

RC MODELER

THE WORLD'S LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS



THIS MONTH

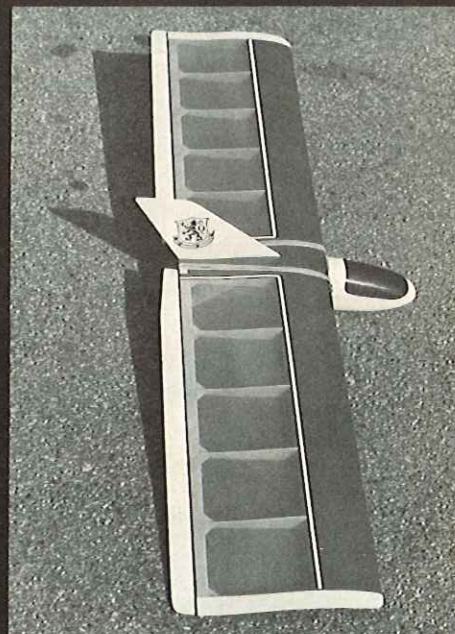
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THIS MONTHS COVER

"Miss Daytona Beach," Stacy Evens posing with a Lanier Colt II, K & B .40 and Kraft radio. Aircraft and Ektachrome transparency by Chuck Borel.

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VOLUME 9 NUMBER 5

MAY

1972

FROM THE SHOP

DON DEWEY

After considering, and rejecting, the mandatory muffler rule for Pattern contest flying during the 1972 season, the AMA Contest Board did a complete about face and hastily instigated this rule for 1972. To many, both contest and sport fliers alike, this rule change seemed to be an invasion of personal rights — an inconsidered move on the part of a few people to shove mufflers down the throats of all the pattern fliers in the U.S. whether needed or not. If you are one of those who believe this, then perhaps you'd better take a second look at what is happening in this country at the present time.

Many states have passed laws to protect the environment from those of us who are careless enough to mistreat it. Do you realize that the snowmobile industry has almost been wiped out this year due to laws passed limiting the use of those vehicles in most of the Northern states? The snowmobile industry was much larger than the R/C industry, by far. The dune buggies are doomed to go the way of the snowmobiles and will be very closely followed by trail motor bikes if action is not taken in the near future. Too many inconsiderate drivers and riders chasing back and forth across the wilderness have upset the ecology of the area to such an extent that laws had to be enacted to prevent further damage and erosion. Of course, our model planes do not cause any trouble with wilderness areas; we don't cause erosion; and we usually don't disturb the mating of wild elk, beaver, or what have you. So why worry about snowmobiles, dune buggies, and the like?

At the time of this writing, two states have passed strict laws against noise pollution --- New Jersey and Oregon --- and more state legislatures have similar type laws under consideration. We certainly fall under the noise pollution portion of state laws and probably more so than most of us realize. A dirty, nasty bark of an unmuffled engine may be music to the ears of some fliers, but, to most laymen, it is an irritating noise and one that could, and should, be eliminated.

Current mufflers on .60 engines are at best pretty poor. There are certainly numerous mufflers on the market and we have tried most of them. Some do calm down the noise a bit, but none really do silence the engine. None of them make that engine travelling around the sky as quiet as a lawnmower, or as quiet as the family automobile. To be certain, we rather enjoy the sound of a fast revving, smooth running engine and, with any of the current mufflers, it sounds reasonably quiet. But, put yourself in the position of one who lives nearby an active flying field, listening to the whining engines all day, weekend after weekend, and I think that you, too, would object.

To properly muffle our engines is not an impossible task. Look at the powerplants that we are using today. The power of the current crop of .60 engines is about 20% — 30% above the engines that were considered ideal just two years ago. Radio equipment is lighter, aircraft are smaller, speeds are higher and, yet, we worry about sacrificing perhaps 5% — 10% of the available power of the unmuffled engine. We had better start worrying about sacrificing what we all consider the most enjoyable hobby and sport in the world. Take our word for it, our days are numbered unless we really do something about it. The mandatory muffler rule holds only for AMA sanctioned events. Now, what about all of the sport and Sunday fliers --- the only ones that are safe from restriction are the sailplane pilots.

Our current R/C engines will need to be redesigned, and need to be designed with a muffler as a complete part of the engine. Some of today's quietest mufflers will screw up a good engine so quickly that, before you realize it, you have a varnished piece of junk in your hands. The problem is more than simply sticking an aluminum pipe on the exhaust stack of your engine. If fact, the basic problem is to redesign our engines around a muffler. If the engine designers and manufacturers in the world don't realize this quite rapidly they may find that the

markets for their products have been banned.

This editorial isn't meant to scare you --- it is meant to wake up modelers to the very real facts of life today. And one of those facts is that the sport as we know it today may be so changed by tomorrow that it will never be the same again. Until such time as a really good engine/muffler system is available, we should at least all make an attempt to use the mufflers that are available, and, wherever possible, quiet those engines down. We fully expect that next year all Formula One racers will have to be muffled and this rule may just come a year too late. Of course, the real competitive fliers in Formula One hate to think of the idea of clamping down on their engines with a muffler, but face it — which is better — a muffled .40 engine or flying your Formula One racer as a sailplane launched from a Hi-Start?

The time has come for action and action that must be taken now. Don't stick your head in the sand and hope that this phase will pass . . . it won't! Begin now to work actively to promote the use of muffled engines at your flying site even though nobody has said anything to you at all about noise. It doesn't take much these days for the environmentalists to obtain the backing of state and national legislature.

Let's get our heads out of the sand and really listen to all of that noise out there. With several multi-million dollar industries catering to sports enthusiasts losing ground rapidly to the environmentalists who have successfully banned their activities in many areas, it doesn't take much imagination to see what could happen to the much smaller R/C industry and the sport that goes along with it. It's time for all of us, modelers and manufacturers alike, to take constructive action to prevent the sport and hobby of radio control from being something that "they used to do in the good old days." □

Letters

A FEW CORRECTIONS . . .

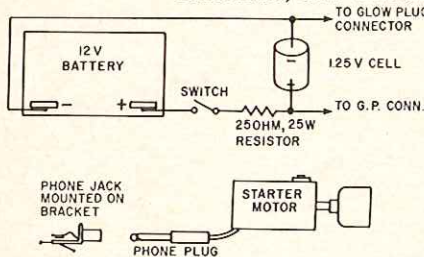
Don:

In regard to the article "The RCM 12 Volt Starting System", which appeared in your January 1972 issue, I have two suggestions. First, is to correct an error in the Fig. 3 drawing. As presented, you would charge the nicad cell in reverse, destroying it. The polarity should be reversed.

Secondly, following your emphasis on safety the starter motor should not use household type A.C. connectors. There is always a danger that someone not familiar with such a use may plug the starter inadvertently into an A.C. receptacle with shocking results. A.C. connectors should be used only for 117v A.C. purposes. I would suggest that a standard, not the miniature, phone plug and socket be used. These are obtainable at any electronic parts suppliers.

Thanks for a very worthwhile article. This and others make RCM an indispensable magazine for the R/C hobbyist.

Yours Sincerely,
Alan Collins
Kitchener, Ont. Canada



CAN YOU HELP?

Don:

This letter is a plea for help from the frozen Northwest.

R/C flying has reached us here in Missoula, Montana, and is to the point of needing organization and guidance from others with experience.

This is an area where, if you ask for anything more than a tube of glue and three sticks of wood, you get a blank stare.

In spite of this, and if our suppliers dog team doesn't break down, we are getting in the air.

If there is any way possible, I would appreciate hearing from some of your vast readers re: - copies of bylaws, rules, procuring a flying field, etc.

If you can't help us, can you tell me who can?

Sincerely Yours,
Bill Barba, President
Hellgate Aero Modelers
1001 South Higgins
Missoula, Montana 59801

Dear Sir:

Could I, through your magazine, contact a club in the U.S.A. who would be interested in corresponding with our club "Waveney Model Flying Club."

The kind of thing we have in mind is an exchange of ideas, plans, magazines, photographs - anything to do with flying model aircraft. We have a fair-sized club, about 50 or more members, with most interested in R/C.

If any club is interested in an exchange of club transfers, I will answer all letters I receive with one of our club transfers. Is it possible to purchase your magazine transfer? (R/C Modeler Magazine decals have been mailed - Ed.)

I would be most grateful if you could find the time and space in your magazine to put my request. Thank You.

Yours Sincerely,
Richard Wickham
99 Banham Road
Beccles,
Suffolk, England

HEADED FOR SAIGON?

Don:

I recently returned from a Vietnam tour at Tan Son Nhut AB, Saigon, where we had an organized R/C and U/C club on the base. This activity was sponsored by the Army USAHAC Special Services, complete with transportation to our two flying fields at Bien Hoa AB and Long Binh on Sunday mornings. When I left in October, we were also flying R/C from the Vietnamese section of the Tan Son Nhut hangars and taxiway at one end of the field, courtesy of a Vietnamese Air Force Major, who was also an active R/C modeler AND the Base Operations Officer!

When the club was organized, we were quite concerned about the availability of model supplies, fuel, batteries, balsa, etc. However, our Vietnamese modeling friends came up with starter batteries and home brew fuel. Our other supply needs were met by modelers and friends going on R and R or leave to Hong Kong, Hawaii, and

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Hobby Lobby
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Our brand new 72 page catalog describes fully and pictures every item in Hobby Lobby's huge stock of R/C equipment.

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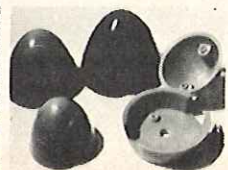
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Feedback

RADIO CONTROL ACTIVITY AND NEWS BRIEFS

Continental Pattern

AMA District IX veeper Jim Mowrey has come forward with a sorely needed remedy for the eternal pattern controversy. His 'Continental Pattern' is not really a pattern at all, though it utilizes the FAI maneuvers, and constitutes one of the most intelligent concepts to come down the pike of late.

Being smugly "American", we never seem to recognize that the rest of the world may have built a better mousetrap somewhere along the line. A point in case would be the almost universal acceptance of international road signs - by everybody except us. Don't buy that one? Okay, how about the metric system of weights and measures - feel any sand trickling into your ears yet?

What Jim has so brilliantly accomplished is an improvement upon the FAI system, which is the best currently available mousetrap. The "Continental Pattern" does away with the requirement for several competition classes with a different pattern for each. Instead we have a master list of fifteen maneuvers, from which the contestant selects those he will perform. In order to provide for more than one group of winners, categories can be established along the bell curve of the resulting point spread in a fashion similar to that which defines frequency bands. In this manner, contestants with widely diverse capabilities can compete with each other meaningfully. Proposed maneuvers for the 'Continental' master list are:

Guest Editorial by Ray Brandoli

The other day I was reviewing some of the original club membership lists and it brought back memories. I could not help but think of all the work put in by a lot of people through the years to make this club what it is today. This brings us around to the reason I decided to write this little treatise. I thought I would explain what I feel is my responsibility as a club member, in hopes that some of you might agree and will act accordingly.

I feel that paying the monthly dues starts me off at "ground zero". This simply keeps my name on the membership list. Because I have paid my dues does not entitle me to be

showered with unlimited services by the other members. Only if I do something significant each year for my co-members can I, in good conscience, feel entitled to their services.

Usually, at the beginning of the year, I decide what my minimum contribution will be. I have always accomplished these objectives and usually go beyond that. The experiences have been rewarding and have helped me to more fully appreciate the total picture of R/C modeling.

Some of the things I've done: Labored to help build two air fields (the most backbreaking); served as club officer a few times (the most rewarding); hunted for a new flying field (the most frustrating); helped judge and run the flight line at several AMA sanctioned contests (the most interesting); served as flag man at the number 2 pylon for a full season of

racing (the most exciting); and so on. About a year ago under the able guidance of Ron Decker I rebuilt one of the club "gang mowers". I spent way over 80 hours of hard work rejuvenating a piece of machinery I was sure would never cut another blade of grass. Incidentally, most of the time my leg was in a cast. When I started to feel as though I had really made a large contribution, I thought of the guy who gave me the job in the first place. Ron delivered the rusty mower to me almost in kit form with a box full of new seals, bearings, bolts, machined parts, prime and finish paints, etc. In addition he had completed the 3 or 4 other mowers in the "gang", the "gang" frame, and had even worked on the tractor. Now there is someone who really made a contribution, and there are a number of others like Ron. I doubt that many people realize the amount of work put in by a relatively few members.

So what is the moral of the story: First, the money we pay as dues does not keep the club functioning. The money does not mow the grass, serve

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CONTINENTAL PATTERN SCORE SHEET

MANEUVERS (Cross out those you will by-pass)	Points	"K"	Score
1. F.A.I. TAKE-OFF (Mandatory)		10	
2. FIGURE M		15	
(Option) STALL TURN		8	
3. DOUBLE IMMELMAN TURN		10	
(Option) IMMELMAN TURN		5	
4. THREE OUTSIDE LOOPS		15	
(Option) TWO OUTSIDE LOOPS		10	
(Option) ONE OUTSIDE LOOP		5	
5. CUBAN EIGHT		10	
6. SLOW ROLL		15	
7. THREE INSIDE LOOPS		10	
(Option) TWO INSIDE LOOPS		6	
(Option) ONE INSIDE LOOP		3	
8. FOUR POINT ROLL		15	
(Option) KNIFE EDGE FLIGHT		10	
9. STRAIGHT INVERTED FLIGHT		10	
10. THREE HORIZONTAL ROLLS		15	
(Option) TWO HORIZONTAL ROLLS		10	
(Option) ONE HORIZONTAL ROLL		5	
11. HORIZONTAL EIGHT		10	
12. TOP HAT		15	
13. THREE TURN SPIN		10	
14. LANDING PATTERN APPROACH (Mand)		10	
15. LANDING PERFECTION (Mandatory)		15	
(Inside 50 ft. circle)		15	
(Inside 100 ft. circle)		10	
(Outside 100 ft. circle)		5	

From the Swamp Static, publication of the R/C Nuts of Broward County.

engine clinic

By
Clarence
Lee



Hardly a month goes by in which I do not receive a letter or two from a modeler who is in the process of building a scale model and has come up against the problem of cooling the engine without deviating from scale. Those big openings that are necessary for cooling would just ruin the appearance of the model. So how do they get around this? This month let's talk a bit about proper cooling of cowled-in engines. The following letter is typical of those I receive. I ran this particular letter as the writer makes mention of an R/C propeller driven truck that helps make a point.

Dear Mr. Lee:

I am currently building a Spitfire, 2" to foot. The engine will be inverted and I'm concerned about the cooling. The bottom of the cowl will be open about the diameter of the engine. I can't believe the engine will be cooled enough since it will be virtually all inside the cowl.

I plan to open the front of the nose behind the spinner as much as possible. There is quite a lot of blade area inside the spinner and I wondered if it would be necessary to drill a small hole in the front of the spinner to pull air into this area. I read a construction article several years ago on an R/C propeller driven truck, the engine was mounted inside the body. Even with the engine wide open the truck would hardly move until a front vent was opened.

It would seem the same principle would apply, but I wanted to check with you. If so, how small could I make the hole? Of course I want to stay as close to scale as possible but I realize I must make concessions to scale for the sake of cooling.

I plan to open the scale stacks for venting the cowl.

Many thanks for any help you can give.
Bud Caddell
Birmingham, Alabama

It has been my observation over the years that the majority of scale model builders seldom give the amount of attention to proper cooling of their engines that they should. Many months to several years will be spent

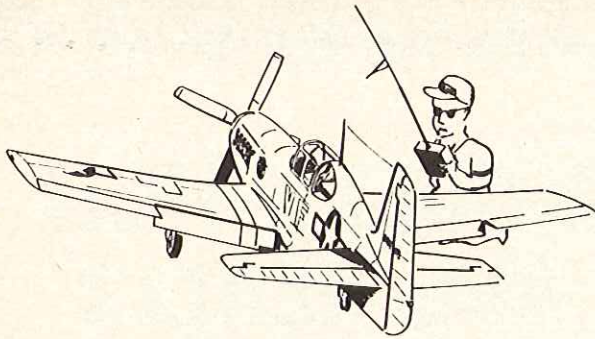
on construction of the model, putting in all of the scale detail including a fully detailed cockpit complete with relief tube, but little or no attention will be given to proper cooling of the engine. A small hole somewhere in the nose is usually the extent. As a result, on the first flight the model staggers into the air (usually overweight and tail heavy), the engine gets hot and sags, and the model is reduced back to kit form. The engine manufacturer is, naturally, cursed for putting out such a lousy product. If lucky, the airplane is repairable, the hole in the nose made a little larger this time to get more air just in case the engine was a little hot, and another attempt made. Quite often the results are the same again. The modeler is sure the engine is at fault as he had a "big" hole in the nose this time. The one thing modelers seem to overlook is the necessity for an air exit.

The R/C propeller driven truck is a good example of this, but in reverse. There was an exit but no entrance. The propeller does not create air, or push it, it only moves it. For the truck to move there had to be both an entrance and an exit for the air to move. The same thing pertains to a cowled engine. The air has to move through the cowl in order to cool the engine. If only an entrance is provided the hot air stays motionless in the cowl and there is no cooling effect. Due to positive pressure in the cowl your outside airstream simply bypasses the cowl as if no opening were present at all. So the point of all this is — the exit is just as important as the entrance and must be taken into consideration. There is no way to get around eliminating these openings so there is going to have to be some

deviation from scale. Better this than a bent airplane.

Okay, how large should these openings be? This, naturally, depends on the size of the engine. The entrance should be equal in height to the height of the fins and head of the engine. In other words, from the top of the head to the bottom cylinder fin. It is most important that air pass over the head fins as this is the hottest part of the engine excluding the exhaust stack. If the head fins are allowed to protrude into the airstream, as in the case of the Spitfire mentioned in the letter, then the opening need be only as high as the cylinder fins. Width-wise, the opening needs to be about two thirds the width of the engine cylinder, minus the fins. This means that, with a .60 size engine, the opening would be about an inch wide. Some of you are probably wondering how the pylon racers are getting away with considerably smaller openings. Remember that the racing engines are turning considerably smaller propellers at higher rpm with less load on the engine. They also move at a considerably faster speed. Scale and stunt model engines are working a lot harder and, in the case of most scale models, swinging more prop than they are really happy with. That 14-6 turning slow to make the airplane more realistic may look great, but is murder on the engine. The exit should be half again as large in area as the entrance. This does not mean one big hole. It can be composed of several openings. Just be sure that, area-wise, the exit is half again as large as the entrance area. Remember that the air gets hot and expands, so more has to get out than is going in. Also, you want the air to be

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SCALE IN HAND...

For the past couple of monthly columns, we've been attempting to give an in-depth review of methods used to make cockpit detail, and from the numerous letters received, this would seem to have been a particularly welcomed feature. Our thanks to the readers who wrote — your encouragement is appreciated, even if sometimes the weight of correspondence makes us reply in clipped fashion on an individual level.

And so, to round out the feature, this month we are going to be covering the single most important part of a cockpit — the instrument panel. There can be little doubt that the panel of a scale model comes in for a rather disproportionate amount of attention from the average spectator or even the average modeler. Time spent here is going to be justified, so give it your best.

First, we'd like to give a couple of warnings. The two most-seen mistakes in model panels seem to be a) white instrument faces; very rare indeed on aircraft panels; these almost invariably are black, and b) Chrome-plated "bezels" (surrounds) to the instruments; again extremely rare and even then almost entirely confined to civilian plush-type privately-owned aircraft. To these two errors we can add a third, less offensive to the eye but equally wrong and seen on many a scale expert's model — lack of color. If you take a good look at the panel of most any aircraft you'll see a lot of color. For example, rev-counters frequently have the upper one-sixth or so paneled in red, to act as a warning that a needle that dwells too long in that area may find us flying a glider, and not a very good one, either. We came across one case where the last 300 rpm were marked progressively in yellow, orange and red. Oil pressure gauges very often have yellow in them somewhere.

The figures and needles in instruments aren't always white, more usual-

ly they are painted with luminous paint which, in daylight, has a light gray-green tint, not at all unlike "Sky Type S", which is the color we use for this purpose.

Anyway, enough of these "be-ware's." Let's get down to building a panel.

Stage 1. We make an accurate drawing of the panel with instruments, etc., denoted by circles or other shapes; no further detail is necessary. This drawing is made from the plastic template we mentioned at an earlier time. It should look something like Fig. 1 and will serve as our "master."

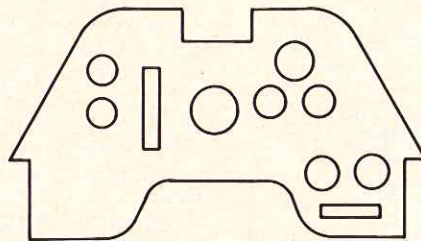


FIG. 1

Stage 2. Now transfer this shape to a piece of .020" or .030" plastic (white styrene) and cut it out very carefully. This is going to be the "face" of the panel.

Stage 3. Make another panel of plastic identical to the first one except that the thickness should be 1/16" — 3/32" or even 1/8". This layer will be used as the spacer and the inside edges of the cutouts are painted black — see Fig. 2.

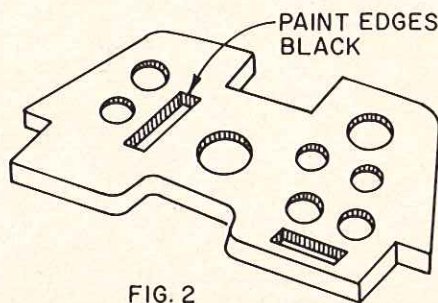


FIG. 2

Stage 4. Take a piece of .030"

plastic somewhat larger than the panel. On to it, glue the instrument faces, using your master to get each in perfect position. The instrument faces, themselves, can be made from the ready-printed cards available from Tatone or World Engines outlets, or they can be home-made. Not that we are going to recommend such a long way of doing it, but our own method is to draw the instruments about 3" dia. on pieces of card with a Rapidograph pen. We then send these to one of the commercial photostat houses for reducing to required size; at the same time we have the copies made "negative" — that is, white on black. Any area which will later be colored should be inked in on the original so that it will be white on the small photostat — color shows better over white than black.

The needles can be drawn on, but we prefer the three-dimensional needles described later, so we make no provision for these at this time.

If you are going to put colors in the faces or paint the figures, now is the time to do it. We use a very fine brush, plastic-kit enamels (our own favorite is Floquil Railroad colors) and work under a magnifying glass. Sure, it's tedious work, and if the thought of painting light green over white figures that often are only 1/32" high appalls you, you forget this stage and it won't show too much. We're not trying to con you into doing it — we're just letting you know what can be, and is, done.

Now for those needles. We cut ours out of .015" or .020" plastic; paint them and then glue in place with one tiny drop of cement on the instrument face.

By now you have a part that looks something like Fig. 3.

Stage 5 is a little less fiddly and will seem easy after the last work. We now make the instrument "cases" or mounting-lugs, as follows: Mark out

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CUNNINGHAM ON R/C



In the June 1968 issue R/C Modeler Magazine created and introduced Quarter Midget Racing to the R/C fraternity. The growth of this very interesting class of model was somewhat less than spectacular, due, in part, to most modelers flying the larger radio equipment at the time. It took several groups of modelers in numerous spots around the country to really push this event to the place that it now holds. It is difficult to talk to a group of modelers who are not interested in Quarter Midgets, and have either been building and racing them, or now have them under construction, with a planned schedule of races.

The basic idea behind the Quarter Midgets, back four years ago, was to provide a racing class that would appeal to the Sunday Flier (not just to old '49'er, Ken Willard, but to all sport fliers). The rules were aimed at keeping this a sport fliers event, with the emphasis on fun flying and competition without turning the event into an engine race, or a super-model-building competition. Several sets of rules have evolved around the country, and frankly, some of these rules do not intend to keep this event for the sport flier. I feel that this is wrong, but since the majority of pilots should have a voice in an event such as this, it would seem that the most popular rules would be the ones to become official.

Let's think about this for a minute. The Quarter Midget class has as its power plant, a .15 engine. There are not very many engines in this class suitable for racing work, but the ones that are now (and were then) in production are very well suited for this type of flying. One of the most important provisions of the rules were that the engine must have an operating throttle, and the later addition of a timed idle rule was to keep this engine from being hopped up beyond the average flier's means. I believe that a one minute idle rule is too long. Also,

I believe that the California approach to the problem by requiring a ten second idle is too short. Twenty seconds isn't too bad. When the race is ready to begin all engines are started and when all are running, each is throttled back at the same time and held at low throttle for ten, twenty, or sixty seconds. At the start of the idle period, the helper takes his hands off of the model and it must remain at rest throughout the entire idle time. When the flag is waved to start the race, each flier, in turn, shoves the transmitter to full throttle and takes off, unassisted. Many, many very good .60 engines will not sit at idle for one minute and then take full throttle without spitting, choking, and dying on the runway, so why expect a .15 to behave better? Ten seconds isn't bad, and this may be enough, but twenty seconds would be time enough to really see that the engine will idle down.

A restriction on the fuel further imposes a simplification on the flier, and the Contest Director. If the contest organizers furnishes the fuel then this keeps the sport flier right in there with the more sophisticated racer. Bob Reuther from Nashville, Tennessee reports that the contest furnished fuel works very well and really doesn't amount to a lot of money since the tanks are small, and not much is used for each race. They use an electric fuel pump to first empty the tank (no sandbagging allowed by having half a tank of pure nitro waiting for the rest of the fill up), and then fill it from the contest fuel. They use a commercial fuel with about twenty-five percent nitro and this has worked very well. The .15 engines seem to take to nitro very nicely, and many have run their engines on over 50% nitro with no damage to the engine.

The rules covering the basic design of the aircraft have worked very well,

and allow for a very nicely designed model. In fact, the width of the fuselage at 2 $\frac{3}{4}$ " will accommodate most of the medium sized radios with ease. The over-all height of 5" is just about right from an eyeball view, and most seem to run over this height. The weight rule was set up before radios were as light as they are now, and yet it is tough to build a model of this size at a weight ready to fly, less fuel, at 2 $\frac{1}{2}$ lbs. The maximum weight of 4 lbs. could be attained by some really heavy type builder (Old Uncle Don could get close!) but if it weighs four lbs., it would be awfully tough to get off of the ground, and would not be any type of contender in the race. The aircraft should appear to be similar to a full scale aircraft, but scale is not meant to be any part of the rules. If it looks something like a F-51, or a Navion, or a Minnow, let it compete.

Wing thickness is another matter that should be explored. A minimum root thickness of $\frac{3}{4}$ " was first proposed, and this was later changed to $\frac{7}{8}$ ". Now, a better thickness would seem to be 10% of the chord at both the root and the tip. The very thin wing really isn't the best for this type of aircraft, anyhow. A wing with extremely thin tips is prone to go into a high speed stall when turning a pylon, the result being one very crunched airplane. A 10% wing will give you very good flying characteristics, and will be a "safe" wing to fly. It should not have a desire to fold up in flight, nor will it snap out of a tight turn.

One of the largest problems encountered by most clubs when they hold a Formula I racing event is the tremendous amount of manpower required to put on a meet. It requires a minimum of 24 men to really do it correctly, and many more than this are needed to give every one a rest during the day. The Fort Worth Thunderbirds have been putting on three or four Formula I racing events each year for quite a few years, and we well know just how demanding this type of contest is on all of the non-racing types.

Since the Quarter Midgets are an event for the sport flier, it seems to me that it should be automatic that the race itself should be designed for the sport type club. It should be designed to need a minimum of manpower to keep everything going. After all, with airplanes as simple as the QM's, and with relatively inexpensive engines,

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SUNDAY FLIER

KEN WILLARD

This past weekend I went to Seattle. The purpose of the trip was to attend the seventh annual Northwest R/C Symposium staged by the RAMS club of Seattle.

This relatively unknown (up to now) regional show highlighted two very interesting facts. First, this regional show is rapidly growing into a major event on the national scene — and will need bigger quarters next year at the rate it is growing. I'll go into that in more detail later on.

Second, the competition between airlines is fierce. Now that's not anything particularly new to us when it comes to luring passengers, but I'm referring to the air freight aspect. Specifically, I'm referring to the business of air freighting R/C models to shows.

Let me tell you about my experience in getting to and from the Seattle show. Then I'll tell you about the show.

Recently we had an item in RCM about United Air Lines PAF (personal air freight) as it applies to transporting our R/C models. And they do a good job too. Shortly thereafter, a letter was published which extolled the virtues of Eastern Air Lines and the way they take care of R/C enthusiasts.

And here's what happened to me on my Seattle trip.

I live in Los Altos — thirty miles from San Francisco International Airport, and slightly less than fifteen miles from San Jose Airport, which is smaller, less crowded, and less expensive. So, when I go to Seattle (where I have relatives) I prefer to go from San Jose, even though it means the flight has to stop at Portland en route. But that only increases the time by twenty-five minutes, and I spend more than that getting to San Francisco Airport and getting parked compared to going to San Jose. And, Continental Airlines has five abreast seating in the coach section, rather

than six.

But I had no knowledge of what Continental would provide in the way of air freight service for my Wavemaster display model, which required a box that was six feet long, two feet wide and one and one half feet high!

So I called the Continental office at San Jose and talked with Mr. Putnam, the manager.

"Mr. Putnam, I go to Seattle fairly frequently, and like to go Continental out of San Jose, but this time I've got a problem."

"What's the problem?"

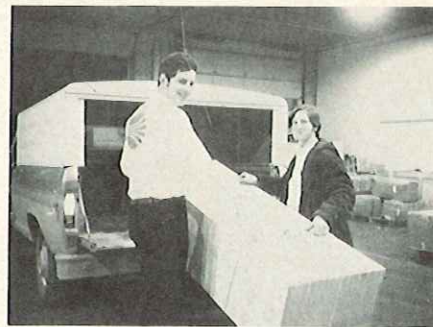
"I've got a six foot radio controlled amphibian airplane that I want to take along. I have it packed in a big box, and the radio is inert, but naturally, it has to go air freight. Now, United has this arrangement for R/C enthusiasts whereby they can get the R/C model right on the same plane with themselves — even check the loading if they want. They've publicized this service, but I've never heard whether Continental has the same offering for R/C enthusiasts."

The response was immediate. "Mr. Willard, anything they can do, we can do better! Just give us the chance."

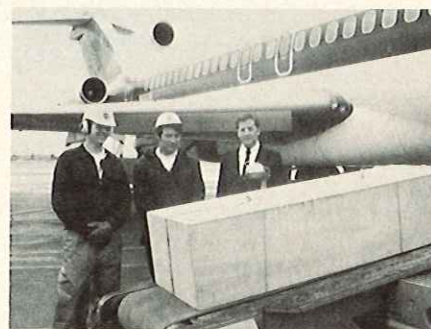
So I did. And they did. When I arrived at the terminal early Saturday morning, Trent Morse, the supervisor, directed me to the air freight office; there, they checked the box in, and then offered me the chance to watch the loading. It was raining, and dark, but everything went right on schedule. When we arrived in Seattle, the off loading went the same way. And when I went over to the air freight terminal to pick up the box, and told the agent I'd be back early the following Monday morning, he grinned and said, "We'll be right here waiting for you."

He was as good as his word, too. This time, the weather was a little better, and just so you modelers can get an idea of what was involved, I took a couple of action shots. Picture

number 1 shows Steve Coffield and



Dave Westby loading the Wavemaster into the panel truck to take it to the 727. Picture number 2 shows Les Flue and Steve Bekkerus, Continental air cargo handlers, with the Wavemaster "coffin" (as I called it) on the autoloader, and Dave McCleish, operations supervisor, who "supervised." This was the first time they'd loaded an R/C amphib on a 727.



You can see from picture number three, where Dave Beal is guiding the "coffin" out of the cargo bin when I returned to San Jose, that it did use up the whole width of the loader.



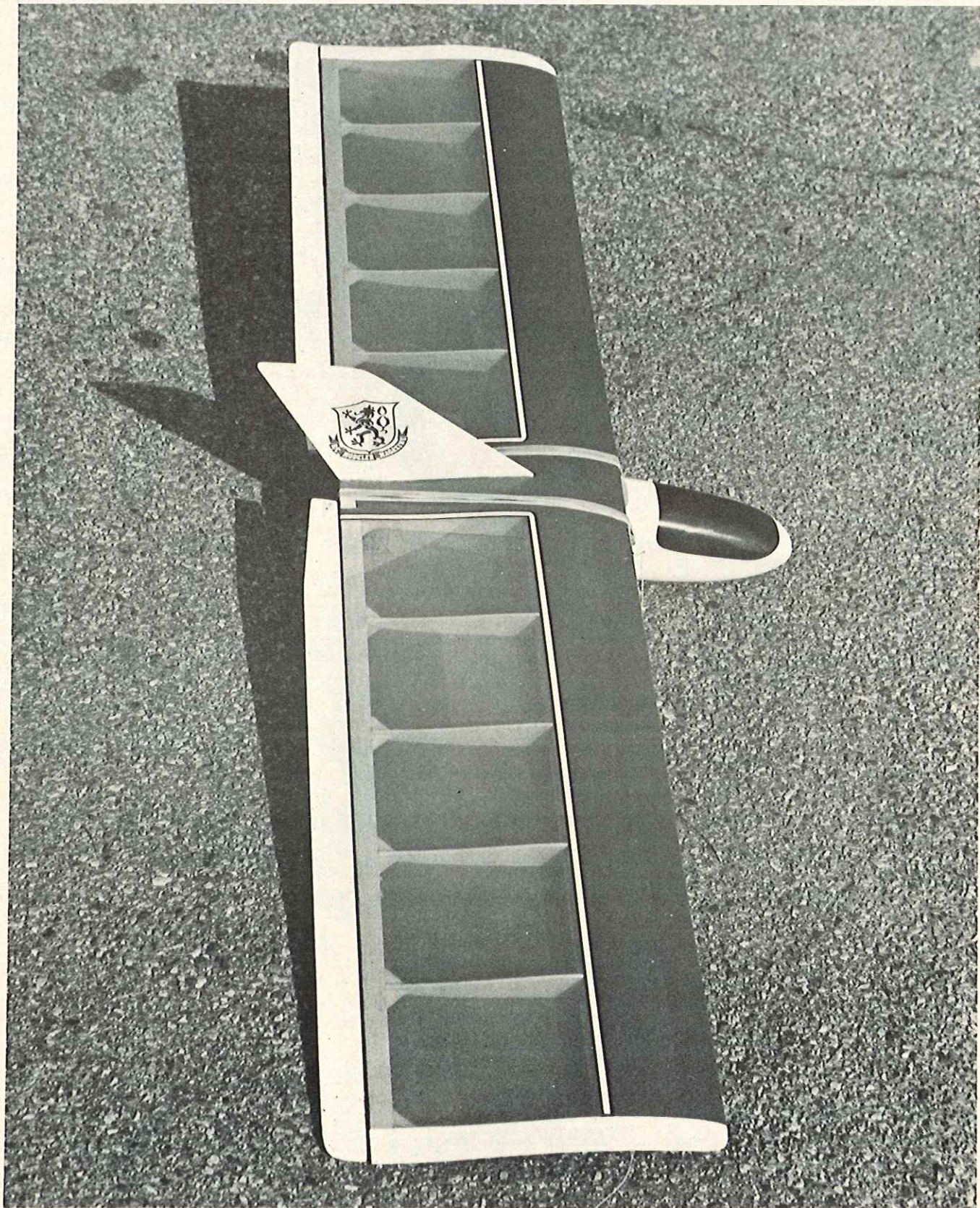
The whole operation was perfect from start to finish. The "Proud Bird With The Golden Tail" lived up to its name.

So, if you have occasion to take your model somewhere, here's a couple of suggestions. Call in advance and make the arrangements personally. Box your model carefully, and provide a means for it to be lifted easily — not

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little plank

CHUCK CLEMANS
and
DAVE JONES



Editors Preface: After receiving the construction article for the Little Plank from the authors, Chuck Clemans and Dave Jones, I was totally intrigued by the design of the aircraft and by its performance potential. The RCM prototype which I constructed from the authors original plans, weighed 25 ounces and had a wing loading of approximately 5 ounces per square foot. The amount of "rake-up" of the elevons proved to less than shown on the plans and no engine of any type was used, our Little Plank prototype being set up for Hi-Start and electric winch usage. The first few flights required some 'sorting out' of the aircraft to obtain the proper trim for thermal flying. The model proved to be one of the most remarkable thermal soaring machines we have flown to date and competed favorably with many high performance thermal machines in the area. In fact, the full thermal potential of this ship was never fully realized even with over 100 flights to its credit. It goes up on an electric winch, or Hi-Start, like it was on rails and, while its flight speed is quite fast compared to the conventional sailplane, it virtually acts as a "thermal sensor" in the air. Without any dihedral whatsoever, and its extremely low wing loading, the model reacts to even the smallest thermal by raising a wing tip sharply. Turns can be made so tight that it is almost like a pylon racer and staying in a thermal is virtually a unique experience. While the Little Plank can be thermaled in a circular flight path similar to any conventional sailplane, by applying full up trim on our particular prototype, the model would shoot straight up the center of the thermal.

Once properly trimmed, and once the flyer has become used to this unusual machine, we found that it equalled the best thermal times of the high performance ships that we pitted against it. The Little Plank is definitely not a beginners machine by any stretch of the imagination. With sensitive elevons, no dihedral, and a fast forward flying speed coupled with excellent penetration, the Little Plank requires your constant attention to fly it. You cannot take your eyes off this ship and expect it to be in the same attitude as you left it! This ship is more analogous to flying a full house competition multi insofar as it has to be flown all of the time and you can easily become disoriented due to its configuration. We were extremely impressed with the performance characteristics of this model and its ability to perform with the best of them in thermal competition. If you are a soaring pilot who has passed the novice stage, we recommend this design to you for a complete change of pace in soaring as well as a challenge to your thermal piloting skill. It is an excellent design based upon several years of research by the authors and has a performance potential that has yet to be reached to its fullest extent. . . . Don Dewey

RCM PHOTOS BY DON DEWEY

The Little Plank is one of the most exciting and challenging sailplanes we have yet flown.

Designed for the experienced flier, it is equally at home in thermals or on the slope.

Optional pusher engine shown.

The Little Plank is a design for slope soaring, thermal soaring, and sport flying. It makes use of the plank configuration to provide ease of construction and maximum performance with low power. The principle design features are:

Configuration: Flying wing with zero sweep back and constant chord.

Fuselage: No internal bulkheads.

Rudder: Centrally located, non-moving, permanently attached to wing.

Power: .049 to .10 in pusher configuration, prototype used TD .051 with Cox tank mount and TD .09 with Tatone mount and internal tank.

Controls: 2 channel with elevons for pitch and roll functions.

Control Linkage: Uses sliding servo for roll and fixed servo for pitch. Both servos are mounted on a plywood rack to allow removal as a unit. Breakaway linkage to prevent servo damage due to crash.

Wing Section: S-1 with no undercamber. A 9½% section with mild reflex. A reflexed Eppler 385 section has been developed and will be tested in the near future.

Dihedral: None, tip shape provides

small dihedral effect.

Construction: All balsa using standard wood sizes. Plywood used at stress points.

Weight: Less than 2 lbs., using PCS radio and KPS-10 servos and TD .051-2.5 lbs. with TD .09. 25 ounces as thermal soarer without power.

Performance: Surprisingly fast with TD .051. Capable of 10' diameter loops, rolls, and inverted flight. Six foot diameter turns possible on the slope. Will fly hands off when adjusted for circular flight. Tows well on electric winch or Hi-Start.

The Little Plank is a sport design for the Sunday flyer or others desiring a change of pace. While the plank configuration sacrifices efficiency due to the reflexed airfoil, it offers advantages in compactness, ease of construction, maneuverability and versatility. What other design can be thrown off a slope, winched, fly under power, and will loop, roll, fly inverted, alarm spectators and frighten birds?

Historical

The plank, or ironing board configuration, is not new. Our first one was a Dutch design called the "Ironing

Board". This was in the late 1940's. Later, the British magazine, *Aeromodeller*, published three views for a towline glider and the coordinates for a so-called self-stabilizing airfoil. This airfoil, a 9.5% reflexed, undercambered section was the basis for a design series which included a 300 sq. in. towline glider and a 1200 sq. in. radio controlled slope glider in addition to the Little Plank. The Little Plank utilizes a flat bottom version of this wing section for improved penetration and simplified covering.

Design

The current design is the joint effort of Chuck Clemans and Dave Jones. Dave is the proprietor of Western Plan Service, 5621 Michelle Drive, Torrance, California 90503. A request to the above address will produce a list which includes a variety of designs for slope and thermal, with such unusual items as a semi-scale Spitfire for slope and a 2500 sq. in. plank for FAI record attempts. Dave is responsible for the basic aerodynamics and configuration while Chuck, who resides in the Seattle area, can be given credit for power modifications, construction and flight test.

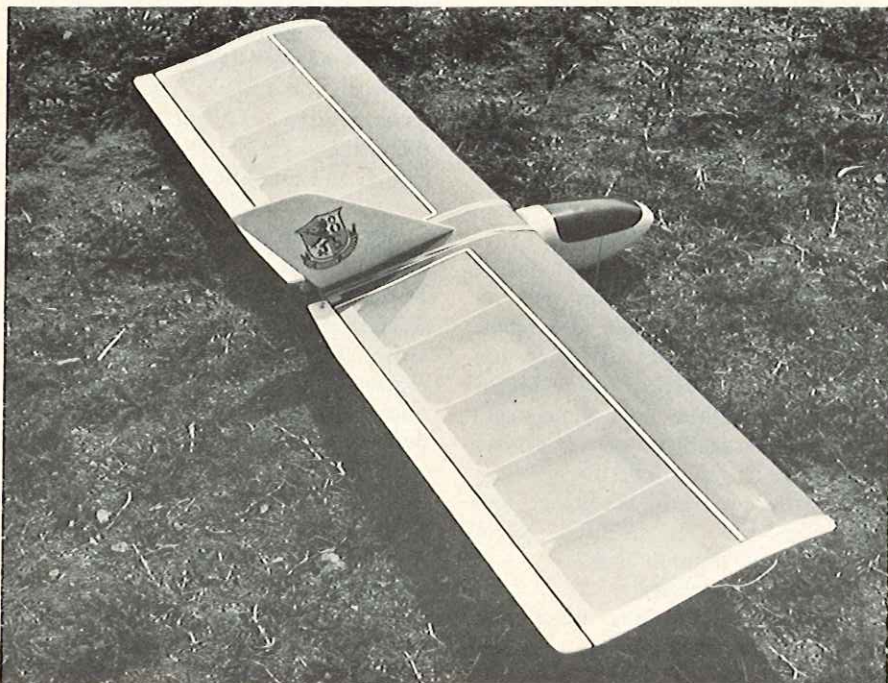


RCM's prototype of the Little Plank weighed 24 ounces, had over 200 flights at time this photo was taken.

The Little Plank is an attempt to produce an aircraft which one can carry assembled to the field and is at home either at the slope or in a thermal. It is maneuverable and requires a minimum of power. The pusher configuration was used because of efficiency advantages and to reduce the post-flight cleanup problem. The size of the Little Plank allows the use

of a TD .051 for sport flying or an .09 for the more adventurous. Power could be increased still further but is not recommended. The Little Plank is strong enough to accept a .19 but two problems must be resolved. The flat bottom airfoil with reflex will cause large trim variations between high and low throttle due to center of pressure movement. Further, the center of

Finish is white Aerogloss dope over silked fuselage with wing covered with red and transparent yellow Solarfilm. Tips, elevon and vertical fin are white Solarfilm.



gravity must be between 17% and 20% for reasonable stability, which may be difficult to achieve with the weight of a larger engine in the tail.

The design of the wing tips provides a small amount of effective dihedral which, while improving stability for circling in thermals, does not cause problems in maneuvers such as roll, Immelman, etc. Elevons for control in pitch and roll simplify the installation since separate pushrods and bellcranks are not required for the ailerons. Aileron differential is not used on the original and does not appear to be needed.

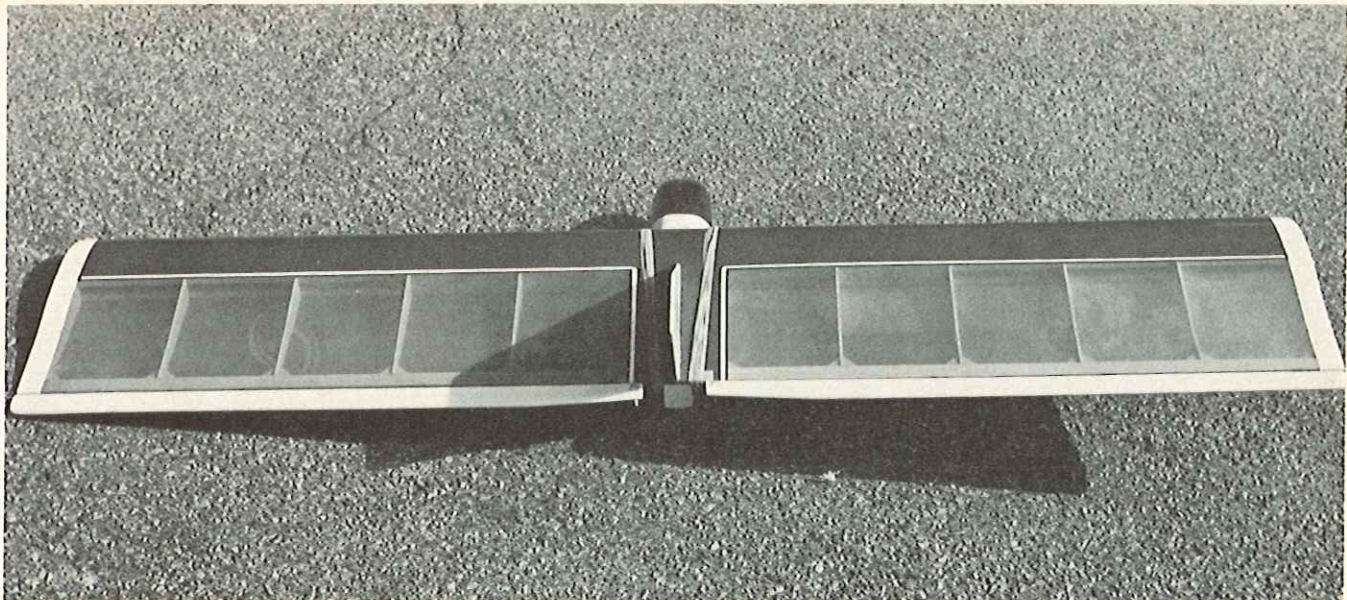
Flight Tests

Due to the unusual configuration and the variety of flight modes intended for this design, an extensive series of flight tests was undertaken. These tests were conducted over a period of several months in widely diverse weather conditions and resulted in several improvements to the original design. Slope tests were conducted with engine and propeller in place in conditions ranging from mild shear to straight-in at 35 mph. While the Little Plank can not be considered an exceptional dead-air machine, it is outstanding in high winds. Extended inverted flight (the reflexed airfoil requires about 1/4 down stick), rolls, and loops were accomplished with ease.

Powered sport and thermal flying presented nothing unusual but did suggest some changes. The engine run with the TD 051 using the Cox tank mount was considered a bit short for sport flying. A 1 oz. internal tank was mounted for use with the TD 051 and later tests with the TD 09. One thing to remember is that pushers tend to richen up in the nose-up attitude due to tank position which is the opposite of tractor configurations. This means that the engine should be adjusted with the aircraft in a slightly nose-up attitude prior to launch.

A TD 09 was installed to evaluate sport flying characteristics with additional power and to provide a faster climb rate to thermal country. The TD 09, while improving the sport flying characteristics, sacrifices soaring ability due to the extra 1/2 lb. which must be carried in the form of engine, tank, and ballast.

During the tests with the TD 09, it was noted that the Little Plank would sometimes protest audibly when the speed got above a certain point. A series of dive tests was undertaken to investigate this problem and you



Rear view of Little Plank shows straight wing, rear mount for pusher engine, if desired.

guessed it – FLUTTER! Several modifications were made in an attempt to eliminate this problem including straightening the pushrods, pinning the hinges and sealing the hinge line, all of which delayed the onset of the flutter but did not eliminate it.

A solution to the flutter problem was finally achieved by reducing the width of the elevons from 2" to 1-3/8" as shown on the plans. The Little Plank can now sustain vertical dives in glide or powered flight without protesting. This might be useful if you ever find one of those "Killer Thermals" we keep reading about.

Tow tests were conducted using an electric winch and roughly 1,000 feet of 30 lb. line. No problems were encountered even with crosswind

launches. Begin with full-up and concentrate on keeping the wings level. With the ply shear webs you don't have to worry about wing failure.

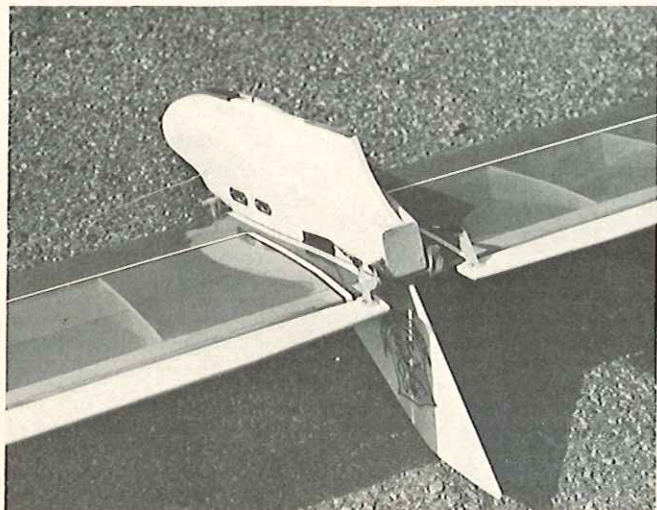
The durability of the Little Plank was tested by flying it into a sign, a freeway, and a small alder forest (all on purpose of course!) The only damage was to the fuselage which was 1/4" shorter after the sign and freeway tests. Be sure and use a nylon clevis such as Williams Bros. between the elevator and aileron servos as the pin will pop out of the clevis before the servo gears strip.

The color scheme of the original Little Plank was chosen for visibility at high altitude and to reduce orientation problems. The fuselage and bottom of the wing are black. The upper surface

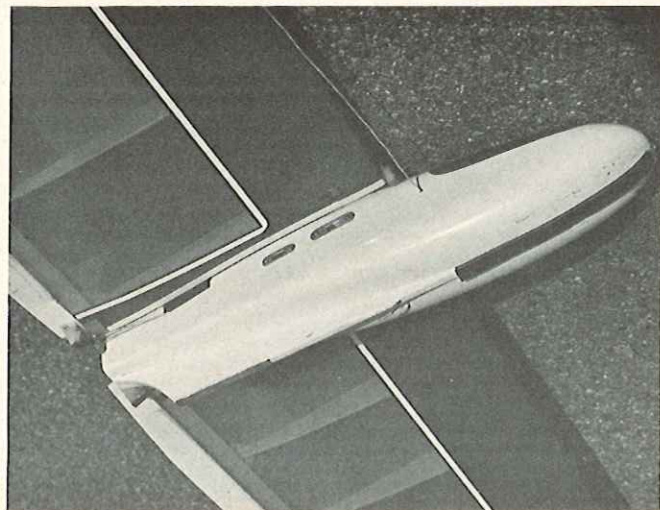
of the wing is orange trimmed with black. The rudder is orange with a reflective chrome sunburst. RCM's prototype used a white acrylic fuselage with blue canopy (painted) and a wing covered with transparent yellow and opaque red Solarfilm.

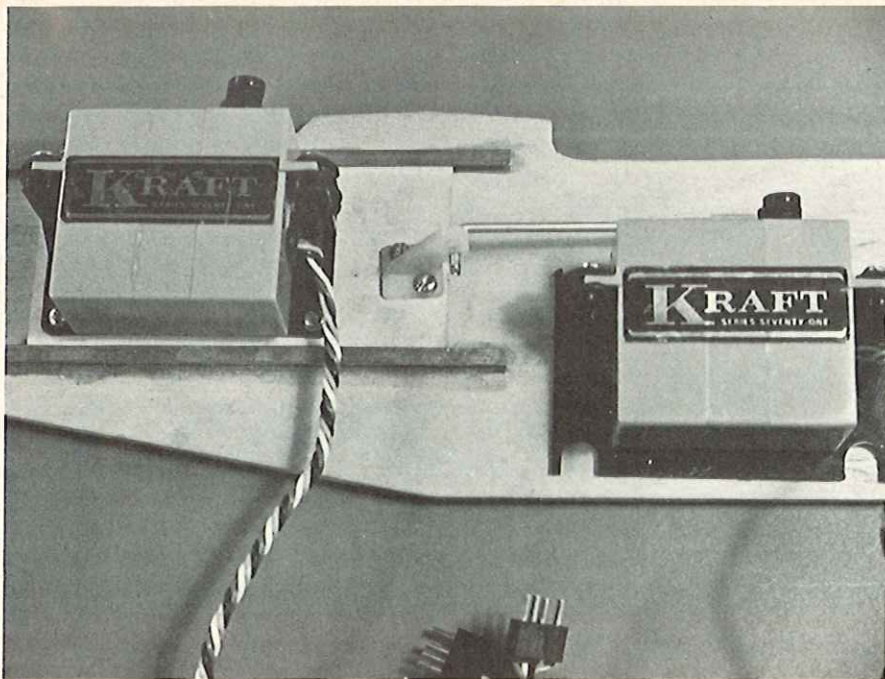
Other Little Plank's which have been built from my rough plans have shown flight characteristics similar to the original. An exception was one which was test flown with $\pm 3/4$ " elevon throw instead of the recommended $\pm 3/16$ " and a rearward CG location. It was reported to have done three snap outside loops off the tow and nearly given the owner a heart attack. Stick with the control movement and center of gravity shown on the plans for the initial trim flights.

Note straight pushrod connection to elevons. Underside of elevons sealed with full length strip of clear MonoKote.



Fuselage pod with tow hook and skid. Latter made from two strips of servo mounting tape and a strip of polypropylene "Living Hinge."





View of servo mounting in Little Plank. Aileron servo tray slides in brass rails. Kraft KPS-12 servos.

CONSTRUCTION

Use light balsa throughout. The objective is to arrive at a ready-to-fly weight of $1\frac{3}{4}$ – 2 lbs. for thermal flying. For slope flying, weight is not critical, unless you want to hang in there during minimum lift conditions. For sport and average slope flying, 2 – 2.5 lbs. is acceptable with the .09 engine.

Wing:

Using a template for accuracy, cut the ribs from soft $3/32$ " balsa. The trailing edge is an odd size,

$5/16$ " x $3/4$ " x $3/16$ ". Standard $1\frac{1}{2}$ " trailing edge stock can be utilized if split down the middle. Another way to produce the trailing edge is to laminate two $3/4$ " wide strips of $1/16$ " (on top) and $1/4$ " balsa. In either event, use light balsa.

Splice the wing spars and leading and trailing edge stock. At this point, you have most of a wing kit. Cut about ten trailing edge jig blocks from scrap balsa and use them to hold the trailing edge in position above the plan. Pin the lower main spar in place,

shimmed with $1/16$ ", to allow for the lower forward planking. Cement all ribs in place using Titebond. Make certain all ribs are vertical and wipe off any excess glue around the main spar to avoid problems when installing the shear webs. Glue the upper main spar and leading edge in place and let everything set up.

Cut some $1/32$ " ply strips and web the main spars as indicated (remember to shim $1/16$ " on bottom). Using a sanding block, shape the upper leading edge to accept the top sheeting. Prepare the top sheeting by coating the upper surface with water or household ammonia and glue in place with model cement. Plank the center section and set aside overnight. (I hope you remembered to remove an extra $1/16$ " aft of the upper spar on the center section ribs – I usually forget to).

When dry, remove the wing from the board and shape the lower leading edge. Replace the wing on the board inverted, jig the trailing edge, and add the remaining $1/16$ " sheeting. Remove from the board when dry and add the dead soft balsa tips. Prior to final sanding of the wing, give all rib trailing edge joints a second thin coating of glue.

Sand the wing tips to match the upper airfoil then cut the leading edge of the tip to the shape indicated on the plan. Bevel the underside of the tips from the lower airfoil surface to within about $1/16$ " of the upper surface. Cut the elevons from $3/16$ " soft balsa and add plywood inserts for the control horn mounts using Titebond glue.

Cover the wing and elevons with MonoKote or Solarfilm leaving a gap where the rudder will attach and add the hinges. Seal the gap between the elevon and wing with a MonoKote strip on the underside. Be sure and allow enough slack so that the motion of the elevon is not inhibited. This excess can be creased into the gap after application. If old style (wet) MonoKote is used, spray a bit of silicone lube into the top of the hinge line to neutralize the excess MonoKote adhesive. After covering the rudder, attach it to the wing with epoxy. This joint is quite strong due to the curvature of the wing surface.

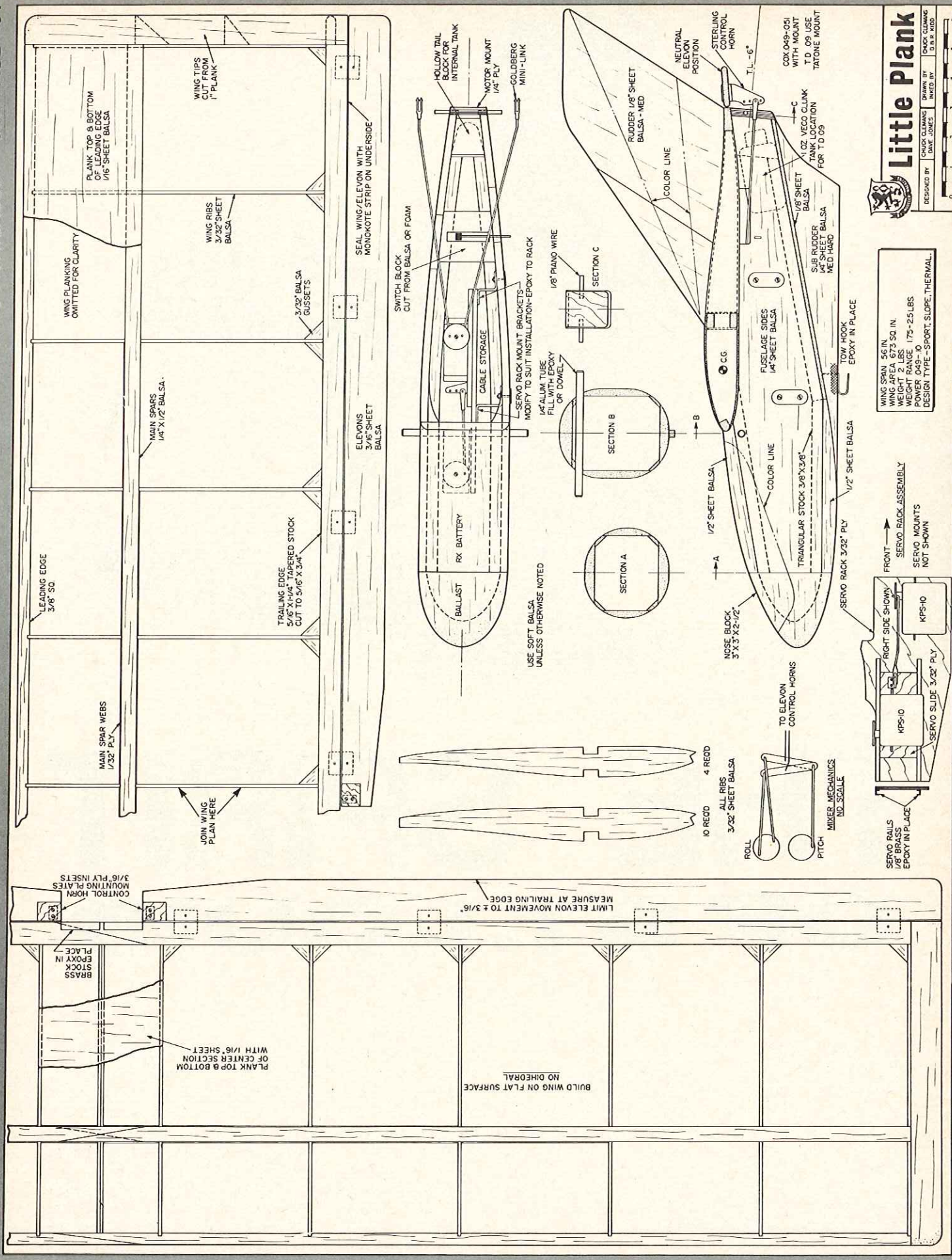
Fuselage:

The width and shape of the pod can be adjusted to suit your equipment but retain the nose moment and side area shown. Use soft wood throughout and build a box consisting of sides, top

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Author's Little Plank in flight. Photo taken at 100 acre Boeing Hawks field at the Boeing Space Center in Kent, Washington.

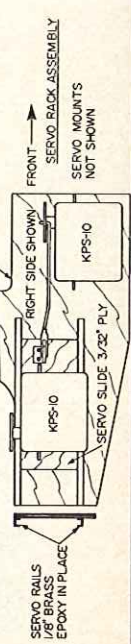




Little Plank

DESIGNED BY CHUCK CLARK
DRAWN BY DAVE JONES
INVENTED BY DAVE JONES

WING SPAN 5.6 IN
WING AREA 67.3 SQ IN
WEIGHT RANGE 1.75 - 2.5 LBS
DESIGN TYPE SPORT, SLOPE, THERMAL



SERVORAILS 1/8" BRASS EPXY IN PLACE

SERVORAIL SIDE SHOWING

KPS-10

SERVORAIL SLIDE 3/32" PLY

RIGHT SIDE SHOWING

SERVORACK ASSEMBLY

SERVORACK MOUNTS NOT SHOWN



Carl Weyl and the 'Spirit' at the end of a successful day of racing. They won every heat they flew in. Not bad, considering the model made its first flight about an hour before the race! Carl is tipping the model up to show that the grin on the 'Happy Face' pilot is as big as his.

THE SPIRIT OF ST. LOUIS

BY GUS MORFIS

The Quarter-Midgets have really taken over in the Northrop M.A.C. Most have been built with sport-flying in mind, but with a number of similar class models in the air each weekend, impromptu races are very common. Some of the fellows worked up a match between our club and the Orange Coast R/C Club to be held at Mile Square Field, and then the interest really began to pick up.

Carl Weyl wanted to enter, but it

was tough to find something that would carry his older, bulky radio gear. We did a lot of wild sketching but nothing was working out right.

Eventually, we came to the conclusion that we had to go back to basics, and we took to the "aerospace systems analysis" approach. We drew in the servos as tightly as we could, tucked in the receiver and then spotted in the minimum cross-section called for in the rules. Right away we

could see that we had to find something with a big square fuselage, preferably with the cockpit faired in. The best location for the wing seemed to be on top of the fuselage where it would be out of the way of the goodies tucked inside. The first sketches indicated that a Mr. Mulligan might do the job, however, it wasn't too long before it became apparent that the big flat cowling up front was going to cost too much drag. What was

**AN UNLIKELY LOOKING CANDIDATE.
NEXT TO ALL THOSE SLEEK, STREAMLINED QUARTER MIDGETS,
THE SPIRIT OF ST. LOUIS JUST KEEPS ON WINNING RACES**

needed was something with a "pointy" nose and a "boxy" fuselage.

Well, it wasn't too long before the sketches looked more and more like the Spirit of St. Louis. After all, the "Spirit" was a famous racing plane . . . didn't Lindberg win the prize money for being the first man to fly from New York to Paris?

Actually, the "Spirit" idea started as a gag, but the more we sketched, the better it looked. When you stop to study it, the "Spirit" makes an excellent prototype. The nose sections are very clean, permitting a good airflow around the prop and the fuselage lines are very smooth. The worst you can say is that the center and aft fuselage sections are too square and those corners can cause vortices to form. But it did fit the radio gear neatly and it looked simple to build.

The guys in the club were sounded out and, while they all thought it was a weird idea, none of them came up with an objection and agreed that it fit within the letter of the rule, at least. (If not the "Spirit" — HAW!) The consensus was that the Quarter Midget event was going to be kept a loose-hung "fun" event with as much spectator appeal and novelty value as possible. While most had been thinking of Goodyear Midgets originally, it seemed that broadening the outlook might help.

The design took about a week to work up, working during lunch time and a little in the evening. Carl, who

works nearby, would come by daily to get a progress report and second-guess the drawings. Finally the design was done and it was up to him.

You can guess the degree of difficulty in building this model when I tell you that he started building after Thanksgiving, with the race scheduled for December 5th. Like most well conceived projects, the first flight actually took place in the morning of December 5th, just before the race!



Actually, the model was ready for its first flight on the 4th, but that day was just too windy.

BUILDING YOUR MODEL

The first thing you want to do is lay your radio, tank, servos and engine out over the plans and make whatever revisions you require to accommodate your gear. You fellows with the new small gear should have no trouble, but the bigger servos will leave you with a real snug fit. If you feel you want more room, just go ahead and widen the fuselage as you want, but remem-

ber to revise all the bulkheads accordingly.

FUSELAGE:

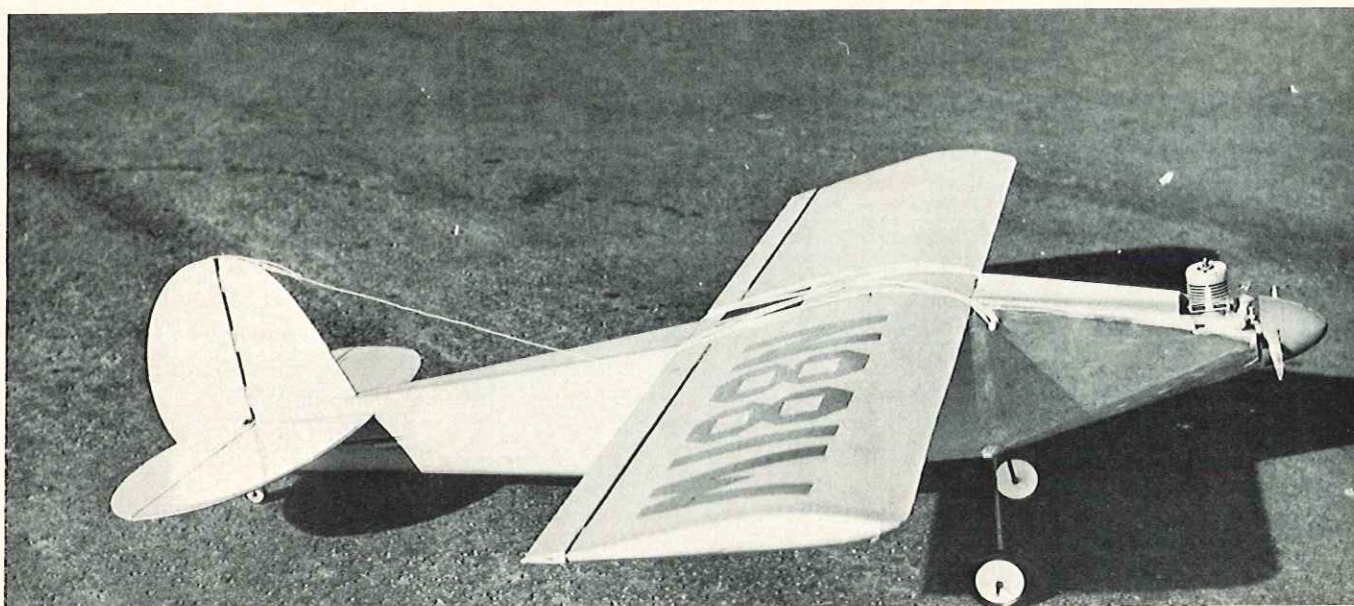
Fuselage construction is very simple, but remember to use enough glue to do the job well, and be careful not to over-do it, especially near the tail. Remember, it's a lot easier to add weight if you are too light than to add lightness if you are too heavy! The fuselage is strong enough to stand all normal flying loads; if you are concerned about the 1/16" sheet construction, go thicker at your own risk! It won't make the model fly better, but it will make it easier to handle.

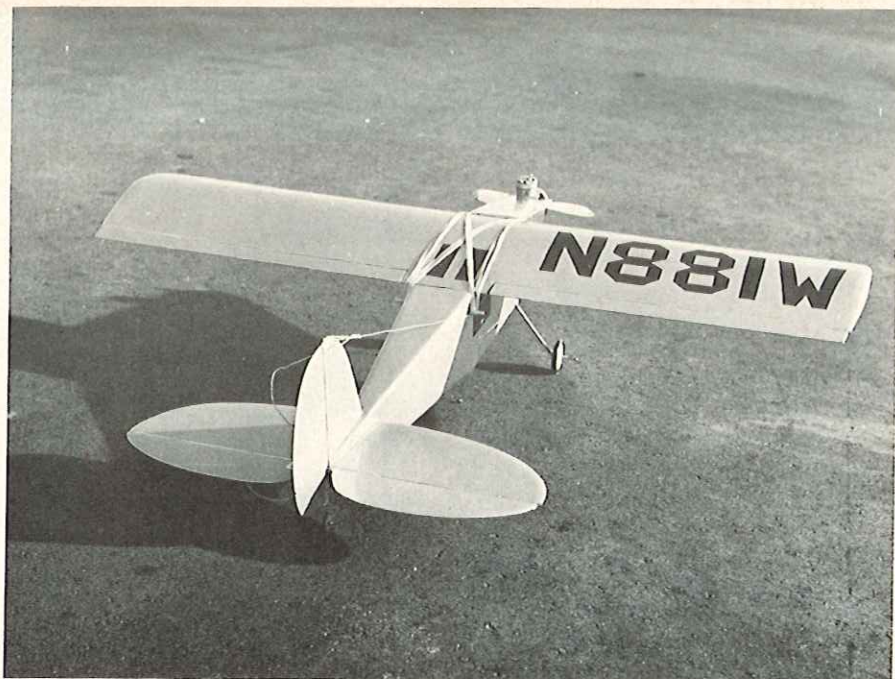
The nose contours are quite easy to achieve. First, build the nose up square; then using a sanding block chamfer the nose until you can get a circular contour at the spinner, using 1/4" sheet stock. Glue these pieces on well and, when they are dry, sand the contours in. The contours are just a progressive series of radii from full at the spinner to zero at bulkhead #3.

Notice that we show the 1/16" side plates running forward of bulkhead #3 on the outside of the 1/4" nose blocks. This makes it slightly tricky in assembling the fuselage, but those side sheets are the only thing holding the nose in place! If you prefer to butt-join the nose on the fuselage, go ahead, but you better reinforce the area by wrapping with some glass tape.

EMPENNAGE:

This is all cut out of 3/16" lightweight balsa. Remember to fit the





The Spirit of St. Louis can be "cleaned up" by using nylon wing hold bolts if you so desire.

rudder with your favorite steerable tail wheel. Notice that the stabilizer has a slight amount of incidence shown on the plans. Test flights indicated the need for "down-elevator" trim. (This was the only adjustment required, by the way). This is to be expected when you have a zero angle thrust line and a high flat-bottomed wing. The drag is up high where the wing is and, in addition, the wing down-wash acting on the horizontal tail makes the model want to nose up.

If you find you have to constantly carry elevator trim, I suggest that you go to the extra trouble to re-install your tail so that you use very little trim at all, for trim is drag.

WING:

The wing is a real cinch, the top and bottom are made of

1/16" x 7" x 36" sheet stock. If you can't find 7" stock you can cut 8" to fit, or edge glue a 3" and 4" wide together to make up the size. Note that the leading edge piece sticks out 3/8 of an inch so that your chord length is 8-3/8". The wing area works out to 312.88 square inches, which includes the wing tips.

The wing is built flat with no dihedral and no twist. I was concerned about tip stall, but there has been no evidence of any tendency to fall-off at all.

LANDING GEAR:

The landing gear is simplicity itself; bend up 1/8" diameter rod to the shape shown and J-bolt it to #3 bulkhead. Personally, it is my conviction that this wire gear is less draggy than the bent up sheet metal jobs

which are so popular now. We started flying using Williams Bros. "old timer" wheels for scale effect, but they just didn't hold up, and Carl changed to a pair of regular wheels for the final heat. There wasn't any apparent difference in speed.

COVERING:

The entire model was MonoKoted Aluminum with the exception of the nose section forward of the wing which was Chrome MonoKote. The markings were all Black Trim-Film and the name "Spirit of St. Louis" was done in India ink on the nose and covered with a piece of transparent MonoKote to protect the ink from the effects of glo-plug fuel.

This doesn't sound like much of an exciting color scheme, but the model did stand out among all the red and yellow and purple and orange . . . etc. competition. Of course, the high wing was distinctive, too. Oh yes, we had a pilot on board, in the form of a yellow "happy face" sticker which looked kinda cute.

TRIM & ADJUSTMENTS:

By careful wood selection and neat building, the "Spirit" weighed in at 2.55 lbs.! Balance was at the quarter chord, as shown on the plans. The control throws worked out as follows: elevator total travel, 3/4"; rudder total travel, 1 1/4"; aileron total travel, 3/8".

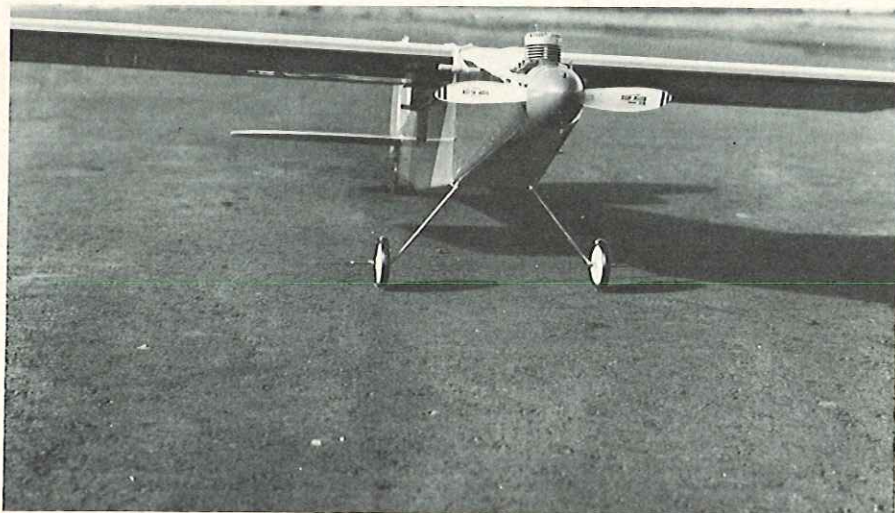
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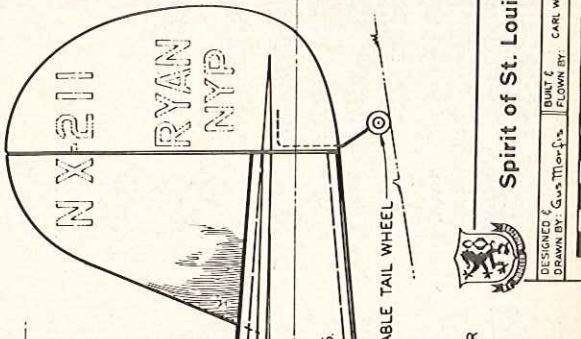
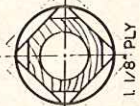
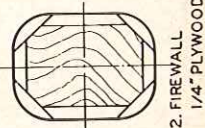
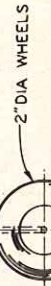
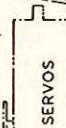
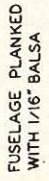
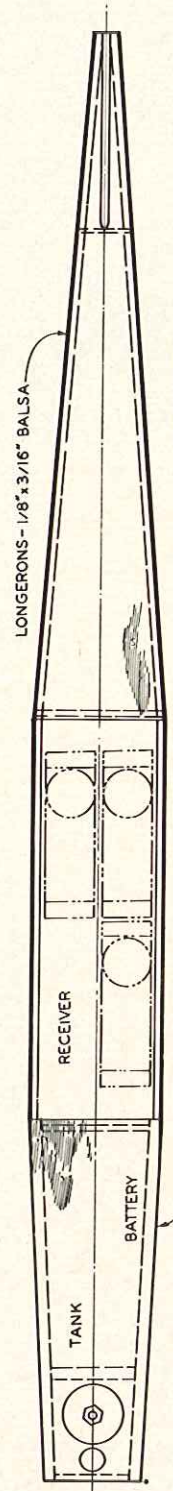
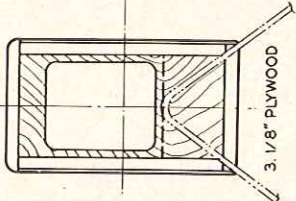
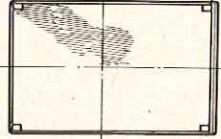
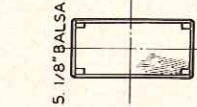
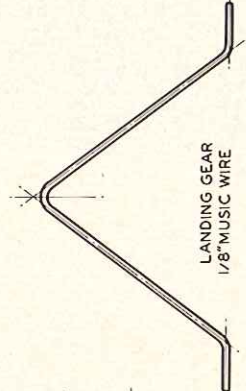
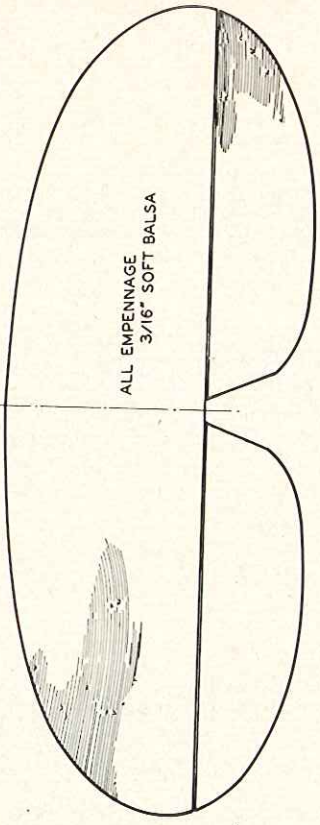
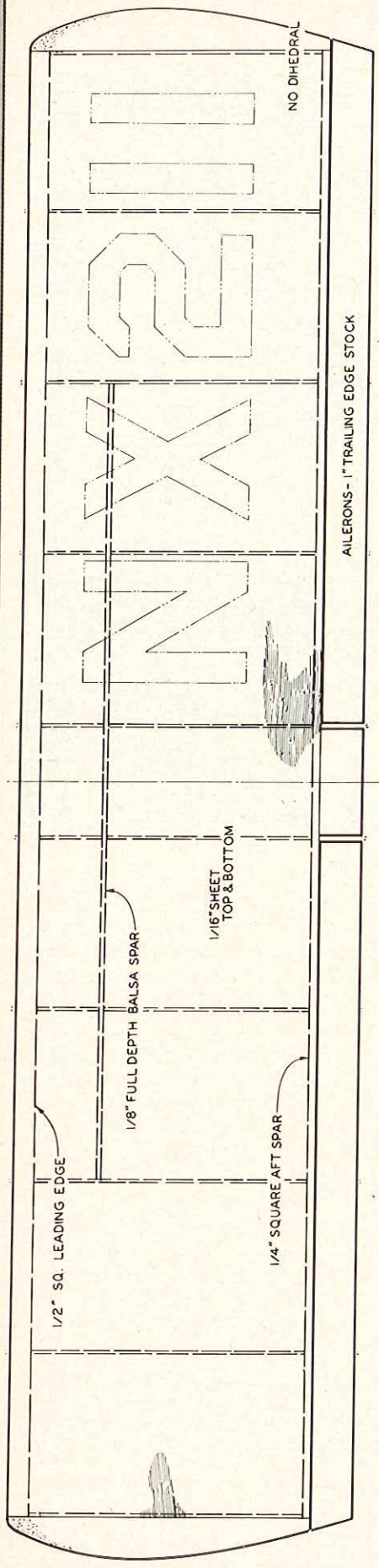
There isn't too much to say here. The model is viceless with a good smooth straight-ahead stall. It has shown no tendency to fall off, no matter how hard the pylon turn is. As was mentioned earlier, the only "problem" was that it needed down elevator to trim out. A little down thrust took care of that on the original. I think that rigging the stabilizer as shown on the drawings (with 1° incidence) will take care of that satisfactorily. The engine was also given about 1° right thrust. I haven't shown this on the drawings since everybody seems to have his own special setup that works well for him.

So there it is. A simple, honest, quick building model which won the first race it entered, even with having the handicap of greater frontal area because of the bigger radio gear.

The "Spirit" isn't a magic model, however. Carl Weyl is a darn smooth flyer and that is the combination that did the job. The "Spirit" can win for you too, but you have to learn to fly a good tight course and don't let yourself be 'spooked' by the competition.

That's the "Spirit"! □





A QUARTER MIDGET RACER
WING AREA: 312.88 SQ. IN.
ENGINE: .15, WITH IDLE



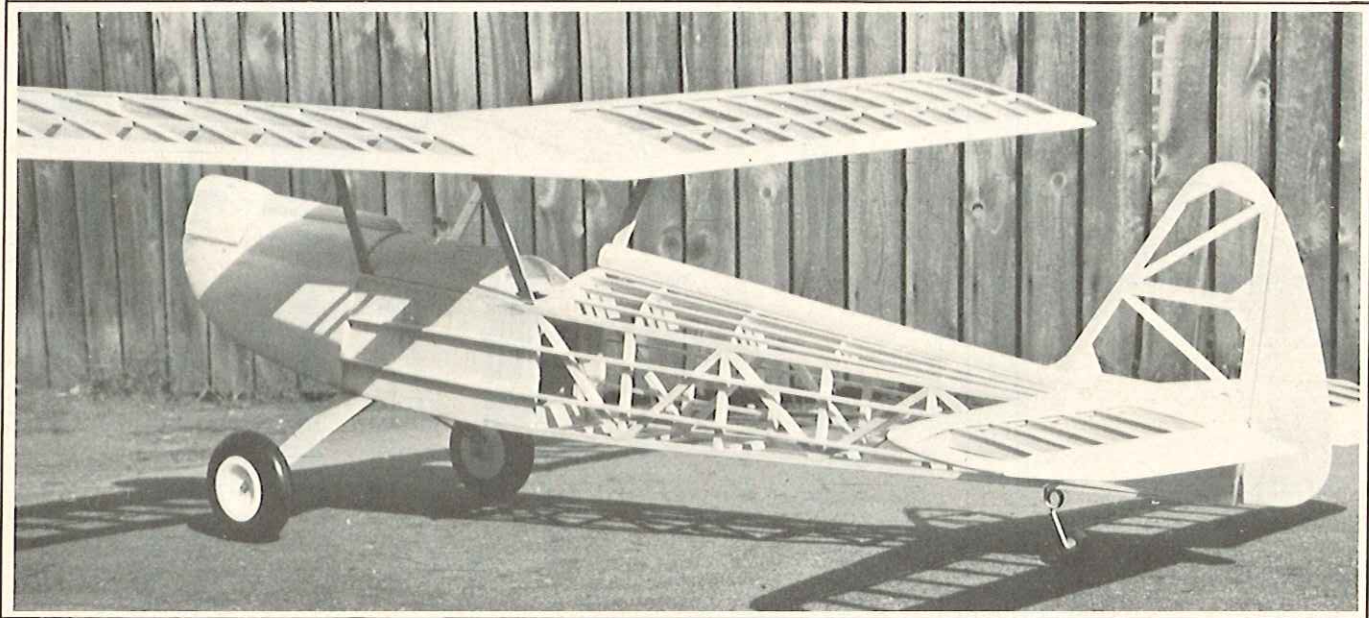
Spirit of St. Louis

DESIGNED BY: CARL WETZ
DRAWN BY: CARL WETZ
BUILT & FLOWN BY: CARL WETZ



MIGHTY

by DAVE BODDINGTON



BARNSTORMER

I was about to start this article by stating that I have a great fondness for large models but the truth is that I love all sizes of aircraft—from the smallest models to the largest full-size aircraft.

The Barnstormer model presented here is, in fact, the largest of a series of designs using the same basic layout. Smallest of the line is a 38" single channel version for .049—.08 cu. in. engines, followed by a 52" span design also for single channel. The Barnstormer 72 comes in both parasol wing and bi-plane byes and, lastly the mighty version presented here.

An extended **Mighty Barnstormer** with a pusher engine mounted above the wing has been built by a television producer in this country for camera carrying purposes. Mounting the engine above the wing was carried out to reduce the risk of vibration being

transmitted to the camera, the latter located in the fuselage. Initial test flights show great promise and it is hoped that, with a 16 mm movie camera mounted in place of the present 8 mm one, results will prove good enough to use on television news and magazine programs.

Few sights can be more inspiring to the modeler than that of a large model carrying out a low, slow fly past or a gentle approach and genuine three point landing. The **Mighty Barnstormer** certainly looks majestic in the air, it has that correct 'sit', if you know what I mean, and one thing I can guarantee, it will certainly draw the crowds! If you do not like to be surrounded by a lot of folks when you are flying a model, then either do not build this model or find some uninhabited area to fly it in. Large size and scale-like appearance always seems to

add up to crowd appeal.

For those of you living in an area that suffers, or enjoys, snow in the Winter, I can thoroughly recommend the fitting of skis to the **Mighty Barnstormer**. With a low powered .60 engine in the prototype, the 100 yds. or so takeoff on skis was something to behold and the landings, with that soft kiss onto the snow, make the standing about in the cold well worthwhile. Although I have not tried it, I feel sure that she would also be great on floats although, in this case, a .71 to .80 engine would be necessary to cope with the extra drag on takeoff.

For normal flying, a good .60 engine is powerful enough, the relatively low wing loading and clean efficient wing keeps the model airborne at quite low power settings. Despite its large size the **Mighty Barnstormer** is rugged and will take some

90" OF PURE FLYING PLEASURE FOR THE SUNDAY FLIER.

EXTREMELY DOCILE AND EASY TO FLY, IT WILL DRAW THE CROWDS WHEREVER YOU TAKE IT - - - - -

hard knocks, as was proved on its maiden flight. The prototype 'M.B.' was built by a friend of mine, David Toyer, and he just managed to get it finished in time to take to a 'Fun' meeting at Old Warden Aerodrome. It is, of course, against all recommendations to test fly a new model at any competition meeting, but the temptation was just too great. I checked that all the controls, elevator, rudder and engine, were working and then we fired the engine up. For the first attempt I elected to try a takeoff but she veered to port and rudder correction seemed to have no effect whatsoever and, after retrieving the model, tried a hand launch next time. Again she started turning to port and I gingerly inched on a little right rudder - no effect - more right rudder and even more turn to the left. A semi-cartwheel left the model pretty well undamaged but subsequent checks showed, much to my chagrin, the rudder was coupled up incorrectly. Being a regular contributor to a R/C model magazine, I hate to think the number of times I have implored the readers to check and check again before flying, at least it proved that the advice was right even if I did not take it myself.

CONSTRUCTION

I will try to keep the description of the building as short as possible, but bear in mind that there is always someone who has not built a model with this type of construction before.

Do try to 'pair off' longerons and spars so that each side are of equal density and strength. White glue can be used for all construction except for the metal to wood joints.

The plan specifies an amount of 5/16" balsa and, if this is unavailable, 1/4" balsa can be substituted as follows:

Fuselage (1) Top and bottom longerons, 1/4" x 3/8"; (2) Uprights and crosspieces, 1/4" x 3/8"; (3) Diagonals, 1/4" square; (4) Sides, cowl cheeks, infill, etc., 1/4" sheet; (Note: Formers F2 - F11 must be modified to suit) (5) Stern posts, 3/16" x 3/4", and supports for rear 1/16" sheet, 3/16" x 1/4".

Fin and Rudder substitute 3/8" for all 5/16" dimensions.

Wings Main Spars, 1/4" x 3/8".

FUSELAGE

Commence by constructing a left-hand and right-hand fuselage side from longerons, uprights, diagonals and sheet lower sides and cowl cheeks. When these are dry, mark and glue into position the 5/8" x 1/2" beech



The Mighty Barnstormer - - - it all adds up to a lot of airplane. Would you believe the author has hand launched it?

engine bearers, having first drilled them to take the engine plate bolts.

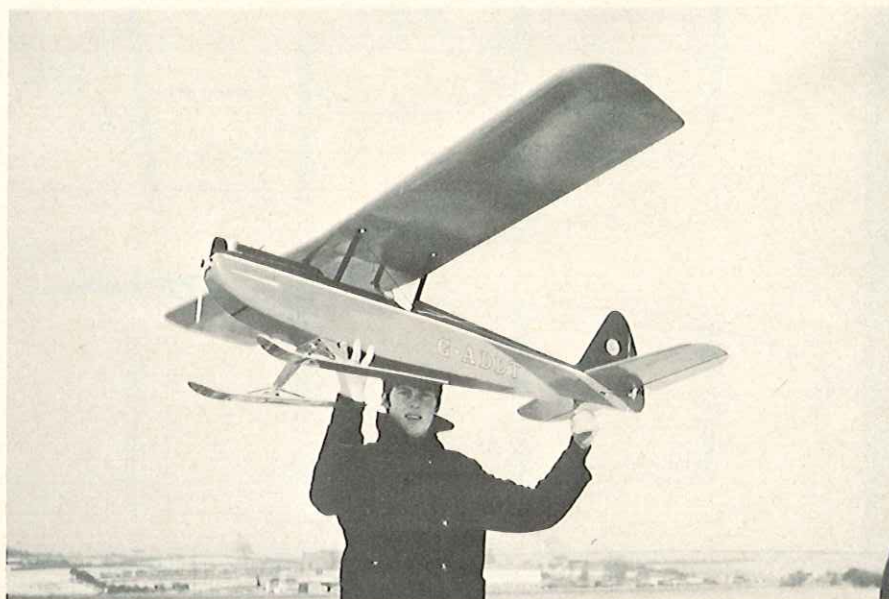
Drill the 3/4" x 1/2" hardwood strut support crosspieces and glue and screw them to formers F4 and F5. Note that Former F5 is laminated from 1/16" plywood and 3/16" strip. Glue F4 and F5 to the fuselage sides making sure the sides are square, followed, when these are dry, by cross pieces, undercarriage bearers Formers F1-3 and Formers F6-11. Add the sheet infill to the front of the fuselage, the fuel tank floor and the 1/8" x 3/8" rear deck stringers. Pin and glue the bottom sheet, including the 3/16" plywood undercarriage plate, and the 1" cowl bottom block.

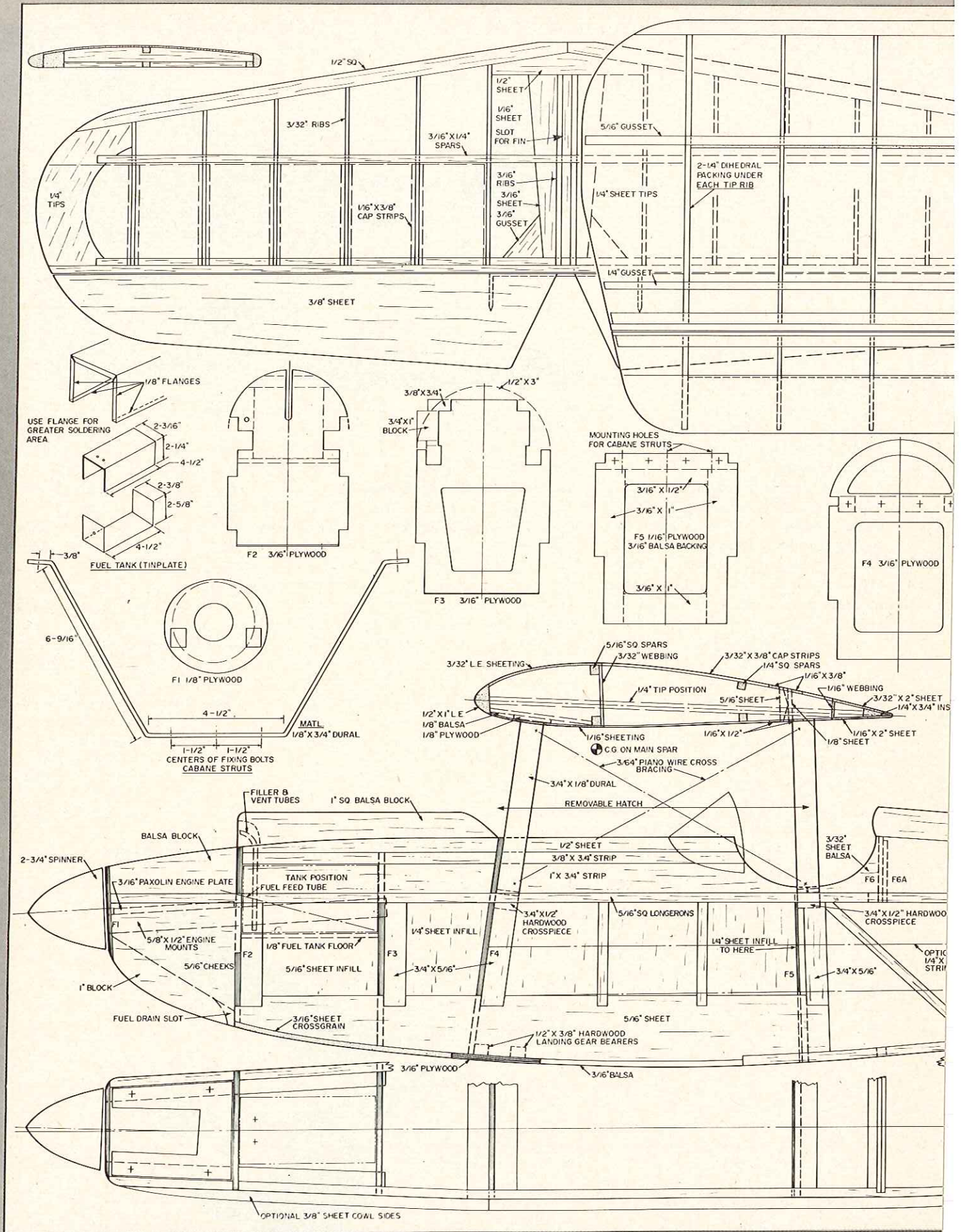
For a more attractive fuselage, glue on additional 3/8" cowl side sheets as far back as F4 and then two 3/8" x 1/4" hard stringer each side to 3/4" or so past Former F11. These stringers are gradually tapered off towards the rear of the fuselage. This additional sheeting and the stringers adds to the strength of the fuselage and it is certainly advisable to include them if 1/4" balsa is used in lieu of 5/16" balsa. Mark, drill and bend the cabane struts, starting from the center and work out on each side in turn, and screw and epoxy in position on hardwood bearers.

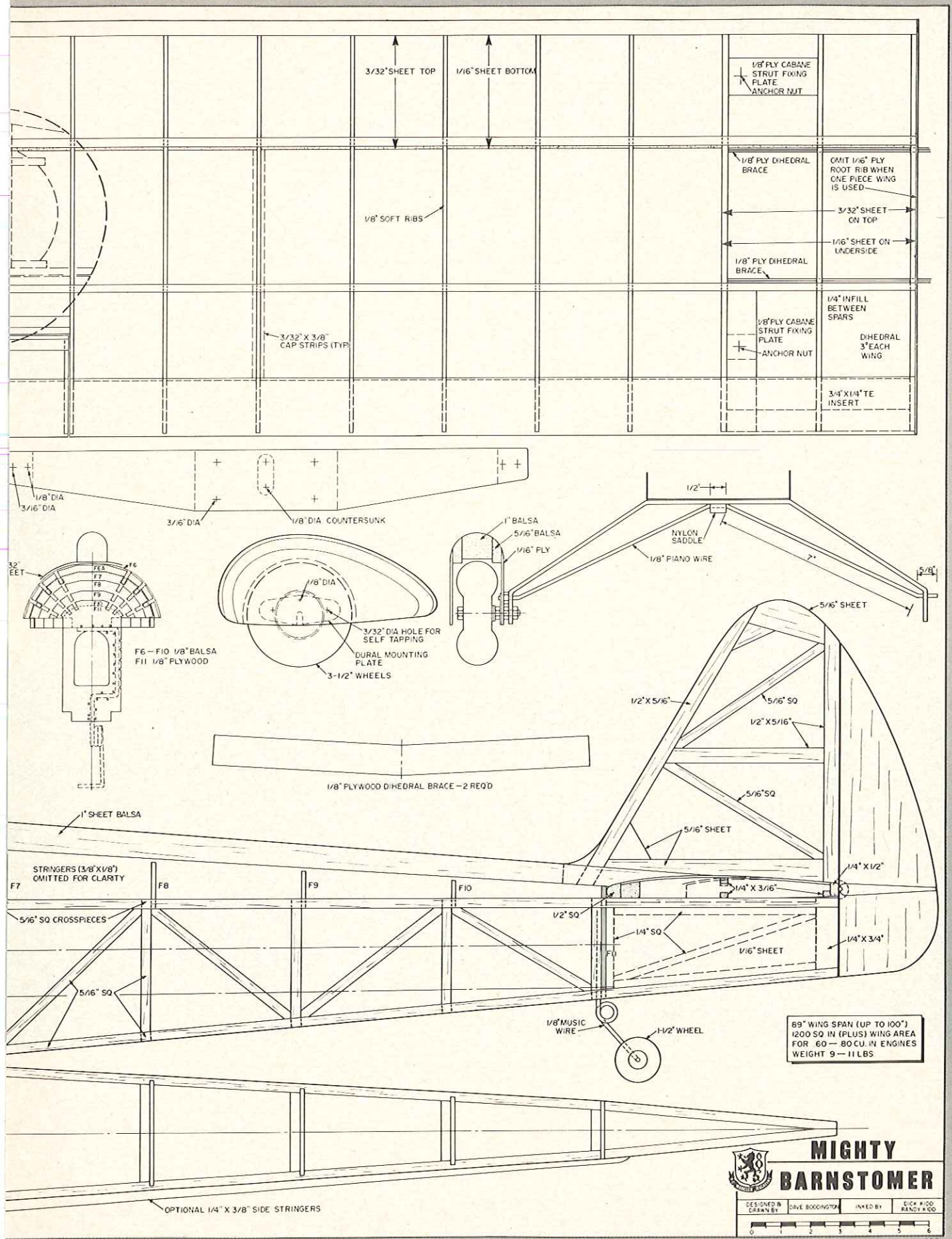
1" x 1/8" dural struts can be used instead of 3/4" wide and the edges

To Page 68

With a low powered .60 the M.B. will takeoff in 100 yards with skis attached.







89" WING SPAN (UP TO 100")
 1200 SQ IN (PLUS) WING AREA
 FOR 60-80CU IN ENGINES
 WEIGHT 9-11 LBS

MIGHTY BARNSTOMER

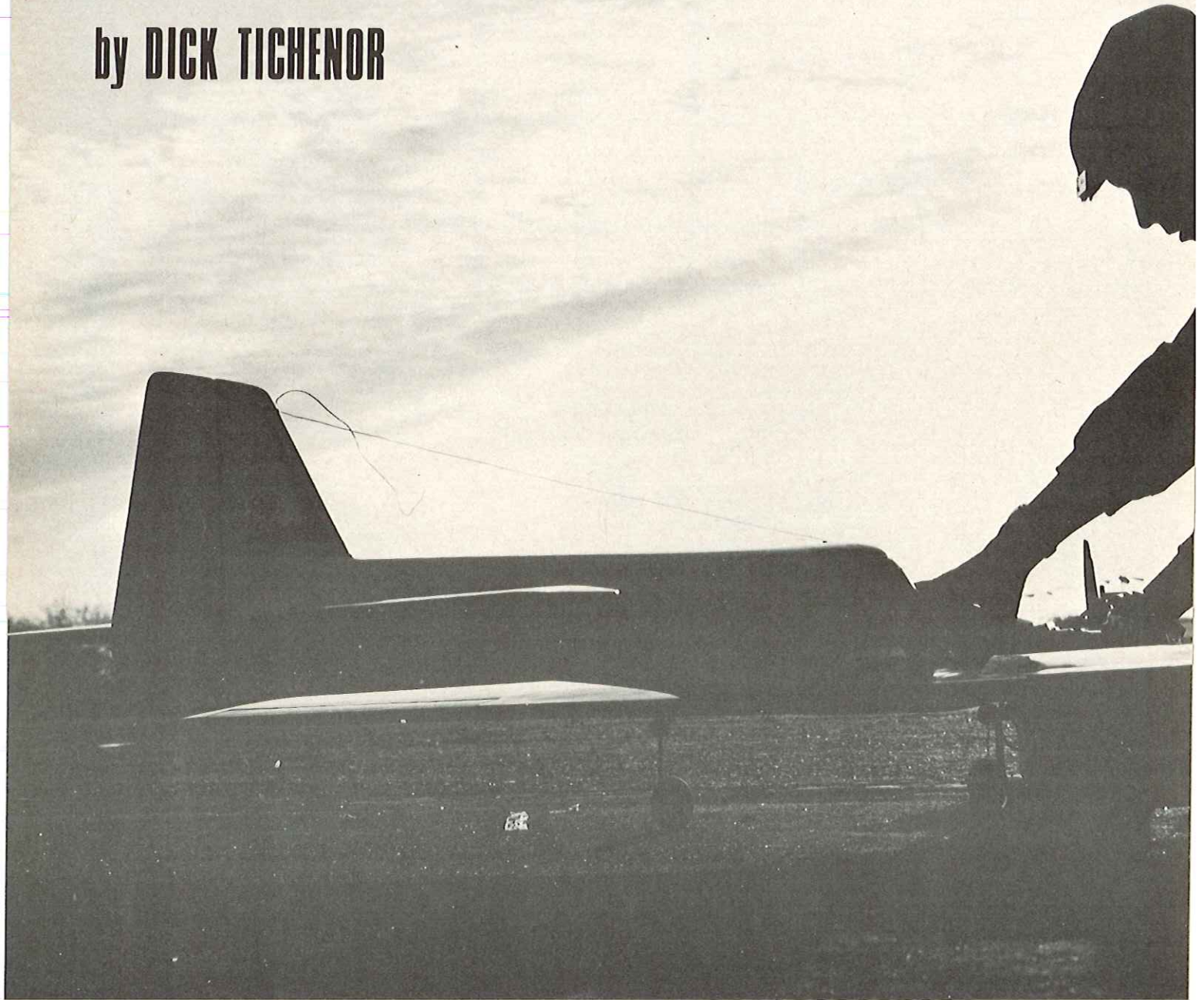
DESIGNED BY: DAVID BOONINGTON INVENTED BY: DICK HOOB RANNEY HOOB

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RCM GOES TO BUCKEYE

by **DICK TICHENOR**



The first big contest in the West was the Southwestern Regionals at Buckeye, Arizona, which included R/C, control line and free flight events. Last year the R/C group decided to split off and hold an extravaganza R/C pattern meet. That's how the first Annual Southwestern R/C Championships was born.

The contest was held January 29 &

30, 1972, on a former AAF training field that is used exclusively for model flying and located 23 miles northwest of Phoenix, Arizona. Those lucky guys have long runways, lots of space in the desert and no complaining neighbors to make problems! Hosting the affair was the Arizona Radio Control Society, Inc., Phoenix, Condors, Luke Air Force Base, and Miniature Aircraft

Pilots Association, Scottsdale, Arizona. George Sing was Contest Director with Bill Roseberry as Assistant CD and Chuck Watkins as Contest Manager. These fellows have been running R/C contests for a long time so its not surprising that all the details and facilities for a first class meet were handled most efficiently. Extra frosting to the cake was the

flying the pattern in the same air space wasn't a boring thing to watch, and the callers had their hands full advising the contestants what all the other airplanes were doing. Somehow there were no mid-air crashes.

I don't know when I've seen such a variety of models at a contest. The big heavy, high-powered ships with retractable landing gear were there as were the large light ones. Also there were smaller models, some high powered, some lower powered. Makes you wonder which way the design trend will go by the end of this year.

This contest came equipped with a Saturday night banquet. Banquets aren't best known as the most exciting action in town, however, this one gave everyone present something to think about. Phil Kraft was the guest speaker and being the old pro that he is, he could have delivered an entertaining speech. He chose not to do the routine thing but, instead, expressed his feelings on the status of today's R/C pattern event and followed by asking for opinions from some of the country's renowned R/C modelers who were there. Following is a synopsis of their comments. (Ed. Note: These quotes were read and verified by each man on Sunday).

Phil Kraft: "The pattern event has been pretty much the same for several years - need changes in pattern."

Ron Chidgey: "Agreed - we should join the rest of the world and work within the FAI."

Jim Whitley: "Like FAI - if changed, need pretty maneuvers, no snap maneuvers."

Joe Bridi: "I like the FAI pattern."

Red St. Aubin: "Agreed - however

less emphasis on takeoff, more emphasis on interesting maneuvers. Example: Takeoff - WWII P-51 and Spitfires were not penalized if they didn't make a smooth takeoff before going up to fight."

Larry Leonard: "For 'D' pattern use FAI. Tighten up 'C'. Competition should be so that if you blow a maneuver, you really blow it!"

Jim Oddino: "Don't do to pattern the same that was done to Formula I in the early days. By the time that I could get a ship built, it was obsolete due to rule changes. Go a little slow on changes."

Cliff Weirick: "Stunt needs more spectator appeal - I like to go fast and turn left!"

Marty Barry: "The USA has been the leader in pattern and should suggest something new to FAI - maybe similar to full size FAI maneuvers."

Jim Whitley: "We need to make the event more interesting for spectators and other contestants. Example: The man behind each judge could hold up a number to show the score for that maneuver."

Phil Kraft: "CONCLUSION: Pattern is stale - the USA should take the lead. I feel the Europeans would be receptive. The event should be more flexible, and more fun and interesting for both contestants and spectators alike."

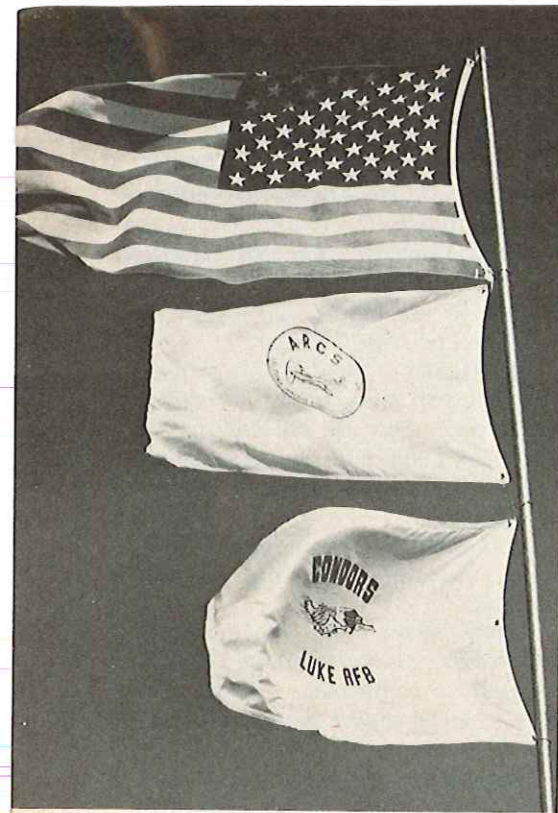
How about that, sports fans! Maybe the R/C Contest Board should take note.

The First Annual Southwestern R/C Championships was an excellent contest. Here's to an even bigger meet next year! □

package given each contestant containing a souvenir decal, shoulder patch, and a walnut plaque with bronze medallion and inscribed plate.

Flight lines moved at a fast pace all through the meet. Score cards were processed rapidly and scores announced on the PA system in short order. There were 4 lines in about a 100 yard space. Believe me, 4 models

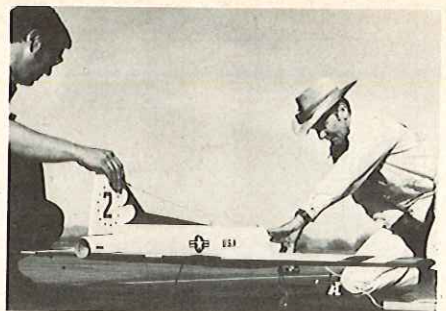




ABOVE: Three flags over Buckeye, Arizona.
 RIGHT: Frank Conway displayed a magnificent and striking Boeing 727.



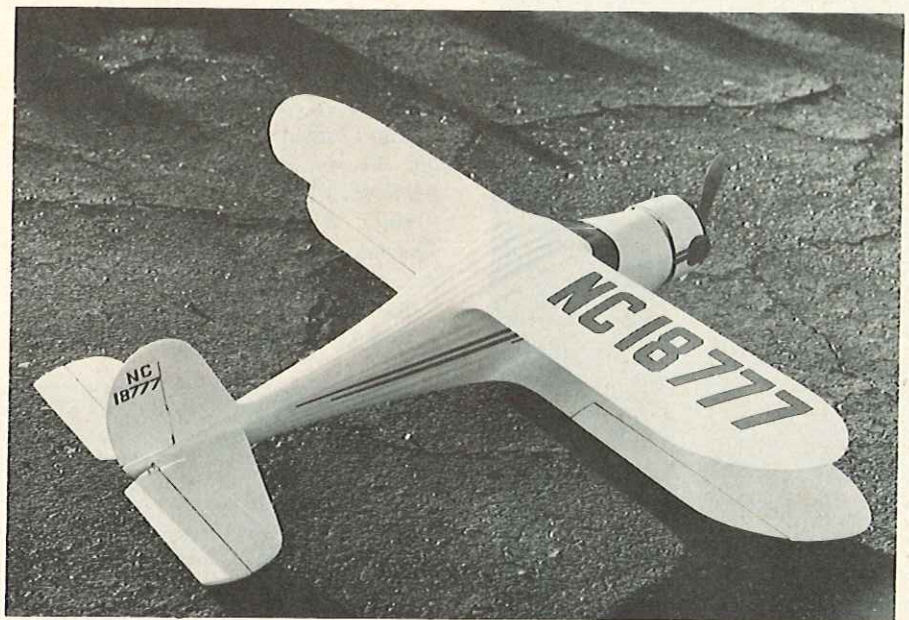
Bob Lake and Art Riedel of Ventura County Comets with pair of Veco .61 powered 'Cuda's'.



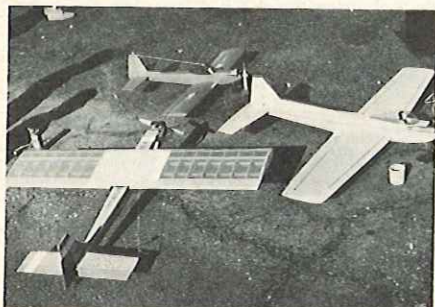
Bill Hempel and Dick Schofield of Tucson, Arizona, fire up Dick's Lee-Veco 'Vulcan'.



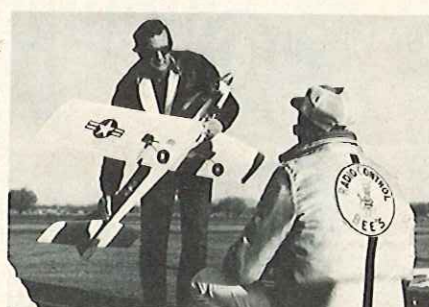
ABOVE: Joe Martin was back in pattern competition flying this beautiful P-51 with Multicon retracts.



RIGHT: Fuller G & K Products displayed their stand-off scale Beechcraft, now in kit production.



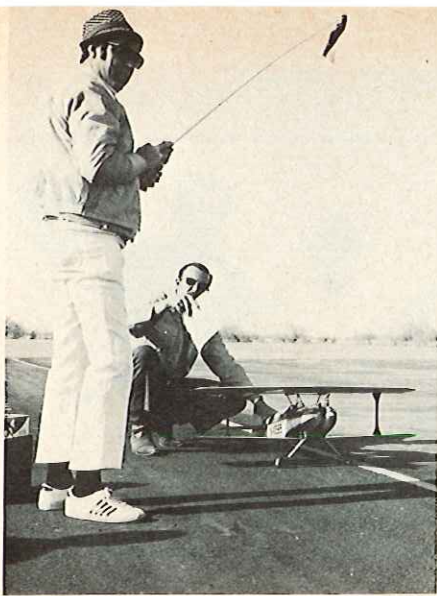
Big ones, little ones, light ones, heavy ones — entries covered the whole range.



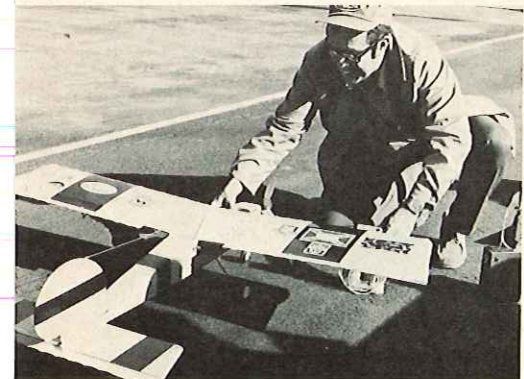
Orbit's Big John Elliot fuel checks Bud Page's Cutlass. Webra, Multicon retracts.



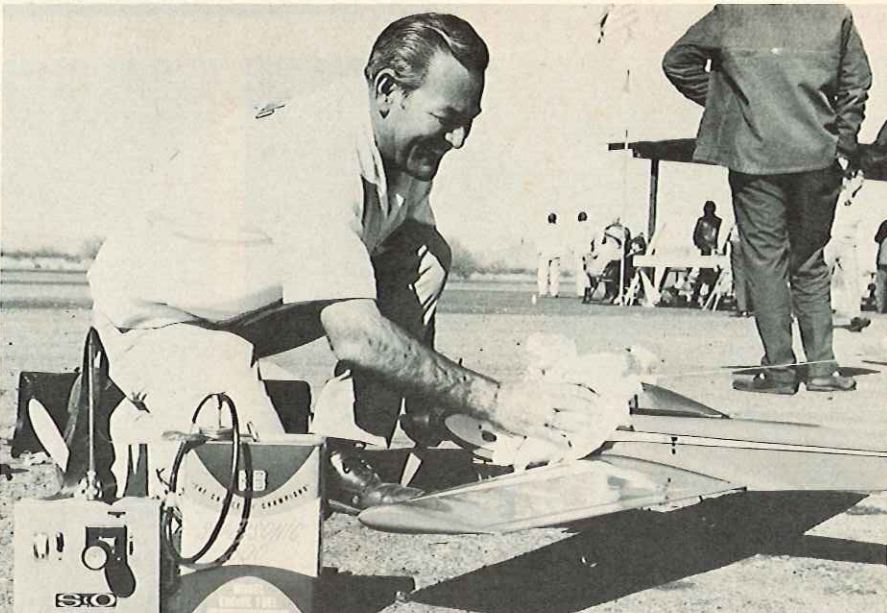
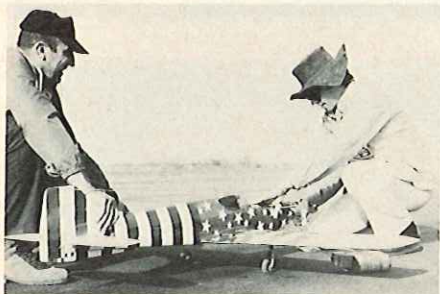
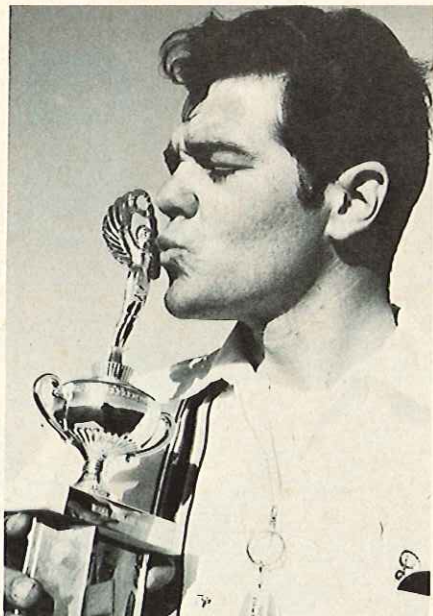
Tony Brown, Conejo R/C modelers, with entry built from RCM plans. K & B .40 FR, MonoKote, 4 lbs., Kraft radio.



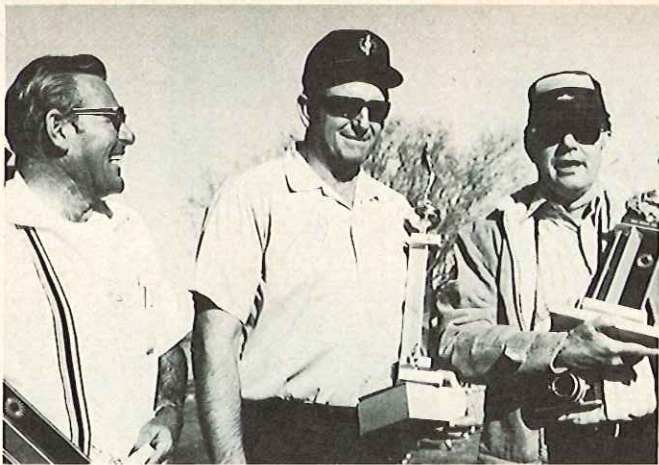
LEFT: Al Casey hangs on as Red St. Aubin prepares to put his Enya .60 powered Aeromaster through the pattern. ABOVE: Marty Barry lifts a late Kraft design. RIGHT: The big winnah! Jim Whitley and Daddy Rabbit III.



ABOVE: Check this! Cliff Weirick flew this Middle Stik in Class B! RIGHT: How sweet it is! His first trophy . . . 2nd in Class A Pattern for Don Guttridge of the BIRDS club. FAR RIGHT: Tom Melsheimer, BIRDS, drives his Kaos while Vicki Blonquist calls the pattern.



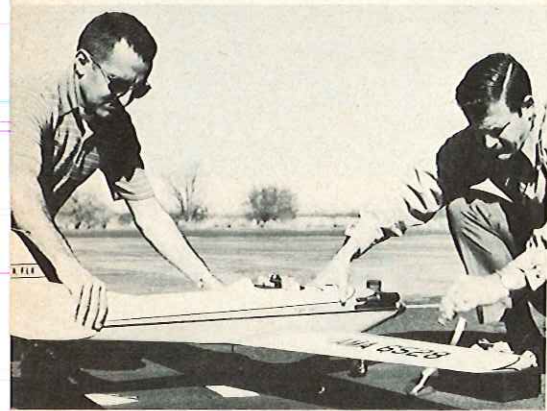
TOP, LEFT: Frank Capan lends moral support to Larry Leonard. Patriotic paint job on Miss Liberty Belle. ABOVE, LEFT: J-Bipe, soon to be kitted. Art Schroeder and Ernie Weiss, tinkering. ABOVE, RIGHT: Know why Joe Bridi is so happy? P.A. just announced Class C Expert final score. Joe took 2nd with Kaos.



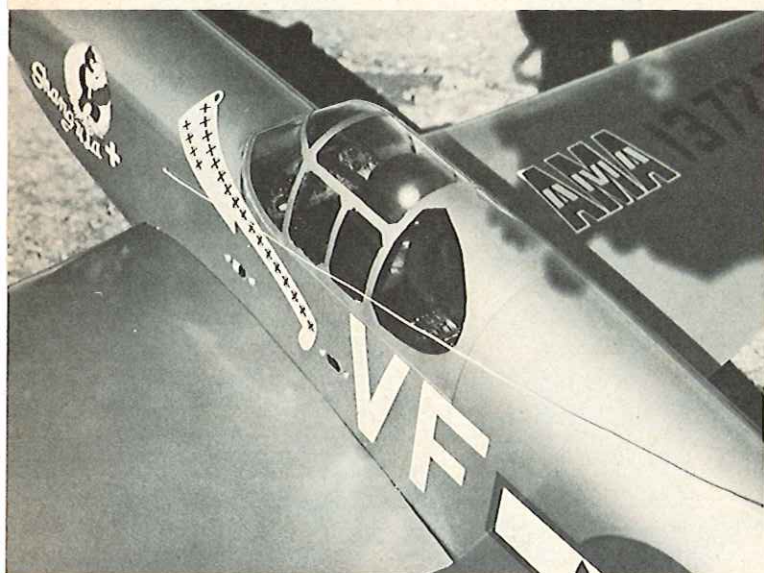
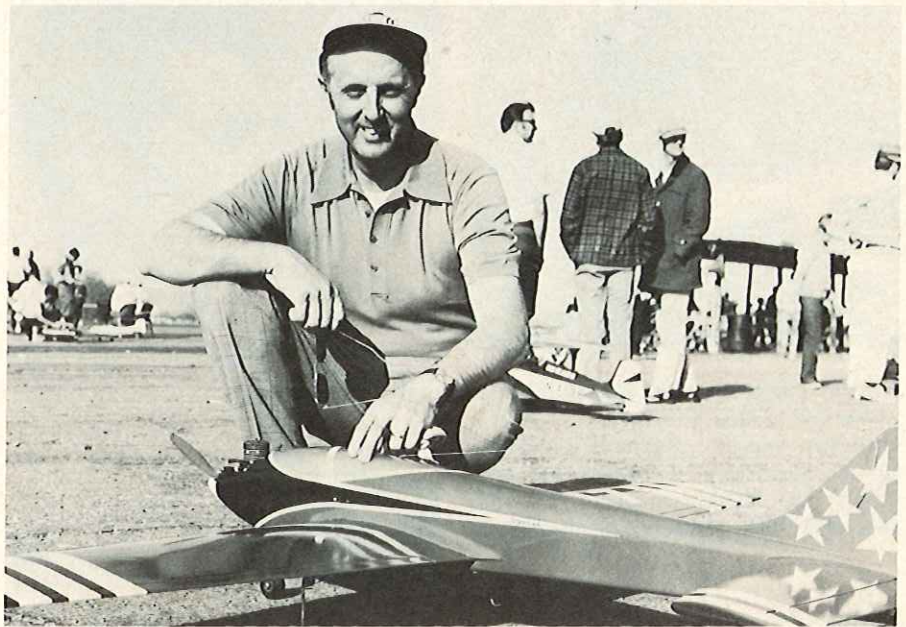
The Big Boys! "C" Expert heros; Joe Bridi, 2nd; Jim Whitley, 1st; Phil Kraft, 3rd.



Conejo R/C modelers carried home a big share of the hardware.



ABOVE: Jim Fosgate of Pro-Line assists Ron Chidgey to ready his Tiger Tail. All the way from Pensacola, Florida, to try Arizona in January! RIGHT: Ed Keck and his Starfire. Webra .60 and Pro-Line equipped.



ABOVE: Joe Martin's P-51. Impressive amount of detail for a pattern ship. RIGHT: Phil Kraft was guest speaker at Saturday night banquet. See text for thought provoking subject.



SOARING

WITH DON DEWEY



A JOURNEY TO BAKERSFIELD BY DICK JANSSON

For an R/C soaring modeler in the northeast part of the USA, the dream of having a weekend of sailplane fun in January (and even a contest) is usually just that — a dream. The alternative is to luck-out and find a non-stormy weekend and then bundle well to shield the cold air, to have the pleasure of becoming miserable trying to find some lift and shag the launch line. We do not have the favorable conditions in which we can fly for a major portion of the year, a fact that has its compensations as we can also get a lot of model building done in the meantime.

All of this provincial eastern type of modeling was altered by the invitation of one Don Dewey. This guy Dewey suggested that I arrange my travel schedules to the West Coast so that I could wander by Bakersfield, California, on the weekend of 22 and 23 January. He invited me to partake in the never-ending thermal lift of sunny California — a temptation only short of that of Lorelei.

Indeed it was found that a “business” trip could be arranged, and so I started to construct a box in which to carry a large size competitive sailplane. The box ended up more like a casket, and my teenage daughter (the one with the sewing machine) was imposed upon to manufacture a pair

of denim sacks, one to contain the wing panels, the other to hold the fuselage; daughters are useful after all. The next trick was to work up a good line to hand the airline stewardess (this was the most enjoyable part of the trip) as I boarded the plane with these two 5½ foot long sacks, and finally we were on our way. But wait, this trip took me to Seattle, and then to San Francisco, still a long way from Bakersfield.

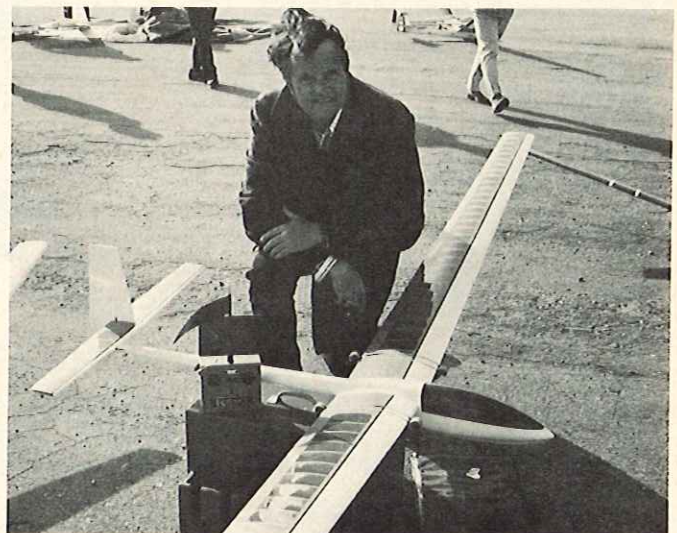
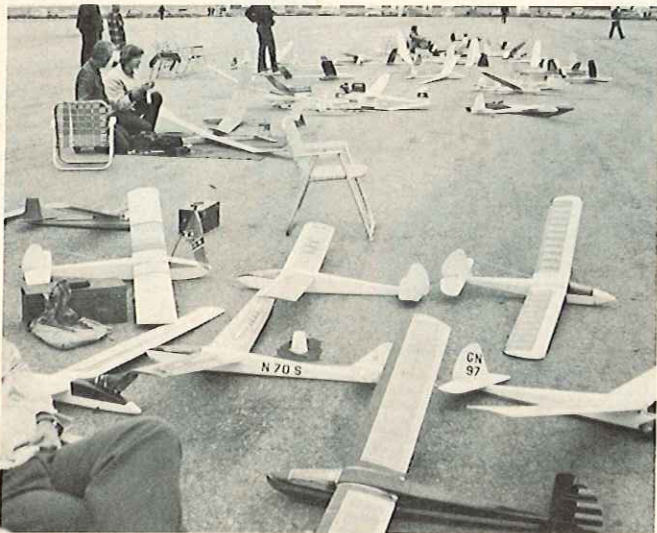
The latest problem was solved through the use of the telephone and knowing that the centroid of the LSF is in the area just south of San Francisco. Being an LSF member helped find some very willing modelers in the form of Bob Andris, Marshall



BAKERSFIELD CONTEST WINNERS: Front Row, L. to R: Tom Christian, 2nd overall, 2nd North Team; George Steiner, 3rd North Team; John Baxter, CD, SBSS Prexy, 1st overall, 1st North Team, Team Trophy; Stu Horton, 4th North Team; Jeff Walters, 5th North Team. Back Row, L. to R: B. Hinman, 2nd Precision (Sunday); Brian Stevens, 3rd Duration (Saturday), 2nd South Team; Roland Boucher, 1st Scale (ASW-17); Marshall Watson, 2nd Duration (Saturday).



John Baxter, the big winner of the 1972 North-South soaring meet.



BELOW, LEFT: A very small portion of the pit area. **BELOW:** Hugh Stock with beautiful FK3. Hugh, LSF Treasurer.



LEFT: A typical mighty heavy launch. **ABOVE:** Bob Andris prepares to launch his Diamant as the gallery looks on.

Watson, and Hugh Stock. Sight unseen, I was invited by Hugh Stock to be his guest down to the contest and back, and to say the least, it was a real ball. Hugh is the new LSF Treasurer and has a fine bachelor pad in Saratoga, California, containing enough sailplanes to outfit an entire soaring club. It was also discovered that Hugh is also a good competitor for Paul Bunyan's tall stories!

On Friday, 21 January (we both copped out from our vocations), we took off for Bakersfield and arrived at the point on the map that had been indicated as the flying field. It was a field all right, an asphalt field that must have measured ½ mile by ¾ mile, nearly as far as the visible local horizon! The trip down showed that the San Joaquin Valley was cloudy and even foggy, not very encouraging for that fabled California lift. We rigged a high start launcher and tossed up a few flights and found the lift as was expected, nearly non-existent! As the afternoon wore on, the sun did shine through the clouds somewhat, and we practiced typical New England light air soaring. On toward the late afternoon more of the contestants arrived to test the flying area, and the Southern contingent of contest organizers showed up to lay out the launching and landing areas for the next day (Saturday) and the contest.

Along about now it is necessary to explain that this contest in Bakersfield was set up as sort of a provincial West Coast "shoot-out" between the Northern and Southern California proponents of variations of the soaring theme. The line of division between the factions is the 36th parallel. Each entrant was labeled as coming from the South or the North and, if they had heard me utter an allegiance to the East, I may not have been able to find a ride back to civilization! Also, my location in New England is at latitude 42° 21', which is further north than any part of California so, regardless of the continental separation of home-stead, I was assigned to the Northern team.

Saturday dawned cloudy and calm, and it became evident that we would have a delayed start as the organizers had planned for 60 entrants and 103 showed up; in California things are done in an astoundingly big way! Flying got started by about 10:00, but the large number of contestants made the rounds go slowly. There has been such a large influx of new modelers into the soaring area of interest that it

was evident that many did not have a great deal of experience in being launched by a winch, and that same newness factor showed in the modelers' efforts in winch line retrieval. The planned three rounds had to be cut short at two because of the foregoing problems.

The conditions of the contest air favored a floater type of sailplane; flying wing types such as the Gryphon came down almost as fast as they went up. Very surprisingly, though, some of the heavier ships such as the Cirrus were able to get reasonable times as they could zip over to favorable corners of the flying field. Those of us who had very light, high-lift soarers trimmed for maximum lift and slow speed, found very small pockets along the edges of the pavement. These conditions were also aided with the use of a thermal sensor, of which there were a handful present. In the first round there were only a few maximum time flights (set at 7 minutes, with a three-minute period of grace to land). Scoring rules more strongly favored landing points than flying, as a modeler could land in the middle of a five section runway and get an added 100 point bonus; the other runway sections scored 50 and 25 points outward from the center block.

At about 2:30 on Saturday, the cloud cover broke and the marginal lifts were raised to light thermals along the pavement edges. A pilot had to still work hard to get a max flight. These conditions truly tested the mettle and experience of the soaring pilots and, in this respect, there was found to be no basic differences in soaring skill levels from the East Coast to the West Coast – the experienced pilot prevailed in the scoring column.

Saturday evening saw an event which was advertised as a banquet that turned out to be a feast that almost overflowed the motel facilities. This affair reinforced the impression gained in meeting and dealing with fliers from all over California, and that was one of immense congeniality and friendship. Le Gray, LSF President, was the key speaker of the after-dinner part with his affability and many words (and a few barbs, too). This writer was royally treated and delighted by the presentation of the contest special award trophy (sponsored by Kraft Systems) which is a replica of a sailplane made of hammered and brazed copper; the presentation was for having travelled the greatest distance to attend the contest.

Sunday morning dawned with some hope that there would be more breaks in the cloud cover, but those hopes were dissipated by the time we got to the flying site where we had more of Saturday's weather for the morning. Flying started somewhat earlier due to the fact that the Northern group (who ran the contest on Sunday) did not have to perform registration tasks, and they seemed to be more experienced in the large scale winching operations. Soon after 9:00 a.m. there were gaggles of sailplanes going up on the lines with the hope of getting in a complete three rounds. But even with the completion of the first round in 2½ hours it was felt that two could be held, and so the precision total flight time was lowered from 15 minutes to 9 minutes, with a 7 minute maximum-per-flight limit.

Just at about the transition between rounds, the wind arrived in a big way and with a vector change of 180°, requiring the tedious relocation of the launch lines. Again, the pilot was tried heavily as he had to now re-trim his soarer into a device that was more like a missile projectile to be launched into the awesome wind. This sudden change in meteorology is bound to influence sailplane designs so that they can readily reset for a variety of flight regimes and provide a maximum performance in each.

While the northern group of flyers were out-numbered by 5:1 and the statistical odds were not in their favor, they were able to win the team prize by a scant 100 pts. in a total of more than 8000, and it was the South Bay Soaring Society, a northern group (if you can follow that), that took home the majority of the prizes.

I am indebted to all of those modelers who were met throughout this journey to Bakersfield as they all contributed to a weekend that was a real ball, a contest and comraderie that is prevalent in aeromodeling, but most especially in sailplane aeromodeling.

FINAL STANDINGS

SATURDAY DURATION

1. John Baxter	1000 pts.
2. Marshal Watson	998 pts.
3. Brian Stevens	968 pts.

SUNDAY – DURATION/PRECISION

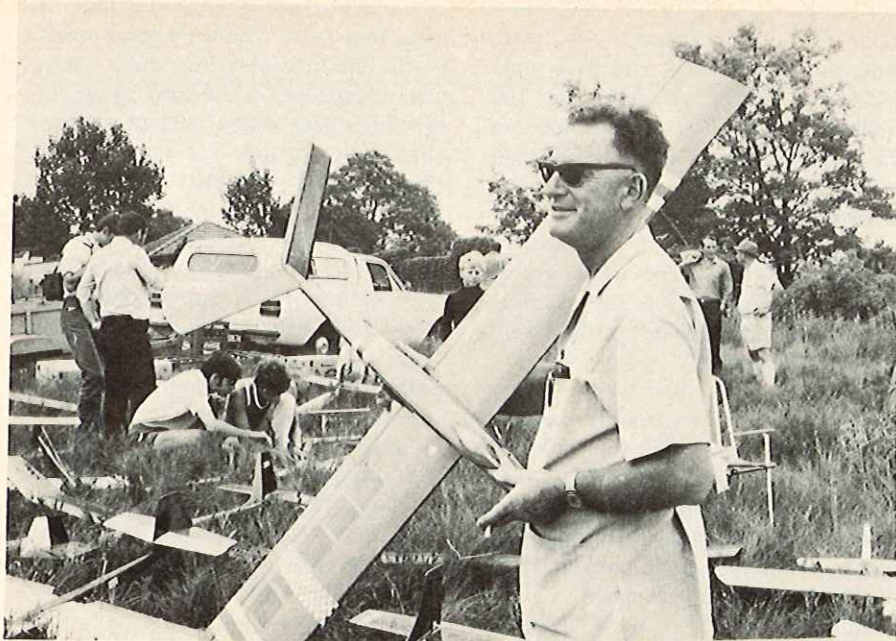
1. Jeff Walters	1000 pts.
2. B. Hinman	994 pts.
3. Tom Christian	946 pts.

SCALE

1. Roland Boucher	ASW 17
2. K. Nierich	ASW 17

1ST OVERALL

John Baxter 1934 pts.



Monte Malherbe of Pretoria, S.A., made a clean sweep of South African National Soaring Championships.

SOUTH AFRICAN NATIONAL SOARING CHAMPIONSHIPS

The South African RC National Soaring Championships, run separately for the second year, were held at Durban on the first, second, and third of January, 1972. Cape Town, the home of RC soaring in South Africa, sent along quite a strong team but guessed wrong in their heavy models which, while perfect for the blustery Cape weather, were at a distinct disadvantage in the calm marginal conditions that prevailed at the contest.

It was generally agreed that this contest, organized by the Durban Model Airplane Club was one of the best organized and most enjoyable championships ever run in South Africa. The result, which we think gave a lot of pleasure to all, was a clean sweep by Monte Malherbe of Pretoria. Monte, who, as you probably know, has not flown competitively for many years, and makes it a practice, as a model dealer, to spend most of his time helping newcomers along, is always a very willing worker at competitions. Monte won both the slope and thermal major events — the latter with a borrowed Cirrus. His slope soarer was a Dave Raythorne design, a lightweight 28 ounce low wing slope machine called Act 2, capable of flying in the lightest of lift.

Rounds 1 and 2 of the Open Slope Soaring was held on January 1st, at the Kloof, a site which can give reasonable lift but was, on this day, marginal, with the result that many of the

heavier models sank into the valley below to get entangled in the power lines which always seem to curse a soaring site. Landing point scoring had to be scrapped because of the restricted landing area.

Monte Malherbe revelled in the light lift and beamed like a searchlight all day. With his long experience and powerful presentation he is second to none as a competitor, topping both rounds by a clear 238 points. Cape Townians John Lock, and Neville Kelly (last years winner) with scores close together could not keep up the pressure in round 2 in an ebbing wind which, in fact, forced the postponement of the second round of the novice class which had J. Roats of Vereeniging in the lead.

The second day was clear and bright with no wind. With a north-eastern predicted for later in the day, the venue was changed to Cliffdale, 1000 feet higher and 30 miles from Durban. At midday the novices volunteered to fly despite marginal conditions which did improve as the day wore on. Jasper Roats, the present Transvaal R/C Power Champion, maintained his lead to beat Dennis de Wit of Cape Town, flying a rudder and elevator controlled Amigo.

Monte Malherbe opened the 3rd round of the Open Class with an excellent 4407 points, but was clipped by one point by John Lock for the highest individual round score. The final scores, best 2 out of 3 flights were: Malherbe 828, Lock 773, N.

Kelly 604.

A thermal soaring competition on January 3rd was a true test of both model and pilot as weather variations provided a real challenge. In fact, these variations were so great that not a single maximum flight was recorded. During this event only 3 good thermals were caught with Monte Malherbe and Ernie Morrison of Durban getting 2 of them.

From the outset it was obvious this was going to be anybody's contest with the favored flyers struggling and novices going well. There was no stopping Monte after his near max and he totalled 1462 points to Ernie Morrison's 1361. Pat Curtis from Cape Town scored consistently and was the only one to hit the spot five times, ending up 3rd overall with 1273 points. 1971 champ, Neville Kelly, could not get going to move up from his 4th spot.

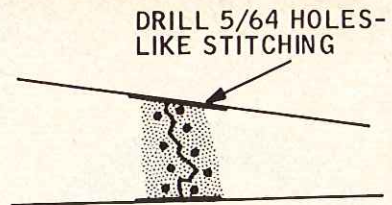
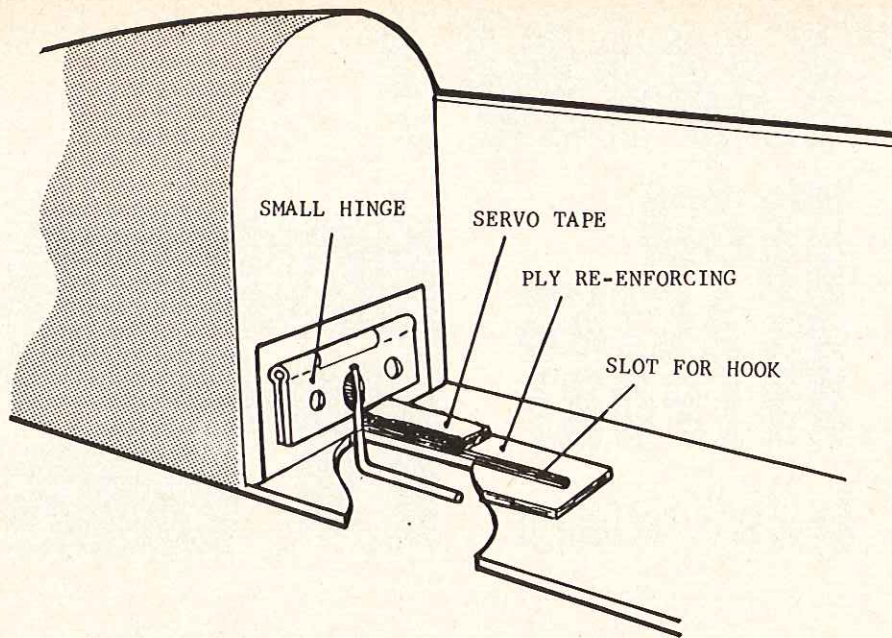
Our congratulations to Monte on his well-deserved win and his bronze proficiency eagle award in his first thermal soaring contest. During the late afternoon the mini-FAI Thermal Event took place in a strong wind with the result a dead heat between the father and son combination of Neville and Steven Kelly from Cape Town. The senior Kelly was beaten by 14 seconds in the final fly-off.

A special presentation was made for the top rudder and elevator machine in slope soaring which fell to Dennis de Wit of Cape Town and his Amigo. The Nationals weekend ended on a high note at a most pleasant prize award presentation held at the home of Arthur Bonamour.

While on the subject of contests don't forget the RC Sailplane Thermal Soaring Spring Warm-Up, sponsored by the North Jersey RC Club, to be held on April 23, at the N.J.R.C.C. glider field, in Wyckoff, New Jersey. This is a Class A, AMA sanctioned event with J.J. Beshar, 198 Merritt Dr., Oradell, N.J. 07649 as contest director.

Hints & Kinks For Sailplanes

Glider tow hooks tend to be somewhat vulnerable and can easily be damaged on a hard landing, so why not fit a retracting tow hook? The sketch shows Jack Headley's method, in which the tow hook, bent from a scrap of 1/16" music wire, is silver soldered to a small hinge. This hinge is then bolted to a frame, which should be reinforced with a scrap of plywood.



EPOXIED (SPATULA) COVER
WITH FIBERGLASS SHEET.
SMOOTH WITH POLYETHYLENE



CROSS SECTION

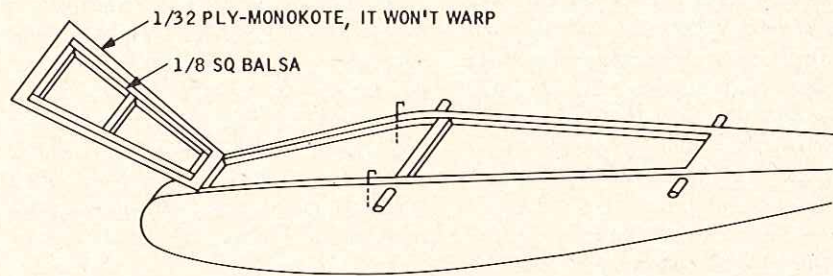
EPOXY PUSHED THRU HOLES
MAKES ONE BIG STAPLE.
COVER WITH FIBERGLASS SHEET

A small slot is required in the bottom of the fuselage which is also reinforced with plywood. Stick a scrap of servo tape onto this plywood to provide sufficient friction to hold the hook in the out position, but also allow it to retract on landings. With this system your tow hooks should last at least as long as your model.

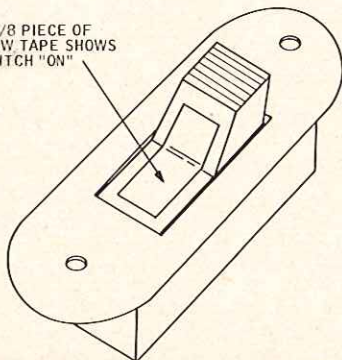
Here's an idea from Larry Renger, a project engineer for Estes Industries, Inc., Penrose, Colorado 81240. In order to color code his airborne switch so that it is visibly on or off, Larry uses a small patch of 3M tape (#471 Red-Orange). Cut it to 3/16" by 3/8", fold in the center, and stick it on the slide switch as shown in the sketch. This will give you a visible reference from several feet away as to whether your airborne switch is on or off. While we are on the subject of Estes Industries, they make a plastic parachute which, while designed for model rockets, is excellent as a drag chute for a Hi-Start. Made of thin plastic with shroud lines, the cost for the 12" diameter model is 35 cents, the 18" diameter is 45 cents, and the 24" diameter chute is 60 cents. Made of

Day-Glo colors, they are visible for quite a distance and hold up for some time when used on a conventional Hi-Start.

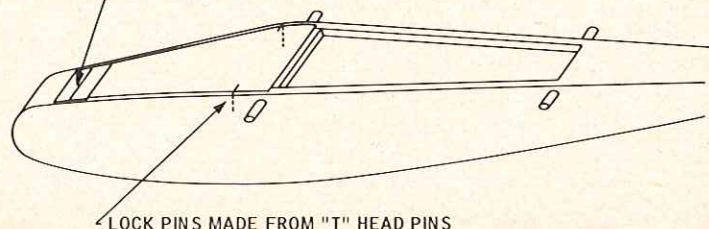
Ronald Geese of West Lafayette, Ohio, suggests that, when covering a ship with MonoKote and making the control surface hinges from that material, it is sometimes difficult to hold the surfaces in position to install the pushrods before the model is covered. It is also inconvenient to iron on the MonoKote hinges to the bare wood, install the pushrods, then remove the hinges so the plane can be covered. Ron solved this problem by making the temporary hinges out of cellophane tape. The tape is quick, saves heating the iron, is easily removed, and is inexpensive.



3/16 x 3/8 PIECE OF
DAY-GLOW TAPE SHOWS
WITH SWITCH "ON"



HINGE 1" PLASTIC ELECTRICAL
TAPE-WHITE OR CONTRASTING
COLOR

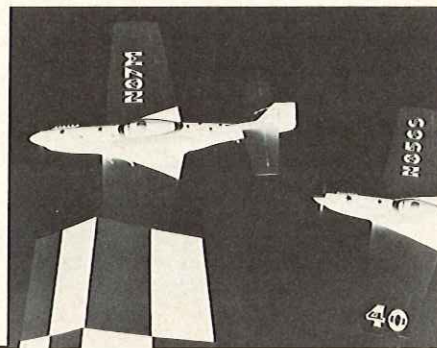


TURN!



RCM RACING REPORT

by dick tichenor



RCM's Quarter Midgets are here! This racing event, conceived and introduced by R/C Modeler Magazine, is really catching on and growing across the country. It is experiencing growing pains, to be sure, and it appears that the fliers interested in Quarter Midgets are trying various rules in their own areas which will be most helpful when the time comes for a uniform set of racing regulations. In fact, RCM Quarter Midget racing is bound to eventually become an AMA event.

Incidentally, on the same subject, Bror Faber tells us that John Elliot (19412 Olana Lane, Huntington Beach, Calif. 92646) will be the focal point for all opinions and viewpoints, so direct your comments, concerning the involvement of NMPRA with Quarter Midgets, to John.

Two Southern California clubs, the Orange Coast R/C Club and the Northrop Aero Modelers, are co-sponsoring a series of bi-monthly races taking alternate turns at hosting the event. RCM attended their second race at Mile Square with the Orange Coast Club as host. Paul White and Ken Holden were the busy co-contest directors. Unique for this particular race was the introduction of a three pylon course, appearing to be much safer than the previously used two pylon course. The rule requiring landing with the engine running was interesting, especially when a half point is taken from the score if the engine is dead during landing. Loss of a few half points during the course of a day's racing can put you way out of the winner's circle.

John Elliot won all six of his heats flying a Super Tigre .15 powered Ballerina that weighed 3 lbs., 10 oz., with a winning time of 1:39.2. Paul White turned in five firsts and one

second place with his Super Tigre powered P-51, featuring his own designed miniature retract gear. John and Paul voluntarily disqualified themselves as they had installed Perry carburetors on their engines. Their action was in keeping with the strictly stock engine approach. The winners of the event were 1st - Fred Reese (14.5 points), Cosmic Wind; 2nd - Carl Weyl (13 points), Owl Racer-Miss Pogo; 3rd - Kent Thomas (12.5 points), P-51 (original); 4th - George Alvedo (12 points), Francis Mustang; and 5th place to Jack Stafford (12 points), with his Stafford Mustang.

A wide variety of designs ranged from the simple "let's-go-fly" approach to the more sophisticated and highly finished models. Engines used were Super Tigres, O.S. Max's, Fox's and Enya's. It's refreshing to see so many of the modelers trying out their own theories and designs in this event.

Racing the RCM Quarter Midgets is an exciting competition event for the sport flyer and is an inexpensive way to enjoy the competitive thrills of racing. There was only one mid-air collision at the OCRCC races, and it resulted in a 3/8" nick in the wing leading edge of one ship and a similar nick in the trailing edge of the other.

Both racers completed the heat as though nothing had happened.

Since, as we mentioned earlier, rules for the RCM Quarter Midget races are in the formulative stages, here are two sets of rules currently being tried out in two separate parts of the country. The first are the Northrop Model Airplane Club Quarter Midget Racer Rules:

NORTHROP QUARTER MIDGET RACER RULES

ENGINE: Any stock .15 engine.

PROP: Any size, only one blade can be modified.

IDLING: Engine must idle 10 seconds immediately prior to each heat.

WING: Monoplane - 300 square inch minimum area, 7/8" minimum chord thickness at fuselage side. Biplane - 300 square inch minimum area, 5/8" minimum chord thickness.

FUEL: Normal sport fuel, not over 20% nitro.

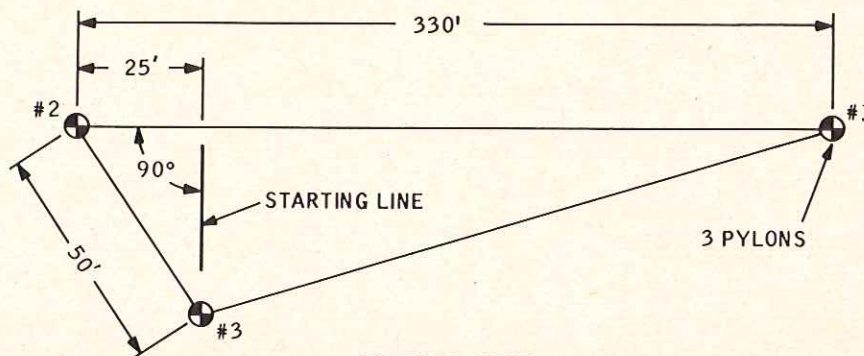
APPEARANCE: Semi-scale version of racing aircraft.

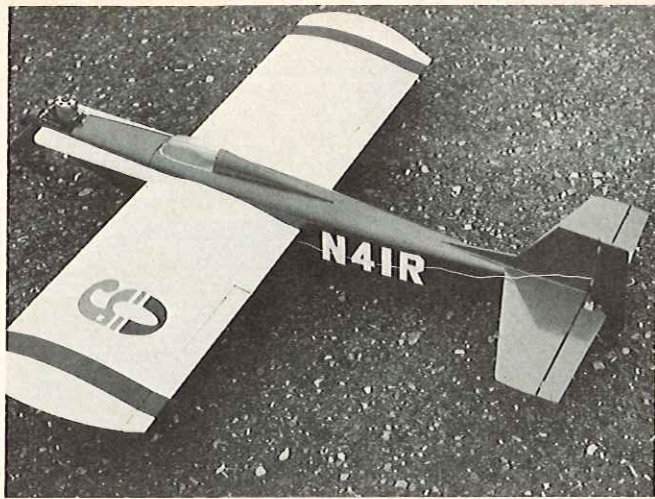
FUSELAGE: 2 1/2 inch minimum width, 5 inch minimum height at pilot.

WEIGHT: 2 1/2 pounds minimum, 4 pounds maximum.

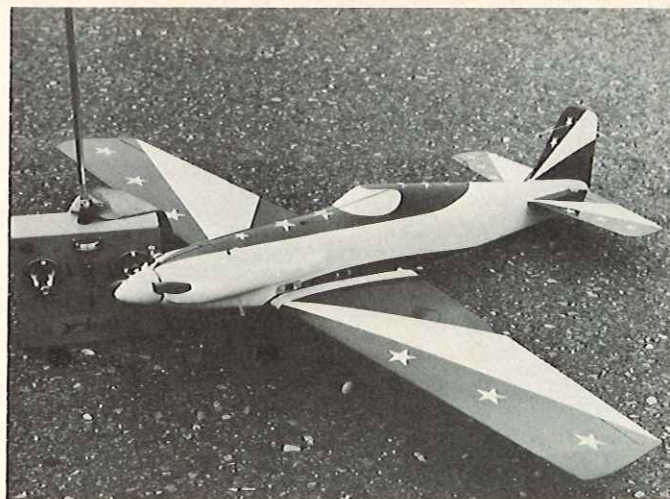
On the subject of Quarter Midget racing, the following are Wally Davidson's comments from the Northrop Aircraft "Modeler" concerning this event:

The following recommendations are based on observations of quarter midget racers and racing.

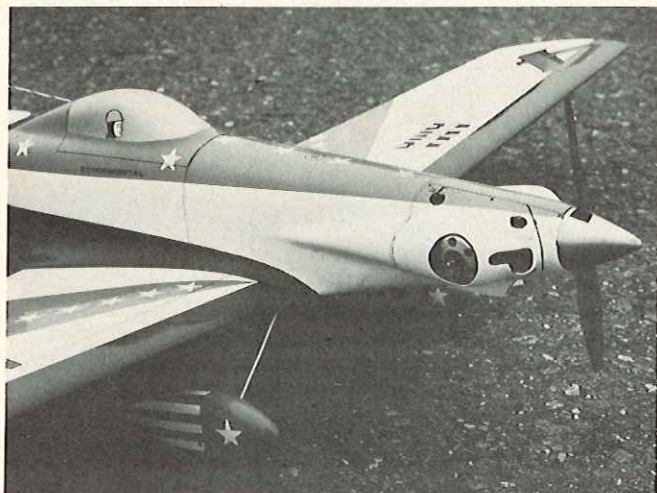




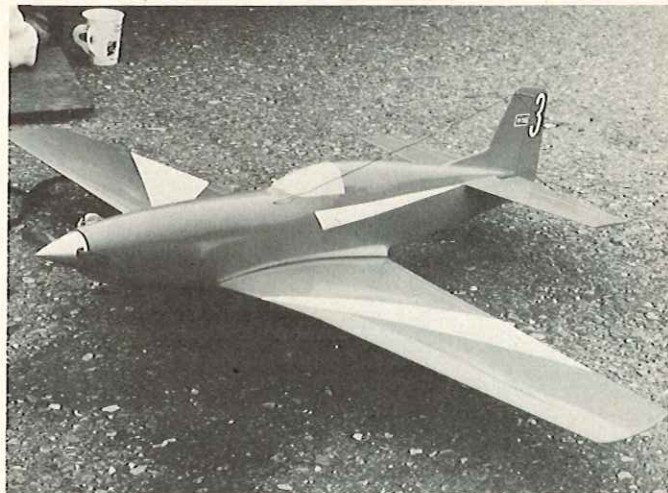
The winner! Fred Reese flew this Cosmic Wind to 1st Place.



Mark Thorley's beautiful K & K Ballerina, Dean's radio.



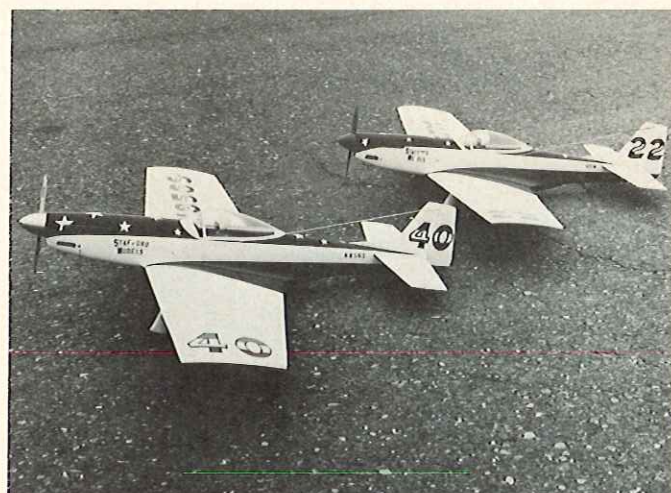
Big John Elliott's beautiful Ballerina with fibreglass cowling.



George Azvedo's 4th place P-51, Francis fibreglass fuselage.



Frank Szekula flew Francis P-51 powered by Super Tigre .15.



Stafford and Meyers P-51's. Staffords Quarter Midget P-51 kit available soon.

(A) The fuel selected for racing should be used, exclusively, by all racing participants. The MINIMUM nitro content for engines of this displacement should be 20%.

Reasons for recommendation:

1. Contrary to general belief, nitro

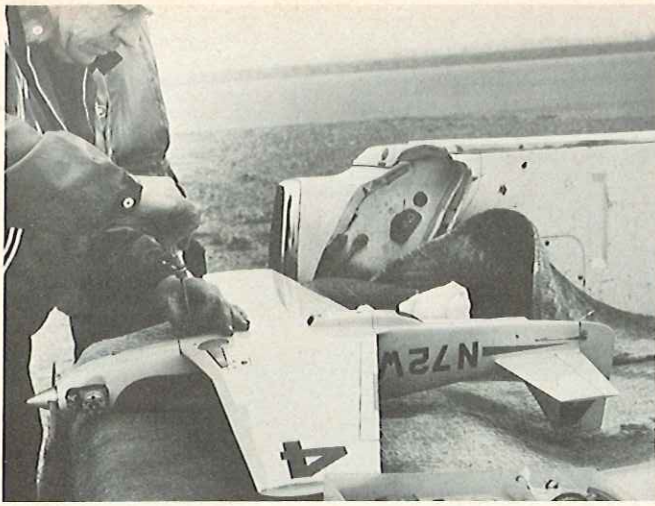
content between 10% and 30% will change the high-speed rpm only about 3% or 4%.

2. With an increase in the nitro content, fuel mixture settings become less critical.

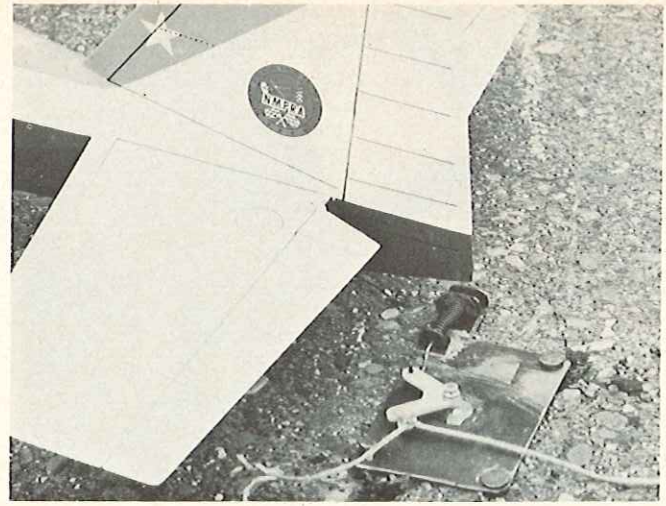
3. With low nitro content, there is

some risk of over-heating an engine as the tendency is to set a mixture on the ground which becomes too lean during flight.

(B) ANY engine which meets the displacement and the idling requirements should be permitted.



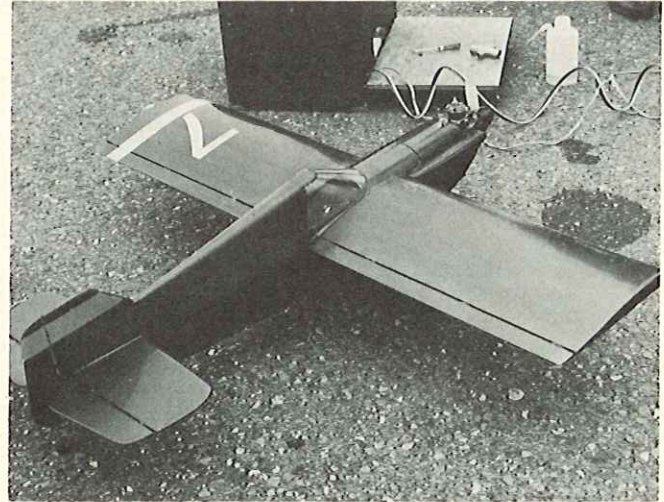
Paul White gets his P-51 together. Mustang features Paul's own design retractable landing gear.



Release stooge tried out — has possibilities in Quarter Midget Racing.



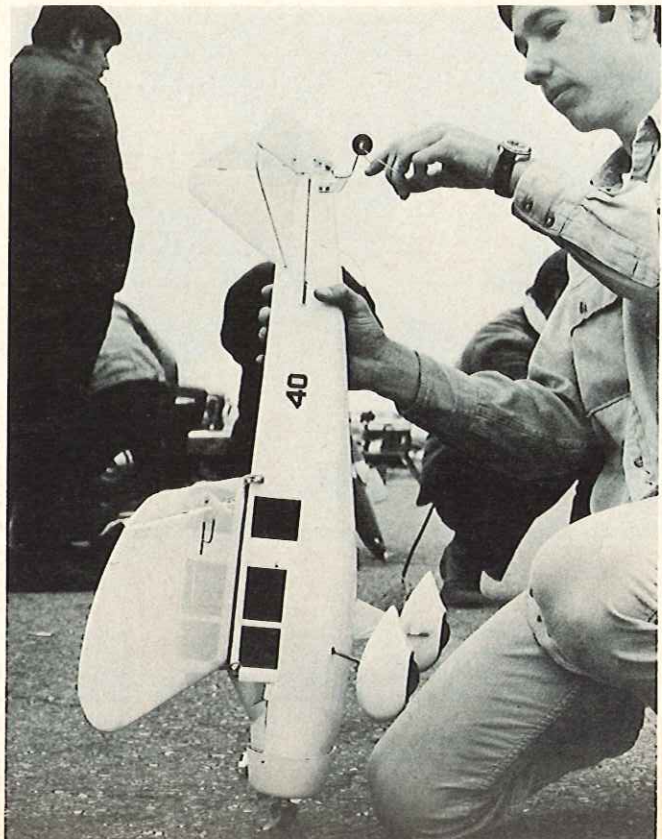
"Two away — what'cha waiting for?"



A Cassutt, built from RCM Plans, by Don Groves.



OCRCC President Bert Baker entered a Little Mike.



RIGHT: A Mr. Mulligan by Steve Cummings at the recent Quarter Midget Races.

Filled In
By C.D.

Filled In
By Starter

Contestant's Name: _____												
Round	1	2	3	4	5	6	7	8	9	10	11	12
Heat	2	4	1									
Idle Test	OK	OK	OK									
Pylon Cut	0	1	0									
Pwr. Ldg.	OK	OK	X									
Finish Position	3	2	1									
Score	2	2	3									

(C) The idling test should be conducted prior to EACH heat, and it should be conducted by the Starter at the race "start" line.

Reasons for recommendation:

1. Such a rule would force each contestant to make certain that idling requirements can be met prior to his taking a starting position.
2. The Starter (or an assistant) could monitor the rule against further needle adjustments following idling tests.

(D) Propeller selection should be "open", with balancing modifications, only, permitted. (No blade configuration changes.)

Observations made during races of 5 December:

Don Dombroski, as Starter, took on an added responsibility. By so doing, he simplified the means by which data was collected after each race.

His location on the field permitted him to observe, and note, whether each contestant landed "power on." He also checked the Pylon observers for their record of pylon cutting by contestants. These facts were also noted.

The means of communication with the statistician were 3" x 5" cards, prepared by the C.D./Statistician with contestants name, round number, and heat number. Don's contributions would have been aided had we prepared the 3" x 5" cards as shown in the sketch. This would make of the Starter, a Field Judge who would grade and score each contestant.

*

From Bob Penko of Euclid, Ohio, Quarter Midget C.D. for the M.A.R.C.S., comes a set of Quarter Midget racing rules which they are currently using. These specify a minimum wing area of 300 sq. in. with a 10% wing thickness which equalizes the frontal area between the tapered and constant chord wings while also eliminating ultra thin wing tips. (See Cunningham on R/C, this issue, for a discussion of this 10% thickness section). This 10% minimum section also makes biplanes more competitive. The M.A.R.C.S., also specify a 5" minimum height at the canopy or windshield, and a 2 3/4" minimum width fuselage, allowing the use of older and larger radios. Weight minimum is 2 1/2 lbs. Planes must be recognizable semi-

scale models of aircraft that have been raced, closed course. No Deltas are allowed. All Quarter Midgets must be able to be landed under power and must stop rolling with the engine running and be capable of R.O.G. Failure to make a landing under power will add 20 seconds to the individuals heat time. Bob Penko notes that some clubs are using the "hands-off" idle rule prior to takeoff and suggests that one or the other should be used - that is, the aircraft must be landed and stopped rolling with the engine running, or alternately, the aircraft must idle unassisted for a specified length of time prior to takeoff. The M.A.R.C.S. rules also specify a .15 maximum engine size, engine to be stock, although the carburetor need not be a stock carburetor. The total number of laps around their course equals 2 miles.

*

Back on the West Coast again, Fred Reese, writing a Quarter Midget commentary for the Northrop Model Airplane Club Newsletter, comments as follows: "In the recent Quarter Midget races between the Northrop Modelers of El Segundo, California, and the Orange Coast R/C Club, flying skill and consistent engines proved to be more valuable than flat out speed. The winning aircraft at the December 5, 1971 contest, flown by Carl Weyl was a Fox .15 powered Spirit of St. Louis. (Presented as a construction article in this issue of RCM).

"Shocking? Not really. Carl is a smooth, competent flyer and he flew the shortest distance around the pylons. His airplane is only 3/4 oz. above the 2 1/2 lb. minimum, is aerodynamically clean, and very easy to fly. It was quickly apparent that the flat bottomed or high lift wings could get around the pylons more quickly than the thin racing wing types.

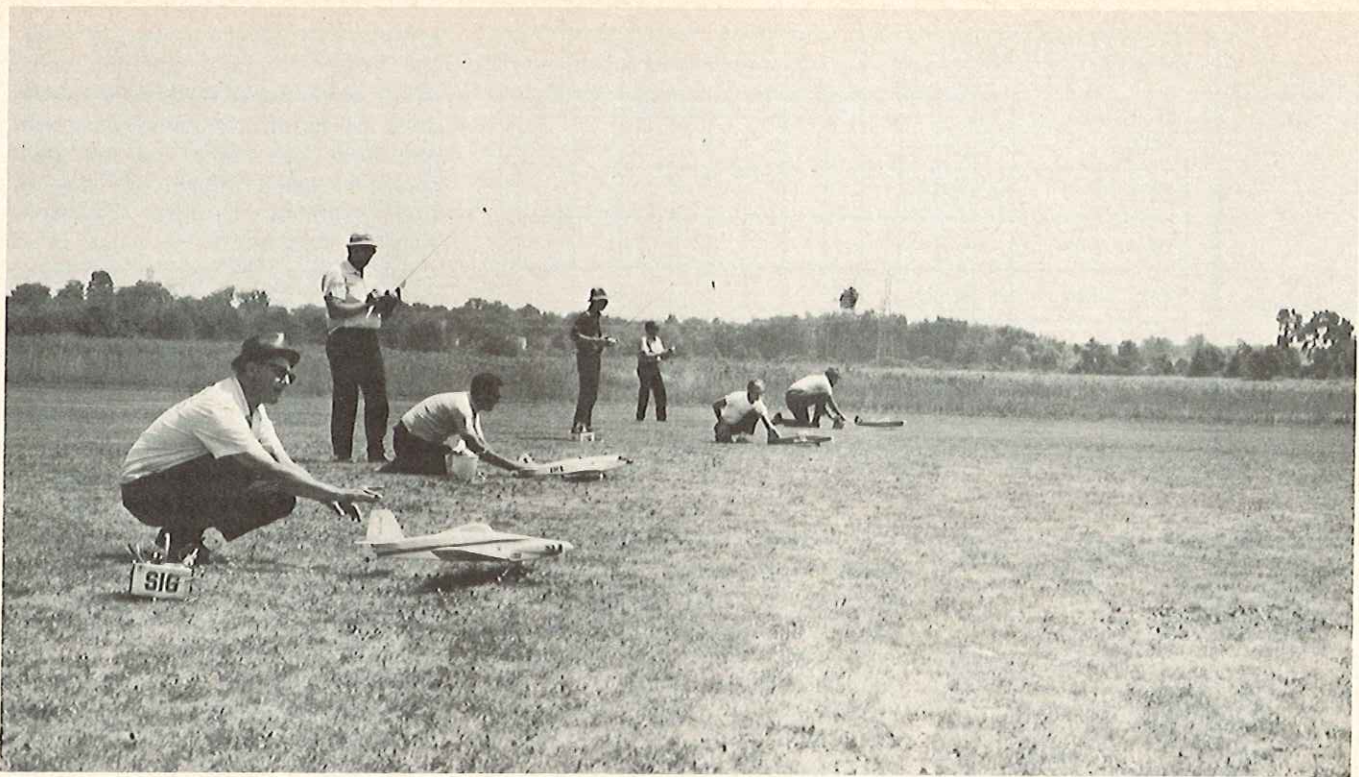
Having to fly a wider course lost all of the speed advantages the thin wing might offer. Some work needs to be done on airfoil selection which will give both high speed and low stall speed; be light in weight, and easy to build without twisting. Excessive weights seem to be as much of a disadvantage in the turns as poor wing design. The second place airplane in the same event was Don Grove's "Casutt Special" built from RCM plans and powered by an O.S. .15, ending up only 20' behind the Spirit of St. Louis in the fly-off race. Again, Don's airplane was fast, consistent, and he flew very tightly around the pylons. Third place in the same contest went to George Alvedo, flying a Super Tigre powered Francis Products P-51. There were four of these P-51's entered, all powered by Super Tiges.

"Some general recommendations observed during these and subsequent races would suggest that 20% of the wing area is a safe factor for the stabilizer and I would not recommend less. Elevator movement should be about 1/4" in each direction. If the airplane snap rolls out of a 90 degree bank turn from full up-elevator, the movement should be decreased. Do not try this turn unless the airplane is several hundred feet high. There should be no chance that your airplane will snap roll out of a high-G turn during a race.

"Aileron movement can be adjusted to individual preference for roll rate. Full span strip ailerons on a mid-wing racer should move about 1/8" - 3/16" in each direction. This will give a slow to moderate roll rate which is sufficient for racing. Inset ailerons can move about 3/16" - 1/4" to get the same results. Start with the lesser movement and increase it later, if so desired. For racing, I prefer soft, or unsensitive, controls. The airplane will fly a smoother course and speed is lost to drag each time a control surface is moved. Right now, an O.S. Max .15 in a 2 1/2 lb., minimum dimension racer with a wing that will turn quickly is still the airplane to beat."

*

For those of you who would like to try something a little different, we're presenting a set of plans from the Northrop Model Airplane Club Newsletter for the Hot Canary, designed by Gus Morfis and Jack Headley to conform to Northrop M.A.C. Quarter Midget racer rules. A scale is presented on the plans for easy enlargement for those who would care to try this



In foreground, Bob Penko releases his K & F white Cosmic Wind against a Howard Pete, Minnow, and Curtis P-40Q at MARCS 1/4 Midget Race.



Mentor Ohio group with Ed Norbora's Zebra F-51 being shown to flagmen. Don Love's P-51 in foreground. Tom Clark's P-63 King Cobra and Austin Leftwich's yellow Doubler on ready line.

interesting low wing aircraft.

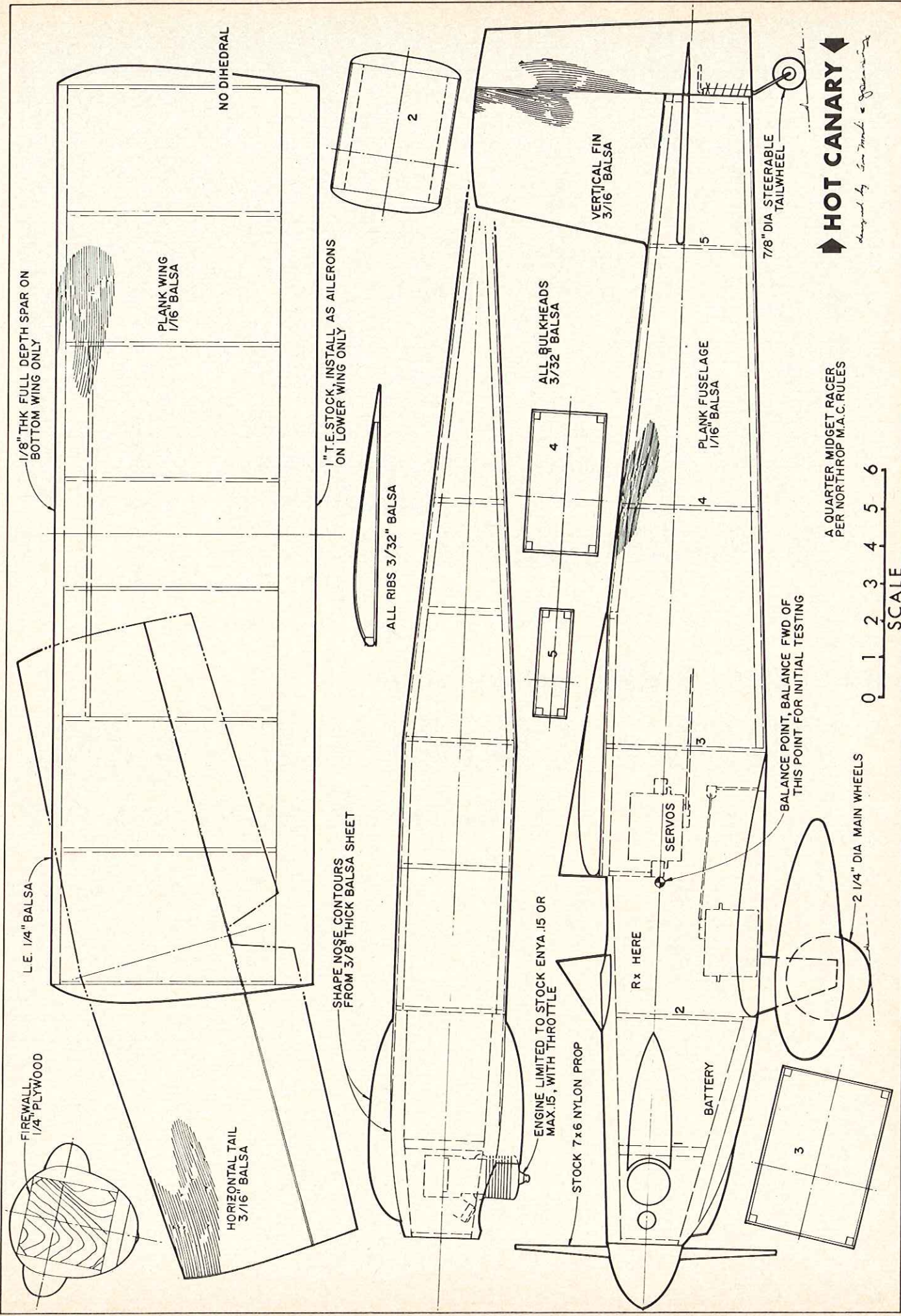
Quarter Midgets are here, and they're off and running! Let's keep it a competitive event in which the sport flyer can participate to the limits of his ability, increasing his proficiency curve with each and every race. Drop

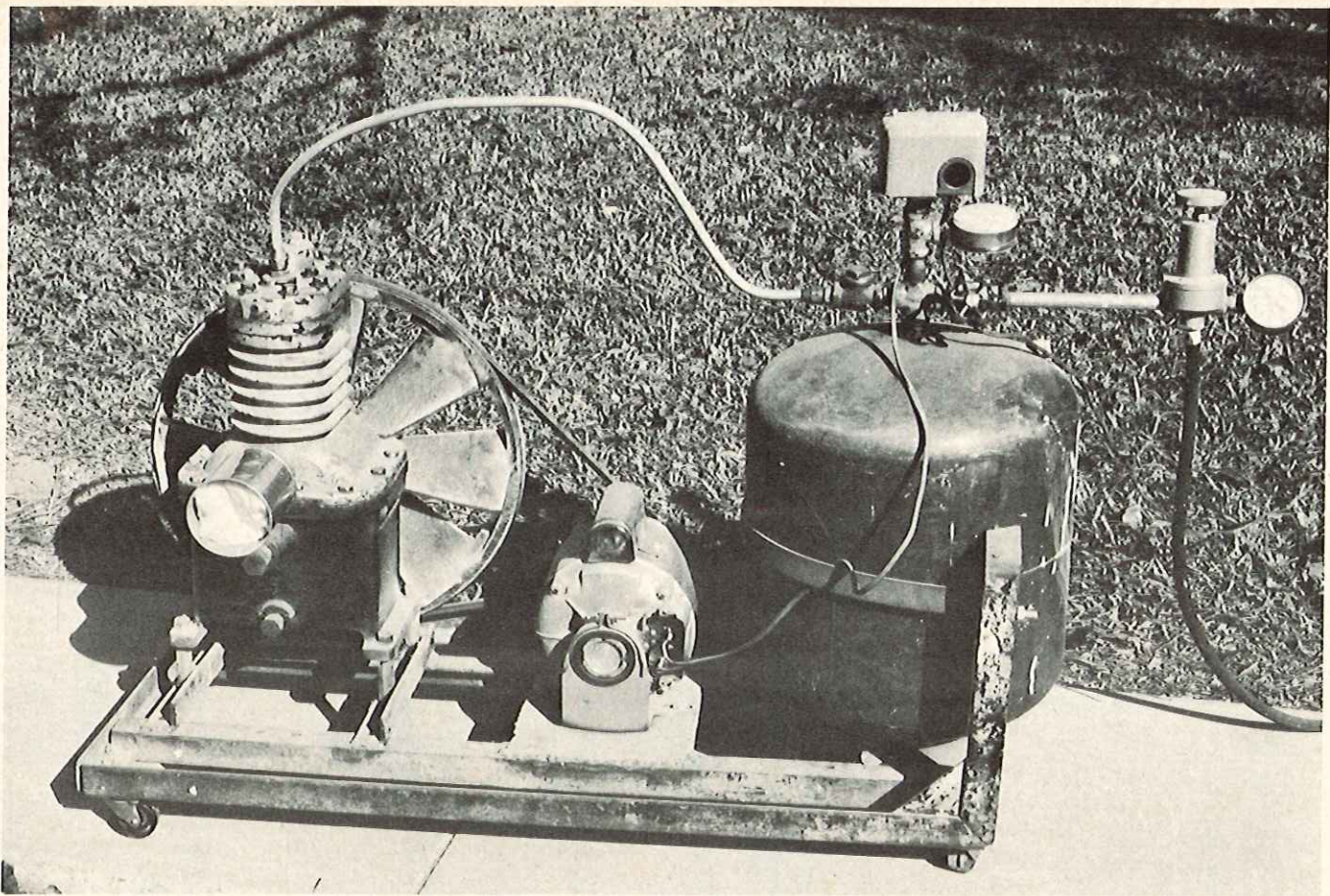
us a note with your ideas and suggestions concerning Quarter Midget racing. R/C Modeler Magazine conceived, created, and introduced Quarter Midget racing several years ago, and we're happy to see the interest that is so rapidly being gen-

erated for this event. We will do our best to help promote and encourage this event and to present your suggestions and comments, as well as your experiences in the pages in this magazine.

Let's go racing!







Beautiful, isn't it! But you can build this spray paint compressor from junk parts for twenty-five dollars or less. Compressor is double piston type. Note home made air filter.

you can build your own **PAIN** **T COMPRESSOR** *from junk parts for \$25*

By Max Blose and Joe Ripley

So you want a nice sprayed paint job on that new ship? What, you don't have a compressor? Well, don't let that stop you, just build one. There are many old units lying around just waiting for our use. These are compressor's of the piston type, from old refrigerators. The newer sealed unit types will not work, due to the oil that it circulates in the air line of the system. Usually the type needed can be found at an air conditioner or refrigerator repair shop. Of course, if you start looking, it's hard to tell where one might turn up.

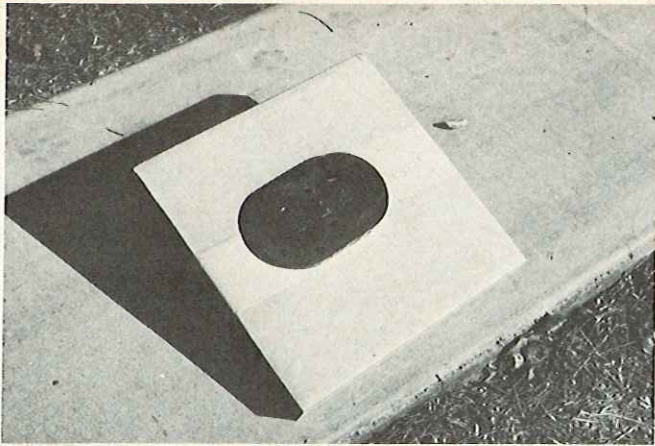
These compressors are of the reed type, and since the reeds are usually made of spring, and since they are built for a closed system of gas, some modifications may have to be made to the valves. The moisture in the air may rust a hole through the metal. You

may remedy the situation by taking the head off, and make new valves of tempered brass, or solder a piece of brass or copper on the valve where it makes contact with the opening from the piston.

Now, we all know modelers being modelers, they are going to build it the way they want to, so all we can do is outline how we built it. Anyway, it will have to be built to fit the compressor and tank that you are able to obtain. First, you start off with a base. This can be made of wood or angle iron with a metal plate to hold the motor, compressor, and tank. Again, measurements are not given, just a basic outline, since this will have to fit your particular compressor, tank, and motor. The motor mounting holes should be elongated, so that the motor may be moved around to tighten the

V-belt. Mount the compressor firmly to the mount then mount the motor, fully toward the compressor. Now, measure the distance from the motor to the compressor for your V-belt size. This should be done carefully, using a string template, if necessary. After you obtain the proper size of V-belt, you may install it to the motor and compressor, then adjust for tightness by moving the motor in the elongated holes and, finally, tighten the motor down.

The tank we used was a disposable freon tank that the air conditioning men use to recharge the freon in the air conditioning systems. As you can see from the pictures of the two compressors that both were different types. Try to obtain the largest one you can. These tanks will withstand 300 pounds, so you are in the ball



Compressor head off, showing view of reed valves.

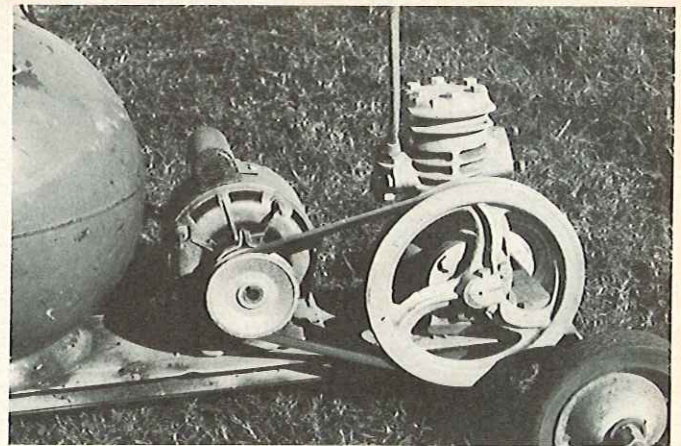
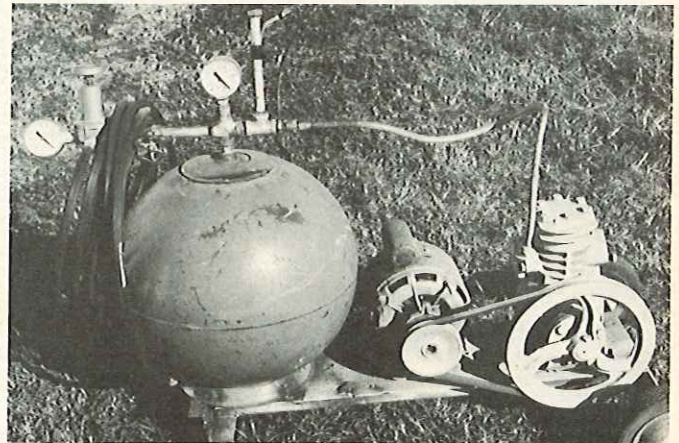


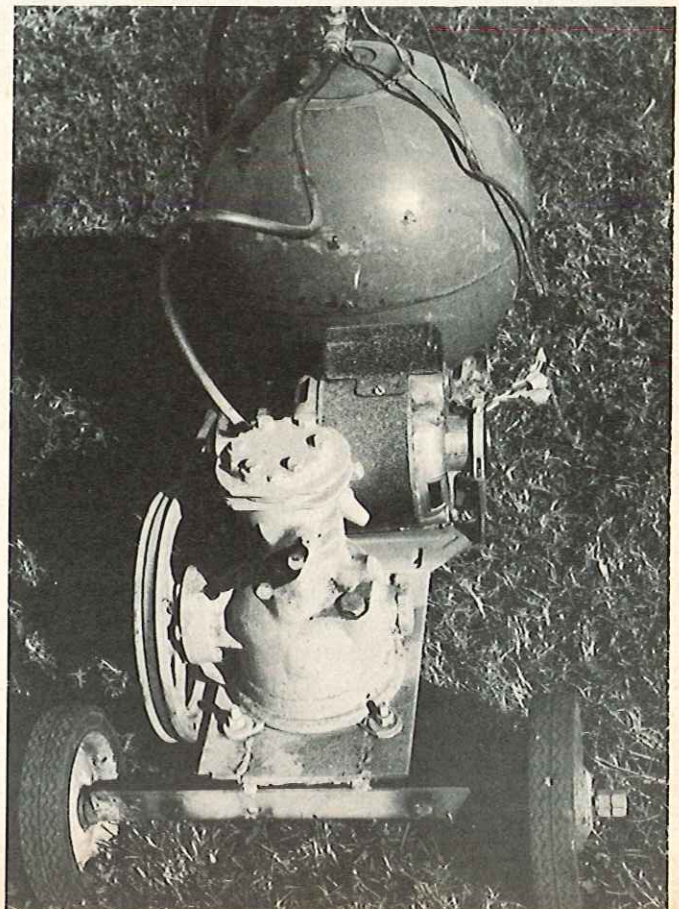
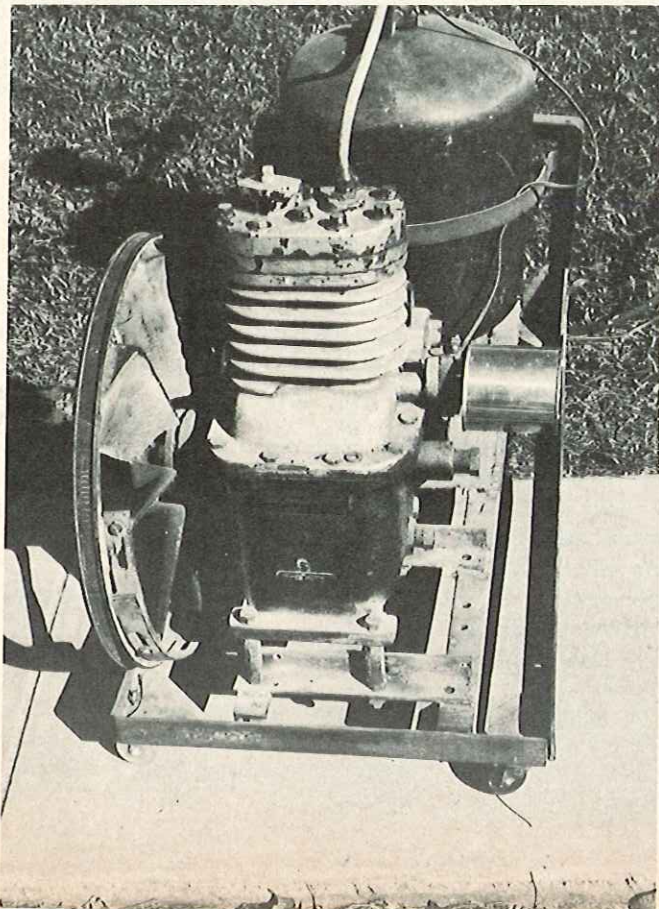
Photo of compressor and motor.



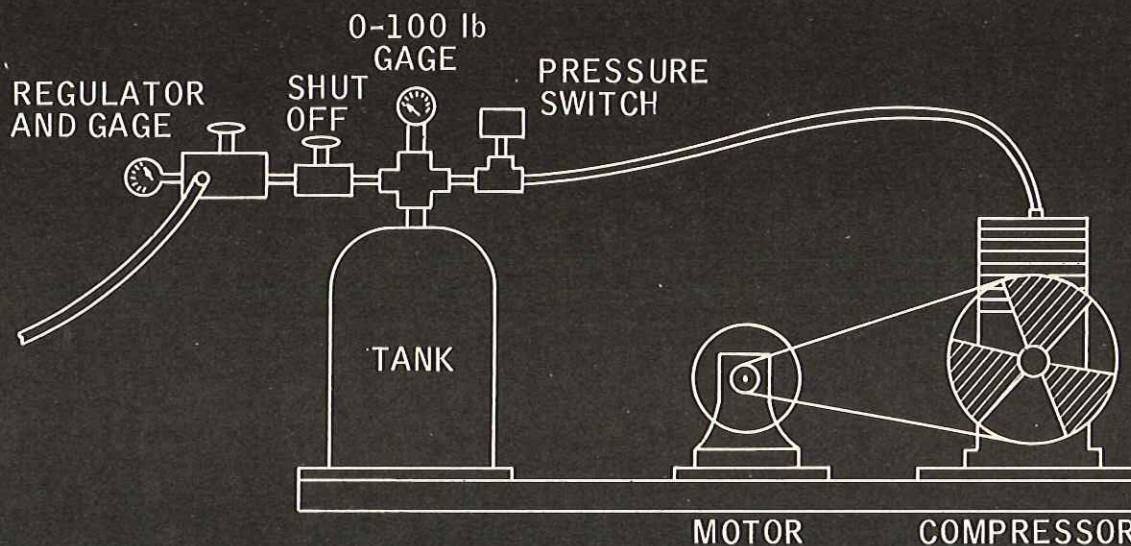
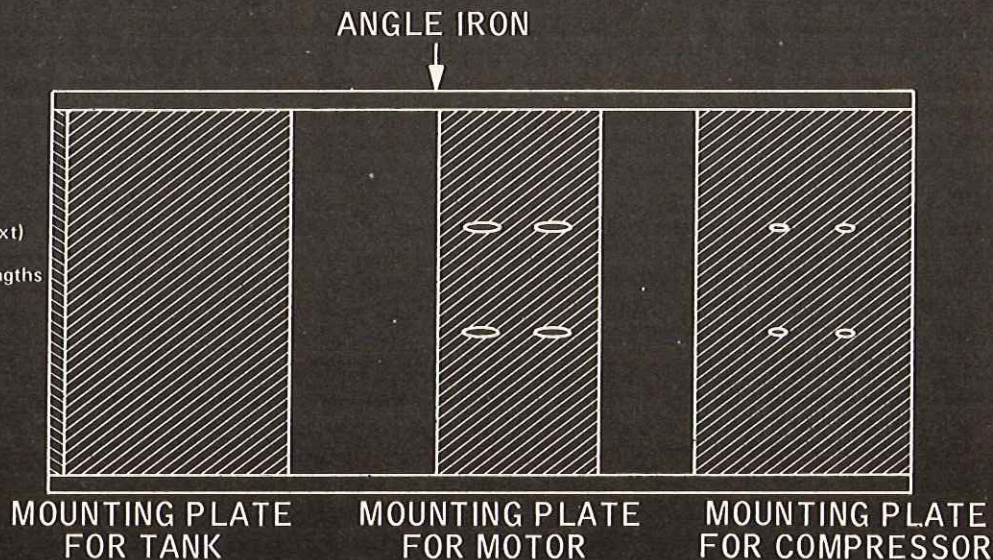
ABOVE: View of large Freon tank and plumbing. BELOW: View of double compressor with one output plugged.



ABOVE: Close-up of plumbing. BELOW: Compressor with single piston, different type of Freon tank. Note wheels, built like a golf cart.



- Parts List
- 1 - "Jet pump" pressure switch
 - 1 - 0-100 pounds pressure gauge
 - 1 - 1/4" inline cutoff
 - 1 - 1/4" four-way connection (see text)
 - 1 - 1/4" tee connection
 - 4 - 1/4" threaded nipples, various lengths
 - 1 - 1/3 H.P. electric motor, old washing machine motor.
 - 1 - Piston-type compressor, from old refrigerator.
 - 1 - Length of 3/8" copper tubing, from tank to compressor.
 - 1 - Large disposable freon tank



park with any one of them. Now that you have the tank, mount it. You can see from the photographs that one is tack-welded to the metal base plate, and the other is held on by a strap of sorts.

Now that you have all this mounted, it is time to start the plumbing. Install the four-way connection. If you can't find one, you can make one by taking a tee, brazing a fitting to the top of it, and drilling a 1/8" hole for the air to come through to the pressure gauge. Or, you may use another tee in the line just for the gauge. Place this four-way connection to the tank using an all-thread nipple fitting to the tank. Now, using another nipple to the four-way connection, connect a tee fitting, leaving the tee to the top. Next, using the appropriate nipple, attach the pressure switch to the top of the tee. From the other side of the tee attach 3/8" copper tubing to the

compressor. If you have a dual piston compressor, one of the outputs from the head may have to be blocked off, if it is not already. Don't worry, it will work, as the air will get to the line through an internal chamber. Now, to the other side of the four-way connection, attach the cutoff valve or, if you have used another tee for the 0-100 pressure gauge, attach the cutoff to this. The top of the four-way connection is used for the 0-100 pounds pressure gauge. That's why the fitting with the 1/8" hole was brazed in place. The air regulator and hose, as well as the air line filter, can be installed to the shutoff valve.

Most pressure switches are set for 20-40 pounds. That is, they will turn on at 20 pounds, and shut off at 40 pounds. They can be adjusted, and ours are set for 60-100 pounds. On the pressure switch the load goes to the motor, while the line goes to your wall

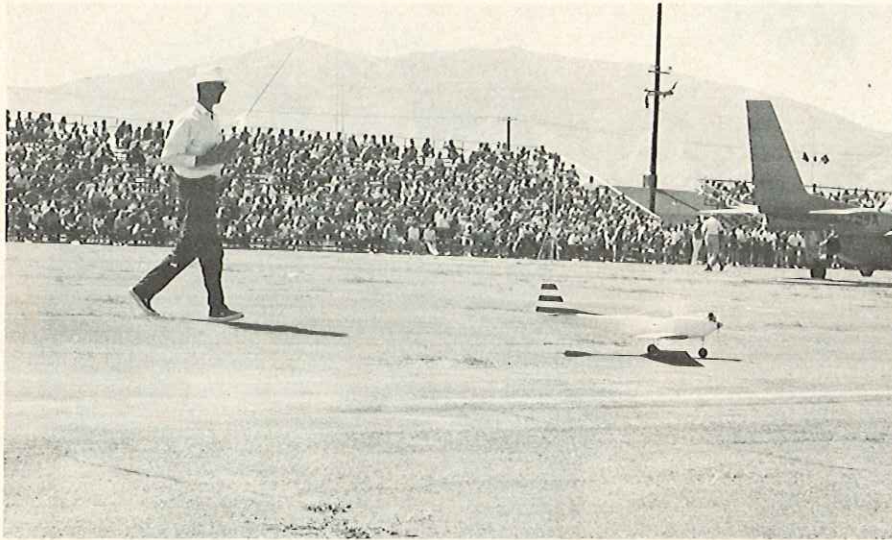
plug. You may want to put casters or wheels on this compressor, so it will be more portable.

Oh, you asked about the motor? Well, what about the one you took off the old washing machine before you hauled it off to the dump? And, since being the good guy that you are, look at all that loot you saved for that new rig, and got her that new washing machine in the bargain! By the way, I see in the Sears Catalog that you can buy a compressor, but they cost money. These we built, with all the scrounging around, cost us less than \$25.00 apiece!

We have found that one of the best guns to use is the Binks Model 15. It's a small gun that does a big job, and uses 8 oz. cups for your paint. We hope your compressor turns out as well as ours has, for ours have painted many an airplane during the past months. □

RCM Visits the RENO R/C CLUB

PHOTOS BY TOM WHITE



Jim Freshman taxis his Perigee out for a demonstration flight at the 1969 Reno National Championship Air Races.

The Reno R/C Club has been in existence for seven years and currently has 22 members in the AMA chartered group. Incorporating as a non-profit corporation in early 1970, approximately half of the club members are in the novice stage. For this reason the members instituted a person-to-person

flight program to enable the new men to become airborne and to achieve a degree of proficiency in the shortest possible time. Interest runs from "dirty" scale to pure sport with an emphasis on sport and fun flying.

The Reno R/C Club has a sublease on a piece of property from an owner

who lives in California. Collecting rent from the tenant who lives on the back of the 120 acre spot, the club flies on the front section. They have currently fixed the fence, added a gate and painted it, and put up a sun shade and restroom facilities. Having borrowed a grader, they leveled a take-off area approximately 600' long by 100' wide. Current plans include the installation of a barbeque for summer family outings.

The club has participated in two National Championship Air Races in Reno and have flown demonstration flights at the last two such Championships as well as having been invited to fly during the waiting periods at the end of the cross country races. The club has also participated in the Fallon Naval Air Station Air Show and the Carson City Air Show in the State Capitol. Static displays provided by the club members, as well as the flight demonstrations, were successful in that it put R/C modeling in the eyes of the local populace. This was the original goal of the membership insofar as creating an image of being part of the sporting public. Many of the spectators who attended indicated that they had never dreamed of such a hobby and sport. Since that time a club project has included assisting fellow RC'ers in Elko, Nevada, to get started in the sport with both flight instruction and general assistance.

As a civic minded organization the RRCC holds public displays such as in

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A view of the sign that attracted over 1,000 people to the R/C display at the center.



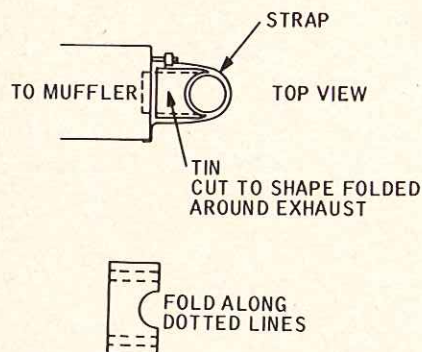
This is a view of the display held in the Pavilion Mall of Park Lane Shopping Center, the largest in Reno. 17 planes were on display during the Friday night and all day Saturday event.



FOR WHAT IT'S WORTH

Bill Howell of Bellaire, Texas, suggests that a Dristan nose spray container can easily be converted for use as an engine prime bottle. Simply remove the nozzle and fill 2/3rds full with fuel. When pointed above horizontal, it will put out a heavy mist. Pointed below horizontal, a solid stream is available. The screw cap prevents leakage while in the flight box. Be sure to remove the lettering on the container with steel wool to avoid possible accidents.

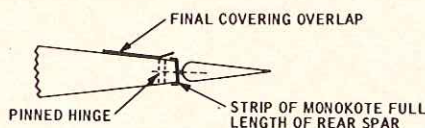
The holes in the exhaust port of your engine, left by the removal of a rotary exhaust baffle from an engine such as the Veco, may be covered with a small piece of tin, cut to shape with tin snips and held in place with the strap that holds on the muffler as shown in the sketch. This idea was submitted by James Hensley of Platteville, Wisconsin.



Richard J. Skurski, of North Tona-wanda, New York, suggests that a clean-up aid for the hands when using messy epoxy or polyester resin is a protective hand cream by DuPont called Protek, The Invisible Glove. The cream is applied to the hands before starting work, dries on the skin, and is not greasy. Epoxy or polyester can even be smoothed into place with bare hands, since the "invisible glove" protects skin, and washes off with plain soap and water, taking the resin with it. This works great with paint and dope as well. DuPont Protek is available where auto parts are sold.

Jim Boydston mentions that, when locating holes for your hinges that are pre-drilled, lay another hinge on top of the surface directly over the installed

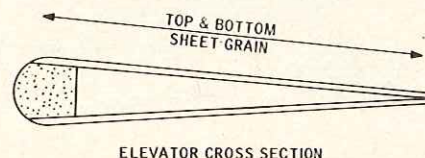
hinge, then just push down through with a straight pin. After that you can enlarge the holes very neatly by using a small rat-tail file as if it were a drill. This gives you a tapered hole to match the round wood type toothpick for your hinge pin. While on the subject of hinges, Jim suggests that in order to obtain a more professional looking covering with your Solarfilm or MonoKote around hinges along the trailing edge of control surfaces, just use a strip of MonoKote or Solarfilm to cover the trailing edge and wide enough to fold over onto the upper and lower surface of the control surface by about 1/16" to 1/8" as shown in the sketch. Then you can slit it for the hinges and install the control surface. After the hinge pins are glued and dry, it's easy to complete the covering without having to fold down into the area between the control surface.



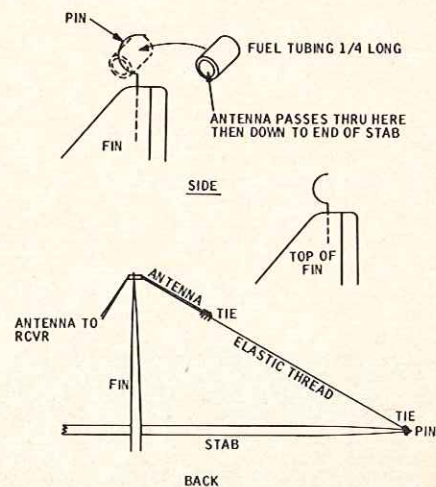
Bill Painter, of Stockton, California, has come up with an excellent method for applying the leading and trailing edge sheeting on a wing. Since the new hot glue guns have both pros and cons, this is a twist that may change a few minds. Run a bead of hot glue along the main spars, leading edge, and trailing edge wherever the sheeting is to be applied. Don't worry about the glue solidifying. Next, hit all the ribs from the leading edge to where the sheeting stops and from the trailing edge to where the sheeting stops. Now place your leading edge and trailing edge sheets in the appropriate positions, grab your household iron set to "wool", and iron on to the wood. Go slowly so that the glue underneath melts completely and makes a good bond. The heat will also temper the wood somewhat as an added bonus as well as re-melting the solidified glue to apply a perfect wing sheeting without waiting overnight for the glue to dry.

Donald F. Hansen, of Wichita,

Kansas, mentions that the use of solid soft balsa for elevators and rudders in order to keep the empennage light is now quite popular, but he has found that they split too easily with hard use, as well as warping when they are covered with silk and dope. Don uses a built-up elevator with the sheet grain as shown in the cross section of the sketch. Add a small block to the tip and a block to the elevator horn. Use epoxy at the trailing edge for no warpage and maximum strength. This makes a strong, light elevator, especially good for larger models.

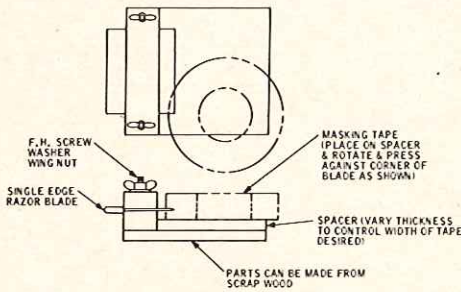


Elastic thread, available at any sewing notions counter, makes a simple antenna tie-down. About 35 cents will buy enough for several dozen aircraft. As a newcomer to R/C, Roy McGee, of Albany, Oregon, used it on his first airplane, a Falcon 56. He found that the antenna extended beyond the pin, so he made a 90 degree turn at the top of the pin and toward the end of the stabilizer. At the top of the pin he placed a pin bent in the shape shown in the sketch. In the "U" bend of the pin, a 1/4" length of fuel tubing was installed through which the antenna passes preventing chafing. The pin was then crimped to a snug fit on the tubing. The elastic thread, was then easily tied to the end of the antenna



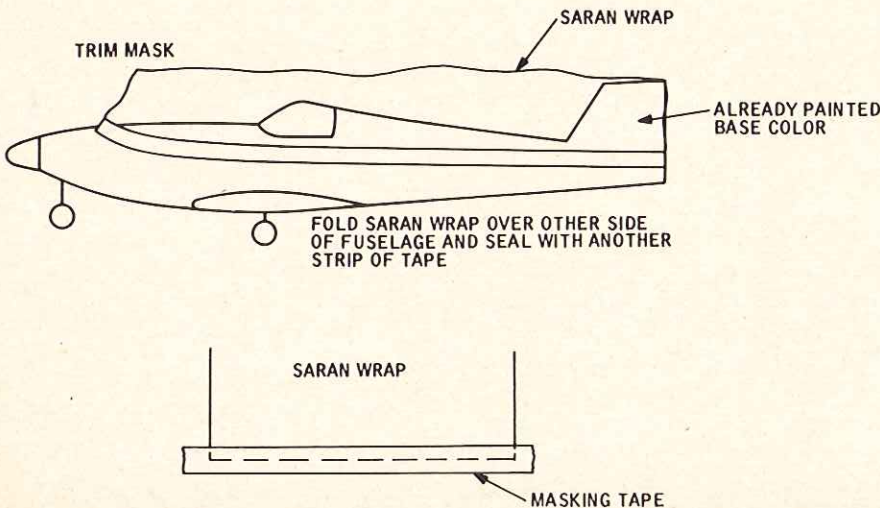
and the other end tied to a pin in the end of the stabilizer. The pressure of the crimped fuel tubing, in conjunction with the soft elasticity of the thread, maintains a taut but not tight antenna wire. This method is cheaper, easier, and less unsightly than using rubber bands.

If you don't have, or don't care to buy, all the different widths of masking tape needed by the average RC'er, here is an idea from W.F. Cowles, of Waverly, New York, which requires purchasing only one width, approximately 1" for most cases. The sketch is self-explanatory and the size of the parts is left up to the builder.



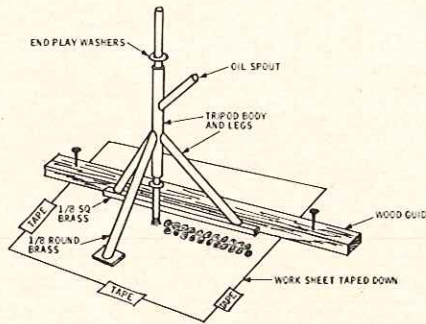
With the age of foam wings and a large number of foam wings being hot wired at home, Richard Duncan, of Waco, Texas, found that the best material for making foam cutting templates is a table top material known as Formica. The edge of this material will sand to a glass like finish and will not burn if the wire is allowed to rest in one spot.

Here is a solution for masking over already painted areas when you are spraying your next aircraft. Instead of cutting paper to fit your trim job, simply unroll an appropriate length of Saran Wrap, Glad Wrap, Stretch & Seal or any other similar product. Cover



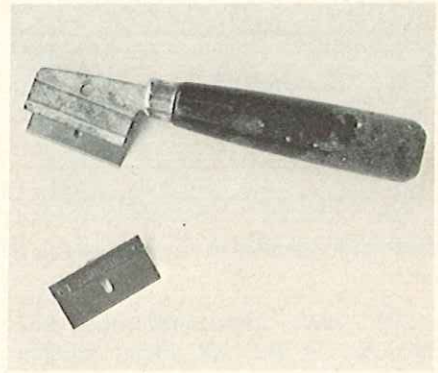
the edge with 1/2 the width of 3/4" wide masking tape and seal the other half to your trim masking tape. The Saran Wrap will easily fold around curves, corners, etc. In addition to the ease of handling, a big plus is when you are covering large areas the Saran Wrap will stick to itself, greatly lessening the need to stick down your masking covering with masking tape. This idea was submitted by Stuart Gwin, of Boise, Idaho.

Scale modelers who have been stumped by the fancy scrollwork on instrument panels and cowlings should try the burnishing tool of Jim Kiger, of Fremont, California, which is the end result of many discouraging attempts by Jim to obtain this scrollwork. After trying everything from steel wool to abrasives impregnated in rubber, sandpaper on dowels, Jim finally tried to make a small wire buffer from steel cable and had excellent results. To make this unit, take a small size U-control cable and cut to 1" lengths, then pack as many as possible into a brass tube that has an inside diameter the size of the scrolls you want to make. Now sweat solder them in place. Grind the cable ends off close to the tube, 1/8" or less. Slide this unit into the next size larger tube, which acts as a body and guide. Attach the three legs, the 1/8" square guide and the oil

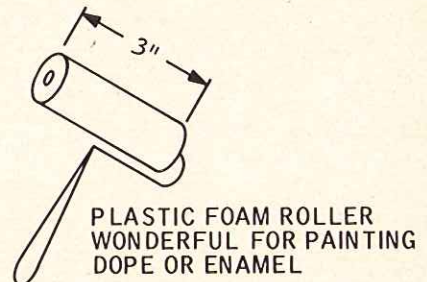


spout. Now you can make a cowling for that Spirit of St. Louis. Make certain that you lay out all work on thin cardboard templates first and have a few guidelines in soft pencil. Many ships have scrollwork that is not in parallel lines. With a little practice you can really doll up that next scale ship with some eye-catching metal work.

Since we all use X-Acto knives and razor blades for cutting balsa, George Pack, of Clarence Center, New York, has found a tool that utilizes the best qualities of both the knife and blade. This is a wallpaper hangers trim knife. It uses a single edge razor blade, has an offset handle for easy use and is inexpensive. It sells for approximately 69 cents with refill blades at 5 cents each and is found in most paint and hardware store. Besides cutting balsa, it is excellent for scraping Hobbyoxy glue.



If you can't afford that expensive spray equipment for your planes and boats, try using a small 3" plastic foam roller that you can purchase in any commercial paint store. The small roller works as well as a spray job and, being made of soft plastic foam, will contour to any surface. It sounds strange, but try it. Cost is about 49 cents. This idea was submitted by Stu Jester, of Waldwick, New Jersey.



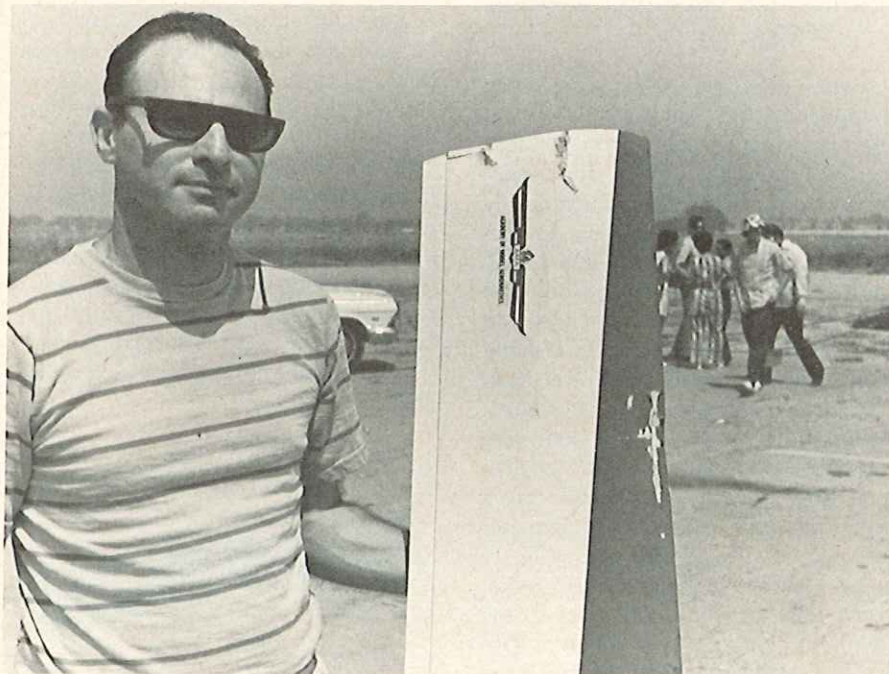
49¢

HAVE A GOOD IDEA?

SEND IT TO FOR WHAT IT'S WORTH AND YOU MAY WIN A 1-YEAR SUBSCRIPTION!

KITS & PIECES

Dick Sonheim



Alan Radin with Glaskin wing after mid-air collision described in column.

We have mentioned the fine qualities of the AR Flight Glaskin wings previously in this column. In addition to having a mirror-like smooth finish, the Glaskin wing is exceptionally strong. Recently I witnessed two mid-air crashes involving planes with Glaskin wings. In both incidences, the Glaskin wing landed with relatively little damage. The other models involved came completely apart and were total losses. The photo shows Alan Radin's Glaskin wing after a head on mid-air. The two marks at the tip of the wing were from the propeller of the other plane. The slight dent in the leading edge is from the wing of the other model which also was a .60 powered pattern type plane. The other model was completely destroyed.

•
Would you believe! A radically new material that replaces balsa and foam? Form Lite Products, P.O. Box 2033, Fullerton, California 92633, is manufacturing model airplanes from an entirely new foam type product. Form Lite may be cut, sawn, and sanded the same as balsa wood or cut

with a hot wire in the same manner you cut foam wings. It may be joined by using any type cement or glues, finished with any dope, filler, epoxies and polyester resins, or covered with any kind of film or cloth. This material is **absolutely** hot fuel proof, will not warp, will not burn or support combustion, and is stable to 250 degrees F! We tried dope thinner, various paint thinners, acetone and hot fuel on this material and nothing seemed to affect it in any way. Form Lite Products is presently marketing several assembled fuselage kits (New Era I and II fuselages) and will shortly have available assembled Form Lite wings for their Form Fly kits. They also plan to market several Quarter Midget racers.

•
This month's Kits & Pieces project was the easiest, if not the quickest construction project ever given to me by our head honcho, Don Dewey.

The Sky Knight is a plastic and foam ARF manufactured by Pilot Models in Japan and distributed by World Engines in the U.S. As with most ARF kits the only extras that

you must purchase are a fuel tank, wheels, a radio and engine.

We have reviewed other plastic "quick-build" kits in this column in the past, but the Sky Knight has features not found in most others. For example, the opening is cut out for the motor and the plastic is rolled over and molded, forming a double thickness. This, of course, strengthens the motor compartment considerably and virtually eliminates the possibility of the plastic cracking. The plastic fuselage is formed around a plywood framework that includes plywood formers and a firewall similar to a built up model. Hardwood motor mounts are epoxied to this framework. The nylon bearing for the nose wheel is mounted to the firewall at the factory. Brass hinges are riveted to the rudder at the factory and the wing and stabilizer tips are fastened to their respective panels. The canopy is molded into the fuselage and, although it is not transparent, it does eliminate the messy job of trying to fasten a canopy to a plastic fuselage.

Using Hobbyoxy 4, the 10 minute epoxy, or some of the other 5 minute epoxies, the average builder should be able to almost completely assemble the Sky Knight in one evening. The instruction sheet contains excellent drawings and easy-to-follow assembly instructions.

The wing panels are joined together with a balsa rib sandwiched between the panels. This will give a much stronger joint since you are gluing foam to wood, rather than foam to foam. This is a good place to use Hobbyoxy 4 epoxy, since it will give you a few extra minutes to align the panels and tape them together. Be sure to give the balsa spars a good coat of epoxy and, when the panels are joined, they are pressed tightly against the balsa rib. The aileron horn can be epoxied into a slit in the balsa trailing edge in the same manner that you would install a hinge. Upper and lower center covers are provided which give strength to the center section of the wing. The upper cover has a servo cut-out which will fit into the cut-out in the center of the foam wing core. The center covers are glued in place using contact cement. The edges of the plastic covers are sealed to the plastic wing covering with a liquid cement provided with the kit. The strip ailerons can then be attached to the wing using the brass hinges provided. I like to put a light coating of Vaseline on the hinge pin to prevent the epoxy

from binding the hinge.

The plastic wing skin is cut away exposing the groove in the landing gear blocks. A plastic cover is provided that is cemented (with the liquid cement) over the landing gear mounting block. The landing gear is held in position with nylon retainers and wood screws. Du-Bro 2½" wheels were used on the main gear.

Cut slots in the trailing edge of the horizontal stabilizer and the elevators and epoxy the metal hinges in place. Drill a 1/16" hole in the edge of each elevator and epoxy the elevator connecting rod in place. Use a ruler to locate and mark off the center of the stabilizer so that it can be aligned properly in the fuselage.

Drill holes in the side of the fuselage as marked by an indent in the plastic for the wing holder assembly. Place the fuselage on the wing and hold in place with rubber bands. Insert the stabilizer in the slot provided at the rear of the fuselage, being sure that it is parallel with the wing. When you are sure that the stab is properly centered and parallel to the wing, cement it in place with the liquid cement provided in the kit. The rudder, which already has the hinges in place, is fitted to the vertical fin. Drill holes through the vertical fin and metal hinges and bolt in place.

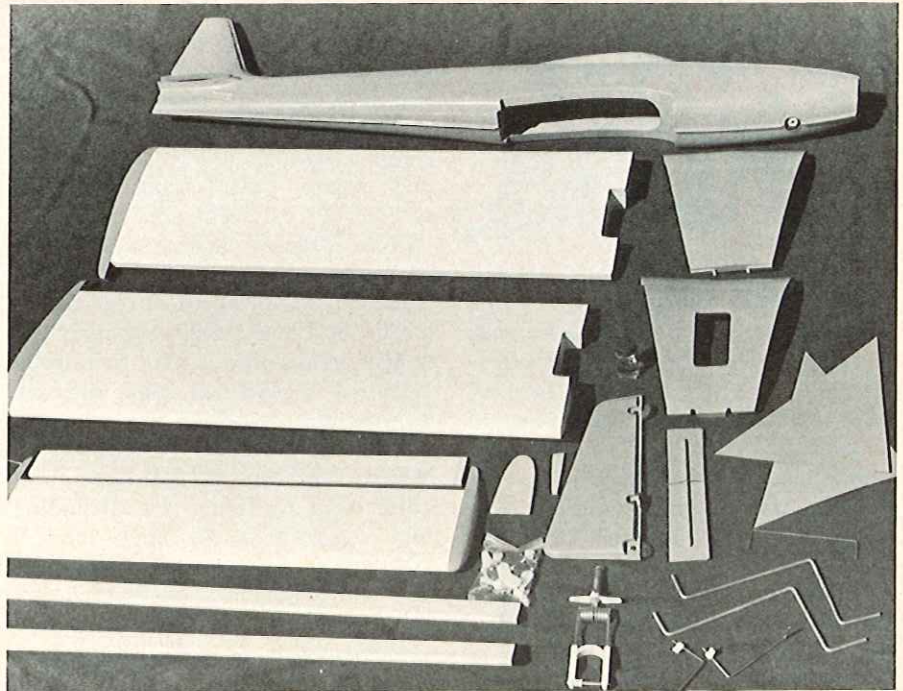
The steerable nose wheel is inserted through the hole in the bottom of the fuselage and through the bracket mounted to the firewall. The nose gear assembly is held in place by a single screw through the top of the bracket.

Two metal plates are bolted in place on top of the wooden motor mounts. Drill and tap these plates to fit your motor mounting.

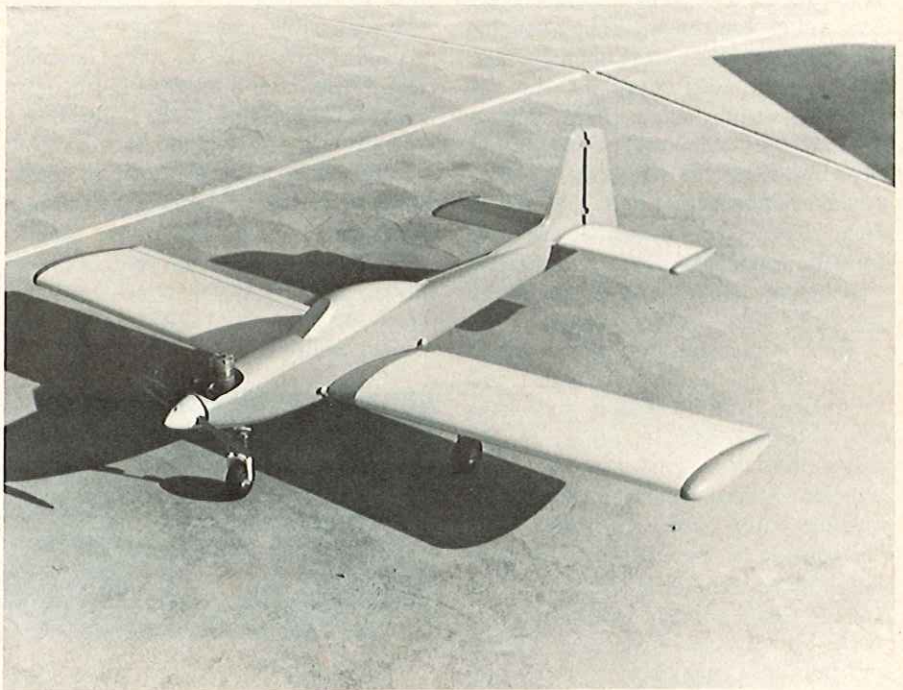
An 8 oz. round Sullivan tank will fit perfectly through the hole provided in the firewall. The pushrods and radio gear can now be installed.

Our Sky Knight was powered by a K & B .40 sport engine with a Perry carburetor swinging a 10-6 prop. The test flight of the Sky Knight was made on a day that was so windy no one else would take their airplanes out of the car. After taking off and making a few minor trim changes, I handed the transmitter to Howard Reed, who was really amazed at how well the Sky Knight penetrated the wind and how easily it flew under such adverse weather conditions.

The Sky Knight has a 51" wing, 650 sq. in. total area, and the fuselage is 42" long. Price is \$49.95. Powered by a K & B .40, it makes an excellent



Parts layout of the Sky Knight – the quickest airplane you've ever assembled!



The Sky Knight is not too big and not too small – a real "fun" airplane to fly.

flying combination.

The Sky Knight will be the quickest airplane you will ever assemble. The instruction sheets are excellent and all the parts fit perfectly.

In summing up the summing up, the Sky Knight is a real "fun" airplane to fly. It is not too big and not too small, and it will fit in most cars without removing the wing. After many flights, the fuselage shows absolutely no signs of fatigue or cracking, which is sometimes prevalent

with this type of plane. I highly recommend the kit and, as Howard Reed says, "It's a ball to fly."

As a parting shot, be sure to boil your nylon spinners the same way as you do nylon propellers. A serious accident was just barely averted recently when a nylon spinner came apart, throwing sharp pieces around like a fragmentary bomb.

Don't take chances! Boil those nylon spinners. □



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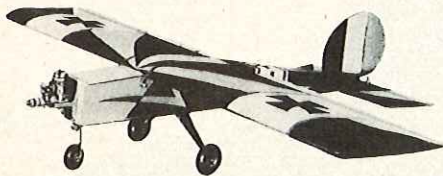
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SOARING

From Page 41

polyethylene plastic sheet around the fuselage tightly for evening out the surface, then allow to dry. Finally, remove the polyethylene the next day and finish as required. You will have repaired a Cirrus fuselage to a point where the next time you break it, it most definitely won't be at the former break point.

Paul Denson of the Torrey Pines Gulls mentions that the best building pins for use on sailplanes are insect pins, usually made in Austria, which are made of steel and have very sharp points. The #2 pin will not split a 1/16" square strip even when it is under tension. Paul mentions that he uses the larger #4 insect pins for RC sailplane construction, since they are smaller in diameter than the common dressmaking pin. In fact, they are almost like needles with heads. Paul also sent along a sketch of his hatch cover which he states is not really new but using this method does not require cutting the hatch stripping to fit the contour of the fuselage. The hinge is made from plastic electrical tape of the one inch variety which comes in all colors at the local hardware store. Paul has even used it as a hinge for the 1/8" spoilers on the wings of his 10 foot Elfe sailplane. The T-head pin is used as a locking device and simply needs a 1/4 turn to open or close.

We'll close off this month with a poem written by 9 year old Tim Renaud written for his father.

Until next month, good soaring. Do your bit to fight noise pollution ... fly a sailplane.

To Dad

WIND'S TOY

Today I saw a toy in the air,
 Just a little bit of a thing,
 Flying without a care,
 Through the air.

It must of thought silence nice,
 Because it never made a sound,
 It was as quiet as mice,
 Running on the ground.

Through the air it glided away,
 Away out of my sight,
 And maybe I'll see it another day,
 The soaring glider so white.

.Tim Renaud (Age 9)

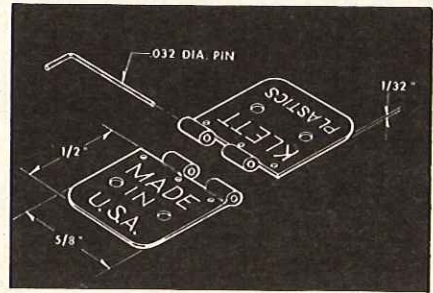
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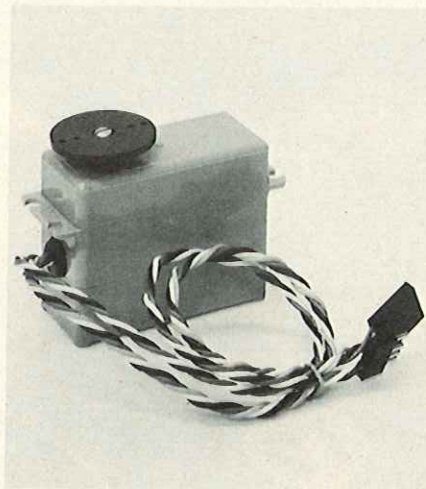
TAKE A LOOK AT THIS

From Page 59

leading and trailing edges for added resistance. The wing panels are joined to a full ¼ plywood center rib with built-in fuselage attach tabs, and a ½" x 18" hardwood landing gear spar. The fuselage is ¼ sheet balsa box with ¼ plywood bulkheads. The engine mount features an offset mounting to eliminate side thrust adjustments and to provide a smooth cowled front end with jet-like styling. Complete landing gear, formed canopy, illustrated plans and a construction manual are included. Price is \$39.95.

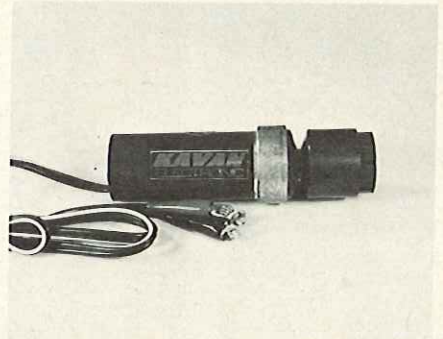
H & H Radio Control, 1617 Sylvan Drive, Plano, Texas 75074, a Kraft Systems Inc., authorized factory service center, has produced a Kraft servo tester and actuator that fits in the pocket or flight box and takes the place of the transmitter receiver. Operation simply consists of plugging in the airborne battery pack and the servo. Rotation of the wheel on the actuator causes the servo to duplicate the travel as if it were connected to the servo in the normal manner. This actuator is ideal for servo installation in the plane where adjustment is necessary and usually requires the transmitter and receiver. The actuator was designed, built, and tested by elec-

tronic engineers. When ordering specify make and model of radio plus connector type. The servo actuator is priced to sell at \$19.95 and has a 90 day warranty. Pulse widths available are 1 to 1.8 ms and 1 to 2.0 ms. Rep Rate is 18 ms. Voltage required is 4.8 to 5.0 volts. Connector is Multicon or Brunner with others by special order only. Size of the servo tester is a Kraft KPS-10 case. Tested, Approved and Recommended by RCM.



Now available from Model Rectifier Corporation, 2500 Woodbridge Avenue, Edison, N.J. 08817, exclusive American distributor of Franz Kavan products is the new Kavan Planetary Gear Electric Starter. This starter offers a significant technical advance in the field of electric starters, is extremely small, compact, and powerful. It has a reversible cone for

various spinner sizes and prop nuts as well as coming complete with a pulley for boats and cars. RCM has thoroughly Tested, Approves and Recommends this starter to your consideration. Order direct from Model Rectifier Corp., or any of the MRC dealers.



The Honey "Too" is the first complete ARF in fiberglass on the market. This new product from Glas-Craft, P.O. Box 8242, Sacramento, California 95818, features a joined glass fuselage with ABS covered wings and stab; formed landing gear, and complete plans and instructions. Available in red, white, green, blue, orange, and yellow, as well as metal flake colors, the Honey "Too" has a 56" span and 576 square inches of wing area. All up-weight is 4½-5 lbs. with a .35 - .51 engine. Total construction time is 8-10 hours. The Honey "Too", priced at \$49.95 (add \$10.00 for metal flake colors) will do the complete AMA Pattern but is also ideal for the Sunday flyer. □

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MIGHTY BARNSTORMER

From Page 29

should be rounded off and emiered smooth. Highly polished dural struts can look most attractive and the shine can be retained by proofing after polishing. Fuel proof the fuel tank bay & install tank. The metal fuel tank shown on the plans is the most convenient type for a non-aerobac, or semi-aerobatic model. It can be made

to fit exactly into the space available and, once tested, can be a permanent fixture. That proviso, once tested, is however most important. I have had metal tanks leak from one of the joints and, to reduce this risk, suggest that 1/8" flanges be bent on all edges to be soldered. When the tank is completely soldered, a large capacity soldering iron is essential, clean off all the flux and pressure test under water to check for leaks. Copper or brass tube can be used for the filler, vent and feed tubes. Glue top fuselage blocks and 1/16" sheet to rear.

Shape and sand the fuselage to the required contours. The engine and rear

dorsal fins should not be added at this stage, it is easier to attach them after the remainder of the fuselage is covered.

WINGS

The wings are constructed in two halves and joined by plywood dihedral braces or left as separate panels and joined by dural dowels sliding into paxolin or dural tubes in the wings. Up to two additional bays can be added to each wing panel without changing the construction.

Although the wing has a semi-symmetrical section, the rear lower part of the ribs are flat allowing the wing halves to be constructed on a flat building board. Commence by pinning down the lower 1/16" x 2" sheet trailing edge and the 1/4" sq. and 5/16" spars (packed up on 3/32" scrap). Glue ribs in position followed by the 1/4" sq. and 5/16" sq. top spar and also the 1/2" x 1" leading edge (packed up on 1/2" and 1/8" scrap).

When the ribs have dried, the top trailing edge and leading edge 3/32" sheeting can be glued and pinned in position. The 1/4" balsa tips follow a line from the center of the leading edge to the center of the trailing edge, trimming the rear spar and shaping the rear of the tip to suit.



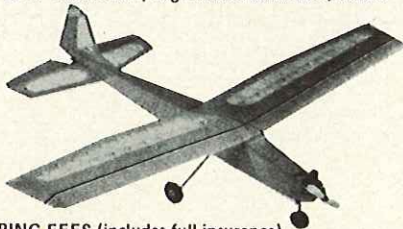
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Remove the wing half from the building board and glue the 1/8" plywood cabane strut fixing plates in position. Screw and epoxy to these plates the anchor nuts (I prefer to use the floating type of anchor nuts - 1/8"-3/16" dia. bolts) to allow a little more latitude when fitting the struts, to receive the strut bolts.

The 1/16" leading edge underside sheeting and capping strips can now be added and also the 3/32" sheet balsa webbing between the upper and lower front spars (grain vertical). Shape the leading edge with a razor plane and sand the whole wing smooth. Construct the opposite wing panel in a similar manner. Cut slots in the first two wing ribs to take the dihedral braces and join the two wing halves together, with braces, propping up the tips to the required amount. (Wing dihedral may be reduced by up to 1" under each tip for models featuring proportional controlled ailerons.)

TAIL SURFACES

Cut the tailplane ribs out by the block method, using the tip and center ribs as the templates. Build the tailplane flat over the plan, pinning down the tips, the main lower and rear spars and 3/16" center sheet. Glue the ribs in position followed by the main top

spar, the 1/2" sheet center doubler and 1/2" square leading edge.

1/16" sheet leading edge is added as far as the main spar and 3/8" x 1/16" capping strips to the rear of the ribs. Note the slot left for the Fin, this should be the width of the finished Fin. Elevators, Fin and Rudder construction is straightforward.



John Maloney of World Engines, Inc., shows size of M.B. John's not very short, either!

UNDERCARRIAGE

This can be in the form of a single leaf dural undercarriage providing the dural is sufficiently strong, alternatively a combination of dural (at least 1/8" thick) and music wire should be used.

COVERING AND FINISH

Cut the underside sheeting of the wing away at the position of the cabane strut fixings so that the struts seat direct on to the plywood. Temporarily bolt the wings to the struts and then bend and solder the music wire cross bracing to the cabane struts, checking first that the wings are sitting 'square' on to the fuselage.

The basic structure of the Mighty Barnstormer is strong enough to allow any type of covering to be used although nylon and dope will undoubtedly give a more durable finish. Whatever the type of finish used, be sure to thoroughly fuel proof around the engine bay area. Balsa, fibreglass or A.B.S. plastic wheel pants will improve the looks of the model and are satisfactory when flying from smooth runways or short grass.

The fuselage is large enough to contain any form of radio equipment, reed or proportional, and leaves ample room to get your hands in to fiddle

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about with plugs, pushrods, etc. With all this room to work in, there is no excuse for anything but the neatest, safest installation - and do not forget to check that the controls all work the right way round!

FLYING

First, a word on controls. With ailerons fitted, it is essential to reduce the dihedral to about 1° for each wing. Even with this reduction of dihedral, the ailerons will not give you a vicious

bank and if you are the type that prefers everything to go with a snap, crackle and pop, then increase the size of the ailerons. Similarly, it is important to retain the stated dihedral for a rudder only (plus elevator and engine, of course) model and again the rudder can be increased in area for the 'sporty' pilot.

With the model balancing on the lower main spar, and free from warps, flying should not present any problems. Hand launching is quite simple, despite the large size, it just needs a little more muscle power than the average model.

Takeoffs and landings can be achieved from rough grass although this will be helped by using larger airwheels and a more powerful engine. Avoid over-correction on takeoff from smooth runways, a well trimmed model will require very little steering during the takeoff run. Once in the air, the Barnstormer will fly stably, and smoothly, and is free of any aeronautical vices.

May I wish you good 'Barnstorming' in the coming season and start to practice signing your autograph for all the admiring public who will be surrounding you! □

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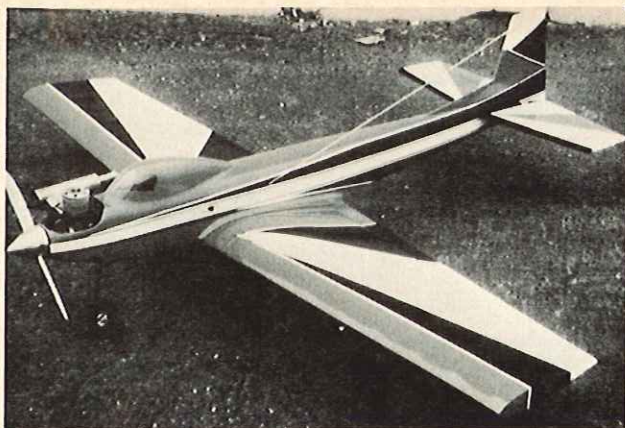
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Wing Span: 58"
Wing Area: 625 sq. in.
Weight 6¼ lbs.



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LITTLE PLANK

From Page 22

block, and bottom block. When dry, add 3/8" triangular stock and carefully sand the front end to accept the nose block. Spot glue the nose block in place using 5-Minute Epoxy and add the tail block using a clamp to hold the rear sides in place. Add the 1/8" bottom sheeting and remaining 3/8" triangular stock. Cut out the 1/4" ply motor mount plate and recess and epoxy the blind nuts for the tank mount (or Tatone mount). Fill the nuts with wax or soap and epoxy the motor mount plate to the rear of the fuselage. Note that the engine thrust line is -6 degrees relative to the flat bottom of the wing. No side thrust is

required.

Sand the fuselage to shape and install the medium hard balsa sub-rudder. Remove the nose block and hollow for ballast. Prior to cementing the nose block permanently in place, construct the servo rack and trial fit all equipment.

Control System:

A sliding servo and mounting rack was used on the prototype and provides an easily removable system. A further advantage is that a hatch is not required. A mixer is depicted on the plans and would provide an automatic reduction in surface throw. Whichever system is used, try for minimum slop in the system to avoid flutter.

The keel for the sliding servo system is cut from 3/32" birch or 1/8"

mahogany plywood. The servo slide is 3/32" birch ply. Both servos are mounted using plastic side mounts with bolt heads recessed. Use the servo slide to align the slide rails and epoxy the latter in place. Ensure a close but free fit between the rails and slide.

The servo mount brackets are epoxied to the servo keel and adjusted to place the servos as near the center of the fuselage as possible. Drill 1/8" holes in the bracket so epoxy rivets will form to ensure a good joint. On the prototype, an aluminum plate was used to secure the bracket bolts. A more neat installation can be provided by inserting a 1/4" dowel or a plywood plate where the bracket bolts exit the fuselage.

Final Assembly:



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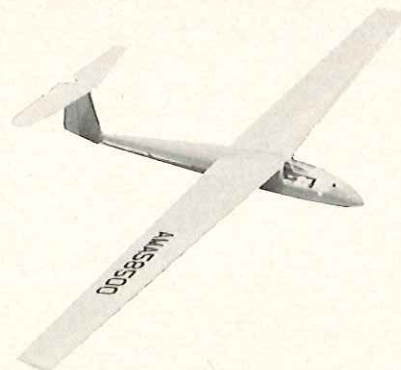
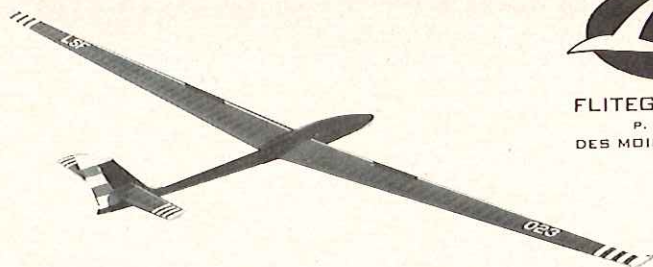
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Glue the nose block in place and sand the fuselage to final shape. Cover the fuselage with Solarfilm, MonoKote or otherwise finish. Add the wing hold-down tube (fill with epoxy or dowel) and rear hold-down pins. Nylon bolts can be used to secure the wing but you are on your own. Remember to provide a stop for the servo keel if the forward hold-down tube or dowel is not used. This will prevent damage to the RX or battery pack during a crash as a result of the servo rack moving forward. The antenna exits the fuselage about 1/2" below and behind the wing leading edge and is secured with a rubber band and pin at the rear of the wing tip.

Flying:

Balance at the point shown on the

plans which corresponds to 17% of the theoretical wing section at approximately 2" behind the leading edge. A good way to do this is to mount two pencils upright in a vise (or in holes in a board). The aircraft can be precisely balanced by suspending it between the two pencils. The erasers on the pencils will keep the plane from slipping. For pitch stability the allowable CG range is 17% - 20%. With the CG at 17% the neutral elevon position is as shown on the plan. Control movement on the prototype was $\pm 3/16$ " measured from the bottom of the elevon trailing edge.

Make initial slope flights in medium or average lift conditions. Save the light air until you are familiar with the Little Plank. Set the elevons at full up-trim and launch briskly into the

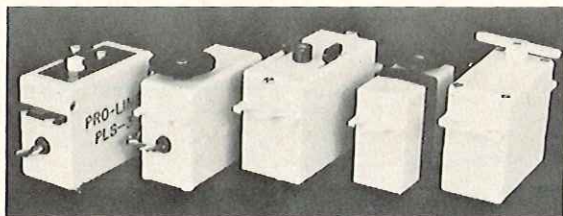
wind. Apply down elevon as required for penetration. With practice, 6' diameter turns can be made on the slope (into the wind of course).

The Little Plank handles well on an electric winch or Hi-Start, going up like it's on rails. Begin with full-up and ease off to adjust the rate of climb.

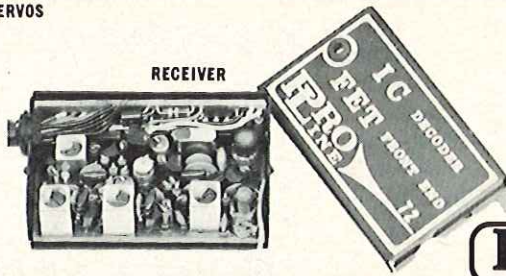
Initial powered flight is a snap! Apply full-up trim and launch briskly into the wind. Be prepared to apply down to control the climb angle. The best climb rate is achieved by launching into a thermal, of course. Otherwise, use gentle figure eights into the wind.

With the TD 051, Cox tank mount, 6 x 3 pusher prop, and Super Sonic 100 fuel, you can expect from 600' to 800' altitude in dead air. With the TD 09 and a 1 oz. tank you can go out

THE EASY WINNING TOUCH...



SERVOS



RECEIVER

SERVO INFORMATION

1. All silicon circuit.
2. PLS-10 and PLS-11 servos now have a new stronger gear train.
3. The servo amplifier uses a custom integrated circuit with 57 transistors, 63 resistors, 5 diodes and 2 capacitors. The external parts count has been greatly reduced to improve reliability.
4. Polyurethane encapsulated to prevent failure due to effects of vibration and high humidity.
5. Each servo is run for 2 hours on a test fixture that puts the servo through a pre-programmed test sequence that closely approximates actual flying conditions.

RECEIVER FEATURES

1. All silicon circuitry.
2. The receiver front end uses especially graded field effect transistors in the RF amplifier and mixer stages for excellent cross modulation and overload characteristics.
3. Four narrow bandpass I.F. stages use high quality American made transformers with external temperature compensating capacitors for excellent selectivity and stability.
4. Polyurethane coated to prevent failure due to vibration and high humidity effects.
5. Strong aluminum case and 1/16" epoxy circuit board provide real protection from damage as well as shielding from large signals and noise.
6. Integrated circuits are used in the decoder section to reduce the external parts count. This improves reliability and makes possible the small size.

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Sample issues with full-size plan and plans list may be ordered against \$1.00 – pre-payment from

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of sight. A 7 x 4 pusher prop should be about right for the .09 if you can find one. Flight tests with the TD 09 were conducted using an 8 x 6 cut down to 7 x 6 which works but does not allow the .09 to achieve full power.

For sport flight, 10' diameter loops are accomplished with ease. Rolls are best entered from a shallow dive to gain speed. A little down trim and you will be surprised at how fast an .051 can move 600+ square inches!

In conclusion, a word of caution is in order. The general configuration of the Little Plank means just one thing to birds – HAWK! This was demonstrated recently at Boeing's Kent, Washington flying site when about 100 small birds scrambled and tried to force the plane out of their air space. If you have hawks in your area, be prepared to share your thermal since they are a curious lot and may mistake you for a brother.

For those of you who build a Little Plank, drop us a card with questions, suggestions or comments c/o R/C Modeler Magazine.

BILL OF MATERIALS

BALSA: 1 – ¼" x 4" x 36" fuselage sides and sub rudder; 1 – 1/8" x 3" x 36" fuselage bottom and rudder; 1 – 3/16" x 3" x 36" elevons; 2 – 3/32" x 4" x 36" wing ribs; 4 – 1/16" x 4" x 36" wing sheeting; 4 – ½" x ¼" x 36" wing spars; 2 – 5/16" x 1¼" x 36" trailing edge stock; 2 – 3/8" x 3/8" x 36" wing leading edge; 1 – 1" x 2" x 12" wing tips; 1 – ½" x 3" x 12" fuselage top and bottom; 1 – 3" x 3" x 2½" nose block; 2 – 3/8" x 3/8" x 36" triangular stock.

PLYWOOD: 1 – 6" x 12" x 1/32" shear webs; 1 – 6" x 12" x 3/32" servo rack assembly.

MISCELLANEOUS: 1/8" x 1/8" x 12" brass servo rails; 1/8" dia. wire, rear wing hold down; ¼" dia. Al. tube or dowel, front wing hold down; ¼" ply, motor mount; 3/16" ply, control horn mounting plates; 0.04 Al., servo rack mounting brackets.

SUNDAY FLIER

From Page 16

because it's heavy, but because it's bulky. I used polypropylene rope (\$2.00 for fifty feet) around the box lengthwise and crosswise. Mark the contents – and be sure to specify that the radio is inert. Also, it will help if you have a photo of the model with you and show it to the staff; they are all interested – several of those I talked with either flew R/C or had friends that do. Finally, try to schedule your flight at a time when the passenger load is light. The airline



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In newspaper talk, "30" means "the end". But for us and all model builders, it's just the beginning... the beginning of our Thirtieth Anniversary and a year-long barrage of innovative new products, the likes of which you have never seen. Strong words? Consider this...

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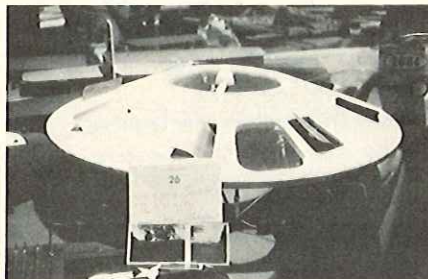


cargo staff can give you better service simply because they're not so rushed.

And, as our new products editor put it succinctly, you can use Continental Air Lines; they've been "tested, approved, & recommended by RCM."

That's the story of the trip up and back. Now I'd like to tell you a little about the N/W R/C Symposium, as the placards around the Sea-Tac Motel, where it was held, identified the show.

This was the seventh annual show, and I've got to be honest; the first time I heard about it was last year. But the rate of growth of this show, as with the others, has been surprising, even to the RAMS. I don't have all the statistics — somehow they get boring anyway — but there were over one hundred models on display. About twenty of them were boats, ten were cars, and the rest were aircraft. I use the term aircraft rather than airplanes because some weren't airplanes. Dale Shubert entered a real live R/C flying saucer. Picture number four shows the saucer, together with some photos of it in action. You can see the vanes which trap the air and cause the downward airflow as the saucer spins opposite to the propeller. A very unusual display.



Picture number five shows the display hall. I took this shot early Sunday morning before the crowd really came in. Otherwise all you would have seen was the backs of people. Again, I didn't take attendance, but I'd guess that around 2500 to 3000 people showed up during the two day display.



I was particularly impressed with

the way the RAMS combined an entertaining show with an educational program. Seminars were held on pylon racing, soaring, pattern flying, and Ralph Brooke acted as chairman of a session on "How to Get Started in R/C." And, lots of movies were shown.

Although I couldn't attend all of the seminars, I did get to the one on soaring, and was fascinated by some of the things they're doing up in the great Northwest. Ralph Majeski, from Salem, Oregon, gave a talk on thermal sensors that just about made me feel like I'd better go back to rubber band models! Ralph has a fifteen foot span sailplane, shown in picture number six, which weighs ten pounds, eight ounces of which is multi-channel telemetry for sending information on temperature. He has a temperature rate of change sensor in each wing tip, and a temperature differential sensor for the two which tells him which tip has the upward rate of change at the fastest rate, plus an air speed indicator, altimeter, and variometer. It takes two people to fly the airplane — one to watch it and the other to read the dials. When the thermals are around, he says you can stay up until the

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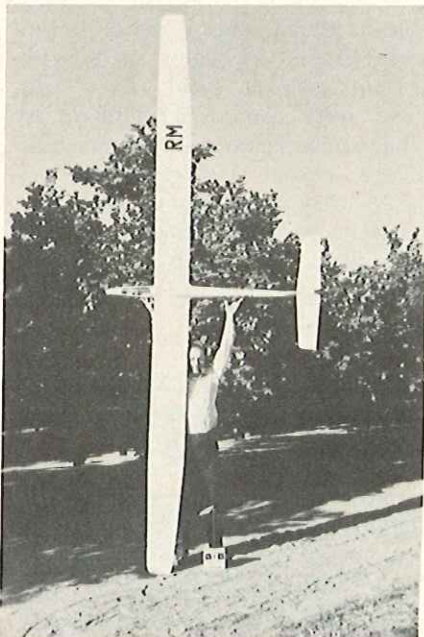
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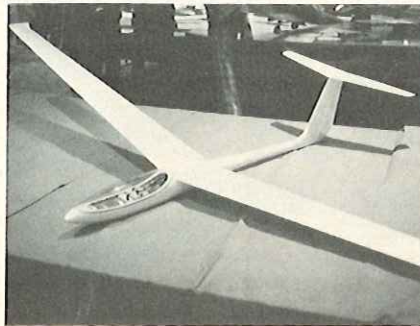
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batteries get weak! But — it ain't cheap.



More in line with you and me, yet truly beautiful to behold, was Earl Pace Jr.'s original design fiberglass epoxy resin sailplane which won top honors in the sailplane class. This is the second time in a row that he has won. The T-tailed beauty has an in-

genious mechanism which makes the ailerons act as flaps as well, and by carefully positioning them he actually has a simple form of variable camber wing.



Entries in the scale event were all topped by the unbelievably accurate model of the Aircoupe — or Ercoupe — built by twelve year old Jon Stamm. Picture number eight shows Jon with his model. I was informed by his father that Jon did absolutely all the work by himself — no help from old Dad — and I can believe it after meeting and talking briefly with Jon. He's a quiet, studious, and somewhat shy lad, but he really knows his airplane. This, incidentally, is his second scale Aircoupe.



Picture number nine shows Bill Apt with his semi-scale version of the Kasper tailless glider. I had a long talk with Mr. Kasper, who designed and flies the full scale version. I understand his demonstrations of the capabilities of his design are spectacular, and when you talk with him, you can't help but feel the intense love that he has for flying his bird. He talks of control by



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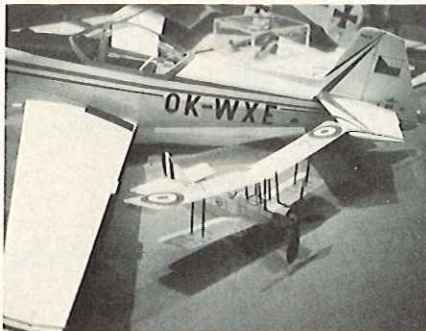
spanwise flow of the center of pressure, which also causes fore and aft movement due to the sweep. And, it all sounds completely logical.

Somehow, in the excitement, I lost the name of the designer and builder of the top seaplane winner. But picture number 10 shows the model, named "mermaid" which has a molded fiberglass hull, nacelle and tip floats that are flawless. A truly outstanding example of meticulous workmanship.



Another intriguing model, who's builder was unidentified, was a small WW I biplane, shown in picture number eleven. The plane is shown along side a Zlinn Akrobat scale job, just to show the contrast in size. The little biplane, with a span of around

twenty-two inches, is powered by a rubber band motor!



Absolute top model in the show was Dennis King's P51D, built from a Fliteglas Model kit. Picture number 12 shows Dennis with his model and the three trophies it won...including selection by the viewing public as



"Best Model in Show." I am only sorry that I can't show it in color. Fabulous!

At the banquet, the principal speaker was Mira Slovak, the famous speed pilot, hydroplane driver, and airplane hijacker. Yes, you remember; he hijacked a Chechoslovakian DC-3 and escaped to freedom. It's quite a story; I couldn't begin to tell it as he does. All of us at the show were deeply impressed with his obvious sincerity and love of our country.

And that's the story of the seventh annual N/W R/C Symposium and model display. The RAMS club did an outstanding job of presenting the sport of radio controlled miniature aircraft, boats and cars to the people of the great Northwest. I was glad that I was able to attend, and to pass on to you some of the highlights of this important regional event. As always, there were commercial displays by model manufacturers, but somehow, in the relaxed atmosphere that prevailed, they really seemed to be just modelers who were showing some of their skills. The models, the seminars and the modelers - the RAMS did it up right. Great club.

Great show!

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SCALE IN HAND

From Page 12

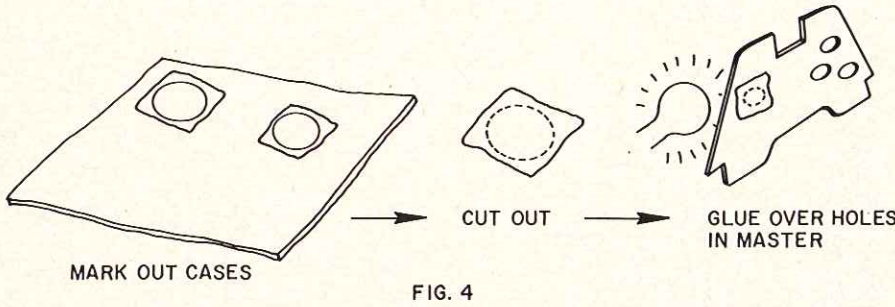
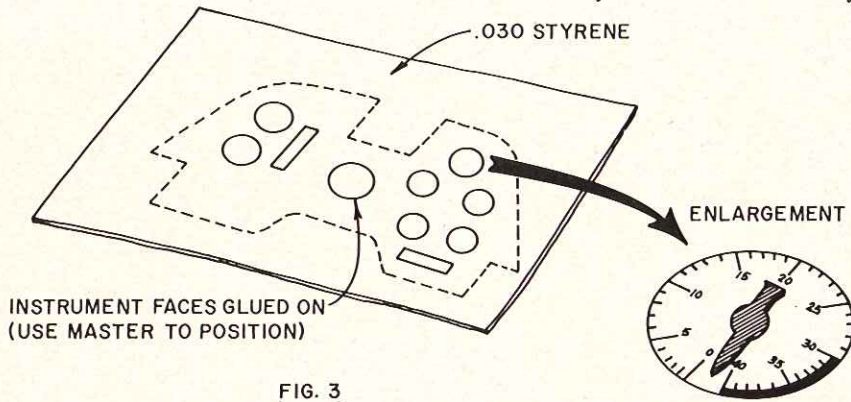
on .020" plastic the cases as shown in Fig. 4, and cut them out. Do not attempt to cut out the centers—the overall shape will do. Now glue these over the holes in the master, position them carefully on exact center by

sighting the whole thing in front of a light bulb. Testor's or Plastruct liquid cement is ideal for this, but remember do not put glue on the joint until the position is accurate. The glue dries so fast you may freeze the case in a wrong position while in the process of sliding it about.

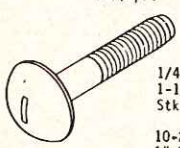
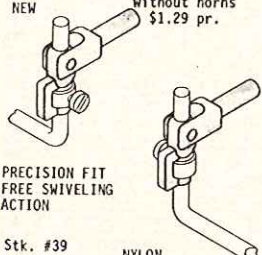
When the "cases" are all dry on the master, you can easily remove the center of each one from the back, using the master as a guide.

Sand or scrape the master free of any loose bits and examine it under the glass for neatness. When satisfied, spray it in the appropriate color, which can range from matte black or gray in a typical WW 2 aircraft to

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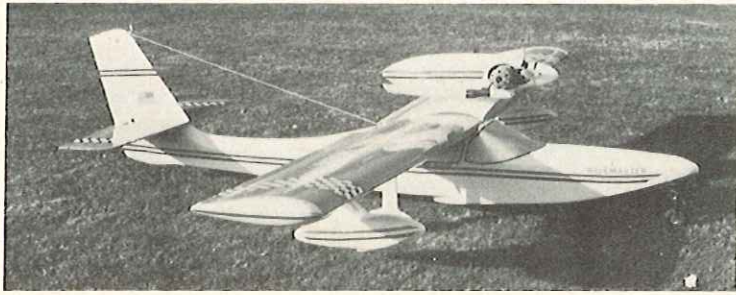


LOOK!!!
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See Page 84

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From Page 14

more people will be flying, and less will be working. The race course should be simple. The original course was a three pylon type, with the number one pylon being 300 feet upwind from the number two and three pylons. Two and three should be 100' apart. This provides a course that has safety for the fliers being able to "hide" in the triangle of the three pylons. 10 laps around this course will make a 1½ mile race. The starting line

should be 100' up wind from a line parallel to #2 and #3, the same starting set up as for Formula I. Now, to investigate the problem of flagging for pylon turns, and cuts, etc. Again, drawing from the experience of the Nashville bunch, they station their watchers at pylon #1 in a line parallel to #1 but away from the course. They erect a tent about 150' away from #1 in order to provide shade and comfort for these men. Each "cut caller" also doubles as a lap counter, and has a large numbered card that he flips over

each time the aircraft he is following passes a line between himself and the pylon. Naturally, he doesn't flip a numbered card on the first pass after takeoff, but as his aircraft comes around again he flips the #1 card. After #9 the caller for the pilot knows that he is on the last lap, and can try and spur home a winner. Now, the secret to this set-up is that the aircraft do not fly around the pylons, they simply pass a line at #1, make a turn and come back down toward #2. All turns must be left hand, even though the pilot may actually cut inside the pylon. This system has the advantage that the flagmen at #1 are kept out of the very dangerous hot spot at #1, and they can be so situated that they can be actually almost in the pit area between races rather than being stuck way off in the "boondocks" all of the time the races are going on. By having the flagmen also serve as lap counters, a number of people are eliminated. Of course, if the aircraft turns before it gets to the invisible line, it has "cut" the pylon, and a cut is signaled by the caller in the same manner as it would be called in a Formula I race. The "cut caller" does not flip his counter card, thus automatically making the aircraft fly another lap.

The race course is short enough so that the flier has a better chance of seeing where his aircraft is in relation to the pylons. Flying in Formula I, it is pretty easy to tell where your aircraft is in relation to #2 and #3 pylons, but almost impossible to tell where you are in relation to #1.

Next, let's talk a bit about the actual flying of these little birds. As mentioned earlier, the .15 engines now available are pretty good. So far the OS .15 has been the most widely used, but a number of West Coast races have been won with the new Fox .15. The Super Tigre .15 is the fastest engine of all, but its carburetion is not too good, it has a tough time on idle, and is prone to die out on a tight pylon turn. No doubt, in the next few months, a lot of thought will be given by the engine manufacturers to improving their engines for this event. The best prop to use on these little birds for racing is a 7 x 6. Turning this size prop these engines, on high nitro fuel, have been tached at over 20,000 rpm! The beauty of these little aircraft is that they make very enjoyable sport planes. To tame a hot little racing aircraft down, simply put a 9 x 4 or an 8 x 4 prop on it and use mild fuel such as Dukes Fuel, K & B 500, or something





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similar. Using Cox Blue Can fuel or Fox Missile Mist for contest flying provides you with enough go-power to really move out.

The control surfaces should be set up with small movements. The faster the aircraft flies the less that you have to move the control surface to attain the same result. If you are testing out your new airplane, use a 9 x 4 plastic prop, and reasonably large control surface movement. Move the surfaces about the same amount as you would use on a nice even-flying trainer. Let the ailerons swing 1/4" up and down, and the elevator about 3/8" up and down. After you get the bird checked out, have corrected for any warps that may have crept in during building, and be sure that the balance point is about right (shoot for from twenty to twenty-five percent C.G.), then reduce the throw on the ailerons to 3/16" or maybe less, and the elevator to 1/4" or less.

I have designed and built and flown a number of small airplanes, and each one of them has been very quick on ailerons using the throw set-up that I usually use on a .60 aircraft. A QM should have smaller ailerons, and should have long aileron horns so that a lot of adjustment can be made.

When flying a pylon course your controls should be set up so that, when you have full left aileron, you gently roll over to the left, and then when you pull in full up-elevator to make the turn your turn is a nice smooth circle, not a real fast switch back. This point is where the high speed stall comes in on a thin wing. With a thin wing, lots of aileron throw, and lots of up-elevator, you have a disaster looking for a place to happen! I simply can't stress enough that the surfaces and the movements should be small.

I am currently working on a simple Quarter Midget 'Midget Mustang' that will sneak its way into these pages in the near future. As in keeping with all of my designs, it is simple and economical to build. Actually, this is the real beauty of the QM event, you can scratch-build an airplane to fly in these races with very little work, no long hours putting on a super finish to gain starting points, and not much money invested. You can buy all of the wood needed for one of these little jewels for less than five bucks.

I have received one of Bob Reuthers Hobby World Fiberglass Minnow kits to test out and report to you, which I will do by the next issue.

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Let me say right now, though, that the fuselage is a beautiful example of fiberglass work. It really is lovely. I kinda' hate to goof it up with one of my less-than-stellar (*Classic example of understatement . . . Ed.*) paint jobs. I will have it finished and test flown in time for the next column.

Please, all of you interested in the QM event, keep in mid that we have one very fine event for the engine/aircraft builder/expert in Formula I. Let's keep QM for the sport flier, for the guy who would like to have the fun of racing without the problems

and costs of super-powered racing. In other words, for the Sunday Flier who likes to have fun with his flying, and would like to have a little competition to spice up his hobby. Let's keep it an event that YOU can fly in with a twenty dollar unmodified engine and a ten buck airplane that can be built in a weekend. Let's keep it simple, easy to run, and fun to fly. Let's keep Quarter Midgets for all fliers, not just a few.

Maybe, even a claiming race to keep it honest, eh, fellows? Try suggesting a \$50.00 claiming race in Formula I sometime and see what happens! □

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SCALE IN HAND

From Page 80

pretty pastels like beige or powder-blue in a privately-owned type. Or, in the case of a wood-grained panel, the face can be covered with a suitable design of "Contact" or similar kitchen shelving vinyl. In this instance the instrument cases would be separately painted and attached after the "Contact" is in place. There is only one glue that we know which would do this job (stick styrene to vinyl — or stick anything to vinyl, come to that!) and that is Loctite 404, a somewhat expensive glue at \$5.00 per 1/2 oz. bottle but one which can frequently succeed where others fail. Of course, a bottle will do a great number of panels!

After the panel is sprayed, the final little embellishment of small screw-heads in the corners of the mounting lugs, done with white glue from a hypodermic needle and painted silver, and we're all set to "put it all together."

*

While we take a cup of coffee and

survey our handiwork, and before we forget, we'd better warn you about Loctite 404 — don't get it on your fingers! This glue instantly bonds fingers together and the only way to get them apart is to cut them free of each other, which messes up the workbench, the floor, and your good humor. If you don't believe it, try it out. On second thought, believe it, and don't try it out.

Stage 6. Now all of you patient types who have stayed with us through all this are about to see what you've made. Glue the spacing layer to the instrument faces layer. On top of this assembly, glue a layer of thin clear styrene or butyrate sheet. Lastly, glue on the outer panel. Looks good, huh? Trim the oversize layers down to match the master. All set? Glue it in!

*

There are countless embellishments that can be made to the basic panel. Sometimes a panel is split into several sections, some of these angled. Altimeters have a reset knob which should be incorporated. Some ships have more than one panel (our Me 109 has three). Compasses call for special attention too but, by and large, the fundamental method described will be

found suitable and only the details change. Having made one such panel you'll be full of ideas on further gimmicks yourself.

*

Once in awhile this column feels that it is necessary to sound off about something. When we feel, rightly or wrongly, that Scale and/or Scale modelers are getting a bad break we say so. Our column in the December issue brought forth so much response which shows that RC scale modelers generally are far from happy with the competition scale scene as it presently stands, that there seems to be only one fair way out — air the gripes, uncover the problems, and hopefully come up with a few solutions.

Next month we are going to do just this. There'll be letters from you guys, explanations and comments from us, and maybe something worthwhile will emerge.

If you are a modeler who flies in scale contests, or plan to be one, don't miss it.

*

Correspondence to Scale in Hand can be addressed directly to: 104 Talcott Court, Bolingbrook, Illinois 60439. □

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ENGINE CLINIC

From Page 10

free-flowing with no positive pressure build-up.

One more very common mistake seems to be the belief that the larger the area around the engine the better the cooling. Many times I have had fellows comment that they have an inch, etc., of airspace between the engine and the cowl. This is exactly what you do not want. If the cowl were to touch the sides of the cooling fins the air would be forced through the fins, and this is what you do want. So put some baffles in the cowl to make the cooling air go through the fins and you will put an end to your over-heating problems.

While we are on the topic of cowed engines we would be pretty safe in assuming that the majority of these will also have inverted installations. This brings up the problem of getting the engine to idle. This is another subject on which I get many letters. When you turn your engine upside down the glow plug becomes an oil sump and you can expect to have idle problems. It only takes one drop of oil to put out the fire. Idling the engine slightly on the lean side helps, but is not a sure cure. The best and easiest solution is to install a 500 mil nickel cadmium battery in the airplane with a micro switch on the throttle that cuts the battery in at idle and turns it off as you open the throttle. You can get a minimum of twenty or thirty flights depending, naturally, on the amount of idle time with one charging. Even if the battery were left burning through the whole flight, you can get eight or nine flights due to the resistance of the glow plug being less with the engine running and drawing less current.

Dear Mr. Lee:

I just recently bought a Super Tigre G60F1 with the twin glow plugs. First of all, it started first lick but wouldn't richen out. This was cured by checking the spray bar as suggested by you in one of your past columns. There was a shaving of brass in the slit, so I cleaned the whole carb.



EAST COAST SOARING SOCIETY

ECSS members attended a series of six soaring contests that were open to all AMA members. Members of the ECSS were included in a percentage point system that led to the final ECSS championship at the close of the 1971 season. The ECSS has sponsored 10 contests since its beginning in 1970. Contests were held in four states this season, many more states and contests are contemplated for the 1972 season.

R/C Clubs that expressed an interest in sponsoring a contest under the ECSS program received a free booklet containing complete information for conducting successful soaring contest for as little as \$5, to as many as 100 contestants. This booklet contains useful data on personnel needed, equipment required, frequency control for a maximum number of rounds per day, timer and contestant briefing, advertising, and many other bits of useful information to guide them when planning their first soaring contest or possibly the biggest contest yet.

Members of the ECSS receive a monthly Newsletter that contains articles on official business of the Society, keeping the membership current on contest rules and regulations, proposed and passed amendments to their Constitution and By-Laws, ECSS proposals to the AMA, FAI and CIAM, and minutes of the 9-Member Board of Director's meetings.

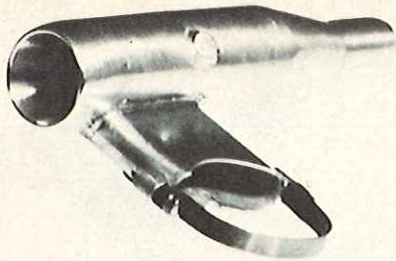
On the lighter side of things, passed ECSS Newsletters contained approximately 100 pictures of sailplanes from all over the United States. Also, twelve separate articles on contest winning glider designs, including 3-view drawings of each winning model. Other articles reported in the various ECSS Newsletters were: Before and after reports on contests, maps, reports on products that became available during the past season, a complete membership roster, articles on soaring clubs, where they fly, and how to join the ECSS. The ECSS Newsletters published interesting technical articles on thermals, winches, aerodynamics, towing gliders with a powered airplane, construction articles on hand-operated winches, parachutes for retrieving towlines, wings with fiberglass shaft spars, up to the second news on AMA, FAI and CIAM proposals, rulings and meetings, and many other items of interest to the soaring enthusiast.

The East Coast Soaring Society plans to and will be bigger and better in the coming season. Come soar with us or just keep current in "what's happening" in R/C soaring this year by joining the ECSS. For additional information, a free copy of the ECSS NEWSLETTER and an application blank, forward your request to: THE EAST COAST SOARING SOCIETY, 9410 N. Penfield Road, Ellicott City, Maryland 21043. Attn.: Treas. 72

R.C.R.C. 12th Annual RC Contest

DATE: May 6 - 7, 1972

SITE: Old Huntsville Airport; TIME: 8:00 A.M. - 6:00 P.M. Saturday, 8:00 A.M. - 2:00 P.M. Sunday; HEAD-QUARTERS: Ken Bar Inn Motel - located on So. Parkway; ACCOMMODATIONS: Two motels within walking distance - on site camping also permitted; EVENTS: R.C. Pattern (Class A, B, D Novice, D Expert), RC Scale (AMA). For further information please contact: "Red" Scholefield, C.D., or Gary Martin, President, RCRC, 3412 Hutchens Avenue, Huntsville, Alabama 35801.



MAC'S MUFLER - \$12.95

Turned aluminum, stainless steel band, cadmium bolts, no power loss, custom made, Wt - 2 oz. or less. Specify specific engine.

HONEY TOO

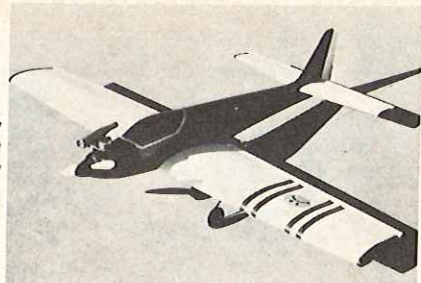
Wing Span56"
 Length45"
 Wing Area576"
 Wt. (Total)5-6 lbs.
 Power35-46 Disp.

White \$49.95
 Metal Flake \$59.95

1/6 SCALE SPECTRE
 RCM Plan built same material as Honey Too

\$69.95

1/8 SCALE SPECTRE
 Available Soon \$59.95



Molded fiberglass fuselage and cowl, vinyl covered wing and horizontal stab, Pre-cut one piece ldg. gear and dihedral brace, all hardwood and balsa parts plus ldg. gear for conventional supplied.

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Now it runs great but it wouldn't idle slow enough for the plane (Contender) to sit still on grass. I've tried almost everything I know to slow it down . . . closing baffle more, resetting the linkage - no good.

The biggest problem though is glow plugs. As you know, one of the plugs is short with no idle bar, and the other is long with the bar. The original plug burned out after about a gallon of fuel. One of them only lasted for one flight, if not less. I thought I might be burning them up with the battery, but I've used several other flyers', and they still burn up. I finally found a long Super Tigre plug, and it seems to do O.K., but I only have two flights on it. Any suggestions as to the reason for these plugs going out so fast? The wire in the plugs was still intact.

Yours,
 David R. Major
 Mars Hill, N.C.

If you are sure that your battery voltage is okay, (1½ not 2 volts) then only two other things could cause the glow plugs to be short lived. Either you are running the engine too lean or there is something defective in the engine, causing wear, and resulting in metal particles. Check the oil on the

wing of your airplane for any metal particles in the oil. Only one speck of metal on the element of the glow plug will cause it to burn out. This is the reason many new engines will often burn out a glow plug on the first flight. If the oil coming from the engine is clear, then you must be running the engine too lean, so try richening it up some.

As for your idle problem, you did not give me very much to go on, Dave, so I can't be of much help here. Possibly your tank position is on the low side which would also let the engine lean out towards the end of the flight accounting for the glow plug burning.

Dear Mr. Lee,

I am building a Sig Baron's Buggy kit which will be my first multi-channel plane. I plan to install a Heathkit GD-19 radio with 3 servos (engine, rudder, elevator). I was planning to install an OS .10 engine but I am now wondering if it might be too small. I have an OS .15 and wonder if it might be a

better choice. What do you think?

Thank you for any advice or suggestions you can give me.

Sincerely,
 Bob McShane

The difference in power between a .10 and .15 is pretty marginal. A hot .10 might put out more than an over-the-hill .15. In any event, I would use the .15. Better to have ample power as you can always throttle back or run it on the rich side.

Dear Clarence:

I and two of my fellow fliers have OS .58 R/C engines and they seem to have excessive vibrations, more so at middle speed than at low or top end. I wonder if you could tell me if there is anything I can do about this with this particular engine. I was thinking of removing one ring or adding another head gasket to reduce compression or should I give it up as a lost cause?

Sincerely,
 Joseph Perrone
 N. Haledon, N.J.

Joe, all engines will have a vibration period through the mid range. Some

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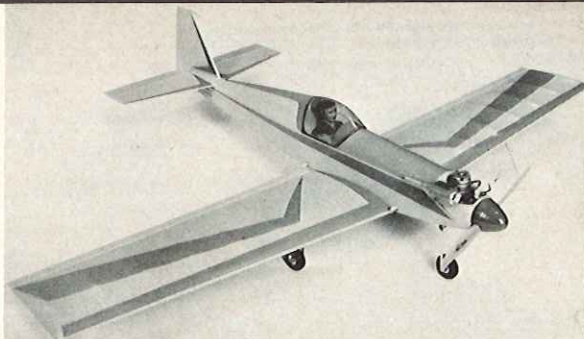
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SPECIFICATIONS:

WING SPAN ----- 49½"
WING AREA ----- 416"
LENGTH ----- 39½"
DRY WT. ----- 3-3¼ lbs.
WING LOAD - 17oz. sq. ft.
POWER ----- 15-25 disp.

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Craftsmanship, Materials, Packaging And Performance That Are Peerless -
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more than others. Usually it occurs between 7,000 and 8,000 rpm. There isn't much you can do about it. Adding weight to the crankshaft counter balance is the solution, but this is pretty hard to do. If the compression ratio were too high, lowering it would help a little but in the case of the OS .58 the compression ratio is okay and your problem is one of balance. You definitely do not want to remove one of the rings as the engine would not run properly. Frankly, there is nothing that can be done other than to be sure the engine is mounted solidly to beam mounts and balance your propeller. If you are using a plastic spinner try running the engine without it and see if the vibration is less.

Dear Mr. Lee:

I and some friends have Cox .020's. They ran great last year, but this year they refuse to start. All they can do is run on the prime. We have tried everything. Can you help?

Michael Sciascia
Bath, Maine

Allowing the engine to set for a year has let the castor oil congeal in the tank, fuel line, or reed valve. Pull the tank apart and clean it, the spray bar assembly, and the reed valve. It is

about the only thing that could cause the engines to only run out the prime. If the fuel is supplied, they will continue to run.

*

The letters have been slowing down the last couple of months. I don't know if I have answered all of your questions or if you are just waiting for the other guy to write in. At any rate, I need the material to work with so don't leave it up to "George." If you are in a real panic and need a personal reply, be sure to include a stamped self-addressed envelope. If any of you have come across a solution to a problem that might be of interest to others, let us know. Or if there is some topic you would like to have discussed, we are always open for suggestions. □

FEEDBACK

From Page 6

as officers, clean the outhouses, repair the equipment, send out newsletters, etc. Second, it takes a combination of our brains and our brawn to keep the club going.

So --- this year let's not put our officers, committee chairmen, and

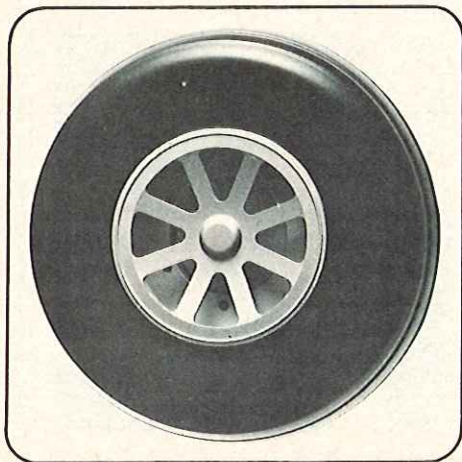
contest leaders in the position of having to beg us for help. We know what jobs have to be performed. If you are new, see your sponsor for advice. Let's pick the jobs we want and go on record with the person responsible for that activity. I already know what I would like to do. Do You?

Last of all - if we cannot show up at the appointed time, let's have the courtesy to find our own replacement. When we call the contest leader let's not tell him we are sorry we can't make it, let's call him to name our replacement. In summary, as members of a very fine R/C flying club let's be mature and responsible about our obligation to help out. Let's not have our club leaders have to tell us. In the words of my immortal U.S. ARMY Master Sargent - "Look bud, I'm not your mother."

- From the NCRC 'Club News'

Sport vs Competition Flyers

If you think the title is correct, think again. Without both, our hobby would be back in the "dark ages" of the 50's. That was an interesting period. To my knowledge, we had come a long way - single and two



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tube receivers, with A and B batteries, relays, single, compound and cascaded escapements. Radios would often work (sometimes) and vibration problems were part of the hobby. There was a market! The sport flier bought and the hobby grew. The competition flier pioneered new equipment and the sport flier made it practical by buying in large volumes.

Today, the competition flier is usually the one who gives the hobby a good name (where there is any notice). The sport flier is usually good, but is rarely noticed. Planes flown by the competition flier are often kitted and built — and flown — by the sport flier who is competent.

When it comes to meets, the public watches the flying. It is the sport flier who gives his labors in the various support jobs that make the meets possible. Sport and Competition fliers need each other!

—From Valley Forge Signal Seekers
'Hear Ye'

Spaceport RC'ers Inc. Annual Scale Contest

The Spaceport RC'ers Incorporated held their Fourth Annual Scale Contest near the end of 1971 and, as it turned out, was the most successful meet sponsored by the group. Included was Stand-Off Scale and AMA scale with the majority of the entries in the former category. With 46 members, approximately 75% of the membership of the Spaceport RC'ers

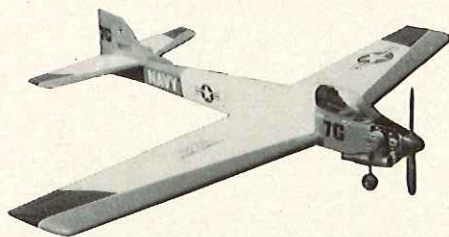


George Jordon stand-off scale winning 'Albatross'. George, from Cocoa, Florida.



William Allen, of Jacksonville, Florida, with his BD-1 at recent Spaceport scale meet.

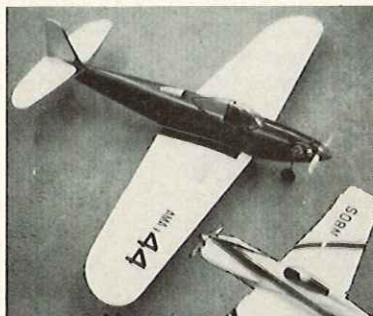
FLY 'EM-YOU'LL LIKE 'EM For Competition Pattern or Racing



JIM KIRKLAND'S A-6 Intruder

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\$39⁹⁵



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Third Annual RCM — Fort Worth Thunderbirds NATIONAL FUN FLY CHAMPIONSHIPS AMA Sanctioned



Contest Date: June 17 & 18

Location: Thunderbird Field, West shore of Benbrook Lake, Fort Worth, Texas.

Events: National Fun Fly events; Spins, Loops, Rolls, and Spot Landing, AMA Scale.

Prizes: Trophies through 10th place in the Fun Fly, through 3rd place in AMA Scale.

Entry Fee: \$5.00

AMA and FCC License required.

For entry blanks and rules contact

Chuck Cunningham

5333 Wooten Drive, Fort Worth, Texas 76100

Roar!

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For nearly three decades K & B engines have led the field... so it's not surprising when K & B makes radical changes that again set them ahead of the rest. The new K & B .15s feature many of the innovations already incorporated in their other engines, but with such extensive improvements and modifications that internally they are 100% new! Externally, too, it's a new look... to house the internal changes and to give added strength. Proven and tested in the field they are tops in the .15 class!

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- Features include:
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Standard
\$28.00



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RENO RC CLUB

From Page 51

the Pavilion Mall of Park Lane Shopping Center, the largest in Reno. At the last such event there were 17 planes on display during the Friday night and all-day Saturday affair. Many types of craft were displayed from the 72" SE-5 to one model completely built of cardboard. Over a thousand people came to the display with about 85 attending the flight demonstrations on Sunday. The Park Lane Association assisted with marquee

advertising and the evening newspaper ran a photograph of the R/C Club's Queen, 17 year old Linda James, who won the title of Miss Reno R/C. Special invitations were sent to the mayors of both Reno and Sparks, as well as to the County Commissioners.

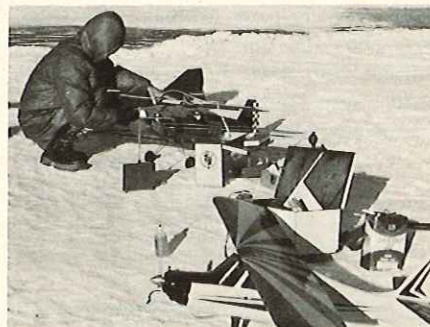
Tom White, Publicity Chairman of the Reno R/C Club extends an invitation to all modelers who visit the Reno area to come fly with the club at any time. The RRCC is listed in the chartered club section of the AMA news. RCM extends its congratulations to a civic-minded and earnest group of R/C sports enthusiasts. □

fly scale aircraft and do their best to promote scale throughout the South.

The Spaceport RC'ers is the club to watch... they are rapidly on their way to becoming the scale club of the South.

Polar Bears and R/C

Behold the Polar bear segment of the Winnipeg R/C Club! These nuts meet every New Year's Day regardless of weather conditions. This year is was nice - only 10 below zero and 20 mph winds for the flying activities! Approximately 20 members showed up while 60 cowards in the WRCC stayed home. The result was lots of frozen fingers and weak batteries but they managed to get a half dozen planes in the air this January 1st. A couple of planes equipped with skis fared best on landing and takeoffs. A half-hearted attempt was made at shoveling off the runway - just enough to take off according to Al Thorarinson, publicity chairman and chief photographer for the Winnipeg R/C Club. Al reports that mostly Logictrol equipment is used by their group.



Gluing Cabin Windows or Canopies

From the SVRCC Newsletter comes an idea for gluing cabin windows or canopies without the normal amount of frustration and obscenities. Simply use Pliobond by Goodyear Rubber Company, a product which is available in virtually all hardware stores. This material works like a charm. Just brush it on and let dry until no longer tacky, then join the canopy or window material to the fuselage. Once dry, the two cannot be separated without breaking balsa or distorting the plastic. The SVRCC group also suggests that if you have trouble with decals peeling off, try spraying them with Testor's Chip Guard. This material was developed for protecting fancy paint jobs on slot car bodies. It works well on MonoKote and Solarfilm, Lanier Aero-Skin and epoxy paints. It also is excellent for application over club

decals and those press down rub-on letters.

Pylon Advisory Group

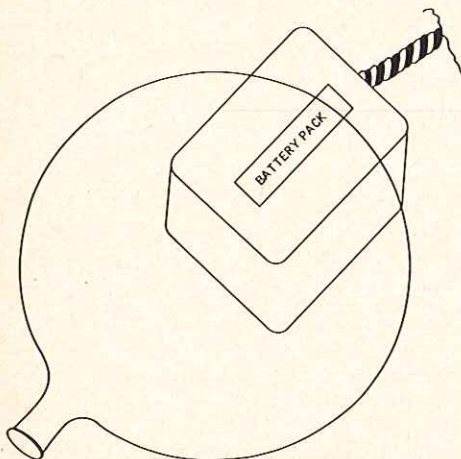
In January a group of 25 modelers, representing most of the major clubs in the Chicago area met for the purpose of forming a pylon racing group which has been named the Chicago Pylon Club. Among the founding members are Jerry Nelson, Jim Greer and the famous racing Hillers.

The purpose of this group is not to hold their own races but, instead, to assist local clubs with good fields to hold the racing events. The Chicago Pylon Club will assist in every way possible from the setting up of concessions, obtaining the contestants, and helping to officiate. At the time of this writing, the CPC has four firm and three possible commitments from Chicago area clubs for pylon races this coming season. The main event of each racing meet will be Formula I. The host club will then decide whether they want to include Formula II, F.A.I. or Open Pylon for the second event.

Frustrated pylon fliers in the Midwest area who are looking for other racing enthusiasts should contact Bruce Balko, of Balko Machinery Co., 2445 Hamilton Drive, Elk Grove Village, Illinois 60005. Bruce, in turn, will send out information on racing dates and locations, and will keep the writers informed of all the new racing dates that come up. Our congratulations to the Chicago Pylon Club for an outstanding effort towards the promotion of R/C competitive racing.

Fuel Proofing The R/C Battery Pack

From the EIR/CA Newsletter, of Richmond, Indiana, comes this simple method to fuel proof your R/C battery pack. This is really a modification



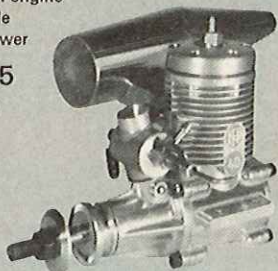
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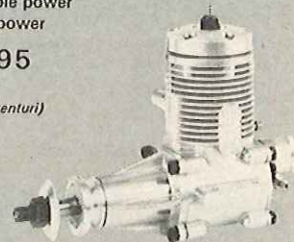
\$5695
(with muffler)



HP40R-PR

Perfect for RC pylon
Dependable power
1.2 horsepower

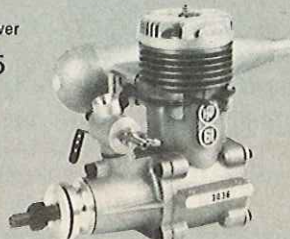
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HP61RR-RC

Open pylon and marine use
All new disk rotary valve
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aluminum wheel
bracket will
take wheels up
to 3" in diameter
(wheels not inc.)



entire landing
gear assembly
unscrews from
mount in seconds
for quick removal

husky 8/32 set
screw allows easy
adjustments on
steering arm

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provide precise ground
control and straight
line take offs

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brake



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All sizes
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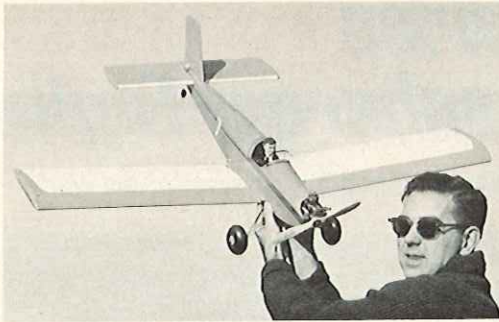
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BRYCE PETERSEN'S

TOUCHDOWN

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Larry Cullers-Kokomo Blue Angel R/C Club says: "It's nice to be able to take a small airplane, like the performance "Touchdown" with a .23 and do everything that the .60 boys do. It's a hit wherever I go. Thanks for a marvelous kit.

Charles Paz-San Juan, Puerto Rico says: "Your "TOUCHDOWN" is a beautiful flyer. I have done some demonstration flights with it and people love it, very good on windy days, really great on take offs and landings.

.15-.23 engines
3 or 4 channels
length 34 inches
weight 3 pounds

formed and soldered
landing gear with
screw-on hubs

foam wing
balsa fuselage

wing options -
• 48" trainer
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(semi-sym w/ailers)

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AT6 - SNJ

All balsa kit as featured in
Sept. R/C Modeler

High performance semi-scale
Engines .29-.40
Wingspan 53"
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500 MAH batteries standard, high capacity 250 MAH optional. Dual, shock protected charger. . . . Transmitters will be in production as soon as inventory is completed. 8 channel IC encoder will be standard on all units. . . . All design and production under direction supervision of Ed Thompson, whose designs since the inception of digital control have had a profound effect on the Model Industry.

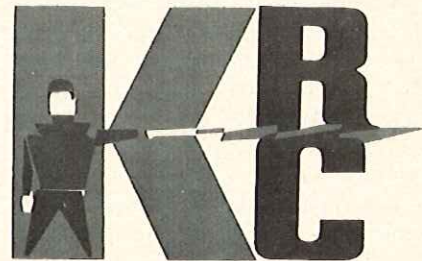
RC MANUFACTURING
RADIO CONTROL DIVISION
7717 FAIR OAKS BLVD.
CARMICHAEL, CALIFORNIA
95608



of the Hobbypoxy molding method. Inflate a large toy balloon, then push the battery pack into the inflated balloon while gently letting the hot air out of the balloon. You may have to try this several times, but you should be able to insert the pack so that you will have enough balloon around the battery wire that you can tape or tie the balloon to the wire.

Indiantown Gap Invitational

The Keystone Radio Control Society Incorporated of Pennsylvania, like most clubs, has a wide variety of flying interests, but most recently the Quarter Midgets have really taken the members fancy. The Midget Mustang, Cassutt, and Rivets types being the most popular. One of the years most outstanding events sponsored by the KRCS is its annual Invitational Fly-For-Fun meet at Edward Martin Military Reservation near Harrisburg, Pennsylvania. This meet is held for three days over the Labor Day weekend and on their fourth annual Invitational in 1971, nearly 100 fliers registered for the event. Known as the Indiantown Gap event, the KRCS invites you to attend their 5th annual Invitational Fly-For-Fun on September 2 and 3 of this year.

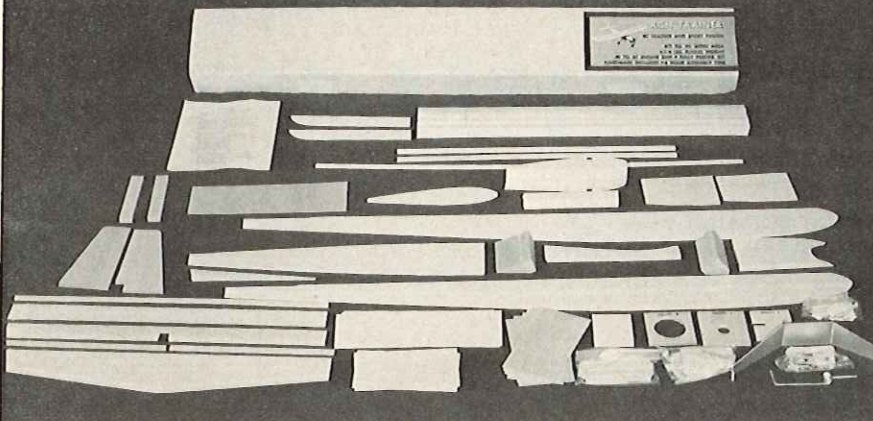


Plane Cleaner . . . With Intrigue

Here is an inexpensive, fast, and safe plane cleaner for field and home use suggested straight from the "CAN" a publication of the Cleveland Aero-model Society of Cleveland, Ohio. Try about 1 oz. of your favorite dish-washing detergent (pink or green adds interest and mystery), 3 oz. of alcohol, and 1 quart of water. Mix together and keep handy for use in a finger type spray plastic or glass bottle (the window spray kind). When your ship gets all funky after flying, spray it with this goop, as you would a window, and wipe off with a clean rag - a little goes a long way, but it works and will preserve the car carpeting on the way home. We've even tried it at home in the shop and rinsed off the ship over the laundry tubs when we're through. It works, it's inexpensive, and has lots

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of uses at the field. You're welcome to formulate your own mystery juice with some experimentation such as adding a few drops of your favorite after-shave or cologne if you want to add depth to the mystery or attract your favorite spectator

McDonnell Annual R/C Meet

The McDonnell Annual R/C Meet has become a tradition as the largest R/C event that occurs in the Midwestern America. All R/C modelers are invited to attend the upcoming event which will be held in August 1972 in St. Louis. For further information, contact the McDonnell R/C Club, 9154 Severin Drive, St. Louis, Missouri 63134.



Jim Goad ready for a flight with his Coyote at 1971 McDonnell R/C Club Annual R/C Meet, held at St. Louis, Missouri.

Shop Tip

From the "Servo Chatter" of the Aerotelemechanics, Inc., of LaGrange, Illinois, comes a quick, easy, and fairly accurate way to cut notches in leading edges, trailing edges, and stacks of ribs. The method involves clamping a sufficient number of hack saw blades, teeth up, in a vise to cut the proper width. The depth of the cut is controlled by the distance the blades extend up from the jaws of the vise. By drawing the parts to be notched back and forth over the blades, the parts will cut until you reach the jaws of the vise and thus, the proper depth will be reached. This will result in a uniform width and depth in all ribs made in this fashion.

Red River R/C Club

At the present time, the Red River R/C Club is 23 members strong and has its flying field on the west edge of the city limits at the junction of Highway No. 2 and Interstate No. 29. The property is owned by the city of Grand Forks and the City Fathers have allowed the Red River Radio Control Club members exclusive use until the

land is sold. This is an excellent field that is almost completely free of obstructions and the passers-by on the highways can see the models in the air. A few of the current members of the RRRCC have been attracted by this closeness (1/4 mile) to the general public. During the summer there are always a few cars along the shoulder of the highways, as spectators. Their flying field is a closely mowed 300' x 400' area with unlimited flight area, two large clean airplane workbenches, two small dirty workbenches, a wind sock and a frequency clothespin control board that are in place all year long. This year the Red River Radio Control Club will host its 6th Annual Fun Fly-In in July. Modelers in the area are asked to contact Charles E. Orange, 1701 University Ave., Grand Forks, North Dakota 58201.

Gotcha' Last

We're pleased to announce that Frank Schwootz, of the Lower Tennessee R/C Society, recently surpassed his own 1971 R/C endurance mark of 1:02.5 by .2 seconds flying his Ueda powered Trixter Beam out of the local corn field. RCM's Editor is quite proud of his old friend Frank, who managed to set this new personal record after only recently completing his second successful R/C flight.

Happiness is:

HIS:

.... "eyeballing the 'models' on RCM covers ..."
 "spending your vacation at the NATS ..."
 "the wife forcing you to go flying ..."
 "finding a can of beer in your tool box ..."
 "24 hours of daylight and no wind ..."

.... "a wife that loves to go flying ..."

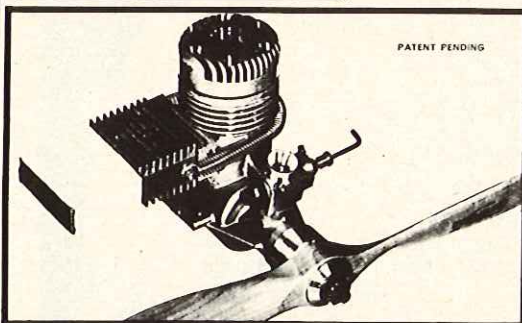
HERS:

.... "roasting hot-dogs over a balsa wood fire ..."
 "windy days and darkness ..."
 "ironing something besides MonoKote ..."
 "Sunday dinner on time ..."
 "anything on time ..."
 "your husband brings you home a package and it isn't a new model kit ..."

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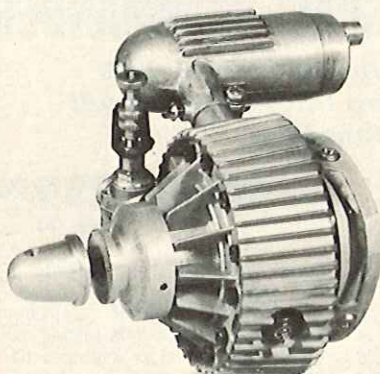
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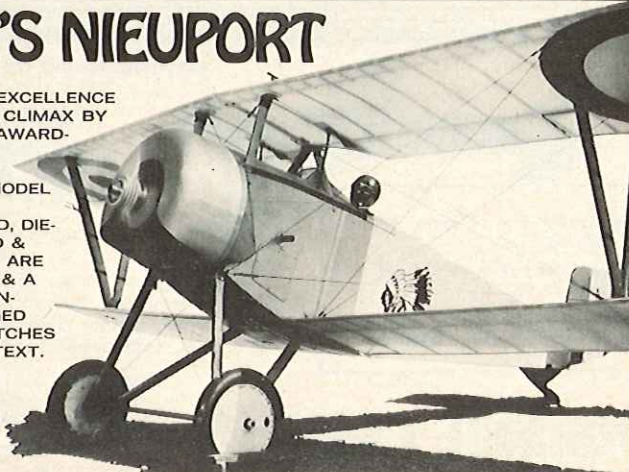
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LETTERS

From Page 4

the U.S. mainland. In addition, the base hobby shops in the area kept as much hobby equipment as possible. We had some high level support for our flying activities and as is always the case, made many friends.

So, if you are a modeler and headed for the Saigon area, bring your gear and help pass the tour with some flying. Contact the USAHAC Special Services on Camp Gaylor, Tan Son Nhut, or Major Long, VNAF AC-119 flight operations section, Tan Son Nhut. Those individuals being assigned to Long Binh or Bien Hoa should also contact the Camp Gaylor Special Services for more information.

Sincerely,

B.W. Conchin

Former Member, Saigon Sky Sailors.

FROM THE LADIES

Don:

Do you ever feel that your efforts are in vain? That no one appreciates your hundreds of pages of information on airplanes? That too much copy goes unnoticed?

As the wife of an airplane hobbyist, I would like to assure you that you should have no fears whatever. My husband hovers over your every word, your every article, your every suggestion, your pictures, your diagrams, and every single ad. He's ordered enough stuff to outfit his own store (and he buys locally too, to make sure he doesn't run out of something).

For some reason R/C Modeler was late this month and every day he came home wanting to know if it got here

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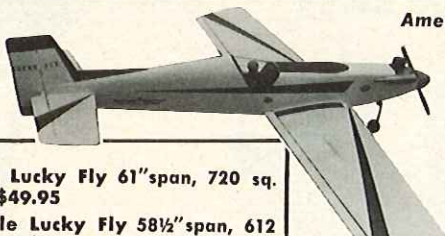
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Will no longer appear in the monthly issues of R/C Modeler Magazine. Due to the fact that this is the most comprehensive course ever published, it's length would require 48 issues for its complete presentation. Therefore, the RCM Flight Training Course will be published in its entirety as a three volume Anthology Library Series of books within the next few weeks. Watch for it.

yet. If it had taken any longer I would have begun to fear for my sanity.

He was the talk of the neighborhood when he set up his 55-gallon drum of alcohol out in back, hanging from three posts by a system of pulleys. We've got a lot of tea-totalers around here.

When they found out there was some castor oil mixed in with it, that's when they really started to get worried.

You know the fuselage jig you described in this past issue? Well, he's down in the basement figuring it all out. The trouble is, you come out with so many good ideas, he'll have to live to be as old as Methuselah to enjoy them all.

Anyway he's left the magazine alone long enough for me to look up your address.

Hope you can print this. He'll fall out of his PT-119 cockpit if he finds out I've told you all this.

Sincerely,
Nancy Hurst
Collinsville, Illinois

Don:

I hope this letter is appropriate, for I've been wanting to tell you about the fun and frolics that flying has been for me. This is a little different because I am a girl.

My husband introduced this fascinating hobby to me and I have thoroughly enjoyed it. Fascinating, although expensive. So you see fellas, I still agree with your wives, but most hobbies are expensive.

I guess it all started when David (that's my husband) and I started dating about a year and a half ago. We rode out to the local RC field, and after a year's absence of flying, David got the bug again. Well, I had never seen anything like the little toy planes flying all around. Therefore, knowing my boyfriend thought these "Things" were intriguing and me trying to keep him interested, decided to go along with this crazy sport. After many months of going to the field, David decided to let me build a small glider. Low and behold, it was fun! As the months kept going the gliders went to free flights, then control line and now we are in the big thing, RC. Make that me, David is already a pro. David's patience was super. Two people in a small workshop sharing pins, pliers, glue, etc., was just as bad as two women in the kitchen. But over a year's courtship with planes, we got married to each other and the hobby.

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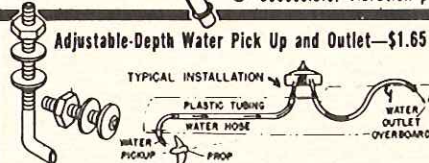
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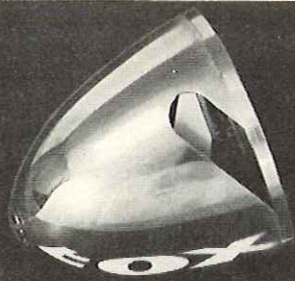
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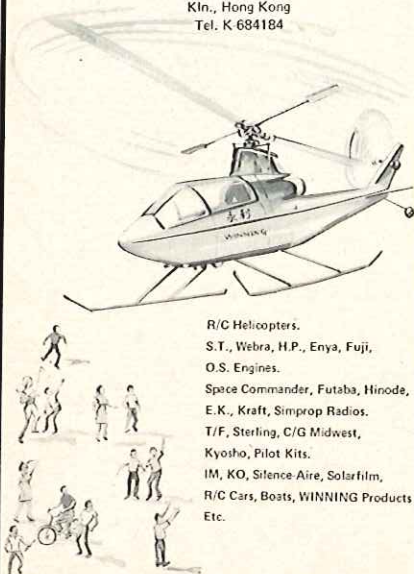
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I just wanted the men out there to know that all is not hopeless with their wives or girlfriends. Give her a little patience, teach her a little, and maybe she'll be going out to the field with you on Sundays. And if you don't want that, at least she will understand why you're hooked.

I hope this will help someone. Thanks for listening.

*Sincerely,
Mrs. David R. Chesney (Roxanna)
Greensboro, N.C.*

LETTER FROM A YOUNG MODELER

Don:

This is the first time I have written to your magazine. I have been in modeling for about 40 years. I started making the old three stick rubber pushers, then to cleveland models - Boy - they were really good models. After that to U-Control, then to single channel. Now I have been in multi for about five years. I still call myself a young modeler at 71. That is all for my life history.

Of all the safety rules, the best article so far are the ones by Ken Galbreath. If we would all follow his article, things would be easier for all of us.

I have been reading R/C Modeler Magazine for quite awhile and of all the airplane magazines, yours is the best. There is no single article that is better than another... they are all great.

*George H. Morriss
Vallejo, California*

R/C, CIRCA 1937

Don:

Re: "RC, Circa 1937" in your March issue, Roland Bourne passed away only a week or so before the final tribute appeared. I would like to correct Mr. Eggert on one detail and also pass along a few experiences with a Hull/Bourne ship that were never publicized.

The caption on the large photo says "Proportional rudder on vintage RC craft!" This has to be incorrect, as I'm sure Walt Good and others will confirm. There were several attempts to avoid the necessarily sequenced operation of a long surface, but proportional was still a long way off. Early RC'ers will recall that even post WW II ships were rudder only, escape-ment-operated.

The 12-foot sailplane mentioned as the first Hull/Bourne ship was an ugly

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job (box fuselage) but what a work-horse! When finally retired it must have had little or none of the original wood and fabric. It was flown mostly from the near-300-foot West Hartford hill (Hull and I roomed in a farmhouse at the top) overlooking a small golf course to the east. One day after Hull's javelin-style hand launch, the ship got fairly well out over the golf course before control was lost and it headed back toward the hill. It pranged, of course, but that had happened so often that the three of us sauntered casually down the slope to the wreck. Not so two eager-beaver golfers who had seen the silent aircraft heading for the hill. They scrambled madly up the hill, through underbrush and over at least one fence. The five of us reached the ship about the same time. One of the breathless golfers exclaimed disgustedly, "Oh, hell! It's only a model!" We didn't help the situation any with our guffaws, and the two potential heroes left without another word.

Winch tow was also tried with this 12-foot model, from the top of the hill. Bourne built a drum to replace a wheel on Hull's car, and a takeoff strip of tar paper was laid down to provide a smooth path for the dolly that cradled the ship. The tow line was heavy fishing line. More than enough horsepower was available at the jacked-up rear end of the car, so the winch tow was quite steep and realistic. When the ship got to perhaps 125 feet or so, Hull lifted his foot and the tow ring dropped off. With no elevator control and the ship at an impossible angle, only one thing could happen: a beautiful series of linked stalls. Thanks to the experience of the builders, the ship was well trimmed and the stalls were more-or-less straight ahead. However, about 100 yards away to the west there was a small chicken farm, and the swooping ship must have looked like a hawk to the poultry. The bedlam created by the squawking birds was really something else! I don't know what the egg count was that day, but I'll bet the farmer wasn't hurting for fresh fertilizer! And, believe it or not, on about the 5th or 6th oscillation (by now getting quite gentle) the ship made a beautiful landing with a perfect flare.

Ross Hull met an untimely death in the late 1930's. He would have dearly loved to have seen what's being done today in RC.

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