

The Arcane Bombardier

Fall, 2003 A.D.
Volume 1 Number 3

Pennsic XXXII, Indirectalbe Fire, And The “Leod Combat Crossbow”

Pennsic XXXII was, to say the least, an experience. New challenges, old problems... (Didn't I say that last Issue?) Let me say at the beginning, I was both enthused and appalled at the Lopsided Victory by the East this year. I won't second guess the Generals or Kings, but a better balance is needed for next year. As of last reports, the War Points were, 10.5 to .5 in favor of the East. The only event won by Mid was Rapier and I Salute their valiant efforts. There was a great disparity in the Battles and not, as rumored, of numbers. I will amend that only for Siege Engines which out numbered them on the average of 2:1. The interesting thing is that much of the new growth in the East has stemmed from the efforts of Mid Masters to help us get going.

Herein lays a dilemma. Though it is expedient and personally Safe to Off a Peasant with his Pitchfork from atop your Armored Horse in full Armor, it is much more pleasing to win an at least vaguely even fight. As Gentlemen of the Field, something needs to be done to,

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The departments within this periodical will be as follows:

Head line....(above).... The Lead Story

Intro/Editors Note.... First Column

The following will be in order of Priority
(My Choice per Issue!):

Wall Busters.....Heavy Engine News

Puncture Proof.....Armor and Fortifications

Long Distance.....Archer's News and Info

Behind the Smoke.....Latest Powder Stuff

The Sharp End.....Close Weapons News

More from Less.....Light Engine News

In the Air.....Other Missile Weapons
(Slings, Javelins, Atalatal, Etc.)

Nose Newts.....Local Events and Stuff

Beyond the Horizon.....Other Events

Comments.....Yours (Keep it, Short and
Clean)

Designs for the Doer.....Plans, Etc...

From Page 1

shall we say, “Level the Field”. Whether it requires new Alliances, Shared Ideas, or down right Handing out of Technology, it would be much more fulfilling to have the score a little more even next year. We may be opposed Kingdoms but, there is a difference between a Victor and a Bully. Call me “Benedict the Gonner”, if you will but, I strongly suggest we share much of our knowledge with the Mid in preparation for a much more even Victory next year. Oh, the Mid will be back next year; No Question! But, will it be with Anger or Morale? Last time I looked when all was said and done, the Dead got up and walked back to their camps to fight again. We don’t leave the Dead to rest in Peace with their memories. Your long standing Feud with the Mid will not be overcome in the near future, if at all (;<}>). A humiliating defeat easily brings back an angry warrior next year. Angry warriors are the kind that make mistakes like extra heavy hits, bad blows, ignore honest hits, and otherwise mis-perform due to desperation. On the other hand, an improved soldier with high Morale will invest in an honest effort because he believes he and his Army have a real and honest chance of winning

Speaking from a Safety Officer’s point of view, I believe the interim cooperation is necessary for this future.

So much for the Soap Box...
Differing opinions are accepted.

Back to fun stuff...

We had a wonderful collection of Engines at Inspection on the Monday before the Castle battles started. We had over twenty Engines and of those only 2 never made it to shoot. Two others that

failed the initial inspection were readily serviced, reinspected, and performed fine for the battles

I had the unique opportunity to be Siege Marshal in Charge for the East Kingdom’s defense of the Castle. This was a Quest. Picture if you will, over 500 Armored Warriors in a semi-enclosed space about 300’ by 120’ psyched to fight, then drop in 12 Siege Engines, including 2 Trebuchets, all with limited Firing Arch and the standard necessities for avoiding too close and Friendly Fire. It was a handful. We had excellent Marshals on duty but, only 2 dedicated completely to Siege Engines. My compliments to all; they worked very well with the mostly alien Siege Machines. We had no injuries related to the Siege Engines and a protracted intense battle. The environment was rife for overruns of engines and only one was at all complex.

During that overrun of one Engine, I was caught in the Rush. I was wearing a Helmet with full Yellow and Black Bumble Bee Stripes, carrying a 5 foot Marshal’s staff with Yellow and Black Spiral, and wearing a Black Marshal’s Tabard with Crossed Swords on THE FRONT. (See it coming?)

As the push came, it was necessary to turn and go around the Engine and at that moment the line failed. The advancing rank surged and I was hit multiple times on the side of the Helm, Shoulder, and Back, all be it reasonably. I called a Halt!

I’m not upset with anyone as I believe that this was not meant to be an attack against a Marshal. No action was requested or taken. The Problem I have been addressing for the last 6 months is the real culprit. A Helmeted Marshal in a Munitions Helmet, colored or not was new. The Tabard was not marked on the

back. (Both, excusable!) THE STAFF LOOKED LIKE I WAS CARRYING A BOLT OR JAVELIN FROM THE ENGINE!!! I WILL discuss this later in "In the Air".

Two Engines survived the battle until withdrawn due to proximity kills in the last minute. The Battle lasted a little over 34 minutes, excluding Holds. This was no small accomplishment and "My respects to all who fought and served so well".

The next Day it was East's turn to Lay Siege and return the Castle to our hands. We set our Engines and Troops to attack on 3 Fronts, The Gate and both North and South Sally Routes.

Our troops were massed to attack with supporting mobile engines and enfilade heavy batteries out side the Castle. Tactics of the use of Engines was still new to the Generals and as a Marshal on Field I could not advise. A system of Flag Communications was set up but, never used. The now veteran crews used there Pre-Pennsic Training and previous day's experience to accomplish the necessary support. The first volley was sent over the walls near and to the left of the Gate. Second was split to both ends of the Castle. The remaining Fire was concentrated on the invasion side for the duration. The following Engines were used indirectly over the heads of our troops or directly through openings in the ranks as needed. The heavy Engines applied enfilade fire 20' ahead of our troops throughout the engagement. The 80% hit ratio of the engines in the confined space helped the advancing troops take the Castle back in 7.5 minutes. One of the Mid's Ballistas put up a real stand in an end Parapet and was finally taken, after absorbing 2 hits, by invading troops from inside, Having watched the Duel between engines, I

must congratulate the fine defensive efforts by the interior team and the tenacity of the attackers.

On the Third Day, our organizers created the Bridge Battle. This 3 part conflict limited Siege to the last battle. It really was a good idea other than the fact the Mid and Marshals virtually ignored any Engine hits during the last battle. For my Marshals position between the two bottom bridges, I watched them (both 3 Marshals and the Mid fighters) ignore 6 clean hits in 2 minutes. The only attention given was when a Bolt/Javelin passed between the Ear and Shoulder of a Marshal. He actually moved a foot! There was no excuse for this as all 4 marshals near the activity had been advised of the Kill situation for Ballista Bolts 3 minutes before we "Laid On!" The Crews were again unadvised as to tactics. A lot of Engines wasted time on other Engines by choice or by Command. (Again, I was forced to be neutral as a Marshal.) Had they used the natural space between Shield wall and Spearmen of the opposing units they would have had a clear field of Fire to enfilade every time the advance met and became stalemated. On the other side the Engineers massed most of their engines between bridges 3 and 4 with a gap of only about 8 feet between Engines. Once a bridge near them was taken they were easily overrun. The Bridge Battles fell 3 to 0 in our favor. I can't prove that Siege made any difference the way it was used, but the last battle seemed to go a lot faster.

Mister Neutral (I felt Neutered by now) was back for the Final Conflict. The first two confrontations were wonderful to watch and I only had to advise a group of about 30 fighters that they had reached the Boundary and that

in a quiet voice. I was impressed with both the skill and ferocity of the Fighters, and that they were really working at being Safe as well.

Then came the third round. On setup we obliged the error of the Mid at the Bridges by repeating the same disbursal of most of our Engines barely 8' apart in the middle of the back line. In the first 2 minutes of the battle an End Runner from the Mid wasted 4 of 6 crews in one virtually unmolested pass. It would have been 5 but, there was a spare crew near one Engine to re-man it. The outlying machines died well and the 2 survivors in the center survived the battle. Once again, I, due to the overall chaos, was forced to watch the now STANDARD lack of enforcement of Ballista hits. I was stuck near the Engines and the hits were 40 to 60 yards away. Watching both the machines and encroaching combat, I was not able to run out and kick both Fighter and Marshal Butt. More on this in another Column...

There were many minor complications to be solved this year. They were dealt with well but, we can improve these before next year.

I had a wonderful and busy time at Pennsic XXXII. I will be heavily involved in Siege Activities next year and hope to spend time on the field as a Siege Commander as well as a Marshal. With the great influx of quality Engines, I hope that I will be able to insure more and more creative Siege activities there next year.

Nuff 'bout me.

With the expected input engendered at Pennsic and other communications the Bombardier will be

going Bi-Monthly as of this Issue. (Did I hear Cheering?) Many knowledgeable folk have offered to invest their time in presenting Articles to this, hopefully informative, electronic Rag. I won't be a "Name Dropper" but, after discussion many highly placed and/or highly renowned voices will be heard here. New Columns will be opening soon and I may even break down and start sending this in PDF as well. This is to facilitate the easier transmitting of images and mass data to slower or more discriminating systems.

In this Issue along with other interests, the Bombardier will deal with Large Bolt Production and use, and an excellent, inexpensive, design for a Combat Crossbow and Ammo. We'll even try to insert some quality B&W images of interest. B&W is substituted for Full Color to save "Lotsa" Bytes when we send it to you.

The more you input, the better we can serve.

THIS WILL BE THE LAST ISSUE WITH COLUMNS STILL LISTED WITH THE, "Doesn't Anybody Care", LABEL. If you want to keep them SUBMIT SOMETHING!!!!

Sorta Old News...

November 15, and January 15 will be the next expected release dates. Deadlines will be the first of that month (roughly).

Advertising will still be FREE but, keep it to 4 column Inches; B&W images are okay. Activity listing will ALWAYS be free but, be sure you include a contact person.

If there are no submissions to a department or I have no new info for that department in an issue it will still be given space but, will have a “Doesn’t Anybody Care?” note in it and after 3 issues will no longer be carried. I will resurrect it if input is made.

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Indian Orchard, MA 01151-1503
Or Email
Graywolf@handgonnes.com

I am still willing to make this a Monthly.

On to the NEWS...

For this issue the order of departments will be as shown on Page 1, Column 2.

Graywolf

Wall Busters

It is with a sad Heart that I say that Oskar’s fine Onager got to Pennsic only to be a Conversation Piece. This was due to lack of trained Crew for this specific type of Engine. The handsome design had proved its metal weeks before and would have likely passed Inspection with Flying Colors. Let’s hope it makes it next year with full Crew and maybe a sister.

BUT, we had four excellent Trebs (Okay, two Trebs and two Mangalores). They were wonderful.

The first was a real attempt to emulate a classic Mongol thrower. This Mangonel was made in the classic look and was actually made with Lashed Sticks. It stood over 12’ high and looked like if you Sneezed on it, it would collapse. WRONG!

From the first Cast, it threw SCA 1 pound Rocks 60 to 65 yards. Then he proved it would do the same for 10 pounders without even breaking a sweat. He and his crew made for a nice smile during inspection. I hope to see a lot more of the designer and his creativity.

Staying in the same Vein, we had a Monopole Mangonel Cart Mounted that served as one of the Castle Defense Gones (Get used to it. It’s another term for Engine.). This was another innovative and creative Engine. I have to admit it was designed from a relatively Paranoid point of view as it could swing and shoot in any direction, including behind. Ammunition was carried in the Cart on which it was mounted. This was one of the Engines used in defense of the Castle on the first

day. Its capabilities were great. It worked as well over the Wall as in closer combat. The well trained Crew could manage a High Lob to drop close as well as reach out and Smack someone shots over the wall safely. This was a nicely made and beautifully fun Engine.

The other two “true” Trebs were equally enjoyable. Both Gravity Engines were excellent performers and a pleasure to have in operation. One had an articulated weight on the Arm the other weight was static mounted with a Wheeled Base.

The Wheeled Engine though not fancily finished, worked very well and effectively threw better than 60 yards consistently while holding a fairly consistent impact point. The irregularities appear to be a result of the use of small modern wheels rather than Classic Large ones. These small wheels were not sufficient to move easily on the slightly uneven ground of the Battlefield. Use of more period large diameter wheels, spoke or solid would greatly reduce this problem. Otherwise, the overall performance was excellent with both small and large Rocks. The Arm was made in two pieces securely bolted together with a very sturdy metal sleeve. The release was simple and secure. The base was solidly made. A little dress-up and it would be and excellent Show Engine as well.

The Treb with the Articulated Arm was well made and well Dressed. An articulated Treb doesn't work well on a rolling base and the Builder didn't use one. This sacrifice in mobility was well countered when this ranged Engine was operating on open ground behind the lines. It threw 1 pound, 10 pound and Cluster munitions beautifully. Everyone has their own taste and I would have happily substituted his

Safety for his Release but, the design worked fine both in and out of the Castle. This engine was an excellent miniature interpretation in 1/6th Scale of its ancient brothers.

One other thing, none misfired and no one dropped a Rock on themselves. These were tested Engines before they were brought to Inspection

All the Trebs were designed to throw the Smaller Rocks and clusters. We need Engines that are designed to use the BIG Rocks to adjunct these excellent engines. More on this also in “In the Air”...

Again, your comments are encouraged and I will be happy to print them. I need your Articles to make this section a success.

Puncture Proof

I picked up a new Helmet at Pennsic from Ironmonger Armory. The Beast is well made and HEAVY. Looking at it without the padding, you would never believe it would ever be made to fit or be almost comfortable. Well, with a little creative help it is both of the above. I'm far from skilled enough to recommend methods of construction, yet. I'll need to do a few more first.

The helmet building isn't the real point here anyway. Markings for a Marshal are. I'll leave the Horror/Injury stories for the Campfires. With all the increased activity and energy on the field today, I hear more and more Marshals talking about wearing at least basic Armor. I realize Marshals are total non-contact non-combatant but, that doesn't stop the accidental stroke or errant

missile from “Catchin’ you up th’ side o’ yo’ Head” or Kidney, Sternum, Throat, etc., for that matter. I personally would prefer to have something bounce off my Grill rather than have a unique Goggle shaped bruise around my eyes.

Currently we only really have the Staff and Tabard as Identifiers. Oh, and lack of visible Armor.

If you were at Pennsic XXXII, you may have noticed an inverted Bumblebee running about at the battles involving Siege. Black or White Tunic with Black and Yellow Marshal’s Crossed Swords Tabard, a standard Marshal’s Staff, and a Bumblebee Striped Helm, that was me. You may also have noticed those Marshal Staff looking things flying over your head or bearing down on you with a Yellow end and Fins. Those were Ballista Bolts. (Yeah, the ones people tend to forget CAN’T be Blocked by Shields, Deflected by Arms or Armor, and Kill you DEAD if they hit you on the fly. The hit doesn’t need to be acknowledged like an Archers. It’s too bad you can’t read Helmet #’s at 40 to 50 yards.)

The Helm was temporarily marked using chevrons of Black and Yellow Duct Tape, but this has since been removed for regular painting. Most of us can’t afford to buy a different Helm for each varied social situation. But, I feel the marked Helm will help as a quick Identifier as more Marshals wear them. My Helm is now being fitted for a Stretch Cover/Sock that will be anchored to Velcro at the bottom so it may be removed when I go Combatant. Those Marshals out there that are interested in keeping their Handsome/Pretty Features and wish to wear a Helm may well wish to consider this Idea. The more consistent we are the less we get into problems.

As for the Bolts I will be petitioning both the E.K. Siege General and the Society Deputy Commander for Siege to phase out the Yellow Stripe on Ballista Javelins/Bolts for a White one while retaining the Yellow tip.

Many Marshals still don’t, or won’t wear Armor so we need consistency all the more to assure their Safety. And you need to keep an Eye on those Stripes for more than one reason.

Forts, Armor, and Targets get the same column here, and there is much ado about Forts this pass.

More Pennsic stuff...

Many of us have had the sweet opportunity to have a nicely setup Hay Bail Castle. They are really a fun addition to any Battlefield.

Few of us have had the chance to fight from within at fully built Fortification. These are proof that there is fun to be had in H*ll.

Siege Engineers and those wanting to be should take careful notice of the height of their Engine’s Elevation Fulcrum (the point the projector rotates around) from the ground and make a careful check that the Crenations in the Battlements are lower to the ground than it. Even our tallest Direct Fire Engines at Pennsic fell short of this height by a good 4” and many much more than that. If the Engine is too short, the use of Depressed Fire is out. And, Engines need to be moved back from the Crenates just to clear thereby reducing the vision of the Operator(s) and crew. This obviously applies to Plain Walls as well. The Taller the Wall the more critical this is. Pennsic Castle’s Wall Crenates were only about 7’ above the field and 9’ at the end

Towers. Even moving the Engines back 5 or 6' still meant a minimum accessible range of 30+ yards. The expedient solution here would be to fill a small ramp for each Engine or build Fill/Risers, both to be considered for next year.

If you are intending to build something rather permanent, you would do well to consider this potential problem as it also effects Archers.

Also, speaking of semi-permanent structures, I heard as a Joking comment that a Castle Wall might as well be built of old Tires. After the chuckle the Light bulb lit up. Why not? After some well placed 2X4 or 4X4 stabilizing Posts were set and if you layered them like Bricks. All you would need to do is Fill with Dirt as you layered up. A thin, 1X? could be added/Lagged to the front and the design is only limited by space and imagination. If you have a friendly Schoolyard it could ad an additional Playscape when not used by your local Group.

Any Comments, Ideas, Designs?

Long Distance

This month you will only get a few paragraphs from me here. This Column though will be far from short.

Thanks to the efforts of Lord Leod Dubh from the Shire of Lyndhaven, East Kingdom, this month's Feature comes from this Column. Let me give you a little background on Lord Leod.

This month's feature was produced by one of the members of SCA from the Wild Lands of the Canadian North. I hear that SCAdian Moose tremble in fear at his name, even in their Armor.

Lord Leod Dubh, in order not to cause Meece Stampedes, lives under the mundane name of Richard Ivey and immersed in Canadian Army. He has 7 years in the SCA, 3 years in CA, and is Marshal Warranted in HW, CA, and Siege. He has been kind enough to offer his Email included in the Article to assist the fabricators of his excellent design.

His simply made and effective design lends itself to upgrading and dressing-up. This is an excellent piece to the beginning Combat Archers out there, including me!

So, where's the Article? His drawings and full instructions are the major portion of Drawings section in this Issue. *(Also, there are images there to support the latest Article from Oskar related to "More for Less".)*

Please remember, to Field in Battle as a Combat Archer, you will need to wear minimum SCA Armor and get "Authorized". But, there is no reason you can't make one just for fun, too.

One bad comment, some folks snuck uninspected CA Missiles on to the field at Pennsic this year. This is dangerous. Inspections are there for a reason. Some of these "Arrows had the ends taped together to make a flat end with a center Notch. The result was an end that could penetrate better than an inch through a standard Grill. Luckily, there were no injuries due the irresponsible actions of this individual.

Inspection passing Missiles are not that hard to make. Even the above units could have been fixed easily IF THE PERSON CARED! Also these dangerous projectiles were unlabeled (You know, the Name, Kingdom, Unit, and SCA# thing?) so, it's pretty obvious that the owner knew they were wrong. Watch yourself and others. You wouldn't want to be on the receiving end of one of those.

More Submissions from more of you "Pros" out there will make this section what it is designed to be.

Doctor up your hitting
power with a "Docmo",
Go Bigger!
at ballistaplans.com

Behind the Smoke

Doesn't Anybody Care? (That's Twice)

Again you get ME...

Also see "Beyond the Horizon"...

It surprises me that an area of the SCA with so much controversy appears to collect so little attention. It appears that both Gunners and Fighters take no affront at the Idea that Fighters are hapless Pavlovian Slaves to stimulus.

So, my comments on Guns and Pennsic XXXII are being presented as perceived at the currently acceptable level of involvement and understanding.

"Yeah, those, like, noisy, smelly things were up on the Hill again this year. Guess some people, like, went up there and a bunch of 'em, like, talked and made some Noise. They're kinda weird.

"When they got ready for the 'Real Stuff', you know the Battles? Well, they made lots of noise and smoke. I guess they used, like, Fireworks like the really cool ones on Friday night. It was neat but, like, everybody knows that Gunpowder isn't Period.

"It was nice of them to bring all that stuff just so the Fighters would know when to start and stop the Battles.

"UH, did I tell you that the Friday Fireworks were way cool?"

Did I offend anybody? I hope so.

Personally, I wish to apologize to Master Rodric Hawkyn and company for not assisting as I had intended to in the Gunner's Safety Course or the Shots. My burden with Siege and number of my unit members that had to back out late left me unable to join you this year. This should be remedied for next year even with my greater involvement in Siege.

The other subject here is

"Paint balls"!

There, I said it; it's out, no taking it back. It comes trailing all the modern negativity with it like a Charles Dickens Ghost.

I knew there were negotiations for a Demo at Pennsic before the last

Issue but, I decided to not “Muddy the Waters” by publishing my views. As it turned out, the Idea was originally approved but, canceled at the last minute due to complications seen by the Coopers (owners of Cooper’s Lake where Pennsic is staged).

This whole thing is a tough one. I have read the reports on both the method and application of the Demo and feel it is quite a bit safer than even allowing our regular Archers to shoot and/or compete. The system uses a standard .69 Cal. Paint ball with about 10 grains of Powder and is basically safe from any point beyond the muzzle Flash. It is for Target only and is absolutely not being considered for use on the Field. The effort here is to familiarize folk with the reality of Ancient Firearms. I have no problem and am in favor of this.

BUT...

I’m also a staunch believer in allowing nothing down the Muzzle in an uncontrollable environment. I have worked with Firearms in some of the toughest spots you can think of during Rev. War Demos. In these events, much like ours, Commanders/ Safety Officers monitor the use of Powder charges and there size. Overcharging shooters are immediately removed from the action and my even be banned from further events. Even putting a paper wad down the Barrel is grounds to have a man removed from at least the event. Cartridges are inspected before each battle as well as the Arms. Any thing in the Barrel becomes a projectile including unburned Powder. Now add the Local Laws. Then surround all this with untrained Civilians.

By involving Powder AND projectiles in an activity we can end up with some real sticky situations. Totally

Dry Sites would be necessary. I could go on.

Overall, I think it is a bad Idea, for now.

Differing opinions welcome.

The Sharp End

Doesn’t Anybody Care? Twice?

It saddens me to see a real opportunity for the Fencers and Rapier Artists to recruit more interest or tell how to get the right stuff. Maybe someone could speak of what to look for in a Foil or Rapier or good designs for appropriate clothing.

Maybe not expanding the numbers just makes winning easier?

Oh, well...

The reason I included this section is pure respect. Many of the gentles involved in this activity also share the thrill of good Engines. Their courtesy is being returned by this inclusion.

Curses, Foiled Again?

Time for better
Equipment?

Better contact
Therion Arms

At

Therionarms.com

More From Less

Lots of good stuff here this Issue, a Fin pattern and Jig from me and details on a Pintle mount from Oskar, both with images to start those Winter Projects.

Let's start with Oskar...

Pedestal Mount

The following descriptions and instructions are for a simple to make folding pedestal mount for a siege engine of the Ballista or Arbalest design. When assembled it is in three pieces, an Upright with four folding legs and two cross braces just over 2 feet long each. It is relatively light and very easy to transport and set up. I have had it set on surfaces ranging from the Tower in the Pennsic castle to sloping forest ground complete with rampant vegetation with equally good results. This is a non-wheeled design, but it has 360 degree traverse, plus or minus 55 degree elevation, and is an excellent point-defense mount.

You have to have, two 8'x2x4's and one 8' 4x4. You will have a chunk of the 4x4 left over.

48' of 1/2 inch threaded rod.

12 nuts and 24 washers

Depending on the dimensions of the yoke you build the spade bits will differ. The weapon pictured is a Docmo Arbalest with the yoke according to his design with a 3/4" pintle.

1", 3/4" and 1/2" spade bits.

Chisel and hammer.

Hacksaw and file.

Skil™ or Rotary saw

Level

Mark out a square that is 12 square feet in area on the floor or ground for later. This will be just less than 3 1/2 feet to a side. This is for a class "B" engine. You will have to experiment to adapt it for a class "A".

Cut the 2x4's in half. Drill a 1/2" hole in the middle of one end of each of them, 2 inches from the end of the board. These will be the legs. Cut one corner off of each leg on the drilled end so the legs will fold out properly. This does not have to be a big bite, just knock the corner off. The legs will fold out from the upright the same way each time, so picture all the corners you cut off on the same side of the 2x4 left or right according to your preference, mine is oriented widdershins.

Measure and cut 2 pieces of the 4x4 exactly the same length, between 29 and 30 inches long and mark the middle of one side. These will be the cross braces.

Take the last piece of the 4x4 and measure eight inches from one end and drill a 1/2" hole through the center of the beam. Drill another hole through, just a little more than half an inch lower, through the other two sides. This will be the Upright and the end with the holes in it is the top.

Cut two pieces of the threaded rod to hold the legs to the Upright. The rod will have to go through two 2x4's and the 4x4, so it will be a little over eight inches long.

Take the cross pieces and locate the middle mark. Lay one piece on the other to make a cross, center and square it. Mark to either side of the board on the lower piece. Lay the pieces side by side and make symmetrical marks on the other board. When you are finished these pieces will fit together like Lincoln Logs. Take the Skil saw and adjust the blade so that it will cut to just a hair over halfway through the 4x4. Do not assume this measurement is 2 inches. Cut to the inside of the marks you have drawn on the 4x4, and then cut many times through the piece you will be removing to make wafers of the (to be) removed chunk. When you have done this use the chisel to remove the wafers and bits that are left and then smooth the bottom of the cut. Fit the pieces together to test them. They should

lie flush with each other. Don't worry if they wiggle a little, but they should be loose enough to fit together easily. Water will swell this joint so be sure it is to your liking.

Now cut a six-inch chunk off the bottom end of the Upright, opposite the end with the holes in it, and drill a 1/2" inch hole through it. Take two of the legs and the small 4x4 chunk and run one of the threaded rods through the hole. Put two nuts on and tighten them so that the movement of the legs is firm. Get someone to hold the assembly vertical and open the legs so they touch opposite corners of the square you laid out earlier.

Take one of the 4x4 pieces and hold it horizontally up to the legs (with the level on top to make sure it is horizontal) so that the holes you drilled in the 4x4 can be marked in the center (not the mid-point of the board, just the center of the section covered by the 4x4 brace) of the 2x4 legs. Mark the holes on the 2x4 and drill them with the 3/4" spade bit.

Measure and cut 4 pieces of the threaded rod to fit the holes you just drilled, just over 6 inches long.

Bolt the 4x4 to the legs so the gap in the middle faces down. You will measure from the top of the 4x4 to the middle of the Bolt at its apex. Transfer this measurement to the Upright using the top hole as the measure point. Cut the Upright to the same dimensions. Remove the small 4x4 block and replace it with the Upright. The way this should look at this point is a capital "A" with a wide base and the Upright perpendicular to the horizontal brace. The base of the Upright should be flush to the surface of the horizontal brace. Remember that there is a little "wiggle" built into the assembly.

Bolt on the other two legs through the lower hole in the Upright (making sure the cut off corners of the legs all face the same way) and swing them out so they touch the other two corners of the square. The second legs will appear to be slightly longer because of the lower hole they pivot from. Make sure the Upright is vertical. Hold the second piece of 4x4 up into the gap in the first one and mark the holes on the second pair of

legs and drill the holes through the legs with the 3/4" bit.

Assemble the second cross brace and bolt it in place.

Now you have the pedestal mount with the upright in place. At this point mark the ends of the horizontal braces in the following fashion. You are going to mark the ends of the braces, (N) for North, (S) for South, (E) for East, and (W) for West. The first brace, the one that goes on with the gap facing down gets the N, and S marks. Duplicate the marks on the top of the Upright so that the mount goes together the same way each time. The second horizontal brace gets the W and E marks.

The reason the holes in the legs are 3/4" while the holes in the braces are 1/2" is because it makes assembly easier, and there is some adjustment that can be made for uneven or completely flat surfaces. Also when you take this apart for transport you should leave the bolts in the horizontal braces so you don't lose any hardware. The legs should never be removed from the Upright once assembled. The legs will fold parallel to the Upright and transported or stored that way.

The pivot point for the yoke is next. The pintle on my yokes is made from 3/4 inch bar stock. I found by drilling a 1" hole down into the Upright and then inserting a length of 160psi ammunition tube with a section removed into the hole as a sleeve it makes a very satisfactory bearing and swivel.

What you want to do then, is to take the yoke you have and experiment a little. Take a ring of 160 and cut it away a little at a time until you have a good fit for the pintle bar stock. Make it a good tight fit, with a hair of a gap between the ends of the 160 ring. Measure the outside of the closed 160 ring for the diameter of the hole you need in the top of the Upright.

When you have the diameter of the hole, drill it into the top of the 4x4 Upright to just short of the length of the pintle on your yoke. Be careful to get this as vertical as possible as a canted hole will make your Ballista traverse funny. When you have the

hole take a length of 160 PSI and cut a section out of the side of it to match the ring you made earlier. Shave it so that the fit onto the hole at the top is firm but not so tight that you have to bash it. If it is too tight you might split the Upright when you set the pipe, and you might deform the pipe to the point that you can't insert the Yoke.

When you have the 160 to the size you want it *gently* hammer it into place into the Upright and trim the excess off when you are done. Insert the Yoke pintle and it should have a stiff travel, but smooth. Use enough washers under the yoke to get the pintle of the Yoke just up off of the bottom of the hole in the Upright so the weight of the weapon is held on the face of the Upright via the washers, and is not boring its way into the wood beneath the end of the pintle.

Done! As a note, please feel free to contact me at home 401-624-2059 or at oscar@sfrcs-sabis.net in the evenings to help if needed. This is the first time I have written these instructions out, and they might not be clear in places.

Good Shooting!

Oskar

(The images for this are added behind the Crossbow design in "Drawings".)

Indirectable Fire...

There is a lot of complaining about the poor flight characteristics of 4 foot Javelins/Bolts. Many prefer the old 3 foot design based on Golf Tubes which flies fairly well. 4 footers without fins are not very aerodynamic, reacting as Tail Heavy. Most finned ones carry a lot of drag, an irregular rotation and shortened range.

I've been asked, "How do you make those Tail-Heavy 160 Siloflex Bolts fly worth Sh*t?" For all the complaints, mine work and are made like this:

(This is a response to a question from the Siege Group at Yahoo)

My bolts flew straight and true with a gentle spin and Good range. No injuries from impacts even at minimum range, and of 120 used at Pennsic, only one set of fins was replaced. (This was damaged during practice on Monday as it scraped between the gap in the center of the 60 yard Tilt Target (Hard, Sharp edges) on Monday. The repair was done in 30 seconds at camp but, could have been done on the Field in the same span.

I use 3/16 EVA Foam for fins. They need no special mounting as the slot they go through is 1/8. I'm including a full-size Pattern for the Fins. They are elliptical and generally deform and deflect easily which avoids tearing and limits possible penetration of Face Grills. They will get a temporary memory if left crumpled for a while but a little Pull and they'll straighten right out. I get about 90 from a single sheet and they cut out easily with normal Scissors. Sheets here cost about \$17.

The 160 Siloflex is cut to 46" so, when you add the Ball it comes to 48. BOTH ends are deburred to avoid String Damage and remove the chance of Punch Through.

My fins are set at 4* with no shaped edges. Oskar's are straight with Aerodynamic opposed surfaces. I prefer my design as the damageable parts take less work. I use a Table Saw and a simple jig to cut the slots. The Jig is made from 2, 18" Framing studs with the ends cut at 4* and a piece of Faring Strip. Attach the Studs to the strip with 2 screws each and glue with a 1-1/4 space between the Studs. Clamp the Jig to your saw with the strip at the normal service Front and serve the saw from the back. This makes the saw pull the tube against the jig. Raise the saw blade just high enough to make a slot about 1/4" longer than the Fins and set the jig to leave about a 1.5 to 2" end on the bolt behind the Fins. Place the Tube at a high angle and lever it down to cut. Rotate 180* and repeat. This leaves an 1/8" slot with a twist to each side for spiral. I do over 180 tubes an hour this way. You may

screw up a couple getting set up the first time but, set right this is consistent and fast.

Drill the other end for your Ball retaining material and you are ready to finish the Bolts.

Mount the punctured ball per SCA standard and Stripe the bolt to just before the Fin Slot.

To insert the fins, cut a Gallon Milk Jug to get a large slab of plastic big enough to fit around the whole fin on both sides. Wrap it around from side to side and kink a fold in the middle over the fin edge. When you insert the fin slip it through about the center and then use corner to start the feed out the other side. Adjust until you have the full end of the "Needle" exposed. Then Push/Pull the Fin about 1/2 way through and then continue pulling just one side of the plastic Needle through. Once this part is free, pull out the remaining half of the Needle. You can adjust the fin position after you have the plastic out. The whole process takes less than 20 seconds on average.

I hope this is clear.

(The images for this section are added to the Drawings section after Oskar's.)

As always, just submit info and we'll publish it. It helps us all.

In the Air

Darivs Architectvs, a premier designer of amazing True Ballistas, and an excellent Warrior/Centurion, is also a fine thinker. After observing the 2 Castle Battles, from the Cutting Edge both times, he brought up the following;

"We were Stupid on both sides for the Battle. SCA rules allow for rocks to be thrown from the Castle. How about DROPPED? Two men would be required to deposit a rock (250 pound) out a Crenate onto that pesky

Spearman sticking his weapon through the opening. How about several 10 Pounders dropped by a single defender?"

Darivs has a good Idea there. Boiling Oil could be simulated by a bucket of Red Strings You wear a couple, you're wounded, back off; you get a lot, and you're DEAD. Right now everybody just stands around the Gate and waits for something to happen. Boring! for both sides... "Oh, an Archer hit, I guess I'll go back and resurrect. Nothing really gonna move for a while."

Let's even consider Caltrops. These could be readily duplicated in a Safe way by tying 2 six inch pieces of Weather Stripping together and painting the ends Yellow. Step on it and Hop for the rest of the action or go Resurrect. Fall on them and you get to remove all you can reach; then Resurrect. Miners could remove them but, you'd have to protect these unarmed Heroes working on their Hands and Knees. (Bridges..?)

How 'bout a working Turtle? This would be a rolling shelter that would need to be protected from being overrun for 10 minutes (we compress what real Siege time would be)[Oh, my God! They'd need an actual Sally out? Nah, No Guts.], then at predetermined point, (With a Hold set, and neither side knowing where....-- It would be done by dice with a Matrix before the battle-- Battle Mining is not an exacting Science, for our purposes.) a Hole would be opened inside the Castle and any men under the Turtle would be allowed to enter through the Hole, into a 10 foot Circle. When they are killed the Hole is closed.

This stuff is still in Prototype but, expect at least some of it at Pennsic next year. I will be bringing this stuff up at the E.K. Siege Meeting. If we're gonna

do it, do it right. Castle defense was a "Last Stand". Why don't we make it more like a Real One? The Guys outside get to resurrect anyway. Why not make them work for it?

I'd really like to see some input from Slingers and Throwers out there. If you are or know any of these folks, get them to send me some information and ideas. Slings and thrown weapons are still viable weapons today. I think it would be interesting to see some of this diversity and see it done right.

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Reports from the Known World

These are Rumors ,Quotes, and Comments

"The surest way to kill a hobby
is to try to make money at it!"

-Red Green

Courtesy of Lord Doughal

With All Possible Respect for Julie
Andrews...
"My Favorite Things"

By Oskar

Plates that are piled high and bottomless
glasses,
Fixing my Gorget and a pole-arm that
thrashes.
Grey painted armor and helmets that
ring,
These are a few of my Favorite Things!

Eyes bugging out from Siege arrow
impact,
Tents that don't leak and arm-armor
intact.
Pudding for dinner and Badger's t'ree
t'ings,
These are a few of my Favorite Things!

Women with red hair and bodices laced
tight,
Fighters that play fair and engines that
work right.
Yellow-Black death that flies on swift
wings,
These are a few of my Favorite Things!

(repeated)

When my life Bites,

When my strings Break,

When I'm feeling sad.

I simply remember my Favorite Things,

And then I don't feeeel soooo Baaad!

Courtesy of Oskar...
We will be "Upping" his
Medication!
Additional verses welcome...
 };<}>

“ };<}> “

For those of you who don't know, this is
 my smiling little Imp.

Graywolf

“...and I'd have settled for polite
 Applause.”

From Master Henry of Bergental
As the Pennsic Fireworks opening
coincided exactly with his finish of a
presentation at our Bardic Circle.

R.E. their incoming Majesties of the
East Kingdom

From both

Chocolate is Period

It's not Feast Gear, Its Tableware

Period containers preferred

Insurrections are tacky

Displays of heraldry are delights to the
 heart

From His Majesty Balfar

Fruit is a treat

Prefers Ginger Ale to drink

Thank you notes to Scribes for your
 beautiful Scrolls are greatly encouraged.

If you don't know how to reach them

the Tyger Clerk of the Signet can
 always help

Fruits of the Deadly Nightshade are
 attempts to poison Her Majesty
 (examples are Tomatoes and Peppers)

From Her Majesty Luna

Fruit is not a food, it is a Cordial that is
 not done yet.

Courtesy of the East Kingdom's fine
SCA Periodical "The Pikestaff"

It is no accident that
 "stressed" spelled backwards is
 "desserts."

Unknown...

Courtesy of Lady Pagan

"I want to work with all more,
 it rocks
 many were in awe of the
 machines... I have started the
 upgrading/rebuilding."

Courtesy of Jean Paul

This seems to set the Stage for next
year's Engineers. This quote has been
repeated in many forms.

Pennsic XXXIII will have some new
 and challenging Siege Competitions.

ME

God willin' an' the Creek don't Rise,
even beyond the Battle Fun there will be
some worthy competitions for those who
make the effort to bring their Engines to
Pennsic

The more you Say the more they'll get
to Hear. Send me Quotes, Comments
and Rumors

Nose Newts

I wish to thank the “Pikestaff” (The East Kingdom’s official Newsletter) and its fine Editor for her kind assistance again.. Please look to the www.sca.org site for further contact information, directions, and details. Please feel free to forward information on your events to me. This is a traveling season and wherever you are you information may attract traveling SCAians.

Please also remember that these are SCA activities not Ren Faires. This means that a reasonable attempt at Period Wardrobe is required and there are specific Rules apply to the activity. Be sure to check with the host before going to ensure you are prepared and have a good time.

If I get enough articles and things to fill up more issues this section will become more timely, and. I will miss less of your Events here. In order to keep this a full and interesting publication I alone can’t fill the pages enough in a shorter period to make it worth your time to read.

(Please note that, for now, Local is considered within 150 miles of Springfield, Massachusetts)

Add your event to the list.

Contact me at:

Graywolf@handgonnes.com

It is a pleasure to open this section with a Coronation. I will miss Their Majesties Darius and Roxanne, and look forward to welcoming Balfar and Luna as they step into Power.

Coronation of Balfar and Luna [RP]

Sept. 27, 2003

**Barony of Dragonship Haven
(Bridgeport, CT)**

Dragonship Haven will be hosting the FOURTH Coronation of Their Royal Highnesses Balfar and Luna. Lots of supporting activities and entertainment will create a fine day for all. The Feast will be limited to the first 200 persons for this 15th century fair. Festivities will begin at 10:00 and Last Court will begin at 11:00 and the New King’s First Court will begin at 4:00. There will be plenty of activities for young folk as well. The Site is DRY.

Resv. Including Dayboard are \$10 w/ a \$30 family cap, Feast \$8, 12yrs. and Under 50%, 13 to 18 -\$1. \$3 non-SCA fee.

Resv. Deadline Sept. 21.

For further information contact sproctor@snet.net

Fall Crown Tourney [RP]

Oct. 25, 2003

**Barony Bergental
(New Salem, MA)**

No more than just Crowned and Their Majesties will be at the Fall Crown Tournament to witness the selection of their Heirs who will lead E.K. and Aethelmarc at the next Pennsic War. The event will be at New Salem Town Hall; fighting on the Soccer field beside. There will be a Dayboard and Feast as

well. The event is still being added to at this time.

For further information contact:

Lady Alinor at
sarah@snowplow.org

or

Matatias at
hertz@cs.umass.edu

Return of Tolkien Tourney, II
Sept.19-21, 2003
The Bridge
(Coventry, RI)

“Retro Time!” The Bridge brings back the Dark Lord’s (Master Feral) own tourney. Combats, Dancing, Gaming, Cabin Camping(!), the works..! This should be a FUN Event. A Feast of Beef, Bird, Bunny, Ale and Mushrooms, Mushrooms, Mushrooms will be held fully laced with Fine Stories and entertainments.

Cabin Resv. are \$12 /person/night (+\$3 for non-SCA members) \$6 for Day trippers, Children under 5 Free.

Feast fees \$18 at door as available.

For Information contact:

Beth at
baroness.bridge@pobox.com

Falling Leaves
Sept. 27, 2003
Carolingia
(Wellesley, MA)

This is a nice relaxing but, active event. They are well prepared for both Combat and more Polite activities including a Women’s Foot Race (!?) in the Afternoon. There will be indoor and outdoor activities as well as a dancing, games, shopping, and even a Hurling Match. The Feast will also be a Ball. Requirements for the Feast are that you

bring a Period Dish that serves at least 8 with Recipe.

For information contact:

Anne of Felding at
aharring@wellesley.edu

Fall Feast of Simplefare
Oct. 18, 2003
Fennbrycg
(Norwich, CT)

The Canton of Fennbrycg has a great answer to ward off the chill of Autumn with “Simplefare”. There will be a traditional Feast as well as Rattan and Fencing. There will even be their special variation of the Bear Pit. This would be a nice place to fine tune your skills for the Crown Tournament. This is also a Showcase event so you can show your best to the Outside World. Multiple non-violent activities will be available as well. Lots of room for activities is given by the Town Green.

The Site is damp.

Site Fee is \$3, Off board \$6, On board \$12 w/ reservation.

For more details contact:

Lord Edmund at
Edmund_vnh@msn.com

Well, that’s it for now.

Fun is both how you find it
and how you make it.
Live it up while you can;
Winter is coming.

Would
Your
Ad
Look
Good
Here?
It's Free!

Contact

Graywolf@handgonnes.com

Be in the next Issue.

Beyond the Horizon

Pennsic, Powder and Powerful Things

Okay, Pennsic was a bit smaller this year, if you call 12,000 versus 14,000 notably smaller from the First Person view. The pageantry and color were there just the same. The Food was excellent with even a new vendor. (You haven't lived 'til you've had "Rat on a Stick" washed down with Fallen Angel Ale [Raspberry Cider served in a

refillable Bottle you keep].) The fine Sutlerys had the usual first quality products at non Rip you off Prices. Here again, some new Ideas like Rubber Band Muskets for the Rapier Folks showed. The parties refused to be damped by anything and the great Social Frolics migrated back and forth through the camps like foraging Amoebas giving the opportunity for revelry for all who wished. There was less Music this year and it was sadly missed. At least there was no lack of beautiful Dancers in all shapes and sizes wherever the rhythms sprang up. The limited/lack of transport to the South end of the property was a problem and so was the Mud (read as: Grease...). It took only a ½ inch of this stuff and the best SUV just sits there in 4WD. I got stuck 4 times on level ground. Deity(s) bless all who were kind to others in these problems. They, I'm sure, wore a good bit of Pennsic as payment. There were some very nice people out there. THANK YOU! What ever guides the Universe was kind enough to curtail the Rains the day before the Battles started.

The Battles were large, noisy, crowded, chaotic, colorful and impressive, all the things that keep you coming back. The Cannons were impressive as they opened and closed the confrontations. And, the Marshals were out there doing all in their power to keep things Safe. With only a few injuries for all the flailing weapons, they did a wonderful job. The number of Siege Engines on both sides impressed all but the most Jaded Fighters. I would be remiss if I didn't mention the devoted Chirurgeons and Water Bearers who devoted their time and efforts to keep us all healthy.

The Courts were gay and wonderful from Baronies, Shires,

Houses, et al to The Crowns. Entertainment from Theater to Concerts, to Dancing, and other endeavors filled any holes in the nights.

A&S rose it's beautiful, Rainbow scaled, Head with multiple submissions from the best of both Kingdoms. Fencing Artists Thrusted, Parried, and danced with their expert skills. And, Archers, whether Bow or Crossbow carved arcs to their targets with well honed skills.

The disparity in War Points doesn't do justice to all that gave their best.

Speaking of those giving their best...

Pennsylvania is the U.S. Capital for fine Fireworks manufacture. It was well proved this Year at Pennsic. Through the efforts of a true Powder Lover we were presented with an INCREDIBLE, AMAZING (MAJOR UNDERSTATEMENT) PERIOD FIREWORKS DISPLAY. The display took a full year to prepare and was better than most seen on the 4th of July in many cities. The display mimicked in the most positive way the wonderful pyrotechnics done in Paris, France on "Bastille Day".

I had the advantage of being in a camp across the street from the display. I got to see not only the Show but, the efforts of the folks that made it go. WOW!!! In the glare of the flames and clouds of smoke ghostly figures could be seen dashing to and fro, risking all to delight us with a Sky and Ground full fountains of fire, streaking rockets, and explosive bursts of scintillating light. Flashes and explosions in the night made the Castle look like it was truly immersed in a dire Siege. Oohs, Ahhs, Viavs, Hozzahs, and other cheers only

vaguely attempt to do justice to this Show.

If this is to be a continuing part of the experience of Pennsic, then even if you could ignore the rest, it is a trip worth crossing Continents.

I will make the Pilgrimage to Pennsic XXXIII (even if it is just 11 hours for me) with a truly religious fervor. There were SCAdians from as far away as Australia and as near as down the street. Events like this show the World, all detractors aside, that we are a community and a culture unto ourselves.

If I missed anyone's efforts here, I apologize. From the Guys that did the "Potties" to wearers of Crowns, all made Pennsic XXXII worth every effort to be there.

Graywolf

Join the Fun.
Become a
Member.
Contact,
The Society for
Creative
Anachronism,
NOW.

Get more Info at:
www.sca.org

Combat Archery on a Beer Budget

Or How to make a SCA Legal Crossbow for under \$ 25.00

© Lord Leod Dubh
MKA Richard Ivey
Email: lord_leod@canada.com
Shire of Lyndhaven, East Kingdom

I have been fighting in the SCA for a number of years and witnessed the development and growing popularity of combat archery (CA). My first foray into the ranks of the combat archer was 2 years ago with a 30-lbs fiberglass re-curve bow and dozen shafted arrows. I found the venture to be somewhat costly; the bow was \$40.00 and each arrow with a “Baldar Blunt”® and APD cost \$4.00. At these prices one could encounter an equipment cost of almost \$100.00 just to get on the field. Now, some people might find that an acceptable cost, but I know that many of us in the SCA live what has been called the “Champagne Taste Beer Budget” lifestyle.

I have looked into buying a crossbow for CA and have seen many crossbows that are designed for that purpose, but most of them retail for somewhere in the vicinity of \$125.00.

So what’s a working man supposed to do? It was with this in mind that I decided to design and build my own CA crossbow. Now, like most of you who have thought of trying to do this, I went on-line to find plans. They are there, but most are limited in direction and construction. My design is not unique or 100% original; it is an amalgam of what I have seen on the field over the last few years. I have taken what works and stuck to the K.I.S.S. principle (that’s “keep it simple stupid”).

I have used this design in various forms for the last year and have been successful. I encourage anyone to make this crossbow and, if you see ways of improving it without adding additional cost, please let me know.

The “Beer Budget” Crossbow:

Materials required as follows:

- 1 30 inch piece of 2 x 4 clear pine (approx. \$ 5.00)
- 2 Fiberglass tensioning bars for chain link fence. (approx. \$ 4.00)
it should measure 60 x **1/2 x 1/8 ”**.
These are available at most hardware stores or fence supply stores. (The standard here is 1/4 X 3/4 X by 48. I used a 28” main Prod w/ a 12” backer and I’m getting about 500 in/lb. Ed.)
- 1 3” or 4” Bolt with only 1” of thread for the firing pin (approx. \$ 1.00)
(The threaded portion will be need to be cut off with a hacksaw.)

- 1 12" of 1/8" bungy cord/shock cord. (approx. \$ 1.00 *You may have to purchase this at a dressmaker's shop.) (Stretch Cord from old "Fly Toggles" Works... Ed.)*
- 2 2" Corner Framing Brackets (approx. \$ 2.00) *(The Flat ones...Ed.)*
- 1 2"x 1/8th bolt with acorn nut. (approx. \$.50)
- 4 1" wood screws (flat head) (approx. \$.50)
- 1 36" length of nylon cord for the bow string - no thicker than 1/8th inch (approx. \$ 1.00) *(Or you can make a String Jig and make your own serious String for the Bow. Mine was done with 10 wraps continuous, of B-50 to make a 20 strand String, double served at the center 25.5" long. Works Great! Ed.)*

Total Cost: (approx. \$ 15.00) all values are in Canadian Currency. *(Yeah, Right, Mine cost \$18 U.S. but, I used Poplar and Oak to make it. Pine would be about \$7. Ed.)*

Tools Required:

NOTE: Some knowledge of woodworking and power tools is required.
Remember SAFETY FIRST!

Table Saw/Circular Saw or equivalent
 Router/Router Table or 1" Chisel or Gouge
 Drill Press or Hand Drill
 Screwdriver
 Adjustable Wrench
 Round Chainsaw File

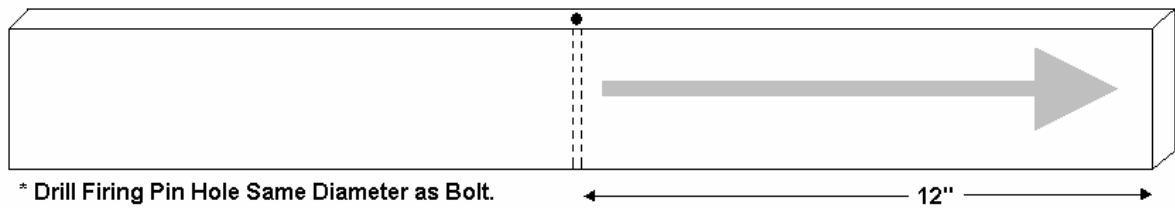
Spending Money ☺

Purchase your piece of wood. It should be the best quality 2x4 you can find. Ensure that it is free of knots, and that the grain is straight and tight. If you are keen, you may be able to get this piece of wood at a construction site in the scrap heap. (Ask first!)

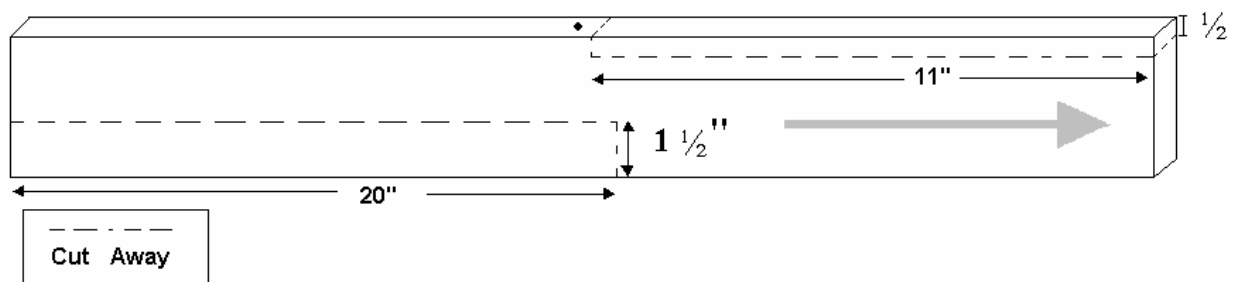
All of the other materials, unless otherwise stated, will probably need to be purchased at the hardware store.

Building your own Crossbow

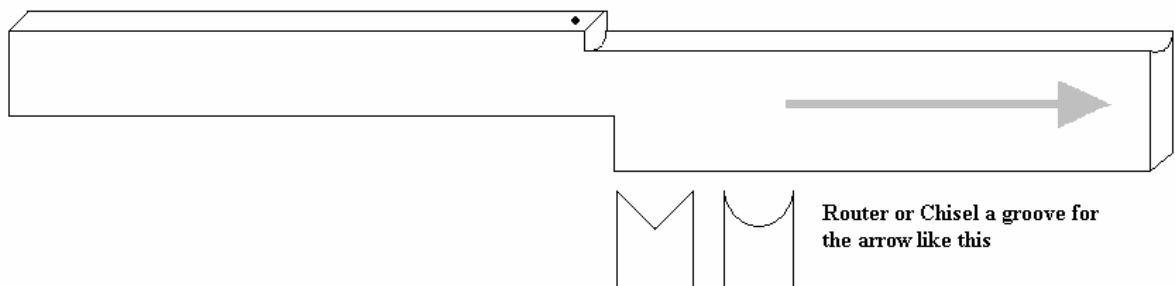
Step 1: Drill the hole in the 2X4 for the firing pin. The hole should be the same diameter as the firing pin bolt.



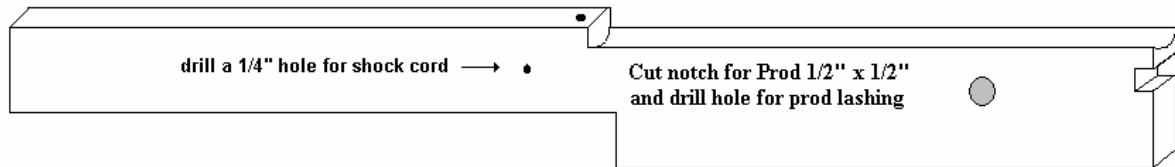
- Step 2: With a straight edge draw lines marking where the material will be cut away. A carpenter's square works best. Cut away the material as marked. *(Note: Save the material cut from the handle portion of the stock. This can be used to make the trigger in step 5)*



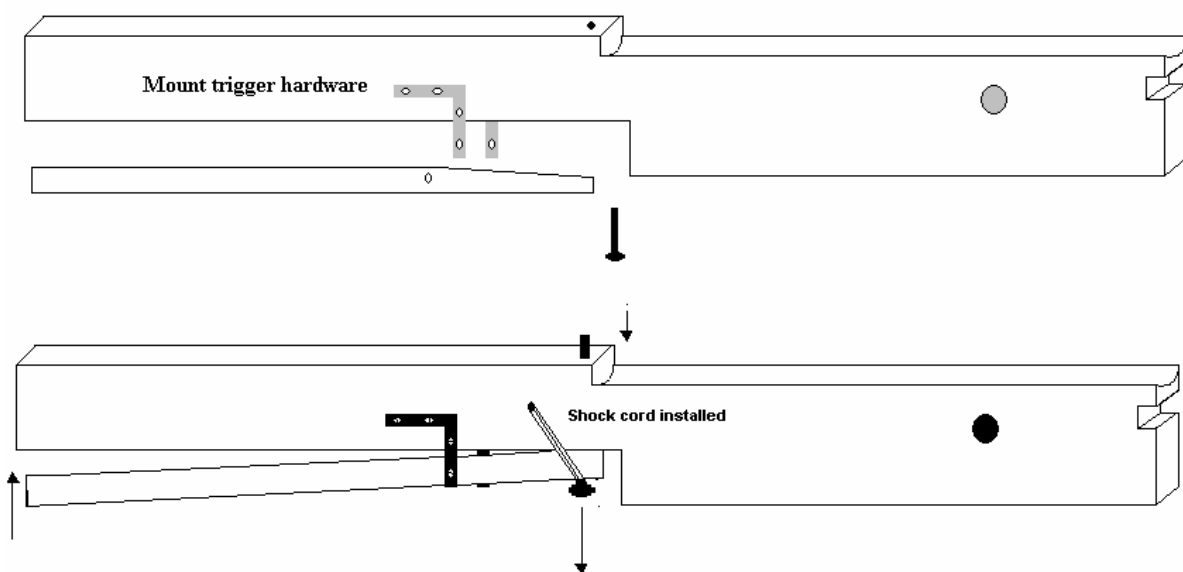
- Step 3: On the forward portion of the crossbow, where the bolt will rest prior to firing, use a router or chisel to create a channel that the bolt will be guided by.



- Step 4: Cut notch in the forward end of the stock to receive the prod, and drill a 1/2" hole 3-4 inches back on the stock for the lashing to pass through in the locations shown. Drill a 1/4" hole for the shock cord behind the firing pin.

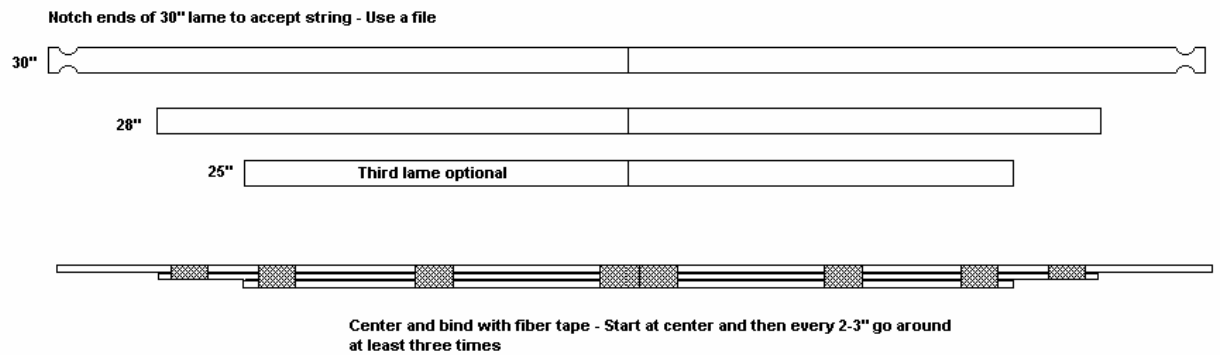


Step 5: Mount the trigger hardware as shown and attach a trigger to the hardware. You can use the scrap wood left from the initial cutting to make your trigger. The firing pin bolt should have the threads cut off and be filed to remove any burrs. Also, a small hole should be drilled near the head of the bolt to allow the shock cord to be passed through. On the trigger, drill a hole in the end for the firing pin to pass through vertically. Drill a second hole horizontally, intersecting the bolt hole, so that the shock cord can be threaded through both the trigger and the firing pin bolt. The shock cord acts as your trigger return keeping it up until you fire. Insert the firing pin bolt, with the head down, through the trigger and the stock. Thread the shock cord through the hole in the firing pin (through the hole in the trigger) AND through the shock cord hole on the stock and tie shock cord in a secure knot.

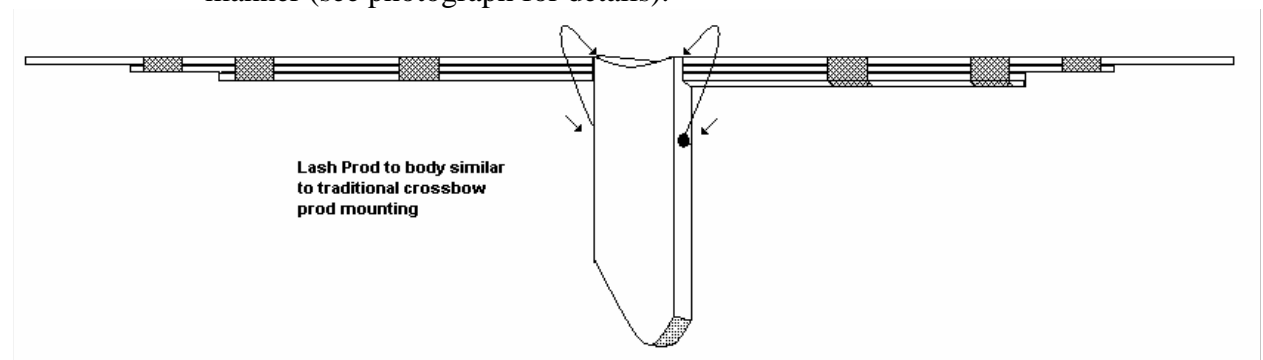


Step 6: Cut your prod material into the following lengths. Using the chainsaw blade file, notch the ends of the longest section of the prod material to

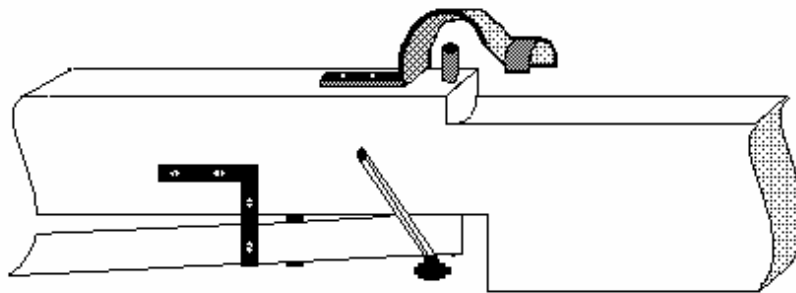
hold the bowstring. Stack the three lengths evenly and bind with fiber tape as shown.



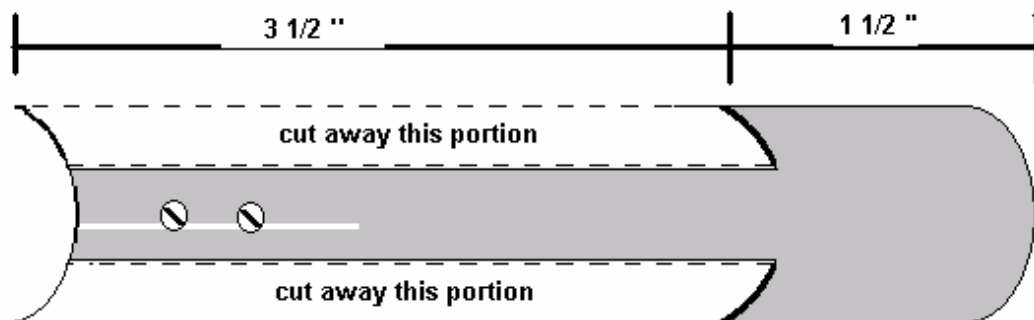
Step 7: Mount your prod well centered on the stock and lash in the traditional manner (see photograph for details).



Step 8: You may want to add a bolt-holding device, which can be made in many ways with multiple materials and styles. In the following diagram, the device is made from a piece of heated and bent ABS Pipe (2" ID).



Example of Bolt Holder Made with 2" PVC

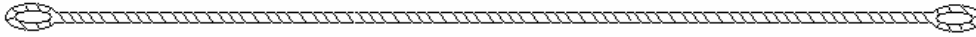


Bolt Holding Device Pattern (NOT TO SCALE)

≡ Cut from a piece of black abs pipe 2" ID cut in half lengthwise ≡

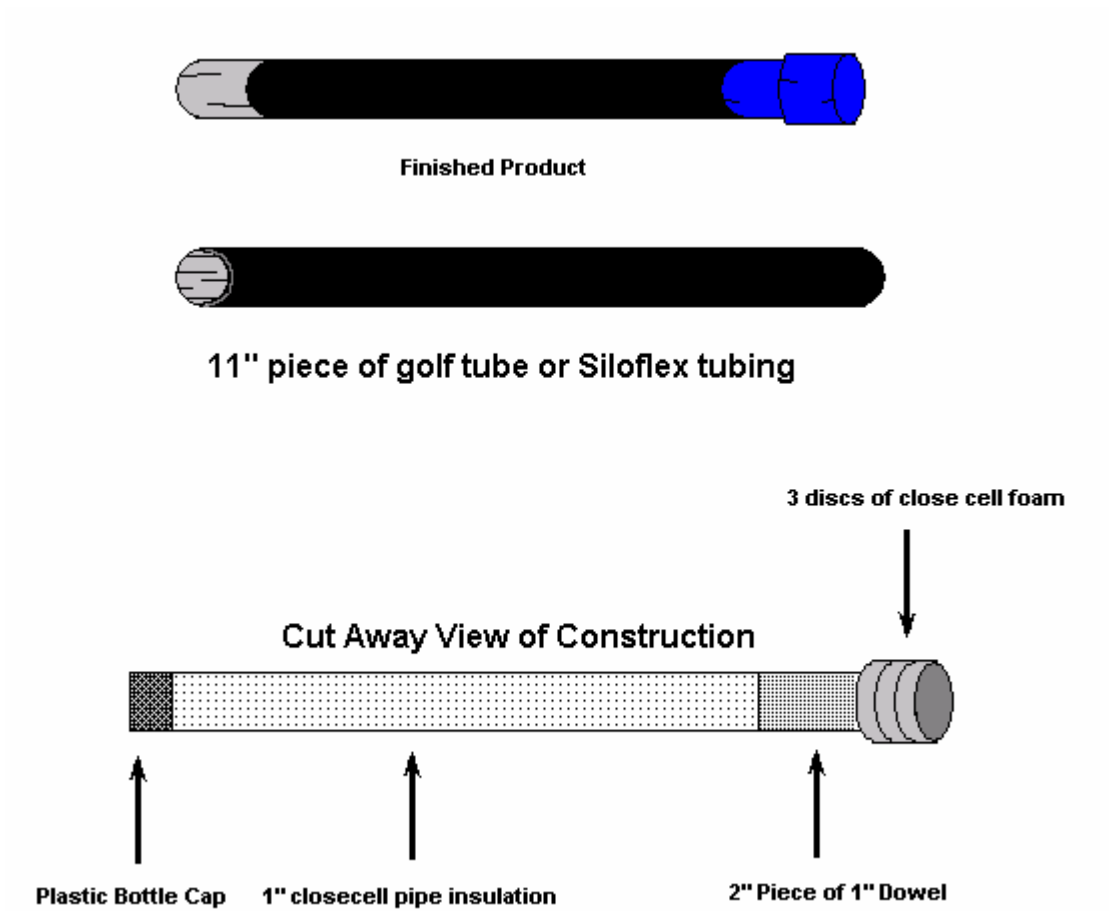
Step 9: Add Bowstring.

Bow String Should be at Shorter than full width of prod 26-28"



Step 10: The bolts should be made from golf tubes or Siloflex ensuring that the outside diameter of the tubing is no less than 1 1/4". Cut tubing into 11" lengths and sand all rough edges.

NOTE: When making golf tube bolts, insert 1" diameter pipe insulation into the interior of the tube to add rigidity. Place a standard plastic bottle cap in thenock end of the bolt, fiber tape and cover with duct tape. Cut 1" diameter dowel into 2" lengths and insert into the front end of the bolts, fiber tape and cover with duct tape. Add 1 1/2" thickness of closed cell foam, the same diameter as the bolt, forming the thrusting tip. This should be fiber-taped on and covered with red duct tape. (Note: Check the CA rules in your Kingdom to see if this design conforms to their standards)



Test and have approved by a CA Marshal, it should receive a rating of approximately 450in/lbs.

(Play with the Bolt Design a bit to get the best and straightest performance. Thin fins seem to work well. I'm getting 40 Yards clean with mine. Great Design!!! Ed.)

**Thanks,
Lord Leod**

The Following are Images and text for
Oskar's Pintle Mount...

The following descriptions and instructions are for a simple to make folding pedestal mount for a siege engine of the Ballista or Arbalest design. When assembled it is in three pieces, an Upright with four folding legs and two cross braces just over 2 feet long each. It is relatively light and very easy to transport and set up. I have had it set on surfaces ranging from the Tower in the Pennsic castle to sloping forest ground complete with rampant vegetation with equally good results. This is a non-wheeled design, but it has 360 degree traverse, plus or minus 55 degree elevation, and is an excellent point-defense mount.





You have to have, two 8'x2x4's and one 8' 4x4. You will have a chunk of the 4x4 left over.

48' of 1/2 inch threaded rod.

12 nuts and 24 washers

Depending on the dimensions of the yoke you build the spade bits will differ. The weapon pictured is a Docmo Arbalest with the yoke according to his design with a 3/4" pintle.

1", 3/4" and 1/2" spade bits.

Chisel and hammer.

Hacksaw and file.

Skil™ or Rotary saw

Level

Mark out a square that is 12 square feet in area on the floor or ground for later. This will be just less than 3 1/2 feet to a side. This is for a class "B" engine. You will have to experiment to adapt it for a class "A".

Cut the 2x4's in half. Drill a 1/2" hole in the middle of one end of each of them, 2 inches from the end of the board. These will be the legs. Cut one corner off of each leg on the drilled end so the legs will fold out properly. This does not have to be a big bite, just knock the corner off. The legs will fold out from the upright the same way each time, so picture all the corners you cut off on the same side of the 2x4 left or right according to your preference, mine is oriented widdershins.

Measure and cut 2 pieces of the 4x4 exactly the same length, between 29 and 30 inches long and mark the middle of one side. These will be the cross braces.

Take the last piece of the 4x4 and measure eight inches from one end and drill a 1/2" hole through the center of the beam. Drill another hole through, just a little more than half an inch

lower, through the other two sides. This will be the Upright and the end with the holes in it is the top.

Cut two pieces of the threaded rod to hold the legs to the Upright. The rod will have to go through two 2x4's and the 4x4, so it will be a little over eight inches long.

Take the cross pieces and locate the middle mark. Lay one piece on the other to make a cross, center and square it. Mark to either side of the board on the lower piece. Lay the pieces side by side and make symmetrical marks on the other board. When you are finished these pieces will fit together like Lincoln Logs. Take the Skil saw and adjust the blade so that it will cut to just a hair over halfway through the 4x4. Do not assume this measurement is 2 inches. Cut to the inside of the marks you have drawn on the 4x4, and then cut many times through the piece you will be removing to make wafers of the (to be) removed chunk. When you have done this use the chisel to remove the wafers and bits that are left and then smooth the bottom of the cut. Fit the pieces together to test them. They should lie flush with each other. Don't worry if they wiggle a little, but they should be loose enough to fit together easily. Water will swell this joint so be sure it is to your liking.

Now cut a six-inch chunk off the bottom end of the Upright, opposite the end with the holes in it, and drill a 1/2" inch hole through it. Take two of the legs and the small 4x4 chunk and run one of the threaded rods through the hole. Put two nuts on and tighten them so that the movement of the legs is firm. Get someone to hold the assembly vertical and open the legs so they touch opposite corners of the square you laid out earlier.

Take one of the 4x4 pieces and hold it horizontally up to the legs (with the level on top to make sure it is horizontal) so that the holes you drilled in the 4x4 can be marked in the center (not the mid-point of the board, just the center of the section covered by the 4x4 brace) of the 2x4 legs. Mark the holes on the 2x4 and drill them with the 3/4" spade bit.

Measure and cut 4 pieces of the threaded rod to fit the holes you just drilled, just over 6 inches long.

Bolt the 4x4 to the legs so the gap in the middle faces down. You will measure from the top of the 4x4 to the middle of the Bolt at its apex. Transfer this measurement to the Upright using the top hole as the measure point. Cut the Upright to the same dimensions. Remove the small 4x4 block and replace it with the Upright. The way this should look at this point is a capital "A" with a wide base and the Upright perpendicular to the horizontal brace. The base of the Upright should be flush to the surface of the horizontal brace. Remember that there is a little "wiggle" built into the assembly.

Bolt on the other two legs through the lower hole in the Upright (making sure the cut off corners of the legs all face the same way) and swing them out so they touch the other two corners of the square. The second legs will appear to be slightly longer because of the lower hole they pivot from. Make sure the Upright is vertical. Hold the second piece of 4x4 up into the gap in the first one and mark the holes on the second pair of legs and drill the holes through the legs with the 3/4" bit.

Assemble the second cross brace and bolt it in place.

Now you have the pedestal mount with the upright in place. At this point mark the ends of the horizontal braces in the following fashion. You are going to mark the ends of the braces, (N) for North, (S) for South, (E) for East, and (W) for West. The first brace, the one that goes on with the gap facing down gets the N, and S marks. Duplicate the marks on the top of the Upright so that the mount goes together the same way each time. The second horizontal brace gets the W and E marks.

The reason the holes in the legs are 3/4" while the holes in the braces are 1/2" is because it makes assembly easier, and there is some adjustment that can be made for uneven or completely flat surfaces. Also when you take this apart for transport you should leave the bolts in the horizontal braces so you don't lose any hardware. The legs should never be removed from the Upright once assembled. The legs will fold parallel to the Upright and transported or stored that way.

The pivot point for the yoke is next. The pintle on my yokes is made from 3/4 inch bar stock. I found by drilling a 1" hole down into the Upright and then inserting a length of 160psi ammunition tube with a section removed into the hole as a sleeve it makes a very satisfactory bearing and swivel.

What you want to do then, is to take the yoke you have and experiment a little. Take a ring of 160 and cut it away a little at a time until you have a good fit for the pintle bar stock. Make it a good tight fit, with a hair of a gap between the ends of the 160 ring. Measure the outside of the closed 160 ring for the diameter of the hole you need in the top of the Upright.

When you have the diameter of the hole, drill it into the top of the 4x4 Upright to just short of the length of the pintle on your yoke. Be careful to get this as vertical as possible as a canted hole will make your Ballista traverse funny. When you have the hole take a length of 160 PSI and cut a section out of the side of it to match the ring you made earlier. Shave it so that the fit onto the hole at the top is firm but not so tight that you have to bash it. If it is too tight you might split the Upright when you set the pipe, and you might deform the pipe to the point that you can't insert the Yoke.

When you have the 160 to the size you want it *gently* hammer it into place into the Upright and trim the excess off when you are done. Insert the Yoke pintle and it should have a stiff travel, but smooth. Use enough washers under the yoke to get the pintle of the Yoke just up off of the bottom of the hole in the Upright so the weight of the weapon is held on the face of the Upright via the washers, and is not boring its way into the wood beneath the end of the pintle.

Done! As a note, please feel free to contact me at home 401-624-2059 or at oscar@sfrcs-sabis.net in the evenings to help if needed. This is the first time I have written these instructions out, and they might not be clear in places.

Good Shooting!

Oskar

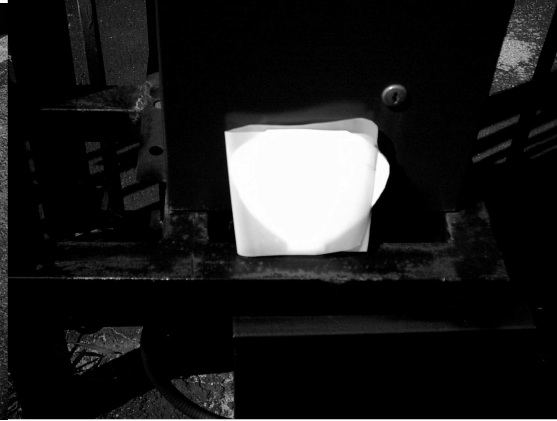
Thanks,
Lord Oskar

Drawings and Images for Ballista Bolt/Javelin Fins and Jig

I lied. I'm going to give you a full set of Photos and a couple of Drawings to help you make them Four Footers fly better.



Fin Assembly installed



Fin Piece with Fin Needle

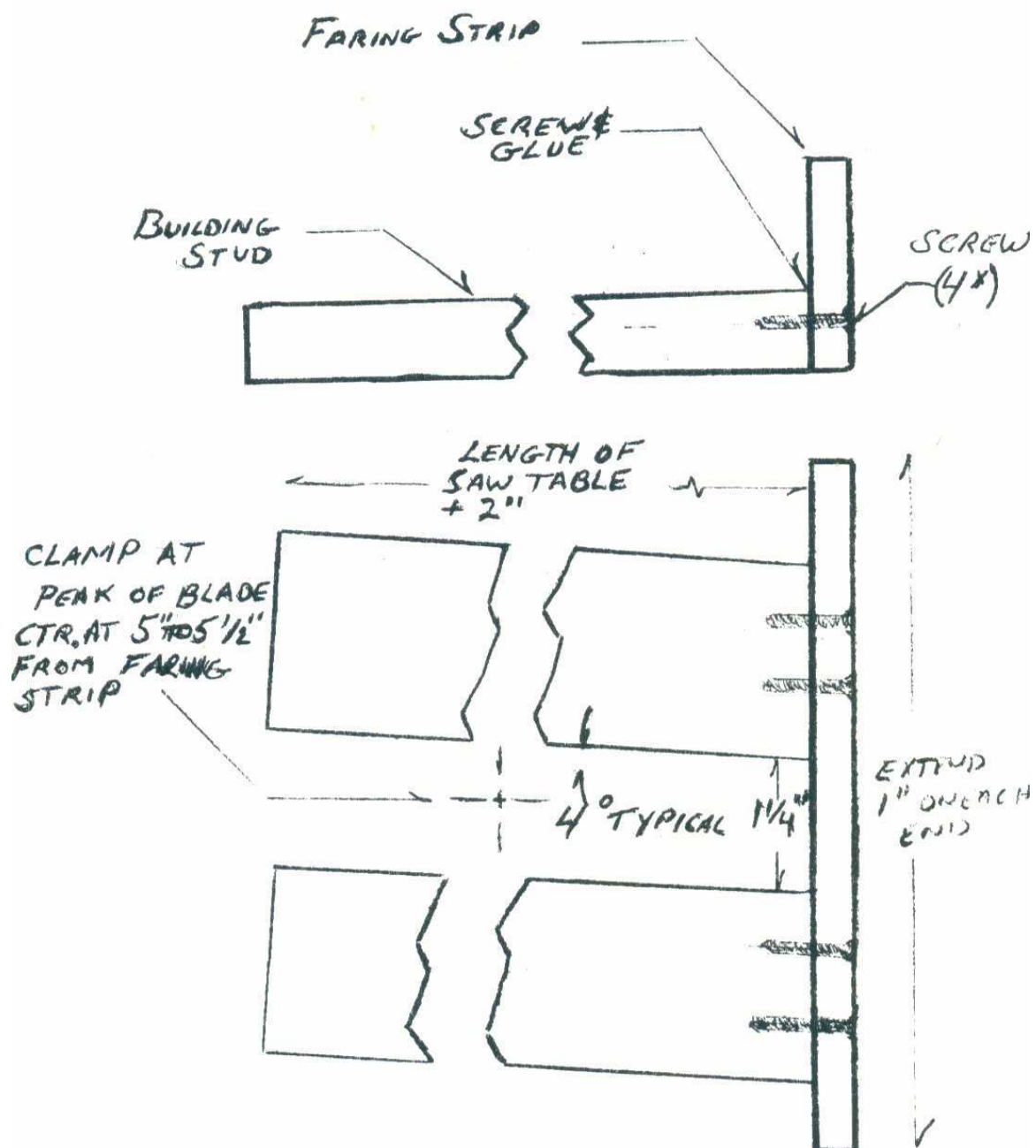


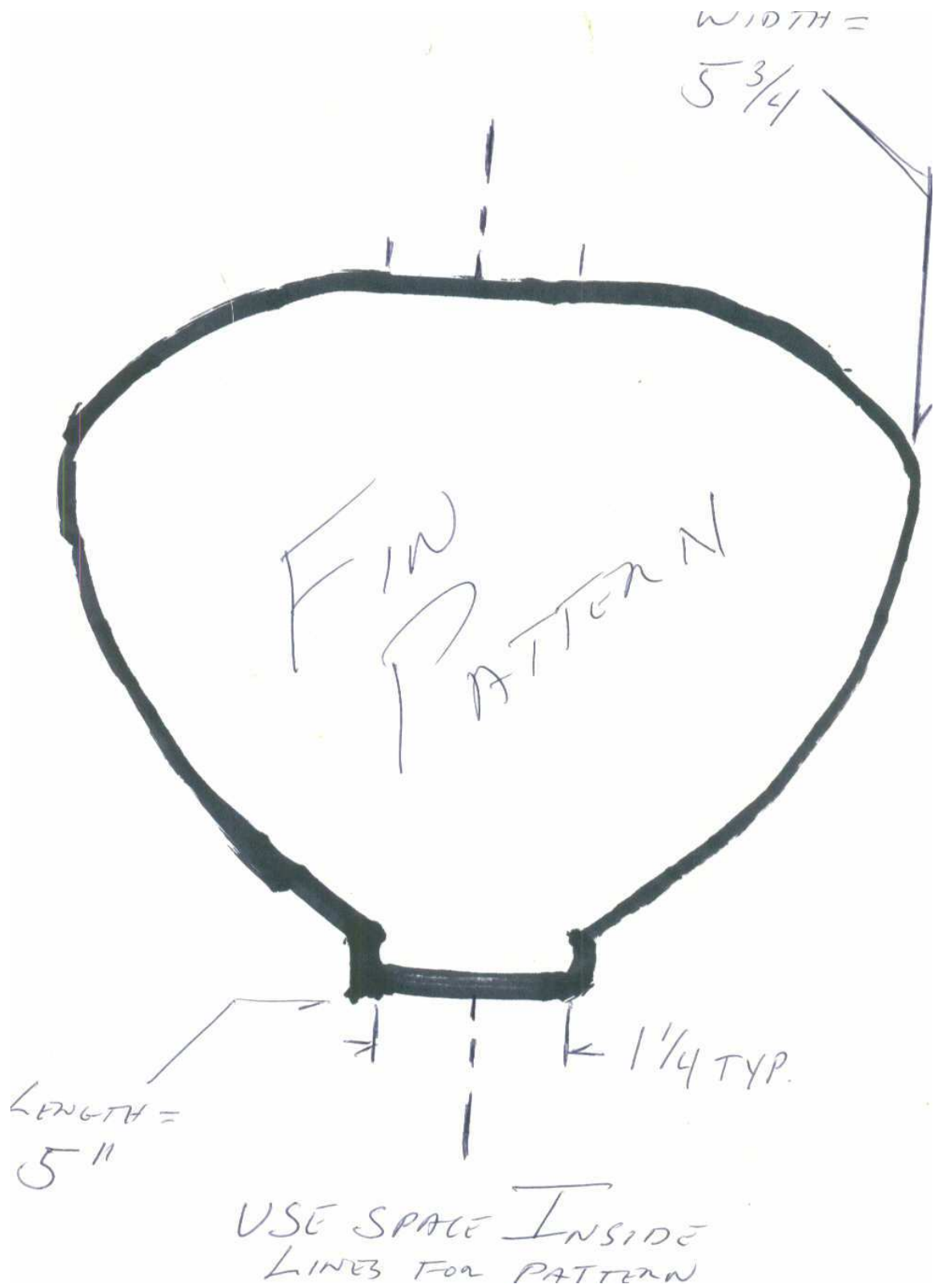
Fin Pattern \$1 for Size



Old and New Styles

FIN JIG





Okay, the drawings aren't pretty but, you get the Idea.

Talk to you again in November...