THE MOSTLY MONTHLY NEWSLETTER OF THE

EUGENE 5160 CLUB ~ NOVEMBER 2017

https://www.facebook.com/5160Club newsletter archive: http://www.elementalforge.com/5160Club/

NOVEMBER MEETING

November 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

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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

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

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

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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/

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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.

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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

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October Meeting Notes

Frank Bobbio and I (Michael Kemp) started off the meeting exploring Rockwell C scale hardness (RHC) testing. I got fed up with guessing hardness by sliding a sharp file on the knife edge. I know some folks can gauge hardness this way – like some folks can judge forge temp within 20°f by color. That ain't me. So some years ago I ponied up for a Rockwell tester that I can stuff under my bench (space is at a premium in my tiny shop – no room for a bench-top tester).

Recently, Frank had been testing various steels and heat treating options with RHC graded testing files. Both Frank and I were curious how that would compare with my portable tester – so he brought his samples and I brought my tester to the meeting. Here I am checking the RHC 60 reference block on my tester, which read it as RHC 60.

There are two big differences between the test block and a blade. For one, the blade is thin and the test block is thick. Even though the tested steel is placed against an "anvil", questions remain about whether you might get a low reading due to the flexing or displacing of metal allowed by a thin blade. Secondly, the blade is a wedge shape – an very slight wedge, but the fact that the tester hits it at a slight angle might produce a low reading. If your knife has a ricasso which was heat treated consistently with the blade then you can avoid both issues by testing the ricasso and assuming that the blade is the same hardness... but to me that raises other questions.

There was general discussion about the above concerns and testing in general. For those who harden before grinding the bevels – they could test before grinding and have flat, thicker steel to test... but then you could be testing a decarburized layer that does not represent the final edge of the blade.

"I ran a whole series of tests on 15N20 and then bending to breaking at all different *[tempering]* temperature ranges before I even got to the next stage where I actually made knives out of it" Frank said. **Here's a couple of Youtube video of a few of Frank's tests:** https://youtu.be/HTaCU_Trz_s https://youtu.be/q8TBsPmEYgU

"I made three samples of 15N20, three of 52100, and three of 3V which is a CPM *[Crucible Particle Metallurgy – a process that creates very fine, distributed carbides]* and I wanted to figure out what was the best steel that I could make a kitchen knife out of that I didn't have to do a sub-zero quench on... and which was available in 0.070" to 0.090" thickness."

Frank tested several samples of 15N20 at different tempering temps: 250-350-450°f. Frank said that the 250°f bent to about 25° and broke "the 350°f I really had to pull on it to break. The 450°f I bent WAY over – I had to pull as hard as I could and it bent back *[to about a 20° permanent bend]* so 450°f is too much..." so he settled on 350°f.

Frank had been torch heating the edges of his 15N20 paring knives for the quench, but given how well the 350°f temper performs, his feeling is "why bother."

Frank noted that decarburization can go quite a bit deeper into heat treated steel than just the outer darkened layer. He also said that he'd quenched 52100 samples from 1495°f. *I believe Frank uses a Parks 50 type quenchant.* Using his hardness testing files – which are in 5 HRC increments – the piece tested at 40-45 HRC after grinding off the outer darkened layer. "Once I ground down to 0.030" thick it was full

hardness." If the steel started at 0.075" thickness then that's 0.022" ground off each side – Frank later opined that decarb on his 3V test went in 0.015". For reference, a credit card is 0.030" thick.

Another thought: if I grind my knife edges down to the thickness of a dime (0.050") before heat treat I'm pushing the boundary of having decarb all the way through the edge – unless I start using stainless steel foil pouches.

Frank also tested some 3V – which you quench from 2,000°f. At that temperature Frank was concerned about greater decarburization – so he tried one sample bare and another sample in a stainless steel pouch. He plate quenched both in a 3 ton press. He had pre chilled the plates in a regular freezer (a little below 30°f). "The one with the foil was full hardness... pushing 65 *[RHC]*... and the one without the foil – even though I ground it – it was back around 45 *[RHC]*."

Frank's first sample of 15N20 came up at 58 HRC on my tester. "I heat treated these at 350°f" Frank noted "so on the chart I thought they should be around 59 *[HRC]*."

The next piece I tested for Frank was another 15N20 sample. This one came out 50 RHC on the ricasso – which may have included a decarburization layer. A test closer to the edge read 54 RHC.

As a side note, Frank tried some options for welding less expensive steel tangs onto 52100 blades. Mild steel TIG welded on worked fine – as did a test with 45% silver solder. Frank noted that he used heat paste to avoid un-hardening the blade portion.

On a rope-cutting test Frank got 400 cuts with his 3V test blade. On the 15N20 he got 250. But Frank cautioned "On the rope cutting there's so much involved with the technique – how you hold it – how you push it... I could have easily fudged these numbers *[unconsciously]* so I'm a little disappointed with the rope-cutting test..."

Edward brought up Wayne Goddard's rope-cutting test machine that takes the human element out of the process.

Then I Rockwell tested Franks 52100 sample and came up with 54 RHC on the blade bevel. Frank questioned the validity of that since his 55 RHC file slid off the blade and "it should be up at 60 *[RHC]* as far as my heat treating... the 60 *[RHC file]* was just barely cutting it and the 65 *[RHC file]* really cut in."

Frank noted that he was trying out 3V for a kitchen knife because he can get it in the 0.070-0.090" thickness so he can grind a kitchen blade out of it with minimal time/waste. Also he did not want to get into stainless as that would require sending it out for sub-zero heat-treat. As a "shock-resistant" steel with 7% chromium (half-way to stainless) it is somewhat rust resistant. The pre-quench temperature for 3V is sensitive – a 100°f difference changes it from a wear-resistant steel to a shock-resistant steel. On the Crucible Steel chart the 3V rates high for wear resistance.

Frank's goal is around 60 RHC and enough toughness to take 200% of what the knife should be expected to be subjected to.

On the 3V sample I got 55 RHC on the ricasso and 45 RHC – which is not a reliable reading – see below where Frank re-tested with his spanking new Rockwell tester. A second test further back on the bevel came up with 52 RHC... so the thinness of the edge may have a distinct effect on the testing.

I noted that the D2 pocket knife I carry only reads around 50 RHC near the edge – and my Henckels and Wusthof kitchen knives test in the low to mid 50's RHC. The pocket knife has a wide "apple seed" edge so the angle of the bevel may be a factor, but the kitchen knives are thin and flat ground so the only issue with them would be whether they were too thin to read accurately.

Next Frank passed around some of his finished kitchen knives. This is a 15N20 blade – selectively heat-treated that has been in use for a month. He did a mustard finish on it.

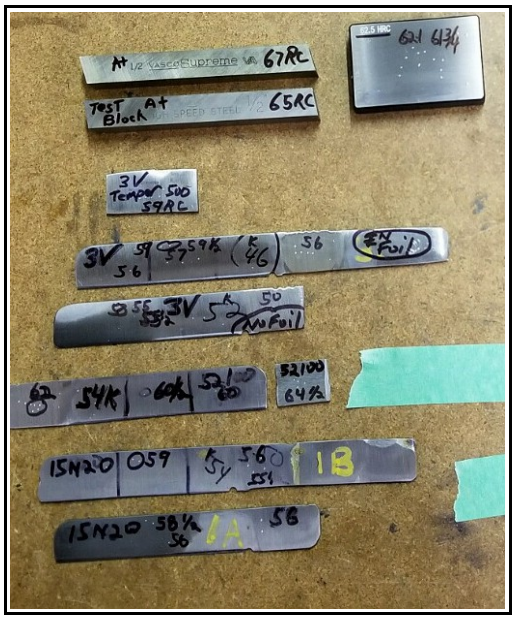
The next one was also selectively heat-treated. The blade was then sandblasted, etched, then rubbed with fine steel wool “to knock back the etching.” Frank likes that the 15N20 is somewhat rust resistant but feels that the edge starts to loose it's sharpness after a few days or weeks of kitchen use. Frank postulates that “micro corrosion” is dulling the edge faster than abrasion.

This knife had been in use for two weeks “but the edge goes bad fairly quick.” Inspecting the edge with a magnifying glass, Frank sees what looks like micro corrosion marks “It's not really dull-dull but it loses that nice cutting edge much faster...”

Frank's last pass-around was another 15N20 kitchen utility (or small chef) that he'd just finished up. “I thought I'd do one with an as-hammered finish on the top, and this is all one heat treat *[not differentially heat treated]*...” with a slightly hollow ground bevel. African blackwood handle.

Frank sent me some more info on hardness testing that I'm going to insert here before returning to the meeting notes.

He purchased a bench Rockwell tester from Grizzly.com. I believe the knife in this photo is the same 15N20 selectively hardened knife that he passed around at the meeting. The RHC is 37 near the spine and 64 near the edge.



Frank re-tested some of the samples I'd tested at the meeting. My tests are marked with a “K”. Some agree fairly well with his tester (HRC 54 vs 55/56) and some vary widely (54 vs 60/62 in one sample and 46 near the edge vs 56/57 slightly higher on the blade) with my numbers always on the low side. So while my portable tester always hits it on the money on the thick flat reference block – it's not reliable on thin beveled blades – at least not how I've been using it. I'll have to see if I can change methods to get more accurate results.

… back to the meeting …

Frank shared his take on silver solder: Stay Brite is 3 or 4% silver with a resin core and a 430°f melting point. “The flux does the heavy lifting – the only better flux is what Bob Loveless used: Eutectic 157.”

For his belt buckles Frank is looking at “... higher temperature solder: this is 45% - I bought this for $25... melts at 1,300°f – braising with low fuming bronze is 1,600°f, nickle-silver 1,700°f so if you need to solder a stick tang *[all thread extension]*” ... using the Safety-Silv 45 keeps you below the steel's critical temp.

The low temp Stay Brite does not provide the strength of the higher temp solders/braising that you want for high stress joints.

For Frank's belt buckles he's got a thick buckle that he's attaching a relatively thin rod to the back. With the higher temp braising the whole construction was getting too hot – but the Safety-Silv 45 works fine. Frank highly recommends using the Eutectic 157 with the Safety-Silv 45.

Lynn Moore noted that Wayne Goddard insisted that you never want to touch a solder joint or solder with your fingers. Wayne would sand off any joint before soldering – and re-sand it if it was touched.

MIKE JOHNSTON came forward next. He's done more reading and thinking about how to process fresh moose bones since the last meeting. "I found that simmering them – slow cooking them – for 10 to 12 hours with carrots and potatoes ends up with most of the meat falling off and most of the marrow coming out." He followed that up by putting the bones in a mixture of ½ cup OxyClean laundry cleaner with warm water in a quart jar for 7 or 8 hours – which completely finished the cleaning.

"I may have left it in the OxyClean a little long – it started pitting the bone."

He followed that with a vigorous dip in water and Dawn dish-washing soap. "They're slick as a whistle clean."

Mike will be getting moose bones from family members in Alaska that he'll use for handles, spacers, handle scales, and inlay. Martin Brandt suggested making some leather-working tools with some of it.

There was quite a discussion of bone usage in handle making – warnings about using young thin-walled bones or including the "knuckle" areas that may come apart over time.

I prompted Edward Davis (who has experience processing bones for his Natural History Museum job) to give his two bits. He explained that bone is a composite material of minerals and collagen, and while you want to get the grease and oils out of it you don't want to loose the collagen or it will be subject to crumbling. He noted that it might take 10 years to start falling apart if the collagen was compromised. So slow cooking is good but a full boil is bad. "If you leave it outside for the beetles to get you don't want to leave it for too long *[or the beetles will start eating the bone itself]* or leave it uncovered, so putting it into the compost pile is good." And later added that "you don't have to have your own beetle colony. If you leave it outside and cover it with wire mesh or something to keep scavengers from taking it away – flies and beetles will get in and they'll eat all of the meat off of it... but keep it out of the rain – and freezing and thawing is the worst!"

Referring to what another in the group had suggested, Edward noted that you can place the bones in water in an airtight container (maceration) "and you leave it for a week or so and when you open it it smells worse than death. You pour off the water, add clean water, and close it up again. Over time the microbes remove all of the meat … but if you do it too long then they'll start to get into the collagen also."

Edward liked the method that Mike had used but cautioned that leaving it in the OxyClean or other oxidizer (like hydrogen peroxide) or white gas too long could compromise the collagen.

He noted that when the museum gets bones where the collagen has been lost they use something called acryloid dissolved with acetone that will soak all through the bone. When the acetone evaporates it leaves the acryloid in all the micro-pores – taking the place of the missing collagen. *This sounds like the same thing that John Emmerling mentioned using for wood stabilizing (see the March 2014 newsletter):* *http://www.conservationsupportsystems.com/product/show/acryloid-paraloid-b-72/acryloid*

"I currently have 20 orders that I'm working on. This is one of them..." Mike noted.

He passed around a 10" Nakiri Japanese chef knife he's working on made with 1080. He clay heat-treated it, sanded to 2,000, then repeated dipping in vinegar and polishing to bring out the hamon. On this one he used Mother's Aluminum Polish but has also used Flitz polish "to good effect. Toothpaste is a little too course."

Mike then pulled out a big flashing sword! “This is another commission I got... a guy I know, his 15 year old son wanted a gladius.” *[what 15 year old wouldn't?]* Mike forged it from a truck leaf spring.

He had to build a forge extension so that he could get the whole blade up to critical temp. The blade was horizontal in the forge and even holding it with the width vertically, the blade bent slightly under its own weight – so Mike had to compensate for that. Mike recalled Wayne Goddard's “weenie roaster” method. But for his next such project he plans to re-orient his forge for a vertical heat treat.

In response to a question Mike noted that in post heat-treat grinding the weight went from 2.8 pounds to 1 pound 11 ounces. And that he did all the grinding free-hand on the belt grinder at 600 grit using full length strokes – followed by hand sanding from 320 to 2,000 grit and running the scratch lines at opposing diagonals from one grit to the next.

Mike plans a black walnut cow bone and brass handle.

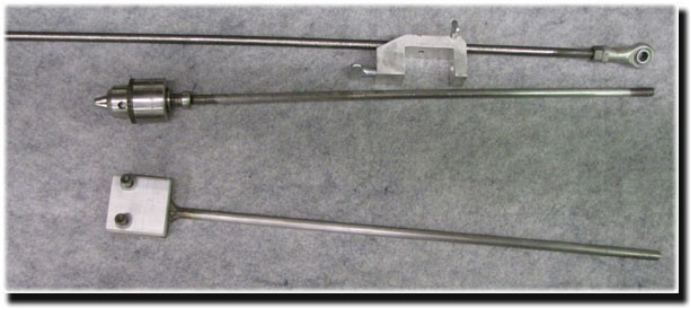
As a final note, Mike said that when he ships knives he typically uses tubes from Home Depot that were the cores of carpet rolls and such. He uses a Harbor Freight expandable hole cutting tool to make wooden end plugs. It leaves a taper on the plug. That works well for a snug fit into the end of the shipping tube (leaving the plug a little proud). Then he uses sheet metal screws to secure the end plugs. “It doesn't cost any more than a flat rate shipping box and it's a lot more secure.”

Our next speaker said that his 8th grade son is required to do an independent project under tutelage at his school. He wants to forge some Damascus. The project requires a mentor and it would be best if it wasn't “dad”. *I think they got hooked up with a couple of folks by the end of the meeting.*

If he stated his name I missed it – I'm going to have to make sure I get it next time.

Moving on to sharing stuff, he pulled out a tool that he made to help with grinding plunge lines (the transition between the blade bevel and the ricasso). It's similar to some knife sharpening tools and lets you set the angle.

The vice lets you adjust the height of a bearing that you can feed an arm through. The chuck is used to hold a round file to define the curvature of the plunge cut.
The square head can be used to hold a regular file or sanding block for the same type of angle control for bevels.



He passed around a couple of Indonesian work blades that he'd shared a couple of months ago, and also a good sized hook bill also from Indonesia. All these have rather large cylindrical handles that seem ungainly but apparently are pretty typical.

In the photo below, the top blade is his son's – the other two are his own in-process blades.

BLAIR GOODMAN was up next. "Jim brought some wrought iron and this is what I ended up with mine – it started looking like a butterfly until we tried making it into a bowl – and we got tired... it turned out pretty well" he said as he flicked the edge with his finger and it rang like a bell.

Blair noted that he forged it out at one of Dave Thompson's "Blacksmith Night Out" gatherings.

When he forged at below welding temp it would break up and he'd have to fold it back up and re-weld it into a new ball – and start over.

He talked a little about looking for blacksmith equipment at garage & estate sales – and passed around a small hammer.

DAVID THOMPSON talked a little more about forging wrought iron. He liked the stuff Jim Jordan had brought – and passed around the bowl he made from another one of Jim's pieces.

JIM JORDAN came to the front with another piece of the wrought iron. "I put it through a mill... etched it... and raised a rim on the outside – just working it *[cold]*."

ERIK LAND came to the front. "I've got my first 3 folders in stainless... and it's a big change. These are the same patterns that I've been using for O-1... I had to work out the spring temper and it's 1,150°f. The blades I tempered at 450°f and I tested them with my Rockwell files and they're somewhere around 59 *[RHC]*. I've been working with Bill Harsey and according to him that's about right."

"I'm working with CPM 154 – I rough grind 'em – I plate quench 'em – the blades are all coming out straight, not messing with it... on Bill's recommendation I'm both heat treating in a foil pouch and tempering in a foil pouch."

Lynn Moore asked if Erik had trouble with the foil pouch sticking to the blade. Erik said that he's heat treating at 1,900°f and "Bill says if you push 2,000°f they will start sticking to the pouch." And Erik noted that the closer you get to 2,000°f the more you start losing the stainless properties of the steel.

In response to a question Erik said that he's plate quenching just using hand pressure and blowing compressed air around the sides.

Just to be sure I'd heard right I verified with Eric that he ground the bevels before heat treat – because I was curious about having an air gap between the blade and the plates. Eric acknowledged the concern but said that a brand new Nicholson file would not touch the blades. "Under Bill's recommendation I froze them overnight in my freezer – the thermometer said it was -10°f. So that's not as low as it could be but I'm not going to run out and buy a dewar *[for liquid nitrogen]* and it seemed like it was harder after I froze it." Erik may go to dry ice and acetone in the future. He also noted that he's conditioned to get the blade tempered as soon as possible after quenching to avoid stress crack "so all night long I'm worried about the blade going TING in the freezer."

There was discussion about tempering before freezing to relieve stress, but Harsey advised Erik to go straight from quench into the freezer (or Harsey uses liquid nitrogen) and then temper afterward. And all 3 of Erik's first CPM 154 blades made it through just fine.

EDWARD DAVIS was up next. "I had to go to a workshop at the University of Alaska, Fairbanks... on the last day a bunch of 'em were going to go on a tour of Denali and I couldn't stand the thought of spending 12 hours in a bus before getting on a plane for 4 hours to go to Eugene..." so he spent the day in Fairbanks.

It turned out there were two folks with knife shops. Erik dropped in on Mark Knapp's shop – a maker of high end custom knives: http://www.markknappcustomknives.com/

He's been on an episode of Forged In Fire. "One of the things he's been doing is that he got a plasma cutter and he'd been making knife blanks out of old circular saws from the mining operations... he's got these huge bins of blanks already cut out. They're Rockwell 58-59 so all you've got to do is grind 'em down and put a handle on 'em." The Bowie blank cost $20.

Here's the 3 blanks he came back with:

He plans on making a double sheath for the small camp knife and Bowie.

There was discussion of methods of stabilizing a stacked leather handle with wood hardener, or slow-set epoxy, or thin CA glue (superglue).

PAUL HINES came forward – first he passed around an LPT (long pointy thing) that he made "just to see if I could get the temper and see how it worked." This was from spare steel left over from cutting Mercury chainsaw bars.

Then he passed around a dagger he'd made from a billet he welded up from cable.

And before we broke up I **had** to ask about this piece of machinery sitting in David's shop. It was used as a DDT sprayer. "My dad used to run up and down the road with that thing – huffing and puffing – no respirator... DDT oh he loved that stuff!"

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

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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 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.oregonknifeclub.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
ttp://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

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.appaltree.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/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.