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AUGUST 1971

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# RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS



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## THIS MONTHS COVER

Judy Dershimer, star of the ski shows at Cypress Gardens, Florida, poses with an O.S. Max .40 powered 'Mirage' designed by Nick Zirolì. Wheel pants and struts custom touches to stock kit by builders Van Ladner and Ed Okie. Ektachrome by Ed Okie.

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## NOW! SIXTEEN MORE PAGES IN RCM!

Last month, the United States Post Office announced a 152% increase in second class postal rates as well as an increase in 1st class rates, to take effect over the next three years. For a magazine of our size, this is an increase of several thousand dollars per month. During the coming months most national magazines are planning on a cover price increase to cover these increased costs. We hope to avoid this step as long as possible, thus we have taken the following steps which we hope will meet with your approval. The most expensive portion of this publication is the inside two and four-color printing. Thus, we are eliminating this process with enough of a savings to increase the number of pages from our normal 88 plus covers to 104 plus covers, making it the largest model aircraft publication in the United States. As modelers, we enjoyed the color photographs, but would prefer the information that can be presented on the additional sixteen pages. We hope you will, too.

The Editors

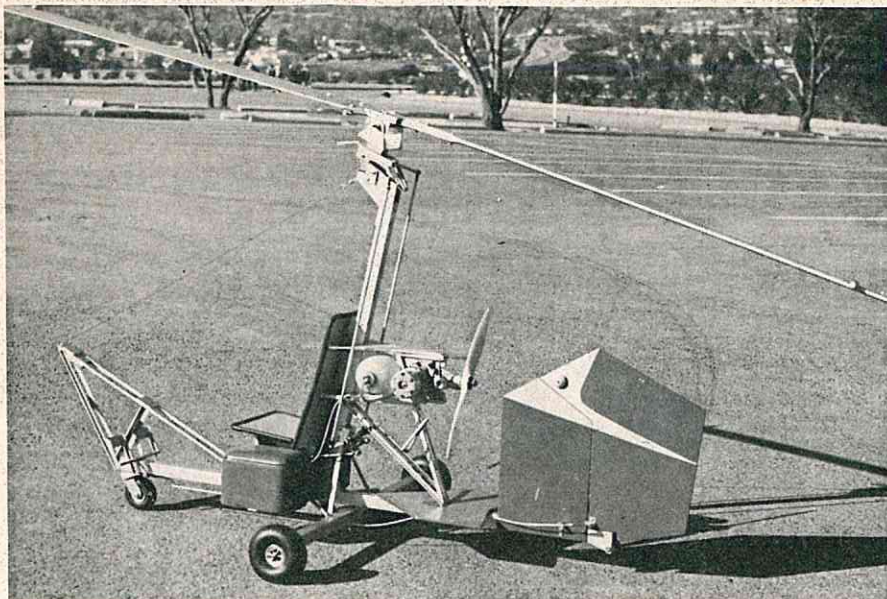


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VOLUME 8 NUMBER 8

# AUGUST

1971



Bill Thomas' scale R/C Benson Gyrocopter. Bill built and currently flies a full-size Benson.

# FROM THE SHOP

by don dewey

This month's lead photograph was taken by Dick Tichenor of a scale R/C Benson Gyrocopter. The model was built by Bill Thomas of Southern California who also built and flies a full scale Benson machine. No further details are available at the time of this writing, but the radio box compartment can be seen to the side of the pilot's seat while the Super Tigre engine and tank are in plain view. An excellent project for the modeler who would like to have something a little bit different.

During the past few months R/C

Modeler Magazine introduced Half-A Midget Pylon Racing designed for .049-.051 engines and small field flying. A tremendous amount of interest has been created by this event and the latter has been complemented by many of the products produced by Ace R/C of Higginsville, Missouri. Paul Runge, proprietor of Ace, and one of the truly fine gentlemen of this sport and hobby, paid us the honor of a visit on his recent trip to California. Before we adjourned to the flying field to let Paul, and his son Tom, try their hands at thermal soaring, we gave a small demonstration of how to use Solarfilm

on the new Ace Mini Foam Wing. Solarfilm, distributed by Technisales, P.O. Box 2233, Alhambra, California 91803, the polymer film with the built-in color which is being imported from England, which we reviewed in the July issue of RCM. One of the advantages of this product is the fact that it can be used directly over foam due to the small amount of heat required for adhesion. The photographs accompanying this month's article will give you an idea of how it is applied directly to a molded foam wing. In the photos we are using a small scrap of orange Solarfilm on a half panel of an Ace Mini Foam Wing. The first step is to seal the edges of the Solarfilm with a Seaelectric iron with roboard tip as shown in the photographs while making sure that all edges are firmly adhered to the foam. Make sure that your iron is not set at too high a temperature, a fact that can be determined by a smooth application of the material to the foam wing with no disturbance to the foam beads. If there is a tendency for the foam to "alligator" (a slight separation of the foam bead particles) under the surface of the Solarfilm, your iron is too hot. After the edges of the material have been adhered, the iron can be used to firm down the material over the entire surface. An alternate method is to use a thermoshrink heat gun as illustrated in one of the other photographs. If using the heat gun, be extremely careful not to apply excessive heat since the 400 degrees plus temperature of the heat gun is enough to melt the foam if applied too closely or for too long a period.

While on the subject of the application of the plastic film materials, here  
(continued on page 75)

BELOW, LEFT: RCM's Editor, Don Dewey, demonstrates how to apply Solarfilm directly over an Ace molded foam wing. First, seal the edges with medium heat as shown in photos left and center. Bill O'Brien assists at right by fusing material smoothly to wing with heat gun.



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## Letters

Sir:

This is in response to Al Strickland's (May, 1971) article entitled "Whatever Happened To Formula I?" It is written at the request of the F.A.S.T. Club, by whom the assignment that ended up in RCM was originally given to Al. As a matter of fact, Whit Stockwell was appointed as a member of Al's committee. Since the committee never met, Whit contributed nothing; had any of the questions been raised with him, he would have contributed a vocal dissent to the views expressed in the publication.

First let me be clear that all of the issues raised in Al's article are valid and relevant issues. They are all issues to which a good deal of thought has been given by a wide spectrum of participants in the sport. Many of them are issues to which the Opinion Poll in December's R.C. News was devoted, with the results that have been widely reported in subsequent months. Some of them are issues that should have been covered in that poll, and could easily have been, but were overlooked (just as Al has overlooked a number of relevant issues that were covered in the poll).

At the meeting of the F.A.S.T. Club just after the May issue of RCM appeared on the stands, the question came up: How many of the 35 Formula I buffs at the meeting had actually been consulted by Al on these issues? Only ONE of the 35 could recall discussing ANY of the issues with him. Yet Al asserts that "The ideas expressed here are not my own, but are a condensation of ideas expressed by hundreds of Formula I flyers throughout the country." He further asserts that, "You are sure to see the merit of these opinions expressed by the majority of the flyers." Now, Al Strickland is a friend of mine. He is a good man, a good flier, and I would not deliberately antagonize him at any price. But I am forced by the facts to call into question the accuracy of his claim that he is expressing the view of the majority of Formula I fliers. I do not believe he would deliberately misrepresent the opinions that he has heard. I do believe that he has allowed his own considerable enthusiasm for these ideas to lead him to exaggerate the extent to which they are widely shared. And if he were not to exaggerate now and then, he would not be the symbol of Texas (even though I hear he's really from Alabama) that he has become in Southern California; so no harm is done as long as we can leaven his expansive yeast. Such leavening is the aim of this letter.

The central proposal made in the Strickland article is that all competition should be AGAINST THE CLOCK. From that single simple idea all the other virtues follow: (1) processing can be simplified because take-off sequence doesn't matter if there's a

separate clock on each airplane; (2) heat make-up is simplified because it doesn't matter who is in the same heat with you, you're really only trying to improve your best time — you could have the same guys in every heat, under Strickland's proposal; (3) scoring is simplified and made "fairer" because all you do is add up elapsed time in the air — the consistently fastest planes always comes in first, the consistently slowest plane always last — and there are no arguments about who crossed the finish line first; (4) division into expert and novice classes if desired is easy: everyone races against the clock, so everyone declares himself to be novice or expert and then you just compare the times and award trophies to the three fastest novices and the three fastest experts; (5) simplify the national championships by using a specified number of flights in a specified number of contests — add up the times and see who was fastest; (6) cuts are simple, this way: everyone flies ten laps — if there was a cut, add to his time 1/10 of his total, thereby making it the equivalent of eleven laps.

There is one more substantive proposal, the ONLY one that does not depend on flying against the clock: namely lengthen the course 150 feet (100 lengthwise, 50 sidewise) to give the fliers more time to straighten out and fly flat, as it were, before they have to start turning those touchy beasts again.

Now, the fly in the ointment is this: IF THERE'S ANY GOOD REASON WHY WE SHOULD NOT FLY AGAINST THE CLOCK, ALL THE OTHER IDEAS EXCEPT THE LAST ONE GO DOWN THE DRAIN.

Here are some reasons why flying against the clock will guarantee the demise of Formula I:

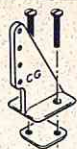
(1) You can put four timers on the SAME airplane, and I guarantee you will record four different times. The clocks may be perfectly coordinated; unfortunately, the thumbs that punch the clocks are a good deal less than perfectly coordinated.

(2) If a contestant is fast, he nevertheless knows he must put in his best possible time every time he goes up: there is never a time when he can fly a wide course and still win. So the danger of tight close flying is enormously increased. We all know that the top fliers really push themselves only when they HAVE to: if they fly tighter than they have to in order to beat the immediate competition, they are increasing the risk to their own planes and to all the competition. From this argument, it clearly follows that Strickland's proposal would inevitably INCREASE the danger inherent in the event.

(3) The element of luck would be considerably reduced under Strickland's proposal: he is doubtless right that it would be harder, perhaps impossible, for him to place as high as 6th in the national standings (I am merely quoting him). And he is doubtless right that the system of choosing

(continued on page 101)

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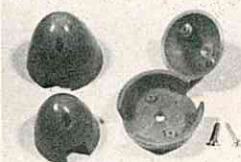
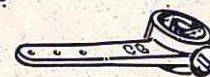
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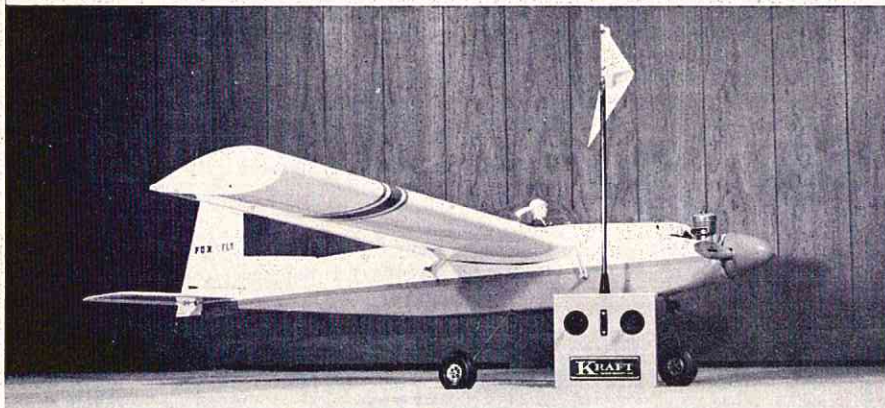
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# KITS & PIECES

Dick Sonheim



Recently, we had one of the large kit manufacturers pull their advertising from this magazine because he did not like a few unfavorable comments we made about one of his kits, although a very elaborate ruse was used as his supposed reason for withdrawing his advertising. We have also been told over the telephone by a manufacturer that that individual "had an agreement with the publications that they print no unfavorable remarks concerning his products."

You must admit that there is no reason to review a product if we are not honest in our evaluation. Remember, if we encounter a problem with the new product, so will you. Fortunately, most manufacturers will accept our reviews as constructive criticism and improve their products. A copy of our reviews containing any unfavorable comments are sent to a manufacturer prior to publication in order that they may answer with any proposed changes that they intend to make, or pointing out any errors that

we may have made in our construction. We feel that this is only fair. If the manufacturer does not find us in error and refuses to make any changes, then the review will be printed as was submitted to that manufacturer. As the kids so aptly put it . . . . Tell it like it is! This we will continue to do regardless of these rare occasions of economic coercion.

This month's Kits and Pieces project will be a different type of almost-ready-to-fly airplane from Johnnie Casburn Model Engineering Co., in Fort Worth, Texas. The Fun-Fli is a shoulder wing sport plane that comes in two sizes. The Little Fun-Fli has a 58" wing of approximately 600 sq. inches. The big Fun-Fli has a 62" wing with over 700 sq. inches.

Upon opening the box of a Fun-Fli kit you see immediately why this is a different type of ARF plane. The balsa and plywood fuselage is completely framed out including the formers and the motor mounts. The top block and

turtle deck are preshaped from solid balsa block and tack glued in position. The rudder, stabilizer, elevator, and ailerons are all machined from balsa and require very little sanding. The wing panels are cut from foam and covered with a heavy gauge plastic sheeting. The balsa trailing edge is built into the wing. It is obvious that very little work is required to get this airplane into the air. For this reason the Fun-Fli is an excellent kit for the beginner and requires very little building skill.

Supplied with the kit is an excellent building instruction booklet with an abundance of pictures and descriptions to aid the builder.

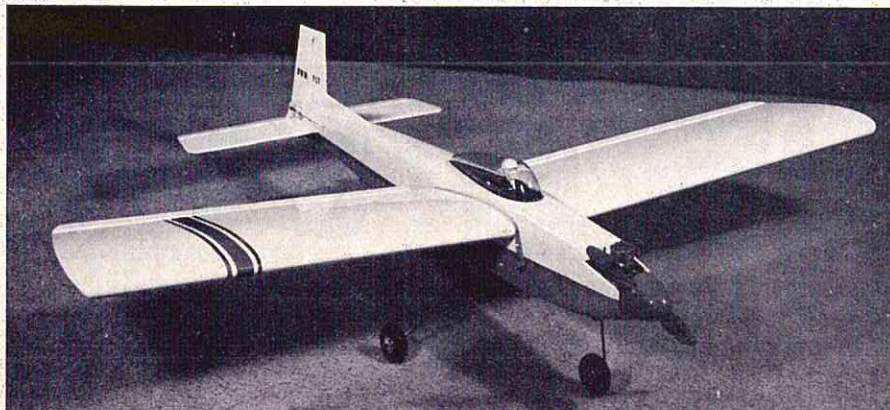
I always like to start the wing construction first and with the Fun-Fli this will only take about 5 minutes. Using Hobbypoxy 2, coat the dihedral spars, the slots, and the edges of the foam wing liberally with the epoxy. Insert the two dihedral spars into the slots and slide the wing panel together over the spars. Use masking tape around the seam to prevent any epoxy from seeping out and place the wing on a flat surface with a sheet of wax paper under the center section. Place 1" dihedral blocks under each wing tip and let dry overnight. Remove the top back balsa block from the fuselage which was tack glued down by the manufacturer. With a curved wood chisel, hollow out the balsa block leaving a balsa shell about 3/16" thick. This is the part of model building that gives me my greatest kicks - whittling on a balsa block.

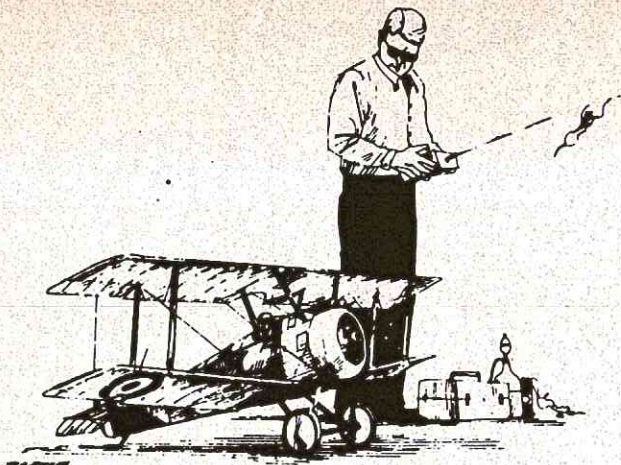
Lay the fuselage upside down and cover with the balsa sheeting supplied. The balsa sheeting is put on cross grain working from the bottom nose block back to the tail. At the location of the main landing gear a sheet of plywood which is supplied is installed in lieu of the balsa sheeting.

Turn the fuselage over and reglue the top back block in place. The horizontal stabilizer is now glued in place in the slots provided at the rear of the fuselage. The vertical fin and sub rudder are also glued in position. Use a draftsman's triangle and make sure the tail surfaces are perfectly aligned.

Drill two holes in the rear of the top front hold down block to accept the hold down dowels. These should be epoxied in place and should extend out about 1/2". Place a sheet of 1/16" plywood against the back top block and draw the outline with a pencil.

*(continued on page 71)*





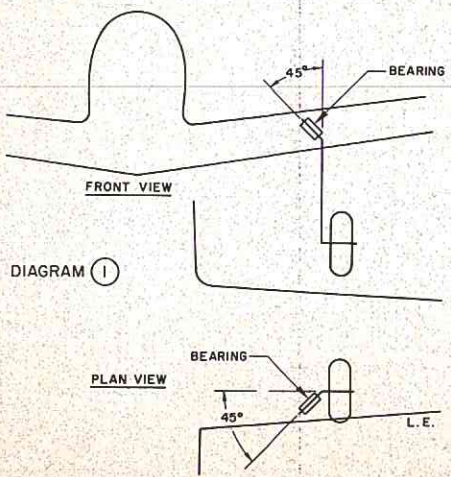
by DAVE PLATT  
(Designer — Top Flite Models)

# SCALE IN HAND...

Since this column started a couple of years ago, there have been many letters from readers requesting that a column be devoted to certain problems. In some cases the same inquiry repeats so often that we bow to the demand — the canopy-moulding feature a little while ago was a case in point. Another favorite query concerns the proper way to go about making cockpit detail, and with the next few months this column will tackle that area, too.

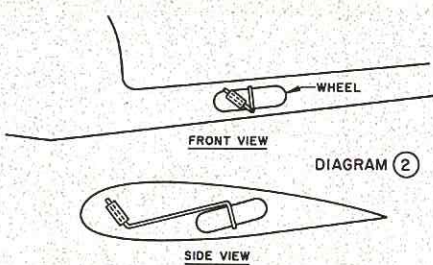
However, we'd have to say that fully one-third of all the letters concern retract-gear and a high percentage want advice on the up-and-twist gear found on *Corsairs*, *P-40's*, *Skyraiders*, etc. This, then, is our subject this time; but before going into it this writer wants to make unmistakably clear that its a speculative feature. I've never built such a gear, but can suggest a couple of methods and leave it to the reader to pick his fancy and develop it himself.

For the time being we're going to leave the question of how the gear is balanced and will concentrate on the pivoting itself. Here's the simplest method, which we'll call the Dual-Angle Pivot Method. See diagram 1.



Notice that the top 1" — 1½" of the leg is bent at an angle of 45 degrees in two directions, and mounted in a bearing which, itself, is firmly fastened into the wing. The vertical part of the leg would actually sweep forward to bring the wheel further forward, but so as not to confuse our drawing we showed it truly vertical. The forward-sweep will have to be accounted for later and will make a minor variation to the 45 degrees; it perhaps will go to 46 degrees, but in any event, provision for slight cut-and-try adjustment ought to be made. When the gear is retracted, the setup looks like Diagram 2.

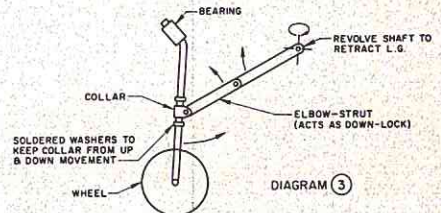
Another thing which will affect the angles involved in the pivot is the dihedral in the wing. Very probably



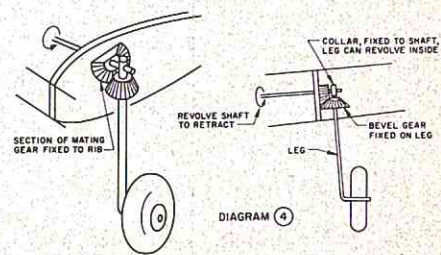
there are some definite rules of geometry which could be used to calculate the precise bearing dual-angle, taking leg sweep, dihedral, etc., all into account. If so, these are not known to me. I'd suggest that you cut off a length of round solder, bend and fiddle with it to get a complete understanding of the basics of this method. Later on, if you decide to go with this method, a rudimentary mock-up using a music-wire leg and a tight tube bearing will give you some definite angles to design into the wing. This process of "inductive reasoning" (finding out what something is, in practice, and then measuring it) may not be as fast as "deductive reasoning" (calculating what something must be, by logic), but for some of us it's probably

the only way our limited knowledge of math leaves, your scribe very definitely included!

So far, so good. As to how the gear can be pulled up, we'd suggest a collar about half-way down the leg, fixed to an elbow-strut which is then driven up by a torque-strut. The leg, of course, is free to revolve inside the collar. Diagram 3 shows this setup.



The next scheme we will call the Bevel-Gear Method. See Diagram 4.



This, again, is a fundamentally simple idea, but one which will call for careful design and craftsmanship. It will be noticed that the correct fore-and-aft alignment depends on the mesh of the gears, not the best arrangement in the world. Furthermore, the system shown does not inherently include a down-lock as did the first method, so one will have to be provided. The thought occurs that the method of revolving the leg with gears could be used with the system of pulling up the leg from the first method; thus providing a lock. To our certain knowledge, at least one full-size ship uses exactly this combina-

(continued on page 98)

# engine clinic

By  
Clarence  
Lee



I have been receiving a large number of letters the last few months and am getting behind in answering. So, I'll forego any technical bits this month and get right to them.

Dear Mr. Lee,

Reading all the fine articles on pylon racing, I decided to have a go at it.

I built a Stafford Minnow and purchased a K & B .40 R.R. I bench ran the engine and was quite pleased with this screaming machine. I could not wait to try it and, so, I put it in a high wing trainer. Good Grief, what a BOMB!!

Afterwards I sold the Minnow!! I still have the engine and I need a carburetor for it that will make it idle. What do you suggest?

I am convinced the engine will make a fine stunt engine if only I can get it to idle.

Thank You,  
Lee Smith

I have received quite a few letters along the same line as yours, Lee. Mostly from fliers that gave racing a try and decided that it was not for them or who wished to convert 'last year's' model for sport flying. The Perry carburetor for the front rotor K & B .40 will fit the rear rotor without any alteration. However, you are going to need something in the way of an exhaust restriction to keep the plug hot at idle. The easiest method is to install a muffler. Nelson Model Products, who distribute the KO line of mufflers, has a model for the K & B .40. The Super Tigre muffler for the Super Tigre .56 will also fit the K & B .40 as will any of the commercial mufflers intended for the Super Tigre .56. If you do not wish to use a muffler, and have a 71 series .40 with the longer exhaust stack, you can drill the stack to accommodate the baffle as used on the front rotor .40. With this set up you will be able to get a nice reliable idle. If your engine is an

earlier series with the short stack you can purchase a new case with the longer stack drilled for the baffle. The cases are interchangeable — it just depends on how far you want to go and how much money you want to invest in the project.

Dear Sir,

I have a Super Tigre .40 ABC in a Goodyear and have not been able to get more than 16,000 rpm's out of it. I am using a cut-down 10-8 speed prop to 9-8. Could you give me some idea as to what I can do to gain rpm's or won't it do any better than 16,000.

I drilled out the carb to .375 but this did not seem to help. I am presently using 10% nitro in the fuel. I did try 50% nitro but this did not seem to help either.

I found the piston fit too tight so I honed out the cylinder so the piston had very slight drag and the dry engine still has good compression. You can hold the piston on compression and it won't leak out. Could you please tell me what is wrong with the engine, also what size plug I should use, long or short?

Sincerely,  
William H. Landry  
Arlington, Mass.

Bill, I think you goofed. I doubt if there was anything wrong with your engine to start with. A 10-8 cut to 9-8 is too much prop. Most fellows start with the 9-8 or 9-8½ and cut these down. Actually 16,000 with the cut down 10-8 and 10% nitro fuel was a good reading. The reason the higher nitro content fuel did not help was due to the fact you were actually lugging the engine with too much prop. Many fellows have the mistaken idea that the higher the nitro content the faster the engine should turn. This is only true if the engine is propped accordingly. In other words, with a big prop lugging the engine down, increasing the nitro can only cause pre-ignition, which results in increased heat

and no increase in performance. Sometimes even a decrease will result. But, as you decrease the prop size and open up the carburetor, the higher nitro fuels will begin to show an improvement. Try cutting a 9-8 to 8¾ or 8-5/8 and running the engine with both 10% and 50% nitro. You will notice a considerable improvement with the 50% formula. You should not have loosened up the fit of the piston. Unlike conventional lapped piston and sleeve assemblies, the ABC set ups are supposed to be snug at the top. For those not familiar with the ABC term, it means aluminum piston and chrome plated brass sleeve. The reason for the necessity of the piston being snug is due to the brass sleeve expanding more than the piston when the engine gets hot under running conditions. This is the advantage of the ABC set up. On a very lean run the sleeve will expand slightly more than the piston and never 'stick up'. Various engine tuners have their own opinions as to how tight this fit should be, but if you can easily push the piston through the sleeve, or if it falls through of its own weight, it is too loose. As for which glow plug to use, long or short — the short seem to hold up better with the higher nitro fuels, probably because the element is up a little higher out of the main combustion chamber.

Dear Sir,

Can you help me with my .35 Merco? It takes about 20 minutes to start this engine when I first get to the field and after that the engine is tight for about 20 flips. Also the engine drops in revs when I remove the plug.

Thank You,  
Bill Johnson  
Ontario, Canada

(continued on page 85)



# CUNNINGHAM ON R/C



It is almost always the same. Someone sees an R/C model fly for the first time and his first reaction is, "Gee, that looks like fun, I think I'll give it a try. Wonder how I should go about getting started."

Or words and/or thoughts pretty close to those are the usual case. If the viewer is at a reasonably populated flying field he may get his courage up and ask one of the pilots: "Hey, that looks great, how much does it cost to get started, fifty-sixty bucks?"

You know the rest of this story. When the casual observer gets the low down on the cost of getting into the hobby, he quickly backs away, looks at every one as if they were slightly demented, climbs into his auto and takes off to watch someone play golf on the tube, or better yet, sit and stare at some cat cavorting on the tube complete with beautiful girl and a can of beer. Our observer takes the easy way out and gets a can of beer . . . at least he can be part of that scene. (Now if he went all the way and dashed off to take a boat trip around the world, while being sure he had plenty of the right kind of brew, he really would be getting with that sport!)

But, every now and then, one of the observers isn't scared off by the initial cost (and keep in mind, it is a lot lower now than just a few years ago) and really is serious in trying his hand at this game. To these men, we all should extend a great big welcome, since these are the dues paying club members of the future; the guys who will be flagging the next pylon race; the men who will be manning the lawn mowers next summer when it is time to get the field in shape. A lot of groups seem to not recognize that the real newcomer isn't being nosy, he really wants to get into the sport and become a working part of it.

But how?

It's really pretty tough to start. You get conflicting advice from all

sides. Everyone seems to be an expert. Where can a guy go to get the real kind of help that he needs? If he is lucky, a good hobby shop may be in his area with a flying friendly hobby dealer behind the counter. But, chances are just as good that the only place to buy hobby supplies is one that also sells paint-by-number sets, knitting needles, and books on how to play tidly winks like a real pro. Perhaps he is lucky enough to stumble on to a good, hard hitting flying club that welcomes a beginner as much as it welcomes a visit from the hottest pilot in the state. Possibly he is observant enough to locate one of the model magazines on the newsstand, if he can push by the crowd thumbing through the pages of a vast number of publications devoted to reporting on another fascinating sport. If he doesn't get himself sidetracked into the other sport he will certainly have his interest kindled upon looking through the pages of any of the model magazines. But as for help with his particular problem . . . pretty tough, because the magazine has readers that have been faithful for many years, and can't print the same information over and over again for each beginner, just when he happens to come along and become interested.

Over the past years both Don and I have written many times on the subject of how to get started, what to do, what tools to buy, what aircraft to build, but for all of you new would-be fliers, I'm going to go over this ground again. Perhaps if you are less-than-the-greatest-competition-flier you, too, may find something of interest in this series. Give it a try.

Also, for you who are new to the sport, if you have any questions that you feel need an answer that can be published, please write and ask. I'll have to beg off from writing a personal answer to each letter, because the volume of mail has been too great to even try and get off answers, but, if

you have a question that can be answered in print, write to me in care of RCM and we will try to publish the reply.

So, back to the question of where you start. Well, that's really up to you. Your situation in life; how much you can afford to spend on the hobby; what type of reaction your wife has to your getting into R/C models; how serious you are in other interests; and what you really want to achieve in model building all play a part. Don't scoff at the wife situation - I have several friends that had budding modeling careers shot down by wives who simply could not tolerate the thought of their husbands "playing around with expensive toys." If your wife tends to lean in this direction, then you need to do a selling job on her first. Keep in mind that the best reason that you can give her for your new found sport is, "It sure does beat drinking beer and chasing women." (Like heck it does - Ed)

If you can afford to spend a pretty good sum of money in this sport, then I feel that the best place to start is at the top. Buy a good .60 size engine, an Ugly Stick or Falcon kit, Solarfilm, a good line of hardware, a five or six channel radio (any one of the top brands is a good investment), and get with it.

If you are something less than well heeled, or you are paying for your kids numerous trips to the Orthodontist, or any of a number of other expenses that always seem to crop up, you may want to slip into this sport in an easy, less expensive way. Remember, when you go the big engine and aircraft route, you will be spending a pretty large amount for fuel and props at each flying session. Those of us who have grown up with this sport don't worry as much about these expenses, since we have come to accept them, but for the newcomer it suddenly becomes extra expensive when he realizes that he burns up about fifty cents worth of fuel on each flight, and if a prop gets broken, another sixty five cents is gobbled up by that flight. So, make your own choice, either go first class, and stand the expense, or go middle class and learn to fly with smaller airplanes and smaller engines.

It's a very interesting fact that, over the past few years, the price of engines (all sizes) and kits have climbed to great heights, as well as balsa, props, fuel, etc., but the price of radio equipment has reached new lows, and

(continued on page 99)



# SUNDAY FLIER

KEN WILLARD

The past two weekends have been very interesting to me and I think that you'll find their description equally so, as they encompassed two widely diverse types of flying. I'd like to begin first by telling you about an experience I had two weeks ago. I completed Level 3 of the League of Silent Flight Soaring Accomplishments Program, and am currently in the process of undertaking the items for Level 4. Level 4 requires that you have a one hour thermal flight and then your choice of another one hour thermal flight or, alternatively, flying four hours on the slope. Flying four hours on the slope is largely a matter of picking the day when the wind will be blowing for four hours, having fresh batteries, and the endurance to sit there for four hours and fly the airplane. Admittedly, you could anticipate four hours of flying and, at the end of some two or three hours, the wind dies down and that knocks it in the head. But, normally, if you know the conditions at the slope where you fly, you can pretty much depend on them and, therefore, there is no real challenge other than the endurance. The one hour thermal flight is an entirely different matter. After being towed off either by a hi-start or an electric winch to go seeking a thermal, to find it, to rise with it and then as it reaches its diminishing stage you've got to leave it and go hunting another thermal. Normally, a thermal is good for about 10-12 minutes of flying — that is, if it's a reasonably good one as opposed to some area of what we call zero lift where there is just enough lift to maintain altitude but not really go up. So, if the thermal is good for 10-12 minutes that means that to fly one hour you've got to hit a thermal, ride it, leave it, find another, and repeat that process five or even six times. And, this is one of the most challenging and demanding modeling activities that I have ever experienced.

A few weeks ago I went out with my thermal airplane, which I call the Big Sinker. It is a Del Gavilan fuselage with a 12' wing, the latter de-mountable into four panels — two center panels and two tip panels. The panels are joined with plywood dihedral braces which can be altered for experimental purposes. On the day in question, I was using five degrees in the two center panels with the tip panels having an additional five degrees each, thus giving me a polyhedral wing. During the glide I did notice that the polyhedral degraded the sinking speed so that it came down a little faster, however, it did make it easier to turn into the thermal once you found it. After a couple of short flights, I went up, located a good thermal, rode it for about 12 or 14 minutes, and then got pretty far downwind, came out of it, and cruised back upwind and thought I had just about had it. But, at about 75' of altitude and just before turning around to come back in to the field, I hit another and up I went. To make this particular story rather short, I found four thermals, each one of them good for about 15-20 minutes. I wasn't really counting the time in each case although I was watching my watch throughout. I passed the one hour mark and, at one hour and 20 minutes, came down. I had achieved the one hour thermal requirement for Level 4 and wasn't interested in attempting to set any endurance record for the field. During that flight I was fascinated with the capability of the sailplane to pick up the slightest amount of lift and go up and up and up . . . I just loved to watch it.

On Sunday, the very next day, I went out again. This time I had changed the configuration. I had 6 degrees in the center panels and 1 degree in the tip panels, virtually a straight V wing. It was immediately apparent when I test flew it that the sinking speed was less. It was also

apparent that I couldn't turn inside a small thermal. However, I decided to put in a couple of flights. I was using a hi-start and, after about three short flights, I made a fourth one and, even though I had a hi-start which was about 600' long when stretched out, the airplane didn't get more than 50 or 60 feet of altitude because it was going slightly downwind. On the release, however, I noticed that the reason it was going downwind was because the wind was being drawn into a thermal and I had released into the face of that thermal. Carefully, I nursed the airplane higher until I finally reached an altitude where I could see that I was in an area of good lift. I went up and up and up and, at about the end of 20 minutes, that thermal played out, the big Sinker with its 12' wing was a mere speck in the sky and fairly well downwind. I brought it back and as I was coming back I reached into another good thermal and back up I went. The time was now up to 45 minutes.

"Wouldn't it really be something," I said to myself, "if I could get two one hour thermal flights on consecutive days? Not only would that qualify me for the Level 4 thermal requirement, it would also eliminate the need for a four hour slope flight and I would also be well on my way towards Level 4 qualifications."

So I rode that thermal on up. At 50 minutes I was so high I could barely see it. I asked Don Lilly to come over with his binoculars to help out. If you get outside of the thermal area, into the sink area, even though you're practically out of sight, you'll come down in considerably less than 10 minutes. I now had about 50 minutes. At about 53 minutes, Don said, "Hey, you better come back, I'm beginning to lose it in the binoculars."

Just at that time I suddenly realized that he had been telling me what it was doing. I thought I was watching it, but I really wasn't. I'd become so enraptured by watching that speck in the sky and just watching that airplane take advantage of the thermal that actually it had gone out of sight and I was listening to him and I was looking at an imaginary plane.

He said, "I've lost it."

There we were, both of us, unable to see it. I just held everything and then suddenly I couldn't quite see it but Don saw it and said, "You're in a dive and the wing is fluttering." Then, it came into view, coming almost straight down, the wing fluttering like

*(continued on page 90)*

# CASSUTT - BONZO

YOU CAN BUILD EITHER OF THESE FAMOUS GOODYEAR  
RACERS FOR THE NEW RCM HALF-A MIDGET RACING EVENT.

By Roman Bukolt

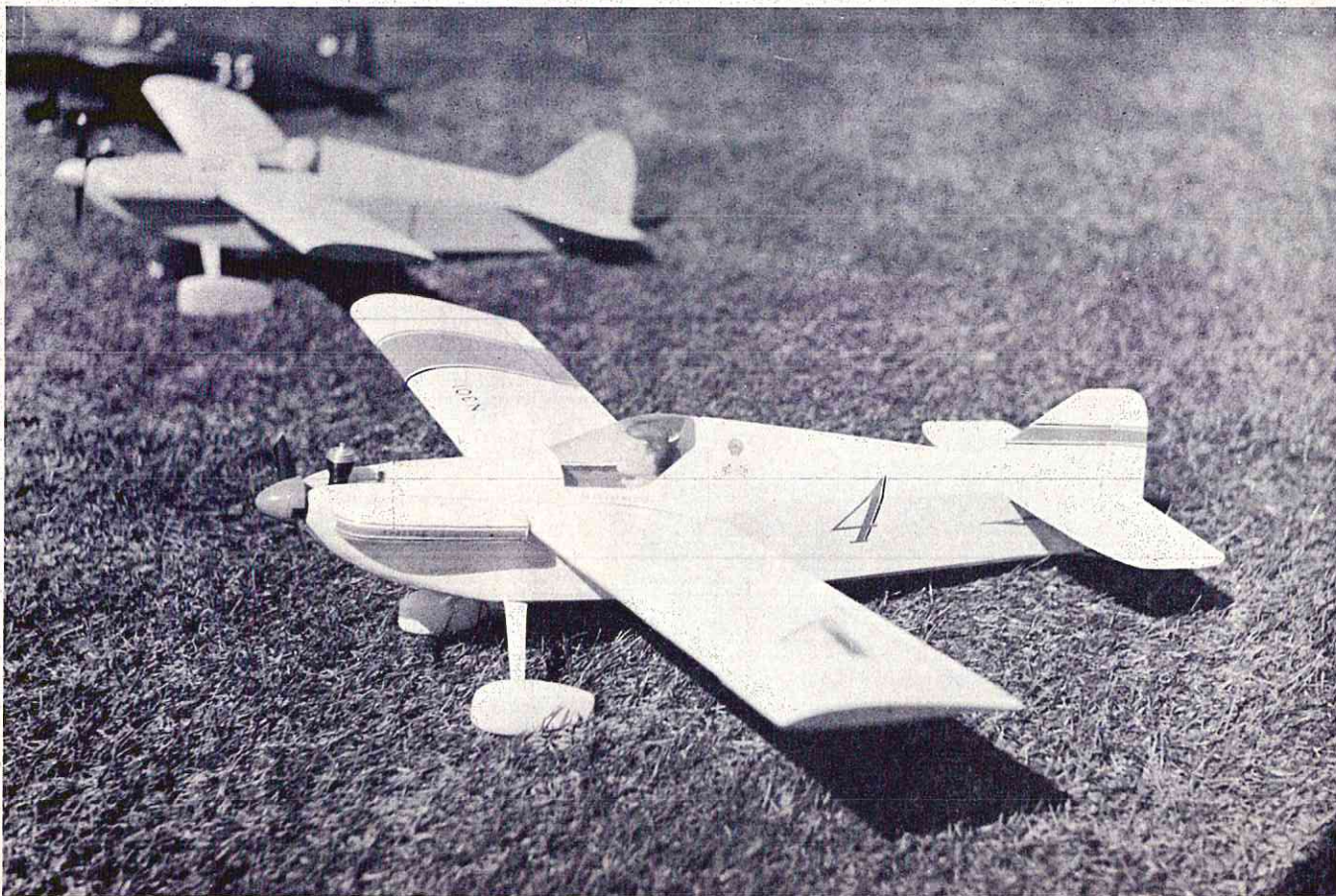
Midget Pylon Racing with .049 Goodyear type R/C pylon racers, is, at the moment, beginning a "wildfire" spread in popularity across the country. This 2 channel .049 Midget Racing event is designed to make racing a fun event, and encourage participation by the casual "Sunday" flier. The planes are small, simple, easy to build, easy to fly, and relatively low cost. The recent May issue of R/C Modeler Magazine saved the starting flag, following a very successful preview by ACE R/C at the Toledo Show, with Don Dewey's proposed rules governing 1/2 A Midget Goodyear racing, and Owen Kampen's construction article on the "Upstart" racer designed for this event. This was followed by ACE R/C's introduction of the "Upstart" kit, a top drawer pro-

duct at a real bargain price.

Now that a couple of thousand "Upstarts" are flying the closed course around the country, it's about time they have a little competition. The Cassutt is a direct outgrowth of the Upstart design. Last January I dropped in on Owen Kampen to do a little "hangar flying" since not much else outside of building can be done during a Wisconsin winter. I was surprised and delighted to see his newly completed prototype of the "Upstart." He and I both had been spending our winter months developing new design ideas around the ACE mini foam wing and this one really snagged my interest. He handed me a copy of a list of racing proposals he compiled for an .049 Goodyear type Pylon Racing event. By the time I finished reading it my

subconscious urge to compete was beginning to swell out in the form of "goose pimple" enthusiasm. I greedily accepted a print of the "Upstart" plans. In our conversation that day, Owen made two comments that made a lot of sense and started me thinking of the Cassutt; that the flying skill of the pilot, more than the design of the aircraft would win the event; and that the model should maintain a Goodyear racer appearance. So, after studying the plans for a little while I decided, rather than build the Upstart, I'd see just how scale-like I could make my racer. I saw a little full-sized Cassutt doing aerobatics over a small airfield one day a year ago and ever since then, I thought it would make a great R/C design whether used for racing, aerobatics, or just fun flying. The Cassutt

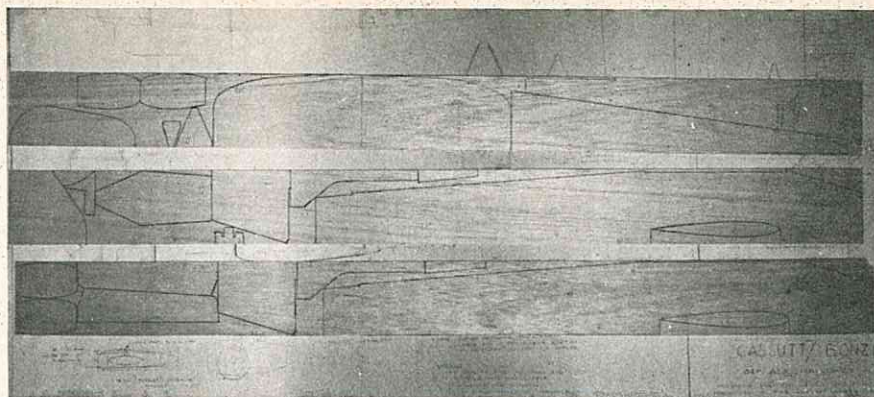
Orange trimmed white Cassutt waits on the ready line with the Bonzo version in the background.



design is well suited as a stable, easy-to-fly model because of the shoulder wing. My data came from published 3-views in the Experimental Aircraft Association publication, Sport Aviation, May, 1962.

Designing a model such as this Cassutt is easy. I simply lay a piece of tracing paper over the "Upstart" plan, trace out the vital statistics including the engine thrustline, firewall, wing airfoil and tail assembly. After removing the tracing from the Upstart plan I simply draw in the new design (in this case, the Cassutt and Bonzo) around the existing parameters, following the Cassutt tail group profile but sticking pretty close to the Upstart tail surface areas. Incidentally, these models turn out to be approximately 2" scale. Note, too, how the Bonzo's distinguishing characteristics are superimposed over the Cassutt plan. It just so happens that the full size Bonzo is very similar in appearance to the Cassutt. For that matter, using the same basic design technique and applying similar construction methods you just might try your hand at designing your own version of a Goodyear racer. The plane will fly alright, as long as you stick to the nose and tail locations in relation to the wing, and to the center of gravity units shown on the plans.

Before getting involved with construction notes I'd like to discuss the flying performance of the aircraft. By now you may have told yourself, "If I build a racer, I'm going to use ailerons instead of rudder, for good pylon turns, and power it with a T.D. .049 or .051 rather than the tame Golden Bee." So go ahead, but chances are you might be out run by a Golden Bee powered, rudder controlled plane. "Hah!" you say, as you start thinking of ways to cut down weight to a bare minimum. OK, I'll even help you. Use 1/16" balsa where 3/32" is specified, even on the tail surfaces. Omit the cheek cowls, spinner and wheel pants. Use wheels made of 3/32" plywood sandwiched between two 3/32" balsa sheets. Cut down on doubler thickness and use a thinner firewall. Oh yes, a built-up wing weighs a whole 2½ oz. less than a foam wing. Two coats of clear dope sprayed on followed by one or two coats of colored dope sprayed on should yield a respectable looking aircraft with an all up flying weight of 20 oz. Now go out there and compete. I'll put my money on the guy with the heavy servos, 600 mah battery pack, thick doublers and an all up weight of

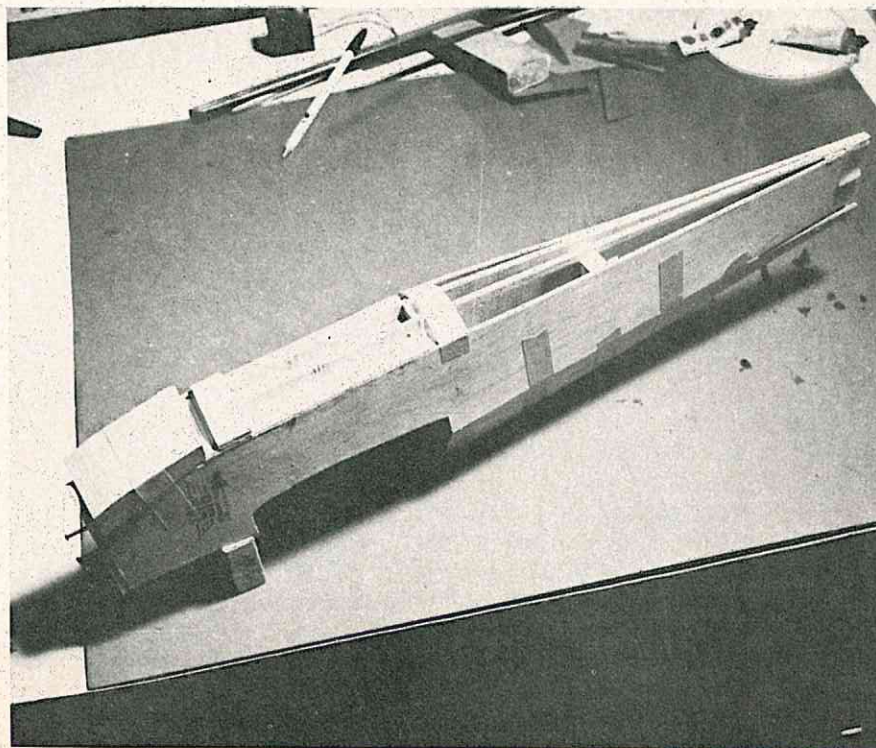


Most of the parts can fit on three sheets of 3/32" balsa. A ball point pen works well for tracing around the templates.

28 oz.

No, I'm not out of my gourd! The Golden Bee engine will fly a Cassutt or Upstart weighing in at 28 oz. at 50 plus mph and if you don't think this is fast, wait until you see two, three or four planes flying around two pylons about 100 yards apart. The heavier plane will have better wind penetration than a lighter one. The lighter plane will have a tendency to balloon coming out of the turns, and be more difficult to hold on course. Yet when the engine stops, this 28 oz. plane turns into a slow, graceful, beautifully docile performer providing the pilot with ample time to make a reasonably accurate spot landing, something he wouldn't do with aileron control. One word of warning, however, a heavier plane has a higher stalling speed so

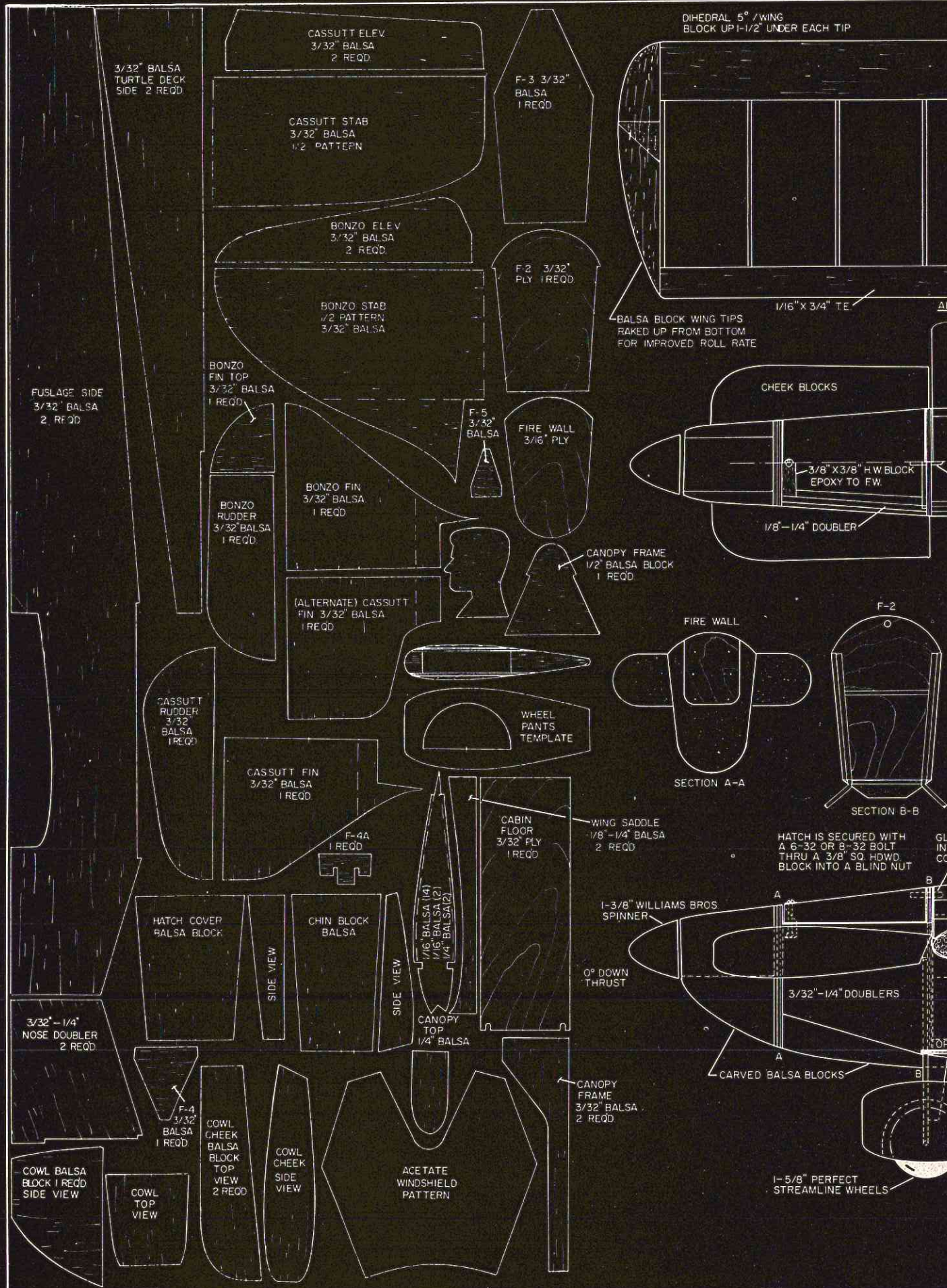
Bottom view of fuselage showing installation of stringers and use of masking tape to hold parts together while the glue dries.

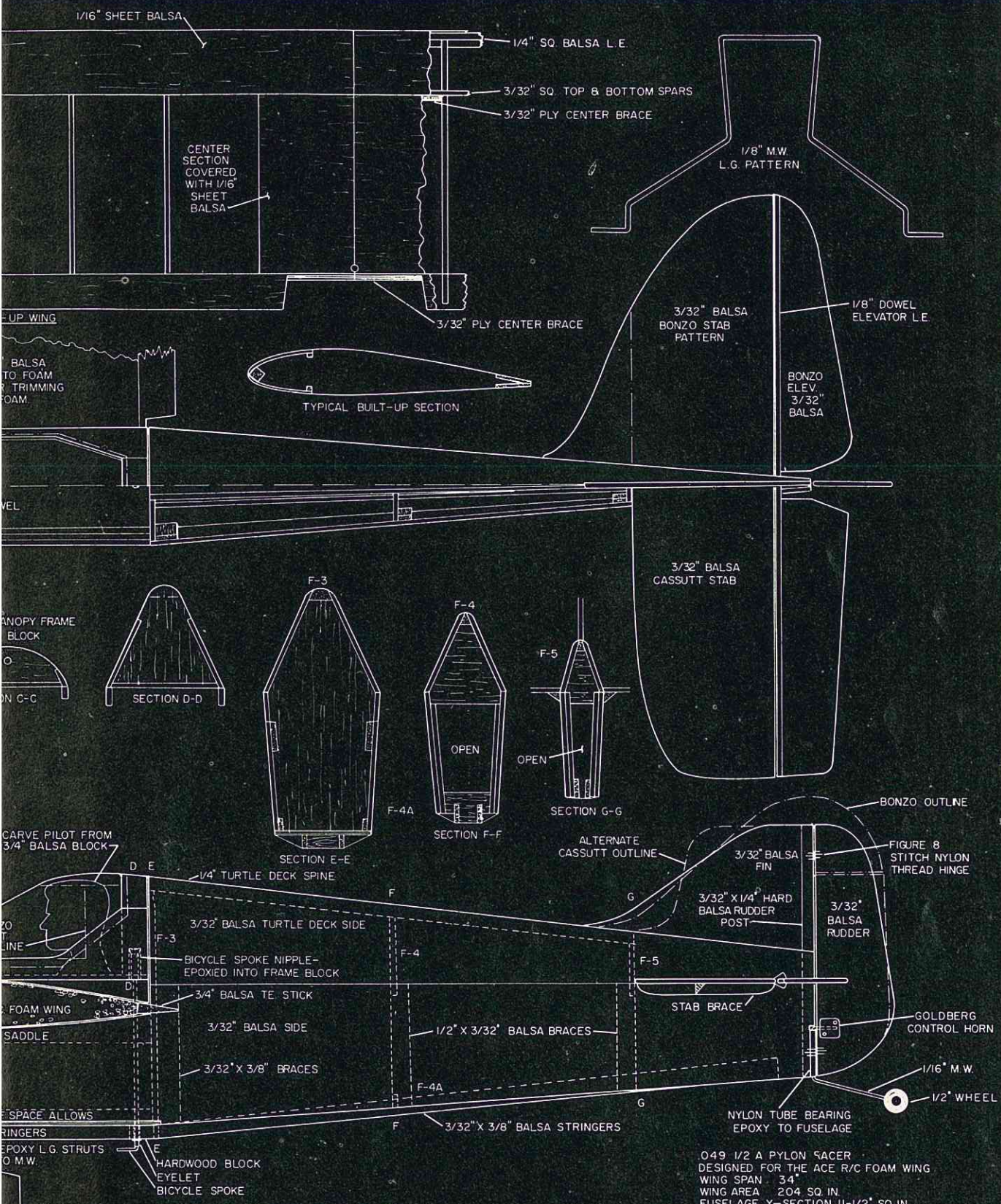


keep the nose down in the turns and don't fly if your engine isn't peaking out. As far as speed and power are concerned, Don Dewey flew numerous flights with his Upstart switching from a Golden Bee to a T.D. .051 with very little change in speed. One or two wide pylon turns can more than eat up whatever speed advantage the T.D. powered plane has over the Golden Bee model. This is where piloting skill will determine the outcome of the race.

The ability of the plane to fly well weighing 28 oz. with a 0° - 0° thrust and 0 incidence wing configuration, may be attributed to the efficient ACE mini foam wing airfoil. With the CG located 25-30% back from the leading edge you'll be able to make slow

(continued on page 67)





**WING NOTES FOR ACE FOAM WING**  
 CUT WING T.E. BACK 3/16", THEN ADD 3/4" Balsa T.E. STOCK.  
 RECOMMEND 5° DIHEDRAL.  
 SLASH TIPS UP 45°-60° FOR INCREASED ROLL RATE.  
 APPLY 1/2" SCOTCH FILAMENT TAPE FROM TIP TO TIP ACROSS BOTTOM OF WING 2" BACK FROM L.E. TO IMPROVE STRENGTH.  
 FINISH WING WITH 2 COATS POLYURETHANE VARNISH OR COVER WITH QUICK-N-EASY PRODUCTS' TOPCOTE.

049 1/2 A PYLON SACER  
 DESIGNED FOR THE ACE R/C FOAM WING  
 WING SPAN 34"  
 WING AREA 204 SQ. IN.  
 FUSELAGE X-SECTION 11-1/2" SQ. IN.  
 WEIGHT 20-27 OZ.



**CASSUTT and  
or BONZO**

DESIGNED BY ROMAN B. BUKOLT DRAWN BY ROMAN B. BUKOLT



# FLYING WITH YOUR MODEL

By Don Gutridge

## UNITED AIR LINES OFFERS ANSWER TO TRANSPORTATION OF R/C MODELS BY COMMERCIAL AIR CARRIER.

Remember taking the time to build that big box to pack your plane in for traveling? How many of you arrived at the airport with your "Big Box" all ready for the long awaited trip to the big contest and found that you were met by panic-stricken looks of horror as the airline agent caught sight of that "box" coming his way? The ensuing discussion-come-argument ended as you picked up all your gear and proceeded to the next counter to try your luck there.

How about the time you finally managed to talk them into carrying your "Super Suitcase" and ended up being a spectator at that contest because they would only accept it as regular air freight and it was not boarded due to space limitations? Thinking you would have been better off if you had lost the first argument, you shuffled off, head hanging, trying to control your rage as you went to the field anyway to watch and help the others - vowing never again to put your airplane on an airplane!

Sound familiar? Fear not, fellow modelers, for I have found the solution to our seemingly endless dilemma, and if you will follow the simple procedures here, our airline transportation problem will soon be banished forever!

As an employee of United Air Lines, and a modeler from the ripe old age of five, I presented our problem to the policymakers at United, and it gives me great pleasure to report that we have been officially recognized by "The Friendly Skies" as a group worthy of special attention. Our executive heads have announced they will soon release (by the time you read this) a letter to our Customer Service people in every city we serve across the nation. This letter will serve to introduce us to them, which means we shall now be expected, and received, with the customary *Friendly Smile of United*.

Since the size of our models is too variable to standardize, I shall illustrate the parameters pertinent to all

This is to certify that the contents of this consignment are properly described by name and are packed, marked and labelled and are in proper condition for carriage by air according to all applicable carrier and governmental regulations. (For international shipments add "and to the IATA Restricted Articles Regulations".) This consignment is within the limitations prescribed for passenger/cargo (cross out one) carrying aircraft.

Marks and Numbers of Package(s) (optional)	Specify each article separately (trade names not permitted) (optional)	Net Quantity per package (optional)
Name and address of shipper or his authorized agent _____		
Signature _____		Date _____

Most of our planes will have a girth measurement greater than 80" when crated for shipping, which means they may be carried as PRAF (Passenger Reserved Airfreight). PRAF is handled exactly the same as baggage, except that it is billed as Airfreight. Space for PRAF is reserved the same as your seat on the flight and should be booked at the same time. Thus you are assured that your model will ride with you on the same plane. Weight limit, per piece, is 50 pounds and size is limited only by the cargo pits on the airplanes. We should have no problem here, even with two planes in one box, but keep them as compact as possible.

Many control-line models, and some of the smaller radio ships and free flights, may measure less than 80" in girth which will classify them as regular baggage. If you have only one other case, there will be no extra charge. If you have two other cases, such as a tool box and a suitcase, the plane may go as excess baggage. This is charged for, but is less than PRAF.

Very small models, such as control-line speed types, may be small enough to fit under your seat on the airplane. You are allowed carry-on baggage, so this is perfectly acceptable. And, for the fastidious types, you may purchase an extra seat at half-fare and strap your plane in right next to you.

Now that we know by what means

our planes may be carried, we must build the box for them. I would recommend 1/8" hardboard with a 1" x 2" pine frame, or 1/8" plywood, or any similar material. In checking materials prices, I would estimate the cost of a box large enough for two radio control pattern ships to be \$4.00 to \$6.00, depending on the materials used. Now, put a handle or two on it, and maybe some metal corners, fill liberally with foam, and you are all set.

There is another point worthy of mention here, and that is regarding insurance. For those who wish it, there is very reasonable insurance available for our planes in transit. We may insure any piece for any amount over airline liability, for a mere \$0.20 per \$100.00 by means of "shippers insurance." The amount of insurance does not necessarily have to be the same as the declared value of the piece.

Many of us will want to carry our own fuel, which is perfectly legal, provided we follow these simple procedures. Any type of model fuel must be packed in a tightly sealed "metal" can no larger than one quart capacity, but make sure you leave at least 2% of the volume of the can empty to allow for pressure changes in flight. We may carry as many "quart" cans as we

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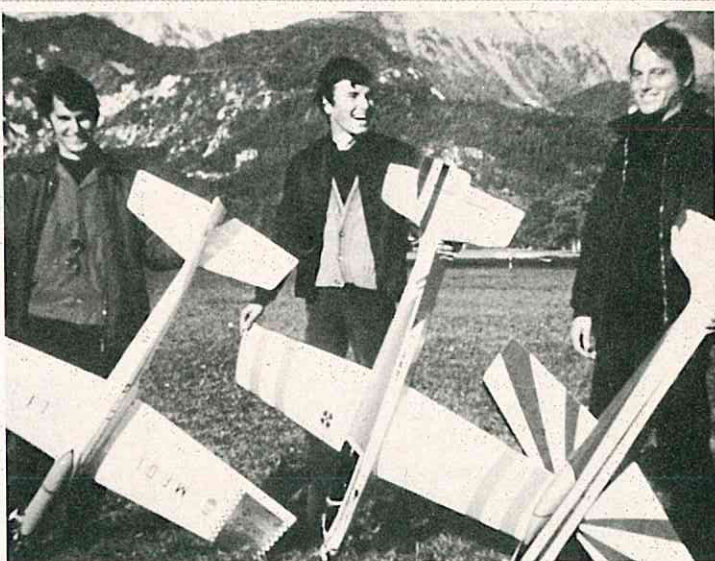
# 1971 World R/C Aerobatic Championship

RCM PREVIEWS U.S. HOSTED

17TH ANNUAL INTERNAT'S TO BE HELD AT

DOYLESTOWN, PENNSYLVANIA - SEPTEMBER 15-19

Photos by Jerry Kleinburg,  
Jack Immelman & Leo Lichtblau



**ABOVE, LEFT:** Wolfgang Matt and "Super Star" - Doylestown will be 3rd Internats meet for young Liechtenstein flier. Ship is considered among Europe's best originals, uses HP .61, Alpha Simprop 2007 radio. Ship light at 3400 grams. **TOP RIGHT:** Lesce-bled contest in Yugoslavia had (l. to r.) Wolfgang Matt (Liechtenstein), Hanno Prettner (Austria) and Walter Schmitz (W. Germ.) in winners' circle. Trio represents strength of European R/C pattern artistry. 19 year old Prettner won this one, 7th W.C. next . . . **ABOVE:** Josef Wester and his original AW-40. Leading 1969 Internats contender from W. Germ. will be 1971 competitor in Doylestown next September. Wester 2nd in 1970 German Nats.

With the 7th R/C World Aerobatic Championship coming up shortly, interest in possible entrants is rising. Based upon reports from our far-flung group of observers here's a brief rundown on some of the prospective team members who are expected to see action at Doylestown between the 15th and the 19th of September:

Germany has always been the leading contender in Internats competition since it started in 1959. As defending team champions the 1971 group will again be the principle competition for Jim Whitley, Phil Kraft and Ron

Chidgey of the U.S. team. Alfons Wester, who was W. Germany's leading flier in the 1969 meet, is expected to bring an improved version of his impressive AW-40 which uses the German made Varioprop radio. A Super Tigre engine has been favored by Alfons. His team mates, Gunter Hoppe and Walter Schmitz have also had plenty of international competition which will make the German team formidable.

From Italy, a young team made up of Benito Bertolani, Graziano Pagni, Ruggero Pasqualini, managed by another leading R/C pilot, Paolo Dap-

porto, is expected to offer major competition at Doylestown. Their ships will resemble Pagni's "Morris HF" with some modifications. A Webra .61 with Pro Line radio will be in Pagni's ship while Bertolani and Pasqualini will be going with front intake Super Tigre .60's and the Italian Robot radio. Latest information leaves some doubt that Italy's top flier, Pagni, may not make the trip due to business pressures. In that case his place will possibly go to Carlo Lenti. However, we're betting Graziano will be there to answer the challenge of competition and to try to up his world



rating from the 20th place he established in 1969.

Results from Mexico's penta-meet series to name its team for the 1971 W.C. hasn't been completed, but so far it looks as though Feliciano Prat, Elias Villegas, Salo Feiner and Luis Castaneda have the inside track on team slots. Strongest contender currently is Prat who just added the tough Mexico City FAI pattern meet to his win collection this year. He shared winning honors with Castaneda and Feiner in this meet. Preferred plane designs lean heavily in favor of Joe Bridi's Kaos powered with HP .61's. Pro Line radios are also finding growing favor with top Mexican R/C pilots. The Mexican team placed 13th in 1969, and are expected to better that position in the 1971 Internat's stanza at Bucks Co. Airport this September.

Austria is expected to field a strong team also for the 1971 W.C. In the last two seasons young Hanno Prettnner has emerged as a serious competitor for top honors. At just 19 years old, he's one of the young group of European RC'ers who have taken on Open fliers with no quarter asked and have managed to increasingly dominate more than their share of the competition. Another Austrian team member, Ferdinand Schaden has been moving up lately and should be watched at Doylestown. Prettnner is now flying a modified "Super Star" powered by a Rossi .60 and using the Dirigent propo radio.

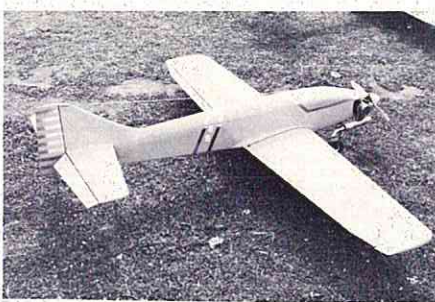
Lichtenstein may not field a full team at Doylestown but the country's leading flier, Wolfgang Matt, almost makes a team by himself. He's only 19 but certainly is no stranger to Internats competition. Fact is, this coming one will be his third! His best showing to date was in the 1969 outing in Germany where he placed 6th, a very respectable showing for the youngster. In addition, he has improved his original "Super Star" airplane which is considered by some in Europe to be the best pattern ship there. It is powered by an HP .61 and has an Alpha Simprop 2007 radio for control. Weighing only 3400 grams it ought to really move through the large-sized maneuvers practiced by Europe's pattern masters.

Luxembourg, with 300,000 citizens, has 3 major R/C clubs who contend regularly for Internats team

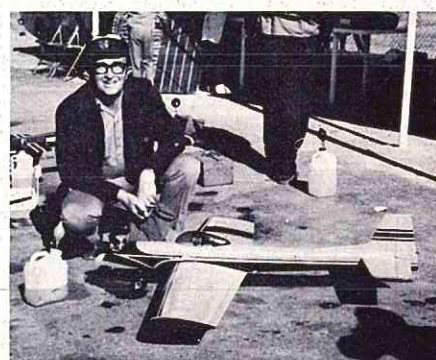
Italian design by Graziano Pagni, "Morris HF" has typical European lines. Webra .61 and Pro-Line in lightweight (2900 grams) ship.



Luxembourg FAI qualification meet saw Norbert Bertemes, Pierre Hoffman, and Paul Behm again win team slots (kneeling, from left, 1st, 4th and 5th respectively). Aero Club of Dudelange hosted meet.



ABOVE: Australian pattern choice is "Super Star" by John McGrane, 1970 National Champ, may see action in Doylestown. Merco .61 and Australian made Silvertone radio are used. Won "Wagga Wagga" Cup, N.S.W. prestige meet. ABOVE, RIGHT: John Thompson's camera caught 1971 Mexican R/C Nats winner, Feliciano Prat, with his modified Kaos. HP .61 power, Pro-Line radio. Mexico's 7500' altitude a tough test on planes, engines and pilots. RIGHT: "Criterium du Nord" at Salmagne, France, saw Joseph Wester top Pierre Marrot of France in Internats warmup. Wester, top W. German flier, developed original AW-40 pattern ship.

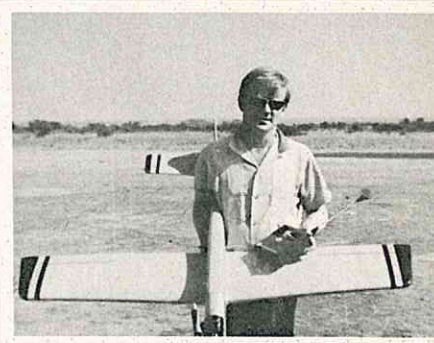
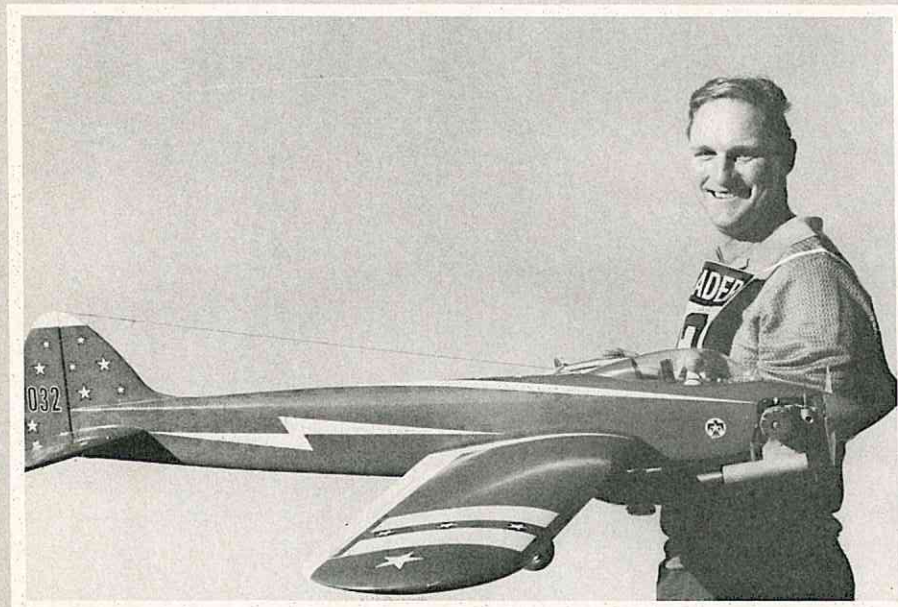




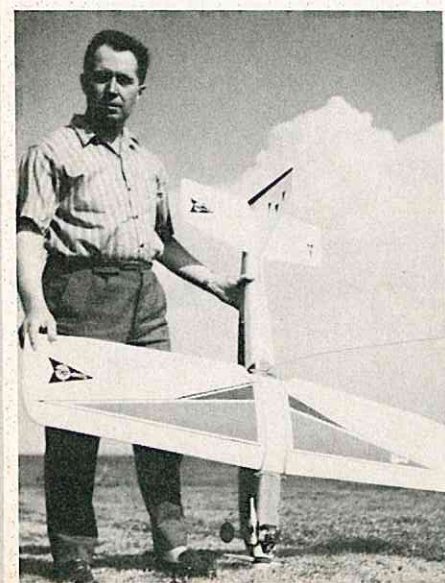
**ABOVE:** South Africa's 'No. 2' – well known Chris Sweatman with flap-equipped own-design Lady Luck, Webra engine and Skyleader radio. **ABOVE, RIGHT:** 4th at Klerksdorp Championships, and 3rd man on South African Team is newcomer Eric Bell with a 'Spit-Panzer,' HP .61 engine and Logictrol radio. Not a bad effort for only a few years of R/C flying. **BELOW:** South African FAI Pattern champion, and a face familiar to most top class flyers. 'Rich' Brand with his new own-design Panzer 20, HP .61 motor, Logictrol Radio, and retracts.



**ABOVE:** Another 1971 Internats ship... Entry by Ruggero Pasqualini is modified Morris HF with Kavan carb. equipped Super Tigre .60G. Radio is Italian made Robot **BELOW:** Don McKenzie and "Bosch Up" – worth watching at 7th W.C. meet. HP .61 and Logictrol radio are favored by South African.



**LEFT:** Perre Hoffman saw Internats action in 1969 for Luxembourg, will repeat in 1971. Ship here is "Moiser", used for practice. Luxembourg team experienced, should better 1969 showing of 20th place. **BELOW:** 1971 Pattern Champion, Ernesto Columbo, and his original contest ship will represent Argentina in Doylestown. 7th W.C. in U.S. gives countries first opportunity to compete in Internats. Enya .60 and Futaba MRC radio.



honors. The team placed 18th in Bremen for the 1969 W.C. but is expected to improve this position in Doylestown due to the added experience they've gained in the past 2 years of vigorous competition. Norbert Bertemes was the leading Luxembourg flier at the Bremen meet followed by Paul Behm and Pierre Hoffman. Each will be back again this time flying typical high lateral area planes and using Alpha Simprop radios.

The South African team is another Internats 'power' whose performance will be worth watching this year. The  
*(continued on page 66)*



# The B.E. 2e

by Roy Scott

photos by Henry J. Nichols



The B.E.2e tempted me for many reasons. One reason in particular was that if ever an aeroplane looked "out of the past," this one did. It brought home to me the pioneer spirit of aviation during the First World War. Wood, fabric and whistling wire, the high cabanes, big wings and two Stevenson's rockets for a motor!

Having designed and built numerous other scale subjects, each having a comparable scale speed to the full size, I had yet to design one that would run the batteries out for the time taken to do a circuit of the field. So there's the second reason. Slow flight.

Thirdly . . . gimmicks! I liked the idea of the exhaust stacks and also bombs of a size that can be seen to drop, and very few World War I planes can boast that at 2" to the foot!

Lastly, I wanted other people to enjoy scale flying without months of hard work, at the end of which they end up with something only an expert could fly.

So there we are. Three good reasons for the B.E.2e: World War I, slow flight and you – Mr. Modeler.

Build it as per the plan and I assure you it will fly itself – certainly time enough to put the transmitter on the ground, fumble for a cigarette, light it, smoke a few puffs, pick up the transmitter and look to find the model flying in the same position as before. This has been done with the B.E. many times, believe me. (*But only into wind!!* – Ed.) Now to work.

Read the plans well and get acquainted with the general layout of things. Next the details. Here you may find you will get a better picture of them from other parts of the drawing, i.e. elevator horn shown on the side view. To the right and down on the plan will show you what this arrangement looks like.

Now you haven't got a kit so let's make one and keep all the parts tagged in a box so as to find them when you want them.

Let's start with the wire jobs. You will notice from the sketch the front cabanes (8SWG gauge wire) runs full length to include the undercarriage. These are joined with a brass tube sleeve, sweat soldered into position. Don't add any of the top wires to this yet. The undercarriage spreader bars are one length of wire (12 SWG). Rigging brace shown on top view of fuselage, 2 wires and brass sleeve. The top wings have 2 jury struts and 4 rigging wires on the outer panels. The lower wings have 2 8SWG dihedral braces and 2 small wire cranks at the bottoms of the aileron struts. The elevator control horn is made up from a commercial metal horn unit. The two copper outside horns are made up but not added until the assembly is installed into the fuselage.

Cut out all the wooden parts, ply first, except the 1/32" decking which is mentioned in the construction.

There are two ways of marking out your parts: Using carbon paper direct on to the wood or trace on to tracing paper cutting through this on to the wood. A mention here regarding the 1/32" ply ribs: These are for strength at the places shown and are a facing to the 1/8" balsa ribs. Achieve these by contact cementing 1/32" ply to 1/8" sheet, thereby cutting out ply faced balsa ribs to the number shown. There are plenty of ribs and a time saver here is by using a band saw. If you don't possess an invaluable item such as this, perhaps a friend may help. Failing this, cut one rib outline from 3/32" ply and use this as your template. When cutting the 1/16" ply doublers, note there are slots in them to accept the tongues of the formers.

The ply for the center section of the bottom wing:







The floor is 1/8" right to the four corners. 2 ply ribs: back end and wing fix dowel support. All other wood parts are self-explanatory by the plan.

All rigging wire is 35 lbs. test plastic coated steel fishing trace, obtainable from most angling stores. Its name is 'Steelon' (English name) and 5 reels of 25 ft. is the order. Also obtainable are lead or brass ferrules from the same store, about 3/8" long and 1/8" in diameter. Get 100 of these as you will need spares from time to time.

Covering material: For this we use lightweight nylon, and as we are not going to paint the colour scheme on (weight) we shall dye the nylon. Yes, dye it. Quite simple and it looks good, too. The dye to use is called Dylon (Rit). A nylon dye obtainable from most hardware stores, ironmongers or fabric store. Cut ample length for the undersides and likewise topsides. 1 small tin of Reindeer beige No. 22 is added to a galvanized bucket of hot water. Place in the length of underside nylon briskly and give it a good stir! Bring to the boil watching the colour for depth. Remove the length and run under the cold tap keeping the nylon on the move. Hang on to a line to dry. Now add to the same mix 2 tins of Coffee Brown No. 7 with just a tinge of black and a tinge of blue – a tinge, by the way, is about the amount one would take from a snuff box, (but if you have a big nose then 1/8th of a teaspoon will do!) and repeat as before.

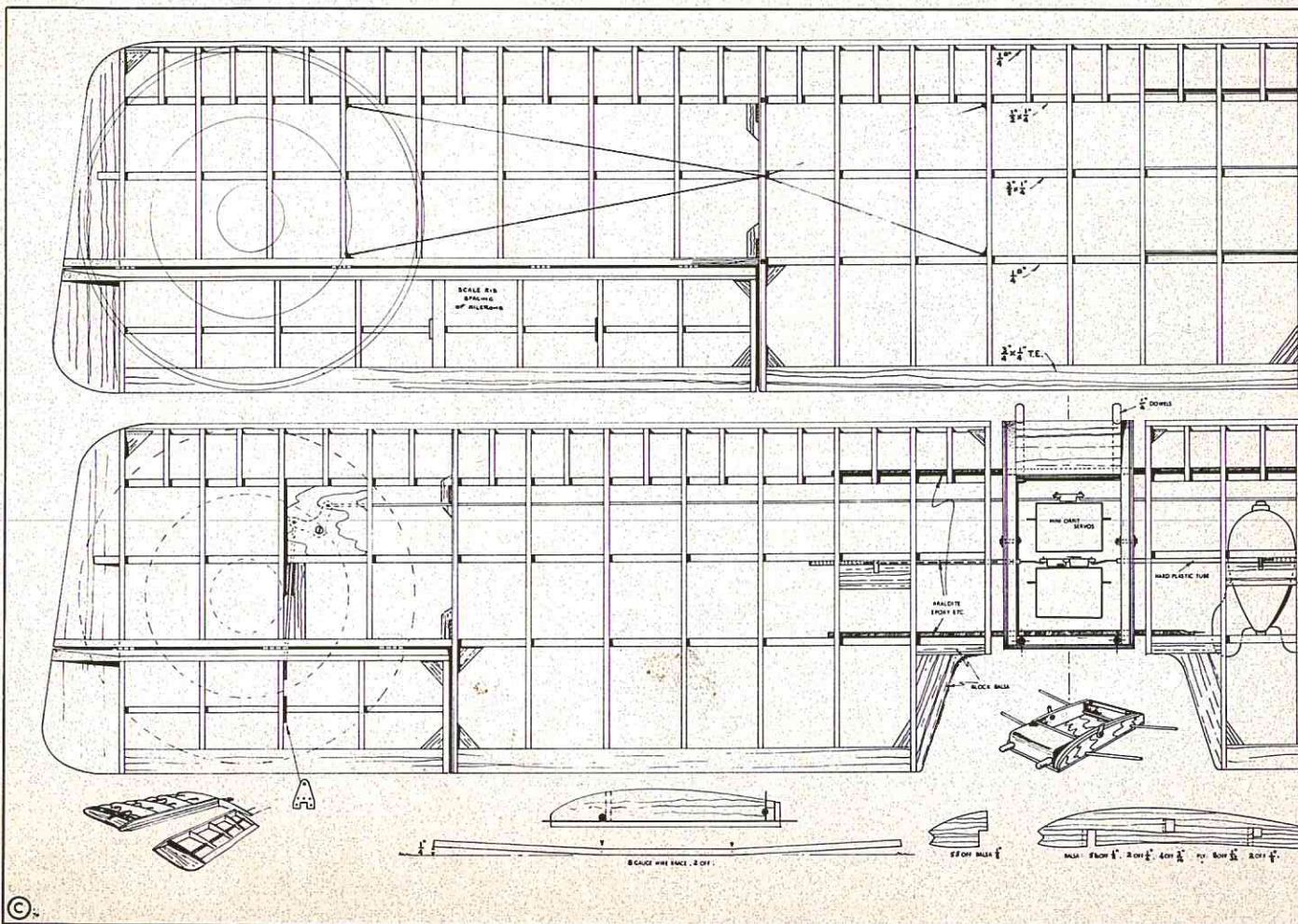
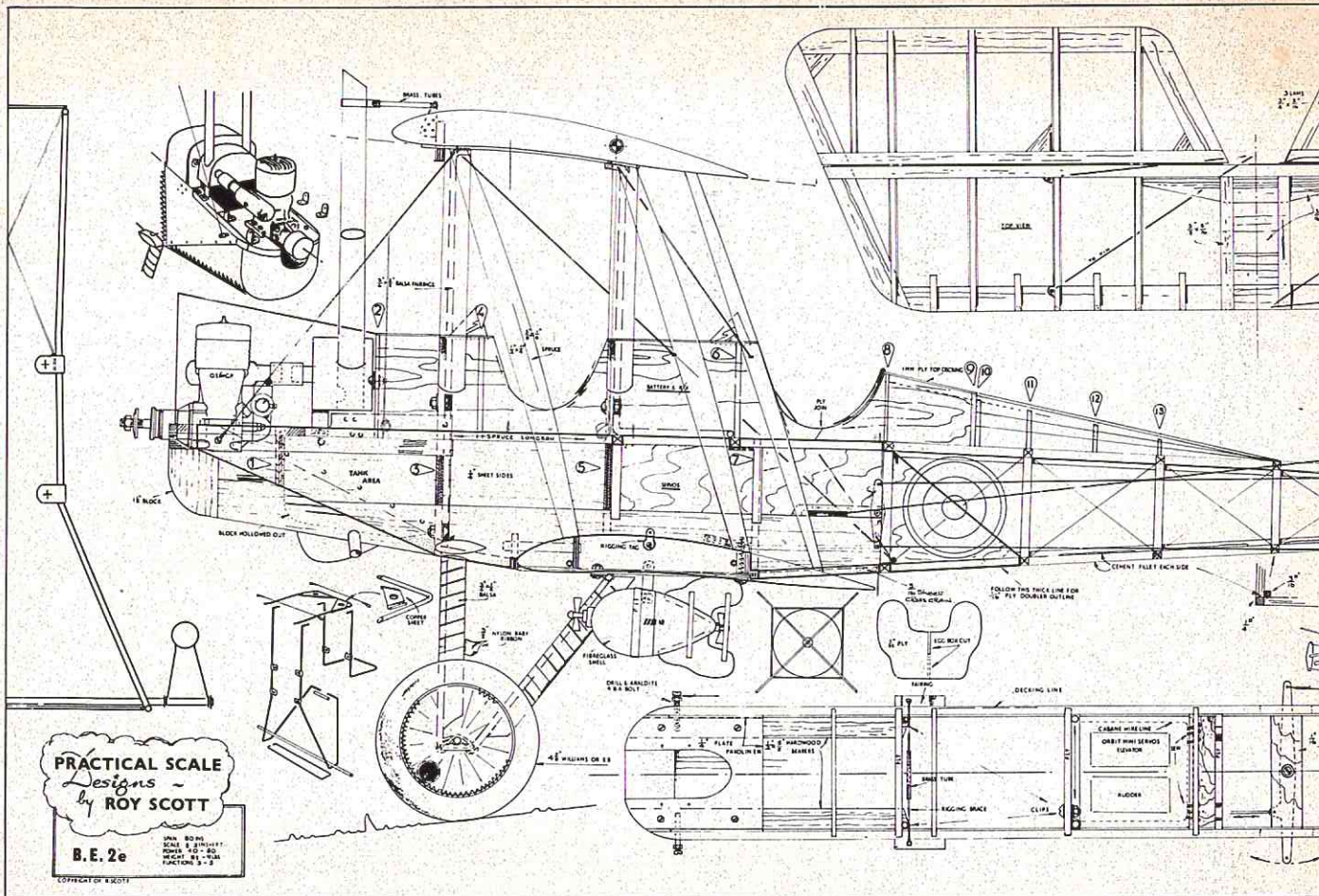
Make up the horns from fibreglass sheet. This can be obtained from stores dealing in radio construction, etc., and comes in the guise of printed circuit board 1/16" thick. The copper can be peeled off quite easily.

Now, armed with the tools of the trade – knife, pins, plenty of white glue, cement, epoxy, soldering iron, saws, hammer, building board and flying goggles, we will cover the plan with a plastic drop sheet and commence construction.

The word glue means white glue; cement – balsa cement; and epoxy – 2 part adhesive.

**FUSELAGE:** Start by making two identical sides from 1/4 sq. in. cross pieces. (Note that the 1/16th" ply doublers are outlined from the nose to the former 8 upright member and diagonally down to former 11 upright in heavy black lines, and must have the former cutouts made prior to gluing the 1/4" strip and sheet side frames). Add formers 3, 5, 7. Add wing fix dowel plate, 3/16" cross sheet below rear cockpit. Square up and let this part set up on top view. Next, glue the front balsa block, and slide in former 1. Pull in the rear of the fuselage sides and glue the 2 ply end pieces. Run a rubber band on the rear end of the fuselage and glue the remaining 1/4" cross pieces. Glue all ply parts to the rear end. Cement four 3/16" strips to the inside of each longeron as shown on the plan. Fix the cabanes with clips, nuts, and bolts. Drill fine holes through the 1/16" ply rear cabane seat and sew with strong thread and cement over. Add the top formers. Cement on the 3/16" x 1/8" back stringers. Glue the 1/2" sheet in place. Carve and sand the balsa rear side to shape. Mark out the tailplane section on each side and cut this area out – take care on this point. Now with stiff paper, about 15" x 15", place on top of cabanes. Mark for 4 holes, cut them, and slide this paper down over the formers, and down each side. Hold down with tape. Now press the paper around the front edge of former 2 and mark with pencil in 4 places where the paper meets the top edge of the two top longerons. The rear-most marks will fall on the ply join line shown on the plan. Remove the paper, draw lines between the marks, and cut 1/32" ply from this template. The reason this template was









EKTACHROME BY DON DEWEY

# ESPRIT

A SEVEN FOOT, 20 OUNCE, HIGH PERFORMANCE SAILPLANE BY

*Lee Renaud*

These words from the poem "High Flight," written 30 years ago by an American trainee pilot, best described for me the thrill of R/C sailplanes. Those of you who have flown sailplanes know and understand the emotion and challenge resulting from the world of silent flight. To them and to those modelers who have not yet tried this exciting sport, this article is dedicated.

My involvement with building and flying model airplanes goes back to the time "High Flight" was written. I have enjoyed all phases of this hobby including Indoor Flying, Control Line Speed and most particularly Wakefield competition in the late 1950's. Nothing has provided me with the satisfaction derived from R/C sailplanes! The challenge is infinite. The variety of models and tasks is limited only by the imagination and daring of the flier. No matter what you are flying now – or if you are a newcomer to R/C modeling, I urge you to try R/C sailplanes. Once you do I believe that you will share my enthusiasm.

While there are many excellent kits available for those who find the convenience necessary, only by designing and flying your own ship is total involvement possible. The model presented here is one persons approach to the ultimate goal of flying higher, longer, and farther than anyone else.

The Esprit is a high performance sailplane designed around modern two channel miniature proportional equipment. With a wing span of 84", it offers competitive performance with convenient size. The plug-in wing panels and removable tail group provide convenient packing for traveling to contests or the local field. It is in the air, however, that this bird belongs. And your first flight will prove that this model was worth the time spent in the shop.

Esprit's most significant characteristic in the air is precise and immediate response to your command. She will fly smoothly, hands off, trimmed for straight flight or an open thermal hunting turn. Once she finds the nose around without excessive of side slipping. sponive to pilot makes spot land-fly her into the and tap down the spot. The normedium-slow, but than expected from this type model. By feeding in a little down trim she will move right along and cover a lot of sky quickly.

*"Oh! I have slipped the surly bonds of Earth  
And danced the skies on laughter-silvered wings;  
Sunward I've climbed, and joined the tumbling mirth  
Of sun-split clouds – and done a hundred things  
You have not dreamed of – wheeled and soared and swung  
High in the sunlit silence . . . ."*

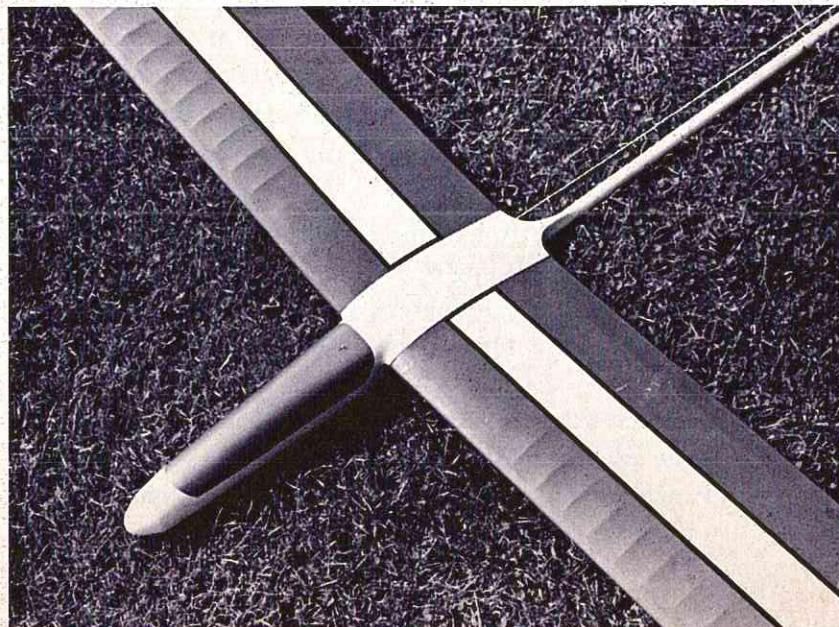
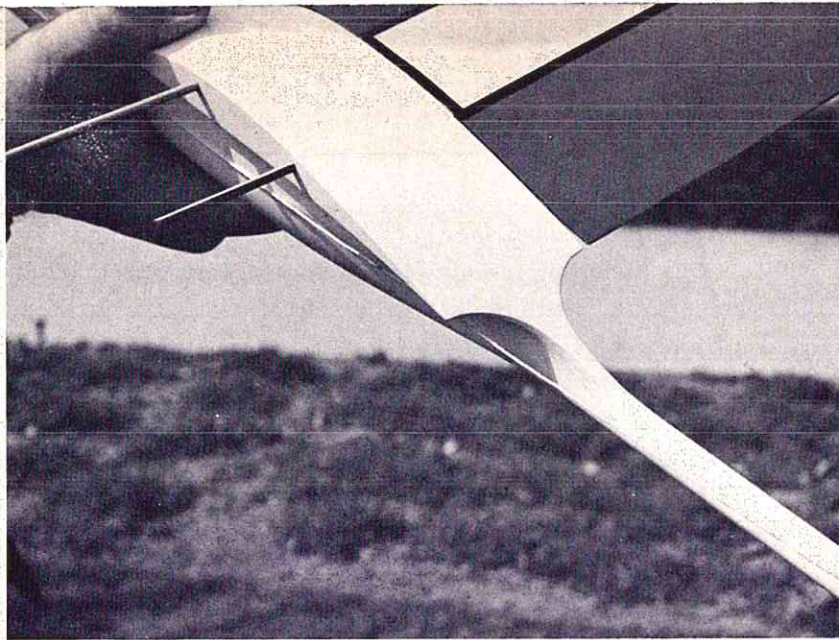
lift you can bring in a tight flat turn banking or danger She is equally re-control which ing a cinch – just final approach when you reach mal glide speed is somewhat faster

Esprit was designed primarily for thermal duration and precision flying. Most of my personal flying is from small fields using the Can Winch described in the June 1971 RCM. This launching method is quick and easy to set up and the 350-450 foot altitude gained is plenty for this model to find any low lift present. If you prefer to use an electric winch such as the RCM Winch in the May 1971 issue, don't worry about standing on the button and letting loose. She will go up very quickly and won't need full speed on the way up. I have hand towed with excellent results but find the Hi-Start more in keeping with my physical condition! As an extra bonus, if you have a slope site available, just add an extra quarter ounce of ballast to the nose and toss it off. She will fit beautifully in winds up to 15 mph with no other trim changes. In fact, the excellent performance on the slope has been a pleasant surprise.

### DESIGN

The Esprit design objectives were to provide a lightweight model with minimum drag. With an equipment weight of approximately 7 oz. and a desired wing loading of 4 oz./100 sq. in., an area of 500 sq. in., and flying weight of 20 oz., were selected as basic design parameters. Previous experience has shown that an airframe weight of 12-14 oz. was achievable with a 500 sq. in. sailplane if carefully built and finished.

The heart of any sailplane is the wing since this provides the total lift and major drag of the model. The tail group provides longitudinal and yaw stability while the fuselage houses the radio and ties the whole thing together. Since the wing plays such an important part in overall flight characteristics, it must be the focal point for design.



The root wing chord is 6.5 inches since this has proven out well in Nordic A/2 gliders which fly at similar speeds. The planform selected is a constant chord center section and parabolic tip outlines. The parabolic outline provides more area for a given span than the more usual elliptical tip shape and was selected for that reason. This results in a flat span of 84" and an aspect ratio of 14:1, with a total area of 508 sq. in. Polyhedral is used for its superior turn characteristic. Polyhedral is not as aesthetically pleasing as straight vee-dihedral nor do full-scale sailplanes have "bent" wings — but, it just plain flies better which is what this sport is all about. The airfoil selected is the Eppler 385 which seems optimum for thermal work. This section has a low entry profile with moderate undercamber and a flapped trailing edge. Maximum thickness is 8.4% and the general shape is similar to the NACA 6409 which I have used with success over the past twenty years. The only problem with this airfoil is that the trailing edge is thinner than standard stock and must be carved from sheet to maintain correct cross-section.

A Vee-tail was chosen because of its lower drag and lighter weight when compared to a conventional tail group. In addition, the high dihedral angle gets the surfaces out of grass or weeds for landings; particularly the wingtip style so many of us favor! The flat area of the tail is 116.5 sq. in. with each panel raised 35 degrees from the horizontal. This provides an effective stab/elevator area of 96 sq. in. or 19% of the wing area. The effective rudder area is 33 sq. in. or 6.6% wing area. Rather large elevons are used with a fully sealed hinge line to ensure precise control response. A flat structure with tapered elevons is easy to build and align for proper incidence and provides a slight lifting section.

The fuselage is a modified pod and boom design with minimum cross section to reduce drag. A reworked Williams Bros. spinner provides a clean nose and convenient ballast box. A removable cabin gives access to the R/C equipment. The maximum area is located near the midpoint of the chord and, when combined with the filleted junctions, ensures that the entire wing panel is working effectively.

The structure shown has been proven strong enough to withstand all normal handling and flight loads. There is no way to build a successful crash proof sailplane, so attention has

been given to 'survivability' and 'repairability' rather than to walking away from vertical landing approaches! My first Esprit survived a 2000 foot terminal dive with both wing panels intact, the fuselage was intact and radio equipment was working normally. Damage was limited to both sections shearing off at the fuselage junction (that was glued in place rather than bolted on) and a fuselage finish that looked like a hard boiled egg dropped from six feet!

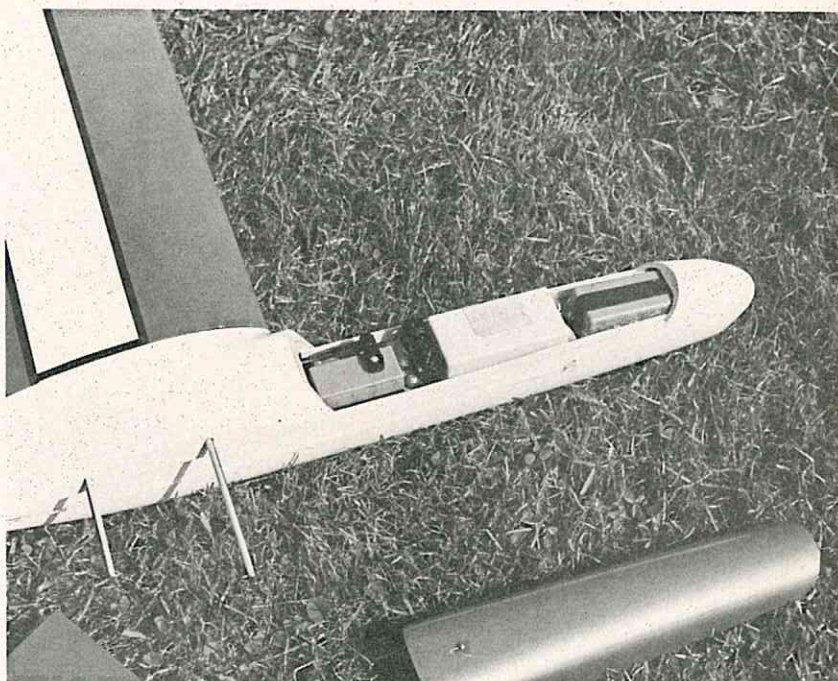
The wing tips and tail group are of lightweight construction to minimize polar moments with the major masses grouped near the Center of Gravity. This improves response to lift and minimizes deviations from the flight path from gusty or turbulent air. This is good practice with any flying machine and particularly important for soaring models.

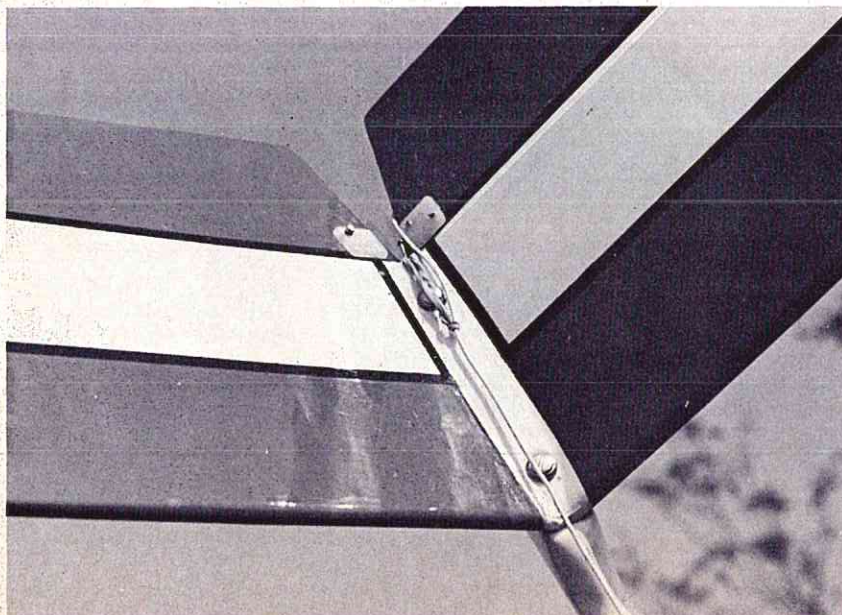
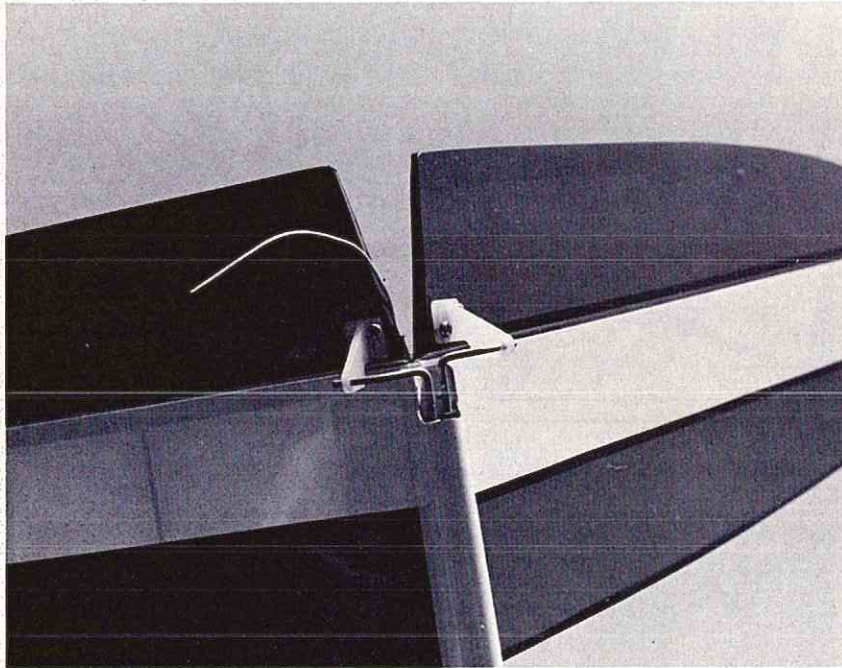
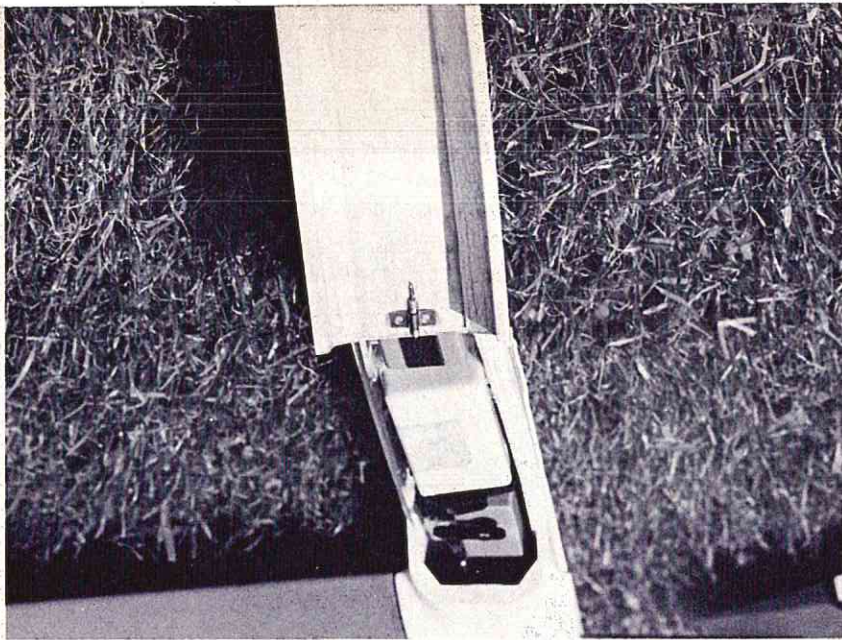
#### CONSTRUCTION

Those of you familiar with free flight models, particularly Nordic gliders will find no strange construction techniques. Those accustomed to foam wings and .60 engines will have to develop a feel for the lighter construction necessary for sailplanes. Select your wood carefully using lightweight stock throughout unless otherwise noted. I suggest that you follow the construction sequence indicated. First, mail a check for \$4.95 to Airtronics, P.O. Box 132, Sierra Madre, California 91024, for the finished lightweight fiberglass boom. Visit your friendly hobby dealer and pick up the material not already in your shop. Everything is standard wood size and hardware normally stocked.

#### TAIL GROUP

The trailing edge can be cut from sheet stock but the time spent to laminate it from 1/8 sq. strip is repaid in a stronger structure. Soak 3 lengths in the bathtub. Cover plan with Handi-wrap and drive stiff pins 1/16" inside the inner edge of the outline. Remove the strips after 15-20 minutes and strip off the excess water by running through your fingers. Run a bead of Titebond Glue down the opposite sides of one strip. Press the 3 pieces together. Lay a piece of 1/16" x 1/8" spruce vertically against the pins and press the balsa strips against the spruce. Put another piece of spruce outside the rear edge. Now, starting at the center, press tightly against the inner pins and drive the pins against the outer spruce strip to hold in place. Work out toward the tips allowing the 1/8" sq. strips to slide against each





other around the curve. The spruce strips prevent the balsa from being squashed by the pressure of the pins. This outline must dry for at least 8 hours before removing from the board so I suggest laminating the wing tip and trailing edges, letting both dry thoroughly.

Now, pin down the 3/16" sq. spars and leading edges. Spot glue the spars together to aid sanding later. The leading edge will follow the curve without soaking in water. Cut the center and tip blocks from soft 3/16" sheet and all ribs from 1/16" x 3/16" strip. I suggest dry fitting all parts then gluing all at the same time. Use Titebond or Devcon 5-Minute Epoxy for all joints. Carefully lay out and drill the 1/8" holes for the mounting screws.

When dry, remove intact from the boards. Using a block with #320 paper, sand smooth on both sides. Round leading edge, taper elevon ribs and sand smooth taper along the span, blending tips carefully. To maintain a straight hinge line, the tail is inverted from the position when built on the boards; so do all shaping near the tips on the bottom surface. Now split the elevons loose and bevel leading edge. Cut fixed section into two pieces centering cut through mounting holes. Use a square or triangle to ensure accuracy. Block up the tip of the panel 8" above the work surface and bevel the center joint using a sanding block against the bench edge, ala hand launch glider style. Be careful not to sand a sweep into the joint. Prop up each tip 8" and join with Devcon. Cut a reinforcing block to fit the joint and glue in place. When thoroughly dry flip over and, using holes as pilots, drill through the tail and block from bottom side. Insert eyelets for mounting screws and the tail is ready to cover.

#### WING

Cut out 4 root ribs R-1 and 6 center across ribs W2, A, B, C from 1/16" plywood. Stack together and sand to ensure accurate outlines. Now, drill 1/8" dia. holes for the wing mounting wires through each pair of ribs, doing the 4 root ribs together. Mark location on each rib. Work very carefully and remake any defective parts since the alignment of these ribs is critical to the model's performance.

Cut 26 balsa rectangles 3/4" x 6" from soft 3/32" sheet and sandwich between any pair of center section ply ribs. I use pushrod ends with one end bent at right angles and a #2-56 nut as

tie rods to hold the stack together. Carve to outline. Cut spar notches, and sand the stack. The tip ribs W-4 to W-9 are cut in pairs by spot cementing two blanks together. Gluing the proper template from the plan to the balsa with rubber cement. Cut through paper and both ribs together then sand smooth and peel the paper off. Split ribs apart and mark.

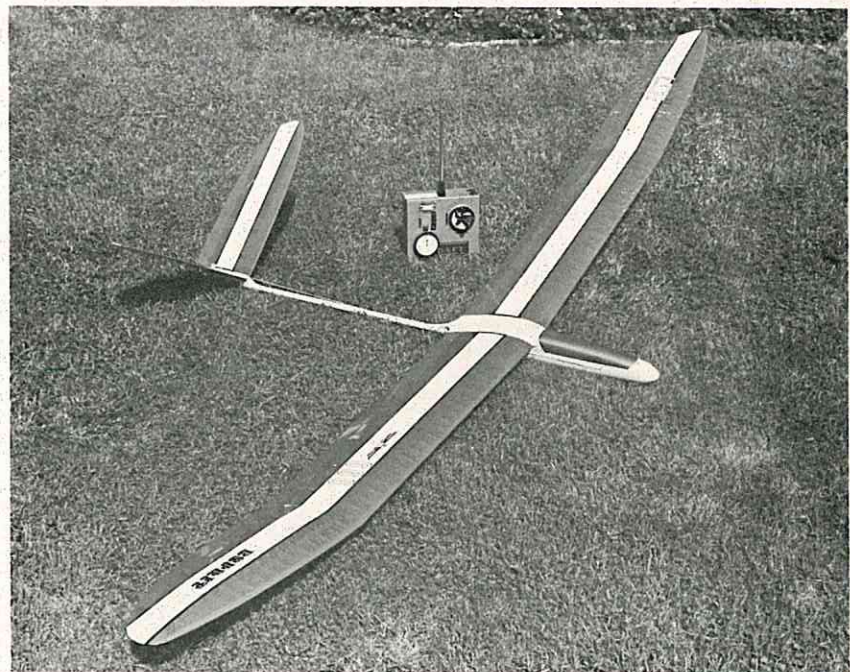
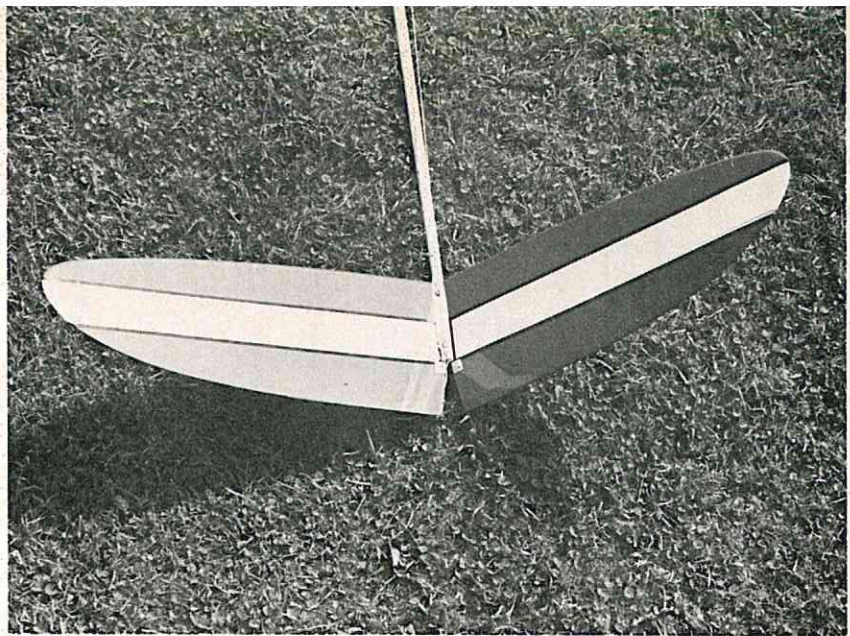
Since no standard tapered trailing edge stock will match the proper airfoil shape, you have to carve your own. This is actually quite easy and takes less than 30 minutes to complete. Select the hardest quarter grained 1/8" sheet balsa you can find - strip 1" width from wider stock if necessary. Set up a simple jig using a 24" length of .125 and .045 music wire epoxied 1" apart to a flat stiff piece of wood. Lay 1/8" x 1" stock between wires and plane or carve a rough taper in the section. Now sand smooth, resting the block against the wires which provide accurate stops. Repeat for the second panel and you are finished. Notch for ribs using an 8" warding file or two hacksaw blades taped together to cut slots.

Bevel the leading edge to rough shape using a small block plane, and start assembly of the center panels. Lay the plan out flat on your work surface. Spot glue the shims for the spars and trailing edge to the plan. Cover plan and shim with Handiwrap, and pin the trailing edge in place. Use 3-4 ribs to locate the leading edge and pin it in place. Lay the lower spars approximately in place and start gluing ribs in place. I strongly recommend the use of Titebond glue to assemble the wing since the flexibility of the joints prevents shattered panels in rough landings. Check the alignment of your ribs and also check that the spars are flush with the rib lower surfaces.

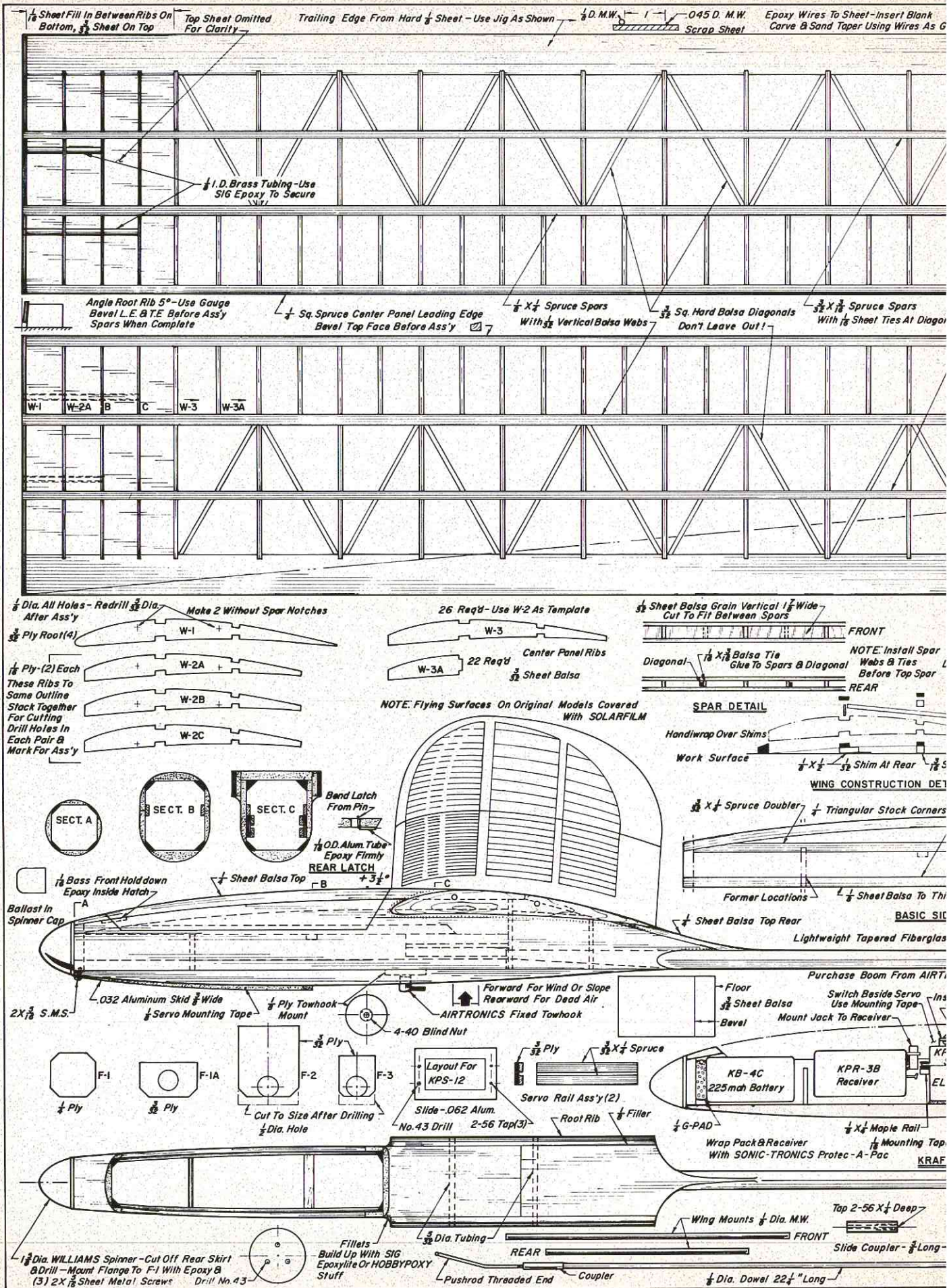
Now cut and fit the 1/32" vertical grain webbing for the forward spar. The web fits between the two spars and, because of variations in wood sizes or rib notches, should be cut to fit. They will be approximately 11/32" high. Now add the 3/32" sq. hard balsa anti-torsion diagonals. Add the top spars, inserting scrap balsa ties between the rear spars and against the diagonal. These add a great deal of stiffness to the wing so don't leave them out! Let dry.

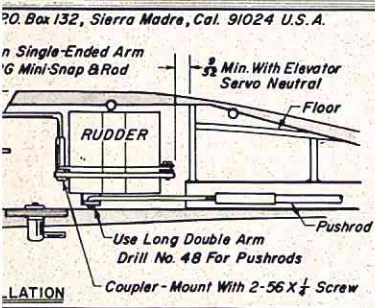
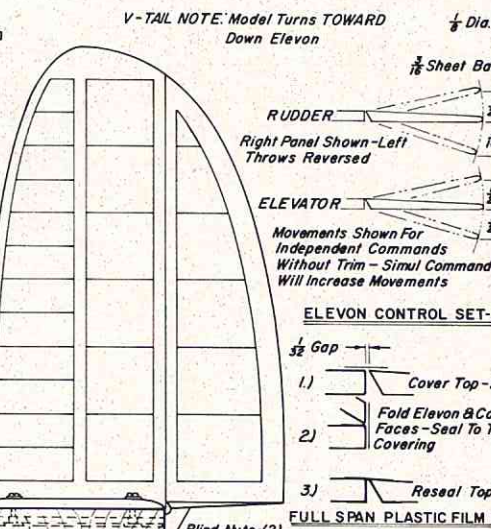
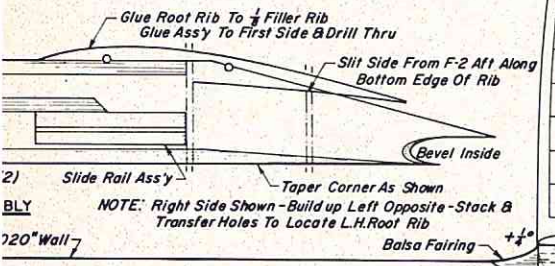
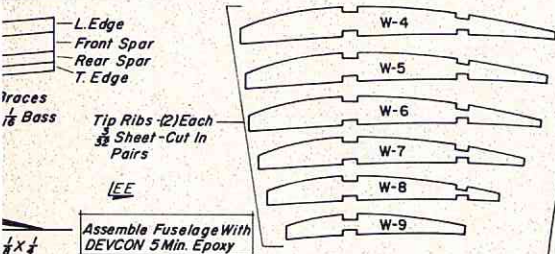
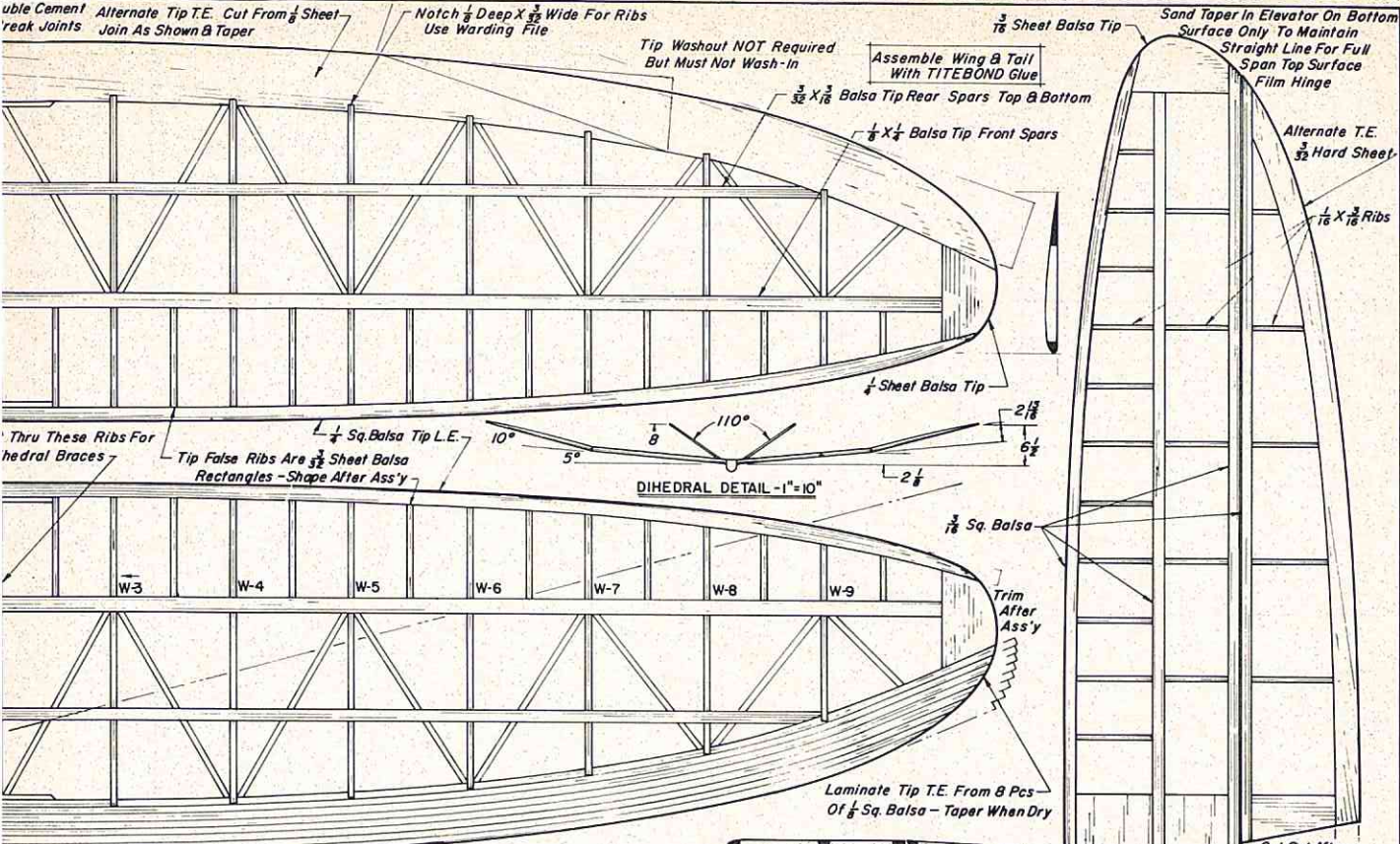
If you haven't already laminated the tip trailing edges, do it now. When dry, carve the taper. For better accur-

*(continued on page 80)*



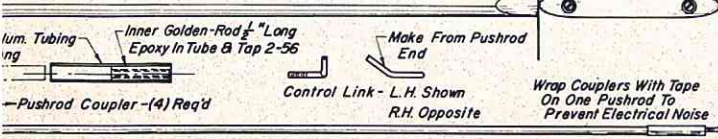






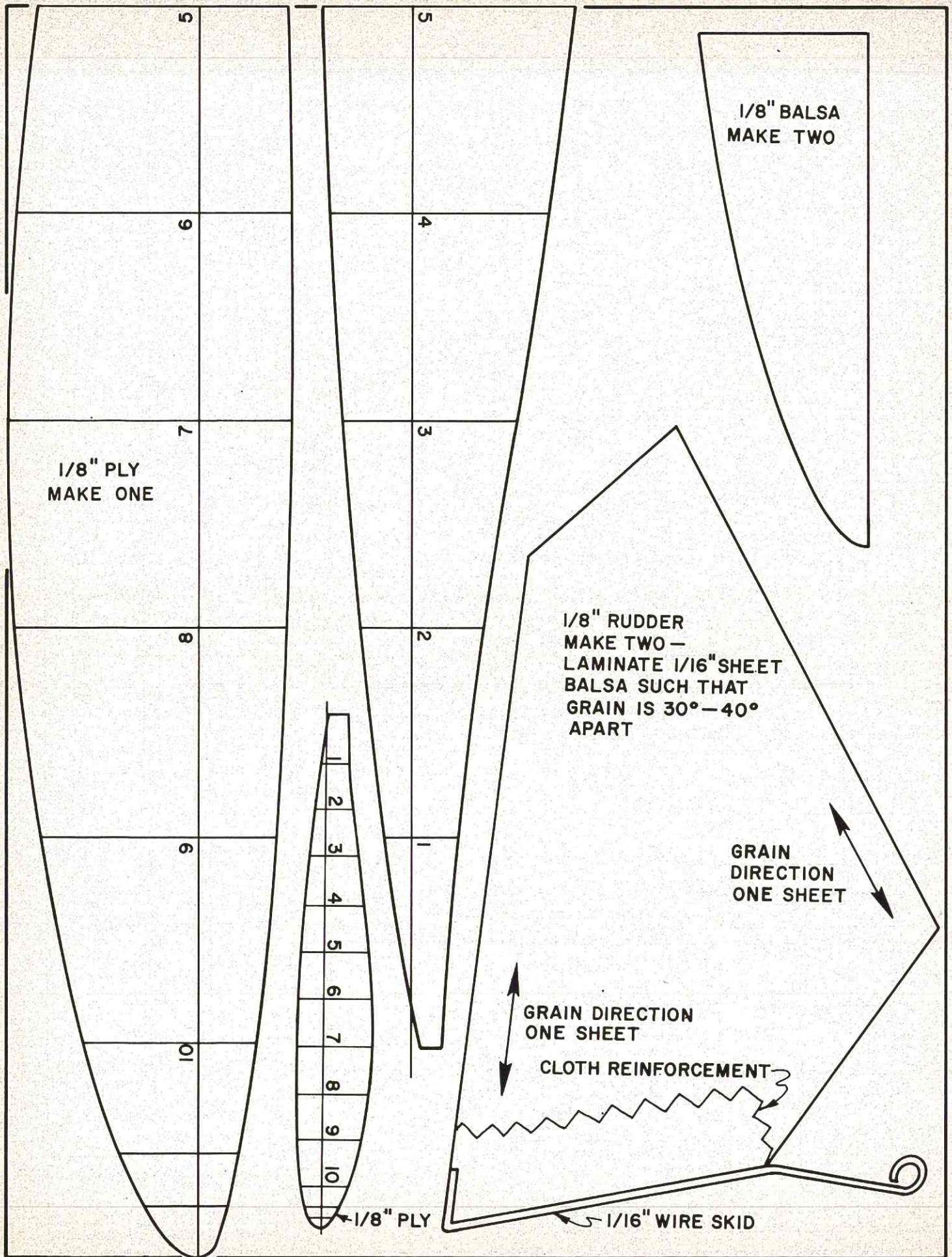
TECHNICAL DATA PANEL

WING: Span - 84" (2135mm.) Flat	FINISHED WEIGHT
Area - 532 sq.in (34.3sq.dm.)	ITEM Oz. Gm.
Aspect Ratio - 13.2 : 1	Wing 6.0 170
FUSELAGE: O.A.L. - 37.5" (952mm.)	Tail 0.88 25
FLYING WEIGHT: 19.96oz (567gms)	Fuse. 4.59 130
WING LOADING: 3.76oz./100sq.in.	Rods .74 21
	Ballast .70 20
	Radio 7.05 200



DESIGNED, DRAWN & INKED BY LEE RENAUD

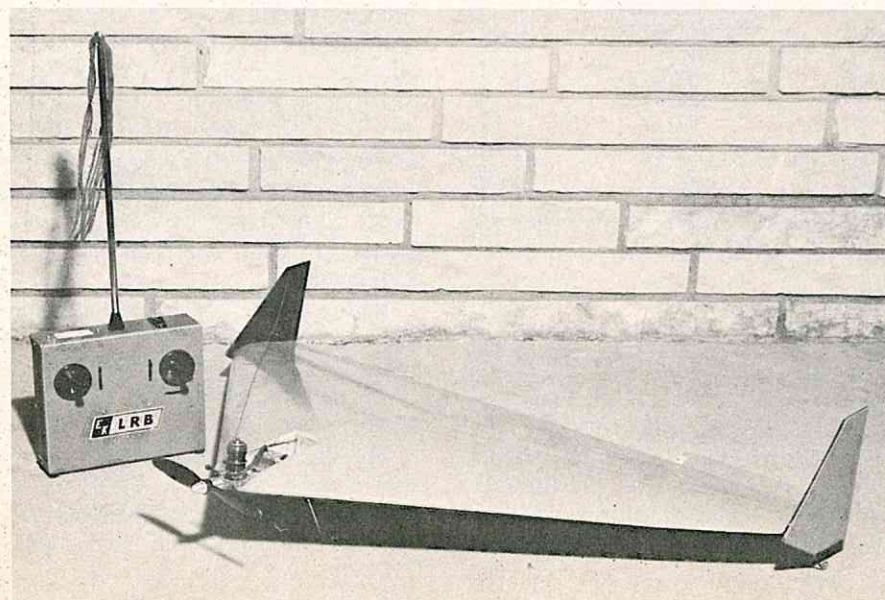
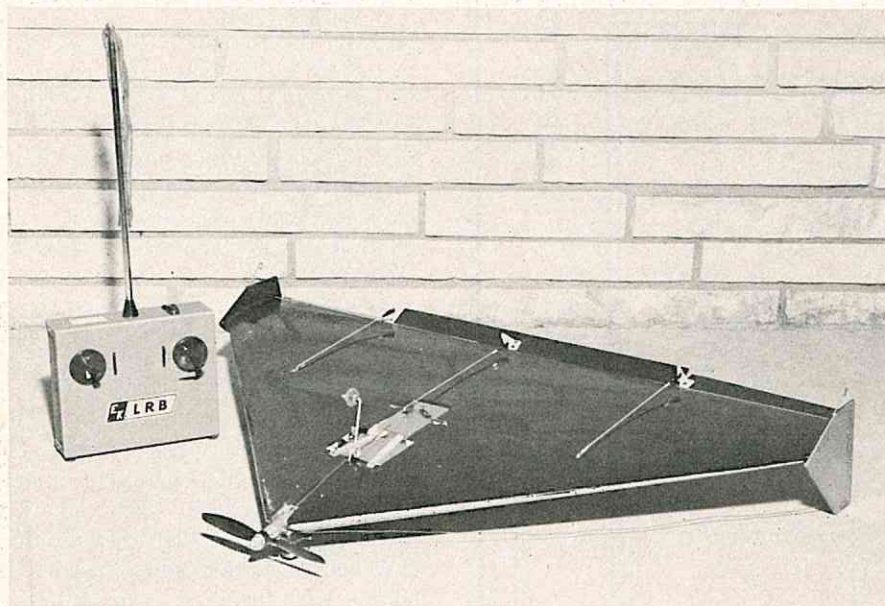
0 1 2 3 4 5 6



YOU TAKE A BLOCK OF STYROFOAM,  
SOME 5-MINUTE EPOXY;  
A FEW SCRAPS OF Balsa, PLYWOOD  
AND WIRE; A SHEET OF SOLARFILM,  
A COX .049 AND YOU HAVE THE

# THUNDERBIRD

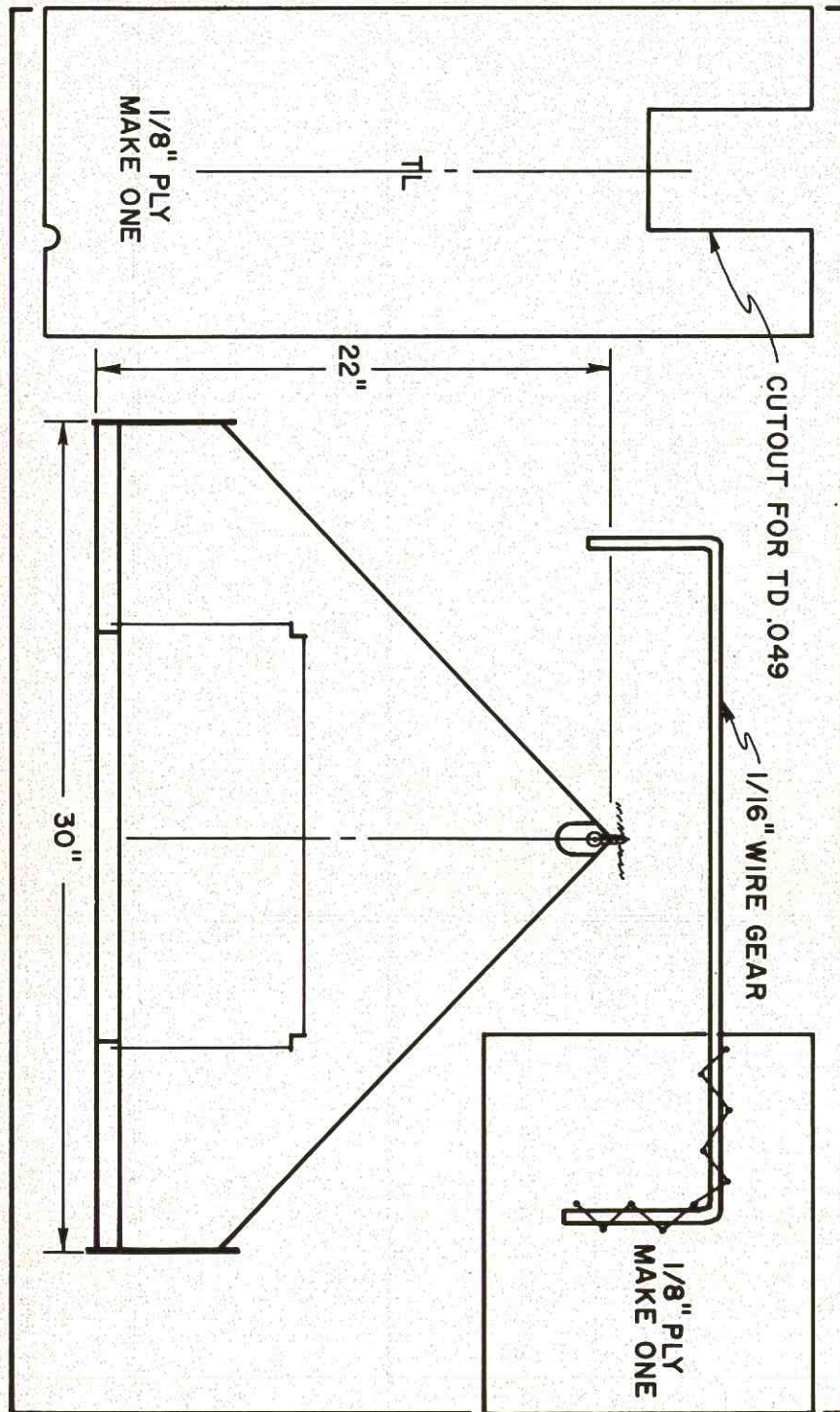
BY JIM SIMPSON  
RCM Contributing Editor



This neat little delta was conceived by me about 2½ minutes after I saw the claim by the silly editor of this rag regarding his airplane being the "world's smallest full house radio controlled model." Such a statement indicates to all that he has very little experience regarding statements in print. (*Right! – Ed*) For instance, he once claimed the Chigger (RCM April 1970) could do such and such in the C-141 which I "THOUGHT" was the world's largest plane at the time. Boy, did I get the mail about that and, when the last envelope fluttered to earth, I had tables, graphs and statistics which proved the C-141 was generally no closer than 7th from the biggest. So – no fancy claims. All I say is this one is smaller than Dewey's Dilly or whatever he called his plane! Matter of fact, I'm sure there are several smaller! And more to come. (*Right! – Ed.*)

My very good friend and close neighbor, Mr. Ed Rankin, was most instrumental in this airplane being what it is. Years ago both he and I had deltas when they were all the rage. In addition, he has considerable experience on real deltas having been involved in aircraft design at the home of the B-58, F-102 and F-106. Anyway, Ed whipped out the airfoil to match the planform I drew and then we cut the two wing panels in the conventional manner. We made the rib templates of 1/8" ply and purposely made the tip rib a bit larger than it had to be because the hot cutting wire moves very slowly around it and causes the foam to "sink" a tad. (*"Tad"... Texas colloquialism. – Ed.*)

I sanded the individual panels



smooth and fitted a piece of 1/8" sheet balsa 1 1/4" wide to the trailing edge. Next, I glued the two panels together with 5-Minute Epoxy, then also glued the 1/8" x 1 1/4" piece to the trailing edge while the delta was flat on the workbench, right side up, and cocked back on the reflex (tilted up) portion of the airfoil. When dry, I cut 1" off the trailing edge then cut two

pieces 7/2" long off each end which becomes the ailerons. The remaining piece is the elevator. Sand them and put them aside till ready to cover.

Carefully cut a 1/8" ply engine mount plate and a 1/8" ply firewall. Attach the engine of your choice with wood screws and the landing gear strut (I used a Jr. Falcon gear on the prototype). Remove an X-Acto saw-

blade from its back holder and use it (or a suitable substitute) to make the engine compartment cutout. Save the cutout. Epoxy in the firewall and the engine mount plate then add the 1/8" balsa tank compartment sides. Now trim down the cutout you saved and fit it under the engine mount plate. Remove the engine and sand the installation down smooth.

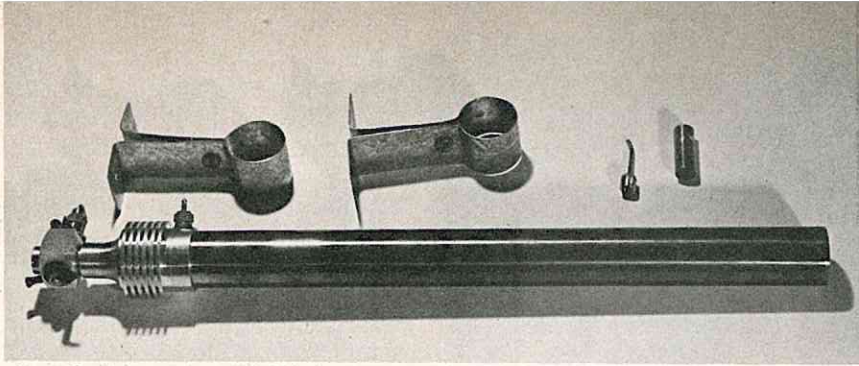
Ed Rankin showed me the correct way to determine (geometrically) the location of the Center of Gravity. I did as he said and mine flew hands off, first flight. So do as we say and locate your CG where it is shown. To do this turn the delta upside down, mark the CG points, then place your radio such that it balances with engine removed. Then make cutouts to accept your radio and the related linkage.

I used an LRB (*Lil' Red Brick - Ed.*) by EK Products in the prototype so to locate it I used a soldering iron to melt out foam until it was a force fit. Then I melted a little trench for the aileron pushrods and little wells for the aileron bellcranks. Once installed, I covered over the linkage with bond paper preparatory to covering the model.

Solarfilm is wonderful, tough, light, neat, easy to use, and most of all its application heat allows one to apply it directly to the foam which is what I did. Once the delta is covered (leave the tips uncovered), cut two fins out of 1/16" sheet balsa with grain parallel to the trailing edge. Then cut two more with grain parallel to the leading edge and "sandwich" one of each with epoxy. Add the 1/16" wire skid and cloth reinforcement and, when dry, cover the inside of each fin, then cut away covering to epoxy wood to foam and attach them to the delta. Use toothpicks to reinforce by pushing into the wing from the outside of the fin. Finally cover the outside of the fins and the control surfaces. Attach the surfaces and install the pushrods and horns. Coat the engine compartment with epoxy then mount the engine and tank. That's all there is to building it!

Before flight, adjust the CG to be right on, tank empty. Adjust all three control surfaces to follow the reflex curve of the airfoil and check for warps.

Fill the tank, start the engine and after a radio check (on, works; left is left; up is up and so on) head her into the wind (if any) and let 'er rip. Mine flies very easy, lands slow and weighs only 18 ounces. Hope yours is better!



## RCM PRODUCT REPORT

# TURBOCRAFT P-80 'JET-STICK'

This month's Product Report is on the P-80 "Jet-Stick" Engine as manufactured by Turbocraft Engineering Co., P.O. Box 1936, Myrtle Beach, South Carolina.

Priced at \$49.95, the P-80 looked like a good introduction into the field of throttle-pulse jet engines. We are sure that a great number of magazine readers who have noticed the advertising from this firm would also feel the same way and might be tempted to purchase one of these units at the \$50.00 price tag.

As received with the P-80 Jet-Stick Engine, the following is a direct reprint of the manufacturer's instructions:

*The P-80 "Jet-Stick" is a throttle-pulse jet engine. A carburetor and a variable reed disc valve function together to provide throttle control of the engine's static thrust. The carburetor adjustments are shown on the factory instruction sheet for the type used. The needle valve setting ranges from 1/2 to 1 1/2 turns open, the variation depending mostly on the size and position of the fuel tank used. The throttle linkage lever controls the amount of fuel-air mixture admitted into the combustion area and the resulting thrust. In addition to the carburetor adjustments shown, the carburetor also moves in and out of the front of the finned housing. This motion controls a sliding valve-sleeve which is attached to the carburetor assembly. By moving the carburetor into the finned housing the sleeve will contact the disc valve . . . pulling the carburetor out slides the sleeve away. This provides variable control of the valve assembly and the pulse frequency, (PPS). The valve sleeve is adjusted to clear the disc valve .015 to*

*.040 short of touching. Since the reed disc valve is allowed to swing back and forth across mean center, it is interesting to note that many true resonant frequencies can be obtained with various settings of the valve sleeve. Close settings provide high PPS frequencies resulting in extremely smooth non-cracking thrust output . . . an exclusive Turbocraft design feature!*

*The carburetor has a threaded fitting on the front-bottom position to which a tire pump is connected to supply air for starting the engine. The small bicycle tire pump works well and is available from Western Auto Stores for around \$1.50. In addition, a glow plug battery, or the round 1 1/2 bolt bell battery is available from your hobby store. A battery clip wire and glow plug connector is also recommended.*

*To start the P-80 engine, connect the battery to the glow plug and turn the throttle linkage arm to the point where the hole in the front of the carburetor is full open. Set the needle valve to one turn open. Fuel should drip into carburetor hole. Pump the tire pump and the engine should start running. If the exhaust is smoky, turn the needle valve to the right (clockwise) a few notches. When the exhaust tube has become dull red remove the glow plug lead and re-adjust the needle valve for the least smoke. The sound tone of the engine should be that of a low-pitch flute. Closing the throttle to the half-way point should produce about one-fourth previous full thrust. Flame-out usually occurs with throttle arm about two-thirds closed.*

*In case of failure to start, check setting of the valve sleeve. The sleeve must clear the disc valve or the starting fuel-air spray cannot get through for ignition. Adjust as specified above. Check the glow plug . . . replace if*

*necessary with FOX heavy duty type, long or short. Check fuel set-up . . . for clogged lines . . . trash in needle valve port . . . Check battery . . . glow plug should burn white hot. Check Connections!*

*A good fuel to use is white-gasoline (Naphtha) or propylene oxide (best fuel) made by Coleman Company for their camping stoves, etc. It is available from your hobby dealer or sporting goods stores for about \$1.29 per gallon. The P-80 burns about 1/2 gallon per hour, so this is a very economical. Be sure to use Teflon fuel lines to carburetor and on air-vents to the tank. Keep fuel lines clear of the hot exhaust tube, running them forward if at all possible. Insulate fuselage with aluminum foil cemented to the inside with GE silicone rubber (bathtub seal in tube) and allow one inch of airspace all around the engine, between the engine and the foil. The engine can be mounted with ring clamps made from flat metal stock. The clamps included in the bicycle tire pump package are normally used to mount the pump to the bicycle frame. Use these to mount the engine.*

From the instruction sheet, it would appear that here is truly a workable and throttleable pulse-jet engine. During our tests here at R/C Modeler Magazine, we gave this engine every possible break to see if it could be made to do something — in fact, anything! According to the instructions the pulse frequency can be varied by moving the carburetor in and out. This could not be done as the brass tubing has a press fit in the aluminum housing, and trying to move the tube only resulted in the carburetor being pulled from the tube. A closer inspection of the tube shows that virtually no precision at all was used in order to fit the carburetor, since the carburetor was drilled out about ten thousandths too big and the tube was flared with pliers and held in place with Silicon Seal. In view of this sloppy workmanship, we machined a new tube that would be a press fit in the carburetor and still slip in the aluminum housing. Following this we connected up a constant air supply that would vary between 0 and 100 pounds. This was tried both down the venturi and through the needle fitting. With gas coming out the back end the engine would not ignite with 1 1/2 volts. This was with a fresh battery that glowed bright orange. It would only  
(continued on page 62)



**Bob Smith after setting new Formula I record of 1:30.3. Minnow powered by Clarence Lee Custom K & B .40.**

## BOB SMITH

SETS NEW FORMULA I

RECORD OF 1:30.3 AS FIRST

TWO SOUTHERN CALIFORNIA

PYLON EVENTS OF 1971 RACING SEASON DRAW

126 PILOTS, 165 AIRCRAFT.

The green flag for the 1971 Formula I racing season came down in Southern California for two of the largest pylon meets ever held. The first, hosted by the Valley Fliers saw a turnout of 75 aircraft among 55 entrants all from the local area. The second meet, held two weeks later near the end of May, must be classified as possibly the greatest Formula I race ever to take place. Hosted by the BARKS Club at an old WWII air strip north of Bakersfield, California, 71 pilots entered the race with about 90 planes to see Bobby Smith set a new Formula I record of 1:30.3!

At the Valley Fliers event, two qualifying rounds were run on Saturday morning. The 24 fastest planes were put into Group One to race against each other while the balance of the fliers raced in Group Two. This system of racing involved extra work for the race organizers and directors

but proved the superiority of the two group system both from a contestant and spectator viewpoint alike.

The Contest Director, Roger Owens, set up the race in this manner so that all the heats would be more exciting. From the spectators standpoint there was hardly a race on either day that was not close and exciting with no mid-air collisions. The pressure was really on the top fliers as evidenced by the first three places in one heat of four planes: Bob Smith 1:34.5; Roger Owens 1:35.7; and Bob Frey 1:38.4. With so many close heats even the very capable Glenn Speckler and his assistant, Gene Christensen, had their hands full calling the winners. The final results saw George Killeen (Minnow, Lee-K & B .40) first; Bob Smith (Minnow, Lee-K & B .40) second; Jim Jenson (Pitts Pallet, K & B .40) third. In Group Two the first three slots were taken by Mel

Santmeyers, Tom Cone and Doug Spreng. Approximately 1,000 spectators were on hand to watch the racing events according to the Los Angeles Parks and Recreation Department representative, Ed Lewis.

Perhaps sparked by the success of the Los Angeles meet two weeks earlier, contestants began to arrive early Saturday morning at Bakersfield by car, private plane, and Bob Bleadon even flew in, in a newly painted yellow P-51 Mustang. All in all, 71 pilots entered the race with over 90 aircraft. Within 20 minutes after the close of entries, Jack Fabre had the heat set up and Glenn Speckler was waving the green flag to start the first race.

The big heat of the day saw Terry Prather set a new record of 1:31.5 . . . a record that, however, was not long to stand. By Sunday morning the kid from the San Fernando Valley got in the groove and broke the record set by Terry the day before. Nineteen year old Bobby Smith did a spectacular job of flying 10 laps around the pylons in a record 1:30.3! Bob flies such a close-in course that on one lap he actually cut the colored ribbons on top of a pylon! He was flying his one year old Minnow with a laminar flow wing powered by a Lee custom K & B .40.

The only fly-off was for 9th place and was won by Bob Bleadon who is coming up fast in this sport. This was the first race for another up and coming flier, K & B's own John Brodbeck.

The final race standings were as follows: (1) Terry Prather; (2) Roger Owens; (3) Jack Hertenstein; (4) Jack Stafford; (5) George Killeen; (6) Wayne Wainwright; (7) Larry Leonard.

Credit must be given to the Bakersfield BARKS for running a very organized affair which included laying out a perfect course in the center of the large runway with Glenn Speckler using survey equipment. The big problem that plagues every race is a lack of helpers but, the BARKS, the flying club in Bakersfield, and the Blue Dolphins, the R/C power boat club, have a great cooperative program worked out . . . they run the contests for each other. The Blue Dolphins do their part as flagmen and helpers in an extremely efficient manner.

Pete Reed, NMPRA President who attended the meet from the East Coast, summed it up on Sunday . . . as Pete said, "It can only happen in California!" □



**FAR LEFT: 75 aircraft turned out for the 1st Formula I event of 1971. LEFT: Part of the action at Valley Fliers hosted event. ABOVE: Killeen, Smith, Jensen, Santamyer, Cone and Spreng . . . The winners in Groups I and II.**



**RCM's Clarence Lee does his thing.**



**Larry Leonard congratulates Bob Bleadon on 9th place fly-off win.**



**Terry Prather's S.T. .40 set 1:31.5 record at Bakersfield.**



**Alex Chisolm, A.M.A. VP with Shoestring, Lee Custom K & B .40.**



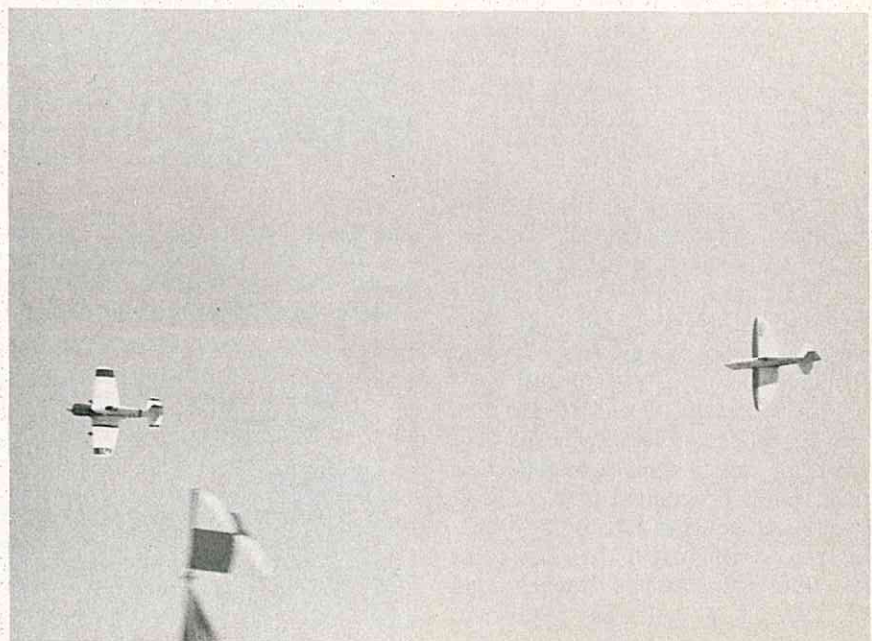
**Joe Bridi with Lee Custom K & B .40 powered Minnow.**



**John Brodbeck of K & B-Veco, an up and coming Formula I pilot.**

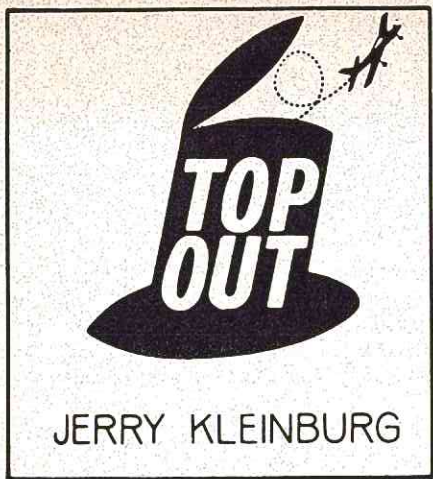


**ABOVE: Glen Spickler flags a heat at Bakersfield. RIGHT: A tight race between Bror Faber and Joe Foster. Formula I racing faster, highest calibre of flying skill ever seen. 1971 racing season will also see record number of new racing enthusiasts.**



PHOTOS BY DICK SONHEIM





JERRY KLEINBURG

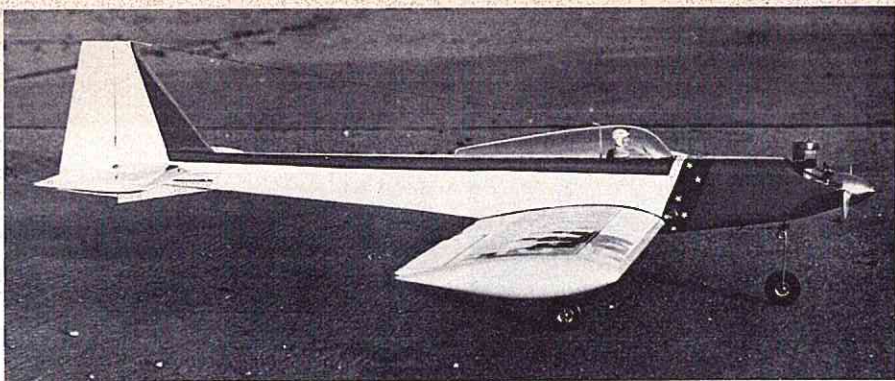
**Polishing Pad” – a finishing boon . . .**

At last – sometimes it takes awhile, but one of my private pet peeves on paint finishing has finally been resolved. Like many, I admire super finishes on models but don’t claim the talent or time to achieve the very special look on them that signals a fine paint job. And, as many do, my approach is a compromise between the practical limits of time and patience and utility, balanced against desire for the admired glossy coatings along with the self satisfaction of a job well done. Well, now that “Scotch Brand Polishing Pad” is on the modeling scene this inner conflict may be eased somewhat. Besides, I’ll finally be able to do away with using that steel wool . . .

You see, steel wool is the ‘secret’ ingredient that gives those fine burnished finishes everyone admires. For a long while it’s been satisfactorily used on almost every painted shape and base material on models ranging from silkspan paper to metal. In a moment I’ll tell you why all this is so, but if you’ve wondered why sandpapers alone and even polishes can’t do the job, take heart and read on because “Polishing Pad” is here to ease your burden . . . Here’s what’s involved:

The ‘just so’ look of a good paint job comes from getting a thing called ‘depth’ along with another elusive element that puts ‘life’ into all colors of paint, even in blacks. The easiest way to build these qualities into your finishes is through the use of white undercoats and the use of steel wool to ‘level’ the paint on all the final finishing coats. ‘Leveling’, by the way, means getting an even light reflection from the total painted surface. Steel wool gives you this leveling by reaching into every part of the surface as the wool pad is rubbed over the dope to give it a uniformly reflective

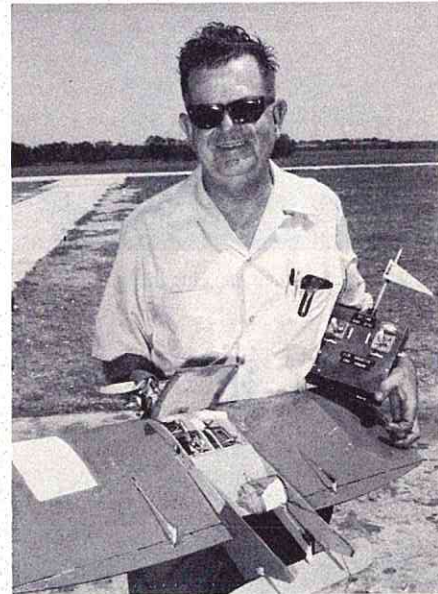
*(continued on page 63)*



The latest version. Bill Thomas’ III Perfection as rendered by A.F. Maj. John Williams of Whiteman AFB, Mo. Fuselage 2” longer, MonoKoted, Logictrol radio. Max Goldhead .60 power plant is local favorite.



ABOVE: Clete Brow of Hobbs, N.M. hauls in loot for Loop-Spin-Roll Event at Clovis MADS Fun-Fly. CD, Fred Magness, does honors helped by Rudy Haggard. RIGHT: Jim Houston and Goldberg “Voodoo” test bed for Cannon radio. Max .15 gives zip for ‘supreme’ service checkout of excellent radio kit. Setup offers easy and economical RC fun and sport.

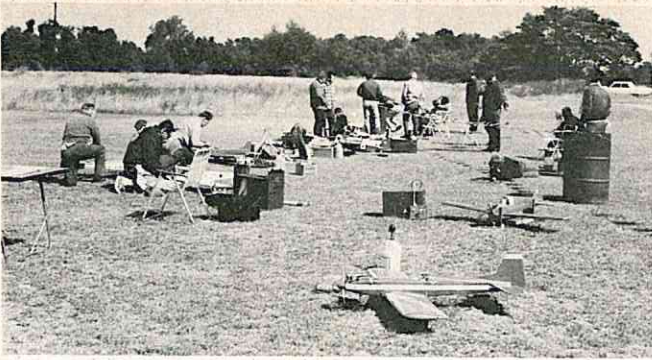


Still popular. Taurus clears sand ‘mountain’ for Capt. Tom Wade at Whiteman AFB. Durable flier uses Heathkit radio and Max Goldhead .60. 90 flights and still going strong.

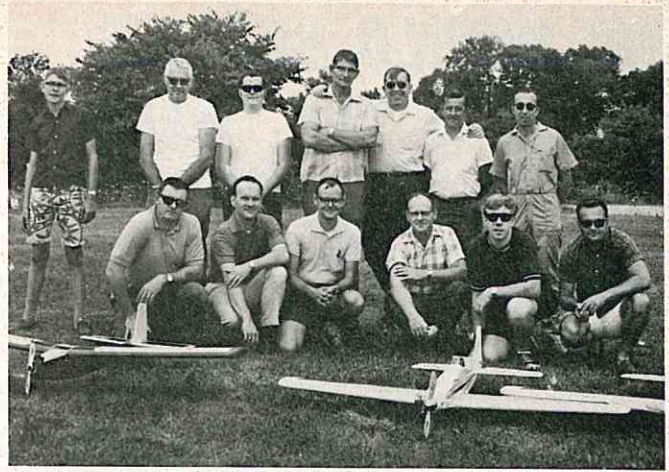


ABOVE: Voodoo leaps from handhold by Bill Doyle. Jim Houston of San Antonio ARCS guides zippy flyer to test newly completed Cannon kit radio. Kit good, a way to save on radio costs, too. LEFT: Paul Hurd (L.) of the Lackland AFB R/C Club shows club prexy, Lou Mango, his latest R/C creation. Ship is Eindecker from Major Models kit. OS .30 with Kraft radio completes 3½ lb. model.

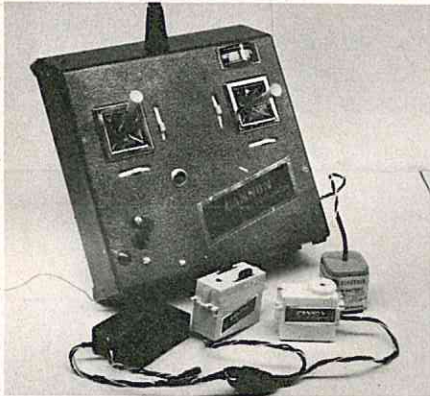




West Jersey R/C Club Fly-for-Fun gets under way. Limbo event had 6 ships orbiting at the same time, a way to get more passes in a shorter time. Ray McCloy sparked meet.



Indiana RC'ing. Members of the Eastern Indiana R/C Assn. entertained Texan Max Blose (standing, rt.) whose Tarman in foreground was RCM feature. Joe Fallon (standing, 3rd from rt.) is club President.



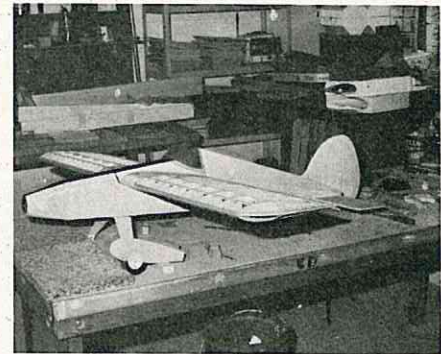
Cannon radio kits fill wide variety of needs and save money. Servos available for every radio in all sizes. Transmitter features canted antenna. Receiver rugged. ABOVE: 'Stik's' galore - Frank Balletta created successful low wing version from Jensen kit of Phil Kraft's famous design. Excellent trainer, low wing loading helpful. Max .60.



"Shades of Death Road" is location of Top O' New Jersey Club field when not using a frozen lake. Chuck O'Donnell's telephoto lens catches PT-17 landing by Dick Carroll. Fox .74 plenty of power.

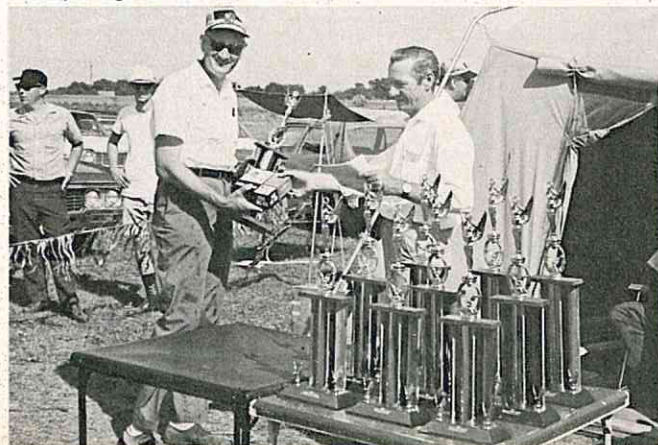


Winter doesn't stop Top O' New Jersey RC'ers. Frozen lake makes good substitute 'field.' Dick Squires' Sportsmaster gets Ed Theusen test hop while Ed Perona watches. Enya .60 and MRC radio OK in cold.

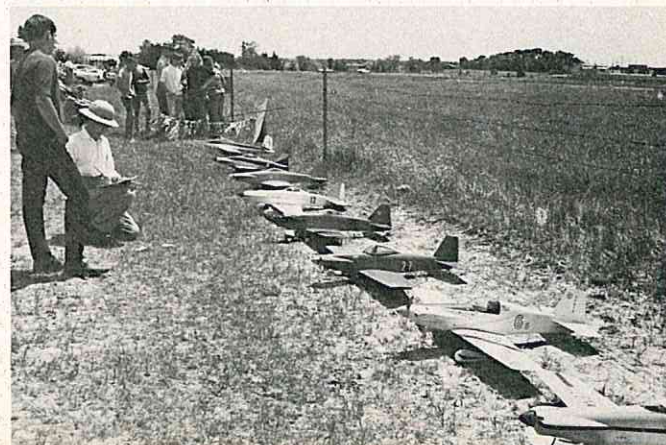


Look again - it's an Ugly Stik in final stages of racing metamorphosis. Ed Theusen of Top O' New Jersey R/C Club came up with latest modification. Flies great with rebuilt Enya .60.

Tops in CX, Pylon I - Charles Reed received awards from Bill Johnson, CD of 11th Annual Lincoln, Nebraska Sky Knights meet. Enterprising club members made contest worthwhile for everyone.



Formula I lineup for Lincoln Sky Knights meet. 1970 saw peak in Pylon I popularity across U.S.



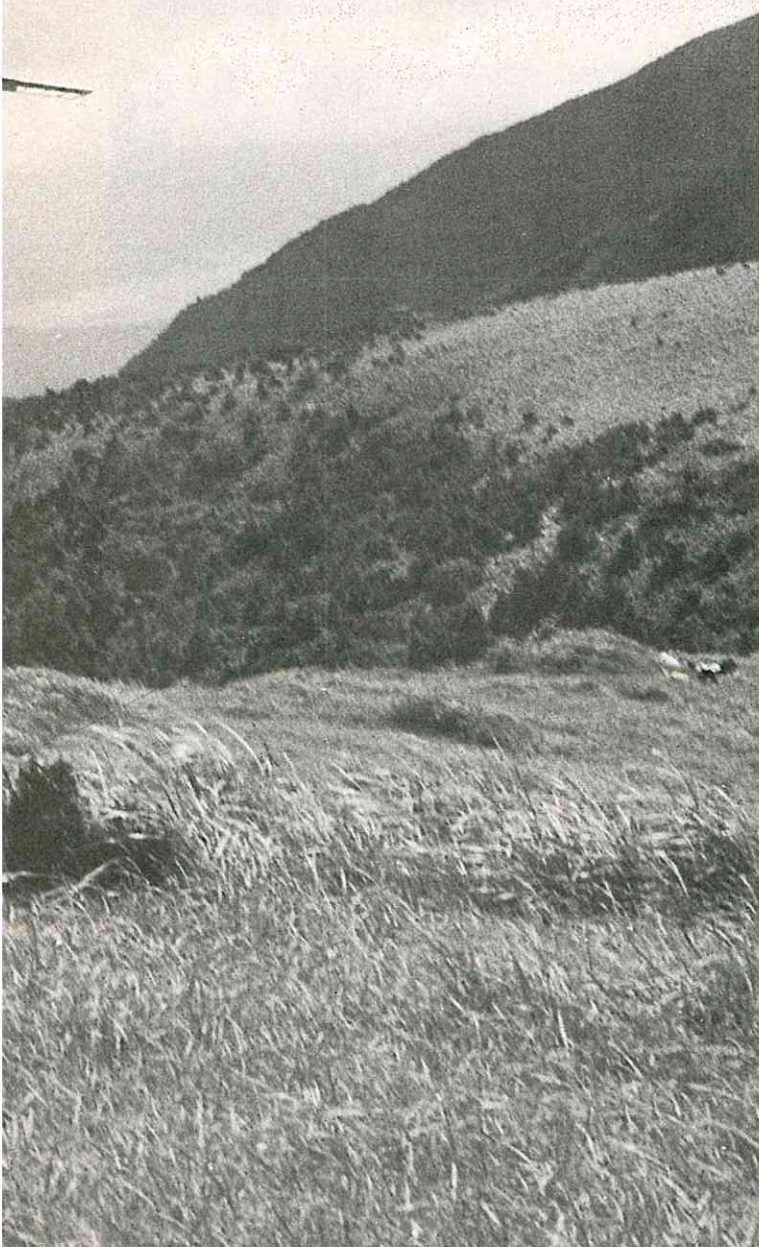


The first annual RCM Invitational Sailplane Meet, held on Monday May 24, consisted of two events, the first being a duration of 5 minute max's and the second a two minute precision event with spot landing. The latter event required the individual flier to be timed from the moment he left the hi-start until the time he touched down on the ground with one point being deducted for every second

over or under the two minute mark. A 30 point bonus was given for a spot landing within 25' of a 12" marker. The Duration event was won by Bill O'Brien flying a beautiful Olympic from the highly prefabricated Airtronics kit, with second place going to Joe Bridi flying a stock Windward from the kit by Mark and Rob Smith; while third place went to Lee Renaud flying the Esprit featured in this issue

# SOARING

WITH DON DEWEY



of R/C Modeler Magazine. Fourth place in the event went to Mardell Tubbs and his Graupner Cirrus and fifth place to Don Dewey and a Gus from RCM plans.

In the Precision event, Lee Renaud took first place with his Mini-Olympic with a score of 238 points, followed by Don Dewey and his Gus with a score of 237 points in second place. The third spot went to Mardell Tubbs and his

Cirrus who racked up a score of 219 points. Point scoring varied from a high of 238 to a low of 158. Times in the duration event ran from an individual low of 0:50 to a high of a 5 minute max per round.

★

## LSF TOPS 100

The League of Silent Flight membership has topped the 100 mark according to a recent announcement by Marshall Watson, League Secretary. The LSF, an organization devoted exclusively to the interests of R/C soaring enthusiasts, boasts widespread membership in the United States and several foreign countries. The LSF is a unique association in that membership can only be earned... there are no fees or dues.

League of Silent Flight Member No. 100 is Daryl Whitney of Woodland Hills, California. Daryl, a 16-year old High School Sophomore, flew his complete membership requirement tasks with a hand-me-down sailplane. The plane, of all styrofoam construction, is a semi-scale model of the famous Schweizer 1-26 and was manufactured by Canyon Plastics of Amarillo, Texas. Daryl's sailplane, dubbed "The Flying Ice Chest" by younger sister Alison, is bruised and patched, dented and spliced, and would certainly rattle and bang if styrofoam could do so. But it flies and Daryl's piloting skills have progressed rapidly to his current proficiency.

Each of the now more than 100 members has earned the privilege to wear the distinctive LSF insignia by completing Level I of the League's Soaring Accomplishments Program. Level I requires documented performance of a 5 minute thermal soaring flight, a 15 minute slope soaring flight (or second thermal flight if no slope is available), and five spot landings within 3 minutes (9.84 feet) of a target point.

Prior to earning membership, participating pilots are classified as "Aspirants." Currently, and in rapidly increasing numbers, several hundred sportsmen aspire to membership. Flying fields in many parts of the world are marked with landing targets where LSF Aspirants work for precision touch-downs after skyborne hunts for elusive lift.

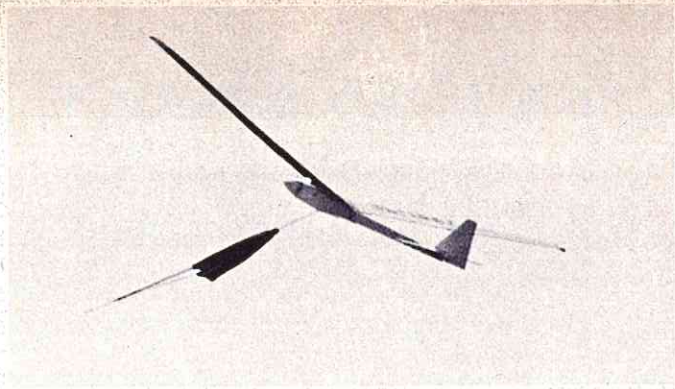
Young Whitney started his model sailplane piloting just five months ago. His flying sessions compete for time with school work and a full schedule of sporting activities. Daryl is first-line center in his school's "B" football team, as well as an energetic participant in basketball, baseball, and other team and individual sports. His interests also extend beyond the world of academic studies and sports: "The Flying Ice Chest" is controlled by a Heathkit five-channel proportional radio which he built and maintains.

Daryl's first exposure to R/C sailplaning was at the Taft, California North-South Meet... "the war between the state"... co-sponsored by the South Bay Soaring Society of Northern California and the Harbor Soaring Society of Southern California. At that event, a family friend signed Daryl in as a contestant, loaned him a thoroughly used "Hangar Queen" to fly, and introduced him to a prominent young competition pilot, Rick Walters LSF/003, as instructor. Those first flights were short and ragged and usually ended in a "save" by the capable, 17-year old hands of Master Walters. But they were a start, and enough to fire an interest for what may become a long and successful R/C soaring career.

Now that Daryl Whitney LSF/100 has reached Level I of the League's Soaring Program, he is looking to greater



**LEFT: The winners of the 1st RCM Invitational Sailplane Meet. L to R: Mardell Tubbs (3rd, Precision); Don Dewey (2nd, Precision); Joe Bridi (2nd, Endurance); Lee Renaud (1st, Precision, 3rd, Endurance); Bill O'Brien (1st, Endurance). RIGHT: A straight wing Gus goes up on the RCM Can Winch.**



**Bill O'Briens Olympic after winning Endurance event. The Olympic kitted by Airtronics — outstanding kit.**



**Joe Bridi walks to launch area with Hi-Start. Joe and Windward 2nd in Endurance event.**



**Ron Neal launches Gus II for Bill Holliman. Bill, Deputy District Attorney for Los Angeles County.**



**Lee Renaud launches Esprit. High-performance machine featured in this issue of RCM.**



**The Esprit comes in for a landing. 5 minute max with 60 seconds to land after max.**



**Mardell Tubbs launches Gryphon for Ron Neal. Built from kit, Gryphon rode thermal inverted!**



**ABOVE: Dee Mollett and Gus II await launch signal. LEFT: Mardell Tubbs makes repairs to his Graupner Cirrus.**



**ABOVE: Willie Richard's Kestrel on tow. BELOW: RCM's Pat Crews served as judge.**





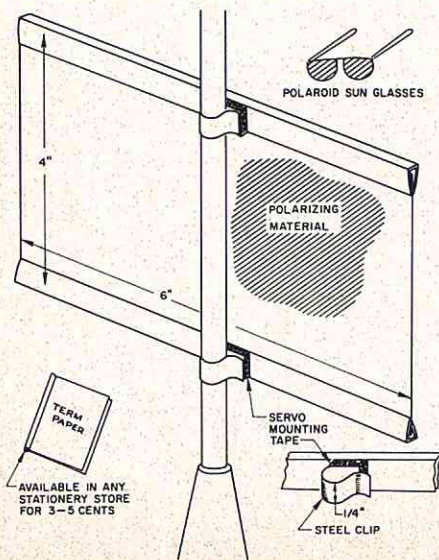
**Daryl Whitney, LSF #100!**

achievements. He is currently building a new, high-performance sailplane and working toward Level II. This next step requires a 15 minute thermal flight, a one-hour slope flight (or second thermal flight), ten spot landings within 1.5 meters (4.92 feet), and participation in at least six R/C sailplane contests. The LSF Soaring Accomplishments Program offers progressively more difficult challenges.

Any R/C sailplane enthusiast interested in participating in the LSF program and working toward membership is invited to submit the following to the Executive Board: (a) name; (b) mailing address with zip code; (c) AMA license number (or other national, FAI affiliated equivalent); (d) radio operator's license number; and (e) a request for data pertaining to association with the LSF.

All correspondence to the LSF should include at least 16 cents in stamps for return postage and should be addressed to: The League of Silent Flight, P.O. Box 2606, Mission Station, Santa Clara, California 95051, U.S.A.

★  
**Polarized Sun Screen ... How**



many times have you lost your sailplane in the sun? It is not guaranteed that the Polarized Sun Screen designed by Paul Denson will prevent this, but it should reduce the chances. As shown in the drawing, the screen is mounted on the antenna 8-10" above your transmitter. To obtain maximum value from your sun screen you must be wearing Polaroid sun glasses. Be very careful in cutting the Polarized material so that the polarizing lines in the sun glasses and the screen are perpendicular to each other. In this position it will be almost impossible to see through the screen. If you twist the transmitter slightly to the left or right you can vary the density of the screen at will.

The screen may be constructed in a matter of a few minutes once you have collected all of the materials. The clips can be bent from a 1/4" strip of tin from a can or aluminum and mounted on the plastic backing strip of a small piece of double stick servo mounting tape. The plastic backing strip is obtained from almost any stationery or five and dime store or college bookstore. It is used in making covers for term papers.

The polarizing material may be obtained from the Edmund Scientific Company, 150 Edscorp Building, Barrington, New Jersey 08007. The stock number is P-70, 890 and the price is \$3.00. For this sum you receive two sheets each 6" x 12" which is sufficient for making 6 sun screens. The minimum order is \$3.00 and this is the best value and you can make it a group project.

★  
**Tow Line Knots ...** From the May issue of the East Coast Soaring Society Journal we are reprinting an excellent article on the proper method for making tow line knots.

*With today's high speed winches, pulleys and other equipment used with*

*towing gliders that weigh as much as 12 pounds it becomes very important that we use some caution in handling and maintaining towlines both for our own safety and convenience and the safety of our airplanes.*

*The type of knot used can be the difference between spending an entire contest out in the field untangling tow lines from the weeds or repairing broken line.*

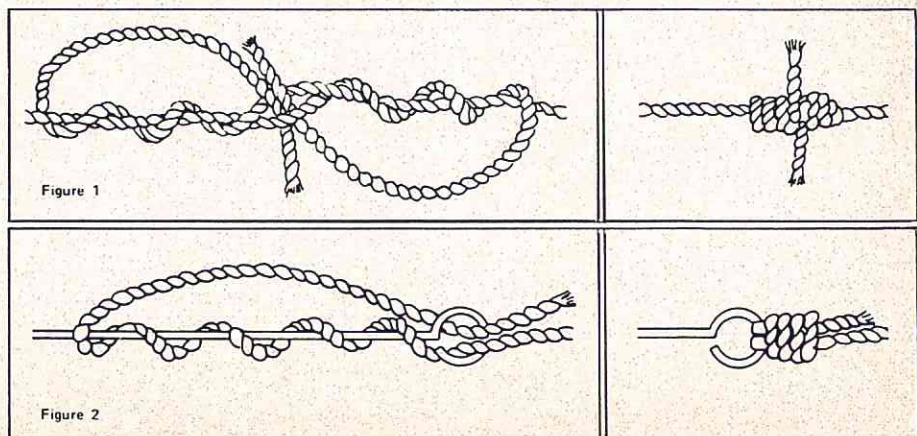
*A knot must be kept very streamlined to slip through the grass without snagging. Nylon and monofilament becomes much thinner when under tension. It is therefore important that a knot be chosen that is self tightening and will not slip apart.*

*The finished ends of a knot should always be at right angles to the tow line to be snag free. If the loose ends are parallel to the line they form a "V" and snag on most anything. They collect weeds that will not fit through the pulley and thus break the line.*

*The following knots are time tested by Anglers and the chief function is to join gut, nylon and monofilament to each other and the associated equipment with a maximum of streamlining. Also these knots are designed to hold when the line is cold, hot, wet, dry, and will not injure the line during storage from fatigue.*

*Figure 1 is the BARREL KNOT (called the blood knot in England), and is strong, secure when used on gut, nylon, and is admirably streamlined. One method of tying it is called the 'incoil' (not illustrated). The outcoil method shown, is recommended by duPont Company in its pamphlet "Spinning with duPont Tynex." The line is twisted and the ends are put back through the center in opposite directions. The ends can be cut very short after the knot is drawn up taut.*

*Figure 2 is the PERFECT KNOT, recommended for swivels and other hardware. It is both strong and stream-*



lined. It offers a double loop at the point where it is most likely to wear through with friction. The end can be cut very short. To tie it, pass the turns successively, one after the other, to the right, over the metal eye, beginning with the outside turn, then the knot is drawn taut.

A little practice before the contest season starts will result in many trouble free hours from your launching equipment. Practice these knots until you can remember them without looking at the illustrations. Once these knots are pulled with over a 100 pounds of torque they will have to be cut out because you cannot untie them.

★

As this column is being written, Airtronics, P.O. Box 132, Sierra Madre, California 91024, announced the availability of their contest proven and highly successful Olympic 88 and Olympic 99 sailplane kits. Highly prefabricated, these kits have been thoroughly tested, and are approved and recommended by RCM. In fact, on our prototypes we probably have more than 1,000 thermal and slope flights including a first place win by Bill O'Brien in the RCM Invitational Sailplane Meet. The Olympic 88 has a span of 88" and an overall wing area of 695 square inches. The "99" has a wing span of 99" and an area of 790 square inches. Polyhedral is used on both and they have a wing loading of 5 ounces per 100 square inches. A 6409 air foil is used on both. Price of either the 88 or 99 version is \$29.95. Available direct from the manufacturer, the Olympic is ideal for sport or contest sailplane flying. Also from Airtronics is the Mini-Olympic, a 42" span sailplane with a foam wing and 240 square inches of area. Priced at \$16.95, it is a very complete kit that is designed for the LSF precision event as well as general slope or hi-start flying. A Mini-Olympic prototype was flown to a first place win in the precision event at the RCM Invitational by the designer, Lee Renaud. Airtronics also has a line of accessories for the soaring enthusiast including hard to get custom tow hooks.

#### LSF SOAR-LYMPICS SET

The LSF 1971 R/C SOARING TOURNAMENT is on... Hummingbird Haven, Livermore, California, 28/29 August. Dick Lemme and Curtis Christen, presidents of co-hosting North Bay and South Bay Soaring

Societies will top last year's tournament with six flight rounds for each of more than 100 contestants. The array of some 200 sailplanes expected on the scene will present wing area acreage rivaling a small Texas ranch. The two-day soar-lympics will be the most comprehensive R/C soaring competition ever held, ANYWHERE.

Christen, who is also Tournament Manager, and Bob Andris, LSF Prexy and Tournament Director, have scheduled new and advanced launch systems for each of four flight lines. The new systems utilize multiple-speed electric winches, can launch any FAI specification model sailplane, and provide automatic line return. Recent tests by developer Gerry Wolfram, Tournament Launchmaster, gave launch times of 20 seconds on tow with 10 seconds for line return. Total time between launches on a single winch... 30 seconds! Multiple-speed electric winch development has made rapid advancement on the West Coast with significant work by Frank Colver and Konrad Nierick of the Harbor Soaring Society and John Converse of Santa Barbara.

The limiting factor in the '71 Tournament is radio frequency availability. In order to provide reasonable flight competition exposure, officials have limited entry to 100 plus the top 10 scale contenders and official guests. Scale sailplanes which are awarded highest "static" points will fly in the regular competition events.

Pre-registration is set for 1 through 31 July. Pilots at LSF Level I or higher get first priority at the 100 entry limitation. After close of registration... midnight postmark 31 July... gate entry will be on a first-come basis.

Pre-registration forms will be mailed to all LSF Members and Aspirants prior to 1 July. Earlier registrations will not be accepted. Entry fee is \$5.00, soaring or scale. A single contestant may enter both soaring and scale, total fee \$10.00.

The LSF Tournament last year attracted 85 pilots and scored a record of more than 500 flights. Les Anderson, NBSS, 1970 Tournament Champion, collected 4,394 points out of a possible 6,000 during the two-day, six-task event. Anderson's winning Graupner Cirrus was followed closely by Ken Willard's MaxiSailer and Roger Hebner's Cirrus, each of which totaled 4,378 points to tie for second overall.

The LSF 1971 R/C SOARING TOURNAMENT will again be co-spon-

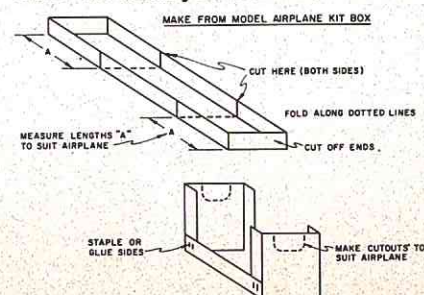
sored by selected commercial leaders who are heavily oriented to R/C-soaring: Du-Bro Products, Kraft Systems, Midwest Products, Model Airplane News, Orbit Electronics, R/C Modeler and Top Flite Models. Hummingbird Haven... a full-scale gliderport east of San Francisco Bay... is available courtesy of Jerry Nelson of Midwest Model Supply Company.

★

While we're on the subject of contests, plan now to attend the 1971 Nats Soaring Event to be held in conjunction with the 1971 Model Airplane Nationals. Sponsored and run by SOAR (Silent Order of Aeromodeling by Radio) a local Chicago area glider club, the event is scheduled for Sunday, July 25 - Tuesday, July 27. Included will be Experimental tasks, Demonstrations, and Test Flying as well as official competition using FAI Provisional Thermal Soaring Rules. The only deviation from the latter will be that the spot landing will be changed from a circle to a 100' long marker line. Awards will include trophies and merchandise in two classes - Standard for any sailplane 100" in span or less and an Open Class for any size sailplane. Special awards will be made for the best Junior-Senior contestant, Best Scale Sailplane, Best MonoKote Ship, and Best Technical Achievement. A special perpetual trophy will also be awarded to the best three-man team from any organized glider club. Launching will be by electric winch, hi-start or hand tow. Electric winches for average sailplanes will be provided. Early registration is requested and you are requested to send your registration form and check or money order to Dave Burt, Contest Director, 3048 Central Street, Evanston, Illinois 60201.

★

**Glider Fuselage Cradle...** Here is a sketch from Paul Yee of Madison, Wisconsin, for an inexpensive fuselage cradle that can be used on the workbench or at the flying field. It is economical and fast to build, taking no more than 15 minutes of your time. We think you'll like it.



(continued on page 65)

# TAKE A LOOK AT THIS..

The demand for psychedelic effects in the craft field and for high visibility colors for model rocket hobbyists are among the growing uses for Pactra Industries' Hi-Glo fluorescents, recently introduced in paint, hardware, hobby and craft channels.

According to company Vice-President Don B. Barber, "Our line seems to have found a special niche through our introduction of project-size popular-priced cans and jars.

In addition to standard 13 oz. spray cans, Pactra Hi-Glo fluorescents are available in 4 oz. single project cans, which have long been one of the most popular sizes among hobbyists and home touch-up painters. The fluorescent colors are also packaged in kits as brush-on paints—six primary colors—blue, green, yellow, orange, pink, red. These, including thinner and a brush, are offered in an attractive desk kit to retail for \$1.49, with twelve kits per shipping case for dealers.

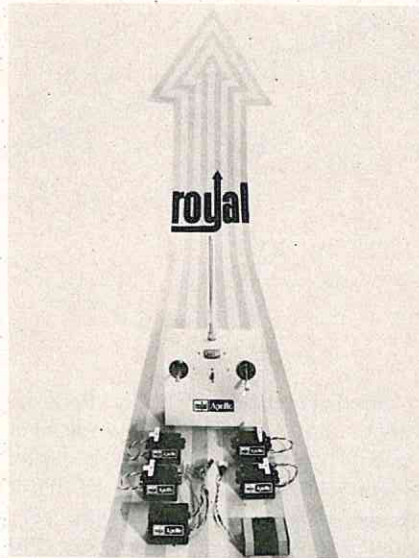
Pactra Hi-Glo fluorescents, the company spokesman pointed out, "are enamel based, not water based. We believe this fact assures their having the coverage and durability that home craftsmen want." The formulas are non-toxic and will not attack plastic or styrofoam.

Further information may be obtained by writing Andrea Talbott, Pactra Industries, Inc., 6725 Sunset Boulevard, Los Angeles, California 90028.



Royal Electronics Corporation, 2119 South Hudson, Box 22204, Denver, Colorado 80222, announces the Royal Apollo Digital Proportional Radio. This system features low cost reliability coupled with world wide

service and is available on all five standard 27 MHz frequencies. The total system flying weight is 14.5 ounces. An external transformer type charger is featured for maximum safety. The complete four channel system is priced at \$289.95, while the complete five channel system is priced at \$299.95.



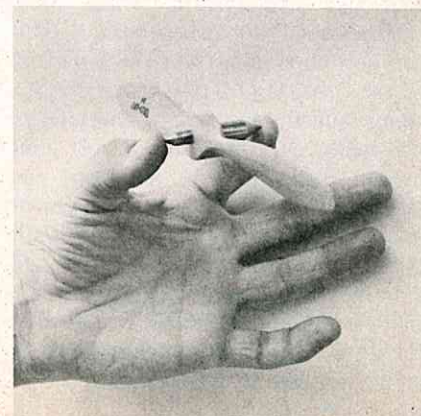
Hobby People, 130 East 33rd Street, Los Angeles, California 90011, has released their Zapper, a low cost applicator/dispenser to fill the need throughout the hobby industry where adhesives, fuels or epoxy paints are used. Adhesives may be applied in precise amounts without dripping, flooding, or starving. This unit is precision molded of natural polyethylene for visual see-through and will resist highly reactive compounds and solvents. The bellows design offers many advantages over conventional glue guns. The suck-back feature in a one piece unit does away with the plunger making the Zapper a most exciting item. Two types are offered by Hobby People, the model CE-100 Closed End, which is best for fuel bulb, primer bottle, or paint mixing. The second model is the OE-200 Open End which is best for use as a glue gun or where adhesive filling is required. Packaged two each, either closed end or open end, and complete with needle point and sealing plug, the price is two for .98 cents. Each unit is simple to use and easy to fill and can be cleaned with normal solvents. The plastic needle may be inserted into the long tapered tip for low viscosity materials such as plastic glue. This allows maximum control over the flow of glue. Each unit is graduated to 30c.c. allowing accurate measuring of Hobbyoxy

paints. There is no mess; simply compress the bellows with your thumb and fill to desired gradation. Tested, Approved and Recommended by RCM.

Available from Hobby Lobby International, is the new 30 second glue available in the Weller Automatic Glue Gun Kit Model 2400K. The kit includes the Model 2400 Automatic Glue Gun, seven Weller glue sticks; seven Weller Caulk sticks; a portable bench stand; a reversible storage tray; instruction booklet; and carrying case. Now you can build your models with no more clamping or waiting since, with the Weller Automatic Glue Gun and the 30 second glue, the glue sets by cooling—instead of drying—in about 20 seconds. A firm bond is achieved in 30 seconds. Just draw a bead of hot glue, press together and in 30 seconds the job is done. This will provide you with a fast, strong, flexible, waterproof bond on wood, glass, plastics, porcelain, pottery, ivory, linoleum, fiberglass, even concrete. And the unit is guaranteed for one full year. It has a heat up time of one minute, a full heat indicator light, a work light, an automatic glue feed, and automatic flow control. It is drip proof, and needs no separate tool to open and close the valve. The retail price is \$10.95. Tested, Approved and Recommended by RCM. Available in the hobby industry from Hobby Lobby International, 2604 Franklin Road, Nashville, Tenn. 37204.

Prather Products, 1660 Ravenna Avenue, Wilmington, California 90744, has produced their new Prop Balancer, a most accurate and easy to use unit of it's type currently produced. This unit, designed to hold between the finger tips fits all propellers with 1/4" hole and up. It can be used anywhere, in the field or work-

(continued on page 62)

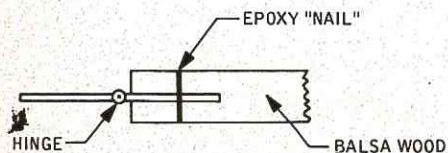




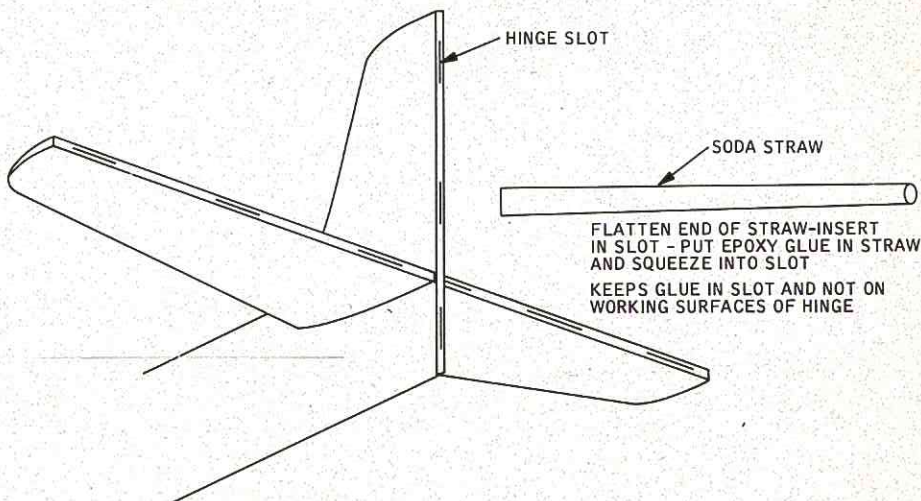
# FOR WHAT IT'S WORTH

Bill Cooksey, of Gisborne, New Zealand, uses the following method when aligning the dowels in a wing with its matching fuselage. First, drill the holes in the wing leading edge, then stuff small bits of plastic foam or foam rubber into the holes so that a small rounded portion protrudes. Dab a small spot of marking ink onto the foam and carefully fit the wing into its proper position. Remove the wing and drill the holes through the dowels at the points on the fuselage indicated by the ink marks. Remove the foam, glue the dowels on the wing, and you will have a perfect fit — something otherwise very hard to accomplish.

Recently, while building his version of RCM's Southern Gentleman, Jan Mitchell, of Victoria, Australia, developed a technique of hinge-bonding which you may find useful on your next model. After the hinge has been epoxied in place, one or two 1/16" or 1/8" holes are driven through the hinge blades and mounting material. These holes are then filled with epoxy which has the effect of "nailing" the hinge in position. This is a similar concept to some forms of brick work used in Australia. The method is also of immense value when hinging control surfaces to flimsy material or very near the edge of thin edging material.



If you want to do your bit for ecology as well as use one of the best solutions for cleaning oil from planes that you will ever try, Max Blose suggests a solution called Basic H. This solution costs about \$2.50 for a quart of the concentrate. It takes one tablespoon added to a quart of water and will really cut the castor oil off your model. And, for your wife, she can take a little and rub it into the castor oil spots on your clothes and wash your clothes and the oil spots will definitely come out. This is an organic solution made by Shaklee products at Hayward, California. It is usually sold in the community by some housewife who is a representative.

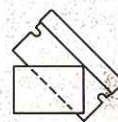
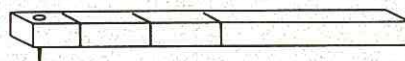


Fred Peters, of Warren, Pennsylvania, has solved the somewhat "sticky" problem of gluing nylon hinges into control surfaces. All that is necessary is to flatten the end of a soda straw and insert into the slot. Put epoxy glue into the straw and squeeze down into the slot that you have precut into your control surface. This will keep the glue in the slot and not on the working surfaces of the hinge.

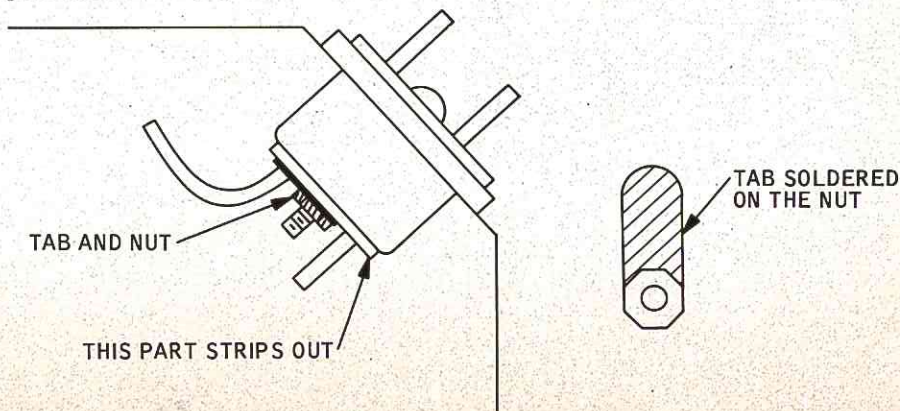
After removing and reinstalling the stopper in a Pylon brand fuel tank a number of times, the threads tend to strip out in the inner plastic part of the plug. After the threads strip, it is hard to tighten the stopper enough to prevent fuel leakage. This problem can be solved by using an idea submitted by Gerald Strope, of Aurora, Illinois. Take a nut and solder a tab onto it and place it inside the tank. The tab will catch on the brass fuel line and stop the nut from turning. Now you can tighten the stopper as tightly as desired.

If you've been faced with the problem of painting roundels on your

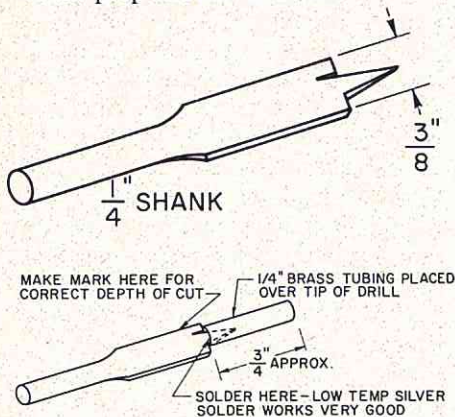
WW I aircraft, here is a method used by Jon A. Boka on his Proctor Nieuport II. First, take a length of hardwood 1/2" wide by 3/4" thick and drive in a nail at one end to act as a pivot point. Mark off, from the pivotal point, distances to the desired circumferences of the roundel. With a fine "Zona saw," cut 45 degree slots into the strip of wood. Into the appropriate slot insert a single edge razor blade allowing the tip to protrude about 1/8". The actual cutting should be done on a soft surface such as cork board.



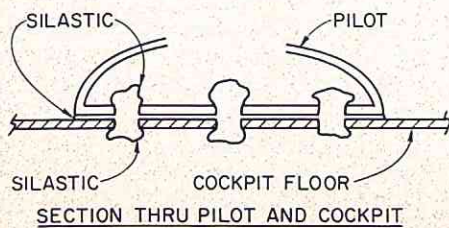
When using wood props for the K & B .40's, Peter A. Philipp of Schofield, Wisconsin, found it necessary to enlarge the prop shaft hole to 3/8" in order to fit the engine. Pete suggests the following — buy yourself a flat



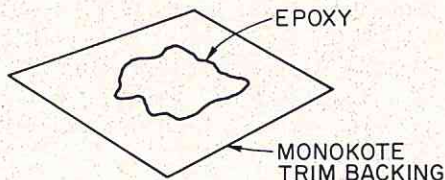
type 3/8" wood bit as shown in the drawing. Silver solder a 1/4" brass tubing over the sharp guiding point to act as a self-centering guide when drilling out the props. It should look as shown in the second part of the drawing. A perfect centered 3/8" prop shaft hole may be drilled without a drill press. Pete also suggests you mark the bit for the correct depth 3/8" hole so that you do not drill all the way through the prop. Be sure to drill back of the prop and not the front.



If you've been puzzled by how to securely mount a pilot in the canopy of your latest model, here is an idea from Ben E. King, President of the Hawaii Radio Control Club, that is quick, easy, and has, on several occasions, been the only thing to survive disaster! First, drill holes in the bottom of the pilot and in the cockpit mounting surface. The holes do not have to be in alignment. Clean the pilot and the cockpit mounting surfaces with alcohol and dry thoroughly. Squirt a little glob of G.E. Silastic in each hole in both the pilot and cockpit floor. Coat the bottom of the pilot liberally with Silastic and push the pilot down into position in the cockpit. Allow the Silastic to cure for twenty-four hours. The Silastic blobs in the holes form rivets that make an extremely strong joint while the thick film of Silastic forms a vibration resistant pad. As a matter of fact, Ben says it takes surgery to salvage a pilot from a cockpit when this method is used. It will work extremely well on Plastic ARF's and there is no reason why it wouldn't work on any surface.



While using fast drying epoxy recently, John Von of Linden, Michigan, discovered that the backing used on MonoKote trim sheet is perfect for mixing since after it has dried it's removable and the backing may be used again for mixing more epoxy. You must use the oily or smooth side or the dried epoxy cannot be removed. By the way, John is 12 yrs. old.



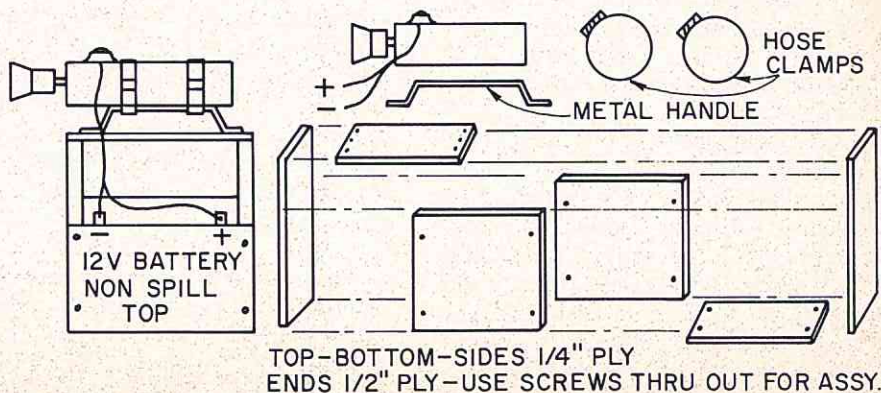
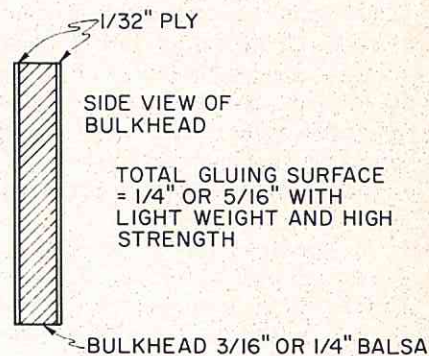
A simple but effective fuel pump can easily be made from a discarded hand lotion dispenser. Use a pair of diagonal cutters to remove the bottle cap from the pump mechanism. Remove the hand lotion residue from the mechanism by pumping a cup of water through it. Drill a hole of appropriate size in the cap of a gallon fuel can, and epoxy the pump to the cap. When the epoxy has cured, slip a piece of surgical tubing over the intake end of the pump long enough to reach the bottom of the fuel can; a clunk weight from a discarded fuel tank can be placed on the other end of this piece of tubing. Place a second piece of surgical tubing over the pump spout terminating in a 1" length of brass tubing (taken from the same discarded fuel tank as the clunk weight) and the job is done. This idea was submitted by M.J. Mansfield, of Fort Wayne, Indiana.

Wilber E. Tolen, of Norwalk, California, being basically of a lazy nature, soon tired of digging out his 12 volt battery, then the starter motor, hooking on his clips, and then being sure his wires were clear before starting his engine, then being careful and laying down his starter so it was out of the way of fuel, decided to solve the

problem. The sketch shows a unit that can be set down quickly after starting and remains in an upright position for ease of use. The starter motor can be placed on the front or back panel for lower profile for ground starting. This makes a completely portable unit that can easily be carried to the flight line.

Needing to slightly enlarge the inside diameter of a piece of brass tubing, Ray Hinds, of Bridgeport, Connecticut, found the best way to hold it was to chuck it in his Dremel Moto-Tool. Then, with the appropriate drill bit held in a chuck or pin vise, which in turn is clamped in a bench vise, turn on the Moto-Tool and run the tubing very slowly over the drill bit. Using this method will enable you to make bushings with very thin walls or just round out a piece of tube that has become flattened or bent.

Wayne Knaust, of Delaware, Ohio, says that for bulkheads in a model, durability does not come from wood strength alone, but also from the gluing surface area. Wayne found the following bulkheads to be ideal for airplanes at virtually no increase in weight. These bulkheads are usable in either the front or rear section of your model.



*(continued from page 47)*

ignite when you had raw fuel dripping out of the stainless steel pipe.

By going to three volts, so that the plug glowed white hot, as recommended in the instructions, the thing would ignite and work like a blow torch. By shutting off the air supply the flame would travel up the tube and we would receive a low pitched flute noise for about one second. But in no way could we keep the engine running. We moved the carburetor in and out, opened and closed the needle valve, and in fact, tried every conceivable method to operate the engine.

Although it proved out by our tests, all of this was known to us prior to the tests since this type of engine must have a combustion chamber and without it, it is not going to run. Combustion will only occur at the tail pipe and then only if a constant air supply is available. We even tried propylene oxide as recommended in the manufacturer's instruction sheet. The only advantage to this was that it would ignite easier and would ignite with the 1½ volt battery. We'd also be amiss in our responsibilities to you if we did not point out to you that propylene oxide is an extremely dangerous material and one which reaches it's boiling point at 70 degrees Fahrenheit.

We also tried heating the forward part of the pipe with a propane torch thinking that it might start if this part was hot enough but this was not to be the case.

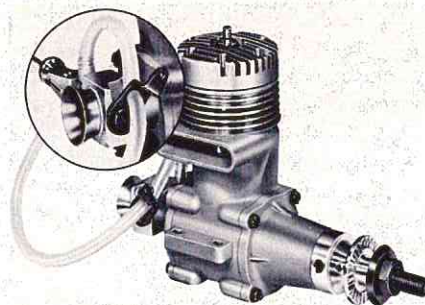
As a conclusion to every conceivable test we could make towards operating this engine, we find that it will not run except to push a small amount of flame with no thrust out the back of the tail pipe making it nothing more than an overpriced cigar lighter. With regard to the so-called throttle capability, well . . . .

As a summation of our findings, we find the P-80 Engine a poorly made unit that consists of a stainless steel tube, a machined housing with reed valve, and faced with a fine Kavan carburetor that serves virtually no function at all since the engine will not run. R/C Modeler Magazine finds this engine to be sub-standard in construction and performance. □

*(continued from page 59)*

shop, and is precision made of polished steel. A must for every flying box, the Prop Balancer is being manufactured by Terry Prather, 1970 NMPRA Formula I Champion and 1970 NMPRA Grand Co-Champion. A balanced prop means better performance, more rpm, extended engine life, less vibration to protect your radio, and longer plane life. Priced at \$1.98 each, this unit is now being used by top competition fliers across the country and has been fully Tested and is Approved and Recommended by RCM.

K & B Manufacturing, 12152 Woodruff Avenue, Downey, California 90241, announces its Torpedo .40 R/C "Series 71" with the Rear Rotor is now available with a built-in Fuel Shut-off. This feature was developed to conform with the new A.M.A. rules for Formula I flying. The engine still maintains all the other popular features of the standard Torpedo .40 R/C "Series 71" with Rear Rotor . . . "Squish-band" head, extra deep fins, more power, and the no-tension single ring, aluminum piston. Available at most hobby shops. Price \$35.00.



The new Webra .40 TV engine is a chip off the old block! From the makers of the Webra Blackhead .61 R/C engine, the International Champion, comes this .40 TV engine (1022 RC) with carburetor barrel in standard R/C trim and available with interchangeable special 8 mm bore barrel for conversion to Pylon Racing. Available from the MRC Enya Corporation, the new .40 is priced at \$57.98. You'll experience the same success with the new model as you have had with your .61 Blackhead . . . 'cause it's all in the same family.

Flite-Lite is a new equipment protection kit available from Sonic-Tronics, Inc., 8017 Craig St., Philadelphia, Penn. 19136. Included in the Flite-Lite "Protec-A-Pac" is one square

foot of special foam material and a patented air cell material which will give absolute protection to your radio equipment against vibration and impact damage. Priced at 89 cents per package, there is enough material for three or more installations. Available at your local dealers, the Flite-Lite Protec-A-Pac has been Tested, Approved and Recommended by RCM.

Model Engineering, 3655 Calumet Road, Decatur, Georgia 30034 has released their Cover Cutter, a revolutionary cutter that cuts silk, nylon, silkspan, MonoKote, Shrinktite, thin plastics, evenly and cleanly. Featuring a permanently sharp stainless steel blade with protective cover, it also is useful for trailing edges and wing tips and for other hard to get at places. It also serves double duty as a scribe for pattern making. Available direct, the price is \$2.00. Also available from Model Engineering is a Dropping Resistor designed to heat your glow plug from your starter battery. Easy to attach, it features a wire wound resistor unit complete with attached coupling, heat shrink tubing, and detailed instructions. Now one battery will do it all, and no separate glow plug battery is required. Prepaid orders are postpaid by Model Engineering and the price is \$1.00. Tested, Approved and Recommended by RCM.

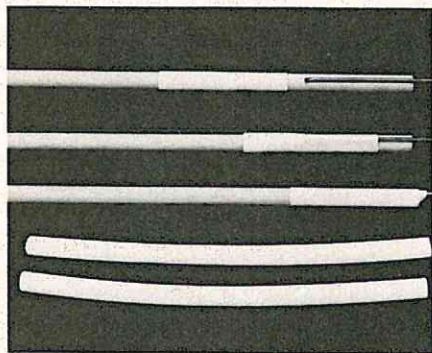
Rand Sales Company, Box 20059, Columbus, Ohio 43220, has announced that their permanently pneumatic, strong and unbreakable wheels, available in both scale-like with tread and low bounce slicks are priced as follows: Scale-Like 3": \$2.99 a pair; 2¾": \$2.79 a pair; and 2½": \$2.59 a pair. These tires are pitch black shiny rubber with realistic diamond tread. The inner part of the hub is removable for installation of an electric brake if so desired. Their Low Bounce units incorporate the same features without the scale-like tread and are priced as follows: 3" at \$2.59 a pair; 2¾" at \$2.39 a pair; 2½" at \$2.19 a pair; and 2¼" at \$1.99 a pair. Tested, Approved and Recommended by RCM.

C & T Model Specialities is pleased to announce the availability of Thermo Shrink tubing for R/C Push Rod applications. Sold in 12" lengths, the tubing is designed to be used with ¼" diameter dowels, and allows push rods to be assembled in a matter of minutes.

The push rod dowel is prepared by drilling 2-1/16" diameter holes to accept the wire ends - grooving the dowel, then slipping 2 pieces of shrink tubing in place and heating with a match.

Packaged in 2-12 inch lengths, there is sufficient tubing to make up to 12 complete push rods. Assembly instructions included. Price is \$5.50 postpaid. Send check or money order to C & T Model Specialities, 19 Dogwood Road, Boonton, New Jersey, 07005.

The photograph shows two six inch lengths of shrink tubing and three pushrods in various stages of assembly. The completed push rod is adjacent to the shrink tubing. Tested, Approved and Recommended by RCM.

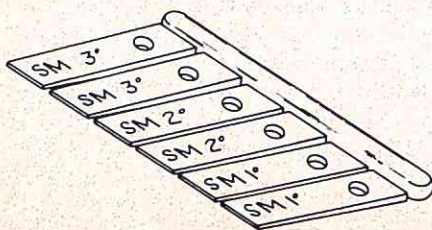


Sterling Models, Inc., Belfield Avenue and Wister Street, Philadelphia, Penn. 19144, announces the release of a brand new item, tapered shims, which they classify as Item #105, Thrust Wedges.

Molded of virgin Nylon, the Wedges come in a matched set of two each of 1°, 2° and 3°. Using the Wedges in combination, any angle of precisely 1° to 6° may be obtained.

Sterling claims there must be 1001 uses for the Thrust Wedges, not only to adjust up, down or side thrust in engines, but also to adjust incidence in wing and tail, to adjust alignments in installations where twists may result in binding, etc., etc.

The single hole molded in the Wedge allows initial line up. A 2nd hole is drilled to suit individual installation, so that the Wedge does not move. The set of six (two each) is .45 cents and available at all hobby shops.



Tested, Approved and Recommended by RCM.

Racy Figures are a set of matching MonoKote circles in various colors with MonoKote numbers in the center. These are peel off, fuel proof units designed for R/C cars, but ideally suited for the new Quarter and Half-A Midgets, providing a quick and beautiful way of finishing your model with your racing numbers. Available in individual packs of three only at 49 cents each, they are available at local hobby shops as manufactured by PMP Manufacturing Company, Box 10233, Denver, Colorado 80210. Tested, Approved and Recommended by RCM.

If you're looking for a complete line of model airplane fuel, Fox Manufacturing Company, 5305 Towson Avenue, Fort Smith, Arkansas 72901, produces four different kinds from Fox Superfuel containing five percent Nitro and 28% oil to the high powered Fox 40-40 which contains 40% Nitro, 40% alcohol and 20% oil. In between are the ever popular Duke's Fuel containing 10% Nitro and 22% oil, and Fox Missile Mist which contains 25% Nitro and 22% oil. All except Fox 40-40 are available in pints, quarts and gallons at your local hobby shop while the racing mix is available in quarts only. Tested, Approved and Recommended by RCM.

Hobby Lobby International, 2604 Franklin Road, Nashville, Tenn. 37204, has stunned the world with their new rubber bands. According to Jim Martin they are better than regular rubber bands because: 1). they are more fuel resistant than regular rubber bands because they are part synthetic rubber and also have a harder, more fuel resistant finish; 2). they are blue - Jim's favorite color; 3). they are narrower but have more strength than conventional rubber bands. They are called the Hobby Lobby Special Wing Rubber Bands which is a clever name since they are special rubber bands for holding on wings made for Hobby Lobby. They are also used extensively by Don Dewey whose wings have a habit of coming off in mid-air due to the way he flies. Hobby Lobby International also informs us that they are importing the KDH decal sheets from Germany designed for R/C auto racing and Formula I pylon racers. One sheet is of world famous propeller manufacturers and is priced

at \$3.45. The 1/8th scale R/C car decal sheet is \$4.45 and the Formula I decal sheet is \$3.85. These are without a doubt the finest decal sheets and of the highest quality that we have ever seen at RCM. Both items are Tested, Approved and Recommended by RCM. □

## TOP OUT

*(continued from page 50)*

quality. Finishing materials that can't reach into the surface don't do that, hence super finish fans have wrestled with good old fashioned steel wool despite the time and trouble involved. Actually, there are a couple of nuisance problems with wool - first, it sheds easily, and that results in metallic particles and dust which have a habit of leaping onto surfaces whenever static charges build up on them. Imagine what that does when you're applying one of those last coats! And secondly, steel wool also stains. It's a special kind of stain that only seems to happen to white paint - and remember, white is the ingredient that is supposed to impart 'depth' and 'life'. It won't do any of that if the steel 'writes' all over the white paint and creates a grimy grey cast. This trouble is avoided by putting clear dope over the white to protect it. Of course that takes extra time . . .

Steel wool has a couple of other advantages that any possible substitute must be able to give. It must follow contours readily yet yield nicely so that you don't eat through sharp edges too fast. You'll find this important when working wing surfaces with their rib peaks. A substitute must also generate friction heat selectively. That means certain areas of dope can be heated and 'ironed' by pressure through the pad to cause the dope to blend away troublesome problems such as the edges of covering materials. Pinked edges can actually be made to disappear by a practiced hand applying friction produced heat to dope in just the right way!

Well friends, things are different now that "Polishing Pad" has appeared. No more shedding at all. Or staining, either. And it 'levels' nicely while 'ironing' just as well as steel wool ever did. It comes in convenient pieces the same size as standard sandpaper and a 1/4 of a sheet will easily last an entire airplane. So hurry to your Scotch Brand dealer and get yourself some before he sells it all to people with

tropical fish aquariums to remove algae from the glass since it's also wet proof and non-toxic. Tell him Jerry sent you . . .

(Want to try a piece of "Polishing Pad"? Send me a 8 cent stamped 3½ x 6½" or bigger envelope with your name on it to TOP OUT at 2515 W. Craig Pl., San Antonio, Texas 78201. Be my guest to this latest boon for craftsmen . . .)

**U.S. ROUNDUP . . .** The onslaught of R/C action continues in all sections of the country.

\*\*\* Out in Missouri, Air Force Major, John Williams, climbs out of a missile silo from time to time to crank up his III Perfection as a change of pace from monitoring radar scopes and teletype communicators. Frequently he's joined by Capt. Tom Wade, Lt. Bill Aanstad, and Tim Brooks, for an evening of flying and R/C talk at a site they have at an out-of-service section of runway at Whiteman AFB. Starting with a Tri-Squire some 18 months ago, Maj. Williams graduated to a Cunningham Professor from RCM plans. Another RCM featured plane, Joe Bridi's Sun Fli IV, also joined the Major's R/C squadron. The Professor is the current favorite, however. A left-hand single stick Logictrol radio is preferred while a Goldhead Max .60 supplies all the power needed. Tom Wade went the Heathkit route for radio equipment and the extra enjoyment of putting it together. It gives him good service in his MonoKoted Taurus which also has a Max Goldhead for power. Another popular kit airplane favored by Bill Aanstad for sport and pattern flying, The VK Cherokee, also sports a Goldhead in the nose. Tim Brooks has the extra job of serving as the new group's checkout pilot and sees that the new ships are trim and 'de-bugged' . . .

\*\*\* Despite high winds that, according to Chuck Wood, of Clovis N.M., had the "log chain windsock straight out," some 28 fliers responded to the invitation of the MADS (Model Airplane Drivers Society) of New Mexico, to a fun fly at Clovis. Besides the wind, the 4300 foot altitude also was another dimension fliers had to consider, especially for the spin event where there were a couple instances of 'zero' altitude recoveries. Despite the difficulties there were no crashes or control problems attesting to the calibre of the piloting and general capabilities of the planes and R/C equipment available to fliers today. Sandwiched between the two days of

flying was a dinner where entertainment included some of the 'rarer' moments in model flying captured on movie film. Taking the hardware and merchandise home were a group of fliers familiar to RCM readers: *Blackjack Event* - J.R. Cox, Ted White, Lloyd Nicholson. *Loops, Spins & Rolls* - Joe Wood, Floyd Idom, Clete Brow.

\*\*\* Down in Texas, Jim Houston, of the San Antonio ARCS, has found that Cannon radio kits are not only a way to save money but are also highly adaptable for a wide range of R/C needs. He's made extra servo sets for his Logictrol and Kraft radios and helped others who needed servo replacements for virtually every other popular radio. Jim says he's especially happy with the ease in which the transmitter kits go together and have given flawless service. The same goes for the Cannon receiver which, because of its small size and rugged design, Jim has been able to get 'supreme' use - he flies it in a .15 powered Goldberg Voodoo, a U/C kit that is surprisingly adapted for R/C fun and sport flying. Jim will be remembered for his earlier R/C innovations which included a 24" Separator that was magazine featured.

\*\*\* See where Walt Throne and the rest of the Syracuse ARCS will hold the 21st Annual Hobo Meet at their flying field this August 21st and 22nd. Bill Kenyon, who's been promoting this meet for as long as we can recall, will also be on hand for the affair as it starts its 3rd decade of service and Fun-fly get-togethers for fliers of the Northeast. We wish them good flying and many more meets . . .

\*\*\* Military bases offer many servicemen RC'ers the chance to use base facilities for flying. Fact is, they are encouraged to participate as a part of the recreational programs that are conducted. Latest to join in is the Lackland AFB R/C Club where a 130' x 750' asphalt pad has been made available for weekend flying. Lou Mango is the 1971 club president who heads up some 32 members in sport flying where a wide range of planes and equipment are used. As in many new clubs, simpler planes are popular using the latest propo radios. A club newsletter is also a part of the club's activity.

\*\*\* The annual Fly-for-Fun contest staged by the West Jersey R/C Club had a new wrinkle in the Limbo event that's worth consideration. Frequencies permitting, they had as many

ships in the air at once as was possible. With pilots orbiting in a large landing pattern, a lot more passes were possible in a shorter time and flying time per contestant got a big boost too. That's always nice in these days when the complaint is often heard of too much time spent on the ground at organized affairs. The same set-up was used in another event laughingly called "Crash-for-Cash" where a 36" length of balsa is stuck into the ground as a target to hit without touching the ground in the process. Success brought a dollar for each knockdown or broken stick. This is another type of "Fun" event that is favored because awards are immediately recognized and the 'competition' is between pilot, plane and object rather than with many individuals . . . President of the progressive club is Jerry Hojnowski, while sparkplug of the contest was Ray McCloy. Here are winners of the events: *Bomb Drop* - Frank Dougherty (26'7"). *Limbo* - Ray McCloy (2'). *Spot Landing* - Bill "Wrong Way" Kegel (5').

\*\*\* The Eastern Indiana R/C Assn. has topped the 30 member level and is still rising as the 1971 season gets swinging. Under the leadership of Joe Fallon, along with Bob White and Dave Marquis, the club membership which extends into Ohio, brought organized RC'ing to the Richmond area. They recently entertained Max Blose (Tarman, RCM plan), the traveling Texan who takes his R/C gear with him on business calls. It's estimated Max exceeds 200,000 miles yearly which means his Tarman is possibly the most widely traveled model within recent memory. It's also used a lot by home fliers as Dave Daggy of the EIRCA and others found out during Max's visit.

\*\*\* How can a 40 member club raise \$1500 to stage a contest? "Because we want to, we try harder," explains Bob Keenan of the Lincoln Nebraska Sky Knights. The 11th Annual Open R/C Contest is a good case in point. Events included 4 classes of Pattern (A, B, CN and CX), Formula I, and Scale. In addition to trophies, a Fox .60 or .74 went to each 1st and 2nd place winner. Topping this was a chicken dinner for all contestants as guests of the Sky Knights. Money for the meet was raised through the combined efforts of the members and their wives who pitched in to sell advertising in a program handout (CD Bill Johnson raised \$500 as top salesman . . .), built

up spectator turnout with TV and radio publicity so that the refreshment stand operated by the wives could show a large profit, and raffled off a completed Lanier plane. These enterprises not only covered all expenses but netted a profit to bolster club expenses for the rest of the year! Of the 65 entries, there were 48 in Pattern (28 in A . . .) with 6 in Scale and 11 for Pylon I. Here are the final results: *Pylon* – Charlie Reed, Jim Bertaglio, Bud Atkinson; *Scale* – Bob Keenan, Bud Atkinson, Don Neill; *A* – Rick Stansbury, Scott Brittain, John Hinds; *B* – George Chisholm, Dean Copeland, Ken Albrecht; *CN* – Dick Duncan, Jim Brittain, Bob Keenan; *CX* – Charlie Reed, Arnold Reed, Lloyd Nicholson.

\*\*\* There's no doubt about the popularity of Phil Kraft's famous Ugly Stik. It's still going strong due mainly to the great Jensen kit which sport fliers and beginners find valuable for ease and accuracy of building a model with excellent flying characteristics. In addition, the ship is being increasingly seen in dressed up versions which is a reflection of the affection that grows around genuine favorites. Latest to join the 'Stik Group' is Frank Balletta, of Hoboken, N.J., who created a low wing modification by making the kits top fit the upper curve of the wing and making the new top of 1/4" balsa for the inverted fuselage. The wing was modified to mount a landing gear in standard fashion by a moderate beefing with a bit of plywood. A 'prettied' nose houses a Tatone engine and nose gear mount. The conversion succeeded by retaining the slow-flying habits of the original which is brought about by its low wing loading, a handy condition for beginners . . .

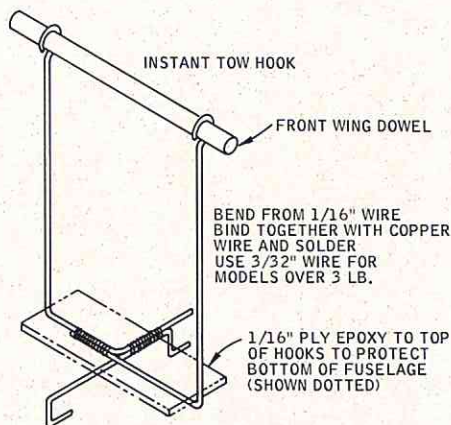
\*\*\* Another 'Stik' inspired creation was turned out by Ed Theusen, 1970 President and general guiding light of the Top O' New Jersey R/C Club. Ed's effort turned out resembling a Cassut racer which according to Chuck O'Donnell "flies like a dream." Ed kept the weight under 7 lbs., and with a rebuilt Enya .60, manages to do knife-edge climbs with the ship. A Logictrol radio provides control . . . Incidentally, Ed's club doesn't let those cold Jersey winters put a crimp entirely on flying. When winter chills set in they just transfer flying operations to a nearby frozen lake from their rugged flying site on Shades of Death Road (that name, no kidding . . .). The 18" ice "makes a good runway," Chuck assures. □

## SOARING

(continued from page 58)

★

**Hi-Start Hook . . .** Here is a quickly built Hi-Start hook that can just as quickly be removed when you desire to fly your glider on the slopes. Designed by Kevin Flynn of North Hollywood, California, it consists of several pieces of 1/16" music wire bound together (or 3/32" music wire for sailplanes over 3 lbs.) with appropriate loops to slip over the wing hold-down dowels. This unit holds securely in place and is ideally suited for Hi-Start or electric winch. Simply pull the two upright wires apart and slip it off the wing hold-down dowel when you wish to fly in the slopes and don't wish to damage the hook.



★

We hope that you will like the addition of this Soaring Column to R/C Modeler Magazine and further hope that you will become a contributor to it. Send your hints and kinks and ideas to Soaring Column, R/C Modeler Magazine, P.O. Box 487, Sierra Madre, California 91024. Also, send along photographs of your most recent sailplane project and your club contests and activities. And, if you're a newcomer, welcome to the world of Silent Flight. □

## FLYING WITH YOUR MODEL

(continued from page 20)

need, but wrap each one individually in corrugated cardboard, or similar material, and seal with tape. Then

pack them snugly in the box with the plane, making sure they are cushioned by the foam. The next time you go by a stationery store, pick up a 4" x 4" red label which says "FLAMMABLE" in black letters, and stick it on your box. We must also certify that these materials conform to certain regulations and are properly packaged. Simply type two copies of the form I have included as an example, and present them with your plane at check-in. I have researched all ingredients in our fuels, so you may rest assured that they do comply with all CAB tariffs.

Now that we have been befriended by "The Friendly Skies," that long lonely trip to the contest may be rendered a thing of the past, and transformed into a pleasure filled experience which will complement, rather than hamper, our R/C flying activities.

All clubs take note! If we get together and arrange to travel in groups, we may proportionately increase the pleasure of these trips. By producing a group of twenty five or more, we may take advantage of the sizable group discount rates offered by United, in addition to the extra special treatment United gives to all of their group travelers. Increase that to a hundred or more, and the additional advantages and savings are tremendous with a possible charter flight.

You may receive assistance in planning group tours by calling any United Airlines group reservations desk. For those of you living on the West Coast, I am presently planning a group, or charter tour to this year's Nationals, and to help the AMA with their promotion of the R/C World Aerobatic Championships, I would like to arrange a tour to this 'first time ever' event in the U.S. We should all do whatever we can to support this venture to pave the way to future W/C events in the USA. Anyone interested in either trip, or having questions or anything presented here may write: Don Gutridge, 6801 Lemon Avenue, North Long Beach, California 90805, or call (213) 423-9437 or 646-6047, and I will be happy to do anything I can to help.

It is my sincere hope that by making United "The Modelers Airline," we will produce a means by which everyone in this great hobby of ours may benefit by being able to enjoy our hobby more fully. Come fly with me on "THE FRIENDLY SKIES OF UNITED" – see you at the Nats!



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Profile of a potential Internat's type aerobatic champion. This year's competition at Doylestown, Pa., will be the toughest ever seen as the world level of R/C proficiency is at an all time high.

AEROBATIC CHAMPIONSHIP

(continued from page 23)

1969 team - Rich Brand, Don McKenzie, Chris Sweatman - placed 4th in Bremen with Rich Brand taking 8th place in individual scores. Rich's original design, the Spit Panzer, uses an HP .61 and Logictrol radio. An improved

version is expected for this year's meet in the U.S.

Possible Australian team member for the 1971 Doylestown W.C. may be John McGrane who won the 1970 Australian pattern championship. He was the top point scorer in FAI pattern meet between the two big 'guns' of R/C competition clubs, the Sydney R/C Club and the Melbourne MARKS. He shared winning honors with Chris Kay and Brian Green, also of the MARKS. Prizes included the much sought "Wagga Wagga Cup" which went to the club whose members scored most points for winning various events at the meet at Wagga N.S.W. which is neutral ground halfway between Sidney and Melbourne in the SE corner of Australia. Tony Stinson reports competition is keen, a useful element in building a team for Internats action. Australian entry in the 7th W.C. will be an historic first in Internats competition for "Down Under" RC'ers . . . .

As noted in the case of the Australian team, having the Internats in the U.S. this year will perhaps make it possible for countries to enter the "big one" for the first time. This is especially true for teams from Central and South America. As an example, Argentina is one that's setting it's sights on a performance at Doylestown. Action to make the desire a reality started with the R/C Nationals in Parana City in January, where selections would be named for the South American and Pan American Championships which may lead to teams coming to Doylestown in September. Staging of these meets is another indicator that organized R/C is growing. Winning the Parana City pattern event, which carried the 1971 Argentine R/C Championship with it, was Ernesto Columbo of Buenos Aires. He was followed by Rodolfo Ferrer and Jorge Burki. Enrique Riis, the 1970 Champion, finished 4th. Columbo flew his original designed ship and used a Japanese Futaba radio. Ferrer came through flying a Kiwk-Fli III hauled by a Veco .61 and a PCS (Kraft) radio. Jorge Burki, who just graduated from the novice class in 1970, had a modified Taurus with a Super Tigre .60 and Micro Avionics radio gear. Former Argentine National Team Race Champion, Jose Dona, sends word R/C activity is growing rapidly despite the supply difficulties and the costs of equipment and materials when they can get them. □

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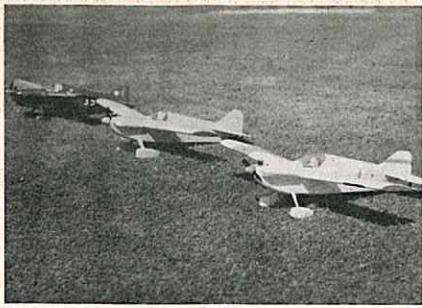
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CASSUTT-BONZO

(continued from page 17)

gentle landings by feeding in some up-elevator to increase the angle of attack. However, if you should choose to locate the CG up around 20% back from the leading edge, you'll get real groovy penetration but the landings are going to be rather abusive. I'd say build the plane strong to take a lot of punishment and don't give weight another thought. Use epoxy, at least in the nose area. Use thick doublers, braces, firewall. You might as well add ballast in the form of structural materials because you'll probably end up adding nose weight anyway. One other advantage to the planes non-critical weight is that it can stand a lot of epoxy field repairs with no apparent loss of performance.

Concerning performance of the Golden Bee engine, several people racing these planes agree that the Cox 5½ x 4 prop seems to provide the best performance. Of course Cox Red Label racing fuel is used, and one modeler here in Madison compared engine performance between the Golden Bee glow head and the T.D. head and noted an increase of 800 rpm's using the T.D. glow head. That's one of the beauties of this event; novices and experts start out on an even footing. No super hopped up engines or razor thin airfoils.

Building materials for this model, including a 1-3/8" dia. Williams spinner and a pair of 1-5/8" "Perfect" streamline wheels shouldn't cost any more than \$5.00 though I strongly suggest the investment in some Quick-N-Easy Products "TopCote" plastic covering or Solarfilm and I'll explain why later in the article. If you buy your materials on Monday, you'll be flying by Saturday. Four evenings should be more than adequate time to finish a model.

Construction of the Cassutt or Bonzo is very typical and straightforward. The plan is self explanatory and templates are included to further

# DON'T MISS



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### SKY-KNIGHTS R/C CLUB OF PORTLAND, OREGON

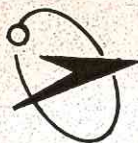
Second Annual Northwest Radio Control Model Show to be held October 16 & 17 at the Pacific Exposition Center in Portland, Oregon.

The Show will feature aircraft, boats and cars. There will be trophies to three places in 15 categories. Queries to:

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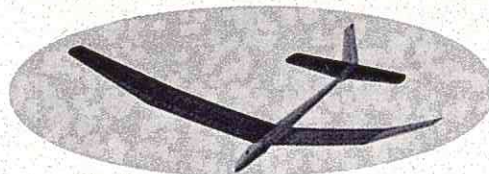
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88 inch span — 695 sq. in. area, 38-42 ounces ready to fly. Ideal all-around sailplane for thermal or slope flying. Launch by winch, Hi-Start or optional Power Pod. Recommended as your first High-Performance sailplane.

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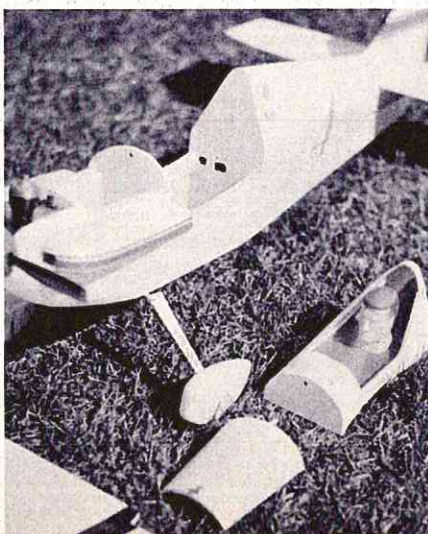
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simplify the transfer of information to the wood without having to back up the plan itself. Besides, I suspect you may want to build more than one. So, instead of telling you what you can see from the plans I'll discuss a few "whys" of the design of this model, such as why a removable hatch instead of a battery access hole in the F-2 former? Easier to make repairs to the nose area, add or subtract ballast, shift or check batteries, install or remove the engine or even add a tank if you decide to try a T.D. .049. Why the involved screw, dowel and bicycle spoke method of holding the hatch, wing and canopy down instead of a couple of dowels and rubber bands? Dowels and rubber bands cause drag, especially at the root of the wing; they're unsightly and very unscale-like; and they detract from the clean flow lines of the model. The canopy is not glued to the wing so that an easy and quick substitution of wings can be made should the wing break during a rough landing. The canopy is not in a particularly vulnerable spot as far as getting damaged is concerned so by making it a part separate from the wing you might avoid some time consuming repairs. Incidentally, ease of repair, is probably the foremost advan-

tage to using a foam winged aircraft in a multiple plane closed course race.

The balsa trailing edge serves at least three useful purposes; it increases the wing area to 200 plus square inches as per the proposed racing rules; it increases wing strength especially since wing fractures frequently begin with a tear at the trailing edge; and it improves the aircraft speed, lift, and

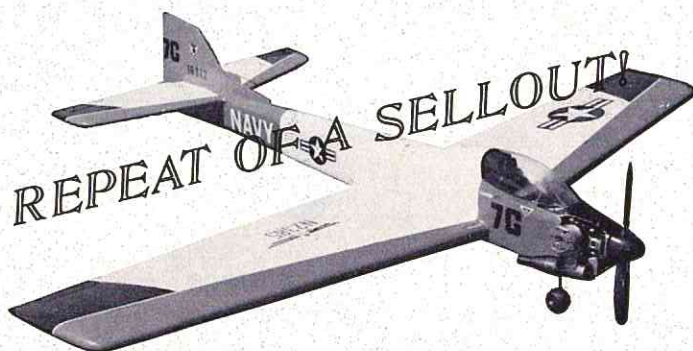
Dowel extending from the rear of the hatch, goes through the hole in the F-2 Former and into the front of the cockpit section.



performance by reducing turbulence and drag. Turbulence exists at the trailing edge of a stock foam wing because of the blunt 1/8" thick radius edge. For normal sport flying, the performance is entirely adequate but where speed is concerned, drag is your greatest enemy and turbulence causes drag. As a matter of fact, avoid any blunt or abrupt trailing surfaces anywhere on the aircraft such as an open cockpit, round dowels, blocky air-scoops, etc. Always maintain a smooth surfaced, airfoil-like or "tear drop" shape throughout the design.

I've covered all my racers as well as all other planes I've built in the past year, with Quick-N-Easy Products, "TopCote". This is an iron-on sticky-back mylar that is available in clear or chrome and I mean chrome, not "silver" finish. It has at least three advantages over the better known, higher priced "spread." It can be applied "cold" to raw foam. Just sand the surface smooth with a 200 grit paper to remove the parting line flash and vent nibs, then after epoxing the trailing edge to the wing lay on the "TopCote." I use a single 17" x 13" piece to cover each wing half. Starting at the top trailing edge carefully wrap it around to the bottom trailing edge,

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pressing it down with your fingers as you progress. If you get a wrinkle, pull it up and try again. Then iron it on at the trailing edge for additional adhesion and, with the iron at a low setting, shrink the covering over the surface by holding the iron just off the surface. The foam will not be affected. I know of no other quicker, easier way of adding strength and a beautiful smooth finish to raw foam. Secondly, the TopCote can be painted with dope. Usually two spray or brushed coats will yield good coverage with a high gloss "painted-look" finish. Thirdly, TopCote seems to have great impact strength. I have a 37" span "Ugly Stik" that I battered around all last summer, covered with this material. It has taken a heck of a beating and still is in one piece or shall I say one bag. The fuselage has numerous cracks and splits in it. The wing has several cracked ribs, but the plane still flies. I cannot honestly say that I've had as much luck with the 'other

brand'. (Solarfilm, available in all popular colors, can also be ironed on the foam wing.) With a little careful planning the entire plane, including fuselage and tail surfaces can be covered with a 26" wide x 43" long piece of TopCote. Save the stiff plastic coated backing sheets from the TopCote. They make handy patterns for cutting the covering material on the second model or when making repairs. Also the backing paper is excellent for mixing small amounts of 5-Minute Epoxy. If you choose to trim your model using "Scotch" brand colored vinyl tape, apply a strip of tape to the backing paper, cut out the numbers, letters, designs, or thin line stripping such as I use to illustrate fake aileron outlines. The tape peels away from the backing paper easily, with no loss of stickiness.

Trimming a plane with TopCote is easy. Just paint a piece of TopCote with your trim colors, cut out the strips or design and apply the "decal"

to the painted surface "tape on" fashion. The "Bonzo" name on my model was made by painting a scrap of TopCote the same color as the fuselage. Thus the name was written on the piece with thinned cope in a draftsman's ruling pen, then I cut the logo out just outside the outline of the word, peeled it off the backing paper and stuck it on the fuselage.

The canopies on my models were drape-formed acetate. I carved a pine block using the front and rear canopy template and the fuselage canopy profile to develop the shape. The wood was sanded smooth and sealed with a coat of urethane varnish. A piece of .015 acetate cut from a sheet purchased at a local Book and Stationery Store, was stapled to a piece of 5" x 9" x 1/2" plywood with the center cut out a 1/2" larger than the canopy mold block. Then, with the block firmly mounted on a post clamped in a bench-vise, I set the plywood frame, with the acetate side up, on an upside-down household iron turned all the way up. In about three minutes the acetate gets soft and flexible about like a thin rubber membrane. Then, grasping the ply frame by both ends, I quickly plunge it down over the mold, acetate side down. I ruined about three pieces getting the hang of it but then in about thirty minutes I stockpiled a half dozen canopies, enough for the entire summer. It's an easy and cheap way of getting canopies, custom made to your particular aircraft.

Gluing an acetate canopy to a fuselage always has been a sloppy job with me. The glue either attacks and melts the plastic or doesn't stick at all. Here again, is a real handy use for TopCote. Just cut a strip 1/4" wide, pre-painted to match the fuselage, and tape the canopy on. I trim the canopy to overlap the wood frame 1/8" and then cover that 1/8" with the tape. It makes a real clean, neat job and it is very easy to replace a damaged canopy since all you do is peel away the tape and tape on a new one. However, for those who are less ambitious you will note that I've included on the plan, a template for a wrap-around windshield.

Because there isn't much space in the fuselage, the simplest way I know of to mount the servos would be to tape them to the ply floor using 1/8" foam double stick tape. I've been mounting my servos this way exclusively, both in large models and in small ones. As a matter of fact, I cut the mounting lugs off the servo cases

since I never use them. Besides, without the lugs I can fit the servos into smaller spaces such as my 2 channel T.D. .02 powered "Dick's Dream." I would suggest, however, that rather than applying the two sided tape directly to the cabin floor, give the floor one coat of dope to seal it, then cover it with a piece of vinyl tape. Apply the servo tape to the vinyl covered floor. Then when you wish to transfer your servos instead of the tedious time consuming job of picking off the remains of foam tape, you can easily peel away the whole vinyl tape with the foam tape still on it.

I'd just like to add a couple of final comments concerning flight time. This model, as well as the "Upstart" is a high performance aircraft. It is designed and built to fly fast. I'd recommend not flying it unless your engine is turning up high rpm's. If you do fly it with a slow engine be careful on your turns. Fly a large turning radius and minimize the banking. The plane does not derive much lift standing on its wing tip unless you've got a lot of speed.

Minimize rudder throw, at least on initial flights. These planes have a very responsive roll rate. Set up a lot of elevator throw. When you come in on a dead stick landing you're going to need it if you want a soft, slow, gentle landing.

Because turning is the prime maneuver conducted with a pylon racer, you may want to adjust your roll rate for optimum response. This can be done four ways. To increase roll rate; increase rudder throw; increase rudder area; increase dihedral; or decrease the angle between the raked up wing tip surface and the horizontal. Needless to say, doing the opposite of any or all of the above will decrease roll rate. Believe me, once you fly one of these bombs or see one fly you'll quickly see why there is no need for the more complicated aileron control.

One more suggestion, buy enough material and stock cut parts for two or three aircraft because one race is all you'll need to see or experience to motivate you into building a couple of back-up aircraft for some real "mean" competition "next week." □



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## KITS & PIECES

(continued from page 6)

Cut out the hold down bulkhead on your Dremel saw and epoxy in position. When this is dry, drill two holes in the proper location to accept the dowels in the top front hold down block.

With a Dremel tool cut out a groove in the bottom of the elevator to accept the pre-bent wire stiffener. This is then epoxied in place.

Place the wing in the wing saddle on the fuselage and put the top hold down block in position. If necessary, sand or carve away any excess balsa in the top block so it properly fits over the wing. Drill two holes in the front edge of the block to accept a 4-40 hold down screw. Directly beneath these holes, epoxy in place a piece of

hardwood across the width of the fuselage to accept the blind nuts.

The entire structure, including the control surfaces, will require only light sanding and then maybe covered with your favorite color of Solarfilm or MonoKote. Be sure to paint the motor compartment with a good coat of epoxy or resin so that it will be completely fuelproof.

At about the same time that we received this kit, we also received a package of the new Klett nylon hinges from Carl Goldberg. This is a thin nylon hinge with a very small steel hinge pin. The hinge will easily fit into a nice slit. Before the hinges are epoxied in place, I recommend that you coat the steel pin with Vaseline to lessen the possibility of the hinge being epoxied together.

Using the Klett hinge or the nylon sheet hinge supplied with the kit, attach all your control surfaces.

Install the wing hold down dowels through the fuselage. A good wing saddle can be made using G.E. Silicone

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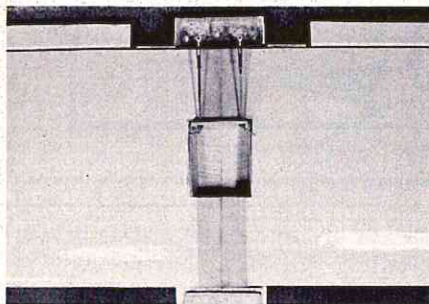
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Rubber bathtub seal. Run a heavy bead of the silicon on the wing saddle. Put a piece of Saran Wrap around the center section of the wing and rubber band the wing in place. Remove any excess silicone that seeps out under the wing.

Bolt the main landing gear to the

Aileron linkage and servo well.



plywood plate on the bottom of the fuselage. Install a 5/32" wheel collar just above the coil on the nose gear and slip into the nylon nose wheel block that was installed at the factory. Install a Rocket City steering arm on top of the nose wheel wire inside the fuselage.

The pushrods may be made from 1/4" x 1/4" hard balsa or 1/4" dowel. Du-Bro Kwik Link rods may be attached to each end of the pushrod by first wrapping with a good strong thread and a good coat of epoxy.

There is plenty of room inside the fuselage for installing any type of radio. I recommend that the servos be installed on the servo tray supplied by the radio manufacturers.

We built the little Fun-Fli and used a Lee Veco .50 for power. A K & B

sport .40 will also work well on this airplane. The Fun-Fli is an excellent flying sport plane and is an excellent R/C trainer for the novice just starting out. The Fun-Fli is also recommended for the beginner with no previous building experience and can be completed in a very short time.

The big difference and certainly an advantage in this ARF kit, over the typical ARF kits on the market, is the balsa fuselage. Most other ARF kits use a molded or vacuum formed plastic fuselage hung over a plywood frame. The plastic fuselages tend to crack due to motor vibration and flying stress and strain whereas a balsa fuselage will stand up much better.

Johnnie Casburn sent us the following letter in regard to his Fun Fly kits and we would like to reprint it in it's



Most famous German sailing — and oldtimer — model airplanes, such as

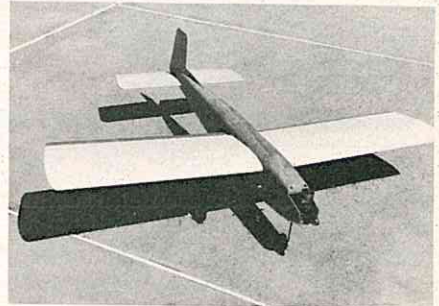
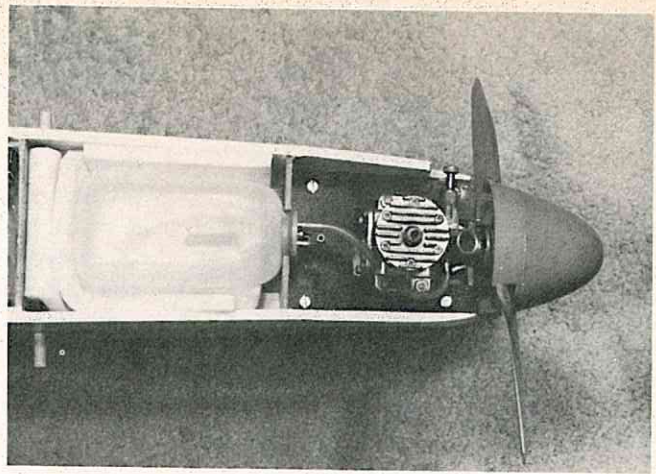
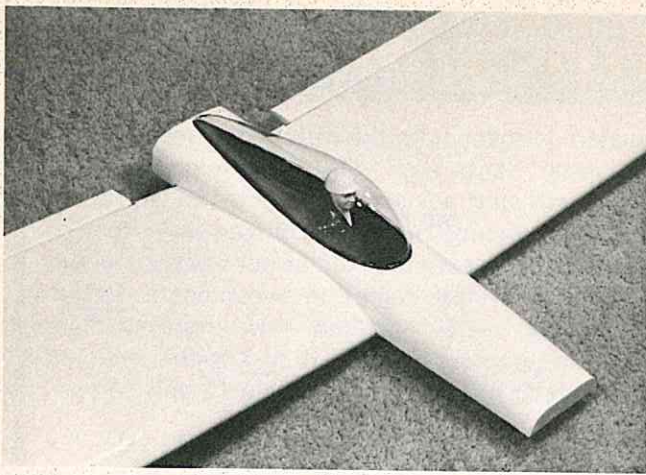
Uranus / Darmstadt D-36 'Circe' / Kaiseradler / Messerschmitt Me 109 / Rumpler C-IV / Fokker Dr-1 (triplane) / World-Champs model 'Marabu WM-69' (by Bruno Giezendanner) are issued by 'Flug & modell-technik,' the leading German magazine for aero modelling!

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The little Fun-Fly, ready for finishing. Balsa ARF, foam/plastic wings.

CB Enterprises, 21590 Cloud Way, Hayward, California 94545, has been manufacturing one of the finest precision machine spinners available from aluminum stock. They are available in a 2" size for \$10.95, 2 1/4" for \$11.95,

entirety.

I fly both at the Fort Worth Thunderbird Field and at the Arlington Golden Triangle Field, probably flying more at Arlington, since it is only fifteen minutes away while Thunderbird is about forty minutes.

While flying around with full house proportional birds, having a ball, I cannot keep from noticing the many young college students showing interest in R.C. However, many are on tight budgets and simply cannot afford the cost. Many of these fellows simply do not want to fly pulse rudder or the small engines. Many of this group have control line engines of 35 to 45 size. When the new 2 channel was announced by Kraft I was delighted and feel that it is the answer for many of these guys.

This prompted us to build two of our R.C. A.R.F. kits, Little Fun Flys. The Little Fun Fly flies very well on rudder but flying with a 35 Veco control line engine without motor control was a new challenge. Two Little Fun Flys were built and equipped with the new Kraft \$99.95 two channel. Since we would not be taxiing, we locked the steerable nose wheel straight. The new little unit was a snap to install since it only required two hardwood pieces to hold the complete unit. We held the unit in place with sheet screws through rubber grommets furnished in the rig. We used a strip aileron set and the cheapest hinges to hinge the aileron. Instead of servo in the wing, we used a piece of plywood and Kwik Links to lock aileron in neutral position. This made the ailerons movable, and could be used to trim out airplane. It also made the airplane easy to adapt to 4 channel at a later date.

The first flight on number one was uneventful with only slight left turn, which right trim corrected. We simply

changed the trim on our ailerons to correct. We had a 6 oz. tank and it ran for 10 to 12 minutes. However, on the check flight we only used enough for three minutes. When the engine ran out of fuel, the model glided very well and only weighed a little less than four pounds. Remember, the flying weight of the little Kraft 2 channel is 8 3/4 oz.

So in closing, I cannot help but think of the many thousands of control line engines that will get many a guy started on this wonderful, thrilling, gratifying hobby of R.C. Even though we used our Little Fun Fly, there are several kits available that will fly very well with rudder and elevator at low cost.

Happy Flying.  
Johnnie Casburn

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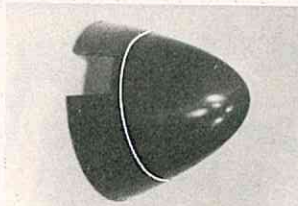
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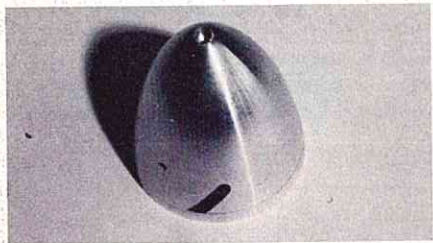
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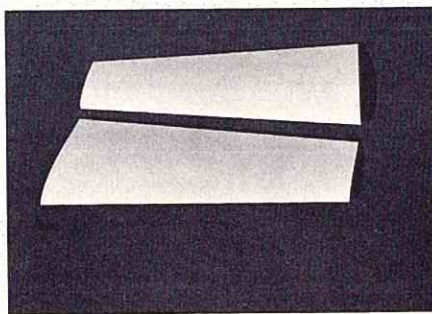
and a 2½" for \$13.95 each. The spinners come complete with a nut and a spinner wrench and a precision machined back plate. The pylon racing crowd has been using these spinners for a number of months now. Since the cost of these spinners is quite high the average flier would hesitate spending that much for a spinner. CB Enterprises will have on the market very shortly a nylon or plastic spinner with the same machined back plate they are now using on their aluminum spinner. The heavy machined aluminum back plate will not twist or warp when the prop nut is tightened as is

The CB Enterprises precision machined aluminum spinner.



the case with many of the plastic spinners. The cost of the plastic spinner and back plate will be about \$3.00 and the plastic replacement spinners will cost only 50 cents each.

A number of months ago we mentioned in this column what we felt was one of the greatest improvements in many years. AR Flight, 23326 Ladrillo St., Woodland Hills, California 91364, is now in full production with their Glaskin wings. Glaskin wings are Mirror finished Glaskin fiberglass wings are the best we've seen — light and strong.



epoxy glass covered foam cores that are extremely strong and lightweight. Glaskin wings are now available for most popular airplanes complete with ailerons and landing gear block for \$28.00. They are also available with retract cutouts. Fully Tested, Approved and Recommended by RCM.

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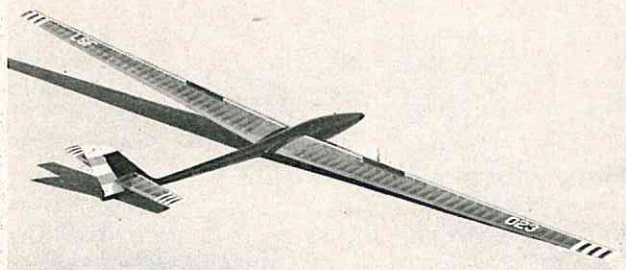
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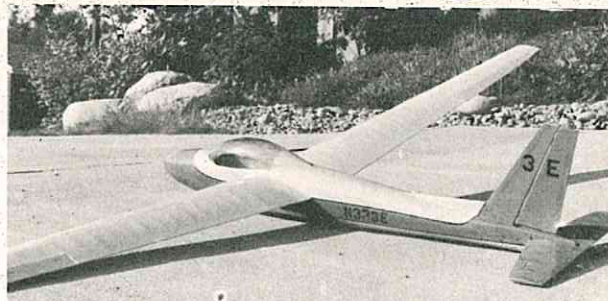
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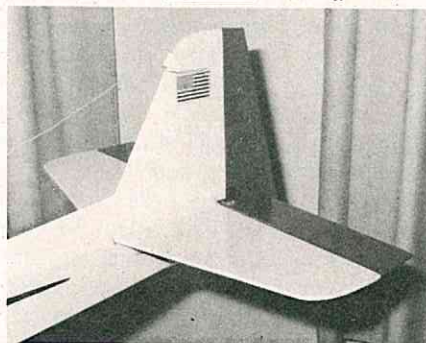
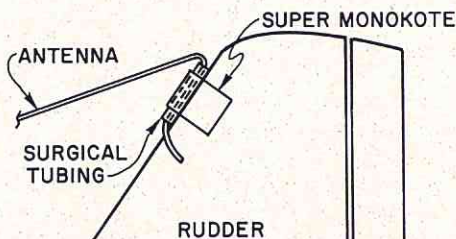
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## FROM THE SHOP

*(continued from page 3)*

are a couple of hints for using Super MonoKote. Bob Nininger of Chappel Hill, North Carolina, feels that MonoKote hinges are much easier to attach if the surface to which they are to be applied is preheated slightly just before pressing the hinge material in place. There has been no problem with wrinkling when the iron is applied and, if the surface is not preheated too much, the hinge is easily moved before the final pressing in place.

After you have made your MonoKote hinges, a few of the scraps can be saved for attaching your antenna to your vertical fin. The photo and sketch shows that this method consists of a scrap of Super MonoKote



wrapped around surgical fuel tubing and applied to the vertical stabilizer. A slight bend in the antenna is sufficient to hold the antenna tightly in place. It also has the added advantage of slipping out easily if the antenna is inadvertently hung up on a flight box or by mishandling. This also has the added advantage of easily swapping your airborne pack from one aircraft to another. James Albers of San Antonio, Texas, sent us this idea.

While we're still on the subject of using finishing materials, we have received a number of letters asking for our methods of finishing aircraft. This type of letter is very similar to the one that asks what type of radio gear to buy, and there would be as many different answers to both questions as



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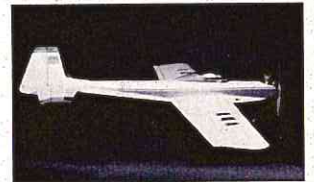
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there are numbers of materials or types of radios to use and modelers to use them. And, just because one particular method of finishing works for one individual, it does not necessarily mean that the same results will be achieved by another modeler using the very same techniques. But, in answer to the many letters we receive, here is my own personal method I use on my sport and competition sailplanes. First of all, I use transparent Solarfilm on the wing panels with opaque Mono-Kote trim patterns applied over the Solarfilm. The same process is used on the stabilizer giving a durable and beautiful finish to these flying surfaces. With regards to the balsa fuselages, they are sanded with progressively finer sandpaper until the smoothest finish possible is attained prior to covering. For a covering material I use Kyosho lightweight silk, which is indescribably light, tough, and virtually blemish free. I apply the silk cross

grained to the grain of the balsa and on the vertical and horizontal stabilizers the silk is applied on the bias. In the case of T-tailed gliders where the top mounted flying stab can create a twisting motion, the vertical fin is double silked with the lightweight material on a cross bias. Following the application of the silk I apply approximately 4 or 5 coats of Buty-Flex dope, a specially formulated pure butyrate aircraft dope available from Indy R/C Sales Company, 10538 Jessup Blvd., Indianapolis, Indiana 46280. This is the finest butyrate dope that I have ever used and dries faster than any other brand we have tried even in colder temperatures. It has no tendency to become brittle or crack. We do find it necessary to add two teaspoons per unthinned pint of Flex-All Plasticizer from Southern R/C Products, 527 Pecan St., Citronelle, Alabama 36522, due to the tremendous "pull" of this butyrate dope.

Three coats of Buty-Flex are applied full strength by brush, and sanded with #400 wet-or-dry paper used dry between each coat. The last two coats are applied in a mixture thinned 50% with Buty-Flex thinner, again applied by brush. After the final sanding with #600 paper, used dry, I apply four coats of Stazon Sleek wood grain sealer which is a remarkable product available in hobby shops or from Mel Farrell at the House of Mel in Burbank, California. This is a pinkish, full bodied sealer that gives a glass-like surface on which to apply your color coats. Each coat is sanded with #400 paper after a one hour drying time. The fuselage is then allowed to dry for 72 hours and Hobbycoxy Enamel or Duplicolor automotive touch-up lacquer (available from Sears Automotive Dept.) is applied as a finish coat. Either one of these materials is then rubbed out with DuPont White Polishing Compound.

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Final trim color applications are applied with MonoKote to match the wing pattern as well as the applications of Finishing Touch decal numbers. With regards to the two materials, Hobbyoxy or Duplicolor, Hobbyoxy is the most preferable of the two. The reason for this is simply that Hobbyoxy gives an extremely high gloss finish that is hard to beat from a standpoint of beauty and durability. It does, however, require much more care in spraying since it has more of a tendency to run and does take far longer to dry than the acrylic lacquer which will dry in a matter of a few moments and has virtually no tendency to run whatsoever. However, acrylic lacquer will "spider-web" or crack on a hard landing where Hobbyoxy will hold up under the most severe conditions. Both will provide an excellent finish, but Hobbyoxy is definitely preferred if you will take care in the preparation and mixing of your materials and be certain to heat the paint prior to spraying. We recommend the use of a Zapper graduated paint mixer from Hobby People for use in accurately measuring out Hobbyoxy paints since improper mixing will give you nothing but grief when it comes to the drying time of this enamel. Be sure to mix the paint well for several minutes and then allow it to stand for an hour. Take the Part A and Part B mix and set it in a pan of boiling water until the paint is heated well. This will thicken the material and may require it to be thinned with Hobbyoxy Thinner prior to a spray application. We use a Miller 2000 Series Air Pump and a #16 Spray Gun or AB-100 Shading Brush set for spraying the Hobbyoxy. The Duplicolor Acrylic Lacquer comes in touch-up spray cans.

While we're discussing these finishing techniques, I would like to stress the necessity for being extremely careful to maintain proper safety procedures in your shop. All of us take the materials we work with for granted and this can lead to serious consequences as evidenced by an accident I had a few days ago for this very reason. While working on my new glider fuselage, I was sitting in my shop during the evening with the electric heater going full bore and the doors and windows shut tight. Without thinking, a gallon jug of Buty-Flex Thinner was open in the shop and the material was being used full strength to clean some residue from a wing

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panel. Within a few minutes I felt extremely dizzy and nauseated, and when I stood up I nearly passed out. After opening the doors and windows and leaving the shop, I felt like somebody had pressed a thousand pound weight on my chest and the back of

my neck. It was nearly an hour later before the extreme nausea, dizziness, and headache disappeared. None of this need have occurred had I not taken the materials I work with for granted or if I had observed simple safety precautions. A few minutes



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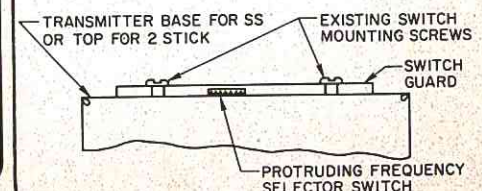
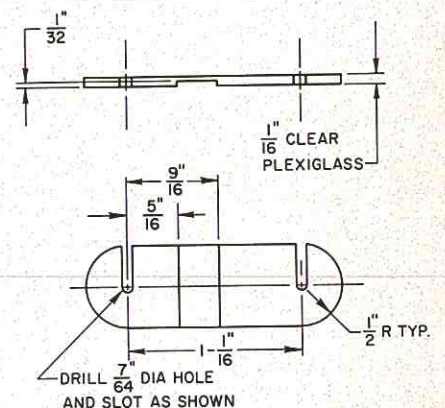
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more and they might have written on my tombstone, "Here lies Dewey, Editor and Hacker, died of Tolulol poisoning." It can't happen to you, you say? Stop and think a minute the next time you go to dope an airplane on a cold evening, in a closed up shop.

If you fly with a new Kraft 71 Series System with switchable frequencies, you may find yourself in a good position to accidentally shoot down your flying buddy. As Ed Walther of Orlando, Florida, pointed out, the frequency switch on the bottom of the transmitter drew the most attention from his friends on the field and it eventually wound up in a position other than the one required for the frequency he chose to fly on. This pointed out to him a need to secure the position of the switch for the frequency to be used. Having the switch in the wrong position is of little consequence to the owner since he will immediately see at start-up time that his aircraft will not respond. But, unbeknownst to him, and during this period of time, he may be bringing his pal to the ground. The diagram is a sketch that Ed sent in for a switch guard he is now using. All of the transmitters in his club are required to be in an impound area and the area is frequented by many people. With this situation prevailing, Ed feels that he has done what he could to prevent a very nasty experience for at least two modelers. The plate is reversible for either frequency.

FREQUENCY SELECTOR SWITCH GUARD



INSTALLATION

Leon Hamilton, of Lynchburg, Virginia, sent us the following letter which we'd like to pass on to you.

Recently I sat down to read over some of my old R/C Modeler Magazines, and an article that caught my eye was the one called Viewpoint in the October 1970 edition.

At the present time I hold a commercial pilot rating, and I have about five hundred or more hours in many different kinds of real airplanes.

In your article I read the following statement, "Straight and level and you're downwind for landing. Now pull the power off and ease the stick forward to get the nose down. Set up a gradual rate of descent. Maintain the forward pressure on the stick and ease in left stick. Ninety degrees and you're base for landing. Hold the nose down and turn on final." You can see by the portions that are underlined that this pilot repeats the statement, keep the nose down. My complaint is this: Never have I had to or know of any of my friends that fly, had to hold the nose down for an approach with power off. I think this statement is wrong and could possibly get a student pilot, either models or real planes, into serious trouble. I fly my models the same way that I do real planes and any time a plane is flying straight and level the nose will drop and up trim will have to be added if the throttle is reduced. The only time a plane will need down trim or elevator will be when the plane is loaded tail heavy in real planes, if power is off, and I balance my models so that they fly the same.

If you have time ask a pilot to take you up and try this in person, ask him to fly straight and level then without moving any control just reduce the throttle and watch the nose drop. Pilots are taught that the throttle controls the altitude if the elevator is constant, and the elevator controls the airspeed if the throttle is constant.

I enjoy your magazine very much but I just wanted to express my opinion.

In closing this month we are pleased to announce that the Dismal Swamp Servo Company, commonly and endearingly remembered by one and all for their contributions to flying by such inventions as the Frog Leg Servo (no longer available due to the drying up of the swamp and lack of interest in reed gear), and the famous Think-a-Flight (Patented) Transmitter

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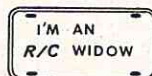
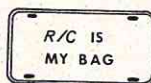
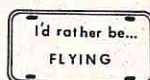
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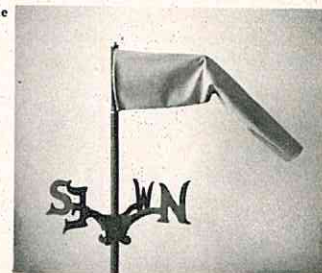
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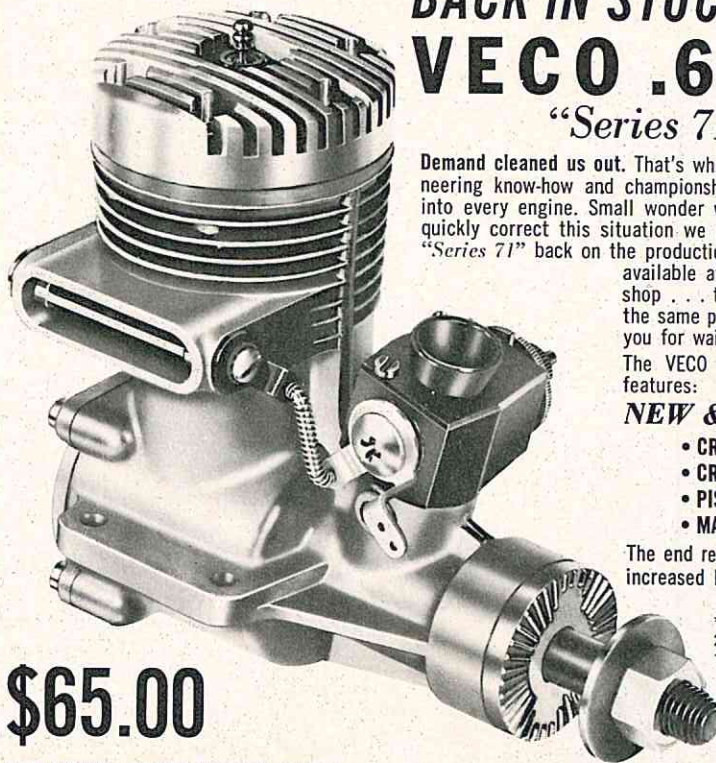
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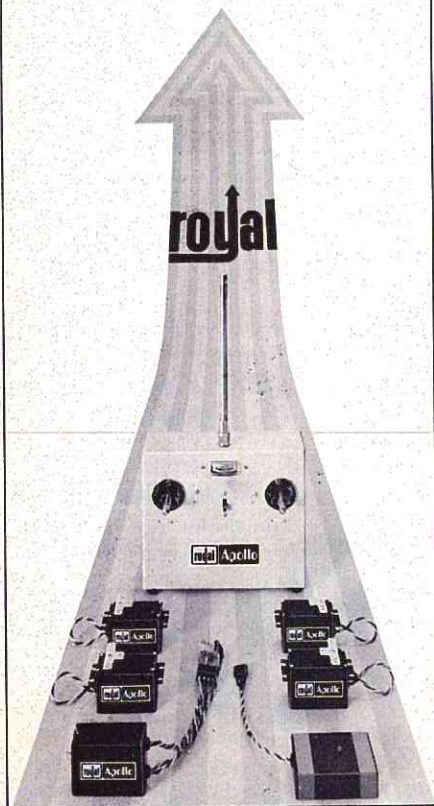
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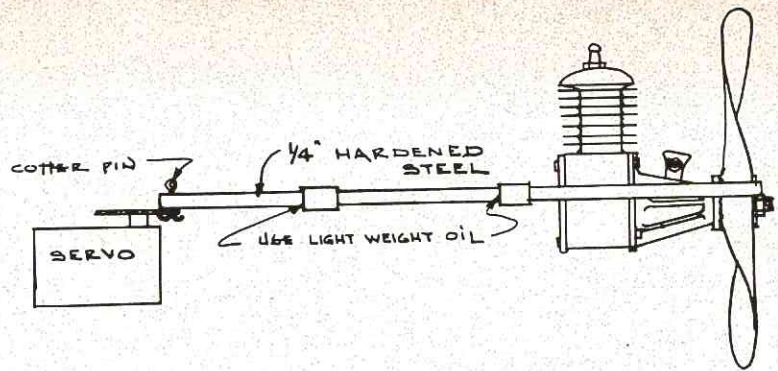
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The one that appealed to our own Joe Bridi, budget-minded and ace Goodyear flier, is a simplified version of a fuel shut-off called the Dismal Positive Fuel Shut-Off Mark II. This is the Green Sheet special of the month (since the price will go up next month) and the offer is good only until January 31st of most any year. If you order now the company will include at no extra cost one dozen ballpoint pens, two ribbons (purple and grey) to use on your transmitter antenna, a live goldfish in a plastic bag (guaranteed live delivery) and a Happy Time Power Slingshot for the kiddies with 200 (actual count) three ounce ball bearings to shoot in it (a harmless toy). This is an opening offer, but you must order early to get your goodies! The Mark II (pictured accurately in the sketch) features positive shut-off of the Goodyear engine with utter simplicity. Note that there is no need to wait for the fuel to run out in the line. This is a little bit more difficult to install than their Mark I model but either model is fully guaranteed. As you will note the servo is actuated and drives the steel shaft between the prop blades causing the engine to stop instantly. This appealed to Joe Bridi so much that he immediately Air Mailed a check to Frank Schwartz, Comptrol-

ler of the Dismal Swamp Servo Company as well as Editor of the Middle Tennessee R/C Society, only to be disappointed at it's return with an accompanying note from Frank which stated that Joe's engine ran so slow in last year's pylon races that the one thing he didn't need was something to stop it.

See you next month. . . .

## THE BE2e

(continued from page 34)

the electrical tag to the rear jury strut point.

**FLYING:** Gun the motor and check any swing with just a dab of rudder — don't hold it on. A touch of up-elevator and neutralize. It's airborne! Now be prepared! You may need to push the nose down. Just a case of over-powering and because of this don't put down thrust in the motor, fly it as per the full size. (High motor you go up, low motor you come down). Now gain some height, using the rudder all the way. Don't touch the ailerons as this may cause slip. Ease back the power and take off the down-elevator you may be holding. At half power, trim out for level flight. That's it. Landings you will have no trouble with, as it lands on its own. Remember this is a model of a bomber, and as such, the only manoeuvres the full size did were evasive. Yours will loop and spin as did the prototypes — drop bombs and fly slowly — don't ask for more.

Have fun!

## ESPRIT

(continued from page 41)

acy I suggest building the tip panels onto the completed center panel, but they can be built separately and joined as a second step if you prefer. Butt center panel to port rudder. Break line and prop the root rib above the board.

Pin the tip T.E. and L.E. in place, and glue the ¼" thick end rib in place. Because of the tip shape the spars are not straight but curve upward in a slight arc. By cutting the lower spars to fit tightly between the tip rib and end rib of the center panel it will spring into place with a natural curve. Add ribs, checking fit of spars against lower surface of ribs. Spar webs are not required in the tips but the diagonals and rear spar ties must be added. For ease in construction the false ribs are installed as simple balsa rectangles fitted individually between the L.E. and front spars. These are rough carved and finish shaped by sanding. Cut full depth slots in the ribs at polyhedral break and insert 1/16" bass or ply dihedral braces. Add top spars and let dry.

Remove from board and check fit of ribs at leading and trailing edges and spars. Correct any deviation from proper alignment by cutting joint apart and re-cementing. Now comes the tedious job of filling in around the root ribs with balsa sheet. There are 48 separate pieces to fit and glue in place, but they are critical in tying the center section together. If the work seems too much for you then wrap a 1/64" ply or Marvelite around the root section. Complete the lower surface and let dry. Now run a 5/32" dia. drill through the 1/8" pilot holes in the ply ribs checking that both holes are parallel. Insert the tubing for the wires and trial fit both panels together. Correct any misalignment without shifting location of holes in the root ribs to maintain fuselage alignment. Check dihedral angle and make sure that the center panels are not twisted. When satisfied, rough up the outer surface of the tubing with file or coarse sandpaper and epoxy in place. I find that Sig Epoxy does an excellent job for these high stress joints. Now fill in the top surface spaces using soft 3/32" sheet moistened on the outside so that it curls to follow the airfoil shape. When this is completed, sand the wing all over using care not to sand flat sections on the ribs, particularly on the bottom surface.

#### FUSELAGE

If you use Devcon the fuselage can be completed in 3-4 hours. By now your boom should have arrived. Since it is ready to use when received, start cutting the rest of the parts out and join together. Glue the ply root ribs and 1/8" balsa filler ribs together. Drill through with #21 or 5/32" dia. drill.

Carefully line rib up on one side following the drawing to get the proper incidence. Now pin both sides together in proper alignment and drill through to transfer the hole location to the second side. Run two lengths of tubing through the holes to act as pilots for the second root rib. This ensures that both wing panels have the same incidence.

Using a #11 X-Acto blade cut through the side along the bottom edge of the root rib from F-2 rearward. Join the sides together with F-1 and F-2 over the bottom view checking squareness. Allow to dry throughout. Now wet the outside of the rear section with household ammonia - I stick it in a water glass full of the stuff. After 10 minutes remove and draw the rear together carefully. Install F-3 and put a glob of Devcon at the back and where the sides come together. Hold the thing for 10-15 minutes or clamp till dry. Don't panic if the sides crack at F-2 and, if you have trouble bending together, then cut half way through the sides from the inside and bend sharply rather than following the gradual curve. Check that both sides are bent evenly by laying over the bottom view on the plan - that's why the bottom of the pod is straight. The rest is easy.

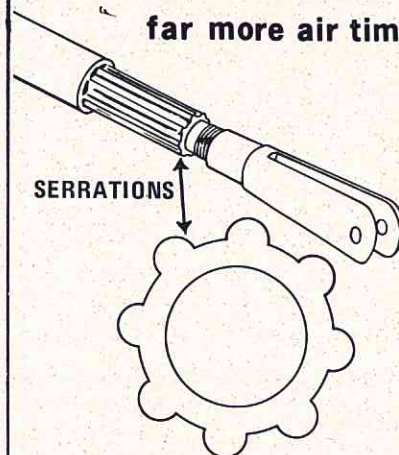
Insert the boom through ½" holes in F-2 and F-3. Lay the pod over the plan and check the boom alignment. If necessary, file the hole in F-3 until the boom is flat on the workbench and falls on the centerline. Epoxy the boom in place.

Make a gauge from scrap plywood to just slip over the root ribs at F-2. Then slide back to the trailing edge to squeeze the root ribs parallel. Install the 3/32" floor between the sides, following the contour of the lower surface. Check the distance between the ribs which should be 1¼" (if you cut the formers accurately) and fit the rear section of soft ¼" sheet between rib extensions. Cut the forward piece of top sheet the same width and glue in place. When dry, trim to follow the side curvature, but do not shape. Layout hatch cuts on the side and cut out with a razor saw and knife. Use a metal straightedge taped in place to get straight cuts. I make the side cuts first with a knife then saw through the ¼" sheet and corner pieces following the knife cuts as a guide. Now you can install the 3/32" x ¼" spruce rails - wedging apart with scrap balsa so they fit tightly against the sides. Check the fit of the hatch which should lightly



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snap on over the rails. Then add the hatch front holdown tab.

Before gluing the bottom in place, I suggest a trial fit of your radio installation - you did make the pushrods and slide when the wing was drying, didn't you? If satisfied, then close up the bottom with soft 3/8" sheet. Cut the rear skirt off a Williams Bros. 1-5/8" dia. spinner leaving a flange 1/16" thick. Sand flat and drill for #2 mounting screws. Square off the front end and epoxy and screw the hub to F-1. Carve and sand to the cross section shown on the plans. I find squeezing the pod between my knees with the boom hooked between my feet while sitting securely, holds the beast while sanding shoe shine fashion with a 1" wide strip of sandpaper. Start with #120 then follow up with #220 and #400 paper. When properly rounded there should be a 5/32" wide portion of the corner piece visible. Add fillets of Epoxilite or Hobbypoxy Stuff. Sand smooth. Now drill through top block for the wing tubes and epoxy the tubes in place.

Cut out the tail mounting saddle parts from plywood. Locate the holes in the 1/8" floor from the stab and install Tee-nuts. I used #2 metal

screws to hold the tail but 4-40 nylon would offer additional shock insurance. Don't try #2 nylon screws - they are not strong enough for air loads. Glue the sides and floor together upside down using two pieces of 5/32" tubing under the floor to space the saddles accurately. Wrap sandpaper around the end of the boom and fit the saddle to the boom similar to fitting a canopy. Now bolt the tail to the saddle; install the wing rod in the front tube, and rest on the blocks 3" up from the bench on each side. Apply epoxy to the saddle and place on the boom, blocking tips until equidistant from the bench. When dry, remove tail, add front fairing block and shape.

#### COVERING AND FINISHING

The wing and tail are best covered in one of the heat shrinkable plastic materials. They do a quick job and minimize warping problems and are better flying and more durable than other coverings. The original models were covered in Solarfilm, using six pieces for each panel with seams on the spars.

The pod should be covered with light silk for additional strength. The original model used epoxy as a base

which developed stress cracks after some rough landings. The weight with silk is the same, and durability greatly improved. The entire pod except the top section between the ribs can be covered in one piece of silk without seams. Fill the pores with Stazon Sleek or your favorite sealer and sand smooth.

There are many materials available today for final finish and if you have a favorite method, go right ahead. I have had good success with Duplicolor Automotive Touch-up Acrylic in spray cans. Available in a wide range of colors it is fast drying, sands easily, and rubs out with high gloss. It is tough and durable. Repairing Touch-up is also easy - give it a try. It is available at all Sears automotive departments.

#### RADIO INSTALLATION

The original models were flown using a Kraft Series '71 KP3-S System with KPS-12 servos and 225 mah battery pack. Full details for this equipment are shown on the plans. Orbit/Micro and Cannon gear have also been checked and will fit if you remove the case from the pack and tape the 225 cells together. For other gear, you are on your own. Space is



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tight so either enlarge the pod or layout your installation very carefully.

Several different installations have been tried including placing the receiver under the wing, with servos forward. NyRods have also been used but I prefer pushrods for greater control precision. The 1/8" dowels are adequately rigid and the use of inner tubing from Pylon Golden-Rods epoxied into 1/8" I.D. aluminum tubing provide end fittings which are tapped 2-56 for ease in adjustment with parts made from .074 dia. push-rod ends.

Sequence of installing equipment is as follows:

1. Make up pushrods w/o rear links and attach to the rudder servo mounted on the slide. Insert the rear end into the forward end of the boom and push through. Dowels will flex sufficiently to keep servo in place.
2. Install rear links and adjust for equal length with servo slide centering along the rails travel.
3. Install the elevator servo using the forward mounting screws and 1/16" thick mounting tape. Adjust for neutral position with the threaded link to the slide.

4. Now install the receiver and batteries.

**FLYING**

Check all surfaces for proper alignment and remove any warps. Wash-out is not necessary in the tip panels but wash-in is very undesirable. Center panels and tail panels must be flat. Check proper C.G. location and ballast if required to balance at rearward location shown on plans. If you selected your wood and finished the model properly very little ballast should be necessary. This balance point is for calm air flying and is the most rearward position recommended.

Experience with all types of models has shown me that a slight nose heavy trim is safer for initial flights. A slightly fast glide is easy to control with elevators but a tail heavy trim leads to stalls which are harder for the inexperienced pilot to control. I have seen many models broken from stalls and none from mild dives. Thus I suggest you add 1/2 ounce of ballast within the spinner for initial flight testing. Final trim can be obtained by removing weight.

Unless you have a great deal of experience, I don't recommend hand glides to verify trim. It is easy to stall

the model with resultant damage if thrown too hard. In addition, ground effect influences the flight path significantly and makes fine trimming impossible. If set up as described, the Esprit can be launched safely in winds up to 18 mph by winch, Hi-Start or slope. The slope with light wind and lift is perhaps easiest for the novice since the model is closer and nearer eye level which makes flight attitude and response easy to judge. If no suitable site is available then use the Hi-Start or winch. Don't worry about maximum altitude, just get up in the air high enough to establish a glide path and try out the control response.

Detailed trimming and flight instructions would require a separate article so it cannot be included herein. Write RCM if you would like to have this kind of information published in the magazine. The basic idea is to establish a minimum sink glide with neutral control in 5-10 mph wind conditions. Then adjust for variable winds with elevator trim. I will be happy to answer any questions about this model if you will send a stamped self-addressed envelope to Lee Renaud, c/o R/C Modeler Magazine.

Good Flying!

(continued from page 10)

Although you didn't say, Bill, I would guess that you are flying in cool weather and the castor oil in your fuel is just getting stiff. Get in the habit of putting a few drops of 3-in-1, or any light machine oil, in the carburetor and exhaust after you are through flying each time and you will not have the problem the next time out. If you experience a drop in rpm when you remove the starting battery from the glow plug, it is caused by either the fuel you are using or the glow plug being too cold. Be sure and use an idle bar glow plug intended for R/C use. This is a common complaint with RC'ers who mix their own fuel and do not use any nitro methane. If you are using 'home brew,' add 5% nitro to it.

Dear Mr. Lee:

I recently purchased a Sterling kit FS-1 of the Piper Tri-Pacer and I am wondering what engine to put in it.

I have a Super Tigre .23 now and I intend to buy a K & B Torpedo .40 with the new Perry carburetor. Since the manufacturer recommends a .19 to .35 engine, I was thinking that the Super Tigre might be marginal power, while the Torpedo might be excessive power.

I have a tendency to build planes on the heavy/sturdy side.

I also have a Midwest Sky Squire powered by a Veco .61 with Perry carburetor. Takeoff weight is slightly over 6 pounds and I usually fly at about half throttle once the plane is airborne. I was wondering if extended flying at this power setting would be detrimental to the engine.

Sincerely,  
Darwin Evelsizer  
Beale AFB, California

If your ships have a tendency to come out on the heavy/sturdy side you would be better off using the .40. It is better to be a little over-powered than under-powered, and the S.T. .23 would be marginal with a heavy ship. With the .40 you can always throttle back, which brings up your second question. Flying at partial throttle will not harm the engine in any way. Because the engine is running cooler and, usually, slightly richer at partial throttle, you will build up carbon and varnish a little faster than with full bore operation. Run some Peak Power or Glow Life through the engine occasionally and this will help to keep it clean. In fact, this is a good policy to follow even if you fly at full throttle all the time. (continued on page 88)

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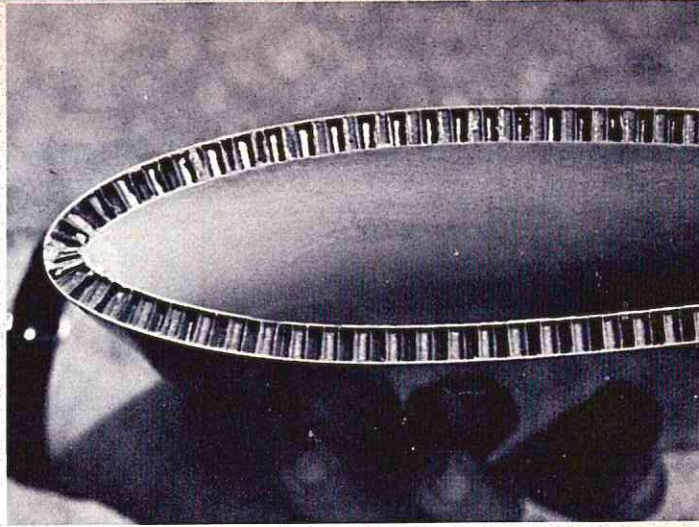
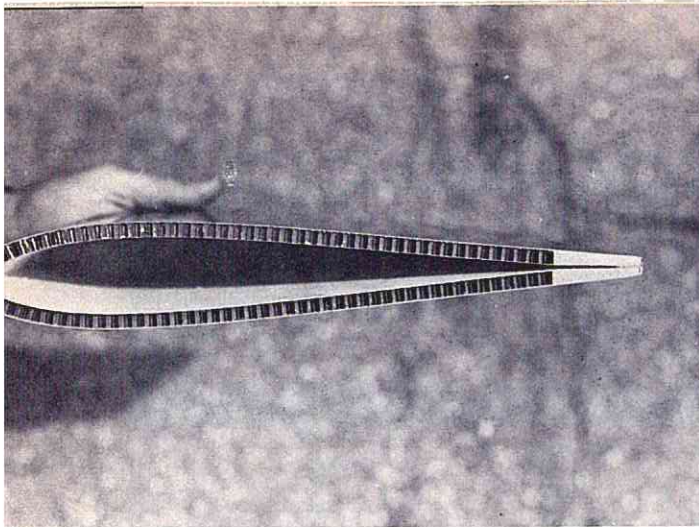
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## THE HONEYCOMB WING

The Honeycomb Wing manufactured by W.A.V.E. (Water Apparatus and Vehicular Engineering Incorporated), 1237 South Wells Road, Saticoy, California 93303, is hard to describe even though we have fully examined and tested the unit and examined a cutaway cross-section of the interior structure of the wing.

We can start off by saying that this is a unique and innovative construction technique in the R/C field and consists of 95% air! You'll be completely startled at first glance by the precision incorporated in this wing. It is a completely true airfoil and a wing that has no variations in its external plan form. It's unbelievable stiffness and rigidity has to be seen to be appreciated.

If you will examine the photographs that we have taken of our test cross-section of the W.A.V.E. wing, you will see that the top and bottom skin is a sandwich of epoxy filled fiberglass cloth on each side of a  $\frac{1}{4}$ " thick slice of honeycomb. This structure, which is bonded under heat and pressure, has extremely high compressive, flexural, and torsional strength due to the fantastic structural properties of the fiberglass and the honeycomb in combination. The wing skin,

### RCM PRODUCT REPORT

itself, is molded glass supported by high strength honeycomb which provides a surface finish that is as shiny and as hard and durable as the finest automobile finish. Honeycomb wings can be polished to a mirror finish with a power buffer, rubbing compound, and auto wax.

With regard to the construction used in the wing, honeycomb and fiberglass means top performance since they are fabricated in a precision mold providing straightness, foil accuracy and wing interchangeability. These factors are combined with the incredible rigidity of a stretched skin structure which make high speed maneuvers possible with accuracy that is limited only by the pilot's individual ability. The same durability provides a heretofore unknown insurance against dents and dings in handling, transportation and rough landings.

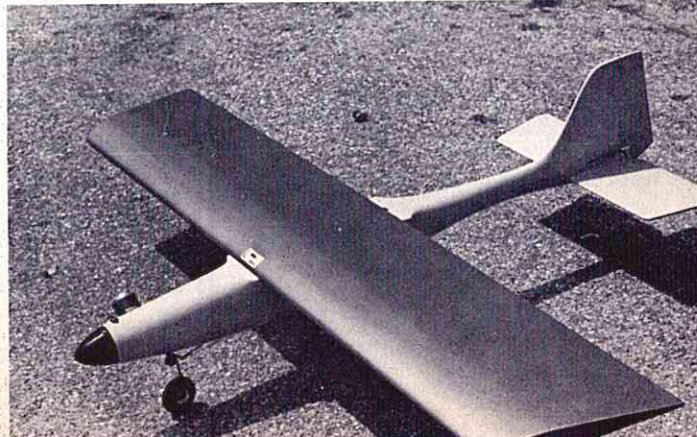
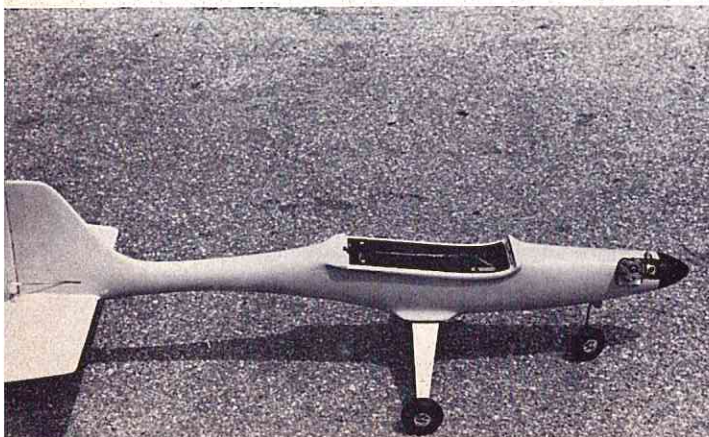
Available for the Kaos, Ugly Stik, Sun-Fli IV, with colored or white gel coat and with ailerons, hinges, and molded servo box included, the price is \$49.95. Each wing is fabricated in one piece with landing gear blocks, hinge slots, and correct dihedral molded in.

In all honesty, we were, until we saw the wing, stunned by the \$50.00 price tag. After seeing and testing the W.A.V.E. wing, we can understand the price and know full well that the wing is not an overpriced unit.

Currently under development is a new pylon racer wing and the Shadow fuselage which are shown in the photographs. The Shadow is a graceful looking molded unit of fiberglass which is designed to compliment the Ugly Stik wing. The strength of this prototype fuselage is indeed phenomenal and we have stood on the unit with 150 lbs. of weight without cracking it, yet there are no bulkheads except for the engine mount. No price has been released on this unit as of the time of this writing.

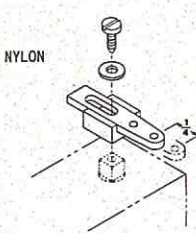
Also in the development stage for complete honeycomb airplanes are a trainer, pattern ship, and pylon racer. A complete brochure is available along with all pertinent technical data for 25 cents from W.A.V.E. and dealer inquiries are invited.

W.A.V.E. wings have been Tested, Approved and are Recommended by RCM, with our congratulations to the manufacturer for a structural breakthrough in the field of R/C aircraft construction. □



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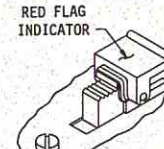


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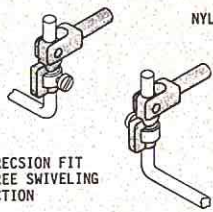
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WATCH HERE FOR MORE TO COME !!!!!

Dear Mr. Lee,

I have a very fine Super Tigre .35 combat engine that I would like to convert for R/C use. I notice, however, that the manufacturer does not recommend this - why not?

Sincerely  
Bruce E. Busfield  
Raleigh, N.C.

Converting your Super Tigre .35 combat engine or any other combat engine to R/C use does not hurt the engine in any way, but the combat engines are ported and timed a little too 'wild' for reliable idle. They are intended for wide open operation only and ported and timed to develop their maximum power at a higher rpm than R/C engines. They will not lug the larger props that R/C ships require as well.

Dear Clarence,

Recently our club, the Louisville Radio Control Club, in order to help preserve our flying field, voted to require mufflers on all engines above a .15. To meet this requirement I would like to put a muffler designed for an Enya .45 on my Super Tigre .46 which has the Mag II carb. Some of my friends have advised me against such a move. But, I have seen advertisements for mufflers which claim to fit a multiple of engines. I can't see what difference it would make. Can you enlighten me on this subject?

Sincerely,  
Jim Rippy  
Louisville, Kentucky

Jim, I think that maybe you misunderstood what your friends were trying to tell you. A muffler intended for one make of .45 will work as well on another make providing you can adapt it to the other make without any leakage at the exhaust stack. The Enya .45 muffler is a real power grabber and will take 800 to 1000 rpm off of the top end of the engine. This is probably the reason your friends advised against using the Enya .45 muffler on your Super Tigre. You would be better off spending a few bucks and purchasing a Super Tigre muffler intended for the engine. The new flow-through Super Tigre mufflers will cause a minimum of power loss which means a cooler running engine, less carbon and varnish, and longer engine life. You may save the price of the muffler in engine repair!

Dear Mr. Lee:

Inverted engines!!! I have a P-38 under construction and thought I'd go all out and invert the engines and make it as scale as possible. Not willing to consider risking the P-38 anymore than necessary, I hung an OS .40 on a Goldberg Skylane. After many hours of experimenting I've decided low speed operation of an inverted engine is just one big problem of fuel loading up in the combustion chamber and putting out the

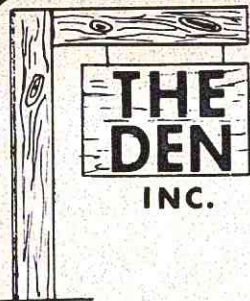
glow plug. The OS .40, when operated normally, has what I consider very good idle and intermediate characteristics when equipped with the Kavan carburetor. Inverted however, an idle of 4,000 rpm plus must be maintained to secure fair operation. The tank is six ounces and is centerlined 3/8" below the needle valve.

Besides the OS .40, I've tried the Enya .35 TV on the test stand and get about the same results. And so the first question... am I knocking my head against the wall trying to get an engine to have good idle and intermediate characteristics when mounted inverted? Of course, I guess I could run the glow plug with a battery connected.

Question number 2... my Enya .45 swings an 11 x 6 slightly over 11,000 rpm while the best my Veco .50 Perry will do is slightly over 10,000. Both engines have been run about an hour and show no signs of heating up and slowing down when leaned out. The Veco has excellent idle and intermediate performance, but it bugs me that the top end is down so much.

Sincerely,  
Gordon L. Wright  
Dallas, Texas

Some engines will have better idle characteristics inverted than others. Of course this is also true of upright engines. However, running the engine inverted is going to cause idle problems with any make of engine. With the engine inverted the glow plug becomes an oil sump and it only requires one drop of oil to put out the fire. Setting the idle mixture a hair on



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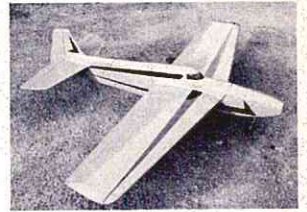
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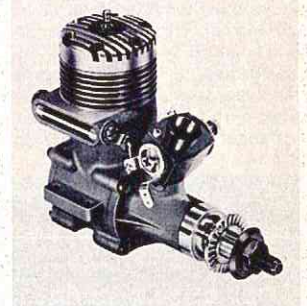
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the lean side will help but then you usually have the engine jumping into a two cycle idle towards the end of the tank. This is detected by the normal idle sound suddenly becoming a fast buzzing sound and the idle speed suddenly increasing. Usually this will happen just as you are about to touch down while landing or on the taxi back. The only sure fire solution is to use a 500 mil nickel cadmium cell and a micro switch that cuts in at low throttle. Current drain is very low with the engine running and you can get a minimum of several dozen flights on one charging, depending on the amount of idle time. As for your Veco .50 only turning 10,000 — there is obviously something wrong with the engine and it should be returned to K & B for servicing.

Dear Sir:

I have a ST G-21, .40 front valve, 2 ring, ball bearing engine which is easy to start, idles well, runs reliably in the two cycle mode but never really winds up like other Tigres.

Have made 60 flights with this engine in a five pound, 675 square inch ship. Takeoffs are like a cross country drive. Propellor is an 11/6 as recommended by the maker (10/6 makes takeoff more marginal).

I have recently taken the engine apart for the first time. I found that the crankshaft had excessive drag. Placing crank ends individually in only their respective bearings

eliminated the symptoms. To make a long story shorter, shaft to case fit between bearings was very tight. Removed a few thousandths from case until lower end was freed up.

Noted that both connecting rod ends were worn and had excessive play. Other internal parts appear to be undamaged. Rings were free and have expansion capability. Some evidence of heat on piston walls and liner. Compression is good; replaced head gasket.

After reassembly, no improvement in top rpm was observed. Fuel mix is equivalent to Duke's. Have been using a Fox long reach idle bar plug.

What can you suggest for this situation?

Yours truly,  
 Bill Metcalf  
 Granite City, Illinois

Your Super Tigre .40 is happiest when allowed to turn up. The 11-6 is too much prop for the engine. After all this is the same size as used on the .45-.50 size engines. You would be better off using an 11-5 or 10-6. The evidence of heat on the piston and liner along with excessive connecting rod wear were brought about by lugging the engine down with too much prop, the tight lower end not helping matters any and, probably, a few lean runs trying to get the engine to put out more. Now with the excessive rod wear (and probably wrist pin holes in the piston also) the compression ratio is lower and port timing altered. The

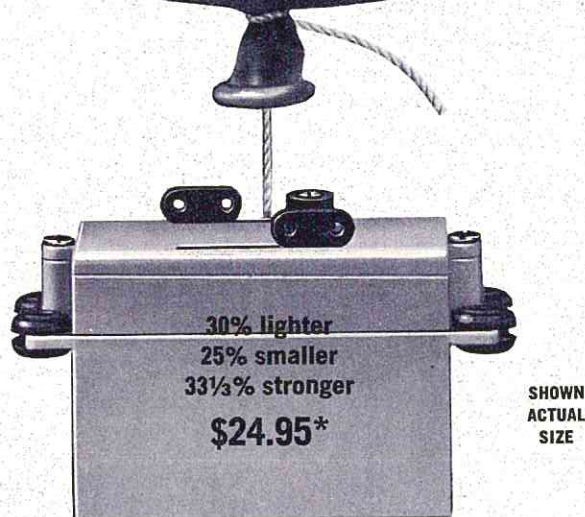
engine will not turn up as it should making takeoff marginal even with the 10-6. The only thing you can do is to replace the piston, sleeve and rod assembly, or return the engine to World Engines for servicing. It is always best to replace the sleeve when replacing the piston and rings even though it may appear to be okay. New rings will not seat properly in an old sleeve unless it has been roughed up by honing. Also, many times a used sleeve will appear okay but actually be out of round, have low spots, and have excessive wear at the window webs. □

### SUNDAY FLIER

(continued from page 14)

mad. It was about ready to be sheared off. Gently, I tried to pull up-elevator, but it continued on its descent. So I had to pull up-elevator, all the way! Well, it came out of that dive, but when it did I had about 30 degrees of dihedral in both panels. Now bear in mind that I don't have steel rods, I had plywood in there. Obviously something had broken, but the wings didn't let go. Very gingerly I thought I might be able to bring it back to the field. I nursed it very slowly and thought for a moment I was going to make it. I got

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it down to around 700' of altitude from the 1500' where it had been, and with the wings folded way up it looked like a wounded bird. Just as I thought I had it made, coming back and gingerly working with it, it suddenly hit what we call a killer thermal, an updraft, that caught me totally unaware. When it hit, the wing folded the rest of the way at the center section and came off of the fuselage. The two wing panels fluttered down. The fuselage nosed down straight from 700' and disappeared at high speed behind some houses about two blocks away. Time: 58 minutes. Distance: Too far to qualify!

Well, we found the airplane and ½ hour later one of the fellows brought one of the wings back and then later the other wing came back. It had gone into a boomerang type of spin and had floated almost three quarters of a mile in the wind away from us. The fuselage, as might be expected, was completely shattered. I had very carefully packed all of the radio gear in the fuselage, and believe it or not, after a terribly hasty dive from 700' that Kraft Gold Seal radio was still working. All I had to do was install it in another airplane. That speaks well for two things: 1) the radio equipment itself, and 2) for the theory that even though you don't like to think about it, plan on having your airplane crash and pad your receiver and batteries accordingly . . . because that's how mine was able to survive.

Well, I'm busily repairing the wing and I'll be going out again for another one hour thermal flight. In retrospect, I want to warn all of you people who are new to thermal soaring, there is a malady that I want to tell you about. For years deep sea divers have known about the dangerous condition called "rapture of the deep." The medical term for this is nitrogen narcosis. It's a euphoric state where the diver becomes so fascinated with the beauties of the deep that he tends to lose touch with reality. He stays down too long. They're not absolutely certain whether it's an imbalance of the gases, nitrogen, oxygen, and whatever else there is inside of a diver, but nitrogen is suspected. The imbalance created by the excess of nitrogen at great depths in the ocean will make a diver have forms of hallucinations — he loses reality and loses all sense of time and, of course, the danger is that he will stay down too long and run out of oxygen. Rapture of the deep has been known as long as divers have been

going to great depths. I think I have discovered — well, I can't really say discovered — I think that I have become a *victim* of a similar malady and I'd call it thermal narcosis. It's a condition that overcomes you as you are watching your thermal soaring glider high in the sky picking up the updrafts and going ever higher. It's such a thrilling sight that you just want to watch it go on up and up and up. And you do. And suddenly you realize that you aren't really watching it any more — it's gone. Now this may sound a little bit far fetched, but a couple of weeks before I had this experience, John Baxter lost his glider in what we call a killer thermal in about the same way. It just went on up and out of sight and disappeared. He couldn't get it back. I've talked to other people since who have indicated that they have become entranced by watching a thermal soaring machine going on up — just riding the current. It's you, the machine, and the air currents and you're putting it all together. That airplane just goes up and up and you just get so carried away with it that you're done! *Thermal narcosis*. Maybe the Doc's will never believe it — all I can say is, let them have a try at thermal soaring; I think they'll agree. The rapture of the sky or thermal narcosis is real. It certainly is for me and I'm going to have to watch out for it because it's well, it's just about like getting high, I guess. It's a real thrill.

Now let me take you to an entirely different modeling scene. And this is one that many of you will recognize. Either because it describes you or because it describes someone you know. I was in Jim Sunday's Hobby Shop yesterday, picking up some wood, and I heard Jim mentioning a newcomer to the hobby who had just finished his first radio control model. His first radio controlled model, mind you. It was a Sterling P-51 kit which he had modified and improved upon with many authentic details because he had been a WW II pilot and had flown both P-47's and P-51's. The P-51 was available to him in this kit so he built it and it's a beautiful job. And he was going to fly it too, but Jim told me he encouraged him to have someone assist him with the test flights and the newcomer agreed. So, I went out to watch the process. It was very interesting. On my way out to the field, I went past a Ford Thunderbird and the lid of the trunk compartment had been removed and there stashed in

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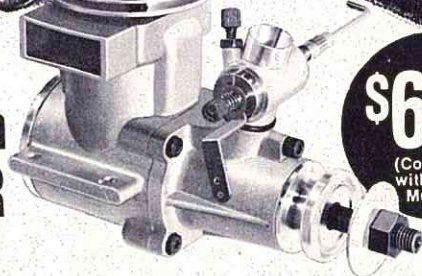
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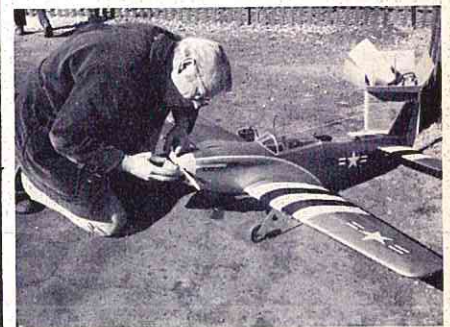
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the rear with a special mounting was a P-51. I drove on to the field and a few minutes later the Thunderbird came in and sure enough it was the one I had seen. I walked over and introduced myself. His name was John McRay. He is a retired Major from the U.S. Air Force and like so many WW II pilots, is in love with the P-51. He built this one with great care and great accuracy. (Take a look at picture #1.) He had the model on the hood of his car and had taken off the top cowling because he had done like so many of us — he had inadvertently left the receiver switch on and his batteries were dead. We were not about to let that deter the test flight so we borrowed a fresh battery pack and installed it. Just look at the landing gear. John made that up himself. Look at the grill over the cooler and the exhaust stacks, the machine gun. Look at the wheels, the wheel covers, and if you could get up close to it, you'd see that he had put thousands of little pin head dents in there to simulate rivets in the metal skin. A beautiful model, and John hadn't built a model in over 35 years and this was his first R/C model.

Picture #2 shows John reassembling the model in preparation for the



first test flight. Again, you can see the beautiful coloring. John has it done up in the authentic 343rd Fighter Squadron colors of the 55th fighter group - a P-51 group stationed in England during WWII. Picture #3 shows John anxiously watching Jim Sunday as he starts the model. You can see that he was using good sense in



getting a lot of expert help. Picture #4 - the moment of truth. Steve Cosby, the bearded pilot, and Jim Sunday, giving a moral assist. Anxiously watching his baby is John, hands on hips, probably to keep them steady.

Finally, look at picture #5, you can see Steve Cosby's finger on the button and John is actually flying his P-51 for the first time. Look at the concentration in his face. He only flew it for a few seconds before he let Steve have it. Steve brought it in for a landing and the flight was over. I never saw a happier and a more nervous man than John McRay. He is so typical of so many newcomers to the hobby. He had built something which he really was incapable of flying, but he used good sense and let somebody check it out for him. He has told me that he is definitely going to get some kind of a ready-made job to practice on before he really attempts to fly this. All I can say is, the rest of you newcomers to R/C flying, take heed! That's the smartest thing that you can possibly do and John showed good judgement all the way through, even though he was very eager to fly it himself.

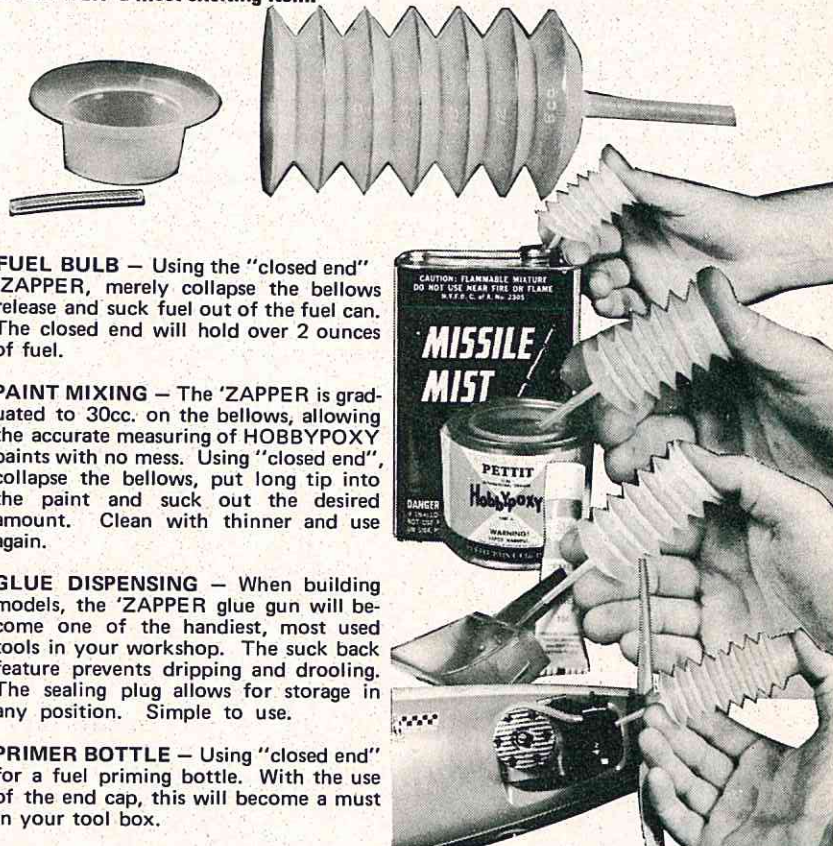
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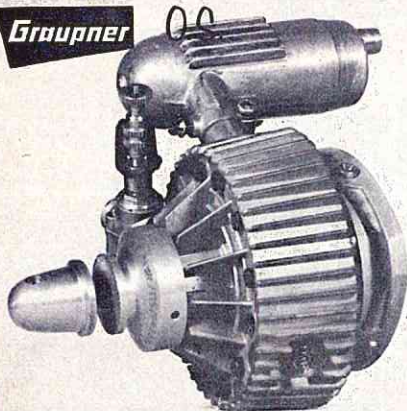
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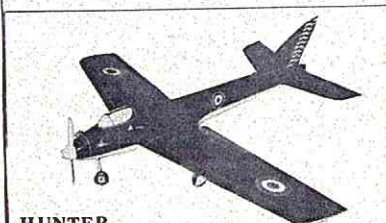
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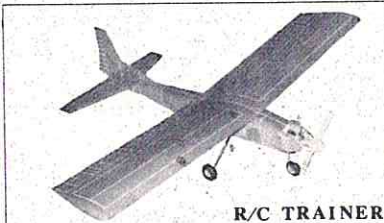
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**SCALE IN HAND**

(continued from page 8)

tion, though in a more complicated form.

★

There are two further methods known to the writer for getting 'up-with-twist' LG, but it is considered that the two shown offer the best possibilities, since the others call for highly precise parts without offering any compensating further advantages.

An additional problem posed by the up-with-twist landing gear is the one of making the wing sufficiently strong. With a hole in the lower surface nearly from the L.E. to the flap hinge line, and little or no room for adequate spars, it seems to me that right here is where the real difficulty with this gear arrangement lays. It's likely that some unusual structures might be called for, and a friend of ours who is building a *Corsair* has a fiberglass wing skin out beyond the legs. We'd seriously suggest a very strong L.E., preferably hardwood. Some metal might be used too.

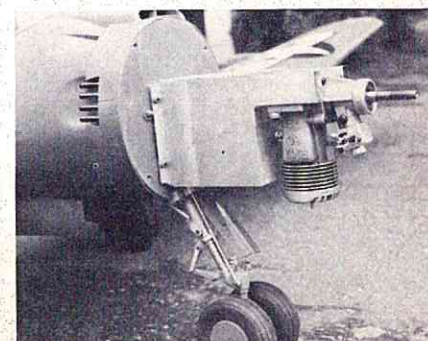
Anyone who tackles these problems is invited to send us details. Good Luck!



★

Wow! Let's get off the head-scratchers to finish up or we'll all be Excedrin cases!

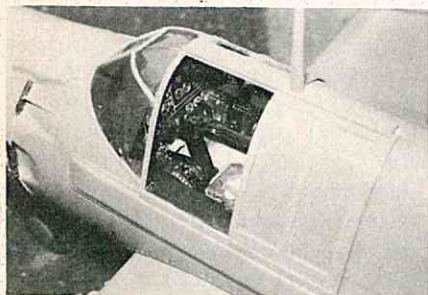
Some pictures which came to us via Claude McCullough (who designed the ship) show a tremendous effort on a Douglas XTB2D-1 (bet you can't repeat that designation tomorrow without looking). The builder is Fred Bouffard of Massapequa, New York, who obviously spent a whole slug of





hours on it. The cockpit photo shows well, but to us the most interesting part is the combined fuel tank/engine mount. The L.G. detail is noteworthy. An Enya .60 powers the bird but the radio was not specified; nor the weight tho' we'd hazard a guess at 11 lbs. or so, give or take a pound.

This ship was one of the forerunners, or parents if you like, of the *Skyraider* and judging from Claud's own prototype (plans are available from RCM) which we've seen fly, makes a practical and highly impressive subject. More like this, please.



★

We got a bit sidetracked this month, but the promised "gem" on R.A.F. roundel proportions will appear next time. Join us then, same book, same place. □

## CUNNINGHAM ON R/C

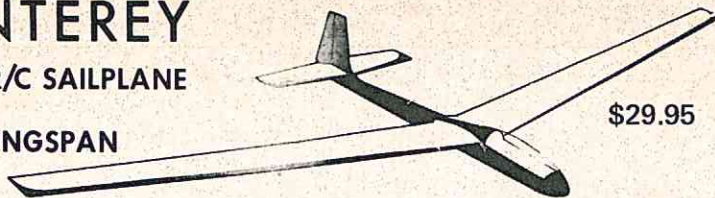
(continued from page 12)

the quality gets better and better each year. With some of the new two and three channel equipment now on the market it is possible to get started with a simple, yet good system for under a hundred bucks. Even if you elect to go the smaller aircraft route, give serious thought as to what radio to buy. My personal preference is at least a four channel rig with nickel cadmium packs in the transmitter and receiver. Not because it is safer or more reliable, or more expensive, (the smaller ones are just as safe, and as reliable, though less expensive) but, because if you progress in the hobby, this radio will allow you to fly any type of aircraft, be it rudder and throttle, glider, pylon racer, big super stunt multi, or a race car. If you can't quite swing the four channel, then buy one of the two channel rigs, but buy one that can be upgraded by the addition of extra servos and battery packs. Over a period of time you will invest as much in this radio as you would have in the four channel to start, but it may ease your financial load to not invest too much at the outset.

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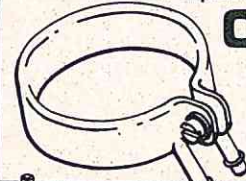
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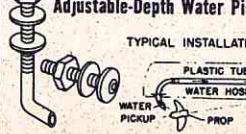
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Once you have decided on a radio, and again, I have owned and flown most of the popular big name brands, and they are all good, then you must give your attention to what engine to buy. If you are an old model builder and you have a real keen ukie engine sitting around that you are dying to use in R/C (even if the engine is twenty years old), forget it. Give the engine to the kid down the street, and go out and buy an R/C engine. You will be much happier in the long run. Almost all of today's R/C engines are great. They start easy, run well, have good working throttles, and it just isn't worth the trouble to try to retread an old engine. As I said earlier, by all means buy a .60 size if you can afford it, and have someone help you learn to fly. Even if you can afford it but you don't have someone to help you learn to fly, **don't buy that Sixty.** With all of that power you will turn your new pride and joy into a bunch of junk quicker than you can blink. I really feel that the very best way to start in R/C is with either a simple glider, or powered with a smaller engine, a .35 or under. A .19 is a great size.

So now that you have decided upon your engine size, what kind and size aircraft are you going to build? Again, your choices are limited by what engine you picked out to buy. If you purchased a .60 then build a shoulder wing aircraft for your first one. The Ugly Stik, Falcon, etc., are great examples of fine kits that are tops for the first timer. My own Professor from RCM plans is a great aircraft for the beginner with a large engine and many, many of them have been built all around the world. The new RCM Trainer, designed by Don Dewey and Joe Bridi, soon to be presented in RCM's all-new Flight Training Course, would be an excellent choice for a .40 size engine. The thing NOT to do is start out with visions of speedy, low winged bombs dancing through your noggin, just because that's what you saw when you visited the field last weekend. Stay away from this type of aircraft until you have made yourself into a good pilot. Nothing is more fun than to experience the thrill of flying a really hot multi ship, and nothing is more deadly than watching a really hot multi ship do a death dive into the ground at the hands of a rank beginner. Don't buy a kit that is a model of the aircraft that won the last Nationals, nor buy a kit of the aircraft that won WWII single handed. These can

be excellent aircraft in the hands of an experienced pilot but too tough for a beginner.

For example, the Kwik-Fli is one of the most popular kits ever produced, and it is a great airplane, but, the wing section (airfoil) was picked out for its ability to stall out quickly to allow that aircraft to perform certain parts of the stunt pattern. It must stall at a reasonably high rate of speed, and break cleanly from the stall into a spin, or a snap roll, or a hammerhead turn. And these are just the things that will give the beginning flier the willies if it happens to him. With most fully symmetrical airfoiled pattern aircraft you must be pretty careful with your landing. If you slow them down too much they suddenly stall, snap roll to the left and die, just when you thought that you had a landing made. What you need for your first aircraft is one that has a semi-symmetrical wing, is strong, yet simply built, and can be easily and quickly repaired.

If you are starting out to build an aircraft for your smaller sized engines, then you really have a tougher choice to make when it comes to kit aircraft. The Royal Coachman is a good trainer for a .15 engine, as is the Little Stik. Also, the standard size Falcon is a good choice. As for magazine plans, RCM has featured a number of outstanding aircraft for the beginner, including the RCM trainer, and my Instructor of several years back. All of the aircraft mentioned are, again, shoulder wing types.

The shoulder wing airplane is the best choice for the beginner for several reasons. It is more stable when flying, the landing gear is mounted in the fuselage rather than the wing, so on a hard landing you may botch up the fuselage a bit, but you won't screw up your complete wing by driving a landing gear block clean through the wing just because you bounced in for a landing.

Another factor in making a choice of both engine and airplane is where do you fly from in your area? I know that in many parts of the country the flying sites are new highways under construction, weed patches, school grounds and assorted other fine and lovely spots. An unmuffled .60 buzzing around a school ground is a sure way to get tossed off on your ear in short order.

If your location does not have a regular flying field, then by all means, give a thought to trying your luck with a simple glider, or a high or shoulder

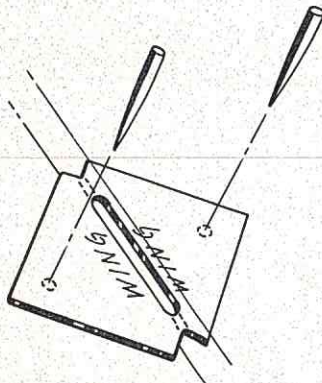
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wing aircraft that you can get airborne with a hand launch. If you are flying in high weeds, then do yourself a real favor and take the landing gear off of your aircraft. Then, when you are coming in for a landing the ship will glide into the grass with little or no damage. With an undercarriage in place a weedy type landing will flip your ship head over heels and may cause a lot of damage. It really is amazing the places that modelers will pick to fly. In fact, some interesting flying has been done in school grounds. Ask Dewey about the time he landed the New Era I in the top of a tree on the Pasadena High School grounds! And also ask him about how chicken we were to go up that skinny tree to try to get it down, and how we had to recruit a young man, passing by, to climb the tree. (For \$5.00)!

As you can tell from all of the foregoing, getting started is harder than it looks. This has been a general discussion of what the problems are in getting started. You must answer these questions yourself in order to achieve the best results for you. In part two of this series I will discuss the real nitty gritty of building your first aircraft, and will try to iron out some of the rougher spots. If at the end of this series you have more questions, then fire them in.

Good Luck, and remember what to tell your wives. Maybe you'll be lucky like me and your wife will put up with all of the nutty things that you really want to do. □

## LETTERS

(continued from page 5)

national champions is in need of modification: in fact, it HAS been modified for this year, in a rather interesting way, but not the only possible way, and I have no doubt that N.M.P.R.A. will listen to still other proposals about how the system should be modified. But the truth is that luck and persistence are both very much a part of racing, and should be. Al had a lot of both, last season, and therefore deserved to place as high as he did.

(4) But above all, racing, to be racing, should involve a kind of head-to-head competition that we have in rotated heat-racing. Let those who enjoy pure numbers, accumulated through a speed-trap, race against the clock. And let those who enjoy the psychology and excitement of racing against other racers go for the checked flag first, second, third, and fourth. **FORMULA I IS AND OUGHT TO CONTINUE TO BE THE LATTER KIND OF EVENT!!!**

Finally, there are several real sticky

problems that Strickland's article does not deal with. (1) The toughest LABOR problem is getting and keeping FLAGMEN. The best answer I can see is to stop giving lap money and turn over as much as possible of the entry fees to the flagmen, counters, etc. — but especially the flagmen. (2) The toughest SAFETY problem is speed beyond the reflexes of all but the very best fliers. Several answers suggest slowing them down by controlling the fuel (eliminate or minimize the nitro and other exotic ingredients), since there is no enforceable way of controlling engine modification. Cold fuel is like a headwind equal for all. (3) A problem for some areas is the MUFFLER requirement: their fields can be used only with mufflers, so they can't even practice for racing elsewhere. But mandatory mufflers might well kill Formula I, since part of the spectator appeal is undoubtedly the noise. We'll see how F.A.I. goes, with mufflers, at the Nats. I'll bet the crowd is noticeably less interested in F.A.I. than in Formula I.

I think Strickland's other goals are already well on their way to being achieved. The rules have been simplified considerably, and sharpened in their clarity, this year. But they are far from perfect: they need modification still, and it is only with the help of fliers all over the country that we will ultimately get the rules to be as equitable and useful as we all want them to be: to that end, there exists an organization called the NATIONAL MINIATURE PYLON RACING ASSOCIATION. It has its own publication, it has officers it's members elect and it is responsive to the views of the membership. It would be nice if the various excellent hobby publications, including this one, would CO-OPERATE with N.M.P.R.A. rather than going off on their own in matters like rule proposals.

Respectfully submitted,  
Robert P. Stockwell

P.S. In talking with Al about his proposals, he says I missed the point: the point that he considers important is that if we don't change our ways, we won't have any sponsors for races, because the present rules encourage too many quarrels and too much bad sportsmanship. I agree fully that we **MUST ELIMINATE THE KINDS OF ARGUMENTS AT THE FINISH LINE THAT WE HAVE HAD TOO FREQUENTLY.** I think we can do it by asking the starter to be absolutely hard-nosed about his descisions, and authorizing him to assign a zero to anyone who gives him too much of a hard time. But I guarantee that **CLOCKS** would increase the trouble, if they were the law. At the most recent Valley Flyers race there were several instances of gross disparities between the facts (i.e. who finished first, as agreed by all) and what the clocks said.

Dear Sir:

In your April issue you had an article in which you discussed the

# fiberglass

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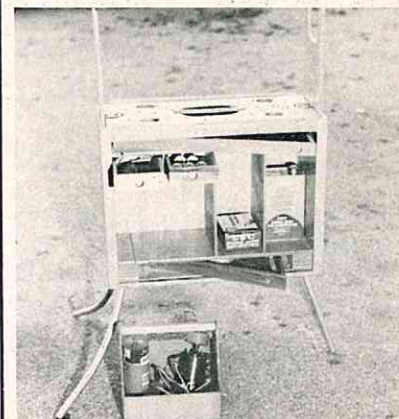
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Norman, Oklahoma

Dear Sir:

I have just finished reading the three articles on pylon racing in the May '71 RCM. I really hope that Quarter-Midget and Half-A Midget racing catches on.

I am in agreement with the ideas and rules you have proposed for ¼-Midget and ½-A Midgets with one exception. One thing that you continue to point out in the two articles is the need for safety, however, you have set up the pylon course in a very dangerous way. With only two pylons there is no way to keep planes from flying over the pilots and officials. With two pylons the shortest and fastest course is as close as you can get to a straight line between the pylons. This leaves no room for pilots and officials. The slightest mistake after rounding the Number 2 pylon can cause a very dangerous situation. I have raced in races using only two pylons and have had to duck planes several times. This danger exists even when using a slower airplane such as ¼-Midget or ½-A Midget racers. We have been racing Sport 15 type races (using .15 engine and 2-channel radio) and the speed is surprisingly fast. You make the statement that the low speed of ¼ or ½-A Midget races won't kill. This is not at all true and even if they won't kill, they could seriously injure a person.

The solution is to use a three pylon course as the Formula I and II events use. This means the number 2 and number 3 turns would be of a larger and less dangerous radius. This, of course, means we need one more flagman, but I believe it is worth the extra effort of obtaining one more official, so we can have a much safer racing event and perhaps save a life or serious injury.

I think the ¼ and ½-A Midget idea is great, but for safety's sake let's use three pylons.

Now, for the article on Formula I rule proposals. Al Strickland is correct in stating that something must be done to save this event. However, the following statement from his article makes me sick, "Now I am not idiotic enough to advocate slowing the planes down, after all racing is to see how fast you can go."

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Racing is NOT simply to see how fast one can go, but it is to see who can complete a race course first under a given set of rules. The idea that these planes must travel at 150 mph in order to have a good racing event is completely wrong. We can have a very exciting AND SAFE event if speeds were a little slower.

I don't know what modelers Al Strickland has been questioning, but around here 90% of the modelers (both racing and sport fliers) believe that the Formula I planes should and must be slowed down before someone gets killed. When Formula I was first started there was an idle requirement. This rule, alone, would slow down the planes. Fuel restriction, intake area restrictions and thicker airfoils are a few more good ways of slowing down the planes.

Al Strickland discusses a method of encouraging beginners. The very thing which discourages beginners is the speed and skill required to fly these planes at 150 mph.

Apparently there have been a lot of arguments at the races Al Strickland has been to. Around here it has not been that much of a problem. Seems to me the problem of arguments could be solved by requiring all complaints to be in writing. In most sports the fellow who insists on arguing with an official is thrown out of the game. If a pilot only flies 10 laps and then finds out he cut one pylon and thus didn't finish the heat, he will very quickly learn to fly the extra lap just in case he made a cut during the heat. He should not be given the heat by adding on the time it would have taken to complete another lap.

The idea of starting each flyers time as his particular starting flag drops would mean that we are only racing against the clock and not against the other planes in the heat. This would only become a complicated way of flying the AMA solo pylon event (which is dead because of lack of excitement).

I like the idea of having a novice rating for newcomers and working up to the expert rating by obtaining 9 points by placing either first (3 points), second (2 points) or third (1 point) in contests. This should encourage more entries in our racing events.

The main points I intended to bring out in this letter is the need to make pylon racing more safe by (1) reducing the speed of Formula I ships and (2) use three pylons in the sport pylon events such as ¼ and ½-A Midget pylon. If these two things are not done, an accident is going to happen and pylon racing will be damaged if not outlawed.

I hope we can get some reasonable rule changes to make racing more safe. I think racing is the greatest thing that has happened to the model airplane hobby and I would hate to see it disappear because of an accident resulting from unsafe racing events.

Sincerely,  
Ralph White  
Fliteglas Models



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