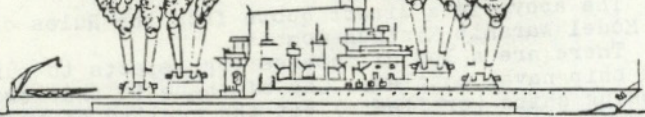


HULL BUSTERS

Feb 83



The Strictly R-C Warship Combat Publication

INTRODUCTION

Howdy der mates (Texan german dialect). Here we are in the heart of winter and people are still battling. Stan and I battled in Dallas (Dec 31st). This was a first in combat, because a destroyer battled for the first time. A couple of weeks earlier another record was cast, Stan's destroyer escort (24"OA) battled. I guess somebody will launch a R/C row boat with a bazooka on board next. Whatever the reasons there is a small ship craze going on and their combat qualities seems scale (small).

Thanks to Bob Amend for the Logo, this is my last logo so you artists please send me some more (Black ink, 4 7/8" long).

Bob Amend is trying to form a club in his area called the "Splintered Hull R/C Warship Combat Club" (a Division of "The R/C Warship Combat Club"). If YOU LIVE IN HIS AREA HE WOULD LIKE TO HEAR FROM YOU at 406 E. Broad St. / Elizabeth city, North Carolina 27909.

Congradulations to pan dees for having his article published in the march 83 issue of scale ship modeler. you rookies should learn from the lessons he learned in his first battle. If you don't subscribe to SSM send \$13.50 to "scale ship modeler/ 10968 via prontera/ san Diego, calif 92127".

There are strong rumors that the next sanctioned battle will be the 2nd Annual southeastern Regionals. These rumors have the dates as April 23 & 24 in Decatur Alabama. verification of the above is anticipated.

HELPFUL ITEMS

Several articals have appeared in HullBusters about building speed switches. If your like me you have had very little success in doing it. I have found a speed switch that is totally assembled and reliable. The local model boating club has been using it for two years without a failure. The size is 1-3/4" x 2-1/4". The price is \$9.50 in the local hobby store. The name is Tamiya switch set kit # SP 1054-1200. It is variable speed forward and reverse. The wiring is fixed with no movement. It is a ceramic resister with a direct contact on full forward and full reverse. So far it has been impossible to lock the wiper arm off the switch. Stops can be added very easily. If you plan on using the 15 amp fuse, which is included, I would recommend changing the fuse holder that is included.

The second item is a small, lightweight & plastic/metal universal joint. The sizes and prices are in the following tables. The first is a single joint and the second is a double joint. These items are available from:

Stock Drive Products
Division of Designatronics Inc.
55 South Denton Ave.
New Hyde Park, New York 11040
Phone numbers 1-516-328-0200
1-516-328-3300

Please note that there is a \$10.00 minimum on a written order or \$25.00 minimum on a phone order.;



Catalog Number	O.D.	L Overall Length	B ⁺⁰⁰¹ Bore	C Dim.	F Set Screw	Max. Utl. Torque Lb.-in.
528-D204	1/4	1-3/64	*1/8	27	44-40	2.5



Catalog Number	O.D.	L Overall Length	B ⁺⁰⁰¹ Bore	C Dim.	F Dim.	Max. Utl. Torque Lb.-in.
528-DD204	1/4	1-23/64	*1/8	.27	5/16	2.5

Bob Spay

MODEL WARSHIP PRODUCTS CO.

The Gun (MK IX GCH) R/C Operated Miniature BB Gun

39.95 plus \$2.00 parcel post (\$3.00 First Class)

fires 90 BB's per magazine before reloading

For use only with R/C Combat Warships.

Any other use of this gun will be considered as abuse by MWP Co.



PLEASE ALLOW 2 TO 4 MONTHS FOR DELIVERY.

PLEASE ALLOW 2 TO 4 MONTHS FOR DELIVERY.

Mk. IX GCH in R/C Warship hull framework

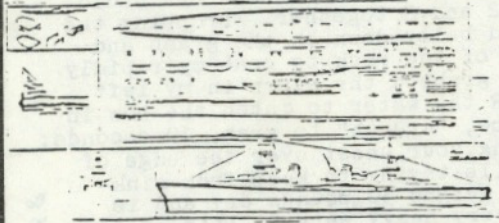
USS SAN FRANCISCO - A TECHNICAL HISTORY by Chuck Hansen

100 pages with Navy photographs and drawings by A. D. Baker III

\$10.95 plus \$1.95 parcel post (\$2.00 first class)

An Excellent Aid to Modeling the New Orleans Plan Set Offered Below

Ship Construction Plan Sets - \$9.95 plus \$1.95 parcel post (\$2.00 First Class)



New! USS Pensacola class Heavy Cruiser
This new ship is projected by R/C Combat Veterans to be an excellent R/C Combatant.

- PLANS AVAILABLE SKILL LEVEL
- USS New Orleans class Intermediate
 - HMS Exeter Beginner
 - USS Aoba Advanced
 - USS Pensacola class Intermediate
 - DKM Prinz Eugen Intermediate
 - USS Alabama Intermediate
- SOON TO BE RELEASED DATE
- Italian Zara class Dec. 82
 - French Aster 83
 - HMS Kent class 83

For Rules of R/C Warship Combat and Information Pack send \$2.95

MODEL WARSHIP PRODUCTS CO.

304 E. Willow Creek - Amarillo, Texas 79108

ARMS MERCHANT TO THE R/C WARSHIP COMBAT WORLD

BUILDING THE PENNY PUMP

"The goal of this hobby is to enable participants to enjoy most of the interesting aspects of surface ship naval battles safely."

The above is a direct quote from the Rules of R/C Model Warship Minigun Combat.

There are a lot of interesting aspects to surface ship naval battles. One of these is that two opposing ships (or fleets) pit the quality of their equipment, training, and experience against each other in a bid for victory.

The ultimate victory for any surface ship is the inflicting of enough damage on ones opponent to cause him to take on water of sufficient quantity to deplete his buoyancy reserve (I.E. sink the bugger). In R/C Combat as in real life, this is accomplished thru the use of shipboard mounted guns.

The ultimate defeat is having ones buoyancy reserve depleted by enemy gunfire. This is true of real life and of R/C Combat.

In real life, damage received due to enemy gunfire is controlled by damage control parties armed with fire fighting equipment and shoring timbers. Damage which causes a listing problem is controlled thru counter-flooding of compartments on the side opposite the list. Severe flooding is controlled by pumps.

In R/C Warship Combat it is highly impractical to have damage control parties that can do the job. I had about two dozen N scale crewmen in my Alabama last year, all armed with little bitty balsa planks and buckets of Ambroid, but those lazy little suckers never did patch any damage. I would have given the whole bunch a dishonorable discharge but after being sunk by the Graf Spee they had all drowned. As for counter-flooding in a ship without compartmentation, this is practiced only in the Polish Navy.

The only logical remaining choice for R/C Combat damage control is the pump.

After the fiasco of the 1980 Nats, I decided that I needed some pumps. Other people had told me about some little windshield washer pumps they had seen in K-Mart for \$7.95 each, so I went down and bought two. After testing, I found out that they would pump about a quart of water per minute each. That sounded sufficient to me, so I went ahead and installed one in the bow and one in the stern. My battleship is allowed 4 pumps by the rules but I thought that surely these nice neat little jewels would keep my keel off of the bottom all by themselves.

Wrong-oh. Stan and Fluegel had told me that those pumps did not have the capacity to handle heavy combat damage, but being the all knowledgeable Rookie that I was, I politely agreed with them and went ahead and did it my way. I could at this point ramble on about the hard head and stubbornness of the typical R/C Combat Rookie, but that is a subject for another article.

I should have listened to Stan and Flueg.

Due to an unfortunate, or fortunate as it turns out, incident in January of '82 I found out prior to a combat encounter that my pumps were inadequate. I was having a fine Sunday afternoon running the USS Alabama around Sequiota Park lake when a floating stick and the vertical rock wall of the lake conspired to imitate a 1/144 scale torpedo. That resounding "crunch" that I heard as the Alabama paralleled the wall at first just puzzled me, Then about 5 seconds later my bow pump came on, followed about 2 seconds later by the stern pump. Even my muddled brain did not take long to put 2 and 2 together. Dropping the transmitter, I flopped belly down on the grass and reached over the edge of the rock to grab my rapidly disappearing ship. I grabbed the stern in my left hand and reached UNDER the water to catch the bow in my right. Elapsed time, "crunch" to grab, 10 seconds.

Have you ever hung your chest over the edge of a sharp rock ledge while trying to keep from sinking a ship model that weighs 30 pounds dry and is rapidly filling with very heavy water? It's no fun. Especially when you are the only person in the park. No help in sight. You can't lift it or yourself over the edge. No leverage to pull yourself up. "Gosh and gollie Steve," you say, "What did you do then?"

Well boys and girls, you wouldn't believe it but Superman, Rin Tin Tin, and Flipper all showed up at once and helped me out of a tight fix. Actually, I got both feet and a good portion of my anatomy wet



NOT ANOTHER SHIP MOVIE!

OBSERVATIONS OF THE FOUNDING FATHER

I sincerely hope all you wonderful people had a very merry Christmas and a Happy New years. I wish to apologize for my sometimes overly gruff manner. I seem to have a problem with this. Even my sweet wife gets lambasted from time to time. This does not mean that I don't love her, nor does it mean I don't enjoy my association with my combat comrades. So try to understand my impatience and I'll try to understand whatever problem I think you have. Except for Fluegel. There's no way I can understand his problems, he's too inconsistent.

I wonder what 1983 holds in store. We may well see the first battling on the east or west coast! When I was growing up in Ardmore, Oklahoma I had heard that Texans were big BS'ers. On moving to Texas I found this to be true. But those east and west coast verbal Admirals make Texans appear to be speechless. I've sent a majority of all the miniguns produced to California and New York and to date (Dec. 7, 1982, 41st Anniversary of Pearl Harbor) no battling has occurred. You can only imagine the grandiose schemes I've heard. If only 1% of the verbally announced construction intentions were completed the east and west coasts would be seething with combat warships.

perhaps you can understand why Fluegel and I often say "talk is cheap, build something!".

Then there are the people who put their thoughts and ideas into balsa and then either never battle or in some cases never even sail the ships! I am often dumbfounded by these strange pacifistic hobbyists.

And I thought combat rookies were bad! Often times these pacifists have many questions and wanted all kinds of advice and help and then don't follow through. It can be very frustrating to a certified warhawk.

So, chickens of America unite and risk a hole or two in your precious works of art and let's battle! you might even be good at battling. I remember the 1980 championships. Martin Schneider wouldn't come even though his Lutzow was ready. He thought seriously of giving up on the whole hobby. But in 1981 he decided to "go for it!", and he won the 81 championships. He also, as you well know, did "OK" in 1982.

So come on, at least prove that you're as bad at R/C combat as you think you are. It's far better to have tried and lost than

Cont Page 68

Cont page 68

never to have tried at all, eh Steven. To loose is not all bad as I've learned in the past two years.

Let's Battle!

Stan

P.S. On Dec. 15, 1982 an historic battle occurred. The USS Tweedy (DE-532) that's right, destroyer escort, battled the USS Houston CA 30 in Amarillo. To my knowledge this is the first time any kind of R/C combat destroyer (much less destroyer escort) has actively participated in an R/C combat battle.

Not only did she participate, she won 40 to 5 against a heavy cruiser! I am rather proud to have been able to build an operational combat warship only 24" long and 3" wide. At one time I said it wasn't feasible. Thanks for the loan of the gel-cell, plug! The battle went 3 sorties.

In the first sortie Houston blasted a starboard hole in the Tweedy's superstructure.

In the second sortie neither ship scored.

In the third sortie the Tweedy landed 2 shots in Houston's forward port hull. The Tweedy was surprisingly stable in the wind. She was slow (like a 24 knot DE that she's modeled after). If this tiny 1275 ton DE can function the 2000 ton gearings, sumners, pletchers and German "Z" boats should be even more feasible.

The Tweedy has a 15 shot magazine. Since she battled in 1982 she is eligible to be in "Jeff's" warship book. My ships in "Jeff's" will be USS Arizona, USS Wichita, USS Salt Lake City, USS Tweedy and IJN Aoba.

I can't wait for the battle of the Tweedy vs. Tirpitz...15 BBS vs 1000 BBS. Wow!



"WE'RE GOING TO THE LAKE TO BLAST THOSE DIRTY KRAUTS OUT OF THE WATER JUST AS SOON AS YOU LEAVE."

NATS TO YOU

Happy 1983! In this, the first hull rusters edition of the new year, I have more good news concerning the 1983 Nationals. The city of Springfield, Mo. has OK'd the use of Oak Grove Community as an R/C combat dockyards during the week of July 10-16. The benefits of this may not be immediately apparent to you rookies out there, but to the old timers who read this, it means a lot. It now appears that all the battlers who attend this years Nationals can get together in one location at the end of each days activities to work on ships and shoot the bull.

Cont Page 69

before the Alabama was dry docked.

The cause of this whole fiasco? A hole about the size of a nickel in the starboard side 2 inches below the waterline.

It was while I was recovering from pneumonia that I tried to come up with a solution to this new development. It seems that a pumping capacity of two quarts per minute just wasn't enough. I really should have listened to Stan and Fluegel.

Since pumping capacity seemed to be a lot lower than what might be needed in a combat situation, I started looking for another type of pump. There seemed to be nothing commercially available that was suitable for our purposes. I knew that Stan, Fluegel, and Schneider all had homemade pumps in their ships and claimed capacities of from 2 to 4 gallons each. I guessed that this was what I would have to do. I had seen Stans pump when in Amarillo for the '81 Nats, but could not remember many of the details. All I could remember was that the casing was a plastic 35mm film can. Working on that small bit of data, I experimented for several evenings with various combinations of casings, motors, impellers, and tubings with no success. The flow rate just was not that good. Then I remembered that most centrifugal pumps do not have a round housing, they are shaped somewhat like a snails shell. This does not have to be, Fluegel has a good working pump with a round casing, I must have been doing something wrong.

I remembered this shape from the times the dishwasher and the washing machine had to be dismantled for repairs. Based on this enlightenment, I sat down and sketched out a small pump housing that could be fabricated from sheet brass. The housing was about 1 1/8 inch wide by 1 5/8 inch long. I meant to keep dimensions small so that the pump would fit in the tight spaces in the bow of the Alabama. Power supply was next. I had a number of small open frame slot car motors in my junk box that looked good so I drew one on my sketch. This increased height but did not affect keel space that would be needed.

I then had a proposed housing and motor for my pump. So far so good. But how to move the water? I knew that centrifugal pumps usually had a round plate with radial vanes perpendicular to the plane of the plate. So what do I use for a plate, and how to attach it to the motor shaft? I guessed that a plate could be soldered to the shaft. What would solder well to a steel motor shaft? Copper? Copper would solder very well. But where to get a small flat copper plate approx. 3/4 inch in diameter that can be used as an impeller plate?

It was one night while I was in Chicago that I solved this perplexing problem. I had gone for a stroll, my gray pin stripe suit and black fedora keeping me barely warm in the foggy chill of the evening. As my mind mulled over the problem, I leaned against a lamppost and absent mindedly started flipping a Lincoln head into the air and catching it (Robert Ludlum, eat your heart out).

A small plate. Flip....., approx. 3/4 inch in diameter. Flip....., possibly copper. Flip....., flip.....flip.....flip. Have you ever seen those cartoons where a light bulb suddenly appears over someones head? The penny pump was born.

According to my ruler, the slot car motors had a 5/64 in. diam. shaft. 89¢ purchased a 5/64 drill bit. Abe Lincoln gets a tonsilectomy. Two small pieces of brass strip for impeller plates, a bit of solder, and I had a pump.

I hooked my brand new pump to a 12 volt battery, put it in a 5 1/2 gallon bucket of water and exactly 2 minutes later had an empty bucket. 2 3/4 gallons per minute. Not bad for government work (sorry Stan).

I quickly built another pump. I figured one in the bow and one in the stern would be enough for now. For some reason I don't remember I only had the time to install the bow pump before the 1982 Easter battle in Amarillo. I still had the windshield washer pump in the stern. In two days of battling that weekend my penny pump saved the Alabama at least twice. Value proven.

Between April and July I worked very little on my ship due to various demands on my time. When the Nationals arrived I still had the same pump arrangement. The penny pump saved the Alabama from a watery fate

Cont page 69

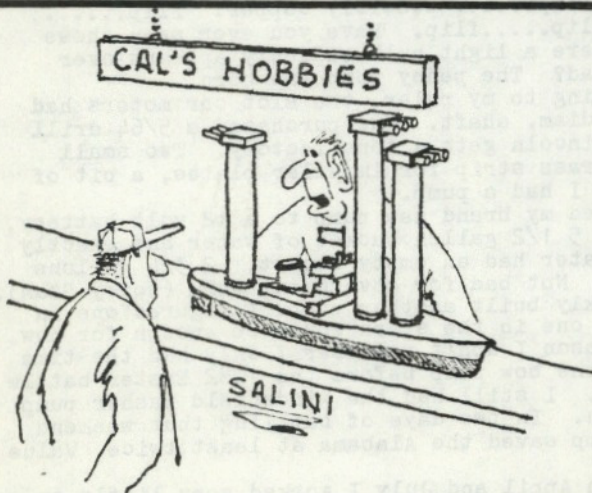
In each of the battles I have attended so far, there has been workshop space provided by someone who lived there. During the '82 NATS in Amarillo, Stan Watkins and Jeff Poindexter threw open the doors of their workshops to the out of town battlers. This means that we did not spend long solitary evenings in a motel room working on a ship with inadequate facilities, all the while listening to Howard K. Smith and Archie Punker spew out their insane opinions of the world's problems. Instead, we had work tables, tools, good lighting, the company of other battlers, and could listen to Stan and Plugel spew out their insane opinions of the world's problems. This time was invaluable to all of us who were involved as it gets people together to share tools, materials, and ideas on how to solve any particular problems someone might be having (read "Rookies").

During the Eastern Regionals in October, Dan and Mary Hamilton not only provided workshop space for everyone who attended, but provided bunkroom facilities and good home cooking as well. These are the kind of people that make R/C Combat great. I sincerely regret that I am personally unable to return the favor of providing a dockyard for everyone at this year's main event. As a substitute the city has offered to let us use the community center, with enough work tables and chairs to go around. I'm afraid that they can't provide tools and materials though, so bring your own balsa, glue, dremel tool, and soldering gun. As an added benefit, the center is only 2 minutes from Wallace Hobbies, the best (only) R/C hobby shop in town. Gary Wallace is the owner/operator of this shop and has participated in just about every aspect of R/C plane, car, and boat building (he has no blood, liquified balsa dust runs in his veins). I think that by the time you read this he will have the framework put together for a cruiser.

Some of you rookies out there may be thinking, "Why all the fuss?" After we finish battling in the evening, I'll just go back to the motel, put my batteries on to charge, and go out to sightsee the rest of the evening."

Wrong again fren breath! If you think you are going to do anything except work on your ship from the time we finish in the

Cont page 71



"I'D SAY YOUR SHIP IS REJECTING THE MINI-GUN TRANSPLANT."

at least 3 times that week, but due to several factors (extremely corrosive water on my pump motor brushes, brittle balsa sheeting on my hull, and point blank salvos from the Tirpitz) the Alabama went down 4 times. This was a record for one weeks battling.

Determined not to let this happen again, I got home from Texas and tore the Alabama down for a complete refit.

Everything came out of the hull and all sheeting came off the hull. By the Eastern Regionals in Decatur Alabama on Oct. 16-17 my ship had new sheeting of higher quality balsa, 4 installed and operating penny pumps, and the soothing knowledge that the Tirpitz would not be in attendance. The story of this battle will have to be related elsewhere but suffice it to say that the Alabama now gets small BB size holes instead of the picture windows it was getting previously. At the end of the fleet battle on Sunday the ship had 9 holes on or below the waterline. The Alabama had acquired at least half of these in the second sortie and had gone back out in the third, gotten more holes, and still never even went low in the water. The pumps had kept her very dry inside, just the way I like it.

If you are currently building a ship or have one in service without a pump, I heartily recommend building a penny pump plus a couple spares for the tool box. Below are building instructions and a parts list.

Photo #1 shows a completed penny pump on the right and all the parts necessary to build one on the left. Start by cutting the housing top and bottom, good tin shears will help here. Mark both plates with a punch, 1/2 in. from the top and 9/16 in. from the left. Drill a 3/16 in. hole in one for the motor shaft bushing to fit into and a 5/16 or 3/8 in. hole in the other for the water pick-up. Cut the housing side next and bend it 90 degrees at a point 1/2 in. from one end. Using a drill bit the same diameter as the shaft on the motor you intend to use, drill some pennies right thru the center of Lincoln's chair in the memorial. One at a time, slide these over a motor shaft and connect volts to the motor. Use the one with the hole that is best centered and vibrates the least. Throw the others away or send them to me. Lay the penny over the housing top (with 3/16 hole) and center it over the bushing hole. Trace around the penny with a pencil. Now draw in the snail shape line to locate the housing sides as shown on drawing. Pre-form the housing side strip by wrapping it around a 1 inch dowel or pipe. With a soldering iron, tin both edges of the strip and the line on the housing top where the side strip will fit. Starting at the 90 degree bend, solder the strip edge to the top. Work your way around the outside, making sure that the side strip stays vertical and outside of the circle representing the location of the penny. Make sure you get a good solder joint all the way around. Next, trim the end of the plate even with the ends of the strip and trim off the two back corners of the plate. Insert the motor shaft into the housing. The shaft bushing should protrude about 1/16 or 3/32 in. into the housing. Epoxy the motor in place on the outside of the housing. Take the two 1/4 by 3/8 vanes and bend them 90 degrees across the middle, leaving a V angle of 1/4 by 3/16 on each side. Solder them to the reverse side of the penny with the offset angle EXACTLY AS SHOWN. If you reverse the offset angle to the other side of the centerline, the pump will pump very little water and draw lots of current. Support the assembled motor/housing in a position with the motor shaft vertical. Slide the penny over the shaft with the vanes sticking up. Make sure it goes all the way down to just short of the bushing. Carefully solder the penny to the shaft, being careful not to disturb the location of the vanes, as the heat will remelt their solder joints. Also make sure the penny stays level on the shaft. Connect power to the motor and see if it runs smoothly. If not, it is out of balance. One vane is larger than the other, or too much solder has run to one side of the penny. Try to balance things by adding melted solder to the lighter side. Now turn the assembly over. This is the position it will be in when installed (motor up, vanes down). Press the top end of the motor shaft with your finger while looking across the open bottom edge of the housing. If you can see the vanes below the housing edge, they must be trimmed back as they

Cont page 71

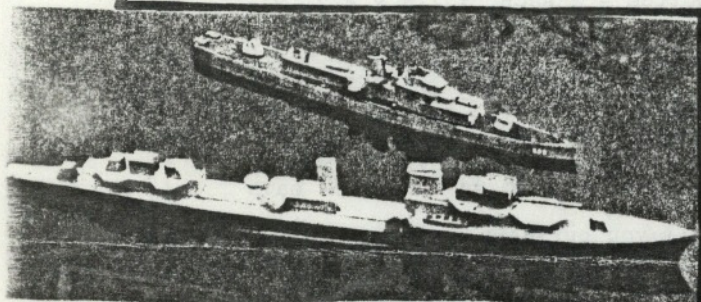
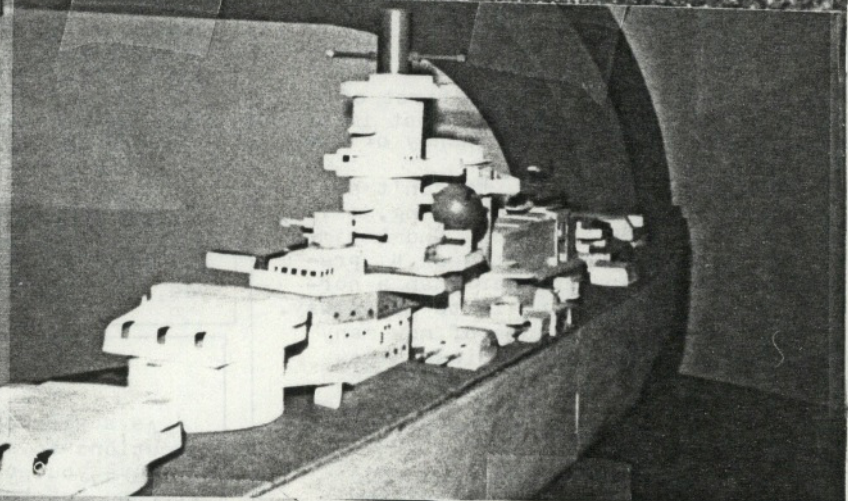
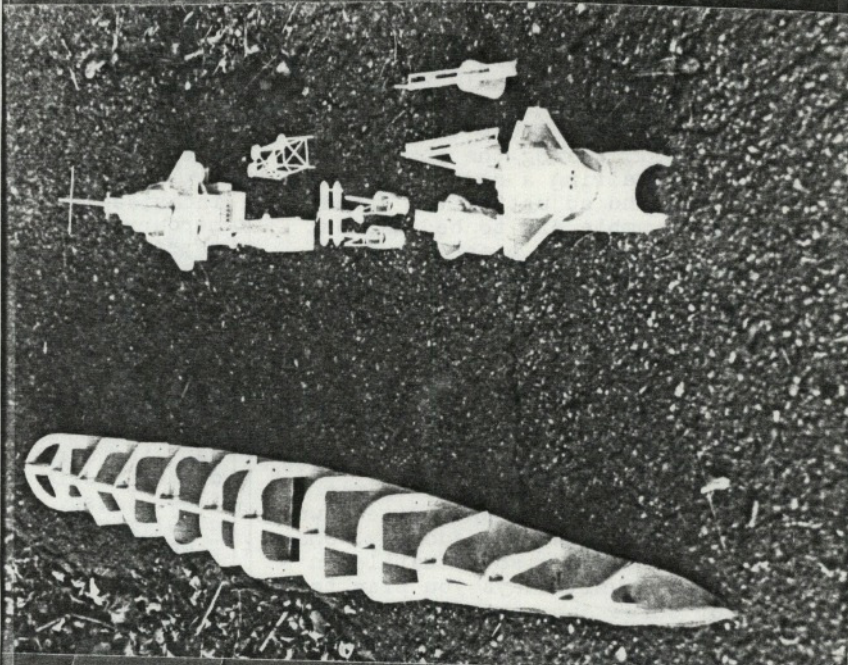
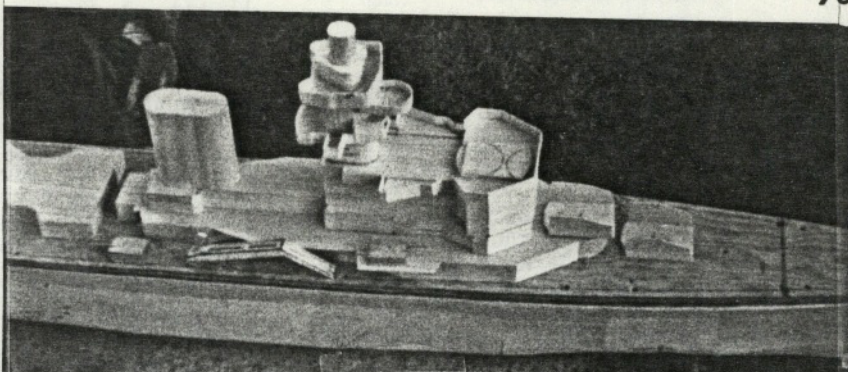
AT THE DOCK YARDS

NORTH CAROLINA. Rob Amend is building the Prinz Eugen (photo #1). radio-cox 4 channel, frequency - 72.160, motors-two associated electronic 05 CAR, props - two sterling, Lights - two, pump-Fluegel type, batteries - two 64's, and guns - one row one stern. Rob is hoping to participate in the southeastern Regionals, and is planning on battling at the 83 NATS.

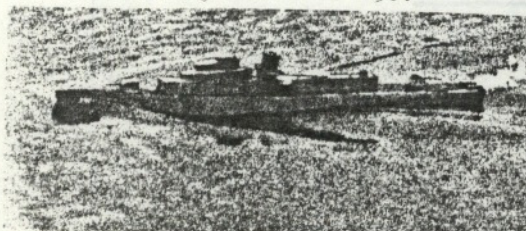
MARYLAND. Martin Hayes is working on the Quincy (photo #2). Laid keel-may 82, guns - two, pump - one, lights - 3 or more, and batteries - 4 or 5. you new orleans class builders, do your best to keep a low center of gravity. Also make your deck seals effective.

NORTH CAROLINA. Jose vilar laid the keel of his Scharnhorst in April 82 (photo #3). radio-kraft 7 channel, guns- two forward two aft, and pumps - two. estimated completion date is April of 83.

CALIFORNIA. J. galini is building the Conte Di Cavour (photo #4). This ship has been under construction for about 3 years! much of this time has been spent on R & D. Guns- one bow, starboard, stern and port, pump - two homemade, props - homemade, throttle - homemade, radio - 6 channel?. galini will participate in the 83 NATS. performance of Terry darby's sister ship is 100 feet in 26 seconds (standing start) and 360° in approx. 14 seconds. similar performance may be achieved by galini's ship. both galini and Terry have a good chance of winning "best of scale".



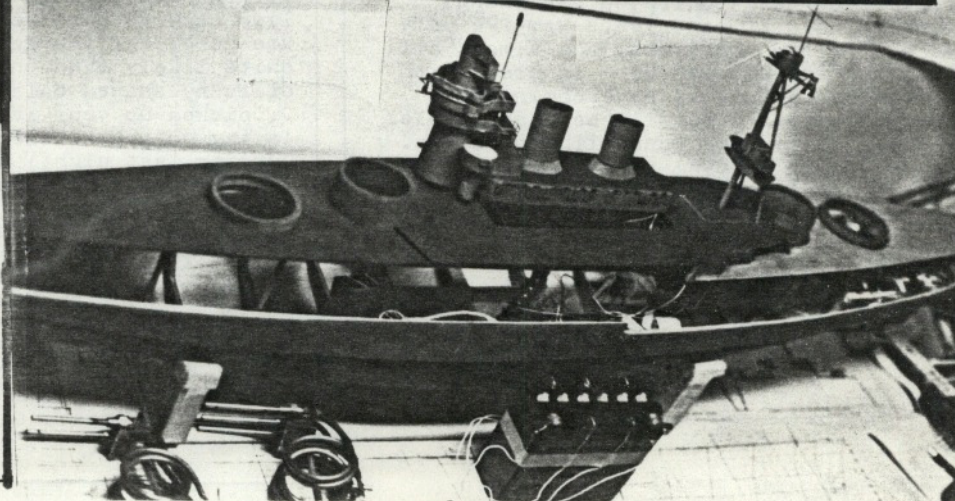
USS Tweedy vs Fluegel's Z-28 Destroyer (this photo was shot following the battle). These Destroyers battled first on December 31, 1982. USS Tweedy won 0 to -50.



December 25, 1982 USS Tweedy (DE 532) at speed in Melvin Sides reservoir Mishomingo, Oklahoma (site of the 1979 R/C Warship Combat Championships).

VISCIOUS RUMORS

The Polzano was built from a lasagna pan. The Algeria was once used to stomp grapes in. Milnolland



1
2
3
4

afternoon until well around midnight, you are sadly mistaken. Evidently you did not read the article that Dan Pees wrote for the August issue about a rookie at the Nationals. If you didn't, do it now, if you did, do it again. A full week of R/C combat is not a vacation, a great time and fun, yes, a vacation, no. "But I've already fixed all those problems in my ship," you say. So what, it's the problems you haven't fixed that will keep your screwdriver and soldering gun working the late shift. The R/C combat motto should be "Murphy reigns supreme". In R/C combat, if anything can go wrong, it will. It is very frustrating just keeping a ship operational and ready to battle.

The most frustrating part of Nationals is not watching Martin Schneider make confetti paper out of your hull. The hardest part is spending from 6:00PM till 2:00 AM patching the hull, fixing the pump, tweaking the guns, repairing a rudder, unkinking a magazine, and adjusting the speed control, then stumble off to bed without a shower, only to get up bleary eyed at 7:00 AM and go out and watch Martin nonchalantly do it to you again. But I love it! Enough of this, we will have workshop space for everyone.

I would like at this time to take a preliminary survey to find out approx. how many of you will beat Nationals. I am not asking for a definite commitment, just a statement of your intentions. If you have any plans at all to attend, please, right now, take a piece of paper and write down the following; your name and address, phone number, which side you wish to battle on (Allied or Axis), which days you plan to be here, your ship's name and class, number of guns and pumps, your radio brand and frequency, and whether your radio has interchangeable crystals. If you have more than one ship, include info for each one. Make this paper, put it in an envelope, and mail it to me before this first of March. My address is below. Most importantly, send your radio frequency or frequencies.

Some of you are saying, "I don't need to do this, Steve knows I'm coming, I've told him 3 times on the phone and 4 times by cassette within the last week." Pretend I have a memory shorter than a hornet's temper. Please send it to me anyway. This will give me some idea of how many plan to attend, how many Allied vs how many Axis, frequency conflicts, and how many new people we will have. After the results are in, I will let you all know in the April issue.

Most importantly, let me know your radio frequency and if you can change frequencies. At last year's NATS we only had one or two conflicts, and almost all available frequencies were in use. With all the new people we have coming this year, more conflicts will be unavoidable. This may cause some scheduling problems. Anyone who is getting ready to buy a radio is heartily encouraged to get one of the new frequencies which were just opened for use by the FCC in December. If you don't have a radio, send me the other info anyway. Thanks.

keep your freon dry,
Steve Milholland
Rt. 9 Box 492
Springfield, Mo.
65804

will rub the housing bottom when it is installed. Now solder the bottom plate to the side strip in the same manner as the top. Make sure the pick-up hole is centered over the motor shaft. Note; when looking through the pick-up hole, the vanes should rotate counter-clockwise. Trim the bottom plate like the top. To prevent BB's from being pulled into the pump, I either put screen over the hole, or solder 2 pieces of wire across the opening.

You should now have a 3/8 in. square opening in the end of the housing. This is where the exit tube will be placed. About 1/2 in. from the end of the plastic tubing, take your Dremel Tool with a cut off wheel and make two 45 degree wedge cuts about 3/8 in. apart. This should leave you with a tube that can be bent 90 degrees. If not, try again. When you get a good one, epoxy the bend joint and brace in position until it sets. Cut a 3/16 radius half circle in the top plate over the exit hole (a cut off wheel does this nicely). Now insert the short end of the bent tubing into the exit hole and seal around the tube with five minute epoxy or hot glue. You now have a complete penny pump.

I will leave wiring and activation to each individual's preference. I use both transistor and mercury switch activators on my pumps and like certain aspects of each. See Martin Schneiders article in the May '82 issue on pump activation systems.

Two last comments. If you use a different motor than what I use, you may or may not have a protruding shaft bushing to deal with. If not, be sure not to push the penny all the way down to the housing or it may rub and bind. You may also need taller vanes if the penny goes closer to the housing than what I have described. Do not try to compensate by using a thinner side strip or you will also have to use a smaller diameter exit tubing. This will decrease the pumps flow. Also, to cut down on RF interference, I solder a .01 microfarad capacitor across the motor terminals. These are available at Radio Shack for 39¢ for 2.

PARTS LIST

Housing top and bottom - 2 each, 1 1/8 x 2 x .016 brass sheet.
Housing side - 1 each, 3/8 x 4 x .016 brass strip.
Motor - 1 Strombecker slot car motor (cat. # unknown)
Impeller plates - 2 ea., 1/4 x 3/8 x .016 brass.
Exit tubing - 3/8 in. O.D. rigid plastic tubing, available at pet shops that sell aquariums.
Impeller plate - 1 Lincoln head penny, any year. (these can be ordered from me for \$1.50 each or \$10.00 a dozen.)

Now I hope all you builders out there are satisfied. This article was written due to popular demand. Next year, if anyone asks, I hope you can all say, "My ship has a penny pump, and let me tell you, it really sucks."

HOPE ASKS?

As a wife of an R/C combatant I have a few questions to ask of other combatant's wives.

Have you ever....

...gone out to hang clothes on the clothesline only to discover that your clothespins are gone. If you go in search you will quite likely find them attached to some piece of funny shaped balsa wood. or

...picked up your Avon catalog which had been laying on the kitchen table (where nubby was working last night) only to find the pages in shreds...used as a cutting pad....At least he spared the table? or

...picked up a telephone book and find a place where epoxy has been mixed. or
...searched for a can of green beans you knew you had on the shelf only to find it used as support for some ship parts. When it's finally returned you discover...epoxy has been mixed on it.

I wonder if these qualities are exhibited in all R/C combatants or just FLUEGEL!

Hope Fluegel

FANA SPRING FEST '83

We had so much fun last Oct. we've decided to do it again. Operation FANA (Fleet Action N Alabama) has been sanctioned. Fleet action will begin at 9:00 A.M. April 23 and 24 in Decatur Alabama. For those that want to insure participation in ship-to-ship challenges, Friday, April 22 will be your best option as several individuals are known to be planning to arrive early. It's up to you to arrange schedules.

The entire event will be NAMBA sanctioned, so have proof of NAMBA membership or that you have applied. The contest "house rules" will be as close to those that will be used at the '83 Nationals as possible. Steve hasn't passed on all the "house rules" as yet but here are the ones I know about that you will have to live by in Decatur and later, in Springfield.

1. Eye protection must be worn in the pit area.
2. Safety pins must be in each operational gun when that gun is not currently being "tweaked" or the ship isn't in the water.
3. A ship that sinks due to combat damage, after the 5 min. (while the ship is returning to port) will be counted as a combat sink.
4. For the first fleet battle ONLY - 250 points awarded to the fleet ready at the appointed time if there is not an opposing fleet (fleet is 2 or more ships). This will be explained more at the meet. The moral of the story is you better be ready at the appointed time -- 9:00 a.m., in this case.
5. Ship to ship challenges will be modified to 2 sorties duration during the Decatur meet.

Other "house rules" will come up, but we will discuss these before the meet.

Registration fees will be \$10.00 a person - regardless of how many ships you enter. If at all possible, pay in advance. This would make it much easier for the Contest Director, Terry Darby, and our hosts Mary and Dan Hamilton to plan and cover their expenses. As during the October FANA, Dan and Mary are going to try to provide crew quarters, chow and dry dock services for all the combatants.

It will be imperative to let Dan & Mary know if you plan to attend (even 12 hr. notice is better than none), so they will know much food to buy. Tentative plans for food are - sandwiches at the lake Sat. & Sun. for lunch (who ever heard of Battle Stations being cancelled so the crew could go to McDonald's?), cookout Sat. night (hamburgers & hotdogs and breakfast Sunday at Mary & Dan's. For those planning on arriving early, you better check with Dan & Mary as much in advance as possible.

Ask anyone who attended the October FANA of '82 about the great lake and the great hosts in Decatur. The lake has everything; open seas, small, medium and large bays, shoals, channels and its all shallow. It's the best combat lake I've seen. As for the hosts, they have set the standard for Southern Hospitality. We hope all you captains will help make the FANA Spring Fest '83 a success.

FLEET BATTLE: APRIL 23-24, 9:00 AM

\$10.00 Registration Fee to: NAMBA MEMBERSHIP REQUIRED

TERRY DARBY (CONTEST DIRECTOR)	DAN & MARY HAMILTON
CHILHOWEE RANGER STATION	Rt. 3, Box 558
TALLASSEE, TENN 37878	or
(615) 856-3133	DECATUR, AL 35603
	(205) 355-1563

See you at the battle.

Darby

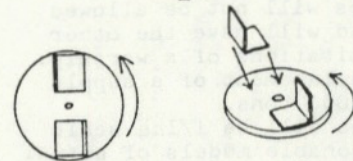
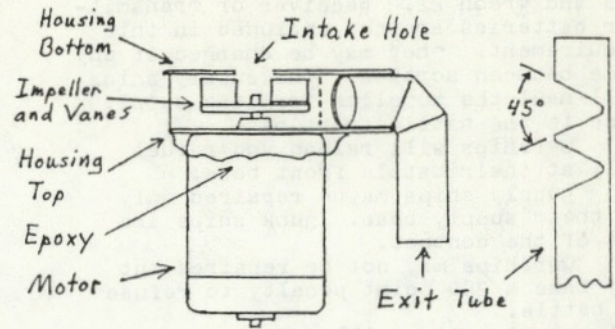
WORDS OF WISDOM

"My first ship took a long time to build and even then it had all kinds of problems. Now I'm building my second ship and it's going much faster, easier, and coming out much better. So I would highly advise anyone starting out in R/C combat to build his second ship before he builds his first ship."

Dale Beaver

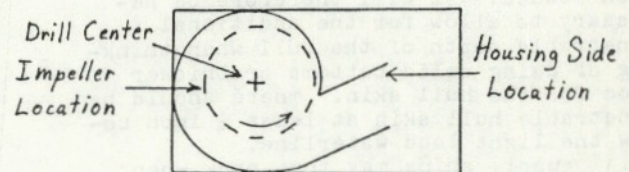
Penny Pump Assembly Cross Section View

71

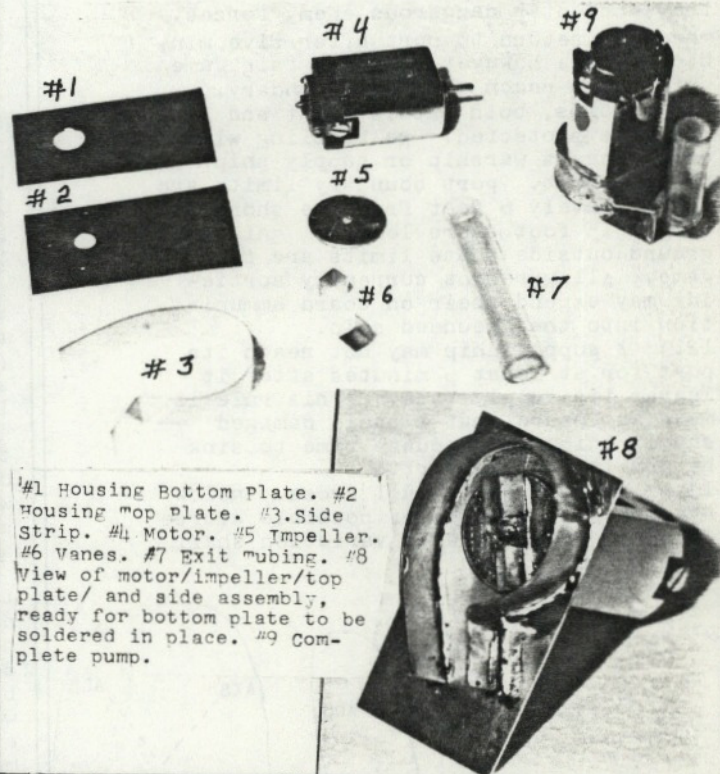


Impeller Plate and Vanes
(Bottom Views)

Housing Top (Bottom View)



Reduced Scale
1/25%



#1 Housing Bottom Plate. #2 Housing Top Plate. #3 Side Strip. #4 Motor. #5 Impeller. #6 Vanes. #7 Exit tubing. #8 View of motor/impeller/top plate/ and side assembly, ready for bottom plate to be soldered in place. #9 Complete pump.

CONVOY ESCORT AND RAIDING RULES

OBJECTIVE: The battling explained by these rules is based on the objective of disrupting the enemy supply stream while protecting ones' own supply stream.

- 1.) supply ships will have a maximum speed only 1/3 that of warships regardless of the actual speed of the modeled ship. Actual speed of supply ships will be about 1 mile per hour (a typical warship makes about 3 miles per hour.).
- 2.) supply ships must transport all supplies used by the warships after the

Cont. page 72

first initial BB magazine load, Batteries and Preon 22. Receiver or transmitter batteries are not included in this requirement. They may be changed at any time between sorties. The supply snips will haul the supplies from the supply base to the battle front base.

3.) Warships will reload and refuel only at their battle front base.

4.) Supply ships maybe repaired only at their supply base. Sunk ships are out of the contest.

5.) Warships may not be repaired but may take a 250 point penalty to refuse to battle.

6.) Supply ships will not be allowed pumps or guns and will have the other construction limitations of a warship.

7.) Maximum displacement of a supply ship will be 15,000 tons.

8.) Supply ships will be 1/144 scale and will be reasonable models of actual WW II supply ships.

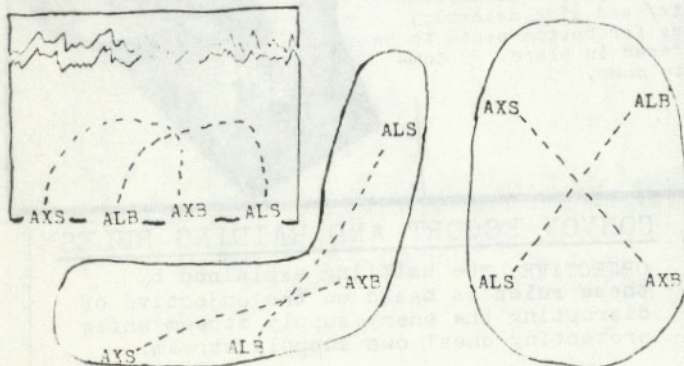
9.) Supply ships will have all areas of the hull that shall be penetrable covered with 1/32 balsa. It should be remembered that a supply ship empty of supplies will normally ride higher than when loaded. It will therefore be necessary to allow for the additional penetrable depth of the hull when thinking of using solid bottoms or thicker wood for the hull skin. There should be penetrable hull skin at least 1/8 inch below the light load waterline.

10.) Supply ships may turn back when they encounter dangerous enemy forces. They may return to port after five minutes at sea however they are fair game until they reach the port boundary.

11.) Ports, both battle front and supply, are protected. No battling will occur once a warship or supply ship reaches port. Port boundary limits are approximately 6 feet from the shore along a 15 foot shore length. Ships aground outside these limits are fair game. All warships currently sortieing may expend their on board ammunition into the grounded ship.

12.) A supply ship may not reach its port for at least 5 minutes after it leaves its supply base. (This rule is made to insure that a badly damaged supply ship has adequate time to sink before it reaches port.)

13.) Convoy lines shall cross. Below are shown 3 examples of possible course layouts. Considerable variation shall be allowed.



ALB (Allied Battlefront) ALS (Allied Supply)
 AXB (Axis Battlefront) AXS (Axis Supply)

14.) Warships do not have a time limit.

15.) There may be no more than one supply ship per three warships of each fleet participating in the overall convoy battle.

16.) Frequency allocations must be a-

greed on prior to the battle.

17.) Notice of an impending sortie does NOT have to be given to the enemy. (Surprise convoy missions are probably desirable.)

18.) The battle is over when one fleet successfully delivers five loaded supply ships from their supply base to their battle front base or when all of the convoy ships are sunk.

19.) The score will be determined by adding warship damage points, supply ship damage points and mission completion points. For each successful supply ship delivery the successful fleet will be awarded 200 points. Damage points to supply ships will count double. Ram penalty points will be standard except ram sinkings of warships will cost double points.

20.) The winning fleet must have at least 250 more points than their opponent. Otherwise the contest is a draw.

12



ROOKIES CAN WIN!

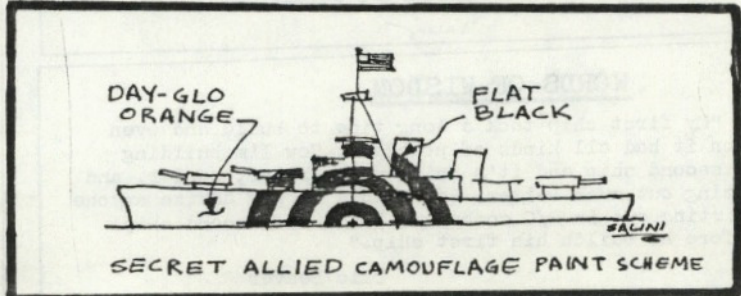
A rookie is commonly thought of as a person new at something. In R/C combat rookies are also people who show up at the lake with a ship that isn't ready for battle. I was a rookie for 3 years! You don't have to ever be a R/C rookie. There is a misconception that the captain is the rookie, this can be true, but most of the time it's the ship that makes a person a rookie.

An example of this was shown at the 62 South-eastern Regionals. Mom parby was handed a radio and told to battle an experienced rattlesniper with a good cruiser. I am told it was a vicious battle but mom won! Why? Because he had a good ship. Mom had never handled a radio until that battle!

What is a good ship? Well, most important it must be reliable. More specifically it should (1) turn 360° in 13 to 16 seconds, it should (2) travel 100' in 26 to 32 seconds, (3) fire 9 to 14 blasts per magazine, (4) the strongest shot per blast should fall 2 1/2 to 6 feet from the ship (slight down elevation), (5) battery endurance should not drop more than 30% (by speed) in 45 minutes, (6) the pump should move 1 to 3 1/2 gallons per minute (7) pit time should be under 20 minutes between sorties, (8) and your radio range should be at least 250'.

If your ship meets these qualifications, all the time, it's competitive. Furthermore, if you don't turn in front of your opponents guns and when your out of ammunition you sail away from the action, well, then your a winner! Come to the NAMS and leave with some metals on your chest.

Sounds simple, doesn't it. Then how come are there so many rookies in most big battles? I'm not sure, but I believe it's due to some emotional handicap that most combatants suffer from. We don't take our ships out to our local ponds and all by ourselves "de-bug" our ship and practice gunnery. We need to go out 3 times consecutively and have everything work, including guns. And by 3 times I mean 3 different days, each day at least 45 minutes in the water. It might take you 10 trips to achieve this, but it's better in your own pond than in a lake filled with hungry nasty enemies! Bluegel



Why copper magazines? First, let me tell you what I don't like about plastic magazines.

Plastic magazines are susceptible to kinking and thus must be positioned carefully. Being flexible, this can be a problem when replacing the deck. Plastic magazines cannot be coiled into a very tight radius, and in fact work most reliably when kept as straight as possible. The inside dimension of a plastic magazine is considerably larger than the diameter of a BB. This means that a higher velocity of gas is required to move a BB from the lower part of the magazine up to the O ring, since the gas at lower velocities will simply pass around the BB. This does not make the gun less tricky to operate.

Now, here's what I do like about copper tubing magazines:

Copper tubing is rigid, therefore will not kink or change position or shape easily. Copper magazines can be coiled tightly (I have coiled mine to a 2" radius, and I know that with care a much tighter radius is possible). The inside diameter of 1/4" copper tubing is only fractionally larger than a BB. I believe that this may be the single greatest advantage to copper magazines. Since the BB fits so tightly, the slightest amount of gas will force it up to the O ring. Unlike many of my "empty" plastic magazine loads, I have never found any BB's in an empty copper magazine.

Also worth mentioning: all the parts of my magazines, with the exception of the copper elbows, are available at most hardware stores, and are fairly cheap. I paid \$5.00 for a 20 foot coil of 1/4" copper tubing—enough to build all four of my magazines. You'll probably have to go to an appliance parts store for the elbows, and you may have to order them. Ask for 1/4" copper 90 degree sweat-type elbows. They should cost about 75¢ each. If you can't find any, write or call me. I'm well stocked (thanks, Steve).

There is a drawback. Careful soldering is important. There's not much clearance between the BB and the inside of the tube, so the least little bit of solder inside the tube will make your gun an extremely ineffective weapon. But a gas-tight seal is essential, so be sure to use just enough solder to do the job. This takes some practice if you don't do much sweat soldering, so you might want to buy a couple of extra elbows.

The first copper magazines I saw were at the 1982 Nationals. Fluogel had them in his Bismarck and I could see immediately that he could never have achieved such a large BB capacity with plastic magazines and still had room for anything else in his ship. Martin Schneider had gone a step further and replaced the gun barrel elbow with straight fittings. Although this was a little bulky for a nice scale fit in a turret (not exactly the type of problem to cause Martin to lose much sleep), it did assure a much smoother flow of BB's - a problem which plagued Fluogel all week.

So I went home to build a battleship and I wanted (a) copper magazines with (b) straight fittings instead of elbows but (c) it had to fit in a scale turret. This last problem was solved when I discovered the existence of the sweat-type copper elbows as I was searching for a valve in an appliance parts store.

So here's what I came up with. Remember, this is designed to fit my ship and my needs. The shape and size of the magazine can be whatever you want.

- Materials: 1- 1/4" brass flare coupling
 3'- 1/4" copper tubing
 3- 1/4" copper 90 degree sweat-type elbows
 1/4" X .050 brass strip } optional-
 1/8" brass rod or tubing } for yoke only
 5/32" brass tubing }

1.) With a fine Dremel handsaw, saw one threaded end of the brass coupling off as shown. Drill out the large piece with a 5/16" drill bit to about 3/16" deep. This is best done by clamping the fitting in a vise (watch out for the threads) and using a drill press. Screw the fitting into a brass flare nut to protect the threads. It seems logical that the drill bit would naturally center itself in the existing hole, but every time I've done this with a hand-held drill, the bit wanders off to one side. For best results the hole should be centered.

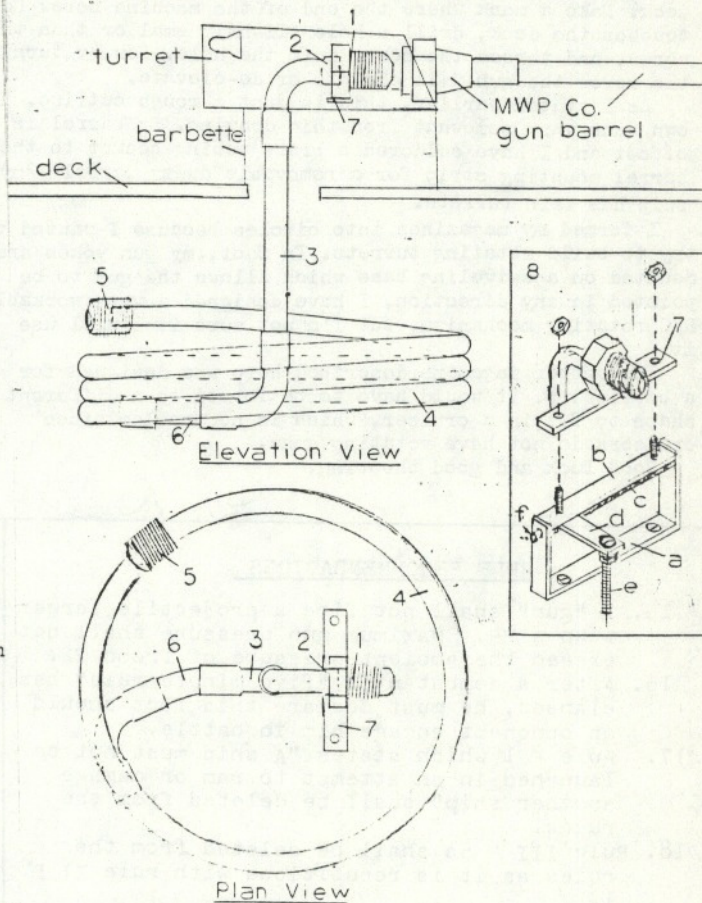
2.) Saw off the end of one elbow, leaving about 3/16" of the flared part as shown. This is done only to make

the smallest possible assembly to fit in the turret. **73**
 Omit it if you like. Solder this elbow into the larger coupling piece. Keep one facet (the flat part) of the coupling parallel with the deck so you'll have a nice flat surface to solder on a mounting plate. See step 7- you could even do step 7 now.

3.) Solder a straight piece of copper tubing (length optional) into the barrel fitting elbow, then solder another elbow to the bottom of the straight piece.

4.) Bend about 3' of copper tubing into a 4" diameter coil (again, size is optional - 4" diameter fits well in my ship). Don't try to do this by hand - use a copper tubing bender. This is simply a spring which fits the tubing snugly and allows it to bend without kinking or collapsing. You can find one at most hardware stores for 2 or 3 dollars. Be sure to get one for 1/4" tubing.

Note: I've heard through the grapevine that some people who know a lot more about it than I (namely, Martin Schneider) claim that longer magazines increase the tendency to spurt, and that 150 BB's is about optimum. Therefore, you may want to use fewer coils than my drawing shows. One 4" diameter coil equals about one foot of tubing, and one foot of tubing holds about 70 BB's. Thus, the magazine shown would hold about 200+ BB's.



5.) Drill out the back end of the leftover piece of coupling with a 1/4" drill bit (using the same procedure as before), insert the end of the magazine and solder. This is where the BB's will be loaded and where the MWP Co. QC adaptor screws on.

6.) This piece of tubing should be slightly bent as shown if you wish to have the gun barrel centered in the magazine. Caution: bend a piece of tubing 6" long or longer, then cut the proper size piece out of the bent portion. A one inch piece of tubing is extremely hard to bend by itself. Assemble the pieces as shown and solder.

7.) You'll need some way to mount the gun, so solder a piece of 1/4" X .050 brass strip to the bottom of the gun barrel coupling as shown. The magazine is now done.

8.) I chose not to have an elevate servo on my gun, but instead to adjust the gun to fire at a specific point on the water. So I built this yoke with a set-screw type elevate adjustment. If you want to use an elevate servo, the same yoke could be used. Just omit the arm with the adjusting screw.

First I made the yoke itself (a). You'll need to tailor the exact dimensions to fit your ship. Mine is 1 7/8" inside to inside. The height varies depending

upon which turret it fits. Drill two holes (1/8") at the appropriate height for the pivot pin (2). Drill two holes in the bottom for mounting to the deck.

(b) Cut a piece of 1/4" X .050 brass strip 1 7/8" long. Drill two holes 3/32" diameter and countersink one side for 2-56 X 3/8" flat head machine screws. If you don't have a countersink a 3/16" drill bit will do. This strip and the hole spacing should match the one you solder to the barrel coupling (step 7). Solder this brass strip with screws in place to (c) a 1 7/8" long piece of 5/32" brass tubing. Be sure to solder the screw heads at the same time so they won't turn. Put the nuts on the screws while you do this to hold them in place. (d) Cut a piece of 1/4" X .050 brass strip about 3/4" long, drill a 5/32" hole near the end and solder to piece (c) as illustrated. (e) Insert an appropriate size machine screw in the hole, put two nuts on the screw and snug them down so that the screw turns but cannot move up and down. (The two nuts will lock one another so that they won't move). (f) Cut a piece of 1/8" brass rod or tubing about 2 1/4" long. Place assembled piece b-c-d-e in the yoke and slide piece (f) through the holes in the yoke and piece (c) after the yoke has been screwed to the deck. Make a mark where the end of the machine screw (c) touches the deck, drill a hole slightly smaller than the screw, and thread the screw into the hole. Now by turning the screw the gun will elevate or de-elevate.

As I stated earlier, this is just a rough outline. My own guns vary somewhat from this drawing. My barrel is offset and I have soldered a brass tubing socket to the barrel mounting strip for a removable dummy barrel - my ship has twin turrets.

I formed my magazines into circles because I wanted to try to build rotating turrets. In fact, my gun yokes are mounted on a swiveling base which allows the gun to be pointed in any direction. I have designed a very workable R/C rotating mechanism, but I'm not sure if I will use it.

The copper magazine described here was designed for a battleship. It would have to be formed to a different shape to fit in a cruiser, which is no problem since cruisers do not have rotating guns.

Good luck and good shooting,

Bob

RULE RECOMMENDATIONS

- # 15. A "gun" shall not fire a projectile larger than a BB. Maximum gun pressure shall not exceed the ambient pressure of freon 22.
- # 16. After a combatant's "five minute rule" has elapsed, he must declare this fact should an opponent engage him to battle.
- # 17. Rule # 1 which states "A ship must not be launched in an attempt to ram or damage another ship" shall be deleted from the rules.
- # 18. Rule III B 5a' shall be deleted from the rules as it is repetitious with rule XI D 1.
- # 19. Ram penalties cannot be canceled for any reason.

SWEAT SOLDERING

Sweat soldering is a process whereby two metal surfaces in close contact are bonded by being heated and having solder drawn, or "sweated", between them. It's how plumbers connect copper pipes, and more to the point, it's how R/C combaters connect copper tubing to copper elbows to make copper magazines.

A key fact is that solder will be drawn toward a heat source. Another key fact is that solder tends to stick only where the surface has been fluxed.

The best flux for brass and copper is a zinc chloride type. It usually comes in a paste form, using petroleum (take note, Fluegel) jelly, and is quite easy to use. The main purpose of the flux is to dissolve oxides from the surface of the metal and allow the solder to adhere.

Use a general purpose solid (no flux) wire or bar type solder. If you use the bar type, try to find some that is fairly small. It's a lot easier to use than the larger bars.

To solder copper elbows to copper tubing, spread a thin coating of flux on the end of the copper tubing. Leave about 1/16" of the end of the tubing free of flux. This will help keep the solder from being drawn inside the tubing where it will impede the flow of BB's.

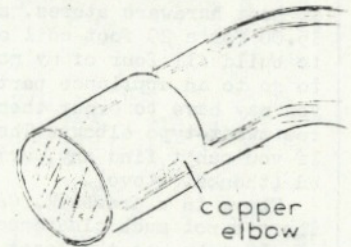
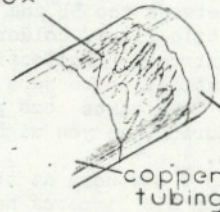
Insert the tubing into the elbow and heat the flared part of the elbow as shown. Soon the flux will begin to boil. As the moisture in the flux boils away, hydrochloric acid is formed. This is what dissolves the oxides from the metal surface.

As soon as the boiling stops and you notice the fluxed area of the tubing discoloring, touch the solder to the tubing where it enters the elbow. The solder will be drawn into the elbow wherever there is flux. Don't make the mistake of thinking you need to see a thick layer of solder where the tubing meets the elbow. If you see a thin film on the tubing that's great. You might only see a thin silver line around the tubing at the flare. That's all it takes. Don't overdo it. It only takes a tiny bead of solder inside the tubing or elbow to ruin a whole magazine.

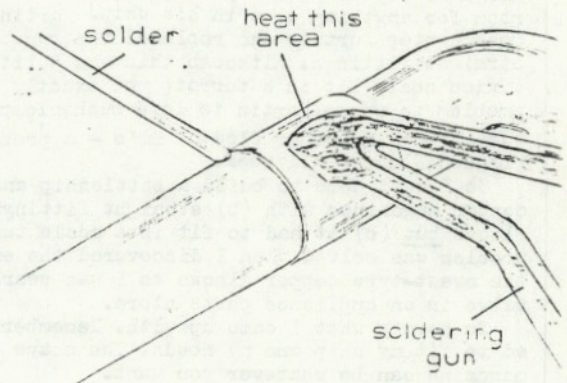
Soldering the brass coupling to the elbow or tubing is a little more difficult. Because the coupling is so much larger it absorbs a lot of heat, so a soldering gun probably won't work. You'll need a torch (a small propane torch available at any hardware is fine). The problem here is that it's awfully easy to use too much heat. Heat the coupling very gradually. Don't hold the torch on it steadily, but pass it back and forth across it until the flux boils. Don't melt the solder with the torch.

SWEAT SOLDERING

apply thin coating of flux



no flux (about 1/16")



Scale = 5x

Let the brass or copper melt the solder. If you melt the solder with the torch before the parts you are trying to bond are hot enough, the solder will not be drawn into the coupling. In fact, it will probably not even stick to the surface of the brass or copper, but will merely roll off, fall in your shoe, and cause you to move rapidly.

Solder brass tubing (as in prop shaft bushings) the same way as the copper tubing and elbows, with a soldering gun.

Soldering brass strips and tubes, as when making the yoke described in my copper magazine article, is done the same way and is considerably easier since you don't need to be so concerned with excess solder.

In summary:

- 1.) Apply flux only where you want the solder to adhere.

cont. "Soldering"

- 2.) Apply the heat where you want the solder to be drawn.
- 3.) Don't melt the solder with the soldering gun or the torch. Heat the parts and let them melt the solder.
- 4.) Use just enough solder to bond the parts. Don't overdo it.

In the words of our Father who art in Amarillo,
Let's battle!

San Deo

NEW RECOMMENDED FREQUENCY LIST

Frequency conflicts have been a real problem in this hobby. Thankfully 22 additional frequencies are now available to the R/C enthusiasts. It was discovered about three years ago that the best frequency conflict situation was when it was between you and a member on "your side". This would allow all of "your ships" to battle all of "their ships".

With this in mind a list of "recommended frequencies" was made up. It has worked pretty well.

With the birth of the new frequencies the "extensive board" has amended the old list as follows. (The number of ships shown is my own addition to help you select a less used frequency. They are not accurate.)

channel	Frequencies		# of ships
?	26.995	Allies	0
?	27.095	Allies	1
?	27.145	Allies	1
?	72.400	Allies	3
?	72.960	Allies	2
?	27.095	Axies	0
?	72.080	Axies	3
?	72.160	Axies	2
?	72.240	Axies	3
?	72.320	Axies	1
?	75.640	Axies	0
* 12	72.030	Allies	0
* 38	72.550	Allies	0
* 40	72.590	Allies	0
* 42	72.630	Allies	0
* 44	72.670	Allies	0
* 46	72.710	Allies	0
* 48	72.750	Axies	0
* 50	72.790	Axies	0
* 52	72.830	Axies	0
* 54	72.870	Axies	1
* 56	72.910	Axies	1
62	75.430	Allies	0
64	75.470	Allies	0
66	75.510	Allies	0
68	75.550	Allies	1
70	75.590	Allies	1
74	75.670	Allies	0
76	75.710	Axies	0
78	75.750	Axies	0
80	75.790	Axies	0
82	75.830	Axies	0
84	75.870	Axies	0

* These channels are "Aircraft only".

The R/C Warship Combat Club does not promote the use of these channels. Hull Busters included them in the list in order that all frequencies available will be organized should they be used.

Bluegel

SUBSCRIPTION CHANGE OF ADDRESS

NAME _____

ADDRESS _____

CITY/STATE _____

ZIP CODE _____

AMOUNT ENCLOSED _____

Feb. \$6.00
Apr. \$5.00
Jun. \$4.00
Aug. \$3.00
Oct. \$2.00
Dec. \$1.00

Do not subscribe for past 1983 issues, over-pay for issues in 1984. Enclose the amount for the remaining even-numbered months of the year. Do not subscribe if you live outside of the U.S.A. Include one extra dollar if you want the 7th issue, which will be sent on one of the odd-numbered months by a guest editor. Advertising is \$2.00 per column inch. Hull Busters does not sell guns, plan sets or anything else, only this newsletter. Send money to: Bluegel/1111 Rain Forest Ct./Dallas, Tx 75217

HULL BUSTERS

MAKE A BETTER, MORE RELIABLE, SURVIVABLE ELECTRICAL SYSTEM.
BY: Dale Beaver.

As I'm sure you're all aware of by now, I was the captain of the beleaguered battle-cruiser HOOD. The first point I want to make is, BE READY FOR THE NATIONALS SIX WEEKS BEFORE THEY ARE TO BE HELD!!!! I put some finishing touches on HOOD just before Terry & I loaded up for that drive to Amarillo. That was a good bit of HOOD'S trouble. The real trouble popped up after the ship-to-ship, with Fluegel's BISMARCK. During that not so epic struggle, Gene Howe lake resuscitated an industrial strength plastic bag into HOOD'S way. The bag fouled all four of my props. While this brought the HOOD to a dead stop, the internal effects were more profound. The motors that I was using were a bit more vicious than I knew. When the motors stalled, they pulled in excess oil amps each. I had 4 of these motors, so I wound up pulling over 46 amps from my batteries, through my electrical system which was made to stand up to excess loads. My batteries are lead-acid, with a rated 24vc @ 28amp-hours. They could take the load. My throttle was a rotary switch used for high cur applications. It could take the load. However, I managed to fry every wire that went from motor to battery. I really got lucky, though. If the wiring had been attached to the side of the ship, like a lot of peoples, I could have set HOOD on fire. And with 3 full tanks of temperature sensitive Freon 22 on board, HOOD could have blown up for real.

The solutions to these problems are fairly simple, and I'm applying them to the rest on HOOD. The first is heavier wire. The voltage or amperage a wire can carry is not the critical factor. Power is. Power is, mathematically, P=EI, E being voltage, I being current. If a piece of wire can carry 125vdc @ 4ah, the power rating is 500 watts. As long as you do not exceed this 500 watt power rating, you can use any vol-amp arrangement you please. You could if you wanted, run 12vc @ 500ah. You still only have 500 watts of power. This is why we can use relays with contacts rated at 1 amp, 125 volts, without burning up the contacts when we push 5 amps through it. There are any number of charts out about what the various wire gauges can handle, but the numbers I've found are as follows:

- 24ga wire on 6v & 12v vessels cruiser size & under, pulling 7.5ah at full stall.
- 22ga wire on 6v & 12v vessels any size pulling 12.0ah at full stall
- 20ga wire on 6v & 12 v vessels, any size, pulling 35ah at full stall

These wire gauges are all determined with a- + 3ah range.

The next, and more important point, is fusing. You can save yourself a lot of unnecessary repairs if you will put fuses on your drive motors. Fuse size is no problem, as some fuses are as small as 1/16 x 3/16. This type of fuse uses the auto style quick disconnects. They will fit into any ship. On HOOD, I'm using the standard type clip fuses. The fuses serve a dual purpose. First, if a motor stalls out, the fuse will blow before there is any serious damage to the rest of the electrical system. Second, the ship will still have power. Many times I've heard the tale of one shaft fouling and knocking out a ship's main drive totally. By having a fuse on each separate motor, one shaft can stall. You will lose only that motor, leaving you slower, but still alive. Of course fuse are subject to being broken by flying bee-bees, but a simple shield will prevent that unfortunate event.

Using the fuses and specific gauge wire are but recommendations, now. However, I think that the club needs to sit down and put together a list of recommended building procedures that could be attached to whatever club rule booklet finally emerges as the Bible of RC Combat. With the increase in new people who don't commune with the Father or one of his disciples, some real thought needs to be given to things like the minimum type of safety required. Polyurethane and balsa burn fast and hot, and with a potential explosive situation on board a battle-ready ship, someone taking part of a freon tank between the eyes because of an electrical fire would be a preventable tragedy. I feel that as the charter weirdos, it's our responsibility to safeguard the neopnyte weirdos until they have been declared hopelessly insane too.

MISCONCEPTIONS

13.) The effective fire power of a 10 gun ship is greater than that of a ship with 2 guns.

SWITCH SET
VARIABLE RESISTOR SPEED CONTROL SWITCH
with E.M.F. BRAKE

RCスベアパーツ
無段変速スイッチ
ブレーキ回路つき

MADE IN JAPAN
TAMIYA
SWITCH SET

This is a photo copy of the box top that the "speed switch" comes in. page 66 refers to this item under "helpful hints".

CONCLUSION

OFFICIAL PRESS STATEMENT
Issued 12-03-1982
BUREAU OF NAVAL AFFAIRS
BIRMINGHAM ENGLAND
(Via Maryville, Tennessee)

ACHTUNG! (Just to get you ruddy axes attention.) Her Majesties Government has decided to reply and clarify as to certain statements made as to one of Her Majesties ships-of-the-line. For the record, the H.M.S. HOOD was reduced to a condition of very temporary negative buoyancy by the U.K.M. TIRPITZ, under the command of that swinish gentleman, Ober-Grand Admiral M. Schneider. (a cash payment of 10,000 lb sterling has been offered for the hide of said OGA, to be used as a throw rug. Similar offer also made by the American government.) Since Herf' Schneider sank every Allied vessel in combat, and at least once, I feel no need to apologize for the performance of the H.M.S. HOOD. This was HOOD'S first combat action, being fresh out of the docks less than 42 hours after completing. HOOD'S situation was very similar to that of H.M.S. PRINCE OF WALES in her first action on 15 May, 1941. Despite the report's to the contrary, HOOD possessed 4 modified MK IX rifles. 3 of the said rifles refused to function due to barrel-liner defects. (sabotage?). The 4th rifle was totally erratic in function, again due to barrel-liner defect. HOOD possessed only one bilge pump which ceased to function upon being exposed to water laced with strange contaminants. (since the pump technology has been traced back to a little hamlet called Fluegelheim-on-the-Rhine, this is suspect.) Due to the sustained battle-damage, and new discoveries in the area of ship construction, H.M.S. HOOD has entered drydock for a complete refit.

Now, to address myself to a more personal note. You may have accumulated more points, Fluegel, but you blew the engagement! Due to internal mechanism shifting, my one remaining gun ceased to function immediately. According to new information that I have recently been apprised of, HOOD went into combat 20% under-propped, almost 10% under-riggered, losing between 20-30% more power due to mis-aligned propshaft bearings, with props that only had a maximum 48% efficiency rating. So here is the "master", with his 5 proven guns, 4 bilge pumps, each with a stated (bragged) 4gpm rate, higher speed, better turning radius, AND THREE YEARS OF EXPERIENCE! (?) You had every tactical, technical, & experiential advantage. You should have been able to shred HOOD in less than 2 minutes. But what happened? The pore ol' rookie grabbed the 3 year veteran by the short rigging and turned him every which way but loose. The mighty 'miss the marck' got in TWO good rams at the first, and then she was unable though she tried, to get around the HOOD to get in a killing broadside! You tried for over 8 minutes to sink HOOD, and you couldn't. NOT DIDN'T, COULDN'T! It wasn't mercy (krauts & nips don't have that virtue). Face it Von Fluegel, the Mighty HOOD made the pride of the Deutsch Kriegesmarine look like it was commanded by a myopic, misanthropic, miscreant. I will be the first to admit that the HOOD was a marginal combat vessel at that time. But that was the sunshine's only easy time. IF you'll inquire of Capt. Darby of the CA34- USS ASTORIA, you will find that we have been researching several new types of ordinance and ship support systems. So beware SHORTY! If circumstances are kind, I will be present at Springfeild, MO, to do battle with the good 'ole "missine marck". And when next we meet, D.W. (Decidedly Harped) Fluegel, I shall relish the pleasure of reducing that miniaturized, motorized watering trough to elf kindling & Hamster chips. I mean deck by deck, boy! This is, as it always has been, ypo hunst, MARI!!!!!!!!!!!!

My Future Condolences,
H.M.S. HOOD, Flagship
BATTLECRUISER DIVISION ONE
CAPT. W.D. BEAVER, COMMANDING

(P.S. Bismarck's burial plot is purchased. coffin provided by Poot brewery. Send remains to Farley hop's manure farm.)

(P.P.S. When Ix sink the Decrepit, ~~KERRRRRR~~ Korroded, Messy BISMARCK, I expect to be awarded both ears and the tail. got it, Kraut?)

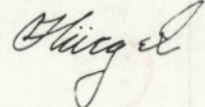
vea, done at last with yet another splendid addition of the superb newsletter Hull Busters. A few comments about the articles in this issue need to be added. The "Convoy Escort and Raiding Rules" are not yet rules but one big "rule recommendation". The NATS Contest Director has embraced their overall concept and the club's Vice-president has also approved of them. However they are not yet rules and some minor alterations may be made to them for the 83 NATS.

Concerning the "FANA Spring Fest 83" it looks like it may be a super big battle. My unofficial head count is, Axes 5 (Schneider, West, Fluegel, Garret, Amend) verses Allies 5 (Watkins, Darby, poindexter, Hamilton, Milholland).

Feed back on the "At the Dock Yards" articles have always been very supportive. It also seems that photos are also very popular. I was pleased that I was able to combine them in this issue. Unfortunately my supply of photos is exhausted. If you would like your ship in a Hull Busters send me the info and a photo. I will cut up the photo, paste it down somewhere or loose it, so don't send a photo you want back.

I wish to thank all the contributing authors and encourage everybody to "keep'em coming". If you type them or have drawings please don't use paper with lines and make them 4 7/8 " wide.

God Bless you All. Fluegel.



Fluegel
1111 Rain Forest Ct.
Dallas, Texas 75217

HULL BUSTERS