

EUGENE 5160 CLUB ~ DECEMBER 2017

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

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



DECEMBER MEETING

December 7th – 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

OKCA December Show – Free admission – Wheeler Pavilion at the Lane Events Center, Eugene OR. Saturday December 9th – 8am-4pm. Current OKCA members can get a table for \$40 – setup 7am-8am) <http://oregonknifeclub.com/shows2.html>

Pendray/Verhoeven Wootz Video – Frank Bobbio alerted us to this video featuring the late Al Pendray, JD Verhoeven, and a couple of smiths from Jordan smelting wootz from “Saladin's Mine” in Jordan: <https://youtu.be/OP8PCkcBZU4>

SAFETY FIRST! – News last week of dozens of buildings damaged or destroyed by fire in upstate New York by a Forged-In-Fire inspired wannabe might make you think “that can't happen to me, I know better.” Over the few years that I've been absorbed in the bladesmithing world several shops run by *very* experienced blacksmiths or bladesmiths here in the Pacific Northwest & Alaska have burned down. Above and beyond the normal cuts, burns, and abrasions one receives in this sort of work, a number of experienced smiths around here have been seriously injured (one killed) by the buffer grabbing a blade and flinging it. So be careful and have fire extinguishers on hand. ~ ~ ~ Michael Kemp

Northwest Blacksmith Association – Intro Blacksmithing classes (Portland, OR & White Salmon, WA) etc. <http://blacksmith.org/events/>

California Blacksmith Association puts on a slew of events to the south of us. Check out their list: <http://calsmith.org/CBA-Events>

Bent River Forge aka Farrier Supplies – north of Monroe, OR has blacksmithing tools and supplies and ongoing intro to blacksmithing and other classes: <https://www.facebook.com/FarrierSuppliesOR/>

David Thompson – has coke and coal for sale (near Jerry's in Eugene, OR) – Talk to him at one of our meetings or call 541 688-2348.

OKCA April Show – Table-holders remember that **December 15th is the cutoff to reserve your 2017 table for the 2018 show!** Members only April 6 10am-7pm – Open to the public Saturday the 7th 8am-5pm, Sunday the 8th 9am-3pm \$6/day (free to members) <http://oregonknifeclub.com/okcashow.html>

DiamondBlade Knives (the friction-forging company that Wayne Goddard worked with) – Lynn Moore gives us a heads up that they will have an episode on Discovery Channel's "How It's Made". The date is unknown so keep an eye out for it.



NOVEMBER MEETING NOTES

I (**MICHAEL KEMP**) opened what must have been the smallest 5160 Club meeting of the year by confessing that I have not done any metal work in quite a while... however I *have* been “processing” over a decade's worth of tree rounds, looking for worthy knife handle material. I've collected short sections of oak and maple that have fallen or we've taken down for safety reasons. I've mostly kept sections where the tree



forks and the grain can go crazy. Danita teases me about my “crotch wood fetish.”

I got some good handle blanks out of the process – but I can't recommend doing it. If I value my time at minimum wage, I'd be better off just buying handle material at the OKCA shows! But if I make knife handles from this stuff I'll have the satisfaction of knowing it came from our property.

Since the November meeting I've finished off my stash of tree rounds – I'll bring more examples to the December meeting show-n-tell. In chainsawing slabs from the rounds, most of it just got tossed into the woods. When you're slabbing up oak the phrase “chain smoking” takes on a whole new meaning. Then the selected slabs went to the table saw where most of that wood became kindling.



Here are a few of the keepers:





I noted that when I chainsawed up slabs from the rounds, many were still quite wet – despite having been under cover for at least 5 years. Martin Brandt noted that the general rule is that wood air dries at about an inch (in thickness) per year. And I'm betting that means cut lumber – not tree rounds with the bark still on. So a 2 or 3 foot diameter tree round would take *at least* 12 or 18 years to dry.

Martin noted that one way to slow dry the cut handle blanks is to stick 'em in a plastic bag – seal it – let it sit until you see moisture condensing on the inside of the bag – then take the blocks out, turn the bag inside out, put the blocks back in and seal it – and repeat until dry.

To reiterate from previous newsletters: Some woods – Oak and Madrone in particular – love to crack and check. Martin recommends boiling oak for an hour per inch of thickness before drying to release the stresses in the wood.

I'd mentioned that my motivation for processing my stash of tree rounds was to make room for a new forge build. That led into a discussion of forge design – past present and planned.

MARTIN BRANDT was up next with a potpourri of give-away odds and ends: golf balls for quick-n-dirty handles for files etc.; plastic dropper bottles and oiler bottles...

“I took apart one of those cheap treadmills thinking I was going to get a nice variable speed motor out of it [for making a belt grinder] –

what a piece of $\text{c}\#\text{@p}$ – it's so open and wires

hanging on the outside of it and 16 wires going to the controller...” and he had a couple of metal rollers left over that he was giving away. Plus he had a slow speed motor from a commercial coffee grinder – miscellaneous hand tools...

Then Martin passed around a couple of blades in process that he's making from files. He put the blade edges in water and torched the backs to make them



tougher. Rockwells range from mid 56 to 60.

Martin noted that areas that got to a purple color when tempering were around 59 HRC – parts that got to blue were still 56 HRC.

DAVID THOMPSON (our host) got up next to show some new (used) hammer finds he'd come across. The ones with a hole in the head are old Bell Telephone lineman hammers – they would use the standard head end of the hammer to pound in foot hold spikes – then if they decided to remove the (threaded) spikes they would use the hole in the head to grab the “L” end of the spike and unscrew it from the phone pole.



There was discussion about the pedigree and uses of the various hammers. A standard head is great for general shaping. Straight, cross, and diagonal peened hammers are great for moving metal in one direction (at right angle to the peen). Folks have different preferences depending on their forging style and the type of work they are doing. Some folks swear by



dog face hammers.

My favorites are a standard head and a diagonal peened hammer – where both heads have their peens in the same 45° plane. With the diagonal peen hammer, the way I hold a knife blade on the anvil the peen lines up either lengthwise or width-wise depending on which way I flip the hammer. That lets me draw the blade longer or wider with a quick flip of the hammer.

Then David said “I’m a real slut for kitchen gadgets...” and he passed around the most extreme meat tenderizer I’ve seen. The hammer head is slotted to allow a set of spring retracted blades to pierce the



meat with each blow!

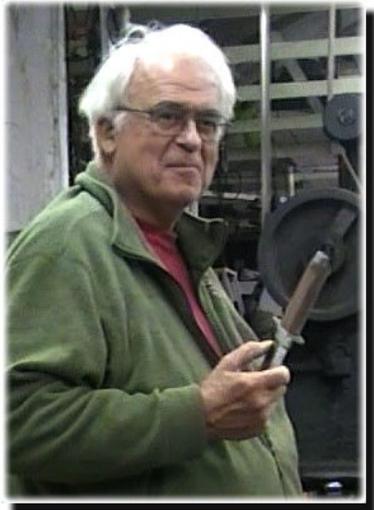
Tip-o-the-day: Be nice to the cook!

PAUL HAINES was up next and passed around a neck knife from cable Damascus:



He passed around a dagger-in-process. “Also Damascus... but I’m really not happy with the handle... the way it looks...” and asked for suggestions on modifying the outline of the handle.

There were suggestions



going in two opposite directions: either make the transition to the pommel more dramatic – or else make the transition more of a smooth arc. A longer grip or a larger pommel were also suggested. Ask a group of knife makers for design suggestions and you’re guaranteed to get a group of different ideas!

Martin said when he’s doing a new handle or blade shape he will mock it up with in cedar. A quick cedar model will let you try out the shape and modify it before committing it to steel & good handle material

In answer to a question, Paul said this Damascus was from 1-1/4” cable.

There was a wide-ranging discussion about cable Damascus. One note was to test the end of the cable before going to all the work of making Damascus out of it: heat the end of the cable to critical (past magnetic) and quench it in water. If the hardened end of the cable shatters on the anvil when struck with a hammer you have some high carbon in the cable – if not you have low carbon cable – not suited for an edge-holding knife.

EDWARD DAVIS got up front to ask for advice about cobbling together a dovetail backsaw for use in (non knife related) joinery. The consensus seemed to be that if you didn’t want to pony up for a new one, make the rounds of second hand shops. Buy-n-Sell was mentioned. Jeff Berkey (of OKCA) was mentioned as a source – apparently he’s opening a second hand store near Willamette Graystone in the Glenwood area.

That inspired a lively conversation about the road construction in that area including a “double roundabout”?!?



I don't think Bring Recycling was mentioned, but that might be worth a look in their tools area.

Another suggestion was to cut the saw from a larger garage sale blade and have Carson's Saw Shop put teeth on it. I guess it depends on how much you want to do-it-yourself!

What followed was far-ranging informal discussions about recent blacksmith events, shop projects, and tools and anvils for sale. Especially the recent NWBA get-together.

The best story was that there was a guy selling hammers for \$5 – whereas Dave had hammers for \$10. Blair noted that a gaggle of folks drooled over the \$5 hammers and even pulled a bunch of them aside – but then left without buying them. Dave goes to the other vendor – buys all his hammers and moves them to his display. The same gaggle of folks comes by later and gets excited about **the same** hammers and buys them for Dave. “Buy low, sell high. The only time I've really made money from blacksmithing!” Dave joked.

~ ~ ~ in other club news:

Edward is going to help me sit the 5160 Club table at the OKCA December show. It is free to the public 8am-4pm Saturday December 9th. There will be a toys-for-tots collection table – if you bring a donation it should be a new unwrapped toy.

I've signed up for our same 2 tables at the big OKCA April show.



Have fun all – and work safe!

Your Scribe ~ 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

Knifemaker equipment and supplies are often put up for sale in the OKCA classifieds – so remember to check their newsletters:

<http://www.oregonknifclub.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 a small show in December and the big knife show in April – if you haven't seen it you've been missing something special!

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

Go to the “Knewslettter” 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/>

Hype-Free Blades
<http://www.hypefreeblades.com/forum>

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/>

Zoro
<https://www.zoro.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.pmtso.com/tool-die-steel.php>

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

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>

Oregon Blade Maker [Oregon] – affordable chassis
and accessories, good reputation – you supply the
motor <http://stores.ebay.com/oregonblademaker>

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

Northridge Tool [Ohio] – precision manufactured belt
grinders <http://www.northridgetool.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](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/STAMPS

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>

Steel Stamp, Inc.
www.steelstampsinc.com

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/>

The Engineering Toolbox (formula & info reference)

<http://www.engineeringtoolbox.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.