http://members.home.net/vmss/ April 2001 Volume 23, Issue 4

The Binnacle

Victoria Model Shipbuilding Society
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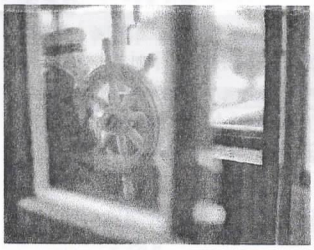
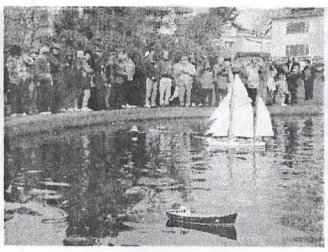
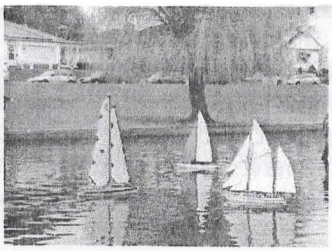
Harrison Pond March 11 —first organized 2001 meet!

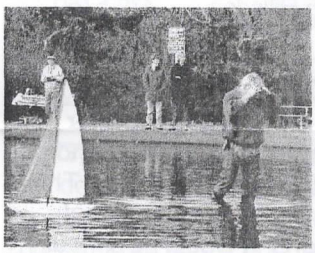
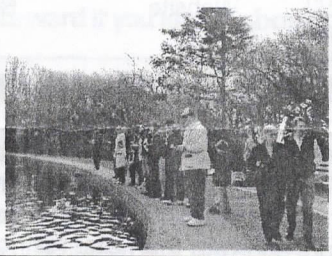
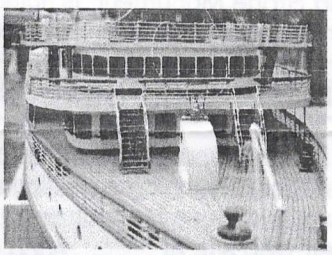
Harrison Pond was a busy place on Sunday, March 11th. A hastily collected group of club members resulted in a turnout of 20 power boats, 10 sail boats, 3 'subs' and 8 to 12 dogs. The one mishap, a lost propeller from Ken Scott's boat, which I am happy to report he found, after walking several kilometers in the pond. There was also an exciting moment when a St. Barnard dog (large size), had to be restrained from jumping into the water and attacking the models.

We had several young skippers in attendance including Alex Craven with his tug "Eileen". Sunday was also the first 'Walkabout' of the year organized by John Adams. He brought his group down to the pond where they were introduced to the activities of the club by Ron Armstrong.

The weather co-operated, making it a very sociable and enjoyable occasion.

Bill Birch

(Ed: Thank you Mike Wheatley and Julie for the photos)

The Powell Cup

The "Powell Cup" is a series of 10 *events* open to all members of the club operating a sailboat capable of operation in Harrison Pond.

The object of this series is:

a) to generate FUN and camaraderie
b) To encourage recreational sailing
c) to increase public awareness of the club at Harrison Pond
d) to boost new membership opportunities

The series will take place as close as possible on alternate Sundays between the months of April and September, starting April 22.

This is a fun *event!* Something completely different! Come out and try your Hand. No serious sailing. No serious boats. And if you protest, we'll throw you in if it tickles our fancy! Gonna be more fun than skinny-dipping in your neighbour's hot tub! Guaranteed! Be there, or be square! ***April 22***

Dates to Remember

Next Meeting May 10, 2001
Royal Oak Lions Hall 19:30

April 21 visit to **Bandit Boats**
Details at April meeting
April 22 Spring Sub Splash
Cultus Lake 11:00-dusk
April 22 Powell Cup Event 1
14:00 Harrison Pond
May 10 Regular Meeting 19:30
Tom Pound, MMBC **Restoration of Models at the MMBC**
May 13 Powell Cup Event 2
14:00 Harrison Pond
May 19 visit to MMBC 10:00
May 27 Powell Cup Event 3
14:00 Harrison Pond
Jun 10 Powell Cup Event 4
14:00 Harrison Pond
Jun 14 Regular Meeting Tips and Tools night, members led by 'Toolman' Paul Jordan

The Submariners Assn of Canada will attend our Sept Meeting to talk about the Victoria Class Subs

May Binnacle Deadline is ***April 28***

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FROM THE BRIDGE

During the weekend of March 15th to the 18th, several club members and their spouses journeyed to Naniamo to visit the annual model exhibition put on by the Mid-Island Boat Modelers at the Country Mall, which turned out to be a very impressive collection . Ken and Lois L. entered several sailing vessels in the judging competition as did John G. with his version of the side paddler "Bulldog". Unfortunately, our members did not fair well in the judging but, their entries were greatly appreciated according to the local scuttlebutt. All in all, the mid island club lived up to it's reputation as a "must see" exhibit.

You will be pleased to note that our swap and shop was a smashing success and according to our Treasurer Derek, we ended up in the black with a $231.00 profit in addition to which we succeeded in acquiring much needed electronic equipment and sundry items for construction of our mini-tugboat fleet of twelve. We still urgently require several volunteers to assist in the building of same, so kindly leave your name with yours truly. jrp

Beacon Hill Park Management Plan.

An open house was held March 28 by the Task Force driving the Beacon Hill Park Management Plan. The objectives of Phase 1 of the plan addressed two key issues:

What does the public think is appropriate use of Beacon Hill Park?

What level of use is appropriate to ensure that the park is preserved for the use and enjoyment of future generations?

The park includes the waterfront from Holland Point (Harrison Pond area) at the west to east of Clover Point at St Charles Street.

I was pleased to see that Harrison Yacht Pond is well marked on the plans and "Harrison Yacht Pond Stone Monument" is noted on the historical monuments plan. Any thought of a "duck pond" seems to have been put to rest!

An interesting talk was given by Bill Dale on the history of Beacon Hill Park. It was designed in 1882. He has lived near the park for the last 70 some years and has seen its development over that time. Most of the trees have been there since the beginning including a large rhododendron that is now 119 years old and blooming profusely!

For all the information visit their web site at www.city.victoria.bc.ca/beaconhill

I will be writing to the Parks Manager, Mike Mathews, to see if we can get the shrubbery south of the pond thinned out to allow more wind for the yachts. I had thought of speaking to him but he is hard to get hold of and, sometimes, a letter has more impact!

Ed Boddaert

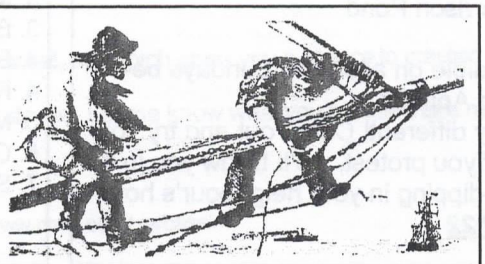
Press Gang

If you can help building the

Bandit Boats

Please call Jack P

592-2021



2001 Executive

President:	Jack Plummer	592-2021
Vice-Pres:	Paul Jordan	388-7929
Secretary:	John McHutchion	480-4048
Treasurer:	Derek Woollard	658 1150
Directors:	Scott Ringrose	744-3048
	Mike Gibson	474-6539
	Mike Hill	384-4024

Other Duties

City and Parks Liaison	Ed Boddaert	746-4459
Membership List	Mike Gibson	474-6539
Entertainment	Bill Birch David Powell	592-6456 479-0905
Regattas	Scott Ringrose Mike Hill	744-3048 384-4024
Show Coordinator	Derek Woollard	658-1150
Publicity	Ron Armstrong	391-0101
Binnacle Circulation	Bill Birch	592-6456
Binnacle Editor	Ron Hillsden	479-5760
Website	Ron Hillsden	479-5760

HARRISON POND WATER

I called the parks department, after the "show" Sunday, about the "low tide" and requested that they raise the water level. The chap in charge of maintenance told me that, with the water restrictions, it would be difficult to add water without causing a furor. However, he would see what could be done. It seems that they managed to sneak some water into the pond since the level is a bit higher.

He also explained that they would leave the water as long as possible, until it became too mucky and/or stinky. When they have to clean the pond they may not be able to fill it up again, due to the water shortage. Logical enough, if it 'aint available for more critical things, filling a boat pond would not be appreciated by the general citizenry! It is quite possible that we may have to look at another, temporary, pond that has water and would be suitable in a pinch. Ed Boddaert.

LIBRARY REPORT - PLANS AND DRAWINGS

I would like to mention to the membership that we have quite a large selection of plans available for your use. The following are recent additions:

- HONG KONG PATROL VESSEL (H.M.S. PEACOCK)
- GUIDED MISSLE DESTROYER (H.M.S. YORK)
- CANADIAN COASTGUARD VESSEL (GEORGE C. PEARKES)
- CANADIAN NATIONAL VESSEL (ST. JOHN)

We have an index in the library that gives an idea of what our club plan collection consists of. Please browse and/or ask.

Over the last year, we have increased our library book collection with a fair number of new titles that may be of interest to you. Please browse and/or ask.

Good reading, Ken

MAIL FROM MEMBERS

Hello Ron,

It is Paul Blanchard, how are things in Victoria these days? Life in Vancouver is moving pretty fast. The website looks good, makes me wish I was still over there. Been pretty hard to get time to myself with all of the schooling for computer programming and what little time I get I work for an Internet company over here. Pretty exciting I must say.

I have a little news to share with yourself and the club, I am getting married in a few months. May 26 to be exact, in Victoria of course.

Well hope that things are going well and will talk to you later.

Paul

Hi Ron,

I thought I would send you a quick note to update you on my latest model project, this may provide you with some material for the Binnacle.

I am currently building two static models of the 1930's J Class sailboats. They are the Endeavour and the Shamrock. They are in 1:100 scale giving them a length of 15". So far I have spent about 2 months on them and they are about half complete. The hulls are made of plaster and fiber glassed with epoxy. I am currently detailing the decks and building the masts. I hope to build two glass display cases for them, perhaps someone in the club could write an article on this subject for the newsletter.

I am putting together an article about model ship railings, which I will send once it is complete.

Happy model shipbuilding!

Doug Dyer

Editors note: Doug took these to the March meeting to show, but it was the Swap and Shop, so he almost didn't get a chance to finish them!

Also, please step forward if you know about display cases!

Book Review — THE HISTORY OF THE BRISTOL CHANNEL CUTTER

by Peter Stuckey - published in 1977

The author covers the history of the pilot boats from 1492 to the present day. The well illustrated book shows hull and sail design through the years. Line drawings and photos are clearly shown, as well as the specifications. These are personal accounts of pilots and crewmen as well as their diaries and logs, showing the cost of repairs and the revenue from pilot boat's operations. This is good documentation of a life style long gone.

The pilot boats were heavily built with more than ample sail (dismasting was common). The wild Irish sea and the Bristol Channel with its treacherous tides required well built boats and expert seamen.

The Pilot Cutter 'John Brise' is the classic example of the channel cutter built in 1913 and it is still sailing!. (It was in Halifax with the Tall Ships last summer 2000! With the introduction of steam vessels and the wireless, many of the dangers of the old ways were removed. Fortunately, many of the cutters have survived and sail over the world as private yachts, always a beautiful picture on the horizon. This book should be in our library.

Bill Birch

Bill Huckin

Bill passed away in the Royal Jubilee Hospital April 5, 2001. In the last few years as he was looking after Barb, who passed away last year, and of course, was battling with his own illness.

Bill was a long time Victoria resident and a former member of the Victoria City Police. He was a past president of our club and a long time member. I will remember him as a helpful, caring and generous person who was always genuinely interested in people and our hobby. He suffers no more.

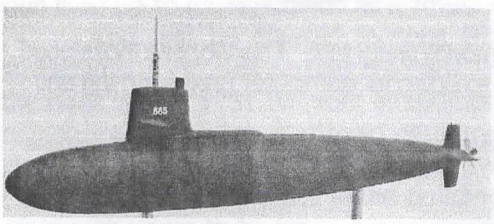
THE SUB SUBJECT

If calls for "More! More!" were lodged as a result of the March column (Bill Birch's and Jack Plummer's dynamic divers), they weren't heard. That's tough, because this April's encomiums go out to two more (this time ballasted) V.M.S.S. members' examples of handiwork.

First, in order of getting-at-it, comes Scott Ringrose's semi-scale Skipjack. Next to that, Mike Gibson's Seehund effort is highlighted so that readers can feast their mental faculties on his 1:10-scale of a WWII, two-men, two-torps midget submarine.

While Scott, like me, just wanted to build a model sub any ol' way, always-thoughtful Mike had several goals in mind. First, he wanted a platform from which to launch torpedoes, but he wanted to achieve that goal with two self-imposed restraints: cost (okay till he needed a radio) and next, simplicity (worked just fine after he conquered labyrinths and mazes).

Scott's Skipjack's prototype was the lead boat of six in the U.S.Navy's first class of nuclear-powered subs--following the quasi-experimental (1954) Nautilus. The prototype was built by Electric Boat at Groton, CT, launched May 26, 1958, and pleased its owners-operators more or less till April of 1990. Not too shabby, what? Skipjack was operated by nine officers and an 84 to 85 man crew. With a l.o.a. of 251.8' and a 31.8' beam, she displaced 3,075/3,500 tons surfaced/dived, but was good for 15 knots on and 29 knots below the surface. (Jane's gives 20 and 30 knots.)



Skipjack and her sisters incorporated a number of technical firsts--sound suppression and mechanical torpedo loading among them. Unfortunately, one of the "S" boats, the Scorpion) was one of only two nukes lost by the U.S. Navy (so far). Despite years in time and millions in treasure, the definite cause of failure has defied all experts. Ironically, though, Scorpion had a bit of a reputation. Insiders called her the "Scrap Iron."

The GRP hull of Scott's model was molded and laid up years ago by Greg Sharpe (Deep Sea Designs), when specs, plans and even photos still were classified material. Hence: the "semi-scale" rider. In the fullness of time, fussy-fussy Greg learned that the sail and hull shapes were a mote out from the prototypes' designs. Tough.

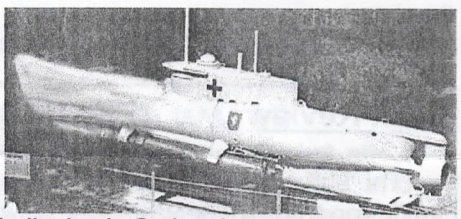
It took Scott some six (!) years but only an estimated 200 hours to build the model. She weighs between 16 and 18 Lbs., is powered by a 6-v. Speed 500, fed by two LCR 64ML Mallory's. A four-channel Futaba controls throttle, rudder, stern planes and the Propel-voided ballast tank.

Skipjack was Scott's first sub, and he suffered many a set back. Mostly, he said, "Because I built her like an airplane." Too light. The linkages, for example, took three goes. But now they're NASA class.

Because of Scott's die-hard mentality, Skipjack is still being improved. But already she's a delight to follow in either the Pond or Thetis lake. Now: Seehund.

Inspired, possibly, by the R.N.'s X-Craft, Hirohito's midgets or Mussolini's chariot (manned) torps, Das Reich late during the hostilities, ordered up 252 Type XXVIIB Seehunds. They measured 35', displaced 15 tons, and moved at 7.75 and six knots respectively. Their sole function was to get two externally-carried fish to where they would mess up the Allies' D-Day fleets and, later, anchored ships in liberated harbours.

With air attacks ruining the Ruhr valley's days, Seehund procurement was contracted and sub-contracted out all over Germany. Components were built here; assembly elsewhere. Some hulls were riveted; others welded--depending on skills and bents. Some sported welds and rivets. Some had Kort nozzles. But not all. And control surfaces varied from one batch to the next.



Another Seehund exclusive worthy of note was their method of deployment. Their nifty size allowed for rail shipment to war theaters north, south and west--much faster and less hazardous than towing. Hence, they were painted in camouflage colours and patterns.

Mike, of course, went the Kort nozzle route. He scratch-built the boat, starting with a light, flawless GRP hull, laid up in molds made by Len Gibbs, with enlarged plans by one von Dirk-Wittasek, as published in a Schifs Modell issue--lodged in Greg Sharpe's library.

Thanks to the model's low weight, coupled with the hull's stubby shape and bulky keel, Seehund responds to radio commands like a Bandit boom boat. Submerged, without benefit from an Automatic Pitch Control (APC), she moves as true and level as if tracking a laser beam. Underwater video from Thetis Lake supports that observation.

After 10 months and about 500 hours that included the mentioned labyrinths, mazes and blind alleys, she was a still unpainted but otherwise finished trophy. So far, a six-channel Airtronics R/C transmits the four essential functions (throttle, rudder, ballast tank and diving planes), but will go into full service soon as two motor-driven torpedoes cap off the project.

Mike, again, wouldn't be Mike if he hadn't added these features: a float-operated periscope, and a hinged shutter on the snorkel mast. Cost? Say $600--including radio.

Next month, Watertight Cylinders (Seehund has one) are up for broad, comparative examination.

Romanus Unicum

You can strop blocks using the linen rigging thread. Wrap it around the block lengthwise and secure it with superglue. Then take some of the ultrafine thread that fly-fishermen use to tie their flies and use this to bind the two ends together at the other end of the block. You then have two loose ends to tie around the spar or whatever, or just secure with superglue again. Looks good, pretty strong and has some flexibility, despite the superglue.

Mid Vancouver Island Marine Modelers March 15 2001 Show

I had the opportunity to visit with the Mid Vancouver Island Marine Modelers Club at their annual show, which was held in the Country Club Mall Nanaimo. This club has now been in existence for fifteen years and has only eighteen paid up members, however they put on a superb show which is second to none.

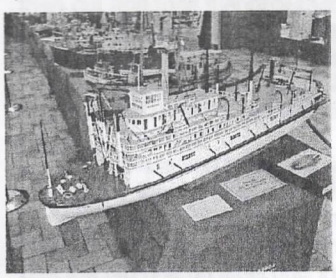
There were over 82 models on display, and the quality if most of the exhibits were superb, in fact it was very difficult to single out any particular model as outstanding, Many of the models displayed the most intricate detail and were beautifully finished. Most of the displays were of RC boats with a few operating static models and a handful if sailboats.

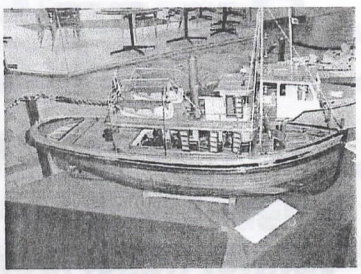
This show was certainly worth the visit.

The club meets on the first Thursday of each month in the Boardroom of the Nanaimo Yacht Club, and they would certainly welcome guests. Sailing takes place at ten AM every Sunday at Long Lake wharf just by the Ramada Inn and all boaters are welcome. With the completion of the four lane highway all the way to Nanaimo it's a pleasant drive, and you are sure to meet many interesting modelers. For more information about the club please contact Dick Copland (250) 758-8715

Jack Ross

(Ed: Thanks for the photos, Jack!)



ON THE SLIPWAY compiled by **Paul Jordan**

Having completed 13 years on VMSS executive, **Ron Armstrong** can now take a well deserved breather to resume his ship modeling. His current "challenge", started in 1992, is a 6' model of the CP Ship "*Princess Maquinna*." His modeling philosophy is "if the ship was made of steel, the model must be made of TIN" which has earned him the title CAP"TIN" RON, and it doesn't take much to guess what material this huge model is made of!!! The ship's hull and most of her superstructure are complete and, although she will have 12V electrical power at first, Ron eventually wants to drive her with LIVE steam so he can see "real smoke" from her funnels. She's expected to be in the water by mid summer. Meanwhile his little tug "*Tanya Dawn*", a 'Canadian-ized Caldercraft' kit, has "had a hard life and desperately needs a refit" which she will get this Fall.. His large stern wheel Paddleboat "*Moyie*" is a copy of the original vessel which is currently undergoing restoration on Kootenay Lake. Many members may not realize that this model is a "Heritage" craft in her own right because *Harry Crosby*, R/C expert at BC Shaver & Hobbies, built her on his kitchen table in 1962. Although now a little "weathered", she was originally made of Balsa but is still going strong nearly 40 years later which in itself is a tribute to her maker. Ron's ultimate goal is to build a model of "*HMCS Battleford*" made entirely of, yes...you guessed it..TIN!!!

Doug Allen is completing a 1/2" to the foot 28" model of the gill-netter "*Kinkasan A*" . Hull and decks are finished and he's working on the doghouse and topside detailing. Once again he's drawn inspiration from fishing vessels built by Britannia Shipyards. He's completed a number of models which are scheduled for exhibition at the Britannia Shipyards Museum and the latest one has been built purely from an old photograph he was shown there. Doug has also just completed a custom designed 1/4" to the foot scale "60's" type Tug based and which was on display at the Canwest Mall Show last month.

Bill Birch hasn't built a boat for a couple of years and says emphatically he doesn't plan to...he's having too much fun with Pres Jack Plummer and his "fleet". Mind you he says, IF he was to build one, it would be "one of those little *Bandits*", and you can hear the excitement in his voice rise when he says: "Yes, THIS is Year of the *Bandit*". (Reminder to all members : there will be a VMSS field outing to **Bandit Boats** on Saturday Apr 21.....)

Bob Blanchard joined our Club last year and although he lives away on Pender Island, he was able to get down to Canwest Mall last month. He was so impressed by the huge display and inspired by John Gough's prizewinning "*Bulldog*", he's considering a Side Wheel Paddle Tug as his next model project. There'll be no shortage of encour-

agement from our small but avid paddle wheeler group here in Victoria.

Ed Boddaert has just completed a highly detailed scratch built replica of "*Columbia*", a 67' Coaster built in 1955 as a traveling "Mission ship" out of Vancouver. She now serves as the flagship for Mothership Adventures Inc who commissioned Ed to build this display model for their offices in Victoria. He's now ready to "change tack" completely and start the Artesania Latina kit of the famous East coast whaling ship "*Charles W Morgan*". He recently visited Mystic Seaport where she's berthed and took dozens of reference pictures for the new model. When he needs a rest from "ratlines n' rigging" he can always bring out his beautiful "*IBIS*", a scratchbuilt R/C Cornish Fishing Lugger which he served aboard as a teenager out of Looe in Cornwall and which was recently seen performing flawlessly on Harrison pond.

More next month

A Technical Supplement to the Binnacle

Introduction to working with Brass

Vance Bass is an accomplished builder of model railroad locomotives as a hobbiest and an author. He has kindly given his permission to reprint this. Vance's site, http://www.nmia.com/~vrbass/ , is an interesting place to visit, you can even learn how make a pop-pop boat!

This is a primer on basic brass scratch building which I wrote for an internet news FAQ. Some of the example measurements are geared towards large-scale railroad models (1:20), but the techniques are scale-independent.
-Vance-

Tools:

Aircraft shears (left-, center- and right-cutting)
Files (flat and round, 10" and Swiss). MUST be new + sharp.
Nibbler. (Radio Shack, $10)
Scriber.
Bench vise (add hardwood jaw pads)
Machinist's square (4" or 6").
Dial caliper
Propane torch
Several grades of sandpaper and a piece of plate glass
Broad-tip marker (or laying-out dye)

Techniques:

Laying out: Most of the "hard" work should be done on paper. Your measurements for curves, rivet placement, joints, etc. must be calculated correctly before you start cutting metal. I use a CAD program for drawings, so I always print out my parts full-size on paper and then cut and tape them together to verify my drawings. (You can print onto plastic and make mock-ups from Evergreen sheets, too).

Once your are satisfied with the drawings, lay them out on the metal. I print another copy of the CAD drawing and then lightly glue it to the metal with 3M Super-77 spray adhesive. Then I just cut along the lines, punch the rivets where indicated, etc.

If you aren't using CAD, cover the metal with laying-out fluid, or use the marker to put a line of color down in the area you will be cutting. Then use the caliper and scriber to lightly scratch lines through the dye.

Cutting:

Once you have all the lines laid out, cut out using the shears. Some shears have finely serrated edges, which leaves a bit of texture on the cut. Finish the cut smooth with files, or by drawing the metal across fine or extra fine sandpaper on top of the plate glass. (Obviously, this is for straight lines only.) The only way to file brass is with a new file, unlike steel which will respond to duller files. Files are not life-long investments -- they wear out and must be replaced when they dull. If the file doesn't cut through brass quickly and easily, buy a new one and use the old one on steel until it's totally dull, then throw it away.

For inside shapes (cab windows, for example), drill a hole and use the nibbler. Clean up the edges with a file.

When drilling holes in sheet metal, you must use a special type of bit, or the bit will grab the metal and either rip it or spin it at high speed, which is likely to rip you. Always clamp metal down to the bench or drill-press table! Since common twist drills will cut a triangular hole, use a brad-point drill bit, or a "Unibit" step drill.

Forming:

Once your parts are cut out, you must shape them, usually by bending angles in them or forming to a curve.

Annealing:

Brass can be bent without annealing, but it work-hardens (gets harder and more brittle) as it is bent, rolled or hammered. To soften it, heat it with a torch until it changes to a dark brown color. To make it dead soft, heat it to red-hot. Dead soft brass may not work harden during forming, though, so experiment with scrap pieces of the same thickness until you determine how much heat you want for the piece you're making. Only heat the area you need to form (as much as possible) to preserve the strength of the piece.

Angles:

The optimal tool is a brake. You can buy small (12") bench top brakes from places like House of Tools for under $40. If you don't have the room or money for a brake, you'll need a bench vise and some hardwood blocks. I use oak blocks which are 1" x .25" x 6", held together by wrapping rubber bands around the ends. If you have installed hardwood jaw pads in your vise, you may be able to use them instead.

Slide the brass between the blocks so the bend line is just visible at the top of the block. Make sure the blocks are aligned exactly at the marked line. Use the machinist's square to make sure the metal is square to the blocks, and adjust as necessary. Clamp the blocks and metal into your bench vise.

Now, take a third, larger block of hardwood (mine is 1" x 2" x 6" oak) and use it as a bending tool. Place it on the clamping block, next to the brass, so the bottom edge is right against the scribed line. Pivot the bending block and the metal at the scribed line until the angle looks right. If the corner isn't sharp enough, you can put the bending block on the bend and lightly hammer it down on the metal. Go slowly -- it's easier to give it more bend than to unbend it.

Curves:

Again, there's a tool purpose-made for the job: the slip roll. The cheapest slip rolls are still quite expensive new, so if you don't have the room or money, and can't find a used one, there are still hand-forming techniques which work quite well. Approach this as an art rather than a science and all will come out in the end. Form and check, form and check. Enjoy the feel of the metal yielding to your touch. If the bend is too sharp or too loose, or in the wrong place, adjust it until it fits, or straighten it and go at it again. You don't have to turn out a thousand of these, so take the time to get it right, while putting in the attention and love a hand-crafted piece deserves.

To form curves in sheet metal, use a piece of steel pipe or hardwood dowel somewhat smaller than the diameter of the curve you will form. As the brass work-hardens, it will want to spring back to flat, so you must use a form which will compensate for that springiness. There are two techniques I have used for this operation. You can clamp the former and the metal into the vise (good for 90-degree curves), or clamp the pipe in the vise with a foot or so sticking out (required if the curve is more than 90 degrees). Anneal the area to be formed. Again, use the square to align the metal square to the pipe, then wrap the metal around the pipe using the palms of your hands. You may need to re-anneal a time or two. Check squareness often, as you check the diameter of the curve.

The pipe-former technique works well for small-radius curves. For larger curves (e.g. boiler jackets, cab roofs, etc.) find a curved former of a suitable diameter. PVC plumbing pipe comes in many diameters and is readily available. Tin cans may also give you the right curvature (they don't have to be empty) and they come in many different sizes (from tomato sauce to beans-for-an-army).

More complex curves are much more difficult, but aren't usually needed. Conical sections for boiler jackets can be formed by hand

A Technical Supplement to the Binnacle

Introduction to working with Brass (continued)

over a pipe. Careful fitting and adjustment will make up for lack of specialized equipment. Hemispheres or domes must be spun on a lathe, hammered onto a form, or stretched using an English wheel. These are jewelry-making or custom automobile techniques -- they're learnable, but probably require more equipment and experience than most of us will acquire.

Oops:

Sometimes, you will totally foul up the piece by bending the wrong direction (some pieces are left-handed or right-handed), bending on a line which is not square, etc. This does not mean the piece is lost. Before junking it, try annealing it really soft, then flattening it by bending, hammering under hardwood, squeezing in the vise, etc. Brass is remarkably forgiving in this way. Once they're flattened, start over and do it right this time.

Joining:

The best joint is a mechanical one. Where possible, use screws, tabs and slots, reinforcing plates, etc. Then, solder the joints. If you can remove the mechanical connectors afterwards, do so. If they're soldered in and visible, you may be able to file them down to match the surface of the piece.

Soldering of brass can be done with a propane torch, electric soldering iron, or resistance soldering unit. If you want to use a soldering iron, go to a plumbing or stained glass supply and get a BIG one – 1000 watts or so. Copper-based metals radiate heat like you won't believe, so a 25w electronic soldering gun is virtually useless.

The keys to good soldered joints are:

(1) clean joints (file, sandpaper, steel, wool)
(2) apply flux to the joint
(3) clean joints
(4) make a strong mechanical connection (see above)
(4) apply heat to both surfaces to be joined
(5) clean, strong mechanical connection
(6) heat the metal only, and let the hot metal melt the solder
(7) clean, strong, fluxed connection
(8) apply the heat where you want to solder to flow to, not where it is puddling up.

Did I mention the importance of clean, strong, well-fluxed joints?

Rivet-punching:

If you're doing something like a tender body or a steel cab, you'll probably want to simulate rivet heads. This can be done a couple of ways. You can drill holes and solder in escutcheon pins with heads the size of your rivets, or you can form the metal to have bumps the size of your rivets. To make a rivet-head former, you'll need a drill press or lathe, a piece of flat steel and some brass or steel rod (1/8-1/4").

First, determine the size of the rivet head. Let's assume you'll want a 1/16" head (.0625"). This is a little oversized for 1:20.3, but it's easy to work with and the results look fairly convincing. Drill a hole of this size in the steel plate to make a female die. The hole can go all the way through the plate. It must be deeper than the distance the rivets will stick up, because if the metal is pressed against the bottom of the hole, it will be formed into the shape of the end of a drill bit, which is not what a rivet looks like. If you want to speed up the punching, drill three holes exactly on a line, spaced the same distance as your rivets. (It's important to get these distances exactly the same.)

Measure the thickness of the metal you'll be punching (for example, ..015") and subtract twice that number from the rivet head diameter. In our example, .0625" - (2 x .015") = .0325". Now, chuck your brass rod into the lathe and face off the end, leaving a little cylinder in the middle which is .0325" diameter and .0325" high. With the piece still rotating in the lathe, carefully touch a flat Swiss file to the corner of the protruding cylinder, shaping it as close to hemispherical as you can. This shape will determine the final shape of the rivet head. You can do this on a drill press, but obviously it's going to be a lot easier on a lathe.

To use the punch, chuck the punch into your drill press, lower the punch into the middle hole in the die plate, then clamp the die plate down on the table. You can also clamp a piece of strip stock or wood to act as a guide fence. Position the marked-out metal so the first rivet is under the punch, then gently lower the punch and squeeze the metal into shape. Lower the punch until the flat surface of the rod presses against the metal, then release. If you push the punch down too strongly, you'll punch a hole in the brass, rather than just forming it. Move the rivet you just formed into one of the adjacent holes, and your next rivet is lined up under the punch at the correct distance.

You could use a 1/32" (.03125") rod as the punch, but the flat surface of the 1/4" rod with a bump in the middle makes a sharper edge, which looks just like a rivet head on flat sheet metal, while the 1/32" rod will make the edges smooth and undefined.

Painting:

As with soldering, surface preparation is the key. Clean and roughen the surface ("give it tooth") with fine steel wool. Then wash with dishwashing liquid or grease-remover. Wear rubber gloves during this operation to keep skin oil from getting on the metal. Some people heat the metal slightly in the kitchen oven (lowest setting, door open) or with a hair dryer or heat gun. You can also soak your spray bomb in hot water for a few minutes to get a finer and more controllable spray. Air brushes give a very fine finish, of course, though some people find painting a large-scale model with an airbrush too time-consuming. Spray a primer coat and let it harden for a day or so, then repeat with the final color.

Practice:

Start off building something small, but which gives you a chance to practice most of these techniques. My learning piece was a locomotive tender.,

I hope that will help get you started. Let me know what you run into that's not included here and we'll find an answer.

regards,
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