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December
2018

The MICROMETER

AUCKLAND SOCIETY OF MODEL ENGINEERS INCORPORATED

PO Box 14570, Panmure, Auckland 1072, NEW ZEALAND

Club House: Peterson Reserve, off Peterson Road, Mt Wellington,
Auckland 1060

Telephone: (9) 570 5286 Club Web Site: www.asme.org.nz

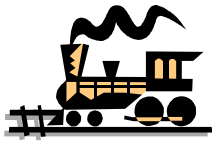
President	Timothy Robinson	09 296 2949
	e-mail address	president@asme.org.nz
Secretary	Mike Moore	09 443 6050
	e-mail address	info@asme.org.nz
Editor	John Lankow	09 576 5400
	e-mail address	editor@asme.org.nz

REGISTERED NEW ZEALAND PUBLICATION

Is this full-size - or a model?

See Pages 3 and 4.





Train Roster

	Date	Electric Driver	Electric Driver	Steam Driver	Train Controller	Station / Guard	Station / Guard	
	2-Dec-18	J Lankow	D Moffatt	Voluntary	<u>T Robinson</u>	M Luxton*	D Vaughan	
	9-Dec-18	M Moore	P Moy	Voluntary	<u>G Anderson</u>	A Stratton*	M Vickers	
	16-Dec-18	M Plant	R Reichardt	Voluntary	<u>D Russell</u>	R Stratton*	D Beecher	
	23-Dec-18	P Woodford	I Ashley	Voluntary	<u>P Dowdeswell</u>		D Wilson	
	30-Dec-18	-----	Xmas / New Year Break - No Roster in Operation					
	6-Jan-19	-----	Xmas / New Year Break - No Roster in Operation					
	13-Jan-19	A Bailey	G Beazley	Voluntary	<u>B Aickin</u>	L Brown*	D Vaughan	
	20-Jan-19	M Hollis	D Housley	Voluntary	<u>P Dowdeswell</u>	R Crook*	D Beecher	
	27-Jan-19	J Lankow	D Moffatt	Voluntary	<u>T Lawrence</u>	M Luxton*	M Vickers	
	3-Feb-19	M Moore	P Moy	Voluntary	<u>S Meikle</u>	R Stratton*	B Matchett	
am	10-Feb-19	R Reichardt	A Shirley	Voluntary	<u>T Robinson</u>	K Ryan*	D Vaughan	
pm	10-Feb-19	P Woodford	I Ashley	Voluntary	<u>T Robinson</u>	A Stratton*	S Shirley	
	17-Feb-19	A Bailey	G Beazley	Voluntary	<u>G Anderson</u>	R Souter*	M Vickers	
	24-Feb-19	M Hollis	D Housley	Voluntary	<u>D Russell</u>	P Tomkies*	D Beecher	

Bold and Underlined Name = **Train Controller**, i.e. the person in overall control of all operations for the day

Bold with Asterisk* Name = **Stationmaster**, i.e. the person responsible for activities in the station area and for the day's takings.

Note: 10 February is Panmure Basin Fun Day - extra volunteers will be required to assist. See below.

Please Note:

If for some reason you are unable to attend on your rostered date, you are respectfully reminded that it is **your** responsibility to find a replacement member to fill the gap – please don't let the rest of the team for the day be left short-handed. **Note: the Train Controllers for both affected days must be informed of the swap in advance.** The details of the swap should be noted in the Run Book.

Also, please ensure the member you arrange a swap with is one who is rostered to undertake the same role to ensure we always have members with the appropriate training and experience on the day.

DECEMBER CALENDAR

Tuesday December 4th, 7.30pm - AGM and General Meeting, ASME clubrooms

Tuesday December 11th, 7.30pm - Workshop Night, ASME clubrooms

Tuesday December 18th, 7.30pm - Committee Meeting, ASME clubrooms

Coming Up: - Panmure Basin Fun Day, Sunday **10 February 2019**. Keep this day free if you can. ASME will be running a double shift that day, and extra personnel will be needed to help control the crowds!

Committee Comments

Committee Comments – December 2018

ASME celebrated Xmas a little earlier this year with the Club dinner on Friday 23rd November at the Remuera Club in Greenlane. A group of 33 participated and enjoyed a convivial hour at the bar followed by a wonderful three-course meal and coffee; all in very nice surroundings. It is always a bonus to use these facilities, being close to the motorway and with heaps of parking.

Timothy and Greville have indeed sorted out the final problem with the engine shed camera and the full surveillance system is working reliably. The committee is now reviewing options to improve and update the security of ASME premises, given the range of clubs using the facilities.

We have been informed of another past member and Past President (1990-92) who has passed away – members will recall John Harrison who often delighted all with stories of his Air NZ days flying Jumbo jets and the like. John was a member of the Tuesday (working bee) Club and built several models during his retirement years.

It's good to see a few extra steamers on the track these days – Bruce Cooper has had his rebuilt Ajax (originally built by past member, Jim Moat) running on several Sundays recently and it has attracted quite some interest amongst the passengers and our Sunday crews alike. With Allan Bailey now back from his UK holiday, he also plans for some more running and of course Mike Banks now has the GWR King operating with the recently completed tender.

The Auckland Council has determined that upgrading of the pathway around the Basin is warranted. The first section along in front of Waipuna Hotel and including a remodelling of the Peterson Reserve carpark is under-way and hopefully will be completed before the Panmure Basin Fun Day, which has been brought forward for 2019 to 10th February (Please note that date now as ASME will need plenty of helpers as usual). Some changes as a result of submissions made by ASME regarding the carpark have been accommodated, but the final plans for the revamp will still see a small loss of car park spaces.

Preparations are being made for another MEANZ audit in January to help ensure that a new ADR Registration and Auckland Council Permit to Operate are in place before the current ones expire on 8th April 2019. This involves a review (& where necessary, updating) of ASME's current operating and safety systems.

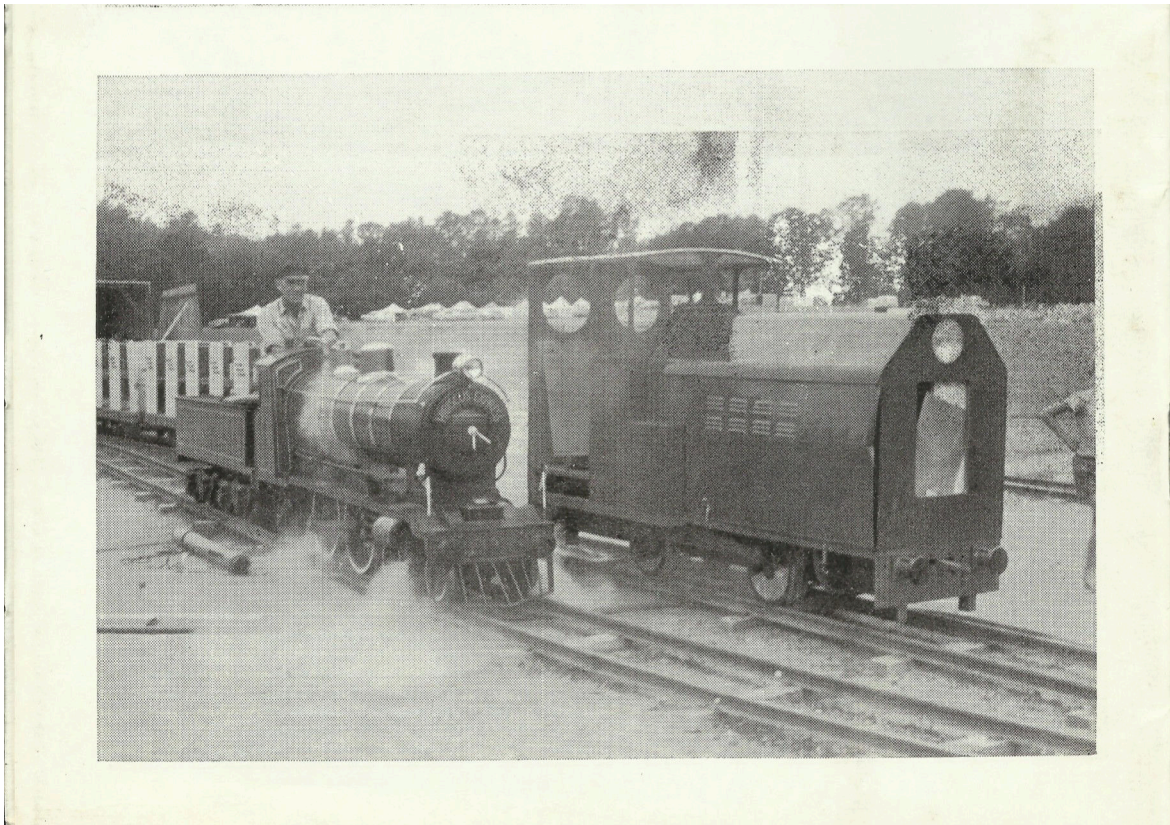
Members may remember the Big Boy For Sale advert mentioned on the cover of the April 2016 Micrometer - well since then it has been purchased by a TMMEC member, shipped to NZ with 17 scale freight wagons, all regauged and the loco certified and now operational in NZ!

At Tauranga ME Club's open day in November (10/11th), the ex Tom Millar Big Boy was operated and there is plenty of You Tube videos now available to view- one worthy of note is at: https://www.youtube.com/watch?v=C48pU2_KePg&feature=youtu.be&fbclid=IwAR1jQzGi4gAjM59G_VjMoxGEk4WTfqPKaLrs5_lifeCnohs3HmP4dHIVDb8 On page 4 is a photo of Big Boy 4005 taken at the Tauranga event by Corban Fray.

Footnote: Dave Russell has advised that he has mislaid his camera and notebook containing his notes from the November meeting, so there will be no Bits & Pieces report this month. Hopefully, the missing items will turn up soon.



And Grant sent in this old photo: "I noticed an article in the Sept 1969 issue of YARN which I was glancing through recently - Live Steam at Orewa no less! The picture is of the Orewa Miniature Railway (long since gone - but to where?)."



Workshop Night, Tuesday 13th November

Report by Peter Woodford

The meeting was attended by 13 members

A good variety of items were on the table including the following:

A locomotive wheel set with runout issues, and a well made boring head

Injectors with suggestions as to do's and don'ts

Well machined links and connecting rods and their fixtures. No prizes for guessing who brought these in!

An example of straight knurling and the tooling that produced it

And a well made adjusting rig from our telescope man.

Just to cover a few of the items presented (sorry no pictures this month)

And just like the first meeting we had to ease people out the door at the end of the evening.

Next and last meeting for the year December 11th (Note no meeting in January)

Notice of Annual General Meeting of Auckland Society of Model Engineers Incorporated

The Committee gives notice that the next Annual General Meeting will be held at the ASME Clubrooms, Peterson Reserve, Panmure on Tuesday 4th December 2018 commencing at 7.35pm.

The Agenda items will be the relevant items as set out in Rule 16.

New committee members are required. If you think you are committee material, don't be backward in coming forward!

Converting Lathes to Metric

By Dave Watt

For many years almost everything I've made has been metric, but most of this work has been done on inch lathes. There was always the need to convert the metric dimensions to inches either by calculation or in my head especially when exact lengths or steps on shafts, grooves etc. were required.

With the locomotives now finished, the decision was made to sort this out. The three lathes to be converted were two Myford ML7's and one American Rivett. All three lathes had 10 TPI cross and top slide screws. The dials on the ML7's were non-zeroing, while the Rivett has zeroing dials. All the dials were graduated to 0.001". The decision to fit zeroing dials to the Myfords was also made.

The original dials on the Myfords were 38mm dia, while those on the Rivett were about 30mm dia. The decision was made to make all the dials 38mm, and to graduate them in 0.02mm increments. Doing this also made it easier to scribe the graduations and stamp the numbers.



The finished dials fitted to the lathes. The vertical slides for the Myfords were also converted.



Components for the cross and top slide dials. The top row is for the Rivett, including the read-off disc at right, having a single line scribed on it. The dials have been 'hollowed out' to remove mass, lessening the chance of slipping when turning the handles. The bottom row is for the Myfords. An 'O' ring was used to provide the friction for the zeroing function.

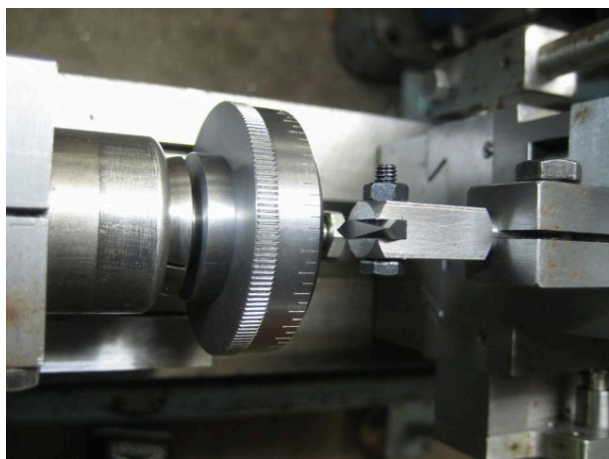
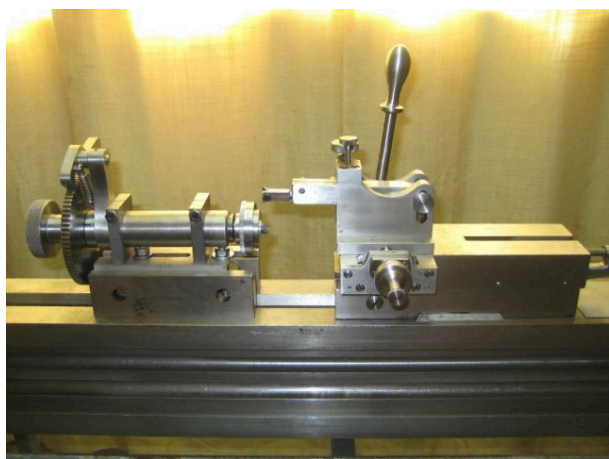
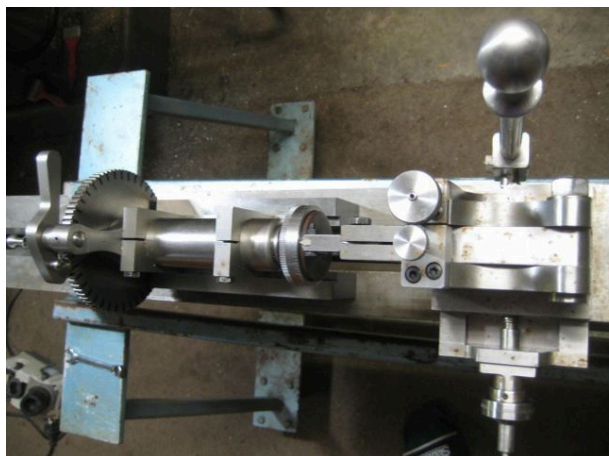
The first step was to make all the dials. These were made from free machining steel having a high sulphur content, as a high-strength steel wasn't required and it made machining, scribing the lines and stamping the numbers somewhat easier. A few extra dials were made to factor in the 'stuff-up' allowance and to have extras on hand for any future projects.



A close-up view of some of the leftover dials.

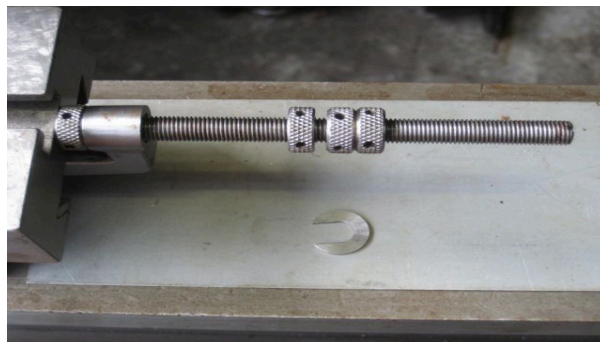
Scribing the Graduations

This was done using the set-up shown in the three views below.



The views are fairly self-explanatory. The set-up shown was for the tailstock dial, the last item to be converted in this project. The dials were mounted to the spindle on which an index plate was fitted to the other end. For the top and cross slide dials a 100-tooth plate was used, while for the tailstock, an 80 tooth was used. Before starting, every fifth tooth on the 100-tooth plate was marked with a

marker pen, as the scribed lines at these divisions are longer, while on the 80-tooth plate every second tooth was marked. After setting the length and depth of cut for the scribing tool, 3.5mm for long and 2.0mm for short lines and 0.1mm deep, a smear of cutting oil was applied around the circumference of the dial. The scribing of lines was ready to start.



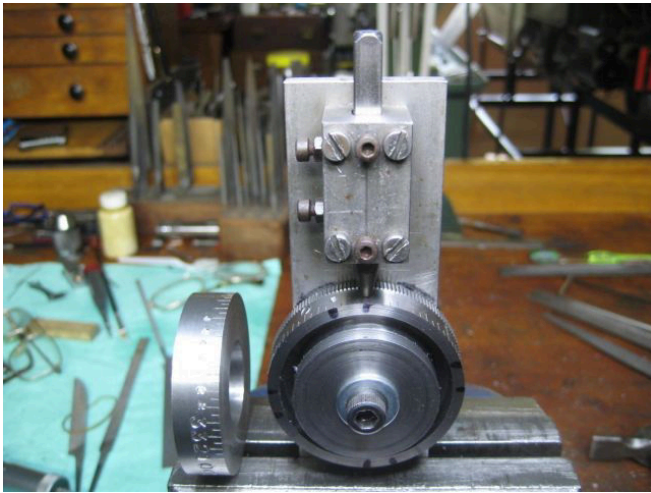
The stop on the end of the slotting tool for controlling the length of the lines. For long lines the three nuts are together, while for the short lines the spacer shown is inserted between the first and second nuts.

The longer lines were scribed first, (learned the hard way) and then using a spacer on the length control rod, the shorter lines were scribed. Scribing each dial took less than five minutes.

The scribing tool was a tungsten carbide threading insert held in a holder that fitted into the slotting attachment, an accessory belonging to the Rivett lathe. The one tool scribed every graduation, making a clean job with minimal burring and it still looks like new. The whole set-up was mounted on an old Rivett lathe bed.

Stamping the Numbers

This is where the fun started. How to position the number stamps in exactly the right place before hitting them with the hammer. The numbers needed to be accurately placed circumferentially and axially for a neat looking result. The stamps I had available were 3.0 and 1.5mm sizes. The larger numbers were used for the whole millimeter divisions while the smaller ones for the intermediate divisions, 0.2, 0.4, 0.6 & 0.8mm. The odd numbers were not used.



The jig used for holding the dials and stamping the numbers, in this case the tailstock dial. The screws on the front and side of the stamp guide were adjusted to allow free vertical movement without any lateral movement in either direction. The dial at left was used for practice as each stamp was changed. The marks for where the number is to be stamped can be seen.

The shanks of the stamps were about 6mm square but were up to 0.2mm out of parallel. To true them up to near- enough parallel, they were held against the side of a new grinding wheel until they were sufficiently parallel, but not necessarily exactly square, which wasn't a critical factor.

To establish a reference point on each stamp, a line was scribed at the bottom on the face above each number, using a depth gauge and tungsten carbide scribe, for circumferentially aligning the stamp with the graduation to be stamped. The axial adjustment was done using paper and sheet-metal shims behind the dial.



The number stamps used. The scribed lines are visible to varying degrees on each stamp.

When all looked ready, a test stamp was done on the practice dial. If any further adjustments were needed, these were made with more test stamping. When all looked good, the practice dial was exchanged for the dial, locked in place and the number stamped. The number would be stamped on all the dials until that number was finished with, and then the whole process repeated for the next number. Before the dials were fitted to the jig, the positions for where the next number was to be stamped were marked out on the side of the dial with a marker pen. (That was also learned the hard way!) The stamping of all the numbers took a full day to complete. After completing all the stamping, the protruding metal was carefully filed off to produce a smooth surface.

The Screws.

With the time that would be involved screw-cutting the metric screws, 10 screws in all, it was decided to try and buy ready-made threaded stock.

After some searching on the Internet I found a company that supplied trapezoidal metric screws in a variety of sizes, both right and left handed. They were able to supply 10mm dia. x 2.0mm lead in 1-metre lengths, so I ordered two RH and two LH lengths. The threads are rolled, well finished, accurate and very machineable. A couple of the lengths were very slightly bent. After cutting the screws to length, they were corrected by the judicious application of a rubber hammer and a couple of 'V' blocks, then tested for straightness by rolling on a surface plate.

For those interested, the supplier was:

Linear Motion Ltd,

3/103 Landsford Cres.

Avondale, Auckland.

Tel: 09 828 6604.

www.linearmotion.co.nz



The screws. The top two are for the Rivett lathe. On the right of each, separate components were made, press fitted onto the screw and pinned in place. The gear is for driving the cross-feed. Both screws have a locking screw for the dials, the force being transmitted via a brass pin located in a radial hole, which is barely visible in the view. The bottom screw with Teflon thrust washers is for the Myfords. All these screws are the same except for length.

The Rivett screws are left handed while the Myford ones are right handed. The 1/4"BSF thread for the Myfords was retained as this thread is used in the handles.

The Nuts

All the nuts were made from phosphor bronze.



The three types of nut made. The two on the left for the Myfords, where the same design of nut could be used on all slides. The two middle ones are for top slides on the Rivett, while on the right is the nut arrangement for the Rivett cross slides with one nut partially inserted into the slot.

The Myford nuts were fabricated by silver soldering the nut to a brass flange, and then machined on the diameters and face of the flange. The Rivett top slide nuts were silver soldered to a steel mount that fitted into a groove on the side of the top slide. A screw hole is yet to be drilled for securing in position.

Many years ago it was discovered that the axis of the Rivett cross slide screw wasn't parallel with the plane of slide movement, mainly in the horizontal direction. To overcome this a floating nut arrangement was made and has worked well. The new nut was made to fit in the slot, along with a spare.

After the hot work was finished the machining was done. The threads were cut using a single point tool ground on a short piece of 3mm dia. HSS, then fitted into an especially made bar. The tool was ground thinner than the correct form so that once the thread had been cut to depth, the width could be carefully widened with successive cuts until the screw just fitted nicely into the nut.



The threading tool. The tool can be rotated in the bar for the correct helix angle then locked in position. This tool was used for threading all the nuts, except the tail-stock.

On the screws the minor diameter is 7.5mm. The standard minor diameter for internal threads is shown as 8.5mm, giving a depth of engagement of 0.75mm. It was decided to bore the nuts out to 7.8mm, effectively adding 0.35mm to the depth of engagement, making it 1.1mm. Doing this should make the nuts wear somewhat more slowly. The outside diameter was cut out to about 10.2mm.

The backlash for all the nuts is no more than about 0.02mm, somewhat better than the original screws and nuts.

The Tailstock

The last stage of this project was the conversion of the tailstock to metric. The original screw was also 10TPI. In this case it was decided to use a screw with a 4mm lead, therefore requiring less turns of the handle to move the barrel a given distance, handy when drilling.



The new tailstock components. Left: the thrust/read-off plate, middle: graduated dial, right: hub on which the dial is mounted. For the zeroing function resistance an 'O' ring is used and the whole is held in place with a circlip. Below is the barrel screw. The nut isn't shown as it had already been fitted to the barrel

The outside diameter of the screw is 14mm; the biggest that could be used in this case, while the depth of thread is 2.25mm, giving a minor diameter of 9.5mm.

The thread was cut in three stages. It was first cut to depth with a parallel tool to produce a form similar to a square thread, followed by cutting one flank using a 15 degree tool, then finally the other flank with a 15 degree tool of opposite hand. The nut had already been made using a correctly ground threading tool and fitted to the barrel, giving something to firmly hang on to while testing for fit. The thread was gently widened until the nut just screwed on with little resistance.

It was decided to scribe 80 divisions on the dial, 40 long, 40 short, providing increments of 0.05mm. This is considered good enough, as it's not likely that one will be drilling holes to an accuracy of 0.01mm, but more likely to whole millimetres or, at

best, to 0.1mm. If higher accuracy is required, this can be fairly accurately guesstimated on the dial. The dial was also made about 6mm bigger in diameter than the original for easier reading at 51mm, giving a line spacing of 2.0mm.



The tailstock with its new dial fitted.

No attempt has been made to convert the Myford tailstocks to metric – yet, as this would require making new barrels and hand wheels, a job that may be done one way or another in the future.



For Sale

Raglan "Little John" Mk 2 Lathe

Our secretary has received an email from Elizabeth Marks who wishes to sell a lathe in her possession.

She says:

"It appears from the Raglan homepage www.lathes.co.uk/raglan that it is late 1940s/very early 1950s. A friend who used to have a lathe cleaned and lubricated it for me about 6 months ago and commented that the drive belt was in average condition. Also, the lead screw was replaced with a good second hand one brought back from England in 2014. All the accessories are shown in the photos, as is a separate Raglan gearbox but I don't know where that fits into the picture.. There is a full Operator's Handbook as well as two books.

I would be interested in knowing what it would be worth to sell - I would include the workbench too - if you have any members interested that would be most helpful.

I look forward to any further information you can provide me with.

Thanks and kind regards

Elizabeth Marks"

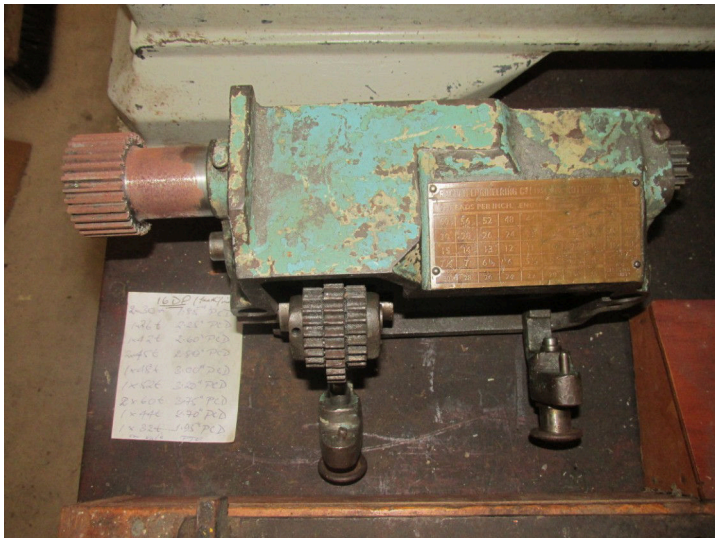
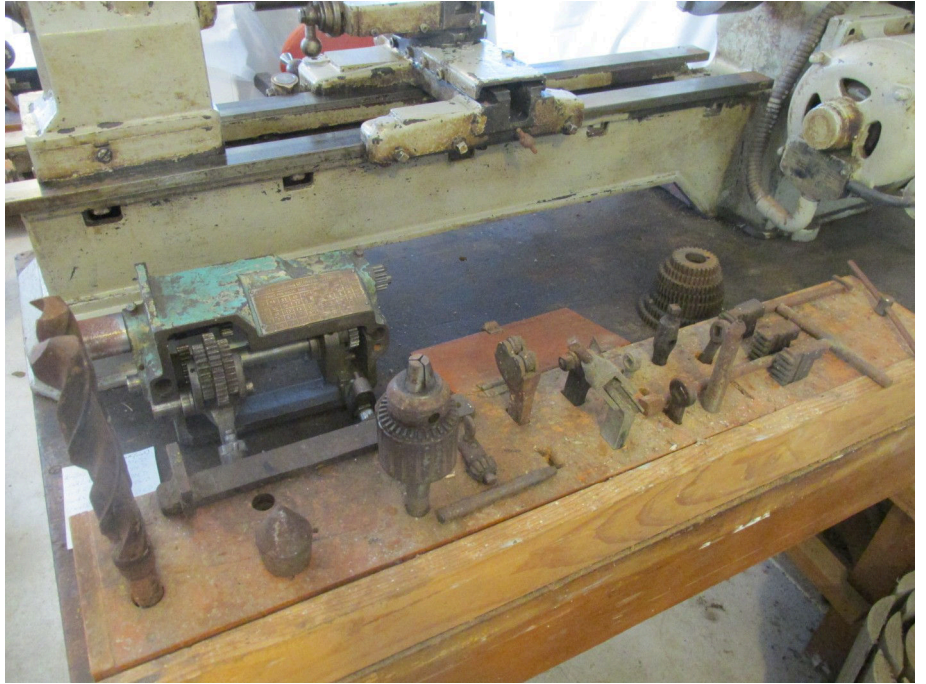
Elizabeth lives in Massey: anyone interested in the lathe can phone her on 832 2628.

THE "LITTLE JOHN" LATHE

Specification

Height of Centres	5½ in.	Toolpost Slide travel	2½ in.
Swing over Saddle	dia. 6½ in.	Feedscrew Graduat'ns	0—1 by .001
Admits between centres	24 in.	Micrometer Dial dia.	2 in.
Bore of hollow spindle	1½ in.	Motor, ½ h.p. (A.C. or D.C.)	1425 r.p.m.
Spindle nose bored	No. 4 Morse	SPEEDS and FEEDS :—	
Size of centres used	No. 2 Morse	Spindle, ungeared	1750—270 r.p.m.
Dia. of spindle Nose	1½ in.	backgeared	220—36 r.p.m.
Spindle Nose threaded	6 T.P.I.	Longitudinal traverse	.003 to .050
Leadscrew—¾ in. dia.	8 T.P.I.	Screw Threads cut	4 to 48 per in.
Width of Bed	6½ in.	Metric	.5 to 5 m/m pitch
Width of each hardened slide	1½ in.	Weight, unpacked	3½ cwt.
Overall length of Bed	43 in.	Overall dimensions	4ft. x 1ft. 8in. x 1 ft. 7in.
Length of Saddle	9½ in.		
Cross Feed Travel	5 in.		

(Subject to alteration without notice)



Do you know this man?

This item was sent in by Grant Anderson, whose partner Jan found it in the Winter 2018 issue of "Dove News". He is none other than David Pritchard, one of the sons of our most senior member Alan, and ASME's contract lawnmower man.

This is the place!

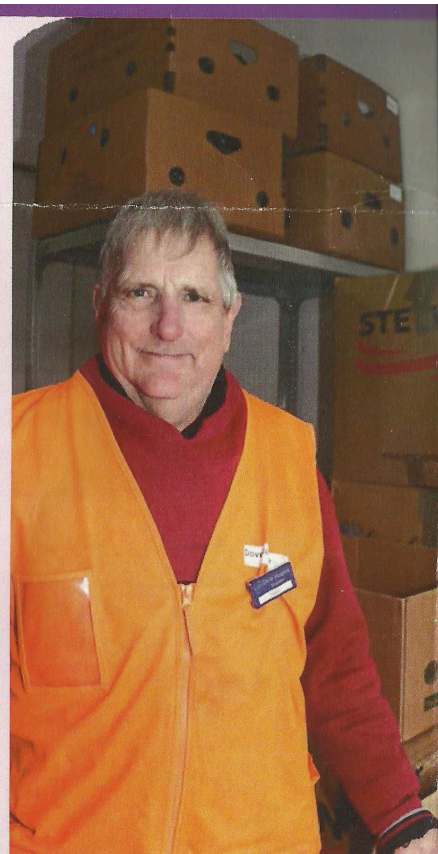
"My name is David Pritchard. I am a volunteer at the Dove Hospice Shop on Apirana Avenue in Glen Innes and my main duty is to receive donations from the public.

I started volunteering for Dove Hospice over 2 years ago after seeing a sign on the shop front door. I had time to spare so I went inside and filled out a form. They gave me a nice cup of tea and biscuits - I thought to myself, "this is the place for me". I was initially placed at the Distribution Centre in Stonefields. I worked there every day for 4 hours, and again, it made me think, "this is definitely the place for me". The team were great.

At the Apirana garage, I sort donations into categories. I love that donated products have a story and the people donating always tell me about where the item came from and what it was used for. I will never forget the time two naked mannequins were donated, it was a cold day, so I felt I should dress them! I often wonder where those mannequins ended up.

I'd like to encourage all our current volunteers to enjoy the work they do, like I enjoy my work. I want them to keep asking their friends to volunteer as we are always in need, and we are a great team to join. Why do I volunteer? I know I have contributed to the community and at the end of my day I can then relax and have a beverage or two."

Would you like to volunteer for Dove Hospice? Call: 0282 580 3000



Not to be outdone, Alan has also been in the news lately: he appeared in the November 15th issue of the *Howick and Pakuranga Times*, complete with pointy party hat, celebrating the 35th birthday of the local 60s-Up movement, of which Alan is a life member.