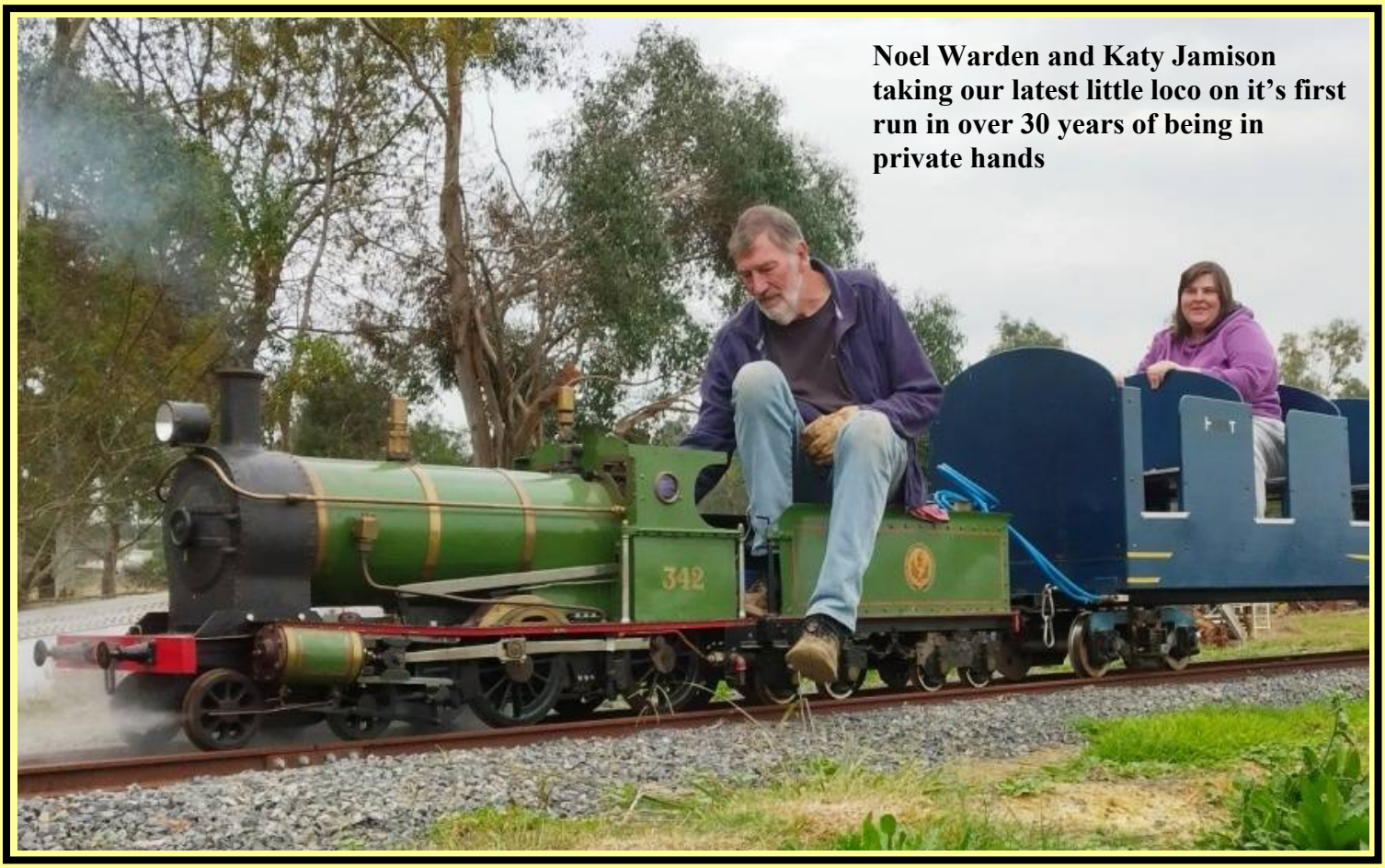
Issue 643 August 2024

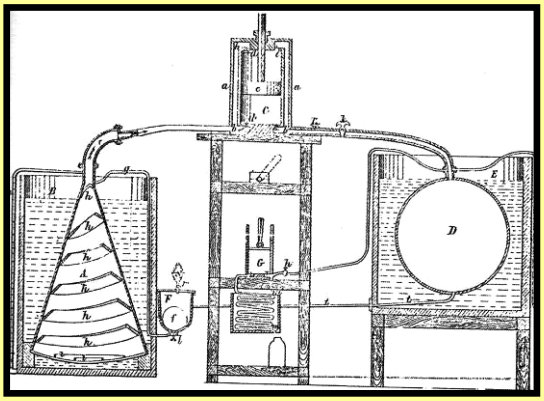
A Wisp of STEAM SUPREME

Extracts from the Melbourne Steam Traction Engine Club newsletter

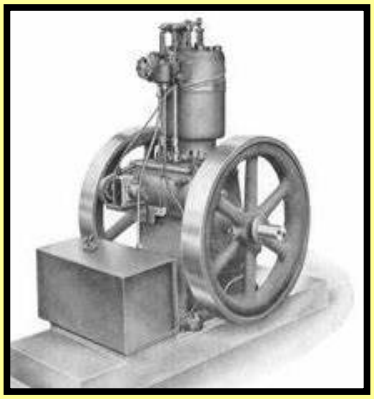
Latest on 12 " Gauge STEAM



Noel Warden and Katy Jamison taking our latest little loco on it's first run in over 30 years of being in private hands



Chilling Out in Geelong
Celibrating Refrigeration's invention 170 ago

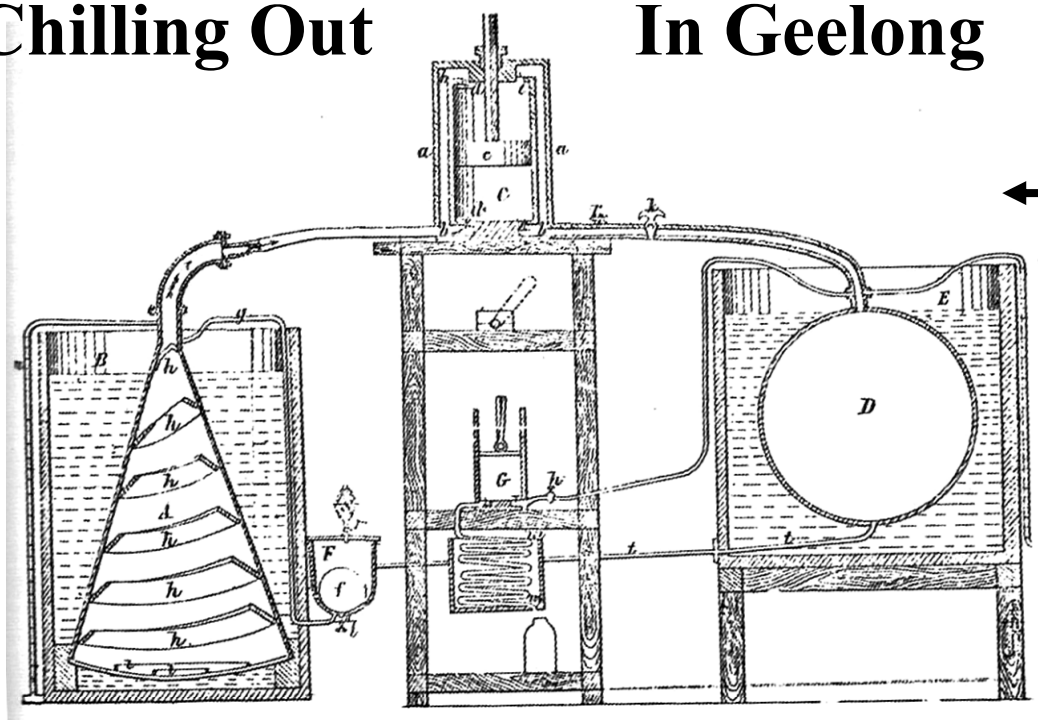


Ronaldson Tippett copies of Lister
Ben Hoeksema

Diagonal Boilers
Our latest acquisition being delivered by Nathan Morris

Chilling Out In Geelong

by Peter Lynch



Harrison's Ice Making Machine ,

Developed at Rocky Point in Geelong , from his British Patent application dated 1856 . Acknowledgement Roy Lang's book James Harrison—Pioneering Genius

Local enthusiasts and historians got together at Geelong Showgrounds in late June to celebrate World Refrigeration Day. A display of refrigeration and milk distribution equipment dating back over 100 years was presented, together with other historic items.

Geelong is an ideal place to celebrate this as it was on the banks of the nearby Barwon River in 1854 that local engineer and newspaper editor James Harrison demonstrated the world's first successful commercial refrigeration plant.

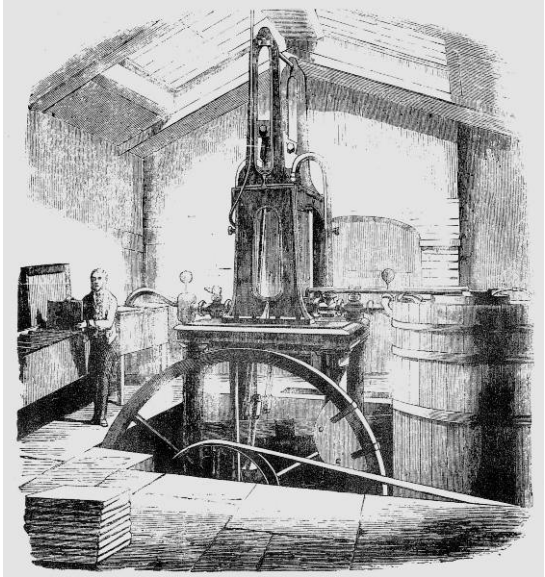
Looking down on the Barwon river from Rocky Point to the location where Harrison performed his experiments over several years developing the worlds first practical ice making machine Warwick Bryce photo

This was basically a large single cylinder compressor, belt driven by a four hp steam engine. which used the circulation and evaporation of ether to remove heat from a cooling chamber where ice was created. The ether was cooled via a coil of pipe in river water and reused on a continual basis.

Prior to this time the use of natural ice to preserve food was somewhat understood however the difficulty of transporting it long distances on sailing ships to Australia made this expensive and impractical.

It is said that a successful Ballarat gold prospector treating his friends to whiskey on ice was paying far more for the ice than the spirits.

Contemporary engineers such as James Perkins (UK) had mooted the principal of a closed loop mechanical refrigeration system that captured the evaporating ether for use again but Harrison was the first to make a successful machine. He filed a patent for his 'refrigerator' and travelled to England in 1856 to promote the idea. In London Harrison made arrangements with Engineers Siebe and Co to produce ice making plants under licence before returning to Geelong in 1858. He established an Iceworks plant there powered by a 12 hp steam engine that could produce 4 tonnes of ice daily for local customers.



Harrison— Seibe refrigeration machine exhibited in London in 1857 (the basis for Warwicks working model) Acknowledgement Roy Lang's book James Harrison—Pioneering Genius

There were huge potential benefits for Australian farmers and overseas customers from the development of refrigerators and freezers. Lamb and Beef could then be shipped to Europe economically and arrive months later in perfect condition. However problems were encountered getting refrigeration plants to operate safely and reliably on board sailing ships and it was not until 1880 that a frozen shipment from Melbourne successfully reached London.
This industry slowly developed but Harrison did not benefit financially by it and suffered financial setback from a defamation case brought against him. He had to sell his 'Geelong Advertiser' newspaper business in 1861 but continued to work as a freelance journalist and Member of Parliament until his death in 1893.

MSTEC member Warwick Bryce has long been fascinated by the Harrison story and , about 30 years ago , built a working model of his original 1854 machine which he was persuaded to bring along and exhibit at the 170 anniversary of it's invention for World Refrigeration Day held in the Geelong Showgrounds pavilion in conjunction with the Geelong branch of the National trust .
I did notice that Warwick's scaled down (1 in 10) and nicely portable machine was powered by an electrical motor and used much safer butane as a transfer medium.

Warwick demonstrating the working model to 3 generations of Harrisons , the youngest is great great great grandson also named James . Graham Hobbs photo

Early domestic refrigerators manufactured in Geelong on display at the showgrounds . The 3 on the left are ice chests , insulated cupboards in which a block of ice, purchased from the local ice works, keep the contents cool for several days . The one on the right is a "kero" fridge in which a small kerosene lamp produced cold through the ammonia absorption process . Variants used a small gas flame or electric element in basically the same machine in place of the wick and burner. Peter Lynch photo

Next time you open your fridge door to get some milk or select something for dinner, remember our local pioneer who helped bring this technology to the world. Peter Lynch for Steam Supreme

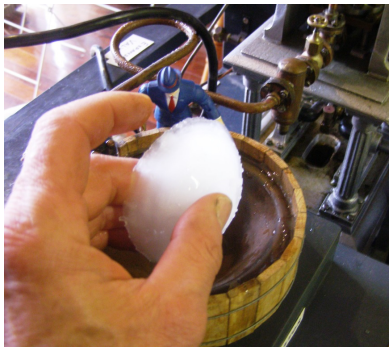
Eds comment *It has been suggested by some wag that we should refer to the fridge as "The Harrison " in his Recognition, after all we call the flushing toilet " The Crapper " after the name of it's inventor Thomas Crapper !*

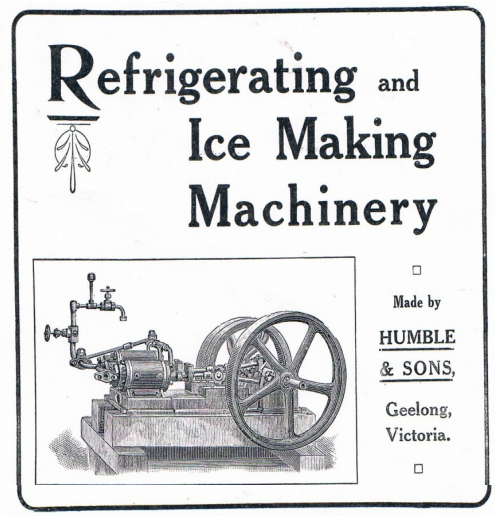
The Event

Geelong is very proud of its history of innovation and manufacturing, probably nothing more so than Harrison's pioneering work on refrigeration. To date this has gone almost un recognized despite it changing the face of the world as we know it today. With the recent move away from manufacturing , rapid redevelopment and increasing population , artefacts and living memories from this important formative era are rapidly disappearing . The movers and shakers in the town are determined to save some of this before it is too late. Spear heading this are the Geelong and Regional Branch of the National Trust and the Royal Geelong Agricultural and Pastoral Society . To this end members saw World Refrigeration day , June 2024 , as an opportunity to celebrate James Harrison's invention of artificial ice making 170 years ago. Ironically this took place on the bank of the Barwon river only about 4 km away from the Geelong Show Grounds Museum . The program, open to the public, centred around the museum's restored collection of refrigeration artefacts and related manufacturing activities. This supplemented by an audio video of the invention of refrigeration followed by a demonstration of a 1 /10 scale model of the original commercial machine make a tiny sample of artificial ice.

The museum also houses Graeme Tonkins extensive collection of ice and milk cart related items Peter lynch photo

The artificial ice , cloudy just like Harrison's





Humbles of Geelong with their engineering works and Vulcan foundry were suppliers of all manner of refrigeration machinery , from 3 cwt capacity, to all over Australia , New Zealand and South Africa

In the evening a private function for benefactors of the project and Harrison descendants was put on .

The highlight was the announcement that the most prized relic of the group , the giant flywheel from the Linde refrigeration compressor from the Jackson's Meat Works at Corio Bay, will finally be erected out the front of the museum . This is in recognition of all in Geelong who helped bring this technology to the betterment of the world .

Graham Hobbs (on the right with the grey jacket) announcing , thanks to recent generous donations funds were now sufficient to proceed with the Linde project.

The Museums newspaper pic of the Linde flywheel gives an indication of the enormity of the machine when you spot the 3 men behind the main bearing block during it's removal for preservation after 66 years of service.

Donated to Geelong Rotary club for display at the proposed James Harrison Museum at Rocky point it has languished since then but fortunately guardian angels ensured it's survival .

The following day the Geelong Branch of the National trust held a public event at the Eastern Geelong Cemetery in appreciation of James Harrison's descendants who have recently refurbished his grave

Members of the Harrison family gathered at James's grave , the only monument to him in Geelong .

The plaque reads

… he perfected and was the first to make commercially successful the manufacture of ice by artificial process , which invention among other benefits pioneered the way for all existing traffic in perishable products

ONE SOWETH ANOTHER REAPETH

Diagonally Riveted Boiler

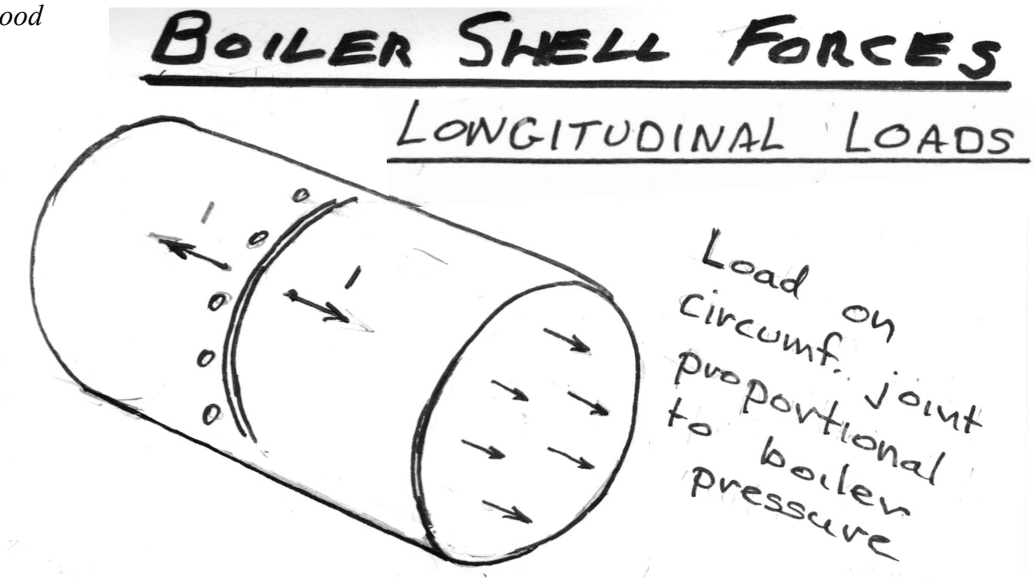
The latest arrival at our Steam Museum is this very eye catching Diagonally riveted boiler . Many years ago its unique construction caught Steve Kelly's attention in Plumb's Benalla scrapyard and although he resisted for quite some time he just had to have it . For the last 40 odd years it has resided in a back laneway behind his Goldsmith shed and the time has finally come for it to pass onto others who will also appreciate its . Lucky our Rohan Lamb was in the right place at the right time so MSTEC is now the new owner of this Diagonal boiler. Actually , according to Rohan there is possibly only 1 other remaining in the world . It is a Cornish type and made to G. J. Wrights patent from the early 1870's . Accordingly the plates are arranged diagonally in the belief it makes a stronger boiler because at no point do the corners of any 4 plates meet. (Steam Supreme issue 487 August 2011) . According to the internet his experiments confirmed that single row longitudinal riveted joints fail by tearing the plate between the rivet holes . With a diagonal joint at 45 degrees the tear path was 35 % longer so the joint was correspondingly stronger .

The workmanship of the diagonally riveted joints is amazing so catches everyone's attention

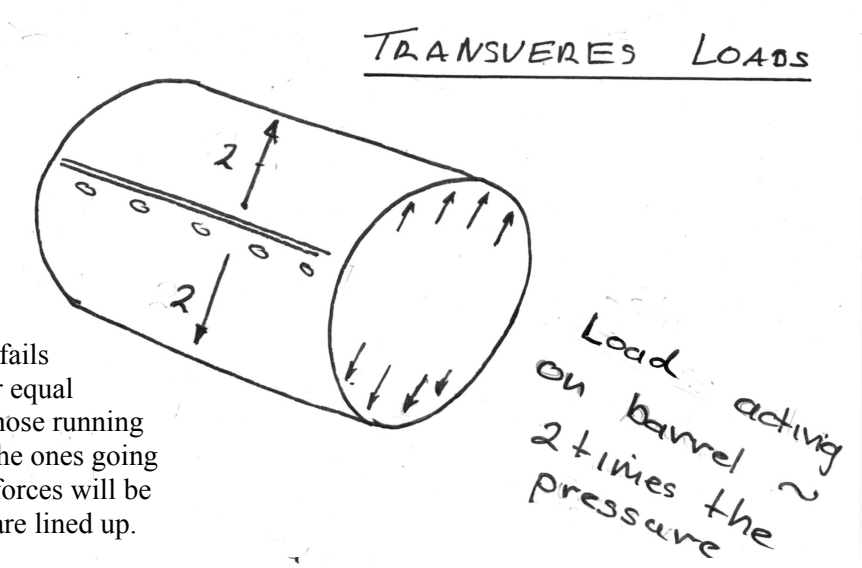
So what is the catch if they are that good every boiler would be that way ?

First the forces in a boiler shell are not the same as simple tensile tests done in a laboratory which is only a straight pull in a single direction .

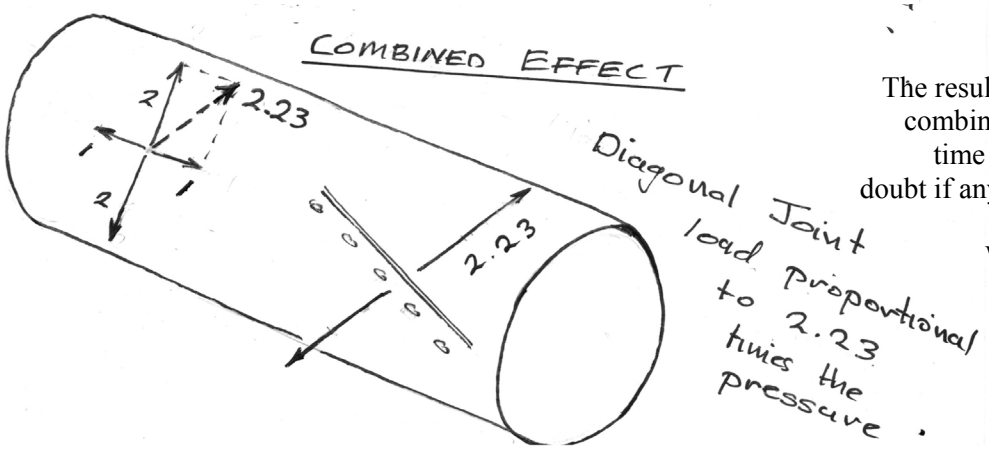
In a boiler steam pressure exerts a force in every direction . The component of this acting on the flat ends of the barrel, want to tear the boiler shell around its circumference letting out the steam



Adding to this load the pressure acting on the curved surfaces of the inside of the barrel tend to try to lift the top up while pushing the bottom down . Due to the greater projected area of the barrel compared to that of the ends the forces trying to split the boiler from end to end are always exactly twice those trying to blow the ends off . This is why seamless tube under pressure always fails by splitting .



Now just which part of a boiler with riveted joints fails first depends greatly on the design of the joints . For equal results on boilers with conventional riveted seams those running from end to end ones need to be twice as strong as the ones going around the barrel . For joints at any other angle the forces will be Some combination of the 2 depending of how they are lined up.



The result is a diagonal seam is subject to the combined effect of both theses forces at the same time so the joint is subject to a higher load so I doubt if anything is gained from its extra strength.

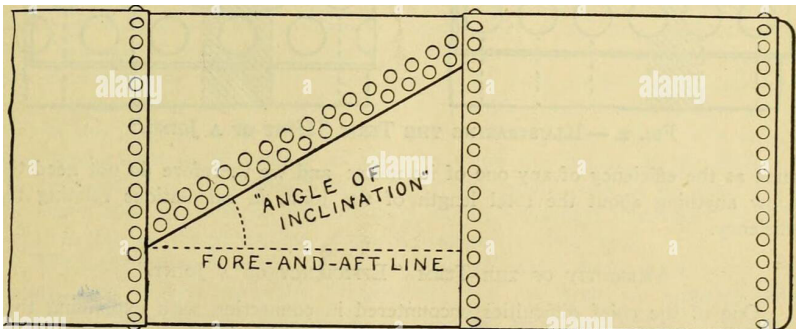
When you consider the extra difficulty of making diagonal plates such as rolling a smooth curve a larger number of rivets , and the wastage of so many triangular offcuts it does not really add up .

What is more experience has shown that equivalent increase in strength can be much simpler to obtain by going to a double row of rivets on the joints running along the barrel while leaving the 1/2 loaded circumferal ones as a single row.

American Experience So far the discussion has been centered around the Wright boiler but a bit of information suggests the Americans followed a similar path wether independently is not known. This internet snippet gives a bit of insight into similar reasoning. .

" With a view to strengthen the plain cylinder made of wrought-iron plates, the seams are sometimes made to run diagonally, as shown in the principle that as the longitudinal is the weakest seam and the transverse the strongest, a diagonal between them gives the greatest amount of strength to the boiler as a whole."

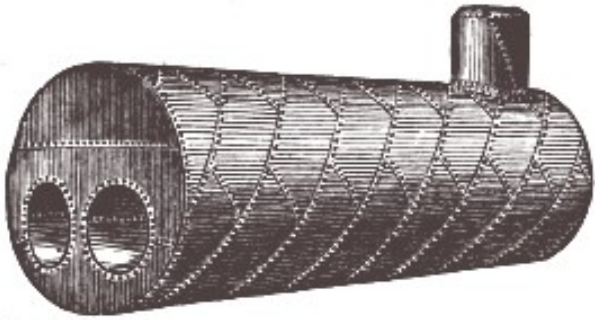
Comments - While we know what he means I wonder if rather than referring to the longitudinal seam **as the weakest** it should have been reworded **the most likely to fail , because it carries twice the load .**



- Given inclining the joint adds to the number of rivets you can fit in but a better way to gain strength is using a second row of rivets to strengthen the joint as shown in the drawing .
- Actually there is a limit to how strong a riveted joint can be made as adding rivets involved drilling more holes giving diminishing returns although adding straps gives some relief .

Records of Steam Boiler Explosions by Edward Marten , London1872

Included in the records was this interesting diagram of a diagonally riveted boiler not too different to ours. Nothing in the paper referred to any failure involving diagonal boilers or comments on their fitness . I guess he just found them interesting and attractive as we still are 153 years later!



Warwick Bryce

12 " Gauge Railway Report

Above, Melbourne Steam Club steam locomotives No.342 (NSWGR Z12 Class 4-4-0) and No.43 a 2-6-2 (intended to resemble a Denver South Park and Pacific style of loco.). Photo – Rob Worland 30th June 2024

The big news is that on Sunday, 30th June, 2024, that for the first time in 30 years our little railway has had more than one steam loco in operation at the same time on one day .

The locomotives were No 43 Clive , that we bought a couple of years ago from NSW and No 342 our little green loco that we got in a completely dismantled , but sound condition , from the John Davies estate . The Rail Team spearheaded by Noel Warden has spent the last several years assembling and refurbishing it back into top condition .

There was no announcement of this run because it was for testing with the outcome understandably unknown. As it was its performance was very promising.

Diesel locomotive P11, Reg entered regular service on Sunday 19-May-2024, with crew training every Sunday. Work on finishing various details is continuing, including the operating instructions. In official terms, the project is continuing towards completion.

When proposing to the Committee this loco be built the build time was estimated as five years. With respect to entering service, this has been achieved. Crews are very happy with its handling.

Train crew vacancies need to be filled. This year 4 members have stepped down from the railway roster for various good reasons .

James Gleeson has joined the roster and Arthur Bithel responded to the appeal in July Steam Supreme and is undertaking training. In the mean time a number of members including a teenager has helped doing extra rosters to help cover some of the vacancies. But more volunteers are needed.

Revenue Trends

Takings for the first 1/2 of this year are significantly down mostly due to the Rally heat wave. Sunday passenger numbers and party takings are slightly down this year mostly due to RunDays clashing with other events but revenue was mostly offset by the fare rises . Trains generally run less than full so there is potential to handle more passengers if we can get them .

Keep Off the Grass

This applies everywhere the, water table is very high this year.As you can see the crane is bogged on high ground.

← Brenton photo

Even more mess when the extracting vehicle also got stuck . →

Comparison of Sister Steam Locos No.43 and No.101

Rob Worland takes the opportunity to compare these 2 locomotives both built in Queensland by minature locomotive builder Jim Jackson

REG is of course our locomotive **No.43 a 2-6-2** (intended to resemble an American style Denver South Park and Pacific loco.). Photo – Rob Worland 30th June

For comparison, at right is No.43's sister locomotive **No.101** in 1997 at the Currumbin Wildlife Sanctuary **.** A 2-8-2 it is built to resemble a Queensland Railways QR CC17 locomotive that never materialised. Photo – Reg Murton.

Apart from the extra two driving wheels, the differences between the 2 locomotives are mainly cosmetic and above the line of the boiler top.

For No.43 the other changed details are the USA type smokebox door and cow catcher.

While the higher cab and taller funnel can give the impression it is a smaller engine. This is misleading. The running gear is identical except for the two less wheels. This does not reduce the tractive effort. The boiler is the same except the barrel is 3½" shorter, related to the shorter fixed wheelbase. This reduction in water capacity would not have any noticeable impact on power rating. (Rob Worland)

Remember the new QR C 17 design was influenced by the Baldwin Locomotive Works QR AC16 Class, a wartime American design for Asian colonial railways but only being available in limited numbers Queensland went on to build 227 of their own highly successful variation from the 1920's right up into the 1950's . After WW2 Queensland Railways went on to design an improved version that incorporated the best features of the existing C17 and AC16 engines including the 2-8-2 wheel arrangement . Designated the QR C C 17 approval was granted for eighteen of these new engines to be built at Ipswich. Construction began in 1950 but at a retarded rate because of post war material shortages and the heavy repair programme. With increasing interest now centred on diesel traction the venture gradually lost its priority. Some components were built but no major assembly work was completed and by 1953 the project was abandoned. (Internet)

Jim Jackson obviously had access to the plans and decided to build a model of this still born steamer for the Currumbin Wildlife Sanctuary which he designated No 101 .

. I imagine there was some satisfaction in building a model of something that did not materialise but would have been the ultimate QR steam locomotive . When Arther Birch also wanted a loco for his rides .Jim built a second one , No 43 , based on the same design but altered some details to give an American appearance for it' owner . This would not have taken too much since the prototype of this class had its roots in the American Baldwin anyway.

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Ronaldson Tippet Update

Following the May Goldsmith Rally featuring Ronaldson Tippett engines the question was raised in Steam Supreme issue 641 June 2024 about the apparent resemblance of a number of R &T engines to Listers and can anyone fill in some details .

Well we got a very informative letter from Ben Hoeksema from Bunyip that certainly clears things up and infact a number of the rare R&T engines I admired on display at Goldsmith and Heyfield were actually from his collection . ***One of the engines on display at Goldsmith was Ben's R&T D type whose lower end clearly has some Lister characteristic .***

As for the Lister connection the story goes that a young Jim Morgan (R&T sales and service guru) was sent to the Ballarat train station in the early– mid 20's to pick up a Lister A type engine and take it back to the factory Once back there it was taken apart , measured and replicated to become their Vertical Benzene Engine .

The carcass of a Lister A engine . Image found on the interweb .

Ben's stripped down R &T 2.5 HP Vertical Benzene Engine for comparison . (He also has another complete running one)

The resemblance is striking , the most obvious difference is the angle of the sparkplug.

Ben also mentions a couple of years ago he saw an engine advertised on Gumtree as a Lister H type but it had Ronaldson Tippet flywheels fitted which he thought strange .

A standard Lister H

The fellow mentioned that it was bought from " some auction at an old factory in Ballarat years ago . Ben took down the engine number and contacted Lister expert David Eddington in the UK who confirmed it was in fact a Lister sold to Mitchell & Co , Melbourne in 1926. So it appears R &T bought a number of Listers through Melbourne agents Mitchell and Company so they could pull them apart and could build their own copies.

Warwick's 3.5 hp R&T G type .

So it appears this engine sat around at the R & T works until their demise and sold / auctioned off . This certainly fits in with what appears to have been going on . Actually the R&T clones are not exact copies but have their own little twists about them . One give away can be the different position of the sparkplug

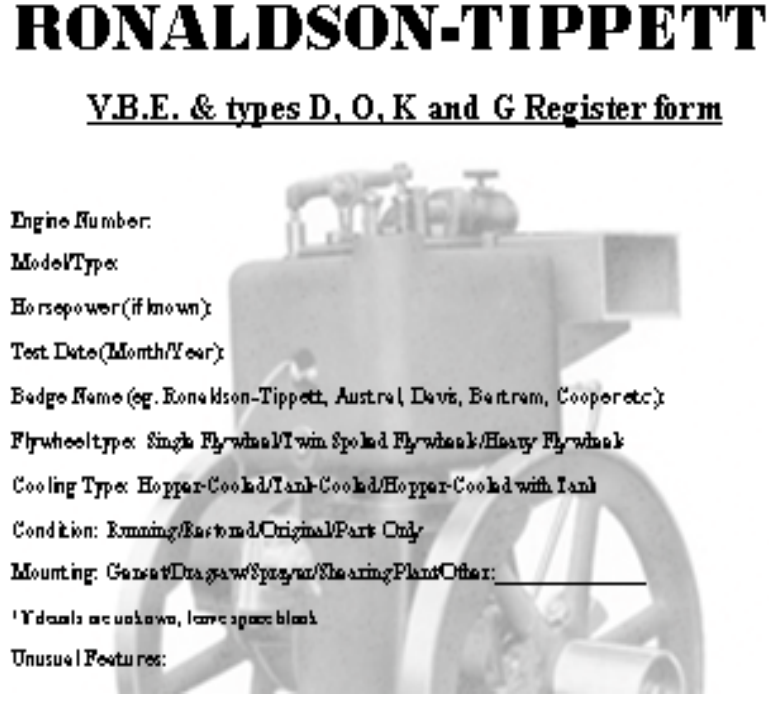
Ben has also done a lot of research in the UK and Australia of the relationship between Lister and Ronaldson Tippett and can find no evidence of hard feelings between the 2 companies so with the destruction of papers by the recent flood this may never be established either way .

As a side note Ben would like to let us know that he runs the R & T Vertical Benzene Engine register and , with the passing of Phillip Knight is now the custodian of all the known original drawings, drafts and transparencies from Ronaldson Tippett and invites our members to contact him if they have any RBT queries .

On the other hand he hopes owners of R&T VBE will forward information of their engines so they can be dated and added to the register and assures no names will appear on the list .

Ben Hoeksema bshoeksema@gmail.com Port Phillip Historical Machinery Society

What a kind offer and it just shows what a wonderful hobby we have . Thanks Warwick



RONALDSON-TIPPETT

V.B.E. & types D, O, K and G Register form

Engine Number:

Model/Type:

Horsepower (if known):

Test Date (Month/Year):

Badge Name (eg. Ronaldson-Tippett, Austral, Davis, Bertram, Cooper etc):

Flywheel type: Single Flywheel/Twin Spoked Flywheels/Heavy Flywheels

Cooling Type: Hopper-Cooled/Tank-Cooled/Hopper-Cooled with Tank

Condition: Running/Restored/Original/Part Only

Mounting: General/Drag saw/Sprayer/Shearing Plant/Other:_____

If details are unknown, leave space blank

Unusual Features:

Junior(s) Matter(s)

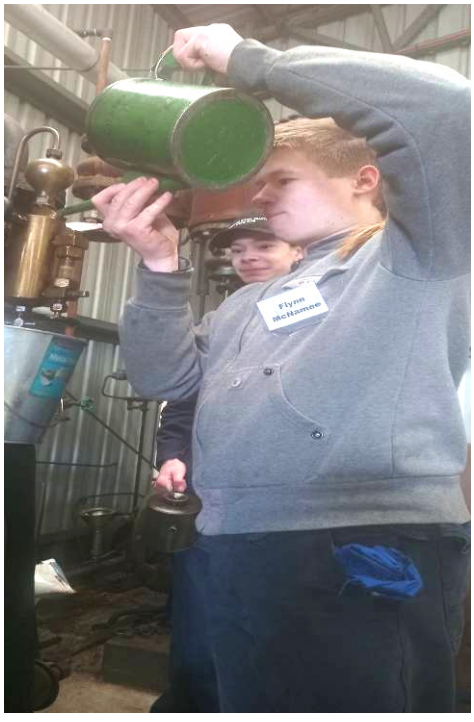
Who says young people, today, are soft? Not MSTEC Juniors! Our younger club members showed their true grit in the early hours of the May Run Day, oiling up the club's stationary engines in thick fog . *Paula*

Can you spot the Junior in the fog? ***5 points*** .....
Can you name the Junior in the fog? ***10 points*** .....
Can you name his helpful side-kick? ***10 points*** .....
BONUS points: Name the Mum or Dad of 2 Juniors? ***25 points*** .....
TOTAL Points: .....

Where ?

Who ?

Sidekick ?



Mum or Dads Name

Later in the day, the fog had cleared, Koby and Spiro working on ….???

Earlier in the year, Marissa, Zenya (Mum) doing driver training with Neil.

This cartoon took Bill Dazenko's Fancy , not sure where he got it but the appeal is in the detail of the traction engine . Obviously drawn by someone who has intimate knowledge of these engine .

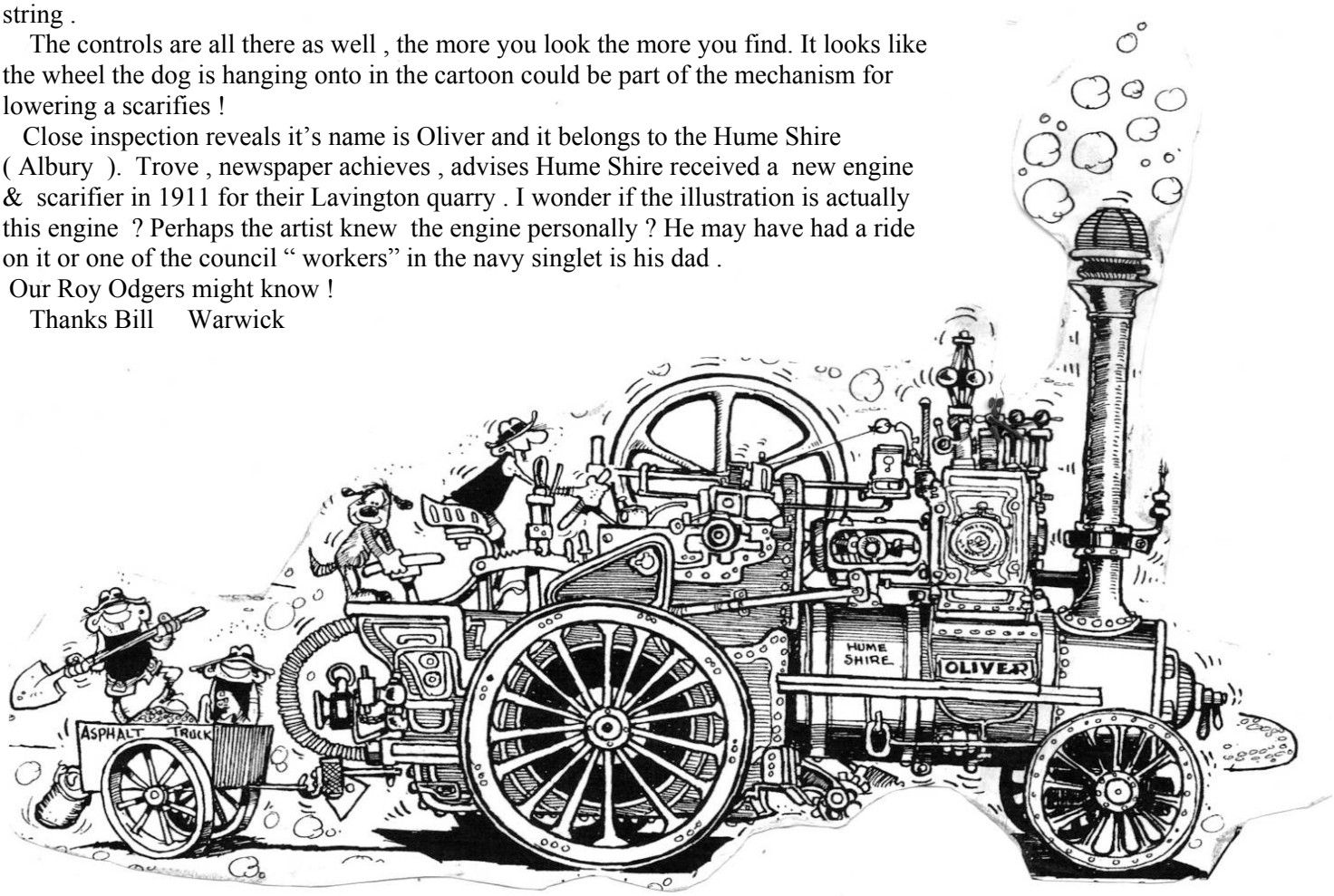
For instance it has a spark arrestor , not something a casual illustrator would include . Also a detailed Pickering governor and Ramsbottom safety valve , a whistle with a string .

The controls are all there as well , the more you look the more you find. It looks like the wheel the dog is hanging onto in the cartoon could be part of the mechanism for lowering a scarifies !

Close inspection reveals it's name is Oliver and it belongs to the Hume Shire (Albury). Trove , newspaper achieves , advises Hume Shire received a new engine & scarifier in 1911 for their Lavington quarry . I wonder if the illustration is actually this engine ? Perhaps the artist knew the engine personally ? He may have had a ride on it or one of the council " workers" in the navy singlet is his dad .

Our Roy Odgers might know !

Thanks Bill Warwick



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Coming Events

SOCIAL MEETING
Wed 3 July

Regular Events : -

MSTEC Social meetings, 8 pm Scoresby. First Wednesday of each month .

Museum open every Thursday, Saturday and Sunday . Miniature Train running every Sunday 11 am to 4 pm

Museum Machinery in action. Last Sunday of each month except end of year..

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