NEWS 165

The first electronic NEWS

COVID-19

TTTG in Austerity

***Household* tools 1920** During the last pandemic

August 2020

www.tttg.org.au **ISSN 2206-1592**

What is TTTG?

TTTG is the Traditional Tools Group; a not-for-profit group of like-minded enthusiasts interested in the history and preservation of traditional trade skills, techniques and tools, including hand tools, machinery and other old technologies. TTTG was established in 1992.

Our bi-monthly Members' meetings feature a guest speaker presenting diverse topics related to tools, trades and technology.

Keeping traditional tool skills alive is a key objective of TTTG and "Real Skills" workshops have been held every year since 2005. These popular fee-based workshops, open to all, are designed to guide participants in developing their tool skills and learning and practicing new techniques.

The Group sells old tools and machinery at affordable prices. Three "members and friends" tool sales are held each year at the Old Eastwood Town Hall in Marsfield. Every February TTTG runs Sydney's largest second-hand tools sale at The Brick Pit in Thornleigh.

The TTTG digital magazine, creatively titled "NEWS", is published four times a year. Membership of the Traditional Tools Group is open to anyone with an interest in traditional tools, history, techniques and skills.

TTTG Membership & Rules

The MEMBERSHIP YEAR starts 1 July and ends on the following 30 June.

The MEMBERSHIP FEE is currently $50 per annum including NEWS by email.
The MEMBERSHIP FEE is due to be paid on 1 July each year and must be paid on or before 15 August. Pay by:

- **cheque made out to TTTG Inc and sent to Secretary TTTG Inc, PO Box 75, Eastwood NSW 2122; or**
- **EFT to TTTG Inc Commonwealth Bank BSB No.062271 Account No.10334075.**

Please include your name and/or member number as the reference.

A Member may choose to pay the Membership one year in advance, but only from 1 January in the current Membership Year and only for one year. *Other advance payments will not be accepted.*

A Member who has NOT paid their Membership Fee by August 15 becomes an UN-FINANCIAL MEMBER from that date and will cease to receive the NEWS magazine. Access to the Members' area of the TTTG website will also cease.

A NEW MEMBER joining between July 1 and March 31 the following year is a full Member for the remainder of that Membership Year only.

A New Member joining between April1 and June 30 does not become a full Member until the following Membership Year and must pay the Membership Fee applicable to that Membership Year.

Contents **NEWS 165** August 2020

NEWS Magazine

NEWS is emailed to all financial members who have provided their email address. NEWS is published in:

FEBRUARY MAY AUGUST NOVEMBER

Printing of NEWS Magazine ended on 30 June 2020.

From 30 June 2020 NEWS will only be available by email.

ATTENTION!! New Membership fee is $50 from 1 July 2020

TTTG Fees 2020 / 2021

Membership	***$50 incl.***
NEWS	***(by email only)***
Workshops	***$60***
Tool Sales	**$10**
Meetings	**$5**

Volunteers Wanted

-To demonstrate skills
-To "sell" TTTG
-To write articles
-To help with the website
-To sort tools
-To repair tools
-To repair old machines

TTTG needs members who can talk to an audience and can demonstrate "real skills".

Why not get more involved?

TTTG Contacts

Editorial/Advertising Enquiries:
Bob Crosbie
bobcrosbie@tttg.org.au

Membership Enquiries:
John Bates
johnbates@tttg.org.au
mobile 0418 488 210

Last TTTG Meeting:
Bargains Night
February 2020

The meeting saw many *quality tools sold at ultra-low prices*. There were bargains for all and anyone willing to offer a reasonable price was could leave with a "find".

The first TTTG Meeting COVID-19

Tuesday 11 August 2020

What's it worth?

will be the theme.
The usual location and starting time.

The Next Member Meeting

Tuesday August 11 at 7pm

Old Eastwood Town Hall
74 Agincourt Road, Marsfield

A talk on "What are Tools Worth"
with an **Excess Tools Sell Off**

Due to COVID-19 Restrictions limited to 15 persons only!

Email johnbates@tttg.org.au and tell us you will be there. Only 15 admitted.

The TTTG 2020 Annual General Meeting

Tuesday October 13 at 7pm

Old Eastwood Town Hall
74 Agincourt Road, Marsfield

Notices and AGM papers will be emailed to all Members later in August.

The Next Real Skills Workshop is on

Sharpening Planes and Chisels ***$60***

9.30am Sunday August 23

Old Eastwood Town Hall
74 Agincourt Road, Marsfield

The workshop starts with an introduction to chisels.
Using traditional methods you will achieve a razor-sharp edge.
Next you will sharpen a plane blade and then tune a plane.
No expensive jigs. Time proven methods that work.

Due to COVID restrictions this workshop is limited to six (6) participants

Advance booking is essential

Email bobcrosbie@tttg.org.au to reserve your place.

Keep watching the TTTG Website for news on Workshops.
Due to COVID-19 Restrictions future Workshop dates will be announced on the website three weeks in advance.
COVID-19 permitting there will be other TTTG Workshops this year.

Future Workshops will include:

-Making Dovetail Joints
-Planing Techniques
-Saw Sharpening
-Veneering

How is TTTG going during COVID-19

The good news: There have been membership renewals!
The bad news: Income has flatlined!

Just a Sec

TTTG Secretary, John Bates

Well it has been tough for the last few months but TTTG is surviving thanks to the support of our Members and Committee. This edition of NEWS is our first fully digital offering. One of the benefits of online delivery is that we are no longer constrained by printing and postage costs. So, you can look forward to bigger and better editions now and in the future.

Member Meetings and Workshops will be starting again this month. However, things will have to be done a little differently due to COVID-19.

Member Meetings will be limited to 15 attendees (not including Committee members) and everyone will need to observe social distancing. Due to the restricted numbers we are asking that anyone who wants to come to a meeting to register their intention to attend a meeting by emailing either John Bates (secretary@tttg.org.au) or Bob Crosbie (president@tttg.org.au).

Thanks, in advance, for your co-operation.
Bring your own hand sanitiser if you can and face masks are optional. If you are not feeling well or have cough or temperature please *Stay Home*.

Be sure to keep an eye on the website for news about upcoming Workshops.
If things go to plan, and no further constraints or new restrictions are imposed by the NSW Government, we expect to have our Annual General Meeting on Tuesday 13 October commencing at 7.00pm and followed by the usual Members Meeting which will start around 7.30pm. You can expect to receive the usual AGM information – notice, draft 2019 AGM Minutes and the 2019/20 financial report – by email sometime during August.

A reminder that Membership fees are due. The cost is now $50 per annum which means you have a few dollars extra to spend on tools so the August Member Meeting is a chance to grab a few bargains.

You can also pay your Membership and confirm your email address at the next meeting to be sure NEWS finds you.

Not a lot else to say except stay healthy and hope to see you at the Member Meeting or a Workshop or two.

The Future for TTTG is in the hands of the Members

TTTG needs Members to step forward and become actively involved

***COVID*-19 permitting there will be a Tool Sale this year and TTTG Sydney Tool Sale on Sunday 21 February 2021**

Just a Word

NEWS Editor, Bob Crosbie

The last on paper issue of NEWS was printed and delivered on time. The cost of printing and mailing was greater than the subscription fee.

In NEWS 175 this editor suggested: "Any Tool Collector craving glossy pictures of old tools should consider joining the Hand Tool Preservation Association of Australia. HTPAA publishes four journals a year printed on thick high gloss paper in full colour. HTPAA can do this because has sponsorship!" The NEWS editor observed: "TTTG does not have a sponsor." Adding "Many TTTG members are also members of HTPAA."

With the cost of printing and posting removed the options for *NEWS* are enhanced. *NEWS* will change especially when the new TTTG Website is installed. The editor is keen to develop this publication as a more responsive means of communication for TTTG members.

The Committee's decision to stop printing NEWS combined with sound financial management and income producing Member's Meetings, tool sales and Real Skills Workshops has allowed TTTG to remain solvent despite COVID-19.

TTTG will email anyone interested in tools and machines
TTTG will be compiling a mailing list and sending out regular updates.
Like all the emails we all get from commercial and interest groups you can stop getting TTTG emails by hitting the unsubscribe icon.

TTTG is developing a new website
The existing TTTG website is looking old. It is time to revamp the website.
The committee will be engaging a web designer to develop a new website.
Developing a new website is a "work in progress".

After the COVID-19 Crisis
TTTG meetings and "real skills" classes will resume as soon as possible.
At this stage it is not possible to schedule future meetings or classes.
When a workshop is possible it will be announced on the website.

The COVID-19 Crisis and TTTG to date
The August 2020 Meeting can be held but the audience is limited to fifteen.
All Classes are limited to six participants due to the COVID 19 Crisis.
The Sydney Timber Show was be cancelled due to the COVID 19 Crisis.

COVID-19 Update
The pandemic restrictions have prevented TTTG from holding meetings, delivering classes and conducting tool sales. In short, from making money.
Workshops are being offered when possible.

What's it worth?
This will be the theme of the August TTTG Meeting.
Bring a tool for a realistic valuation.

Real Skills Classes

The TTTG "real skills" classes will continue!
The core workshops on tool sharpening and use offer an affordable and enjoyable way to experience the basics in a safe and friendly environment. The classes concentrate on the need to develop skills before buying numerous jigs or gadgets.

The presenter's motto is *'Don't throw money at it'.*
The three basic "real skills" classes are:

-Saw Sharpening
-Plane and Chisel Sharpening
-Tool selection and use

The advanced "real skills" classes are:

-Using planes
-Using saws and chisels
-Making Router Jigs
-Dovetail Joints

Getting the most from TTTG classes

TTTG classes are in a safe workshop and taught by competent teachers. To get the most you need to be prepared to follow the advice offered.
Come to a workshop prepared to follow instructions and use the tools provided. Bring your tools but ask the presenter if they are suitable and sharp. Most people have problems preparing material and cutting joints because they are using the wrong tools or blunt tools.

The key to acquiring any skills is understanding technique and practice.

***Real Skills Classes* are limited to six.**

Enrol online www.tttg.org.au $60

This is what you need at a "real skills" workshop.

-Safe sensible clothing.
A good rule is "no ties or loose sleeves".
-Foot wear with leather uppers.
A dropped chisel can sever toes.
-You don't need an apron but you do need to bring your lunch.

Attitude helps!
Show the instructor the tools you use but be prepared to listen. If you don't agree tell the instructor. Don't take it personally!

TTTG offers quality of courses in a safe workshop

- Teaching traditional skills to a high standard.
- Teaching traditional skills in a safe workshop space.
- Teaching efficient hand and machine skill techniques.
- Teaching the right tools and machines for the job.

All TTTG "Real Skills" Classes are limited to eight participants.
This ensures each participant will have a quality learning experience.

What Is It Worth?

The following was published in the last paper NEWS but it worth repeating.

This is a question I'm often asked about an old tool. It is a question that is difficult to answer. The only honest answer is ***what someone will pay.***

TTTG does not offer valuations of old tools but we can suggest price ranges. These suggestions are usually within the prices realised when tools are sold.

How do the TTTG advisers get within a reasonable margin of error?

The first requirement is to know the tools. Anyone appraising tools needs to be able to accurately identify the tools. There is a difference between reality and the fancies of relatives, neighbours or the bloke from the Men's Shed.
The second requirement is to know whether the tool is common or scarce. The vast majority of old tools were produced in large quantities. As a good example consider moulding planes. Vast quantities were made to standard shapes and sizes. They are not rare and most will sell for no more than $10.
The third requirement is to know how much the tool fetches when sold. Following the market is the only way to have enough prices to compare.
The old tool market:

-Garage Sales.	Pre COVID-19
-Auctions.	Hans Brunner Previous Auctions
-Online sales	None locally with realistic prices for example, Patrick Leach USA
-Tool Sales	TTTG Tool Sales

TTTG sells tools on consignment. Profit comes from achieving the best price. The value of any old tool is ***what someone will pay.***

Want to sell or donate old tools?
Email the TTTG Secretary **secretary@tttg.org.au**

Correspondence

Blogger me

With COVID the hands-on practical classes have been "*restricted to six participants*". TTTG cannot conduct larger classes due to the space/number ratio requirements. Enrol online as soon as a Workshop is announced.

People wanting to learn technical skills must be increasingly going online. Any Google search will find numerous YouTube Blogs.
There are some excellent blogs. There is also a lot of total c@&p online!
If you follow the blogs why not write a review for NEWS?

The good and the bad
Faced with all the YouTube possibilities, how can you judge the technical competence of a YouTube Blog? The images may be superb but the content may be appalling. The tool and machine practices shown may be dangerous.

The misleading
Some blogs are there to help but many blogs are trying to sell a product.

No substitute for "hands on"
The Real Skills workshops are worth attending. The smaller classes make them even better. Enrol as soon as a workshop appears on the website.

Pinterest
I get emails from Pinterest every day. I have never signed in. This gives me lots of old images and links to YouTube sites. I'm not complaining!

Should TTTG set up a YouTube site?
My answer is "yes, but."
TTTG has a suitable workshop and access to tools and skilled tool users. All it would take is for volunteers to step forward.

Do we have anyone interested in developing a TTTG YouTube Blog?
The future of TTTG is up to the members.
I will be the first to step forward and offer to demonstrate skills. COVID-19 is making life difficult for everyone. All we can do is "keep going". Being active in the workshop is a good way to stay focused and alert.

Bob Crosbie, Editor TTTG NEWS

Hollow Augers, Stail Planes and Candles

Mike Williams

In the 21st Century, candles would seem to be an archaic form of lighting but candlesticks were made in such great numbers in the 19th and early 20th centuries and in such a plethora of styles that often they exist today as statement pieces in internal décor.

A candlestick without its candle can look unfinished and there are speciality shops that can provide candles of any colour, dripless, beeswax, scented etc but in fairly standard diameters which often don't fit your candlesticks.

Some suppliers sell what can only be described as an outsize pencil sharpener to reduce the diameter but this only provides a tapered end to the candle and allows the mounted candle to assume a sloping attitude. All this is very well if you are trying to create a bohemian café look but often this is not the case.

My wife and I own a couple of quite interesting candlesticks and I was charged with modifying the diameter of some standard candles to suit the unusually small candle nozzles.

Now I own a couple of Stail Planes or rounders so thought that they might do the job. Stail Planes were usually tradesman made and were used to fashion round handles for rakes and brooms. Stail is an Old English dialect word for a handle, hence the name.

When used on a long handle, Stail Planes produce a constant diameter but unless I was prepared to completely reduce the candle diameter rather than just the end, there is always a tapering section between the initial and final

diameters. What I needed was a device that produced a sharp shoulder between the two diameters.
Fortunately, such a device exists and it is called a Hollow Auger.

Hollow Augers were made in a range of sizes. Adjustable hollow augers were also manufactured.

Hollow Augers are used in a Bit Brace. The cutters are similar to plane blades are sharpened by grinding and honing.

The Hollow Auger was developed to create the round tongue or tenon on the end of wooden spokes so that they could be inserted into appropriate holes in the felloes (or wheel rim sections).

The hollow Auger is then the direct opposite of the ordinary auger, creating a column of wood rather than a hole.

The Stail Plane cuts around the circumference of the wood, the Hollow Auger cuts away the end grain around the tenon, resulting in a sharp shoulder. This insures the spoke fits snugly against the edge of the felloe.

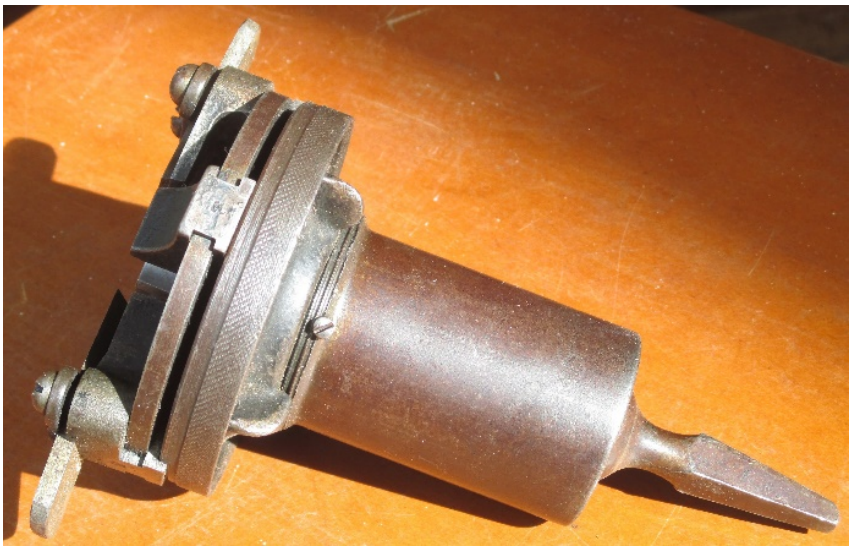
Just what I needed so I delved into the toolbox to find my Hollow Auger!

Now I don't make wooden wheels, either as a business or hobby and when I found a hollow auger in a TTTG tool sale some time ago, rusty and sad though it was, I had to have it as nowadays they are not particularly common.
Hollow Augers came in a variety of sizes and unfortunately, my example was the wrong diameter for my candlestick.

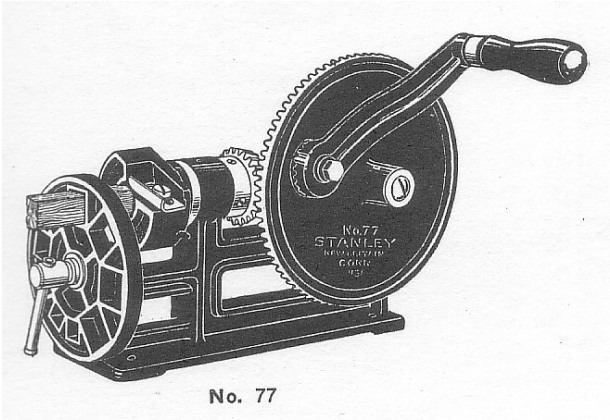
Damn!

There are some very serious collectors in TTTG so I approached one of them to see whether they had the right size of hollow auger that I needed for the job. Amazingly, he had two **Adjustable** Hollow Augers and was good enough to lend me one.

This device is worthy of a separate article. There was no maker's mark on it that I could see but it was very well made and in a similar fashion to a self-centring 4-jaw chuck, the two cutters move in and out in unison with two centring arms, all on a scroll mechanism. A scale on the face allows you to easily set the required diameter from 1.½" to just about nothing.



Both my fixed diameter hollow auger and the adjustable one are capable of generating round tenons a little over 75mm in length, the only fundamental difference being that whereas in the fixed diameter device, the cutters are set with their bevels down, the adjustable auger has its cutters with the bevels up because of the way they have to be mounted. The cutting angle in both is approximately the same.



No. 77

Stanley used to make the No.77 Dowel and Rod Turning Machine which generated round dowels and rods from square stock and although I don't own one to determine the way it works exactly, I understand that it is really a mechanised form of Stail Plane, utilising a similar peeling action.

The end of the story is indeed a happy one. The Adjustable Hollow Auger produced perfect diameter ends on the candles which fitted my candlesticks exactly. The candle wax cuts evenly and smoothly, lubricating as it goes.

BELOW: Ashem Rotary Plane

ABOVE: Ray Iles Rounding Planes

New or Old?

Rounding Planes were made commercially in large quantities in the British Isles from the Eighteenth Century to the 1940s.

Buy new or old?

Green woodworking is popular and rounding planes are still in production. If you need a rounding plane the choice is to spend a lot of time looking for the "right size" old plane or buy a new tool. Buying new saves time but you will spend more money.

Or make a Rounding Plane

Another option is to make a rounding plane. Tradesmen sometimes made their own rounding planes, probably because these tools are easy to make. Google Making a Rounding Plane. Harry Rogers shows how on You Tube.

If there is enough interest TTTG will do a Workshop Post COVID-19

Ashem Rotary Planes

These planes are made from modern materials. Expensive tools but worth considering if you plan to make do serious green woodworking.

Ray Iles Rounding Planes

These planes are made from dry English Beech, fitted with quality blades. Excellent tools. Ray Iles also sells forged blades for rounders and planes.

http://www.ashemcrafts.com/products_rotary_planes.aspx
https://www.classichandtools.com/acatalog/Rounding-Planes-Air-Dried-Beech-Rounders-Ray-Iles-RIR.html

Roll your Own

This pirated image from the web shows how simple it can be.

This blade would butcher wood but it would cut wax.

Back to where we started!

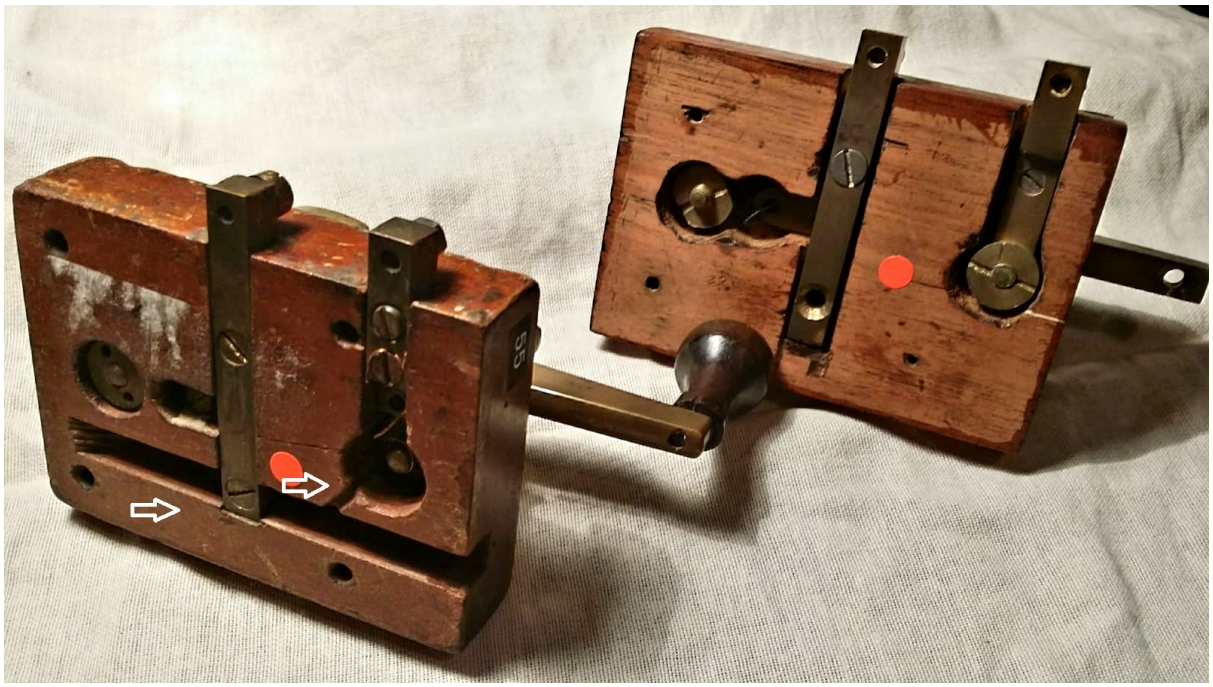
Mike may consider making one of these to tailor fit candles.

JD's: Siemens Morse Keys

John Daniel

Communications have altered a little, actually to a frightening level where Samuel Morse himself would turn over in his grave, however, tempted as I may be, I won't go down that track, neither will I repeat what you already know about the early forms of communication from smoke signals, mental telepathy or other message-carrying devices, I'll just focus on a recent project, a Morse Key by London maker, Wilhelm Siemens patented by his Brother Werner, both were Electrical and Telegraph Engineers.

Hermanas Willemsen* (Herman), a retired Morse operator and collector of Morse Code keys, passed me a couple of incomplete early keys to restore; one marked *SIEMENS BROTHERS & CO (before 1880)* and the other *SIEMENS BROS. & CO LTD* (*after 1880)*



ABOVE: The two incomplete early Morse keys

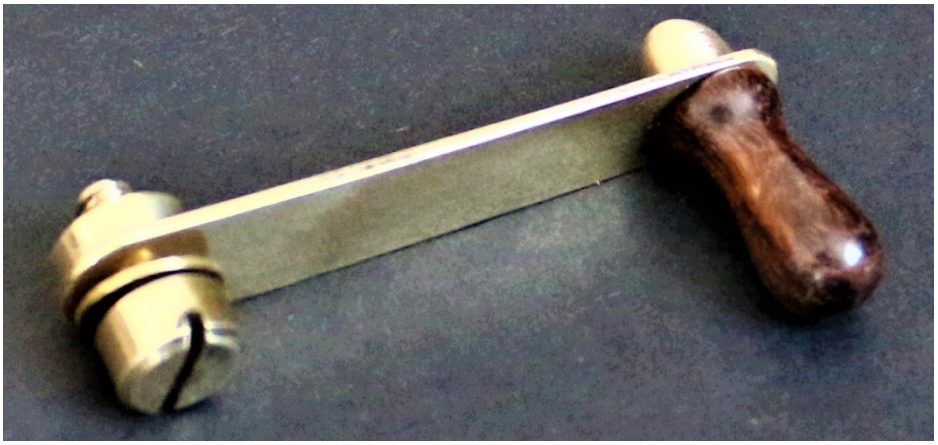
To restore the 'mounted' workings (the working parts are set-up on a base), I firstly focus on the bases. As can be seen from the first photograph both bases are well damaged, the earlier base had had a modification in the past, then removed, leaving a couple of deep grooves, both bases also have missing chips of wood (not seen in photo). The loose dust needed to be brushed off before a good clean with methylated spirits and fine steel wool prior to replacing the missing wood.

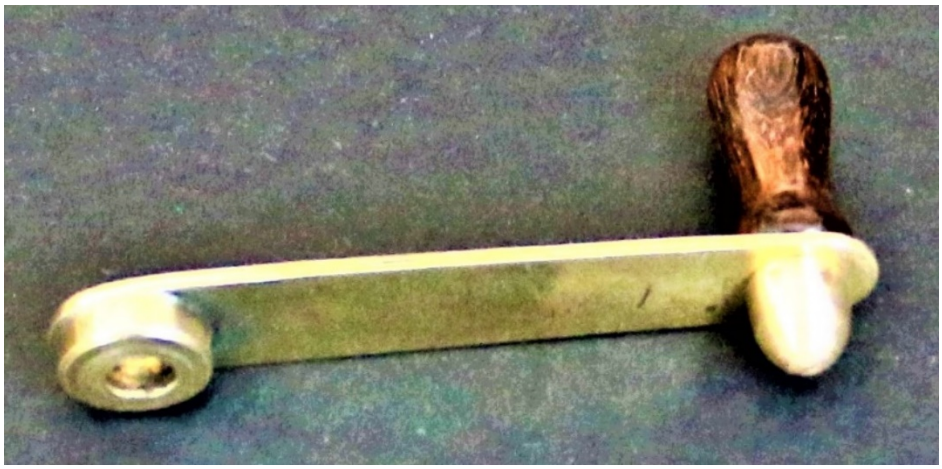
Close up of one of the two incomplete early Morse keys

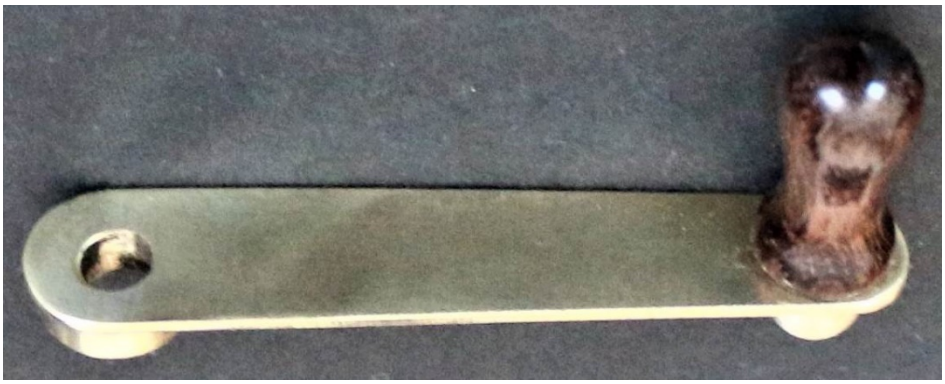
The repaired bases then needed a light staining to tone-in the replaced wood prior to a couple of brush-coats of shellac and a buff-up with Fiddes furniture wax (www.fiddesaustralia.com) and a soft cloth.

It will be noticed in the final photographs that the holes made to accommodate oversized screws used to secure the key to the operator's desk have been left in as-found condition as they revealed a glimpse into the wireless operator's workplace.

Now to the workings; some parts and a few screws were missing on both keys, however, to simplify this story, I'll just focus on the later key (*SIEMENS BROS. & CO LTD*), apart from a few screws, it was also missing a couple of knobs and importantly, its circuit breaker, (the circuit is opened when not in use, to avoid accidental signals).







A bit more time in the shed resulted in a completed and fully functional Morse key. Brazilian Rosewood was used to make the knobs, brass used to make all the metal parts including the rod for the knobs, the screws, switch and contact.

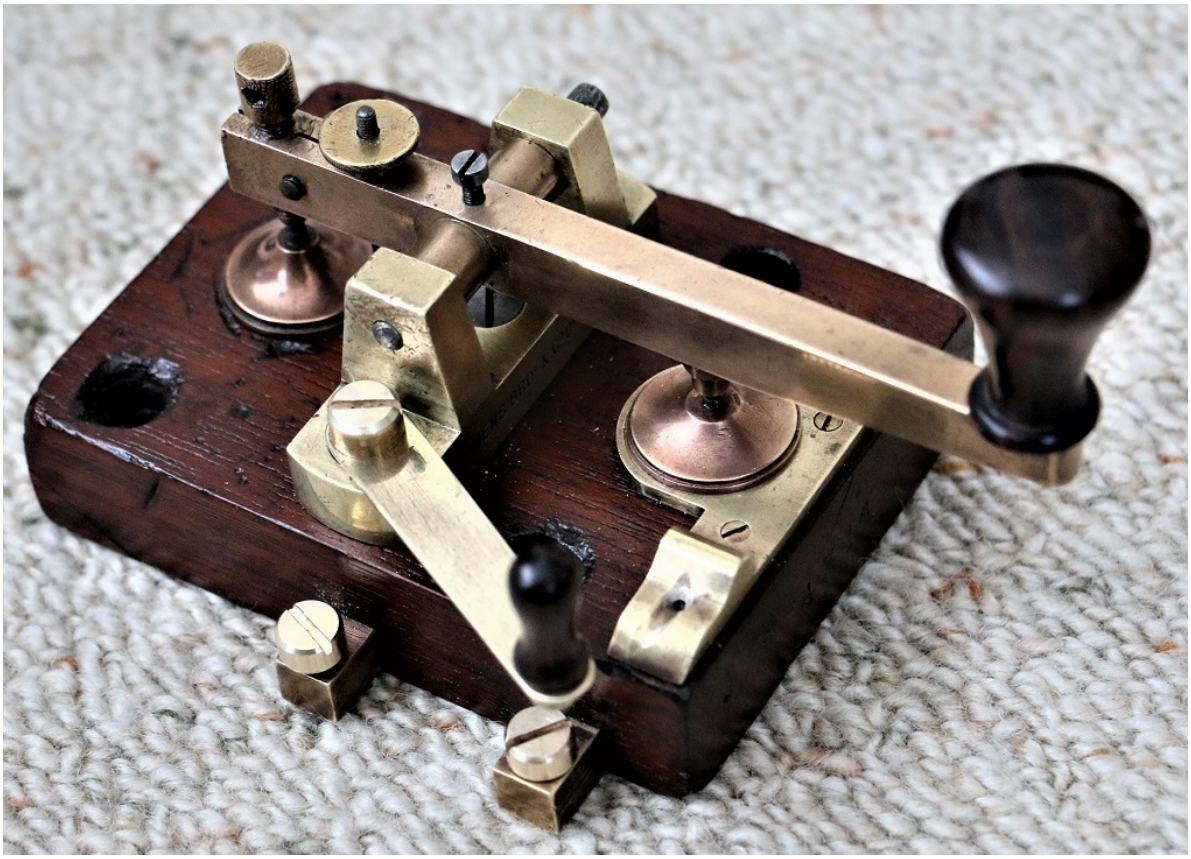
It's always a satisfying feeling when rescuing an old relic, especially satisfying to see the smile when the owner picks it up, and in this case, can't resist tapping a few dots and dashes as he was leaving.

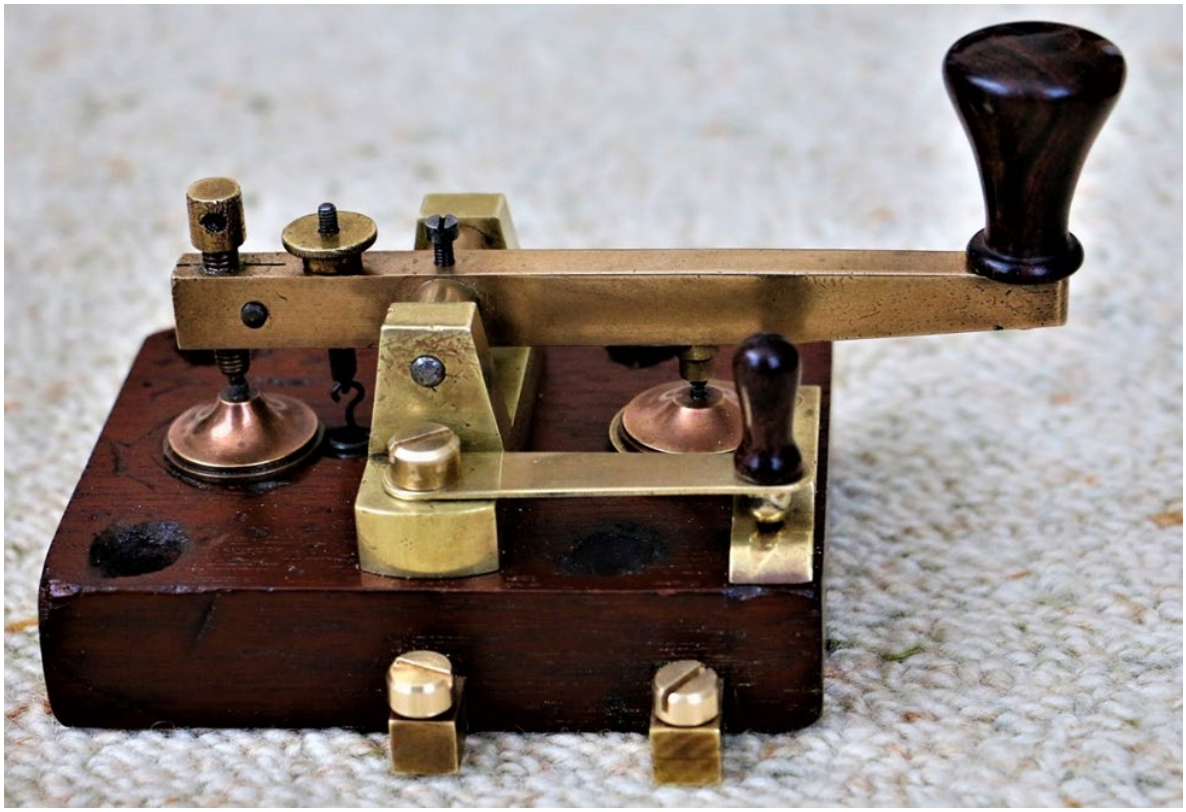
Herman's explanations for the variation of markings:

SIEMENS BROTHERS & CO
Means it was made before 1880.

In 1880 Siemens became a limited company and changed its name to Siemens Bros. & Co. Limited.

SIEMENS BROS. & CO LTD
Means this key was made after 1880 and possibly before 1901 as after Federation (1901), when the Post Master General (PMG) was formed, it started making and using its own Morse keys.
Reference: SIEMENS BROTHERS HISTORY
https://www.britishtelephones.com/histsibr.html





HERMAN WILLEMSEN -his story in a nutshell

Herman was born in Gouda, Holland (renowned for Gouda cheese) in 1940.

He spent most of his youth in a small farming village where his father was a Minister of the Protestant Dutch Reformed Church. From a young age Herman wanted to go to sea.

To get a taste of the sea, he therefore signed on during the long high school summer holidays as a cook's mate on a Dutch herring trawler and as a mess boy on a ferry running between Hook-of-Holland and Harwich. Herman liked the experience and after finishing his Higher School Certificate he joined the Merchant Marine Naval College in Amsterdam rather than going to university as his father would have preferred.

After graduation as a Junior Navigation (Deck) Officer he went to sail for the Dutch Shell on their tankers. After one year, he was honourably discharged because of short-sightedness. He wanted to go back to sea and thus went on to the Radio-Holland Radio/Electronics College in Amsterdam and Rotterdam and two years later resumed his seagoing career as Radio Officer-cum-Electronics Officer on Dutch merchant ships.

For the last six years of his seagoing career he sailed between Singapore, Hong Kong, Australia, Japan, South Africa, South America and the Philippines. Herman "dropped his anchor" for good in Australia in 1966. He worked for OTC (Overseas Telecommunications Commission) in Australia and Papua New Guinea for 30 years in which time Herman had 12 (twelve!) postings. He called his working life "a paid holiday". During his time in Broome and Darwin, OTC was swallowed up by TELSTRA.

Herman went through the ranks from Radio Officer, Senior Radio Officer and Supervisor to Station Manager. He retired in 1996 as Station Manager of Australia's major Coast Radio Station Sydney radio, located at La Perouse. During his retirement he worked as a Volunteer Coastguard Radio Operator at Port Kembla for 2 years, a part-time Teacher/Examiner in Radio & Satellite Communications at TAFE Ultimo for 5 years and a volunteer guide at the Australian National Maritime Museum at Darling Harbour Sydney for 13 years.

During his time at the Maritime Museum Herman was also operating on weekends, the amateur radio station on the museum warship Vampire.

Now fully retired, Herman has time to write articles for Australian and NZ Electronics magazines, collecting and researching the history of Morse telegraph keys and is always on the hunt for that 'next great find'…

If you have a "special find" that may interest Herman email the Editor. The NEWS editor will contact JD. John Daniel will then contact Herman.

Herman supplied this photo with the following documentation:

Here is a picture of me working in the radio room of the Dutch motor vessel "Straat Cumberland" somewhere between India and Australia.

The year is 1965. I am sending Morse code on a German-made Morse key.

Headphones on ready to receive Morse code and typewriter at the ready.

All was done on the typewriter, not anything written down by hand.

Regards, Herman

Making your own Spokeshave
Worth Doing

Hugh McKid

In NEWS 164, Worth Reading I reviewed Fine Woodworking February 2020, Issue 280 with, in part, the following:

"David Welter finishes with "Make your own spokeshave" which with our figured Australian hardwoods would be a great exercise for those TTTG members without a few different spokeshaves – it's not hard to do and would be a perfect article for TTTG NEWS.

Whilst I have been "woodworking" (on and off) for now 10 years I have never made a tool with a steel blade, probably because I didn't think I could and a bought one must be better!

So I followed Welter's article and made 4 (using a common blade). And they all work very well. In this article I'll outline what I have learnt from the process rather than the actual process (because you can follow Welter's or John Gunterman's article).

I use spokeshaves a lot to do curved work and curved templates, particularly to "fair" curves so they are pleasant to the eye and flow. I have a collection of old Stanleys, Veritas and Terry Gordon's (HNT Gordon) – I use them all but my preference is Terry's, the Veritas and then the Stanleys.

Each of these are different and require a different and nuanced approach to setting the blade, particularly the HNT Gordon which is set manually (i.e. tapping with a small, light mallet – another tool I've made a lot of). This can cause some frustration at the start but you do master it and become quite adept at doing it quickly and efficiently. All the above have one thing in common; the blade is separate and is set using a wedge, cap iron etc.

In the Welter article he uses a Hock blade which has a very different seating mechanism and has a much wider cutting edge (100mm) than the normal 50mm blades that the others use (and, as I discovered, has a benefit to astute users and makers).

I ordered a large blade from Hock Tools in the US (www.hocktools.com); being 1/8" thick, 5/8" wide and 4.7/16" long, complete with threaded posts and brass thumb nuts – product number #SP062, cost is US$40 plus shipping. Ron Hock is world renowned for his blade manufacturing and sharpening advice, publishing his pre-eminent book "The Perfect Edge – The Ultimate Guide to Sharpening for Woodworkers".

On Ron's site is a link to How to Make a Spokeshave by John Gunterman which was the basis used by David Welter – you can read/use either as instructions to guide you.

This is what I learnt during the process:

1. Print once and read the instructions at least twice, making notes and converting imperial to metric. The most important part in this is to understand what is important to get accurate *and* to be clear in the progression of which steps when. Welter goes through the process whereas Gunterman lists the steps. Welter has photos, which are useful, but you need to pay attention to what he is writing in words and what he is showing you in the photos.

2. Do a prototype out of easy to work timber that doesn't matter if you stuff it up – a prototype needs to work well before you proceed to the real deal (before using that old piece of gidgee that your grandfather left you). By doing a prototype you will:

i) work out how to mark out accurately as to what goes where,

ii) understand the practical progression of which steps when,

iii) how to physically execute the work,

iv) work out the parts of the process that you need to do slowly and accurately *and* how those parts affect the function of the tool,

v) it isn't always clear what the author means and sometimes you just need to do what you think he/she means and….then you work it out…..slowly.

3. If the prototype doesn't function as it should then keep working on it until it does. You will learn far more from doing this than starting a new prototype. For example, the issue I found first up was that I set the blade into the stock fractionally too deep and thus I wasn't exposing the cutting edge sufficiently for it to cut. From this I learnt that by shaving the "shoe" (the part in front of the blade) fractionally deeper at one end then I could vary the depth of cut along the length of the 100mm blade.

My prototype was a piece of straight grained Victorian Ash, in which I placed a pretty crude wear strip of Cooktown Ironwood. My next two came from a piece of Queensland Maple (I think) which I rescued from a campfire in Cape York and my final 'real deal' is from a smallish branch of a Cooktown Ironwood tree. They all worked equally well.

Tools Used

1. Engineers square
2. 150 and 300 mm steel rules
3. Marking knife
4. Marking gauge

5. 13/64” drill bit and a 3/8” Forstner bit
6. Smoothing plane (No 4)
7. Fine toothed carcass saw (relief cuts)
8. Chisel and mallet
9. Bandsaw
10. Dragon files

The finished product:

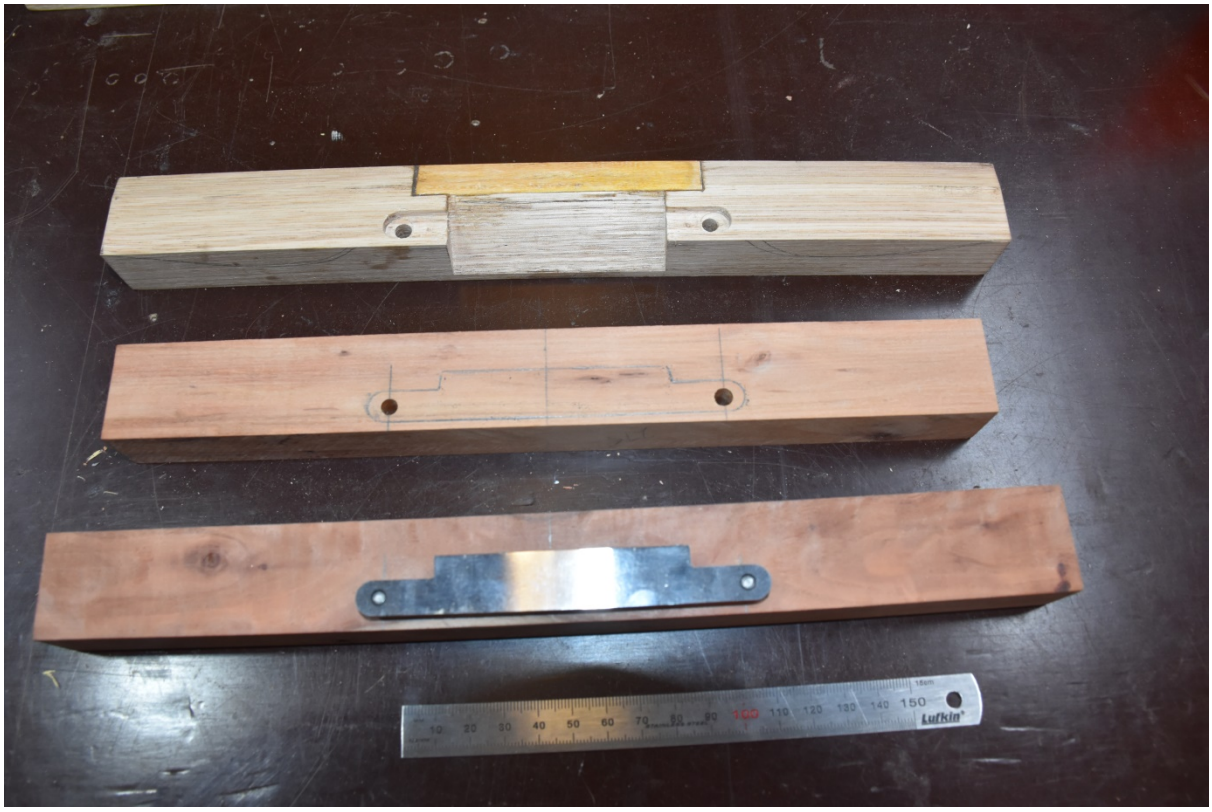
Top – Queensland maple with the blade assembly in place

Middle – another Queensland maple

Bottom – Cooktown Ironwood branch

Very top – evidence they work!

The Vic Ash prototype with a wear strip and the marking out of the next two.



Make a spokeshave or scraper workshop

- TTTG will supply a quality old spokeshave blade.
- TTTG will supply a quality wood.

OR

- You can bring a blade.
- You can bring your own wood.

The spokeshave will be similar to the one in the article

The scraper will be a “Chairmakers’ Devil”

A sharp Devil makes shaving any hardwood a pleasure!

TOOL STEELS: A BRIEF HISTORY (cont'd from NEWS 164)

John Bates

HIGH SPEED STEEL TYPES

HSS is sold under a myriad of trade names in rods, bars, flats and various tool shapes. For this reason, it is an all-too-often occurrence to come across a piece of branded HSS and have no idea what type or grade of HSS it is or perhaps even be unsure if it is or is not HSS.

The following information was compiled to give a rough guide to the composition and principal uses of the many tool steels (HSS and carbon) as well as introduce some of the useful non-ferrous cutting tool alloys.

Type "T" Tungsten-Rich HSS

● T1 (18-4-1) typical analysis (%): C 0.7; W 18; Cr 4.0; V 1.0 – this is the original 18-4-1 high speed steel introduced around 1904. Still held up as a standard general-purpose tool steel. It has a balanced combination of shock resistance and abrasion resistance. It is the easiest HSS to machine. Has high red hardness. Principal application is for cutting tools. However, it has been generally superseded by M2.

● T2 typical analysis (%): C 0.8; W 18.0; Cr 4.0; V 2.0; Mo 0.8 – with higher carbon and vanadium content than T1 and a small molybdenum addition this steel provides a harder and more durable tool edge. Often more economical than cobalt steels it hardens without a soft skin. Not as tough as T1. Suitable for fine edge tools such as hobs and threading dies, form tools, twist drills, reamers, broaches and milling cutters.

● T3 typical analysis (%): C 1.0; W 18.0; Cr 4.0; V 3.0; Mo 0.7 – the triple vanadium and high carbon content of this steel provide the highest wear resistance of any tool steel. It is suitable for cutting hard wrought metals or castings, material that work hardens and soft gummy materials where wear resistance is a major factor.

● T4 typical analysis (%): C 0.75; W 18.0; Cr 4.0; V 1.0; Co 5.0; Mo 0.8 – the addition of 5% cobalt to T1 increases cutting ability at high temperatures, making this steel suitable for hogging cuts where high heats develop. Should be used where tools are well supported, not subject to shock and ground all over after hardening. Generally used for cutting tools, broaches and cold extrusion punches.

● T5 typical analysis (%): C 0.8; W 18.5; Cr 4.0; V 1.75; Co 8.0; Mo 0.8 – the ultimate in HSS for heavy duty cutting possessing a combination of red hardness and toughness that gives outstanding performance. Recommended for heavy duty lathe, planer and boring tools. Especially adapted for cutting hard, gritty material such as cast iron or steel, also heat-treated alloy steels. Best used in tools that are well-supported and not subject to excessive shock or chattering. Cutting speeds can be about 25% faster than T1 with higher tool life.

● T6 typical analysis (%): C 0.8; W 20.0; Cr 4.0; V 2.0; Co 12.0; Mo 0.8 – a high cobalt steel having the highest red hardness of any tool steel. Wear resistance is better than the lower cobalt steels. Suitable for heavy-duty lathe and planer tools.

● T7 typical analysis (%): C 0.75; W 14.0; Cr 4.0; V 2.0 – lowered tungsten content gives increased toughness with less wear resistance. Suitable for intermittent cutting and for sand castings, hard alloys or gritty materials.

● T8 typical analysis (%): C 0.8; W 14.0; Cr 4.0; V 2.0; Co 5.0; Mo 0.8 – wear resistance exceeded only by T3 combined with good red hardness make this steel suitable for severe cutting operations, especially stainless steels. It has also given good results on hard die blocks, manganese steel castings and chilled cast iron.

● T9 typical analysis (%): C 1.25; W 18.25; Cr 4.0; V 4.0; Mo 0.75 – a high vanadium steel for extremely abrasive conditions. Runs best at high speeds with light cuts.

● T12 typical analysis (%): C 1.0; W 14.0; Cr 4.0; V 3.0; Mo 0.75 – a tough high speed steel designed for high resistance to impact. Suitable for variable cutting, such as turning through scale and broaching.

TYPE “T” Cobalt-Rich HSS

● T15 typical analysis (%): C 1.5; W 13.0; Cr 4.25; V 5.0; Co 5.0 - a tungsten / cobalt super high speed steel containing high vanadium for excellent abrasion resistance and cobalt for good red hardness. Ideal for cutting difficult to machine materials where high frictional heat is present. Typical applications include broaches, milling cutters, spade drills, taps, end mills, shaper cutters.

● T15 Powder Metallurgy (PM) primary use is in applications requiring the machining of high-hardness heat-treated materials such as high temperature alloys. The high carbon, vanadium, and cobalt content (same as regular T15) give good wear resistance, hot hardness and hardness. The powder metallurgy process has improved quality from the standpoint of structural uniformity, response to heat treatment and grindability. Typical applications include

broaches, chasers, form tools, heavy duty cutting tools, high production blades, milling cutters, reamers, and taps.

TYPE “M” Molybdenum-Rich HSS

● M1 typical analysis (%): C 0.8; W 1.5; Cr 4.0; V 1.0; Mo 8.25 – the high-molybdenum, low-tungsten HSS which is typically used is for cutting tools of all kinds. It has good cutting ability except for heavy-duty continuous cutting operations where the ultimate in red hardness is required. Due to its high molybdenum content M1 is susceptible to decarburisation at high temperatures, consequently in heat treating and heating for forging and annealing care must be used to prevent decarburisation. Both toughness and wear resistance are slightly better than T1.

● M2 typical analysis (%): C 0.8; W 6.0; Cr 4.0; V 2.0; Mo 5.0 - a tungsten molybdenum, general purpose grade which offers balanced shock-resistance and high toughness combined with good cutting powers. Suited for general machining of carbon, alloy and tool steel types. Offers good heat and abrasion characteristics. Standard machining operations can be carried out with M2 high speed steel tool bits. Bits are supplied hardened to approximately 62 to 66HRC.

M2 is the "standard" and most widely used industrial HSS. It has small and evenly distributed carbides giving high wear resistance, though its decarburization sensitivity is a little bit high. After heat treatment, its hardness is the same as T1, but its bending strength can reach 4700 MPa, and its toughness and thermo-plasticity are higher than T1 by 50%. It is usually used to manufacture a variety of tools, such as drill bits, taps and reamers.
M2 is by far the most popular high speed steel replacing T1 in most applications because of its superior properties and relative economy. It has a wider heat-treating range than most of the molybdenum high speed steels, coupled with a resistance to the decarburization characteristic of tungsten types. M2 offers an excellent combination of red hardness, toughness, and wear resistance. Typical applications include gear cutters, broaches, boring tools, chasers, drills, end mills, form tools, hobs, lathe and planer tools, punches, taps, reamers, and saws.

● M3 typical analysis (%): C 1.0; W 6.0; Cr 4.0; V 2.75; Mo 5.0 and M3 (Class 1) typical analysis (%): C 1.05; W 6.25; Cr 4.0; V 2.5; Mo 5.7 and M3 (Class 2) typical analysis (%): C 1.2; W 5.6; Cr 4.0; V 3.25; Mo 5.5 – contains carbon and vanadium levels that are intermediate between those of M2 and M4. This gives the steel a fine balance of wear resistance and grindability and provides superior resistance to abrasion and edge breakdown. This makes M3 high speed steel a superb tool material for form tools and roll turning. Increased tool life will also be experienced in the machining of heat-treated sections, castings and similar hard materials.

M3 was developed after extensive studies of the effect of increased carbon and vanadium contents on the intermediate molybdenum-tungsten high speed steels. The analysis was tried and proven on practically all high speed steel applications. M3 offers the unusual combination of extremely high edge strength at high hardness levels. With few exceptions, best life is accomplished with a minimum hardness of 65.5 Rockwell C. M3 is more readily machined and offers less grinding resistance than higher vanadium types.
Typical applications include drills, taps, end mills, reamers, counterbores, broaches, hobs, form tools, lathe and planer tools, checking tools, milling cutters, slitting saws, punches, drawing dies, and wood working knives.

● M4 typical analysis (%): C 1.3; W 5.5; Cr 4.0; V 4.0; Mo 4.75- a high-vanadium special purpose high speed steel exhibiting better wear resistance and toughness than M2 and M3 in cold work punches, die inserts and cutting applications involving high speed and light cuts. Used for cutting tools of all types for machining operations.
M4 Powder Metallurgy (PM) is a special purpose grade which utilizes its higher carbon and vanadium contents to develop excellent abrasion resistance. Produced conventionally, M4 is difficult to machine in the annealed condition and grind in the hardened condition. M4 PM is produced by the powder metallurgy process and allows the addition of 0.06 to 0.08 sulphur which provides a uniform dispersion of small sulphides throughout the structure and enhances machinability. Coupled with finer carbides and structural uniformity, better grindability is also achieved.
These factors, along with increased toughness, are ideally suited for heavy-duty cold-work applications.
Typical applications include blades, broaches, chasers, die inserts, form tools, lathe and planer tools, milling cutters, punches, reamers, slitter knives, spade drills, and taps.

● M6 typical analysis (%): C 0.8; W 4.2; Cr 4.0; V 1.5; Co 12.0; Mo 5.0 – has high red hardness and properties similar to T6. Suitable for cutting hard materials and heat-treated forgings. Operates at higher speeds and feeds than regular high speed steels. Suitable for cutting hard materials and heat-treated castings. Operates at higher speeds and feeds than regular high speed steels.

● M7 typical analysis (%): C 1.0; W 1.75; Cr 3.75; V 2.0; Mo 8.75 - widely used for cutting tools in machining operations. Exhibits good abrasion resistance because of its carbon and vanadium contents. It is an excellent choice for premium tools which require an outstanding balance of red hardness, edge toughness, and wear resistance. It is especially suited for machining semi-hard, heat-treated steel at about 300-350 Brinell hardness.

● M8 typical analysis (%): C 0.8; W 5.0; Cr 4.0; V 1.5; Mo 5.0; Nb 1.25 – a niobium (formerly known as columbium) bearing high speed steel with unusually high wear resistance. For general-purpose cutting. Resists decarburisation in hardening.

● M10 typical analysis (%): C 0.85; Cr 4.0; V 2.0; Mo 8.0 – one of the high-molybdenum types of HSS it contains chrome and vanadium but is tungsten-free. A general purpose HSS employed in tooling applications requiring excellent wear and cutting capabilities including punches, taps, drills, broaches, lathe tools, shaper tools, planer tools, etc. May also be used for boring tools, countersinks and reamers. Due to its high molybdenum content M10 is susceptible to decarburisation at high temperatures, consequently in heat treating and heating for forging and annealing care must be used to prevent decarburisation.

● M15 typical analysis (%): C 1.5; W 6.5; Cr 4.0; V 5.0; Co 5.0; Mo 3.5 –

● M20 typical analysis (%): C 0.6; W 4.0; Cr 5.0; V 1.25; Co 2.5; Mo 8.0; Boron 0.25 – an economical HSS suitable for taps, threading dies, form tools and broaches.

Type “M” Molybdenum-Rich Super HSS

● M30 typical analysis (%): C 0.8; W 2.0; Cr 4.0; V 1.25; Co 5.0; Mo 8.0 – high red hardness and wear resistance without loss of toughness. Recommended for turning chilled iron, locomotive tyres, and heat-treated forgings and castings. Subject to decarburisation.

● M33 typical analysis (%): C 0.9; W 1.75; Cr 3.75; V 1.0; Co 8.25; Mo 9.25 - typically used for cutting tools of all kinds.

● M34 typical analysis (%): C 0.9; W 2.0; Cr 4.0; V 2.0; Co 8.0; Mo 8.0 – can reach up to 65 HRC (hardness Rockwell C) and so provides the good wear resistance and excellent heat resistance (red hardness) needed for heavy duty cutting. In applications where tool chatter and shock loads can be avoided M34 is ideal for hogging tough materials or for machining gummy, ductile materials.

● M35 typical analysis (%): C 0.9; W 6.0; Cr 4.0; V 2.0; Co 5.0; Mo 5.0 - used in conditions where the demand for hot hardness is important. M35 is also a good quality wear resistant grade for cold work applications. Commonly used for cutting tools including broaches, milling cutters, reamers, end mills and saw blades. Also known as “5% Cobalt HSS” M35 is a development of M2 and contains 5% cobalt which gives improved hardness, wear resistance and red hardness. It may be used when cutting higher strength materials. M35 is also

known as HSSE or HSS-E.

● M36 typical analysis (%): C 0.9; W 6.0; Cr 4.0; V 2.0; Co 8.0; Mo 5.0 – developed for heavy duty cutting where the maximum of red hardness is required.

● M38A typical analysis (%): C 1.5; W 6.5; Cr 4.5; V 4.75; Co 5.0; Mo 5.0 – similar to M36 but with only 5% cobalt and increased vanadium for better wear resistance.

TYPE "M" Molybdenum Ultra-Hard HSS

● M40 typical analysis (%): C 0.6; W 2.0; Cr 4.0; V 2.0; Co 8.0; Mo 5.0; Boron 0.5 – more highly alloyed than M20 this steel has wear-resistance said to be several times that of other high speed steels. Suitable for heat-treated steel, cast iron, brass, plastics, and other abrasive materials.

● M41 typical analysis (%): C 1.15; W 6.25; Cr 4.25; V 2.0; Co 5.0; Mo 3.75 - a Molybdenum ultra-hard HSS whose primary application is as cutting tools for machining operations.

● M42 typical analysis (%): C 1.1; W 1.5; Cr 3.75; V 1.15; Co 8.0; Mo 9.5 - a 'Super Cobalt' molybdenum-cobalt grade with a high hardness (up to 70 Rockwell C) and superior hot hardness offering excellent cutting performance and excellent wear resistance. It offers increased tool life with retention of the cutting edge. M42 tool bits are supplied hardened to approximately 65 to 68HRC. The alloy has excellent hot hardness and wear resistance and is commonly employed to machine difficult to machine materials including the superalloys.
This steel is ideal for machining higher strength materials and work hardening alloys such as stainless steels, Nimonic alloys, etc. Despite its high hardness, M42 has good grindability characteristics due to lower vanadium content. The carbon content is higher than in most high speed steels, and with this balanced composition, contributes to wear resistance and hot hardness as well as the high hardness.
It is widely used in metal manufacturing industries because of its superior red-hardness as compared to more conventional high speed steels, allowing for shorter cycle times in production environments due to higher cutting speeds or from the increase in time between tool changes. M42 is also less prone to chipping when used for interrupted cuts and costs less when compared to the same tool made of carbide. Tools made from cobalt-bearing high speed steels can often be identified by the letters HSS-Co.
Typically employed in broaches, circular and dovetail form tools, drills, end mills, lathe tools, milling cutters, punches, reamers, slitting saws, and twist drills,

hobs, taps, form and gear cutters, and chasers.

● M43 typical analysis (%): C 1.25; W 1.75; Cr 3.75; V 2.0; Co 8.25; Mo 8.75 –

●M44 typical analysis (%): C 1.2; W 5.25; Cr 4.25; V 2.25; Co 12.0; Mo 6.25 –

● M45 typical analysis (%): C 1.25; W 8.0; Cr 4.25; V 1.6; Co 5.5; Mo 5.0 – obsolete.

● M46 typical analysis (%): C 1.25; W 2.0; Cr 4.0; V 3.25; Co 8.25; Mo 8.25 - primarily used for cutting tools.

● M47 typical analysis (%): C 1.1; W 1.5; Cr 3.75; V 1.25; Co 5.0; Mo 9.5 –

● M48 typical analysis (%): C 1.5; W 10.0; Cr 4.0; V 3.0; Co 9.0; Mo 5.25 - a tungsten type super high speed steel hardened to RC 68-69. It contains high vanadium for excellent abrasion resistance and cobalt for excellent red hardness. Ideal for special purpose cutting tools requiring super high hardness and red hardness, excellent wear resistance and good toughness.
Typical applications include milling cutters, form tools, end mills, broaches, cutting tool inserts, reamers, extrusion die inserts, cut-off tools, lathe tools, shaper tools, and taps.

● M50 typical analysis (%): C 0.85; Cr 4.0; V 1.0; Mo 4.25 – a general purpose HSS most often employed in tooling applications where abrasion resistance is less important, such as woodworking tools and commercial twist drills. Considered intermediate HSS in view of a lower total alloy content than standard types. Normally limited to less severe service conditions.

● M51 typical analysis (%): C 1.25; W 9.5; Cr 4.0; V 3.25; Co 10.0; Mo 3.5 –

● M52 typical analysis (%): C 0.9; W 1.25; Cr 4.0; V 2.0; Mo 4.25 - most often employed in tooling applications where abrasion resistance is less important, such as woodworking tools and commercial twist drills. Considered an intermediate high speed steel in view of a lower total alloy content than standard types. These leaner alloy grades normally are limited to less severe service conditions. Suited for applications not requiring a full HSS such as body stock for carbide tipped drills and reamers, wood cutters, pipe taps, thread chasers and small drills.

● M61 typical analysis (%): C 1.8; W 12.5; V 5.0; Co 5.0; Mo 6.5 - High speed tool steel may have been discontinued. Working hardness in 67-69HRC range.

• M62 typical analysis (%): C 1.3; W 6.25; Cr 3.5; V 2.0; Mo 10.5 - primarily used for cutting tools. Super high speed tool steel. Attainable hardness 68-70HRC.

• M100A typical analysis (%): C 1.3; W 9.0; Cr 4.0; V 3.5; Mo 3.0 – super duty high speed steel. Particularly suitable for automatics on all materials.

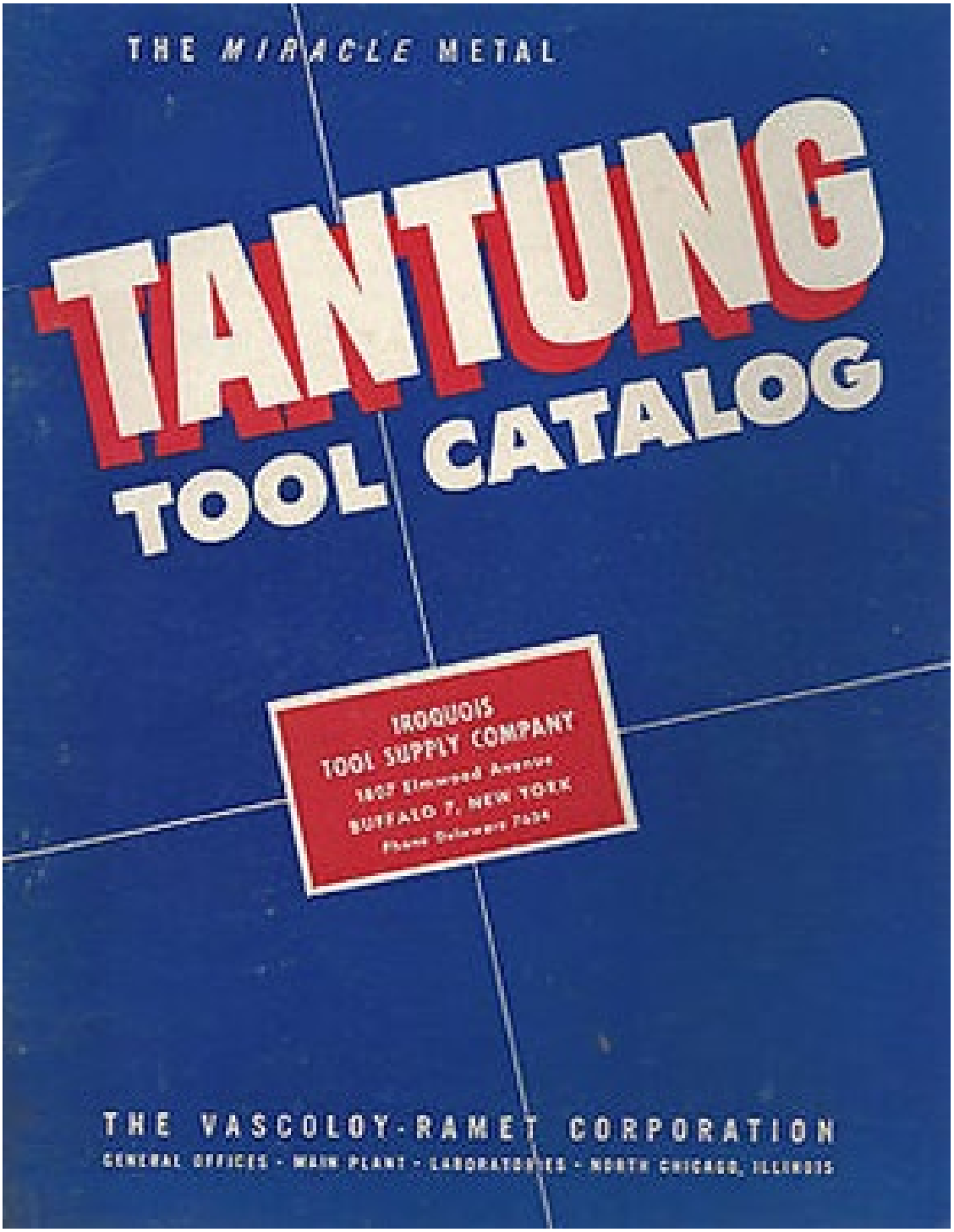
Cobalt-Based Alloys: Non-Ferrous Cutting Tools

Cast cobalt alloys were developed to bridge the gap between high speed steel sand carbides. Although comparable in room-temperature hardness to high speed steel tools, cast cobalt alloy tools retain their hardness to a much higher temperature and can be used at higher (about 20%) cutting speeds than high speed steel tools. Unlike the high speed steel tools that can be heat treated to obtain the desired hardness, cast cobalt alloys are hard in the as-cast condition and cannot be softened or hardened by heat treatment.

Non-ferrous alloys used for cutting tools are often called cutting alloys. These are distinct from alloy steels, although some may contain iron and be allied to the super high speed steels. They may have a base of nickel or cobalt and usually contain tungsten.

An early alloy of this type knows as 'Cooperite' contained 80% nickel, 14% tungsten, 6% zirconium (Zr) or less tungsten and some silicon and molybdenum. An English cutting alloy sold by Samuel Osborn & Co Ltd under the name SOBV (or S.O.B.V) cutting alloy contained high percentages of chromium, cobalt, tungsten, and iron with some vanadium and molybdenum and is more accurately described as a super HSS.

LEFT: May 1950 advertisement by Deloro Stellite (UK) Ltd, Birmingham



Stellite: Stellite is a non-ferrous alloy discovered by the American metallurgist Elwood Haynes in 1907 and is similar to the modern cemented carbides. In 1912, he formed Haynes Stellite Company to produce one of the new alloys, and received lucrative contracts during World War I, making Haynes a millionaire by 1916. He merged the Haynes Stellite Company with Union Carbide in 1920. Stellite is made in various grades for cutting tools, hard facing valves, rock bits and crusher rolls. It is typical of the non-ferrous hard metals and the cutting properties are inherent in the alloy and are NOT produced by heat treatment.

Stellite contains from 40-75% cobalt, 15-35% chromium, 10-25% tungsten and about 2% carbon and small amounts of iron and molybdenum. Stellite retains its hardness at red heat.
The use of cast-cobalt cutting tools should be considered when:

- Relatively low surface speeds cause build-up with cemented carbides;
- Machines lack the power or rigidity to use cemented carbides effectively;
- Higher production is required than is possible with high speed tools; and
- Machining rough surfaces of castings where the surfaces contain abrasive material such as sand, oxide, slag or refractory particles.

These cutting alloys were designed to bridge the gap between High Speed Steel and cemented carbides.

The name Stellite is derived from the word “Stella” meaning a star and is an ideal name for when polished Stellite gives an untarnishable lustre.

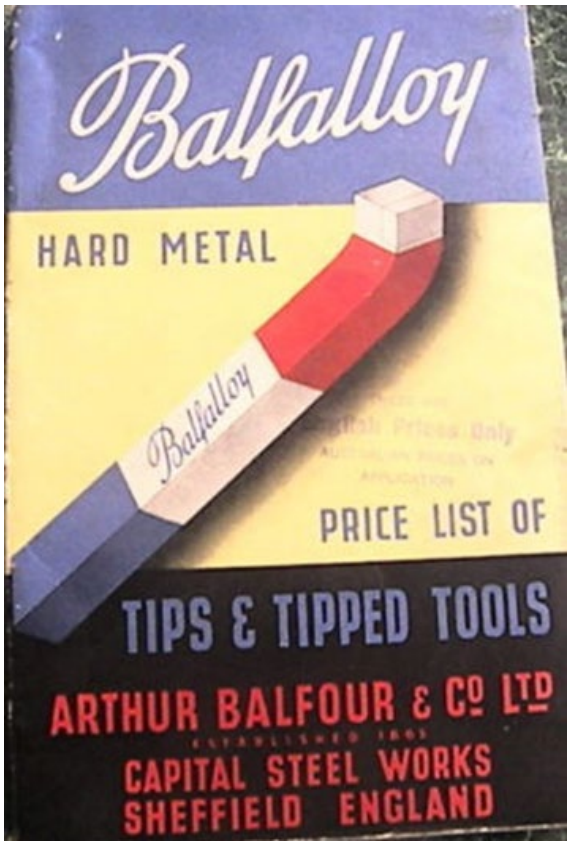
Stellite may be considered as the forerunner of the non-ferrous cutting alloys. It differs from those alloys which were introduced later in that it is a cast material whereas the others are cemented and sintered products. In its improved form, known as Grade 40 Stellite, it is claimed to be equal to the cemented carbides as a cutting alloy. It is an alloy comprising cobalt, chromium and tungsten, which cannot be heat treated and so is cast in the required shapes and ground to final dimensions. The approximate composition of the Stellite alloys is Cobalt 35-47%; Chromium 25-32%; Tungsten 14-21%; Carbon 0-4% C; and Iron 0-5%.

The metal is softer than HSS but possesses a higher red hardness value and because of its hardened state when cast it can only be machined by grinding. Another valuable feature is that it can be welded making it highly suitable for hard facings such as those on work rests of centreless grinders.

Stellite alloys possess properties somewhere between high speed steel (HSS) and carbide. They can be ground with a standard grinding wheel, though the process can be a bit slow going. They're tough and work well on interrupted cuts and on castings that would tend to chip carbide, though they're more prone to chipping than HSS.

High lubricity is another feature and that prevents welding of material on the tool tip. They cannot be annealed and thus retain their hardness and cutting ability to red heat. In general, they will operate at two-times or more the speed of HSS, but not that of carbide.

Modern cast alloy tools are ground on all sides and have a similar appearance to HSS tooling. They resist corrosion extremely well and may stand out in used tooling for that reason.



Don't be put off by the appearance of older cast alloy tooling; some may look like it was cast in a backyard barbecue. It will be dark in colour and have significant imperfections and poor grinding.

New cast alloy blanks may still be available from three manufacturers, but don't expect to get them cheap!

Stellite is used in the form of solid cast tool bits, tips, parting blades, milling blades and tipped tools. The alloy is at its best when it has plenty of work to do and it is tough enough to take interrupted cuts without chipping. It cannot be rolled or forged and is shaped by casting and subsequent grinding. The tool bits are available in inch and metric sizes.
Stellite retains its hardness at temperatures of 700°C (1290°F) upwards to a much higher degree than HSS or other tool alloys.

Tantung: The Tantung cast alloy cutting tool material is composed principally of chromium, tungsten, columbium, and carbon in a cobalt matrix. These elements combined in the proper proportions and cast in chill moulds give Tantung its most important characteristic; the ability to retain its cutting hardness at temperatures of up to 815°C (1500°F).

Tantung is neither high speed steel nor carbide.

Tantung has a high transverse rupture strength, low coefficient of friction and excellent resistance to corrosion. It is tough, readily absorbs shock and impact, and is non-magnetic; it likes to work.

As a cutting tool, it is ideal for all turning, facing, boring, milling, and cut-off applications on nearly every type of metal as well as non-metals. Tantung can be run at surface speeds of up to 2.3 m/s (450 fpm) but performs best at speeds of 0.5 to 1.5 m/s (100-250 fpm) and can be used to excellent advantage on machines where speed, power, and rigidity are limited. In addition, it will not anneal or lose its cutting edge as will HSS when subjected to high-red heats generated during the cutting cycle.

Tantung G is recommended for general purpose machining of both ferrous and non-ferrous metal and general woodworking operations. For VR/Wesson catalogue items, Tantung G Hardness is quoted as 60 to 63 HRC and transverse rupture strength is 2070 MPa (300,000 psi) minimum.

Typical composition of Tantung G is cited as Cobalt 35-40%; Chromium 27-32%; Tungsten 14-19%; Nickel 7%; Carbon 2-4%; and Iron 2-5%.

Uranium in High Speed Steel

During the early 1900s a series of exhaustive tests and experiments were conducted with a view of improving the texture and durability of high speed steel. Scientific opinion at the time was that uranium carbide made an excellent

alloy with steel and, if it could be obtained at a commercially viable price then, it could potentially replace nickel and tungsten in the manufacture of high-class steels. There were also tests conducted using metallic uranium and ferro-uranium.

The results from these tests led to the Standard Alloys Company of Pittsburgh PA offering Uranium high speed steel to the consumer with the assurance that it would increase the efficiency and output of the shop through longer life of the tools, due to their toughness and heat-resisting qualities.

Uranium high speed steel allowed the machinist to take deeper cuts with increased feed at higher speeds compared to any other steel, and the established use of Uranium in some of the best high speed steels for several years demonstrated that Uranium produced desirable qualities that could not otherwise be obtained. Only small percentages of Uranium, in the order of 0.15% to 0.3%, were required to accomplish these effects.

For full details of the Standard Alloys Company's tests see *Uranium in Steel: The history and function of this element in the making of Uranium steels, with analytical methods and test charts*. Standard Alloys Company, Pittsburgh, 1921.

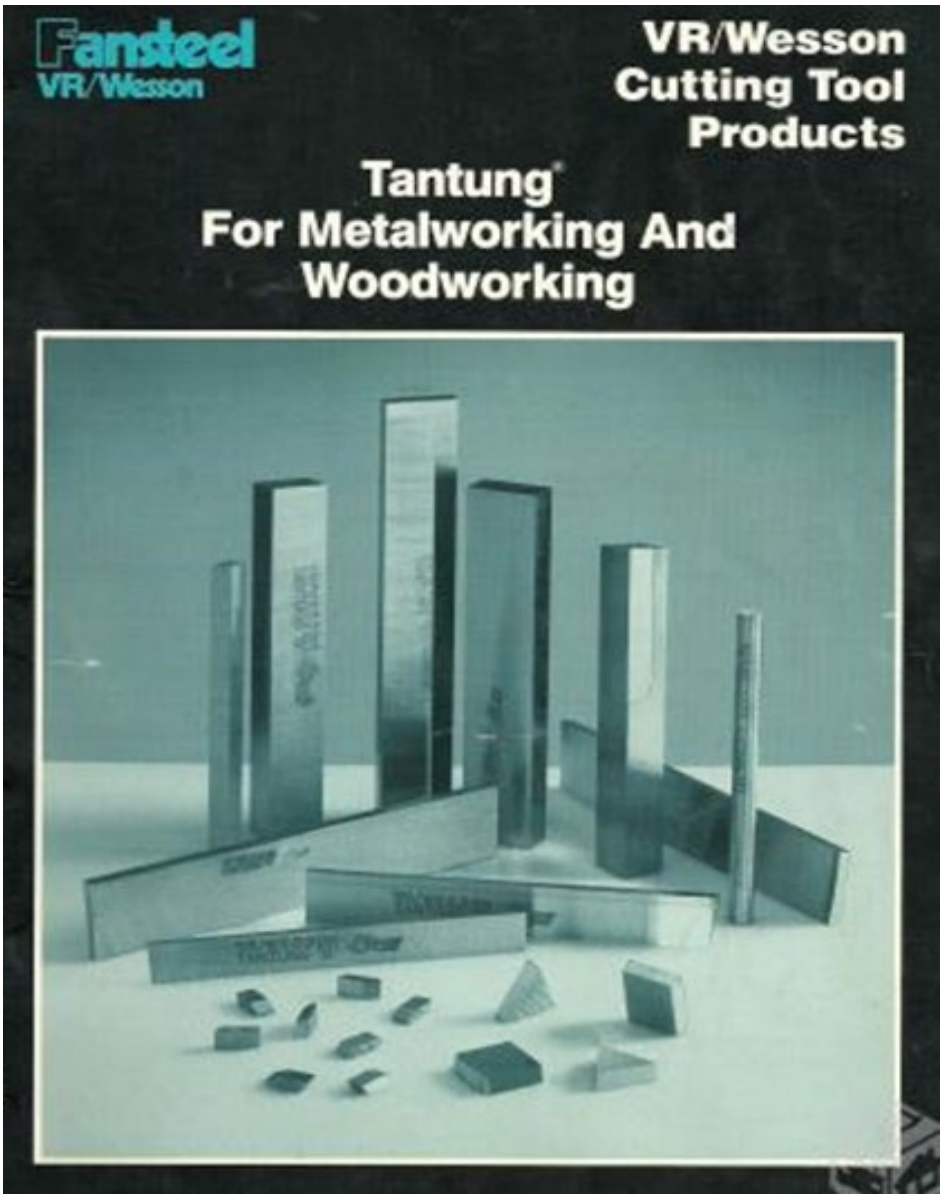
The results produced by Uranium in HSS are explainable in the formation of more stable carbides and tungstides. When Uranium is present there is also evidence that complex carbides are formed, which are more readily soluble in the gamma iron. As these carbides have an influence on the cutting qualities, this

accounts for the excellence of the cutting performance of Uranium high speed steels.

The Standard Alloys Company claimed that “Uranium steel marks the greatest single advance in alloy steels in recent years”. The alloys did not prove to be commercially successful in the long run. However, during World War I and afterwards, uranium-doped steels were used for tools; large amounts of ferrouranium were produced between 1914 and 1916. Production apparently ceased during the 1930s owing to the high costs and lack of demand.

Tool Steels: A Brief History John Bates

NEWS 166 **Some important carbon tool steels**
Water, Oil and Air hardening steels



The final chapter of *Tool Steels: A Brief History* will be published in NEWS 166.

After NEWS 166 is emailed to TTTG members the complete article *Tool Steels: A Brief History* will be available on the TTTG website.

Tools for Making Dovetails

Buying a selection of the top-quality tools recommended to make fine dovetail joints can cost more than buying a top of the line dovetail router jig. The good news is equally good tools can be purchased second hand for less. Some of the tools can be easily made!

These are the tools you need.

Dovetail Template
Resist buying the latest template with digital read out. Instead make a template. You will find drawings and instructions in the old textbooks such as Charles Hayward's. At a TTTG Dovetailing Workshop the instructor has simple dovetail jigs for use by the participants. Once you have used one you will be won over. You may even consider making your own. Bob may even have a few of his "ply and Laminex" templates for sale.

Confused over dovetail angles?
The compromise dovetail angle is 1:7. Simple gradient, run of 1, rise of 7. Set a sliding bevel to the "set out" of this angle and use the sliding bevel to set out the 1:7 when making the dovetail template.

Don't waste time using a sliding bevel setting out dovetails.
Luxury sliding bevels are tempting but old sliding bevels are inexpensive. Look out for a Disston with a cast iron body. Set the bevel and test it. The blade should lock solid. Bevels with wooden bodies often fail this test.

Cutting Gauge
A good cutting gauge is essential for efficient dovetail setting out.
Luxury cutting gauges are expensive, but old cutting gauges are not. Buy old!
A missing "knife" or wedge can be easily made. Good cutting gauge blades can easily be made from metal cutting jigsaw or trimming knife blades.

Dovetail Saw
The myth "you need a saw with very fine teeth".
Old dovetail saws that haven't been commercially sharpened in decades do surface at TTTG tool sales. They all have teeth "rip" filed with no set.
Contemporary saw makers have rediscovered how to make dovetail saws.
Another myth is "the best saws had brass backs". This is good news for users as the collectors go for brass backed saws. An old Disston or similar dovetail saw with a steel back is worth buying!

Buying Dovetail Saws
The old brands to look out for are Disston and Spear & Jackson.
The "best new saws" are made by Lee Neilson, Veritas, Bad Axe etc.
The decision to make is "traditional design or modern materials?" Using carbon fibre for the saw's back has produced light saws with "one screw" handles that don't tend to come loose with the changes in humidity.

Buying a new dovetail saw.

Buying a new dovetail saw from Jim Davey is good option. Jim sells online and before he dispatches any tool he opens the box and examines the tool. Who could expect more! https://www.jimdaveyhandtools.com.au

Veritas Standard Dovetail Saw - 14 TPI **AU$149.00**

The spine is moulded from an advanced material incorporating stainless-steel powder for weight, glass fibre for stiffness, and a polymer resin binder. An over-moulded blade and stainless-steel handle-mounting bolt creates a solid blade/spine/mount assembly. A single brass fastener secures the hardwood handle. Made of high-carbon steel, the blade is 9.¼" long and 0.020" thick, with a cut depth of about 1.9/16". The teeth, set 0.003" per side, have a rake angle of 14° and an included angle of 60°. The blades have 14 or 20 rip-cut teeth per inch. The 14 tpi model is most efficient on stock thicker than ½"; the less aggressive cut of the 20 tpi version is best for stock under ½" thick. Comfortable and well balanced, each saw is 14.¼" long overall. Patented. Made in Canada.

Coping Saw

Second-hand Disston and Eclipse Coping Saws sell for under $15.

The “redesigned truss engineering” coping saws are impressive. The good news is the old design coping saws cut as well! The secret is coping saws cut on the pull stroke, the teeth point to the handle. The hard part is finding good quality coping saw blades. The coping saw is used to remove the waste.

Pencil
With the money you have saved buying second-hand lash out and buy a box of H grade pencils from Office Works!

Mallet
A traditional Joiner’s mallet is far better than a carver’s mallet. The mallet is only used to chop the waste from lap dovetails,

Chisels
Bevel edge chisels are necessary. Look out for old bevel edge chisels. The best bevel edge chisels have octagon handles but the blade is the important part! Suitable new chisels are hard to find. TTTG purchased a few “best I can find” bevel edged chisels from Jim Davey. Buy from Jim! Buy 6mm and 12mm chisels first. www.jimdaveyhandtools.com.au

Making chisels
Excellent dovetailing chisels can be made from old files with a triangular cross section. If you have metal working skills this is a good way to go! Machinist’s “three square” files are ideal. The teeth can be ground off but the safest method is to soften the file and then file the soft file. After filing the new chisel is hardened and tempered. A potential TTTG Workshop?

Dividers
A pair of small spring dividers save time when spacing dovetails.

Chalk
Pencil lines on the end grain of dark wood can be difficult to see. Rubbing white chalk across the end grain makes the lines visible. Dustless is best!

Dovetailing Workshop

Post COVID-19 Restrictions

Cutting well-fitting dovetail joints doesn’t take “decades of experience”. The secret is in the technique and using sharp appropriate tools. Before you spend a fortune on expensive tools come to this workshop.

Watch the TTTG Website for the date of this workshop.

Scratch Awls

ABOVE: Colen Clenton, Australia

ABOVE: HNT Gordon & Co. Australia

A sharp marking awl is a basic tool for making dovetail joints.
The marking awls above are the “Rolls Royce” of marking awls/knives.

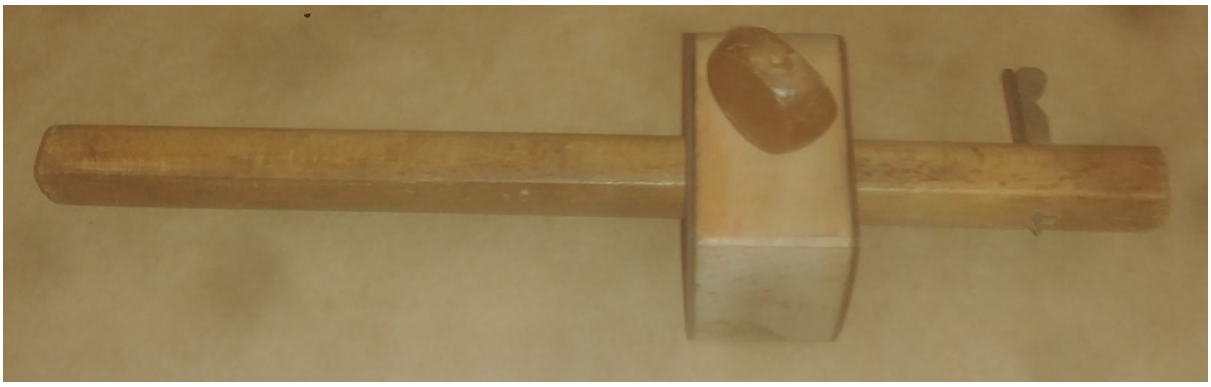
Second-hand marking awls can be purchased for a few dollars.

Marking Awls are easy to make. The steel part can be made from Silver Steel or an old carbon steel knitting needle. The handle can be simple, it doesn’t even have to be turned. The secret is “hard steel, correctly sharpened”.

All covered at TTTG Dovetailing Classes.

If you have the money buy locally made quality tools.

Cutting Gauges



Traditional wooden cutting gauge with wooden thumb screw. Second-hand ones are plentiful and cheap.

Replacing a missing cutter or brass wedge is a simple job. The “stock” will be worn. Plane it flat and face with 1960’s thick Laminex.

Where do you get 1960’s thick Laminex? Watch the “the side of the road”.

The cutting gauge below has been refaced with classic 1960’s red!

Thick Laminex is a better “hard surface” than brass. Apply the glue to the back of the Laminex. Glue under pressure.

The best glue is Titebond. When set flush trim the edges.

New Versus Old Dovetailing Tools

Every few years the tool sellers come up with a “must have” dovetailing tool. Late last century Japanese chisels and saws were the way to make dovetails. Strange given dovetails were unknown in Japan before western contact.

Quality Japanese chisels are good tools but they are expensive. If you want to spend money buy old Octagon Boxwood handled Bevel Edged Chisels. Sharp thin tapering bevelled edges are what you look for when picking a suitable chisel. Reject bent and heavily rusted chisels. Handles can easily be replaced. Lapping flat and edge grinding will rejuvenate any old chisel.

Classic Brands

Ward, Marples, Mathieson, Sorby, Berg and Titan roll off any collector’s tongue. Old chisels were forged and the best makers heavily stamped their name on the non-cutting surface of the chisel below the handle’s ferrule where it would be seen! If it’s a good mark the chances are it is a good chisel.

New Dovetailing Chisels

Ask a reputable tool seller to suggest a “good quality reasonably priced” chisel. As an example, Jim Davey will be able to answer this question.
https://www.jimdaveyhandtools.com.au

Eventually you will need a very narrow chisel. Bevel edge chisels 1/8 inch wide were made. Finding an old one in good condition with a full-length blade isn’t easy. Worth the chase and worth the price! The other essential sizes are 6mm and 12mm. Easier to find, old or new.

Making narrow dovetailing chisels

When you come to a TTTG Dovetailing Workshop you get to use a narrow chisel made from an old “three square” file. Ask how to make one and for a few old files. A small donation will be appreciated. The effort involved in “rolling your own” chisel is time well spent.

Japanese Saws

Late last century the tool sellers from the USA marketed Japanese saws as better than UK style saws. Traditional back saws sharpened correctly cut as fine a kerf as Japanese saws.

Worth Reading Hugh McKidd

Fine Woodworking March April 2020 (Issue 281), 86 pages, 7 articles

Nancy Hiller has the cover with a solid timber standing chest made with American Oak. It is sturdy, in line with the original Cotswold School of Arts and Crafts design of Ernest Gimson – exposed joinery and decorative carving and motifs. It demands hand tools and hand skills in cabinetmaking and Hiller doesn't shirk away from this although she uses machinery where required. This solid timber style of cabinetry lends itself to doing the whole lot by hand because the rustic, strong Cotswold design can handle the inevitable imperfections of making it entirely by hand.

Megan Fitzpatrick bookends the issue with making sawhorses – a simple exercise in using all your hand skills – not a machine in sight. Handmade sawhorses are "old school" and thus have an enormously wide range of uses across all trades. If you are at the start of your woodworking and want to test or improve your hand skills, make them – you will only get better!

There is a very elegant side table (very light, no drawers) from American white ash which could be done in Vic ash (Tassie Oak).

Gary Rogowski highlights four methods for keeping glued panels flat by using breadboard ends. Many woodworkers come to grief on making tables using big, heavy, hard Australian hardwood boards glued together – they split, warp, bow and cup as the timber moves. Timber selection, type of cut, drying time and correct selection and placement of individual pieces are all essential, however the method of construction and use of a breadboard end can turn a dining room table disaster into a long-standing success.

Fine Woodworking May 2020 (Issue 282), 86 pages, 9 articles

David Welter writes an article on making a hall table that is very similar in design to the side table article in Issue 281 above, the main difference is Welter's table has a "floating" top and thus probably looks better.

Tom McLaughlin has a detailed article, complete with measurements on making a chair. Many woodworkers shy away from making chairs due to their perceived complexity and the fact that you usually need to make a number of them. But this requirement of uniformity and number can work for you in that as you complete a prototype and work your way through the joinery, dimensions and construction methodology, then doing 6 chairs can be done as a production line – just make sure your prototype has worked through all the issues! McLaughlin focuses on key strategies/techniques for making a chair – full scale drawings, templates, jigs, pattern making and construction methodology. The fact it's in imperial will mean that most people here will need to re-draw it in metric and

whilst that process is long and laborious it will mean you will understand that chair very well before you start. (Maybe the plans come in metric – I didn't check, but I would still recommend that you draw it out in full, all three dimensions and make your prototype).

Michael Pekovich details an all-in-one workstation for doing dovetails (if that's your thing) - it appears a good idea if you're about to make a piece with traditional solid carcass dovetailed drawers.

Three other articles are worth mentioning for TTTG members; fuming wood to alter the colouring without obscuring the grain (Chris Cochnour); Gary Rogowski on techniques for taming tearout (a common and frustrating affliction to users of Australian hardwoods) and a master class in making pierced panels by Brian Newell. Cochnour's sideboard door panels are spalted, a technique we see very little of in Australia – but very effective.

This issue has a one-page review of Milwaukee's new cordless router and receives the thumbs up. FWM did a review of cordless routers in Issue 277 and the reviewer says Milwaukee's is the best.

Australian Wood Review June 2020 (Issue 107), 82 pages, 9 articles

Reviews are carried out on the Hafco tablesaw, Wikus bandsaw blades, the Nova Orion 18" lathe plus a set of Hillbilly Forge Tools (carving).

Henrik Tjaerby (Danish) makes a lightweight woven slatted bench which is relatively simple and looks good and apparently weighs 3 kgs. Tim Coleman (US) has an interesting article on the embellishment of furniture surfaces, where patterns and motifs are stamped, inscribed, pierced and pieced together. Again, we don't see these techniques used a lot in Australia and it is very effective when used judiciously.

For us dreamers, there is an article on a six-week open studio residency at the Centre for Fine Woodworking in New Zealand with Michael Fortune. Linda Nathan's opening line is, "It's said that learning from Michael Fortune is like drinking from a fire hose." Enough said!

Raf Nathan shows how to make an Heirloom chest – it was a commission so the client constraints are somewhat limiting, but then the construction methodology is very efficient as it has to be as the client is paying. For me it's very plain (another client constraint) and could well do with some of Nancy Hillier's decorative work mentioned in FWM Issue 281 above or even some Tim Coleman embellishment or a spalted panel.

Carol Russell continues with Part 2 of finishing small objects – the use of colour and other surface treatments. The technique of Shou sugi ban, a Japanese technique of charring the surface and then oiling it, is very effective.

Steven Der-Garabedian uses veneering and laminations to make a tea tray – a

small project that can have an attractive end result.

And Phoebe Everill finalises her Shave-horse project in Part 2.

For something out of the ordinary there is an article titled “The ExLab Experiment” conducted by students at the Melbourne School of Design in innovating a common concept using wood. In this case it was seating; chairs and stools, and there are some very creative and innovative designs.

Raf Nathan finishes off the issue with a nice little exposé on spokeshaves, listing the better made ones. (TTTG members will know that an older second-hand full price, but I must say I like using my Veritas and HNT Gordon shaves!).

Hare and Forbes 90th Anniversary

& Chevy truck restoration

On the 26th of June Hare and Forbes celebrated the company’s 90th anniversary and a restored Chevy truck “Flatbed Felix” was presented by our General Manager Rick Foster to the Hare Family to celebrate the occasion and as a token of appreciation from all the staff. Industry Update put together a write up on the occasion and a link to the magazine is attached, article is on page 67.
https://issuu.com/industryupdate/docs/ind_up_issue114_june_2020_nat_lr

During the rebuild none of the staff or owners had seen the progress of the Chevy restoration other than the articles that were being published on our website and I have attached a link to these as well. I’m sure this would be of great interest to your members and “Flatbed Felix” is in the showroom if they ever want to drop by to see it.
https://www.machineryhouse.com.au/Articles

Send TTTG a letter, or an email, or even a text message!

When COVID-19 hit, the committee was organising a new website.

The Lock Down now prevents the brain-storming sessions and meetings involved in defining TTTG’s website needs and expectations.

One of the high priorities is to make the new website more interactive. In other words, to make it easier for interested people to talk to TTTG.

Send the editor your comments on the website www.tttg.org.au

With NEWS going “digital only” the web site options have changed.

As an example, expect to be able to download back issues of NEWS, with a cut-off date, possibly “up to the second last issue”.

Where to Get It

Hare & Forbes, Parramatta

https://www.machineryhouse.com.au/?Store=20

Machinery and engineering tools and a restored old Chevy to examine. Always worth a visit.

Graham McDonald Services, Girraween

http://gmdengineering.com.au

Machinists tools and supplies. You can also get your Mitutoyo spare parts and tools here rather than go to 'that other distributor'.

Lee Brothers, Parramatta

http://www.leebros.com.au

Since 1910 the "Nut House" has been the place where you are likely to match a screw thread. Extensive stock and helpful staff.

Jim Davey, Nowra

https://www.jimdaveyhandtools.com.au

Jim sells tools online and now has a new website. Great stock plus Jim know what he is selling and goes out of his way to help.

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