

EUGENE 5160 CLUB ~ MARCH 2017

<https://www.facebook.com/5160Club>

newsletter archive: <http://www.elementalforge.com/5160Club/>



MARCH MEETING

March 2nd – 6:00pm at David Thompson's shop. If you didn't get the directions in the meeting notice, email me for them: michael@elementalforge.com.

Bring your show-n-tell!

Request from the Thompsons:
“Please **drive very slowly** down our lane. The maintenance is all ours. Thanks.”



NOTES AND REMINDERS

I'll just remind Oregon folks **one more time**: **Ballot Measure 100** – be aware that the passage of the Oregon Wildlife Trafficking Prevention Act bans the sale of items containing any parts of: (i) **elephant**; (ii) **rhinoceros**; (iii) **whale**; (iv) **tiger**; (v) **lion**; (vi) **leopard**; (vii) **cheetah**; (viii) **jaguar**; (ix) **pangolin**; (x) **sea turtle**; (xi) **shark** (excluding spiny dogfish as defined in ORS 498.257(1)); or (xii) **ray**.

The prohibition of ray and shark especially will impact makers using their skin for traditional handle & sheath coverings.

As has been reported, we can't expect government employees to distinguish between (for example) elephant tusk and similar material from non-protected species or even convincing synthetics. When you consider that several folks have reported that their international sales of items containing Damascus steel were impounded due to the trade embargo with Syria even though the items were not destined for Syria (Damascus, Syria – get it?) then you can see what we may be up against.

Willamette Valley Arms Collectors Association Gun Show - March 18th-19th at the Lane Events Center. OKCA will have two knife tables.

http://www.wvaca.org/show_dates.html

Dennis has invited 5160 folks to join him at the OKCA tables – if interested contact Dennis.

OKCA Knife Show – April 7th (OKCA members only) – 8th & 9th (open to the public - \$6 admission) at Lane Events Center.

<http://www.oregonknifeclub.org/okcashow.html>

This is the big one! If you want the pick of the litter get your OKCA membership renewed ahead of time so you can get in Friday and free each day.

California Blacksmith Association – Spring Conference – April 27-30 Vista CA (between LA and San Diego) <http://www.calsmith.org/event-2418120>

Bent River Forge aka Farrier Supplies – ongoing intro to blacksmithing and other classes:

<https://www.facebook.com/FarrierSuppliesOR/>

Northwest Blacksmith Association – Blacksmith Week will be August 17-20 at Government Camp on the slopes of Mount Hood – see

<http://blacksmith.org/events/> for all events.

Portland Vintage & Custom Knife Show – October 28 & 29 – Portland Expo Center – for info check

Chris Palmer's web site: <http://christinepalmer.net>



FEBRUARY MEETING NOTES

DENNIS ELLINGSEN had another give-away of lumber mill bandsaw and circular saw steel and Micarta blocks. There were plenty of takers – but the demand may be temporarily satisfied. He's going to hold off on collecting any more unless he hears that there is a need for more.



STEVE GODDARD also brought in three plastic totes full of garage sale knives to give away. Steve has been paring down his stock of knives-to-refurbish-and-sell-on-eBay – and a number of folks walked away with handfuls of knives.

I (Michael Kemp) brought the meeting to some semblance of order. 15 folks were present and more drifted in later. We started with a table give-away for the April OKCA show. Dennis had a table holder who had to cancel and instead of getting his table fee back, wanted it donated to another maker who might be cash-strapped. Sweet deal!

MICHAEL KEMP (that would be me) was the first one with a show-n-tell. “Once or twice a year I actually finish a knife” I said. “Aw c’mon” someone jeered “you just picked that out of one of the [give-away] buckets!” But I think I convinced them otherwise.



Here's the photo I took at the meeting – the photo at the top of the newsletter is a beauty shot I took later in a light box.



The blade on this paring knife is 15N20/1095 random Damascus I made last Fall – several hundred layers. The blade flares out into the brass bolster (red and black vulcanized liner accents). The handle is from this amazing block of Australian sheoak that I got at the April OKCA show a few years back. I wish I had more. Brass tang pin and Sally Martin mosaic pin in the center of the scroll. Finished with my carnauba/beeswax/mineral oil combo.

The Damascus is etched but not colored, as I've been disappointed with the durability of cold bluing. I've ordered up some manganese phosphate Parkerizing solution to try on future blades.

FRANK BOBBIO came to the front... sporting a heavily bandaged finger. After someone questioned him on it he relayed how he was “real tired Friday and went to split firewood with an axe and I wasn't swinging real good ... so I went inside where I have a forging press where I have a splitter for kindling” it rolled on him and caught his finger. Luckily it did not completely smash the finger. I'm putting this in the newsletter not just to harass Frank (heal up fast buddy) but to remind all of us that our equipment is made to heat and shape steel. Flesh and bone are no contest. Working tired is tempting fate. The Norns love it when you tempt them.



“Ever since I was a kid I wanted a Randall Model 1 knife...” and now he's made one – and it's a beauty (CruForge V steel)!



up the surface with sandpaper or a grinding belt, the shininess of the sanded surface is a give-away that the individual sanding scratches are smooth-sided.

Frank passed around a glue test he'd done with JB Weld. JB Weld is normally gray and Frank wanted to test if there was any noticeable loss of

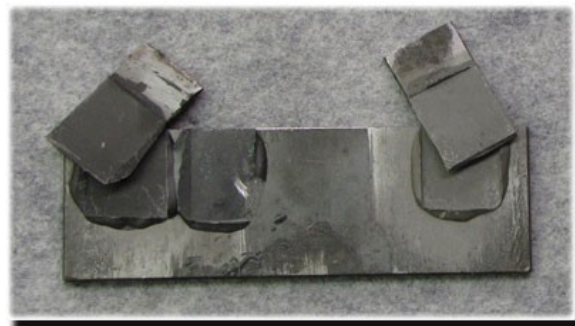
Next, Frank showed us some tests he'd done with the 8670 circular saw steel that Dennis has furnished us with. He cut test pieces 3/4" x 3-1/4" with a plasma torch. He quenched some in peanut oil and some in faster quench oil. Neither produced any quench cracks so Frank will be using the faster oil.

performance adding carbon to make it black. He also tested with and without sandblasting.

The specs for 8670 call for a low tempering temperature – so Frank experimented with 200°F on up to see how brittleness and hardness change in 8670 as the tempering heat is increased. Untempered pieces snapped without bending much at all - in the 250-300°F range the test pieces bent about 15° and took quite a bit of force (using a 3' pipe for leverage on the vice grips). “By the time I got up to 400-420°F I had the pipe all the way beyond 90° - and you can see where it bent [before it broke].”

The sandblasted test pieces both broke down the middle of the glue – they did not delaminate from the steel. The two non-sandblasted pieces both delaminated from the steel. So there's confirmation about the advantage of a sandblasted steel for an epoxy joint. The other two test pieces were just sanded and then wire brushed.

Frank's recommendation for the 8670 circular saw steel is that if you want something very tough “almost unbreakable” then temper around 400°F. If you want more hardness and are not as concerned about brittleness then you can go lower – down to 300°F.



Frank opined: “In general for a knife you're going to be OK with just standard epoxy and a cleaned up joint... but if you've got something that has to really stand up to a beating you'd be better off with sandblasting.”

When asked about hardness Frank noted that his testing with “Rockwell files” showed as-quenched being in the 60-65 Rc range. Tempering at 400°F gave about a 55 Rc hardness – and the lower the tempering temperature, the higher the Rockwell in that range.

Martin Brandt chipped in that “If you don't want a big expensive sand blaster, I got a little pistol grip one from Snap-On Tools... take it outside, put on your face mask... makes a mess... get it all in your hair...” but it's a lower cost solution.

The next thing Frank talked about was prepping steel for epoxy. “If you have access to a sandblaster the surface sandblasted will give you a better performance than the best epoxy on a non-sandblasted surface.” He noted that when you rough

Frank noted that sand or bead-blasted steel (if left untreated) will rust or corrode much faster due to the mat surface holding moisture.

Next, Frank passed around a new knife he made from the circular saw steel (8670). He developed this pattern as a general purpose knife that he could make for a reasonable price – after reviewing hundreds of knife designs on the internet – and drawing it up on his computer. This one has a hollow ground blade.



Here's another take Frank did on the same basic profile. Walnut handle. Flat grind to the spine.



Frank's final item was a give-away: another blade blank cut from 8670 with walnut scales. The requirement is to make a knife from it in the next month (not just throw it in a drawer). Frank thought of a number, a couple of folks guessed – and Edward Davis got the “kit”.



Frank finished up noting that he's setting up the equipment and “Cactus Juice” to do some stabilizing of his own wood blocks and scales. He's talked with Chuck Richards and John Emmerling who each do their own stabilizing with Cactus Juice and got pointers from them on the process.

After Frank spoke I reminded folks of the new Oregon endangered species ban (see **NOTES AND REMINDERS** at the top of this newsletter). The discussion veered into the difficulty of defending something non-protected like giraffe bone when an agent thinks it's something on their list.

Edward noted that he works at the Museum of Natural History at the U of O campus and they dug into the new Oregon law to see how it affects them. It turns out that museums are exempted from the law. From the discussion, my understanding is that the legal ways to transfer an item containing something on the law's list is to (a) give it away (b) donate it to a museum so you get the tax write off or (c) carry it out of state before selling it [you cannot legally sell it from Oregon and ship it to another state or nation]. I'm no legal beagle so take this with a grain of salt.

And speaking of bureaucratic entanglements, Frank relayed that PayPal had withheld his payments on three cable Damascus knives last year. They told him it was due to government regulations because he had the word “Damascus” in the description (and there's a trade embargo with Syria – and Damascus is in Syria. And no, the knives were not being shipped to Syria). It took talking to the supervisor and a week or more delay but they eventually released his money.

ERIK LAND got up to the table with a home-built belt grinder. “I had a really good year last year ... made quite a few folders ... I've always wanted a small wheel grinder – what I wanted was a 2”x72” ... but that would be so big my little shop wasn't going to do it.”



Just to set things straight, he already has one 2”x72” grinder. Erik said “... if you don't have a 2”x72” you need to set your sights on it because for me that was a game changer. Once you can jump into the 2”x72”

belt market they are way cheaper and there are a thousand different types...” There followed a discussion of using old belts and how all of us hold on and use belts that we should have cut and tossed.

He bought a \$35 small wheel for shaping the inside of his springs etc. The plywood was scrap from other projects. He used his CNC machine to shape all the wood but I don't see why you couldn't do the same with a bandsaw.



Scribe's note: A few years ago I graduated from a fixed speed grinder with a flat platen and large diameter contact wheel to a variable speed grinder with flat platen and interchangeable wheels ranging from 1/2" to 8". That's how I dealt with getting more options in a confined space. IMHO a 1" wide belt like Erik's horizontal grinder above is great for profiling but not the best for blade bevel grinds. Bevel grinds go easier with a 2" width belt. And a vertical grinder seems to work best for bevel grinds. Some folks do build their own 2"x72" grinders.

Erik also shared that he has a new Evenheat oven coming. “You start with the base model – the Yugo – and you start looking at the options... well \$100 isn't that much more ...” and next option and next option and pretty soon you're driving a big shiny new truck! “It can get really expensive really quick.” Erik wants to be able to work with larger pieces – and to move into stainless steel – so a large oven with precise temperature control becomes a requirement.

He stated how much fun he has at the 5160 Club April show tables – but only has a limited set of knives for sale. Last Summer he made a resolution to have 24 folders (in styles that sell well) for the 2017 show. “So I went crazy and I cut out 12 sets. And I sat down at the grinder one day and I said 'I don't want to do this. I don't want to be a full time maker – this is taking all of the fun out of it.' And that's what I'm doing it for – I go out and I have a great time in the shop... I have no conception that I'm gonna be Bill Harsey...”

Which is worth noting about this club. Some past and present members rely on knifemaking for serious income. A lot of us are in it because we love it but don't expect to pay the bills with it. The 5160 Club is here to support the full range of talent, experience, and styles. On the one hand you've got folks at each meeting with decades of experience that are happy to share – and on the other hand the variety of styles and favored materials can give you ideas to pursue that wouldn't occur to you if you were just focused on your own style of knifemaking.

WALTER HARDCASTLE brought in a knife that an elderly neighbor wants to sell. The guy had scratched the blade trying to sharpen it and Walter was asking for ideas about getting the scratches out for his neighbor so they can sell it. There were quite a few suggestions about protecting the maker's mark, what grit might be required to get the scratches out, and using hard backing on the sandpaper to preserve the grind lines. Good luck Walter!



EDWARD DAVIS came to the front to show us a “practice” balisong knife he made. It's a practice piece in two ways. His daughter wanted to practice with a butterfly knife and Edward wanted to make her one without a sharp blade. Also this let him work out details of the design so he now has proportions that he can use if he wants to make a “legitimate” balisong. The blade is mild steel and the handle is aluminum.



JIM JORDAN passed around his latest engraving projects – a set of practice plates...



... and a couple of little Kershaw folders he picked up at a show:



A newbie was up next “I'm a brand new knifemaker – about two months and I'm addicted!”



“I didn't catch your name?” someone called out.

“**NOAH**” he replied.

“Hi Noah” chorused the room. “We support you and your addiction.”

In a short two months Noah has made 5 knives. The first knives he made were 1095 – but cracked in the brine quench. *[Brine is too fast a quench for 1095 – oil is a more suitable quench].*

“This one's 1084” he said, handing off his first pass-around. This one he quenched in canola oil. The steel is from the New Jersey Steel Baron. He cut it with an angle grinder and used stock removal with a 1”x30” belt to shape the blade. He put his mark on it using salt water and a battery charger. Stabilized maple burl scales with G10 liner. Carbon fiber and titanium pins.



When asked why he used brine to quench 1095 Noah said that he'd seen it online. “I never met another knifemaker – I've never seen a knife being made.”

Noah noted that he likes a rugged looking finish on the blade. These are ground to 100 grit – then etched in boiling vinegar and lightly finished with 400 grit.

Noah mentioned that he was working in a tight space and wondered if someone might have a large shop that he could rent a portion of.

The Eugene Maker Space was given as a possible option. *When I try to access their website I get a "server not found" error... however they are on Facebook at <https://www.facebook.com/Eugene-Maker-Space-331241636887219/>*

And here's the other knife Noah passed around – Micarta handle on this one:



LYNN MOORE was up next. "I've started making some little kitchen knives – paring knives..." His first pass-around is an in-process piece – birdseye maple and the blade is from the industrial bandsaw (15N20) provided by Dennis:



Here you can see how Lynn uses temporary alignment pins during the construction process.

On a sadder note, when a friend's sister passed away Lynn was gifted a couple of her knives. One is a nice boning or fillet knife:



"It was her husband's – who also died a few years back – and he was an avid hunter so he probably used it for boning..."

The other gift knife is more Puukko or Scandinavian/Saami style. Lynn was intrigued by the way that the metal and wood are matched in a zigzag or wolf's tooth pattern. Someone suggested that this could have been done by shaping the wood first, then making a mold around the handle and casting pewter into it.



Martin Brand identified this as a Tommi style puukko. "Originally it was from a particular maker but then it became a style for that region..."

MARTIN BRANT then came forward with a finished brush knife "I tried it out on some of that ice-storm fallen oak and it held up just fine."



When asked what the steel was Martin replied "Official OFS [Old Farm Steel] – it sparks out like 1084-ish..." Martin cut this out of a piece of recycled steel that was "a bunch of scraps welded together... [that] looked like something to be drug across the ground... they must have used this steel because of the wear resistance."

It looks like I didn't get a photo of it this time around – but here it is from an earlier meeting as an in-process piece:



At that point our host **DAVID THOMPSON** asked for opinions on how the coal forge he recently constructed could have corroded up so fast. He made this as his “forever forge” out of stainless steel. Within a short period it started corroding through the sides about at the height of the fuel level inside the forge. He mentioned coke dust and wood dust and wondered if the interaction with that and air could have produced an acid. “But it's STAINLESS STEEL!” So if you have any insights – bring 'em to the meeting this Thursday!

And with that we broke up into informal discussions and gradually drifted into the night.

JOEL PUCKERSON sent a few photos of a D guard Bowie he's been working on. Medical issues are slowing him down, send Joel your best thoughts!



Have fun all – and work safe!

~ ~ ~ Michael Kemp



FREE DE-CLASSIFIEDS

Email me a brief description of what you are selling/buying/ looking for with your preferred contact (phone/email/...). Unless you let me know you want a shorter run, I'll run the note for 3 months and then send you an email to see if it's still valid. No charge – just email me at Michael@ElementalForge.com

Lynn Moore is setting up a new shop and has these “extra” items from the old shop for sale:

Propane forge \$50

DeWalt 12” abrasive wheel chop saw \$40

Heavy duty vice \$25

Contact: beeblues26@msn.com or 541 554-5294

OKCA members: knifemaker items are often put up for sale in their classifieds – so remember to check their newsletters: <http://www.oregonknifeclub.org/>



WEBSITE LINKS

5160 CLUB

5160 Club Newsletters are archived at:
<http://www.elementalforge.com/5160Club/>

Hint: to Google the archive for a specific knife style or presenter name, use a search like this:

sami site:<http://www.elementalforge.com/5160Club>

or this:

ron lake site:<http://www.elementalforge.com/5160Club>

OREGON KNIFE COLLECTORS ASSOCIATION (OKCA)

The OKCA hosts monthly dinner meetings where you are guaranteed to see treasures from the wide world of “things that go cut!” OKCA also puts on the big knife show in April – if you haven't seen it you've been missing something special!

<http://www.oregonknifeclub.org/index.html>

Go to the “Knewsletter” link and scan a recent newsletter for a membership form and contact info.

FORUMS

Bladesmith's Forum aka Don Fogg Forum

<http://www.bladesmithsforum.com/>

Knifedogs Forum (USA Knifemaker)

<http://knifedogs.com/forum.php>

American Bladesmith Society

<http://www.americanbladesmith.com/ipboard/>

Usual Suspects Network

<http://www.usualsuspect.net/forums/forum.php>

Blade Forums

<http://www.bladeforums.com/forums/forum.php>

Peter Newman of Bent River Forge/Farrier Supplies has a closed Facebook group for Oregon Blacksmiths
<https://www.facebook.com/groups/173156733117832>

Julious Griffith's knife groups on Facebook:

- Custom Knives For Sale by Maker - Available now
- Knifemaking - Works in Progress (w.i.p.'s)
- Knifemaking Equipment Buy, Sell, or Trade (used only)
- Knifemaking - Masters to paying Students connection
- Knife shop photos
- Knife Calendar - Events, shows, hammer-ins, schools, misc.

These are all closed groups – to keep them focused – so if you want to join one of the groups, click the “+ Join Group” button and also message Julious and give him some info on yourself so he knows you have real interest in the group.

REFERENCES

Our own Wayne Goddard's books are available at Amazon:

<http://www.amazon.com/Wayne-Goddard/e/B001JS9M10>

And you can email the Goddards directly for his DVD at wgoddard44@comcast.net

Most of the companies in the “Knife Maker General” links (below) have a section for how-to books and DVDs.

Verhoeven's Metallurgy For Bladesmiths PDF – this is a very deep dive, not an introduction.

<http://www.feine-klingen.de/PDFs/verhoeven.pdf>

Verhoeven's updated book:

<http://www.amazon.com/Steel-Metallurgy-Non-Metallurgist-J-Verhoeven/dp/0871708582>

ZKnives – Knife steel composition/comparison/etc.

<http://zknives.com/knives/steels>

Kevin Cashen's Bladesmithing Info

<http://www.cashenblades.com/info.html>

Tempil Basic Guide to Ferrous Metallurgy
http://www.tempil.com/wp-content/plugins/download-monitor/download.php?id=Basic_Guide_to_Ferrous_2010.pdf

From the Heat Treating Society of the ASM – the Heat Treater's Guide Companion for Android devices. Look up heat treating details on hundreds of steels in the palm of your hand.
<https://play.google.com/store/apps/details?id=com.pfiks.mobile.heattreaters&hl=en>

My “Knife Info” has some knife musings and cheat sheet charts – plus Oregon and Eugene knife laws:
http://elementalforge.com/tips_notes/

CLASSES FOR KNIFE MAKING, ETC.

Gene Martin offers personal instruction at his shop south of Grants Pass for a daily rate.
<http://www.customknife.com/>

Michael and Gabriel Bell of Dragonfly Forge offer an ongoing series of small group classes in Japanese style sword forging and fittings. Located on the southern Oregon Coast.
<http://dragonflyforge.com/>

Murray Carter offers small group classes in a variety of subjects, primarily focused on traditional Japanese cutlery. Located in Hillsboro, Oregon.
<http://www.cartercutlery.com/bladesmithing-courses/>

David Lisch is an ABS Master Smith who has taught classes in Washington. He recently moved his shop and has not restarted classes yet – keep an eye out on this page:
<http://www.davidlisch.com/Learn.html>

Jim Hrisoulas now offers both formal classes and mentoring sessions in 2 hour blocks at his shop in Henderson, Nevada:
<http://www.atar.com/joomla/> and click the “Bladesmithing Classes” link.

The ABS (American Bladesmith Society) offers classes in Washington, Arkansas and elsewhere – if you are up for traveling across the country to take classes, check out their “Schools” link:
<http://www.americanbladesmith.com/>

James Austin offers forging classes in Oakland, CA – axes, tongs, viking anvil, etc.:
http://forgedaxes.com/?page_id=148

Blacksmithing classes at Farrier Supplies aka Bent River Forge
26729 99W, Monroe, Oregon
Coal, coke, forges, parts, tools, classes...
<https://www.facebook.com/FarrierSuppliesOR>
(541) 847-5854

Blacksmithing and some bladesmithing workshops are hosted regularly by the Northwest Blacksmith Association: <http://blacksmith.org/>

USA Knifemaker has a lot of fun & informative videos on their YouTube channel:
<https://www.youtube.com/user/USAKnifemaker/videos>
... and hey - “free” is a hard price to beat!

Nick Wheeler also has a good YouTube channel with a lot of how-to videos:
<https://www.youtube.com/user/NickWheeler33/videos>

GENERAL TOOLS & SUPPLIES

Woodcraft of Eugene – thanks to Joe & the crew for six years of hosting 5160 Club meetings – we've had to move on, but the hospitality was appreciated.
<http://www.woodcraft.com/stores/store.aspx?id=515>

MSC Direct
<http://www.mscdirect.com/>

McMaster-Carr
<http://www.mcmaster.com>

Grainger
<http://www.grainger.com>

Surplus Center
<http://www.surpluscenter.com/>

Victor Machinery Exchange
<http://www.victornet.com/>

KNIFE MAKER GENERAL

Knife kits, steel, tools, machines, supplies such as handle material, fasteners, belts, glues, finishes, etc.

Jantz Supply – Davis, OK
<http://www.knifemaking.com>

Texas Knifemaker's Supply – Houston, TX
<http://www.texasknife.com>

USA Knife Maker's Supply – Mankato, MN
<http://www.usaknifemaker.com/>

Knife and Gun (K&G) – Lakeside, AZ
<http://www.knifeandgun.com/>

Alpha Knife Supply – ?Everett, WA?
<http://www.alphaknifesupply.com/>

True Grit – Ontario, CA
<http://www.trugrit.com>

Especially Abrasives – lower cost 2x72 belts
<http://www.especiallyabrasives.com/>

KNIFE STEEL SOURCES

New Jersey Steel Baron
<http://newjerseysteelbaron.com/>

Kelly Cupples (High Temp Tools) – Alabama
<http://www.hightemptools.com/steel.html>

Niagara Specialty Metals – New York
<http://www.nsm-ny.com> (click Products/Knife Steels)

SB Specialty Metals – New York & Texas
<http://shop.sbsm.com/>

Bohler Uddeholm – numerous U.S. locations
<http://www.bucorp.com/knives.htm>

Sandvic – stainless steels – Texas & Pennsylvania
<http://www.smt.sandvik.com/en/products/strip-steel/strip-products/knife-steel/sandvik-knife-steels/>

Pacific Machinery & Tool Steel – Portland, Oregon
<http://www.pmtsco.com/tool-die-steel.php>

KNIFEMAKER EQUIPMENT

Beaumont (KMG) [Ohio] – the industry-benchmark 2x72 belt grinder
<http://www.beaumontmetalworks.com/shop/>

Travis Wuertz [Arizona] – premium versatile grinder
http://www.twuertz.com/Home_Page.php

Pheer [Gresham, Oregon] – affordable grinder made in Oregon
<http://www.2x72beltgrinder.com>

AMK [Ohio] – affordable grinder, quick-change between platen & contact wheel
<http://amktactical.com/>

Coote [Port Ludlow, Washington] – affordable, simple grinder – you supply the motor
<http://www.cootebeltgrinder.com>

Marinus Kuyl [Hillsboro, Oregon] – another affordable grinder made in Oregon – and parts – you provide the motor.
<http://oregonblademaker.com>

Grinder-In-A-Box – grinder kit, assembly required
http://www.polarbearforge.com/grinder_kit_order.html

The “No Weld Grinder” plans can be purchased from
<http://usaknifemaker.com>
either as a booklet or as a download – just use the search box to enter “no weld grinder”

Wayne Coe [Tennessee] – grinders, motors, VFDs...
<http://www.waynecoeartistblacksmith.com>

Contact Rubber Corp – wheels etc.
<http://contactrubber.com/contact-wheels.asp>

Sunray – drive wheels
<http://www.sunray-inc.com/drive-wheels/>

Renaissance Metal Art [Mulino, Oregon] – 80# ram
air hammer
<http://www.rmetalart.com/tools.htm>

Anyang [Texas] – air hammers from 20# to 165#
<http://www.anyangusa.net/>

Meyer Machine Tool [Ohio] – treadle hammer
<http://www.meyermachinetool.com/Blacksmith-div-.html>

Spencer/Clontz tire hammer plans/workshops
http://www.alaforge.org/Trading_Post.html

Appalachian Power Hammer plans
<http://www.appaltnet.net/rusty/index.htm>

Helve Hammer and Quick-Change Dies Video –
from a BladesmithsForum.com thread.
<https://www.youtube.com/watch?v=uzruqYkKGNM>

True Grit – under “Machines & Accessories”
<http://www.trugrit.com>

FORGE & REFRACTORY

Chile Forge
San Marcos, Texas
<http://www.chileforge.com/>

Mankel Forge – Muskegon, Michigan
<http://mankelforge.com/forges.html>

Western Industrial Ceramics Inc.
All things refractory – Tualatin, Oregon
<http://www.wicinc.com/>

High Temp Tools (scroll down the page for the
category buttons) Tuscaloosa, Alabama
<http://www.hightemptools.com/supplies-mainpage.html>

High Temp Inc. has also been recommended for
Kaowool etc. Portland, Oregon
<http://hightempinc.net/>

Omega – thermocouples & measuring equipment
Stamford, Connecticut
<http://www.omega.com/>

Auber – more thermocouples and controllers, etc.
Alpharetta, Georgia
<http://www.auberins.com>

Hybridburners – home of the venturi T-Rex
Smithville, Georgia
<http://www.hybridburners.com/>

Pine Ridge Burners – for ribbon burners and all
associated fittings, blowers, valves, etc.
Conway, Massachusetts
<http://www.pineridgeburner.com>

Zoeller Forge – low cost venturi & parts: Z Burners
Lanesville, Indiana
<http://zoellerforge.com/>

Here's the original article on making a ribbon burners
that John Emmerling wrote back in 2005 for the
NWBA Newsletter:
<http://blacksmith.org/2005-1-hot-iron-news/>
You can download the PDF from that site. John's
article starts on page 11.

BLACKSMITH

Farrier Supplies
26729 99W, Monroe, Oregon
Coal, coke, forges, parts, tools, classes...
<https://www.facebook.com/FarrierSuppliesOR>
(541) 847-5854

Blacksmith Depot
<http://www.blacksmithsdepot.com>

Pieh Tool
<http://www.piehtoolco.com>

Centaur Forge
<http://www.centaurforge.com>

Quick and Dirty Tool Co.
<http://quickanddirtytools.com/>

LOGO/ETCHING

Ernie Grospitch – Blue Lightening Stencil
<http://www.erniesknives.com/>

IMG International Marking Group
<http://img-electromark.com/>

Electro-Chem Etch
<http://www.ecemmi.com/products.html>

HEAT TREAT SERVICES

Here are some folks who provide heat treating services for blades. While all of these have been recommended by one reputable person or another I have not had experience with them. If you use one, let us know how it went!

Paul Bos Heat Treating at Buck Knives. Paul Bos has retired and handed the torch to Paul Farner. Highly reputable. Post Falls, Idaho:

<http://www.buckknives.com/about-knives/heat-treating/>

Peters Heat Treating is another highly reputable operation. Meadville, Pennsylvania:

<http://www.petersheattreat.com/cutlery.html>

Texas Knifemaker's Supply offers heat treat services. Houston, Texas:

<http://www.texasknife.com/vcom/privacy.php#services>

Tru-Grit provides heat treat services. Ontario, California: https://trugrit.com/index.php?main_page=index&cPath=34

K&G also provides heat treat services but I can't find a reference on their web site – you'll have to contact them for details. Lakeside, Arizona:

<http://www.knifeandgun.com/default.asp>

Byington Blades heat treat service is in Santa Clara, California: <http://www.byingtonblades.com/>

It's my understanding that Chris Reeve Knives uses ACE Co in Boise Idaho – which is enough for me to add them to the list:

<http://www.aceco.com/heattreat/index.html>

WOOD SUPPLIERS

Burl Source – handle blocks/scales – So. Oregon
<http://www.burlsales.com/>

Shelton Pacific – stabilized wood – Shelton, WA
<http://stores.sheltonpacific.com/>

Gilmer Wood – N.W. Portland
<https://www.gilmerwood.com/>

North Woods Figured Wood – Gaston, OR
<http://www.nwfiguredwoods.com/>

WOOD STABILIZING

K&G (Knife and Gun) – Lakeside, AZ
Good reputation with everybody.
<http://www.kandgstabilizing.com>

Gallery Hardwoods – Eugene, OR
I've purchased stabilized blocks from them at the April show. They tend to be heavier, presumably more durable/stable but less wood-feel than others.
<http://www.galleryhardwoods.com/stabilized.htm>

WSSI (Wood Stabilizing Specialists International, Inc.) – Ionia, IA – some folks have had issues with them, some folks are totally happy.
<http://www.stabilizedwood.com/>

Alpha Knife Supply – ?Everett, WA?
<http://www.alphaknifesupply.com/>

Turn Tex Woodworks – San Marcos, TX
“Cactus Juice” and pressure chambers etc. for the do-it-yourself folks – your mileage may vary.
<https://www.turntex.com>

OTHER GOODIES

Sally Martin Mosaic Pins – So. Oregon
<http://customknife.com/index.php?cPath=13>

Oregon Leather – 810 Conger Eugene and 110 N.W.
2ND Portland
<http://www.oregonleatherco.com/>

Coyote Steel – wide variety of new steel, scrap,
copper, brass, bronze – Garfield & Cross St. Eugene
<http://www.coyotesteel.com>

Cherry City Metals – Salem, Oregon – metal
recycling and useful objects
<http://www.cherrycitymetals.com/>

Amtek – tool steel & cutting tools
<http://websales.amtektool.com>

Rio Grande – jewelry tools/supplies
<http://www.riogrande.com>

Otto Frei – jewelry tools/supplies
<http://www.ottofrei.com>

M3 Composite – space age mokume & other
<http://www.m3composite.com/>

Voodoo Resins – striking resin handle material
<http://www.voodooresins.com/>

Minarik automation & control
<http://www.minarik.com/>

Valley Stainless (that does water-jet cutting) is one of
Craig Morgan's customers. They told Craig “bring in
a pattern” and they'd work with you on small batch
cutting. They don't have a website yet. 29884 E Enid
Rd, Eugene, Oregon 97402 (541) 686-4600.