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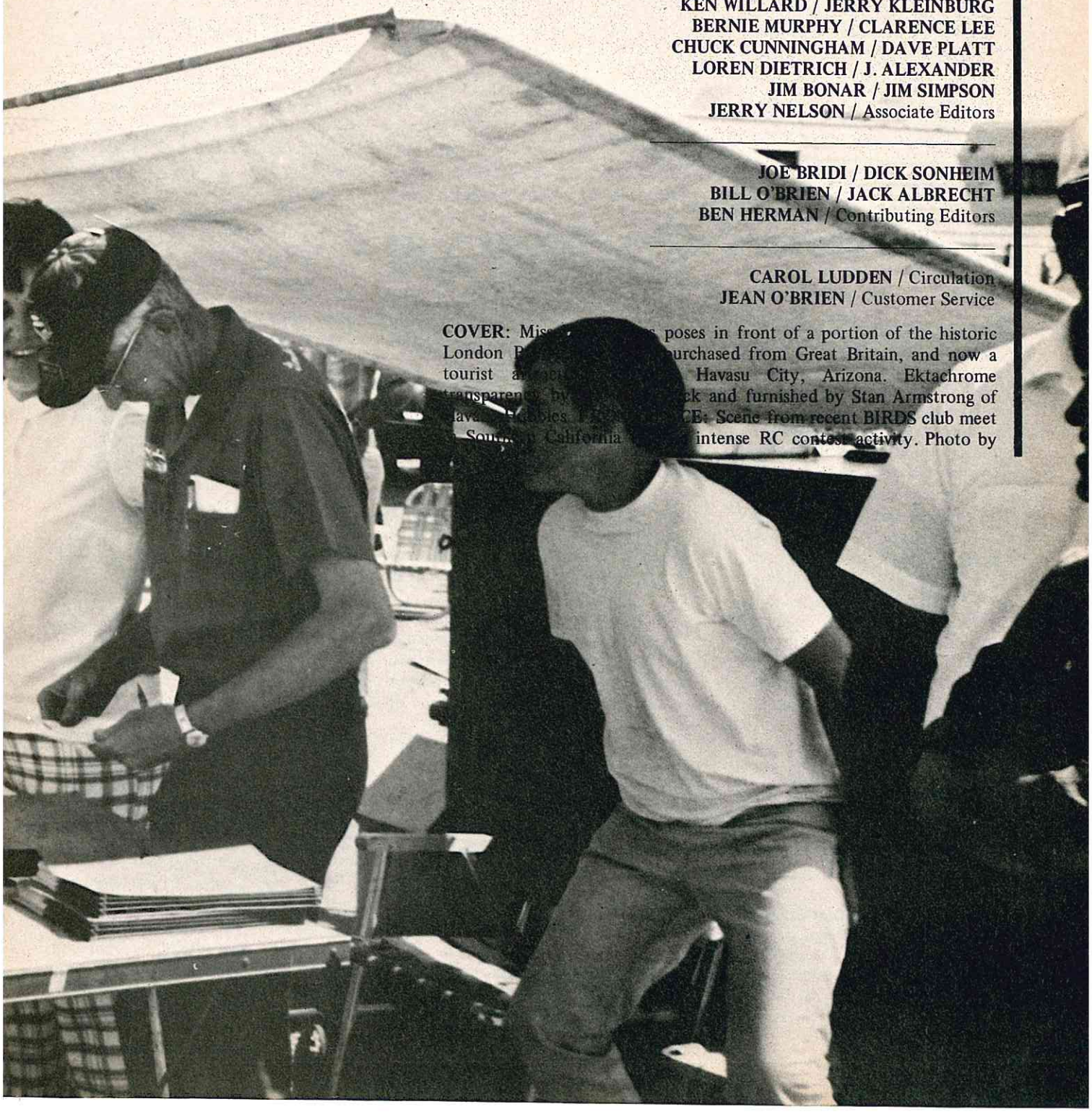

COVER: Mis[illegible] poses in front of a portion of the historic London B[illegible] urchased from Great Britain, and now a tourist a[illegible] Havasu City, Arizona. Ektachrome transparency by [illegible]ck and furnished by Stan Armstrong of Lava[illegible]. [illegible]CE: Scene from recent BIRDS club meet [illegible] Southern California [illegible] intense RC contest activity. Photo by

VIEWPOINT

BY: DON DEWEY

This month's editorial takes the form of a letter from the Memphis R/C Club, Inc. to the Federal Communications Commission concerning FCC Docket No. 18803. We urge you to carefully read their objection to two specific parts of the proposed rulemaking recommendation issued as Docket 18803. If you are in agreement with C.T. Williams letter, please write to the Academy of Model Aeronautics, Washington, D.C. 20554, so that the AMA's Frequency Committee may voice your wishes before the F.C.C. on this matter.

Dear Sir:

These comments are filed as an objection to two specific parts of your proposed rulemaking recommendation issued as FCC Docket 18803. Specifically, the Memphis Radio Control Club objects to the proposal to (1) amend par. 97.89 **Points of Communications.** of the Amateur Regulations, and (2) to require amateur six meter FM repeater transmitters to operate in a frequency subband of 53.0 to 53.2 Mc/s (proposed par. 97.61 (c)).

Our objection to the rewording of par. 97.89 is a fundamental one in that the proposed version of this paragraph eliminates the current clear authorization of the use of amateur frequencies for model radio control and other useful and technologically stimulating purposes. Par. 97.89 now reads . . . ."Amateur stations may be used also for transmitting signals, or communications, or energy, to receiving apparatus for the measurement of emissions, temporary observation of transmission phenomena, radio control of remote objects, and for similar experimental purposes . . . . ." We feel that in the past this authorization has been most beneficial. It has provided the impetus for the powerful and sustained development of model radio control equipment which has been led by amateurs since the earliest beginnings of this field in the 1930's. The work of Howard McEntee W2SI, Walt Good W3NPS, Phil Kraft K6SQF and many others has brought the state of the radio control art to the high degree of sophistication and reliability it enjoys today. The MRCC believes that it is in the best interests of the Amateur Service to continue this clear mandate to amateurs to continue their work in this and allied fields. Our reason for our second objection is that adoption of that part of proposed par. 97.61(c) relating to the six meter band would virtually destroy the existing arrangements for radio control model activities on that band. These arrangements were established by the Academy of Model Aeronautics (AMA) in 1968 and have since been widely adopted by those licensed amateur operators who are also AMA members and radio control enthusiasts

Specifically, the frequencies involved are five "AMA suggested channels" at 53.1, 53.2, 53.3, 53.4, and 53.5 Mc/s, and their establishment and widespread adoption has provided coherence and organization to what was previously a haphazard arrangement whereby any amateur who wanted to use six meters for RC activities picked out a frequency which he thought was otherwise not in use in his locality. However, at AMA contests and other assemblies of modelers from different locales this former practice led to procedural problems with flight line frequency control and, at times, to interference problems with models engaged in contest flying.

If the provisions of Docket No. 18803 are implemented, six meter FM repeater transmitters will be required to operate in a frequency subband of 53.0 to 53.2 Mc/s. Since these repeater transmitters are invariably of high power and are located atop tall buildings, towers, or on mountain peaks to maximize their area of signal coverage, if this proposed FCC rule becomes effective, it will only be a short time before the 53.1 and 53.2 Mc/s RC channels will be completely unsafe and the 53.3 and 53.4 Mc/s channels questionable in high signal strength areas near such transmitters.

It seems to us that use of six meters by both RC and FM repeater activities is fully justified and that the question becomes one of best allocating the available frequencies to avoid conflicts. We believe the following arguments are pertinent:

(1) Since VHF TV Channels 2 and 3 are in extensive use around the country, it would be most desirable to keep high powered amateur transmitters as far away, frequency-wise, from the upper end of six meters as possible. In this respect, it should be pointed out that RC transmitters are almost universally under five watts in power and are not connected to efficient antenna systems. FM repeater transmitters are just the opposite, and we believe that requiring them to operate above 53.0 Mc/s could create front-end overload type TVI problems over wide areas.

It should be noted that in the "Directory of American Open Repeaters" appearing in the April, 1970 issue of "73 Magazine", only eight out of 48 six meter repeaters use a frequency above 53 Mc/s as either an up-channel or down-channel. It would appear that those installing existing six meter repeaters have found it advantageous to stay below 53 Mc/s and it would be both costly and inadvisable to force a change for both the FM and RC users as would result from implementation of Docket No. 18803.

(2) One might ask if it would be possible for six meter RC equipment to move closer to 54 Mc/s. The opinion of the MRCC is that this would be undesirable since the very miniaturized and lightweight receivers mandatory in airborne RC use would

then themselves have overload troubles from powerful Channel 2 video carriers at 55.25 Mc/s in many parts of the country. Harmonic problems from CB RC transmitters which are in use at the same time at the same flying fields (26.995 x 2 is 53.99 Mc/s) or from nearby Channel 1, 2, or 3 Class D CB transmitters would also militate against operating RC aircraft on six meters in the area above 53.7 Mc/s. The channel arrangements promulgated by the AMA were arrived at in consideration of the above factors plus the avoidance of possible receiver image problems. These arrangements have proven very useful and workable in the almost three years they have been in existence, and, as matters stand now, six meter amateur RC equipment on the AMA channels has proven to be highly compatible with the 27 Mc/s and 72 Mc/s non-amateur RC equipment in use at the same time and place.

In summary, as the FCC knows through earlier actions of the AMA with respect to the establishment of the currently authorized RC CB channels, the problems of finding suitable frequencies which will allow this rapidly growing activity to flouish with safe, reliable channels between ground control and airborne models are severe ones. Those of us who, in addition to being RC flyers, have earned amateur licenses feel that we contribute to the easing of these overall problems by spreading ourselves out on the six-meter channels, thus leaving more air time available to our non-ham RC colleagues.

We believe that if, as is proposed by Docket No. 18803, par. 97.89 is altered and the FM repeater transmitters are forced into the 53.0 - 53.2 Mc/s subband, amateur RC enthusiasts will be hard pressed to find frequencies which will be as useful and safe as the AMA RC frequencies have become. We would respectfully suggest that all concerned, FM repeater users and RCers, would be better benefited by maintenance of the current wording of par. 97.89 with respect to radio control and by establishment of a subband for FM repeaters below 53.0 Mc/s. We would be most grateful if the FCC could see fit to adopt at least a tacit acknowledgment that 53.0 to 53.6 Mc/s is a legitimate and useful area in which model radio control activities can be pursued both for amateur technological development and recreational flying.

C.T. Williams W4VSD ●

THE MODEL WIFE

BY PATRICIA GROVES

Y'know, gals, there's all sorts of aspects to this "Model Wife" thing. Silent suffering 'n things like that just aren't necessary. There's a gorgeous advantage here, absolutely crammed with possibilities. Let me tell 'ya:

One morning after the kids and husband had gone off to school and work, I'd cleared off the kitchen table, poured a fresh cup of coffee, grabbed a couple of pencils and some clean sheets of paper and sat down to have my monthly rasslin' hasslin' session with the bank statement. Now, I always lose, but still 'n all, it's a high spirited contest; although, I'm resigned to an impotent sort of fist shaking outcome, "I'll get you yet, you computerized Red Baron!"

On this particular morning there were the usual checks: the mortgage company, gas, light 'n water, grocery stores, Dr. Specialists, Dr. Extra-Specialists, Dr. The Other Specialists (one good GP would have done just as well), and – here's another check. Hmmm, I'm thinking, Jim Sunday . . .

Jim Sunday? Forty dollars? My husband wrote a check for forty cotton pickin' dollars? Without telling me? And worse. Without making an entry in the check ledger? Oiy Vey.

Shall I call him at work? No. For forty dollars, I'm going to see his face.

No one's birthday is coming up; ergo, no secret little gifties. The car's in half-way decent shape. No work done there. He hadn't bought any new clothes. Not that I'd seen anyway. (The situation is getting darker.) What about the kids? Nope. Haven't seen anything new there.

Armed with such cold, fact-ridden female logic as that, it's perfectly obvious this guy, Sunday, is some kind of a shady character. I mentally tick off the possibilities . . .

Dinner that night was good (but not too good for the lousy crumb). Then, with a studied casualness that would have done credit to Katie Hepburn, I ask, "By the by, who's Jim

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ENGINE CLINIC

BY CLARENCE LEE

Bob Smith's record-setting Open Pylon racer, the Mach 1, used a Lee Custom .40.

A NEW NATIONAL OPEN PYLON RECORD AND SOME MUCH-NEEDED RACING ACCESSORIES.

By the time you read this the pylon racing season will be well under way. Things got off with a real bang in Southern California this past weekend with a pre-season non-point meet held by the San Gabriel Valley R/C club at the Whittier Narrows flying site. Formula I had forty one entries, which shows the amount of interest in this phase of R/C flying. The highlight of the meet was the 1:32 turned by Bob Smith and Jeff Bertken (BS Racing team) in Open Pylon for a new national record! The airplane was an original design by Bob and his brother Chuck called Mach I. The engine was a Custom K & B .40 by yours truly. For some of the sceptics who might think a lap was missed, there were five stop watches on the race. The three judges, my own, and Bob's brother. All were 1:32 or under! Bob blew one turn pretty badly, or the time would have been under 1:30. This was during the course of a regular heat race – not a special set up race just for the record.

Bob Smith of the BS Racing Team (Bertken-Smith), after setting national record of 1:32.

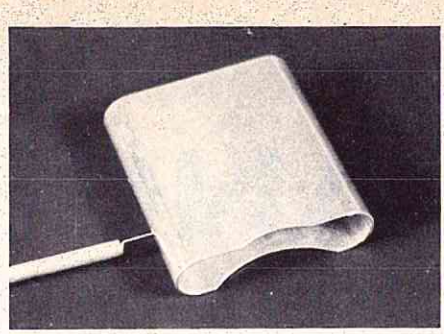
The airplane developed some aileron flutter during this run, so had to be pulled from the contest.

The fastest time in Formula I was turned by Joe Bridi using one of the new ABC Super Tigres with a 1:41. Formula I was won by Doug Brink using a K & B .40 with a ship that, in my opinion, was even faster than Joe's. However Doug doesn't fly the course as well as the old pro Joe Bridi – in fact, few do. When Doug finds the groove around those pylons, he will be under 1:40.

With the speeds that these ships are turning now, it is only a matter of time before a serious accident occurs. The speeds are getting beyond the capabilities of many of the pilots. As we all know, not everyone flying pylon has the instant reflexes that it takes to control one of these bombs moving at 160 mph down the straights.

I like to hear those engines scream and watch the ships move just as well as the next guy, but I would sure hate to see a spectator or contestant killed, or seriously injured, when one of these ships goes into the crowd or pit area. I have had my hair parted several times while waiting in the pits at number two and three pylons, and we all know it is only a matter of time before a serious accident occurs. Right now the AMA sanctioned contests are covered by the AMA insurance. What do you suppose would happen to the insurance rates and pylon racing if a fatality occured? I will be willing to bet we could kiss pylon racing goodbye as an R/C event. With the handwriting on the wall, why do we sit around and wait for the inevitable to happen?

A possible first step towards slowing things down a little might be to put a restriction on the fuels. Some pretty exotic mixes are being used. I've mixed a few myself. We could limit the fuel to commercial fuels with a nitro content no higher than 30%. Supersonic 1000, Cox Racing, Fox Missile Mist, etc., fall in this category. This will get the times back into the 1:50's which is still a nice racing speed. The ships are still moving fast enough to do serious damage, true, but there is a little more 'think' time at the transmitter. This could easily be carried out by the sponsoring club supplying the fuel and supervising the fueling of all ships while in the stand-by box. This is what is going to have to be done with the FAI event, so there is no problem involved as far as I



K & B exhaust extension — a much needed pylon racing pylon racing accessory!

can see. Fuel costs would not be a problem, as I am sure the fuel manufacturer whose fuel was used would be glad to supply same for the advertising value.

I personally do not favor the stunt prop, stunt fuel, or smaller engine restrictions. After all, this is a racing event. To take this direction would only kill interest in the event and we might just as well go back to racing our stunt ships which was the original intent of Open Pylon.

How about some of you contest directors taking the first step before pylon racing becomes a thing of the past? Once started I am sure others would follow suit.

I received some samples of the new Top Flite speed props in the mail this past month. These are truly beautiful racing props. When Top Flite first introduced their racing prop for pylon racing several years ago, it was slow to catch on. Most R/C fliers were used to the big butter paddles and did not see how a little skinny bladed thing like that could work. Modelers that had come up through the U-control speed ranks knew better. The props slowly caught on, and fliers began to realize that the 10-8 or 10-8½ cut down to 9" diameter, or under, really worked. Then the 'chicken stick' crowd began to complain to Top Flite that they were breaking too many props. In an effort to please, Top Flite beefed up the blades. Now to get an engine to turn and the ship to move took extensive reworking of the prop. As the event took hold, more and more fliers began to realize this. It wasn't long before the pylon pilots were crying for the original prop. So again, in an effort to please, Top Flite has brought back an improved version of the original Speed Prop. This time you do not have to cut down the 10" diameter or notch the back of the blades to fit the spinner back plate. The props are available in 8½", 9", and 9½" diameters, and with 8", 8½", and 9" pitch. The 8½" and 9" diameters will be the more popular, as it would take a pretty healthy .40 to swing the 9½" diameters. However, the larger sizes give the rework artists extra wood at which to carve away. Even the tips have been washed out slightly as I have mentioned in past articles. The only work that is necessary on the smaller sizes, is a touching up with sand paper.

Now some of you that have not been involved in racing are going to wonder about the thinness of the blades. Especially when you can flex the tips with your fingers. This is NOT a defective prop. They are intended to be this way. As the U-control speed fliers can tell you, when that blade flexes, it really goes to work. You **do** have to be careful of the wood grain. Even though Top Flite is selective, this is a mass produced prop, and some with marginal grain will get out. Check every prop before you use it, and do not stand in line with the prop when the engine is running!

If you are serious about pylon racing it would be a good idea to get yourself one of the electric starters that are on the market. Although some of the fellows are starting their engines by hand, these thin blade props break very easily, and the sharp trailing edges are rough on fingers.

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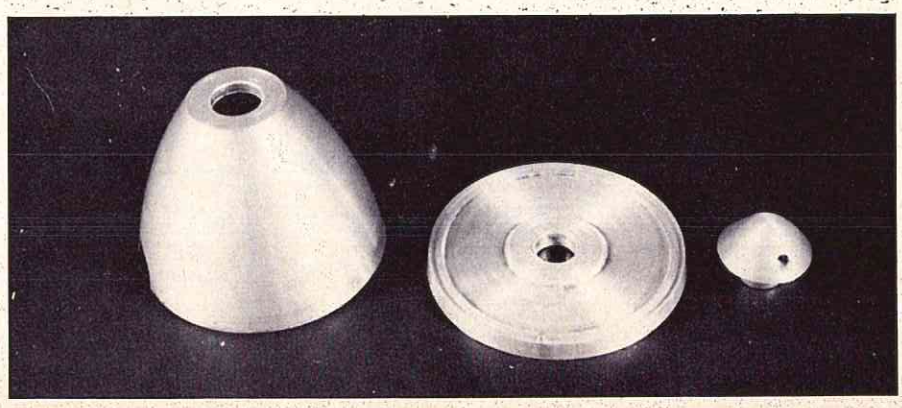
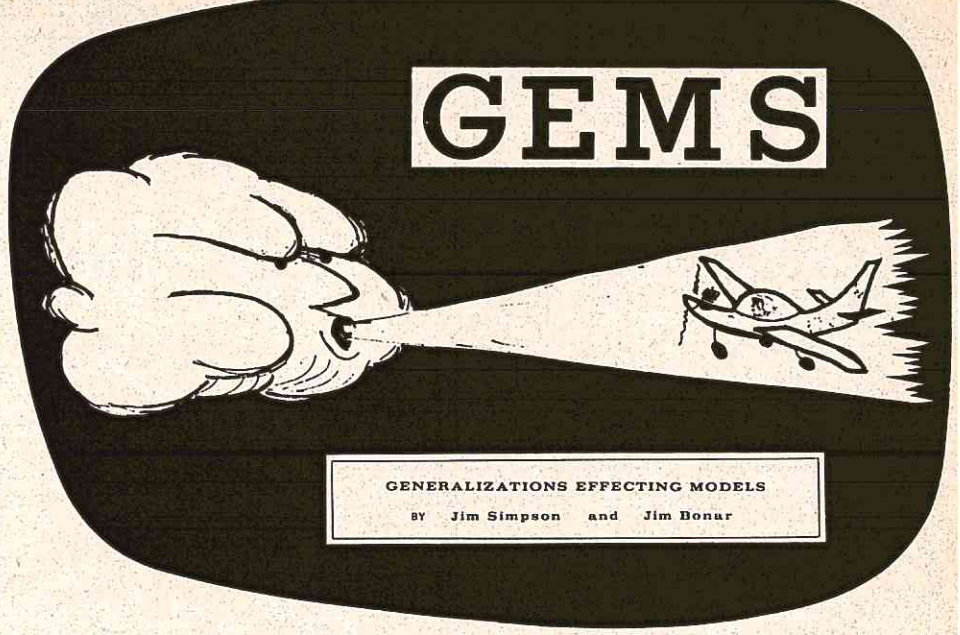
The unique 1 Turn Tru spinner units designed for pylon and electric starters.



GEMS



GENERALIZATIONS EFFECTING MODELS

BY Jim Simpson and Jim Bonar

The Basics of Formula I . . . INTEREST, STUDY, PRACTICE, PROCEDURE, AND PREPARATION.

We will consider Formula I pylon racing before pattern because it is much easier to fly and can be successfully done with much less experience! After all, you simply take off, make 22 tight 180 degree turns, fly a landing pattern, and land! Simple, huh?

Here's the big picture – we'll cover the phases as follows; interest, study, practice, procedure, and last preparation. This will give you many opportunities to back out if you decide to, yet still give you as much as possible if you decide to compete.

Of the hundreds of modelers we know we honestly can't name one who has flown Formula I pylon, then quit and gone back to pattern, exclusively. There is tremendous excitement in racing and it's very contagious!

If you have been Rat Racing, you have felt this excitement. Also, if you have ever won any kind of race you know whereof we speak. If this kind of excitement and the exhiliration of winning appeal to you then, by all means, get in the racing game!

Perhaps you've not yet known any of the experiences we've mentioned. No matter, just continue with the next step.

If at all possible get some friends together and try a race with your trainer, sport, or stunt job as the case may be. If not, use your family, but in either case post one person per airplane 506' upwind with a different color flag for each airplane. Have the person hold the flag, (handerchief or bandana) up in the air as your plane approaches and whip it down smoothly as your plane is overhead or abreast.

You will need another helper standing close to you who can watch the flag and as it goes down he (or she if you're lucky) must shout "turn" and you must act accordingly. After your roll out from that turn you must adjust your heading offset slightly to allow a pair of 90 degree turns here at the near end of the course and you just judge these turns, yourself. It's really quite easy with a little practice!

Your helper can be a big help by whispering sweet nothings in your ear while you fly this portion of the course, in an effort to calm you down, help maintain your position, and so forth!

You must always fly 11 laps although only 10 constitute the race because if you cut only one pylon the 11th lap will make up for the cut and if you cut 2 or more you're out anyway! Moral – don't cut pylons!

If you find this exciting the next phase will logically be to study. What engine, what plane, what radio – and so on!

Use a reliable radio, above all. Don't try it with a clunker! These planes move so fast there's no margin for error and, besides everything else, will fail anyway at one time or

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PUFFIN II

BY JOHN D. WOODS

This model airplane is a complete departure from the others I have designed. It is relatively easy to build because of its very low parts count and its fairly conventional construction methods. There are only three departures from the ordinary and two of these have conventional alternatives. So, for those of you that read as far as the authors' name and no farther because you said to yourself "This is another one by that guy that can't do anything the way the rest of us do," take heart and read on!

In the beginning there was the Ryan ST and pilots, old and young alike, harkened unto the smooth lines and great capabilities of this "before its time" airplane. Then, as with most things man made, it passed into history. Since then it has been resurrected by Controline and R/C Scale modelers to win and place in many scale contests. Then, John Elliot Jr., decided that its basic design might be modified, somewhat, and be made into a fine Class III contest ship. So he toiled long and hard – more than 6 days and 6 nights because he rested a lot – and came up with the forerunner to the present design. This aircraft resembled the full scale aircraft in profile but had some concessions to practicality in order that the model could easily perform the pattern maneuvers. It had an inverted engine, flaps and DeBolt retract gear. So impressive was this design, both in appearance and in flight, that I elected to carry on with it and try to further extend its capabilities. Many extensive modifications, both in construction techniques and the basic airframe, were made. The result was Puffin II – a new model from every standpoint. The picture of Puffin I shows the engine upright, no retracts because of the additional unnecessary weight, a slightly re-designed fuselage and wing section, and the addition of wing fillets. The flaps were retained on this version, as on the first Puffin II, because of the very desirable low speed characteristics produced by them. They are not included on this version because an extensive lightening program was undertaken and a pound and a half was cut out of the design, making flaps unnecessary.

Some airfoil modifications also took place to improve low speed characteristics. This same basic airplane was flown at weights up to 8¼ pounds without struggling – the model as shown on the plan can be built as light as 6 pounds using the new miniaturized radio equipment. The flying characteristics don't seem to suffer on either end of this wide weight range. All Puffins built and flown to date have exhibited the same excellent flying characteristics. The model is capable of any maneuver the R/C pilot is able to perform. It does not exhibit any unusual or undesirable characteristics; for example, spin entry and exit are both easy and predictable, knife edge flight is excellent; it will snap on command, recovering immediately upon release of the controls to neutral, and it will perform all of the AMA/FAI maneuvers smoothly and easily. Begin construction of the model with the fuselage since all of the new techniques are used during its construction.

THE FUSELAGE: Cut 2 full length fuselage sides from 3/32" straight grained medium balsa. Make both sides identical and mark the positions of A, B, & C on the top and bottom edges of these sides. Next cut two 3/16" fuselage doublers according to the pattern on the plan. Using contact cement adhere these doublers to the inside of both of the fuselage sides. Be certain to make a right and a left side. Now, glue a 3/16" square stringer on the top and bottom of both sides from the doubler to the end of the fuselage sides. Cut a 1½" x 3/16" tail block and glue between these stringers in the position indicated. Taper these blocks the full 1½ inches so that when the tail is brought together in a later step the sides will contact each other along this whole distance and have a ¼" width at the end of the fuselage. Next, shave a 3/16" sheet of styrofoam off of a block and cut it to fit inside of the 3/16" square stringers, the fuselage doubler, and the tail block, and glue in place. Your sides should now look like picture #1.

Cut bulkheads "B" and "C" from 3/32" ply and the firewall "A" from ¼" ply. Also cut the plywood engine mount from ¼" ply. Glue B and C in place using Hobby Poxy I glue – note that these bulkheads key into the 3/16" balsa doubler on the top and bottom. Be sure the fuselage is square and allow to dry. When dry, epoxy the firewall in place in front of the 3/16" doubler. Clamp and tape it in until it has cured, being certain that the lower front edge of the fuselage sides contact the firewall all the way to the notch. Your fuselage should now look like picture #2. Glue the 1/8" fuselage alignment member "D" in place between "B" and "C" on the top of the

Two of the author's stable of Puffin's. The larger version is the one presented in this article. Designed to fly at weights varying from 6 to 8¼ lbs.

In the beginning, there was the RYAN ST . . . . Now the PUFFIN II, a fine pattern and sport ship which retains that vintage accent while providing all of the flight characteristics demanded by the contest flier.

fuselage. This part both aligns the fuselage and determines the curvature of the fuselage at the wing station. Notice that the fuselage is not straight between these bulkheads but follows a gentle curve. Notice, also, that the fuselage taper starts at "C" and that the fuselage width decreases in both directions from there. Next, epoxy the plywood engine mount in between the fuselage sides and on top of the 3/16" doublers and the firewall. Tape and clamp until dry. When dry, cut a 3/8" balsa block to the same outline as the engine mount and epoxy in place directly on top of it. Make sure the engine mounting blind nuts are in place on the ply mount before the balsa cap is glued on. Now bring the tail post together, being certain that both sides of the tail cone have the same curvature, then adhere with Hobby Poxy I cement. Your fuselage should now look like picture #3.

Very carefully cut the 3/32" filler sheets for the top and bottom of the tail cone, making sure that the curvature on both sides of both pieces are identical and glue in place inside of the 3/16" square stringers and flush with the top and bottom edges of the tail cone. Cut a 3/16" sheet filler for the bottom front of the fuselage and glue in place between the firewall "A" and bulkhead "B" and against the 3/16" fuselage doubler and between the fuselage sides. Your fuselage should now look like pictures 4 and 5. The square cut-out shown in "D" between "B" and "C" is necessary only if you use the large servos and have to relieve the top inside of the fuselage to accept their greater depth. If you use the miniaturized equipment this is not necessary. Cut a ½" block of balsa and glue in between A and C on the bottom side. Shape this block using the curvature of A and C as a guide. Cut a piece of 1/8" balsa and glue it on the bottom aft of "C". Shape this sheet using the fuselage sides and the bottom of "C" as a guide. Cut a piece of 1/8" ply and glue in place between the 3/16" doubler at the aft end of the wing saddle. This ply plate is the anchor plate for the blind nuts for the wing hold-down bolts. Glue a 1/16" sheet of balsa over this ply plate the same length but wide enough to extend to the outside of the fuselage sides. Block sand a taper in this 1/16" balsa plate so it contacts the wing along the aft top side when it is bolted in place. The fuselage should now look like picture #6.

Turn the fuselage over and start building up the top side by gluing on "E" in place along the center line of the fuselage. Notice that this member extends from the ply spinner ring in the front to the vertical fin at the rear. Next cut the 1" balsa blocks that fit against "E", front and rear, and epoxy these in the positions indicated on the plan. These blocks are necessary to provide strength to the engine mount and the empennage, so do not attempt to extend the foam blocks along the whole fuselage length. Block sand these to shape – gently rounding the edges to give a pleasing appearance to the aft end and tapering it down in front to blend into the spinner ring. Build the stab from ¼" sheet balsa and epoxy in place with Hobby Poxy I. Your fuselage should now look like picture #7.

Cut two styrofoam blocks slightly oversized, and with 90 degree angles to fit between these balsa blocks you just shaped, and against "E" and the top of the fuselage. Glue in place. Very carefully block sand this foam using the shaped balsa blocks and "E" as guides until you have gently rounded fuselage

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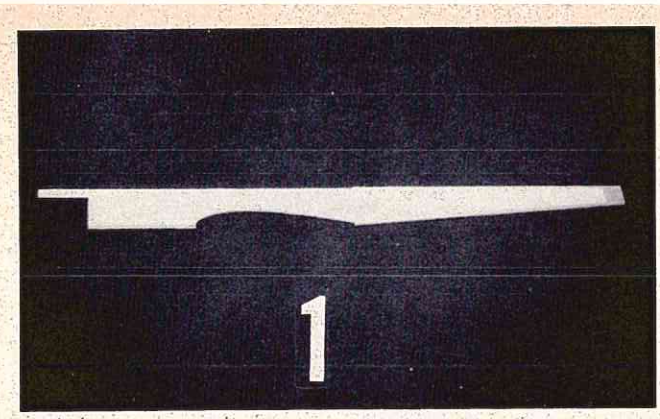
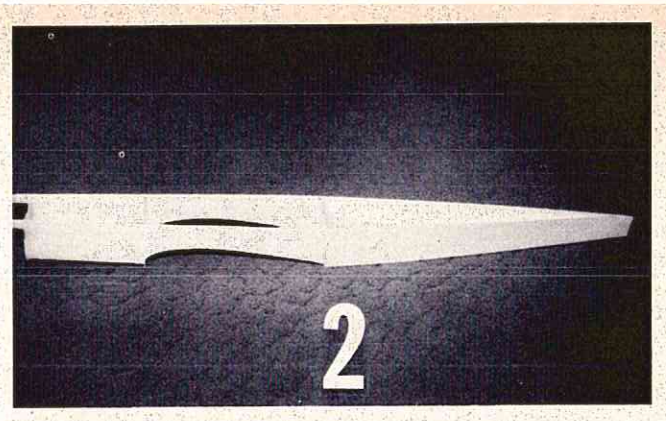
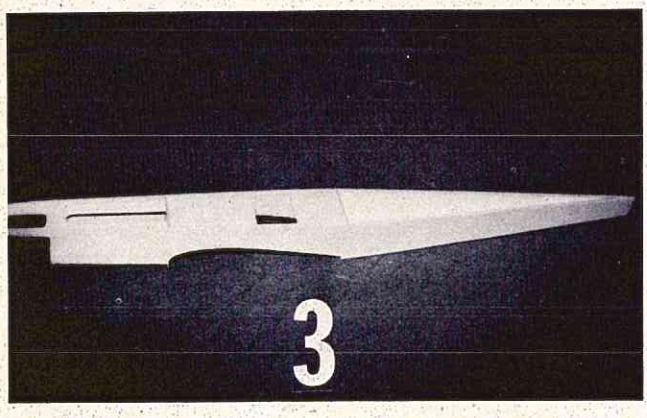


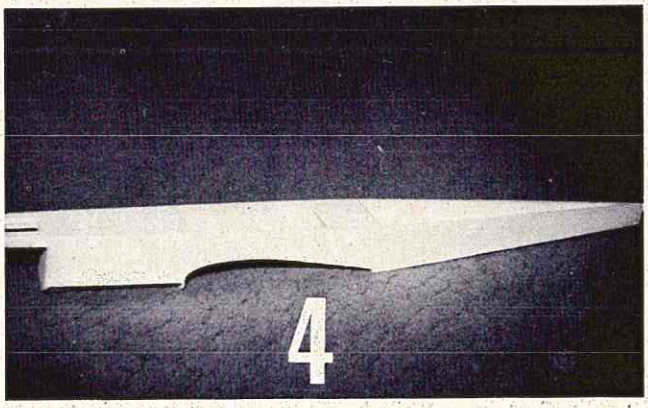
Step #1 3/16" balsa and styrofoam doubler in place.



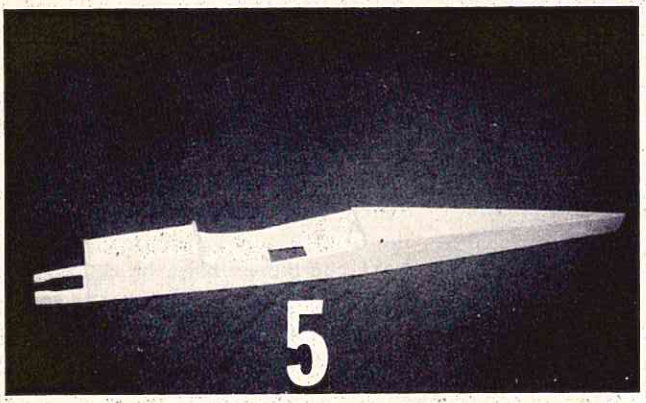
Step #2 Fuselage with bulkheads glued in and tail post joined.



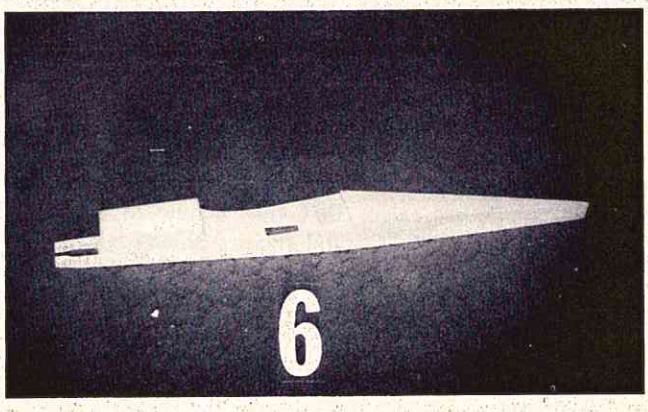
Step #3 Fuselage showing top sub sheeting and ¼" plywood motor mount glued in.



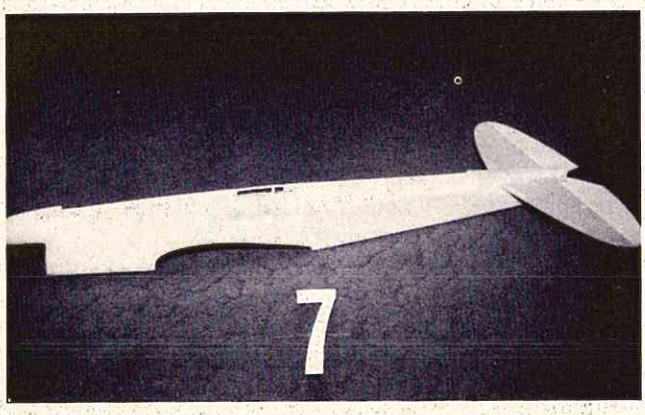
Step #4 Shows a ½" balsa block fill in over plywood mount making a straight line across the entire fuselage top.



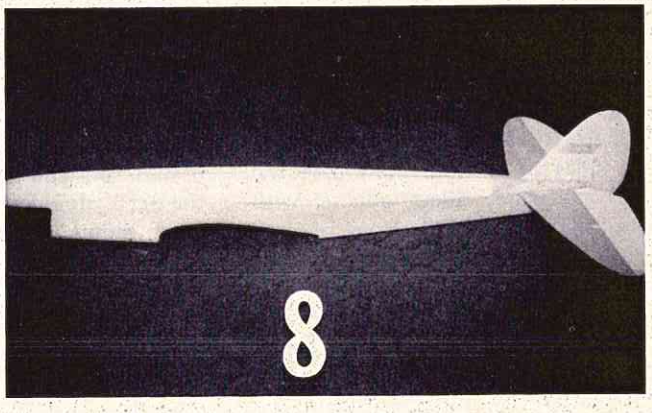
Step #5 Fuselage bottom with sheet balsa fill ins forward and aft of the wing saddle.



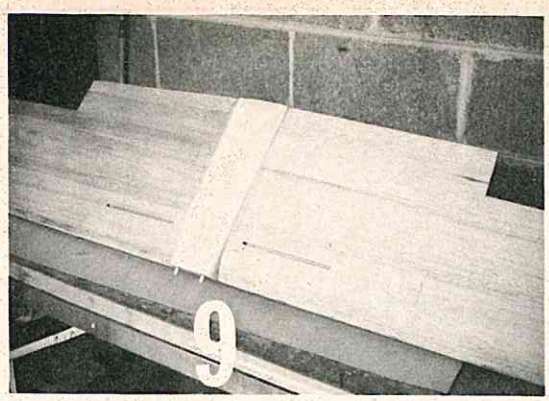
Step #6 Fuselage bottom complete with balsa block under chin and shaped 1/8" balsa sheet on bottom of tail cone.



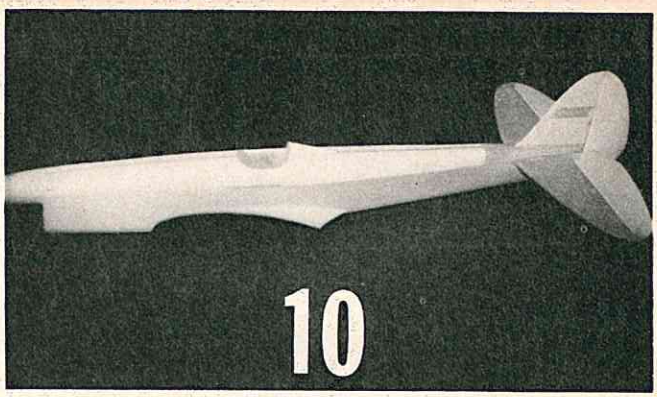
Step #7 Shows stab, front and rear balsa blocks and fuselage spine in place.



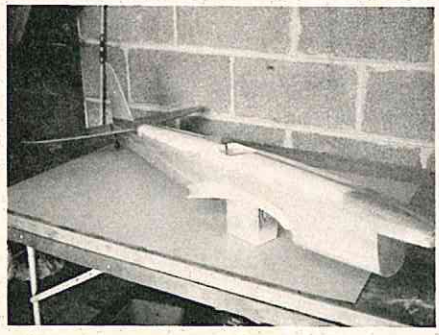
Step #8 Fuselage top complete with styrofoam blocks in place.



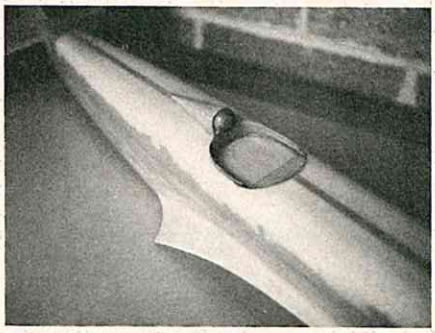
Step #9 Shows wing with fuselage fairing completed. Wing must be completed before fillets can be fitted on the fuselage.



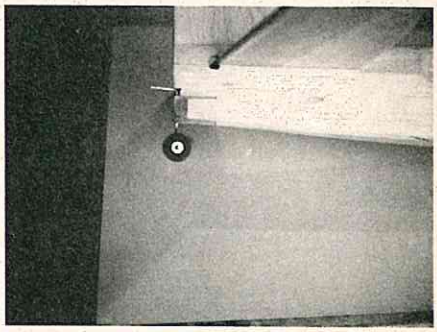
Step #10 Fillets are complete, fin in place and cockpit cut out and floored.



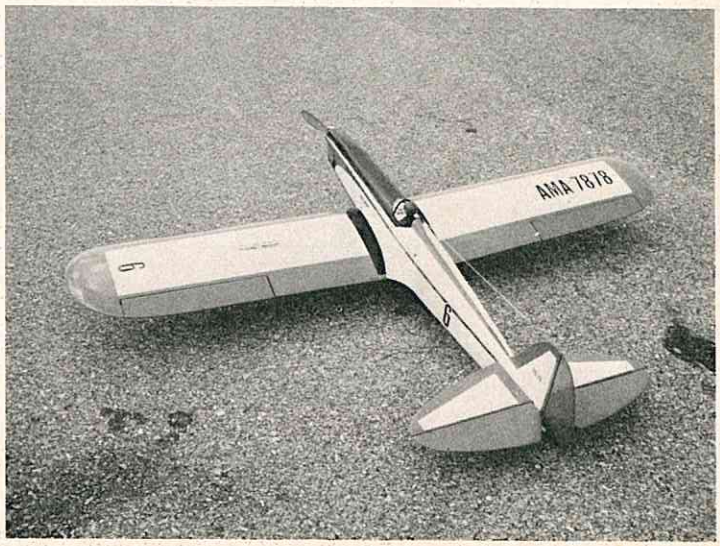
This picture shows the fuselage section with fiberglass over the sytrofoam and two coats of Hobby Poxy II glue ready for final sprating.



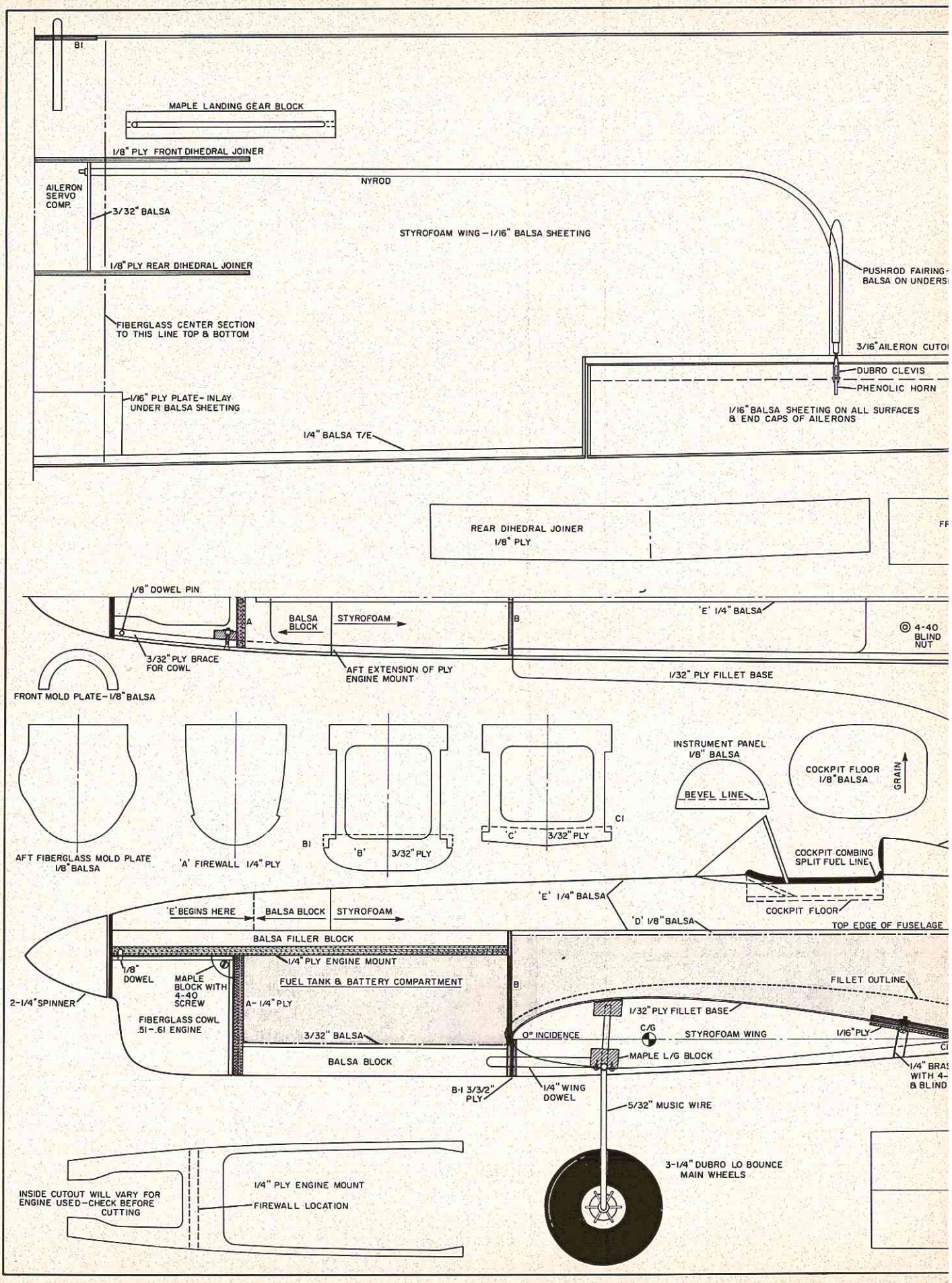
A closeup of the cockpit showing detail of flooring, instrument panel and headrest.

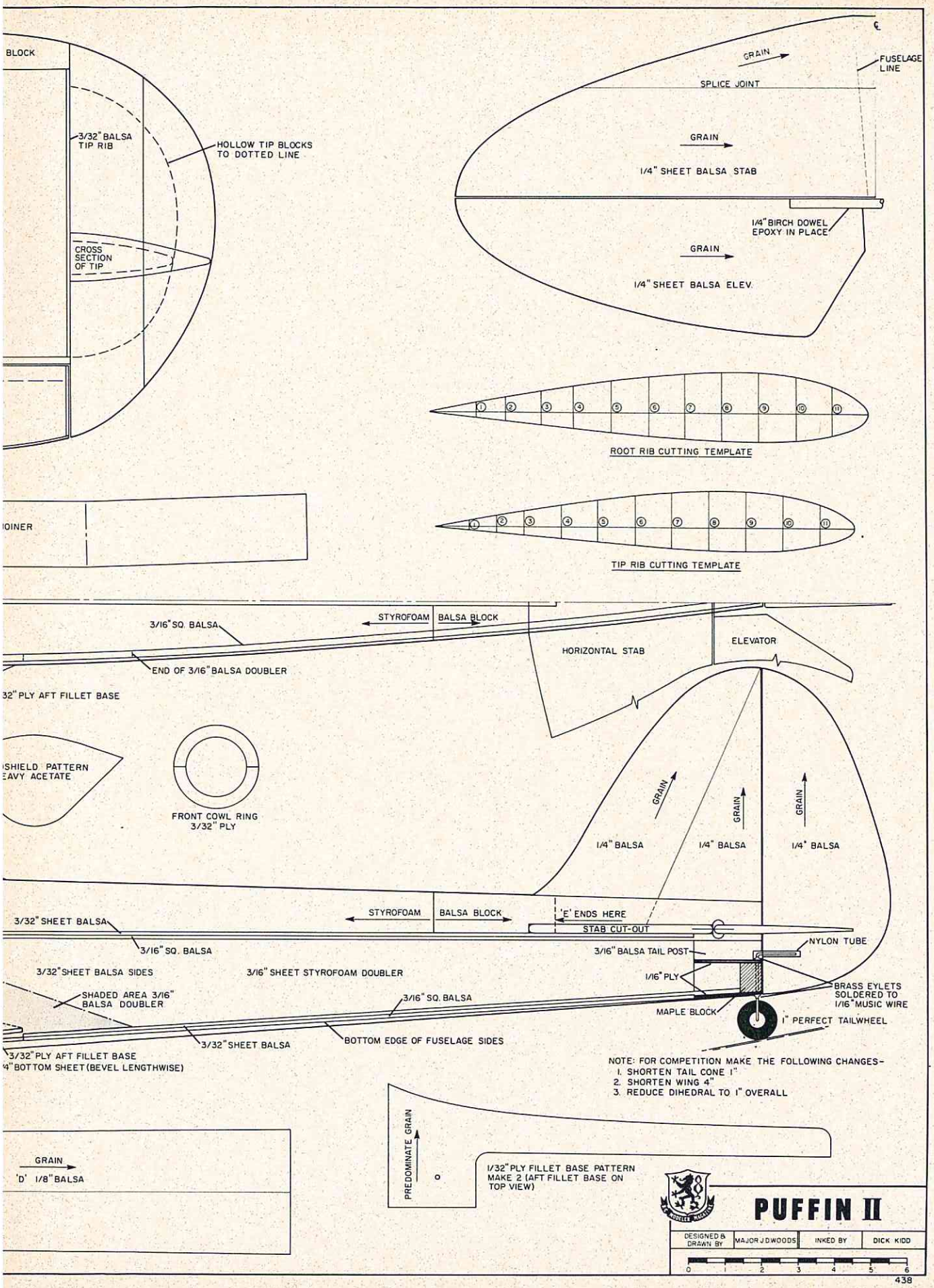


Tail wheel detail — note the flush nyrod push rod exit forward of tail wheel and under stab.

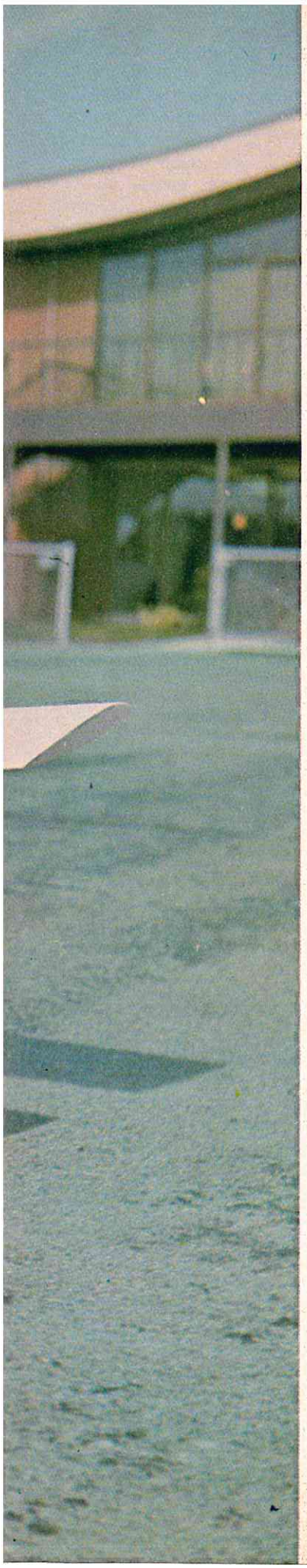


Above: author with his third Puffin — color scheme is orange and white. Upper, rt: Side profile shows off the long (51") fuselage to its' best advantage. Rt: rear quarter view shows the long tapering nose and fillets very well.


B1
MAPLE LANDING GEAR BLOCK
1/8" PLY FRONT DIHEDRAL JOINER
NYROD
AILERON SERVO COMP.
3/32" BALSA
STYROFOAM WING – 1/16" BALSA SHEETING
1/8" PLY REAR DIHEDRAL JOINER
PUSHROD FAIRING – BALSA ON UNDERS
FIBERGLASS CENTER SECTION TO THIS LINE TOP & BOTTOM
3/16" AILERON CUTO
DUBRO CLEVIS
PHENOLIC HORN
1/16" PLY PLATE – INLAY UNDER BALSA SHEETING
1/16" BALSA SHEETING ON ALL SURFACES & END CAPS OF AILERONS
1/4" BALSA T/E
REAR DIHEDRAL JOINER 1/8" PLY
1/8" DOWEL PIN
A
BALSA BLOCK
STYROFOAM
B
'E' 1/4" BALSA
4-40 BLIND NUT
3/32" PLY BRACE FOR COWL
AFT EXTENSION OF PLY ENGINE MOUNT
1/32" PLY FILLET BASE
FRONT MOLD PLATE – 1/8" BALSA
AFT FIBERGLASS MOLD PLATE 1/8" BALSA
'A' FIREWALL 1/4" PLY
B1
'B' 3/32" PLY
C1
'C' 3/32" PLY
INSTRUMENT PANEL 1/8" BALSA
BEVEL LINE
COCKPIT FLOOR 1/8" BALSA
GRAIN
COCKPIT COMBING SPLIT FUEL LINE
'E' 1/4" BALSA
COCKPIT FLOOR
'E' BEGINS HERE
BALSA BLOCK
STYROFOAM
'D' 1/8" BALSA
TOP EDGE OF FUSELAGE
BALSA FILLER BLOCK
1/4" PLY ENGINE MOUNT
1/8" DOWEL
MAPLE BLOCK WITH 4-40 SCREW
FUEL TANK & BATTERY COMPARTMENT
FILLET OUTLINE
2-1/4" SPINNER
A – 1/4" PLY
B
1/32" PLY FILLET BASE
FIBERGLASS COWL .51 – .61 ENGINE
3/32" BALSA
0° INCIDENCE
C/G
STYROFOAM WING
1/16" PLY
BALSA BLOCK
MAPLE L/G BLOCK
1/4" BRAS WITH 4- & BLIND
B-1 3/32" PLY
1/4" WING DOWEL
5/32" MUSIC WIRE
3-1/4" DUBRO LO BOUNCE MAIN WHEELS
INSIDE CUTOUT WILL VARY FOR ENGINE USED – CHECK BEFORE CUTTING
1/4" PLY ENGINE MOUNT
FIREWALL LOCATION



FULL SIZE PLANS AVAILABLE --- SEE PAGE 88



BI-FLY

A "Fly-For-Fun" Design for .15 Engines and Anything From Galloping Ghost to 3-Channel Digital.

BY JOHN RILEY

Bi-Fli – a fly for fun plane which is the result of a number of ideas which lay dormant until the RCM Design Contest came along and provided the incentive to get the project underway. I have built and flown many different types of models, mostly gas, and now really enjoy the thrills of R/C modeling. As a modeler dating way back to pre-Plymouth Internat days, I have some pretty strong convictions on how a model should be constructed and so really jumped at this opportunity to express these ideas.

With the power of today's engines, and the reliability of R/C equipment, we now have real freedom in the design of the model and can lean towards good appearance in design and model finish. Since the Bi-Fly is a fly-for-fun plane, I looked first to a realistic configuration. There are a lot of us who like a bi-plane, as is evident by the increasing numbers seen in R/C circles today and, I personally, like a cabin model, so I molded the two design ideas into the Bi-Fly. My second criteria for a model is that it must be rugged. I like a plane which will get up and go without spending a lot of time out for repairs. Despite all one does to prevent accidents there are times when they do happen, and so I appreciate a model that can take a few bumps and still come out on top. I can assure you that is you are careful during construction that the Bi-Fly will meet this criteria. Third, if it is a little out of the ordinary the plane will make a good conversation piece and, in my research, I sure didn't turn up many cabin type bi-planes!

One of my biggest problems is finding time for modeling, so I really look for short cuts in construction and, as is evidenced by the plan, this is a slab sided model with the corners rounded off to dress up the appearance. Since I abhor the building of wing structures the next big short cut is in the flying surfaces. I used the "Testors" foam wing and stab, but the "Midwest" or Sig foam wings would do just as well.

The original was flown with a Controlaire GG, Rand LR3 and a Fox '15' engine. Those of you with one of the new, smaller digital rigs should find the Bi-Fly very satisfying as well as those of you who prefer pulse proportional systems.

So there you have it, a cabin bipe which is a little off the beaten track in basic configuration; a model which is designed to have eye appeal, and yet is built ruggedly enough so that it will provide many hours of good flying fun and stand up over the years as a real asset to your flying fleet.

BASIC CONSTRUCTION DETAILS:

Fuselage: Select medium to hard balsa for the fuselage sides with the main criteria being that both sides should be equal in weight so that they will bend equally when forming the nose and tail. Butt glue the 3" and 4" sheets of 1/8" balsa together in preparation to cutting out the fuselage sides.

One of the big jobs in building a model from scratch is the transfer of the part shapes from the plans to the wood. I like to use a trick used in the sheet metal trade, being that of placing the plan over the material and then punching, or in the case of balsa wood, taking a pin and poking through the plan into the balsa at each corner of the part. In the case of curves, space the points about ½" to 1" apart, depending upon how straight or sharp the curve is. Once this is done remove the plan and, using a straight edge, (except on curves) and an X-acto knife, line up the points and cut the parts out. This will make a neat and accurate part which will aid in construction.

After the sheets for the sides have dried, place the plan over the sheet and line up the reference line on the plan with the glue joint between the *(continued)*

3" and 4" sheets. This reference line will be of real value later when fitting the foam surfaces to the fuselage in order to obtain the correct incidence. Proceed to transfer and cut out the sheet sides, doublers (actually this is reinforcement for stress areas), and fuselage formers. Don't forget to make the right side shorter to allow for the 3° right thrust. After these parts are cut out, proceed to assemble them. The original has a see through cabin for the sake of appearance. The model is reinforced in this area with 1/8" plywood and is well worth the effort, but if it is preferred, a block of balsa for the windshield and painted windows will suffice.

Glue on the doublers making sure you build a right and a left side. (I suggest contact cement for this operation). As you glue in the doublers, a scrap of 1/8" sheet is convenient to use in order to obtain proper spacing for the fuselage formers. The better the fit you obtain here the stronger your plane will be. After the doublers are in place and the glue well set, you should add the triangular stock to the sides. To make the triangular stock I used an X-acto knife and diagonally split ½" square stock.

The next few steps will bring the model up to where it will begin to reward you by quickly taking on shape. Don't forget the doublers on formers 4 and 5. This is needed to keep these formers from breaking during the bending process of bringing the tail together. At this point I suggest the use of white glue (Elmer's) for all hardwood parts. Now glue in formers 3, 4, 5 and the 1/8" x 1/2" strip in front of the lower wing. This step is followed by sheeting the bottom of the fuselage in the area of the landing gear and adding former number 2. When this is dry, pull the nose and tail together (rubber bands, pins, etc.), add formers 1 and 6, and glue the tail end together. Caution: at all times, when gluing in formers, double check to make sure everything is square. This will prevent a lot of trouble later on.

The tail wheel bearing, and nose and tail balsa blocks are next. The original has a swivel tail wheel rather than a stationary one or a tail skid in an effort to ease ground handling when using GG or other similar R/C gear. The ½" square hardwood bearing is fitted at the angle shown and is secured lightly for flying with a rubber band around the dowel in the tail of the plane. Now add the tail balsa wedge, the bottom nose block, and the 3/8" nose side sheets. When these are dry, add the balsa block just under the engine. (If you prefer an inverted engine for appearance sake a few changes in the balsa nose blocks is all that is needed.) It is a good idea to install the engine mounting nuts at this time. The original has a Tatone "15", large tank, and engine mount with blind nuts in the firewall. Before adding the balsa block at the front of the cabin, the battery area between formers 1 and 2 should be lined with about ½" of styrofoam. It is also a good idea to line the floor of the cabin between former 2 and the front of the lower wing. This is a quick, easy and light way to strengthen the nose and also adds a cushion effect for the R/C gear. Caution: always use white glue on styrofoam. Now add the cabin balsa blocks. With this complete and dry, double check all joints and re-glue all fuselage former glue joints. This operation is well worth the time and effort as it is a real strength builder and also adds to the internal appearance of the structure.

We are now ready to cover the top and bottom of the fuselage with 1/8" sheet. The best results can be obtained by cutting the balsa about 1/8" to 1/4" longer than the width of the fuselage, glue in place, let dry and then sand flush with the sides.

The next step is to rough carve the blocks, then sand both them and the fuselage corners to a round cross section. Sand through the corners of the top and side sheets until you are into the triangular stock approximately 3/32 of an inch. Use a good sanding block and, with a little care, the results of this effort will really reward you as it gives a "Cessna" appearance rather than a "boxy" one. After you are satisfied with the shape of the fuselage the tie down dowels can be added.

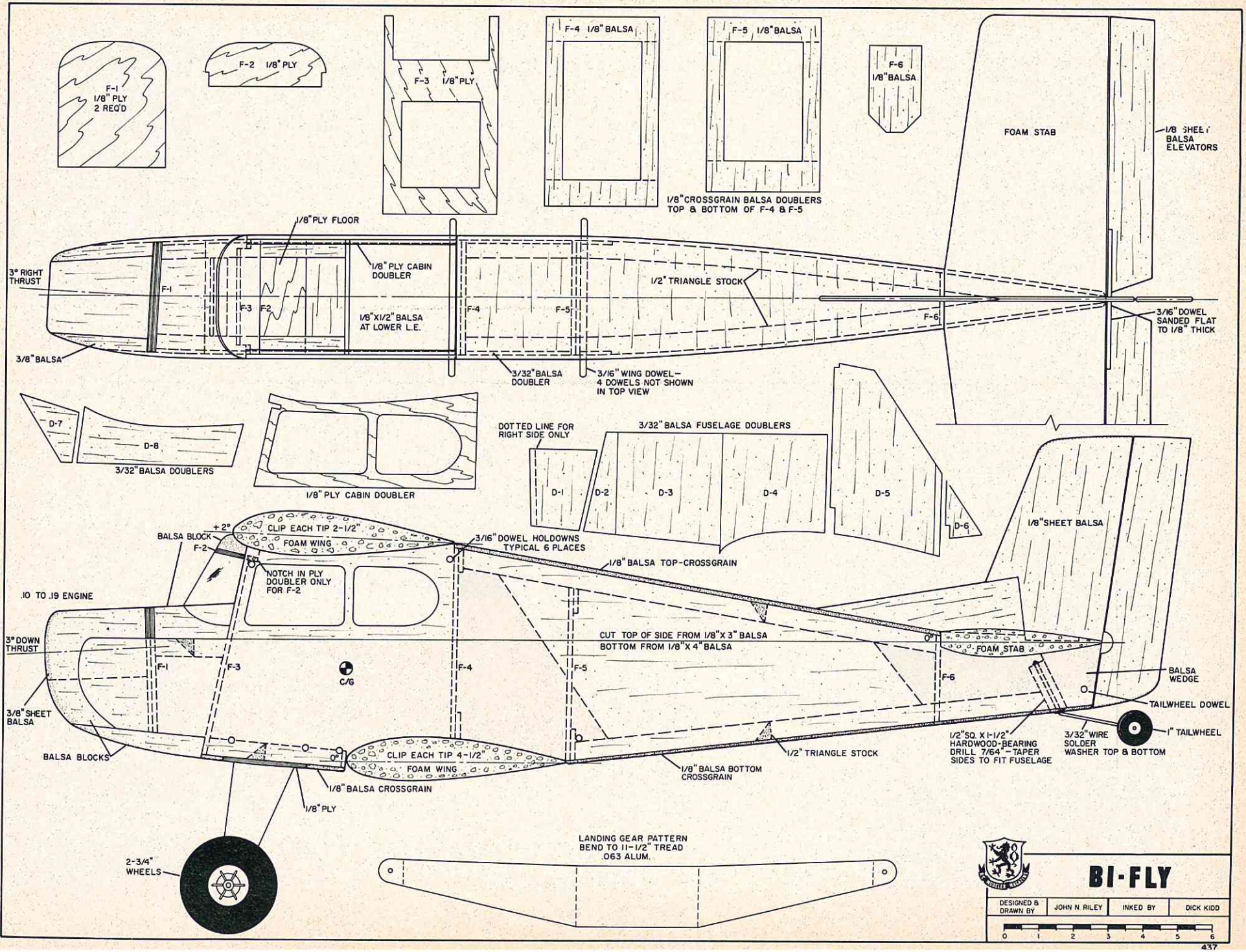
Stabilizer and fin: As you make the fit between the fuselage and the stab, double check to be sure of the incidence. Glue in the stab and let dry (white glue). Carve out the stab to receive the fin and glue in place. (white glue). Now a few notes on handling foam flying surfaces: The procedure outlined in the December, 1966, RCM article on the "Whiz Kid" works fine and will be described as a tried and proven method. 1. Sand all surfaces lightly to clean off flash and break the shiny surface. 2. "Paint" on two coats of 50-50 white glue and water mixture. Sand lightly between all coats of "paint". 3. Using wet gas model silkspan cover the wings and stab. 4. "Paint" on two to three more coats of 50-50 white glue mixture. This seals the styrofoam from dope, oil, etc. and adds greatly to the strength of the flying surfaces. After treating and covering the stab, mold in the rudder using plastic balsa or some other fillet material. Attach the rudder to the fin and the elevator to the stab using Micro-mold, Dubro, or any other low friction hinge.

Wings: Clip as per plan specifications using a hot wire cutter. If one is not available, a coping saw will do. Cut out and insert in the trailing edge of the wing, three inches on each side of center, a 3/16" dowel to take the strain of the hold down rubber bands. Sand and finish as per the 50-50 white glue and water procedure listed previously. The center of the wings should be fiberglassed (five inches wide) to help ease the strain placed on them by the fuselage and the hold down rubber bands. Now is the time to make the final fit between the wings and the fuselage. A sheet of carbon paper between the wing and fuselage will aid in finding the high spots. Caution: check the wing incidence while making this final fit.

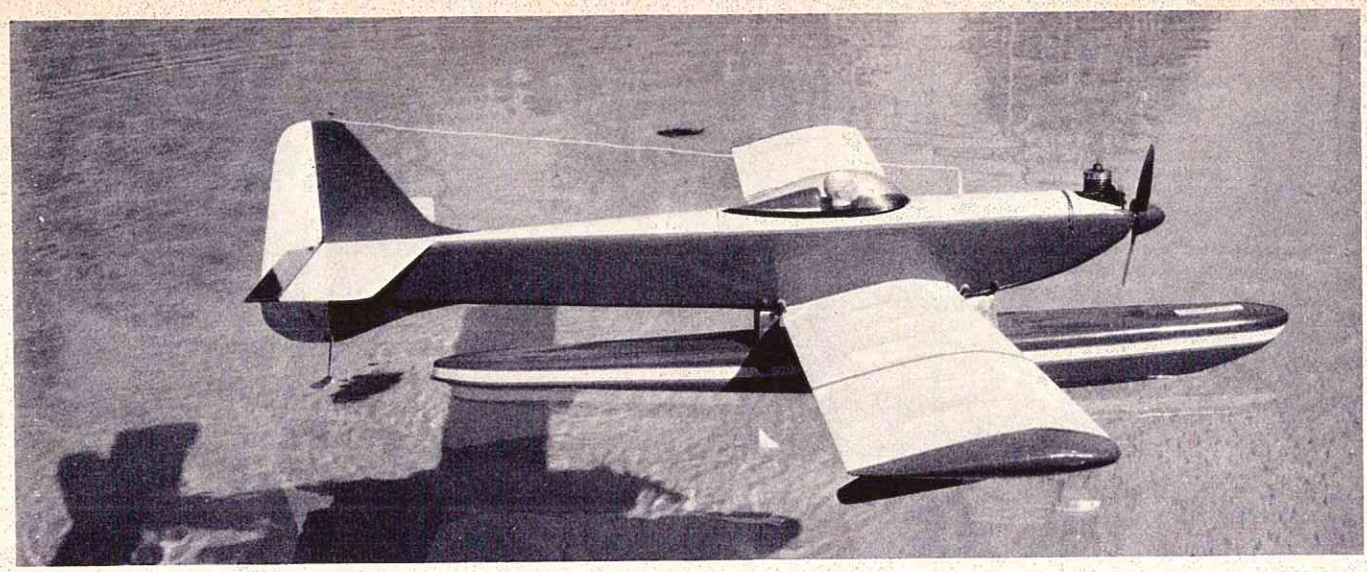
Landing gear: The original has a knock-off, Cessna type gear. This eases the strain on the fuselage during rough landings. The gear on the original was hand made but a ready made one approximately the same size will do. This completes the construction of the model.

Finishing: The original has three coats of brushed Aero-Gloss balsa filler coat, (sand between all coats), two spray coats of white, and was trimmed by spraying on maroon. The wing surfaces are painted with Sig Super Glo Plastic Finish as it has less tendency to "check".

Flying: If you are careful with regard to incidence and thrust lines during construction you should experience no real problems when test flying. The model could not be regarded as a trainer but fits well into that middle area between a trainer and the large full house rigs. The Bi-Fly's flying characteristics can be summarized by saying that it is a stable, not too fast, very responsive model. Keep the CG as shown or slightly forward of this point. The control surfaces are adequate and could be slightly reduced for GG. ●



FULL SIZE PLANS AVAILABLE --- SEE PAGE 88



Ken's Islander in seaplane configuration. Side view shows flotation angle at rest.

THE ISLANDER

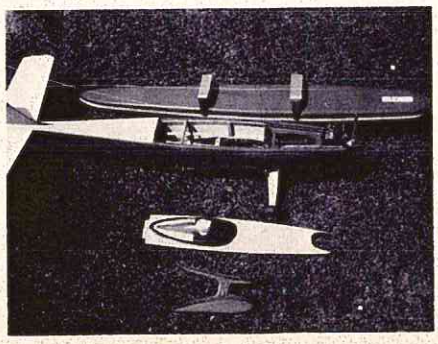
BY KEN WILLARD

In the May issue of RCM I introduced you to the concept of the Islander – a single float seaplane with wing tip floats – as something you could do with any more or less conventional low wing design, so long as the float was big enough to support the model and also had enough upsweep aft of the step to permit proper rotation for water takeoffs.

So here are the plans and a few construction hints. First, though, let me warn you that this model is definitely not the beginner's cup of tea when it comes to flying, even though it is quite easy to build. With that big rudder and those large elevators, it's very responsive, and even though it doesn't have ailerons, it's very easy to fly inverted. It also spins and snap rolls readily, and recovers just as fast.

It's a real pleasure to maneuver on the water. The little water rudder may look too small, but if it were any bigger it would be almost too effective at high taxi speeds.

Above: Ken Willard with landplane version. Below, left: Main float with struts; fuselage with landing gear; hatch; and wing tip float. Below, right: Bud Freeman lands the Islander.

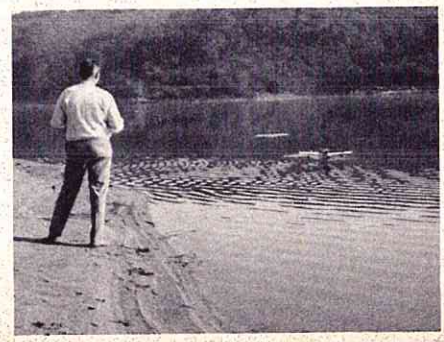


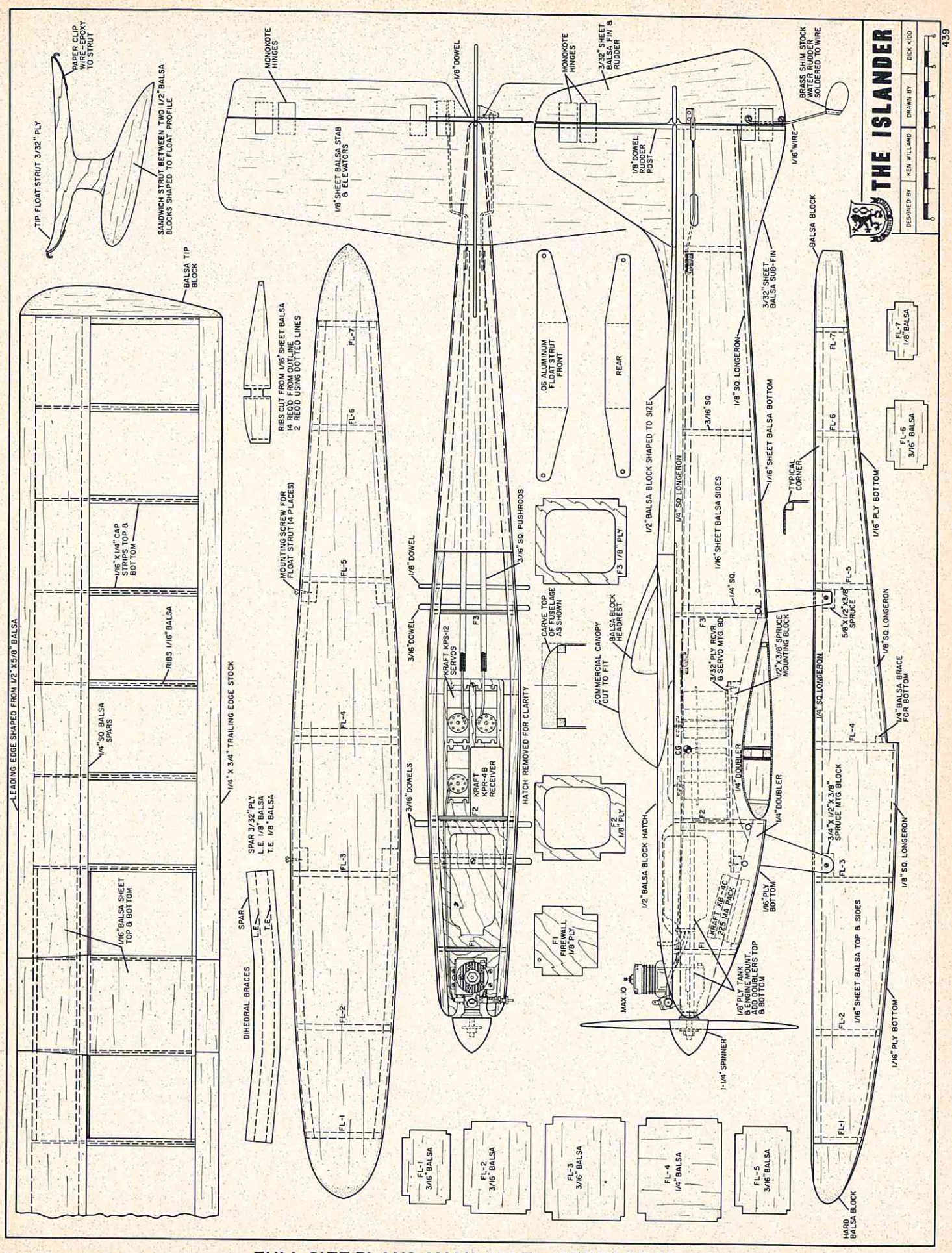
Finally, I have not shown the conventional "tail-dragger" landing gear in the plans, since all you have to do is unstrap the float and strap on a Hallco lightweight landing gear, and make a tail wheel to mount in place of the water rudder. If you do want to utilize the landplane version, put the gear on backwards so it slants aft. Since it is mounted forward of the wing, you want to get the wheels as far back as possible to reduce the ground looping tendencies which are accentuated with a forward placed gear.

As you can readily see from the plans, the wing is of standard rib and spar construction. In fact, you probably could replace the wing with one of Midwest's foam wings, although I've never tried it. If you do, I'd suggest the addition of a sharp leading edge spoiler for about five inches out on each panel from the center section to reduce the tendency for tip stalls on landing.

The float is nothing more than a streamlined box, with a nose block and tail block added. By rounding the corners on the top, around the ¼" stringers, you can soften the squarish look, but keep the corners sharp on the bottom, for good planing action. The little spruce blocks, which are glued to the side so the mounting

(continued on page 75)



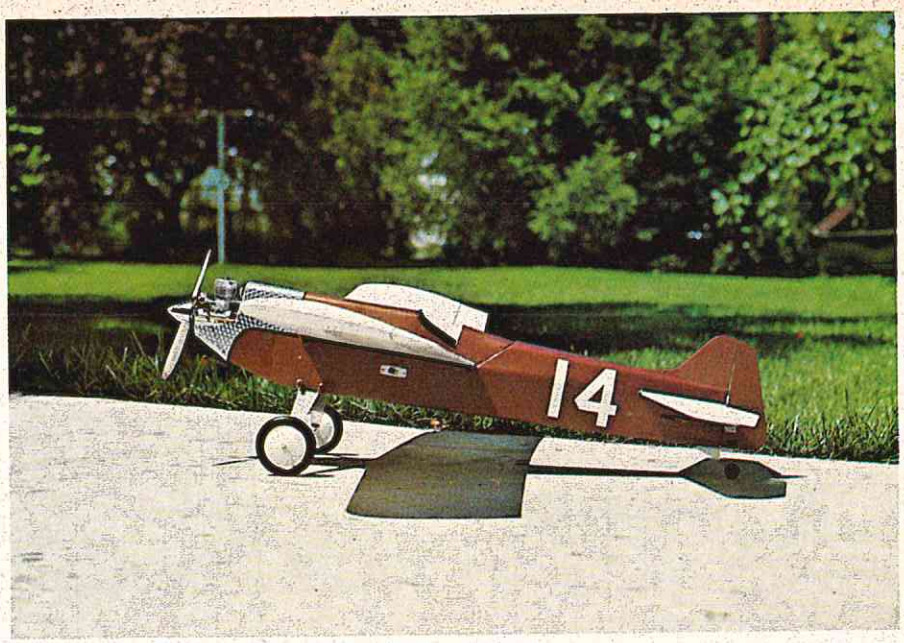


FULL SIZE PLANS AVAILABLE --- SEE PAGE 88

HOT DAWG

BY BOB LOVEJOY

Getting into Quarter Midget Pylon Racing is easy if you start with a proven design by Ken Willard; kitted by Top Flite; and then modified to look like a vintage racer that will actually eat the competition alive around the Pylons . . .



Here is a .15 powered Quarter Midget racer with antique charm and sparkling performance that is built from a popular kit. The Top Flite "Top Dawg" was slightly modified to improve speed and maneuverability while at the same time getting an appealing old-time look. Although the flat bottomed wing was maintained for fast, tight turns, the camber line has been flattened enough to enable inverted flying. Fuselage and tail surface changes are for appearance only.

The Hot Dawg has flown with both the Rand Dual Pack and small Orbit Digital proportional system. Loops, axial rolls, inverted flight and any combination of these maneuvers can be performed with R.E.M. on either system but the digital system has an understandable edge in reliability and performance.

Enough dialogue. Clear off your work bench and let's get started.

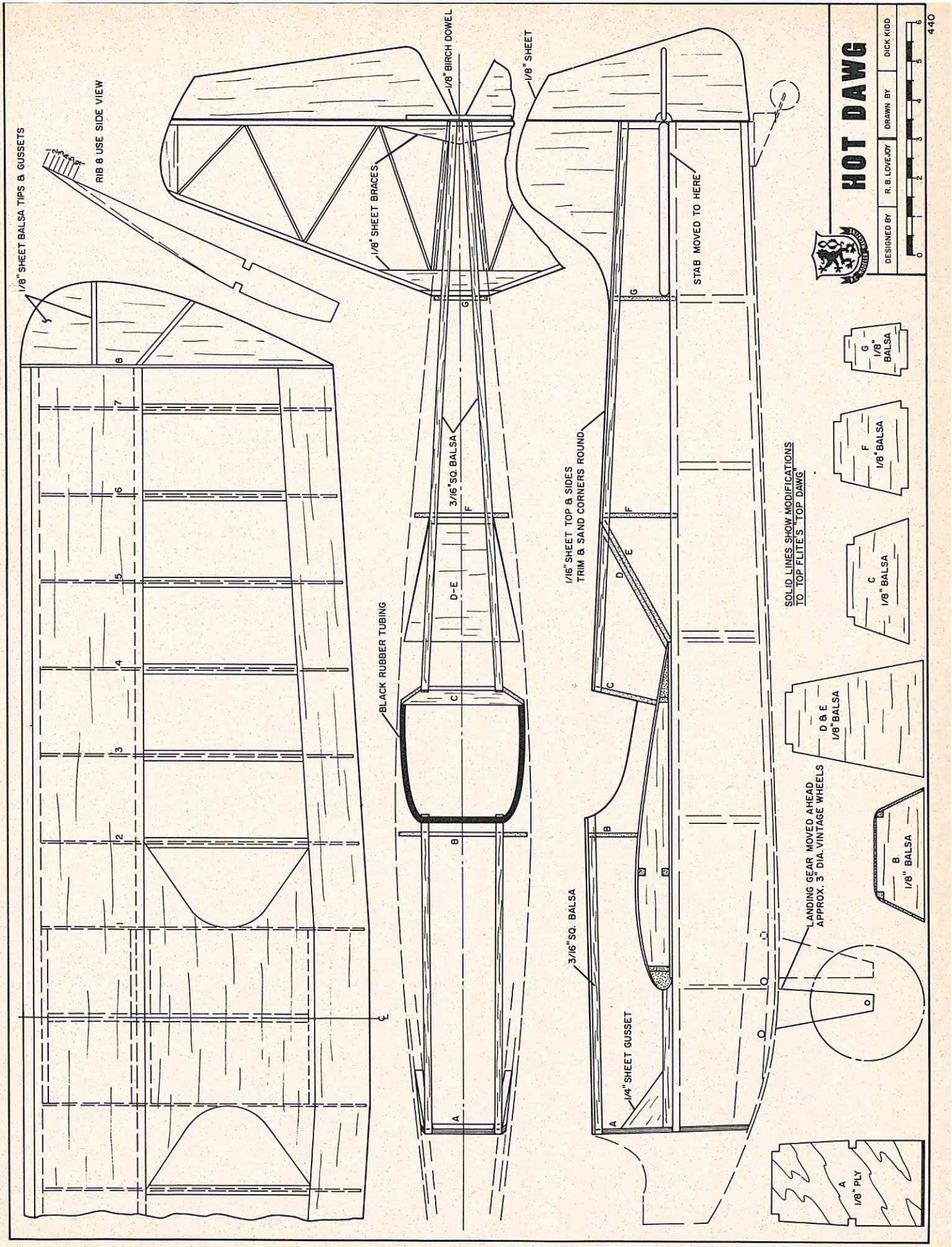
WING – Cut the ribs to their new section, build the wing as the plans instruct except for the trailing edge and capstrip pieces. For the wing taper simply cut an inch off the wing tip rib, lay a straight edge between it and the first rib out from the root, cut off all the other ribs even with the straight edge and sand each rib (top edge only) to a point maintaining a smooth airfoil. Now glue the trailing edge pieces and capstrips in place. Cut out and glue the wing tips and gussets in place. That wraps it up.

STABILIZER AND RUDDER – Cut S-1 pieces to new outline, then cut out the 1/8" sheet braces. Assemble as the plans instruct. The same goes for the elevators, fin, and rudder after they have been cut to their new shapes.

FUSELAGE – Steps 1 through 4 are followed without any changes except for relocating the stabilizer slot. Allow the bottom fuselage stringers to extend to the end of the fuselage. Cover this open section in step four when covering the bottom of the fuselage. Formers E (replaces F-15 of kit), F, and G should be cut out and glued to the fuselage in their respective locations. E leans against F. Place the finished wing on the fuselage. Cut out and glue formers A, B, C, and D in position. Cut out and glue the nose gussets to the top fuselage stringers and back of former A. Glue the stabilizer to the top fuselage stringers. Cut lengths of 3/16" sq. balsa and assemble the remaining framework. Allow to dry thoroughly. Make a saw cut separating former A in half (per dotted line) and cut a notch for the tank tubing to protude. Cut the stringers apart between formers D and E. Remove the wing with nosedeck and cockpit frame attached. Take the dimensions of each panel and cut out 1/16" sheet pieces to fit. Coat the inside of the fuselage with HobbyPoxy or fiberglass resin for strength. I recommend using a 4 oz. tank and adding a little more right thrust than recommended in the plans.

TRIMMING AND FLYING – If it comes out a little nose heavy, don't worry. Mine balanced about 1-½" back and it didn't seem to hurt anything. Range check, make sure up is up, etc., and fill her up. Taxi out with up elevator head into the wind and hit it. You'll break ground in a few feet and climb out like a Saturn IV.

●



FULL SIZE PLANS AVAILABLE --- SEE PAGE 88

QUARTER MIDGETS

BY BOB PENKO

AT 80 M.P.H. THEY'RE JUST AS MUCH THOROUGHBRED RACING MACHINES AS THEIR LARGER COUSINS, BUT A LOT LESS EXPENSIVE. STOCK .15'S THAT MUST DEMONSTRATE AN ABILITY TO REMAIN ON SMOOTH GROUND, UNASSISTED FOR ONE MINUTE OR MORE AT IDLE SPEED, WITHOUT MOVING, KEEP THE WELL-HEELED PRO'S AND HIGH-NITRO BOYS AT BAY.

The first area quarter-midget pylon race for 325 sq. in. models was held October the fifth, 1969 at Mentor (near Cleveland), Ohio, by the Mentor Area Radio Control Society (M.A.R.C.S.). Twelve planes showed up and entrants came from a radius of 100 miles. Not bad for a brand new event.

Almost all the planes used the O.S. Max 15 R/C engine, partly because the importer, World Engines, had donated a prize for the best time using the O.S. 15 and, partly, because of the engine rule requiring that the plane demonstrate a landing under power, and the O.S. 15 idles extremely well. The rule worked fine and we didn't have all the various interpretations that usually crop up with throttle rules.

The fact that a 300 square inch racer is only half as big as a typical R/C plane makes a landing field look twice as big by contrast, and that makes it a lot easier to land. Almost all of the quarter-midgets that we have built and flown have been easy to land – easier than most pattern type planes, probably because you can overshoot to the half-way mark on the field and still set it down and taxi back.

Taking off, on the other hand, is not always a "right-off-the-board" thing, but the planes have all responded to modifications to remedy the problem. For instance, we found:

1. The landing gear on a tail dragger should be right under the leading edge of the wing. If it is ahead of this, it ground loops and, if behind, it noses over too easily, especially on a grass field.
2. A tail wheel is better than a tail skid.
3. You can fly well with only one aileron and no rudder, but you have to couple the tail wheel to the aileron servo in order to steer on take-off.
4. If rudder is used, very little throw is needed.
5. Keep the landing gear short. If the plane sits high, it will ground-loop easily. Hold up-elevator when first accelerating until there is enough air speed for the plane to hold it's own heading. A little right rudder at this time is needed. Ease off on the stick and let the plane lift off by itself – usually fifty feet away on grass. Set the elevator trim for self lift-off before you release the plane. All this will require a bit of trial and error.

We found a semi-symmetrical airfoil works best on racers. A flat bottom airfoil will balloon too much when you round a pylon into the wind.

Building in a 3/32" washout at the tips; that is, the tips have less angle of attack than the wing root, takes care of snap rolls on landings, and doesn't seem to affect the top speed, and with it you can land as slowly as you please. For racing, we found a nose heavy plane grooves better – set the C.G. at about 20% of the chord. The quarter-midgets make dandy sport and stunt flyers; just move the balance point back to 30% and put a separate servo on the rudder for full-house stuntability. Some of the advantages of a small plane are obvious; such as, less time and material. (The Brown Racer can be built and covered for $15.00) But some other pluses are that you can put the assembled plane in most car trunks. In fact, it's practical to build a one-piece plane and put a hatch in it for the radio gear. If you undershoot the runway and land in the weeds, you won't even have a broken prop most of the time.

That feature was especially nice last winter, when I flew one on skis – no take-apart, just put it in the trunk and head for the hot coffee!

The system we used for the race was different and appealed to us because it took less manpower – only five or six officials as against a dozen for the usual pylon contest. Also, there is a lot less danger, since we don't put anyone out at the pylons. Instead, we moved the flagmen back to the sidelines. From there, they could see if a plane went as far as the pylon or not, which is, after all, the important consideration. The pilots and callers move to a central position between the pylons, (only two are used), and therefore are only 250 feet or so from each pylon. This is close enough so that a flagman is not needed to tell the pilot when to turn. Only one flagman or judge was needed at the downwind pylon – for some reason, it is seldom cut. The judges and C.D. are in contact via intercom, so you don't need a runner.

Like to race – try the RCM Quarter Midget event!

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A DIFFERENT APPROACH TO CONTROL RODS

BY JIM DOTY

REPRINTED FROM THE TRI-VALLEY R/C NEWS

In 1966, Bob Hensler was experimenting with guides for his Fokker D-VII control cables. He found that Teflon tubing inside of aluminum tubing made a perfect guide and could be bent to simulate pulleys as well.

During one of our noon-time discussions, Bob and I decided we could obtain push-pull action if we used piano wire instead of flexible cable.

Since then I have tried this scheme in several models. At first, I used it only for motor control, then for rudder and elevator, and finally for aileron control. I've had such excellent results with this approach that I thought I would pass it along.

What makes this system worth considering over other control hookups? Primarily the minimal play in the linkage and the capability to negotiate sharp bends without increasing the control linkage friction appreciably. The Teflon tubing with its self-lubricating qualities is the major contributor to the frictionless operation. Additionally, the system is light in weight and soldering around the linkages is no problem since the Teflon does not shrink or melt at soldering temperatures.

I used the aileron hookup shown in Figure 1 for my Skysquire for over a year of successful flying with no deterioration in performance. Two sizes of music wire can be used for the control system (.020 and .025 diameter). The minimum bend radius for a 90° bend should be about 1½ inches for .020 dia. music wire and about 2½ inches for .025 dia. music wire. With these radii the friction of the system is about like that of a straight line installation of Nyrod and is not affected by temperature changes or the "in-use binding".

The .025 dia. music wire should be used for large models just due to the greater resistance to bending but the .020 dia. can be used for tight bends and is more than adequate for smaller aircraft.

Figure 2 shows an installation used on a powered glider with the elevator mounted on top of the fin. Even with the double bend, the linkage is still fairly frictionless and keeps the weight in the tail at a minimum.

I wasn't able to get pieces of 3/32" O.D. aluminum tubing longer than twelve inches, so I joined two pieces of tubing as shown in Figure 3 for the longer runs. The main things to remember here is to keep the epoxy away from the butt joint and to clear all burrs from the ends of the tubing before joining them.

Several methods can be used to install the connecting ends on the piano wire. Figure 4 shows a typical installation in the plane. The non-adjustable installation shown on the left side of the figure consists of a piece of brass tubing slipped over the music wire and bent at 90°. A snap-on keeper completes the installation. The right end of Figure 4 shows the adjustable end which, in this case, consists of a DuBro coupler and screw-on clevis. It's best to slip a piece of 1/16 O.D. brass tubing over the music wire to act as a shim before you attempt to solder on the DuBro couplers. If you have a lathe you can drill a .030 to a .040 diameter hole down the center of a 3/4" long 2-56 screw and use it in place of the DuBro Coupler.

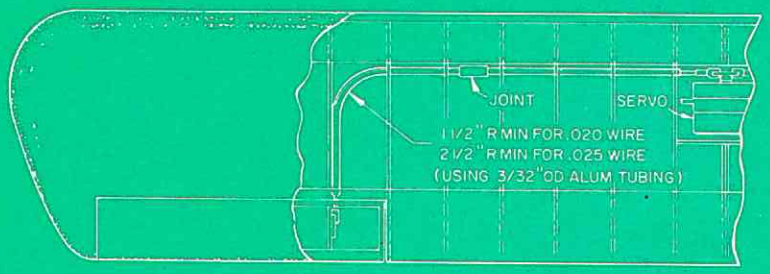
It should be noted that the Teflon tubing is captured between the two pieces of brass tubing at either end of the linkage so that the Teflon tubing moves with the wire inside the aluminum tubing. Be sure that the Teflon tubing extends far enough past the end of the aluminum tubing to prevent metal-to-metal contact at full servo travel. I usually leave about 7/8" on both ends with the servo at neutral. The cost of materials is as follows:

Piano wire-36" – 5¢; Aluminum tubing – 25¢/ft. x 2 ft. 50¢; Teflon tubing 9.5¢/ft. x 3 ft. – 30¢; Total is 85¢ plus end fittings.

While the low cost is not one of the advantages of this system, the other advantages make it worth considering, especially for the smaller models.

All materials except the Teflon tubing can be purchased at your local hobby dealer. The Teflon tubing is Alpha TFT200 thin wall, #22 Teflon tubing and can be purchased from Allied Radio or Newark in 100 ft. rolls. The #22 can be used for both .020 and .025 dia. wire. ●

FIGURE 1



TYPICAL AILERON LINKAGE HOOK-UP
(WITH MIN R FRICTION IS LITTLE MORE, IF ANY, THEN OBTAINED FROM A STRAIGHT PIECE OF NYROD)

FIGURE 2

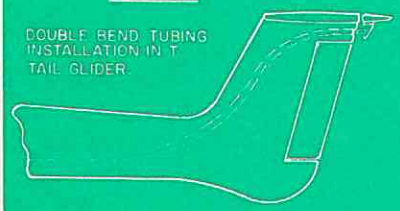
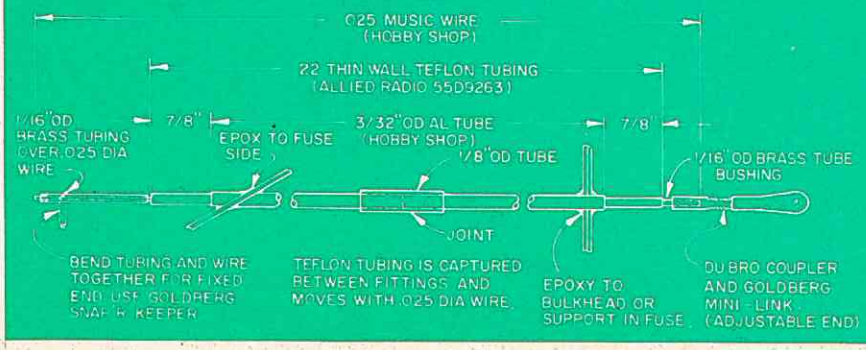


FIGURE 3

SPREAD EPOXY BACK APPROX 1/8" FROM END OF 3/32" OD TUBING. THEN SLIDE EACH PIECE INTO CENTER TUBE.

FIGURE 4

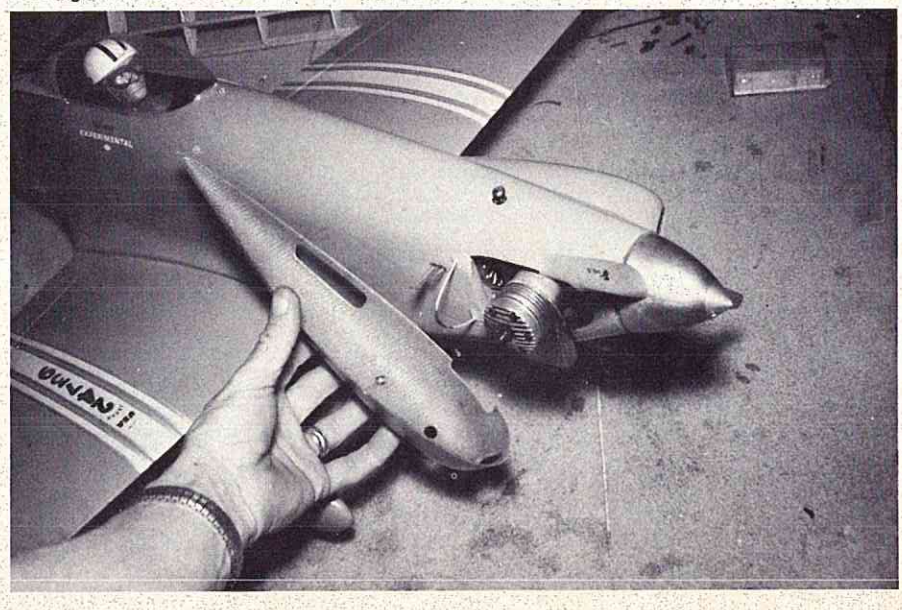


The Manx, a Minnow, and friend. All that runway is nice, except that there's no one to race against over there in APO-land!

HINTS, KINKS, AND HOW-TO'S FOR GOODYEAR RACING

BY DAN SANTICH

Method of holding cowl on with Dzus Fastener. Note location of tank vents and spring holding exhaust extension in place. My pilot wishes I'd let him out of there.



In the history of model aviation there has never been an event that has captured more spontaneous interest and activity than Goodyear racing. Where other phases of modeling are, unfortunately, fading out, Goodyear popularity is increasing by leaps and bounds. Modelers who packed away their control lines and DT fuses 10 years ago are joining in on the fun and excitement. Why? There are probably as many different reasons for a modeler turning to Goodyear as there are modelers. Perhaps it's simply the thrill of a race, or that there is no question who the winner is, or that there are no judges watching your every move. Whatever the reason, one thing is fairly certain – it is here to stay.

As in any other phase of our hobby, luck plays a large and significant part. There are so many, many things over which we have no control. Things such as a plug blowing its element on the 9th lap, or a servo giving out, or the engine throwing a prop blade, or a mid-air. These things happen. There may be no logical explanation for them other than luck.

Besides good luck, the largest single factor in winning is consistency. Sure, you must be fast, but if you check the results of nearly any pylon race you will see that it is not always the fastest ship that wins. This is what I am going to try to get over to you first. How to be consistent. I will also pass on a few tricks I have picked up that will help you in building your little bomb.

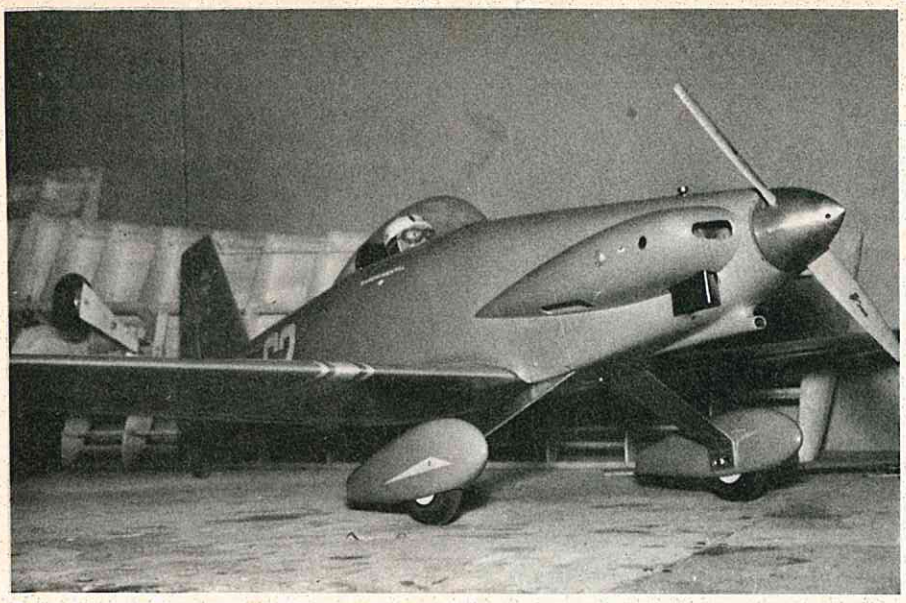
Preflight and Postflight

To you who have done any flying in full size airplanes, these words are all important. In Goodyear Racing they are the key to success and are probably more important than any other single part of your contest routine. Make up a check list. I know this sounds silly but in the heat of competition it is easy to forget a minor item and blow a race as a result.

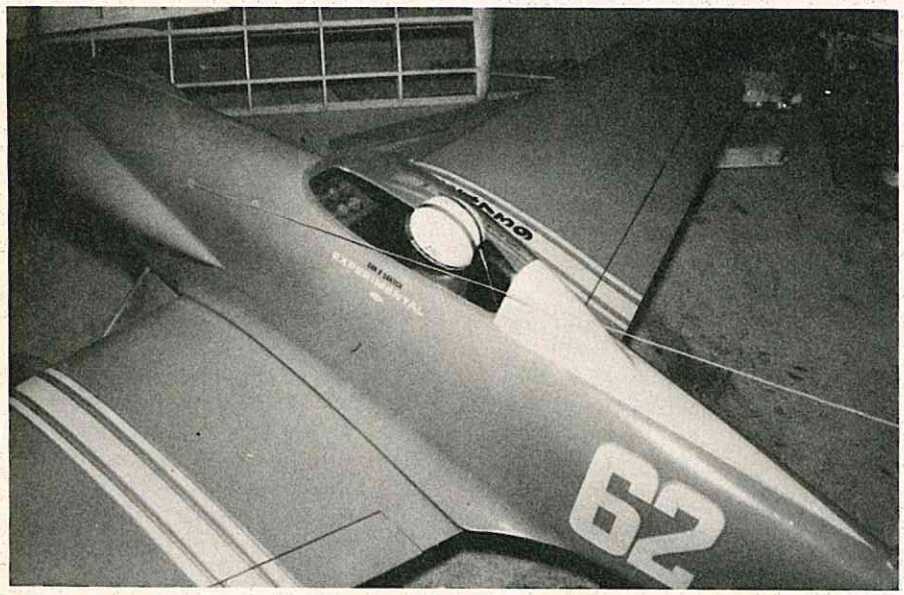
Here is the checklist I use:

Spinner and prop nut – Prop (check for cracks and nicks) – Glow plug (check) – Head bolts – Engine mount screws – Firewall screws – Throttle linkage – Needle valve for tension – Fuel tank and lines (leak check) – Landing gear bolts – Axle bolts – Wheel pant screws – Wheels for freedom – Wing bolts – Antenna – Elevator clevis and horn for cracks – Rudder clevis and horn for cracks – All control surface hinges – Refuel – .

If you follow this check list faith-



Cowl in place. It takes me 15 seconds to remove cowl, change plug, and replace. Goldberg 'Shoestring' aluminum gear works beautifully on 'Minnow'.



Above: Cockpit detail helps. Canopy is held on with epoxy glue colored with Hobby Poxy. Nylon eyelet for antenna exit. Below: Tail wheel bracket made from Rand aileron bearing.

fully, you will eliminate 9/10ths of the reasons for a no start, an abort, or a dork. So much for that. Now, lets make it go:

The K & B 40 is by far the most popular engine used in pylon racing. The reason for this is obvious: It is a hot little package right out of the box and any attempt at internal improvement will usually result in ruining of a good mill. Don't mess with it! Follow the break-in instructions and you will have a good, dependable powerplant that will carry you thru many, many races.

The performance of the K & B 40, or any other engine for that matter, depends largely on the amount of air available to the intake. With the carburetor so near the firewall, this can present a problem. Here is one solution:

With your engine in place, draw a circle around the outside of the throttle intake on the firewall and/or Tatone mount. Remove engine and drill out the firewall and mount. The hole should be large enough so that the intake throat will fit into it without touching the sides. Now, run to the local stationery or hardware store and get a plastic magic marker (Zip Mark Corp.) that is at least 3/4" in diameter and about 4" long. Cut off the ends and wash thoroughly with soap and water. Measure from the intake hole to fuselage side opposite access cowl and cut to proper angle and length. The air intake of the tube should be inside the non-removable cowl, however if you are doing this after the ship has been built, you can exit it out the fuselage below the cheek cowl. Epoxy in place. This method will not only increase performance but will provide a drain for excess fuel coming from the carburetor and eliminate any chance of it getting inside the tank and battery compartment.

While we are at the front end, an excellent method of holding the removable cowl on is with a slotted Dzus fastener. It gives you quick access to the engine and fuel vents and will not vibrate loose. Be sure to key the rear of the cowl so it will not slip out of position. (see photo)

An exhaust extension can easily be made from the bottom half of an inexpensive Zippo type cigarette lighter. Cut the bottom off, drill 2 small holes, one on either side, and run a spring around the engine and into the small holes. Split two pieces of

(continued on page 73)

FINISHING, ANYONE?

BY JACK PERRILLA

(Reprinted from the 'Wram's Horn,' Westchester Radio Aero Modelers, Inc.)

Fellas, this may sound like a helluva long method to achieve a beautiful finish on your aircraft, but time-wise it takes about 8 days overall. While you're out in the boondocks flying your No. 1 Pride and Joy and making like the hottest Pattern man in the world, you can be thinking about dashing madly home and getting your hot little hands on the job you have sitting in the cellar waiting to be completed. That is, if you don't bash the one that is now cavorting around like an angry bee over your head!!! Naturally you will repair it, you will repaint it, you will re-equip same, should you make like a mole with a 100 ft. loop from 90 feet!

But now back to how to do what we started out to do. Your P & J is completed, silked and approximately 5 coats of clear dope have been applied. **(Easy, Wasn't it? Only took 4 months, 3 weeks, 7 hours, 15 minutes & 11 seconds to get this far!!)**

Patience guys – the next week will drive you out of your tree. OK, here we go:

1) Sand the entire aircraft with 320 grit paper – **like, keep it soaking wet.**

2) Brush or spray 2 coats of thinned DuPont lacquer primer on your P & J after making certain the bird is thoroughly dry. Allow **1 hour** between each coat.

3) Wet sand again with 320 grit paper – finish so it's glass smooth.

4) Wipe entire bird with "DuPont Prep-Sol". This removes oil, grease, fingerprints & probably part of your finger meat!

5) Now get on it with your "Tac Rag" available from automotive supply houses or from your friendly hobby dealer.

6) Now grab your DuPont lacquer, (color choice is yours) and add two (2) tablespoons of castor oil **(Yup the same kind as you know what)** per **pint** of lacquer. **Dissolve the castor oil in the thinner first, then add this glop to your color lacquer. Strain same thru a piece of cheese cloth. It makes the spraying or brushing much easier.**

7) Spray about 12" away from your bird **(the aircraft ya dope, not your girlfriend)** very lightly, just wetting the surface. Apply about 4 or 5 coats, a little heavier each time. Allow about 10 minutes between each coat.

8) Now go upstairs, neck with your wife or girlfriend, mix a bowlful of strong martinis, and you may have a wonderful evening from here on in, because you are going to let what you have just done on your aircraft **dry thoroughly for the next 24 to 48 hours.**

9) A day or two later, depending on how anxious you are to get to your bird, darn it, aircraft, get on it with the 600 paper – **wet, wet, wet!!!**

10) Now make sure the aircraft is really dry, even in all those small nooks & corners. Blow it off with the vacuum cleaner hose. **(The other end ya meathead).**

11) Now you can mask off to your hearts content for the trim color. Make certain you seal all the masking tape edges with clear lacquer sprayed on.

12) Now spray the trim color on & once again **leave the whole mess as it is overnight (24 hours, man).**

13) Yep, as usual, a bad luck number. **Slowly, but slowly remove the masking tape by peeling it back over itself so as not to destroy the edges of your trim color.**

14) Back to good luck #s. **Wet sand the trimmed area very lightly with 600 paper, wipe down with your tac rag again to eliminate any dust still hanging in there, and spray one coat of clear lacquer, medium to heavy, over entire aircraft.** (That time I called it right, tonight I forgot about "Birds" almost). Now go upstairs and do the same routine with your wife or GF as you did 3 nights ago (same routine, but it can be a different "bird"). This whole smear is going to have to dry for another 24 to 48 hours.

15) On your way home from work, pick up a can of DuPont White Rubbing compound, a bouquet of flowers for your know who, or whom, or whatever, cause you are gonna be in that cellar for a couple of hours making with the muscles while you rub down your P & J (your B.W. should be so lucky). Get on it with the muscles you will now find out you haven't used for a heck of a long time. Boy, are you gonna be sore armed tomorrow!! Rub that aircraft with a soft cloth you swiped from your wife, until every bit of rubbing compound is on the cloth and not the bird. Rub it over with your sweaty fingertips to check for smoothness. **Not satisfied??** Rub it all over again with the compound. Now go upstairs again and leave the P & J buried on the workbench. You will now need an arm rubdown to get you in shape to go to bed, and to work tomorrow morning!!

16) The next night, if you have recuperated from last night, go bury yourself in the cellar again with a can of DuPont Paste Wax which you have purchased on your way home from that so-called job. Rub the aircraft gently but firmly, until she sparkles like you can't stand it!! Now back up to admire your handiwork, crunch that spare wing you had on the floor and forgot about, with your size 12.

17) And get the devil out of that Black Hole Of Calcutta (unless it happens to be the Calcutta preceded by **OH** in which case **stay**!) known as the cellar, and upstairs to the couch. Lie down quickly, phone your head shrink quickly and make an appointment (or 3 or 4) and try to figure out why you ever got into this hobby in the first place!

. . . . . or in other words . . . whyinell didn't I use Mono-Kote in the first place??? Rotsa-ruck!!!!

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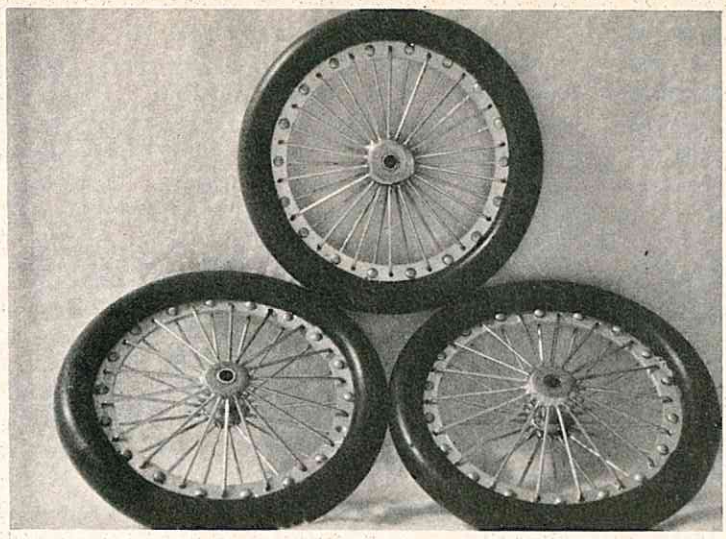


HALF-A WIRE WHEELS

Superlight Small Scale Spokers From Dime Store Materials

BY DAVE ORR

A goodly number of early wood-and-wire circa WW I type aircraft lend themselves very well to scale designs in the .020 to .049 power range. Typical of the type was Don Srull's Eastbourne Monoplane recently published in RCM. The problem of wire wheels for these little antiquers is the issue here.

The most common approach simulating real spokers has been scoring the lines on plastic discs. The easy way out was to use solid wheels. The method described here isn't going to make Dave Platt jump out the window, but there is a way to simulate the real wire-type wheels. Not exact miniature replicas, mind you, but certainly suggestive of the real thing. For those of you who can drill umpty-ump wee holes around the flange of an eyelet . . . go ahead! This way is easier. And cheaper. Also faster. And you can make them without having to wear jewelers' loupes for contact lenses!

The local dime store yields most of the needed materials. A couple of bucks will cover a dozen or so of the wheels. The spokes are common pins which limits over-all size to about 2-½ inches in diameter. You'll need an aluminum cookie sheet, about 1/32 to 1/16 inch thick, a package of Perfect No. 4 washers and a 4-40 bolt an inch long with three nuts. Don't forget a paper of pins. Some heavy cardboard forms the hub centering template – note pad backing is fine. Adhesives required are solder, regular overnight-type epoxy, Ambroid and some of the new Devcon 5-minute epoxy (this is the greatest invention for modelers since the razor blade). Tires are formed from ¼ inch black neoprene fuel tubing.

A word about tools. You'll need a No. 70 twist drill for the spoke holes. A well-equipped hobby shop has these. A No. 50 twist drill is used as a countersink for the pinheads and a No. 33 drill is right for boring the 4-40 bolt hole. Small wire nippers (the right-angle type is best), a pair of regular pliers, tweezers and a soldering pencil should do it. One very handy tool is an old dentist's "explorer" or discarded pick. Or you can bend a small angle on the end of a piece of music wire – it's just as good.

Caution! Use a drill stand or press to bore the spoke holes. The little No. 70 twist drills break easily and the torque "throw" from a hand-held drill when you start it will break its weight in drills. Do file or sand the No. 4 washers bright on the sides to be soldered – tinning is O.K. Before soldering the washers put some oil or other corruption on the bolt and outside nut undersurface to keep the solder from adhering.

On the original wheels, the washer hub holes were reamed out to 1/8" diameter. This is easily done by using No. 32, 31 and 30 twist drills, progressively, as reamers. 1/8" is a convenient size because you will need small axle bushings inside the wheel. Use short lengths of 1/8" O.D. x 3/32" I.D. aluminum tubing. The wheel axle may then be 3/32" music wire or 1/16" wire with small sleeves of 3/32" O.D. x 1/16" I.D. aluminum tubing.

The following "steps-by-steps" show the method used. The prototypes were 2-¼ inches in overall diameter. All three wheels weighed 1-¼ ounces which works out to 0.44 ounces each. About half the wheel weight is the tire alone.

Notice that you will be making double-tapered wheels with both sides cone-shaped. For a flat side, just eliminate the spacer nut after making one cone-shaped side.

Good looking, inexpensive and easy!

1. Draw a paper pattern of the wheel and spokes with compass and protractor. Ten degree intervals yield 36 spokes, 18 on each side. Rim outside diameter is 1/8" less than desired over-all wheel diameter including the tire. Rim is 5/16" wide with spoke holes centered 1/16" in from inner edge.

2. Tape the pattern to aluminum sheet and mark wheel center and spoke hole centers with a sharp punch. Remove the pattern and score the rim outlines on the aluminum with sharp dividers.

3. Bore the spoke holes with a No. 70 twist drill. On one side use a No. 50 twist drill to countersink every other hole deep enough to "seat" a pinhead. On the reverse side similarly countersink the holes not done on the first side.

4. Using a small electric jig saw, carefully cut the rim out. Use extra care while cutting the inside circle to insure accurate centering. With a small file smooth all edges and slightly round the outside edge.

5. From heavy cardboard cut a circle to fit inside the rim and mark the center carefully. Double cement this disc inside the rim and smear Ambroid around the center on both sides. Bore the center hole with a No. 33 drill. Using a No. 4-40 bolt for alignment bolt. Spokes should overlap the washer edge by 1/16". After cutting arrange all spokes on the washer in a radial pattern. cement a No. 4 washer to the cardboard on each side to reinforce the hole, using a 4-40 nut to anchor the washers. When dry, remove the nut, apply cement to the washer under it and retighten the nut, gluing it to the washer. The 5-minute epoxy may be used for this.

6. Insert 18 spoke pins through the rim from one side, seating the heads in countersunk holes with the pins pointing in the same direction as the center bolt. Bend the pins down to the rim and squeeze flat with pliers. After adding all spokes for the first side, tape the pinheads flush with the rim.

7. Add a No. 4 washer to the bolt so it rests on the nut. Using small wire nippers lift and trim each spoke so it rests on the washer but clears the center.

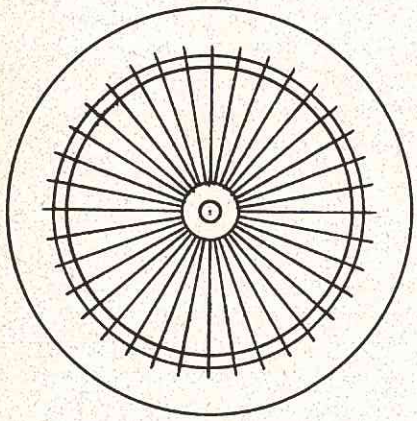
8. This part is a bit tricky. Add another washer to the bolt so it rests on the spoke ends. Add a drop of oil to the bolt and one surface of a 4-40 nut. Run the nut down to the washer oiled side down and finger-tighten. This will move some spokes, but with care, the alternate tightening of the nut with spoke realigning will result in the nut holding all spokes securely between the washers. With a small soldering pencil carefully fill the space between the washers with solder.

9. Remove the 4-40 nut and carefully unscrew the bolt from the completed wheel half. Reverse the bolt and thread it through the wheel from the completed side. Add a 4-40 nut and construct the other wheel half as in Steps 6 through 8 above. After soldering the second wheel half remove the nut and bolt from the wheel assembly.

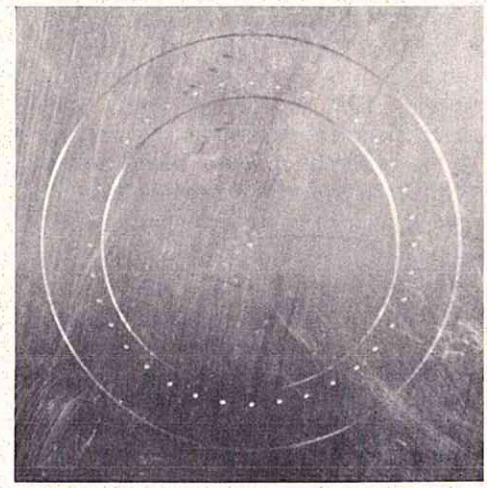
10. Now we have to get that cardboard core out. Easy. Soak the wheel in water for 10 minutes and dig out the cardboard with tweezers. All the inside hardware comes out with it. Clean up any glue traces around the rim with a Q-Tip and thinner.

11. From a round toothpick, Q-Tip handle, or 1/16" dowel, cut a ½" piece and split lengthwise. Using the 5-minute epoxy, mount these pieces on each side of the rim opposite each other on the outside edge. These will serve as anchor blocks for gluing the tire in place. Cut a length of ¼" black fuel tubing to fit around the rim and split lengthwise.

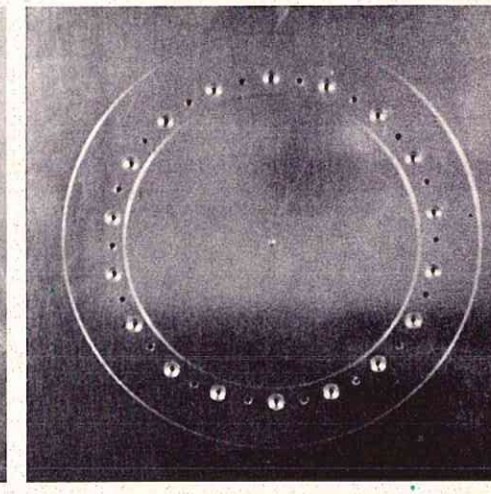
12. Trim and fit the tubing to fit around the rim and coat the inside and ends with regular overnight epoxy. Fit in place with the ends over the little anchor blocks and tape in place. When dry, that's it! Don't forget to epoxy the tubing axle bushing in place. ●



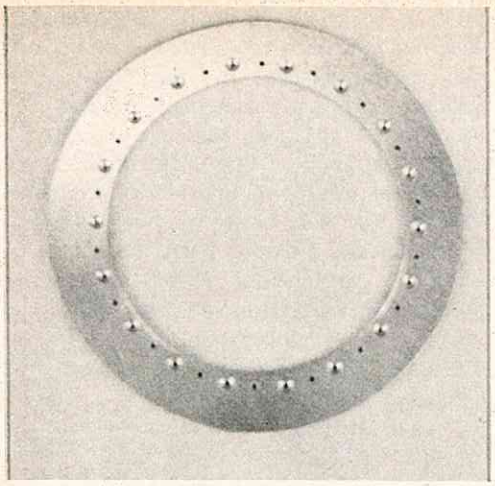
Wheel layout pattern



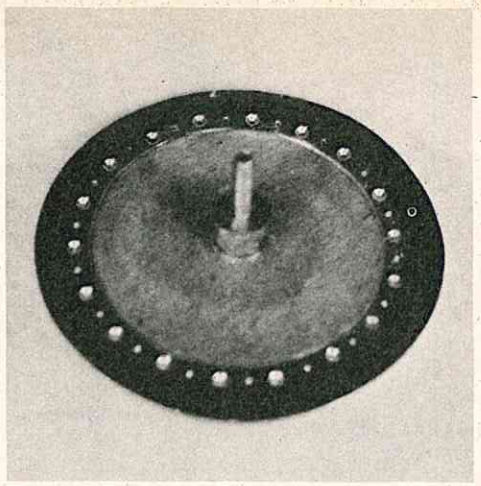
Aluminum punched and scored



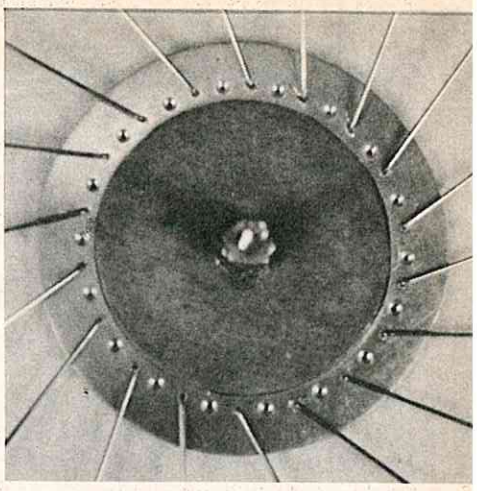
Spoke holes drilled and countersunk



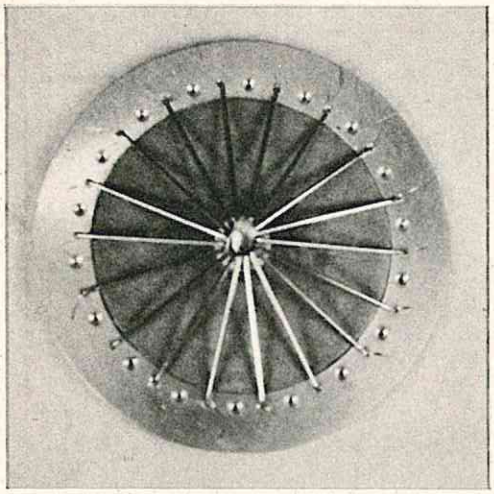
Rim cut out and filed smooth



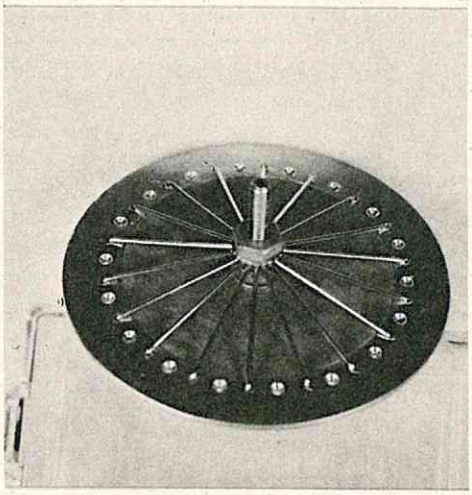
Cardborad disc and bolt in place



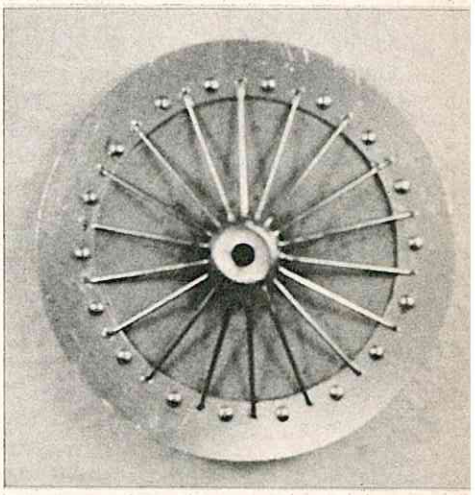
Pin spokes inserted and bent



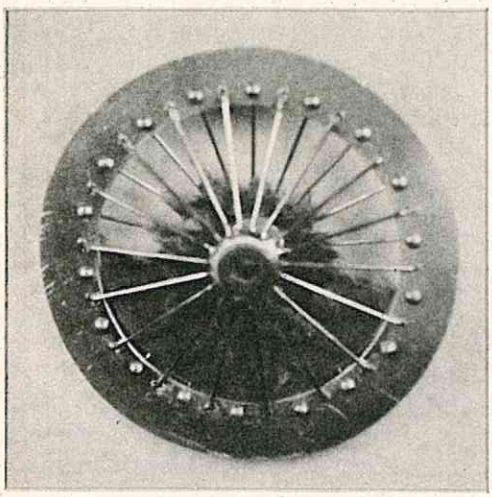
Spokes trimmed and centered



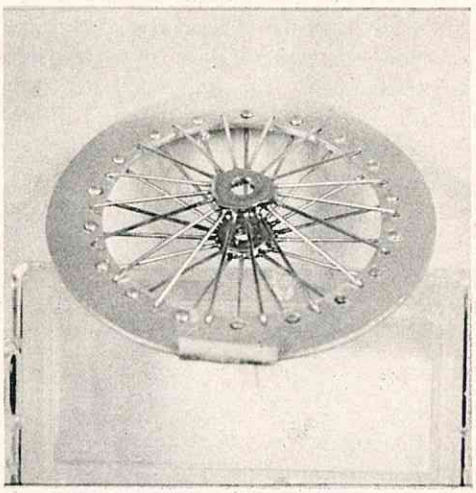
Outer washer and nut in place



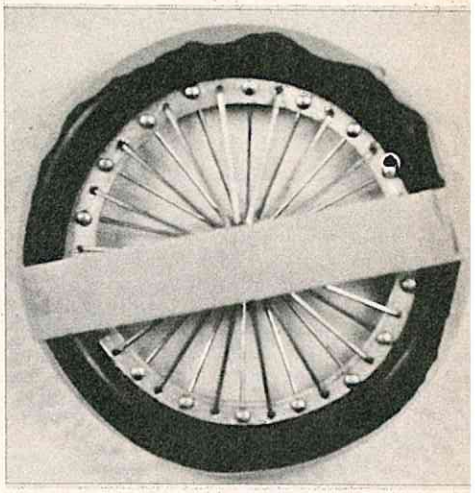
Hub soldered and bolt removed



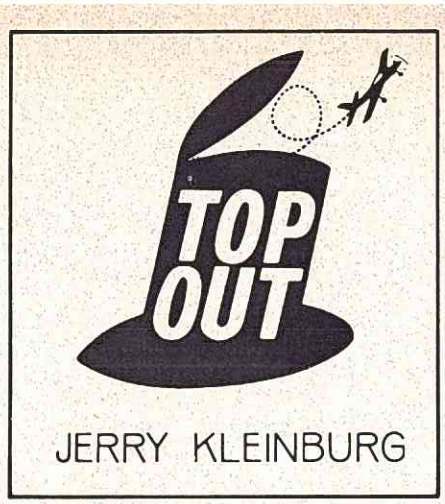
Cardboard core half dug away



Tire gluing blocks in place



Tire epoxied on and taped.



JERRY KLEINBURG

RC seems to have its own chicken-or-egg question. It's not clear if the new and increased use of radio modeling is bringing on the current rapid growth of the hobby or whether the new ranks of RC'ers are finding new uses for models and radio gear. In any case, that's what's happening as new ideas and new modelers make their weight felt within the dynamic panorama known as RC'ing.

And it's not boating or auto racing that's in mind here, although both – especially cars – are on the upswing in a big way. It's the flying variety of RC action that is seeing the most innovation and enthusiasm and revealing an ever-widening and growing awareness to RC and its potential.

For instance, this week we heard of a pair of Ohio fliers who commemorated the launch of Apollo 12 by issuing "First Day" covers – specially stamped and marked envelopes – that had been flown by radio controlled miniature aircraft. Last November Gene Silverman teamed with Dr. W.F. Harris, and with the help of postal officials of the Poland Branch of the Youngstown post office, bundled 50 of the carefully processed collectors items and flew them in an ST 60 powered Moraine Saulnier equipped with Micro Avionics radio gear. And in traditional postal style, the pair 'delivered' the mail despite wind, cold and snow . . . The historic event was advertised for stamp collectors and response for the "covers" was gratifying. Gene Silverman, a past president of the Sharon, Pa., Skylarks, is a materials test group chief who, along with Dr. Harris, works in the research department of the Youngstown Sheet and Tube Company, one of the country's largest steel producers. Dr. Harris, a chemistry Ph.D. and a noted stamp collector specializing in air mail history, provided the philatelic know-how while Gene contributed his equipment and RC skill to the project. "This was a means of illustrating how RC may be used in ways other than doing loops, rolls, spins, etc." Gene said. "Stamp collector interest was good enough so that we're also going to repeat the special flight for Apollo 13," he added.

Interested? Gene's address: 3450 Staunton Road, Youngstown, Ohio 44505.

And in another area of RC growth, a major Hollywood film production turned into a happy union of RC technology matched to new filming techniques that were revealed when Walt Disney screened "Varda, the Peregrine Falcon" to nation-wide TV audiences last December. How it all happened and why, is a story worth telling since it's about a memorable plane and two well known sets of RC'ers – Larry Leonard and Bud Anders of California and Walt Schoonard and Tom Drake of Florida. It's an odyssey that also includes a film producer and 13 falcons who all went on location in Alaska and Florida and soon learned a lot about RC. This is how it went . . .

Frank Zuniga, director of Pisces Productions, had a problem on which he and Ervin Paik, his assistant, were working. Roy Disney Jr., of the Walt Disney Studios, wanted to produce another of their famous nature movies and, fortunately, Dennis Brisco, the noted falconer was available with 13 falcons trained with the help of Bob McCullum and John Hall. Reviewing the proposed story line set many of the filming methods and schedules and it was here the idea of using RC came along to perhaps help over a tough place or so. The film makers hoped one of "those" radio-controlled model planes could be used for an aerial shot or two to give a falcon's view of the surrounding for a more realistic effect and to supplement the regular helicopter mounted cameras. A small portion of the filming schedule was set aside for the RC experiment while a call went out for a couple of RC'ers to handle the job. And so the 1969 National RC Champ, Larry Leonard and his partner, Bud Anders, found themselves on location in Delta Junction, a scenic spot about 100 miles N.E. of Fairbanks near the Alcan Highway up in Alaska . . .

Gene Silverman and Dr. W.F. Harris prepare for an historic "First Day Cover" RC flight to commemorate the Apollo 13 launch. Pair collaborated in 1969 on successful philatelic flight. RC use expands . . .

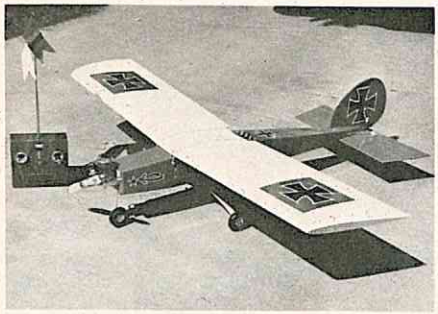
Their first job was to prepare a standard Lanier pattern plane to mount a stripped down 16mm camera to shoot pictures through the prop. The ship's cowling and Rev-Up 11 x 7 propeller were colored dull black with Krylon paint to eliminate glare to the camera which was set in the plane at a slight upward tilt. Other modifications were an oil deflector rigged to prevent lens fogging from the engine exhaust. Fitted with a Kraft radio, the plane had an inverted VECO 61 on Lord vibration mounts to further dampen possible camera movement. A Kavan carburetor led back to an 8 ounce fuel tank that allowed about a 7 minute flight, more than enough time to run off 1-½ minutes of film from a 50' roll at 64 frames per second, another way of getting smooth footage. About 2-½ pounds of nickel-cadmium batteries were packed in for the camera motor actuated by a 5th servo . . .

Test hops and the first film "rushes" brought quick realization to Frank Zuniga and his crew that RC camera results were better than had been expected. Soon the original RC schedule was exceeded as Larry and Bud met added challenges and the needs of the imaginative director. More and more footage was ground out in the air of the cliffside nest of feathering fledgling falcons in their precarious life in the Alaskan wilderness. A normal RC mission began on the Alcan Highway while sparse traffic was stopped, planned shots taken with bomb-run precision followed by a landing back on the highway sometimes viewed by a puzzled driver of an occasional auto . . . In a short time the collection of film cans grew, and, in line with the story, the action soon transferred to Orlando where the diminutive dynamo, known as Walt Schoonard closed his shop and, together with Tom Drake, his good-natured flying buddy, took time out to help add a

(continued on page 57)

"Miss Liberty Bell", Larry Leonard's new ship for 1970. Reed Packard pic misses the retracting gear but shows the Perry carbed Lee-VECO mill in the Kwik-Fli IV layout. A far cry from Alaska's rugged camera plane . . .

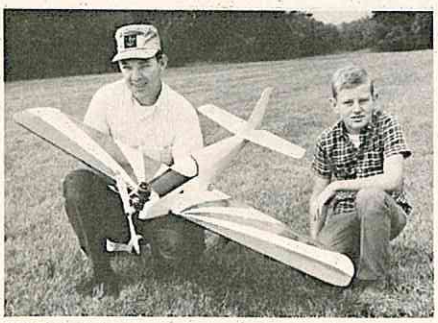
Kwik-Fli plus . . . KCRC's George Bericamp beautifully modified a standard kit Enya 60 and Kraft. Below: George's encore — a twin K-Fli from the frame of the original. Two Max 40's charge this one.



Another standard . . . A Jensen Ugly Stik by Fred Hulen, KCRC's P.R. stalwart. ST 60, Micro and parachute grace racy box. Nylon props NOT recommended . . .

KCRCers unpack for an afternoon of sport flying. Shade and comfort for family and friends . . . KCers, a leading club in all RC facets.

The KCRC 'buddy' system. Fred Hulen gives cover to Dick Turner during misty RC session in Kansas City. Too much up, Dick?



KCRC father-son fun event team. Jim and Denny Carey with ST 60 powered Trainer Master that managed T.O., 3 loops and landing in 35mph wind in 27 seconds.

Back from the mist and fog . . . Dick Turner and Nieuport fun ship. Foam wings, ST 40 and EK Logitrol. Pair from Kansas City RC Club.

Brownwood beauties . . . Members of the new Broken Arrow RC Society gather at their Brownwood, Texas flying site. County Parks Commission donated land . . .

Some of the members of the Kapiolani RC Club at their new flying site, an extinct crater on Diamond Head. Kuramoto, Wong, B. Onaga, L. Onaga, and Kawakami.

Tops in C Expert — Dan Carey received trophy from Jim Miller who sponsored Alamo RC Society contest in San Antonio.

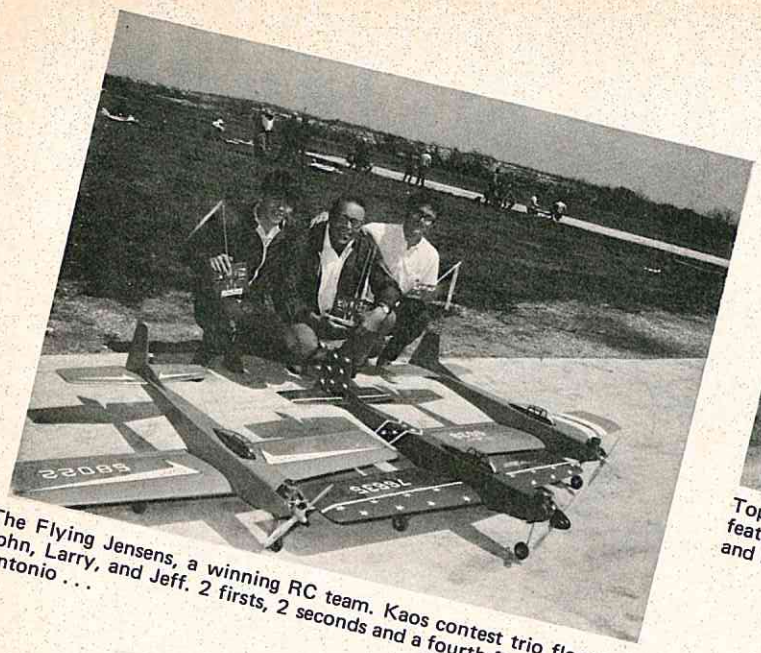
Big Pylon I line-up for early season meet indicates hot racing schedule for Texas Racing Circuit. 20 entries in San Antonio . . .

Dan Carey's T-Bird gets needle getting 'assist' from competitor Cal Scully. Dan edged Cal in close C Expert event.

A winner . . . New Lanier Cosmic Wind had debut in San Antonio contest, won maiden race. Len Purdy shows 5 lb. plastic racer. Ship has hi-density wing skin, 455 sq. in.

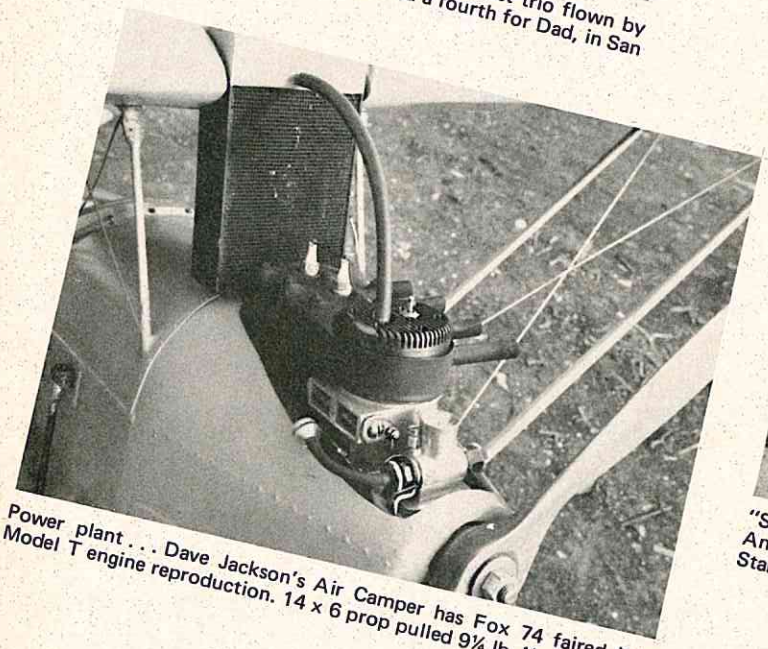
An original by a doctor — ergo, "Quack Fly". Ft. Worth's Dr. Bob Pearce and pattern ship took 3rd. Did better in Pylon I, winning $100 first place in ARCS season opener.

Mel Whitley of Austin RC Club took 2nd in A Pattern in first contest attempt. Original P-51, 58" span, 7 lbs. with Enya 45. Neat original retracts. A comer . . .



The Flying Jensens, a winning RC team. Kaos contest trio flown by John, Larry, and Jeff. 2 firsts, 2 seconds and a fourth for Dad, in San Antonio . . .

Tops in Scale . . . Dave Jackson, ARCS VP and Original Pietenpal featuring working L/G struts had 1450 sq. in. wing. 82" span, Fox 74 and Logictrol.



Power plant . . . Dave Jackson's Air Camper has Fox 74 faired into Model T engine reproduction. 14 x 6 prop pulled 9¼ lb. ¼-size replica.

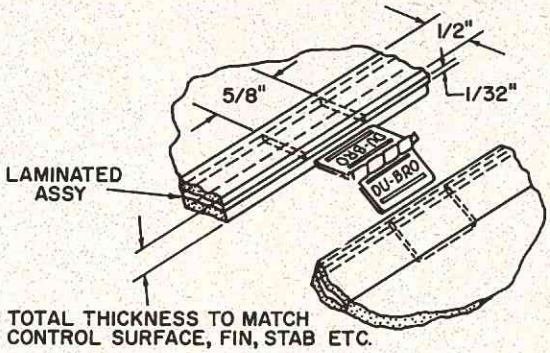
"Slow Wire" is re-work of deBolt Live Wire kit. Jim Waterman of San Antonio ARCS created fun fun ship. MonoKote, ST 60, Logictrol. Stable, sturdy product from dedicated RCer.

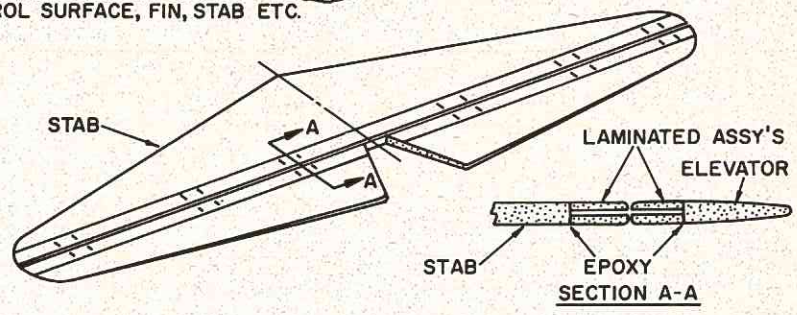
Top sportsman . . . Ed Rankin managed smile after heartbreak loss by 1—10th second. Ed's Mustang turned 1:46.0 heat, was edged by Steve Helms at 1:45.9!

The Flying Banker . . . Bob Lutker, one man pep squad of the Ft. Worth Thunderbirds, readies his fleet Pylon I racer for heat in San Antonio. A steady competitor . . .

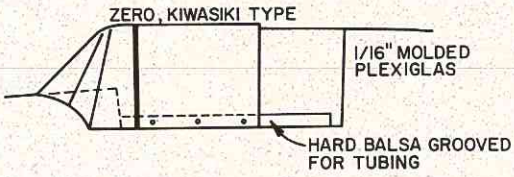
FOR WHAT IT'S WORTH

Jerry Smith, Wishawaka, Indiana, writing in the Tri-Valley RC News suggests an idea that will eliminate that problem of digging slots for control hinges and will also guarantee accurate alignment. Simply determine the location of your hinges, laminate 3 pieces of balsa to the approximate size shown, but leave out the center lamination where each hinge is to be located. Epoxy the laminated assembly to the stabilizer and the mating laminated assembly to the elevator. Block sand flush with the matching surface. The hinges will fit snugly with perfect alignment. This idea may also be used on the vertical fin and rudder.

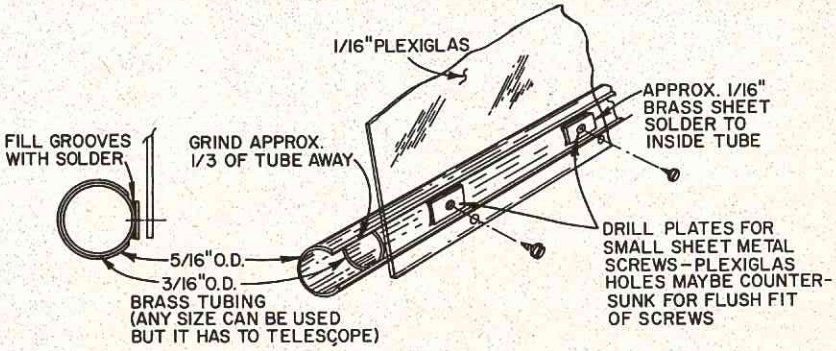


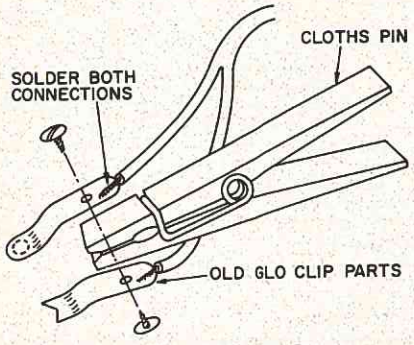


If you've been looking for a "slop-free" linkage for sliding canopies of the Zero or Kawasaki style, you might do well to study this idea from Gerard Davet of Cheyenne, Wyoming. One excellent feature of this canopy sliding rack is that the sliding hoods stay snug with no slop from side to side or up and down. It can also add to scale appearance as far as the rack is concerned. Another feature is that the sliding hood can be easily removed for repairs, cleaning, etc.

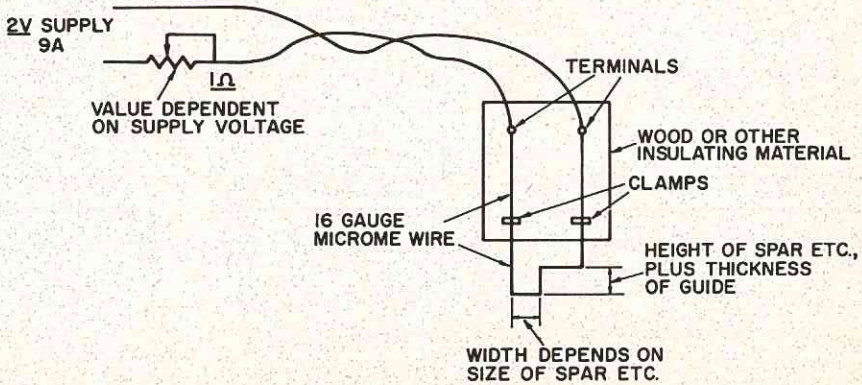


When your old plastic glo-clip gives up the ghost, use the metal fittings to make this clip which will last much longer. A word of caution: Be sure the metal parts don't touch the spring as a short to see. When your old plastic glo-clip gives up the ghost, use the metal fittings to make this clip which will last much longer. This idea was also submitted by Dan Harrison.



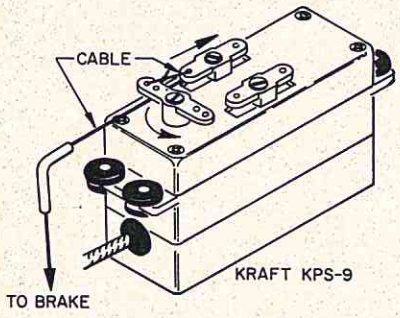


Gordon Gullock of Victoria, Australia, suggests a channelling tool for foam core wings which utilizes a small piece of wood or other insulating material and a 6" length of nichrome wire which operates from a 2 volt starting battery. The current drain is approximately 9 amps. This unit is very simple to make



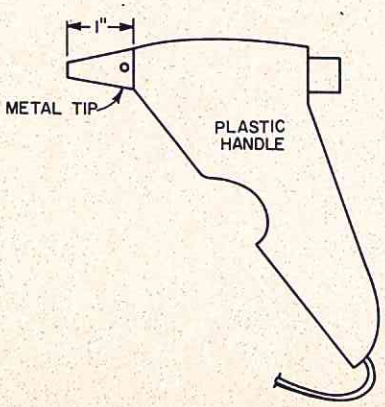
in a matter of only a few minutes and will prove quite useful in channelling spar slots, torque or pushrod slots, etc.

G.P. Walker, Jr., of Monroe, Louisiana suggests that if you have one of the combination push-pull and rotary output servos such as a Kraft KP9, this can be used as a mechanical brake. For more throw on the brake cable, thread the cable through the linear arm and to the rotating arm that moves opposite from each other. Be sure to rig it so that the pressure is not applied until extreme movement is reached.

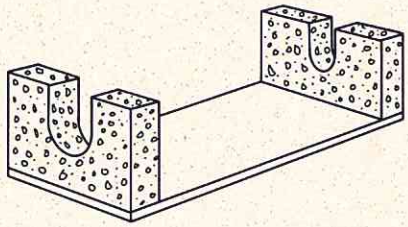


Transmitter sticks which use the ball and socket type construction, such as the Kraft and Bonner stick assembly have a bad habit of becoming sluggish about centering, after being used for any length of time. This is especially true during cold weather. The remedy for this is to spray a small amount of Oven-Gard silicon spray on the ball of each stick from the outside of the transmitter case. Work the stick a few times and it's better than new. Be sure not to spray inside the transmitter. This idea was submitted by Clyde Goforth of Knoxville, Tenn.

If you like to use Super MonoKote, but can't afford to part with 10 dollars for a sealing iron, R.E. Molsick of Pinellis Park, Florida, suggests using one of the Wen Electric Glue Guns, which has been thoroughly cleaned of all glue residue, as a heat sealer for tacking down the MonoKote. This gun can also be used in areas that are hard to reach with a flat iron. The latter can be used for shrinking the larger open areas. The heat from the Electric Glue Gun will not put a hole in Super MonoKote.

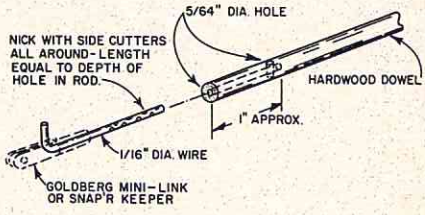


Left over blocks of styrofoam can be used as a fuselage cradle in your shop. The ideal size is 6 inches wide by 12 inches long. Cut out the desired cradle area. Glue the blocks to an 18" long by 3/4" thick by 4" wide piece of plywood. The glue can be contact cemented with 3M 77 or glued with Titebond. You now have a quick, cheap, and soft fuselage cradle. Suggested by Kent Landefeld of East Aurora, New York.

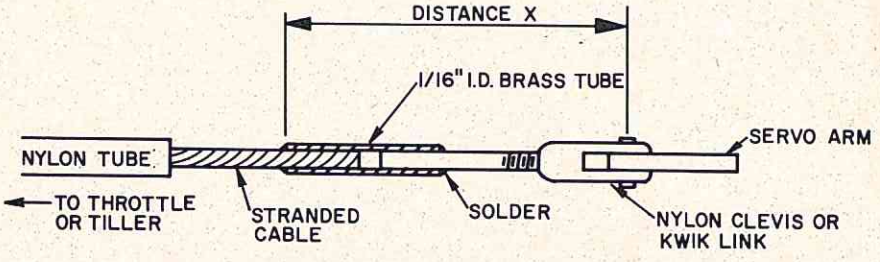


Joe Perez of San Antonio, Texas, submitted an idea dealing with tapping up the control from the tiller arm of your nose wheel to the rudder servo, or the carburetor arm to the throttle servo. The idea is particularly adaptable to the racer type or smaller size model where space is at a premium. Notice how much shorter the X distance is in the suggested method. The heart of the idea centers around using a larger I.D. brass tube for the joiner.

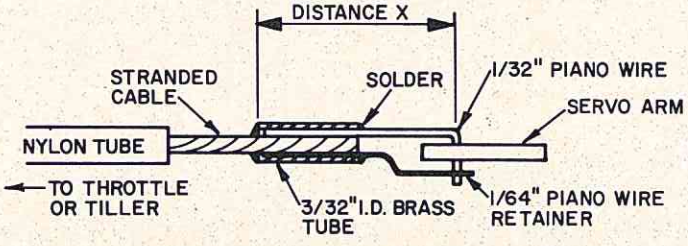
In this day and age of fancy control cables, Phil Johnson feels that there are a few who still prefer the old standby to operate the elevator and rudder. The push-pull rod is very simply made by using a hardwood dowel and a length of 1/16" diameter wire or welding rod. Poke the epoxy into the hole in the dowel, using 1/16" wire as a poker, until the epoxy squirts out of the cross hole. Push the pre-nicked wire into the hole until it is bottomed. Allow the normal cure time for your brand of epoxy. You will find that the wire cannot be pulled out by normal hand force.



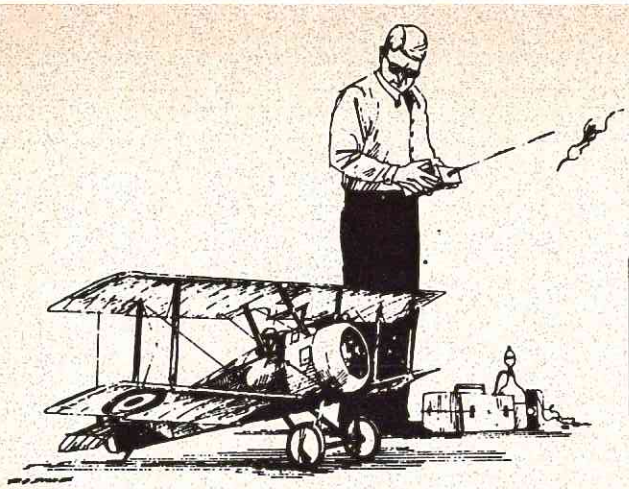
James Petro of Carey, Indiana, mentions that an idea, presented in an earlier 'For What It's Worth' column, consisting of fitting a Teflon sleeve in a spray bar body to stop wear, air-bleed, and needle movement, is perfectly satisfactory if you have access to a machine shop and the Teflon. However, as Jim points out for those of us who only have a corner to build in and a Sunday to fly on, an easier way to do the job is to take about 1/2" of Teflon pipe thread sealing tape, found in most hardware stores, and wrap a couple of turns tightly around the clean, dry threads of the needle. Screw into the spray bar, and it is now well sealed. ●



PRESENT METHOD



SUGGESTED METHOD



by DAVE PLATT
(Designer — Top Flite Models)

SCALE IN HAND...

The pair of columns which appeared recently, dealing with retracting-landing gears and folding wings, aroused considerable comment. A number of favorable letters, received by this writer and the boss, Don Dewey, made it unmistakeably clear that this is just the sort of feature that you scale fans really want and need.

With grateful thanks to those correspondents, we are going to devote the main section of this column to making true-scale wheels.

★ ★ ★

All of us who ever tackled a scale job have been presented with the problem of finding a suitable pair of wheels for it. A pair of really accurate wheels and tires add greatly to an otherwise excellent model, while a pair of commercial ones invariably spoil the total effect of a model, no matter how good it may otherwise appear.

Is it a lot of trouble to make some? Relative to the time spent on the rest of the model, the answer is no. A pair of true-scale wheels will take, on the average, about 20 hours to make.

Does it take special equipment? Here we will admit that it does, if we agree that a lathe is "special"; and not too many modelers have one.

The method described here was originally devised by Mel Culpepper of the Chicago Scalemasters, with slight additional refinements by Bob Talchik and the author, of the same club.

Here's what you need:

1) A lathe, about 6" swing is ideal.

2) About 1 lb. of "Silastic A", a self-curing silicone rubber compound made by Dow Corning. This material is usually available from industrial fiberglass outlets.

3) About 1 lb. (makes many tires) of Devcon Flexane 95 Liquid, a self-curing urethane rubber, almost black in color.

4) Two pieces of basswood, a little bigger than the finished tire.

OK, so much for the ingredients. Now for the recipe.

a) First, draw an accurate sideview of the proposed tire, with all outside detail like treads, makers name and size etc.

b) Next, make a cross-sectional drawing of the tire, showing inside as well as outside size; Fig 1 shows a typical layout for these drawings.

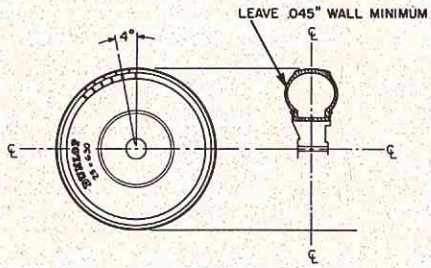


FIG. 1

c) Make two form-tools from 1/16" tool steel, one of **half** of the outside shape; the other of **half** of the inside shape. File plenty of back-relief into the cutting edges of the forms. See Fig. 2. Note that "outside" tool is

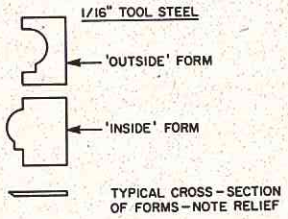


FIG. 2

female; "inside" tool is male.

d) Screw a piece of basswood to the lathe faceplate and turn a half-pattern of the outside shape. Remove most of the wood with regular lathe tools, saving the form-tool for the last 1/32" or so. This guarantees an accurately-shaped tire. Do not use the form-tool to remove **all** the excess wood; the screaming and burning will drive you out flying after ten minutes. (Fig. 3)

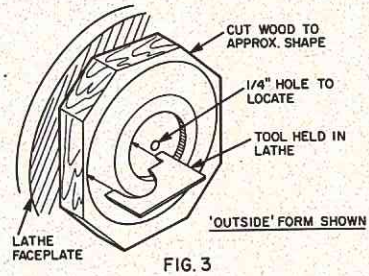


FIG. 3

e) Using specially-sharpened lathe-tools, cut the longitudinal treads. Then, set the lathe index to mark out the lateral treads. Cut these by hand, using a **very sharp** chisel. Basswood works beautifully, so this is an enjoyable task.

f) Trace the manufacturer's name, etc. on to thin card stock. Fix the card to the tire-form with rubber cement. Put the whole design down on one piece of card – don't try to cement down separate letters, since accuracy becomes too difficult.

g) Cut around the letters with a sharp modeling-knife, and remove the excess surrounding card. This leaves the actual letters glued to the pattern in precise position. Clean up well.

h) A light coat of varnish completes this pattern, sanded well when dry.

i) Make a half-pattern of the "inside" size of the tire. This pattern is opposite to the "outside" pattern, in that it is a female, or concave shape. (Fig. 4)

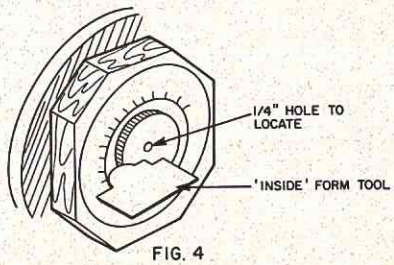


FIG. 4

j) Build rough balsa wood boxes around the patterns. Mix the Silastic using the supplied instructions on

(continued on page 70)

WIND EFFECT

BY JIM SIMPSON

There is a lot of folklore and old wives' tales about the effect of wind on model aircraft. This month we'll try to put some light on the subject. Anyone who doesn't see the light as we do is welcome to comment.

We have three general situations in which we can fly: A calm day, a constant wind, and a gusty wind. First, let's talk about flying on a calm day and some general flying qualities of model aircraft. As an example we will use a typical class III plane and call it GEM I. It weighs 6 pounds, stalls (quits flying) at 30 mph in straight flight, and under full power it cruises at 75 mph. Now let's make a turn; as we roll into the turn we need to put in some up elevator to maintain altitude because, now we not only have to overcome gravity, but also the centrifugal force of the turn. The relationship is shown in Fig. 1. lg is lift required to overcome gravity, C_f is lift required to overcome the centrifugal force of the turn, and L_t is the total lift required for the turn.

Bank Angle	L_t
30°	1.155
45°	1.414
60°	2.0
80°	5.25
89°	57.3

At 30° of bank, L_t is 1.155, now multiply the weight of the plane by this and you will have the total lift required for a level 30° bank turn. In the case of GEM I the answer would be 6 x 1.555 = 6.93 lbs; for a 45° bank, 6 x 1.414 = 8.484 lbs; for 60° bank, 6 x 2 = 12 lbs; etc. This increased lift also results in increased drag. The increased drag is dependent on many things quite complicated to figure, so we'll assume that with GEM I the increased drag is such that 30° of bank turn results in a decrease in airspeed of 5 mph to 70 mph; at 45° bank speed drops to 60 mph. If we know the speed and angle of bank, we can compute the radius of turn.

	Bank Angle			
Speed	30°	45°	60°	80°
30	105	60	36	10
50	289	166	94	30
60	420	242	140	43
70	575	332	192	59
80	741	427	247	75
100	1171	675	391	119

Using 45° bank and 60 mph we see that the radius of turn would be 242 ft. All these speeds and distance are relative to the air, airspeed, and air distance and on our calm day, they would be equal to ground speed and ground distance. One other factor which should be mentioned here is what happens to the stall speed in a turn. If we were to throttle back while in a level turn, the plane would slow down, and if we maintained the turn and level flight, the plane would stall at a higher speed than it would in straight and level flight. How much higher the stall speed would be is explained in Mr. Dunlevy's letter in the May issue of RCM (page 4). Our GEM I would stall at 36 mph in a level turn. (45° bank)

If you are still with us, we'll get into flying on a day when we have a constant wind blowing. We realize that there will be some wind changes and gusts, and we will cover these in the next paragraph, but for now we have a perfect constant speed wind of 25 mph. Now we have three relationships to consider, (1) the airspeed of the plane, (2) the speed of the wind and (3) the combination of these two factors which determines the relative movement of the plane to us on the ground. Let's fly the plane downwind. It's air speed is 75 mph. The wind is blowing in the same direction at 25 mph. The combination of airspeed and wind gives us a relative speed to the ground of 100 mph. Now if we fly the plane against the wind, airspeed 75 mph and wind 25 mph, the ground speed would be 50 mph. In relation to us on the ground the plane would be going twice as fast downwind as it would be against the wind. But in both cases it would be traveling at the same speed through the air – 75 mph. O.K., now let's do a turn and let's use the same 45° bank and 60 mph turn as on the calm day. The radius of turn in the air is 242 ft. which works out to 9 sec. for a 180° turn and 18 sec. for a 360° turn. If we do a perfect 360° turn in the air we wind up at the same point in the air as we started; however, the air is moving along the ground at 25 mph and, in relation to the ground, the plane would wind up 660 ft. (18 sec. at 25 mph) downwind after completing the turn.

As we progressed through the turn the plane's ground speed will be constantly changing even though the airspeed remains the same, 60 mph. When the plane is heading downwind it's ground speed will be 60 + 25 = 85 mph; when headed upwind 60 – 25 = 35 mph; and at the crosswind points, it's ground speed would be 60 mph. The path along the ground would look like what is shown in fig. 2a. If the wind speed happens to equal the speed of the plane the path would be as shown in 2b which is frequently seen at free flight meets where the planes seem to race downwind turning slowly into the wind and almost stop, when headed into the wind, and then turning slowly and racing downwind. In this case, even though the airspeed remains the same, the ground speed would change from zero to 120 mph (60 mph wind).

Lets discuss one other phase of flight, climbs and descents, and the combined effect of wind and airspeed. Let's say our GEM I will climb at 60 mph at a rate of 1000 ft. per minute. 60 mph figures out to 5,280 ft. per minute so for every 5.28 ft. it flys forward through the air it will climb 1 floot, and in one minute, the plane would climb 1000 ft. and travel 5,280 ft. forward (1 mile) through the air – fig. 3a. If it is a calm day then ground distance would also be 1 mile while climbing 1000 ft. in one minute. But let's add wind and see what happens. With a 30 mph wind (2,640 ft. per min.) and a climb into the wind for one minute, we again reach 1000 ft., but our ground distance is only ½ mile (60 mph – 30 mph = 30 mph ground speed for one minute = ½ mile). See fig. 3b. Downwind would have the opposite effect, increasing our ground speed and decreasing our angle of climb. See fig. 3c. Note that in both cases the plane will climb 1000 ft. in one minute but that the angle of climb changes.

Now what about gusty conditions? Due to momentum, inertia, or whatever term you use, a body at rest tends

(continued on page 64)

Snowshoes and 26" of snow . . . just right for Paul Butcher's Norseman in balmy (like the fliers) 10° weather. Smooth soft snow has advantages.

GRAB AN AXE AND FLY!

BY E. N. CAMPANA

The weatherman said, "temperature 12 degrees, winds 7 to 18 miles per hour, skies clear, snow depth 26 inches . . . . "

"Yep", I figured, "ideal flying weather", so I called Paul and asked if he wanted to go flying.

"Sure", came the ready reply. "I sharpened the axe last night . . . I'll call Tom, you check with Jim, and I'll see you at the edge of the field in about an hour."

In short order, several SoMoRaCC members made their way to the flying site with the man having the biggest feet leading the way to the strip. Walking on 26 inches of fresh snow, you'll usually sink up to here unless snowshoes are worn. (To the uninitiated in this sort of ritual, snowshoes look like oversize short-handled tennis raquettes.) So the big-footed flyer on snowshoes led the way and packed down the trail. Meanwhile, fliers with sharp axes, machetes and pangas (he's referring to an East African broad-bladed knife . . . Ed.) headed into the nearby bush to chop down a dead tree or two. These were hacked into five foot lengths and heaped over a basket of kindling next to the trail's end near the selected flying spot. Next, a pint or so of glow fuel was sloshed on the pile and a match tossed onto it. In ten minutes a fine smudge fire was the center of activity and it was possible to tell the exact wind direction: If we breathed pure air, we were upwind; if eyes watered, throats choked, and we coughed and coughed, we were downwind. In the latter case we took off toward the smoke . . . This is called flying blind.

There was a time when we had to fly without using gloves or mitts because transmitters needed the capacitance effect of bare hands on metal transmitter cases. A bonfire was necessary then to thaw numbed fingers from time to time. Today's transmitters are vinyl clad, are far more dependable, and may be operated with gloves on. But we retain the tradition of burning a bush or tree anyway – a burnt offering to the Gods of Miniature Airplanes . . .

Here in the Land of Eternal Snows – where winter lasts 8 months, and it's even tough sledding the other 4 – we have learned a few verities about RC bush piloting in wintry climes. First of all, it's necessary to realize that there's **snow** and then there's **SNOW** . . . The first kind is firm and frozen; a man can hardly stand erect on it, while a plane's skis leave scarecely a mark. **SNOW** is a different matter; this is light, wispy, fluffy, and may sit ten inches or more deep over **snow** the other brand . . .

Jim sets his ski-equipped Bar-Fli on

The walk back . . . Bob Campana retrieves the Norseman after a long slide past the spot. Floats doubly useful in lakes-a-plenty Canadian countryside – after snows melt.

A bonfire, an RC accessory and tradition in Winter flying. Paul Butcher, SoMoRaCC member, does honors. Firewater helps too . . .

Snowy pit. Campana and de-geared Coachman. Piano wire brittle in cold climes and may snap before rubber bands hold-downs. Hot charged nicle-cad battery OK.

Bar-Fli ready to barf into Canadian Winter Wonderland. Long flat snow stretches can trick depth perception. Jim Elgie, MAAC official, aims for take-off.

the **SNOW**, and the plane sinks to the wing! Unless a plane is super-powered, it can't take off through the fluffy stuff. She'll just sit there and pant, the prop whipping a trough in the **SNOW**. When really overpowered, the plane starts to taxi on its wing, skis knifing under the fluff. The prop chops a channel for the fuselage, and the plane gathers speed. In 50 feet skis start hydroplaning (snow-planing? Ed.) and the ship rises out of the **SNOW** and barfs off into its aerial element as though it had been peopled. Hurrah! Jim's airborne!

Paul's Norseman is also on skis. It looks good that way but it, too, sinks into the **SNOW** despite abundant contact area. It takes a firm shove to get it moving, but it rises away smoothly after some 100 feet of take-off run. And it just seems to float around in all that thick, cold, condensed air . . .

When we're flying from **snow** touch-'n-go's are a real sight. With an unbroken shadowless background, an approach has to be long and calculated since the expanse of white may confuse depth perception. But after touchdown, accelerating away without digging in is easy. At least Jim and some of the others make it look that way. I remember the last time Jim made a **snow** touchdown – neat and smooth – he gave the Bar-Fli a hard shot of right rudder and she started to slip sideways. Advice was immediate: "A great stem-christie, Jim!" Or, "Try a gelandesprung over that hump . . . "

We've learned two rules about starting engines in the cold: Have enough juice in your battery to make glow plugs flare brightly; and, flood engines thoroughly to start them. Flooding assures a good piston seal and raises the compression ratio. This may make the mill run backwards when it first starts, but she warms up that way so we let 'em run. One thing though, we watch for backfire fires that sometimes occur in flooded engines – this kind of heat isn't wanted! Engines, we've noted, may not run without the battery connected until they're up to operating temperature, nor do they respond friendily to sudden throttle changes when frigid. Despite colder temperatures 500 feet up, the engines run trouble-free once they're thoroughly warmed up. Special fuels or additives aren't especially necessary, although a squirt of ether-spiked fuel can speed the starting process and lessen the need to flood the mill in the process.

Should the plane dunk its engine on a landing, clean the snow away at once, or the hot engine will melt it. It'll then re-freeze in less than a minute and you'll find your reciprocating pride and joy encased in green castor-ice! A glop-sicle.

Throttle linkages also may freeze, intakes clog with ice, and assorted other threats that make engines balky after a snow dunk. Shove the front end into the smudge fire and in time the ice thaws. Also, instant smoked plane . . .

Deep and fluffy **SNOW** is an ideal medium from which to learn to fly. As sometimes happens, the plane may be given the wrong signal, so she dives earthward. Pfumpff! she hits and keeps going, filling the crankcase full of snow, till the plane is imbedded up to its rudder. Dig 'er out, wipe off all those white crystals and fly again! **SNOW** is more forgiving than any other medium.

One time I was grounded until I decided to chance a hand-launch of my conventional landing geared plane. It turned out I didn't have to worry about it flipping over on landing because I promptly pfumpffed the Royal Coachman up to its saucy empennage. On digging it out I made several discoveries: the rubber bands holding the landing gear had remained in place but the 5/32" piano wire had snapped! Wire gets brittle at low temperatures, and rubber becomes inelastic – in fact, seems to turn almost to nylon. Incidentally, nylon props are a revelation in the cold environment too. I've never known one to break unless it touched ice. Nylon won't dent at 10 degrees. On the other hand, it'll shatter against icy surfaces.

Every so often others try to imagine what cold weather flying is like. Don Dewey is one. He's also a humorist. In the January 1969 RCM he mentioned that his polypropolene strip hinges had become brittle at 39°, possibly because of temperature differential (it got up to an unbearable 86° by noon . . .) Well, my darn hinges don't seem to know about temperature change because they're lugged out of a 74° house into 0° outdoors and they work fine. Now maybe that L.A. smog . . . But anyway, Don can sure design Country Coachmen . . . Ah, did I say Country Coachmen? I meant Royal Squires . . . (Namby-pamby Californians. 39° indeed . . . !)

Back to Artic antics, Paul learned that older-style NyRod type pushrods, unless used in an undeviating straight line (or constant curve) are too inflexible to follow minor curve changes of 10, or even 20 degrees. Servos don't have push enough to overcome resistance that uneven curves cause between inner and outer tubes that harden in such cold. However, modern propo gear has been found very dependable at these low temperatures. This year – three-fourths of the way through the Winter – we haven't had a failure or had to fire up a snowmobile to chase a flyaway; not yet anyway . . . Failures in electrical components that have occurred so far have been found in receiver decoders for some reason. Faults usually show up on the ground, so despite soft snow landings, the old rule still holds: If it don't work on the ground, it won't work in the air.

A peculiar phenomenon of Winter flying is the sight of sheets of snow peeling off the plane and slowly tumbling to the ground. Snow that sticks to exhausted oil on the fuselage peels off in flight from (a) force of the slipstream, or (b) warming effect of the exhaust, or (c) differential expansion coefficients 'twixt ground level and flying level temperatures, or (d) a combination of these factors. As for beginners, when they first see this happen it gives them a start – they swear they've lost a stabilizer or something!

A final benefit of Northern clime flying is the excuse provided to fetch along frost-bite remedy, also termed anti-freeze, to stoke up as temperatures dictate. This can result in some rather spectacular flying! Ever see a 84" span Norseman do consecutive outside loops? If YOU'RE looped you will!

So . . . don't just sit there, enjoy yourself! Grab an axe, wax your skis, tether your sled dogs and do your RC thing in **snow** or **SNOW**! That is, unless you live in Calgary, or Winnipeg, where it REALLY gets cold! ●

KITS & PIECES

BERNIE MURPHY and DICK SONHEIM

Above: Attaching deck. Resin can says "use with adequate ventilation," Murphy! Below, L to R: Holes cut for drive shaft and rudder tube, A simple drill-and-file operation. Deck temporarily taped to hull to cut hatch openings. Bottom row, L to R: Drive train and deck tabs installed. Ready for bulkheads; engine and radio installation. Shakedown photos on next page.

BERNIE MURPHY

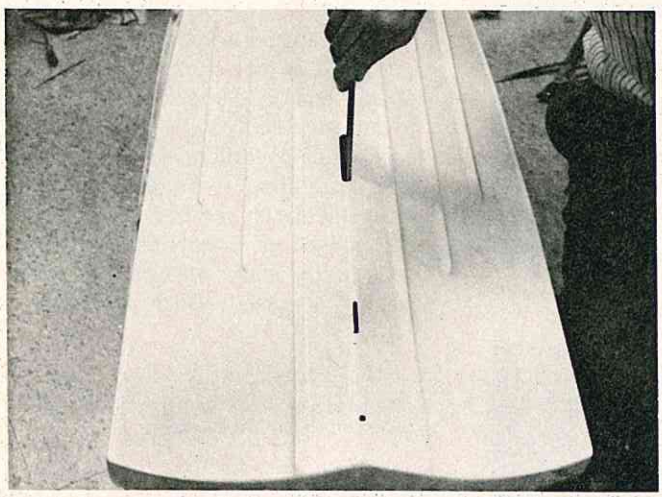
It seems a little strange to be writing Kits and Pieces on a regular basis again – but we're certainly happy to be back.

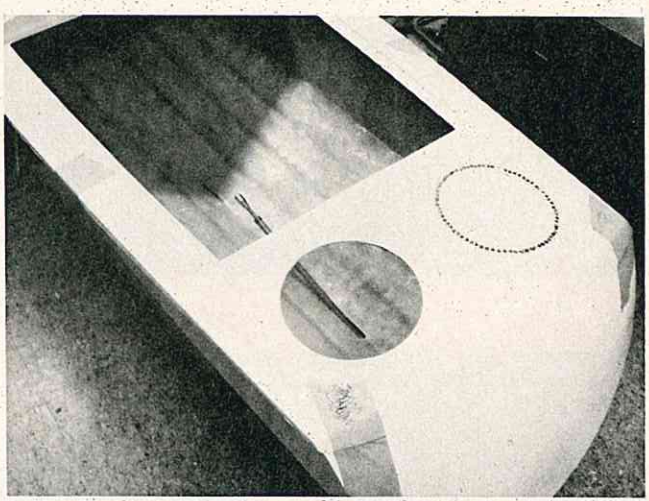
The balsa dust in our shop is accumulating rapidly, with a few new materials added into the chips – fiberglass, foam, ABS plastic, etc. Several new projects are well underway and, as rapidly as possible, will be reported.

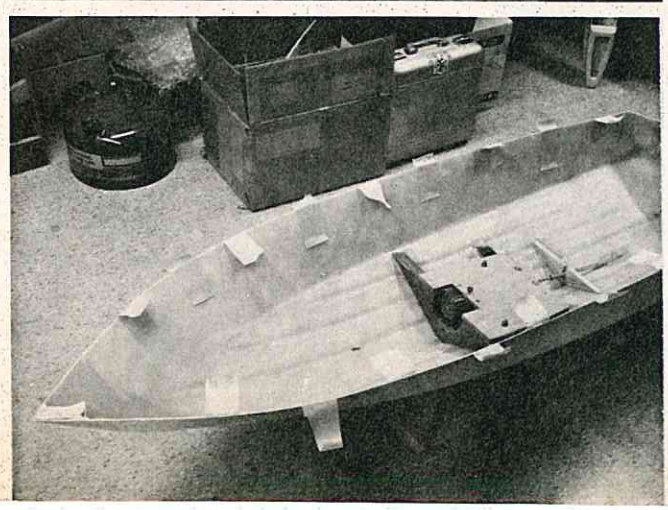
The report this month is somewhat a change of pace – an R/C boat. "Somewhat," since this one is about as exciting to handle as any multi airplane. The boat is the "Moppie", a 5'3" version of the World famous 31 foot Bertram Offshore Ocean Racer.

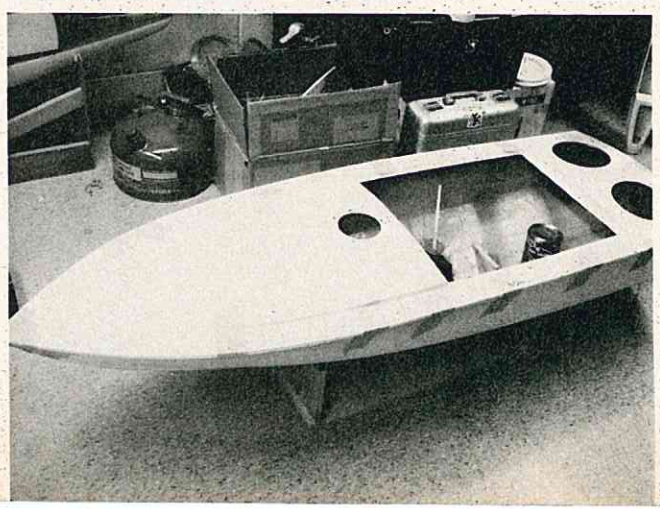
Construction of the hull and deck is of fiberglass, with an average thickness of 1/16", making a very sturdy, rapidly assembled model. It should be noted, at this time, that we are **not** avid powerboat fans, hence, it takes a lot of boat to "turn us on," and a simple, quickly built model that can be completed before the initial enthusiasm wanes. The Moppie is both of these, being easily built – ready to run – in two or three evenings.

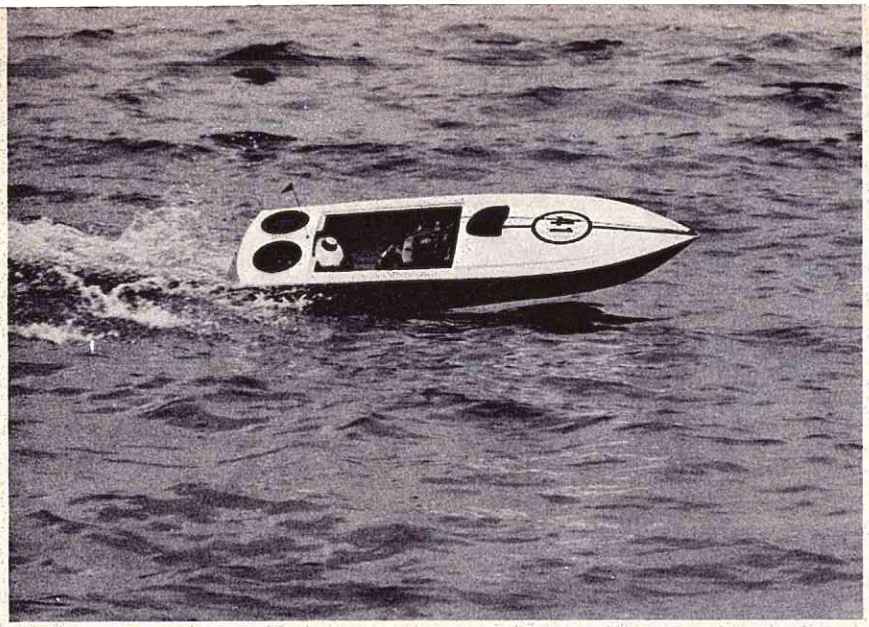
The process of turning the Moppie kit into a beautiful running craft requires only a little effort, and can be accomplished by any RC'er. One un-











Smooth, clean, and fast! Choppy seas present no problem.

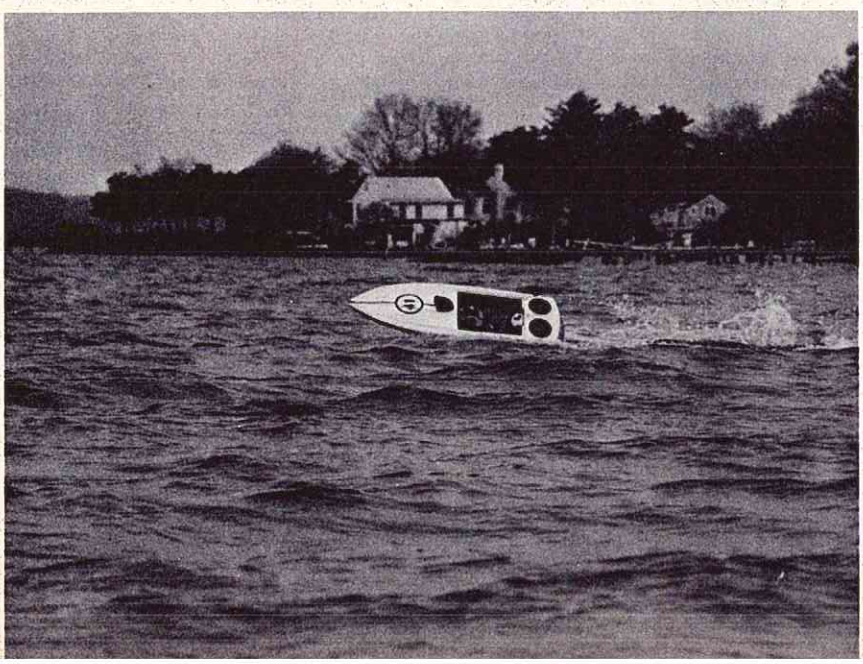
usually nice feature is the fact that **all** needed hardware and fittings are included, eliminating the need to spend endless hours trying to locate some little item.

Completion of the hull requires cutting holes in the bottom for the shaft, strut and rudder post. Full size templates are supplied, making for a simple drill and file operation. The drive shaft tube assembly (comes assembled) is slid into place, and held temporarily with clothespins and tape. The engine mounting "V" blocks are set into place, and the engine assembly

You have to admit, it's pretty realistic!

(also pre-assembled) positioned on them. This "drive train" must be accurately aligned, and a little extra time spent assuring that everything is in proper position is well worthwhile. When satisfied, all parts are "tacked" into place with small strips of fiberglass tape and polyester resin. (Mixed properly, polyester resin will cure in 2-3 hours).

While waiting for the resin to cure, holes can be cut in the deck for the hatches and air scoop. These holes can be cut quite easily with a sabre saw, or (as we did) by drilling a series of small holes and filing to finished size. We chose the latter method to eliminate any chance of scratching the deck. Back in the hull, once cured, a final check of alignment. Once satisfied that



Knife edge flight? Rough water and hand left rudder fail to flip the Moppie.

everything is in place, the "V" block engine mounts are **securely** resined into place, and the shaft, strut and rudder tube **securely** epoxied. Servo rails are also glassed into position now, along with a series of fiberglass tabs along the top of the hull, to be used later in attaching the deck. Construction to this point can easily be completed in a single evening.

Installing the deck is a task which will be long remembered. The deck is fitted and securely taped to the hull.

This assembly is now suspended upside down between two ladders or chairs. The trick here is to get your head, shoulders, one arm, and the can of resin **inside** of the boat. (Ed note: Adequate ventilation?) It can be done! The fiberglass tabs previously installed on the hull are resined to the deck, while in this position. Once inside the boat, we decided to glass the entire seam making a more rigid structure – though not necessary. After the resin has cured, silicone rubber (bathtub sealer) is used to seal the outside (this should be done after any planned painting). Glassing in of the two bulkheads and installation of the engine assembly, deck hardward and radio and construction is completed – off to the pond (We can't wait – painting will be done later).

The first runs on our Moppie were made at the DCRC Symposium, under rather restricted space conditions – with exciting success. The 3½ HP Homelite engine starts easily with the built-in recoil starter, and the centrifugal clutch allows positive power control from a standing start.

Our Moppie has run in open water in the Chesapeake Bay and many of its tributaries without mishap. The watertight radio compartment is just that – having suffered no radio damage from water seepage – and we're running in salt water! The boat seems to be capable of withstanding water as rough as we are willing to venture into, and has proven impossible to capsize – even deliberately. Top speed has been clocked at 29 MPH, – with enough engine noise to delight everyone. Boats appear from everywhere, and in short order, someone is challenging – a race – their full size against your model. Imagine how **they** must feel when **you** win! Running time is limited to about 20 minutes on the built-in tank, but an optional auxiliary tank extends this time to well over an hour.

The Moppie is available through your local hobby dealer, or direct from One Design Electronic Models, 521 Lakehurst Rd., Toms River, N.J., 08753. It can be purchased in several forms – the complete kit with everything at $349.00, hull and deck only at $124.00, or completed, ready to install radio and run at $499.00. The cost may seem a little steep, but, considering the cost of the engine assembly, the excellent quality of the kit, and the fact that ours would seem to be a lifetime investment, we feel that the cost is justified. We have "buried" far more in airplanes, with less actual operating time, – besides, it makes that family outing to the beach a little more pleasant!

One Design is currently considering marketing a smaller version of the Moppie, in the 36 inch range. This size would allow use of current R/C engines. They may be contacted directly for the latest information.

We highly approve the Moppie, and hope to find many more in our local waters this summer.

We have just obtained a kit of DuBro's Sea Bird – looks like yet another good reason to spend the summer at the beach. At first appraisal, it would appear to be an excellent kit. Clean, sharp vacuum forming, shaped wood parts, and **complete** hardware. With a little luck in the building time department, and even more with the weather, we will have this one flying in time for next month.

The new G-PAD, from R/C Engineering, 356 W. Roma, Phoenix, Arizona 85013, contains two distinctly different materials; one a shock absorber (beige), which is their original G-PAD, and the other a vibration isolator (coral).

The latter is in the poly-urethane family and is an extremely low density open cell foam; it is the "deadest" low density foam that R/C Engineering could come up with. When dealing with shock and vibration isolation, the word "dead" is of utmost importance. This is the inability of a material to return energy which is applied to it. Materials which are not "dead" are springy (like foam rubber). "Live" material feels great under static conditions but can be treacherous under **dynamic** conditions. What happens is this: With periodic inputs, such as the vibration received from an engine, the equipment mounted in "live" material starts bouncing; after a few cycles, you have a condition in which the PC board is going in one direction and the components are attempting to go in the other. Now this won't damage **good** solder joints, but it will show up poor connections. Moreover, it will literally snap component leads on larger components (capacitors, coils, IF cans, etc.). "Dead" materials do not do this.

Since outstanding vibration isolation **and** shock absorption cannot be realized with one material, R/C Engineering has gone to a two-part

system with the new G-PAD. It works like this: a double walled, slip-fit box is built of the shock absorber (beige) and the vibration isolator (coral). For best results the vibration isolator should line the box. (Use contact cement – Weldwood, Pliobond, etc.) Under normal operating conditions (such as running the engine with one prop blade gone) the vibration isolator suspends the receiver from the outer box and the rest of the plane, thus minimizing vibration coupling into the receiver. Under adverse conditions (a euphemism for wipe-out!) the vibration isolator compresses and allows the receiver to contact the shock absorber, which in turn does its darndest to keep your repair bills down.

An interesting sidenote is that prior to the instrduction of G-PAD, cracked resistors and broken crystals were quite common among the many units that manufacturers received for repair from all over the country. Since G-PAD, this type of problem is much less common.

Ray Pisar, of R/C Engineering states: "We feel that G-PAD is a substantial improvement over the older material and would like to thank the few people who were bold enough to tell us that they liked the superb shock absorption qualities of G-PAD but also wanted outstanding vibration isolation. We at R/C Engineering are sincerely interested in offering the best possible protection and repair service for R/C equipment."

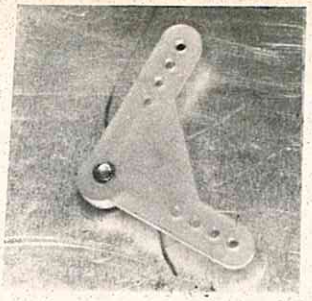
RCM has Tested, and Approves and Recommends the new G-Pad to your consideration.

See you at the beach and/or field!

DICK SONHEIM:

We received several new items from Nelson Model Products Inc., 1414 West Winton Ave., Hayward, California 94545. The first item is the Instacrank, which consists of a nylon bellcrank mounted on a small sheet of aluminum. The Instacrank is only 5/16 of an inch thick and makes an ideal bellcrank installation for the thin foam wings used in pylon racers. The Instacrank retails for $1.25 a pair.

The second item from Jerry Nelson is a new American made muffler called the McAllister muffler. This unit is similar in construction to the Silence-aire type but smaller in size and lighter in weight. Preliminary tests on a Super Tigre 56 shows only a slight loss in power on the ground and no noticeable change or loss of power during flight. They will be available in sizes



for .35 through .60 and priced at $12.95 each.

Two new kits from Sterling Models Inc., Philadelphia, Pa. 19144, the Schweizer SGS 1-34 Sailplane kit has a wing span of over eight ft. and can be built with an optional power pod. The Lancer RC kit is a low wing trike geared model with 525 sq. inches of wing area. Both kits come complete with most of the hardware required including aluminum engine mounts in the Lancer kit.

It was bound to happen! As soon as the radio manufacturers came out with their miniature digital radio equipment the model builders began to see how small they could make their aircraft and still stuff in a full house proportional system. A good example of this was the Rimfire, designed by Jan Sakert, and featured in RCM a number of months ago.

Phil Kraft scaled his famous Kwik Fli down to a model with less than forty inch wing span. Because of its small size it was appropriately named the Flea Fli. This type of a model is strictly a fun type ship for an experienced flyer. The disadvantage of this type airplane is its small size, and the relatively high air speed needed to fly your model could quickly put it out of sight.

Recognizing the desire for smaller aircraft, Midwest decided to kit one of

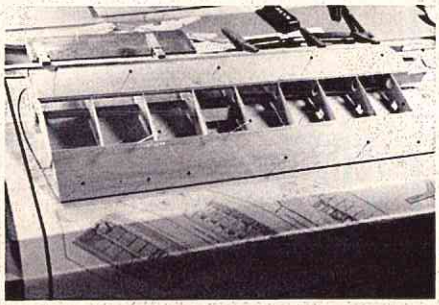
the smallest full house proportional radio models on the market. Also recognizing the fact that a model the size of the original Flea Fli would be difficult for the average flyer to handle as well as being cognizant of the problem of trying to cram the radio gear into something that size, they decided to increase the size of the Flea Fli to something a little more practical. Thus Midwest scaled up the Flea Fli approximately 10% and, hence, the name, Flea Fli + 10.

Because of the airfoil used the wing must be built over the plans with the bottom spar raised off the plans with special half inch triangular spacers. A little extra care should be taken in positioning the bottom spar on the spacers to insure a leading edge sheet gluing surface. I did make a few minor changes in the construction of this kit over those shown in the plans. For example, I prefer to screw down the hatch rather than use rubber bands. Rubber bands have a habit of breaking at the wrong time and the radio won't work too well without a battery pack! Also, I feel it's a cleaner looking installation.

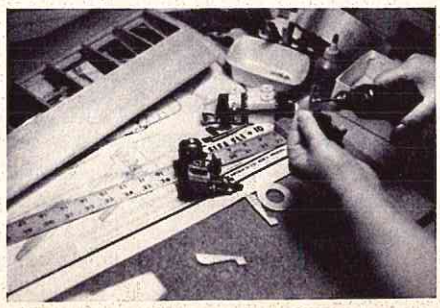
If you are going to use a Super Tigre .23 as shown in the plans you will have to slightly modify the motor mounts which are supplied. Use a file, or a Dremel tool, and grind the curve on the top of the motor mount back about a quarter inch so that the motor can be moved back closer to the firewall. After you have located and drilled the holes for mounting the engine to the mounts you may cut off a portion of the motor mount that extends beyond the motor mounting flange.

Midwest supplies their contest grade balsa wood in this kit, which not only makes it a pleasure building, but also helps keep the weight down. The Flea Fli + 10 kit comes complete with all hardware including the Rand pin type hinges for the rudder and elevator. This is a fun type airplane that you can carry in one piece in the trunk of your little sports car. ●

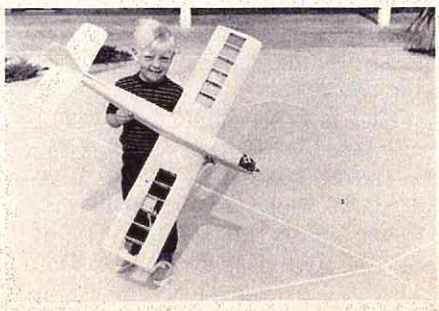
Flea Fli to wing construction shows spacers under bottom spar.



Grind away motor mounts to fit ST. 23.



Flea Fli + 10 ready for covering.



TOP OUT

(continued from page 38)

Florida finishing touch to the outdoor nature film epic.

Flying action in the east called for slipping between trees, jumping over low obstacles, and other maneuvers requiring a nimble plane. To obtain all this, a new 6 foot 880 square inch Clark Y sectioned wing to set at 3° positive incidence, was made and fitted with 1-½" full span ailerons and tip plates, all MonoKote covered. Other refurbishing brought the highly modified Lanier Midget to 12 pounds fully loaded. Another Lanier plane, a Thunderball, was set up as an 'actor' to protray flying prey for the 'starving' story falcon who eventually found that the model was lean pickings after the filmed 'crash' scene. It was also here where the aerial shots of the 'battle' with a bob cat and the falcon were made as were the shots where Walt and Tom had to duck the plane through 8 foot wide slots between trees to satisfy the enthused but demanding film makers. It did get a bit nervous but, as the RC role kept growing in the movie's making, Walt and Tom hung in there with the tough flying assignments . . .

A 52" version of Joe Bridi's Sun-Fli 4 is kitted by Jac-Mac Models. Bob Lake shows Jack McPherson's ship at rest. Hand cut quality balsa and wing jig are kit features. 1st class . . .

Altogether some 5200 feet of film was exposed on all the RC missions. This amounted to approximately 15 flying hours on the plane. As for fuel, although exact count was lost, about 13 gallons of Dean Lewis' Tiger fuel went through the VECO mill without a hitch. "And not a glitch out of the radio or any servo failures either," Walt Schoonard pointed out.

"What about the plane that went through all the hard flying and landing knocks, where is it now?", Walt was asked. "Frequency interference finally caught us right on our own field on the day AFTER finishing the last shots," Walt related. "We were starting to take a few publicity shots for TV Guide magazine when a new visitor to our Orlando field turned on a transmitter and sent the rugged camera ship to its reward," he concluded.

And the movie? Across the country one Sunday evening last winter surprised RC'ers wondered about those scenes as they unfolded on TV. The obvious scene showing the RC flyer having his plane chased and 'attacked' and dropping his transmitter (no, in

Don Yockey (r) gets assist from ARCS president Bill Morgan. Was 4th in successful early season contest. Pylon I competition hot . . .

Wil Cowen, Austin RC Club and "Pink Panther" original has Enya 60, foam wing, plywood fuselage – weighs 7 lbs. Austin lawyer enjoys RC competition . . .

real life Mr. Kraft's products DO NOT pop open like that . . .) was recognized readily by RC buffs everywhere. But the rest of the 50 minute movie – with some 26 minutes worth of the final product coming from the RC camera ship – came as a mild shock to those who later realized they had witnessed the Hollywood debut of RC as a major tool in making movies! What's next, they wondered . . . ?

HERE 'N THERE

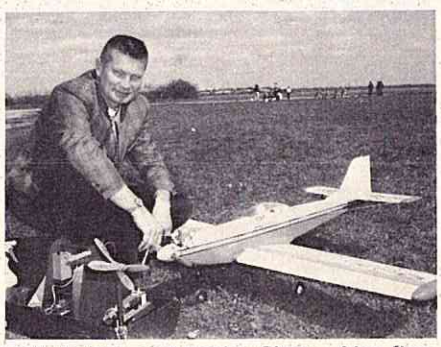
First, the latest work from the Sage of the Brooklyn Garbage Dump, Harold – The Great – Goldklank:

Hi Jer!

Returned last nite from a 2 day visit to the Flying Bison's RC Conference in Buffalo. Too bad it was held in "Snow City" . . . but there were enough people to keep things interesting . . .

Tony Bonetti (sic) confessed that he wants to win the Nats worse than ever and I advised him he'd have to beat me first! That seemed to leave him a bit shook – it took him about 5 minutes to stop laughing. I don't know why he laughs when he's shook, but he does.

Spoke with Walt Schroder – he's really one helluva great guy. I asked for an editors job on MAN and he told me, "I got an editor – what do I need a bum like you for? Besides, you can't spell . . . " I guess that's true, but why is it important? Anyhow, I did not get the job, so I put the curse on the



Gail Jacbson and Lanier Citron. Also flew new Lanier Cosmic Wind in Pylon I racer in ARCS meet. More to come from steady pair . . .

The big one . . . Bud Lockwood readies his Omen, 96" pattern ship (RCM Plan). Portland, Oregon RC'er has Flying Flea also for size balance. Can't keep a good man down . . .

Gyrating Mussah on that crazy pagan and drank all his booze!

Jawed a bit with Maynard Hill and told him that on his next record altitude attempt I expect him to fly off the edge of the world. He just smiled and carefully explained the earth is curved and that you cannot fly off the edge . . . He must be nuts, or sumthin'.

Then I suggested to John Worth, AMA's Executive Secretary, that he help me become a Contest Director and he left the conference instantly! Maybe he had to go home . . . ?

Well, that's all . . . The SOB's send their best. See you around . . .

The Great Goldy

Kansas City . . . Kwik-Fli's never die – they just keep changing . . . George Berlcamp of the Kansas City RC Club proved this by putting a cabin on his. Result was a neat plane that showed a beautiful basic plane can still be improved upon. Not to be satisfied, after flying his cabin-Fli a season, George redid the ship for 1970 into a twin powered configuration using 2 Max 40's. Whatta bomb! Fred Hulen tells us George and the rest of the KCRC gang enjoy their regular fun-fly get togethers as well as serious competition work. The KCRC continues to be one of the U.S.'s most active clubs who's leadership in all RC facets is reflected in their newsletter, CONTACTS, edited by Charley Reed. Must reading . . .

TEXAS . . . Welcome to the new "Broken Arrow RC Society" of Brownwood, Texas. Max Blose (Tarman – RCM Sept. '69) tells us Mickey Stephens is the first president for the new 17 member club whose members hail from 3 Texas counties. Flying is done at a site donated by the Brownwood Parks Commission. Max adds that RC'ers visiting the area "are welcome to watch or join us in flying."

San Antonio weather provided the means for one of the first sanctioned contests of 1970 and saw some 50 contestants respond for Pattern, Scale, and Pylon I events. Dan Carey of the Ft. Worth Thunderbirds edged Cal Scully who came from Port Arthur with his original Mr. Ed IV (RCM, Feb. '70). Dan was flying his T-Bird, a modified New Orleanian and came from behind to take the top spot in a close race with Cal, Dan's partner, Dr.

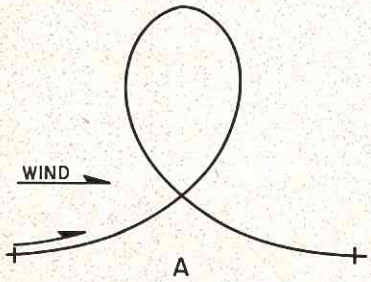
Bob Pearce was 3rd with his original "Quack Fly". Larry Jensen who came to the contest with a trio of Taos competition birds and two sons who also came to win, was 4th in the C Expert event. In A Pattern, Bob Ernull of the Huston Space Center RC Club won his first contest followed by another newcomer, Mel Whitley of the Austin RC Club. Young Dan McNorton was 3rd. Lt. Ivan Munninghoff racked up another win in B Pattern while Craig Bliss of Houston and Harvey Helmke of New Braunfels, Texas, shared honors in B. C Novice went to the Jensen brothers with John edging Jeff in another close race. The J brothers also shared similar honors in the Hi-Point junior awards. Scale went to Dave Jackson, VP of the Alamo RC Society who hosted the contest at their excellent flying site in San Antonio. The contest was sponsored by Jim Miller of Miller Aviation who provided the trophies and cash awards.

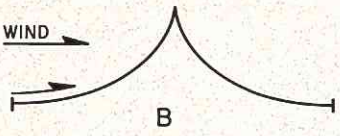
Pylon I was the most popular event with 20 entries. After 7 heats that saw the debut of Len Purdy's new Lanier Cosmic Wind, Doc Pearce of the Ft. Worth Thunderbirds toted up 28 points for the top place in the racing event. John Locke of the Houston RC Club placed 2nd with 26 points while Dr. Gale Helms and Don Yockey settled for 25 points apiece. Fastest heat went to Gale Helm's son, Steve, who posted a 1:45.9 time to edge Ed Rankin in a similar orange Mustang who crossed the finish line at 1:46 even in the same heat! From this and other action seen in the early San Antonio contest, it's certain that pylon competition will be hot in the Lone Star State in 1970!

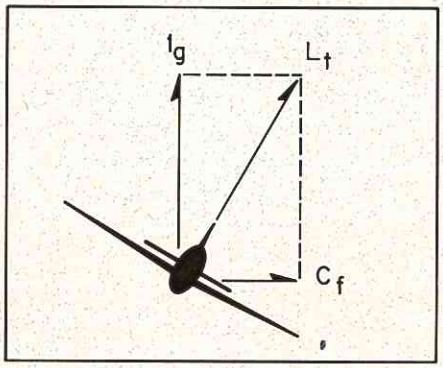
Hatboro, Pa. You've read a lot about the 1970 Toledo RC Conference and how the big crowds came and enjoyed it. Well, two RC'ers and their wives hold a different memory of the occasion and will never forget the 1970 show – and they didn't see it at all. Dick Penrod and Faye Peoples, along with their wives, started on their way to Toledo in Faye's Cessna 170-B 4-place plane from Philadelphia. Trying to duck a dense snow storm over the Laurel Mountains caused them to fly into the ground in desolate Mt. Ross State Park. All survived the crash and for some 6 hours they huddled around a fire built with a book of Playboy matches Deloras Penrod saved as a momento of an earlier Florida trip. Faye then managed to trek some 4 miles and found the home of Homer Howard, the park's caretaker who rounded up snowmobiles that got the two couples to alerted ambulances which then took them all to the Johnstown hospital where their injuries were treated. Dick is a Bell Telephone supervisor and Faye works for the Standard Pressed Steel Co. Both are members of the Glenside RC Club. The couples expressed appreciation for the concern and flowers sent by their club and the Valley Forge Signal Seekers. Understandably, no mention was made at this early date of plans for the 1971 Toledo show . . .

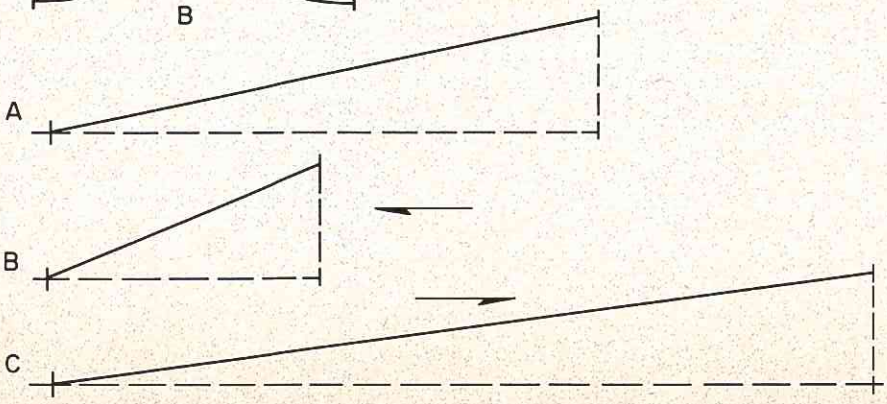
Hawaii. A new Hawaiian club, the Kapiolani RC Club, has an unusual flying site – an extinct crater. Diamond Head Crater in Waikiki is the location of regular flying sessions of the year old club. No noise complains there . . . Twenty members presently are signed up and it appears there'll be some competition other than RC clubs of Hawaii, the Aloha and Hawaii RC Clubs. The 9th & 10th of May saw the 2nd annual 50th State RC Championships. More of that later . . . ●

to stay at rest and a body in motion tends to remain in motion. Basic physics, right? This motion is measured in both speed and direction and called velocity. Take our GEM I flying on a gusty day, say a wind 20 to 30 mph with an average speed of 25 mph. Flying into the wind the plane's ground speed will average 50 mph (75 mph airspeed – 25 mph average wind). However, due to the inertia as the plane meets the varying wind speed, it's airspeed might temporaily change anywhere between 70 to 80 mph. So, on days of gusty winds we don't want to be flying around close to the stall speed of our plane because we could suddenly lose some of our airspeed due to wind gusts which could put our plane below it's stall speed.









Now we will review all the letters and comments that have appeared in RCM over the past year and let's see if we can clear up some of the muddy water. First, a reprint from an RC Club newsletter which appeared on page 51 of the Feb. 1969 issue of RCM. This article very accurately described wind effect until it got to the part dealing with the 180° turn after take-off. This portion was commented on in detail by Mr. Dunlevy in the May '69 (page 4) issue. Just a couple of comments on Dunlevy's letter. When he states "once an aircraft is airborne and has a substantial airspeed we must forget about the effect of wind on the flight characteristics of our bird", it can be misleading. True, a constant wind will not effect the flight charac-

teristics, but the wind can have quite an effect on the relative movement between plane and ground, as we will see. Also, the TAS spoken of should have been written IAS (indicated airspeed). Except for these two minor points, Mr. Dunlevy's letter was very descriptive of the wind effect.

Let's take a close look at what happens. Using our GEM I and a constant wind of 25 mph we'll make a take off and a 180° turn. Open throttle and away we go. At an airspeed of 35 to 40 mph (10 to 15 mph ground speed), take off and start climbing out at an airspeed of 60 mph (ground speed 35 mph). We start our turn, still climbing, and now we need more lift to overcome the centrifugal force which increases the drag and slows the airspeed some more, say to 50 mph airspeed. Now we are half way through the turn (crosswind) so our ground speed is also 50 mph. As we continue through the turn we notice that the climb angle is decreasing and that the plane seems to be flying faster (ground speed is increasing) so we put in a little more up and the plane's airspeed slows to 40 mph (65 mph ground speed.) Let's review a minute; the plane's ground speed (it's movement relative to us) at the start of the turn was 35

mph; ½ way through it was 50 mph; and at the end of the turn it was 65 mph; it's relative movement to us was always increasing in speed. But, take a look at the airspeed, 60 mph at start; 50 mph at ½ way; and 40 mph at end of turn. We started the turn 30 mph above stall speed and ended up only 10 mph above stall while our ground speed almost doubled. Another thing to consider is that the stall speed was higher during the turn because of the increased lift required to overcome the centrifugal force. True, we didn't stall out GEM I but take another type of plane other than a high powered class III like a 7 lb. .29 powered shoulder wing (shades of yesteryear) which stalls at 25 mph, climbs at 30 mph and cruises at 35 mph.

Let's take-off and turn using a wind of 15 mph. At the start of the turn the airspeed is 30 mph (15 mph ground speed). Start the turn, a little up elevator, and airspeed slows to 28 mph (½ way through the turn 28 mph ground speed). Now as the plane turns downwind, the ground speed starts to pick up (Losing head wind and picking up tailwind) so the angle of climb decreases. A little more up and the airspeed slows more and, oops! Stall! Crash! Just before the stall, airspeed was 25 mph (headed downwind, 40 mph ground speed).

Let's review again what happened. The ground speed was 15 mph at the start of the turn, 28 mph ½ through the turn, and 40 mph after completing the turn, always increasing, and the model seemed to be always "speeding up" to us on the ground. However, it's airspeed was **decreasing**.

Now let's go to the letters that appeared in the Aug. 1969 issue (page 4). All of them except the first one, imply that a plane picks up airspeed when it turns into the wind and loses airspeed turning downwind due to inertia, kinetic energy, or whatever you want to call it. The formula for kinetic energy is $KE = \frac{1}{2}mv_2$, where m = mass and v = velocity. Velocity has both direction and speed. Let's use the example used by Charles Peake on page 90 of the Aug. 1969 issue. He cites a pylon racer with a 100 mph airspeed and a 20 mph wind. This gives a ground speed of 80 mph upwind and 120 mph downwind and he feels that the ground speed could not change that much (40 mph) in the short period of time it takes to do a 180°

turn because of inertia. First, take a calm day flying South, air speed 100 mph, ground speed 100 mph, and the same speed going North. Can we say there has been no change in velocity? No, because we are going in opposite directions. The change in velocity is 200 mph. Now add the wind blowing South and what is the change in velocity? 200 mph (120 + 80). How about that? It's the same as a calm day!

In Bob Spaulding's letter he uses an airspeed of 35 mph and a wind of 35 mph and then states that in a 180° turn the kinetic energy would change 825 ft./lbs. (0 mph ground speed to 70 mph ground speed). But why measure it relative to the ground, why not relative to the air? 35 mph in one direction to 35 mph in the opposite direction (change of 70 mph) with a change of 825 ft./lbs. of kinetic energy. On a calm day the same would be true.

Assuming level flight the airspeed of a plane is determined by thrust, and drag only. When a plane turns the drag increases; therefore during a turn the airspeed cannot increase and, in fact, it will decrease some because of the increased drag. Why compute speed, velocity, kinetic energy or inertia relative to the ground? The ground is not affecting the plane. There is the force of gravity, but it only acts in a vertical direction. We tend to relate to the ground because thats where we are standing. What if we were in a car going 35 mph and flying a model at 35 mph airspeed? When it's going the same direction as the car, its's speed, velocity and kinetic energy relative to the car and you is zero. When going in the opposite direction its relative speed is 70 mph, and the kinetic energy is 825 ft./lbs.

In closing we would like to leave you with a problem. It could have been stated using a plane, wind, and the ground, but makes more sense using a boat, a river, and the shore. A hunter gets in a boat at point "A" (on the shore) and paddles upstream one mile to point "B" (B is one mile from A) and his hat falls into the water. He continues upstream for 10 more minutes and remembers that his tickets home are in the hat brim so he turns around and paddles back downstream and catches the hat at point "A".

How fast is the stream flowing? ●

SCALE IN HAND

(continued from page 46)

mixing, and pour into the boxes. Be sure that air-bubbles rise **away** from the patterns. Let cure for 24 hours. (Fig 5)

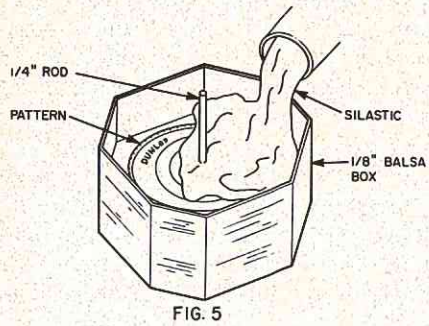


FIG. 5

k) When set, try the patterns together, using a ¼" drill to center them properly.

l) Mix the Flexane to the recommended proportions and stir for at least 2 minutes. This is vital!

m) Pour some Flexane into the Silastic "outside" mold and swill it around to fill all the detail. Pour in enough Flexane to completely fill the cavity which results when the "inside" mould is pressed in place. Note that **no** parting agent is used.

n) Bring the moulds together, using the drill to center them to each other. Press hard together. Some of the Flexane should ooze out around the sides. Use weights to hold the moulds together while curing. Let set for 24 hours.

o) Pull apart the moulds, and pry out one immaculate and perfect half of the first real-looking tire you ever had! Trim off any flash.

p) Repeat steps m, n, and o three more times. Now you have four halves.

q) Mix a small quantity of Flexane, and using it as glue, join the halves to make two complete tires. Let set 12 hours before handling.

This procedure makes the tires. Of course, we still have the hubs to make, but since these will vary almost infinitely from model to model, we are not going to detail this process. In any case, the methods used in metal-turning are well-known; while the tire-making process is not. There is just one thing to remember; that is, when turning aluminum you need **very** sharp tools (keep grinding them as you go) and spin the metal as fast as possible.

★ ★ ★

Next month we are going to talk about making fiberglass spinners, so all you guys out there who need a 4" (or bigger) spinner for a scale model can look forward to Scale in Hand's next column. Like making tires, the procedure is not **difficult**; it just takes time and care!

A good source of scale R'C model plans, accessories, and sundry data is Bob Holman Plans, P.O. Box 741, San Bernardino, California 92402. Send for the man's list – it's good. Bob is a real scale fan and a whole lot of information that he supplies is unobtainable anyplace else.

★ ★ ★

Midwest scale fans,– the West Suburban (Chicago) R'C Club will host a Scale Fly-In on September 27. Strictly low-pressure stuff. Stand off class **and** another event not requiring B.O.M. For details, write Don Coulomb, 456 N. Indian Wood Dr., Carol Stream, Wheaton, Illinois 60187.

★ ★ ★

See **you** at the NATS?

★ ★ ★

TAILPIECE . . . . .

Quotable Quotes:
The difference between a poorly finished model and a well-finished one is sandpaper.

–Anon

Simplicate and add more lightness.

–Henry Struck

If there's a 1% chance that something can go wrong, it goes wrong 99% of the time.

–Murphy

(This is the original Murphy's Axiom)
Polystrene foam is an answer looking for a problem.

–Anon

You never **finish** a scale model. You just stop working on it.

–Phillips (Pioneers, Santa Clara)

Do **you** know a Quote – some saying with dry humor but a fundamental truth? If so (and it's apropos scale modeling) send it in! ●

FORMULA I

(continued from page 33)

fuel tubing and slip over the edge of the extension that fits over the engine exhaust. Make sure it is snug to eliminate any metal to metal noise. (see photo)

In order to go, you must have fuel. A 6 oz. tank is sufficient to provide at least 5 minutes running time. Do not go any smaller than this. If you must wait for 2 minutes while the flash next to you flips a cranky engine, you will

be lucky to complete 10 laps without a flame-out on a 4 oz. tank. Everyone knows the tank should be centered as close to the thrust line as possible, right? But what about the filler and vents? This was learned the hard way at the Fort Worths' Thunderbird Field last year. Out of 6 heat races, I made the checkered flag only one time. The other 5 were lost because I ran out of fuel after 9 laps. Cliff Weirick had this very problem at the '68 Nats. I do not know if Cliff ever found his problem, but mine was because the fuel was siphoning out the vents in flight. Why? Because they exited the fuselage below the centerline of the tank, even though they ran to the very top inside the tank. Make sure the vents exit the fuselage above the tank centerline.

While on the subject of fuel, there are some modelers who insist on using a pressure system. If you have had good luck with it then more power to you. I believe, however, there are more problems involved than the small amount of speed, if any, gained by using it. Starting is always a problem when using pressure. A flooded engine is the usual result. The needle setting is very critical on pressure, probably twice that of suction, and any leak in the system will result in an erratic engine run. I recommend to stay away from it. You will have more success, and trophies, without it.

That about covers the essentials. The following items are little "tricks of the trade" I have picked up and may help you in building your next racer.

1) Attaching a canopy to a Hobby Poxy finish was always a problem for me until I discovered this method: After canopy is trimmed to shape, hold it in place with a few small dabs of contact cement and mask around the canopy and the fuselage, leaving a ¼" gap between

the bottom of the canopy and the fuselage. Mix some epoxy glue and add a few drops of desired color to your Hobby Poxy resin. Let it set until it is thick enough to apply without running. When you have it completely around the canopy, smooth it out with your finger wetted in thinner. Remove the tape before it completely sets up and smooth out edges again with your finger. (see photo)

2) The Goldberg Shoestring aluminum landing gear makes a strong and attractive addition to nearly any racer and can be polished to a high gloss. Attach it to ¼" plywood epoxied into the bottom of the fuselage. Make sure the gear has a slight amount of toe-in. This will aid in straight away take-offs and usually cures a ship that has a habit of continuously ground looping upon release. (see photo)
3) One of the best and easiest ways I have found to attach the steerable tail wheel is by using a Rand Aileron Bearing for the bracket. It is strong and puts no stress at all on the rudder. (see photo)

That about covers it with the exception of the race itself. This is something you simply must learn by doing. One of the biggest assets is a good caller. Try to work with him beforehand and practice your race as though Leonard, Bridi, and Stockwell were on your tail!

And, good luck. ●

THE ISLANDER

(continued from page 26)

struts can be screwed on, are butted up against the stringer and the upright. This method of strapping on the float works well on this size model, but if you want to use the idea with a bigger job, be sure the bands holding the struts to the fuselage are sufficiently strong and tight in order to keep the assembly from collapsing due to water loads as the engine pulls the fuselage forward and the float drags backwards. You'd be surprised at just how heavy the stresses can get!

As with the float, the fuselage is a streamlined box, but with a rounded hatch and turtledeck that is provided by using a ½" balsa block carved to shape. For weight purposes, use the lightest grade of balsa for these parts, since they are not subjected to heavy loads.

To hold the hatch in place, a piece of 1/8" plywood is glued to the bottom at the rear. This slides underneath the forward edge of the turtle deck and holds the rear end down. The front end can be held down with a rubber band stretched over two screws on either side of the fuselage.

The engine and tank mount is an integral structure made of 1/8" plywood, shaped to the planform of the fuselage forward of the leading edge bulkhead, and glued in place with retaining doublers on each side. The cutout for the tank lets it cradle in place and, when you put the hatch in place, you'll have to make a cutout in it as shown on the plans, since the tank extends above the side of the fuselage. By tailoring the cutout, you can make it a snug fit, and that holds the tank down in the cradle.

If the wing tip floats look familiar to you, that's because you've seen them before on the Seafoam. There seemed to be no reason to design new ones when these work so well. The strap-on feature is useful if you want to fly the Islander as a landplane, too.

The tail surfaces are of the standard sheet balsa type except for the addition of an 1/8" dowel for a rudder post in order to strengthen the entire assembly. This is particularly necessary for water operation when using the water rudder.

The three servos and the receiver are mounted on a 3/32" plywood tray which is screwed in place on the spruce cross braces. For balance, the 225 mah. battery pack has to be up forward under the tank. Wrap it in several layers of Saran Wrap, since this will not only keep it dry but also cut down the effects of engine vibration. As usual, the servos and receiver are mounted with mounting tape.

If you have larger servos than the KPS-12, you can modify the location of the mounting tray by lowering it slightly. Please note that I have made a small cutout in the hatch so that the ends of the pushrod wires wouldn't rub. Here, again, the method of attaching the pushrods to the servos is to remove the wheel, insert the bent end of the pushrod wire, then reattach the wheel. Make a slight bend in the wire, as shown in the plans, so it will always rest on the top of the servo and, thus, stay locked in place.

Covering, as usual, is a matter of choice. My choice was Mono-Kote – even on the float. If you are very careful to overlap the seams and seal them carefully, this method is just

as waterproof as any, and a lot quicker, both to make as well as to repair.

Try to make the wing cradle a good snug fit, and use wing mounting tape, so that when you strap the wing in place with rubber bands, it just about closes up and is waterproof. Spray has a way of getting in wherever the opportunity presents itself!

The Islander is easy to build and a quick way to take advantage of all those lakes around you. Try it for some real flying thrills this summer. ●

THE PUFFIN II

(continued from page 17)

top. Be careful not to over sand, particularly in the vicinity of the balsa blocks. Build the fin and rudder and glue in place. The results of all this should look like picture #8. Cut out the cockpit using the template on the plan. Cut the styrofoam to the depth indicated by the slot in "E" and at that location. Floor the cockpit with 3/32" blasa. Cut an instrument panel and glue it in place. Carve a headrest from block balsa and glue it in place aft of the cockpit area. Cut out the 1/32" ply fillet base and bevel the front so it easily conforms to the curvature of the leading edge of the wing saddle. Put the fuselage aside and build the wing.

WING: No detailed building instructions will be attempted for the wing since it is a conventional styrofoam wing. The wing is sheeted with 1/16" balsa and the cutting templates for the styrofoam are included full size on the plan. The tips do warrant some explanation. These are built from two 2" x 2" soft balsa blocks. After the wing is sheeted, cut both of these blocks to conform to the tip rib shape. Hollow the block closest to the wing completely out leaving a ¼" balsa shell top and bottom. Leave 1" front and rear to allow for sanding the curvature of the tip without sanding too thin. Next, partially hollow the outer block to lighten and cut it to the shape of the wing tip. Glue one of these to each of the tip blocks previously glued on. Block sand these tips to the shape shown on the plan. Also, notice on the aft part of the center section of the wing that there is a 1/16" ply plate inlaid into the foam before the top sheeting is put on. This is the plate that the wing hold-down bolts screw down against. Now, build the fuselage

fairing from soft block balsa and cap the front and rear with "B" and "C" respectively. This fairing is clearly shown in picture #9 as are the dowels that secure the front of the wing to the fuselage.

Mix some Hobby Poxy I and glue the 1/32" ply fillet base to the wing saddle cut out. Tape securely in place along its entire length so it conforms exactly to the wing cut out. Lay a large piece of plastic wrap on the center section of the wing to keep it from being glued to the fillet base and bolt it in place. Now, using masking tape, secure the outside edge of the 1/32" fillet base to the wing surface so it will fit the wing exactly when the glue cures. Set aside to dry. Cut two blocks of styrofoam 4" high and 15" long by 2" wide and saw the top and bottom outlines according to the fillet shape shown on the plan. When the fillet base dries, remove the wing and glue one of these blocks on each side of the fuselage and against the top side of the fillet base. Allow to dry. Cut the aft fillet base member from 3/32" ply and glue to the bottom of the foam aft of the 1/32" ply fillet base. Shape the foam using sandpaper until you achieve the shape indicated by pictures #10 and#11. Apply medium weight fiberglass deck cloth using Hobby Poxy II glue over all foam areas. When cured, brush on another layer of glue using a Flux brush. Sand gently using 80A Garnet paper. Do not sand into the fiberglass cloth.

Construct the cowl with fiberglass using the Hobby Poxy E-Z-Duz-It method and attach as shown on the plan. The conventional alternatives to the foam construction I promised are as follows: First the 3/16" foam sheets inlaid in the back of the fuselage sides can be eliminated and 3/16" square Wassen truss bracing can be substituted. Second, the foam-balsa-fiberglass fuselage top can be replaced by a single full length soft balsa block sanded to shape, hollowed and finished the same way as the rest of the balsa parts. If you are handy with balsa carving, the fillets can also be made from soft balsa blocks or any other method you are familiar with. Do not just eliminate them, however, because they contribute substantially to the strength and appearance of the airplane.

FINISHING Finish the entire model with two coats of Hobby Poxy II glue according to Pettit's Ez-Duz-It method. Apply these coats over the fiberglass parts so that all wood parts

will have two coats and all fiberglass-foam parts will end up with four coats. Do not scrape the foam-fiberglass parts with a blade but sand these parts until smooth with 80A Garnet paper. Spray on your favorite Hobby Poxy color, add a vintage trim accent and there you have it . . . A Puffin II.

FLYING: No special warnings or notes are necessary when test hopping this bird. It handles extremely well on the ground and, when it gets rolling it tracks very well with no large rudder correction needed for the takeoff roll. Just a very slight back stick pressure will get the bird into the air for a very graceful and smooth lift off and climb-out. You will find the airplane very easy to get used to; it's very smooth on the controls and an able acrobatic performer. ●

GEMS

(continued from page 14)

another. That is, if you're human like the rest of us! The most popular engine is the K & B 40 Rear Rotor RC! If you can get one of these it would be an excellent start. See the article by Clarence Lee in RCM for details on how to "hop up" the engine.

Which airplane you start with is pretty much up to you. We have listened to pro & con arguments concerning balsa vs foam 'n glass for years but, as yet, can see no clear cut line of superiority.

Before you buy, study what's available. One commercial kit of a popular racer has too short a nose on it and one foam glass kit has a wing which won't pass inspection.

Yes, inspection! Consult page 52, section 23 of the 1970 AMA Model Aircraft Regulations for rules concerning the pylon racers. You should already be a member of AMA and, if so, will have a copy of this book. If not yet a member, then join, and get one free. If you live abroad the book can be had for 50 cents plus postage, I'm sure!

Now is the time to carefully study the rules – BEFORE you build. Unfortunately, lots of our friends built their models then found the plane didn't fit the rules!

For instance; .40 is maximum engine size, and must be from lots of 100 or more (stock, to you mechanics!) and likewise the carburetor! The prop must be 2 blade wood, fixed

pitch, and the spinner is to be rounded and at least 2" in diameter.

The fuselage is a minimum 7" by 3½" at the cockpit, with the landing gear consisting of at least 2 wheels, 2¼" dia., non-retractable, and ground steering is required. Wings are a minimum of 450 sq. in. area for Formula I; 600 sq. in. on Formula II! Airfoil to be 1 inch thick on Formula I and Formula II biplanes. Otherwise 1½'' minimum on Formula II monoplanes!

The minimum weight (less fuel) is 5 lbs., maximum is 6½ lbs., and if you show up at the weigh-in standing light we can guarantee Cliff Weirick will make you add every ounce!

That's enough rules to get you started so get with the program! And order your rule book as there are only one and half pages of important rules which you, the contestant, must comply with!

The next phase is practice, practice, practice. Then practice some more. Then when you are real good keep up the practice to stay proficient! No joke!

The 23.9 series in the rule book states the mimimum requirements you must meet prior to entering competition so by all means do this.

Next get out and fly the "course" at least twice a day, as often as possible in order to become familiar with your gear and to get the "feel" of the course! As you do this you will discover how much advantage there is in "rolling out" of a turn dead on course, as opposed to correcting your heading on each leg of the path! That's all just "feel" which comes only with practice.

Another thing you will discover is what a great asset your "caller" will be. Ideally, he will be a U-Control speed champion who is really "Mr. Super Cool!" You might also consider training your own! We know of a case where an 11 year old boy does a great job of calling and, between races, he and his dad spend lots of time discussing the race in progress! This young lad was trained by his father, as they were both beginners together, and are now learning together. Imagine what a great pilot the lad will make with his dad doing the calling!

Racing procedures are best learned by doing. This begins with you showing up to register with your equipment, plane, and 3 view scale drawings. Yes, Formula I is really scale, and the planes which get 20 points (the maximum) handicap are

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really beautiful scale jobs! So don't gripe just beat 'em at their own game. Make yours better!

You will be called upon to race in heats along with 3 other anxious pilots and your starting position will be determined by your handicap points, so the prettier the better. When you get to the starting line and have received your take off order, you or your pit man will hold up the planes, in turn, to be identified by the flagman, and be assigned a flag color.

Now be sure there is no frequency conflict before you start the engine. Not after your takeoff. 'Nuff said?

Starting your engine is a cinch because you did fill the tank, check the glow plug and battery, check the engine head, and generally secured all before you reported to the flight line. And naturally you will also do it prior to coming out each time, right?

Oh! Now with the engine running check the radio again! After you're sure it works to perfection look at the flagman so he will know you're ready for launch. When it's your turn to go and the flag is dropped your well-trained assistant will launch your plane and you'll fly a fast tight course to win first place.

OK, now getting ready to do all that is preparation and doing it as outlined is procedure, and here's wishing you enough luck to beat everybody but us! ●

ENGINE CLINIC

(continued from page 12)

Paul White and Al Strickland have introduced an item that has been long needed for the pylon racers. A machined aluminum backplate and lathe-trued Veco spinner to match. It is most important that the spinner run true. The die cast backplates that normally come with the spinners have a tendency to run out and let the spinner wobble. This means vibration that can damage the front bearing, loosen screws, and give your servos a real working over. In fact a lot of your servo problems, in both pylon and sport ships, can be traced to out-of-balance props, and wobbling spinners. Especially if you use some of the plastic spinners that mount on the front of the prop. I shudder every time I see a pylon racer sporting one of these!

Paul and Al now make the Turn-Tru backplate and spinner unit.

The backplate is machined from bar stock aluminum and is heavy enough to have a slight flywheel action. This, in itself, does not add any rpm to the engine, but does help maintain rpm going around the pylons. The backplate has a small groove machined around the outer edge into which the spinner fits. This means that no matter how tight you draw down on the spinner, it will not jump over the edge of the backplate. The spinner is fit to the backplate and a light machine cut taken to bring it in dead true. If you have any wobble with this unit, it will not be caused by the spinner. Be sure and check the prop drive spool and threaded steel extension on your K & B .40, as recommended in past columns, for run out. The spinner is only as true as the stud on which it mounts.

The backplate has a small pin that fits a notch in the edge of the spinner. It also has a pin to engage the drive spool of the engine. To install, you slip the backplate onto the drive spool backwards. The pin is hollow, so you mark the drive spool with a small drill through the hollow pin. Take the backplate off, drill the drive spool, and reinstall. With the backplate pinned to the drive spool, and the spinner pinned to the backplate, you have about eliminated the chance of it coming off. How many times have you gotten a heavy load of fuel in the engine, hit it with the starter, and had everything go clangity-banging across the field, causing great embarrassment. You will not have this problem with the Turn-Tru unit.

The Turn-Tru spinner units are available in both 2" and 2-¼" sizes. They can be made on special order in other sizes also. Their use is not limited just to pylon racing. If you are going to run a spinner on your stunt or sport ship, they are the only way to go. I have never run a spinner or any kind of any airplane, myself, without making a machined backplate. You will be surprised how much smoother your engine will run.

You can purchase the units direct by writing to — Turn-Tru Spinners, 16516 Teak Circle, Fountain Valley, Calif. 92708. The price is $5.95. They will be available through dealers, so if your local hobby shop does not have them in stock, tell him to get some. They are going to be in big demand, as most of your top competition fliers will be using them.

★ ★ ★ ★

There is one other new accessory

for the .40's that I would like to bring to your attention, and that is the K & B exhaust extension. This was a long needed item that has now been available for several months. Fellows in the larger metropolitan areas find out about these new things right away, but modelers in the remote areas, or those that have to purchase supplies through the mail order houses, are sometimes slow in finding out about new accessories such as this. An exhaust extension is a must on the Formula One and Two jobs, and a lot of tempers have been lost in the past trying to fabricate one. This is a thing of the past now, as you can purchase one over the counter from your friendly hobby shop dealer for $3.00.

That does it for another month. We'll forgo answering any letters this month as it would drag the column out too long. I wanted to bring the new pylon goodies to your attention before the racing season is over. We'll get back to the letters next month. ●

THE MODEL WIFE

(continued from page 6)

Sunday?"

"Sunday?" he munchingly mumbles, "Oh, he runs a model shop."

"Oh, really? A Model Shop, you say. What kind of Model Shop? Little bunnies? 36, 24, 36?"

A look of confusion and utter disbelief crosses his two-timin' face.

"Gotcha!" I cry out.

"Hold, woman! The Honorable James Q. Sunday happens to be an upstanding citizen and the proprietor of the local hobby shop. Balsa boards, babe, not buxom broads. I bought a model. A-i-r-p-l-a-n-e. For the kids, of course. Monty 'n Larry want to get into U-control flying, and, well, I thought I'd help 'em get started and blah, blah, blah . . . "

Excuses, excuses.

Well, I'm sure this kind of thing (or one like it) has already happened to you. Otherwise, you'd be reading Vogue, Good Housekeeping, or The Saturday Review. The reason, m'dear, you're reading **R/C Modeler** is because you've already decided if you can't lick 'em, join 'em.

Which is fine. But it always behooves the wife of any man to have a ploy. Basic Feminine Rule Number One: Always have a ploy.

And for you? have I got a dandy – !

READERS' EXCHANGE

NON-COMMERCIAL fan ads only. Commercial ads of any kind not acceptable at this special reduced rate. RATE: 15 words or less $3.50 in advance. Name and address free. Additional words 20c each. CLOSING DATE: 20th of third preceding month. (I.e., May 20th for August RCM, June 20th for September RCM, etc.) We do not furnish box numbers.
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VECO 61 CUSTOM ENGINES with Perry or Kavan carburetor $69.00. Selectively hand fit and assembled by designer Clarence Lee. Veco 50 Customs $53.00. Dealer inquiries invited. C.F. Lee Mfg. Co., 7215 Foothill Blvd., Tujunga, Calif. 91042.

HELP WANTED: World Engines is always on the lookout for talented modelers in drafting, die making and electronics. Let the hobby support you for awhile. Work here part time while you get educated at one of Cincinnati's fine colleges. Resume to John Maloney, 8960 Rossash Avenue, Cincinnati, Ohio 45236.

DIGITRIO/CLASSIC REPAIR SERVICE. Ed's Hobby, 212 N. Farragut, Box 4305, Colorado Springs, Colorado 80909.

BACK ISSUES Air Trails, Air Progress, Aero Digest, Flying, Flying Aces, Popular Aviation, Aeromodeller, Airnews, M.A.N., all model, pulps, etc. AVIATION Magazines, 24248 S. Crenshaw Blvd., Torrance, Calif. 90505.

RADIO CONTROL MODELS built from kits or plans. Planes, gliders and boats. With or without radios and engines. Sport, stunt and scale planes in stock at all times. Pro-line dealer. Call or write for details. North Shore Models, 25 Locust Road, Northport L.I., N.Y. 11768. Phone: (516) 757-0962.

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DIGITRIO 4-Single stick, 4 servos, 27.045 — built-in charger, Nicads, Harness. Professionally built — guarantee. $150.00. Paul Yakowec, 23-30 130 St., College Point, N.Y. 11356. Phone: (212) 353-6415.

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FOAM WING CORES cut to your specifications. Send for free information. Mr. Ed IV with horz. stab $9.95, R/C Nobler $7.95, Lil Toad (delta, Feb. '69 RCM) $6.95, Flea Fli $6.95, others. Nielsen Enterprises, 3000 Forest Ave., Port Arthur, Texas 77640.

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1969 ORBIT. 4 Channel. 2 Stick. 6 meters. PS3D MK II servos. Very good condition. Asking $200. Bob Young,. Call collect only if interested please. (717) 233-2896.

CONTROLAIRE DELUX 4 Channel. Complete with 4 servos. Brand new, never used! $225. Robert R. DaValle, 1771 W. Howard Street, Chicago, Illinois 60626.

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HEATHKITS — Professionally wired. GD-19 $55.00; GD-57 $37.50. Write for details. Transistor Specialists, 1801 West Main, Jefferson City, Mo. 65101.

LOGICTROL III 5, Two Stick 72.08 MC, 5 Min, Servos. Good condition, $200.00. Bob Burnett, 2113 Sheriff Court, Vienna, Virginia 22180, (302) 281-9680.

OLYMPIC POSI-TRACT — Nose and two mains with dust covers. Never used. $45.00. Vincente Mire, 507 Woodrow Ave., Selma, Alabama 36701.

WW II 1½" scale R/C plans. McTaggart's Sea Fury, FW 190D-9, FW 190A3, Spitfire, $4.50 each. P-47D "Razor", F4U-4 $4.95. F/G fuselages available, canopies $3.00. .25 for complete list. Bob Holman, Box 741R, San Bernardino, Calif. 92402

TEN YEARS MODEL Airplane Inventions, illustrated, comprehensive booklet, $1.25, Garil, 825 New Hampshire Ave., Washington, D.C. 20037.

"THE QUEEN CITY RADIO CONTROL CLUB will be holding its annual 'Fun-Fest' August 1, 2, 3, 1970. Contact Chuck Cook, C.D., 1218 Campbell St., Regina, Saskatchewan, Canada.

PCS, Complete system with Bonner Sticks on 72.96 Mhz. Excellent condition, flown 4 hours. $200. Sammy D. Alldredge, 308 Hodge Street, California, Mo., 65018.

WANTED: Morton or Burgess M5 — will pay top dollar in good condition. Or? Dick Hoff, 15225 Stagg St., Van Nuys, Calif. (213) 786-7564 — (213) 368-1224.

ORBIT 1970 2 stick 4-8. Never flown. 4 PS4D servos 72.960 $295.00. Orbit 1968 2 stick 4-8. 4 PS2D servos 72.400. Perfect. $175.00. Kraft 1969 6-12 2 stick. 4 KPS10 servos. Perfect. $225.00. Top Flite uick-Fli III Kit. $30.00. OS60 new $35.00. 550 inch built up J3 above average fininsh includes Merco 35 $75.00. Bud Caddell 1525 Badham Drive, Birmingham, Ala. 35216.

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Strategy:

OK, now. The guy's already up to his neck in balsa shavings, foam board, Ambroid 'n Tite Bond (not to mention those cancelled checks). There're little itsey servo screws laying on the side board. ("Don't touch that!" he yells.) And you're just stuck with the Hobby Poxy that's on the kitchen table and the scorch marks left on the linoleum floor by his soldering iron.

Out of this you can get a new kitchen table or floor, but let's start off small until you get the hang of it. How 'bout a new iron?

Ploy:

Try this: "Y'know, honey, you really should have your own iron for MonoKote. Here. Have mine. Then you won't have to wait while I finish with the ironing. I'll just go get another . . . "

New kitchen table or floor? Well, heck, go ahead and plan to redecorate. But, before you do though, you'll have to get his "shop" all fixed up 'n handy (for the old kitchen table you're gonna move out there). See? There's all sorts of possibilities here.

Strategy:

Fooey on housework.

Ploy:

"Honey bun, you do such nice work; why don't you build an exact scale model. I've always had a weakness for ——[1] Why, I remember once ——[2] And I'll be glad to do the research for you while you're at work . . . [3]"

Believe me, he'll be so pleased that you're interested in his hobby that he'll never complain about unironed shirts[4],half-hearted dinners, and all the dust fuzzies under the living room couch and the bed. As long as you can keep feedin' him information, Pussycat, the house can get so crummy, you'd have to take a bulldozer to it. Besides, most of it's tracked in balsa. So, it's his fault anyway . . .

Work it right and you've got it made.

1 Fill in your own choice. But start domestic and then you can expand into the Savoia Marchetti's, Fokkers, Hawkers, Mitsubishi's, etc. The possibilities are staggering. Italy, Germany, England, Japan . . .

2 Fill in your own goopy sentimental and/or intriguing story. Wing it! Lay it on him, baby.

3 Et cetera. Et cetera. Go, girl.

4 Scratch that dumb ole iron. Get a passport! ●