufacturers. They were light and had lots of power, but their top speed was restricted by their comparatively large frontal area – they had too much drag.

The Cardinal Britten

The fifth Britten, the Cardinal Britten, was very similar except that John went to great trouble to slim down the composite monocoque body.

The result was an agile performer with a very high maximum speed – fast enough with a top rider aboard to win almost every race it entered. It was ▶

JOHN BRITTEN'S WORKSHOPS

The Mona Vale stables, which John Britten had converted into a stylish residence, bordered a large, glass-roofed pool on the west, north, and east sides. The north side was open. Its repair and renovation by John's daughter, Isabel Weston, featured on the TV show *Grand Designs New Zealand* in 2018.

The building's east wing contained a large space, known as the 'garage', where the original bikes were made. Later, it was here that the composite monocoques were first manufactured. In other rooms on this side of the building, the lampshade makers toiled, and the drawings for the Britten petrol engine were worked on.

At the Carlyle Street workshop, in a former New Zealand Railway's yardmaster's and shunter's building that sold cheaply when the railways were privatised, John installed a CNC mill which he had bought comparatively inexpensively in the US. His father regularly travelled to the US and may have been involved in its purchase. The workshop had at least one other mill and a lathe. Most of the hand tools belonged to the team members working there. At the time of John's death, there were about 15 men working in the building's various spaces. There was a body shop, a paint bay, a dynamometer room, an assembly area, and a large smoko room. In another room, model kits and assembled models of the V1000 were made by artist Jim Wyllie. Upstairs was a tiny flat and a drawing office.

What had started as a few friends making a couple of bikes for BEARS racing at the local racetrack had evolved into a capable company.

Today, the building is unrecognisable, having gained large street windows and a much larger second storey. There is no sign that this was where the majority of the Britten V1000s were made.

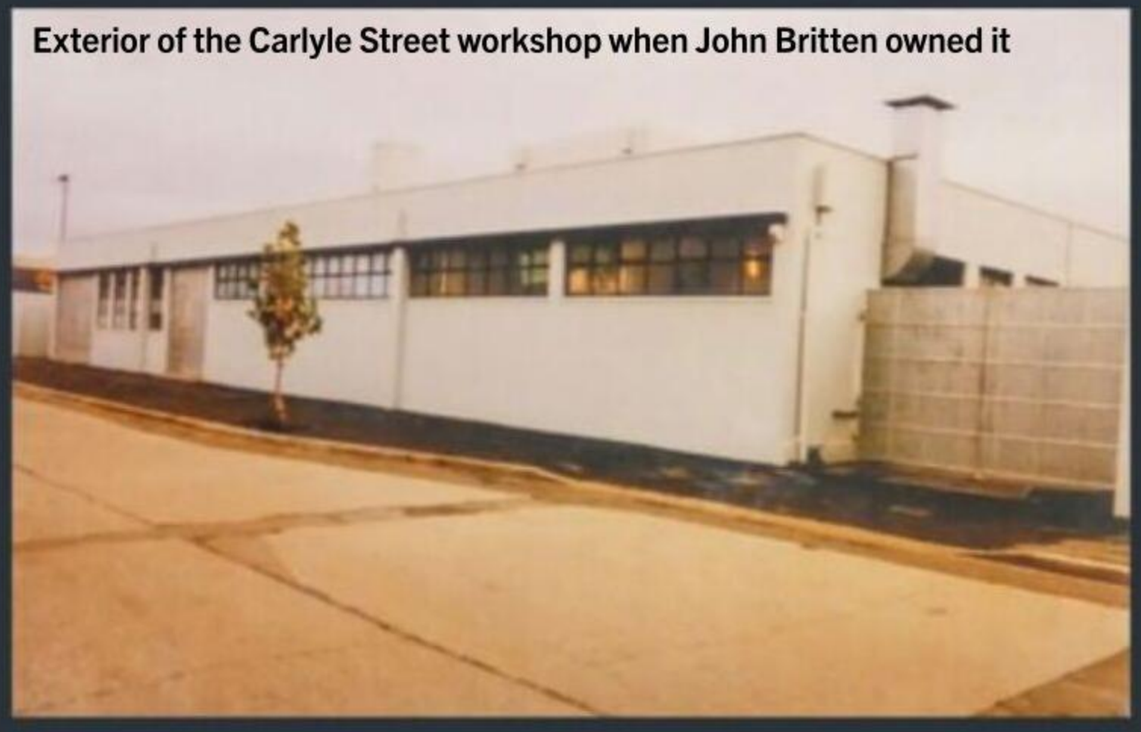
Part of the interior of the Carlyle Street workshop in the early 1990s

The Matai Street stables today

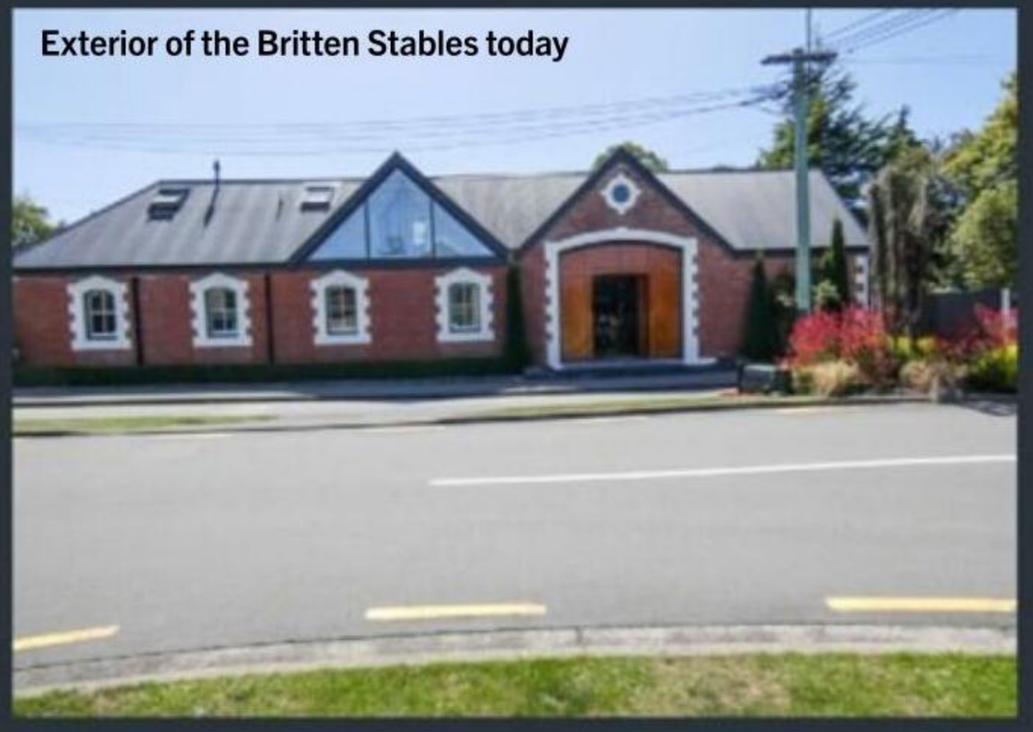
The entrance to Matai Street.
The plaque says “Britten Stables”

Carlyle Street exterior today. The second storey is recent

This is the workshop space which is reproduced in the museum. John appears as a hologram



Exterior of the Carlyle Street workshop when John Britten owned it



Exterior of the Britten Stables today

Mike and Craig

A display at the Britten Museum

Brass taps designed by John Britten and his mountaineering boots

Tiffany-style glass lamps await display at the museum

the first of the 10 production bikes, called 'V1000s', which were basically identical to it.

Like Enzo Ferrari, who used the profits from selling Ferrari road cars to pay for the racing department, John planned to finance his racing by selling bikes. The ones which have changed hands in the last few years have done so at prices over US$1M, but at the time, the sale prices, high as they were, barely covered the cost of making them.

The carbon-Kevlar composite body took hundreds of hours of fairly unpleasant work to complete, and John told one of his team members, in about 1990, that each engine cost $40K to make. The titanium connecting rods "cost as much as a decent bike", he complained. The financial deficit was made up by merchandise sales, sponsorship, and injections of cash by John.

Mike Pero and John Britten

John Britten and Mike Pero were born in Christchurch 10 years apart and came from different backgrounds (John went to the private St Andrew's College, Mike to Shirley Boys' High School), but they have notable similarities.

Both were captivated by motorcycles at an early age and both started and ran their own businesses – John with the BMC and his lampshade operation, Mike with Mike Pero Mortgages (sold in 2010 to Alan Hubbard's ill-fated South Canterbury Finance Limited) and Mike Pero Real Estate (sold in 2024 to the very long-established Australian real-estate company Raine and Horne).

Mike's involvement in motorcycle racing was as a rider. Between 1977 and 1982, he was the New Zealand Motorcycle Road Race champion a total of six times in various classes. As a designer and team owner, John celebrated many victories at racetracks around the world.

Mike is a qualified pilot, flew for Mount Cook Airline, and has been involved with two airlines that planned to compete with Air New Zealand. The latest was to have carried passengers between New Zealand and Rarotonga, where Mike has family land.

John's interest in flight was rather more esoteric. He had a lifelong fascination with the way that birds flew – how the wings flapped, how the feathers responded to the air passing over and through them, and so on. This led to investigations of 'ornithopters' – aircraft with flapping wings – and man-powered flight.

Fly like a bird

John made, but didn't fly (it wasn't ready in time), a unique monoplane/biplane for a local Birdman competition.

He tried hang-gliding but gave it up when he cracked his pelvis after a rough landing in the Port Hills. Auckland writer CK Stead's 1965 story 'A Fitting Tribute' features a long-haired, rather scruffy young New Zealand man who achieves immense posthumous fame by being the first human to fly under their own power. It is tempting to imagine that John Britten was the model for Julian Harp, the Kiwi who could fly, but Stead says that Harp was in fact based on his outrageous Australian mate Barry Humphries, aka Dame Edna Everage. The story was televised in 1985.

One of the very few books John struggled through was a biography of pioneer New Zealand aviator Richard Pearce, given to him by an early girlfriend.

The Britten Museum

At the beginning of 2025, Mike Pero approached John Britten's widow, former international fashion model Kirsteen Price, with a proposal to set up a factory to make new Britten V1000 bikes.

Kirsteen sent him to Craig Roberts to discuss the matter. It was obvious to Craig that making new Brittens would be very difficult. Craig had personally reassembled the second pre-production bike from scattered bits, refurbished, or remade parts and knew first-hand the challenges involved. He knew that many of the original patterns, moulds, and jigs had been lost or damaged and that very few of the original drawings and specifications had survived. During the conversation, the idea of having a Britten museum in Christchurch ▶

THE DENCO V-TWIN ENGINE

Colin Lyster, a Rhodesian-born motorcycle racer, left Africa at his father's urging following his discharge from the Rhodesian army.

He had been conscripted to fight in Kenya against the Mau Mau rebels, in the dying days of the British Empire. In England, he made a vertical-twin motorcycle engine, intended for 500cc motorcycle racing, by cutting a Hillman Imp engine in two, and designed an eight-valve head for it with twin-overhead cams.

The compact, lightweight alloy Hillman engine was based on the cast-iron Coventry Climax FWM engine, which had a very successful Formula 1 (F1) career. It was designed by Harry Mundy, who later was in the team that designed the Jaguar V12 engine. The FWM had been modified for use in the Imp by former Polish university professor Leo Kuzmicki, who had previously worked on the Norton engine, which won the 500cc World Championship in 1950 and '51. He was also involved with the Vanwall F1 car, which won three Grands Prix in 1957 and six in 1958, when Stirling Moss was second in the Drivers' Championship, one point behind Ferrari's Mike Hawthorn.

Colin Lyster came to New Zealand with his Kiwi wife, a well-known ballerina, in 1972. His plan was to make high-performance four-cylinder speedboat engines to sell. He designed and supplied castings for a 500cc single-cylinder, air-cooled speedway engine, many of which were built by Denco Engineering in Christchurch.

Bob Denson, Denco's owner, also made a 1000cc V-twin version of the engine for sidecar racing, and it was this engine which caught John Britten's attention when he was visiting Denco with a view to getting Bob to make four-valve heads for his Ducati. It was a smooth-running engine with lots of low-speed torque, but ran out of puff at high revs. Working at Denco at the time was Rob Selby, who eventually joined the Britten team in Carlyle Street as a machinist.

surfaced. This seemed a much more achievable proposition.

The BMC still owned three bikes which were on display, along with the Brosnan bike, at Classic Motorcycle Mecca in Invercargill.

The John Britten Preservation Trust was set up with trustees Mike Pero, Craig Roberts, Daniel Stirland, and Kirsteen Britten, with John Britten biographer Felicity Price as chair. Museum director Mike Pero is providing all the financing. Premises on the ground floor of Iwikau House, on the corner of Cambridge Terrace and Cashel Street, were obtained, and high-tech internal partitioning was installed.

A true homage to John Britten

The museum has Britten bikes and artefacts on display, two boutique cinemas, a functioning workshop where maintenance (which won't involve intrusive noise) will be carried out on visiting Britten V1000 bikes, and immersive audiovisual experiences. There is also an amazing hologram of John.

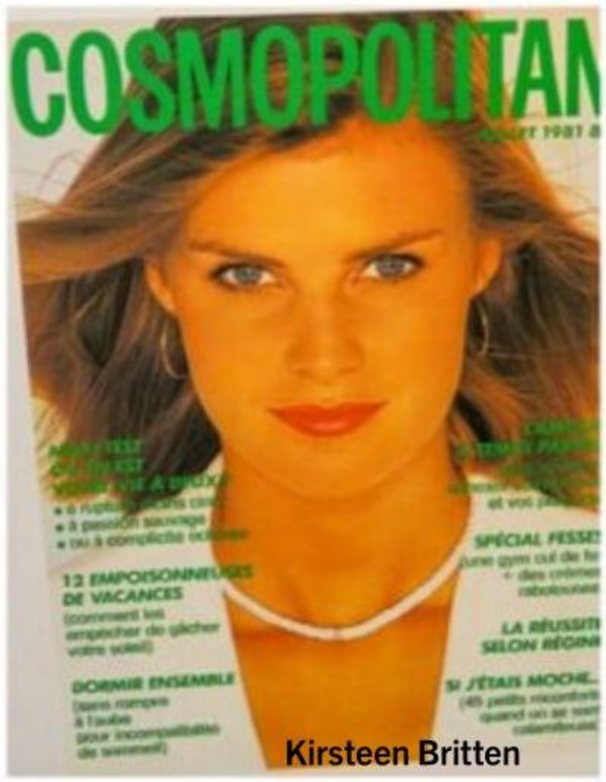
In the workshop, one of the pre-production bikes will gradually be assembled from its parts. The workshop has been recreated from photographs of the assembly space in Carlyle Street. One of the BMC's former mechanics, Guy Kingsbury, has lent his blue toolbox, the very one seen in contemporary photos.

Several of John's lamps are displayed, along with brass taps he designed for the Matai Street stables and a pair of platform shoes made of cast aluminium. The shoes were part of a David Bowie costume he wore for a fashion event that he helped organise.

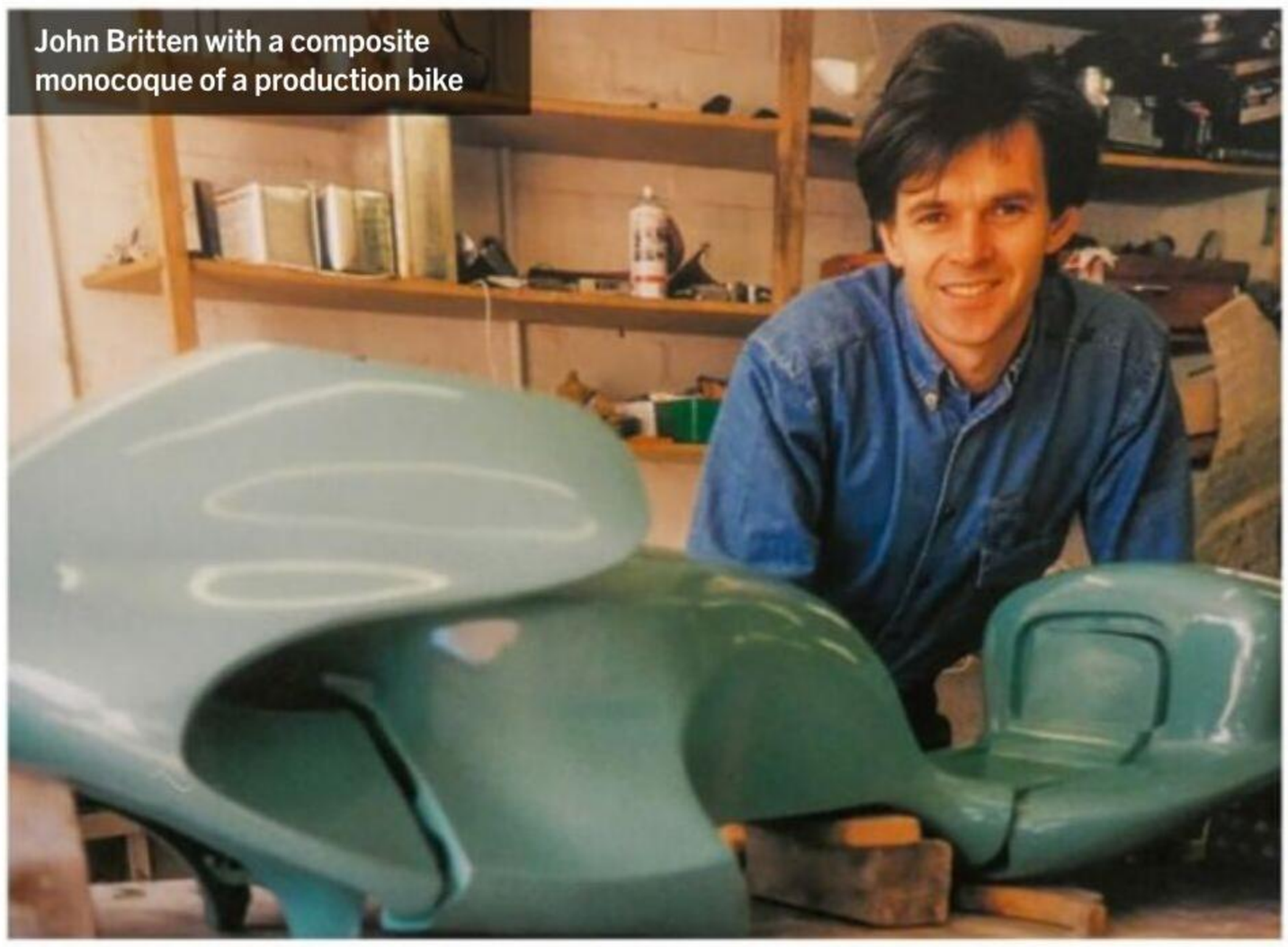
The museum opened for the first time on 18 February 2026. It will be open seven days a week, from 10am to 5pm. There is a range of admission prices: one-day; two-day; yearly; and concession for Gold Card carriers, students, families, and children.

Membership to the Britten V1000 Club is also available.

Kirsteen and John Britten with the Sir Richard Hadlee Award in 1994



Kirsteen Britten



John Britten with a composite monocoque of a production bike

John Britten at a party

Resene Paint Expert Jay Sharples shares his advice for painting in hot weather

Keeping you and your paint cool is important, so try to avoid painting in direct sunlight. Overcast conditions are best, but if a cloudless day stretches out ahead of you, a good plan of attack is to start early, ahead of the sun, and work your way around the building, keeping ahead of the sun as you go. Take a break during the hottest part of the day, for the sake of your finish as well as your health, or use that period to prep, for example sanding or priming surfaces.

Tip Use shade protection where you can. A gazebo or large sun umbrella will help keep you and your Resene products cool, while allowing you to continue painting even in the heat of the day. Keep in mind that if the surface you're working on is dark, it will get hotter in the sun than light coloured areas. With this in mind, it is a good idea to try to do your darker areas when they are in the shade and are cooler. And if you do have to paint in direct sun, try to paint the darker areas first before they heat up. If darker areas are already very warm to touch, give them time to cool down and work on lighter coloured areas first.

Tip Resene Hot Weather Additive will help combat the effects of scorching temperatures on your finish – add it to your Resene waterborne paint to slow down the drying process and give a longer wet edge. "Resene Hot Weather Additive really helps with the flow of the paint for a great, professional finish," says Jay. Avoid over working or overspreading the paint as this will make it dry faster and is more likely to lead to a streaky or patchy finish. Paintbrushes need to be considered when it comes to painting in hot weather. Wrap your brushes in a reusable plastic bag to keep them fresh during breaks. You can do the same with your roller and roller tray too. If you find your paint is drying too fast, which can be a common problem during hot weather, Jay suggests lightly pre-dampening your surface with water.

It's a gas

Use industrial gas for your shed projects? Chances are that you're paying ongoing cylinder rental fees whether you're using the gas or not.

Eziswap Gas works differently. It operates a 'cylinder swap' system. Customers initially buy a full cylinder of their required gas or gas mix, use the gas, then swap the empty cylinder for a full one, paying only for the gas used. This way, customers avoid paying any ongoing cylinder rental fees.

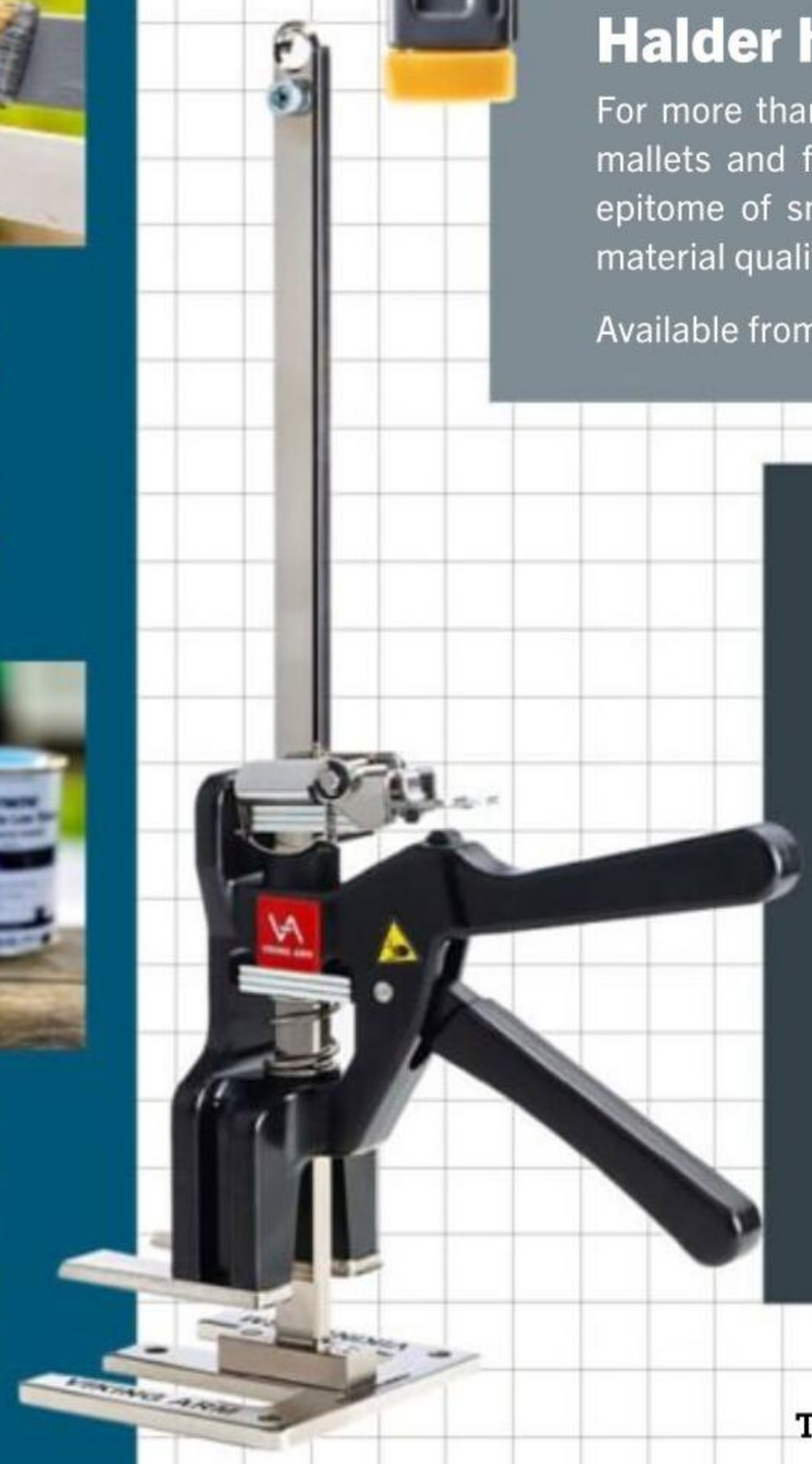
Worried about the initial cost? You can buy a cylinder of your choice from the Eziswap Gas website (eziswapgas.co.nz) and check out with Afterpay. Using Afterpay, you can spread the cost over eight weeks (conditions apply).

With more than 57 swap centres nationwide, Eziswap Gas is a better way to purchase industrial gas. It's also New Zealand's only 100 per cent Kiwi-owned, nationwide industrial gas provider. Win-win!

Halder hammers

For more than 85 years, Halder soft-face mallets and forestry tools have been the epitome of smart solutions and supreme material quality. Made in Germany.

Available from Hi-Q Components.



Viking Arm

The Viking Arm gives you unlimited possibilities to work more efficiently and with less manpower.

With a lifting capacity of up to 330 pounds (150kg) and the ability to lift and lower with millimetre precision, the range of applications is virtually unlimited.

Available from Hi-Q Components.

LEARN THE ART OF MARQUETRY

By Edward Prince | Photographs: Edward Prince and supplied

Centuries ago, trade guilds regulated the apprenticeship and training of skilled craftsmen. Once trained, these artisans travelled Europe plying their trade. One such craft was marquetry. Ed Prince demonstrates how to create your own pieces using this ancient and delicate technique

For centuries, trade guilds associated with woodworking, carving, gilding, wheelwrighting, and copper-smithing controlled how skilled craftsmen were apprenticed and learned their craft. The guild process enabled ideas and knowledge to be spread, innovations to take place, and new techniques and materials to be experimented with. When an apprentice graduated to being a journeyman, he would travel around European workshops, refining his specialist skills until he became a time-served master craftsman. Marquetry was one such specialist trade. Marquetarians cut veneers of wood, tortoiseshell, mother of pearl, brass, pewter, and enamel, transforming their colours and textures into patterns and images and applying them to furniture. In the process, they produced some incredible furniture and interiors for royalty, the church, and wealthy merchants.

Is marquetry difficult?

For years I have been using veneers for cabinet details and decorative elements on boxes and panels. I never attempted marquetry, erroneously assuming it was really hard.

Intarsia

Marquetry

However, after a visit to Sorrento, Italy, the home of marquetry, and watching craftsmen working at the task, I found out it was surprisingly easy to create simple, interesting images. When I tried it myself, I was amazed to discover how rewarding it is.

I sat at a table, sawing away at packs of veneers, sticking bits together, listening to podcasts, relaxed and peaceful, focusing on the pieces being cut and making good progress quite quickly. A perfect way to spend some time and have something to show in an hour or two.

Sitting there, I reflected on some of the best things about the craft. It is not messy or dusty – you could even get away with doing it at the kitchen table. You are also not deafened by noisy machines or power tools, and there is no massive physical exertion lifting heavy cabinets around. And the tools needed to produce good work are not expensive: a fretsaw, blades, a knife, a straight edge, and tape.

The terms ‘marquetry’ and ‘inlay’ are often confused with each other, but they are different processes. ‘Marquetry’ involves sticking layers of veneer onto a surface; ‘inlay’ involves setting work into a cut-out recess in a surface. There is also a third process, ‘intarsia’, which is a combination of both and is often more three-dimensional in execution.

Distinctive techniques

There are three distinct techniques that are used when making an image with veneer.

Fretsawing

Packs of veneers are cut with a fine saw and reassembled.

Knife cutting

Single or pairs of veneers are cut to fit together.

Template (stick as you go)

An image is broken down into individual parts; each part is stuck to packs of veneers and sawn; and then, like a jigsaw, the parts are assembled.

Some history

The history of marquetry is fascinating; it has played an important role in reflecting status via materials and design. Rare and precious materials have been applied to a core structure since the Egyptians, and the techniques refined by the Greeks, who developed

Inlay mother of pearl

better tools and adhesives and had access to a wider range of timbers.

In the 14th century, Italy’s wealthy merchants, the aristocracy, and the church saw the craft flourish. Both design and techniques were influenced by what was seen on the trade routes.

Interior panelling by Italian Geo Franco, 1400

André-Charles Boulle

Thomas Chippendale,
Diana and Minerva commode, 1750s, England

Émile-Jacques Ruhlmann – art deco, 1924

Craftsmen began mixing gilding, painting, decorative wood, ivory, metal, and jewels in a technique called ‘certosina’. This blended inlaid and applied decoration, which could also be multidimensional. Marquetry techniques and skills quickly developed. Every European nationality added to the development of this craft. Italians refined many techniques and skills; the French, with the development of Boulle work; and Germany and the Netherlands added their touches with their technical mastery.

The UK contributed too, with the greatest cabinet makers and architects of the Georgian period – Robert Adam, George Hepplewhite, Thomas Sheraton, and Thomas Chippendale – then the artistic revolution of the French art nouveau

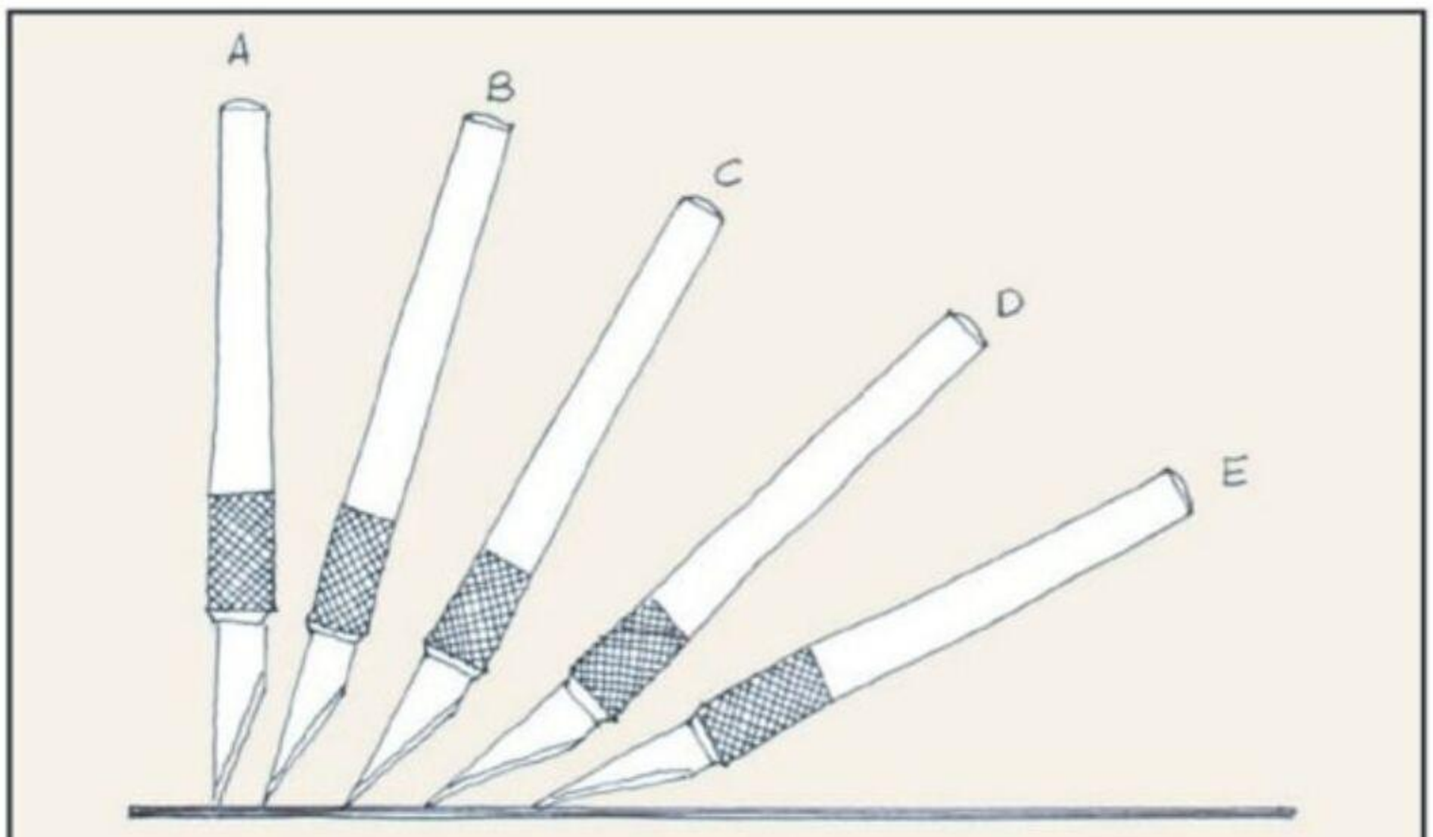
movement, with Émile Gallé and Louis Majorelle, followed by English arts and crafts, with William Morris and Earnest Gimson. And the art of using veneer has continued to evolve. A quick search of the web will show what remarkable things can be achieved with these skills and techniques.

Taking on your own marquetry projects

Obviously, the first place to start is with some veneers.

Sadly, New Zealand does not have a good veneer supplier. There are a few companies that will sell large sheets of veneers ready for sticking onto big sheets of manufactured board.

You could buy a pack of short veneers online, ask around, or there are some suppliers on Trade Me.



Techniques

Different positions for cutting with the knife; the rule is that the longer the cut, the lower the blade.

A. Stab cut
For small intricate points, complex shapes, and very hard woods, stab through the fibres with the tip.

B. Step cut
For sharp twisting shapes or hard woods, short 10mm cuts towards you.

C. Sweep cut
For gentle curves, two to three light cuts and then a heavy cut.

D. Score cut:
The first cut to mark a line with a light cut.

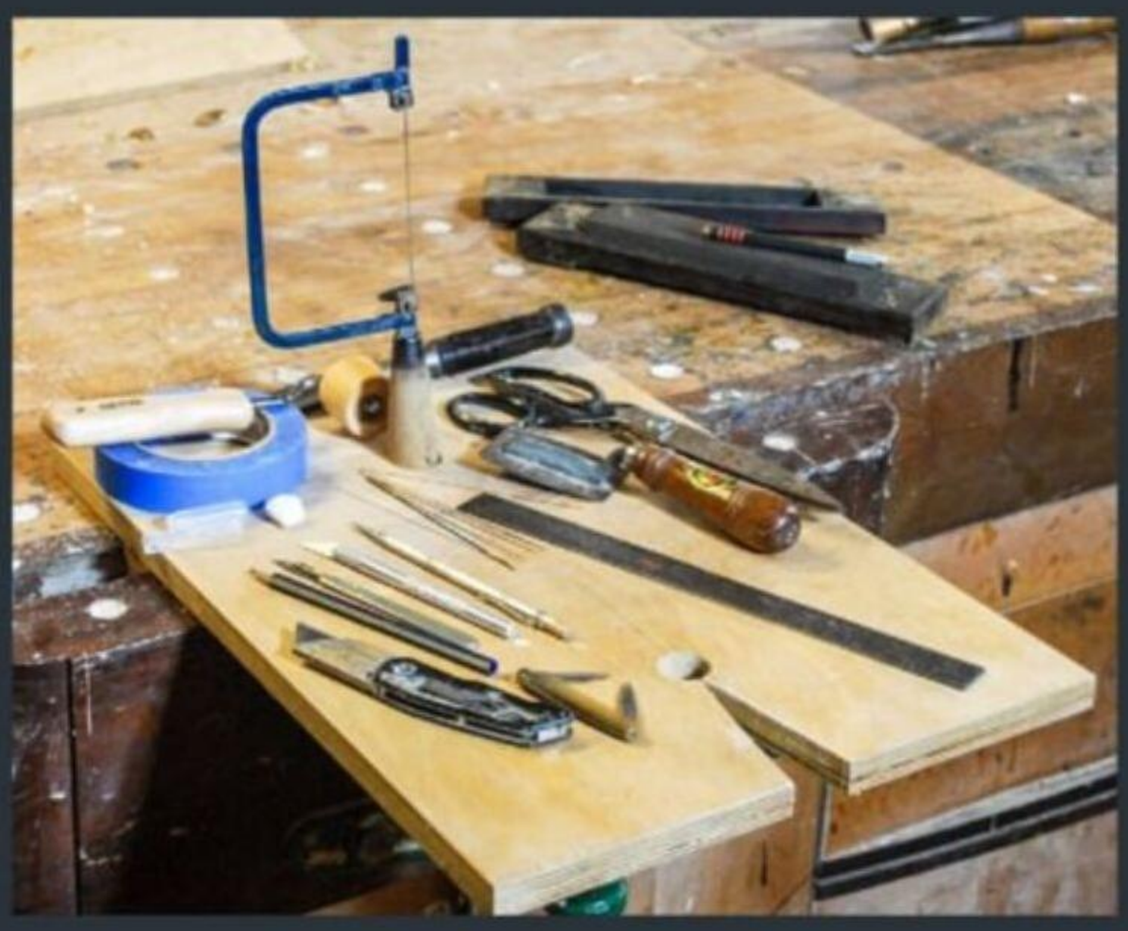
E. Straight cut
Trimming straight edges.

To sharpen the blade: draw the back of the knife over an oilstone or emery paper a couple of times.

Tools required

The tools for marquetry are basic.

- A fretsaw with 0.2 to 0.6 saw blades available from jewellery suppliers
- A craft knife
- Fine pointed drill/prodder
- An emery block/oilstone to sharpen the back of the craft knife blade
- Masking tape
- Wallpaper roller (for pressing down the masking tape)
- A good pair of scissors and a veneer saw
- Good glasses or a jeweller's visor
- A cutting table with a slot and hole



Some marquetry projects

For this introduction to marquetry, I have proposed three projects with different levels of complexity.

The first two are adapted from a book by Ken Horner, president of the American Marquetry Society.

1. A simple two-tone bookmark
2. A slightly more complex box that requires some care with accurate woodwork
3. A picture that can be as ambitious as you want it to be

THE BOOKMARK


Step 1


Step 2

Step 1 Start by making some packs of veneers; each pack should contain about six to eight layers of contrasting veneers.

Cut them to 170x40mm with sharp scissors or a knife. I used a mixture of walnut and burr elm for the dark wood, and maple, tawa, and ash for the light woods. I used oak and stained it black with a ferrous solution. Tape some wide masking tape over the reverse side of each strip. Using different coloured tapes can help manage the layers. You will also need a second veneer for the back of the bookmark.

Step 2 Assemble the six to eight veneers into a pack and tape them tightly together. Add an additional 'waste' veneer to the front and back of the pack to minimise breakage when you are sawing. Draw, trace, or stick your pattern onto the face of the pack.

Step 3 Fix the blade into the fretsaw. I found it easiest to do this by drilling a hole in the sawing table, inserting the handle and tightening the blade with pliers.

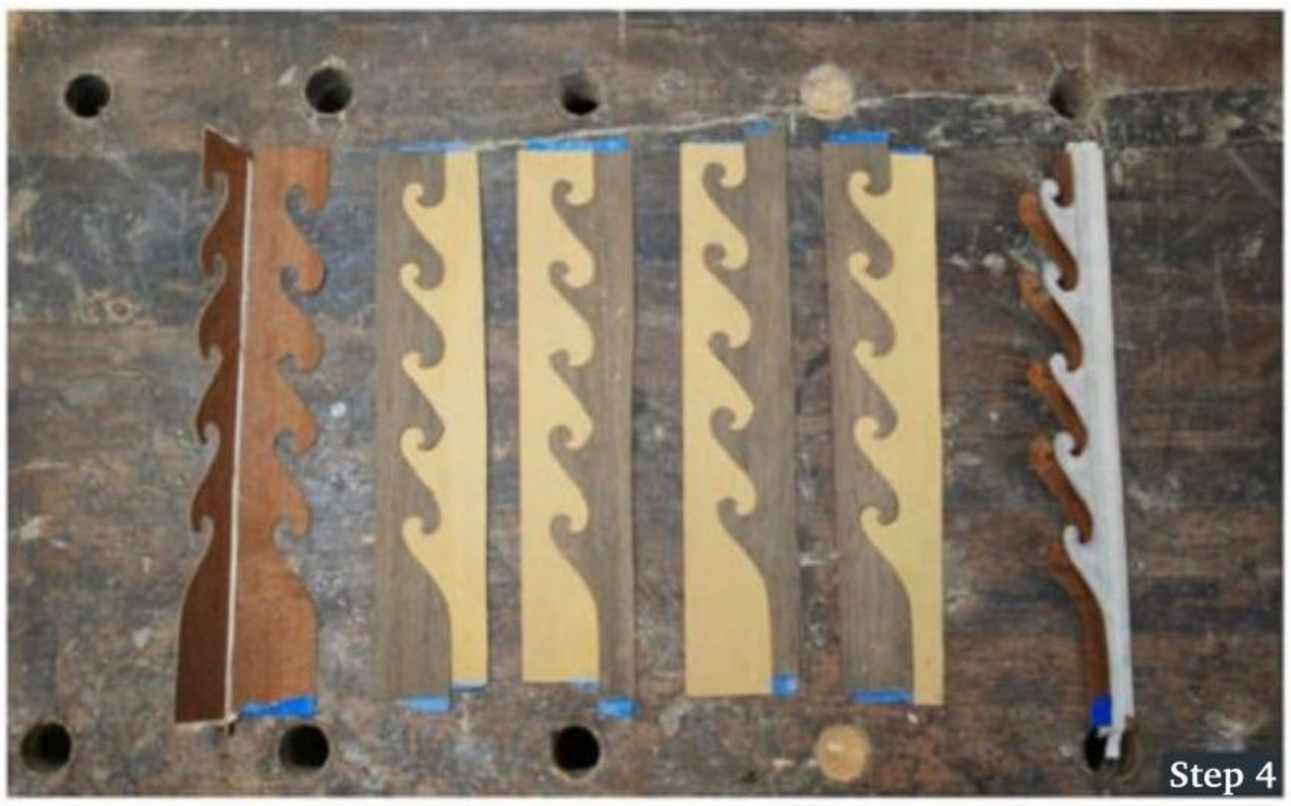
Start the sawing process following your line. You must constantly ask yourself if the sawblade is vertical – keep it vertical, or the parts will fit badly.

Maintain a steady sawing speed and gentle pressure; do not force the blade, as these are very fragile and snap easily. You will learn fast! Soon, you will have to change blades not because you broke another one, yet again, but because it is blunt!

Keep your fingers close to the cut and apply pressure to the pack to stop it from flapping about. As you cut further into the pack, you will need to retape where you have cut to keep everything together.


Step 3

Step 4 Once the pack has been cut through, carefully separate the parts, throw away the face and back veneers and then fit the opposite halves of the design together. Tape them in place, always keeping the tape only on one face.


Step 4

Step 5 Spread a thin layer of glue over one side of the veneer and glue the backing veneer to the face. A small paint roller makes a perfect spreader as if you are glueing a few.

Tape each bookmark together to stop them slipping about when you press them together. Make sure there is some paper or tape separating each bookmark, or they will stick together. Clamp them between two thick flat boards.

Epoxy or urea formaldehyde is a better adhesive, as both are more rigid when cured. A good quality aliphatic resin will be adequate for this project. Aliphatic will not prevent the wood from bending with the change in climate, as it absorbs moisture and can also stain light woods easily. Contact adhesive is not suitable for marquetry.

Leave the glue to set for 24 hours and then remove the tape carefully. Take care to pull the tape at a low angle; do not pull with the grain. If you see the grain tearing, stop and pull from the other direction.


Step 5


Step 6

Step 6 Trim the edges with a block plane on the shooting board, cut the ends square, sand the faces, square the corners and edges, sand, and polish.

Left: Ideas for designs are all around, whether they are reproductions of traditional shapes, tattoo patterns, iconic locations, or natural forms

THE PUZZLE BOX


Step 1


Step 2


Step 3

Step 1 The preparation for this project is the same as for the previous project. Prepare two packs of six 130x130mm veneers consisting of four different tones, from light to dark – ash, silky oak, sapele, walnut – with a disposable backing veneer for the front and back.

Cover each veneer leaf with wide masking tape on one face. Use different coloured tapes for each type of veneer. This will help you later when you assemble the puzzle. This project can get very confusing, and colour coordination will help.

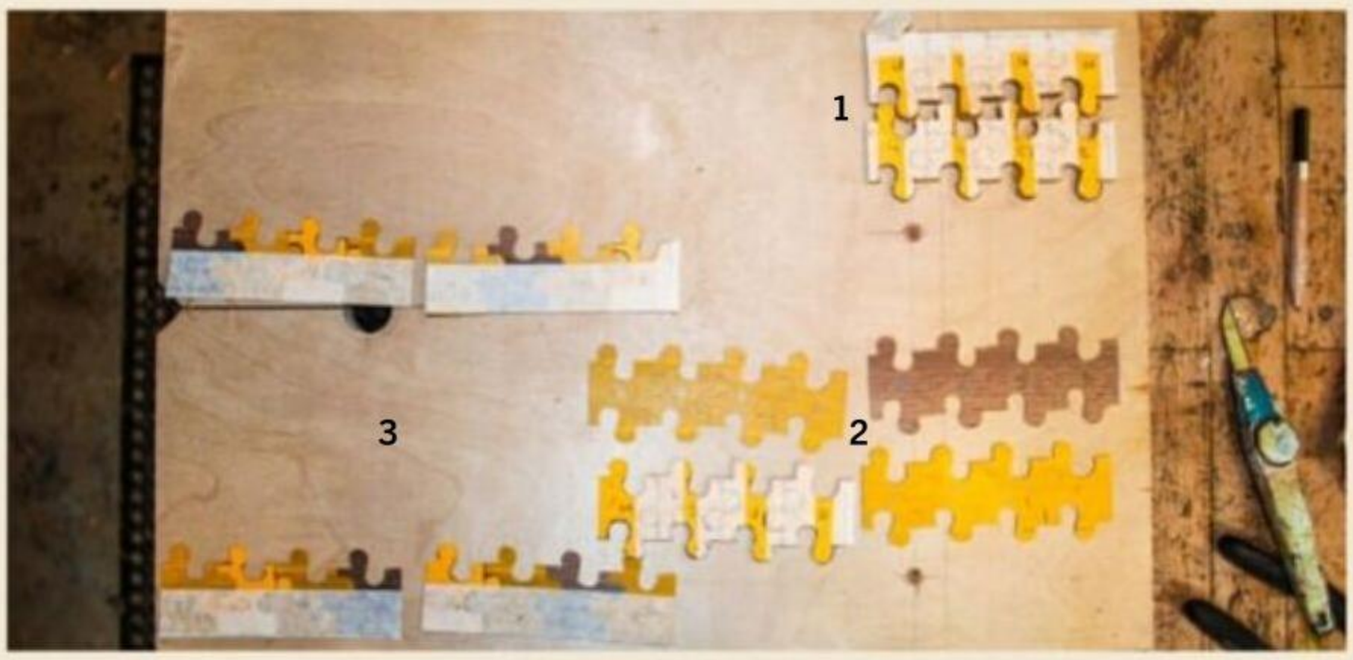
Step 2 Organise the veneers so all tape is facing upwards. Tape into two bundles: one bundle for the sides and the other for the top. Transfer the design to each bundle on the outside.

Note: the design layout for the top panel is different to the sides. This means you will only use part of this stack for the project; the leftovers can form another project.

Step 3 Clamp the cutting table to the bench and fit a sawblade to the fretsaw so the teeth cut on a downward stroke. The teeth on these blades are so fine that I needed a magnifying glass to see them and get them the right way round, and I still got it wrong at times.


Step 4

Step 4 Cut out three horizontal pieces, starting at one side, keeping finger pressure close to the cut and rotating the pack throughout. It takes time to get used to such fine cutting, using the cutting table's hole and maintaining even hand and finger pressure. Most importantly, focusing on keeping the blade vertical – if you are not square, the top piece will be a slightly different shape and the parts will not fit from the bottom. Eventually, you will have followed the line and cut out four strips. Tape these together, reforming the pad, and then saw each strip into the separate puzzle pieces.



Note The image at left shows the process from an initial sawn strip to an assembled strip (clockwise from top left):

1. The cut strips.
2. A separated strip before being recut.
3. The top line of each side is assembled in sequence after the second cutting and assembled according to the chart.

Step 5 On a flat surface, remove the tape you applied to secure the second cut and separate all the pieces. Keep all four parts of each shape together.

Place each shape in sequence on a separate surface, resulting in four trays of four colours, totalling 16 pieces.

Make sure that you keep everything in line, numbered, and in sequence. Follow the chart below (Sides 1–4 and Top) carefully, fitting and taping each piece in place. When you have finished, cover the back with the wide tape, turn over, and check you do not have any tape on the side to be glued down; remove it if you do.

Step 5

Side 1

1	2	3	4
4	1	2	3
2	3	4	1
3	4	1	2

Side 2

2	3	4	1
1	2	3	4
3	4	1	2
4	1	2	3

Side 3

3	4	1	2
2	3	4	1
4	1	2	3
1	2	3	4

Side 4

4	1	2	3
3	4	1	2
1	2	3	4
2	3	4	1

Top

2	1	4	3
3	4	1	2
4	3	2	1
1	2	3	4

Step 6 My marquetry jigsaw pieces are based on 30mm squares, so I made five 130x130x10mm box sides of plywood.

Being oversized, this allows me some leeway for the final fitting. I glued the veneers to the sides and clamped them between two thick, flat blocks of wood, and left them for 24 hours to cure.

Step 6

Step 7 The tape was removed, and the pieces were sanded carefully. A word of warning: having spent such a lot of time and care making this, it is so easy to ruin it at this stage by vigorously sanding and scraping away 0.6mm of wood, chasing that perfect finish. Slow down.

It is unbelievably easy to sand through your veneers. With sandpaper wrapped around a cork block, sand with the grain. As a rule, concentrate on the edges; the middle will take care of itself. Start with 120 grit and gently remove any unevenness and most of the big marks. Then a quick rub with 150 to remove scratches

Step 7


Step 8


Step 9


Step 10

Step 8 The first step of making the box itself consisted of planning one edge straight on the shooting board. Then, working around each edge, getting each part square and exactly the same. Hopefully, your veneers are in the right place and flow around the faces. You can mark the top and sides so they are in the correct sequence, and which edges will be mitred.

Step 9 Mitre the edges either by hand with a plane, using a router in a table, or with a table saw set to 45 degrees.

Step 10 Clean up the mitres with a block plane so the outside corner is exact, crisp, and straight, and check the 45-degree angle is precise.


Step 11

Step 11 The sides are ready to be glued together, so tape them in place, glue along the mitre joint with aliphatic, and tape together. Clean off any excess glue inside with a damp cloth and brush.


Step 12

Step 12 Making the internal box was the same process as making the outside with mitred corners. This was made to the internal measurements from swamp tōtara with a 20mm thick base fitted into a rebate that I cut on each side using the mitre saw, then glued in place during assembly. The thick base adds strength and stability.


Step 13

Step 13 The lid and box are taped and ready for final sanding. Finish with 180/240 folded in three, sanding with your fingers. My preferred finish is two to three coats of shellac sanding sealer rubbed down between coats with 240 grit and a final rub with 0000 wire wool to get the surface flat, then beeswax.

Scan QR code for product detail

The completed box (above). On the left is the first box I assembled with a different top because I did not follow the assembly instructions carefully enough, and nothing matched.

Lion Rock, Piha is an iconic feature of the rugged west coast of the Waitākere Ranges

A MARQUETRY PICTURE

Preparation When I studied the work of the masters, I could see what could be done, but I wanted a simple idea to start with that wasn't all flowers, fans and birds, so I took a long walk along the west coast at Piha, taking numerous photos.

When I got home, these were edited, and half a dozen looked like they would make a good subject. I printed them out, traced the outlines of the major blocks of tone and refined some details.

The finished tracing also included important datum locations on each corner of the image. These datum points are very important, so the image does not move when redrawing the parts as you build up the image.

I analysed the image to see what features could be blocked out, kept the design easy to cut out, and avoided too many loops and fine lines.

This also gave an idea of the sort of wood grain, colour, and pattern that could loosely represent each part: smooth, plain, and light for sky; burr for bushes or rocks; stripy grain for grass or leaves, etc. Think about which elements need to be dark and light, bearing in mind that when you look at an image, features need to stand out and perspective gets lighter in the background.

Step 1

Step 2

Step 1 With the veneers selected and cut roughly to size, I covered the back face with the wide blue masking tape to minimise breakout when sawing, especially on burrs with very short grain.

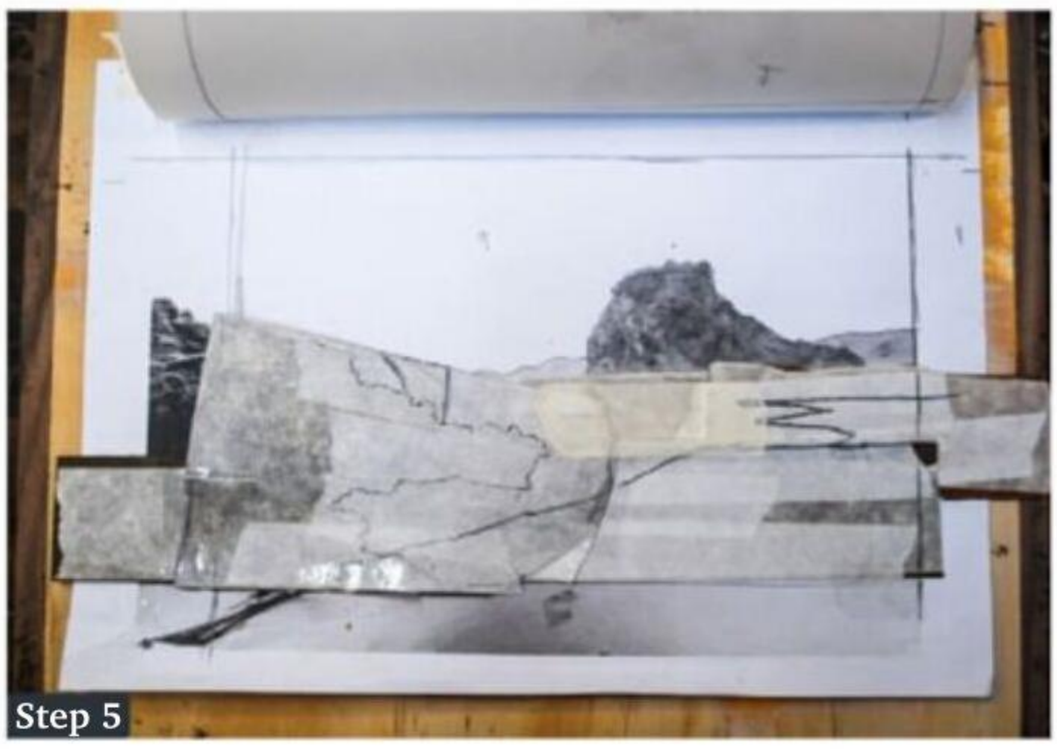
Step 2 With the veneers selected, I started out with Lion Rock, comprised of burr ash and burr elm cut oversize.

These two veneers, plus two backing veneers, are taped to each other. The original drawing is placed over the veneers and correctly oriented with the datum marks and get the right bit of grain.

Then, using carbon paper and a sharp pencil, the lines are transferred to the veneer pack. The in-cut and out-cut are carefully noted so as not to interfere with the design. This waste is removed as the design progresses. When sawn, the pieces are separated and then taped


Step 3


Step 4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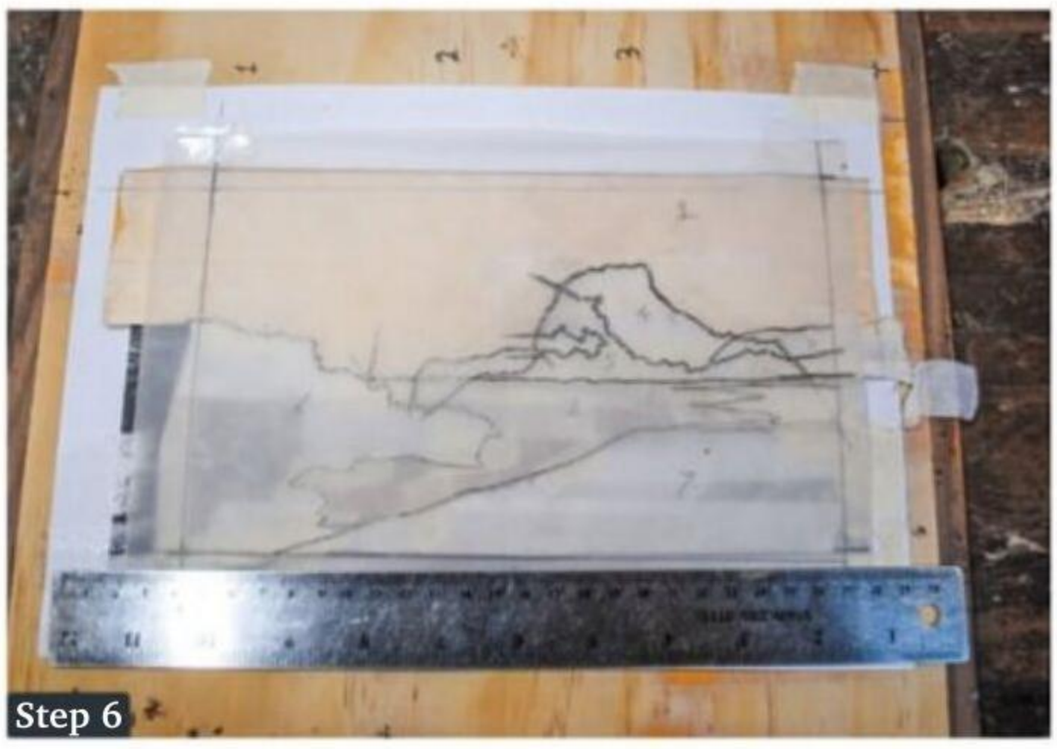

Step 6

together. As the cut progresses, tape over the cut.

Step 3 Sawing out Lion Rock.

Step 4 The second separate element was the landscape behind Lion Rock with the sky. This clearly shows the exit lines in the background. Again, saw out the parts and tape together.

Step 5 A stack of veneers that would comprise of the sea, beach, rocks, and tributary was then cut roughly to size, taped on one face, and then taped together using the tracing to locate the individual veneer in the right place.

Again, the design was traced onto the veneer with carbon paper and sawn. As this is a large part, the cuts were taped to keep the pack together as it was being cut. When all the cuts were made, the pack was disassembled, the waste discarded, and then each part was taped together to make up the beach scene.

Step 6 Finally, all the parts brought together: the sky section, Lion Rock itself, the landscape, rocks, and the beach


Step 7

were taped together and sawn along the horizon line, with everything located in the right place using the tracing.

Step 7 If your design has a cutout inside another shape, use a fine drill or thick needle to poke a hole in a discreet location and thread the sawblade through the hole, then tighten it in the fretsaw frame.

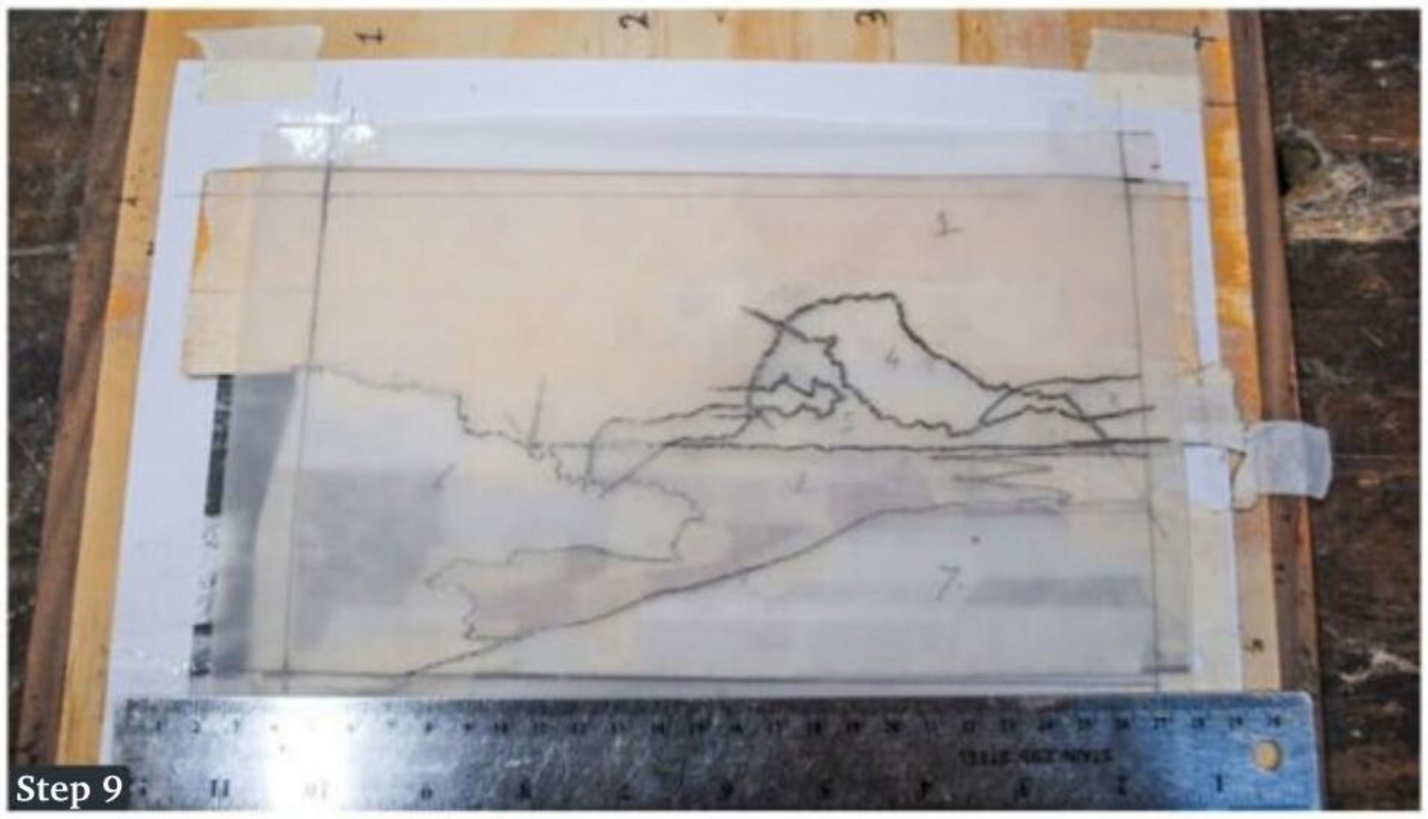
Step 8 Now the main picture was all taped together, the outside was marked out to be cut square, a border and feature line added, and then glued onto a sheet of 12mm ply with aliphatic resin and pressed between two thick flat pieces of plywood.

Steps 9 and 10 Once the panel was removed, I cleaned it up by carefully pulling most of the tape off around the picture, then getting it smooth with a light cabinet scraping (a different picture is shown); sanded with 150 and 180; and sealed with shellac sanding sealer.

The finished picture (bottom right). It needs work to make it look a lot better. I have got the colours of the sea completely wrong; the tributary is not seen, as the woods I chose were too similar; and the rocks need shadow and light. There is no doubt that this is going to be a very interesting journey mastering this art.

For more information, read William Lincoln's *The Marquetry Manual*, look at the website of Silas Kopf, and search Pinterest to see some incredibly inspiring work by some remarkably talented woodworkers.


Step 8


Step 9


Step 10

Off the grid

DOWNSCALING, BUT NOT SLOWING DOWN

By Murray Grimwood | Photographs: Murray Grimwood

"Do not go gentle into that good night" – Dylan Thomas

Time to sell the family keeler, but not to back off from the projects and activities. Downsizing means new beginnings elsewhere

As I've aged, I've always clung to the belief that I'll do this or that again, someday.

But selling our keeler recently – its replacement is a tiny trailer yacht – made me face the fact that I may never sail into Moorea or up to Hawaii or down to the subantarctic islands again. That shift paralleled getting involved in the local model engineering group (more on that in a later article), so miniaturisation – of everything: from possible voyage destinations to possible construction projects – has been the overriding feature of recent times. To quote Monty Python, it makes you think, doesn't it?

Early days

I came to boating by reading Arthur Ransome's *Swallows and Amazons* series at the age of eight.

Subsequent hassling of a not-unsympathetic dad resulted in a catamaran evolving in the downstairs garage. The hulls were flat sided and flat bottomed like narrow duck punts, decked in at each end and with a narrow plywood bridge-deck. In the measurement of the times, the hulls were 15 inches wide, 15 inches deep, and the bridge-deck was 15 inches wide too.

From memory, the overall length was 10 feet, the end decks were about two feet, meaning the bridge deck must have been six feet long. Framed in inch-square rimu and clad in 3/16 ply, she was a typical '60s Kiwi DIY effort.

We took her everywhere; Stewart Island (the *Wairua* crew kindly lowered her over the side, and I paddled her, laden with the family gear, over to Leask Bay, then through the Ringaringa Passage), Kaikōura, and many lakes. It even surfed, after a fashion …

Later we would use a PA-Vauxhall-powered (but gearbox- and clutch-less) plywood cruiser to venture further – another common-to-the-era Kiwi approach – and had some notable adventures with it before we chicks flew the family nest.

We, in turn, took our own chicks (two boys, 10 and 12 years old at the time) for a year-long sojourn up and down the Queensland coast in a 24-foot

It even surfed – after a fashion … Yours truly, aged nine (left)

We once bailed that cruiser with gumboots and tin cans …

Paradise on a shoestring, battle flag proudly flying. *Multipass* was a Seawind 24; each hull 1m wide and 1.2m tall; impeccably mannered and perhaps my favourite of all our boats. For a year, she was home for our family of four

"Perhaps I was subconsciously practising downsizing already"

If someone asks what I do, I reply, "I'm a MacGyver"

catamaran – each hull a metre wide and sitting-headroom only (perhaps I was subconsciously practising downsizing already …).

Skills were demanded of

All these efforts – indeed any long trips afloat – tend to demand sheddie skills.

More accurately, I've come to think of it as demanding 'MacGyvering' skills. A little like *Scrapheap Challenge*, you only have the tools and materials on hand to achieve your goal (typically, making it safely to your destination). We once bailed that cruiser with gumboots and tin cans, having come back from a tramp to find the self-bailing Venturi had back-syphoned and only her beached bow was above water.

Then we drained the (fresh – it was a lake) water from the sump until the oil showed, dried the distributor over a twig fire, and drove her home. We learned that day that oil smeared on your arms is a good sandfly trap …

I was reminded of such when we reunited with our offspring (and theirs) over Christmas. One nice day (there weren't that many this summer), we all took the grand-chicks out on a shallow bay, using surf-skis and paddle-boards. Between us, we have well over 100,000 nautical miles under sail; most oceans crossed (many more than once); a couple of circumnavigations; everything from Alaska to Antarctica. Yet here we were in this shallow puddle, enjoying the water, the ambience, the day, and the sharing of it all. The lesson? It doesn't need to be big.

Letting go

I'm proud of what I did to the keeler; the laminated-plywood dodger, built with a friend; the stainless targa bar, built from old dairy tubing; the solar system; the fridge …

Then there is the box that I built to go on the back of the dinghy (which was the longest we could fit on deck, but not up to carrying two people plus

> “Dried the distributor over a twig fire, and drove her home”

gear). The box’s length was in turn governed by the space between the dinghy ‘thwarts’ (seats). It is hard to let go of this stuff sometimes. But I have the photos and the memories (shades of Jim Croce!) and in truth, new challenges are more exciting than smug contemplation of old ones, plus which the boat needs to be both loved and used.

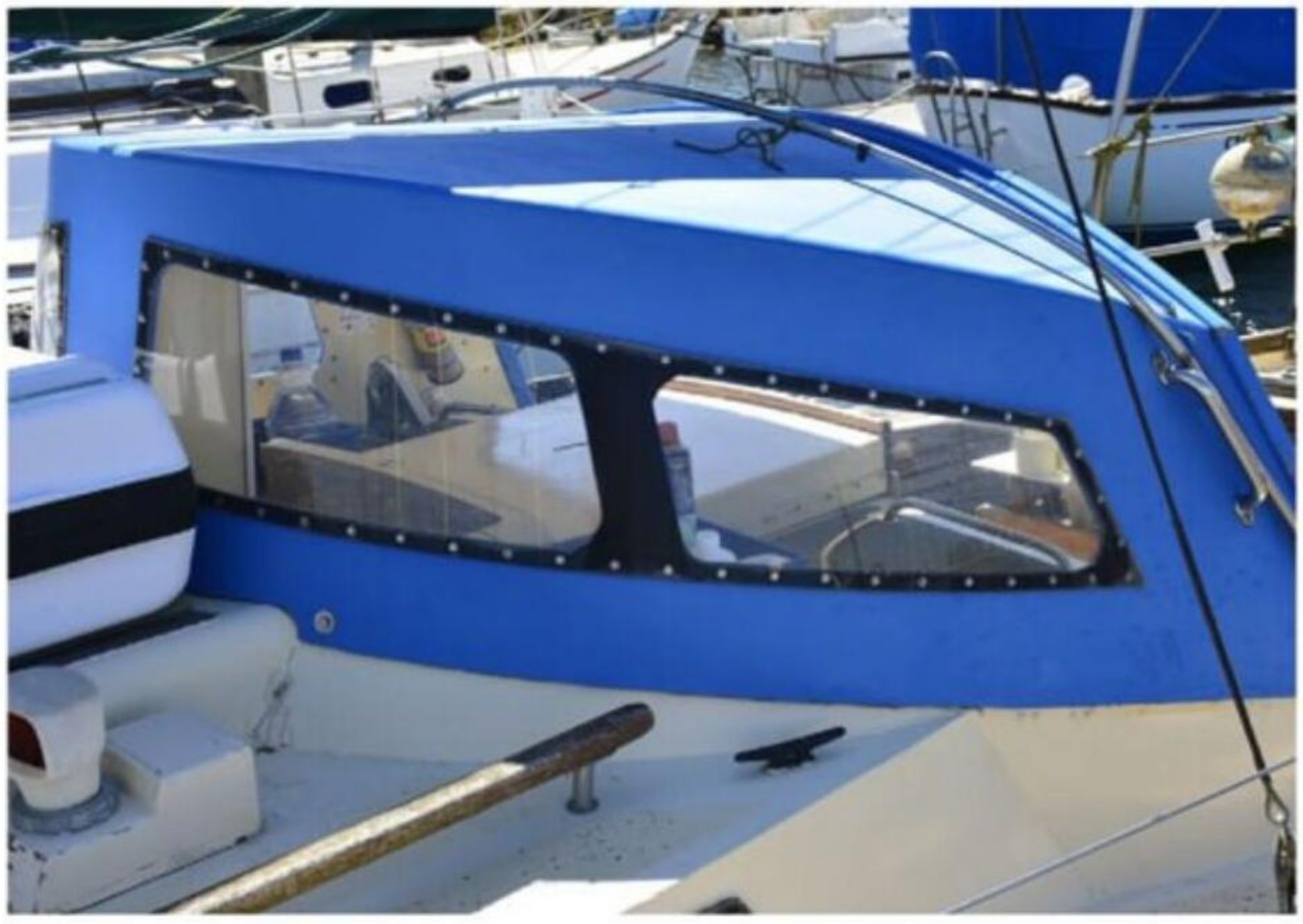
Memories of car-sized projects figure similarly: the Escort-powered Hillman Imp; the Alfa-then-Escort-powered Hino Contessa(s); the Humber 80–powered Glas Royal Goggomobil; the Holden HD X2 wagon (with Celica box, Dellow housing, and a grumpy cam), a Special or two … great fun all, but all in the past now.

Thumbnail

The little trailer yacht – a Hartley 14 – was a barn-find gift from a migrating friend.

It is so old that it has a hollow Oregon mast and was nailed together, so it

I’m proud of the dodger that we built (inside shown above, outside below). Many’s the time I’ve hidden behind and/or under it



The box attached: lengthening the waterline and increasing buoyancy

The box packed for stowing upside-down on the keeler’s deck. The recess (left) I moulded to take a fuel can

My winter project – I can think of worse! Over 3000 plans were sold for the Hartley 14; I wonder how many survive? In knowledgeable hands, they can punch well above their weight

dates from well before epoxy glues (I'm guessing Aerolite or resorcinol). She needs new sails, and while I'm at it, we'll go fully battened and add reefing points and lazy jacks. I'll likely replace the steel-plate centreboard with a daggerboard, with the lead just in the bottom (one reason being that the board can go in the Corolla, reducing towed weight).

I'll turn the cockpit seats into sealable air tanks (using watertight hatches) and give it a mainsheet traveller mounted above the tiller. I'm thinking of adding platforms astern, as steps and as water-line extenders (much like that box on the dinghy). And a boom tent of course – those *Swallows and Amazons* books feature camping-cruising more than once. In short (bad joke), the little boat will slake my maker urges, challenge my MacGuyver capabilities, and open up a different kind of cruising – rivers, lakes, and estuaries – while still being reasonably capable in bigger stuff.

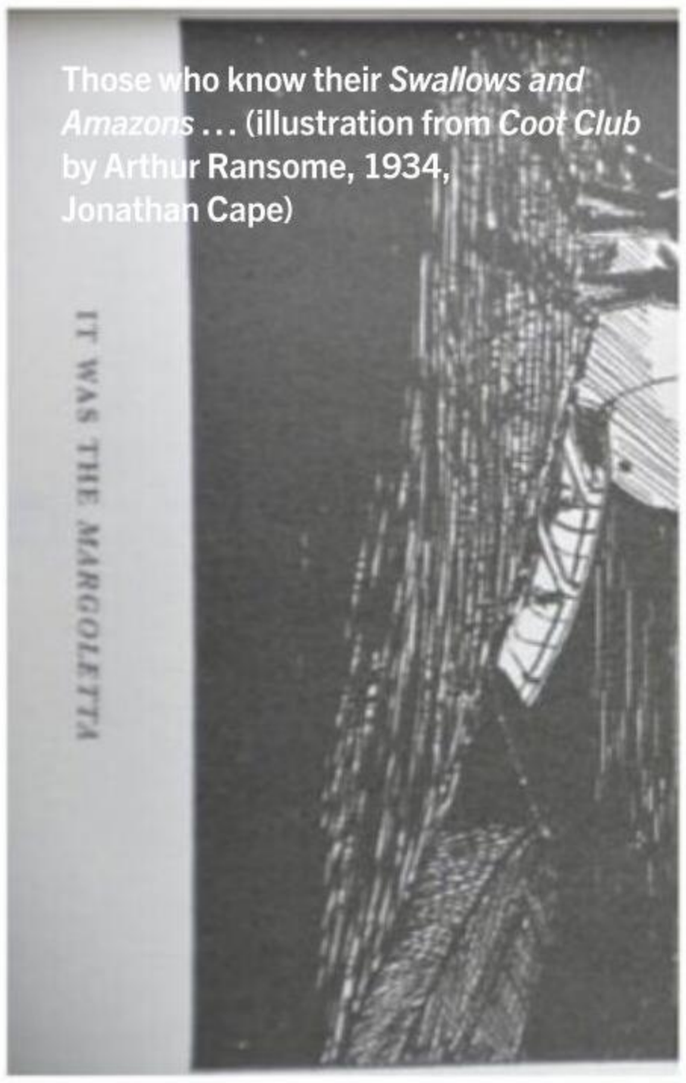
The best boat name ever

As she arrived, she was called *Julbillee II* (the Roman 2), for reasons that presumably made sense to a prior owner (reminding me of the best boat name I ever came across: *Neveragain II*).

We are not superstitious; our Queensland catamaran had been named *Scardey-Cat*, *Fleabag* and *Aikane-Kai*, before we re-named it *Multipass* (the boys having recently watched Bruce Willis's *The Fifth Element* movie). So we are going to rename the newcomer *Thumbnail* – she being a miniature of the real thing.

I'm hoping some of the grandchildren will come out on *Thumbnail* for the odd adventure – we'll see. I'm also considering what *Thumbnail*-sized adventures we can concoct? Jumping over to Stewart Island, perhaps? Ticking off the South Island lakes as we traverse them? Maybe even a coastal passage …

An 80-year-old resurrected this old pond yacht, rigging it and adding radio control. Downscaling personified



Those who know their *Swallows and Amazons* . . . (illustration from *Coot Club* by Arthur Ransome, 1934, Jonathan Cape)

Art deco tinged and purposely big enough to carry the radio-control of the era

Meantime ...

A friend who has owned a couple of seaworthy yachts and has a few offshore passages under his belt as well had to give up the big 'uns for health reasons. Now 80, he dragged me along to the local Model Engineering Society, where he'd been satisfying his love of boats by creating exquisite models, mainly of real New Zealand ships. Here was a whole crowd getting genuine pleasure out of modelling and supporting each other in the process.

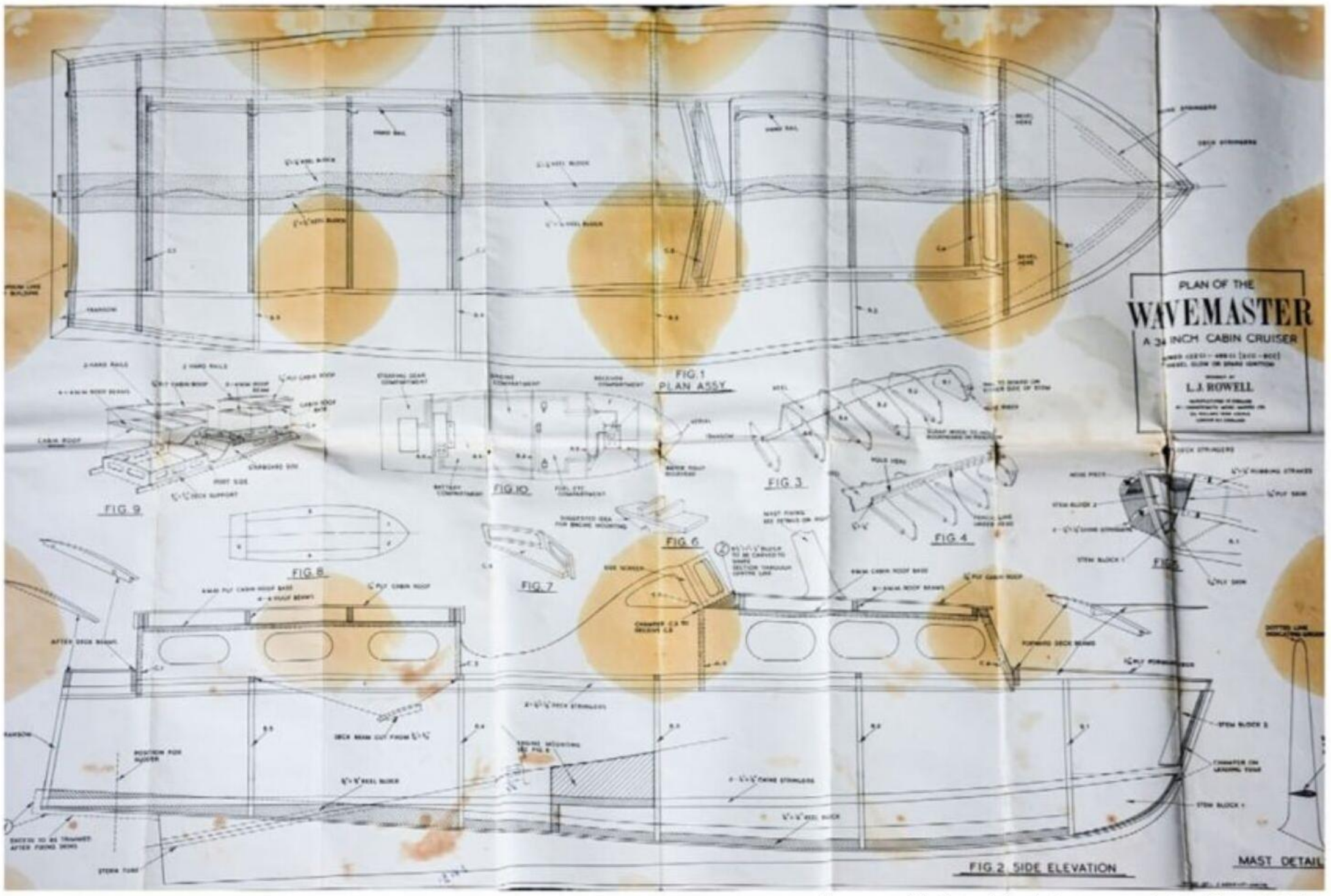
They host birthday parties as a fundraiser, plus run their own expos. The pond at such times is filled with all manner of craft, the ride-on trains percolate past, and the tether cars scream briefly (it's the only remaining track in New Zealand).

Three-dimensional printing is becoming more of a feature, and the club has its own printer at one end of its workshop. My 10-rater yacht is a bit big for their pond, but on their 'free to take' shelf was a donated '60s model motor cruiser (a 34-inch Yeoman Wavemaster) needing a new home. Well, now it has one.

It had a glow-plug engine, which I removed and re-donated. I'll e-power it – nothing too startling, just a basic boat that I can hand over control of to

"He'd been satisfying his love of boats by creating exquisite models"

Members of the Model Engineering Society meet at a local pond



It came with the original plans, complete with fuel stains

a youngster and not cry (too much) if it runs into something solid. I'll repaint it and give it internal and external lights, because the model engineers also put on night events – chains of LEDs adorning fences, rails, trains, and boats making a great spectacle. Those who know their *Swallows and Amazons* will understand why this cruiser will be called *Margoletta*.

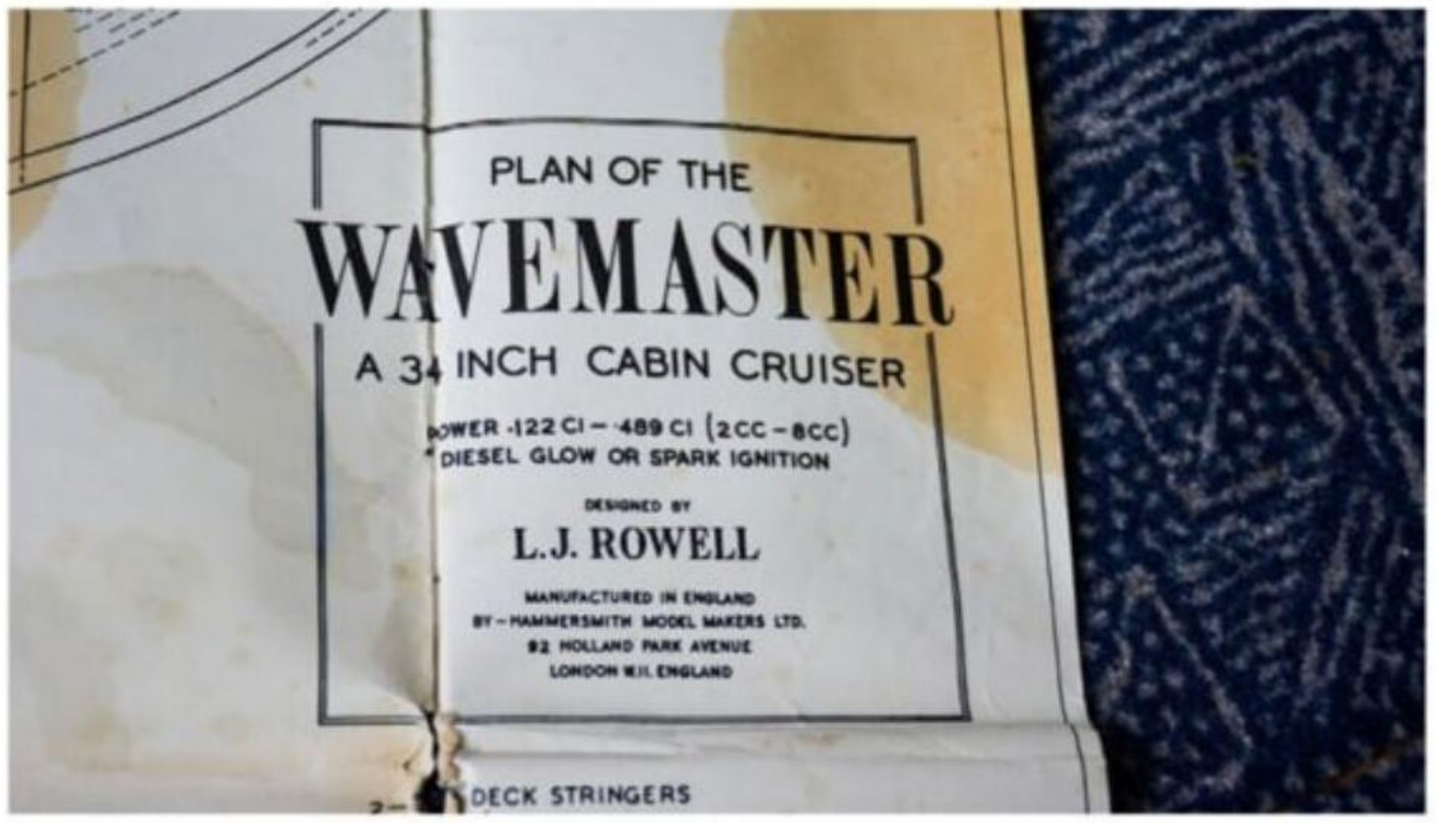
Patina v. perfection

Neither boat – the trailer yacht or the Wavemaster – is in perfect nick – not even close.

There is perhaps an argument that they should be restored to pristine accuracy for historical reasons. But it isn't mine. I have come to respect, indeed revere, patina – the stuff that happens as an item ages. It is that thing's history, after all. I'd rather know the reason that someone installed a motor with non-matching numbers than worry about not having the original one. Seems to me that using new materials to take something back to what it might have looked like when new itself wipes all that intervening history.

In reality, there's room for both approaches, but the longer in the tooth I get, the more I favour backstory over concours.

In the case of the Wavemaster, I traced, contacted, and visited the original builder. Turns out he has a fleet of RC aircraft, but wasn't so much into the boats. I now know he bought it from Eclipse Radio in Dunedin, prior to 1970. So it is already 55 years old, minimum, and to a design that we can trace back to 1953. You'd expect a little patina in that time.



The lesson I'm learning is that small doesn't have to mean less. Seamanship is seamanship, engineering is engineering, and making is making, at any scale. And of course, the accountant is liable to offer less eyebrow-raising; small usually costs less. At least, that's what I tell her. I'll no doubt document both builds here in the coming months; stay tuned.

Meantime, there is no intention hereabouts to "go quietly", in Dylan Thomas's terms; there's too much to do and too little time …

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Templates and jigs

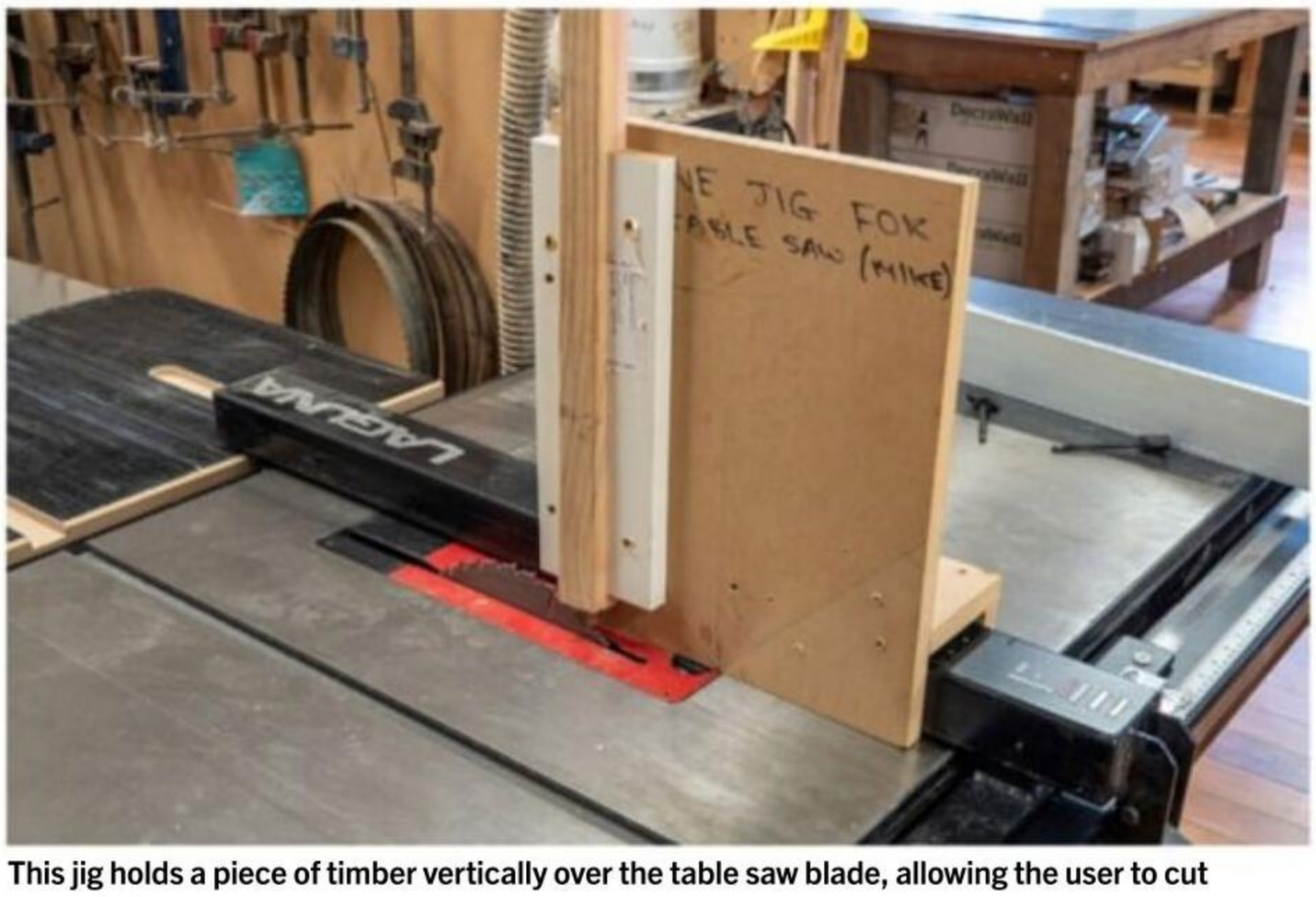
APPLIED WORKSHOP WISDOM, DESIGNED TO REPEAT

This is part two of a series on understanding and using templates and jigs in your workshop projects. You may also be very surprised to discover what constitutes a 'jig' among your array of tools

By Nigel Young | Photographs: Nigel Young

When it comes to hand tools, a mitre saw is a surprisingly useful one in your workshop. Clamp it down – and use the whole blade: the classic joke is that you've paid for the whole blade, so use it all

Two bench hooks, and easy to make. The closest one is mounted in a vice for even more stability and has clearly been made for a left-handed user. The other one has the top piece of timber stopping short of the width – this is your cutting edge



This jig holds a piece of timber vertically over the table saw blade, allowing the user to cut accurate tenons

In the previous issue of *The Shed*, No. 125, we looked at the work of mandolin maker Malcolm Locke and the use of templates and jigs in his work.

Next issue, we're going to look at the construction of a 1800-millimetre-long Model T Ford truck pedal car, currently being built at the New Brighton Menz Shed. This also involves the use of templates and jigs, which had to be made before the work on the car could even begin.

While both of these projects are very specific, don't let that mislead you into thinking that templates and jigs are only of use in bespoke and high-end projects. Take your vice, for example – it is a jig designed to do one simple thing – hold something in place so that you can work on it.

Now, you can do other things with a vice, and there are, of course, many different types. But despite their differences, they come back to the same core principle – holding the item you're working on still and steady, so that you can do whatever it is you want to achieve.

What is a 'jig'?

Wikipedia lists several meanings for the word, including in dancing, where 'jigs' can refer to a type of "lively folk dance", particularly associated with Irish and Scottish traditions, or in fishing, where it is a fishing technique using weighted lures called 'jigs' to attract fish. Each of these two contexts involves rhythmic movement, whether in dance or in the action of fishing.

But if we define a 'jig' as 'a device that allows for consistent and continuous rhythmic movement', we may have to broaden the scope of these articles. 'Formers' are another type of jig – I used them for making the prod (bow) for the crossbow that I built several issues back. I think, however, that this definition is the one I like the most: jigs and templates are just ways of capturing a bit of workshop wisdom so that you don't have to think it through every time. In its simplest form, a jig controls movement, while a template controls the shape.

A former is used not only to control the shape but also to prevent movement

while a process is happening. In the case of the crossbow prod, I was fibreglassing several layers of thin wood together over a curve – the former – and then held it there with straps while the fibreglass did its job.

In that particular case, I was experimenting with strips of New Zealand Oregon, which had a long, straight grain going the length of the prod, with equally thin strips of kwila decking with a much tighter grain. The aim was that the Oregon would provide the strength while the kwila would provide the power. In the end, I used solid fibreglass and a car spring – but that's another story.

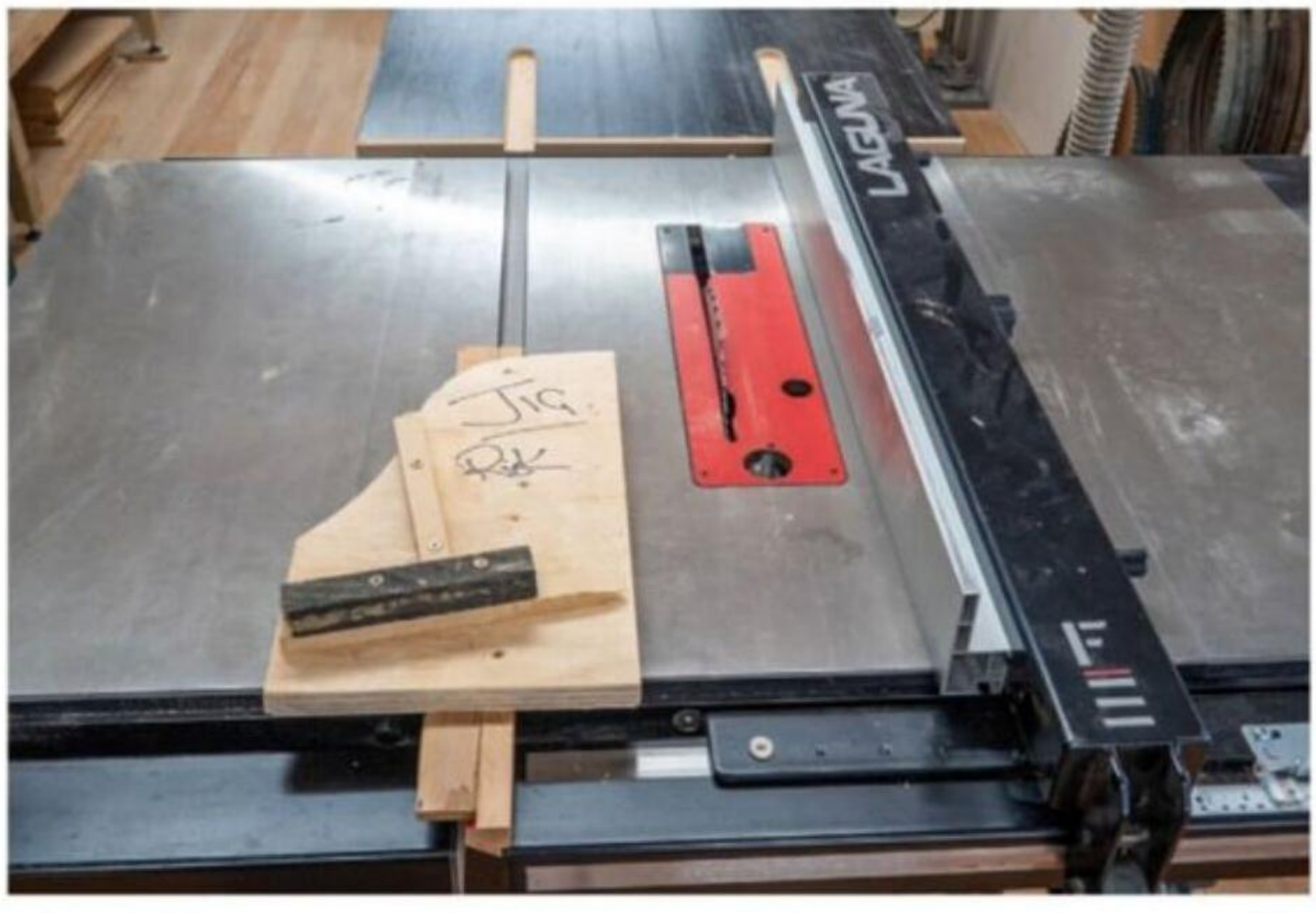
Repetition

The biggest advantage, however, is repetition – both the movement and the shape can be reproduced any number of times, with consistency and tight tolerances guaranteed. Almost. The vagaries of timber, workshop heat and moisture in the environment, and potential wear and tear on the jig or template will always need to be taken into account – especially if you've used MDF or something similar.

If you look around your workshop, you'll be surprised by what jigs you already have – a mitre box and a mitre saw mounted on a frame are both jigs – they provide both stability and restrict the cut to wherever you have set it. Oh, and when you use it, don't forget to use the entire blade, and not just the middle bit – it prolongs the life of the blade and ensures a better cut, as it is less rushed. Putting a fence on your table saw or

Another view of the tenon jig, showing the blade, the jig, and the timber

This is the jig used to cut across the corners of boxes with a mitred joint. It provides a horizontal surface for glue across the joint, along with an opportunity to use different timber to provide a highlight



This jig is designed to use the guides rebated into the table saw top. In this case, the jig is being used to cut pieces of timber at both a specific length and angle

> "They come back to the same core principle – holding the item you're working on still and steady"

Another version of a jig made to use the guides in the table saw top

Above and below: Use of the 'spacer' for cutting consistent strips

router box is exactly the same as the cut is being controlled, resulting in a better – and more importantly – repeatable cut.

So, how do we use jigs?

The bench hook is a good place to start – a flat piece of MDF or ply with a piece of timber across the bottom on one side and the most of the top on the other. The top piece stops short to enable a saw to go past, so it's just an alternative to a mitre box. One advantage is that the bottom piece can be mounted in a vice, making it very stable.

Moving to the table saw, jigs can be used directly over the top of the blade, and in the photos accompanying this article, we have one holding the vertical piece of timber for cutting tenons. The other one with the opposing 45-degree support is used to cut slots in the corners of a box with mitred joints in order to insert stiffeners. Different timbers are often used, supplying colour highlights as well as a horizontal surface for glue across the joint.

There are also jigs that use the rebated grooves in the table surface, allowing cuts at any angle that is required, while holding the piece of wood firmly and securely. Nervous about trying to cut thin strips with your table saw? Use what is effectively a spacer with a back stop that extends past the width, which in turn catches the piece of wood that you're cutting. By pushing the jig through, the strip is not only cut safely, but it is also consistent every time.

Control and repeat

While jigs control the cut, templates control the shape, enabling consistent, accurate repetition.

Planning a complex shape is one thing; having to repeat it is another. If you've ever tried making a musical instrument in which the accuracy of the shape also impacts on its tone – we saw this in the last issue with Malcolm Locke's mandolins – then getting it right the first time is paramount – once it is right, it is always right. Almost – there is still the caveat I mentioned earlier.

One tool that is particularly suited to templates is the router – with adjustable depth and a good range of bit shapes, it is a very useful tool to have in your

> “While jigs control the cut, templates control the shape”

workshop.

I used one for a dining table a few years back. I cut a curve in a sheet of ply – I can’t remember the thickness, but it was around 4–6mm – I had clamped to the table, and then put three curves in the 18mm thick ply table top. I had three strips of mahogany that I then glued into the cuts, having curved the ends to match the router bit radius. Books have been written around the router, and in the Menzshed I attend, we have *Router Jigs & Techniques* by Patrick Spielman, which demonstrates a very good range of both templates and router mounts that can be used in conjunction with them.

I’m sure you’ve also watched the YouTube clips on track-mounted routers, along with what I know as a skilly – a hand-held circular saw that is probably the next thing you buy after you’ve bought your power drill and driver set. These usually come with a guide that can be mounted to the side – effectively a jig for making parallel cuts.

The template approach

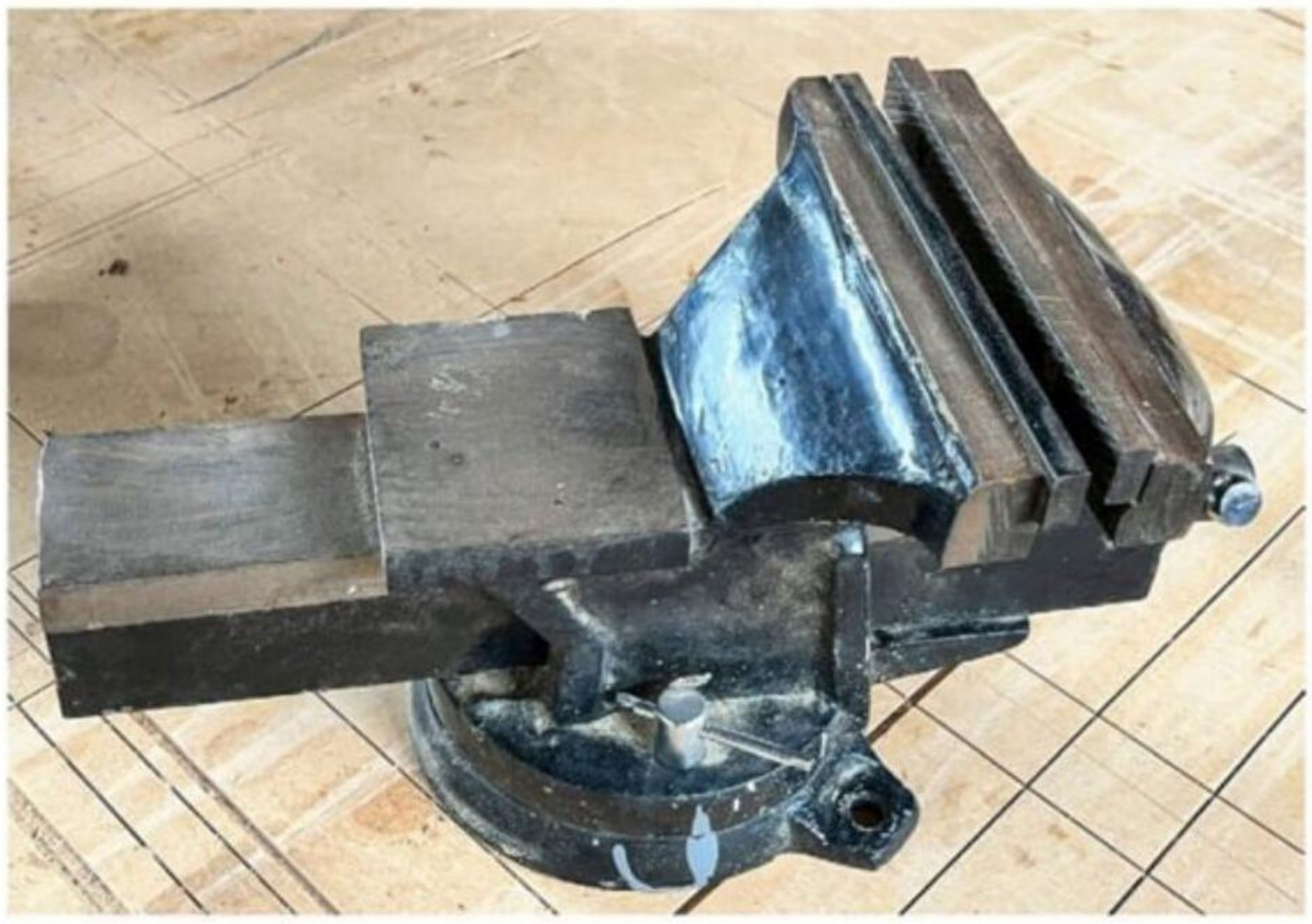
I used the template approach a lot when I built my crossbow some years back.

I started with a 1:1 drawing, transferred that to a sheet of foam board, which I then cut out with a Stanley knife. I used this to map out different versions as the design interated, and having the core of the shape in foam board saved a lot of redrawing.

It was from that that I cut the final shape. Since then, the prod (bow) I used has failed – I formed it out of a strip of fibreglass, but it was made from short-stranded rather than long-stranded fibres. The result was that the crossbow

I used curved plywood templates to form these grooves with my router. When my grandson was younger, he saw them and asked, “Who drew on the table?”

The fibreglass prod that failed but still serves as a template for a future prod. I know that it works, as it gave me good results at the time. A great example of ‘workshop wisdom’ – I put a lot of time and research into it originally



A great vice – it’s quite versatile and really is a jig with a specific name

> “Adapting out of experience and building on what you have learned”

tension and then quick release meant that the fibres started to separate.

But rather than throw it out, I taped it so that no one could get hurt from sharp fibreglass strands, and now I use it as a template. I know it is right, as it has been tested, so using it as a template gives it a new life. Interestingly, the crossbow was a case in which jigs, templates, and formers all had a role.

Iterate and repeat

Inevitably, things change.

Each time you build something, you will have learned more about it, and invariably, you’ll want to tweak it. Having an established jig, template, or former means that you are starting from a known position, one that has been tested, and from which both the pros and the cons have been observed.

An existing jig, template, or former means you can fine-tune it, without having to start all over again – that’s what I found with the crossbow. This is your ‘workshop wisdom’, where the many hours you put into it are there in front of you. So, no going back to square one – start from where you left off, and you will be working with applied knowledge, adapting out of experience and building on what you have learned.

Resume and repeat

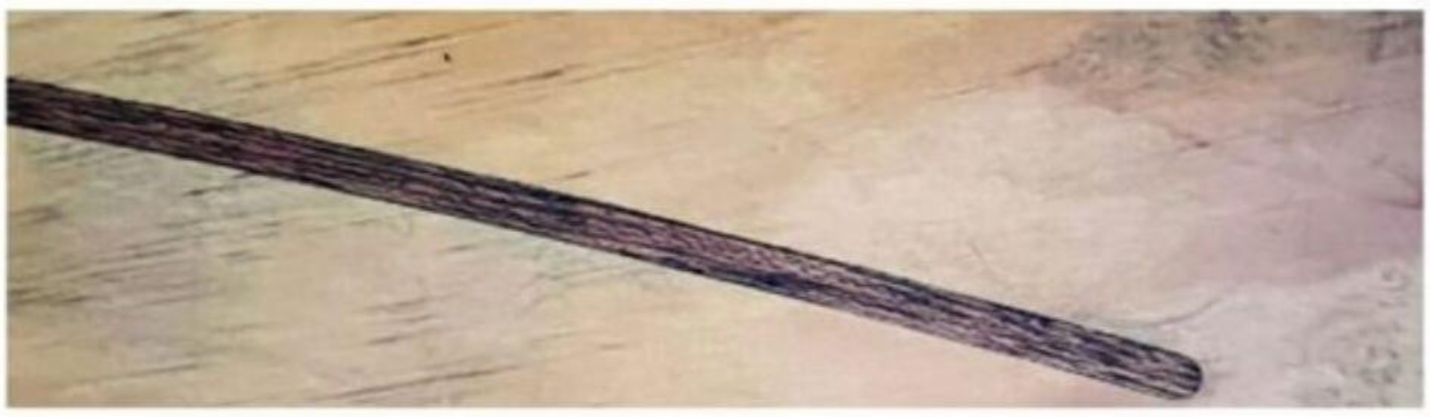
Jigs, templates, and formers allow you to move on to something else, but should the occasion arise, to be able to go back and make some more. You put the hours into the research, the fine-tuned result verified it, and now you can go back to it whenever you choose.

Jigs, templates, and formers are also your IP – they are the result of your efforts, and they have a value in their own right. If you’re in business, jigs, templates, and formers belong on your balance sheet – but that’s another topic altogether.

For now, you are able to ‘rinse and repeat’ as many or as few as you like. You’ve turned your research and hard work into ‘workshop wisdom’ and have the confidence to do it all again if you so desire. If you put the time into making them in a manner that reflects good workmanship rather than just building them ad hoc on the fly, there’s no reason why they shouldn’t last you for years, hanging on the wall or stored in a cupboard all ready to be taken out and reused as you see fit, reflecting all the original work that gave you good quality – repeatable – results.

Take the time to look around you. Just about everything in the room will have been made using jigs, templates, and formers, showing the degree to which it all can be scaled. All because you took the time to plan out and fine-tune what you wanted to achieve – good design and procedures providing a consistent, satisfying and endurable item. That’s not only wisdom; that’s also legacy.

Another vice. This one allows for clamping from different directions – a very useful jig



A closer look at the end of the router cut for the mahogany strip on my table. I was very pleased with it

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HEAR THAT WHISTLE BLOWING

The Bay of Islands Vintage Railway in Kawakawa is a national treasure, operated by a handful of dedicated volunteers. Rare rolling stock is meticulously restored for current and future generations to enjoy, plus, there are some very exciting plans afoot for this railway's future

By Jason Burgess | Photographs: Jason Burgess

When the whistle of a train blows in Kawakawa, the main street slows to a crawl. It has been that way for over a century.

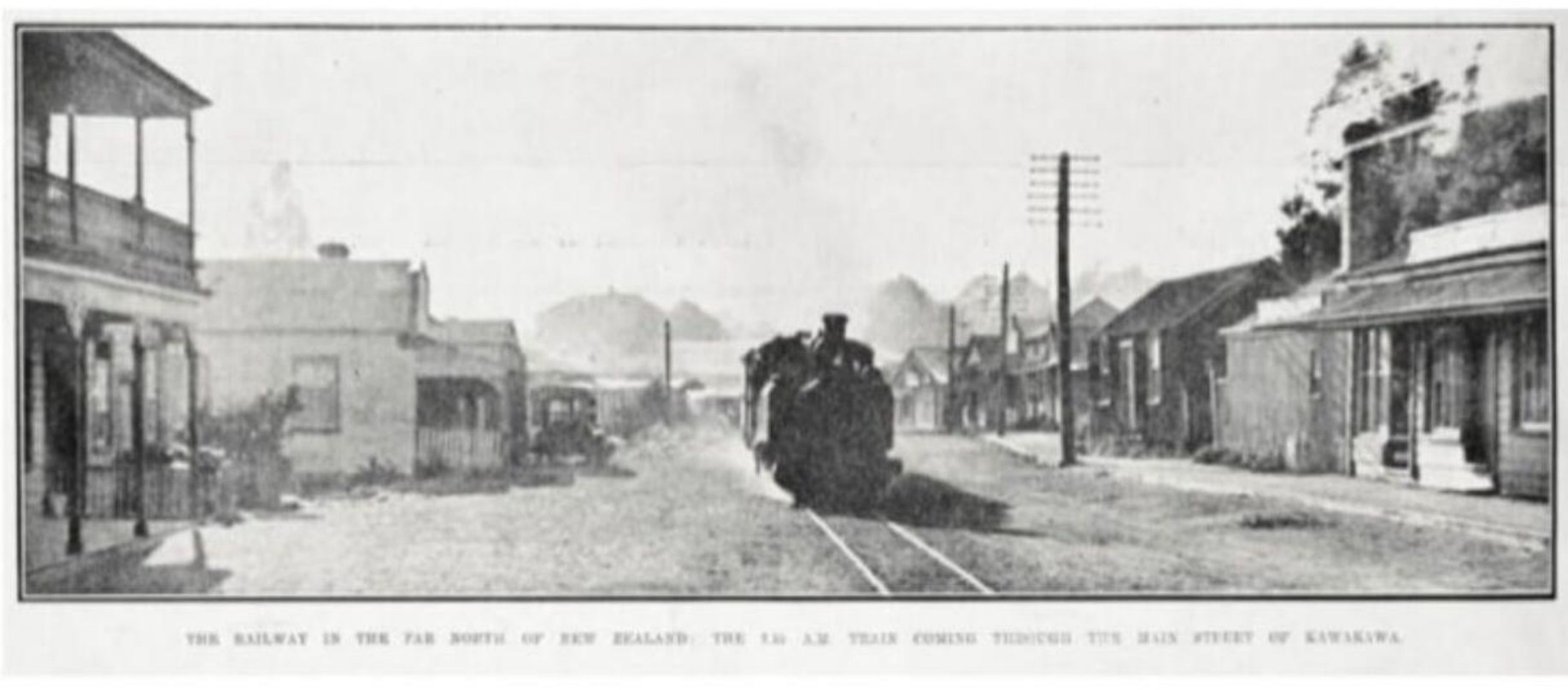
This historic Northland town grew up alongside its railroad, and it remains unique in that both cars on State Highway 1 and Bay of Islands Vintage Railway (BOIVR) trains share the same thoroughfare through town. The sight of an old iron horse rumbling down the median is as captivating for bystanders as it is for the passengers on board. More than just a joy ride, the line is a reminder of pioneering tenacity and the pivotal role railways played in opening up the country's back blocks.

Meet Denis

There was a time when Denis Hewitt, a veteran BOIVR volunteer, spent his hours at its Kawakawa sheds climbing under rolling stock, working on engines, repairing brake cylinders, inspecting axles, laying sleepers, and digging in turntables.

These days, you are more likely to find him riding the restored carriages as a guard on the two-hour-long return trip to the Whangae tunnel – near Opua. Here, he gets to share his memories of the restoration of this, the oldest rail line in the North Island.

Denis says, "I always wanted to join the railways, but my father wouldn't let me." Instead, young Denis helped break the land on his dad's farm, driving tractors while training as a



THE RAILWAY IN THE FAR NORTH OF NEW ZEALAND: THE 7.45 A.M. TRAIN COMING THROUGH THE MAIN STREET OF KAWAKAWA.

The railway in the far north of New Zealand in the main street of Kawakawa, circa 1922 (photo: Auckland Council Libraries' heritage collections)

Denis with his bag full of rail archives on the platform at Kawakawa

motor mechanic. Skill sets that have served him well at the rail yards. While Denis's mobility is not what it used to be, his passion is as vital as his recall is detailed. Keeping up with his book-worthy, nuts-and-bolts backstories on a back-of-house tour of the sheds can be exhausting. He is a veritable library of information, with detailed knowledge of the provenance of each locomotive, carriage, and wagon in the collection.

In the beginning

The story of Northland's once-extensive rail lines begins in the 1860s with the discovery of coal at Kawakawa.

The first railway involved a horse-drawn timber track out to a wharf at Taumarere, the highest navigable point on the river from the Bay of Islands. A steel track was laid in 1870 and extended out to Opua by 7 April 1884. In 1925, Opua became the terminus for the North Auckland line and the Opua Express passenger train, a service that ran until 1967.

Freight trains to Opua – mostly transporting meat and dairy from the nearby Affco Moerewa works and dairy factory – remained in operation until 1985. The BOIVR took over the line after that, running sightseeing services the full 14km over 14 bridges from Kawakawa to Opua. The rail was shut down for restoration work in the early part of the noughties, reopening again in 2006, this time operating just the 4.5km to Taumarere and back. Today, the journey to Whangae travels over the aptly named Taumarere Long Bridge,

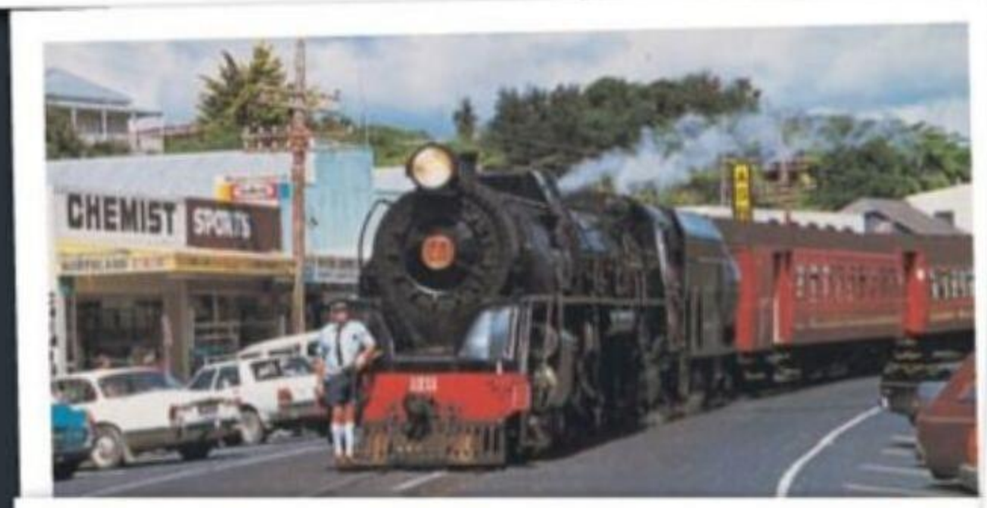
CONSTRUCTION OF THE WHANGAREI-KAWAKAWA RAILWAY: A VIEW OF KAWAKAWA STATION, NORTH AUCKLAND.

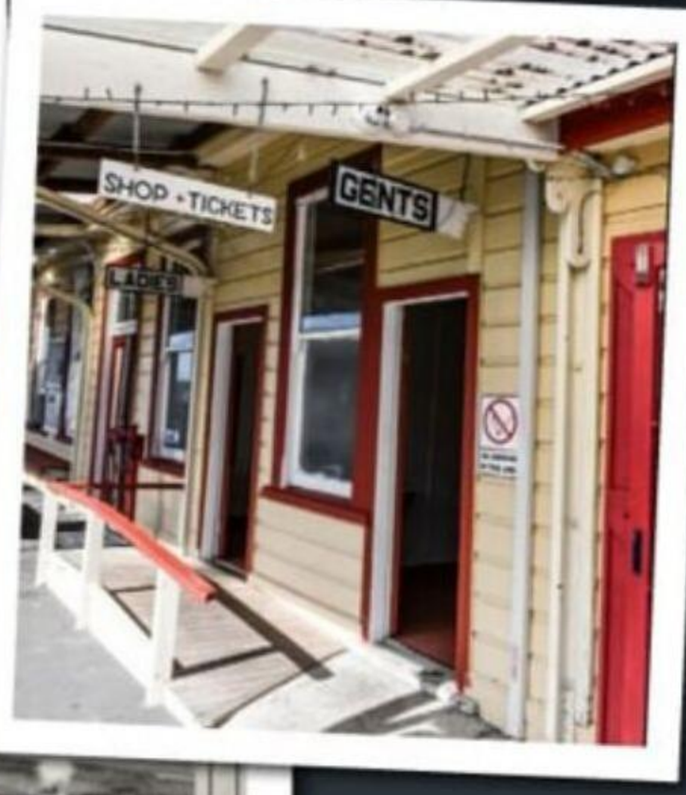
Kawakawa Station

There have been two stations.

The first was situated on the site of the present-day Four Square carpark, opposite the Star Hotel. This station had a platform, an engine shed, and a goods shed, all built in 1877, with a pit, weighbridge, and loading bank.

The original station building was a cottage that had been moved in from Taumarere. This building was converted to a dwelling when the 'new' station was built in its current position in 1911, in the days when trains on the line travelled to Otiria Junction and then on to Auckland.





THE COMPLETION OF ANOTHER LINK IN THE NORTH AUCKLAND RAILWAY SYSTEM.

> “Simply put, nothing can be bought at Repco”

the longest curved rail viaduct in the Southern Hemisphere, first built in the 1880s.

Future plans

While the last section of track between the 80m long Whangae tunnel and the Opua marina still lies buried beneath the Pou Herenga Tai cycle trail, the hope is that rail through to Opua will be reinstated once repairs to the tunnel are complete.

From here trains will connect to the steam vessel *Minerva*, which is currently being restored. This 1910 ocean-going vessel can carry 100 passengers, and there are plans afoot for her to sail to Paihia and Kerikeri. It will provide a missing link in the region’s transport network while also providing much-needed employment opportunities.

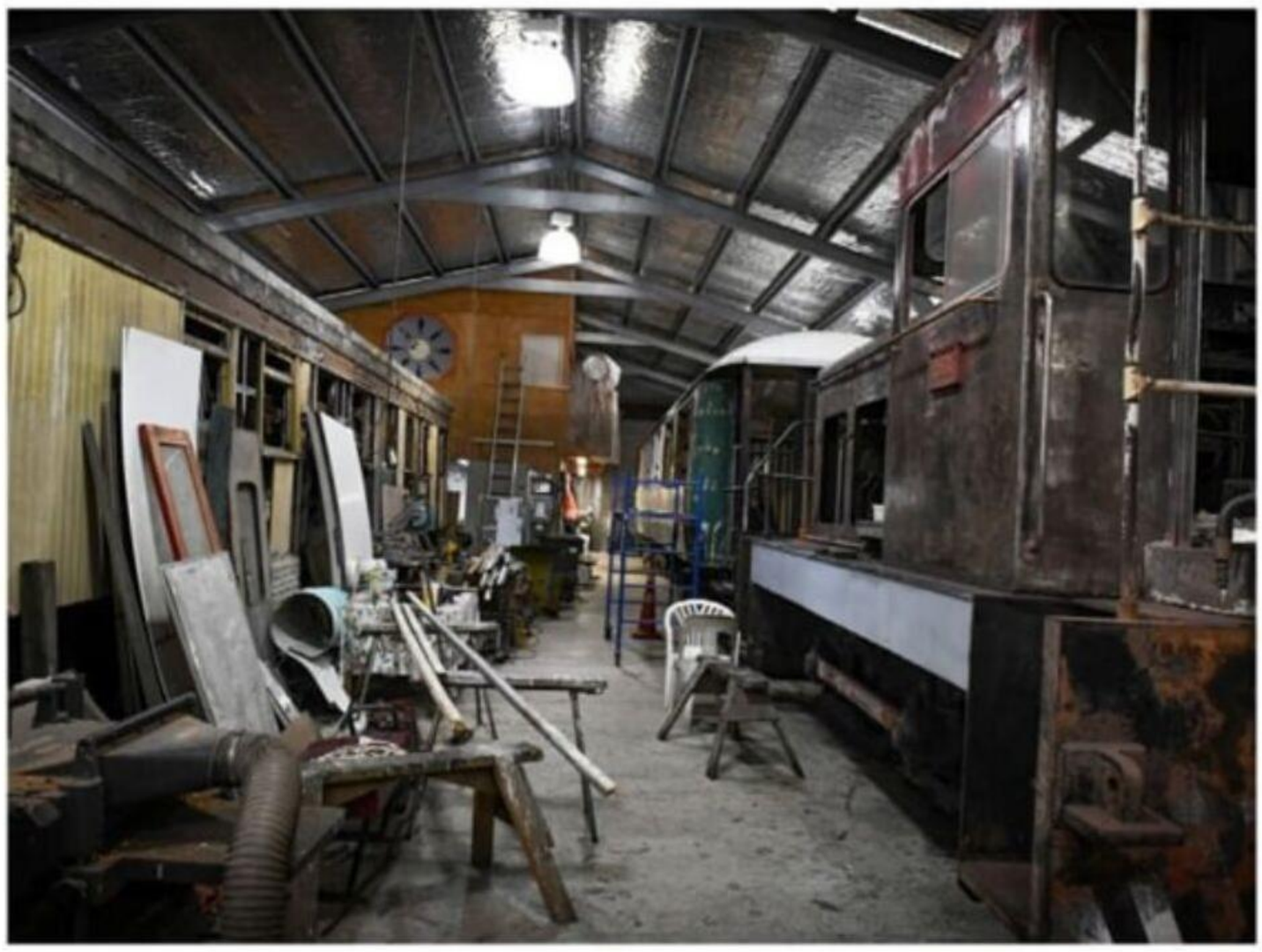
While the crew operating the BOIVR line has a shared enthusiasm for railroad history, Denis says that staffing the sheds can be a bit of an issue. “We used to have 20 volunteers. Five died in the last few years! The guys we have got from WINZ are doing a bloody good job. They have taken it on, they come in early and do a run down the track to make sure it’s cleared,” he says.

Volunteers work the sheds on Tuesdays, each bringing their special skill. The BOIVR also operates work experience programmes in summer and works as a trust with the local Ngāti Hine hapu, where they have already identified young local talent ready to embrace the challenge.

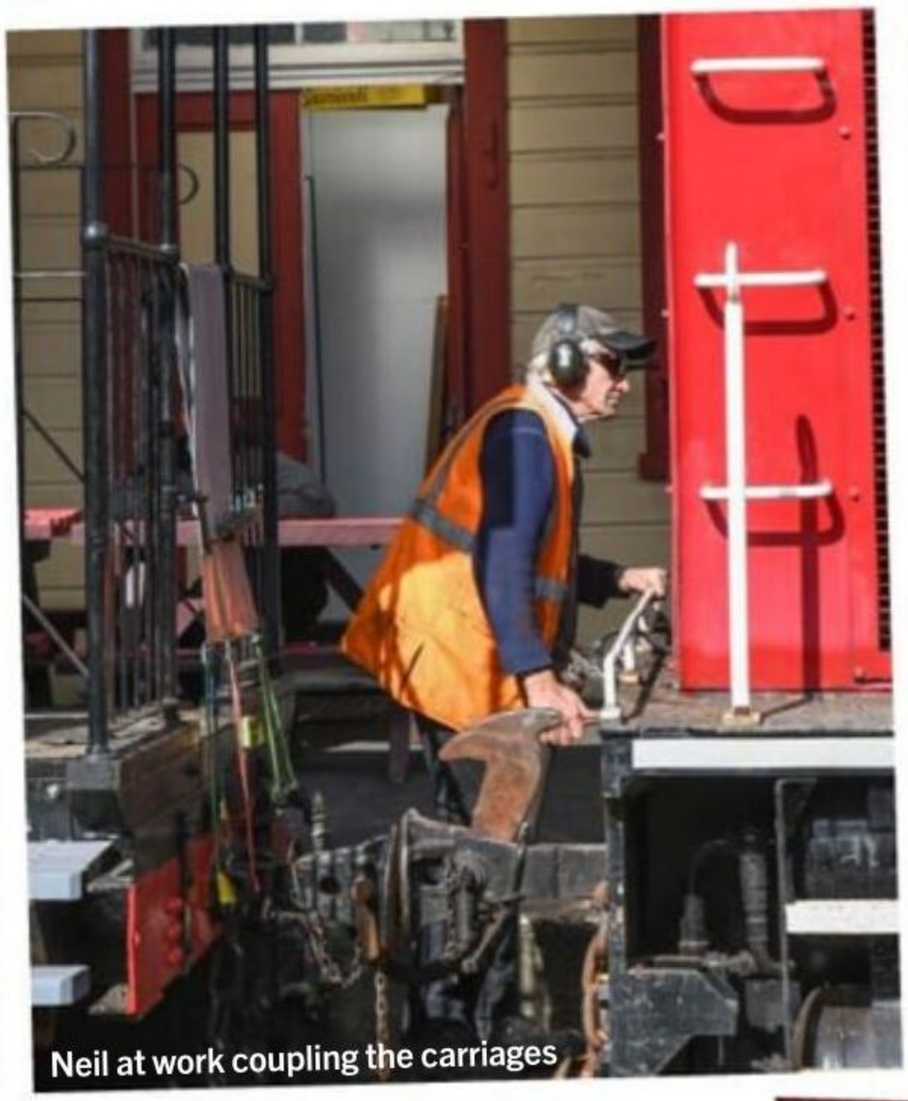
In the shed

With six engines and eight carriages, the BOIVR has its work cut out maintaining and restoring the fleet. ▶

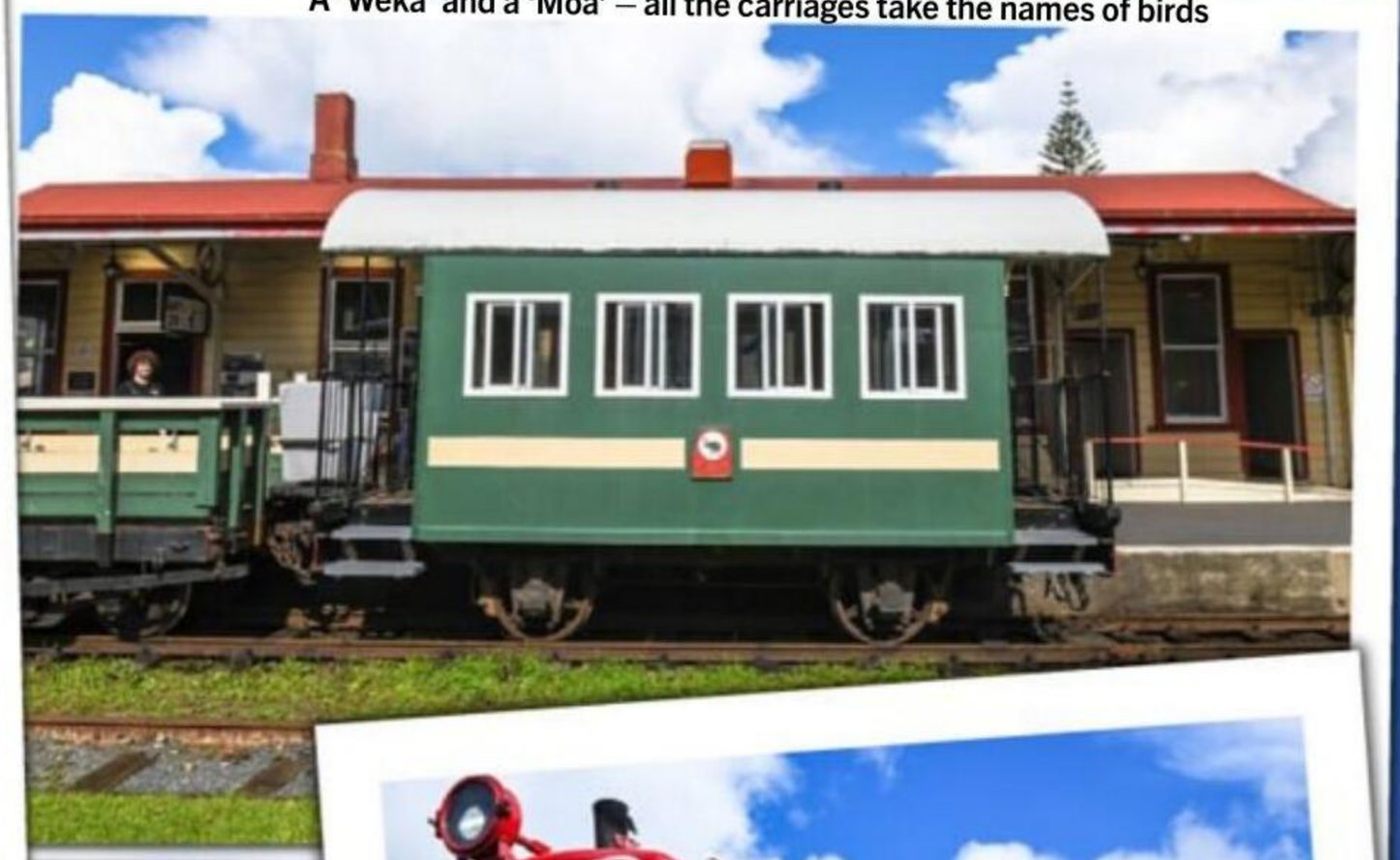
Good as new – interior of the Kingfisher dining car



The restoration workshop



Neil at work coupling the carriages



A 'Weka' and a 'Moa' – all the carriages take the names of birds

Locos Kauri (above) and Esmae (below)

The platform

There are no quick fixes for weathered and often neglected vintage rolling stock; bearings and engine parts have to be made on site, steel work replaced, and wood sections rebuilt. Simply put, nothing can be bought at Repco.

Two carriages flank the walls: one being an old observation car, originally from the Rotorua to Auckland Express, the 'Blue Heron'.

"It was built in 1930 in Ōtāhuhu," says Denis, "had single swivel armchair seats down each side. Lasted three years in that format, but did not carry enough 'troops', so they refurbished it with ordinary seats. When we got it in 1986, it was in very poor condition. They had cut every second pillar out to create window space, but it was too weak, so we put a steel frame in it.

"It is giving us a little bit of a problem, where a brace connects to the chassis; it hasn't got enough flex. We are doing a

"This one sat in the Peckett sheds until 1927 because an order fell over"

The loco Charlie on the platform

big job on this, so it will last another 50 years."

Recently, a wheels-up restoration took place for an AL carriage called 'Fantail', which is now back on track. All the rail cars here are named after birds.

Real vintage

"These carriages," says Denis, pointing to the other car, the oldest in the yard, "could tell a few stories.

"Built in 1915 and painted yellow, it was in the breakdown train at Frankton Junction. Before it was taken out of service, it was a cookhouse with a tin roof. There is a hole in the roof for the stove. A new piece at the end for the gas bottles. Bunks inside for the breakdown crew and a sign that says, 'Do not expectorate on the floor'.

"It was built in Newmarket, Auckland. It has a steel chassis, but originally, they were built from timber. When I first came here, this used to sit outside on a stump of track. It was empty then, and they used it for the kids. The nails were all rusting out, so we bought it in here to get it out of the weather."

At the front of the shed, the chassis of a 1892, FA250 steam engine rests upside down. Denis says this "was made in Addington, Christchurch, converted to carry extra coal in a bunker. Before that, they had a flat back to the cab, and the coal would scatter around inside. With an extra ton of coal onboard, the front wheels weren't sitting on the track very well. So, they put a trailing truck underneath. We have yet to put her together. We got her from Whakatāne board mills: '0-6-2' – no wheels up the front, six driving wheels, and two trailing beneath the cab."

Kauri's cab

Gabriel

At the time of our visit, the BOIVR's flagship locomotive, 'Gabriel', is cordoned off under a siding awaiting attention.

Denis announces, "We will be doing a test run after replacing some axle bearings and completing a boiler inspection. The wheel is out while we wait for some money to fix it. It costs about $1K per bearing, and there are four of them that need to be cast." ▶

In the shed, Denis shows visitors the 1915 carriage from the Frankton breakdown train

Gabriel is a 4-4-0 with a 30-ton engine built by Peckett and Sons in Bristol; one of five made between 1905 and 1912. “This one sat in the Peckett sheds until 1927 because an order fell over,” Denis says.

Originally used on the Portland Cement Works line near Whangārei, it came out in 1928 and worked there until about 1983, when the rail system was shut down. It was brought up to Kawakawa in 1986 and overhauled, which included rebuilding the boilers, the cab, and the bunker. Initially, the BOIVR had Gabriel on loan, then Portland rang up one day to say it needed be sold, otherwise it would be scrapped within a week. “We raised $5K in a week and bought it, and it’s been here ever since,” says Denis.

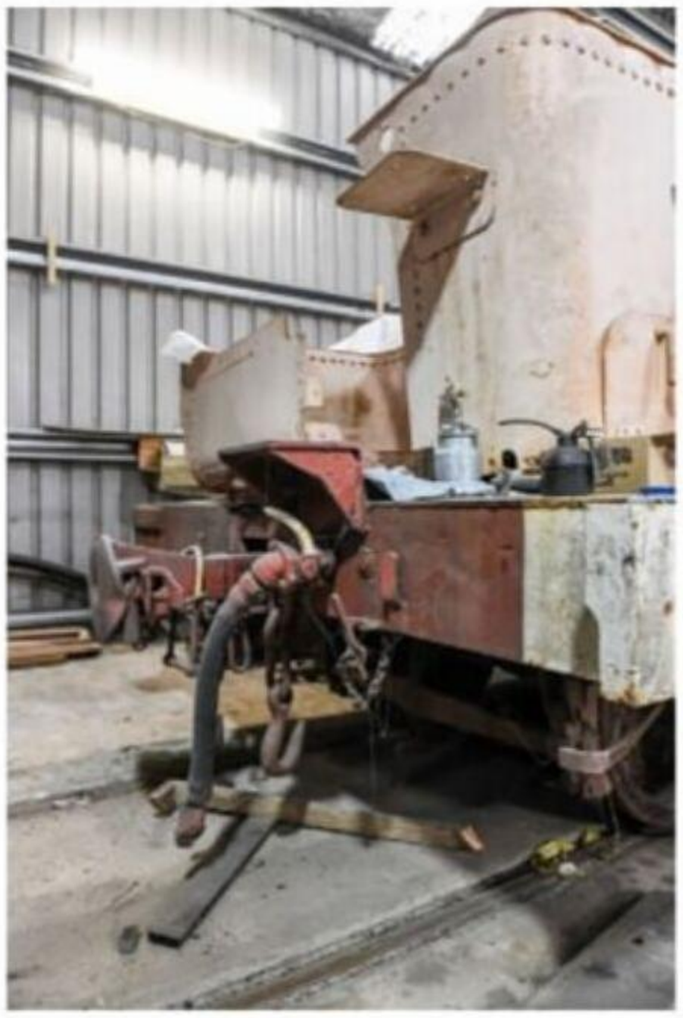
From the works

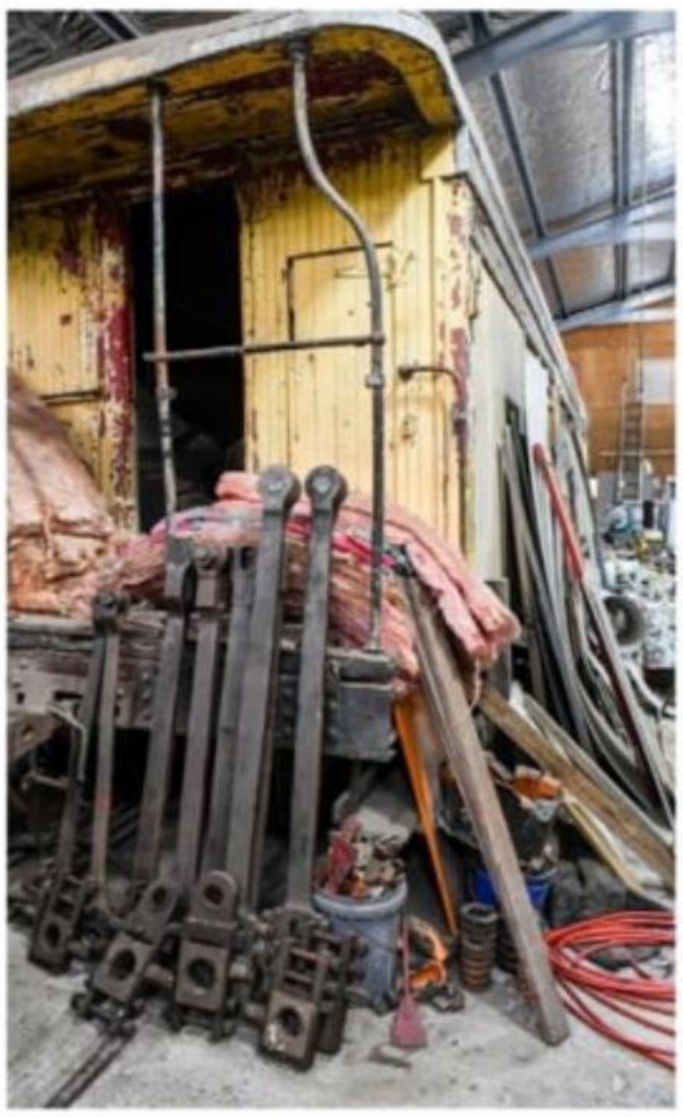
Two other engines were sourced from the Affco freezing works at Moerewa. A 1973 Baguley-Drewry 0-4-0 called ‘Ruby’ had replaced the 1897 FA Class, 0-6-2 tank-engine affectionately named ‘Sweetie’. In 1952, the latter had been converted into a Detroit Diesel. Denis remembers, “Ruby was up at the freezing works, sitting in the engine

The FA250 built in Addington circa 1892

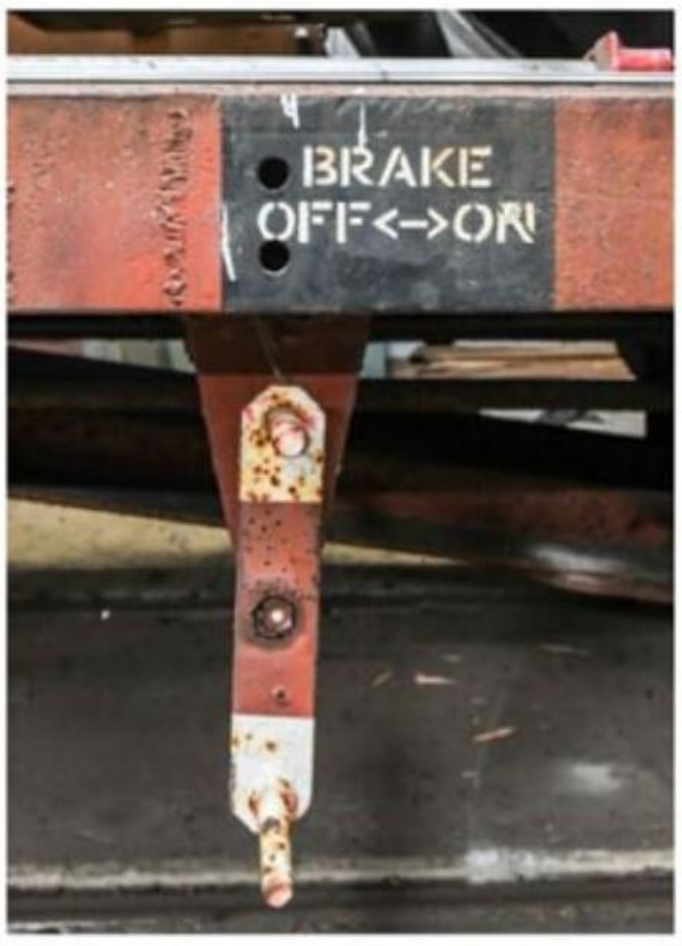
Interior of Ruby's cab

Original wheels for the breakdown carriage





The Kauri, a DSA-class loco donated by Fonterra



Neil in his happy place

shed. Sweetie was parked behind the engine shed. They went to move her – they hadn't moved her for a while because they were using Ruby – they got in, turned the key, pushed the button, and nothing happened, they said, 'Oh, I betchya they have stolen the batteries.' They go and have a look, and sure enough, the batteries were missing. While they were looking for the batteries, they had a look at the front, and oh, there is something else missing … it happened to be the motor! A Detroit Diesel.

"We got Ruby when we had stripped all the rail out of the freezing works, and of course, Ruby in the shed had nowhere to go because we had taken all the rails away. The next thing we know, it arrived down here (on the back of a truck). A lady had bought it for us and said that as long as we painted it her ruby red and named it 'Ruby', we could have it. It was already ruby red, but I slapped another coat of ruby red paint on it. Just a while ago, it developed a funny fault: it kicks out of gear when you drive it. It is in for diagnostics, something to do with the air system and for a repaint."

Birds on the track

Outside, Denis shuffles between the various carriages and waves out to Neil, an engine driver who is busy shunting in a loco called 'Kauri': "He used to drive diesel trains through the Karangahake Gorge, and worked on the Kaimai Tunnel when they were putting that through. He's been working in Melbourne for years – he is a very smooth driver."

To the carriages: "'Pukeko'," Denis says, "was built in 1934 in Ōtāhuhu. Originally, steel; we redid it in ply because we didn't have anything else. It was part of the 'Morepork' that used to run through the night from Auckland to Kawakawa."

Denis remembers seeing the dining car 'Kingfisher' being renovated in 1966 when it was still in operation. Originally built in Newmarket in 1925, Kingfisher was subsequently relined by Denis when she turned 90. "The frames were still good as gold," he says. "Inside: these seats and windows were sourced from old 'NZ Road Service' buses. On

Gabriel – off its wheels and on a siding awaiting new axle bearings and a boiler inspection

Challenges ahead – a cross section of the original timber exterior wall of the breakdown carriage

one side, the windows are from long-distance coaches, and the others are from commuter cars. The right-hand side has second-class seats, the left: first class."

Almost extinct

Denis is proud of the brand-new aluminium-sided carriage called 'Moa'. "A Moa," he smiles, "because it is extinct. There is only one other we know of in Christchurch. They have a proper one. This is only a representation of an old E-class wagon. It's the right length because we had a welder in to extend it.

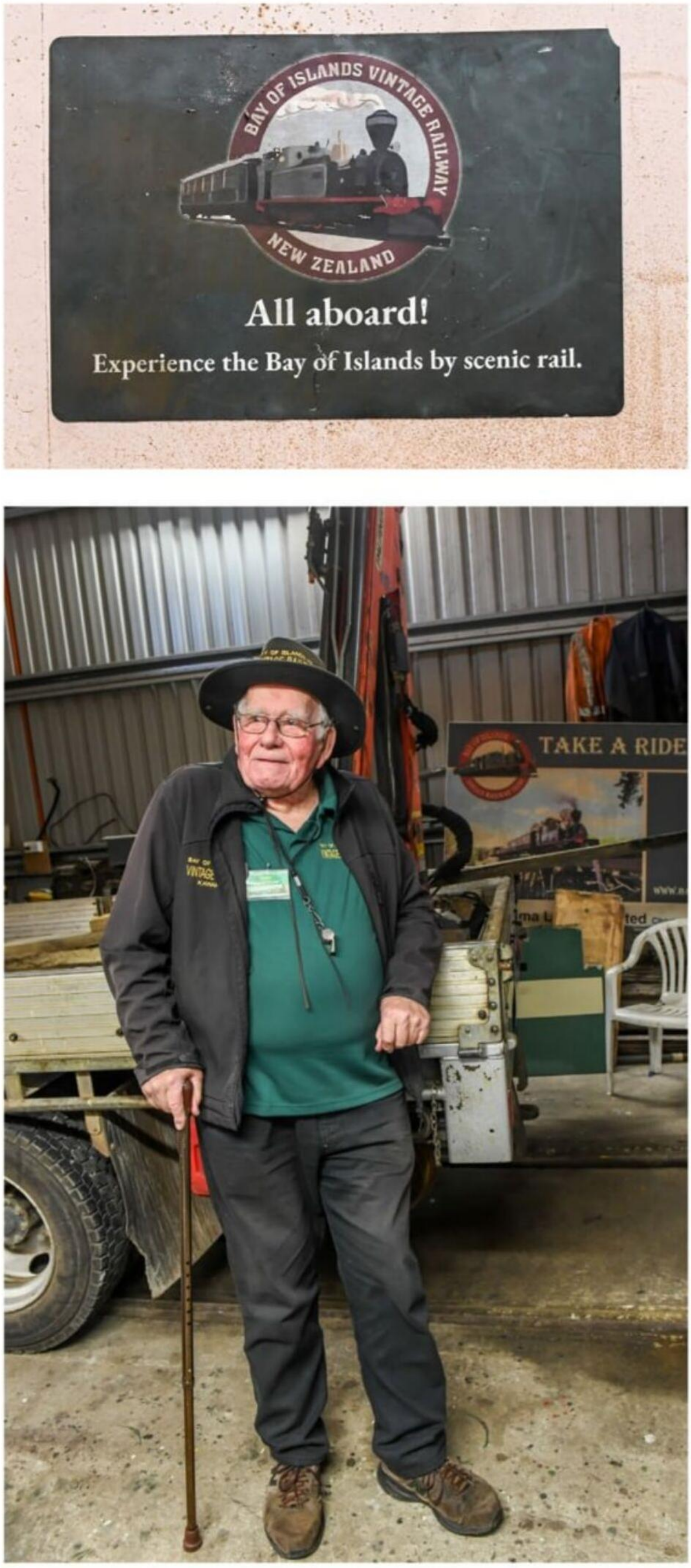
"I overhauled the chassis. Another guy and I built all the end bits, and I did the brakes. We built the frames, using the bows from an old coach to screw the roof on it. This doesn't have enough windows, and they would have had wooden sides. Inside the seats ran lengthwise, under the windows, and there would have been a wall across the middle; one side had wooden seats, the other horse hair: two classes."

All aboard

Meanwhile, on the platform, history seeps into the present as passengers from the morning train sip flat whites and reminisce about the days when everybody click-clacked across the country by rail.

Many of the tracks they speak of are long gone, but riding the Kawakawa line has rebooted the memory banks. Maintaining that history can be an expensive proposition, especially when train restoration skills, engineering, and building expertise are dying arts. While the challenges are great, the passionate crew at the BOIVR manage to keep 160 years of rail lineage operating and plans for expansion very much alive.

It goes without saying that the next generation of volunteers with the necessary skills or a will to learn are always welcome.



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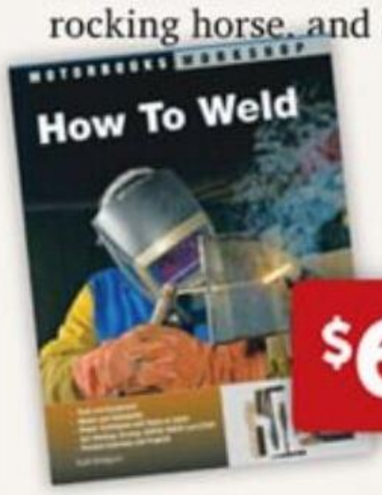

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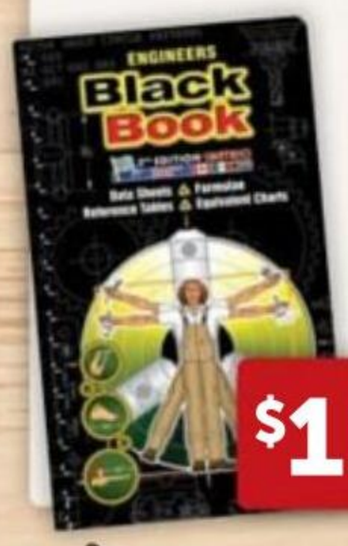

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THE MEN'S SHED MOVEMENT IS ABOUT MAINTAINING MEN'S HEALTH AND WELL-BEING IN AN ENVIRONMENT CATERING FOR THEIR INTERESTS

A shed brings men together in one community space to share their skills, have a laugh, and work on personal projects or within a group for the shed or community.

Sheds and their members decide the projects to undertake. However most sheds throughout New Zealand take on some community projects, examples include repairing toy library stock, building playgrounds for early learning centres, repairing old bikes for community distribution, building planter boxes for the main street of the local central business district, the list goes on.

The shed is a great place for blokes to learn new skills. We see builders teaching engineers some of their skills and vice versa.

Sheds have been operating in New Zealand since 2008. The last decade has seen the number of sheds across both urban and rural areas increase to 140.

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THE THRILL OF THE CHASE

By Mark Seek | markseek@rocketmail.com | youtube.com/@theshedshrink

Our shrink tells us that working on projects and restoring old objects benefits us in many ways. It's pretty amazing to find that dream barn find, and then have the opportunity to spend weeks, months, or even years enjoying your shed time, bringing it back to as-new

In the wee hours of the morning on no particular day, and earlier than any self-respecting farting sparrow could be located, I find myself meandering down the gravel driveway to where there is supposedly a 1937 Chevrolet for sale.

It reminded me of other times when I sniffed out a barn-find, usable classic car or a motorcycle. The 'thrill of the chase' that few get to experience, and it goes something like this.

The chase

You find yourself in a dusty shed at dawn, the air smells of old oil, sawdust, chicken manure, and gasoline.

In front of you sits the old Norton under the layers of dust, tarps, blankets, and boxes. "It hasn't coughed or spluttered for at least 30 years," says the old timer who tucked her away, hoping to rebuild and ride once again the bike of his youth.

"Hmm …" you mutter to yourself. Most people would see junk. Others, like you and I, see something that will consume our evenings and weekends for the next few years. We see a challenge that excites us, and here's the fascinating part: we can't wait to start on it!

There is something deeply human happening in sheds around the world right now. People are taking machines apart that time has forgotten, then cleaning each component by hand and bringing them back to life. But this isn't really just about motorcycles at all; it's all about what's going on in the human mind when we find something worth fixing.

The world is now a busy place

Our modern world moves at a relentless pace.

We swipe through hundreds of images while eating our breakfast, we attend meetings where nothing feels concrete, and we send hundreds of emails into the void, hoping that something meaningful will return to us.

Everything seems temporary, digital, and somehow unreal. Then someone like you and me discovers an old motorcycle rusting away in an old shed, and then suddenly everything changes. Picking

Mock-up

Before and after

Patina

up an old Amal carburettor stained with old fuel and clogged with grime changes everything for us. This object is real, tangible; it has weight and texture; it existed before smartphones or Facebook, YouTube, and all that – before this world became fast.

And unlike the intangible tasks that we have every day, this carburettor will either work or it won't. No grey area or corporate jargon can hide poor craftsmanship. The engine will either work or it won't. Psychologists have discovered our tangible need for results, and that our brains are wired for competency and mastery; we need to feel capable to see the direct results of our efforts.

Progress is uplifting

In restoration, every nut and bolt removed presents progress you can measure. Think about your last week at work – how many tasks did you complete where you could see the finished result? How many projects gave you that deep satisfaction of holding something real in your hands and knowing you created it?

For most of the population, it's close to zero. We move paper, send data, attend meetings about meetings, and work never feels truly done, does it? Now imagine spending Saturday morning in your shed working on your engine on the bench. You begin with the engine block covered in grease and oil; it looks beyond hope, but eight hours later, you have stripped every component off it and assembled all the parts. They sit there, clean and in labelled boxes. You replace worn components and assemble the whole thing with your bare hands. You can see with your own eyes what you have accomplished. This is what psychologists call a completed stress cycle, and it's extremely rare in contemporary life. But there's something even deeper going on here, team, so when you or I choose to restore something vintage, we are making a statement about our values. We are rejecting our disposable culture and saying that some things deserve to be saved.

Restore, not replace

Craftsmanship mattered back then, and the old ways had merit.

In a world that is designed to replace rather than repair, restoration becomes a quiet act of rebellion. The choice of model we choose to rebuild can often reflect our personalities and reveal something from our past – maybe your dad owned one, or there was a particular bike you lusted after growing up. This is quite a common occurrence.

Restoring them isn't just mechanical work; it's a conversation with the past, a way to preserve something that mattered when the world was different.

In our current disposable culture, this preservation work can feel important to us. The value isn't monetary; as you well know, most of us spend far too much on our projects.

Time in the shed is an escape from the daily performance demands of modern-day life; our unmonitored time becomes precious. Consider this: you are creating competence in a world dominated by specialisation that makes us feel useless.

So, the next time you discover that project, remember that you might be broke, but healthier and happier than most people out there with nothing in their sheds but a washing machine and a lawnmower.

Keep chasing those parts, keep those old machines alive, and make sure you enjoy plenty of 'thrill of the chase' adventures.

Know your stuff

THE Shed QUIZ NO. 7

TEST YOUR SHEDDIE KNOWLEDGE

1 

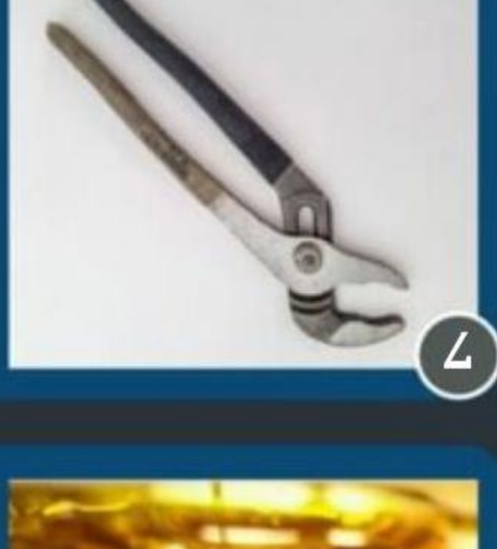
What is shellac made from?

a) Tree sap
b) Insect secretion
c) Cicada skins

2 

What is basic slag?

a) A steel-making byproduct
b) Crushed quarry stone
c) Traditional wood glue

3 

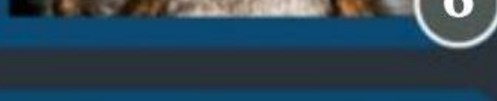
Which of these has the highest melting point?

a) Iron
b) Aluminium
c) Tungsten
d) Copper

4 

Did Ferdinand Porsche make an electric-powered car in the 19th century?

a) Yes
b) No

5 

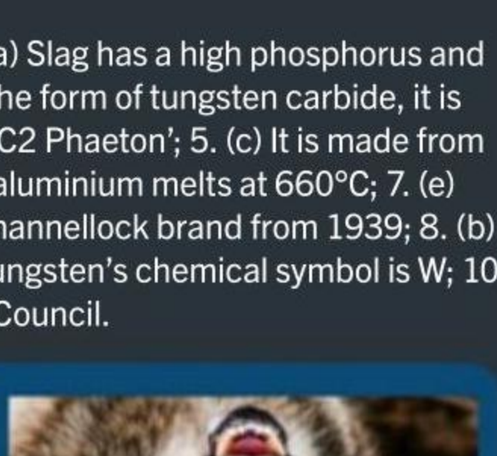
What is Neatsfoot oil?

a) A treatment for athlete's foot
b) Slippery coating for snow skis
c) A leather preservative

6 

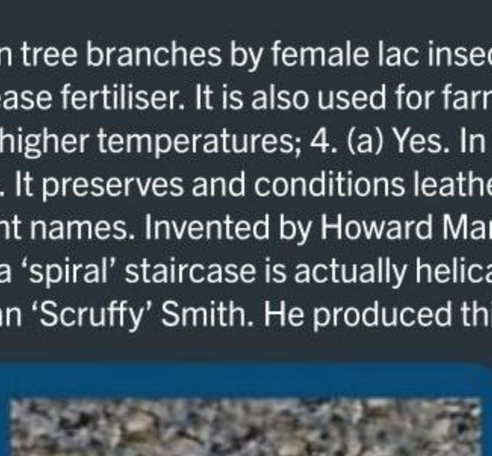
What difference is there between the melting point of pure aluminium and the common aluminium alloy 6061?

a) They are exactly the same
b) Pure aluminium melts at a slightly lower temperature
c) 6061 alloy melts at a slightly lower temperature

7 

What are the pliers in the photo called?

a) Poly-grip pliers
b) Groove joint pliers
c) Water pump pliers
d) Multi-grip pliers
e) All of the above

8 

A spiral staircase owes its origin to Archimedes' spiral.

a) True
b) False

9 

'Wolfram' was the original name given to which metal?

a) Lead
b) Tungsten
c) Copper

10 

What is the drainage strainer shown in the picture called?

a) Domed strainer
b) Messy strainer
c) Self-clearing strainer
d) Scruffy strainer

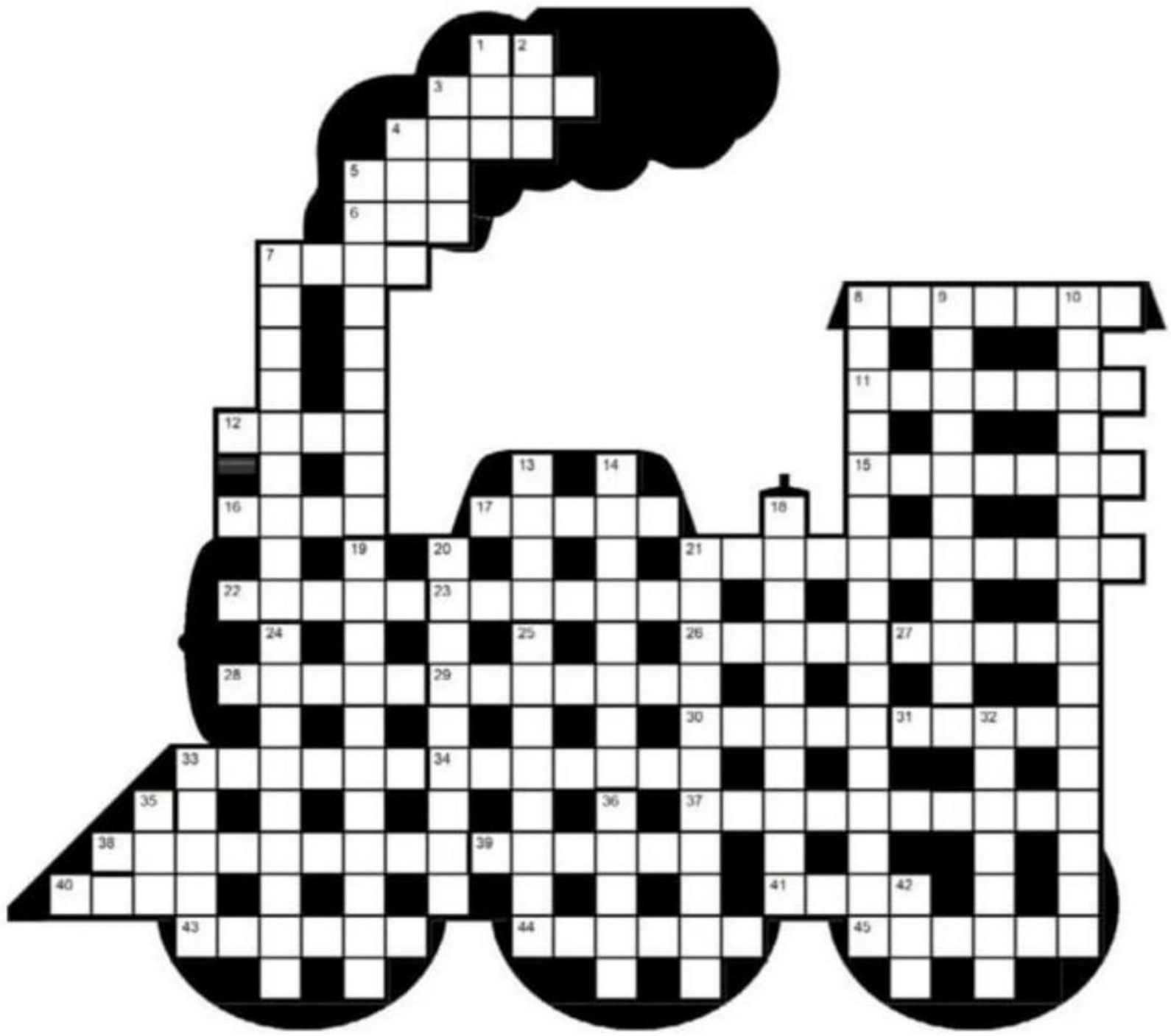
Answers: 1. (b) A secretion deposited on tree branches by female lac insects. They are native to India and Thailand; 2. (a) Slag has a high phosphorus and lime content, making it a good slow-release fertiliser. It is also used for farm tracks; 3. (c) Tungsten melts at 3422°C. In the form of tungsten carbide, it is used for cutting tools that stay sharp at higher temperatures; 4. (a) Yes. In 1898, he built a car called the 'Egger-Lohner C2 Phaeton'; 5. (c) It is made from rendering cattle shin bones and hooves. It preserves and conditions leather; 6. (c) 6061 alloy melts at 650°C, and pure aluminium melts at 660°C; 7. (e) These pliers are known by many different names. Invented by Howard Manning in 1933 and manufactured under the Channellock brand from 1939; 8. (b) False. What is commonly referred to as a 'spiral' staircase is actually helical, like a screw thread, not spiral at all; 9. (b) Tungsten's chemical symbol is W; 10. (d) It got its name from its designer, Brian 'Scruffy' Smith. He produced this design in the 1980s for the Waitemata City Council.

THE SHED CROSSWORD NO. 4

By Māyā

F13 was known until 1958 as 39 7d, when it was renamed after the castle from 10 - both taken from the works of 5 down 28, which also include 1 2, 23 and 8d. 38 is a "Pushmi-Pullyu" 17 43 on display in a Dunedin museum.

Most of the above-mentioned clues don't include a definition.



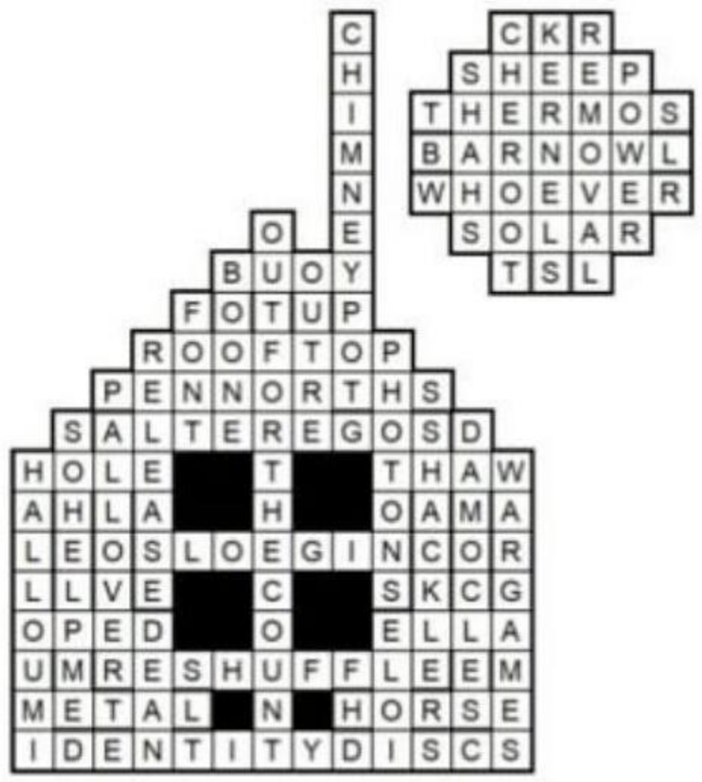
Across

3 Strip useful implement back (4)
4 Bachelor next to sweetheart (4)
5/6 Father clutching at mockery (6)
7 Whose father starts a prayer? (4)
8 Play highest suit card, securing one heart win (7)
11 50% of evidence involves throne for Vatican City, for example (7)
12/31 Early cosmological theory found in parts of late art history (4,5)
15 Love Murray breaking into arsenal (7)
16 Rabbit who escaped danger by using a patch (4)
17/43 Drink chaps drink in the south-east (5,6)
21 Angrily Lou yells bad word such as ratbag, seesaw, tip-top or zig-zag (11)
22/39 The colour of turkey and chicken (5,6)
23 Hero of novel announcing, very precisely, that he possesses an agricultural implement (7)
26 Siphon off every now and then as a prank (5)
27 See 4 Down
28 See 6 Down
29/44 Divorcees admitting priest tries rapid methods of transport (7,6)
30 H-handle reversing time? (5)
31 See 11
33 Functional uniform, dark brown or black (6)
34 Small pocket-watch, a type of 17 43 (7)
37 Stiff drink before start of athletic event? (6,4)
38 Join sheep running to Empress (9)
39 See 23
40/7D Coterie he lied about (4,9)
41 Sommer held back by Melanie Klein (4)
43 See 17
44 See 29
45 Board printer's space with wood (6)

Down

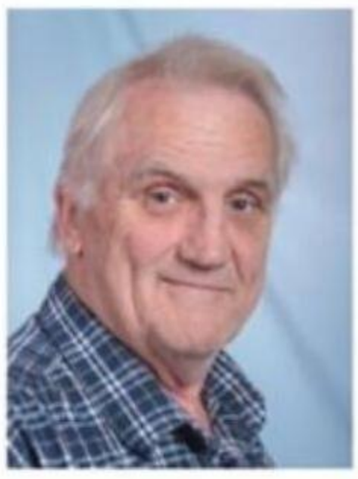
1/2 Burgle Orbison for Mr MacGregor (3,3)
3 See 41
4/27 Rods working in a pub (3,5)
5/28 School so strict about student interrupting drink (3,6,5)
7 See 40 Across
8 Fluid character who shouldn't be allowed to bestow supreme executive power according to Monty Python (3,4,2,3,4)
9 Compile ten works, but it's not enough (10)
10 A leaf (say) in danger from a small dog (say) (7,2,3,4)
13 Mount Payback? (4)
14 Mo by place of white cliffs? Capital! (8)
18 Mad reason to pull 44? (10)
19 Rider after ailing charges (11)
20 They're permitted bugs in closer dioceses (9)
21 Locked up before 8 across - free at last - drink? (7,4)
24 Shred message about replacing old car? (9)
25 Most dashing from Mo when captured by thinner revolutionary (8)
32 Lecher carrying large gold coin stack (7)
33 Angers one holding gutted snake - what can't you do with a scene like that? (5)
35 Carp about a fine (3)
36 Regal composer? (5)
42/3 Copy bird no more (7)

Answers: *The Shed* Crossword No. 3



Still don't know who this is

THE USEFUL IDIOT



Our *The Shed* magazine founder is preparing to launch a YouTube channel featuring how-to videos to accompany his own shed project, but there are a few technical details to address first

By Jude Woodside

You may have seen my latest project piece in this issue of *The Shed*.

You may not know that it is accompanied by a video of the whole process that is available on *The Shed* website. This has been a test, a proof of concept for my new channel, tentatively titled 'The Useful Idiot' on the basis that I am an idiot, but occasionally I can do useful things.

Although I did spend some time in my youth as a cameraman working in film and video for a well-known Australian broadcaster, it has been some time since I used a video camera in anger; it is even more out of my comfort zone for me to be in front of the camera.

Rookie mistakes

I have featured in some projects in the past where I was able to make use of the remote function on my trusty DSLR, but that is not an option here.

It was difficult enough to remember my lines, especially difficult since I only had only the briefest idea of what those lines should be. I did take after take of the opening until I finally got it. Fluent, unhesitating, and masterful. Then I checked the footage and found I had framed my head out of the picture.

Worse, when I got to look back at the content on a large screen, I found this utterly unknown character had taken over. Dressed in my clothes was this very old person with big black rings under his baggy eyes, with an ungainly demeanour. I have since come to terms with the character in the video, although I still think he's an imposter.

It may look natural, at least I sincerely hope it does, but the video was a long and strained process, particularly the start. Once I got started, it came together more easily, and I deliberately picked a project that I had built previously and wasn't too challenging.

Covering all bases

The video is on *The Shed* website and shortly will be on my own YouTube channel, The Useful Idiot.

My intention is to do more of them, but I want to make sure that my videos are at least accompanied by a written piece for ease of reference. That means shooting stills as well as video, which makes the process slightly more involved. I did think that I could take stills from the video, but my camera is a little old school and only 1080, not 4K. It does work, but the images aren't as high-res as with the SLR.

I am hoping to improve my system to include multiple camera angles. I have an eclectic collection of GoPros, old iPhones, and other video cameras, which I have assembled over the years with a view to doing just this sort of coverage. I'll be sure to keep you posted.

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Over the past 15 years, we've refined our off-grid solar systems through hands-on experience, trial, and improvement. In just the past three years, our team has successfully completed more than 300 off-grid installations - the most in New Zealand.

Our latest Solar Pac range represents the culmination of that expertise. Each system has been designed to meet every requirement of off-grid living:

- Outdoor-rated and weather-resistant enclosures
- Temperature-controlled operation for optimal battery and inverter longevity
- Wi-Fi monitoring for real-time system oversight
- Generator-compatible for full energy independence
- Compliant with all New Zealand Electrical Codes

To date, we've installed over 100 Solar Pac kits across the country. These systems are modular and easily scalable, allowing homeowners, farms, and businesses to expand as their energy needs grow - all while maintaining reliability and compliance.

Go Off-Grid

Choosing to go off-grid is about more than just independence - it's about taking control of your energy future. With power prices in New Zealand continuing to rise and outages becoming more frequent in rural and coastal areas, generating and storing your own electricity gives you stability, savings, and peace of mind.

Off-grid living allows you to produce 100% of your own clean energy, free from the costs and limitations of the national grid. You decide how much power you use, how it's managed, and when it's stored or backed up by a generator. For remote properties, farms, and lifestyle blocks, this means no connection fees, no surprise rate increases, and no dependence on distant infrastructure.

Our Solar Pac systems make that independence simple - combining solar generation, lithium battery storage, and intelligent monitoring into one seamless package. Designed to handle New Zealand's varied climates and conditions, they provide consistent power all year round. Going off-grid isn't just a lifestyle choice anymore - it's a smart investment in resilience, sustainability, and long-term financial freedom.