

# RAM

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NEWSLETTER of the BLACKSMITHS ASSOCIATION OF MISSOURI

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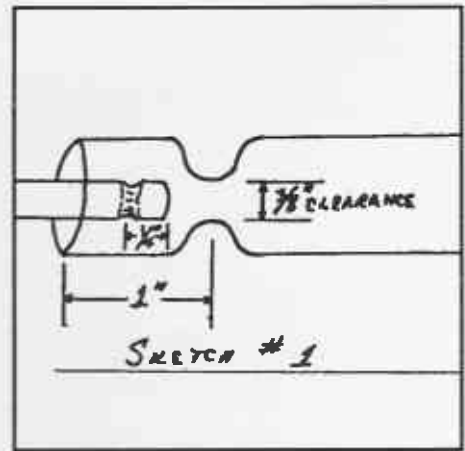
**17** Pat McCarty is responsible for this heart hook project.

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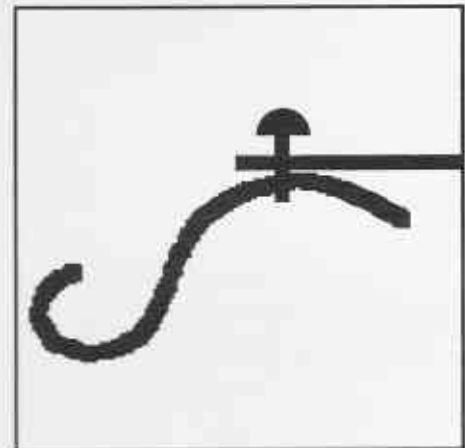
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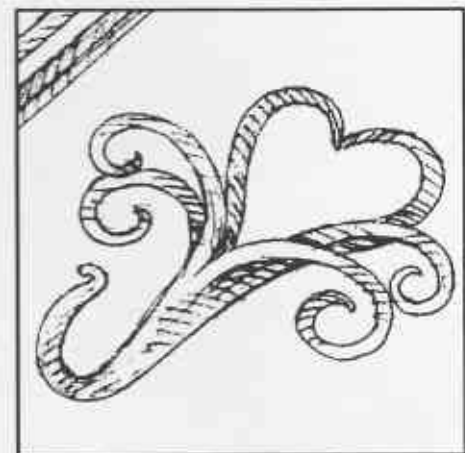
**23** Stan Winkler promises a dry meeting in newly washed Ste. Genevieve.



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# Newsletter of the Blacksmiths Association of Missouri

*Volume 10 No. 6*

**Our cover:** J.K. Reynolds and Colin Campbell were two of the smiths who got together at Pat McCarty's forge to ring in the new year on the anvil.

**Editor**  
Jim McCarty

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Tom Clark  
Pat McCarty  
Maurice Ellis  
Ed Harper  
Bob Woodard  
Doug Hendrickson

**Art Director**  
Jerry Hoffmann

**Mailing Labels**  
Maurice Ellis

The Newsletter of the Blacksmiths Association of Missouri is published six times a year and is mailed to members of BAM. The annual fee for regular membership is \$20/year; a portion of this amount is for a subscription to this newsletter for one year. Editorial inquiries should be addressed to: Jim McCarty, Rt. 1 Box 20, Loose Creek, MO 65054 (314-897-4111). BAM membership inquiries should be addressed to: Steve Austin, 44 N.E. Munger Rd., Claycomo, MO 64119 (816) 781-1512). Occasionally some material will be copyrighted and may not be reproduced without written consent by the author. BAM welcomes the use of any other material printed in this newsletter provided the author and this organization be given credit.

## BAM Membership Application

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Phone: (    ) \_\_\_\_\_ Zip: \_\_\_\_\_

New Member     Renewal

How did you learn about BAM? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Memberships are for one year from receipt of dues. Dues are \$20, which includes a subscription to the bimonthly BAM newsletter. Please make checks payable to Blacksmith Association of Missouri.

## ABANA Membership Application

*Primary ABANA Chapter Affiliation* \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Phone: (    ) \_\_\_\_\_ Zip: \_\_\_\_\_

New Member     Renewing Member

How did you learn about ABANA? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

- Regular Member .....\$35 yr.
- Senior Citizen (65+).....\$40 yr.
- Fulltime Student.....\$25 yr.
- Overseas Airmail .....\$70 yr.
- Overseas Surface Mail .....\$50 yr.
- Contributory Member .....\$100 yr.
- Public Library .....\$25 yr.

*See reverse*



## Editor's Anvil

Finally got to show what passes for my shop to someone. Phil Cox showed up the day before the November meeting and I gave him a quick tour. Phil is doing some neat stuff.

He has been experimenting with Damascus knives and had some real nice specimens along. Phil isn't folding as much as most guys, and you know, I think I like it better that way. He buffs everything to a mirror finish. Got to see how he does that. He is also making some nice leaves like the ones that fall off Tom Clark's anvil. Phil does them under the power hammer, showing he has reached an agreement with that tool and it knows he's boss.

It's good to run into each other isn't it?

Haven't seen much of brother Pat but the last I heard he was making quilt frames. His newest quilt has a BAM logo on it I understand. What a talented guy our VP is!

We got together one Friday and Pat showed me how to make hinges. They look passable. Now I'll have to make a chest to put them on. I've been saving some pit-sawn boards that came out of my house for a special project. Maybe this is the one.

Pat also made a basket twist, his first. It came out pretty good. I can imagine a lot of places where these would fit in, including the legs for my forge. He only made one though.

Finally got back to my forge after a month doing woodworking. For lack of anything else to do I tackled one of the pieces of cable Daniel Floyd gave me. I was amazed at how easy it forge welded into a half-inch billet. That was the easy part. Forging a blade is pretty tough when you don't know what you are doing. I got something pretty passable but need some friendly advice on what to do next. Do you quench and temper or etch first? How long do you etch and what is the dilution rate? For that matter, what kind of acid works best?

Roy Warden offered his method: He says work the blade pretty fine,

maybe down to 240 grit. Heat it to critical temperature and quench in oil, then clean it up to where you left off before. Now put it in the oven at 350 degrees for one hour.

When you take it out it should have a straw finish to it. Finish the knife to suit your fancy and then suspend it in acid for another hour. Roy uses some stuff from Radio Shack designed to etch printed circuit boards for the acid. He puts it in a length of PVC pipe with a cap glued on the bottom. After it has etched take it out and wash in water. He gives it a final polishing with 1000 grit paper. Sometimes he wipes it down with gun bluing and lightly sands to expose the high areas. The low spots retain the blue color, emphasizing the damascus.

Roy showed me a beauty of a knife that had stars on the bolster and his initials in the blade. He is working on an article for the newsletter. It's nice when someone like this offers to give their secrets for success away.

I've about run out of books on blacksmithing at the Jeff City library and have turned to related topics. Check yours out for books on metalworking. There is almost always a chapter on blacksmithing in these

books and sometimes they have real neat projects. Look for the oldest ones.

A good one I have know is called "Practical Blacksmithing and Metalworking" by Percy Blandford."

I checked out another book on old kitchen utensils. While everything in the book isn't forged, there are a number of blacksmith items and some of the tinware could be adapted to the forge.

Also don't pass up agriculture and shop class text books at flea markets and auctions. I picked up a nice one in Sedalia called "500 more things to make for Farm and Ranch". It is a compilation of Extension Department Bulletins from the '30s and '40s. There were several items on forges and hoods and well illustrated tools and hardware to make on the forge. Guess back then every farm had a forge.

Makes me wonder what these Extension guys have left in their files. The California Blacksmith ran a short piece on fires that they credited to the University of Missouri (many moons old).

I doubt if anyone has tapped the Land Grant University bunch but years ago they were well-versed on blacksmithing techniques. In fact, most schools that had an FFA class had a forge too. Steve Austin showed me a gas forge (about 3 feet long) that he said came out of a school. Heard tell there's still one at the school district I pay taxes to (Fatima) but that they never use it.

Got to talk them out of that.

I've had so may calls on coal forges that I don't have time to check them all out. If you need a forge give me a call and I'll tell you where to find one.

Thanks to those who heeded my call for articles. I had a good turn out for this issue. Keep them coming, please.

— Jim McCarty



# Dear BAM

Dear Jim,  
I'm interested in collecting all I can find of maxims, expressions and sayings that relate to ironworking and blacksmithing.

David Petersen of Wales recently sent me a list of 37 of these which I'd like to use as a starter list. If you'll let me know of any other ones you know of or come across, I'll compile them. Perhaps our readers can help. Thanks,

*Bob Woodard  
2748 Oakshire Circle, Cape  
Girardeau, MO 63701-2012*

Too many irons in the fire  
Strike while the iron is hot  
Going at it hammer and tongs  
Bring a bright spark  
Being poker faced  
Hard as nails  
Punch it home  
It's riviting, isn't it  
Do you get my drift?  
Having a drawn out conversation  
Getting to the point  
Making a point  
Iron out a point  
Forging a friendship  
Forging ahead  
Being on one's metal  
A chain reaction  
Linking up with  
Quenching one's thirst  
Cool off  
To lose one's temper  
To temper one's argument  
To get overwrought  
Hammer home a point  
Link up with someone  
To tire one's enthusiasm  
A blow by blow account  
A vice like grip  
Having chiseled features  
No smoke without fire  
As hard as iron  
Iron hard  
Iron rations  
Iron curtain  
Iron hand in a velvet glove  
To strike a light

## Welcome New Members

Charles Schumann, 2242 Roscoe St., Chicago, Ill. 60618 (312) 549-7065

Bill Gichner, Box 8, Thany Beach, Del. 11930, (302) 539-5344

Robert Poling, 165 Marks Ave., Lancaster, Ohio 43130 (614) 654-9199

Norman Wendell, 180 W. Marks Ave., Lancaster, Ohio 43130, (614) 654-2040

Carl Dishong, Star Rt., Reno, Ohio 45773

Paul Sperbeck, 313 Hillview Circle, Waukesha, Wis. 53188 (414) 544-0784

Steve Kayne, 100 Daniel Ridge Rd., Candler, NC 28715, (704) 667-8868

Charles Robinson, 1423 Third Ave., Picayune, Miss. 39466, (601) 798-0060

Robert Michalik, 3874 Stone Ridge Court, Arnold, Mo. 63010

Arthur Price, 115 Oakwood Dr., Deatsville, Ala. 36022, (205) 285-4099

Don Drummond, 1101 W. 86th St., Kansas City, Mo. 64114, (816) 361-3697

James T. Lackey, 1507 Sycamore, St. Clair, Mo. 63077-2217, (314) 629-4611

Lowell Tonding, RR 3, Box 3494, St. James, Mo. 65559, (314) 699-4346

Guy McConnell, RR 4, Box 40, LaPlata, Mo. 63549

Mark Von Drasek, 401 Kalen, Apt. B, St. Louis, Mo. 63114

John Stouesand, 7190 Highway B,

Cedar Hill, Mo. 63016, (314) 285-0951

Terry Temple, C/O CeeKay Welding Supply, PO Box 17423, St. Louis, Mo. 63178, (314) 938-5000

Ralph Brindley, 4421 Ashby Rd., St. Ann, Mo. 63074, (314) 423-2559

Ronald Schaefer  
Rt. 1 Box 134  
Loose Creek, Mo. 65054  
(314) 897-3235

Swede Douglas, RR3 Box 251, Mansfield, Mo. 65704

Dan Syrcle, Box 47, 224 York Ct., Bentley, KS, 67016 (316) 796-1904

Daryll Allen, Rt.1, Box 86, Plainview, Ill. 62676, (618) 836-5435

Brady Marken, Box 875, Libby, MT 59923

Kelly Erbschloe, 2795 Dunhill, Maryland Heights, Mo. 63043 (314) 291-1171

John Medwedeff, 430 S. 19th St., Murphrysboro, Ill. 62966 (618) 687-4304 (shop) 687-2958 (house)

Ron Deichmann, 6040 Circle Dr., House Springs, Mo. 63051 (314) 671-0460

Jennifer Flores, 4928 Lindenwood, Apt. 250, St. Louis, Mo. 63109 (314) 832-2151

### New Addresses:

Joe Wilkinson, Rt.1 Box 132, Morrison, Mo. 65061

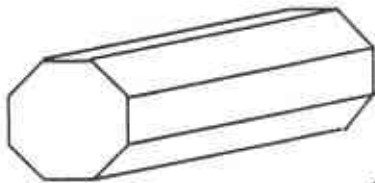
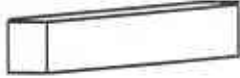
Ed Levinskis, 3785 Banbury Dr., St. Charles, Mo. 63303

R.E. Elkins, Rt.2 Box 244 AF, Clinton, Mo. 64735

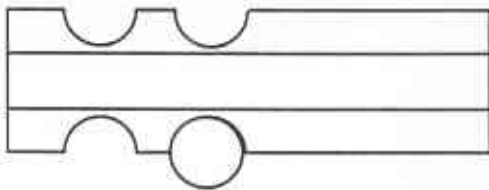
## Tang Chisel

This Tang Chisel was demonstrated by Peter Ross at Hillsboro, OR in March, 1988. Notes and sketches were by Hugh Eddy.

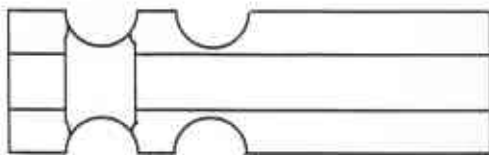
Stock --  $\frac{3}{4}$ " mild steel



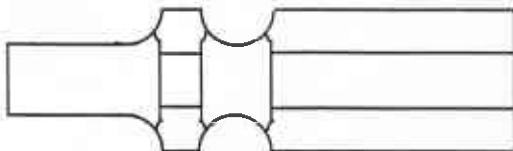
1. Forge corners to make octagon.



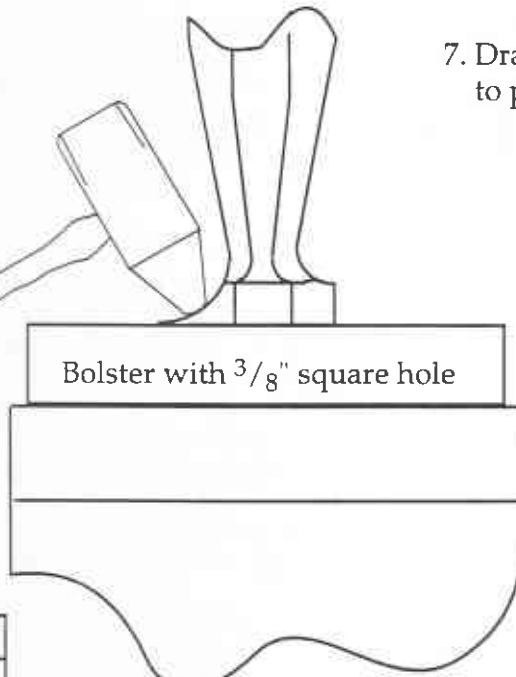
2. Fuller to make shoulder. Hammer over  $\frac{3}{8}$ " round to make fullers.



3. Fuller on four sides.

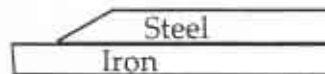


4. Draw out tang to  $\frac{3}{8}$ " square.

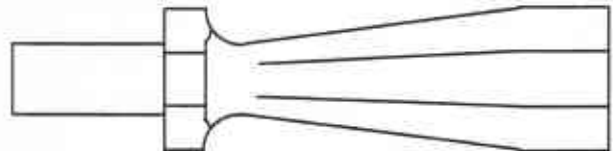


Bolster with  $\frac{3}{8}$ " square hole

6. Fuller shoulder on bolster.

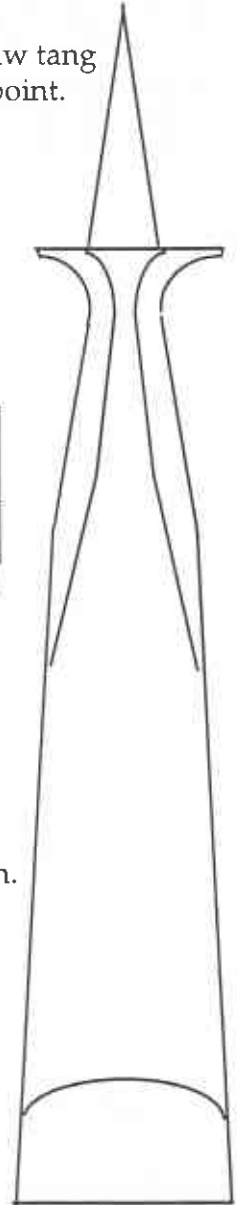


8. Scarf a piece of steel by tapering one end. Forge weld steel to end of chisel.



5. Taper chisel shank on near edge of anvil.

7. Draw tang to point.



9. Draw blade to desired shape/length.

# BAM NOV. MEETING

BAM's November gathering was a real good event. Todd Kinnikin hosted the meeting at his large, drafty shop located in House Springs.

Todd had lots of big tools to look at. Jerry Hoffmann showed his forge welding techniques and made a snake.

John Murray gave the Bradley hammer a workout, while Lou Mueller and Bob Miller demo'd on the treadle hammer.

The food was great, chili and Todd's special brew dubbed "Bam Boozle Beer."

Anyone who survived drinking one of these should contact the poison control center with the antidote.

Todd's beer (21 cases were consumed) is lit up by a hot pepper that increases in potency with time.

I understand the meeting was over by 7 p.m. — the next day.

There was the usual lie and technique swapping and dessert was beef jerky. The trade was a handle.

Iron in the hat was well represented and we brought in \$180.

Thanks Todd for a good day.

## Minutes

### *November Meeting*

#### Business Meeting

Tom Clark called the meeting to order. Minutes of last meeting accepted. Treasurer Steve Austin was not present, but Tom reports that we are financially sound, with about \$6,000 in the bank.

On February 5 & 6 (Sat. and Sunday) there will be a forge building workshop at Lou Mueller's shop in Valley Park, to build forges for BAM and the '94 ABANA Conference. Members are urged to attend and help out.

A future treadle hammer workshop was discussed.

Tom announced that BAM now has 300 plus members, including 90 new members in 1993.

BAM elections will be held next July.

The Bob Patrick Award will be given out in April. Call Doug Hendrickson with your suggestions about who should win it. Tom urged members to contribute rings for the BAM-

ABANA ring project.

Tom mentioned he is working on a study program concerning various levels of blacksmithing (beginning, intermediate, etc.)

There was discussion about having more structured meetings with specific demonstrations, more practice forges, etc.

Andrew McDonald said there is a hands-on workshop at the Jefferson County Historical Society in Mt. Vernon, Ill., on the morning of the 2nd Sunday of the month. Call Andy at (618) 549-1954 for more information.

Meeting adjourned.

Trade items:

Maker	Winner
Maurice Ellis	Tom Clark
J.K. Reynolds	John Murray
Bob Alexander	Ed Harper
Tom Clark	Phil Cox
Rainbo	Maurice Ellis
John Murray	Kevin Fallis
Phil Cox	Bob Alexander
Kevin Fallis	Pat McCarty
Pat McCarty	Bob Woodard
Ed Harper	Rainbo
Bob Woodard	J.K. Reynolds

Good show on trade items, including a Claydon Knot by Bob Woodard

#### *Iron in the Hat*

Winner, Item, Maker  
Jennifer Flores, Scroll Tongs, Andy McDonald  
Joe Wilkinson, Brass Brush, Bob Alexander  
Bob Alexander, Hot Cutter, John Murray  
Bob Crouch, Heart Hook, Bob Woodard  
Emil Bubash, Candle Stand, Pat McCarty  
Frank Sherwood, Wizard Head, Carl Buck  
Frank Sherwood, Letter Opener, Unknown  
Jennifer Flores, Wood Carving, Unknown  
Jennifer Flores, Double Heart Hook, Rainbo  
Tom Marlen, Railroad Spike Knife, Phil Cox





*Left: Tom Clark leads the busniess meeting from a perch on one of Todd's workbenches. The turnout was high for a cold, dreary, November day.*



*Left: Big E, Lou Mueller and Jim Waller check out some of Todd's big tools.*

**Photos by Pat McCarty**

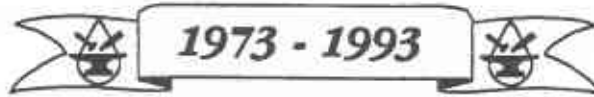


*Left: Jerry Hoffmann showed some welds and made a snake. Below: This knife was made from an old hacksaw blade by Pat McCarty. It was a present for one of his sons. I'd keep the door locked at night, Pat.*



# ABANA

*The Artist-Blacksmiths' Association of North America now proudly celebrates its 20th year!*



P.O. Box 1181, Nashville, Indiana 47448  
Executive Secretary, Janelle Gilbert Franklin

Office Hours: 7:30-11:30 am & 1:30-4:30 pm  
Phone: (812) 988-6919

## President's message December, 1993

Dear ABANA Chapters,

The ABANA Board held its annual November budget meeting at Emmert and Jane Studebaker's remarkable facility, the Studebaker Homestead in Tipp City, Ohio, last month. Thanks to their generous offer to host the annual ABANA budget meeting, costs associated with a meeting of that type have been held to a minimum. We deeply appreciate Emmert and Jane's wonderful hospitality.

Once again, we had a very productive meeting. Our financial picture looks very good going into 1994. We elected new officers for 1994, and they are 1st vice president Andy Quittner, 2nd vice president Toby Hickman, Secretary Hans Peot and Treasurer Pete Brandenburg. I would like to take this opportunity to thank outgoing treasurer Bill Callaway on a great job as ABANA treasurer since 1986. Bill has been a pillar on the board and a responsible steward of your treasurer. Thanks Bill, for a job well done. Bill will be working closely with Pete to ensure a seamless transition.

We made several changes within the standing committees that will affect how we do business in 1994, and I would like to mention them briefly:

- 1. The scholarship function has been moved to the Membership Services Committee, now chaired by George Dixon. This committee will play a more active role for the ABANA membership in 1994.
- 2. We formed a publications committee, chaired by Andy Quittner. This committee will replace the Anvil's Ring Committee and will provide a better platform for managing our publications, which now includes the Hammer's Blow. The board elected to keep the Hammer's Blow, even though it does not yet "pay for itself." It is hoped that the ABANA membership numbers will rise high enough as a result of the Hammer's Blow to completely fund it in the future.
- 3. We activated the Grants Committee, with Pete Brandenburg as chairman, and members Elizabeth Brim and Andy Quittner. We will be actively pursuing outside sources of funding for selected ABANA programs.

There are many other changes and improvements in our 1994 plan. We will be focusing and reporting on each of them in the coming weeks. We are confident you will like what you hear.

Of course, we want you to be around to hear them all! That means your continuing focus on shop and personal safety. This time of year, it is tempting to keep the shop closed up. Unfortunately, that isn't such a good idea in a craft where ventilation is important. Breathing protection is hardly ever focused on as a safety concern, yet almost everyone knows that prolonged exposure to smoke, dust and industrial gases can lead to emphysema. Like hearing damage, it takes a while to manifest itself. The next time you are out in the shop, make sure you have adequate ventilation. You can pat yourself on the back 20 years from now!

Warm regards,

A handwritten signature in cursive script that reads "Clayton Carr".

Clayton Carr  
ABANA president

# ABANA Liaison

Atta Boy . . .

. . . to SOFA Chapter (Southern Ohio Forge and Anvil). More than 800 people attended this year's Quad State Round-Up at Tipp City, Ohio, and Ken Scharabok, who chaired this bastion of the art for the eighth straight year.

. . . and Happy Birthday to Bill Gichner and congratulations on a lifetime membership gift from his home chapter, the Mid Atlantic Smiths Association. Thanks for teaching and promoting smithing most of those years.

## Member list exchange

We are going to do the member list exchange again this year and will be calling four chapters a month with a request for each to send in your chapter membership list in a DBaseIII or ASCII file on disk if possible or a hard copy if not. We will compare your members with ABANA's and send you back a list of ABANA members in your zip code areas who have not joined your chapter. (We will, of course, solicit your members who have not yet joined ABANA.)

## Contributory membership dues earmarked

The ABANA "Contributory" membership that is \$100 instead of \$35 for members who want to extend their support has been earmarked to fund the ABANA/NOMMA Exhibition. At the ABANA board meeting this year in November, the ABANA board voted to earmark the \$65 difference to the Exhibition Fund Committee chaired by Elizabeth Brim. This exhibit is coming up this Dec. 12 - Jan. 23, 1994 at the National Ornamental Metal Museum. Funds are needed to cover the insurance, heavy shipping fees and awards. Many chapters have already contributed, but Elizabeth is \$6,500 behind. If some of your members

can afford to help, we're going to show some real "iron" to people who haven't seen it before. So contact the ABANA Office if you would like to be a contributory member.

## Joe Humble Award

Enclosed in this chapter mailing is a postcard nominee ballot for ABANA Chapter Editors to submit before Jan. 30, 1994. The purpose of the award is to select editor of the year and was outlined in a letter from ABANA board member Tim Ryan. The award recipient from the majority nominee submissions will be given the award at the 1994 ABANA Conference being held in St. Louis, Mo. (June 15-19). Past and present editors should be considered for nomination. Editors, please send in your ballots.

## Editors help! Paperwork plea

The ABANA office is requesting that chapter newsletter editors use the enclosed ABANA application for reprint in newsletters. We are of course appreciative of your willingness to publish an application, but the variance of information and paper sizes is slowing down membership processing. With 3,500 renewals and more new members joining in 1994, consistency in applications submitted would sure help. Also, we would like to track where the applications come from so we can give credit where credit is due!

Change of officers? Many chapters assume that the ABANA Office reads every newsletter and can get a change of address that way — but we archive the newsletters and do not have time to cross check each one every month. So, please just drop us a postcard with your change of president or editor (with phone numbers) so we can keep our list up to date.

*John Pollins III, Chapter Liaison Committee Chairman*



# Forge a Pepper

by Robb Gunter

Some years ago while working in SWABA's State Fair Exhibit, a young lady said, "Bet you can't forge a chili pepper." The challenge was on! I told her to come back in an hour and we'd see about that. With a piece of 3/4 inch black gas pipe and a piece of 3/8 inch rod for a stem, the first attempt began. Although somewhat crude, it was rewarding when the young lady came back and had to eat her words. As it turned out, she paid a healthy price for it. With a bit more practice I got the bugs worked

out and here's the recipe for growing your own chilies:

Start with:  
3/4 inch or 1 inch of black iron (gas) pipe 18 inches to 24 inches long — plenty of handle.

Plug or tape off the end not going into the fire.

Heat 3 inches evenly — turning the pipe in the fire — to a good yellow (don't burn it).

Fuller the pipe with either a 3/8 inch rod fullering tool or a fullering jig, 1 inch from the end, turning the pipe with each hit. Fuller down until a 3/8 rod will just fit inside.

Fuller a small groove in the 3/8 inch rod 1/4 inch from the end.

You're ready for a fluxing heat. Both pipe and rod must be carefully heated yellow. Brush and flux the rod.

Use a plumber's 1/2 inch radial wire brush to clean the inside fullered pipe. Flux quickly and insert rod to the fuller mark.

Close the fullered pipe down on rod in fullering jig. This needs to be done quickly and returned to the fire before the flux cools too much.

Slowly bring to a welding heat allowing the pipe and rod to soak at welding heat to insure temperature is inside fullered area.

Forge weld in the fullering jig with quick light taps — turning the pipe between each hit. A second welding heat can be taken if necessary. Allow pipe with welded stem to cool.

Cut pipe and stem as shown in Sketch #2.

Forge stem to a short taper — avoid hitting septal area.

Shape the septal — on a real chili it is 5 lobed or somewhat pentagonal.

Take a good yellow heat over entire fullered area and stem. By selectively quenching the stem and septal area, upset it down on to the pipe. Insert the stem in the pritchel hole of your anvil and hammer the other end of the pipe. Allow the pipe

just below the septal to swell somewhat, as this looks more normal. (Sketches #3 and 4.)

After upsetting septal and before curling the stem — use a small radius grooving chisel to define ridges on septal which point to each lobe. (Sketch #5.)

Curl the stem.

Hacksaw off the pipe 6 inches to 6 1/2 inches for 3/4 inch or 7 inches to 7 1/2 inches for 1 inch pipe (measuring from the septal).

In a swedge block, taper the open end of the pipe from yellow heat, turning the pipe between each hit to avoid any folds. Make the taper relatively short at this point — the taper can be smoothed and made longer after the pipe is closed and forge welded.

The chile can be tapered and forge welded onto a rod at this point to make an interesting tool handle (3/4 inch pipe makes the best handle).

After forge welding hot rasp the closed end to a small hemispherical radius.

With a coarse 3/8 inch square file, shape a cleft in the radius end. Most chili peppers have a 2 lobed end, much like a bell pepper has 4 or 5 lobes (see sketch #6).

Lengthen taper for a smooth transition back toward stem and septal. Wrinkling the pepper: Sketch #6 shows two primary wrinkles which line up with cleft in the end and are 180 degrees apart.

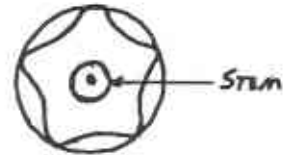
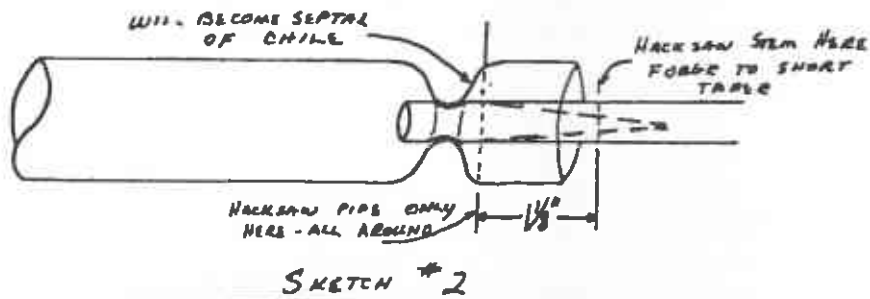
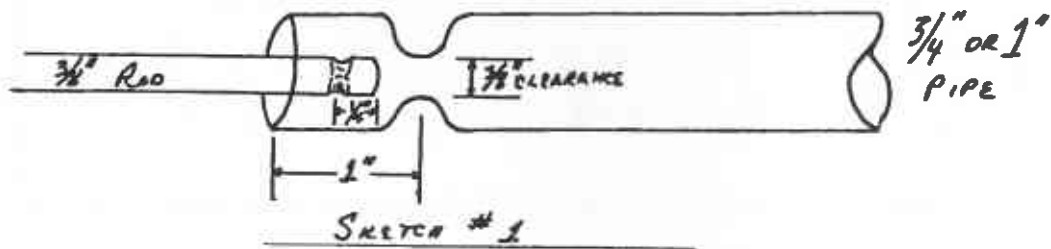
I found it most helpful to buy a chili pepper or two in the grocery store and study the real thing.

A nice final touch before waxing is to use a fine brass wire brush at black heat on the stem and septal for contrast.

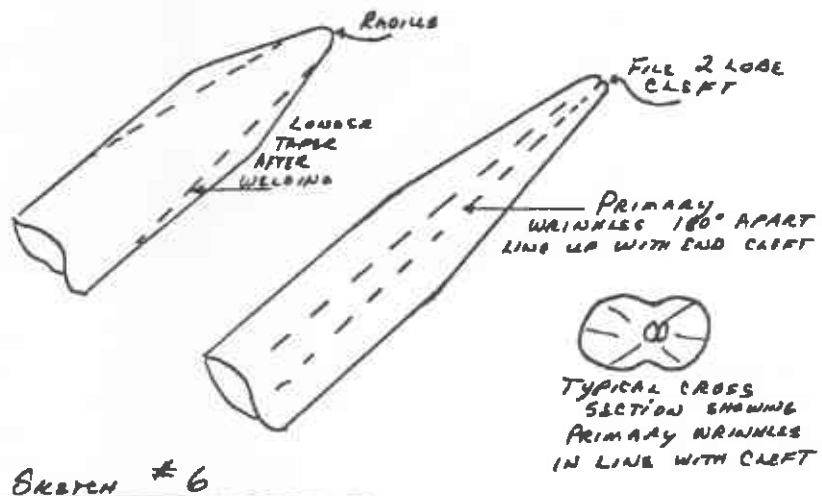
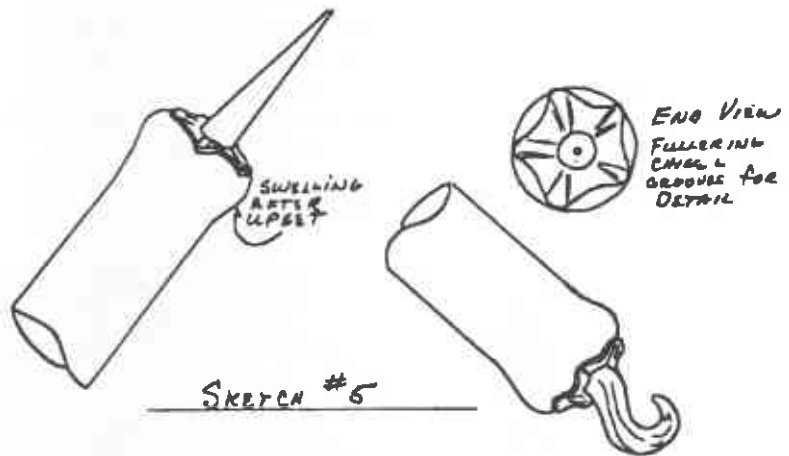
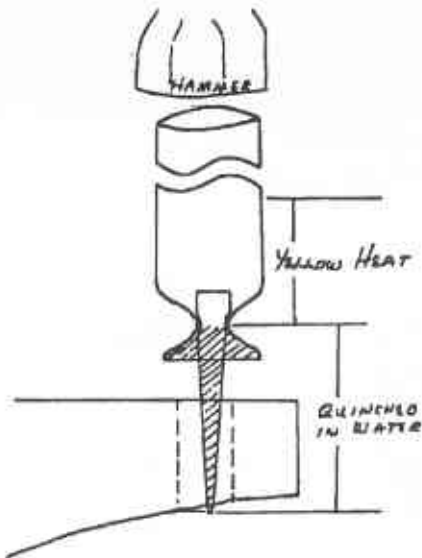
Amazingly enough, in most chilies, as a result of forge welding, there are even seeds inside when you shake the chili.

I've had lots of fun using the chilies by themselves or as handles on fireplace tools, barbecue sets and door pulls. Let me know what other ideas you come up with.

— Reprinted from the *Pounders Press*  
by way of the *Forge Facts*.



END VIEW  
SEPTAL SHAPED  
SKETCH #3



# Trivit Pursuit

by Jim McCarty

Trivits make a practical and useful gift that you can forge. They'll give you plenty of opportunity to add your own brand of creativity and they will protect the finest table top from hot pans.

I made my first trivit under the direction of Don Witzler at the John C. Campbell Folk School. The basic design I took out of the book by Tucker, but the legs were my own idea. The design on the circle was adapted from a book of colonial wrought iron drawings Don had.

My second trivit was a last-minute Christmas gift. I made and decorated the circle in similar fashion but forged the legs from a piece of 3/8 inch rod salvaged from the scrap heap. On one end I forged a leaf, then cut it off to about 4 inches and put a tenon on the last 3/8 inch. The leg was bent into a U shape and the leaf was turned slightly down and to the right. Then the tenon was heated and fitted into a hole I drilled into the circle and hammered into a rivit to hold the leg in place. The trivit then has three leaves in the center — a nice touch.

Here's the steps involved in making this trivit:

1. Cut a piece of 1/2 or 3/4 by 3/16 stock to the correct length for the circle you want. Use the formula  $\pi \times R$  to get the length. For example, a circle with a 7 inch radius =  $7 \times 3.14 = @22$  inches. A 7 or 9 inch trivit is perfect for most pans.

(You can also buy a circumference ruler from Centaur Forge. This ruler has a scale for the radius you want. On the opposite side is a scale that shows the length stock you need to end up with that radius.

The rule is made by Lufkin and costs \$16 if memory serves me right.)

I have also used 1 inch stock but I like the narrower stock better. I also tried 1/8 thickness but found it wants to bend too much and is more difficult to forge weld without burning.

Forge a taper for about 3/4 inch on one end, then flip the stock and do the same thing on the other end. Heat as much of the stock as you can and start the circle by hammering it on edge over the anvil horn. Keep heating and bending over the horn until you get a rough circle with the tapered ends overlapping but not closed.

Put it back into a clean fire, heat to orange and wire brush to remove the scale. Close the tapered ends, heat, flux, bring it to welding heat and forge weld with light blows. When the ring sticks put it on the horn and with light blows clean up the inside and outside edges.

Go back to the fire and heat the entire ring by rotating it slowly



through the fire. Throw it on your cone and tap the edges until it is a true circle. Keep the ring flat as you work.

Now you are ready to punch or

drill the holes for the leg rivits. Be bold — punch one right through the weld! Three legs works better than four since it is easier to get it level on three legs.

I used the leg holes to divide the design into three parts. I started the ring design in the center and worked towards the leg holes in a zig zag pattern. This would be easier by far if you forged a V-shaped chisel. That would cut the guess work out and cut the time in half. I followed up by punching a dot in the wide part of the V.

An alternate design could be made with a curved chisel that surrounds a punch mark. Bet you can come up with some other ideas.

You can do this work cold.

I forged the legs on the first design from the same stock as the ring. It took about 4 inches. Start by heating one end and spreading the end with a ball pein. Use a fuller or blunt chisel to put three lines on the end.

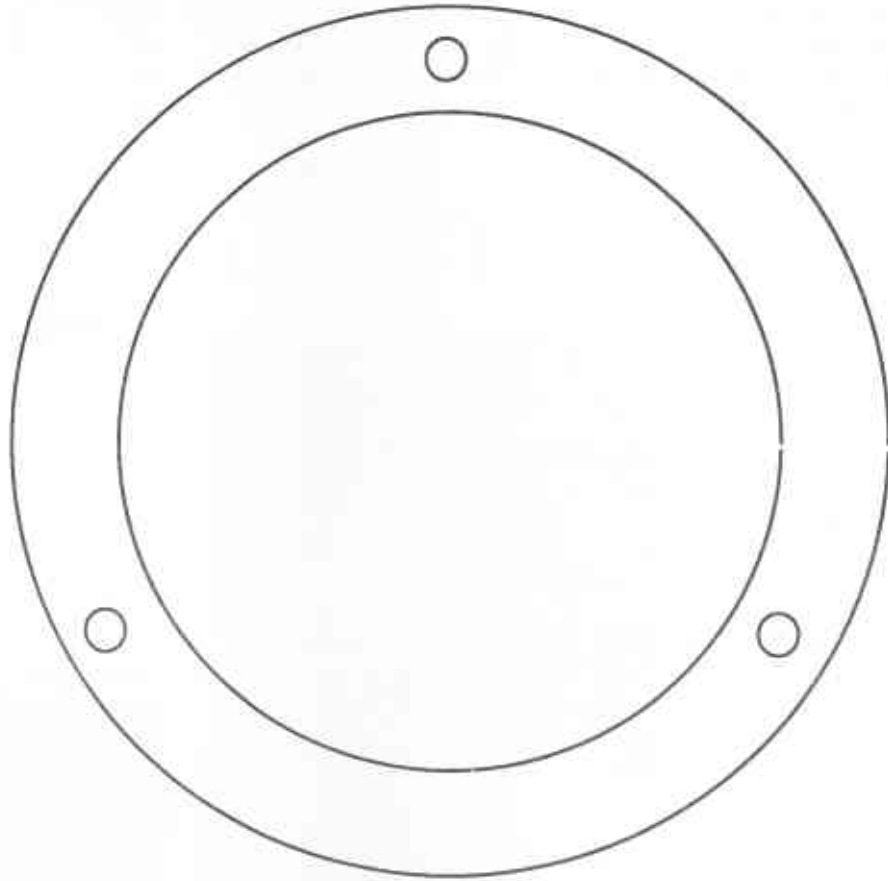
Flip the stock and repeat the process on the other end.

Now punch or drill the rivit hole about 1 1/2 inches from one end. I used a rivit with a 3/8 inch head. Be sure all three legs are punched in the same place. Curve this end over the horn and make a loose scroll in the opposite direction on the other end — this end is the foot. If you did it right the fuller marks will point up on both ends.

Be careful to bend and scroll all three legs to the same shape. After comparing them rivit to the ring. If it sits crooked, heat the offending

leg and tap it true with a wooden mallet.

Wire brush it, hit it with a brass brush at black heat and finish with oil.



by Maurice Ells

## Shop-built air hammer

I first became interested in building a small air hammer in the summer of 1987. While in North Carolina on vacation, I visited the John C. Campbell Folk School and of course the blacksmith shop. Across the street from the shop was the shop of Glen Gilmore. Glenn had a small air hammer in his shop and he demonstrated it for me. It was quite impressive — no rotating belts or pulleys, no springs or arms to come apart and no bodily injury to the operator.

After returning home I began to get all the information that I could on air hammers. I talked with several engineers and a bunch of sales persons. I came up with a basic design that seemed like would work.

Between two back surgeries I toyed with the design. I began gathering materials and built a frame that I thought would be satisfactory. An article in the fall 1992 issue of the Anvil's Ring by Rob Kinyan with a picture of the air hammer that he built intrigued me. After contacting him by phone, he graciously sent me the plans for his hammer. I used the

ram and guide system very much as they were in Ron's plans to complete my hammer.

The frame on my hammer is constructed of 3 inch by 10 inch rectangular tubing. The base is 1/2 inch plate about 24 inches by 36 inches. The ram is a piece of 4 inch by 4 inch by 10 inch solid cold rolled steel. The anvil is a 6 1/4 inch round by 29 1/2 inches long solid steel cylinder. The ram weighs 70 pounds with the die. The cylinder that I used is a 2 inch bore by 15 inch stroke. With this arrangement I can get a good 10 inch stroke when running the hammer. If I build another hammer of this type I will use the 10 inch H beam frame that Ron Kinyan developed. It is much simpler and less welding is required.

Very few problems were encountered in the construction of the hammer. Locating the big pieces for the ram and anvil was the biggest problem. I used ARO valves and WABCO cylinders. Any pneumatic brand that a person likes can probably be obtained from any of the several good supply houses in the St. Louis area.

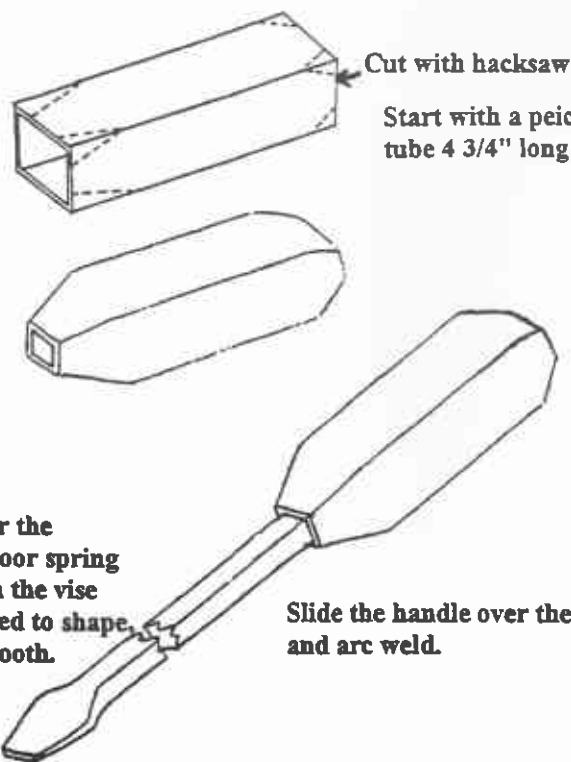


## Screwdriver

William Plant  
The Rivet, Western Canadian  
Blacksmiths' Guild

Forge the ends down to 3/8" inside diameter. Arc weld the saw cuts shut.

Use a 3/8" dia. square spring steel for the main shank. I used an old overhead door spring that I heated in the forge, clamped in the vise and pulled straight. The bit was forged to shape, finished with a flatter and ground smooth.



Slide the handle over the square shank and arc weld.

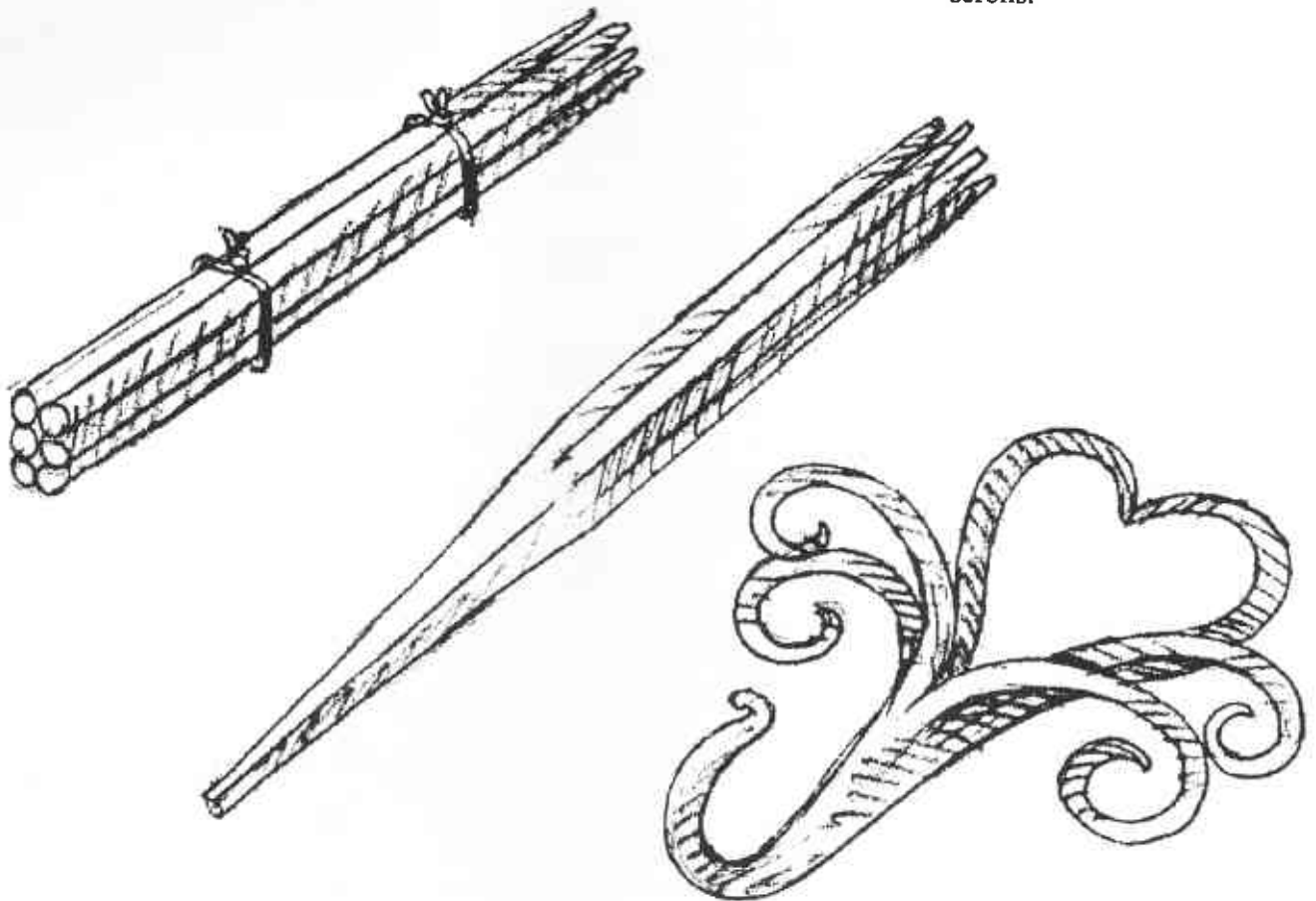


by Pat McCarty

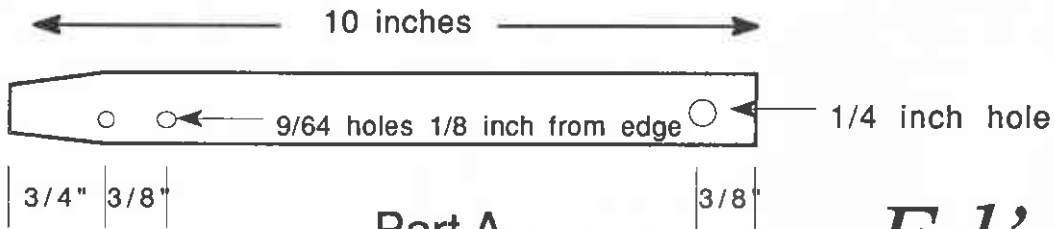
# Heart & Scroll Hook

This simple hook will make a nice Valentine's Day gift when that time comes around and is a good piece to practice your forge-welding technique on.

1. To start, cut six pieces of 3/16 round to 10 inch lengths.
2. Draw the one end on each rod to a point.
3. Bundle the rods and wire them tightly together.
4. Forge weld the square ends for about 3 inches.
5. Form the welded end to a point and bend into a hook.
6. Shape the two center rods into a heart shape using scrolling tongs.
7. Form the remaining four rods into scrolls.



Slightly taper

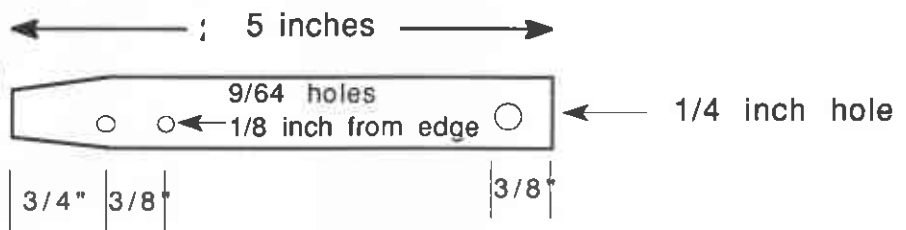


Part A

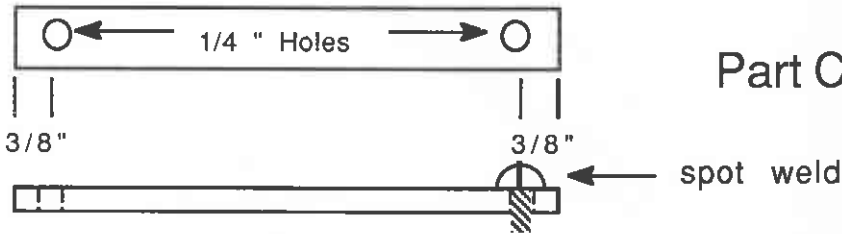
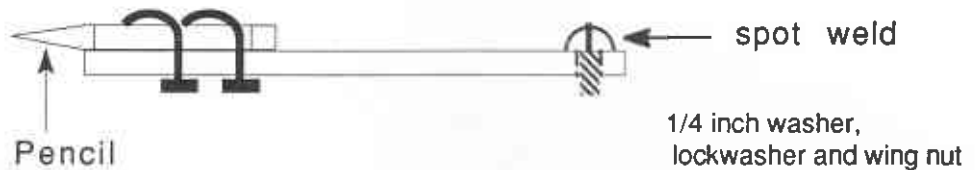
# Ed's Circle Maker



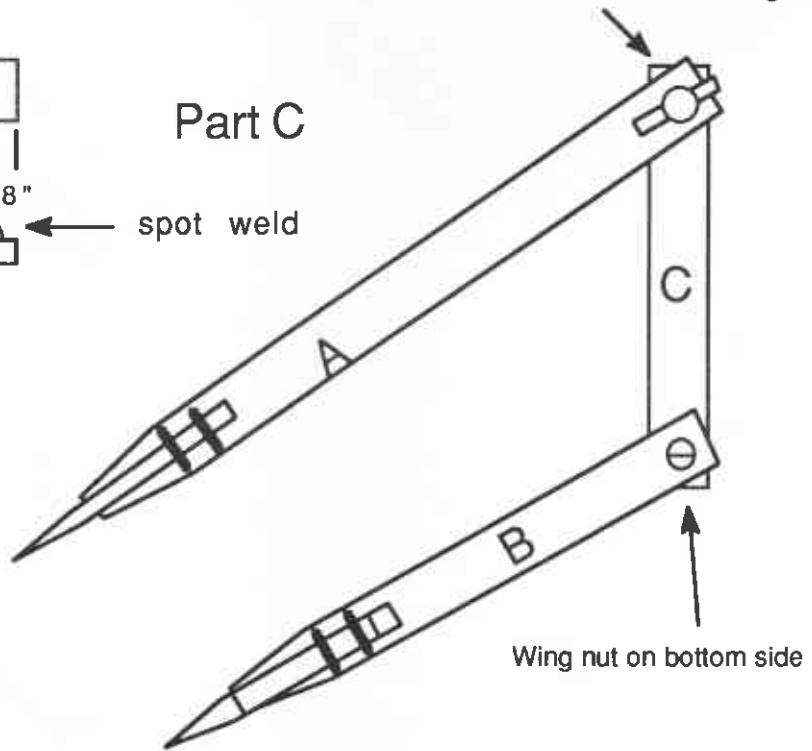
Slightly taper



Part B



Part C



Have you ever started to draw a big circle and got tired of the stick, nail and pencil trick? Here's a simple solution, make your own compass. All you need is:

- 20 inches of 1/8 by 1/2 inch flat steel (cut one piece 10 inches long and 2 pieces 5 inches long)
- 2 1/4 x 20 round head screws
- 2 1/4 inch flat washers
- 2 1/4 inch lock washers
- 2 1/4x20 wing nuts
- 4 6/32 x 1 1/2 inch screws and nuts (Bend 2 6/32 screws to 1/8 inch diameter. Bend 2 6/32 screws to 1/4 inch diameter)
- 1 8d finish nail — cut off the head

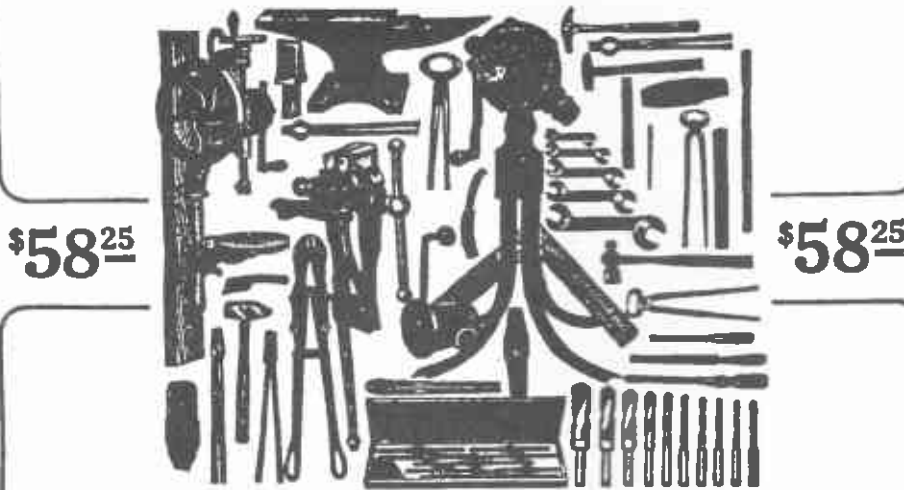
Assemble the compass as shown. Keep one or two 5 inch pieces extra to extend the compass.

— Ed Harper, Wright City, Mo.

## Big Masterworkman Blacksmiths' Outfit

Contains ALL the Necessary Tools

This outfit will take care of the heaviest work, and contains all the tools needed by the blacksmith and horseshoer. We selected it especially for high class ironworkers, men who demand the best.



\$58<sup>25</sup>

\$58<sup>25</sup>

No. 9B51004

Price  
\$58<sup>25</sup>

Used equipment, sheet metal machinery repair, contact Bill Haines, Haines Machinery Service, 402 Joe, Kirkwood, Mo. 63122; (314) 965-6123.

Two sources for low-cost tools: Harbor Freight Tools, 3491 Mission Oaks Blvd., Camarillo, CA 93011-6010; 1-800-423-2567. Tools On Sale, 216 W. Seventh St., St. Paul, MN 55102-2599; 1-800-328-0457. Both have complete lines of all kinds of equipment at really good prices. Best of all, you skip the state sales tax! Note: If you get the Tools on Sale catalog, call for current prices. They are always cheaper than what is listed in the book.

For sale: What appears to me to be a cavalry forge. It has a blower and legs that fit into a box and closes up for easy transport. The blower slips into the forge with a dovetail arrangement. Like new \$200. Call Randy Cate, Rt. 1-738, Bloomfield, Mo. 63829; (314) 568-3876 or 568-2394. Also has lots of old horseshoes and may sell a small anvil and some hand tools.

Need a forge? I have a dandy cast-iron model, no name on it but it has a fire pot, needs a blower. Measures about 3 foot long. \$75. Also I have a large (too heavy for me to lift) shear. It's a Winner brand, looks like an Edwards. Great shape except for a crack in top blade. \$125, includes arm. Also Also, I have a floor model drill press, really old, set up to run off a wide flat belt. 15 inch Barnes. Great shape, just needs motor and belt. Has new Jacobs chuck. \$200. Also also also, I have a blower (Champion I think) that runs off a wide flat belt. \$20. Jim McCarty, (314) 897-4111.

For sale: General Electric D.C. motor, 2 belt pulley/ Frame 204/ winding shunt/volts 230/ amps 412/ speed 1150/ HP 1/ duty continuous/ hours 10/ mounted on an adjustable frame. Emil Bubash, (314) 892-4086.

For sale: 25 pound Little Giant hammer. New bearings throughout. completely rebuilt. 2 sets of dies. 1 hp motor. \$1,500. Maurice Ellis, 4 Covey Ct., Florissant, Mo. 63031-1206.

## BAM Bulletin Board

For sale: Home built air hammer. 70 pound ram. Flat dies. Complete with 3 hp Curtis 2 stage air compressor. \$3,000. Maurice Ellis, 4 Covey Ct., Florissant, Mo. 63031-1206.

Classifieds are free to all BAM members and anyone who has something to sell to a BAM member. Send them to Jim McCarty, Rt. 1 Box 20, Loose Creek, Mo. 65054.

*The Blacksmith's Journal* is Jerry Hoffmann's monthly guide to blacksmithing techniques and projects. One year is \$30 and two years costs \$52. For more info call or write Jerry at Rt. 1 Box 189, Lonedell, MO 63060; (314) 629-4061.

Valley Forge and Welding has many items for blacksmiths including treadle hammer kits, Claydon Knot Benders and pre-formed shovels for fireplace sets. Also has S-7 tool steel at reasonable pprices. Write for catalog: 30-C E. San Francisco, Willits, CA 95490.

For books on blacksmithing you need Norm Larson's catalog. Write to him at 5426 East Hwy. 246, Lompoc, CA 93436. To order call 1-800-743-4766 evenings only. He takes Visa and Mastercard and features same day service.

Clay Spencer is offering plans for his world-famous treadle hammers, in case you missed the BAM workshop and don't want to wait for the next. They include 12 pages of drawings and a list of materials. Send your name, address and a check for \$7.50 (cheap) for your copy to: Caly Spencer, 208 Metaire Lane, Madison, AL 35758. While your at it, include \$2 for a copy of the latest Bituminous Bits. The Bits is Alabama's newsletter which Clay does. The latest issue features a bunch of colonial projects from Peter Ross, Williamsburg's blacksmith.

# BAM

## Shop Notes

*Got a tip to share? Jot it down and send it to the editor, Jim McCarty, Rt. 1 Box 20, Loose Creek, Mo. 65054*

### Good Slickum

Many years ago I read a short story about a tramp steamer caught in a typhoon. Among their other problems they were developing a hotbox in their propeller shaft. If the bearing should seize, they would either have to stop the engine or tear up the shaft. In either case they would lose steerage way, get parallel to the waves and capsize with all hands.

After several pages a salty old engine room type took a pinch of emery powder and introduced it into the bearing via the oiler. The grit eroded/polished the bearing surface until the friction was reduced to manageable levels, and they all lived happily ever after.

I don't know why the yarn impressed me so, but the technique has served me well. It works on grungy vises, sticky pliers, too-tight threaded joints and is useful in slicking up rifle actions.

Like they used to say on TV, a little dab'll do you. A little bitty dab, mixed with oil or light grease, and worked into the tight joint. The part that works out of the joint does no good, so there's no use putting it in here in the first place. Then just exercise the joint until it loosens up to suit you. Rinse the grit out to halt the action.

I have about a half-pint of 600 grit abrasive (Carborundum, I guess) that looks and feels like gray face powder. It really puts a high polish on a surface; a coarser grade would work faster. At the present rate of consumption it should last until the middle of the next millennium.

— *Ellis Burgess, The Texas Forge Review*

**Editor's note:** Pat and I made a set of hinges and the second one didn't want to move. So we mixed up a little oil and grit from a piece of sandpaper and pressed it into the joint. After a few hundred twists it works better than the first hinge, so I know first-hand this technique does the job.

### Tips from Charlie and Walt

These Charlie Orlando and Walt Scadden tips were printed in the Mississippi Forge Council newsletter

as a report on the Alabama Forge Council's 1993 conference:

### Charlie Orlando

**The Fire:** A proper forge fire has three zones. The oxidizing zone is at the bottom near the air vent, the neutral zone is in the middle and the reducing or carburizing zone is at the top. All three zones should be burning coke. Green coal should be at the left and right side of the fire where it can be converting into coke and can be fed into the fire as needed. Work pieces should be placed on the top of the fire and pushed down into the fire. This keeps the fire solid and keeps the oxidizing zone low in the fire. Do not place green coal on top of a work piece. Conversions to coke will decrease heat. Place work in the fire with the thinnest part of work up to prevent burning. Remember, hot stuff goes on the floor and cold on the shelf. If it is on the floor assume it to be hot — even if it is black.

**Hammer Work:** Always wear earplugs when forging. Charles uses three types of hammer blows. Wrist blows are used for light, very accurate work; elbow blows are used for more powerful — but less accurate — work; and shoulder blows are used where maximum power is needed. Good upright posture should be used and the hand, elbow and shoulder should be in the same vertical plane. Strike straight down aiming for the center of the anvil. Dragging and pushing blows are not effective in moving metal. Control the direction of metal movement with the striking area of the hammer. Neck metal down by using the edge of the hammer and the edge of the anvil. Make shoulders by using half-on, half-off blows. To extend a taper, start at thick area and work toward point using overlapping blows. Remember, the hammer hand is labor and the material hand is management.

**Post Vise:** The heavier a post vise is, the better it works. Three are needed, at convenient locations and different heights. Tighten on the right side and loosen on the left. Use your weight and save energy.

**Chisels and Punches:** When making punches and drifts leave the striking end round. Square up the striking ends of chisels. Charles used a thin piece of sheet metal to protect the face of the anvil when cutting with a chisel. When using a chisel or punch look at the material — not at the striking end of the tool. Use the lightest hammer you can for the job.  
**One Final Tip:** Apply Borax with a plastic squeeze bottle.

#### Walt Scadden

1. Carburetor cleaner will clean paint from concrete.
2. Oven cleaner will take anything off anything.
3. Cast iron gray paint — NAPA 1986 — likes forged work and is a good spray paint finish.
4. Collar lengths should be the circumference of the work plus 2.5 times the thickness of the collar.
5. Keep three notebooks in the same binder. Book one is your daily journal. Record work done, problems, opportunities and time for work. In book two record conversations about business with anyone. In book three record information about supplies, equipment, sizes, quantities and where bought.

Walt's words to live by:

1. Compliment good work.
2. Help someone who is having trouble without letting them know.
3. Be careful about negative comments concerning work by others.

#### Kevlar Gloves

I have found the source of some Kevlar "hot mill" gloves. They are great in the shop and are cheap too from the factory! \$8/pair! Catalog available. Carolina Glove Co., PO Drawer 820, Newton, NC 28658; or call 1-800-438-6888 or (704) 464-1132.

—Roy Plumlee, Tamaroa, Ill.

#### What a country!

This notice was recently printed in the New England Blacksmiths newsletter:

**WARNING:** Recently a claim was settled for burns received by the purchaser of a forged branding iron. Settlement was made because there was

not a guard to prevent the accident and a written warning stating that the branding iron could be harmful if touched when hot. BAM would like to go on record as hereby officially notifying all members, non-members, other ancillary people, mammals and other living objects that: a metal object inserted and left to reside in a 3000 degree fire will be hot and can cause severe bodily harm. Just ask a steer.

— North Texas Blacksmith Assoc.

#### Straight and narrow way

A straight blade is the shortest distance between two points. Make that one point and the bolster. Ever harden a blade and have it come out of the oil bent just a wee little bit? Say about 45 degrees concave and looking like you'd never find it if you dripped it on the floor of a screw factory? Tim Zowapa who does my heat treating, got in an all-fired hurry to head out on his vacation and sent back a couple of blades crooked as a dog's hind leg. After enjoying the fine sport of heckling the master heat treater extraordinaire, I learned the gospel of the straight and narrow blade according to prophet Zowapa. I have now used this a number of times. People, I'm here to declare to one and all, it works well. Clamp the top (back) of the blade forward of the bend, twist, bow, knot or whatever in a vice so the cutting edge hangs below the vice. With one hand, protect the edge with a dripping wet rag. With your other hand, heat the top or back of the blade with a torch. With your third hand, apply pressure to the knife handle and straighten the blade. After recovering the heat, hold in position for half a minute or so while the blade cools. You can speed the process up by running the wet rag up the side of the blade. Open your vise and you're back to the shortest distance between one point and the bolster. One other point — it's not necessary to melt the back half of the blade. Just good and warm will do just fine. I guess 600 or 700 degrees is plenty.

— Chris Peterson, Bonneville Forge Council

## Forging on the River

In conjunction with the exhibition "The Blacksmithing Craft Continuum", the River Bluff Forge Council and the National Ornamental Metal Museum are sponsoring a regional blacksmithing meet. ABANA Chapter members in Alabama, Arkansas, Texas, Louisiana, Illinois and Missouri are invited to the Museum for this special weekend event Jan. 15 and 16.

Smiths are being solicited to exhibit their unique talents to participants. The museum smithy is fully equipped with coal and gas forges, mechanical and air hammers and welding equipment. Registration cost will be waived for demonstrators. Please contact Doug Learn ASAP if interested.

Cost is \$20 and includes breakfast snacks both days and barbecue lunch Saturday. The location is at the Metal Museum, 374 W. California Ave., Memphis, Tenn.

For more information contact Doug Learn, president River Bluff Forge Council 3037 E. Glengarry Rd. Memphis, Tenn. 38128-2909 (901) 358-1192 (home) 320-4644 (work) 320-5526 (telefax)

# BAM NEWS

## At the Metal Museum

Here's the schedule for the National Ornamental Metal Museum. Please note the museum is closed for one week during exhibit changes and is always closed on Mondays. Tours are available by appointment Tuesday through Friday between 10 a.m. and 5 p.m. Please call (901) 774-6380 to schedule a tour.

Dec. 12, 1993 — Jan. 30, 1994

*The Blacksmithing Craft Continuum:* An invitational exhibition of work by members of the Artist-Blacksmiths' Association of North America. Works by students and their mentors will be presented, showing the influences in craftsmanship and design considerations transmitted from one generation to the next. Over 50 forgings and photographs by American and European ABANA members are included.

Feb. 6 — April 3

*Contemporary American Indian Sculpture and Jewelry:* This exhibition of Native American metalwork presents new concepts and materials being used in the four corners area of the Southwest. Opals, agates quartz and gold replace traditional turquoise and silver in jewelry designs which will surprise and delight visitors. Noted metalsmith and author Lane Coulter is guest curator.

April 10 — May 29

*Metalwork of the Ivory Coast:* The Memphis in May International Festival is a month-long celebration of international culture, business and fun. In conjunction with this year's Festival, the Metal Museum presents

historic metalwork from the Ivory Coast. Jewelry, tools, utensils, masks and ritual objects from regional and national collections will be exhibited.

June 5 — Aug. 7

*Artisans in Silver, 1994:* Once again the Museum is pleased to host an exhibition of work by members of the Society of American Silversmiths. This year's touring exhibit consists of 85 objects by 40 of the Society's Artisan members. Sterling silver hollowware, sculpture and flatware are all featured.

*Elsa Freund, Modern Pioneer:* The Metal Museum is one of five institutions nationally to present an exhibit of work by Elsa Freund, one of the premier American Jewelry designers of the mid-20th century. Ms. Freund, now in her 80s, and a long-time resident of Arkansas, is represented in major museum collections both in the United States and Europe. The touring exhibit was organized by Florida Craftsmen, Inc. and curated by Robert Ebendorf.

Aug. 14 — Oct. 9

*The Rabinovitch Collection, Sterling Silver Servers from the 16th-20th Centuries:* Dr. Seymour Rabinovitch, author, collector and Professor Emeritus of Chemistry at the university of Washington, Seattle, will share his love of sterling silver servers with Museum visitors. Between 50 and 60 pieces from his extensive collection will be featured, dating from the 1700s to contemporary silver servers being handcrafted today. Modern pieces will be shown along with historic antecedents, demonstrating how function truly defines form.

Oct. 16 — Dec. 4

*Mary Lee Hu, Master Metalsmith:* World renown jeweler, Mary Lee Hu, professor of art at the University of Washington, will be featured in a one-person exhibit in conjunction with her appearance as master-smith at Repair Days '94, Oct. 22 and 23. New works in 18 and 22 k gold will be shown along with bracelets and neckpieces from private collections.

Dec. 11 — Feb. 5, 1995

*ABANA Comes of Age:* In 1994, the Artist-Blacksmiths' Association of North America celebrates the 21st anniversary of its founding in 1973. With over 3,400 members, ABANA is dedicated to educating the public about American ironwork as well as serving its craftsmen/members. This exhibit is juried by Richard Wattenmaker, director of the American Archives, Smithsonian Institution, a published scholar with a lifelong commitment to the international craft of ironworking.

Apr. 15, 1994 Fundraising Event  
*Bean Counters' Night Out:* Celebrate "tax day" at a fundraising event benefiting the museum and Opera Memphis. Make a contribution and receive an instant receipt for your '94 taxes. Sponsored by the Tennessee Society of Certified Public Accountants. Music, food, fun and pocket protectors!

**John C. Campbell Folk School**

Jan. 23 -29: 18th Century Hearth Equipment, Peter Ross

Mar. 20-26: The American Bowie Knife, Jim Batson

(This is a small selection of classes. For more information and a schedule write to the school at Rt. 1 Box 14A, Brasstown, NC 28920 or call (704) 837-2775 or 1-800-Folk Sch. Classes are offered through the Elderhostel program.

**Allison's Wells School**

May 1-7 Blacksmithing, Elmer Rousch

May 15-21 Bladesmithing, Chris Marks

The Art of Bladesmithing, Jim Batson

For enrollment and further information call (601) 859-5826 or 1-800-489-2787. Classes also offered through the Elderhostel program.

BAM's Ozark Conference: Potosi, Mo. April 30 - May 1.

ABANA Conference: Washington University, St. Louis, June 15-19

## Next Meeting Jan. 22 at Stan Winkler's

The January meeting will be held on the 22nd at Stan Winkler's Mule Skinner Forge in Ste. Genevieve. Stan promises to hold back the flood just for us.

Since the trade item is a bottle opener, we will need something to open and Stan promises large quantities of liquid in dark bottles (no BAM Boozle, he says).

A bunch of demos are already lined up: Doug Hendrickson and Pat McCarty will show how they make bottle openers, Bob Miller will put Stanley's treadle hammer to work with some special knifemaking tools and Lou Mueller will show some nifty jigs he uses to make hangers and hooks and more on the bender.

In the afternoon the forges will be open to beginners whowant to try their hand while there is someone around to answer questions.

To find Stanley hit I-55 and take it to the Hwy. 32 exit. Go east on 32 until you cross the creek and ... hell, just follow the map at right, that's why I put it in here!

If you get lost call (314) 883-7670 and a rescue team will be dispatched. If you need the area code you are really lost. See U there.

### Ozark Conference update

BAM Conference chair Stanley Winkler offered this update on the April 30-May 1 event:

Demonstrators will be Jim Wallace of the Metals Museum, Russell O'Dell, Tennessee metal spinner, and BAM's own Hank Knickmeyer on Damascus.

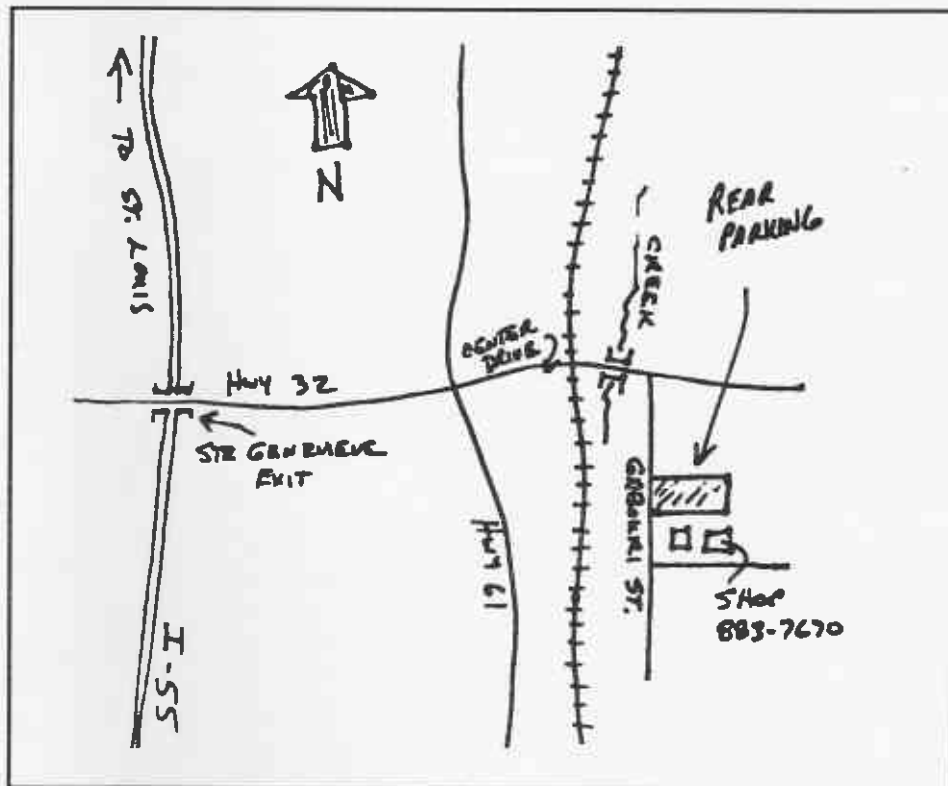
New this year will be a special bladesmiths' corner featuring different aspects of knives like finishing and forging.

Once again two forges will be worked by BAM members. There will be a Saturday night contest, anvil shoot, bonfire and Tim Ryan auction.

Another new addition will be a Tater gun shoot-off, so get yours built soon.

Admission is free to BAM members. More next month.

NOVEMBER—DECEMBER 1993



## Next meeting: March 12

The March meeting will be held on March 12th at Pat McCarty's forge near Washington, Mo. Pat has a rather unusual house and shop and the demos last year were great.

## 1994 BAM Schedule

### January Meeting

Stan Winkler, Ste. Genevieve, Mo., January 22

### ABANA Conference

Washington University, St. Louis, June 15-19

### March Meeting

Pat McCarty, Washington, Mo., March 12.

### July Meeting

Vernon Fisher, Rocky Mount, Mo., July 25

### Ozark Conference

Potosi, Mo., April 30 and May 1.

### September Meeting

Ken Markley, Sparta Ill., Oct. 1

### May Meeting

Steve Austin, Claycomo, Mo., May 21.

### November Meeting

Hank Knickmeyer, Cedar Hill, Mo., Nov. 5.

**B.A.M.**  
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