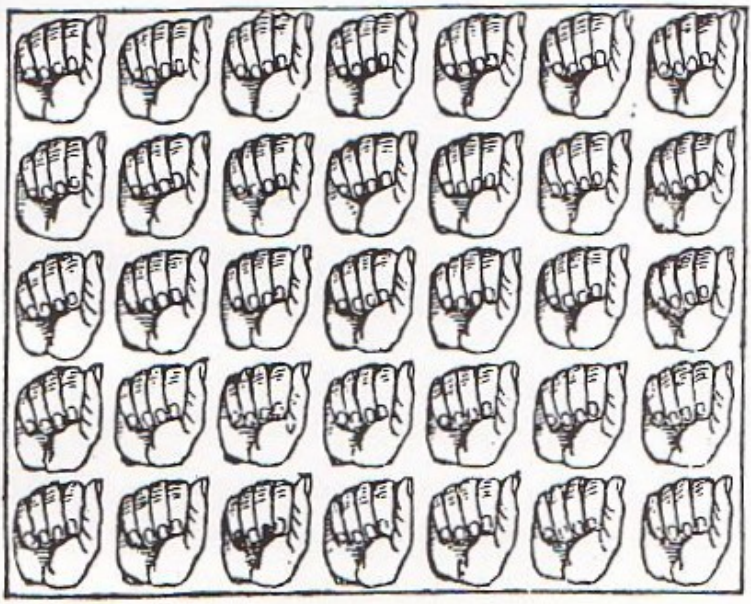

TTTG Inc. Newsletter Number 77. June 2004.
The Traditional Tools Group (Inc.)

www.tttg.org.au

THE TRADITIONAL TOOLS GROUP (Inc.)

TTTG Newsletter Number 77. June 2004.

Contents.

Cover: See page 5

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Postal Address.

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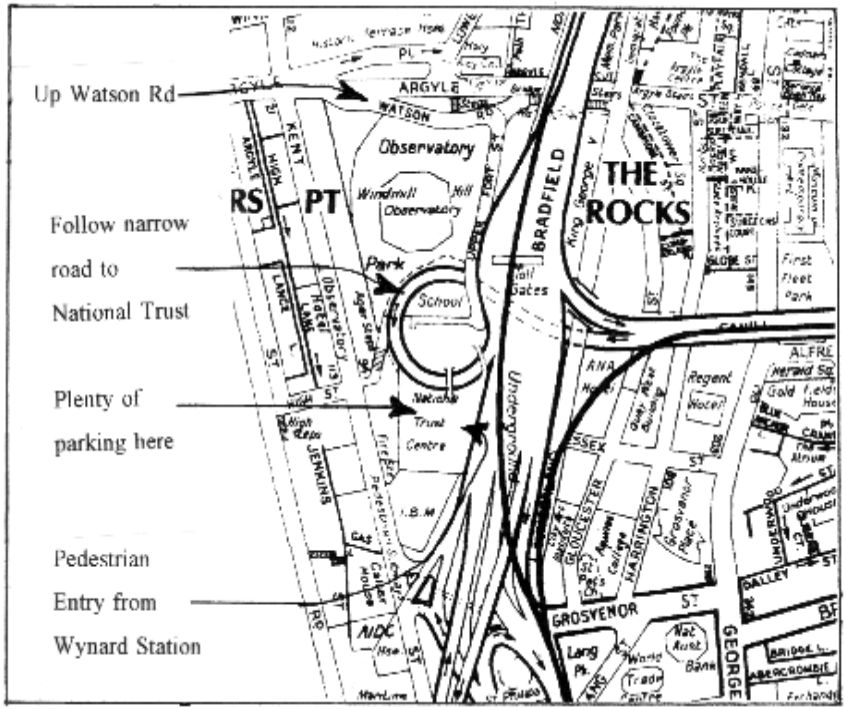
tttg.org.au

<u>Next Meeting</u> **Tuesday 8th June 2004**
National Trust Centre, Annie Wyatt Room
Observatory Hill. Commencing at 7:00pm



PROGRAMME

1. **THE MEETING WILL BE SHORTLY AFTER THE WORKING WITH WOOD SHOW AND THE SHOW HIGHLIGHTS WILL BE DISCUSSED PLUS A DISPLAY OF NEW PLANES MADE BY OUR MEMBERS, RECONDITIONED PLANES BY JIM DAVEY AND SOME COMMERCIALLY AVAILABLE PLANES.**
2. **THIS WILL BE FOLLOWED BY FRED'S WOTSIT.**
3. **THEN OUR FUN AUCTION. (See the new auction rules overleaf).**
4. **SUPPER BY MARIO DATO.**

Next Meeting.
National Trust Centre. **Tuesday June 8.**
Annie Wyatt Room.
Observatory Hill. The Rocks. Commencing at **7:00 pm.**

Topic: **After the Working With Wood Show**
AND.
-A display of the latest planes made by TTTG members.
David Chee and other TTTG members.
-A selection of reconditioned planes by Jim Davey.
-Plus some commercially available planes.

The topic will be open to audience discussion facilitated by our TTTG President who will attempt to maintain order!

The Auction will follow. Potential vendors: we must ask that you please contact Bob Crosbie or Mike Williams beforehand (at least a day's notice) of what you intend to bring in for auction so we can organise to finish somewhere near time.

Previous Meeting.
National Trust Centre. **Tuesday 13th April**

Topic: Rebuilding Shakespeare's Globe Theatre in London.
Speaker: Matt Fenn
Matt had the audience spell-bound with his photographs of traditional carpenter's work. No gauged and stress graded pine and nail-guns but well selected well prepared timbers united by structurally sound joints.
Even though his photos of The Globe were in storage Matt had images of recent work in Australian timbers. This is about as far away from current light framing and industrialised construction as it is possible to travel.
The talk was a reminder that old skills are being passed on and that when everything reaches crisis point there may be a sustainable way forward.
When he gets those photos out Matt will be back for another presentation!

Rouse Hill
TTTG put on demonstrations of saw sharpening at the Rouse Hill "Out of the Woodwork" weekend which attracted quite a bit of interest and several new members! Thanks to all those who members who gave their time to make it such a success.
Future Meetings.
TTTG is actively seeking guest speakers.
If you know of a potential speaker please contact a member of the TTTG Committee.

The Cover.

The illustration on the cover is from a review of Wheeler's Patent Washing Machines published in the Mechanics' Magazine in February 11, 1859.

Wheeler's Patent Washing Machines were advertised as T. Wheeler & Co's "Oxonian Knuckle Washing Machine." in the same issue of the magazine.

T. WHEELER AND CO.'S

"OXONIAN KNUCKLE WASHING MACHINE."

THE Improvements in these New Inventions are the non-exposure of the user's hands to the dangerous parts of the Machine, and the rapidity with which the work is done. These Machines have neither bands or wheels passing on the outside, wherein lies the liability to accident. The rubbers are the truest representation of the knuckles or hand washing yet brought out; the compensating floating rubbers work at right angles, backward and forward, in the same manner as does the hands. These Machines can be supplied with rubbers that represent a person's hand in the action of rubbing; the knuckles, finger nails, and palm of the hand being truly modelled. They are capable of Washing Clothes of every description whatsoever, the largest bedding to the most delicate piece of muslin can be washed without breaking a single thread; in fact, such is the delicacy of the action of these Machines, that the paper you are now reading can be passed between the rubbers without sustaining any injury, at the same time being thoroughly effective in cleansing. The Patentees confidently recommend these Machines to the notice of Laundresses, Heads of Families, Hotels, Emigrants, &c. So simple is the action of this Machine, that a boy or girl of 10 or 12 years of age can work it; the only skill required is to soak the clothes one hour before placing them in the Machine, placing a portion of the clothes at the handle end of the Machine; laying on the rubbers a part of them; turn the handle, and the clothes will pass through between the rubbers to the opposite end, effecting a saving of at least 50 per cent.

Prices: Washing Machines, £1 6s., £2 6s., £3 6s., £4 10s., £5 15s.; Washing, Wringing, and Mangling, £8 £10 15s., £14 14s.—Full Instructions sent with every Machine. Testimonials or References sent on application.

MANUFACTORY, ALBION WORKS, PARK END STREET, OXFORD (114)

What questions does this machine suggest about early machine design?

Hand Tools and Machine Tools.

The Traditional Tools Group has never entered into the debate about what is a hand tool. TTTG has catered for anyone with an interest in old tools and machinery. Critics could argue that our interpretation of traditional is very flexible and that we have deliberately evaded the issue.

The “Oxonian Knuckle Washing Machine” is an example of how any clear distinction between hand and machine technology can be elusive with early mechanical devices. This is a mechanism that increases production by multiplying human muscles. It is a very good example of how early machine designers attempted to replicate human mechanical processes.

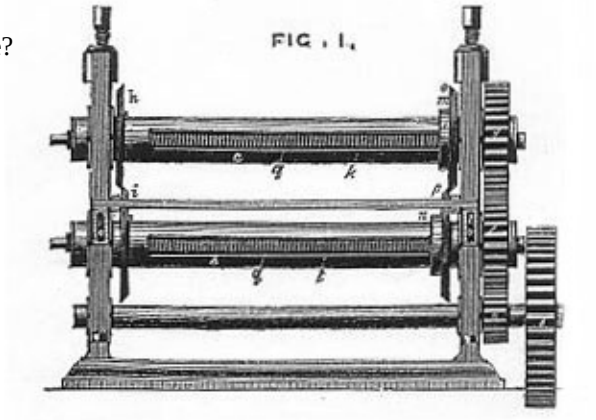
In many ways the “Oxonian Knuckle Washing Machine” is analogous to “mechanical automations” such as the “Mechanical Turk”. In a similar way an early Oliver Hammer is an attempt at making a mechanical Smith’s striker.
A rotary powered modern washing machine or a steam Drop Hammer is, in contrast, the application of purely mechanical principles to the manipulation and processing of materials.

See following page for details of
The mechanism of The “Oxonian Knuckle Washing Machine.”

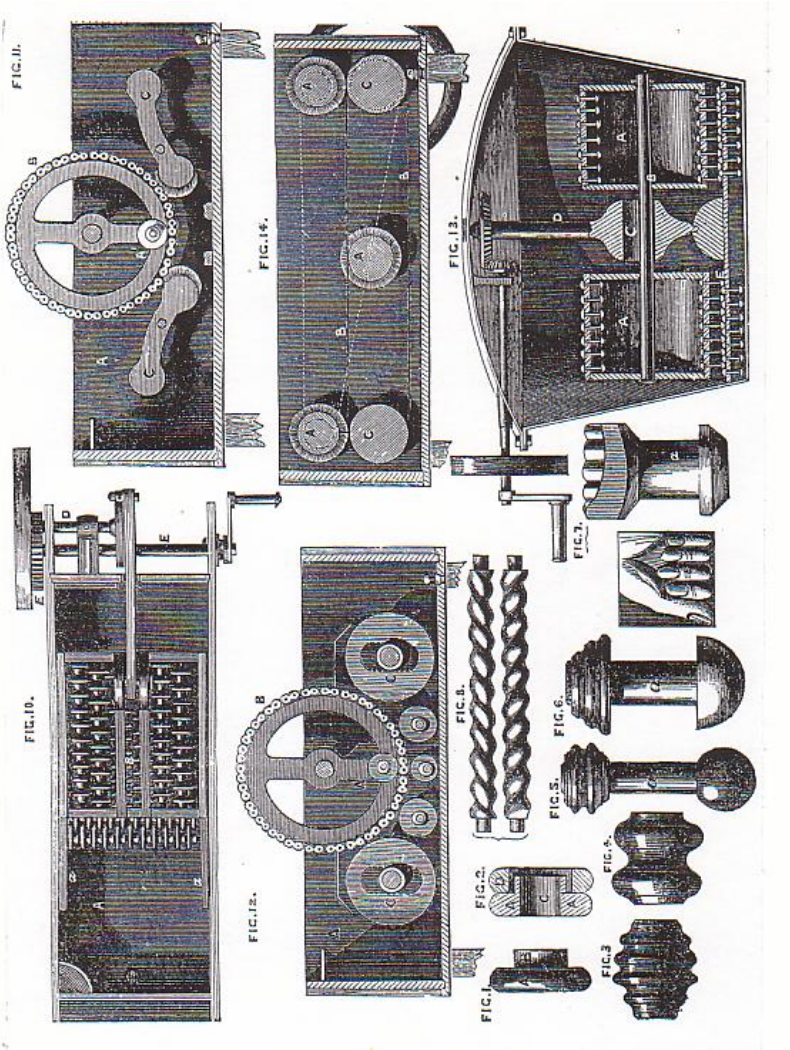
WHAT IS IT?

The mystery item in News 77 was an early Lathe Slide-Rest.
Shank’s Patent Slide-Rest is illustrated in The Magazine of Science 1844.

What is this device?



Oxonian Knuckle Washing Machine Mechanism.



2004 TTTG Workshops.

June 20.	**Metal working skills.** Basic bench and metal machining skills.
July 18.	**Edge Tool Sharpening and Plane Tuning.** How to sharpen and tune planes.
August 22.	**Hand planing.** How to use hand planes to achieve accurate work.
September 19.	**Moulding planes, fillisters and ploughs.** How to set up and use moulding planes.
October 17.	**Combination planes.** How to set up and use combination planes.
November 21.	**Shaves and Scrapers.** How to use all types of spokeshaves and scrapers.

All workshops commence at 9.30 am and conclude at 3.30 pm.
All workshops are held at Asquith Boys High School. Jersey Road Asquith.
Members:$20 Non Members:$40

About the TTTG Workshops.

There are a number of skills based workshops available in Sydney
But TTTG workshops are arguably the best available.
Our workshops offer these features:

-The lowest cost.
-Quality teaching.
- Excellent facilities.

And some of our courses are not available elsewhere.
Where else can you learn saw sharpening or how to use specialist planes?

REPEATED DUE TO POPULAR DEMAND.

Edge Tool Sharpening and Plane Tuning. July 18.

Early booking is essential, don't miss out!

Correspondence.

Australian Abrasives.

A few of our members have speculated about the origins of this company.
The editor expressed the ill informed opinion that Norton (Bear) acquired Australian Abrasives to remove a competitor. Not so and the real story is even more fascinating as John Bates relates.

Well I think Australian Abrasives Ltd (AB) was established around 1938. It was a venture involving divided control and ownership amongst four companies - the Norton Company and the Carborundum Company of the USA, the Universal Grinding Wheel Company of England and McPherson's. This demonstrates how seriously these nations viewed the gathering war clouds in Europe.
The AB factory was located at the corner of Rawson and Parramatta Roads, Auburn (the site is now occupied by some 'megamart') and functioned uninterrupted throughout WWII.
It operated on a neat balance of using the aluminium oxide abrasives of Norton and the silicon carbide of the Carborundum Co. The plant also produced Norton's diamond wheels in latter years. I think it closed some time after the Korean War.
For more information see
M Tymeson "The Norton Story" (Norton Co, Mass., USA 1953).
Sorry Bob, it would have been nice to hear that it was a great Australian product swallowed up by the Yanks. Alas it was just another bit of foreign knowledge transfer albeit very well done by us Colonials. I have a few AB products in the workshop and also feel regret that the flow was stopped in its prime so to speak.
At the time the Carborundum Co was Norton's biggest competitor so the venture was pretty significant.

John Bates

Loan of old printed material for reprinting by TTTG.

TTTG is always seeking old printed material for reproduction in News.
Also old Tool Catalogues are sought for possible reprinting.
Please consider sharing your old printed material with News readers.

Some Australian Abrasives' Products.
McPherson's Catalogue No.164.

98 McPHERSON AUSTRALIAN ABRASIVE STONES

Z756—SILICON CARBIDE BENCH STONE

115	8 x 2 x 1	Fine
116	"	Medium
117	"	Coarse
121	6 x 2 x 1	Fine
122	"	Medium
123	"	Coarse
133	7 x 2 x 1	Fine
134	"	Medium
135	"	Coarse
107	4 dia. x 1	Combination
108	8 x 2 x 1	Combination
109	6 x 2 x 1	Combination
110	7 x 2 x 1	Combination
111	5 x 2 x 3/4	Combination
156	8 x 2 x 1	Extra hard and fine
158	6 x 2 x 1	Extra hard and fine

Z757—ALUMINIUM OXIDE BENCH STONE
No. 88 (INDIA TYPE)

Harder than Silicon Carbide, long-lasting, give a beautifully smooth razor-like edge and hold their shape well. Each Aluminium Oxide stone is oil impregnated.

Combined qualities of hardness, sharpness and toughness make these stones of outstanding value in machine shop, for use on lathe and planer tool and scraper blades. They also produce fine oilstoned finishes on woodworking tools.

Size 8 x 2 x 1.

Fine	Medium	Coarse
No. FB 8	MB 8	CB 8

Z758—COMBINATION STONES

Coarse and fine grits vitrified into a single stone. Coarse side for dull tools; fine side for a finished edge.

No.	188	187	186
Size, ins.	8 x 2 x 1	7 x 2 x 1	6 x 2 x 1

Prices on application.

Z759—POCKET STONE
No. 149 3 x 3/8 x 3/8 ins.

Z760—FLAT TAPERED SCYTHE STONE

No. 198 9¼ ins. long.

Z761—COMBINATION AXE STONE
No. 196 3 ins. dia. x 5/8 ins.

Z762—GRINDING WHEEL DRESSING STICKS

½ x 6 ins. long, round
⅝ x 6 ins. long, round
½ x 6 ins. long, square
¾ x 6 ins. long, square

Z763—FINISHED HONING STICKS
Available to suit Sunnen, Micromatic, Hall and Hipsley Honing Tools. Further particulars on application.

Z764—MACHINISTS' FINE STONES

No. 292	4 x 1 x ½ ins.	Fine
No. 293	4 x 1 x ½ ins.	Med

Z765—SLIP STONES

177	4½ x 1¾ x ¼ x 1/16	Fine
178	"	Med
179	"	Coarse
180	4½ x 2½ x 5/8 x 5/16	Fine
181	"	Med
182	"	Coarse
183	4½ x 1¾ x ½ x 5/16	Fine
184	"	Med
185	"	Coarse

Z766—THICK COMBINATION KNIFE STONES
No. 289 4" dia. x 1½"

Z767—UNFINISHED STICKS VITRIFIED BONDED SQUARE STICKS

Hard, sharp and fast-cutting these sticks are widely used by jewellers, die cutters, engravers and instrument makers. Very useful for removing stock from corners of dies without scratching. Each of the following sizes available in fine, medium and coarse grits.

Z768—ROUND STICKS

These sticks are specially suitable for use on tools and dies with either straight or curved edges. Each of the following sizes available in fine, medium and coarse grits.

¼, 3/8, ½ x 4 ins. Square, Round Triangular Half-Round.

Z769—REAPER KNIFE FILE
No. 57 14 in. long

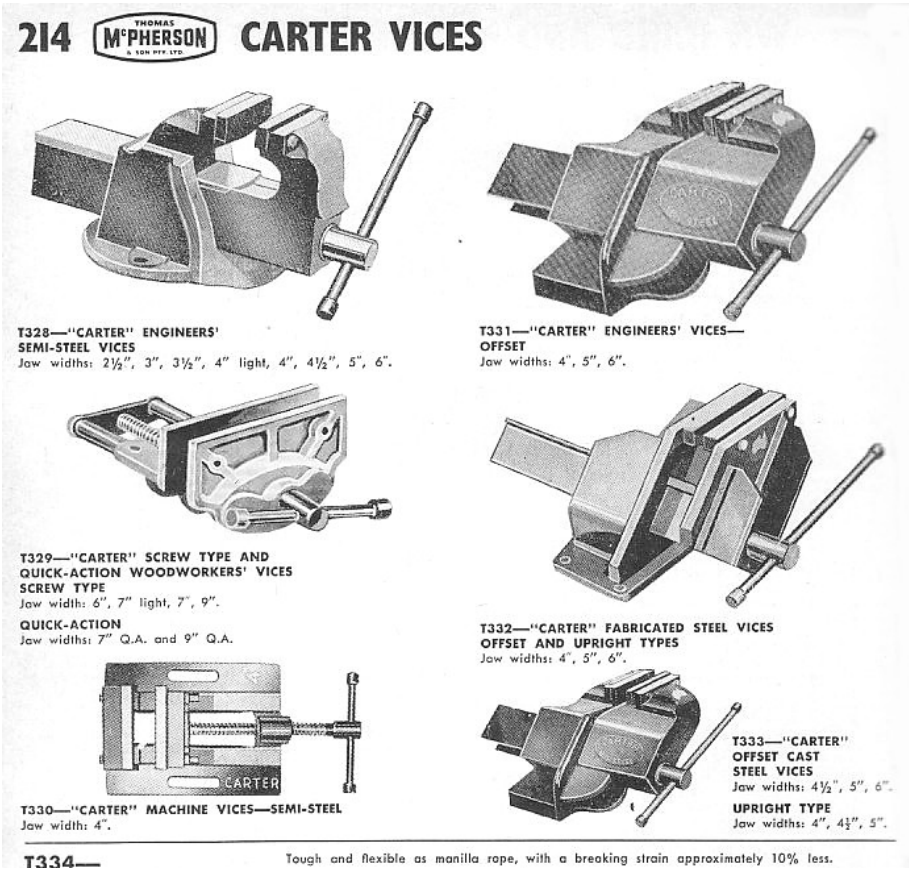
Z770—OVAL SCYTHE STONES

No. 190 10 ins. long
No. 191C 12 ins. long

Z771—ROUND SCYTHE STONES
No. 203 12 ins. long.

Information.

CARTER Tools: Vices.
McPherson's Catalogue No.164.



REMINDER.
The TTTG Committee is examining the possibility of having an Exhibition of Carter Tools.
TTTG is interested in any documentary material on Carter Tools. Advertisements, invoices and packaging material are sought.

Events and Publications.

Back Issues of News.

Do you want a back issue of News?
Mike Williams has found a forgotten cache of old issues.
Get in early to secure back issues.

Australian Made Machinery Directory.

Wood and Metal Working Machinery.
John Bates is compiling this Directory.
Any information on the following would be appreciated.
-Australian made Engineering Machinery.
-Australian made Woodworking Machinery.
-Australian made Leather Processing Machinery.
-Miscellaneous Australian made Machinery.

Illustrations are needed for this Directory.
Do you have any of the following?
-Old Catalogues by Australian Machinery Manufacturers.
-Old Leaflets by Australian Machinery Manufacturers.
-Old Invoices from Australian Machinery Manufacturers.
-Packaging material from Australian Machinery Manufacturers.

Carter Plane Leaflet.

The Reprint of an undated Carter Tools colour Leaflet is still available.
A limited number are available.
Get in quick to secure your copy of this collector's item!
Cost is $5 each, postage is extra.

TTTG Library Catalogue.

Work has begun on a TTTG Library Catalogue.
This will be an invaluable resource for TTTG members.
Copies will be available free of charge to TTTG members.
Projected publication date is mid 2004.

Donations for TTTTG Tool Boxes.

The Committee is still seeking donations for the TTTG Tool Boxes.
Cabinet makers' and Carriage makers' tools from 1920 to 1940 needed.
Any tools marked N.S.W. Railways would be appreciated.
TTTG has two Railway Workshop Tool Boxes.

Further Information.

For full details of all TTTG Events see the Web Page. www.tttg.org.au

THE LEDGER

New Members

On behalf of the TTTG Committee and Members, the Treasurer extends a welcome to the following new Members :-

Liza Eisermann
John Emery
Ron Sherring
John Heald
Michael O'Mahony
Warren Anlezark
Richard Bird
Mick Laki
Bob Johnston

Several of these new Members joined as a result of their participation at TTTG's Saw Sharpening Workshop, the attendance at which was very pleasing.

It is believed that Bob Crosbie's Saw Sharpening Workshop is the only all day, hands on workshop in Australia at which saw sharpening is comprehensively taught. If anyone knows of another such workshop, please let us know; we don't want to brag unjustifiably. However, at only $20 for TTTG members, these workshops represent excellent value and you get to go home with at least one of your saws sharp and with the knowledge to sharpen the rest of them. (Bear in mind that it would otherwise cost you about $20 to have a saw machine recut and sharpened, losing about a centimeter from its depth in the process.)

Australia is awash with blunt saws, unused because their owners don't have the easily learned skill to resharpen them !

Metalworking Skills (hand and machine) is the subject of Bob's next all day workshop to start at 9:30 am on Sunday, 20th June, 2004 at Asquith Boys' High School. (Information and bookings with Peter Evans on 0419 245 699.)

As many would be aware, TTTG President, Bob Crosbie is an experienced and knowledgeable manual arts teacher at Asquith Boys' High School.

Clynt Sheehy
Hon. Treasurer

TTTG SUBSCRIPTION RENEWAL NOTICE

2004 – 05 SUBSCRIPTIONS BECOME DUE ON 1st JULY, 2004

(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
GROSVENOR PLACE
SYDNEY NSW 1220

* If you live more than 50 km from Sydney or you are a pensioner, then you MAY CHOOSE TO PAY only $22.50

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 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 2004-05 subscription payments from the following members (as at 16th May, 2004). These members should ignore this notice.

10	**129**	**241**	**256**	**320**	**330**	**333**	**336**
23	**195**	**242**	**264**	**328**	**331**	**334**	
49	**238**	**253**	**305**	**329**	**332**	**335**	

John's Page. John Daniel

Some tools are conversation pieces.

I was given the phone number of a fellow down the coast that had retired and wanted to sell his tools, so naturally I made the call. I learnt that the gentleman had started his trade as a cabinetmaker back in England with a lot of his time spent making coffins. A visit was necessary.

He had several "tables" of tools that would be well placed in any tool sale. Most fell into the "user" category, however, there were a few collectables amongst them, so after a cup of tea and a good yarn, we carried them out.

It was obvious that the tools had been well cared for, and as they were handed to me each seemed to have a memory attached. One tool in particular seemed to be extra special to this craftsman. It was an ordinary looking jack plane, one perhaps that wouldn't get a second glance at a flea market. He drew my attention to the handle of the plane. "It was replaced early in my apprenticeship", he quietly remarked, accompanied by a reflective smile, "I dropped it and broke it. I was heading down the road to get one to replace it when my boss intervened and took it home that afternoon. Next morning he proudly handed it back to me with its 'new' handle. He had fashioned it out of an offcut from the end of a coffin." Apparently the coffins of the day were of English Oak.

The metal tools, many quite useful may have "collector" appeal, however, to me the real appeal is in the humble tools that were to become "conversation pieces", as they carry some history with them and a warmth absorbed from the lovely gentleman that had used and cared for them over the years. I feel privileged that they now are in my care.

Responses to a conversation piece.

I have told this story to a few people and find their reactions interesting, perhaps some of the strangest reactions came when I handed them the plane with its coffin-offcut handle.

One elderly gentleman gave a shudder and promptly handed it back to me, and then placed some distance between him and the plane.

A woman almost affectionately cradled the plane in her arms and thought that it had a lovely story and that the owner must have been a lovely man.

Another man was visibly repulsed and remarked that he wouldn't have "that thing" in his house.

A purist commented that it was just a common old plane and that it was a pity that Beech wasn't used to replace the handle.

A local "woody" lamented the loss of "all that good timber buried over there".

These reactions well demonstrate our differences. No wonder there are so many varied collections out there. I suppose it all comes down to "in the eye of the beholder".

John Daniel

Photograph: The handle/tote that receives such a varied reaction.

If nothing else, it was the main link between the man and his work.

Odd or unusual sized screws:
Is there an explanation? John Bates

Some months' back, perhaps even years, Bob Crosbie posed a question, as he so often does, about the origin of the 'odd' sized screws used in the Stanley planes and such. Being one who professes faith in the engineering fraternity I thought that this question would be easily answered by consulting the standard engineering references on screw threads.

I was wrong!

Well perhaps not entirely, but it is definitely not a question that can be answered by reference to contemporary standards.

Anyway I refused to say die and at a later point in time I was browsing through an oldish engineering tome (MALEEV, *Machine Design*, 19 :115) and came across the following information on machine screws:

> *"Machine screws are small cap screws and their sizes are designated by number instead of the diameter of the shank. The American Society of Mechanical Engineers Standard (1907) starts with No.0 having a diameter (d) of 0.060 inches and uses an increment of 0.013 inches per number* [some time prior to 1964 the No.4 – 36 and No.14 – 20 and No.14 – 24 screws had been deleted from the American Standard, but these screws were still in general use in the USA, especially the No.4 -36].
>
> *The diameter of any ASME number machine screw is found by the expression:*
>
> $d = 0.060 + 0.013N$
>
> *where* ***N*** *is the size number and* ***d*** *is the major diameter of the screw. In addition to the number, machine screws are like other screws specified by number of threads and length. For example, No.16 – 20 x 1 inch Msc. For sizes larger than No.16 or d = 0.268 inches cap screws are used instead of machine screws."*

Odd or unusual sized screws.

Eureka! So I began to think that we might have a few new candidates for the Stanley 'odd' screw. What if Stanley actually used the No.14 – 20, No.15 – 20 or the No.16 – 20 which have nominal diameters of 0.242, 0.255 and 0.268 inches respectively?

Further scrounging around dusty shelves turned up a pre-1900 self-published reference work by Saunders (copyright 1894). It contained evidence that, from perhaps as early as 1890 through to say the middle of the 20th century, 'machine screws or cap screws' were widely available ex-stock with various kinds of heads (hexagonal, square, socket, fillister, round, flat countersunk and oval countersunk) and in a wide range of sizes (from ¼ inch to 1.¼ inch diameter and up to 6 inches in length).

The fact that these screws were stocked in a wide range of sizes and pitches (including 20 threads per inch pitch – see the table below) during that period allows me to think that there was also a strong demand from tool makers, machinery manufacturers and other users of these fasteners. So perhaps Stanley and other manufacturers simply used the available fasteners in whatever sizes suited their needs and their products. Is the 'odd or unusual' Stanley screw simply a bit of 1890s standard kit that survived because they had lots of stock? I won't yet claim that this is an answer to the mystery, but I reckon it's worth thinking about.

My edition of Saunders handbook (c.1917) lists the following screws as being available from stock. Do any of them match the threaded fasteners in your Staley tools?

No. #	Decimal inch	TPI (Why 3 pitches?)
12	0.2157	20, 24, 30
13	0.2289	20, 24, 30
14	0.2421	20, 22, 24
15	0.2552	20, 22, 24
16	0.2684	16, 18, 20
18	0.2947	16, 18, 20
19	0.3078	16, 18, 20
20	0.3210	16, 18, 20

Source: SAUNDERS, Charles H *Handbook of Practical Mechanics* Boston, Massachusetts, copyright 1894 at page 97.

Files: How they were made in 1889.

John Bates posted the following on George Radion's web site.
It generated some correspondence and may be of interest to readers.

'File-Making by Hand and Machinery'
The Manufacturer and Builder. November 1889 (USA).

I found it very interesting. Hope you do too! John Bates.

"But few tools can lay claim to as great antiquity as the file. So very old is it, indeed, that no mention can be found in either profane or sacred history of its invention, for it antedates written history; but in the Bible, in second Samuel, the thirteenth chapter and the twenty-first verse, is to be found the following: "Yet they had a file for the mattocks, and for the colters, and for the forks, and for the axes, and to sharpen the goads." This was 1093 years before the advent of the Christian era, and there is every reason to believe that the file was in use before this time. Certain it is, that from that time on, there are numerous proofs to show that the file became more and more in general use as the years went on. In the sixteenth century it had become so common that all reference to it was a purely matter-of-fact way, as when Burnett, in his "History of the Reformation," describing how Sir Edward Grimston escaped from prison, thought it only necessary to say that the cell bars were cut apart with a file. It has only been within the past quarter of a century that there have been placed in operation any marked improvements in the process of manufacturing files; and even yet there are many mechanics who still insist that files made by the methods of a century ago are superior to those made by the more modern methods of machinery. Up to within late years this opinion has had all points of fact in its favour, and even now it may have some. A description of the two processes - that is, hand and machinery, will, therefore, be of interest.

Take the former, or hand process, to begin with. The steel is first rolled, or tilted, into bars of a size as nearly as possible to the sections required. The sections bring to the steel in the rough, which are cut from the bar into about the length and diameter of the file required. They are then annealed with great care by placing them in annealing ovens heated by charcoal, coke or anthracite coal, until they are of a cherry red, and then allowed to cool gradually. This sufficiently softens them for the chisel cutting, but very frequently after being taken out of the oven it is found that the heat has bent or warped them. Should this be the case, they are forged into shape again.

Files: How they were made in 1889.

They are now filed or ground, the grinding being done on a huge stone, six feet in diameter, the workman sitting almost astride of it and holding the steel directly on the stone with both hands. In olden times, and even in years not long past, this was a dangerous process, as the stone would sometimes break while in motion, with fatal results to the workman. These accidents are rare in this country, owing both to the care exercised by the grinders and the superiority of the stone used. After the blanks are ground, they are "stripped" - that is, they are filed down to the true surface to remove all irregularities. They are now ready for the cutter, who sits astride a bench in front of the block or anvil, across which rests the file. It is held firmly in place by a strap across either end, into the lower loops of which are placed the cutter's feet, like stirrups, the weight of the legs thus firmly holding the bar in place. The tang (the part to be inserted into the handle) points toward him, and, after slightly greasing the "blank," he is ready to cut the teeth. In his left hand he holds a small chisel, the edge of which always exceeds the width of the file, and placing it on the "blank," with an inclination of from 40 degrees to 55 degrees, according to the character of the file to be made, he gives it a sharp blow with the hammer in his right hand. An indentation in the farthest or small end of the file in thus made, the indentation naturally inclining toward him. This, of course, leaves a ridge, or a tooth, slightly thrown up above the surface, and, following this as a guide, he places his chisel alongside of it and strikes another blow with his hammer, and this is continued until the teeth are cut the full length of the face of the blank.

An average workman will strike from sixty to eighty of these blows per minute. All this time the file is resting on a thin sheet of pewter, or a bed of pewter and lead mixed together, so that the opposite side of the file will not be injured. In cutting round, or half-round files, the indentations are made very narrow, say about one-tenth of the circumference, and run in a straight line from point to tang. Then the next indentations are cut in the same way, but shaped differently, the chisel being applied as a tangent to the curve. In cutting cross teeth, the same methods are followed - that is, indentations are made over indentations.

The files are now ready for tempering, or hardening. They are first covered with a paste, made of powdered cows' hoof and other material, to protect them from damage while heating, and are then heated to a red heat in molten lead, which gives them a perfect, even temperature, and plunged into strong brine. From the latter they are removed before they are entirely cold, so that they can be straightened if necessary.

Following this, they are treated in a muriatic acid bath and then a lime-water bath, the first to remove all oxides and surface dirt, the latter to remove the acid. The tangs are then softened, after which they are brushed with oil, and they are ready for packing.

Two hundred years ago attempts were made to cut files by machinery, but with no encouragement until about 1858. Less than thirty years ago a company, with immense capital, was organized in Birmingham, England, to operate the file-cutting machinery invented by E. Bernot, a Frenchman, but the effort soon proved a failure. The same result followed the Prestons, of Manchester, Eng., and the British Patent Hardware Company, of the same place, the machinery of the latter being the invention of an American. Numerous attempts were also made in Sheffield, England., but partially owing to imperfections in the cutting machines, and the opposition of workmen to machinery of any shape or form, the efforts proved abortive. France had also had her file-cutting by machinery enterprises with more or less success. This country, however, was more fortunate in this regard, and is quoted in the "Encyclopaedia Britannica" as the first nation ever clearly to demonstrate that perfect files could be made by machinery.

In the fifties, the American File Works made files by machinery, at Ramapo, New York but only remained in business for a few years. An attempt of the same kind in Hartford, Connecticut, in about 1857, did not succeed. Then closely followed the Whipple File Works, of Ballard Vale, Massachusetts in 1858, the Weed File Company, and others.

The most successful was the Nicholson File Company, of Providence, Rhode Island, which was organized in the spring of 1865, with W T Nicholson, the inventor of their machinery, at its head. The substantial brick buildings were planned to admit of enlargement from time to time, as might be required. One of the first steps taken was to ascertain what had been done, not only in America, but in the old country, both in files and steel, and to this end their agent spent several months in Europe, with full instructions to purchase such machinery as might be thought worthy of adoption. These works now turn upwards of 1,500 dozen files per day, and their success is absolute proof of the merits of the machine-cut file. The machinery used by this firm is so arranged that it will produce a file with teeth, in their spaces, conforming to the hand-cut file. The article produced, the company saw fit to call the "increment cut file," the word "increment" meaning increase.

Files: How they were made in 1889.

These files are not cut a uniform depth or space, and no two spaces can be found exactly alike in the entire length of the side. A file machine, it should be understood, is a machine that moves a "blank" quickly upon a bed, with a chisel rapidly falling upon the blank as it moves, and making teeth or indentations. The clearest description that could be given of it, is that it is hand-work operated by machinery, for one hand of the machine slides the blank along, while the other sets the chisel and strikes the blow with the hammer. The objection to machine work, however, by those who claim to entertain any objection, is that it is so accurate that the teeth are cut regularly in rows, and of a uniform depth, a thing to be avoided in making a perfect file. In making them by hand, however, this accuracy or regularity could not be obtained by the most skilled workman, even if it was desirable, for the force of his blows cannot always be the same, nor can he always place his chisel exactly in the same position.

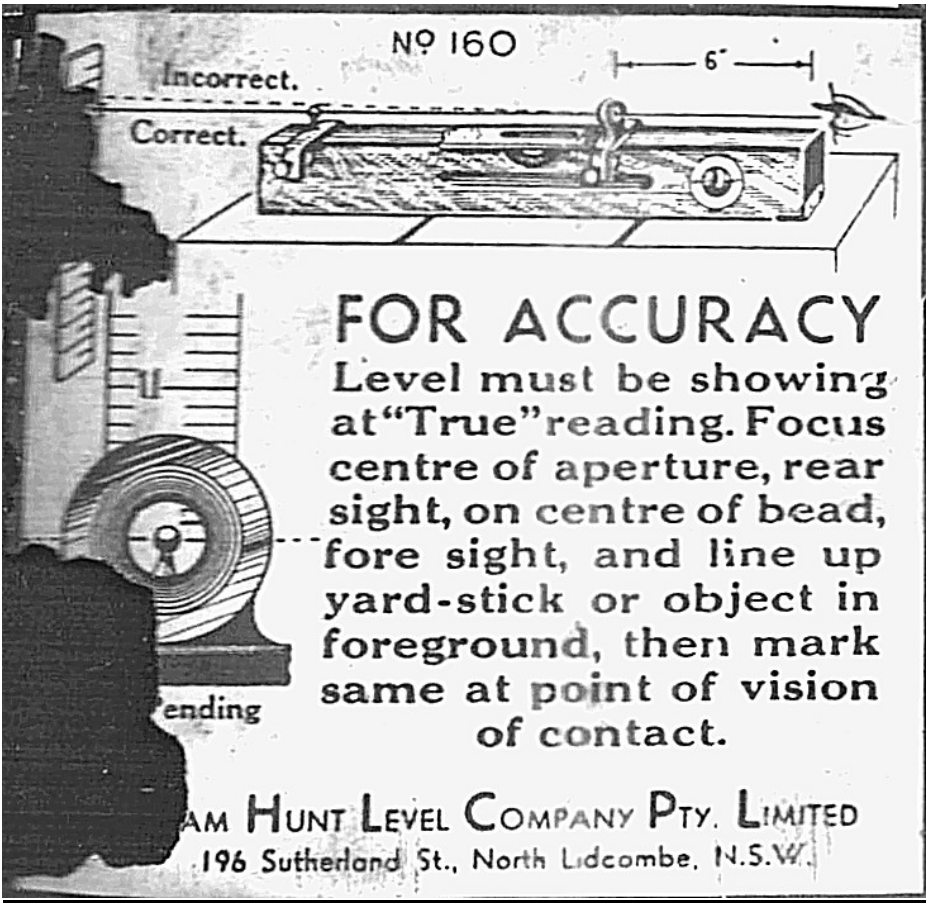
In speaking of the variance between their increment files and files with the regularly cut teeth, the Nicholson File Company very clearly explain by saying that the difference between this and the perfect regularity of the old machine-makes must be apparent, particularly in the double-cut files, as in the one case the files cut with such extreme regularity, when put in use, will in the first inch of its movement produce channels or grooves, and the grooves will continue to be made deeper as the file shoved along, thus producing that "grooving" and "chattering" so often complained of, while in the "increment-cut file" the grooves made by the movement of the file for the first inch will have their sides cut away as the file is moved toward the "tang" or handle, and vice versa ; and while it is cutting as fast as it's points will permit, it is also said to cut smoother than the best hand-cut of the same coarseness. The irregularity spoken of consists not only in the spaces between each tooth, but also in the heights of the teeth themselves, thereby completely removing the objections hitherto argued against machine files.

Rasps are also made both by machinery and by hand, the chisel for making them however, being in the form of a three-cornered or triangular punch. The other processes are precisely as in file-making.

Notwithstanding the great number of files made in this country, a file is often made over, or sharpened- as often as three or four times, many small concerns doing nothing but this. The word "sharpen" in this case is misleading, for in reality the old teeth are ground off and new teeth chiselled in."

Another Aussie.

William Hunt Level.



William Hunt Level Company Pty. Limited
196 Sutherland Street, North Lidcombe. N.S.W.

Image provided by Steve Flint.

Steve has a William Hunt level with a clear maker's label and instructions.

If he is at the next meeting Steve will probably have the level with him.

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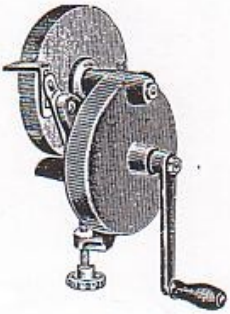

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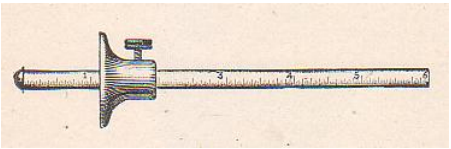

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