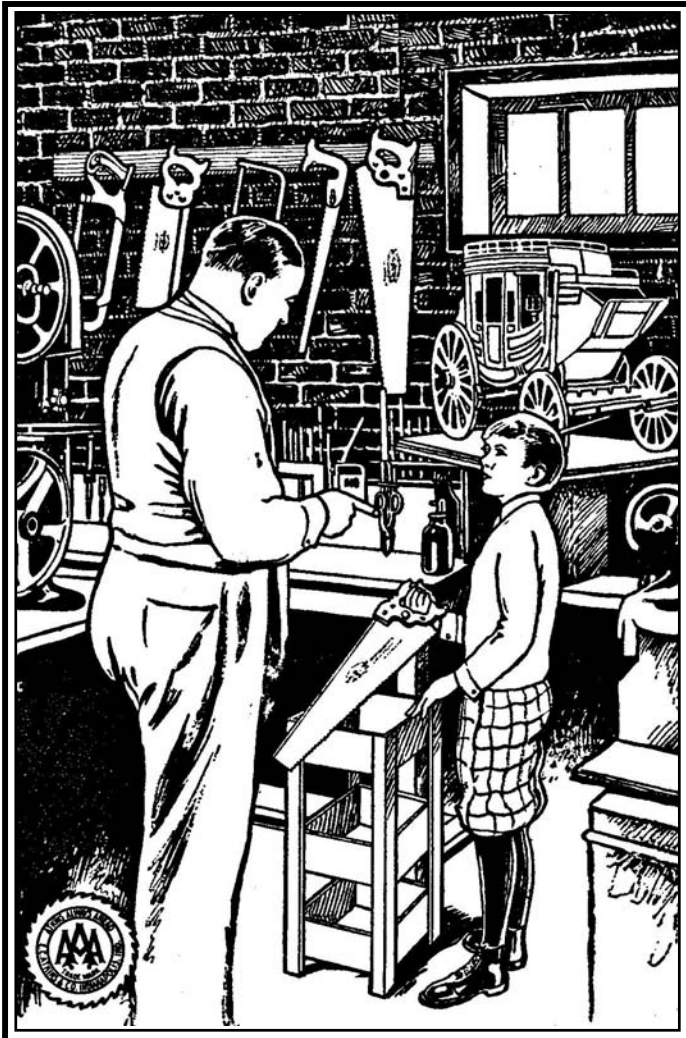


TGT



Newsletter Number 88. April 2006.

The Traditional Tools Group (Inc.) www.tttg.org.au

THE TRADITIONAL TOOLS GROUP (Inc.)

TTTG Newsletter Number 88.

April 2006.



Contents.

Meetings.	3, 4
The Darlow Tool Rest Setting System.	5
BUY SELL SWAP	6
2006 Open Day.	7
2006 Workshops.	7
Selling Old Tools.	7
Front and Back Page.	8
News 88 Insert.	8
TTTG Publications.	8
Correspondence.	9, 10
What is known about Robert Towell?	11, 12
Atkins Saws Letter.	13
John's Page.	14
Warranted Cast Steel.	15-19
Saw Sharpening Notes.	20-24
Inlaying Squares.	25
More Smith's Key.	26
The Ledger.	27
The Editor's 1937 Circular Saw.	29, 30
Kiama Woodcraft Group Inc.	31
Australian Wood Review. Collector Special.	31
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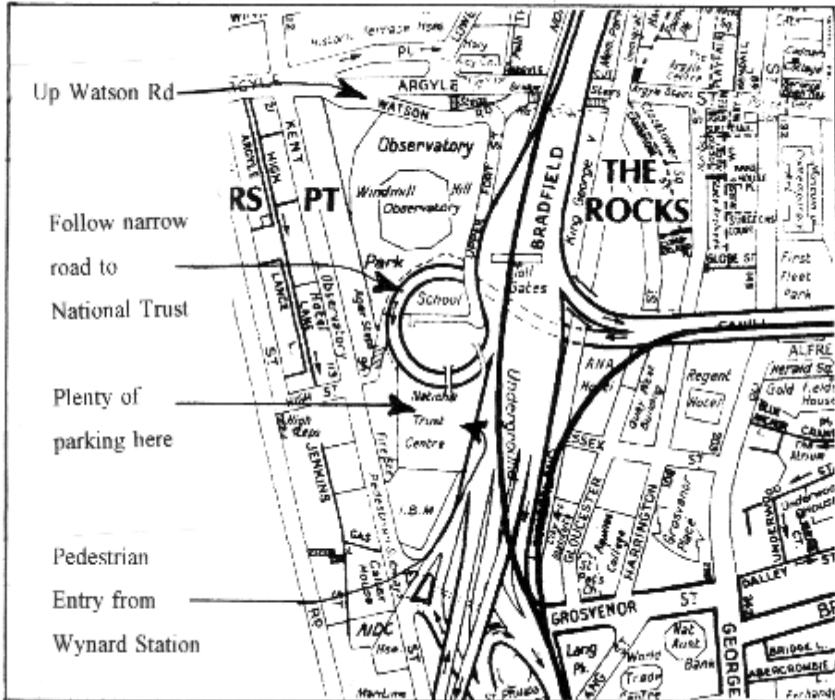
Next Meeting

Wednesday April 12, 2006. 7pm.

NOTE THAT THE MEETING IS WEDNESDAY, NOT TUESDAY

National Trust Centre,
Observatory Hill.

Annie Wyatt Room
Commencing at 7:00pm



Programme

1) The Trading Hour.

“TTTG members only” tools for sale.

2) Presentation.

STANLEY SCREW THREADS.

3) TTTG Auction.

No reserves, everything must be sold.

Catering by Mario Dato.

Previous Meeting.

Tuesday 14 February 2006. 7pm.

Mike Darlow: Sharpening Wood Turning Tools.

Mike Darlow is an accomplished wood turner and author with a reputation as a speaker. He is known for his strong opinions on technical matters and his incisive humour.

Mike started off by explaining the theory of abrasives, both grinding and honing, to an appreciative audience of well over fifty TTTG members and guests.

Spurred on by the audience's enthusiastic response Mike explained his own contribution to grinding wood turning tools. This breakthrough is the development of a simple system of setting the grinder tool rest to achieve predictable consistent angles despite radial wear of the grinding wheel.

Mike's system is described, with a full size template of his jig on page 5.

For grinding woodturning tools this method makes other jigs and devices redundant.

Mike also explained the system of grading grinding wheels stressing the need to use a soft aluminium oxide vitrified wheel and to dress the wheel regularly.

As well as spellbinding the crowd with his words Mike distributed samples of his woodturning books. These are well worth acquiring by anyone interested in learning correct technique and the latest opus has superb illustrations of traditional turning.

TTTG extends appreciation to Mike and anticipates his appearance at a future meeting.

Next Meeting.

Wednesday April 12, 2006. 7pm. NOTE THE DAY,

NOT TUESDAY as the Annie Wyatt room is not available that day

STANLEY SCREW THREADS.

A discussion of the screw threads used in Stanley planes.

John Bates will give a brief talk on the screw threads used in Stanley planes.

Were they Standard or Non Standard Threads?

How were these threads manufactured?

Fred Murrell display Stanley planes "from the rarest to the common place".

The serious collectors will be impressed! **The Audience** will ask the questions.

Jim Davey will ask the hard questions. **Bob Crosbie** will attempt to maintain order.

No holds barred but be sure of your facts before entering into this debate.

Reading John's Stanley Threads Part 1 before the evening, is recommended.

The Trading Hour.

This is usually set up by 6.30pm. Minimum price is \$20 per tool. Quality only.

"Members only prices". For the serious buyer but there are always bargains.

The Auction.

This has become an institution. Trainee Auctioneer still wanted! Throw away prices.

Somehow we manage to sell everything. Usually there are no reserves. Stupid prices.

Planes to Play Stations, Rules to Rusty bolts. Anything could be under the hammer.

Who got the Car Radio last time?

Paying after the Auction.

Two TTTG Committee members record the takings. The Treasurer is also on hand.

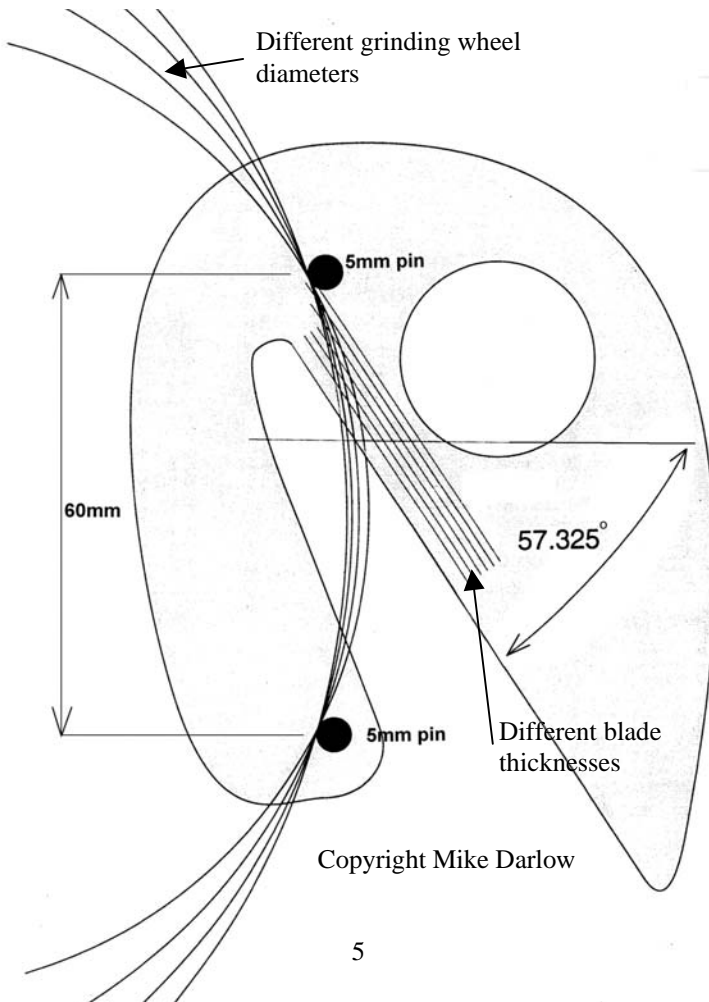
Purchases can assist by trying to have the exact money ready.

If say you owe \$4 but only have a \$5 note please consider "rounding up"

The Darlow Tool Rest Setting System.

Actual sharpening angle with the template designed for 2mm blade and 200mm wheel

Wheel Dia. (mm)	Blade Thickness				
	2mm	3mm	4mm	5mm	6mm
200	25°	24.3°	23.6°	22.7°	22.6°
175	24.7°	24.8°	23°	21.9°	20.8°
150	24.6°	23.6°	22.4°	21.1°	19.5°
125	25°	23.8°	22.4°	20.8°	18.4°



BUY SELL SWAP

Entries are free to TTTG members.

WANTED

- Anvil 70 kg to 200 kg with any available tools.
David Hire. email dhire@zip.com.au 0412 969596 after hours 9552 3636
- Heavy Firmer Chisels. Square edge chisels all sizes 1" and above.
Mick Dowling. 03 93863481 or 0407 544338. itshimselfthen@bigpond.com
- Wanted to buy (or swap): Farm / Implement Spanners and Wrenches.
Railway and large Engineering concerns.
George Radion -03 95571178, email radion@iprimus.com.au
- Emmert pattern makers vice or lend of one to copy.
Contact Guido 02 93196190 info@wroughtartworks.
- Blacksmiths Post and Bench Drills, hand or power, any condition.
Buffalo, Champion, Silver, Globe, Dawn, Goodall Pratt, Union.
Rick Mitchell. 02 47514762 or 02 47519797.
- Lead Dressing tools and Bobbins. Kevin Allen. 02 95232359 or 0416 243396
- Parts for 1937 Driver Circular Saw.
Riving Knife and Crown Guard. Any attachments. Contact the Editor.
- Big Saw sets. I am looking for a decent "Inshave".
Stan Ceglinski email biliwood@bigpond.net.au



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Fax: 02 4447 8820
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Nowra NSW 2541

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Waterstones 
- DMT Duo
Diamond Plates 
- DiaSharp
Diamond Plates 

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- DMT Duo-Plus
Diamond Plates 

WHILE STOCKS LAST

2006 TTTG Open Day.

On Sunday 23 April 2006 TTTG will hold an open day for members.

The theme is **Sharpening and Tool Repair**. The venue is Asquith Boy's High School.

Members can bring tools to the Open Day for **Sale and Swap**.

This will be a "members only" day. Anyone can attend by joining TTTG on the day.

Members can use TTTG's equipment and the workshop resources at the school.

Jim Davey will be there with a selection of "fettled" planes for sale.

Jim will also have a selection of sharpening and tool care products for sale.

TTTG 2006 Workshops.

Plane Tuning.

Sunday 19 March 2006

Workshop Open Day.

Sunday 23 April 2006

Saw Sharpening.

Sunday 21 May 2006

Plane Tuning & Sharpening.

Sunday 25 June 2006

Venue for all workshops is Asquith Boys High School. Workshops start at 9.30am.

Tea, coffee and biscuits are provided. Bring your own lunch.

Asquith Boys High School, Jersey Street Asquith 2077. 9.30am to 3.30pm

TTTG Members \$20. Non-members \$40

To be sure of a place it is advisable to enroll in advance.

Why TTTG Workshops?

TTTG workshops are arguably the best available. They are not available elsewhere.

Our workshops offer the lowest cost, quality teaching and excellent facilities.

TTTG can arrange workshops to suit your needs.

But only if you tell the Committee what you want!

Selling Old Tools.

TTTG can arrange the sale of second hand tools. Old tools are sold by TTTG:

- a) By private treaty. We offer to get a good price for quality tools.
- b) By Auction at TTTG Meetings.
- c) At Henry's Annual Tool Sale on the TTTG Stand.
- d) At The Timber and Working With Wood Show on the TTTG Stand.
- e) By advertising in TTTG News.

The advertisements are free but the other services are subject to a fee.

Contact a TTTG Committee member for details.

News 88 Cover and Back Page.

The illustration on the front cover is from the title page of The Atkins Saw Book for Home Craftsmen, published in 1930 by E.C. Atkins and Company, Indianapolis USA. The letter included with this booklet is reprinted on page 13. TTTG readers may appreciate this example of good old style subtle salesmanship.

The illustration on the back cover is a Robert Towell Plane.
For details see **What is known about Robert Towell?** Pages 11&12.

News 89 Insert. This will be included in the June Newsletter
Stanley Planes and Screw Threads. John Bates.
Part Two. Stanley Plane Threads.
What they are and why they were used.

TTTG Publications.

-Nock&Kirby Catalogue

\$5 per copy plus postage.

-Carter Tools Leaflet.

\$5 per copy plus postage.

-Benns' Hardware.

\$5 per copy plus postage.

-1932 Record Tools Catalogue reprint.

\$8 per copy plus postage.

-Stanley Planes and Screw Threads. John Bates.

Part One. Metal Screw Threads.

Origins and Technology clearly explained.

\$10 per copy plus postage.

-Stanley Planes and Screw Threads. John Bates.

Part Two. Stanley Plane Threads.

What they are and why they were used.

\$10 per copy plus postage.

-Johns' Pages.

SOLD OUT.

More Reprints are planned for 2006.

These include the 1950 Stanley Tools (Great Britain) Catalogue and a collection of Instruction Leaflets for Record Tools.

Some back issues of TTTG News are also available. Supply fluctuates so it is best to enquire about availability. Cost is \$5 per back issue, postage is extra.

Correspondence.

The editor received an email from Karen Gorsuch, librarian Tasmanian State Library. She had an inquiry about a **Paul Call Combination Woodworking Machine**. Karen had first approached the Power House Museum in Sydney who could not offer any advice. Curious as the Power House does sometimes refer people to TTTG. She then contacted HTPAA who referred her to TTTG. Given TTTG's excellent Web Site it is a bit of a worry that Sydney's only "technical" museum finds an inquiry about one of Sydney's best-known tool merchants too difficult. In due course the owner of the machine emailed the editor.

"I have been informed by Karen Gorsuch,(State Library,) that you would not mind me making contact with you about the above! I inherited the combi.saw/ buzzer/ dowelling machine from my wife's father, and I would very much like to know as much as I can learn of it for maintenance and settings, as well as the instructions for fitting the sanding attachment. Hoping you can assist thank you, Chris Harris".

Well I told him how lucky he is to have this machine and offered some general advice. I felt obliged to suggest he get instruction on using a jointer if he has not used one!

The second email from Chris provided additional information.

"Thanks for your reply to my email. I have everything up and running, and am quite pleased with myself! However! I have this belt-sanding gadget that's making me think I'm a bit of an Eejit! I cannot think of anywhere to mount the blighter! (and Karen dobbed you in as our "expert"!) I understand you have some publicity for the machines? Can I offer to pay for some copies? And why is the planer called a "jointer"?"

I've used a Paul Call Jointer for years but it came to me second hand so I don't have the instruction leaflet for the jointer, which is the English term for a planer!

Has any reader seen a Paul Call Belt Sanding Attachment?

Chris can be contacted at www.tasmail.com

Dear Secretary,

Firstly, thank you and the Committee for their expressions of appreciation for the No. 2 plane. I am especially pleased that it will find a slot in the T.T.T.G. tool collection. Now, as you know the main reason for my recent visitation to Oz. was to check on the progress of "The Butcher Coffin". I am extremely pleased to report back - that there has been little or none - apart from selecting the timber. Not having seen my old friend Terry for some eleven years I was somewhat taken-aback by his appearance. For when he picked us up in Hobart the consensus of opinion between my wife Jane and myself was that - if anything he looked younger than all those years ago (as indeed did his lovely wife Marian). The Tassie air obviously agrees with them. Bearing this in mind Terry - not without good reason - is not in any need or particular hurry to complete the project. However, the plot of his last resting place was pointed out to me, high up, overlooking the beautiful crescent of Cloudy Bay, my immediate reaction was that without doubt this was a view to die for!

Yours sincerely,

Reg Eaton

Correspondence.

T. B. Linley-Sydney.

In answer to Stephen Richardson's request for information on a T.B.Linley marked saw.

T.B.Linley was an agent for TURTON BROTHERS and MATTHEWS PHOENIX STEELWORKS, SHEFFIELD who were "manufacturers and suppliers of all kinds of warranted cast steel for tools, &..." They also manufactured and supplied tools such as "hammers, saws and files."

In 1879 T.B.Linley's premises were at 111 Clarence Street, Sydney.

TURTON BROTHERS and MATTHEWS Advertisement on page 32 of the 1879 "Illustrated Guide to Sheffield" may provide some provenance for Stephen's saw. A copy of the advertisement is on page 35 of Kenneth D. Roberts' book "Some 19th Century English Woodworking Tools."

A Thos. B.Linley (possibly T.B.Linley's son) operated a retail outlet at 573 George St., Sydney. (See News 47 June 1999).

I have several moulding planes with the Thos. B.Linley mark, however more interestingly, a 1¾" Pattern Makers gouge, see photograph below.



There is no other mark on the gouge and it is obvious by the stamping, that it was struck with Linley's Trademark at the time of manufacture, possibly it was stamped in Sheffield for Thos. B. Linley.

As to Stephen Richardson's saw, I am leaning towards TURTON BROTHERS and MATTHEWS being the makers and T.B.Linley the merchant, however many merchants had "more than one iron in the fire". More research needed!

John Daniel.

What is known about Robert Towell?

Robert Towell was a London maker of infill metal planes working in the first half of the nineteenth century. This has been deduced from the planes recorded marked Robert Towell as no contemporary printed references to Robert Towell have been found. TTTG has published everything that is currently known about Robert Towell in News. Refer to Mick Doherty News 75 and Fred Murrell News 82. Fred Murrell's list of recorded Towell planes is particularly useful.

Fred illustrated a plane marked Towell on the wedge keeper and Buck on the infill. This double stamping is the only known objective evidence to date a Towell plane.



Fred's article was reviewed by TATHS in the United Kingdom. This generated an email from Joel in New York asking for a copy of Fred's article. The editor emailed Joel and asked him what he knew about Towell planes. Joel explained that he had been corresponding with TTTG member Mick Doherty. Joel raises a number of questions that deserve some discussion. Below is a copy of Joel's email.

"Attached is a copy of an email I sent to Mick Doherty about 2 years ago about Robert Towell. Feel free to use the information but I suppose it should be edited so it doesn't sound like an email to a third person. I don't have much more information. I am happy to provide details on my planes if you have questions. I am always interested in any information on Towell.

Towell is not listed in any directory anyone can find. This suggests he did not have a business of any size and probably worked out of his home (garret master) or in another person's shop, unlikely as the planes are signed by him. All I have read on Garrett masters suggests that their lives were very hard to mouth. Gluing together good and cheaper wood makes a lot of sense if: you the customers don't really care about anything except how well the tool works, the rosewood you buy is of variable quality and larger nice pieces are too expensive to slice up for wedges and you don't have money or storage to have much of a wood inventory and you are buying very small quantities either from a lumber yard or as scrap from a furniture maker."

Joel attached two pictures of a Towell panel plane, one of which is reproduced on the back cover of this issue and asked Mick some specific questions.

"Mick the major question I have is the front bun. Murland assured me it was original but after seeing photos from you I am not so sure. However it does have a strike button and the top bun is dented so if it was a modification it's an old one. Also the major difference between this plane and the others is that the rear infill is made of two pieces of wood. The first forms a 20 degree or so incline at the bed area and then fills the back part of the plane. The second piece sits on top of the first piece and brings the bed to a 45 (or so angle) from the 20 degrees. If the other plane has this feature it is not noted in the article and it is most interesting. There is no metal "frog" piece. It just occurred to me that the second piece might have been a repair - but I don't think so - way to well done - but I will look at the plane again.

Also the dovetailing is kind of sloppy. So it is possible with this more primitive - or at least less smart rear infill and the sloppy dovetailing that this plane is earlier than the others and the front infill is just a different design. - one closer in final shape to a front of a regular wooden panel plane- I don't know."

The discussion is now open!

The editor looks forward to comments from Mick Doherty and Fred Murrell.

Perhaps Joel will send details of his Robert Towell planes for publication in News.

Atkins Saws Letter.



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When you are ready to buy saws, you will find the catalog section in the back of the book on pages 22 - 31 describing Atkins SILVER STEEL Saws, either with or without the Perfection Handle, as well as saw tools and saw specialties.

Remember that E. C. Atkins and Company have been responsible for most of the improvements in saws, and during our long experience in their manufacture, dating back to 1857, we have learned to scientifically fabricate steel to the highest degree of perfection, so that when you buy any product with the Atkins' name, you are sure of getting the best value for your money.

It pays in the long run to buy quality - in fact it is the cheapest in the end. Your hardware dealer will show you why.

Yours very truly,

H. C. ATKINS AND COMPANY,

H. C. Gladding
1st Vice President,
Director of Sales.

"A Perfect Saw For Every Purpose"

Remnants of an early plane



Recently I was given a handful of bits and pieces. Amongst them were some parts that obviously belonged together. They were the remnants of a Meriden Malleable Iron Co. smoothing plane. Apart from the broken handle they were in good condition overall.

The Meriden Malleable Iron Co. smoothing planes were manufactured in the mid 1880's. They were eight inches long by two inches wide and came with an adjustable throat and a double iron. The back iron was stamped with four patent dates. Quite a quality plane for that era.

Where is the rest of the plane? No doubt dropped, broken and discarded. The blade is possibly still lying at the bottom of a box as a worn out paint scraper.

The Meriden Smoothing Plane Parts. (above)
It is to be hoped one day that these remnants of a quality plane will help to complete or upgrade a relative.

Note: The Meriden Malleable Iron Co. operated in Meriden, Connecticut, USA and was first set up in July 21st, 1868 manufacturing iron and brass castings, moving on to house fittings and builders hardware. They added metallic planes to their manufacturing around 1883 and were still manufacturing these through 1888. They ceased all operations in 1901 and closed shop.

Reference

Pages 197 & 198 Patented Transitional & Metallic Planes in America 1827-1927
Roger K. Smith
Athol, Mass. 01331

"WARRANTED CAST STEEL"

Clynt Sheehy

Readers of this Newsletter will have come across Sheffield chisels and plane blades marked "Warranted Cast Steel".

The tools themselves were not cast to their present shape but they (or their cutting edges) were forged or rolled from ingots poured from a relatively small closed clay (or more recently graphite) crucible. High quality tools were made from cast steel for about 200 years up until the mid-1950s although the earlier of these cast steels were made using other processes (see e.g., Reference 1) and the later cast steels were made from ingots poured from steel made in larger capacity electric furnaces.

I have a Ward & Payne firmer gouge marked "Cast Steel" which I purchased new in 1955 from one of the then best hardware stores in Sydney – Anthony Horden's basement, downstairs from the Pitt Street entrance. It may have been old stock ! However, the term "Warranted Cast Steel" is traditionally taken to mean crucible steel. Post-World War I, edge tools have been increasingly rolled or forged from ingots cast from alloy steels made in electric arc or induction furnaces.

Crucible steel appears to have originated in India before 1000 AD and was exported to Europe through Damascus. (Some sources argue that high quality crucible steel was being produced in India as early as 300 BC – Wootz or Pulad steel.) The process was re-established by Benjamin Huntsman in Sheffield in 1742. The difficulties in obtaining uniform structure and composition, even by repeated hammering, lead Huntsman to the idea of remelting crude steel in crucibles to make it more uniform. Most references say that Huntsman developed the crucible process to make better quality steel for clock springs; however it was quickly taken up by edge tool makers. (A history of Huntsman's background and work is given in Reference 1.)

The materials melted in crucibles in the earlier days of the process were blister steel or wrought iron together with Carbon (in the form of charcoal) and fluxes. This remelting operation eliminated the slag particles and produced a high quality steel. More recently other scrap steels were used in the process. (Note: This article is not intended to be a discussion of the different types of iron and steel. For descriptions of wrought iron and blister steel, etc., see the references at the end of this article.)

The lidded crucibles were of refractory clay to which graphite was often added. They varied from 13 to 20 inches (330 to 510 mm) in height, were about 9 inches (230 mm) in diameter and held from 56 to 80 lb of metal (25 to 36 kg). The crucibles were lidded so that the Carbon content did not change during the process. The furnaces usually heated a number of crucibles with the molten steel being progressively decanted into the ingots.

Crucible steels are of first-class quality and their manufacture is very expensive. The process is now only used for the production of small quantities at a time of high-grade alloy steels (by the addition of elements in required proportions for specialized or experimental purposes), which may not be available from the suppliers of commercial alloy steels. These special steels may involve the alloying of various percentages of elements such as Beryllium, Silicon, Manganese, Nickel, Titanium, Aluminium, Molybdenum, Tungsten, Vanadium, Cobalt and Chromium.

Because crucible steels were always expensive to produce, it was usually the earlier practice to hot forge-weld a relatively thin plate of cast steel onto a backing of softer, lower quality wrought iron which constituted the bulk of the blade. Have a look at the side and face of an old chisel or plane blade marked "Warranted Cast Steel" and you may be able to discern the different shade of grey being the welded-on cast steel cutting edge. The softer wrought iron backing is more able to absorb the impacts of use while the cast steel edge is optimally heat-treated (see below) for cutting and is accordingly less tough than the backing. Also the soft wrought iron backing has the added advantage of not taking as long to grind than if the blade were wholly made of cast steel. The more recent tool steel thinner blades of modern metal planes are more liable to chatter because they don't have the impact-absorbing bulk of the earlier, thicker, bi-metal blades. As previously mentioned, many of the one-piece tools marked "Cast Steel" up until the immediate post-World War II era were rolled or forged from ingots cast from steel made in larger batches of steel made in electric furnaces.

The tools would, of course, be correctly hardened and tempered before sale. They are hardened by heating to red heat (785°C) and quenched in various liquids. This changes the crystal structure, entrapping the Carbon atoms. They are tempered to toughen them and reduce their brittleness. The tempering reduces their hardness until the appropriate balance between hardness and toughness is achieved. The process also has the outcome of releasing the locked-up stresses induced by hardening. The tempering is done by heating to a specific temperature and quenching. For plane irons, this temperature is about 260°C and for wood chisels, 275°C. Manufacturers saturate the steel at these temperatures in controlled ovens; for small tools, tempering colours provide a guide. (Members attending The Traditional Tools Group's Metalworking for Woodworkers workshops are instructed in the techniques of heat treatment and it is not discussed further here.)

Quality of Steel

It is often said that more recent tools are not made from the same quality steel as those made before World War I from crucible steel.

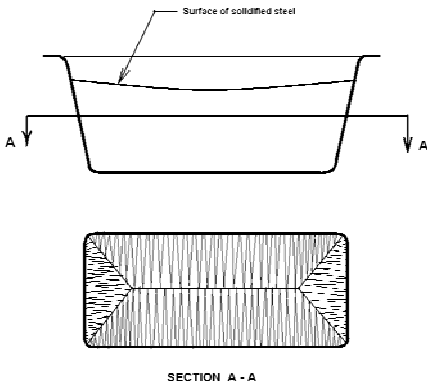
Top quality modern tools, from reputable suppliers, are made from alloy steels subjected to very stringent quality controls.

But "steels ain't steels". Tools are made to a price and some manufacturers also make a range of "economy" tools for the home handyman. Whilst the best crucible steels made by highly skilled exponents of the craft are unmatched in quality, their production, "by hand", required many factors to be "spot on". These factors include:

1. **Temperature of melt.** If too hot, whilst you get a good melt of the Carbon, it produces coarse grained steel which is inferior for tool making. If too cold you don't get a complete Carbon melt and it also results in inclusions in the steel which are detrimental to tool making.
2. **Clay from which the crucible was made.** The best English clay originally came from the region of Stourbridge near Birmingham. This clay could withstand the 1600°C of the molten metal and also transfer a minute amount of silicate to the steel. The crucibles needed to be strong enough to be able to be lifted with special tongs without breaking while full of liquid steel which, of course, would be a very dangerous situation. Usually, each steelmaker made his own crucibles which became thinner with use and normally only lasted for about three batches of steel. More recently, graphite crucibles were used which could withstand up to six steel batches. Thus the cost of crucibles was a significant component of the cost of making the steel.
3. A match between the **Carbon content of the steel being remelted** in the crucible and the amount of Carbon induced into the melt. The initial charge could have consisted of "blister steel" (See Reference 1), wrought iron or other scrap steel. The Carbon content of the finished cast steel had to precisely match the use to which the steel was to be put; for wood chisels and plane blades this is 1.0% to 1.1%, by weight, of Carbon. The Carbon range would be from a minimum of 0.7% for stamping dies (which have to absorb impacts) to a maximum of 1.4% for razors (which have to best hold an edge); the higher the Carbon content, the more brittle the steel (presuming it is subsequently tempered correctly). Steels with Carbon contents in the range of 0.4 to 1.4% are heat-treatable. Above 1.4% it's more like cast iron.
4. **The purity of the steel** in the initial charge; it should ideally have a very low Sulphur and Phosphorus content as both these impurities promote brittle fracture in the tools made from the steel.
5. **Time spent in the molten state.** The steel was kept molten for from 20 minutes to an hour; if it were poured when just molten it would be full of blowholes. By waiting, absorption of silicon (from the silica in the clay crucible) occurred and this degasified and "killed" the steel. A small amount of manganese or aluminium can dramatically and advantageously reduce the standing time.

6. **The speed of cooling of the ingot in the mould.** Cooling is more rapid against the sides of a metallic mould (moulds were often coated with refractory material to reduce the speed of solidification).

Consider a mould of the shape shown below. The growth of crystals, which commences at the sides of the mould, is shown diagrammatically. Solidification commences at the sides of the mould and the crystallization is impeded by the advance of crystals from the other sides. In the corners of the mould, the advance is impeded sooner by crystallization from the adjacent side.



The planes of intersection of crystallization constitute zones of weakness in the ingot which, even after subsequent rolling or forging, may sometimes leave a residual weakness in the tool made from the rolled plate.

Let's hark back to the assertion that old edge tools are made from better steel than modern tools in terms of their ability to take and hold an edge. With all the ways faults may have occurred during the manufacture of cast steel, the writer of Reference 1 considers that old tools made from defective steel would have long since

broken in use so that those surviving tools marked "Warranted Cast Steel" will be superb examples of the steelmaker's craft.

Later Steel-making Methods

The purpose of this article was to discuss "Warranted Cast Steel". Those interested in the many modern steel-making methods should see, for example, Reference 8, below. Suffice to say that very little crucible steel was used for structural engineering and for this purpose; cast and wrought iron were supplanted by steel from the Bessemer process which, itself, was overtaken by the Siemens-Martin open hearth, electric arc and induction processes.

Bessemer steel was unsuitable for tool making as the process "burnt out" key trace elements and sent them up the flue, see Reference 1.

The larger volume (1 to 5 tonne) electric furnaces made the production of solid cast steel tools economically viable; however the word "Warranted" tended to be dropped from those cast steel tools whose steel did not originate in a small crucible. Also the welding of a cast steel edge onto a backing of softer steel became more difficult (and therefore less economical) with the advent of the inclusion of tungsten and chromium in the melt.

References and Bibliography :

1. "Iron and Steel Manufacturing: 1300–1865", The Davistown Museum, <http://www.davistownmuseum.org/TDMtoolHistory.htm>
2. H. Wright Baker (Editor), "Modern Workshop Technology", Part 1, Cleaver-Hume Press Ltd., London; 2nd Edition, 1956.
3. "The Heat Treatment of Tool Steel" by Harry Brearley, Longmans-Green & Co., London, 1918.
4. "Some 19th Century English Woodworking Tools" by Kenneth D. Roberts, Bookcrafters, Chelsea, Michigan, 1980.
5. "Elements of Physical Metallurgy" by Albert G. Guy, Addison-Wesley, Reading, Massachusetts, 1959.
6. "Materialising Sheffield", <http://www.hrionline.ac.uk/huntsman>
7. "The Processes of Iron and Steel Making", <http://www.topforge.co.uk/Processes.htm>
8. "Steel-making Processes", <http://www.key-to-steel.com>

My thanks to John Bates and Bob Crosbie who provided helpful input to this article.

It has been over 40 years since I studied metallurgy as part of my engineering course at UNSW and I would certainly welcome any comments and criticism on the content of this article. They may be sent through the "Contact Us" link on TTTG's website: www.tttg.org.au or by writing to the address inside the cover of this Newsletter.

With the Saw Sharpening Workshop coming up, a few preparatory notes on rip, crosscut and dovetail saws to help people get up and running quickly. When starting on saw sharpening, don't pick up a dovetail saw, unless you want a difficult time. Start with a large toothed rip saw if possible. This will typically be 5 - 6 ppi (points per *inch*, sorry about the imperial). You will also hear tpi (teeth per inch), usually used incorrectly; tpi are almost always one number less than ppi, because tpi is whole teeth measured from gullet to gullet, whereas ppi is measured from tooth tip to tip. In catalogues ppi is typically used; some saws have the factory ppi stamped on the blade below the handle. Just to add interest you will sometimes find, for large teeth, half a point, eg 4.5 ppi.

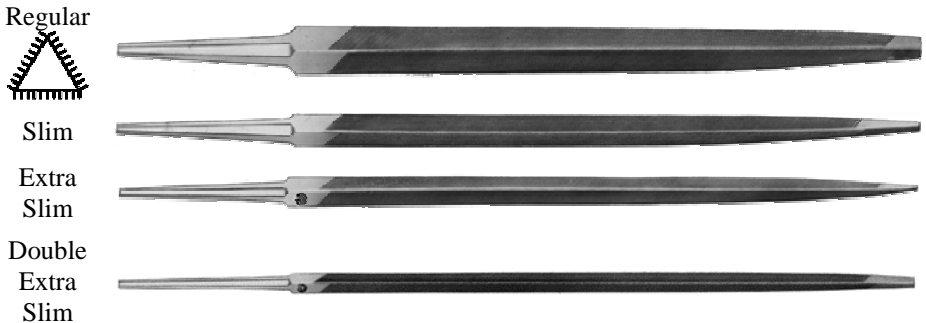
Essential for saw sharpening are triangular files. These are becoming hard to find, although Bunnings are selling some Bahco files at around \$8+ each, handled. The Complete Hardware, Rowe Street Eastwood also sells saw files and will order in if asked. Unhandled files in some sizes are available at McJings (\$8+ unhandled), Blackwoods, and Mick Moyle. They come up at markets from time to time. Taper files *do not* last a long time; the teeth do not so much wear out, as the edge wears and you get rounded gullet bottoms. You *know* when a file is getting dull from the screeching sound it makes as you use it. You do have three edges to use, so a technique I use is to mark the opposite face of the corner I am using with a permanent marker dot; when that corner gets dull, I mark the next one with two dots and use that, and so on. This enables me to keep track of how files are used.

Old saw files make good dovetail chisels; simply grind off the teeth (at least the first inch or so), grind a bevel, hone and there you are. No need to spend \$100+ on a Japanese dovetail chisel, and files (old ones anyway) are made from good steel. Remember to flatten the three corners slightly; after grinding they are razor sharp and slice fingers (even after President Bob explained this I still forgot until...).

There are two types of triangular files – single cut Taper files, usually called Taper Saw Files in catalogues, and Three Square files that are double cut (Mick Moyle has/had some of these at \$4+ each unhandled, machinist suppliers will also stock them. Blackwoods have a wide range). Looking firstly at single cut (the table below is imperial - metric, i.e. Bahco vary slightly – by around $\frac{1}{32}$ " compared to below, and there are small variations between manufacturers, these dimensions are from the Wiltshire Catalogue 1945 – the most complete list I have seen). The McPherson's Catalogue 1952 also lists a "Heavy Taper" in 3" to 8" lengths, no illustration or width listed; 6", 7" sizes still available. " - " means length not/never available:

Length	Regular Width	Slim Width	Extra Slim Width	Double-Extra Slim Width
3"	7/32"	5/32"	-	-
3½"	9/32"	3/16"	-	-
4"	11/32"	7/32"	3/16"	5/32"
4½"	3/8"	1/4"	7/32"	11/64"
5"	13/32"	9/32"	7/32"	3/16"
5½"	7/16"	5/16"	1/4"	7/32"
6"	15/32"	11/32"	9/32"	7/32"
7"	17/32"	13/32"	11/32"	1/4"
8"	19/32"	15/32"	13/32"	5/16"
10"	23/32"	19/32"	-	-
12"	27/32"	-	-	-

An illustration of the width differences between the tapers, Taper files are typically second cut:



All files are made with 60° angles, and therefore you can use almost any file on any saw (very small files may not be big enough for saws with few ppi). So why the variety?

1. Generally you want a file that is roughly twice the size of the gullet; that way you get three corners for sharpening. In practice the corners round over and wear well before the file teeth, so this is not critical unless the file is too small.
2. Large files tend to obscure the teeth you are working on, so make it difficult to see what you are doing – important with aging eyes in particular.

3. Longer files are coarser than shorter files for the same taper width, so leave a rougher edge. Also the corners are sharper on the narrower files compared to the wider, especially Regular, files.
4. With smaller saws with small teeth (the smaller the saw the more ppi usually), the larger files tend to round over the bottom of the gullet. In addition, the finer the file, the less the vibration.

Three Square Files are triangular in cross-section, like Tapers, but are double cut and have *fairly sharp corners* that are slightly set and cut. These files are for general use by machinists for filing internal angles more acute than the right angle, for clearing out square corners and filing taps and cutters. There is a range of types and sizes available; you are unlikely to particularly look for

these files because they are somewhat more expensive than regular taper files, but if you stumble across them... They come in lengths from 4" to 12", and with degrees of coarseness. American Pattern files come as bastard, second cut, smooth - similar cuts to files generally (sizes - only Regular width is available - are in the table, note that the brands vary slightly – perhaps a US-Europe or imperial-metric difference). Note that the Wiltshire Catalogue indicates that larger lengths may have uncut edges, this may no longer be the case. Swiss Pattern files come in a wide range of cuts from 00 (Bastard)-0 (Second cut)-1-2 (Smooth)-3-4-5-6, are slightly narrower in width than American Pattern files, come to a *fine point*, and usually cost more (but wait for the Chinese files to really hit the market). Typically three square files cut more aggressively, and are used with heavier pressure than single cut files, but the latter give a smoother finish. The sharp corners probably enable Clynt to get away with using large three square files on almost all saws. Nicholson do/did make double cut files in a limited range of taper widths in 6" and 7" lengths for use in saw filing machines; these are probably different to machinist files.

3 Square Length	Width
4"	$\frac{1}{4}"$, $\frac{5}{16}"$
6"	$\frac{7}{16}"$, $\frac{15}{32}"$
8"	$\frac{39}{64}"$, $\frac{5}{8}"$
10"	$\frac{11}{16}"$, $\frac{3}{4}"$
12"	$\frac{27}{32}"$, 1"

The only time I have seen three square files mentioned for saw sharpening is in the instructions for the Ulmia Bowsaw; and for saw filing machines. Needle files are typically (but not always) Three Square Swiss Pattern, and recommended for fine dovetail saws; for example one brand of needle file (they are typically overall length $6\frac{1}{4}"$, 3" useable) has a maximum width around $\frac{1}{2}"$ (2.9mm). If you actually sharpen a fine dovetail saw (remember most dovetail saws are 15ppi plus), you will *only* ever use it for *nice* dovetails, because you will not want to sharpen it *again* in a hurry. Bob will demonstrate dovetail saw sharpening at the Workshop. Jewellers' supply shops should be a good source of quality needle files in cuts 00-6. Interesting to see how diamond needle files would/might work.

Use the following table to select the appropriate saw file. Various sources give different recommendations, this table more or less covers the range of those recommendations, i.e. it is not critical to get it *exactly* right. For example Disston recommend 4½" Slim for everything above 10ppi, but that *was* the finest file they made. Now where do you use a 3" or 5" or 10" Regular file? The files that are available according to US websites (usually *not* fully available here), but that do not appear on anyone's recommendation are shown in *bracketed italic* roughly where they would fall. I do not see too many people using 3" or 4" Regular files, not sure when I will get to use my stock of 4½" Regular. Remember three square files are Regular (Nicholson have some double cut taper files in Regular, Slim and Extra Slim, however probably not readily available in Australia).

ppi	Regular	Slim	X Slim	2X Slim
4 or less	7-8" [10"]	7-8" [10"]		
5-5½	7"	7"		
6	6"	7"		
7	[5"]	6-7"	[8"]	
8	[5"]	6"	7"	8"
9	[4-4½"]	5-5½"	6"	7"
10	[4"]	4½-5"	5-6"	6-7"
11	[3½"]	4-4½"	5"	6"
12	[3½"]	4"	4-5"	5-6"
13-14	[3"]	4"	4-4½"	5"
15	[3"]	4"	4"	4"
16-18		[3"]		4"
19+	Use Needle files, Nicholson do make a 2" three square file which could be interesting			

For general rip or cross-cut saws a 6" slim taper looks good if you are buying a file – and is readily available.

Hard to find in Australia are double-ended saw files. Pictured is a 6" one from a UK website with a removable handle; Bahco (sizes available in table, Extra Slim/2X Slim judging by the widths), Nicholson, Vallorbe and others supply these files, but my research suggests only in the UK for some reason. Lengths 6-7-8-9-10" are available in large quantities from Shanghai,



Length mm	Width mm/inch
150	6 ¼"
175	6 ¼"
200	7 9/32"

quality? These files were probably never common; the Wiltshire Catalogue 1945 indicates that they are made "information upon request". Double-ended files are quite useful because you get six edges. Whilst the edges are shorter, this is not a major problem. Typically people do not use the section of the file near the handle, and with the double-enders you do not use the half of the file near the handle either.

Do not use saw files unhandled. The plastic handles are ok, although presumably add to the cost. Making your own is not difficult even without a lathe. Any wood will do, the handle does not take a pounding, it is there to stop you putting the tang through your hand. In a pinch, corks work, especially the plastic variety, champagne corks are best. Drill a hole in the centre of the cork, marking the centre if you need to, and ram the tang in. I often use off-cuts of Western Red Cedar, soft and easy to work – just throw them away when the hole widens, or drill a hole in both ends. Dowel off-cuts also work well. To ensure the tang stays put, a dab of epoxy is in order. Then shape the wood to suit your hand. The files are much easier to use if you grab both ends. Gets a bit hard on the hand holding the pointy end, so a mini-handle is useful (an old golf glove is also useful if you keep on hitting your hand against the newly sharpened saw teeth, or scratching your fingers on the file teeth). The mini-handle can be a cork or a small piece of dowel or off-cut with a hole drilled in the centre. For cross cut saws you can draw a guideline on the wood to help with consistent angles.

You need a saw vice of some kind. At the Workshop Bob will provide a couple of lengths of radiata to stick in a woodworking vice; this is however the minimalist approach and whilst it works, places the saw a bit low for comfortable use. You may be able to pick up a metal saw vice, and they do place the saw at a good height. Or make your own vice before the Workshop. If you have the timber cut and ready, Bob may even help you finish it off at the Workshop. There are some ideas and plans for making a saw vice in the first reference below.

You will also need a smooth or second cut Millsaw file for jointing, these are readily available. You will find a saw set handy; however they will be available for use at the workshop. You will need to provide your own files, these are consumables; *some* will be available for sale on the day; better to purchase before the workshop.

Some References:

<http://www.jlatech.com/rob/Woodworking/Knowledge%20Base%20Saws.htm> is a listing of Internet saw resources, including most of those below.

<http://www.norsewoodsmith.com/ww/sawbasics/sawbasics.htm>

<http://www.vintagesaws.com/library/primer/sharp.html>, this includes references

http://www.cianperez.com/Wood/WoodDocs/Wood_How_To/Smalser_on_Sharpening_Handsaws.htm

http://www.geocities.com/plybench/shop_projects.html

http://www.geocities.com/plybench/saw_sharpen.html

Books:

The Complete Guide to Sharpening by Leonard Lee

Classic Hand Tools by Garrett Hack, chapter 10. Most old woodworking texts have a chapter on the subject;

Audel's is one of the best. Disston, Atkins and Spear & Jackson also published guides.

Inlaying Squares.

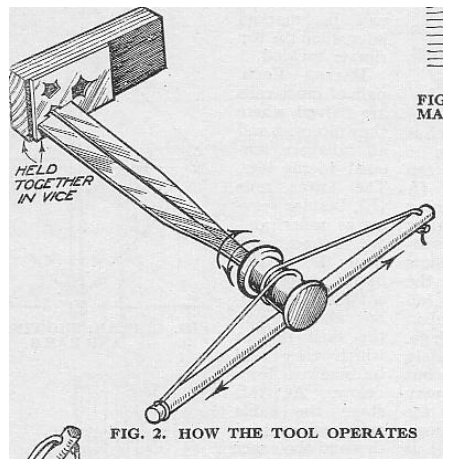
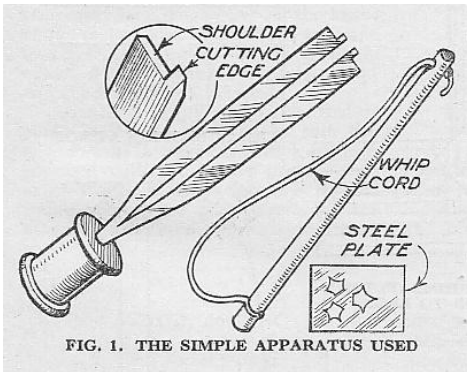
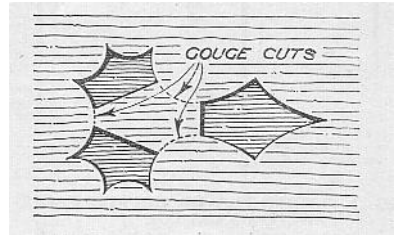
How were the brass rivets in Try and Mitre Squares inlayed?

The tools have been illustrated but how were these tools used?

What controlled the depth of cut?

The answers are in an article in the May 1938 Woodworker magazine.

(The tool is called a Passer Drill and is also illustrated in Dictionary of Woodworking Tools by R.A.Salaman)



The successful use of this apparatus depended on two auxiliary tools.

- The hardened steel plate to guide the cutters and to control the depth of cut.
- A gouge to finish the profile.

Simple when you know how. The author observed that these squares were inlayed in a matter of minutes. I can't help thinking that something has been omitted. Perhaps a film or series of photographs illustrating all the steps in inlaying these squares will surface one day. An illustration of the gouge would have been useful.

How were the brass rivets made and for that matter what about the steel plates?

MORE FROM SMITH'S KEY.

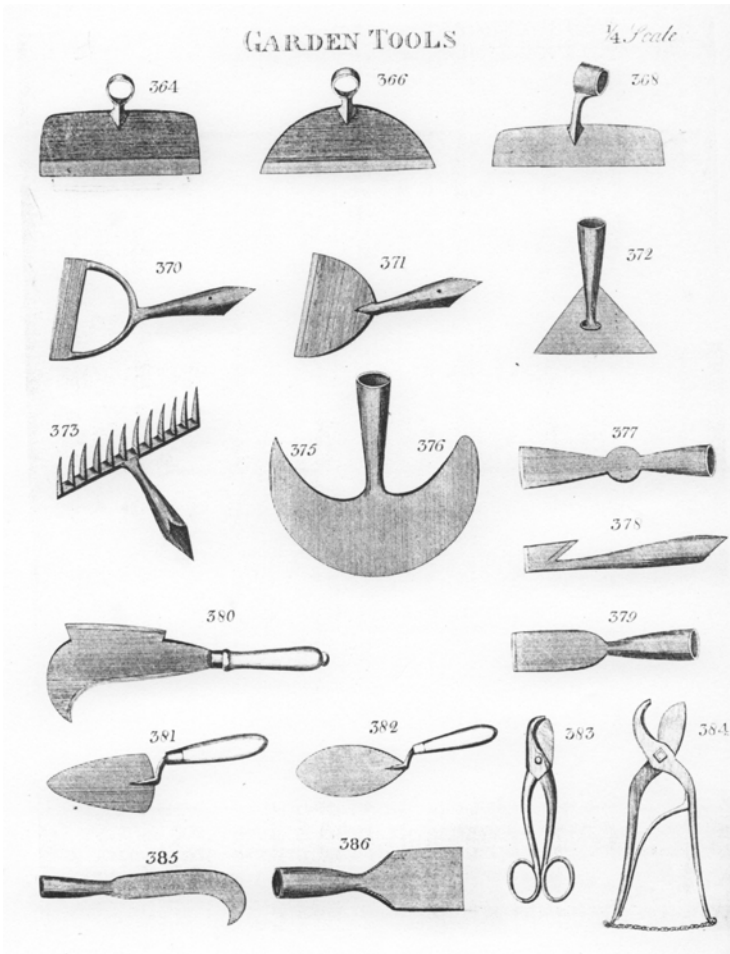
Clynt Sheehy

"Smith's Key" was a catalogue, released in 1816, showing products manufactured in Sheffield, mainly tools and cutlery.

A fuller description of "The Key" was given in the February Newsletter.

Continuing the theme of featuring tools for members with special interest, in this issue is a copy of a plate from "the Key" showing garden tools.

Silas and "The Old Mole", these are for you:



THE LEDGER

New Members

On behalf of the TTTG Executive and Members, a welcome is extended to new Members :-

David Harrison	(M408)	Corey Snell	(M413)
Rick Rycroft	(M409)	Rob Strauss	(M414)
Graham Holland	(M410)	Chris Stimson	(M415)
John Kirkwood	(M411)	Denis Collins	(M416)
Gianni Catalinotto	(M412)	Daryl Lawrence	(M417)
		Geoff Hansen	(M418)

All but one of these new members joined after being impressed by TTTG workshops !

Workshop Open Day

TTTG's next workshop is the Open Day Workshop to be held on Sunday, 23rd April, 2006 at Asquith Boys' High School starting at 9:30 am. Be shown any skill, ask about anything, rap with other members ! And on 21st May we will be holding the ever-popular Saw Sharpening Workshop. For info on either workshop, 'phone TTTG Events Co-ordinator, Peter Evans, on 0419 245 699 or President, Bob Crosbie, 9869 7487; Members \$20, non-members \$40. (Note: non-members may join on the day. By paying \$50 they get both the workshop and the enormous benefits of membership until 30/6/'07 - What incredible value !)

Friends Interested in Tools ?

Do you have friends interested in tools, their use or their history? If so, why not urge them to join The Traditional Tools Group? If they join in April, May or June this year, they will receive for their very nominal \$30 annual subscription, membership up until 30th June, 2007.

2006 – 07 Memberships

Note that 2006-07 membership subscriptions fall due on 1st July, 2006. – See adjacent Subscription Renewal Notice. TTTG's new policy, similar to other clubs, is that if you haven't paid within a month of the due date, then you won't receive the subsequent Newsletter but the Hon. Secretary will send you a polite reminder. This doesn't necessarily mean that you'll get the missed newsletter as print runs are limited.

Clynt Sheehy
Hon. Treasurer

TTTG SUBSCRIPTION RENEWAL NOTICE

**2006 – 07 SUBSCRIPTIONS
FALL DUE ON 1st JULY, 2005**
(TTTG Memberships are based on the financial year
1st July to 30th June)

**PLEASE FORWARD A CHEQUE FOR *\$30
(MADE OUT TO TTTG Inc.) TO :**

**The Treasurer
TTTG Inc.
PO Box N240
ROYAL EXCHANGE
SYDNEY NSW 1225**

* If you live more than 50 km from Sydney or you are a pensioner, then you MAY CHOOSE TO PAY only \$25

Please advise if you have CHANGED your address from that shown on your Newsletter address label.

It would be helpful if you would write your name and Membership Number on the back of your cheque. (See top left of your Newsletter envelope address label for your Membership Number.)

Should you require a receipt, please enclose a stamped self-addressed envelope with your payment or see the Hon. Treasurer, Clynt Sheehy, at a TTTG meeting.

The Treasurer has ALREADY RECEIVED 2006-07 subscription payments from the following prompt-paying members (as at 20th March, 2006).

**10 113 168 241 286 334 414 415 416 417 418
77 163 206**

These members should ignore this notice.

The Editor's 1937 Circular Saw.

In the perhaps delusional belief that this will be read by sympathetic individuals I am going to share one of my adventures. In mitigation I could plead a weakness for old machinery but I will let the readers form their own opinions.

I first had a quick look at a sad old circular saw while I was making an offer on a Mathieson "Star" Mortising Machine. As often is the case, this was a complicated transaction.

Part of the deal was my giving advice on the prices to put on the tools and junk to be offered "next Saturday at the Garage Sale".

Perhaps it will help if I back track and give some back ground information. The daughter of a deceased builder was selling the stuff in the garage. Now all builders' relations seem to inherent the same key phrases, "only brought top quality", "he used it the day before he died", "no one has been in his workshop for thirty years".

While she was considering my offer I had a look around, working on the principle that this approach usually pays off. The circular saw looked a real dog, mainly because it had a grinding wheel fitted to the arbor. The wheel was worn to about 70mm diameter, the throat plate was missing as was the riving knife and crown guard.

Builders always eventually drop bags of concrete on flat surfaces, such as saw tables. This is why I crawled under the saw, looking for cracks in the casting. But this wasn't so easy as the machine was on a heavy crude hardwood frame. I missed the crack but could just read the manufacturer's plate. "SKF Sealed Bearings" and Plainfield, N.J."

When I came to pick up the Star Mortiser I played my hand and sounded the woman out about the Circular Saw. She obviously wanted to get rid of the saw, and I had the transport! All I knew was that the saw was cheap, in poor condition, American, had sealed bearings and probably made in 1940, give or take ten years.

Next morning there was a bit of speculation about how two great lumps of junk had landed in the Metal Work Room. The other teachers recognized the Circular Saw as a Circular Saw but the Mortiser drew universal blanks.

All this happened about four years ago. I immediately got rid of the hardwood stand and removed the grinding wheel. The arbor was still running true but the tilt and rise and fall mechanism was clogged with dust and dirt. When I unbolted the saw table I found the crack. Even worse I found the builder's innovative repair!

As usual Jim did a great job for me welding these cracks. While I was waiting I made up some missing parts and oiled everything.

Then the old circular saw went into storage for the next three years or so.

Then late last year I was asked to help sell some old machines from a school. Among these was a Hyco Circular Saw. At first I thought I would keep the Hyco and get rid of the Circular Saw I had in storage. So I put the two saws side by side. First impression was that the older saw was bigger, larger table and a ten -inch as against eight-inch blade. Close inspection of the Hyco revealed the arbor was in poor condition. I then had a close look at the arbor of the old saw. This was still full of grease and ran true. The table on this saw was also larger than the Hyco. Also the old saw's rise and fall mechanism was a nice piece of engineering. Time for some serious research.

The Internet is great for finding out information about anything American. Any old American machinery is certain to have a web site. The badge on the saw gave all the information needed. Driver Power Tools Walker Turner Company Inc. Plainfield, N.J. The rise and fall mechanism had a patent number. I clicked on the US Patent Office site and every thing began to fall into place. The saw was probably made in the 1930s. Next I found the Driver Power Tools Leaflets on an old machinery site. From this I printed out the 1936 Driver Power Tools Catalogue. I also found some Driver adverts in 1930s Woodworker and Popular Mechanics magazines.

So why did I buy this saw? I could put up all sorts of spurious arguments. The truth is that I like old machines, getting things cheaply and enjoy putting them back into service. When will the Driver Circular Saw be back in Service? It comes down to when I can find the time to put it back together!

You will have to wait for **The Editor's 1937 Circular Saw. Part Two.**



Kiama Woodcraft Group Inc.

Some of TTTG's South Coast members have represented TTTG at Kiama Woodcraft Group's Expo. Kiama resident John Daniel sent the following comments to the editor, "Thanks for the Kiama Woodcraft's advert in the last Newsletter. If I do say so myself it reads well. The group's publicity man was appreciative. The Expo is always a well organised event and does our little town proud."

No doubt flushed with the success of the advert he wrote John added this suggestion, "Just a suggestion, perhaps we could make the Kiama Woodcraft Group Inc. an honorary member. They do not charge TTTG for the space at the Expo and give TTTG a great venue for spreading the word about the group and our activities. Perhaps the Committee would consider it".

The editor put the following resolution to the March 2006 Committee Meeting,

"That TTTG Inc. extends to the Kiama Woodcraft Group Inc associate membership of TTTG, and that accordingly Kiama Woodcraft Group Inc. be included on the TTTG free mailing list".

The above was passed without dissent. The Kiama Woodcraft Group Inc. will receive a copy of News and our south coast members will continue to promote links between both groups.

TTTG members interested in the Kiama Woodcraft Group Inc. Can write to the group at Box 572 Kiama NSW 2533 or phone Len Harrison on 42 612072.

Australian Wood Review. Collector Special. 50th Edition.

The latest issue of the Australian Wood Review includes articles on tool collectors.

The collectors featured are Chris Beaver, David Cummings and Fred Murrell.

The articles are well written and the photographs are superb.

All TTTG members should buy a copy!

The magazine also has an article on the Australian Wood Collection.

As the saying go "and lots more worth reading", at only \$8.95 why not treat your self?

Fred Murrell is a TTTG Committee member who has been a member since TTTG started and has held most Committee positions over the years.

The writer of the article on Fred's collection, Linda Nathan, was obviously impressed.

Linda is the Editor of AWR so one of the TTTG Committee will now invite her to attend a Meeting or a TTTG Workshop.

I'm not sure if the other collectors are TTTG members but if not we will work on it!



The Towell Panel Plane. See story page 12