

The Drift

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The Australian Blacksmiths Association (Victoria) Inc.

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The ABA Vic. (Inc.) Barn.

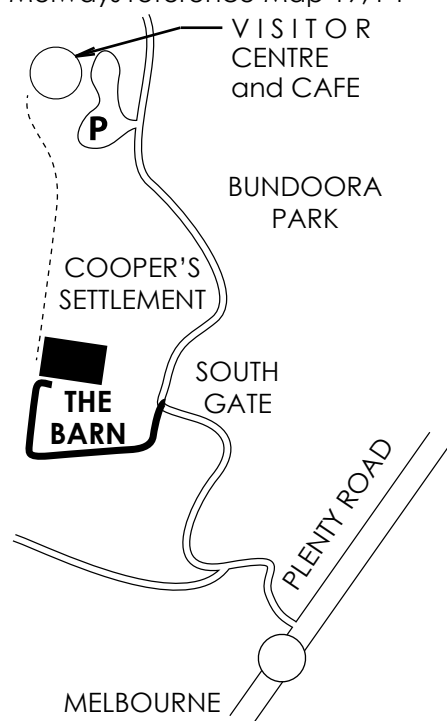
Photo - Jim Deering.

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The Barn Location

The Barn is part of The Cooper's Settlement, Bundoora Park, Plenty Road, Bundoora.

Melways reference Map 19, F4



The Barn Policy

Members can enjoy use of ABA (Vic.) Inc. equipment at The Barn.

- Forge fees are \$5.00 for a half day and \$10.00 for a full day.
- Forge availability is on a first-in first-served basis.
- You will need to clean out the hearth and start the fire.
- Due to coke supply issues keep your fire to a size which suits the stock you are working.
- **Ask the forgemaster if you are unsure or need advice.**
- If you plan to forge in the afternoon, arrive in time to pick a forge to use. Members who arrived early and started their fire are not always receptive to

- late arrivals asking to share.
- Members who wish to use the power hammers must either be trade-qualified and experienced in the operation of this sort of machinery or have successfully completed the ABA Vic. (Inc.) power hammer course.
- When you finish, let the fire go out, clean up your work area and replace tools in their storage locations.
- Always clean up spilt coke.
- Report damaged equipment.

Library Policy

Members can enjoy access to the ABA (Vic.) Inc. library of books and magazines. The library is open from 12:00pm until 1:30pm on regular workdays.

- Borrowing members must have completed the self-paced learning exercises and attended the three regular workdays immediately prior to the borrowing date.
- Up to 4 books may be borrowed at any one time.
- Books must be signed for, including the borrower's name and contact details.
- Books are due for return by two calendar weeks of the borrowing date.
- If another member has reserved the titles, this member has priority for borrowing the books next.
- If unreserved, the loan may be extended for another two weeks, provided the books are returned to The Barn after the initial two weeks and the member signs for the extension period.
- Returning books late will result in the member being prohibited from further borrowing for a period of one calendar month.

- Magazines are not available for borrowing.

If you know of a title that may be of interest to the membership, please contact the librarian so a purchase can be considered.

The Drift Articles

Articles for *The Drift* are always welcome and may be emailed, preferably in Word. In the text, place the words "Image of..." and the image file name. Do NOT place images in the text file.

Unaltered, high-resolution digital images, preferably in colour, straight from the camera or phone, are preferred, of a maximum single file size of 5MB.

Hand-written articles and hardcopy photos may also be submitted via the ABA (Vic.) Inc. P.O. Box, so don't let a lack of computer skills get in the way. If you want your photos back though, please include a stamped, self-addressed envelope.

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The Drift 118 out Aug 2020 The Drift 119 out Nov 2020 The Drift 120 out Feb 2021 The Drift 121 out May 2021
Deadline 14 Jul 2020 Deadline 14 Oct 2020 Deadline 14 Jan 2021 Deadline 14 Apr 2021

Barn Roster

NOTE - Until further notice The Barn is closed to members. Once restrictions are lifted a new Barn Roster will be drawn up and we will resume regular work days, courses and other activities.

Purposes and Objectives of the ABA (Vic.) Inc.

To promote, preserve and develop the craftsmanship, design aspects and techniques of all the various disciplines of blacksmithing to the highest standard possible.	awareness of and interest in the application of the skills of blacksmithing among architects, interior designers, art/craft groups, and the general public and to provide links between blacksmiths and potential customers by means of exhibitions, demonstrations and publications.	To act as a representative body of the interests of Australian blacksmiths, locally, nationally and internationally.
To provide a means of communication between mature people with an interest in the craft of blacksmithing, for the exchange of ideas, experience, techniques and information for their mutual benefit, by the publication of a regular newsletter.	To promote, and actively provide opportunities for training in all the various aspects of blacksmithing by means of demonstrations, displays, lectures, and special tuition sessions.	To undertake community service, providing always that these services are within the comfortable limits of the time, talents and costs that the Association and individual members can afford.
To encourage a greater		To encourage communication and goodwill among blacksmiths everywhere.

Advertising

Commercial advertising, deemed by the Committee to be of interest to members, may be published in <i>The Drift</i> .	Advertising rates are \$60.00 Quarter page \$120.00 Half page \$240.00 Full page Colour Add \$75.00	Members are invited to place classified advertisements free of charge. Contact the Editor to book in and for details required to publish the advertisement.
Contact the Treasurer to book in and organise payment.		



President's Report

Andrew Mobilia

Strange times indeed. The world as we knew it when the last edition of *The Drift* was issued has changed substantially and with it the way most of us are currently spending our lives.

We are very fortunate to be living in a country that has not suffered the extremes of this virus that other countries have. At the time of writing this report (30 Apr 20) we have had 90 deaths. The USA has over 60,000 and rising!!

It would appear as if the lock-down precautions so far issued by the

Federal and State governments are working.

The ABA (Vic) has been basically marking time for the past 6 weeks with access to the Barn and its equipment denied to its members.

This will continue until approval is given to return. When, who knows?

In the meantime we just have to

wait.

At this point in time I don't have anything further to add except to ask you to take care of yourself and family.

In the meantime, stay safe.

Andrew Mobilia.

Secretary's Report

Rick Stadler

On the 18th March 2020 Darebin Council announced the closure of Bundoora Park due to the COVID19 outbreak and social distancing requirements imposed by the Federal and Victorian Governments. The forges were closed and virtually all Association activities were suspended.

All courses have been suspended and we are all just waiting to see how this situation plays out before we can look at resuming any normal Association activities.

So, we are all dealing with altered lives and functions while the lock-down is in place. My family are all working from home so the serenity is totally gone. But it has been

an opportunity to catch up on a number of jobs around the place in-between making copious cups of coffee, meals and tiptoeing around the home offices.

There is little happening in the Association at this time. The tearooms are being worked on as supplies and time are available and they are progressing.

Advice on the AGM is that the date will have to be moved, pending on return of normal life.

For the moment, hang in there, stay safe and well and we will be in touch as soon as further information comes to light.

Rick Stadler.

Editorial - Part 1

Jim Deering

Given the Association is in limbo until the CoVid-19 situation provides us with a more predictable 'new normal' than currently available - suburb-specific lock-downs across the wider Melbourne area began as this edition of *The Drift* was in preparation - there have been some wholesale changes to the newsletter.

As mentioned in the Secretary's Report, courses have been suspended and we are all just waiting to see when we can get back to something near what used to be considered normal.

To avoid promoting events that have been, or may be at short notice, cancelled or postponed, our usual Events Notices PLUS has been changed to provide

only contact details of other Associations and groups so that members may determine for themselves what is on offer elsewhere.

The usual Barn Roster has been put on hold until we are back in The Barn. Can you volunteer as a Forgemaster?

To try and help members beat

the boredom some how-to's have been added to this edition - thanks to those who have contributed these.

As soon as there is some certainty around, the AGM date will be advised to members. Discussions are taking place to see if on-line services are feasible for this and an extension of time to hold the AGM is being sought.



Steampunk Forge

Rick Stadler

In *The Drift* 112 I mentioned a charcoal BBQ that had been left on a vacant block. With extra time available I had a ball trying different things with it.

The side draught works well and the water-cooled tuyeres are most effective, however, I have had to re-purpose an old water-bath pump to reticulate the water through an oil-cooler mounted in front of the blower's intake but it keeps the temperature down well and there is no sign of wear on the tuyeres.

Playing with this led to the development of a very portable blower for shows. An old hairdryer with blown heater elements was dissected and given a fan-ectomy.

This version of hairdryer used a small 24V DC motor to drive the fan. The fan was wrapped in a stubby holder and wired up to a pair of 12V batteries in series to provide a very strong and sustainable airflow. A switch will be added to control the flow.

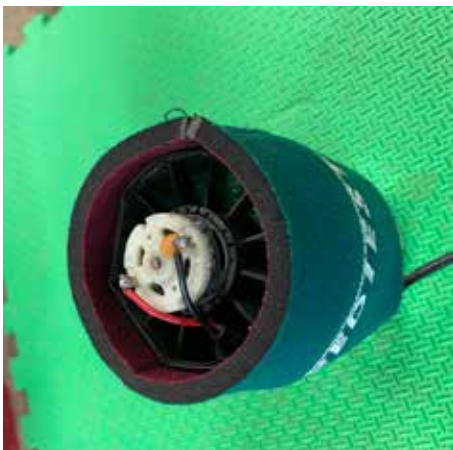
I had two old fume cupboard fans that I 'steampunked' using some scrap sheet to mount as a blower.

Unfortunately this did not work as the fans are used for moving a volume of air and not for pressure.

They didn't appreciate being squeezed down to a 2.5" collar.

The message out of all this tomfoolery is to experiment and have a go at stuff. You'll be amazed at what works and you learn from what doesn't. Work safely and within your capabilities but experiment with what is around you. It is a heap of fun and very time consuming during lockdowns...

Rick Stadler.



Events Notices PLUS

Kieran Gleeson

If any of these events appeals to you, get in touch with the nominated person and make your way to the next event.

REGULAR MEETS

ABA (Vic.) Inc.

www.abavic.org.au

Mont De Lancey Blacksmiths

www.blacksmithing.com.au

Mont De Lancey Homestead,
71 Wellington Road, Wandin North, VIC.
Oskar 0434 533 217

National Steam Centre

www.melbournsteam.com.au

Queensland Metal Artisans Collective QMAC

www.facebook.com/groups/1040000799413532

Join page and PM Graham for details.

Please contact Kieran Gleeson, or the Editor, to add an event for upcoming editions of *The Drift*.

As events can be subject to change at short notice, please check with the contact person **before** you head off.

Western Australian Blacksmiths Association

1 Graylands Road, Claremont, WA.
Richard after 6pm WA time 0429 687 267
www.bawa.net.au

South Australia Blacksmiths Association

General meeting 4th Thursday of the month
The Elephant and Castle Hotel West Terrace Adelaide.
www.artistblacksmithsa.org.au

In following editions of *The Drift* we hope to continue publishing Kieran's Events Calendar, thus providing on-going notice of activities which may interest members.

Thanks for the effort you're making Kieran! Ed.

Peel River Artist Blacksmiths

Tamworth, NSW.
Craig Drew 0407 005 557
www.artistblacksmithnsw.com

Everyone, please note. For state-run blacksmithing events, there may be a requirement that all participants be paid-up members to attend.

Note - At this stage events external to ABA Vic. (Inc.) are not being advertised as they normally would be in our Events PLUS section, as it is difficult to confirm events with any certainty. Contact details of regular meets are though included, hopefully making it easy for members to get in touch with other blacksmithing groups.

Please keep in mind there are gathering and social distancing restrictions being placed and lifted all over the country at present, as we find ourselves in quite a fluid situation. Before you travel, please make sure it is safe and permitted and perhaps keep in mind you may be caught in the quarantine net if you are traveling interstate. **Ed.**

Welcome to New Member

ABA (Vic.) Inc. would like to welcome the following new member.

Garry Johnson of Bayswater

Please make yourself known when visiting The Barn - when it re-opens that is. Better still, send some info about you and your forge to editor@abavic.org.au and introduce yourself to the broader membership. You could even include a picture of yourself, perhaps in your workspace - so we know who to look out for!



The Ordnance Factory Maribyrnong

Keith Towe

An insight into the History of the Ordnance Factory in Maribyrnong, Victoria, during the time of its operations from the early 1900's until its closure in the late 1980's.

The factory complex trained many thousands of apprentices in every conceivable trade and engineering activity over those years.

The late Harry Park, former member Boyd Thompson and I, served our time at OFM with our indenture papers indicating the trade of "Gun Forging and Smithing", which was in fact Engineering Blacksmithing.

We all had good training from experienced blacksmiths and heavy forgers, and we had experience working under the 1,500 ton steam press, the 15 cwt pneumatic hammer, smaller pneumatic hammers, and drop hammers, as well as plenty of anvil work.

As this article indicates, the OFM played a huge part during WWII, and even during the Korean War, I remember well the gun barrels, shells and army and naval forged components that were produced for the Australian Defence Forces.

Many of our early ABA Vic. (Inc.) members visited the OFM just weeks before it sadly closed, was bulldozed and the area converted to a housing estate; the only reminder of the No. 1 Forge is a sign showing Forge Court within the housing estate.

Note. I understand that the following data came from a former blacksmith, Maurice Slocombe, who worked with Harry, Boyd and I in the 1950's.

Keith Towe.

No. 1 Forge Shop and Heat Treatment Section. Building No. 49.

The original northern half of the shop was finished during 1927,

and extended to its present length during 1937-38.

Plant installation was commenced during the latter end of 1927. Forging operations in the forge shop began in August 1928 when the original 8 ton furnace was lit, and steam was raised in two boilers for a trial run of the 1,500 ton Davy

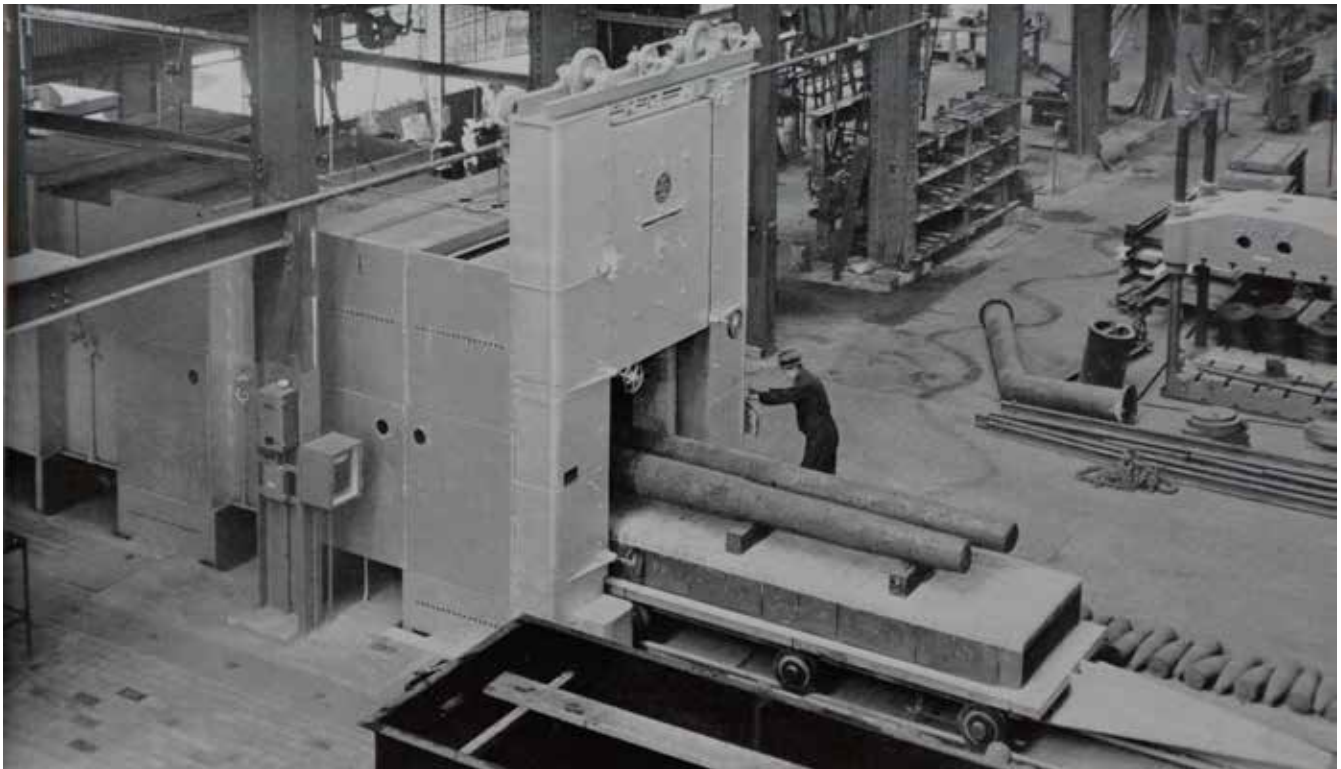
forging press. (Image below).

The first shells forged in Australia were 18-pounders and were produced on the Shaw presses at the northern end of the shop during 1929. It is interesting to note that these presses are still in production for forging small orders and odd components.



1,500 ton Davy press forging an ingot, OFM, source Keith Towe.'





Original image caption - Electricity in modern Melbourne industry. An electric furnace in a munitions factory. Document details unknown, source Keith Towe.

Heat treating two navy gun barrels at OFM. Note the row of shells, bottom right, awaiting heat treatment or having been treated - Keith Towe.

The first large order received in the shop was in 1930, for several thousand stay bolts for locomotive boilers for the Commonwealth Railways. This work brought the drop hammers into operation for the first time.

Later, orders were received for motorcar axles, transmission parts and shock absorber components, and during 1931 the Davy press was first brought into operation for production work forging 8" (203 mm) shells for the navy.

The first forging squad consisted of Jock Robertson, Dan Doolan, George Dunn, J. Vale, J. (Peggy) O'Neill and Harry Allsopp and it is interesting to note that three of this team were still in the forge in November 1943. (Dan Doolan and Harry Allsopp were still in the forge in the early 1950's when Harry, Boyd and I were in the forge K.T.), Dan Doolan in charge of one of the forging squads, Harry Allsopp as Leading Hand Furnaceman and J.O'Neill as one of the Crane Drivers at the big press – all three were part of the forging team.

The first briquette-fired heat treatment furnace was installed about this time and later, a second larger unit was added. These two furnaces being first attended by Harry Allsopp, and later by Harry Smale. Many thousands of shells, bombs and gun components have been heat treated in these furnaces.

Work was very scarce during the Depression Years, a few replacement gun components and motor car parts keeping the shop going.

May, 1935, might be said to have been the birth of large ordnance forgings it was then that the first major gun components were forged for 3" (75mm) 20 cwt. anti-aircraft guns from blooms received from overseas. The first Australian-made bloom of gun steel arrived at the Ordnance Factory for forging in May 1937, and was followed in March, 1938, by the first Australian gun barrel, which was successfully heat treated in the forge shop.

It is gratifying to note that from that date Australia has been self-supporting in steel or ordnance items.

The combined vertical hydraulic forging press at the south end of the shop was also installed during 1939, and has been in continuous use since.

The war years saw great changes take place in the forge shop with tremendous increases in plant and the number of employees, and the variety of work handled.

Hollow forgings, handling large ingots up to 13 tons in weight, the forging of bars up to 50 feet (17 m) long, large gun barrels and liners up to 40 feet (13m) long, and 8.5 tons in weight have now been commonplace, and local steels are being heat treated to the highest specifications to rival anything done elsewhere in the world.

The men of the forge did a great job, and apart from one or two with previous experience in ordnance

work, all had to learn the job from the ground upwards and many difficulties had to be overcome.

The following men were among the earliest employees who worked in the shop.

Blacksmiths

Horrie Andrews

Jim Meikle

G.E. Roberts

Jock Robertson – a barrel-chested Scot and champion wrestler who wrestled The Great Hackenschmidt (https://en.wikipedia.org/wiki/George_Hackenschmidt) under the name of Jim Campbell. Jock was also a champion blacksmith.

Others were

Enoch Adams

Tom Kempster

J. O'Neill

Harry Allsopp

J. Grieves (the first crane driver, and later in the welding section)

Harry Smale

Bob Galloway

Dan Doolan

George Dunn

Phil Lockington

Alf Stanton

'Big' Jack Whelan

George Vass

J. McCallum.

In later years the following personnel were employed as Foreman in progressive order:

FORGING. HEAT TREATMENT.

Ern Roberts

Jack Moore

Fred Heaviside

Hugh Schroder

George (Shorty) Thompson

Bill Harris.

Phil McGuinness

Ron Stein

Lachlan Robertson

Bill Ponslow

Len Buxton

No. 2 Forge Shop Building.

The buildings were erected in 1941 and the installation of plant was completed in July 1941 comprising

boilers, hydraulic pumps and accumulators, compressors. Gas producers, 800 and 1,000 ton forging presses, three mechanically-driven "Baldwin Omes" forging units, six shell forging furnaces, and seven gas-fired annealing furnaces, together with the necessary equipment for machining and heading shells and bombs.

The forging of 250 lb. S.A.P. bombs was commenced in January 1942, on the 800 ton Davy shell forging press in No. 1 Bay, and the first bomb was headed about a month later.

This job presented many difficulties in the initial stages, but it was carried through very successfully, and of a total of 23,000 bombs forged and headed, only 44 bombs were scrapped in these stages.

Production of 25 Pdr. shell was commenced in April 1942, on the Baldwin Omes press in No. 4 Bay, almost 340,000 of these shells being forged and rough machined in this section, and 9.2" HE and practice shells were forged in No.1 Bay at the end of the year.

In October 1943, the first 500lb. bomb was forged, and at the end of the year forging and machining of 5.5" H.H. Shell was in progress. At the beginning of 1944 the forging and machining of 3" mortar bombs was commenced, and in May of that year, the first 8" H.E. naval shell was forged. This shell was pierced to a finished cavity and many difficulties had to be overcome in the initial stages. However, over 10,000 shells were forged and headed successfully with only a small number of rejects.

The experimental forging of the 9.2" AP shell was successfully carried out at the end of 1944, and the experimental forging of the 9.2" caps was also successful early in 1945.

Personnel

Senior Engineers

Mr. E. Herbert and later Mr. R. Campagnolo and Mr. W. Miller.

Section Engineers

Messrs A. Phair and B. Pennycook.

Section Foremen

Messrs T. Irvine and T. Chapman.

Engineering Staff

Messrs R.I. Moss

E. Siggs

K. Robertson

J. O'Callaghan

D. Jones

G. Ditchburn

R. Hanson

W. Wallace

L. Amos

A. Cooley.

Few skilled tradesmen were available at the commencement of this project and trainee labour was used for installation and operation of this large plant. Women were employed machining 25 Pdr. shells and the 3" mortar bombs and other small shells handled by this section.

Maximum number of employees – 225 male and 38 female.

The Plate Shop – Building No. 50

The Plate Shop was originally formed as a section within No.1. Forge Shop in 1932 and it remained there until 1942.

The new Plate Shop, Building No. 50 was completed and occupied in 1942 and is adjacent to the west side of No. 2 Machine Shop.

Whilst located in the Forge, the Plate Shop produced the first two armoured cars built in Australia and made available for the 1932 Centenary Tattoo. Later, six all-welded reconnaissance armoured cars were built on Ford V8 chassis.

Another large project was for two box girder bridges for the army with a working load of 8 tons and tested with a proof load of 21 tons.



The section also produced the mountings for the 3" 20cwt HA anti-aircraft gun (mobile) and later mountings for the 3.7" anti-aircraft gun (static).

During WWII the Plate Shop produced 40mm Bofor gun mountings, platforms and pedestals.

A major project was the construction of 11 No all-welded lighters for the United States Army.

The 65 ton vessels were transported by road and launched in the Yarra River, North Wharf by the Melbourne Harbour Trust's cranes.

Later, the fitting out with engines, pumps, cabins etc of the 11 No lighters plus 7 which were launched but not completed prior to the 11 No, was carried out by Ordnance Factory staff at Gem Pier, Williamstown.

Many other large items including 240 No pontoons T.6 measuring 7ft x 5ft wide x 5ft deep produced for the Army.

As an experiment a 3-cylinder Ruston and Hornsby housing was made from mild steel plate in all welded construction to offset the delay in the delivery of housing castings. The experiment was successful and reduced the weight considerably, viz. casting 23 cwt, fabrication 18 cwt.

In the post-World War Two period the shop produced many large items such as components for Doxford marine diesel engines. These components included bedplates, columns and entablatures and similar items for the Sulzer marine diesel engines assembled by the Commonwealth Government Marine Engine Works at Port Melbourne and later L.O.X. tanks, decompression chambers and pontoons etc. were built.



OFM pneumatic hammer, B and S Massey 'Clearspace' 15cwt with Keith Towe at control lever. June 1992. Image source - Keith Towe.



Former ABA Vic. (Inc.) member Boyd Thompson examining a gun barrel at Garden Island, Sydney, NSW. Image source - Keith Towe.



For Sales and Sponsors



BOC

The AUSTRALIAN BLACKSMITHS ASSOCIATION (Victoria) Incorporated would like to acknowledge the continued support of BOC GASES in supplying our workshop oxygen and acetylene gases.

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SHANE KENNY.**

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At this stage we are NOT selling coke in bulk.

Further information - contact

Steve Nicoll 0438 662 900

Brit Chapman 0498 508 862

Phil Pyros 0403 664 108



FOR SALE AT
THE BARN

TOYOTA AXLE
MATERIAL

\$5.00 each.

33mm
diameter

600mm long

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removed

Tough,
hardenable
and great for
tools.

The AUSTRALIAN BLACKSMITHS ASSOCIATION (Victoria) Incorporated has numerous **Puffing Billy carriage axles. For Sale \$50.00 each.**

Approximately Ø90mm by 1,220mm long.

We understand they are low carbon steel.



Jack Hammer Moils. For Sale \$10.00 each.

About 30mm A/F hex by 900 to 1,000mm long.

Large quantities available.

We understand they are an alloy carbon steel but do not have a specification for it.

Contact Stephen Nicoll 0438 662 900 for details.

Carriage axles and moils **MUST** ALL be sold.



FOR SALE Limited quantity - hurry before it's all gone!

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HIGH FLASH POINT OIL SUITABLE FOR HEAT TREATMENT

THE NEXT BEST THING TO THE REAL THING: AVAILABLE NOW AT THE BARN

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THE DRIFT 117
MAY 2020

11

Dog Spike Fishermen

Peter Willis

I thought I'd share some photos of my Easter in isolation forging project. I'm still a novice, but I'm quite happy with the way these dog spike fishermen finished up!

The limbs are steel pinned and peened in position.

A final coating of linseed oil while still hot.

I made them as gifts for future staff retirements at work. (Rail industry).

My next project is to create some rail spike people playing golf, reading, surfing ?

Regards,
Peter Willis.

Great job Peter, thanks for sharing. **Ed.**



Candelabra Pictorial How-to

Stephen Nicoll



... and that members, is how you make a horseshoe, I mean a candelabra!

You never know, there might even be a course coming on this project... **Ed.**



The decision has been made to close Bundoora Park Farm until further notice.

We apologise for any inconvenience caused.

The health and wellbeing of our visitors, staff and the broader community is our first priority. This is a preventative measure in response to community concern about the spread of Coronavirus (COVID-19).

Please visit darebin.vic.gov.au for regular venue and service updates or call Council on 8470 8888.

For all other advice and information regarding the coronavirus please visit the Department of Health and Human Services website at dhhs.vic.gov.au/coronavirus or call the coronavirus hotline on 1800 675 398.

Mini Club Rooms Update Barn

Shane Kenny

Work slowly continues with the club room modifications, the internal strengthening steel work has been mostly installed and the external curved roof trusses have now been manufactured and installed.

Two industrial window assemblies have been purchased and refurbished, support frames have been fitted to mount them in the hut. As it was near impossible to locate any other suitable windows three new industrial-style windows have been manufactured to complete our window requirements.

This now brings me to the problem of glazing.

With the help of Dr Google and any online videos on the subject, It was decided to give it a go. It looked so easy in the video.

Cutting the glass was done slowly, safely and proved to be quite doable. It became obvious that

we would need a huge amount of glazing putty, again Dr Google provided the information..... Boiled linseed oil and whitening.

What is whitening?

Calcium Carbonate.

After consulting with our Club secretary, a newly retired person from the farm feed industry, I learnt that it is used as a feed supplement.

A twenty kilogram bag and linseed oil mixed and deftly applied as per the video and.... disaster.

It looked like a coarse river sand applied to the widow edges that sagged leaving a rather depressing

looking frown across the pane when the widow was installed.

After grinding the whitening down to a finer powder in an industrial blender, supplied by our club secretary (hasn't everyone got one of these at home?) the mixture appeared to be working, fingers crossed.

With the virus outbreak, progress on the Club rooms has been impacted but it does continue as best as possible.

Stay well and safe.

Cheers,
Shane Kenny.

The Melbourne University Gate Tour - coming, soon

Keen-eyed members will have noticed, and perhaps recall, that mention was made of The Melbourne University Gate Tour in *The Drift* 116.

Given the weather, CoViD-19 and the fluid situation around it, the Editor has decided to hold off running this article in *The Drift* 117.

Once things settle down, and the weather improves, I hope to run this article, in all it's glory, in a near-future edition of the newsletter. It won't be long, really it won't, until the article appears...

The Forged Dragon Head Project - pto...

In the meantime, over the page, there is another How-to for members to try at home...

The Forged Dragon Head Project is reprinted with kind permission from Saltfork Craftsmen, editor Russell Bartling and article author Rory Kirk, of Cheyenne, Oklahoma, America.

Visit www.saltforkcraftsmen.org to learn more about this fellow blacksmithing group in America.

Thanks Russell and Rory, it's a really great article. **Ed.**



Forged Dragon Head Project

By Rory Kirk



Photo 1: A Finished Dragon Head Display

This is my version of a dragon head that can be used for stand alone display (Photo 1) or to accent a variety of projects like bookends, door pulls, fireplace tools, etc.

This is my specific method and sequence of doing the work which has proven to work well for me. You may want to make adjustments for your own specific situation and artistic tastes. I have gotten ideas and inspiration from others that helped me develop my own style so hopefully this will inspire others in the same way.

I start with 3/4" square mild steel bar. Heat up the end of the bar and set down the end for the beard (Photo 2.) The dimension of the set down isn't important. You will have too much material and will need to cut it off later. But it is really hard to set down with too little material so this is the best approach. The thickness is also up to you. I take it down to about 1/4" or a little less but the final dimension will be adjusted later when finishing the beard.



Photo 2: Set Down for the Beard

Now turn the bar over and knock down the flats for the nostrils. I use a flat faced hammer and knock down each corner made by the set down operation at an angle that is nearly 45 degrees (Photo 3.)

Go with what looks right to you here. Take the flats down until they almost meet each other in the middle. Don't worry about marking the beard with the



Photo 3: Making the Flats for the Nostrils

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Photo 4: Make the Nostril Flats Meet in the Middle edge of the hammer. That will be addressed later. (Photo 4.)

Next pre-fuller the cheek area. If you don't have a striker on standby, a spring fuller or Smithin Magician works well here. I use the Smithin Magician with 1/2" fullers top and bottom. Fuller from the top of the face first. Try to place the fullers to come tangent to the back side of the nostril flats. Don't go too deep at first. You can fuller again if you need to. (Photo 5.)

You can adjust swelling behind the fullers with the

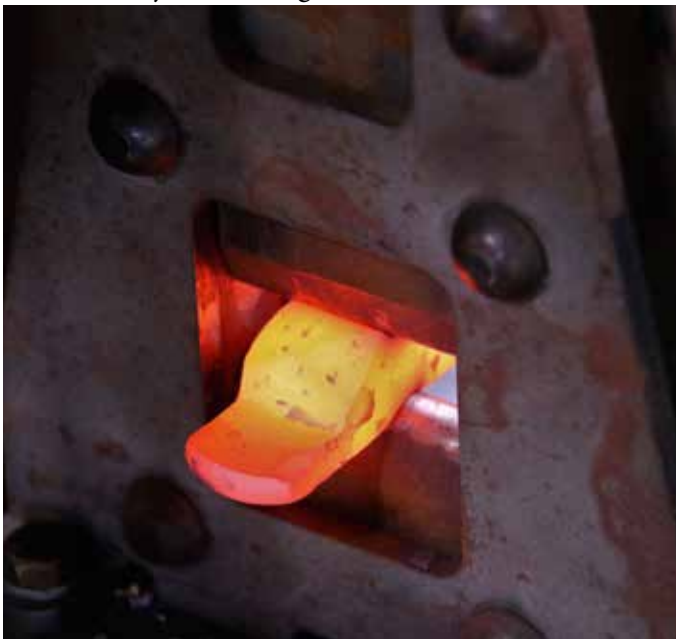


Photo 5: Fuller the Cheeks Behind the Nostrils

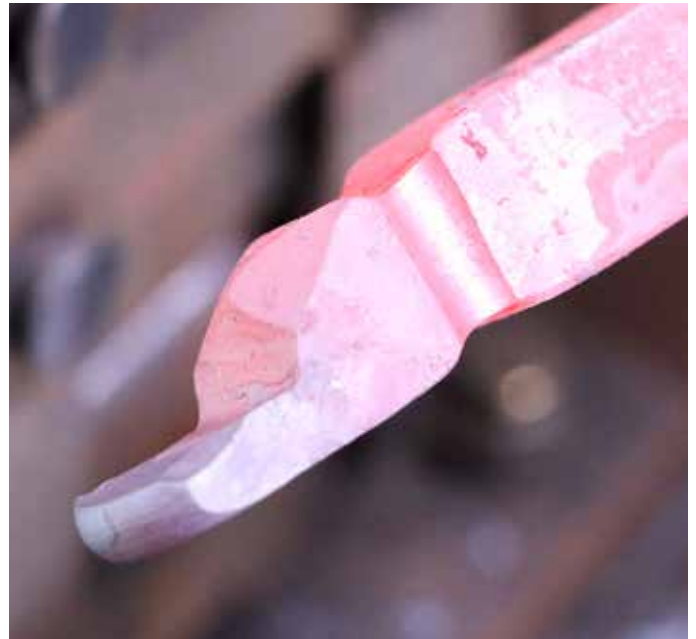


Photo 6: Fullered on Top and Sides of Cheek Area hammer now if you need to.

Next rotate the bar 90 degrees and fuller the sides (Photo 6.) Then rotate the bar at a 45 degree angle and soften the corners where the fullers meet (Photo 7.)

Now widen the fullers by going back over the whole cheek area with a larger fuller. I used a 1" diameter spring fuller tool for this operation. Follow the same sequence and widen out the fullers without pinching the cheek area down too small (Photo 8.)



Photo 7: Fullered Cheek Area

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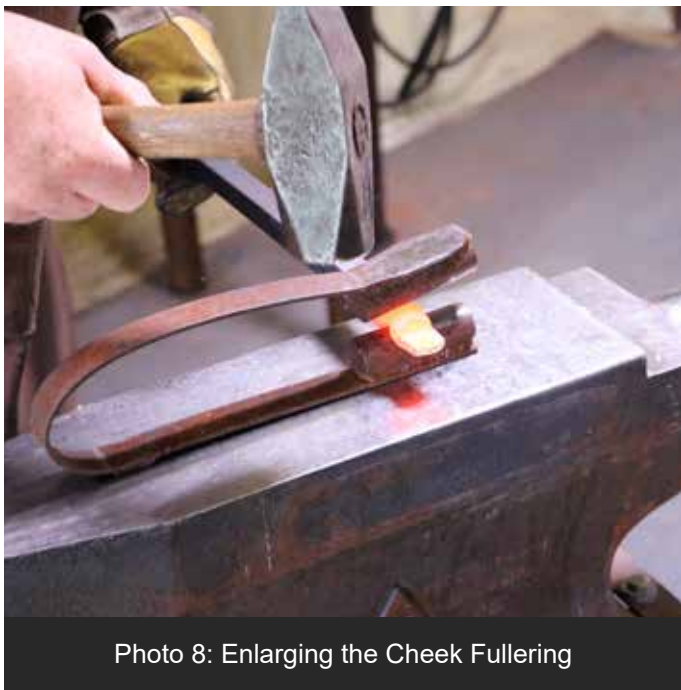


Photo 8: Enlarging the Cheek Fullering

Once the fullering enlargement is done, set the bar aside to cool slowly. (Don't quench as the next step is going to involve some sawing.) You should have something that looks more like a platypus at this point than a dragon (Photo 9.)

The next step is marking out and cutting the horns. Start with a mark about 3/4" behind the back edge of the fuller on the sides of the face. This will be a reference line for the base of the horns (Photo 10.)

Now come down about 3/8" from the top on each side and draw a line about 3" long that angles up to the top of the bar. This will be the side to side cut



Photo 9: Progress After Fullering

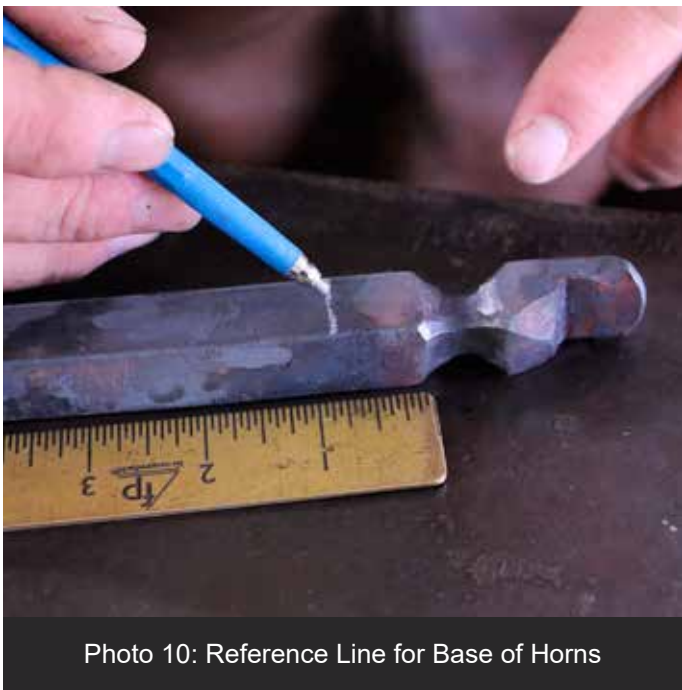


Photo 10: Reference Line for Base of Horns

line for the horns (Photo 11 and 12.)

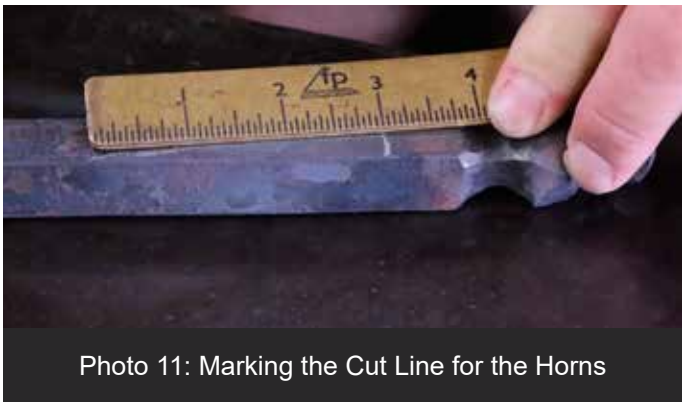


Photo 11: Marking the Cut Line for the Horns



Photo 12: The Cut Line for the Horns

Now cut across the bar on the band saw up to the reference line for the base. If you don't have a band-saw, you can probably use a hacksaw or cutoff wheel but the bandsaw works really well with minimal material loss and it helps to keep the cut even on both sides (Photo 13.)



Photo 13: The First Cut for the Horns

Now you will need to make a mark down the center on top of the horns from the base to the tips and grind that mark just deep enough for a reference. I use a die grinder with a small 1 1/2" diamond wheel for this step (Photo 14.)



Photo 14: Marking the Top Cut for the Horns

You can deepen the cut with a 4 1/2" angle grinder but don't go all the way through. You will probably mark the neck. It is better to go heat the head now and pry the horns up with a chisel to gain extra clearance. (Photo 15.)

Then you can easily separate the horns with a 4 1/2" cutting wheel (Photo 16.)



Photo 15: Prying Up the Horns to Gain Clearance



Photo 16: Cutting the Horns

You want the top cut and the side cuts to meet at the base as close as possible. Use extra care at the base to avoid cutting too deep. If you have enough heat left, go ahead and spread the horns (Photo 17.)



Photo 17: Spreading the Horns After Cutting

You can reheat the piece now and clean up the base with a chisel and/or very small fuller. You will just have to work back and forth over the area until you have it smoothed up and softened after the cutting. It is really helpful, if not completely required, to have a good support for the head when you do this and the upcoming chisel operations. Mine is a piece of angle that mounts in the vice - you have probably seen these before. Use the chisels and files to get the base of the horns cleaned up and get rid of any cold shuts waiting to happen in preparation for rounding the horns. (Photo 18 and Vice Tool Photo 19.)



Photo 18: Cleaning Up the Horn Base Cuts with Chisels and Files

Next heat and bend the horns out to the sides with convenience bends that will aid in rounding them (Photo 20.) You may have to work this step out to keep everything in a configuration that will fit in your forge. Round each horn on the anvil (Photo 21.) You may be able to get closer to the base with a cross pein. Both horns will stretch a little while rounding. If one horn stretches more than the other, just cut to length.

After rounding, I bend the horns to point forward. This gives me more access to the base but also makes the whole piece fit my particular forge. I do a little more cleanup at this stage with the files now that the horns are rounded (Photo 22.)

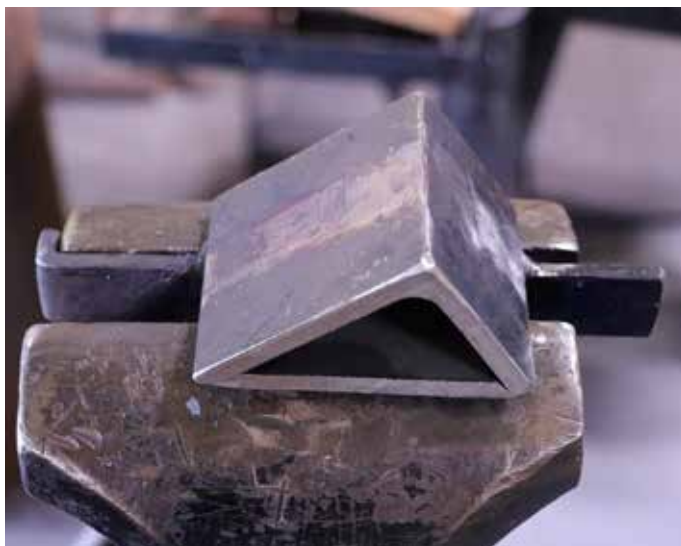


Photo 19: The Vice Tool to Support Chisel Work

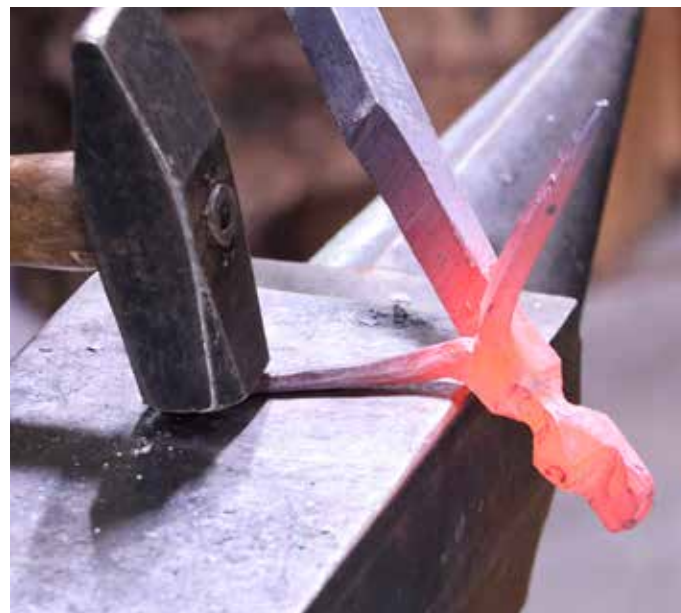


Photo 21: Rounding the Horns



Photo 20: Convenience Bends for Rounding the Horns



Photo 22: Hot Filing to Clean Up the Rounded Horns

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Adjustable bending forks in the vice can be a useful tool to make adjustments if the head gets out of line. It is best to keep everything where you want it using small frequent adjustments as you work (Photo 23.)



Photo 23: Keeping the Head in Line Using Adjustable Bending Forks

The next step is to punch in the nostrils using a center type punch. Secure the head in the vice tool and drive the punch into the nose at an angle that gives you the look you want. Mark each side carefully to keep them even before punching either side too deep. Adjust and re-punch as necessary until it looks right (Photo 24.)



Photo 24: Punching the Nostrils with Center Punch

The next step is to depress the eye sockets. This is a large depression made prior to punching the eyes. I use a ball pein hammer as a handled punch tool and strike it with a soft hammer. Be careful when doing this step to either use a soft hammer for striking or take time to soften the struck end of you tool. The ball pein hammer I use has a 1 5/16" diameter ball which makes the depression about the right size for me. Strike one side, then the other until you get the look you want and make sure they are both equally sized and the same depth (Photos 25, 26 and 27)



Photo 25: Depressing the Eye Sockets (Use a Soft Hammer to Strike!)



Photo 26: Depressing the Eye Sockets

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Photo 27: The Progress After Dishing the Eye Sockets

The head is starting to take shape but there are still several steps left to complete. This is where the dragon head will really begin to take on a personality. Next we will fuller between the eye sockets and the nostrils. This will set the areas apart and gives a nice look. A 1/8" diameter fuller is about right. I think mine is actually 3/32" diameter. Punch the fullers, check the look and location, and fuller again until it looks right to you and all marks are blended smoothly. (Photos 28 and 29.)

After fullering, reheat the head if necessary and punch the eyes. I use a Blacksmith Depot 1/4" Eye Punch for the round eye shape (Photo 30.)



Photo 28: Fullering Between Eye Sockets



Photo 29: Fullering Between Nostrils



Photo 30: Punching the Eyes

Then follow up with a center punch to make a depression for the pupils (Photo 31.)

Some people make happy dragons and some make angry dragons. Mine is a happy dragon. If you want to make yours look mean, then you may want to change the eyes to reflect a mean attitude. You could try leaving them more hollow, fullering in frown lines, etc. But either way, the eyes are key to setting the attitude your dragon head will project. At this point, your dragon should look something like (Photo 31.)

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Photo 31: Progress After Punching the Eyes

The next step is to heat the piece and bend the horns forward to expose the neck for finishing. We will hammer the neck on all four sides to square up, clean up the surface, and narrow the sides behind the head. Taking the sides in will define the cheeks. Be careful not to distort the facial features and hammer carefully as you approach the base of the head. Hold the piece at an angle on the face of the anvil to get a good cheek line (Photo 32.)

Finish by softening the corners of the neck (Photo 33.)

At this point, I like to bend the head down a little



Photo 32: Hammering the Neck



Photo 33: Softening the Corners of the Neck

and go over most of the head, neck and horns with a 60 grit flap disc on a 4 1/2" angle grinder to clean up the surfaces that it will reach (Photo 34.)



Photo 34: Cleaning the Surface with a Flap Disc

Next, I bend the horns back and then work on the beard. For this step, I bend the beard down to a 90 degree angle on the edge of the anvil. We will narrow the beard and cut off excess material later but it is better to bend the beard first. We also want to flatten the front of the face in this step in preparation for cutting the mouth which is easier to do with the extra beard material. Hammer the beard over and then flatten the face by hammering into the edge of the anvil (Photo 35.)

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Photo 35: Bending the Beard and Flattening Face

After the face is flat and even, turn the dragon head on its side and start narrowing the beard. This is a typical drawing out operation but use careful hammer blows when close to the mouth area (Photo 36.)



Photo 36: Drawing Out the Beard

After drawing out the beard it will start to be too long for my taste but will still have a lot of material. I usually cut about half of it off at this point and then continue drawing out (Photo 37.)

If you have trouble getting the hammer into the beard, you can use the Smithin Magician with fullering dies to help drawing it out. Use light blows



Photo 37: Cutting Off Excess Beard Material

and walk the beard out like using a miniature power hammer. Then smooth out and blend any fuller marks (Photo 38.)



Photo 38: Drawing Out Beard with Smithin Magician

While working on the beard, watch to make sure it stays centered and adjust as necessary.

Check the face at this point as you may need to bend the nose up a little after working on the beard. I then like to heat the whole piece and go over it hot with a wire wheel on an angle grinder for a nice surface finish. I use the small cup wheels with twisted wire which seem to hold up better (Photo 39.)

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Photo 39: Hot Brushing with Wire Cup Wheel

You can also go over any rough spots again with a flap disc if needed. Once done cleaning up the surface, let the piece cool slowly to remain soft and we will cut the mouth.

I like to mark the mouth line with a chisel as it lets me get the line just right and I can adjust as I mark it (Photos 40 and 41.)

The mark serves as a guideline for the band saw. I find marking with the chisel before sawing gives me the best results. Cut the mouth back until it just touches the original cheek fullers we did earlier (Photo 42.)



Photo 40: Marking the Mouth Line with a Chisel



Photo 41: Mouth Marked and Ready for Sawing



Photo 42: Sawing the Mouth

Next heat the bottom of the mouth with a torch (Photo 43.)



Photo 43: Heating the Mouth Prior to Bending Open

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Photo 44: Opening the Mouth with a Chisel

Then bend the mouth open slightly with a chisel (Photo 44.) It doesn't take much here (Photo 45.)



Photo 45: The Mouth After Bending Open

Now file the sharp edges on all sides of the mouth to slightly round and soften them. I use a small (6 to 8") half round file for this step. I don't file much here and mostly just take off enough to get rid of the sharp edge from cutting (Photo 46.)

Now heat the piece again and bend the beard. I basically just curl the beard back on the horn of the anvil (Photo 47.)



Photo 46: Filing the Mouth



Photo 47: Bending the Beard

Now I pre-bend the horns up away from the neck (Photo 48) to gain some clearance to put a graceful S-curve into the neck. I use the bending forks for this operation. First bend the base of the neck backward (Photo 49,) then bend the upper part of the neck forward (Photos 50 and 51.)

You will probably need to make some small adjustments at this point to square everything back up, give the final shape to the horns, touch up the facial features, etc. By making small adjustments along the way and keeping everything in line as much as

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Photo 48: Bend the Horns Up to Gain Clearance



Photo 51: Finishing the Forward Bend



Photo 49: Bend the Base of the Neck Backward



Photo 50: Bending the Neck Forward

possible, this final step is easier and less disruptive to the work you have already done. I also like to go over everything one last time with the wire cup wheel to remove scale and provide another pass to smooth and texture the surface and give the horns a final shaping (Photo 52.)



Photo 52: The Completed Dragon Head Prior to Final Finishing

To use the completed dragon head for a stand alone display as was shown at the beginning of this article (Photo 1,) I cut the base of the neck and make a tenon. I use a 3" square base of 1/4" plate with a hammered texture and rivet the tenon in the center. Grind off the excess if necessary for bottom clearance. Four self sticking soft felt pads on the bottom will keep the base stable and avoid scratching table surfaces.

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You can also put the dragon head on fireplace tools, door pulls, etc. You may need to give special attention to the horns and bend them into a position that allows for handling without causing any injuries.

For door pulls, I cut the stock long enough for the handle and forge a stylistic tail on the end opposite the head (As below.). I bend the curves of the hand hold part to contact a backing plate at two points where it is riveted to the plate (Photo 53.)



A Dragon Head Door Pull Ready for Attaching to the Backing Plate

There are a lot of steps involved in making these dragon heads and most of the details can be personalized to reflect your own artistic taste. The methods and order of operations shown here are what



Photo 53: A Finished Dragon Head Door Pull

have proven to work well for me but you may find different procedures work better for your specific forge set up and work situation.

Making small adjustments along the way to keep the project from getting too far out of whack will help you overall. And keeping an eye out for symmetry and alignment really needs to happen all through the project.

I hope this article has inspired and helped you to make your own dragon head.

-Rory Kirk, Cheyenne, Oklahoma

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Quentin Fogarty

Born Dunedin NZ 1946.

Died Melbourne 2020.

Logie-winning journalist | author |
legendary smartarse | honourable
gentleman | beloved family man and
friend.

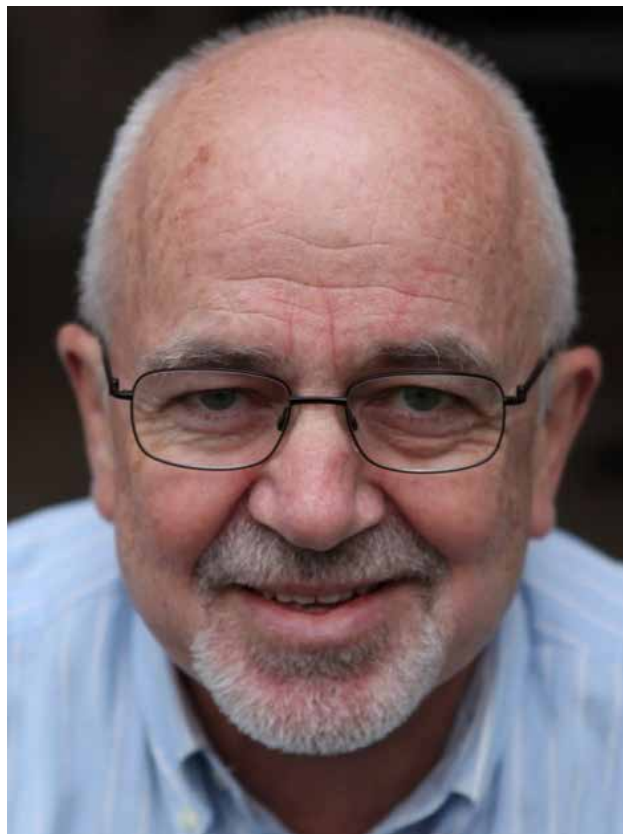
With great sadness we acknowledge the sudden passing of a great man and friend, Quentin Fogarty who suffered a fatal heart attack recently at the age of 73.

Quentin, a Logie-winning documentary filmmaker filmed at The Barn in 2010 when blacksmiths were forging stainless steel branches and twigs for the Blacksmiths' Tree.

Although back then we could only guess at the scale of the project, Quentin, a master of narrative, put together one of the most beautiful vignettes describing the origin of the Blacksmiths' Tree and why it is so important. Never meant for public viewing, this was a promo for a documentary Quentin wanted to make for television. Although we were not successful in getting this documentary made, Quentin shared his footage with Andrew Garton many years later for inclusion in Andrew's documentary 'Forged From Fire'.

Quentin worked at the 2009 Victorian Bushfires Royal Commission, as the Public Affairs manager. He was the driver behind the Black Saturday Gallery, a space just outside the hearing room dedicated to showcasing art from the fire affected communities, including a display of forged leaves from the Blacksmiths' Tree.

Since the display at the Royal Commission, Quentin was a passionate supporter of the Blacksmiths' Tree,



not only filming the blacksmiths at work, but also working behind the scenes as an event manager and media liaison for our launch event in Whittlesea. In 2019 Quentin took staff from the Royal Commission through some of the bushfire affected townships and to the Blacksmiths' Tree.

He will be missed for his wisdom, his sardonic wit and his great empathy towards those who suffered terrible loss in the 2009 fires.

Amanda Grant.

Editorial - Part 2

Jim Deering

Well, that's another edition of *The Drift* out to members. Sometimes it takes forever, other times it just appears as if by magic...

Hopefully members will have found some interesting information in the pages and perhaps some new techniques to expand their skills with.

The Drift 118 should have that elusive Melbourne University Gates Tour and hopefully positive news around the Association and its future developments.

Keep in mind the AGM is coming

up, one day, in some form, soon-ish. Those arrangements are all very nebulous right now, but the reality is office-bearers will be needed!

Have a think about what your business skills are; do they suit a role in running the Association?

Have you some spare time to give back for the skills and enjoyment you're had from your membership of the Association?

Have a crack at being on the committee, it's a good way to get a feel for what the office-bearers do and how things occur in the background to keep the Association running.

In the meantime, there is always a need for contributions to *The Drift* and as you can see, words and pictures, or one or the other, are all good for the newsletter.

