



President-Treas....Richard Ballard  
 Vice Pres.....Bill Andes  
 Sec.-Editor.....Dave Plamann  
 Safety Officers....Darrel Cordle  
 " " ....Nate Ericson

Next Meeting  
 Sept 17, 1988  
 Gaslight Village  
 Clubhouse  
 7:00 PM

Meeting Minutes  
 Aug. 20

The AMA Mag. will be on the shelves at Lawrence Public Library, and Lawrence High School soon. As most of you know, our club provided the subscription's beginning this year. It is generally felt that the publication will be a nice addition.

It was announced that calendars, with our club logo printed on the bottom of each page are available. Pictures of scale airplanes adorn each page that are truly impressive. Contact Richard Ballard or myself if you would like to have one. We'll have an order going in soon.

Our Fall Fun-Fly is scheduled for October 9th. We anticipate a good turnout by our club members judging from the comments we've heard all summer. Our committee chairman is Darrel Andersen, and Darrel Cordle and I will be helping him with the details. Please, if you get a call asking for help. Try to work it into your schedule. Everyone will appreciate it. (Thanks)

Byrons Fan & Fun Fly ? (Impressive)

It would be difficult at best for me to describe when I have had more fun watching other people fly. Byrons show this year was top notch and well organized. The folks flying, (With the exception of one) had good flightline practices and did much to make the week well worth the vacation time, & money. Of the several crashes that week, I heard very little excuse making. Most were due to lack of airspeed on takeoff or landing. We may be able to yank some of the smaller airplanes we fly off the ground too soon. But try it with a 20 pounder, and you'll pick up the pieces

It really wasn't necessary to spend 4 days there watching. But if your buying, it awards you the opportunity to research that dream plane before you lay down the bucks. It was nice to be able to take time to talk with the manufacturers one day. Then spend the next day talking with the guys on the flight line about your choices. Comparing the two is a good way to go.

Camping on site was great, with a new shower house-fast food service area within easy walking distance. (Prime Rib & Broasted Chicken, MMMMM Good). Advice and good conversation at every table.

The "Striking Back" show was sensational to say the least. The Zeros were having their difficulties taking off downwind off the carrier deck, and two B-25s managed to get together in the air. But that's show biz, right Byron! The B-29 was a sight to behold, both on the ground, and in the air. We can only guess when Byron will include that thing in Striking Back. But I'll be willing to bet when he does, they'll have plenty of fire & smoke to go with it. (hint, hint) A-B, big boom, Heres one to take to your mother in law.

Can't wait till next Year!

PRODUCE TEST REPORT: ERNST CHARGE RECIPTICAL  
&  
PLUG COVER

One of the things that Futaba forgot to include with their radios is a means of fastening the charge plug into the side of the fuselage. I have seen several attempts made at holding the plug in place with rubber bands, tape, etc, but most don't work too well. Even worse, letting the plug hang out the side of the fuse/wing joint is a common practice. This is asking for a broken wire in the charging circuit and a dead battery (CRASH!) at the field.

"Why do I need to get to the charge plug anyway?" you may ask. "I always take the wing off at home to charge the batterys!" Well, one very good reason is that you need access to the charge plug to hook up an ESV (Expanded Scale Voltmeter). If you use an ESV at the field between flights, you can be assured of having enough charge left for "just one more flight!". Another reason is that many of the smaller planes can be left assembled if they will fit in your car. It is very convenient to be able to put one of these planes on charge without having to take the wing off to get to the charge plug.

Fortunately the ERNST COMPANY has "Seen The Need". Their #101 Charge Recepticle and #114 Charge Plug Cover make a simple job out of a difficult problem. The recepticle holds the Futaba plug in the side of the aircraft. The plug cover fits the receptical and seals the plug against fuel, dirt, and oil. Best of all, both products add up to less then \$4.00. Truly a good buy!

RLB

DEFINITIONS TO PONDER  
(WASH-IN & WASH-OUT)

Kind of sounds like a laundry soap add, but it isn't! It is a very IMPORTANT measurement of aircraft design that can have a lot to do with how well (and how long) your plane will fly. What Wash-In or Wash-Out means is simply how much "Twist" the wing has in it.

Wash-Out is GOOD! It means that the leading edge of the wing, at the tips, is twisted down in relation to the root (center) section. What this does is to allow the CENTER OF THE WING TO STALL FIRST. This will have little effect on direction or degree of roll when the wing stalls. You simply loose about 30-50% of lift. The wing can no longer support the weight of the aircraft in level flite, so the nose comes down and speed builds back up. Your plane lives to fly again if you are not to low!

Wash-In, on the other hand is BAD. It means that the tip leading edges are twisted UP in relation to the root section. The wing tips are flying at a higher angle of attack then the rest of the wing, and will STALL FIRST. This usually results in a "Tip Stall", or "Snap Roll", or in short, A CRASH, when it happens during a take-off or landing!

Many trainer and sport designs use wash-out as a built-in safety feature. It can't hurt anything on this type of airplane, and always helps. (Well, not always, but usually!) When won't it help? If you are into Aerobatics or Pattern flying, you want to have a perfectly straight wing from tip to tip. Why? Wash-Out (Good) is Wash-In (Bad) when you are up-side down or on your side! Also, when you WANT THE WING TO STALL for a snap-roll or spin, you want it to stall totally and RIGHT NOW!

"What do you do?" You ask. Build your plane just like the plans say to build it, and hope the person who designed the plane knew what he was doing!

Wash-Out, or Wash-In? Remember, "Out is in, but In is OUT!! RLB

KIT REVIEW \*\* GREAT PLANES SPORTSTER BIPE .40  
(THE POOR MANS AEROMASTER!)

PART 2 \*\*\* BUILDING

In part 1 of this review, I covered what I felt to be a problem with the design of the landing gear. Again, I would suggest that you have the gear silver brazed. If this is not practical, I would bend a new 1/8" main gear brace and allow some extra length on the ends for a stronger solder joint. With that said, lets move on to the kit building.

Following the step by step instructions in the Photo-Illustrated manual, we will begin by building up the tail section. Both the fin and rudder, and the stab and elevators are pre-cut from 1/4" Balsa. All that is necessary is to glue the parts together and sand the edge's round. Joiner wire is supposed to be used to join the two elevator halves, but I decided to leave mine separate and use a Y-type push-rod. If you haven't tryed this yet, you should! You can trim out all kinds of odd behavior when each elevator half has an ajustment on it.

Moving on, the next step is the top wing. It is built in one piece, and is built flat on the bench with no dihedral. Wing construction is fairly normal except that the top wing is swept with a straight two bay center section. This makes for some rather interesting spar joints in the center section! Follow the plans, and cut the spar joints correctly and you shouldn't have any major problems.

The bottom wing is next, and is a little more "normal" in that it is built in two sections, then joined with 7/8" dihedral. It has strip ailerons just like your PT-40! In all, an easy wing to build right. Both wings are of D-tube construction with sheer webbing between the spars and a sheeted leading edge and center section. The bottom wing is "Glassed" after joining, but the top wing, being built in one piece, is not glassed. The wing tips are built up from 3/16" sheet and 1/4" bracing. Not overly hard to do and they look good, plus they are light.

The fuselage is next and is built from 1/8" Balsa with 1/8" Balsa doublers. The turtle deck is of stringer type construction. Again, not hard to do, but very strong and light and it looks like you must have spent hours getting that nice round shape!

At this point, it is time to get out the solder and flux. Its Cabine Strut Time! Of all the steps in building a biplane, this is the most critical and demanding. The Cabines are the little wire parts that hold the top wing in place. They hold the wing in alignment and also determine the incidence. They also absorb over 50% of the flight load. THEY HAVE TO BE RIGHT! Following the step-by-step instructions, you shouldn't have any problems. Just BE SURE everything is on the money BEFORE you solder them together, and again BEFORE you glue them into the fuselage. Beg, Borrow, or Steal a Robart Incidence Meter for this step! Full details are given for setting up the plane with only a ruler, but I still would recommend an incidence meter be used. It is the only way you can be 100% sure everything is correct!

One area that COULD CAUSE YOU SOME PROBLEMS IS BENDING THE 1/4" Balsa SHEET that forms the rounded hood pieces over the tank compartment. This isn't as hard to do as it might seem if you soak the sheeting in household ammonia first to soften the wood. You can then "bend" the wood into shape, and if held in position untill dry, it will stay "bent" while you glue it on.

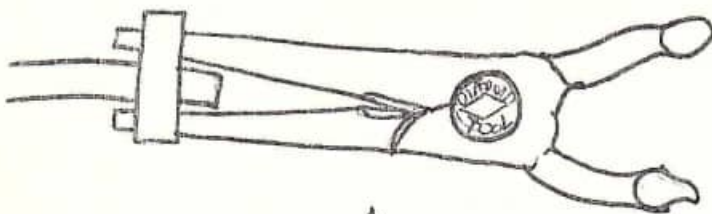
Following installation of the engine and mount, the nose blocks are glued on and rough shaped using the ply spinner ring as a guide. Nothing difficult here. Just SAND OFF EVERYTHING THAT DOESN'T LOOK LIKE A BIPLANE! Follow with the covering of your choice and you will have one of the nicest looking biplanes you can get. Next month we will see if it will fly as good as it looks! Until then, FLY SAFE!

RLB

## HOW TOO: MAKE LEAK-PROOF FUEL LINE ENDS

Here is a very easy way to make a positive leak-proof seal on all your fuel and pressure line connections. Take a piece of scrap fuel line and cut a small section about 1/4" long from the end. Now take a pair of needle-nose pliers and slip the tubing over the ends of the pliers. Pull the handles apart enough to stretch the small section of tubing and while holding it insert the end of your fuel or pressure line into the small section of line.

You now have a double end on your line which will increase the tension on the fitting on your carb or tank. In any case you now have a line connection that will not leak air or come off until you want it to!! RLB



A.

INSERTING END OF LINE



B.

FINISHED DOUBLE-END

## SAD NEWS CONCERNING HB ENGINES

It was announced in the September issue of R/C Report that production of the fine West German HB engines has ended. Perry Aeromotive (Perry pump & Perry carb people) still has non-PDP Blitz .40 and smaller engines in stock and will continue to handle parts and warranty work. I also would guess that some of the .40 and .61 Blitz engines will continue to be available through wholesalers and mail order for awhile. If you want an HB Blitz, now is your last chance!

FOR PARTS AND SERVICE CONTACT: Perry Aeromotive Inc,  
1568 Osage St.  
San Marcos CA  
92069

\*\*\*\*\* FOR SALE \*\*\*\* FOR SALE \*\*\*\* FOR SALE \*\*\*\* FOR SALE \*\*\*\*

FUTABA CONQUEST 6ch./AM Radio, Flight-Craft Solo, O.S. FP-40 Engine,  
1 Gal. Red Max Fuel, Ni-Starter, Props, Glow Plugs, Fuel Pump, Etc.

Call 887-6354 ---- ask for Dusty ---- Make Offer

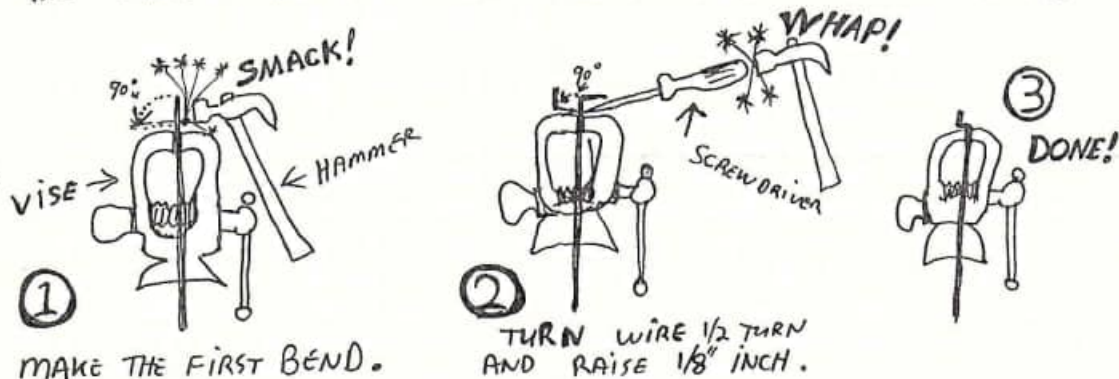
## SERVO/PUSH-ROD CONNECTIONS

From time to time someone asks me about servo connections and what works best for primary flight control hook-ups. I had a fellow ask me just the other day what I thought about using E-Z Connectors. My answer was that I have had only one failure involving an E-Z Connector and that was on a nose wheel connection that popped off during a rough landing. (read crash!) I went on to say that I was using them in my AeroMaster Biplane and thought they were perfectly safe!

As usual, I was wrong! Later that same day I noticed what I thought to be an excessive amount of "slop" in the rudder linkage on the AeroMaster. Guess what I found when I pulled the wing off and started checking things out? If you guessed a loose E-Z Connector you are right! It seems the little plastic disk that holds the E-Z Connector on the servo arm had decided to give up the ghost and parted company. All that was keeping the linkage hooked up was downward pressure from the push-rod guide. I "got lucky" again!

What will I do about it? Well, the E-Z Connectors are coming off of everything except the throttle linkage. In their place will be Z-Bends right on the end of the push-rod wire. One thing I AM SURE OF, and that is a properly done Z-Bend can-not come loose as long as the servo arm is still intact. Maby!! RLB

### THE EASY WAY TO MAKE Z-BENDS IN PUSH-ROD WIRE.



### PRODUCT TEST \*\*\*\*\* ROBERT RIGHT-ANGLE DRIVE AND MOTO-TOOL # 3950 KIT

I have been using a Moto-Tool in one form or another for most of my adult life. I first became acquainted with the high-speed little hummers while doing tool and die work at Hallmark Cards. Later on I spent soom time as an A.M.T.U. gunsmith while serving in the U.S. Army. I soon found them to be one useful tool for gunsmithing, knife making, and assorted other jobs around the place. I have worn out several Moto-Tools building such exotic things as Viet-Nam bound .30 cal. sniper rifles, .45 cal. match pistols for the All-Army pistol team, and custom knives for a varity of rather "interesting" uses!

I now find myself reaching for a Moto-Tool all the time while building R/C airplanes. I couldn't get along without one. Recently, I have been using a #3950 variable speed B/B tool along with a Robert Right-angle drive. I find them to be an unbeatable combination for model work. How I got along with-out the Right-Angle drive all these years I will never know. It only takes a minute to install the Robert drive and with it in place, you are able to reach into otherwise impossible locations to drill, grind, or shape. How Moto-Tool allowed Robert to beat them to the market place with this item is beyond me!

If you don't already have a Moto-Tool and plan to do any building this winter, put it on your Christmas list along with a Robert Right-Angle drive accessory. You won't be sorry! RLB

## HOW TOO: EASY CAPTIVE WING BOLTS

Have you ever arrived at the field only to find that you had lost one or more wing bolts from your wing? Well I have and it's not a pretty sight! Anyway I got to thinking about some way of capturing the wing bolts in the holes to prevent them from falling out. What I came up with is so simple I don't know why I hadn't thought of it sooner. What you do is go to your local auto parts store and buy rubber O-rings just slightly smaller than  $\frac{1}{4}$ ". Put the bolts through the wing and slip an O-ring over the end of each one. Assuming that you didn't drill the wing bolt holes with a hole-saw, you will find that the bolt can't be pulled out without forcing the O-ring off the bolt first. RLB

## RADIO JITTERS WHILE STARTING UP YOUR ENGINE?

If you have been flying very long you no doubt have seen or experienced glitching and jittering control surfaces while starting your plane. I have even heard of people sending in a radio for repair because they were afraid to fly it!

As a matter of fact there is nothing at all wrong with your radio and you will find the problem stops as soon as you unhook your glow plug driver or Ni-Starter. What is happening is that engine vibration is causing the glow plug connector to break and make contact with the plug several times a second which causes a jillion tiny sparks. These sparks cause RF (Radio Frequency) spikes all over the band which your receiver mistakes for the command for an inverted snap-roll!! In many respects it's just like the noise you hear on an AM Radio during an electrical storm. If you do notice this problem you might do well to run a ground range check just to be safe, but 99 % of the time it is nothing to worry about unless you like to let your plane set unattended in the pits with the engine running!! We all know you don't do that. Don't we?? RLB

## R/C REPORT NEWSPAPER

SEVERAL CLUBMEMBERS HAVE ASK ME ABOUT SUBSCRIPTION INFORMATION FOR R/C REPORT. AS MANY OF YOU KNOW, THIS IS A MONTHLY PAPER PUBLISHED IN HUNTSVILLE AL. BY A BUNCH OF CRAZY PEOPLE JUST LIKE US!

I HAVE EVEN HAD TWO ARTICLES PUBLISHED IN THE LAST TWO MONTHS! THEY EVEN PAID ME FOR ONE OF THEM! NOW THATS CRAZY!

ANYWAY, IF YOU WOULD LIKE TO SUBSCRIBE TO R/C REPORT HERE IS THE INFO YOU NEED:

ANNUAL RATE = \$10.00  
TWO YEARS = \$18.00  
THREE OR MORE YEARS = \$8.00 P/YEAR

MAIL TOO: R/C REPORT  
P.O. BOX 1706  
HUNTSVILLE AL  
35807

P.S. TELL EDITOR GORDON BANKS I SENT YOU. MAYBE HE WILL PAY ME FOR MY LAST COLUMN! RLB

## KIT REVIEW \*\*\* ACE TACHMASTER II

For some time now I have wanted to build an electronics kit. I figured it would be a good way to learn something about electronics as well as save a little money (about 22%) over the price of a finished product. My limited knowledge of electronics demanded something simple to build, yet at the same time I wanted something useful if I got it put together and working. After talking to Tom Runge of ACE R/C about it, he recommended his Tachmaster II kit as a good beginners project. After due consideration I decided to give it a try and ordered a kit. As usual, ACE R/C had it in my hands three days later. Boy! Talk about service! These guys really deliver!

On opening the box two things become readily apparent. First of all, ACE R/C includes EVERYTHING you will need to build the kit. Second of all, be thankful you didn't order a Silver 7 Radio system kit unless you have a lot more experience than I have! Included in the kit is the vinal-clad chassis box, 3-range meter movement, 5 bags of electronic components and hardware, and an excellent 8-page instruction manual. The manual consists of 3 pages of kit building tips, a 1 page circuit description, and 4 pages of building instructions. All are very well done and easy to understand.

Actual construction begins by reading the manual. Don't skip over this step and expect success, as it contains a lot of necessary information as well as a logical building sequence that allows you to make all 40 components and 106 solder joints fit on the 1 1/8" by 3 1/8" circuit board!. I found a headband magnifier to be especially helpful not only during construction but also while sorting out the 23 resistors, 8 capacitors, 8 transistors and diodes, and one IC chip. By following the instruction book step by step, I was able to assemble the kit in a little over two hours. (Just what ACE R/C said it would take!)

At this point you are told to snap in a 9v. transistor battery (not provided) and push the "ON" switch to see if it works. SOMEHOW I SORT OF EXPECTED A PUFF OF SMOKE AND A FLASH OF LIGHT TO RESULT. I was instead pleasantly surprised to find everything worked just as it should. The next step (and one which makes the Tachmaster II so highly accurate) is to calibrate the device. For this, KPL Electric provides the Mega-Buck test equipment! You see, all you need to calibrate the meter is a regular Fluorescent light like the one hanging over your workbench. You use the 60-cycle flicker from the light as an exact calibration reference. By adjusting a 5-K trim pot, the meter is set to read 3,600 R.P.M. on the 5,000 scale. (60 cycles X 60 seconds = 3,600 C.P.M. or R.P.M.). Once this is done flip the range selector switch to the 10,000 and 25,000 R.P.M. ranges. You should get a reading of 3,600 R.P.M. on all three scales. If you do everything is working as it should and is perfectly calibrated. Your kit is finished!

What do you end up with? Well first of all, a highly accurate 3-range tachometer. R.P.M. is read on an analog meter instead of a L.E.D. number read-out, so readings remain steady instead of flickering back and forth like the L.E.D. tachs do. Accuracy is assured due to the circuit design and the high quality components used. (I have seen some L.E.D. tachs read "off" as much as 500-600 R.P.M. and you can't adjust them) Should the Tachmaster II ever need re-calibration you can do it yourself in less than a minute. And should it ever need repair you can most likely handle that as well. If not ACE R/C will repair anything with their name on it for NOT MORE THAN 20% of the current catalog list price. You can't beat a deal like that!

Would I buy another ACE R/C kit? You bet I would. In fact, I am already looking at the catalog for my next project. (Lets see, maybe a F.F.C charger, or some Servos, or?)

RLB

### HOW ELECTRICITY WORKS - A NEW THEORY?

(Excerpt from May, 1988 R/C Report by Hollis Fenn)

Simply stated, the theory says that "ALL ELECTRICAL COMPONENTS OPERATE ON SMOKE. IF THE COMPONENT IS DAMAGED, THE SMOKE ESCAPES AND THE COMPONENT CEASES TO FUNCTION."

Sounds reasonable to me! RLB

