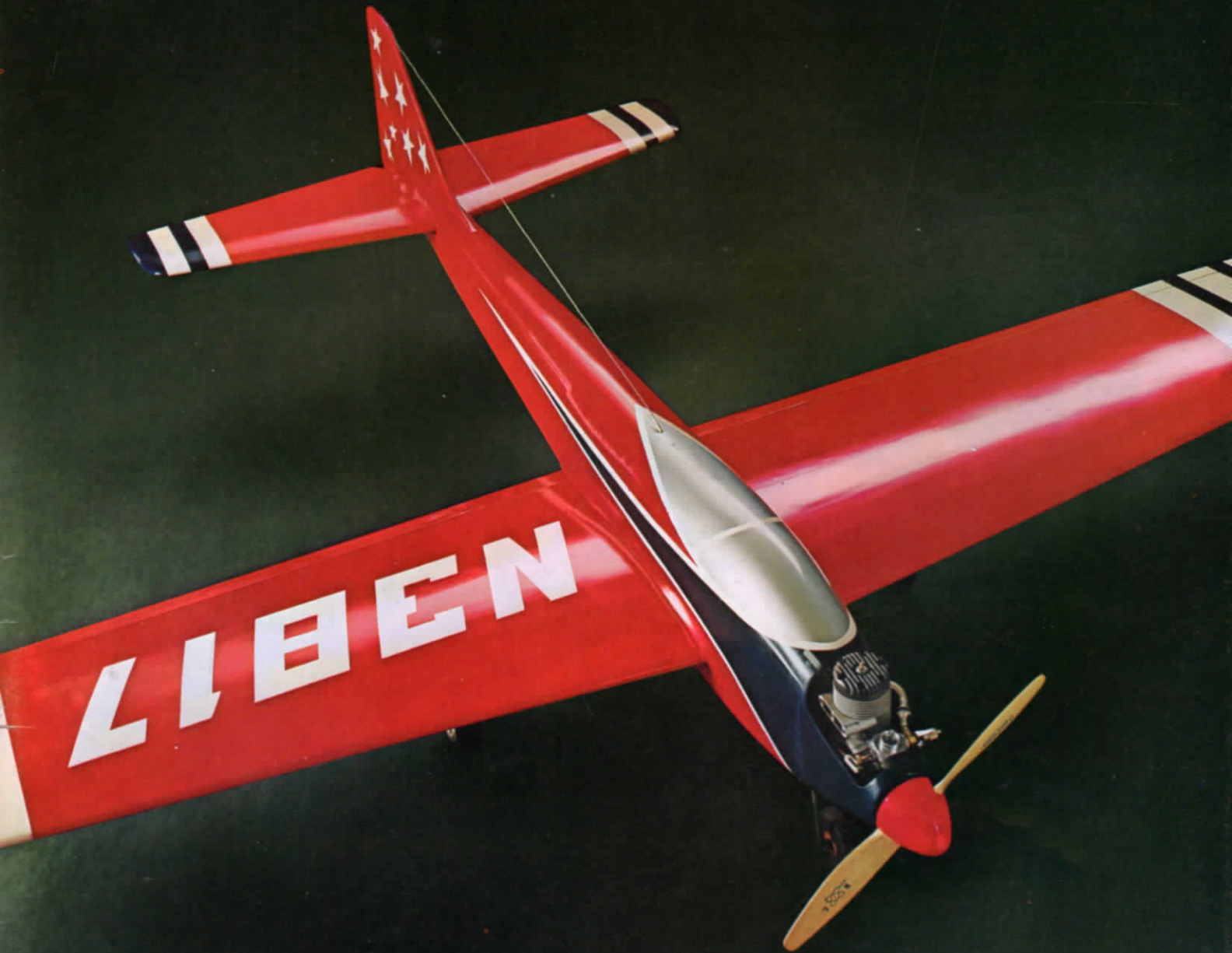


JUNE 1971 75¢



RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS



RETAILERS: SEE PAGE 65 FOR
RETAIL DISPLAY ALLOWANCE PLAN

THIS MONTH

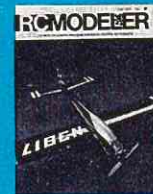
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THIS MONTHS COVER

Ed Keck's original Starfire uses Pro-Line radio and retract gear and is powered by a Webra Blackhead .61. The model is silked over-all and finished with Aero Gloss Dope. All-up weight is seven pounds. 8 x 10 Ektachrome transparencies by Lee Howick and Robert L. Clemens.

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Toledo '71. Bernie Murphy made this collage of exhibitors logo's as he takes RCM's readers on a tour of the 'Show of Shows'.



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VOLUME 8 NUMBER 6

JUNE

1971

THANK YOU

For answering our Reader Interest Survey. If you have not done so, please complete the form in last month's issue and mail it to us. Only if you take the time to fill out the form will we have a true picture of what you like and dislike . . . what you want to see in RCM.

Thank You.
The Editors

The following letters were submitted to RCM as a reply to an editorial contained in the April 1971 issue of RCM:

Dear Loretta:

Your "open letter" to me, in the April issue of RCM, deserves an open answer. It indicates a basic misconception of what AMA, as a national organization, is capable of. It may help, therefore, for me to clarify that point, for you and for many others who have read your letter.

What a disappointment, though, that you didn't send me a copy when you sent your letter to RCM. If you had I might have been able to respond in time for a printing of the reply in the same issue. As it is, having no knowledge of your letter until I saw it in the magazine we have an unfortunate gap in communication response.

Regardless of that, here's my reply. It's still as timely as it would have been if printed earlier - the basic situation is not subject to change in a hurry.

Your letter describes a local flying site situation and looks to a national organization to save it. Your letter also suggests that the Academy of Model Aeronautics can change the public image of model aviation. Both those expectations are unrealistic.

Any attempt to create or change a public image requires spending hundreds of thousands of dollars. Proponents of the SST poured that kind of money into a campaign to fight the public image of noise and air pollution. Similarly the tobacco industry has spent millions combating the public image of cancer being caused by smoking.

Meanwhile, the Academy, after many years of operating in the red, has finally managed to get in the black and start thinking about the possibility of having its own full time PR man. We have been able to spend about \$15,000 on PR for each of the last couple of years but that's a drop in the bucket for this kind of effort these days.

Even so we have done remarkably well. Although we have been able to only promote model aviation in limited ways, we have achieved some amazing results. We have, for example, been able to avoid having model flying regulations imposed by the Federal Aviation Administration, despite several bad publicity problems like last December's infamous Los Angeles Times story.

We have also been able to obtain and keep special frequencies exclusively for radio control of model aircraft, through effective liaison with the Federal Communications Commission. And we have been able to obtain continued U.S. Navy hosting of the National Model Airplane Championships, despite cancellation threats every year since 1964.

We're in constant danger that any or all of these achievements may go down the drain at any time, so our comparatively few PR dollars are being used to maintain the status quo. At the same time we're beginning a modest expansion of the PR effort. As our membership has grown and added more money to the budget we have been able to bring a world championship to this country, we have produced a legal brief to help clubs deal with noise complaints and we have produced a publicity guide to help clubs promote their activities. We're also working on a project to promote how clubs can get and keep flying sites.

Yet our biggest obstacle is the fact that our image is lacking and many of our own people are resisting efforts to change it. It's time we faced up to it: we've got a serious noise problem and only token muffler usage is in effect. The problem is that we still haven't got quiet engines and too many of our people don't want them. Even where mufflers are required, no real attempt is made to achieve a really low noise level. And the AMA membership threatens revolt anytime someone suggests that AMA should impose mandatory muffler requirements.

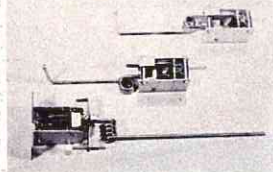
So be it. If that's what our members continue to accept then our image will continue to be a noisy one. And this will make it impossible for the AMA or any other organization to gain greater public acceptance of the activity. All we can do at present is buy some time, by saying that our people are trying to achieve quieter operation. But if we don't achieve that goal all the PR effort in the world won't do any good in the current atmosphere of ecology.

Similarly we've got a safety problem. Despite the distortions of the Los Angeles Times story last December, the fact is that too much of our model flying is not as safe as it could be. Club newsletters are full of appeals to members to pay attention to club safety rules. Note, for example, the following from a recent newsletter of a large club in California:

"We have had safety rules for years, but we still have a safety problem. We have tried the safety marshal approach to rule enforcement, but it only generated resentment and didn't help safety very much. We think it's time to start over . . ."

This kind of situation is unfortunately more frequent than it should be. We all know of too many scary moments at many flying fields. That image is one that is all too

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4 per set with 4 machine bolts. Specify LARGE for .60's and above, SMALL for other engines.

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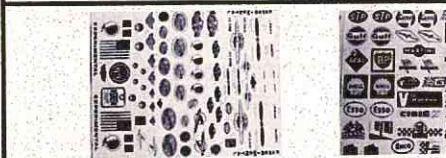


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TRY US OUT: L. F. Did: "By the way, thanks for the quick service on my last order. It saved my weekend." L. F., Lynchburg, Va.

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Here's a good opportunity to grab some Lanier planes on this once-a-year limited sale. Remember that (as usual) we pay the postage on all your prepaid orders (US & APO's). Prices in effect until June 30, 1971.

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obvious to any spectator who watches a typical Sunday afternoon flying session. It's a real situation that we have to face up to and admit we've been very lucky so far.

Our image has to change if we are to make more progress. AMA PR efforts won't change the image. All they can do is call attention to it. Until the image changes by those who create it - the fliers themselves - we'll have a major problem that no amount of PR money can overcome.

But there's another factor which compromises a national organization trying to promote the activity. On any local flying site problem, no governmental agency - city or state - wants any advice from "outsiders". They resent what they consider interference on a local problem and may, in fact, react negatively just to show that the local authorities are in control and don't want or need any "help" from Washington. It's unfortunate, but a fact of life.

In all successful flying site efforts to date, local people have done the job. They have had help from AMA in most cases - evidence of insurance coverage, endorsements from prominent people, documentation to show why model aviation activities should be aided - but the basic job has depended upon local people pleading their cause as deserving and responsible citizens asking for their share of tax money.

Your open letter tells of recreation department meetings and actions of those who spoke against model flying. But no mention is made of anyone from the area clubs or businesses defending the cause. Nothing is said about how the Los Angeles Model Hobby Association answered Mr. Mott of the State Department of Parks and Recreation.

In contrast to the Los Angeles situation, we have the extremely successful example of Pittsburgh, where the state has provided a "noise park" for model flying. This was made possible by local modelers working with state recreation people, using information supplied by AMA to help document and justify the effort.

The same thing can still be done in Los Angeles and anywhere else, but the basic effort must be done by local people working with local officials. The most effective means is for AMA members to get together and indicate their strength of numbers and their right to consideration as tax paying citizens.

Their cause can be aided by pointing to membership in the national organization, as evidence of an insured and responsible activity, recognized and endorsed by government agencies and professional people. This approach has worked elsewhere — notably in New York City, where several municipal flying sites are in operation — but it needs to be an organized approach, combining the efforts of all area clubs.

In all such efforts the AMA can help, but it cannot do the job alone or remotely from Washington. AMA does fine working with national agencies but cannot substitute for local efforts by local people.

And AMA can do more as it grows and has more funds to work with. This means we need a continuance of the current surge which has seen AMA membership double in five years. With more funds AMA can do more for its members.

As an example, AMA's book on the legal aspects of noise problems is being forwarded to you. It provides much of the know-how you need to effectively plead your cause. Copies were sent to all AMA chartered clubs during the past year and many have acclaimed it as a great aid to local flying site problems.

Also being forwarded are copies of AMA's Greater than Golf reprint of an article designed to gain respect for the professional side of model aviation. I hope you can use these aids as others have.

Sincerely,
John Worth
Executive Director
AMA

Dear Mr. Dewey:

I just read the open letter of Loretta G. Hall to John Worth, published in the April 1971 issue of RCM, and I feel that a reply is warranted.

It is incredible that a group of modelers in Los Angeles could seriously take the position that their poor image indicates that the AMA is not fulfilling it's obligation to it's membership. The image that people of Los Angeles have of the modelers there is the image that those modelers project of themselves. If it is a bad image, it is no one's fault but their own. If it were a good image, I doubt if the AMA would receive any credit.

L.A., what have you done to improve your image? I'll tell you that as long as you permit your image to be

(continued on page 88)

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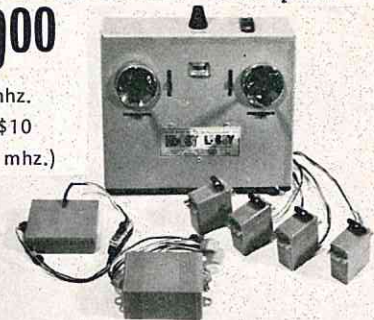
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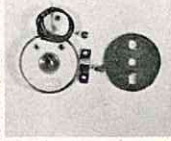
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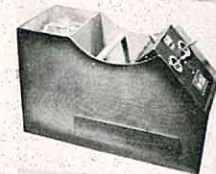
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KITS & PIECES

DICK KIDD



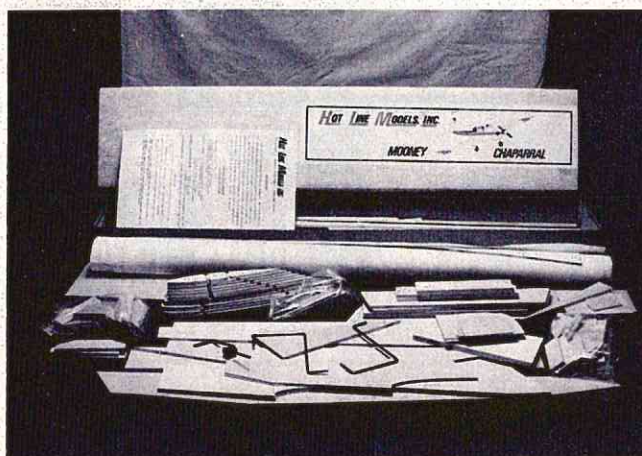
Placed in front of the local airport hangar, the Hot Line Models Mooney could easily be mistaken for its full-size counterpart.

This month's Kits & Pieces project is the Mooney Chaparral, a semi-scale model of the famous Mooney private aircraft. The model is designed for .60 sized engines and is designed to be fully aerobatic while retaining the appearance of the full scale aircraft.

Our first impression was that this was an extremely well packaged kit with all hand sawn parts that have been very carefully done. The instruction sheet is complete including a parts

list for the wing, fuselage and tail group. The plans accompanying the kit are exceptionally good and consist of two sheets — both wing panels are on one sheet so that both panels can be constructed at the same time. The second sheet contains the fuselage and the tail group so that, with ample bench space, you can progress ahead with construction as the various assembly groups are drying. You won't be held up on construction due to a

Kit contents removed from box illustrate high level of prefabrication in Hot line Models semi-scale Mooney Chaparral.



lack of adequate plans.

We'll begin our construction notes in the order as listed in the Mooney construction sheet. Starting with the stabilizer, glue the stab sheeting together to form the outline as shown on the plans. This is pre-cut to outline shape. Use wax paper over the plans and build the 3/16" x 1/2" framing directly on the plans. When dry, add the top and bottom sheeting, then sand off the excess sheeting and tack glue the elevators in place.

The fin consists of 2 pieces of 1/4" sheet. Glue them together and tack glue the rudder to the fin. Sand all of them to the proper shape including the rounding off of the dorsal fin. Set aside and check out all of the wing parts against the plans and the parts list since the wing is constructed next. If your bench is large enough, lay out both wing panels and proceed as follows.

There is a combination 1/4" leading edge and wing jig. Pin over the front spar on the plans with the high end to the center of the wing. Select a length of 3/32" x 4" sheeting for your trailing edge and taper the rear edge of this sheet. Now, pin the sheeting over the plans and glue the 1/4" square x 36" long rear spar to the front edge of the rear sheeting. Note that this spar has to overhang the rear sheeting approximately 3/32". Now fit the ribs and check for accuracy. In the kit we constructed, the ribs had to be sanded some at the trailing edge in order to insure a proper fit both in length and height. According to the manufacturer the ribs have now been plotted from a computer and are completely accurate. However, as received in this kit they were better than most kits we have built and some that we have cut out ourselves as accurately as possible!

At this point, if the ribs are all fitted properly, glue them in place. Do not glue to the 1/4" wing jig! Tilt the center rib 2 1/2 degrees for the proper dihedral angle although the plans call for 2 degrees. Glue the top front and rear 1/4" square spars in place. At this point we installed the wing screw support blocks before the top sheeting was added. The former are 1/4" ply plates. We preferred this method since these blocks can be epoxied in and the remaining area filled with balsa scraps to fit the contour of the wing on the top.

Now taper the rear edge of the top sheeting and glue in place. When completely dry, remove from the plans
(continued on page 70)

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116 (Cor'd of 12) Maple L.G. Mount	\$.69
117 (Cor'd of 12) .09-.15 Eng. Mounts	\$.89
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GEMS

by Jim Simpson

In our travels through the years we have met hundreds of the nicest people in the world. Many of these people who are still living in the same town they were born and raised in have expressed their regret and condolences to us, when our "transfer came through," because we had to move again. These people consider it a tremendous disadvantage to be "on the move" from time to time! And, well, maybe it is. We sure hate to throw away our junk all the time and we've set up at least fifteen shops to date!

BUT, we have taken advantage of the opportunity by meeting new faces. Between us we have met and flown with nearly half the most active clubs in the United States and almost all of them in the Pacific and SEA. Now, that experience alone is worth the inconvenience of moving!

Flying and talking with all these many, many different groups makes us aware of some generalizations we would like to share with you. The first is the "absolute." As we think about what we've done and said in the past we, too, realize our guilt in this instance. Even today you can find, somewhere around you, a person, or group of people, who have a satisfactory method of doing something or who, collectively, prefer a certain plane or radio gear. These people will tell you that their way or their equipment is "absolutely the only way." Right? Know the place now, huh?

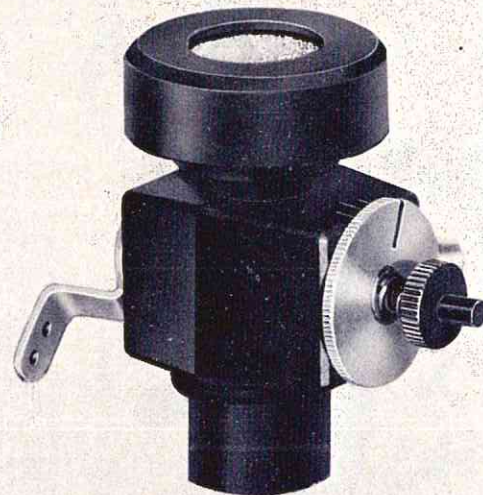
From experience we can assure you that this applies to some degree in every place we've been. In some places it's barely discernible while in others, "absolutely everyone flew the same type of plane and gear even" (except us)!

This experience was beneficial to

(continued on page 91)

engine clinic

By
Clarence
Lee



We have two new products this month that I would like to bring to your attention. The first item is an air filter for the Perry carburetor. This is something that has been long overdue in the model engine field. Up to now the only commercially available air filters were those made for the .19 size engines intended for R/C car use. There has been nothing available for the larger size engines. After a good deal of experimenting, John Perry has come up with a very simple but effective filter for his carburetor that will filter out the finest silt with a minimum loss of rpm. The filter is composed of a molded plastic body containing a piece of plastic foam. Plastic foam comes in various densities, cell sizes, open and closed cell material, etc. Nylon screen, plastic foams, and other filtering materials were tried, both by themselves and in combination, until John arrived at the final material that would effectively filter without affecting engine performance.

The prototype that I tested did not cause any loss of rpm. Production models may use a slightly thicker piece of foam to further increase the filtering action. In this case there will be a 50 to 100 rpm drop which is not enough to be significant. Few of you have tachometers capable of detecting a variation in rpm as small as this.

The filter will sell for \$1.95 and should be available by the time you read this or shortly thereafter. Two models are available. One is for the .40-.50 size carburetor, and the other for the .60 size. I recommend that anyone who is using a Perry carburetor on their engine should install one of these filters. Many of you will say,

"Why? I fly off of a paved surface." I'll tell you why. I get engines in all the time for repair that have gone over the hill long before their time due to dirt and sand damage and yet the owner cannot understand how this could be as he always flies off of a paved field. Even paved flying fields have bits of dirt, silt, and sand tracked in by your big feet, blown in by the wind, etc. If you don't think so just run your sweaty hand over that nice paved surface and see what it picks up. The same foreign matter is being sucked down the venturi of your engine. The big rocks make scratches and nicks in the piston, rings, and edges of the ports that can readily be seen. That fine dusty silt that you might not think matters, acts like a lapping agent and helps wear out the piston, sleeve, and rings. So, if you want to lengthen the life of your engine even when flying from a paved surface, start using an air filter.

There is also one side benefit to using a filter of this type. Most of you have most likely noticed the fuel that spits back out of the carburetor at idle. This fuel, in turn is deposited on the hot engine and results in the brown varnish all over the fins and head. The air filter stops this "spitting-back," resulting in a cleaner engine, and although I have not run any fuel economy checks as yet, would imagine a slight improvement in fuel economy.

The second item this month comes from Bob Seiglekoﬀ who makes the C.B. line of products. Bob first introduced a mixture control carburetor and followed this with a line of precision machined motor mounts. His

latest offering is a fully machined spinner and back plate. Unlike the die cast or spun types, this spinner is completely machined from bar stock aluminum. By being machined both inside and out it runs dead true. The spinner is positioned into the backplate by a tongue and groove. This means that no matter how hard you tighten down on the spinner it cannot jump over the edge of the back plate. The spinner is presently available in 2", 2¼", and 2½" sizes. In the future Bob also intends to offer several different shapes. The spinners come pre-notched for the propeller, and will accept the racing propellers used in Formula I, II, and FAI with no alteration. This feature, in itself, will sell many of you. The price is a little rough at \$9.95, but these are top quality and if you want the best the cost will be higher. You can contact Bob at C.B. Enterprises, 15713 Via Represa, San Lorenzo, California 94580. For the fellows in the midwest, Jerry Nelson at Midwest Model Products handles the C.B. line of products.

Clarence:

I have been running one of your custom .61 engines with Kavan carb for about 2 years now and the engine has about 40 hours on it. It is going great. Last week I started a new gallon of fuel that was taken from a 55 gallon drum and the engine didn't run properly. When I throttled back to land (after about 2 minutes of flying) the engine kicked the propeller nut off. We fly with a club here in Florida and have been buying Sig's Moxey Hesters Fuel for about 2 years. My Lee .61 was run-in on about 3 gallons of Fox Super Fuel, then changed over. It has always performed well. The fuel is stored in a tight 50 gallon drum in an open shed one block from the beach. Also the shipping drum had a leak in it, when received, so all the fuel was transferred to the last drum.

(continued on page 81)



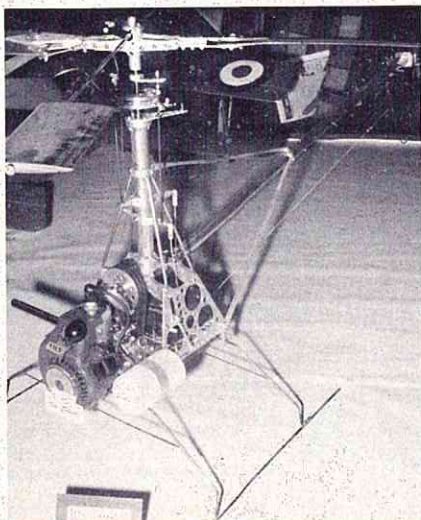
SUNDAY FLIER

KEN WILLARD

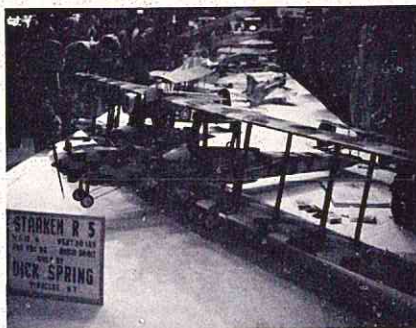
This year, for the first time in the past four years, I once again had the opportunity to go to the Toledo R/C show put on annually by the Weak Signals Club. I had heard how it was growing by leaps and bounds, but was totally unprepared for the situation which existed this time. I won't dwell on it, since my associate, Bernie Murphy, was also there and is covering the show for RCM. Suffice it to say that I'm glad to hear that next year the Weak Signals club has been assured an additional building to house all of the fantastic goodies which just couldn't be properly displayed in this year's surroundings. Did you ever hear the story of the small boy who went into the candy store where the proprietor had piled the various sweets one on top of another to the point where the boy got a stomach ache just looking? That's about the way I felt in Toledo!

But there were some things that I saw which did intrigue me to the point that I fought off the crowd and got a couple of photos. My apologies to all the other exhibitors whose products undoubtedly were equally as interesting from their point of view. These are the items that caught my attention:

The most intricate example of modeling workmanship was this helicopter built by Duane Campbell, Wapakoneta, Ohio.



The biggest R/C model I've ever seen was this 20 pound monster scale Staaken R5 built by Dick Spring of Syracuse, N.Y.



An interesting concept in mufflers – airfoil shaped and tapered, is shown to Ron Murray of Royal Products by Elmer Helfert of Al's Hobby Shop, who makes them.



Heath's new combination battery charger and servo checker strikes me as a particularly useful accessory. The servo checker can be used to make sure everything is working all right without using a transmitter – and this can come in real handy when you want to check a servo during a meet and your transmitter is impounded. Bill Hannah of Heath explains the workings to Ed Hawk, an R/C buff from Wooster, Ohio.

EK Products new little LRB (for Little Red Brick) receiver and servo



unit is a great item for gliders. I particularly like the single stick control, since that's the way I prefer to fly. The price is right, too. Bob Elliott shows Fred Angel.



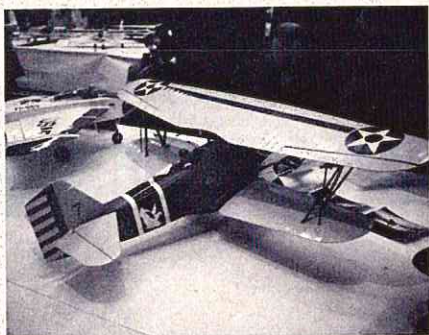
Paul Martin's scale 707-320 has two ST .60's to haul its fifteen pounds around. The retract gear is unbelievable, but it works. Over fifty flights so far.



Many excellent scale jobs were displayed, but there were two that caught my eye particularly, because of a personal involvement with the real thing. Walt Moucha's scale JN-4D reminded me of the days when my father (who was a flight instructor at Kelly Field in WWI) used to tell me stories about his experiences.



The other scale job was Dick Barron's beautiful P6E, done in the motif of the First Pursuit Group of Selfridge Field — where my brother-in-law served as engineering officer of the group. I used to visit there and envy him the fun of flying that beautiful machine (I was too nearsighted to qualify). One of these days I'm going to build a scale P6E so I can have the same fun.



Finally, I took this picture of Linda Andrae — Ralph Andrae's wife — displaying the Wing retractable landing gear. Really beautiful workmanship — and so is the landing gear!



And those were the highlights of Toledo as I saw it.

★ ★ ★ ★ ★

Funny thing. I had to make a tough decision in going to Toledo. That same weekend there was a thermal soaring contest scheduled by the South Bay Soaring Society, and I particularly wanted to enter because I had completed all of the requirements for Level 3 in the League of Silent Flight Soaring Accomplishment Program except for one more contest. I didn't have to win — just score one point and I would then be ready to go on for Level 4. But I decided that one month more wouldn't set me back too far. Spring and summer's coming on, and there should be some pretty good thermals for those level four thermal flights of one hour. So I went to Toledo.

Now, immediately upon coming back from Toledo I wanted to start building a new racing slope soarer for the RCM Trophy Races at Sunset Beach on April 17th and 18th. But then I heard that the thermal contest, scheduled for February 28th, had been blown out with high winds, and was re-scheduled for March 7th. So now I had another decision to make — enter the contest or continue to work on the racing glider? I decided to wait until the morning of the 7th to decide. Decisions, decisions... they were starting to drive me batty. But I'm telling about all this to lead up to the point of this story.

Then came the morning of the 7th. I'd worked late into the night on the racer, and was getting a bit tired of it, so I made the decision. I'll go out to the contest, enter the meet, and compete in at least the first event. That way I'll make my points for qualification for Level 3 in LSF, and could go home and resume work on the racer.

Well, luck was with me (or against me, depending on how you look at the whole story). I won the first event. Now I had a little contest fever and decided to stay. Another decision.

I didn't win the second event, but I did score high enough so that, with a good score in the third event, I had a chance to win the trophy. So I stayed for the third event, which was a relatively simple five minute thermal flight plus a spot landing. Thermals were all over the sky. Everybody was making the five minutes, and it narrowed down to the accuracy of the spot landing. You needed to come within ten feet of the spot for full points. I'd made a six foot spot on the first event, and the chances looked good, although the wind had freshened

a bit and that could make it a little more difficult. But I felt pretty confident; I was flying my new thermal design — the "Big Sinker" — with a twelve foot span. It handled a breeze well.

The starter called me into the ready box for the downwind winch (the wind was slightly quartering, and we were using two winches to keep the meet going fast). The retrievers were bringing in the lines to both winches at about the same time, and purely by coincidence, both the flyer on the other winch (I didn't notice who it was) and I were ready at the same time. There were other gliders in the air, and one of them was beginning to get lined up for a spot landing. I watched it and waited; I was all ready to go — receiver and transmitter both on, surfaces wiggled and checked, winch turned on but not running since I hadn't stepped down on the contact switch. But I was all in position, foot over the switch, and watching the glider which was preparing to land.

At that moment, the flyer on the other winch released his glider and started up. As he was going up, the glider in the air hit the tow line and spun around it. It looked like curtains for both of them. Miraculously, the landing glider spun free. The glider on tow recovered and went up, but the other one went through some wild gyrations before the pilot made a great recovery.

I heaved a sign of relief and compassion for the pilot, started to turn my attention to my own launch, then heard the cries, "Watch out for the backstop!" and again was distracted as the glider which had spun free and made such a fantastic recovery had, in the process, straightened out and was headed directly towards a big wire screen backstop for the baseball diamond from which we were launching. Wow! Again, by a hair's breadth, the pilot recovered. Whew! This is too much, I thought.

Hey, what's that noise? My winch is running! How come? Oh, yea — I had my foot over the contact switch and when I relaxed after the wild backstop recovery, I stepped down on the contact switch without realizing it.

Gad! This glider is about to pull my arm out of the socket. Almost instinctively I let go, which is what you usually do as the line draws tight.

It was the wrong thing to do. The line was stretched far too tightly, and acted like a giant slingshot. The Big

(continued on page 80)

PEGASUS

by jim wilmot

Tired of aircraft that look like glorified baseball bats? The Pegasus combines a WW II fighter type look with conventional and freestyle pattern performance that will challenge your ability. 50" span, four pound weight, .40 - .60 engines. For the proficient flier only.

Now that you've had a look at the Pegasus, you are probably saying to yourself that this plane would be a nice sport plane, or something to relax with.

If you actually thought this, you are in for a big surprise. The Pegasus is not a sport plane, but rather a rip-snorter of a hot contest ship. All the controls are very responsive, and an incompetent pilot would smear the plane all over the field in a few seconds. It is not an extremely hard plane to fly, but was so designed to be unstable enough to enter spins without a falter, and to snap roll at a tremendous rate. Also, the roll is extremely fast, so as to retain absolute control at the low speeds encountered upon landing the beast. The Pegasus is also a smaller plane than the usual contest ship, being powered with a .50, with 500 square inches. Of course, as you already know, a good contest plane must be a smooth flyer even to qualify, and I am happy to say that the Pegasus fills the bill perfectly.

The Pegasus will do all the maneuvers, including knife-edge flight, and hands-off tailslides. These, however, are just the ground work for free-style maneuvers, such as Lomcevac's, Victory Rolls, and Victory Rolls with four or five snap-rolls tacked on the end. When you combine these fantastic maneuvers with a semi-scalish plane you have an immediate crowd pleaser, and a truly fun plane to fly.

If you are trying to decipher what "scale" plane this is modeled after, you just won't find one, because the Pegasus is a conglomeration of most all WW II types, Mustang, Messerschmidt, Macchi, etc.

You will notice that this version is a "tail-dragger", and if you can remember that far back to your last tail-dragger, you know that they are hard to steer in the wind. This has not been a serious handicap, because to takeoff, you have to taxi downwind, stop, and then takeoff. Now, with a tail dragger, the only problem in taxiing comes when traveling cross-wind, and the takeoff procedure is not performed cross wind, so no problem arises.

Now, for the takeoff. The Pegasus, when given full power, will lift its tail off the ground almost immediately, and after a roll of ten or fifteen feet, is ready to break ground when you apply a slight amount of back pressure. Total takeoff roll: sixteen or eighteen feet! Now that you have broken ground, a very impressive fact hits you, and that is that this beast really tears along. And you better believe it! Since I fly at Denver, a mile above sea level, I use a Super Tigre .56, which gives about the same power as a .50 at sea level. With my .56 powered Pegasus, I can do vertical Victory Rolls, composed of four or five rolls, and still have enough momentum left to do three snap rolls at the top. A very impressive way to gain altitude! Flat out, the Pegasus would be a good contender in the open pylon events, if you use a racing type wing.

With this much speed, the Pegasus performs

beautifully: huge loops, gigantic top hats, and almost goes out of sight on the tail slides. I would suggest, if you fly at sea level, to start out with a .45 and work up from there. Even at 5,280 feet, a Veco .45 gives out enough power to perform all the maneuvers without much strain.

Now that we're up, you should think about coming down again, and you would expect the plane to land like greased lightning. Not so. When you chop the power, and feed in full up trim, the ship will start to slow down. Now get her lined up with the runway, and about five feet up, start feeding in the elevator until at the point of touch down, you are holding full up-elevator. How can this be done, you ask? The reason is that the Pegasus has a 1/8" positive incidence, and a semi-symmetrical airfoil. With this airfoil the Pegasus will not stall abruptly even at full low power and full up-elevator. It will, however, start "bucking" but will not fall off on a wing. The only disadvantage to this foil is that it needs a lot of elevator to do an outside loop, but with the elevators shown on the plans, this is not a problem. Inverted flight is quite easy, and can even be flown at full low throttle!

CONSTRUCTION

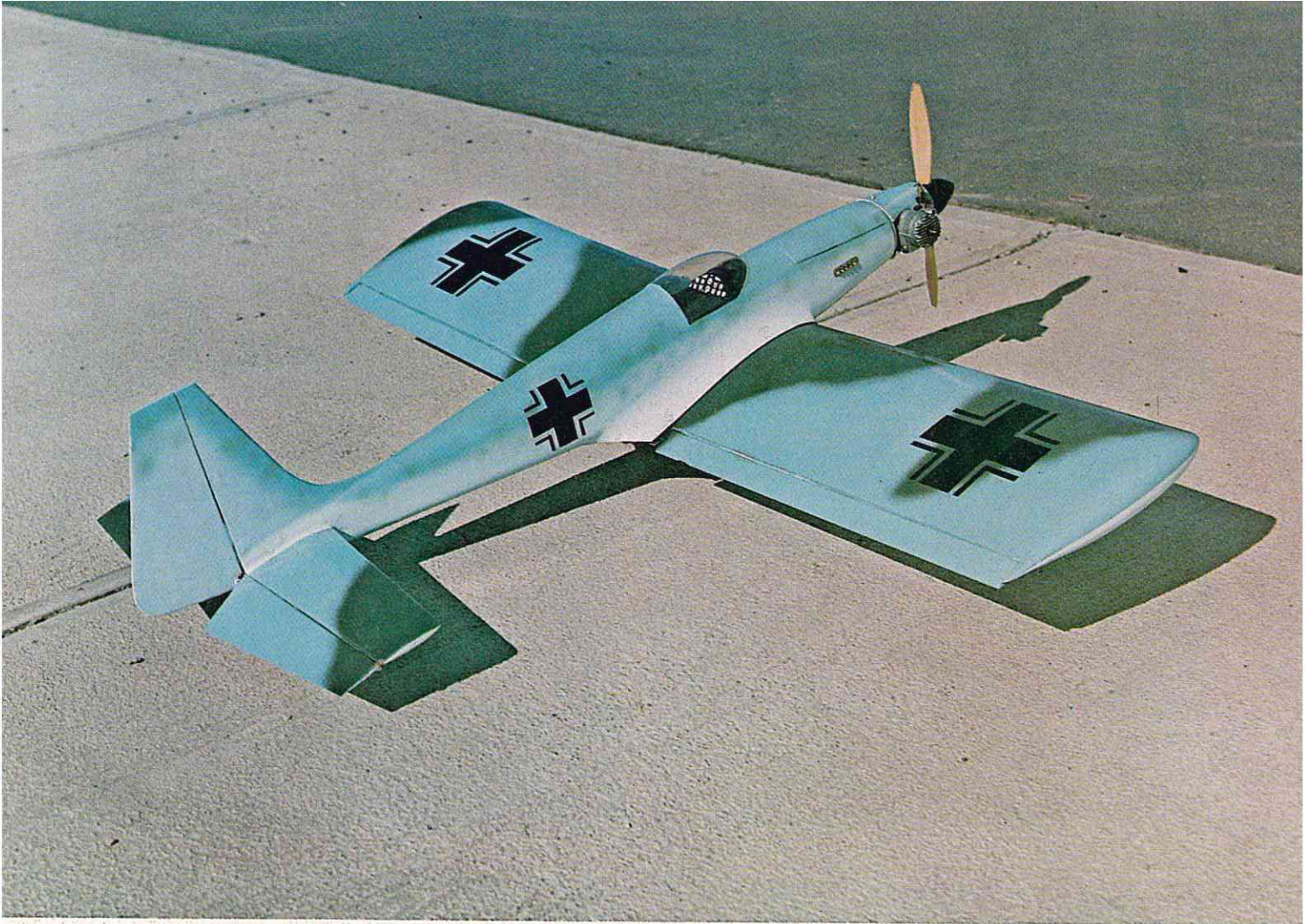
WING

First of all, before you build the wing, you must build a wing jig. This does not mean that you need a forty-dollar building board; in fact, all you really need is two 1/4" steel rods thirty six inches long. If in doubt as to how to construct said jig, notice the wing construction photos, and you will see that the jig takes very little time to make, and will build a very true wing. (RCM Wing Jig).

The second step is to cut out the ribs. In order to obtain a perfect set of ribs, it is necessary to make them by means of the stack method. After you have the ribs cut, and while they are still stacked, drill a 1/4" hole in front and back of the ribs for the wing jig. Then cut out the four lightning holes with a jig saw, and then sand. **Note:** Pick out the lightest wood possible, as the wing should not weigh more than a pound complete with landing gear, servos, etc. The actual assembly of the wing follows normal procedure, so I will not elaborate too fully on the platitudes of wing construction, but I will hit the extraordinary details.

The landing gear blocks are made out of 1/2" x 11/16" x 6 1/2" mahogany blocks. Also, glue 1-1/16th plywood reinforcement per rib. I will guarantee that these landing gear blocks will not split or break out, as they have survived a spin that spun several feet closer to the ground than it should have!

If you are going to build a contest machine, you must build the fuselage fillets, in which case you cannot use rubber band hold-downs, so nylon bolts are the only alternative. So, be sure to build-in the bolts, as you will



have to bolt the wing firmly onto the fuselage to hold the plywood foundation on the fillets. At this point, fiberglass the center section with 3" wide fiberglass (be sure to use fiberglass resin for strength, as the fiberglass is the main component that holds the wing together).

COVERING

The wing at this point should weigh approximately ½ lb. and is strong enough to be covered with MonoKote and not become a bag of balsa, but I use good old silk and dope, as it strengthens the wood, and as yet, MonoKote does not come in camouflage colors. Whichever method you use, remember to keep it light.

LANDING GEAR

The landing gear is BK's coiled main gear which softens the jolts of bad landings quite adequately. You can make the landing gear covers out of gas-can stock and then just solder them to the landing gear strut.

SERVO INSTALLATION

I hope by now, you have noticed that the older, large-style servos will not fit in the Pegasus, and even when using small type servos, the fit is rather snug. So, anyway, when you go to put in the aileron servo, just remember to get as close to the bottom sheeting as possible. Also, the aileron torque rods should be located so as to be about 1" apart, to minimize slop in those huge 1½" ailerons.

STABILIZER

The construction of the stab is similar to the old Taurus and Tauri-type in that the basic framework is built,

and then a top and bottom stringer is added, then the whole mess is covered with 1/16" balsa. This is not a hard stab to build, but make sure that there are no warps in it, and that all the wood has been kept to a bare minimum.

ELEVATORS

The elevators are made out of light ¼" sheet, and are shaped according to the plans and are very conventional except for their size and tie bar. The tie bar is actually two halves joined in the center by a piece of brass tube (soldered, of course). This enables you to get the elevators perfectly square, and with elevators that size if they are just a tiny bit off, true hands-off inside and outside loops will be impossible.

When you go to install the stabilizer, glue it in with Titebond, and then go back and reinforce the joints with fiberglass cloth and resin, and there is not much of a fuselage to glue to back there.

FUSELAGE

Now comes the hard part, and I hope that you have made the wing and stab first, so you will feel obligated to finish the fuselage. The basic fuselage is quite easy to make, but the sheeting of the turtle decks takes some patience and care to do properly. Anyway, on with the construction. First, make the basic fuselage box, which consists of the fuselage sides and main formers with which you should encounter no problems. Now, the next step is to cut out the upper and lower turtle deck formers. The formers are

(continued on page 84)

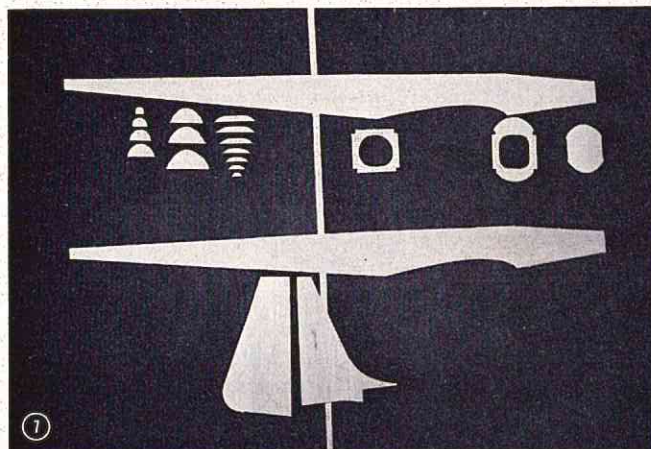
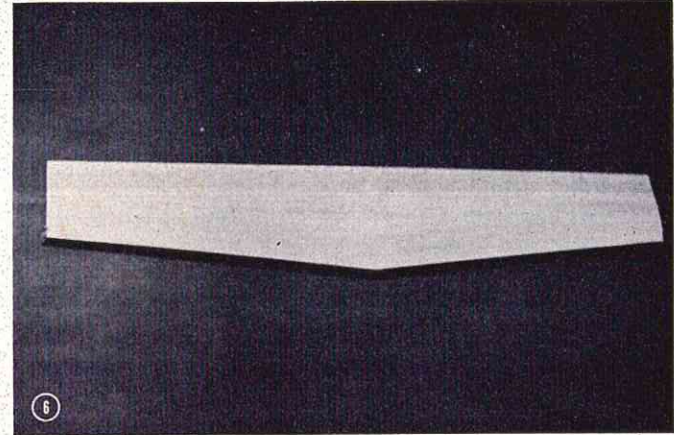
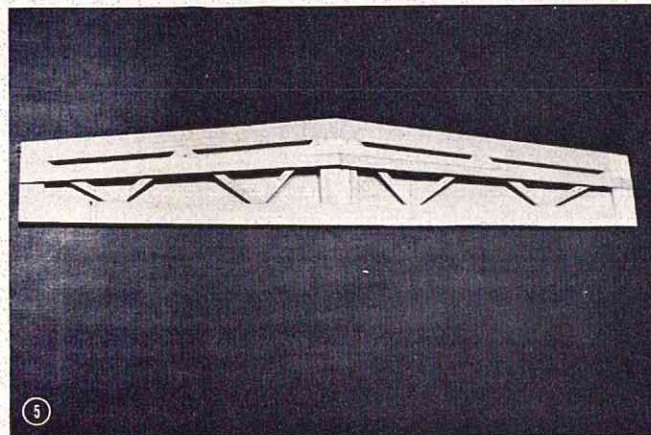
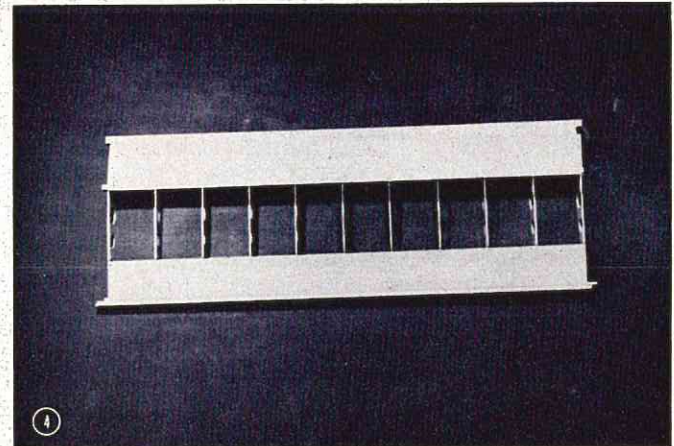
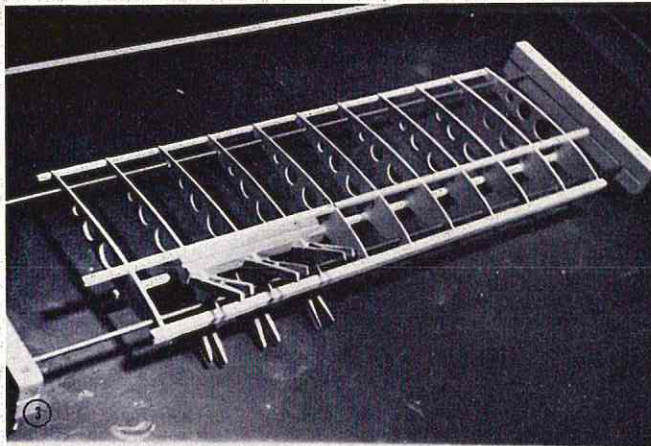
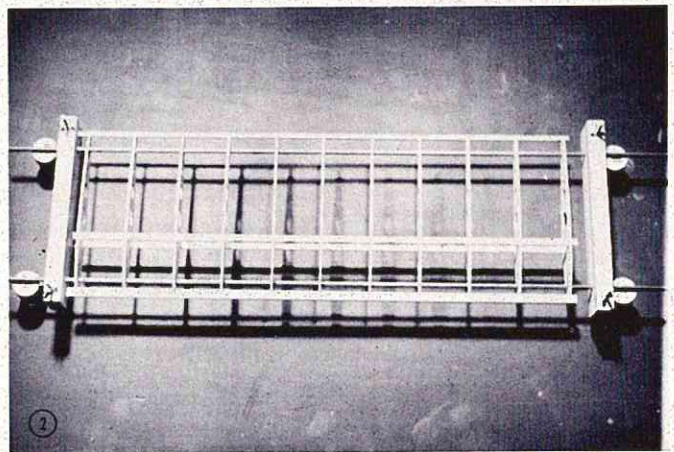
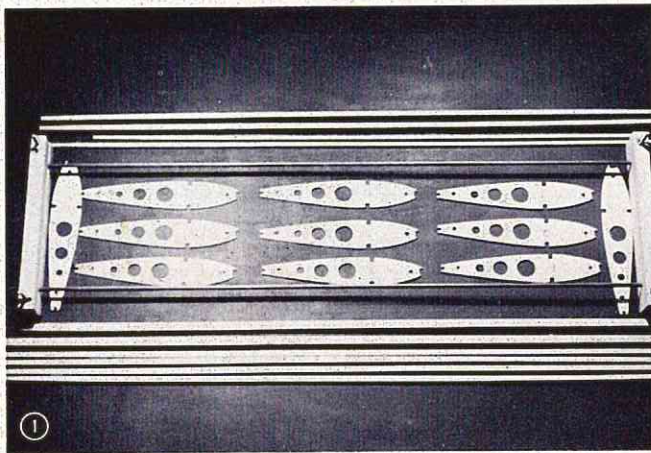
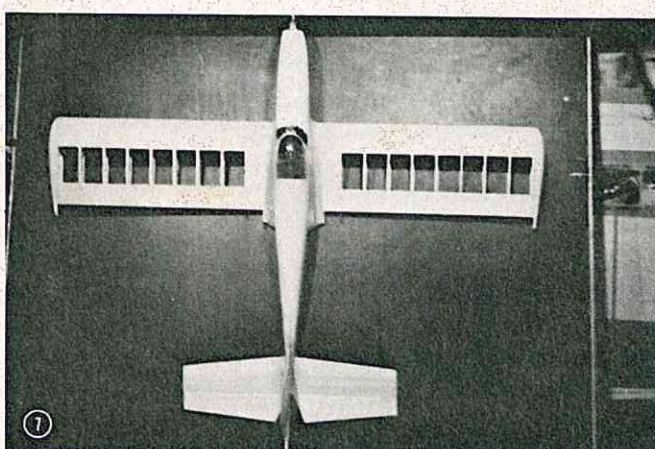
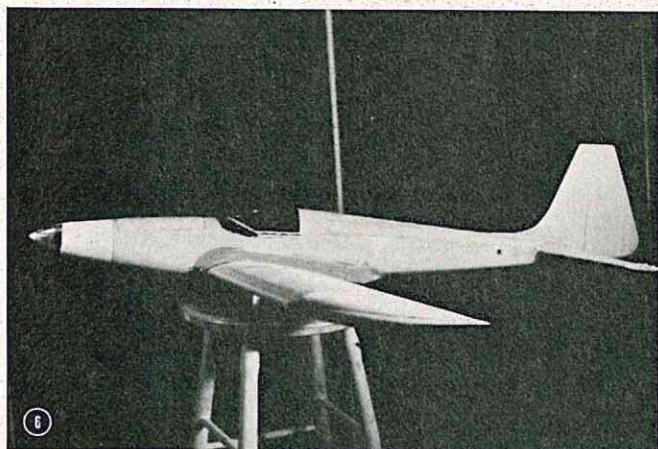
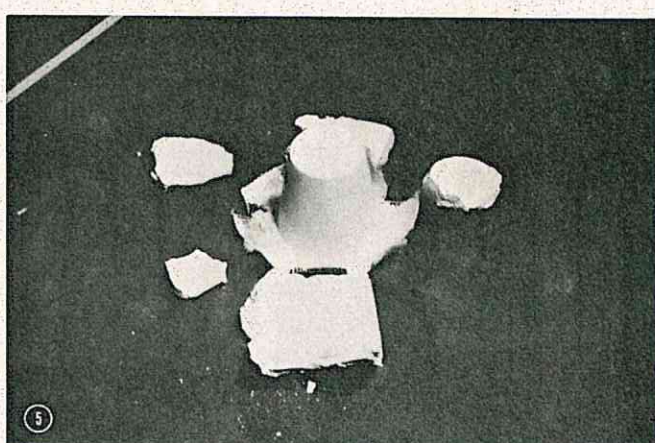
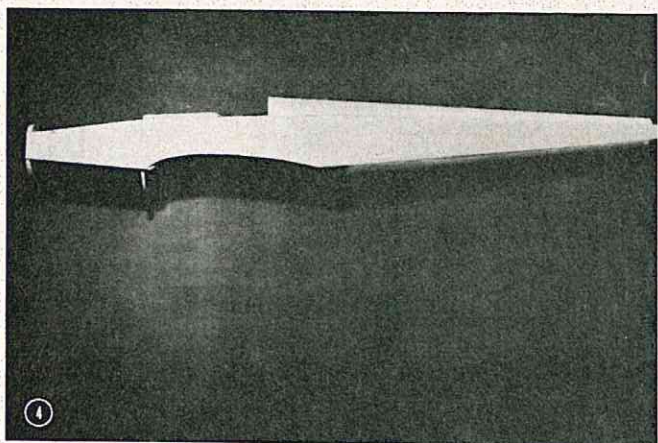
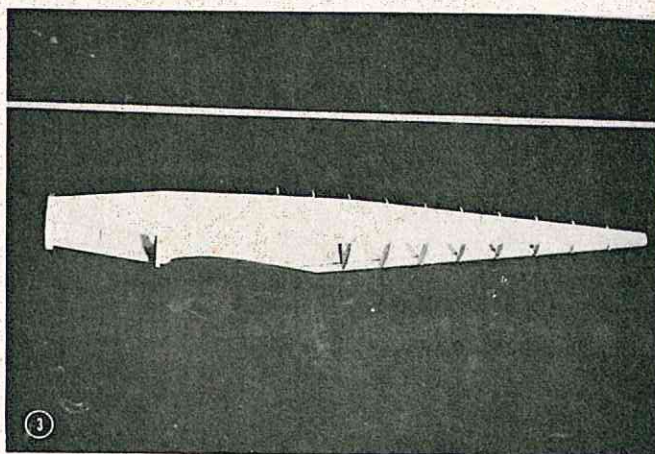
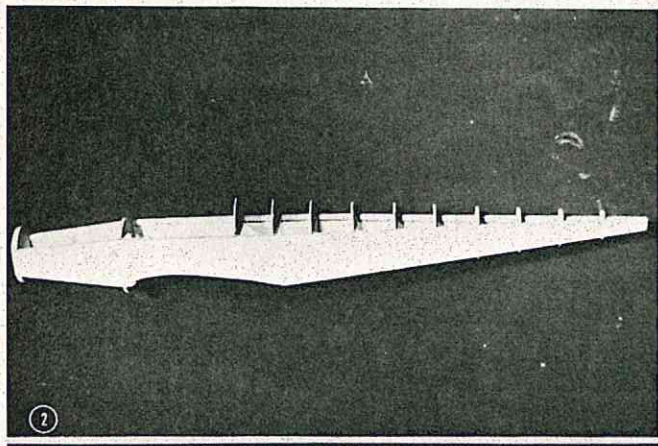
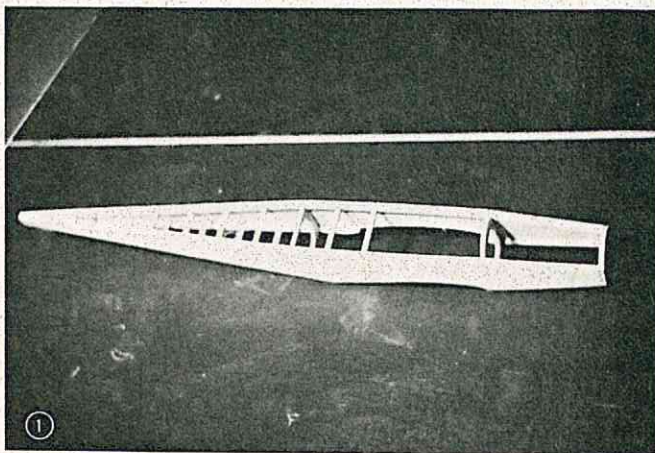
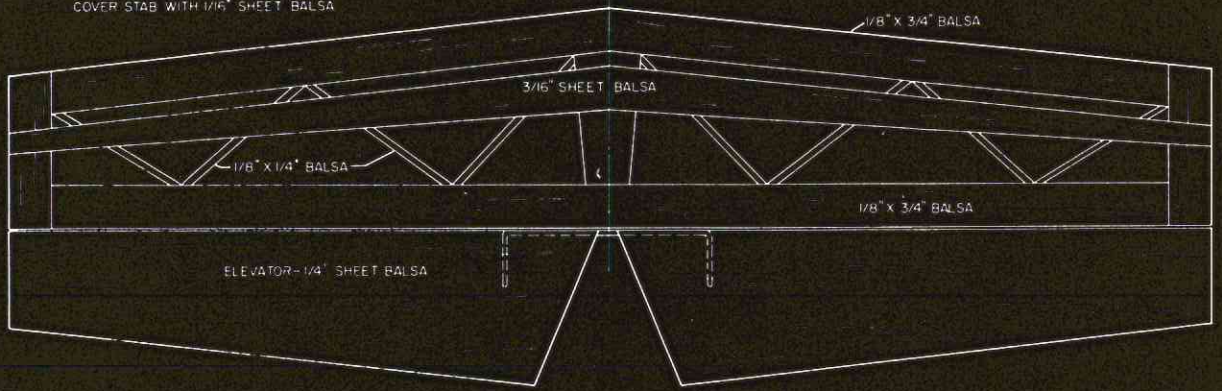


PHOTO 1: Wing ribs cut and ready for installation on wing jig. PHOTO 2: One wing panel on jig and partially completed. PHOTO 3: Installation of landing gear blocks and plywood doublers. PHOTO 4: Wing sheeting added. PHOTO 5: Stabilizer framework in place on bottom sheeting. PHOTO 6: Stabilizer fully sheeted. PHOTO 7: Formers are needed for majority of turtledeck along with fuselage bulkheads.

PHOTO 1: 1/4" cross braces in position. Fuselage bulkheads glued in place. Firewall epoxied in place. **PHOTO 2:** Top formers in place. **PHOTO 3:** Bottom formers glued in place. **PHOTO 4:** Fuselage sheeting completed. **PHOTO 5:** Cowl and broken mold. **PHOTO 6:** Making the wing fillets. **PHOTO 7:** Finished fuselage.



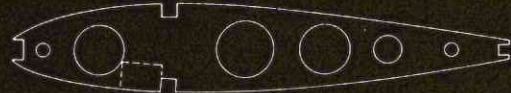
COVER STAB WITH 1/16" SHEET Balsa



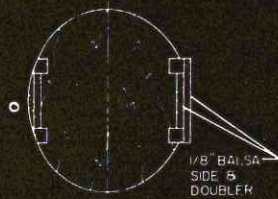
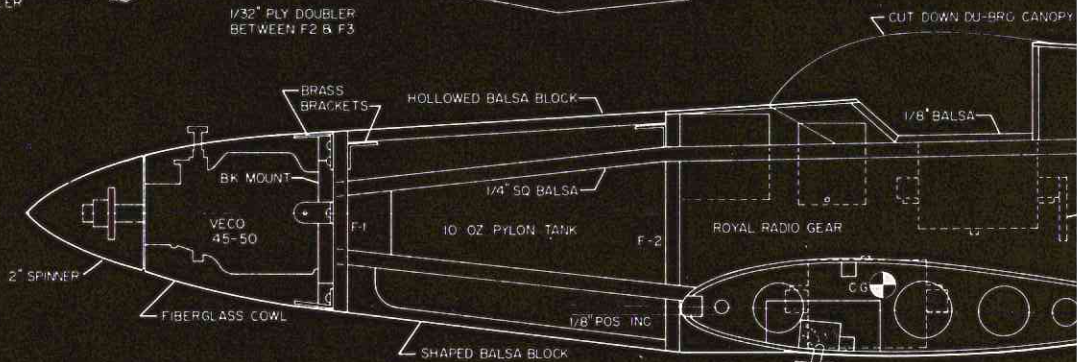
TIPS CUT FROM 2" x 1-1/2" x 1/2" SOFT Balsa BLOCK



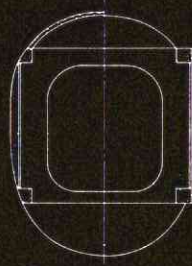
L/G MOUNT BRACE - 1/16" PLY 6 REQ'D



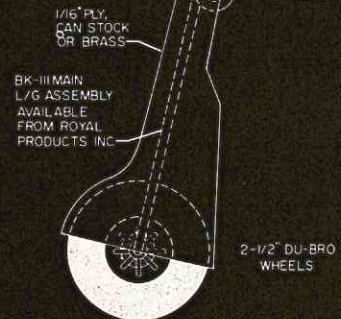
RIb TEMPLATE 3/32" SHEET Balsa 22 REQ'D - 6 WITH L/G CUTOUT (DOTTED) ELIMINATE FRONT LIGHTNING HOLE ON THOSE 6 RIBS



F-1 - 1/4" PLY



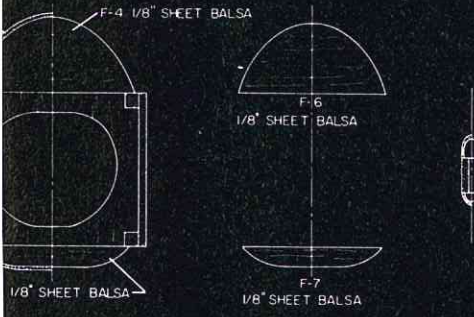
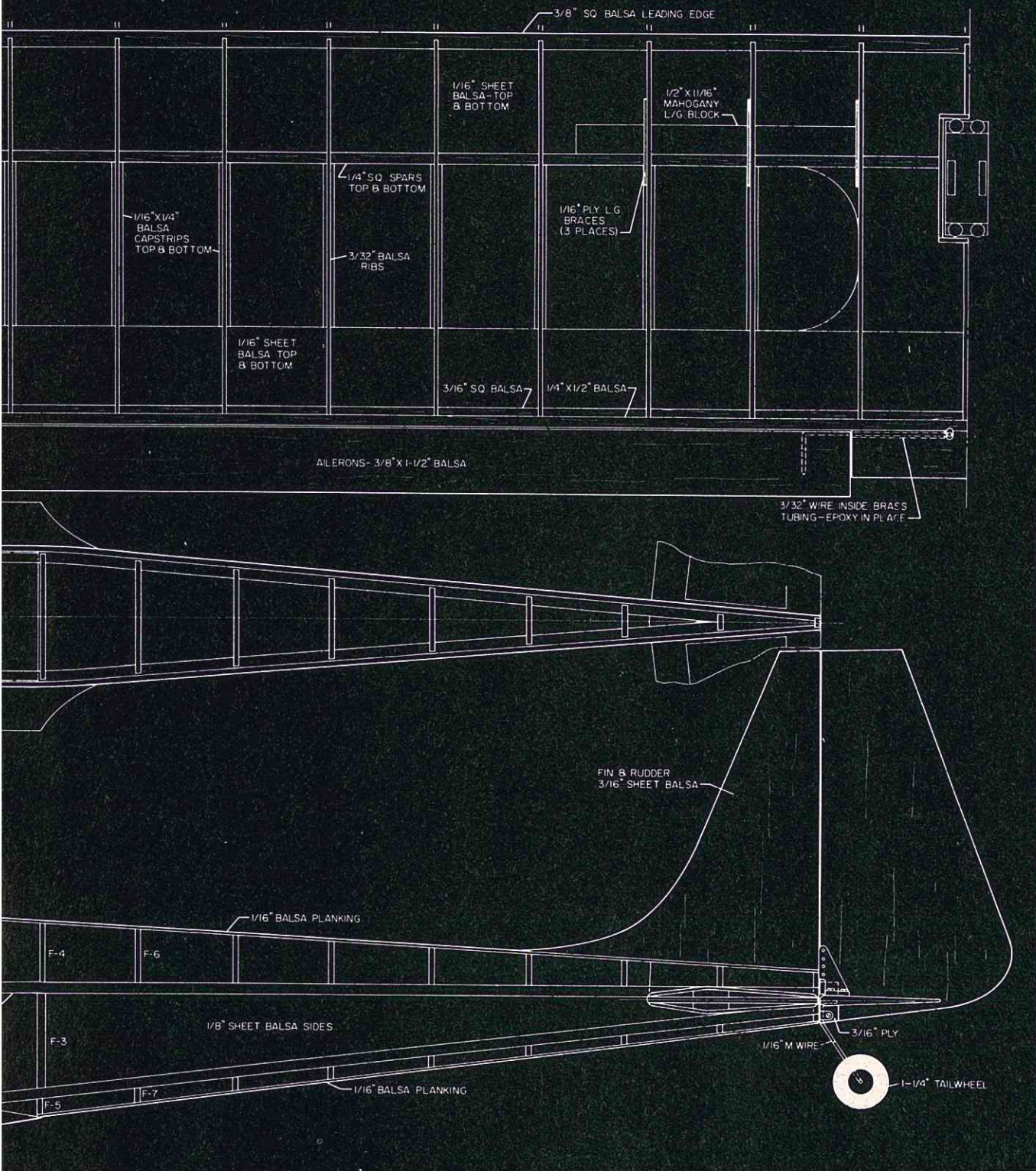
CROSS SECTION AT F-2 1/4" HARD SHEET Balsa



F-3 3/16" SHEET

1/8" Balsa

1/16" PLY



FOR CORRECT FORMERS USE THE STACK METHOD USING F-6 & F-7 AS THE LARGEST, STACK THE NUMBER OF PIECES REQ'D & SAND DOWN TO THE TAIL SECTION SHOWN USE 1/8" SHEET Balsa

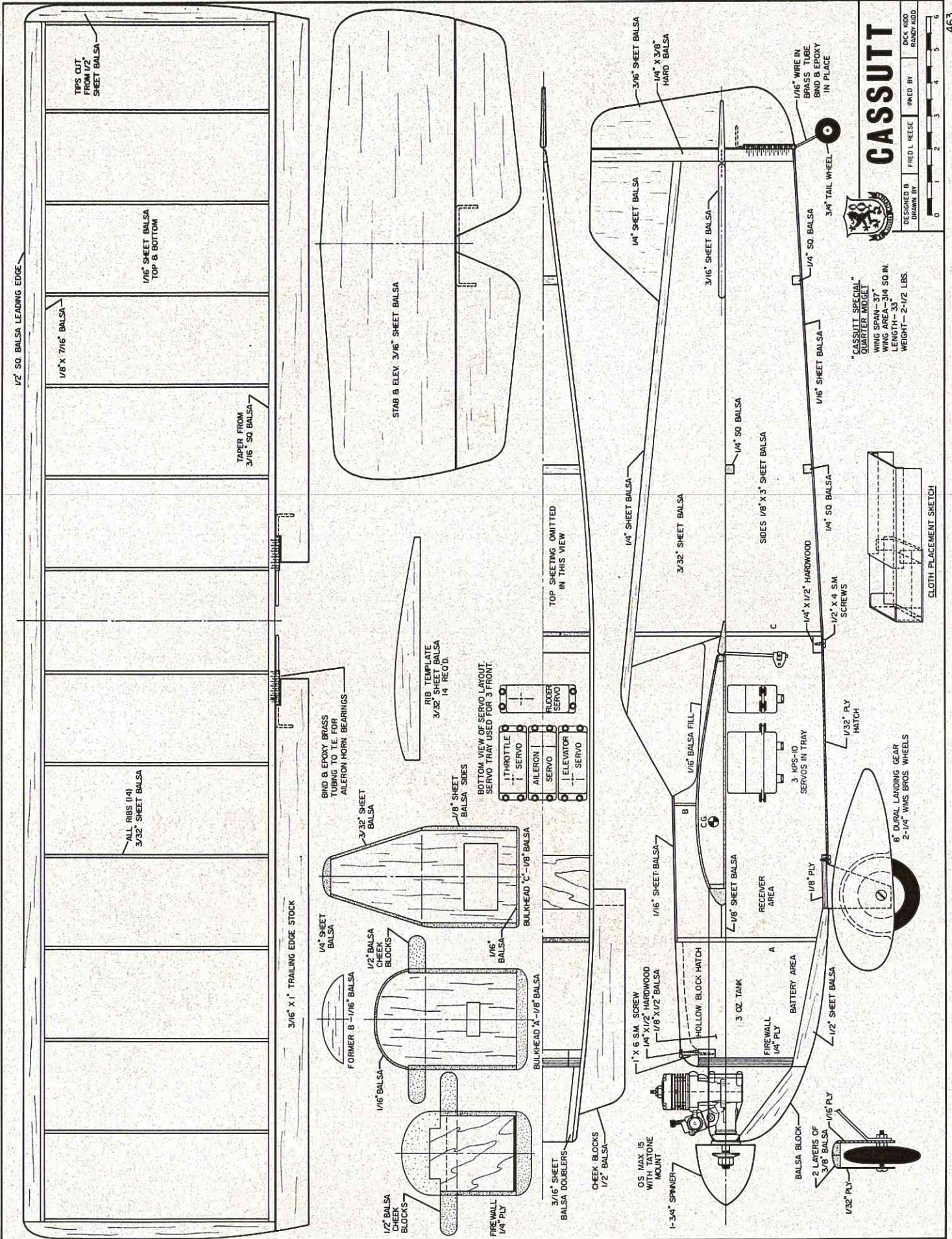
LENGTH 43-1/2"
 WING SPAN 5"
 WING AREA 535 SQ IN
 WEIGHT 4 LBS
 ENGINE SIZE 45-56



PEGASUS mk 4

DESIGNED & DRAWN BY JIM WILMOT INKED BY DICK KIDD RANDY KIDD





CASSUTT SPECIAL
 QUARTER WING
 WING SPAN—37"
 WING AREA—314 SQ IN.
 LENGTH—33"
 WEIGHT—2-1/2 LBS.

DESIGNED & DRAWN BY
 PRED. REISE
 INKED BY
 RANDY KODD

0 1 2 3 4 5 6

CASSUTT SPECIAL

DESIGNED BY FRED REESE

FOR THE NEW RCM QUARTER MIDGET EVENT.

THE CASSUTT IS A ONE-PIECE, .15 POWERED AIRCRAFT

THAT IS AS QUICK AROUND THE PYLONS AS IT IS TO BUILD.

Recently our club, the Norair Modelers, adopted the RCM Quarter Midget rules and has begun racing. And, in so doing, we have become aware of some factors. First of all, speed is important, but you must go fast for ten laps and do it consistently. The airplane must be rugged and be able to survive minor mishaps without major structural damage.

The Cassutt is a one-piece, OS .15 powered, mid-winged racer. It was designed to go fast and it does. It was also designed to be as simple, rugged, and functional as possible with quick access to the engine, radio and fuel tank. Building time was one week of evenings using Super MonoKote as the finish.

It is not, however, a beginner's airplane, and proportional radio equip-

ment is required. My first quarter midget used coupled aileron and rudder and could be used here, but having separate rudder control is better. The Cassutt is too fast and control requirements are too precise for Galloping Ghost. It is a competitive machine.

The Cassutt is very fast and fun to fly as a sport airplane. It is fully aerobatic and will knife edge easily. Large, graceful loops and Cuban Eights are possible as there is plenty of power. The small size allows the Cassutt to be easily transported ready to fly.

CONSTRUCTION

FUSELAGE: The fuselage can be built in two ways. You can use plywood doublers from the firewall

through the radio compartment or you can build a balsa shell and fiberglass the inside. I prefer the latter since it is stronger and the additional weight is easily compensated for by the use of Super MonoKote as the finish. I said the airplane must be rugged: Twice I have cartwheeled this airplane with no damage! (All photos were taken after flying).

I began by cutting the two sides, the firewall and bulkheads A and C. Using Devon 5-Minute Epoxy, rubber bands, and clothespins, glue the tail ends together and the firewall in place, using the bulkheads only to give the proper bow to the sides. When set, glue only bulkhead C into place. You may remove A for now. Add the rudder/post, 1/4" sq. crossbraces, turtle
(continued on page 69)

Building time for the Cassutt is one week, including Super MonoKote finish.



COLD DUCK

By Mike Dailey

(EKTACHROME TRANSPARENCY BY MIKE KOMETZ AND WELDON DAGGOFF)

An outstanding aircraft for the sport flier, complete with retract gear system.

Cold Duck is a sport pattern design, conceived to take full advantage of retract gear. I have tried to keep the fuselage as streamlined as possible, without sacrificing space for the radio gear and engine.

The fuselage is simple in design, and easy to construct. The fuselage is built of contest balsa, and is constructed to fly, not be resistant to crash. I could never understand why a modeler would give up performance, for the allowance of crashes. In most cases, if you beef up one area, it will just break somewhere else. So, why not just build it to fly? The wing, is the well proven 18%-15% symmetrical taper. With the gear up, the aircraft is very clean, and flies fast, and smoothly. It will do the most beautiful slow roll. This is a result of clean lines, and having that dirty old landing gear out of the way. As far as the rest of the maneuvers, the Cold Duck handles them like an old pro.

The retract unit is Selectronics CAS gear. This gear, of excellent design, is the answer to a reliable landing gear system. The struts in the original units were removed and modified legs formed to incorporate a spring coil as shown on plans. These legs can be ordered from me, for \$3.95, which includes a set of right and left mains, postage included. The retract gear, on the Cold Duck, is actuated by a modified 180 degree S4A servo. The servo has a separate power supply, and is actuated by a double-pole, double-throw, slide switch. The slide switch is moved by a fifth channel servo, thus giving a segregated system for the landing gear. The latter can be

actuated directly from the fifth channel servo without undo strain. If by some bizarre accident, the landing gear was to jam, the airborne power supply could be discharged, and the result would be loud sobbing noises and tears. I have never had a landing gear jam, (yet), but I have worked out a system where it is only necessary to carry two to three Nickel Cadmium cells, depending upon the servos used. The schematic shows circuitry for two different servos, and includes transistors used as diodes to prevent feedback from one limit switch to another.

The schematic design eliminates the need of a center-tapped power supply. This system could be used with the RMK gear servo, or with other servos which have limit switches. The gear could also be activated pneumatically, which has been used in my area. Of course, this is another article in itself. The foam wing used on this aircraft can be cut from the templates on the plans or can be purchased for \$7.50, from Howard Engineering, 12316 Third Avenue N.E., Seattle, Washington. Phone EM 4-9354. Howard Engineering is the originator of many fine fiberglass kits.

CONSTRUCTION

Fuselage

Start construction by drawing a straight line down the center of a lightweight $\frac{1}{2}$ x 4 x 36 inch balsa fuselage back. Cut out formers F1, F2, F3, and F4, marking a center line on the top edge of each former.

Epoxy former F1 and glue the



other formers on their proper stations on the center line. Be sure the formers are 90 degrees to the fuselage back. Next, cut out the fuselage sides from $\frac{1}{8}$ " x 4 x $4\frac{1}{4}$ " balsa. Glue $\frac{1}{2}$ " x $\frac{1}{2}$ " triangles on the fuselage sides and $\frac{1}{8}$ " balsa doublers. Be sure to make one right, and one left. The second doubler which is at the wing saddle only, will be installed later. When the formers have dried on the fuselage back, the sides can now be placed on the fuselage back, allowing the sides to take a natural curve around the formers. Use epoxy at F1 and glue at the other joints. Epoxy in $\frac{1}{2}$ " x $\frac{1}{2}$ " triangular stock behind F1. Glue on the $\frac{1}{4}$ " x 4" bottom sheeting. The wing saddle doublers can now be installed. The $\frac{1}{8}$ " x $\frac{1}{2}$ " trusses can also be installed. Glue the $\frac{1}{2}$ " x 4" chin block in place. Locate the center



of the nose for the 1/16" ply ring, and tack glue to the two fuselage sides. Fill in the remaining openings at the nose with balsa blocks and triangles. The engine opening will be cut out after shaping. You now have a large square block, sitting on your workbench. It looks terrible! With the triangular pieces in the corners, the fuselage will come out very round and streamlined. As you cut down into the corners the edge of the triangle will start to appear. You can judge your thickness by the width showing through.

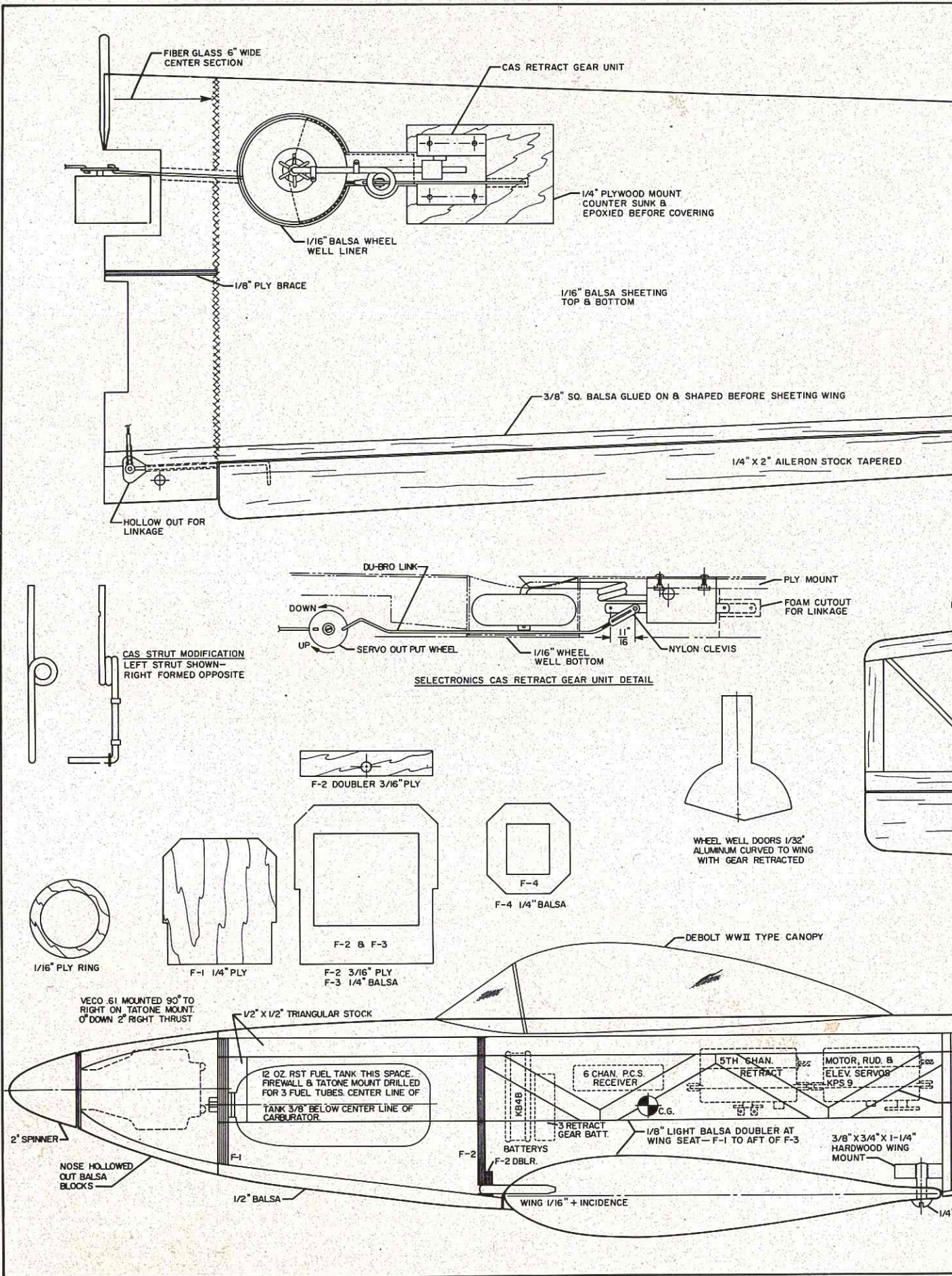
The tail wheel block can be installed. The tail wheel is steered from a link to the rudder horn. Cut out an opening in the right side of the fuselage as shown on the plans for the engine compartment. Place a Tatone mount in the cowl and carve out the inside wood blocks for proper clear-

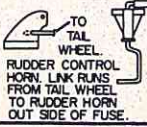
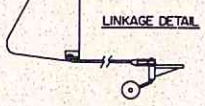
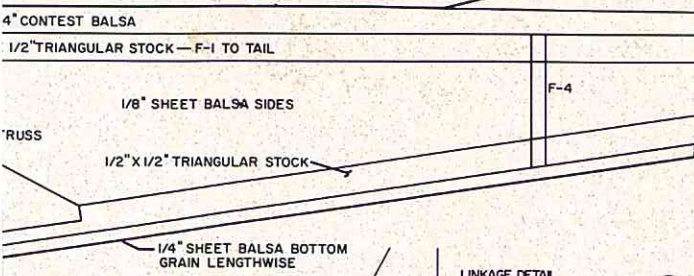
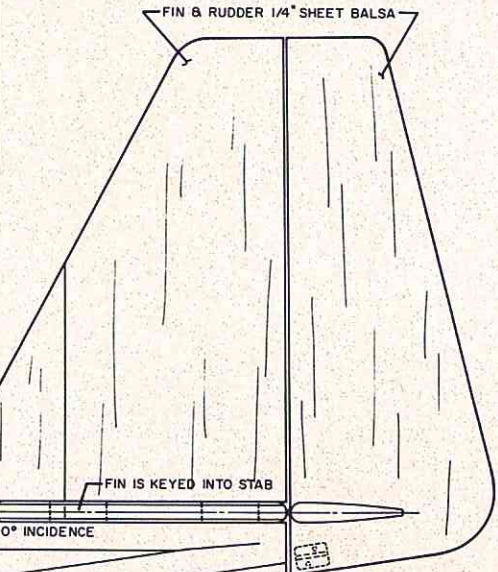
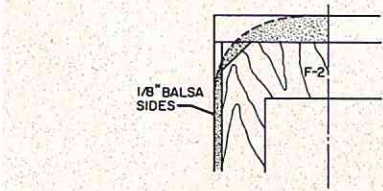
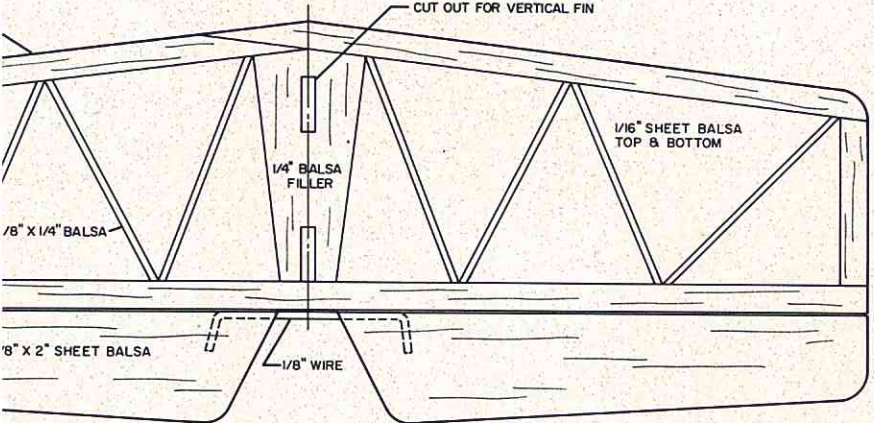
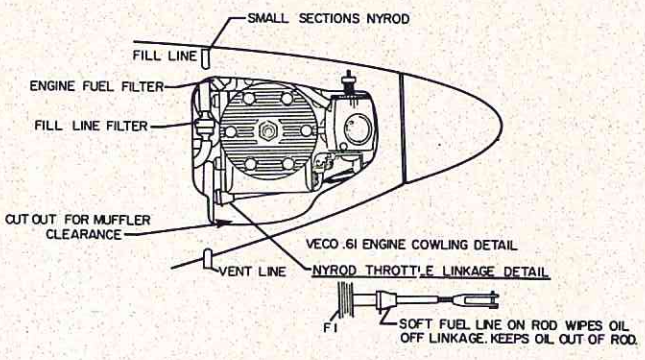
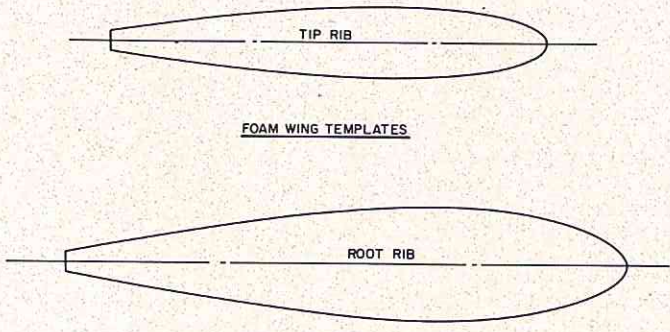
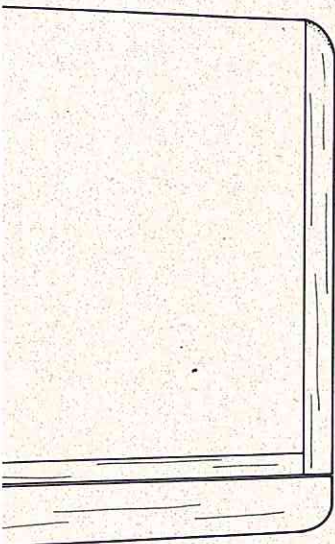
ance. Place the engine in the compartment. Place the propeller and spinner on the engine, allowing adequate clearance between the spinner and nose ring. Noting position of your engine mount, allow approximately 1/16" clearance between the firewall and rear of the mount. Remove both the engine and the mount. Install the engine on mount in the position previously noted. Remove the engine from the mount, place the mount inside the cowl, bolt the engine into the mount, and place the fuselage with the nose in a vertical position. Put adequate shim between the nose ring and the back of the spinner. Adjust these shims for proper thrust settings and spinner clearance. Pour a small amount of polyester resin into the engine compartment, allowing it to run in between the firewall and the

back of the mount. When the resin has cured, remove the engine, drill the firewall, and drill for your mounting bolts and 3 holes for the fuel tank tubes.

Horizontal and Vertical Stabilizer

The rudder and vertical stabilizer are cut out and sanded to shape. The horizontal stabilizer sheeting is cut out and edge glued together. Lay this sheeting on a flat board. The 1/4" x 1/2" pieces are epoxied on top of the bottom sheet. The trusses and center filler are epoxied in and the top sheeting is then epoxied on top of the "sandwich." (Epoxy prevents warpage of the stab). When dry, sand to shape. Elevators are cut out, sanded to shape and drilled for a connector wire. Make sure that each elevator is on the same plane. (Epoxy the connector wire). At
(continued on page 93)





WING SPAN 61"
WING AREA 656 SQ. IN.
LENGTH 51-1/2"
WEIGHT — 6 LBS. (APPROX)
ENGINE — .61 CU. IN.

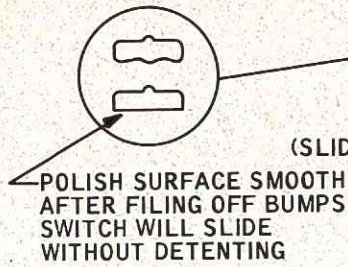


COLD DUCK

DESIGNED & DRAWN BY MIKE DAILY INKED BY DICK KIDD RANDY KIDD

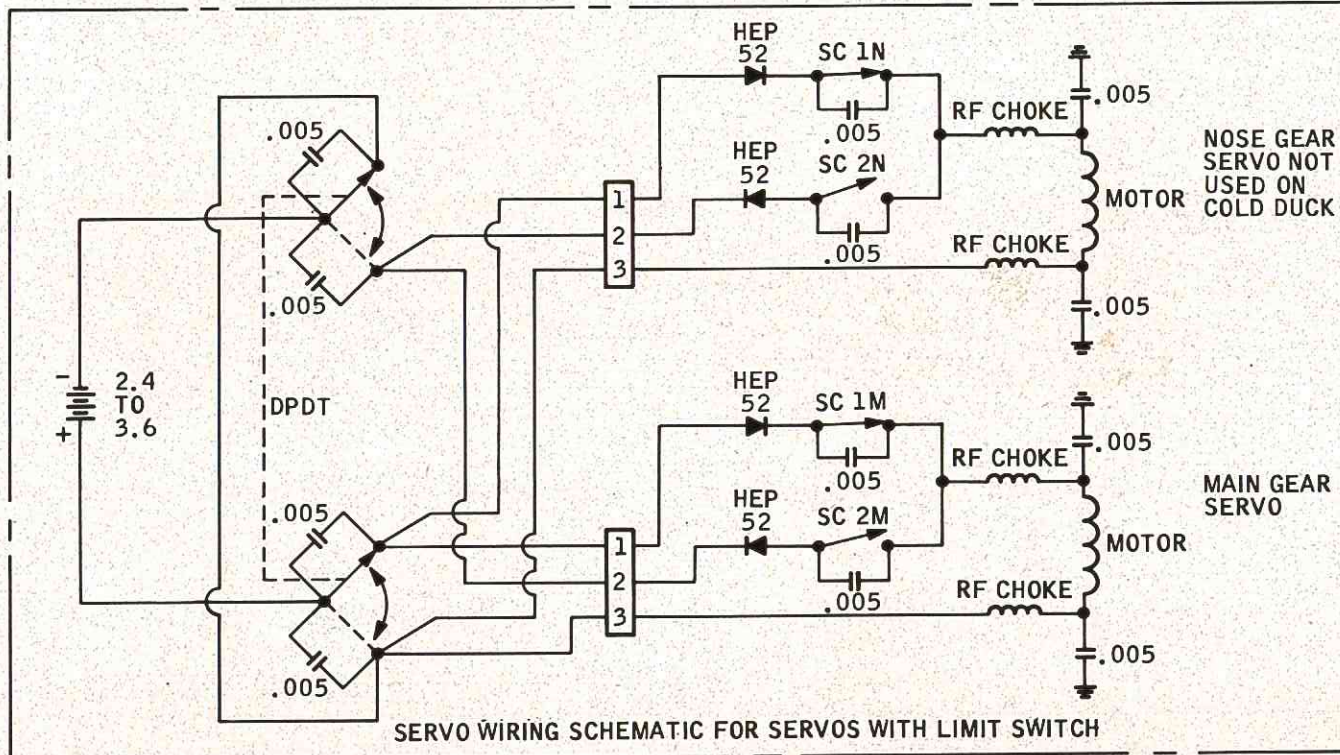
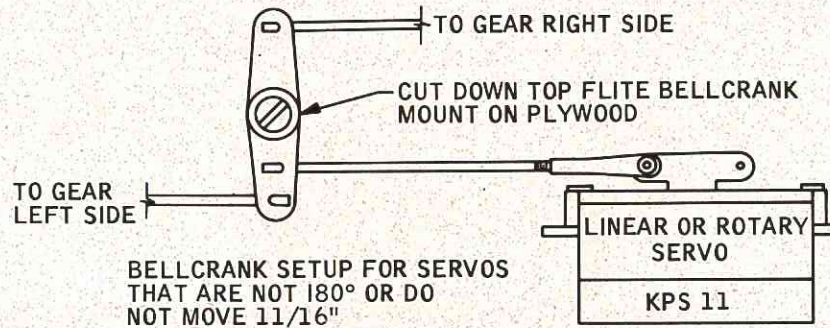
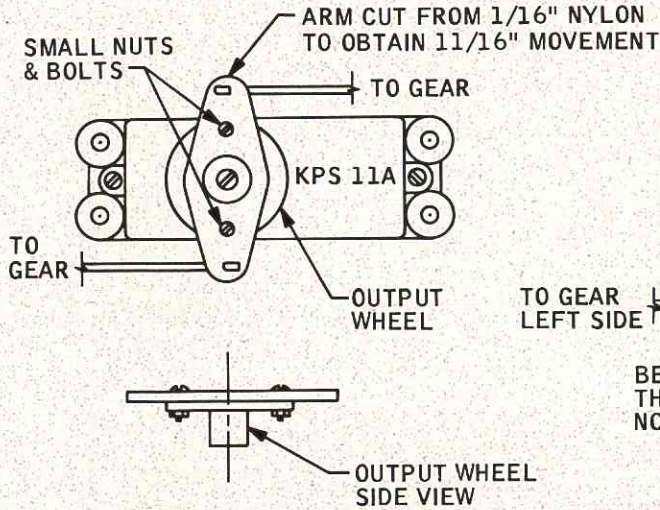
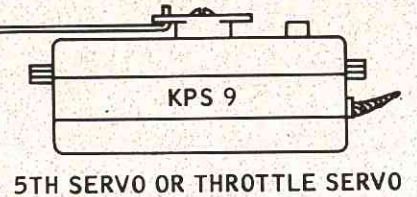


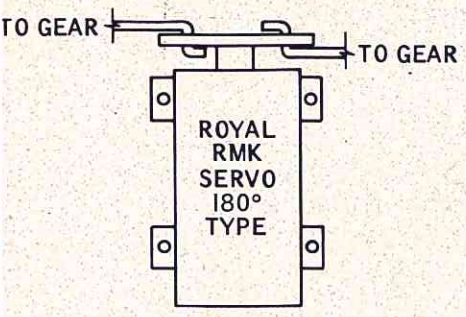
CONTROL SWITCH CONTACTS MODIFICATION



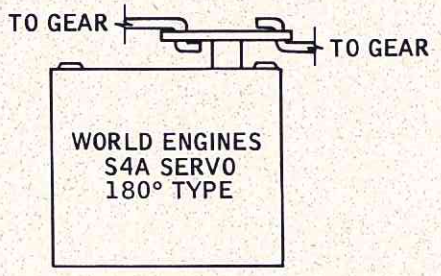
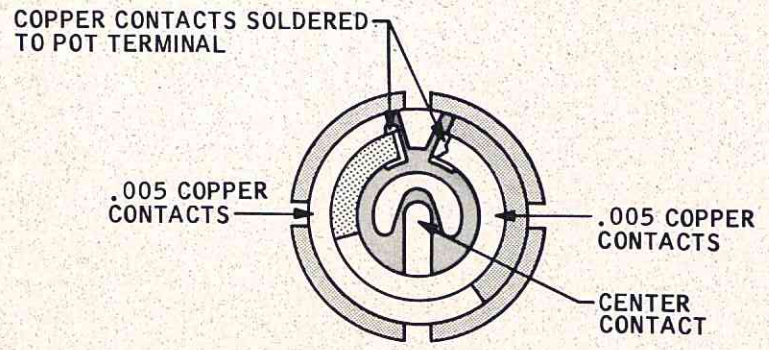
CONTROL SWITCH (SLIDE SWITCH DRAWN FULL SIZE)

WHEELS COLLARS FOR ADJUSTMENT DO NOT ALLOW SERVO TO LOCK ON SWITCH WITH FULL MOVEMENT



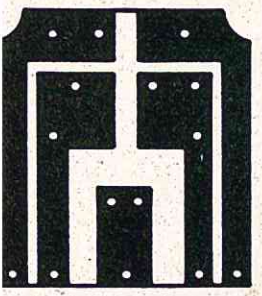
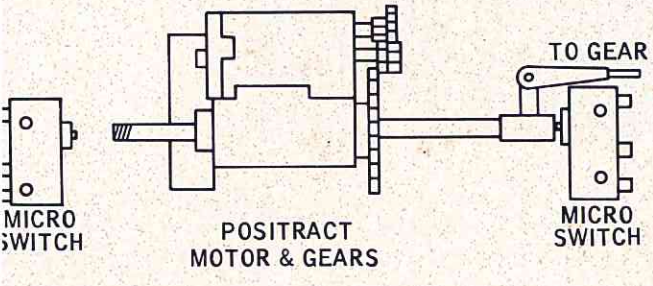
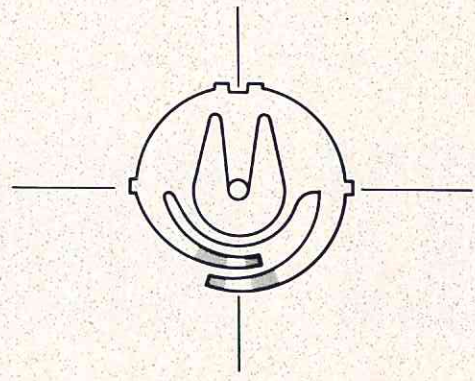


S4A LIMIT SWITCH DETAILS

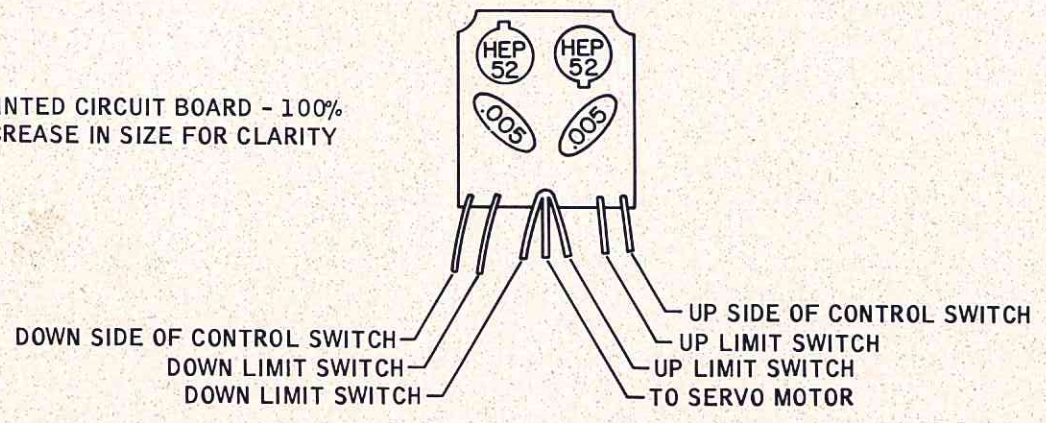


FEED BACK POT S4A TYPE MODIFIED
NOT TO SCALE

THIS TYPE POT ALSO USED IN OTHER TYPES OF SERVOS



PRINTED CIRCUIT BOARD - 100% INCREASE IN SIZE FOR CLARITY



COLD DUCK
Schematic for Retract Gear Servo Wiring and Linkage
 by Mike Dailey

After twice washing my Little Stick in the city reservoir next to our flying site, I decided it was to be retired to pontoons. Then I'd at least have a reason for wading after it! I wanted another, but like most modelers, I found some design changes desirable. Since I am rather rough on model aircraft, the changes had to strengthen as well as beautify it. Also, it was my turn to put in an installment in the SEA war. Travel was to be by military aircraft; therefore, the changes had to make it more easily packed and carried.

I started with a stock Midwest kit from Nashville Hobby Center. Personally, I hate to build wings, but this wing is simple. Build it according to the plan with two

silk, as desired.

The fuselage comes in for the greatest number of changes, mostly minor. The biggest change was the addition of side motor covers extending forward from the firewall. This eliminates some of the boxy look. I used maple motor bearers extending into the tank area to mount an Enya .29BB and brace the sides at the same time. Before starting, it is a good idea to check the firewall for squareness and the fuselage sides for congruency.

Determine the desired thrust line and notch the firewall for the bearers; extend them two inches into the tank area and taper the aft ends. Shape the sidewalls from 3/32" stock. I mounted the Enya lower than

lation. Former F3 and F4 were doubled on the bottom only. A 3/8" hole was centered 1/2" down from the top of F3 for the single wing dowel insert. Doubling the top of F3 and F4 was left until the wing was to be seated.

Although not actually part of the fuselage, the changes to the vertical and horizontal stabilizers must be finished before it can be completed. Punch out all the parts; then, throw away the rudder or re-glue it into its hole in the plank. Fit the vertical stab to the fuselage, and determine a suitable sweep from the top deck to the tip. Using that handy can cap, trace and cut a new tip curve. Square off the horizontal stab tips; cut two wedges from stock and glue to the leading

THE UGLY AMERICAN

R.L.
ANDERSON

exceptions. One, for appearance, reverse the tip formers; cut and sand a new curve on the new leading edge. A half dollar makes a nice tip curve, but how many RC hobbyists have one left in their pockets? Use a handy can cover, instead. Eyeball the new tip profile formers to suit; cut the ailerons to the new tip sweep angle, and cover.

Next, for packing ease — no protruding dowels, take the doubled center rib, W1A, and trace it twice on 1/16" ply. Cut a 1/4" dowel twice as long as W1A. Place the dowel on W1A angling it from under the leading edge notch to under the top main spar cutout. Mark and remove the material covered; glue dowel, rib pieces, and ply doublers together as a sandwich. Install as the center rib as per plans and you have the front wing attachment point. Double the trailing edge with ply and drill for two 8-32 nylon screws. Complete the wing and cover with MonoKote or

shown on the plans. This allows a lower tank mounting but less prop clearance. The gain was in mounting the nose gear. I mounted the gear on DuBro nylon blocks with the steering arm below and outside the fuselage; the tank leads between them; and a collar above the top block to retain the gear. This allowed me to remove the nose gear more easily for packing.

With the thrust line lowered I found excessive exhaust dumping inside the cowl. I just happened to have emptied the amber fluid from a Lone Star can; thus, with a little cutting, bending, and solder I had a Lone Star Extender for the Enya. If you work it right you can mess up the first one.

Double the fuselage sides with 1/32" ply to former F4 for added strength. The aft body formers — F6, F7 — were cut-out more and doubled with 1/8" strip balsa top and bottom. This made for easier pushrod instal-

edge. Trial fit it with its new swept edge to the fuselage. Mark where it intersects the fuselage sides and square it off between these points. Mark the fuselage for the new leading edge intersection and remove the overlapped planking. Insert ply pieces for the screw head support Center the elevator and cut to the more narrow width.

After installing the vertical stab, epoxy in the blocks to be tapped for the 4-40 nylon screws — if you want to remove the horizontal stab that is! Complete the fuselage and cover it, stabs, and elevator. Use some stock material or the original rudder and plank to take an artistic whack at a new rudder. Keep the area approximately the same as the original.

Epoxy a 3/8" maple bearer across the front of F4 to be drilled and tapped for the nylon wing screws. While that is setting up, cut two pieces of 1/8" ply about 1" wide and slightly nar-



Take one **MIDWEST PRODUCTS 'DAS LITTLE STIK KIT;**
 two maple motor bearers; a 2" wide piece of 3/32" balsa;
 and some miscellaneous screws and bits of plywood, and you have
THE UGLY AMERICAN

rower than F3. Drill 1/4" holes through the center at about the angle the wing dowel will penetrate these pieces. Wax the protruding wing dowel and epoxy one ply piece to each side of F3 —after insuring the wing is centered and true to the fuselage. This will double the top of F3 sufficiently to hold the wing stress. Another piece of maple bearer across the forward side of F3 will provide additional strength and a suitable nut plate for the hatch screws, again 4-40 nylon. When the epoxy has set, trim off the excess dowel flush with the forward side of F3.

When the wing, stabilizer, and hatch cover have been covered with MonoKote, cover temporarily with Saran Wrap and

seat into a bead of Silicon Seal. To get the most benefit from nylon wing attach screws. They must not have any space in which to bend or give. For this reason make sure the maple nut plate on F4 and the trailing edge ply doubler are in good contact with the wing seated.

Nylon material punched with 1/16" stationery punch was used for hinges. Two or three holes on each side of the hinge line will hold them securely without pinning when epoxied in. Nemo or Crawford arrowshafts were used for pushrods while RC Craft exit guides dressed up the fuselage exterior. The receiver switch was mounted in the EK UM-2 tray. A wire bent into a U shape was retained around the slide by

plastic tabs held in place under the switch mounting screws. An old TV antenna tip provided a nifty, easy to grasp push-pull knob. To prevent inadvertant "push-on," shape a "C" out of heavy plastic notched to fit under the knob astraddle the push wire. Attach a red ribbon as a "remove before flight" streamer.

How successful have the changes been? It has logged twenty-two hours flying in a Kc-135, eight bag drags, and touched down in the two biggest states; it has flown in two U.S. possessions and two foreign countries. Finished as it is, the Ugly American is sure to attract attention whatever its location. □



Virtually all types of gliders can be hi-started with the "can winch". The highly aerobatic Gryphon, designed and kitted by Ron Neal, comes off the top at about 50 mph!

the 'Can Winch'

By Bill Davidson

RCM's Hi-Start, used over two years, is designed for virtually any type of glider or terrain.



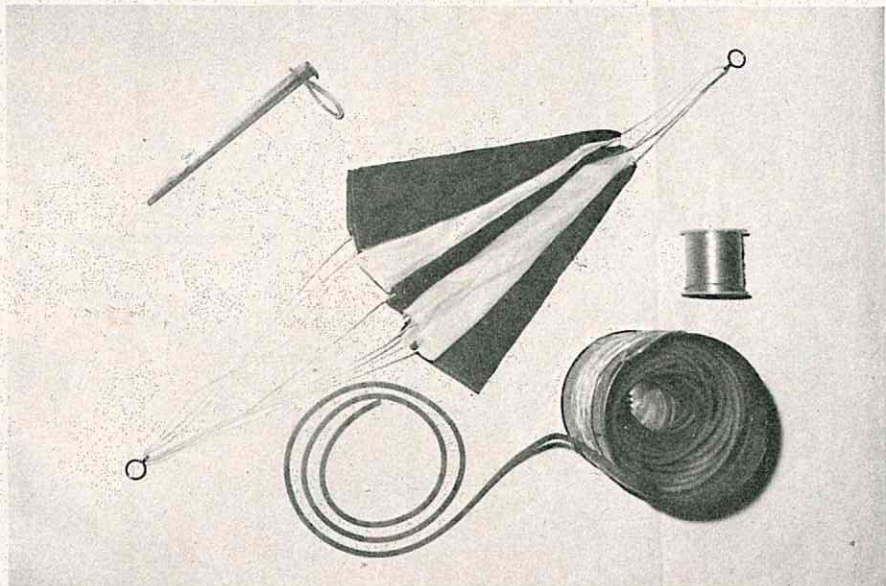
RCM's Editor, Don Dewey, prepares to attach his venerable Gus to the stretched out Hi-Start, held by Johnny Brodbeck.



As Ron Neal watches, Don walks back with glider to obtain maximum stretch. Note chute attached to tow hook.

The RCM Can Winch is most often referred to as a Hi-Start for gliders. It works well on gliders up to 3½ lbs. in weight and is very smooth with a constant — not the rubber band, rocket-assisted snap type launch commonly associated with some commercial Hi-Starts. It is very simple to construct and begins by ordering a KDH parachute from Technisales, P.O. Box 822, San Gabriel, California 91775, priced at \$6.95 for the standard chute or \$13.95 for the deluxe heavy duty unit. The latter is recommended if you plan to do a lot of glider flying since the chute and shroud lines are extra heavy duty and there is a tow ring on the top of the chute.

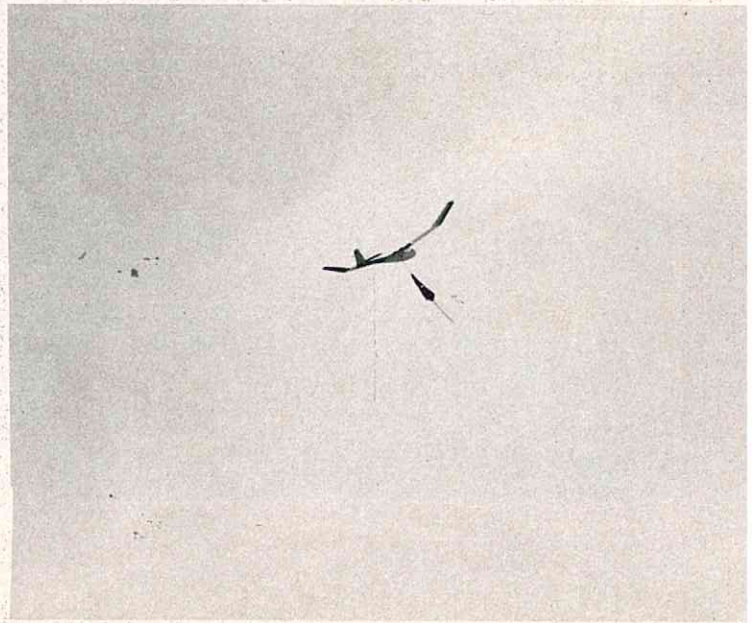
Any medical supply house can order the surgical tubing for you if they don't have it in stock. Ask for a 100 foot roll of 1/8" bore with 3/64" (continued on page 68)



The complete RCM Hi-Start. Metal stake with protective loop; parachute; coffee can with monofilament line on outside, surgical tubing inside. Extra spool of monofilament for additional length.

Launch position with RCM Hi-Start attached. Make sure your receiver switch is on! (Ask Dewey why, sometime.)

The Gus will ride up to approximately 300-400 feet before releasing. No wing-ripping catapult launches, but a gentle, firm tow to maximum height.

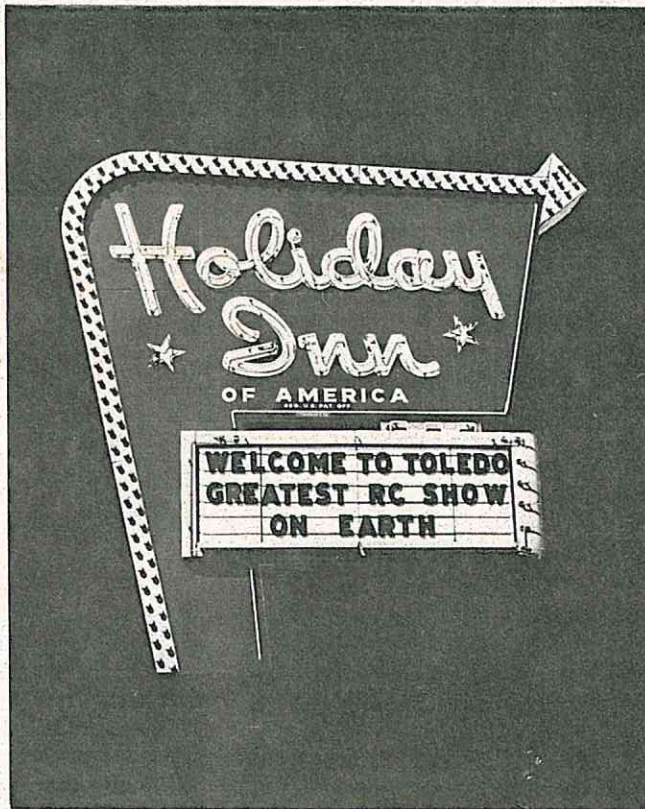


Toledo '71

HOBBY PEOPLE
TOLEDO
MODEL ENGINEERING
BONDHUS TOOL COMPANY
MONTICELLO, ILL. 61862
HARTMAN
NELSON
WINN
INDY RS
PENFORD
CANYON PLAS
RECTIFIER CONTROL TECHNOLOGY
Hobby
GANNON ELECTRONIC
12000 - 26 Sallary St.
North Hollywood
Vics Custom Models
COVERIT
PRODUCTS
Orbit
a dumas
ROSS ENGINEER
BREGLASS BOD
BY MCKENNA
SULLIVAN
THE MINI-FLITE Co.
honeycomb
SOUTHERN R/P PRODUCTS
Lanier
Ready to
MIN-X
CHAMPION
60's
WOODCRAFT MODEL PRODUCTS
MIDWEST
ARISTO-CRAFT
PRO
LINE
HEATHK
KRAFT SYSTEMS INC.
HOT LINE MODELS
IN K&R
EXLENT PRODUCT
SHAMRACK
Octura

BERNIE MURPHY *takes a walk*

*through the undisputed champion of R/C Trade Shows:
notes its enormity,
and traces its history.*



We have been reporting the Toledo Conference annually for eight years. Each year it has become increasingly difficult to describe. In 1965, we tagged the 11th Conference as R/C's "Greatest Show on Earth", a fact echoed by the Inn keepers of today.

The Toledo Conference is the undisputed champion among the "R/C Trade Shows." Each year it attracts more manufacturers, more models, and more model builders (both active and prospective) than any other "show". Each year it grows still larger, keeping pace with our ever growing sport. It has become difficult to even obtain a relatively accurate attendance count, due to the large numbers of people involved in the actual operations of the show, however, we feel that a count of seven to eight thousand would be a conservative estimate. Ninety four manufacturers displayed their latest contributions to the state of the art.

There is no way in which we can accurately convey the enormity of the Toledo Conference. In the past, we have attempted to print pictures of the various displays, and the latest innovations. Honestly, much of this seems to be a waste of your valuable space, especially since the photos alone would require a minimum of six pages (just for the manufacturers).

In recent years, the commercial

aspect of the Toledo Conference has received most of the publicity, and most R/C'ers are well aware of this facet of the "Conference". It is certainly true that this is the one place where the vast majority of the RC'ers needs and wants are displayed for his inspection. This is also the one place where he can meet the people behind the materials that he purchases. But, many are not aware that, as the name implies, this is a conference. Even a large portion of the modelers who attend miss this major aspect of the proceedings!

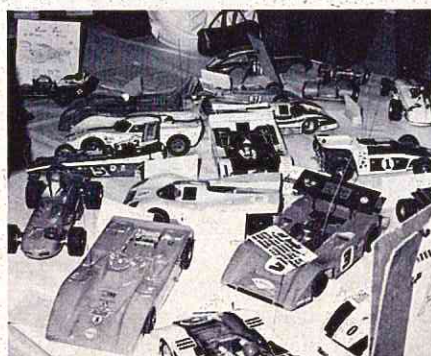
With this in mind, let's take a look at how and why the "Toledo R/C Conference" began. As with many clubs in the colder regions of the country the winter season in Toledo saw little or no flying. This time was generally spent hibernating in some small area of the modelers den, fabricating some new creation for those better days ahead. During the winter of 1955, the Toledo Weak Signals joined with the Detroit R/C Club and decided to hold an end of winter "Conference". This was at a time when even the best equipment required a lot of "tinkering", and there was always someone with a "better idea". Here was a chance to show off the winter's project, exchange views and ideas, and to listen to presentations by the "experts".

This first get-together was held in the Detroit Golf Club. The endeavor was small but successful. In '56 and '57, the Conference was held in a funeral home in Detroit! In '58, the Detroit club dropped out, and the Conference was moved to Toledo. At this point, the event was held at the Trailby Log Cabin, and became the Toledo R/C Conference. The Conference, still in it's infancy, was growing. Attendance was reaching the 100 mark! As it grew, it would move, occupying the Miracle Ballroom, then the Sunnysdale Golf Clubhouse. Around 1960, the first manufacturers began to participate, with 5 or 6 in '61 and about 10 in '62. The attendance figures were also growing, (600), and the presentations more authoritative. Then came 2 years in the Champion Spark Plug hanger at the Toledo Airport. It was at this point that the manufacturers really began to grasp the potential of this Toledo Conference. Twenty five exhibited at the '64 Conference, and the attendance hit the 1,000 mark! This may not seem like a lot of manufacturers by today's standards, but go back and count the total number at that time, and you will find it to be a rather large percentage.

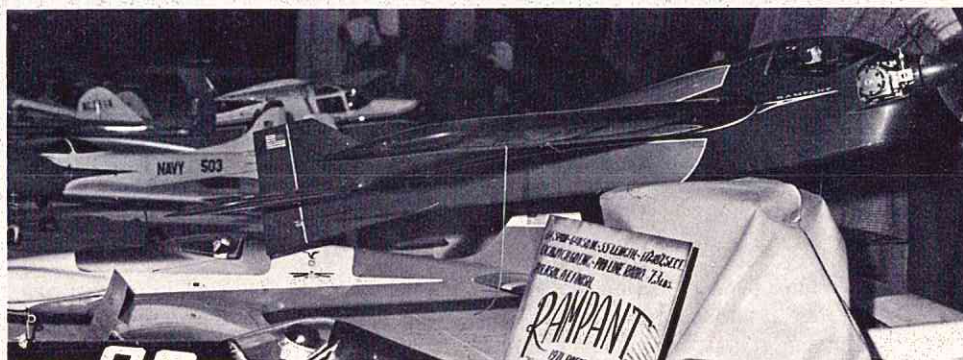
The Conference had once again outgrown its home, and in '65 moved into its present quarters at the then new Lucas County Recreation Hall.



LEFT: Fred Angel's Westland Lysander took 2nd place honors in Military scale. ABOVE: The winner, Walt Moucha's Jenny.



An R/C auto racer display.



Jerry Worth's 'Rampant' captured 2nd in Best Finish, a 1st in Pattern Design.



LEFT: E.T. Hignell's magnificent PBY 5A draws admiring glance. ABOVE: Dave Gierke's Formula II racer.

Since then, it has continued to grow at an astounding rate, until now it is once again bulging at the seams. The county is planning to increase the facilities by the erection of a new hall adjacent to the present one, but we will have to wait and hope on that one until next year.

As you can see, this developed as a Conference. The radios that we use have become sophisticated, the planes more elaborate, and the supplies more

abundant, but the Conference remains. The original intent is carried on in the hundreds of models which make the trip to be displayed and vie for the prizes. While scores of manufacturers patiently listen and answer questions, the "experts" are still spreading the R/C Gospel in the nearby Lukes Barn. Movies are run almost constantly, and small discussions run on to the very early hours of the morning.

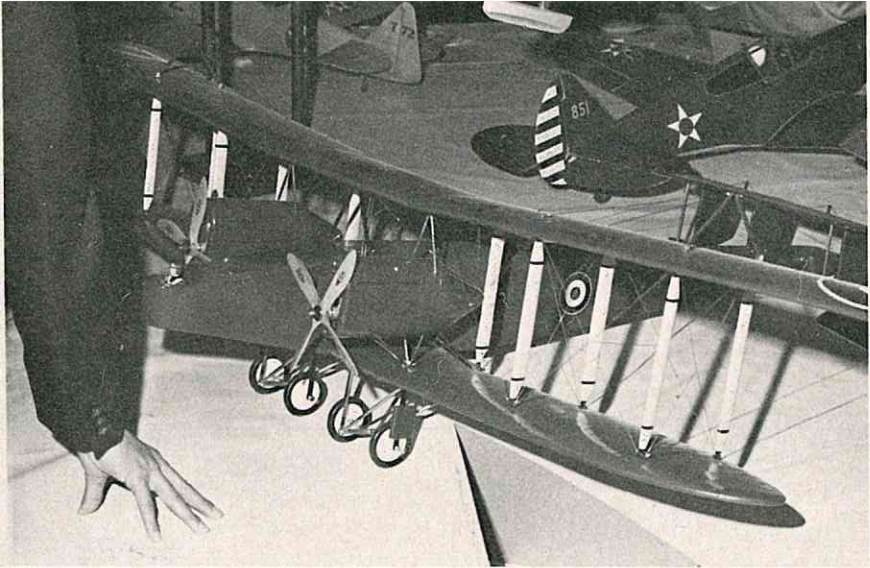
The Toledo Conference has become

one of, if not the most important controlling factors in R/C today. It is here, at Toledo that the manufacturers can reach the largest number of modelers and vice-versa. Their views and opinions are carefully weighed and considered. This in turn, plays a large part in determining what direction the industry will take during the next year.

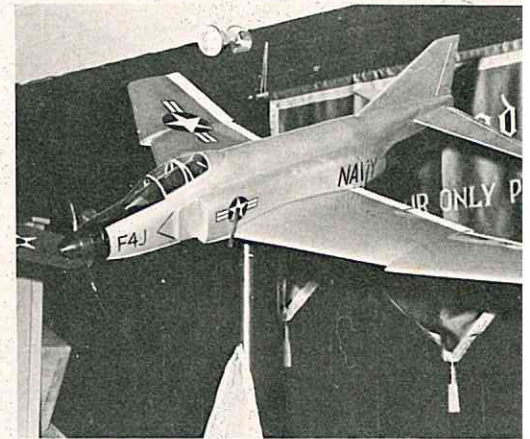
It is impossible to attend a Toledo Conference without meeting old



Lanier Industries latest is their sharp looking Colt. Hot with a .40, a bomb with a .60!



ABOVE: Ralph Jackson's scale Handley Page bomber. LEFT: Beautiful imported Mustang kit by Penford is sure to be a hit.



ABOVE: A newly imported kit from Royal Products. LEFT: Paul Martin's Boeing 707 features two Super Tigre .60 engines.



friends, and making new ones, and the memories of some of the great ones that have gone on to that big flying field above.

The Weak Signals Club has made an outstanding contribution to our R/C endeavors, whether modeler or manufacturer. Their organization and planning of this event has been magnificent through the years, producing one of the smoothest run and most memorable R/C happenings.

See you at Toledo, next year. Don't miss it! □

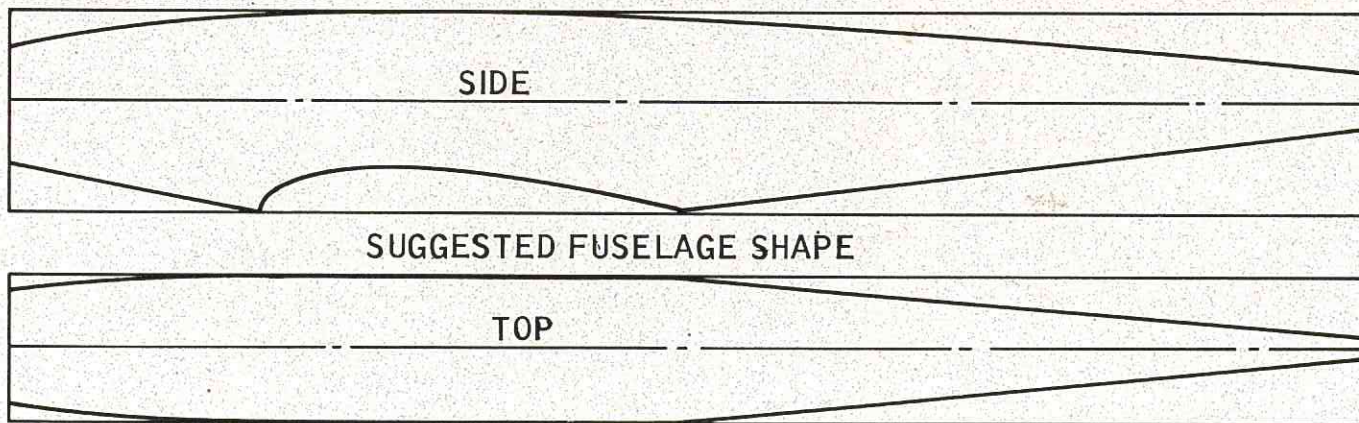


FIGURE 1

SHAPE FORM USING BANDSAW,
HANDPLANER AND SAND PAPER



CROSS
SECTION

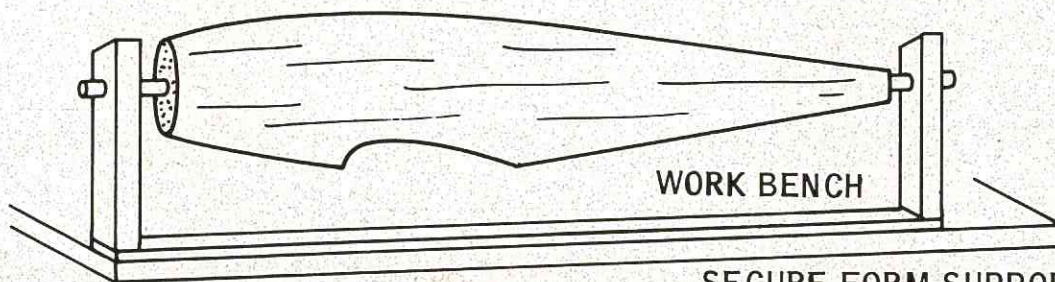


FIGURE 2

SECURE FORM SUPPORTS TO
WORK BENCH WITH CLAMPS

a revolutionary new building technique

MOLDED BALSAPLY

BY PAUL OSTERMAN

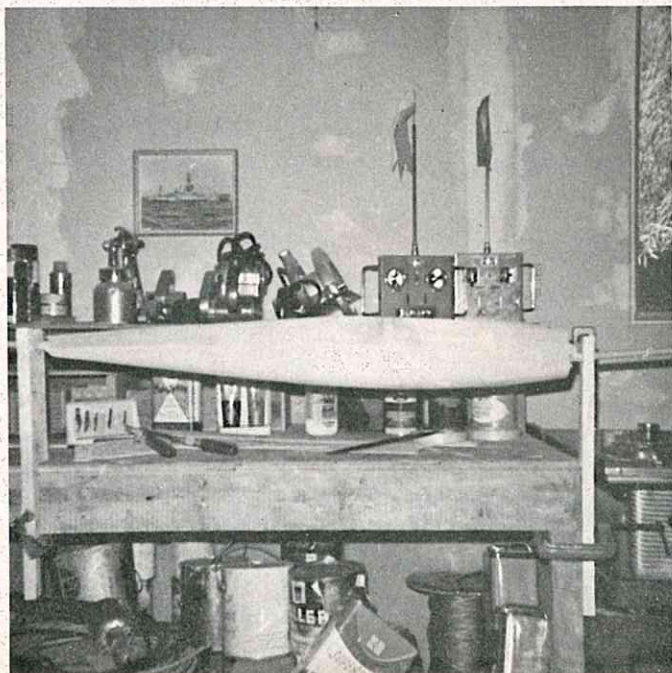
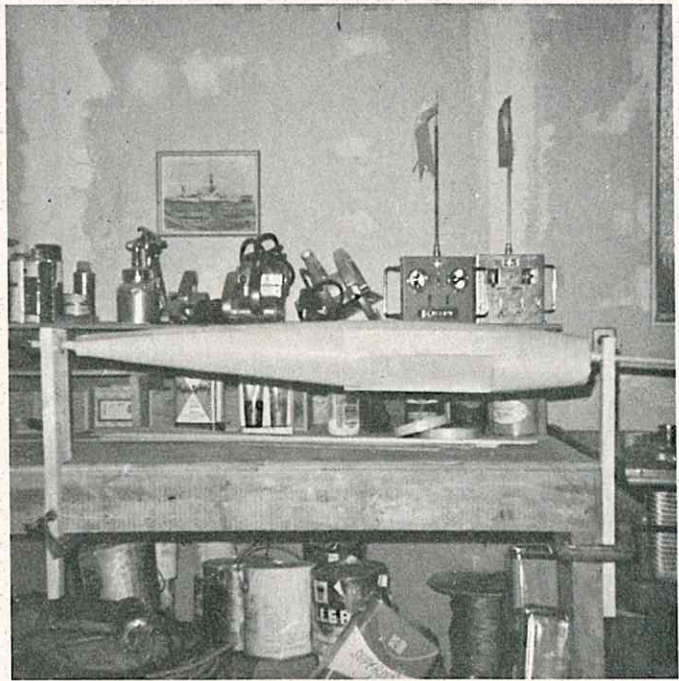
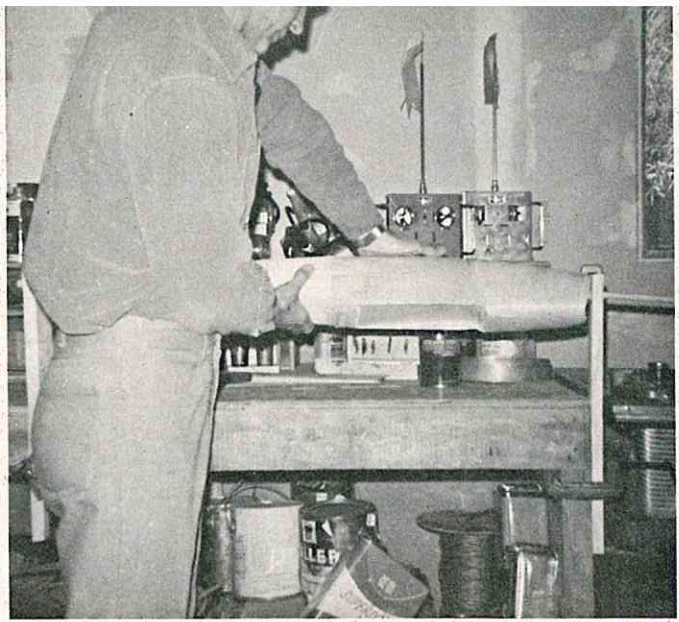
THIS TECHNIQUE LOOKS COMPLEX BUT IS RELATIVELY SIMPLE AND WILL GIVE YOU THE STRONGEST, LIGHTEST FUSELAGE YOU HAVE EVER BUILT.

"Molded Balsa Ply" describes the end product as well as the method of construction to be described. A fuselage made of "molded balsa plywood" is ultra strong because of its multi-directional grain and circular cross section. The elimination of formers, bulkheads, stringers and blocks leaves a light open shell that is adaptable to almost any design configuration from one basic fuselage. It can be built in just a few hours time and at a cost of about five dollars at current balsa wood prices.

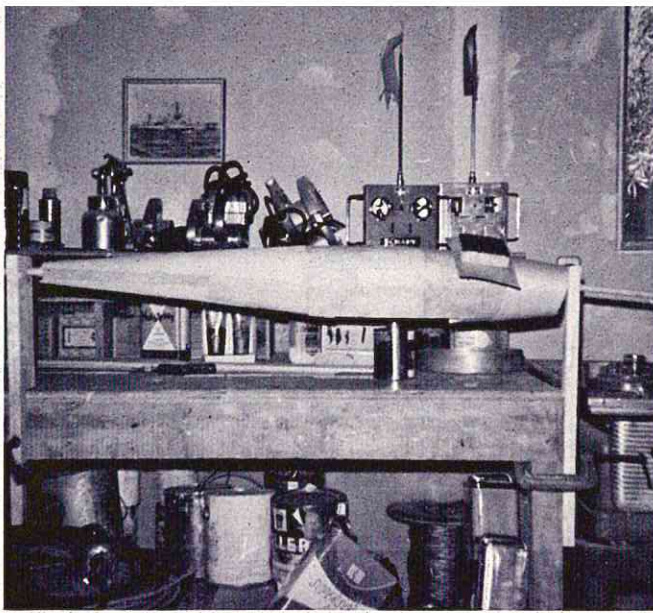
This is a method of construction that requires no painstaking effort or accurate fitting of parts. It does, however, require the making of a mold. If the mold were useful for only one airplane, then certainly the time and effort expended would be unacceptable. However, such is not the case. For years the auto manufacturers have disguised one basic body shell into many different car models with no one the wiser. We modelers can do the same. With one basic fuselage shell we can add a canopy or a cabin, cut in a

open cockpit, trike gear or tail dragger, high wing, low wing, bi-plane, and use a variety of tail and wing shapes. There can be as many different airplanes from one mold as individual imagination can create. Of course, it goes without saying that as many exact copies can also be made as pilot error and interference require.

The design philosophy of "molded balsa ply" is centered on the premise that modelers are hobbyists, and hobbyists need not be professionals, and that the name of the game is



TOP ROW; LEFT: Mold held to form supports with dowels fore and aft. **TOP ROW; RIGHT:** Mold wrapped with masking tape, sticky side out. **MIDDLE ROW; LEFT:** Entire mold wrapped with masking tape and ready for first lamination of balsa. **MIDDLE ROW; RIGHT:** Doublers in place at wing saddle, etc. **BOTTOM ROW; LEFT:** After doublers are in place, balsa pieces are fitted on fuselage in fore and aft direction.



TOP ROW; LEFT: Second layer of balsa is applied crossgrain after contact cement is brushed on first layer. **TOP ROW; RIGHT:** Applying individual pieces of second, or middle lamination. **MIDDLE ROW; LEFT:** Third, or outside layer is applied fore and aft, as was first, or inside layer. **MIDDLE ROW; RIGHT:** Preparing to remove the molded balsa ply fuselage from mold begins by cutting away and carefully removing lower nose section. **BOTTOM ROW; RIGHT:** Mold is removed from balsa ply fuselage.



flyng the plane. The mold (form) does not have to be perfect. As a matter of fact it can be downright sloppy. It should be reasonably accurate, but the usual super finish with a smooth polished surface just isn't necessary.

The first step is the design of the basic fuselage. Lay out the top and side views full size, on paper, with a center line through each view. Since the form will be at inside dimensions, what you have on paper is going to be a quarter inch thinner and narrower than the finished product. The skin thickness of the shell will be 1/8 inch. Be sure to leave enough room for a comfortable fit of the necessary "innards," c.g. fuel tank, battery pack, etc. The design should also be such that its' shape will facilitate easy removal from the form. Ideally, it will be from round to elliptic in shape such as a cigar or wing tank. (See fig. 1). The form is made from most any soft wood. Pine or redwood will do, although cedar if available, is preferable. Whatever wood is chosen should be clear, that is, no knots. A close straight grain will be easier to work with. Contact cement several pieces together if necessary to arrive at the correct dimensions.

Glue the side and top view plans onto the form blank using the center lines as a reference to get them on straight. If you have your own band saw you know what to do next, if not, take your form to a cabinet shop and, for just a few dollars, you can have the necessary cuts made. Drill holes lengthwise into the front and rear of the form about two inches in (7/16" to 1/2" diameter will do). Install dowels to fit in these holes and protrude about four inches out of each end. Don't glue the dowels since they have to be removed later on. Next, drill dowel size holes through a couple of pieces of two-by-two, or similar size wood, and clamp them to your workbench. These will support the form on its dowels and make finishing the form as well as building fuselages much easier. (See fig. 2). Using a small hand planer, round off the corners of the form and finish up the final shape with strips of coarse sandpaper used as in polishing shoes. Try to make the form as uniform as possible but don't worry about a smooth finish since it just does not need it and it won't be painted.

Forming the "molded balsa ply" fuselage is going to be one of the easiest things you have ever done. Cover the entire form with a piece of thin plastic (dry cleaning or laundry

wrapper). Secure the plastic to itself with masking tape. You don't have to be neat about this but don't let the masking tape stick to the form. The next step is to wrap the entire form with masking tape wound on backwards. That is, **adhesive side out!!** Start at the rear of the form and advance to the front, overlapping the tape about a 1/16". Hold the roll of tape in one hand and turn the form with the other. (It will turn on its support dowels). Put the tape on fairly tight but don't be concerned if it doesn't exactly follow the form taper. If the edges are somewhat wrinkled, that won't matter, either.

1/32" birch plywood is a doubler at both sides of the wing saddle as well as at the stabilizer mount. Lay strips about two inches wide at both sides of the wing saddle and 1/2 to 3/4 inch wide at the tail. Don't bother to trim them to shape now, it will be easier later on. Now procede to cover the rest of the form with 1/32" soft balsa sheeting, trimming around the doublers. The grain goes lengthwise to the form. The masking tape will hold the sheeting in place, even around the turns. If necessary, make short cross grain cuts with a razor saw to facilitate going around any compound curves. Don't fret over the joints, they don't have to be perfect. Allow one sheet to overlap the other, press down with the finger and then trim along the raised impression with an X-acto knife. Push the sheeting down well onto the masking tape but don't worry if a corner or two stick up a little, that won't matter and the second layer will tie them down anyway.

Next, coat the entire first layer with contact cement and also prepare a few sheets of 1/32" with contact cement. When the cement is dry and ready, cut a length of the prepared sheet equal to the circumference of the nose section, allowing a little extra for overlap. The entire second layer is applied cross grain. Center the sheet across the top of the nose (at a right angle to the length of the fuselage) and overlapping the end of the form an inch or so. Lay a damp sponge on top of that piece and allow it to dampen for a minute. Remove the sponge and with the palm of the hand, roll the sheet around the form, first one side then the other. (If you have never used contact cement before, be aware that it is unforgiving, once contact is made, that's it). Where the two ends overlap, press with the finger and trim along the raised impression with your

X-Acto knife. Again, don't fret if the joint is less than perfect, it doesn't matter and I won't tell anyone. If you miss with the knife, cut a little sliver of scrap and stuff it in the crack.

Continue covering the form with the second layer from the nose to the tail in the same manner. Since the cross grain layer is going around compound curves, it is going to overlap. Allow it to do so and trim off the excess along the raised impression. When finished, lightly sand the joints to smooth them out and coat the entire fuselage with contact cement again.

The third and final layer is of 1/16" sheet and is applied lengthwise in the same manner as the first layer. Again, make any necessary cross grain cuts with a razor saw to allow the sheeting to follow around compound curves, but keep these cuts as short as possible.

The wing saddle fillets not only add to the appearance but also aid in stiffening the sides of the fuselage. Triangular stock works well for this. Cut pieces to a length and at an angle that will allow them to go roughly around the air foil. Stick them on with a sandable glue (Titebond, etc.). Use filler or balsa scraps to fill any cracks, and sand them to shape. Trim the plywood doublers and sand the shell and fillets to conform with the wing cutout in the form. Trim the overlapping edges to the front and rear of the form. Apply filler and finish sanding the entire fuselage. Apply primer, dope, Hobbypoxy glue or whatever pre-painting undercoat you like to use. Apply silk if you like to use that, although it isn't necessary. In other words, prepare the fuselage for final painting while still on the form. If you wish, this is a good time to locate and make the cutouts for the fin and stabilizer.

When you're ready to remove the fuselage from the mold, draw a line at a point where the leading edge of the wing will be and forward to the end of the nose. Do this on both sides. Using a sharp X-Acto knife and a straight-edge, cut off the bottom of the nose section and remove from the form. Cut the masking tape from around the wing saddle as well as from the front and rear of the form. Free the shell from the form as much as possible. Buck the rear dowel with something firm (the wall of your shop) and with the palm of the hand on the top and the front of the fuselage a firm push

(continued on page 65)

molded wing saddles

BY JERRY SMITH

(Reprinted from Tri-Valley R/C News)

All of us at one time have used foam tape to seal, dampen vibration and to just plain keep the wing from slipping out of place. But, have you noticed that it isn't long before the slop from the engine begins to eat away at the tape holding the foam in place? The foam also starts to deteriorate after awhile. Especially on the engine exhaust side of the fuselage and before long you are replacing it with new tape. So you peel it off, cut a new strip and try to make it stick. You notice I said try. No matter how well you clean the surface, it never sticks the same, does it? I'm sure every one of you have experienced this problem.

I began to look around for a more permanent means. Something that would last the life of the airplane. My airplanes don't usually last too long, but I'm thinking of the other guy. His always lasts forever, it seems!

Because I am a fine red-blooded American (Legion member) I will share my idea with you in hopes that your days of gooey, slobbery, sticky, half-off tape are over. Now you can redirect your effort to other problems like making sure the price tag is off the kit before you bring it home, or, improving the "toy airplane" image with your next door neighbor. But, back to my idea, a molded silicone rubber wing seat designed to fit your plane!

Begin by deciding how wide you want dimension X in the sketch by measuring your fuselage wall thickness. Next, cut some pieces of fir or pine into strips of proper length and size to make up the mold. Finish the sides that will come in contact with the silastic with several coats of dope. Sand smooth with 400 wet/dry paper. Remember, the better the surface, the better the finish on the end product. Build the mold as shown in the sketch. The sides must be removable to help release molded part.

Spray all surfaces of mold that come in contact with the silastic with a dry lube. There are several brands available at most hardware stores. I happened to use 3-in-1 brand, manufactured by the same company that makes 3-in-1 oil. A 4 oz. can costs about 60 cents. After spraying, allow 10 minutes to dry. This will release the silastic, when cured, from the mold.

Make sure it's a dry lube.

Set the mold together and install the end pieces. Squeeze a bead of silicone silastic into the mold and force down. A tube of G.E. or Dow Corning Silastic White Silicone (may be purchased at K-Mart Stores cheapest - \$1.57 a tube), or any similar product will make many. Level as best you can and add just a little more to make it come over the top edge of the mold. Next, cut a strip of Hobbypoxy Easy-Duz-It cloth and lay it into the wet silastic. With a spatula, push down and level the cloth strip flush with the top of mold. A thin layer of silastic should be spread over the cloth.

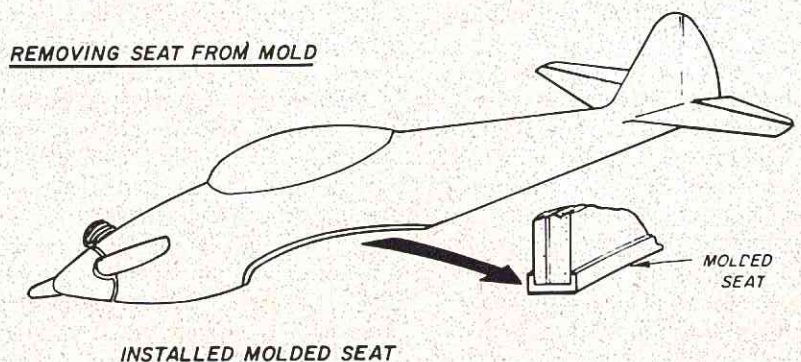
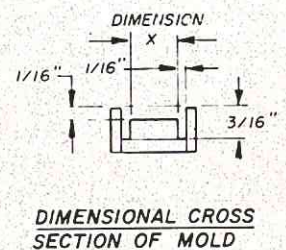
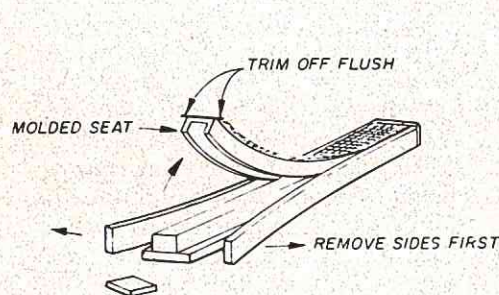
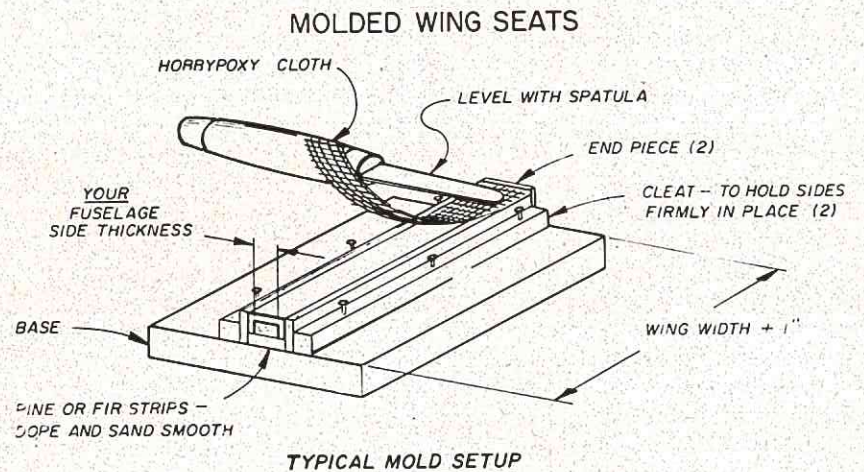
I experienced difficulty in leveling the silastic. It does not trowel readily.

The cloth allows for better smoothing and provides breathing for the compound to cure. To speed up curing time, place a damp cloth over the mold. Due to the thin cross section, the silastic will cure much faster than stated by the manufacturer. I found 8 hours curing time most adequate before removing from mold. To install on your airplane, simply fit and trim. Apply a small bead of silastic to inside of molded seats and place on both sides of fuselage. Install the wing and let set overnight.

There you have it... a set of permanent molded wing seats designed to fit your very own plane.

Happy Molding!!

□



A SIMPLE PARACHUTE DROPPER

By M.G. Huben

HERE'S A SIMPLE WAY TO PUT SOME OF THE FUN BACK IN R/C. REQUIRING NO REWORK TO YOUR MODEL, THIS DEVICE IS ALSO EXCELLENT FOR FUN-FLY EVENTS.

Wagger was very observant in his column (RCM January '69) when he said, "We need more gimmickry. No kid is going to ride 38 miles on a bike to see the FAI pattern flown 46 times. But, kids would come from miles around to see a parachute drop."

Wagger's motivation resulted in the simple parachute dropper shown in this article. Many of us have models, but they aren't adaptable to a parachute compartment/trap door setup, or we don't have the extra servo to open a trap door.

The solution shown here requires absolutely no rework to your airplane. This parachute dropper is simple and light in weight, and you can add it to your model in a few minutes. It can be removed in a few seconds and used over and over again. Additional servos are not required and the dropper can be installed on a rudder-only model. Construction time is perhaps a half hour at most.

The components are attached to the model with masking tape, and are placed on the side of the fuselage. Sketch 1 shows how I attached it to the side of my rudder/elevator slope soarer. Sketch 3 shows the trigger housing from balsa, smear a little glue around the edges of the trigger pin holes to prevent the pin from wearing the balsa.

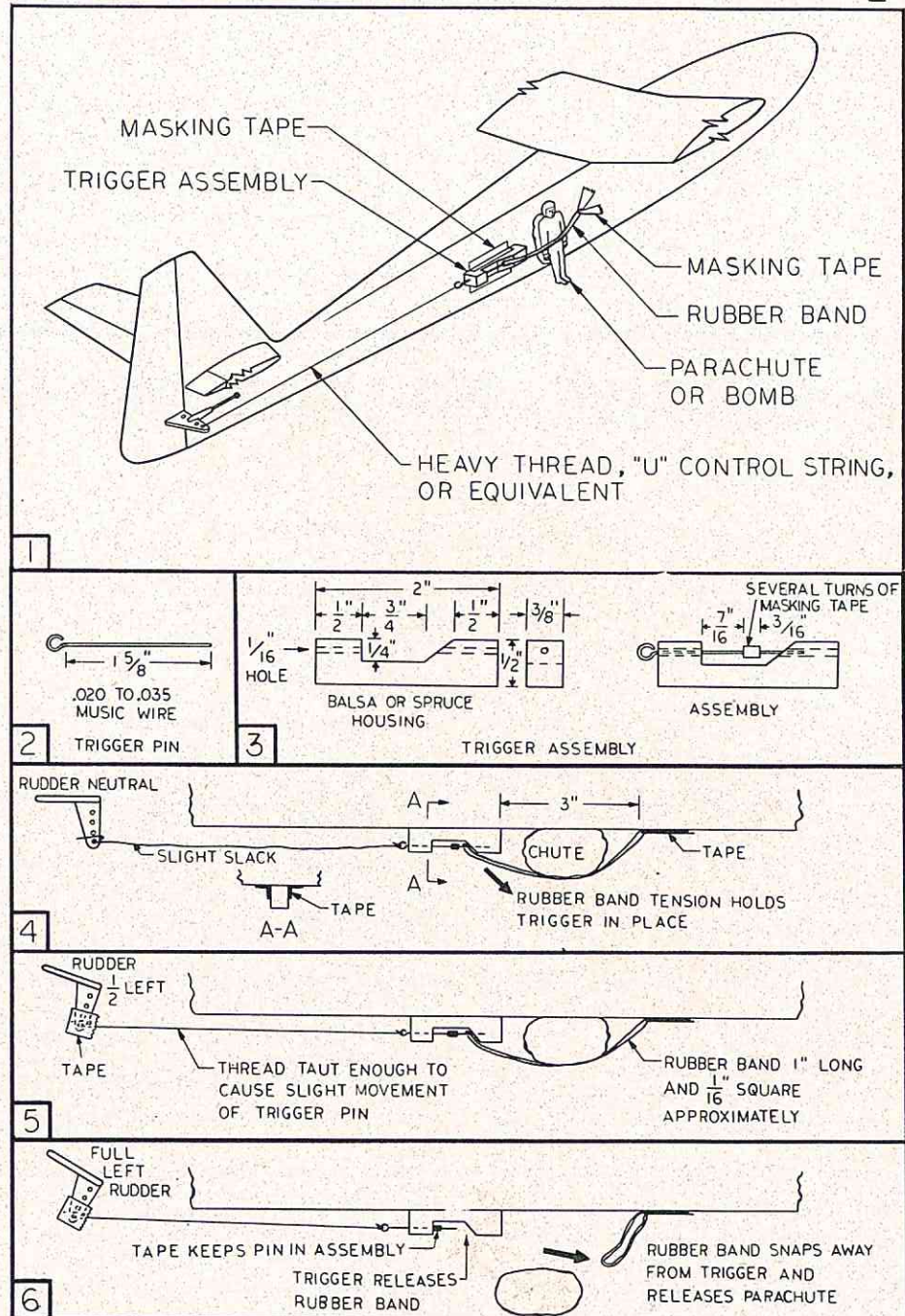
As shown in Sketch 4, tape the trigger housing assembly to the fuselage where desired, then insert the thread into the outer hole of the rudder horn; do not tie a knot but merely loop the thread twice around the horn and tape it in place. This allows for easy adjustment of the slack in the thread and permits quick removal and repeated use of the thread.

When properly rigged, you have full right rudder and $\frac{1}{2}$ to $\frac{3}{4}$ of left rudder available for flying. Full left rudder will drop the parachute. I have used the system on both my reed and proportional equipped gliders and

powered plane. With proportional, it's a cinch; with reeds you must be careful not to hold the switch too long for left rudder.

It's great fun. The flexibility of the rubber band for holding the object to be dropped allows carrying (a) a wide

variety of parachutes, (b) tissue paper-flour bombs, or (c) small gliders. The plastic parachutes that are available at the local toy counters work fine. Be sure to add enough weight to the parachute, or it may outfly your model! □



SHOCK ABSORBING NOSE WHEEL LINKAGE

by Bruce Rockwell

If you switch to the new sub-miniature servos with only a wheel-arm takeoff, you may have noticed that the nose gear linkage has become a problem. A desire for maximum throw on both the rudder and the nose gear with no differential on either, as well as absolutely free movement, inspired the linkage shown in the accompanying sketch.

The outside diameter of the Du-Bro threaded coupler is approximately 3/32" while the inside diameter of the Du-Bro strip aileron horns is a smooth fit on 3/32" diameter material. This setup offers full throw, easy adjustment, and a no-bind linkage.

If you like, you can set up your own "shock absorber" by soldering an appropriate length of 3/32" O.D. (1/16" I.D.) brass tubing on the 1/16" wire. Remove the collar from the center of the strip aileron horn and

mount it together with a mate on the outside of the horn with small compression springs between the horn and the collar at either end. The result is a shock absorber or override with vari-

able tension.

Whatever method you choose, you'll find that it really works and works well and answers the problem of the nose gear linkage. □

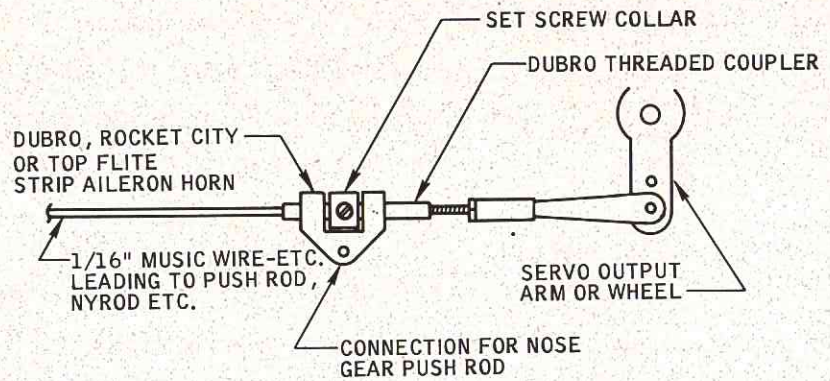


FIGURE A

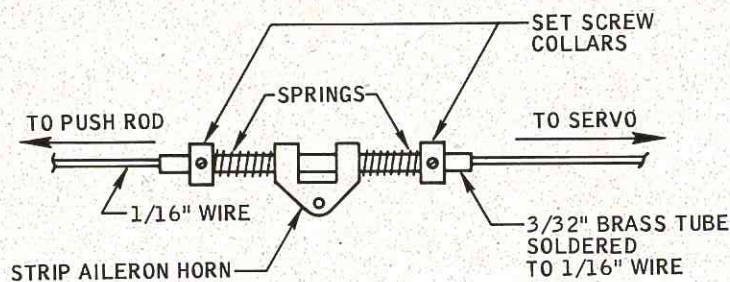


FIGURE B

A POSITIVE, NO-LOAD MECHANICAL BRAKE

BY W.D. MITCHELL

The problem I encountered with the original Bird's Brake system (March, RCM) was that, if I increase the throw of the elevator servo enough for positive braking, I also loaded my servo severely. The elevator servo is the last one you wish to load in a .60 powered bomb! I have measured in-flight loads in excess of 3 lbs. with a very free control system, and my old KPS-9's don't push much harder than that. Neither do most other servos. The best setup I could obtain was an additional 2.2 lbs. required out of the servo, some brakes on constantly, and brakes that would never completely lock up. So, I discarded the brakes and went electric, until I hit upon this very simple modification.

As currently set up on my Lanier, there is no braking action whatsoever until I give approximately 1/3rd down elevator. At 2/3rds down elevator, the brakes are completely locked up. At full down, there is an additional 4 oz. load on the servo. I consider this about ideal, but you can have the brakes set up so there is no braking action ever

unless you hit full down plus trim, when the brakes will completely lock up. Or you can adjust them anywhere between this and the 2.2 lb. setup. Here's how, and it's very simple.

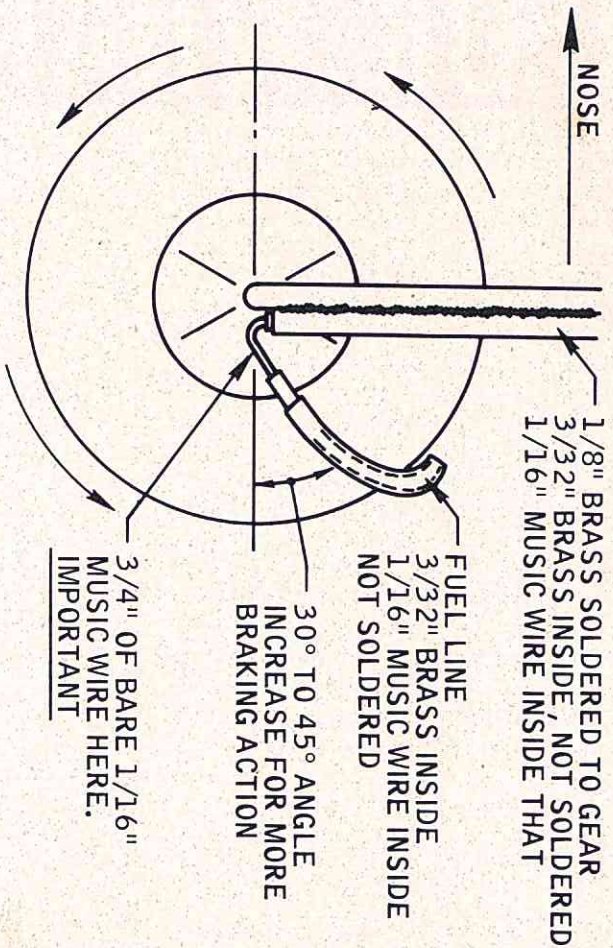
First, use lighter music wire that will flex. (I use 1/16" wire). Where it attaches to the gear leg, telescoping brass tubing of 3/32" and 1/8" diameter go around the wire, with the 1/8" soldered in place. Where the wire would rub on the wheel, a piece of 3/32" tubing builds up the diameter so that small fuel line will fit. This is not soldered in place!

And now, here's the key. Bend the wire up at a 30 degree to 45 degree angle as shown. Now bend the wire around the tire. The tip of the wire should touch the tire first, at the center of the thread, with about a 1/8" gap between the sidewall and the wire.

Now slip on the fuel tubing and see how they work. As the tire rotates, and the fuel tubing starts to come in contact with it, the rotation of the tire flexes the wire in such a way as to

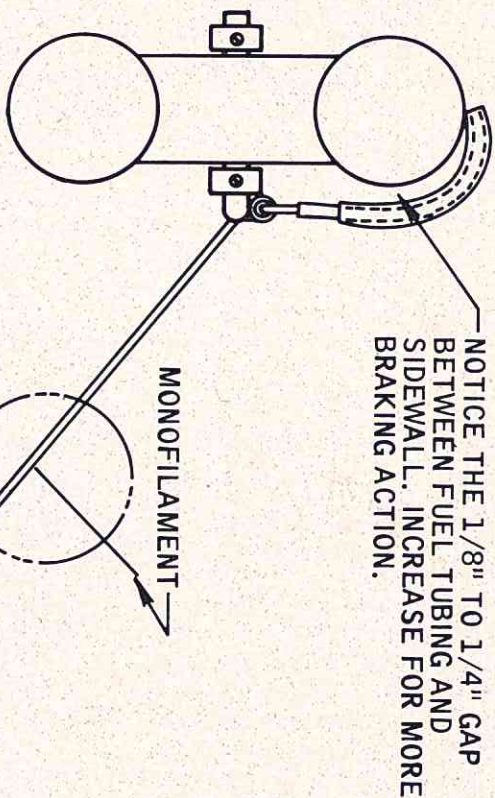
apply more pressure to the brakes. This added pressure can be closely controlled by changing the angle the wire is bent up, or by changing the gap between the sidewall and the fuel tubing. Bending the wire up further, or increasing the gap, increases the sensitivity of the brake. Adjust for equal braking on both wheels at full servo positions, so your bird will not pull left or right. You now have power brakes on your airplane, with the power coming from the plane's own momentum.

If you want to set the brakes very tightly, as I have, you'll need a light rubber band attached as shown to keep the brakes out of contact with the wheel. Otherwise, a wheel could lock up while taxiing. On my plane, the fuel tubing is completely clear of the tire until about 1/3rd down elevator is given. I can slow the plane gradually, stop it quickly, and make about 2/3rds power run ups before the tires start to skid on the cement. □

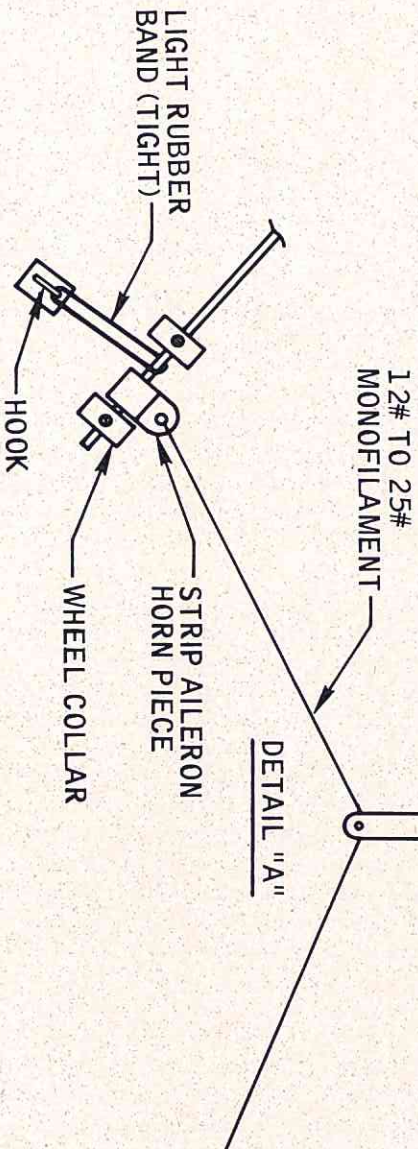


NOTICE THAT THE WIRE IS NOT ONLY BENT UP 30° - 45° AND BENT AROUND THE TIRE, IT ALSO CONTINUES TO BEND UPWARD FURTHER AS IT CURVES AROUND THE TIRE.

IF YOU MUST SOLDER THE 3/32" BRASS TUBE TO THE CURVED MUSIC WIRE, BE SURE TO GET IT GOOD AND HOT AND QUENCH IN WATER. THIS ANNEALS THE BRASS. IT WILL BREAK OTHERWISE WHEN YOU BEND IT.

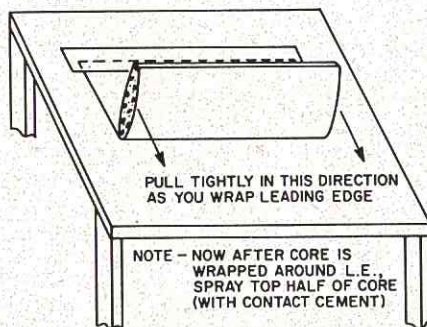
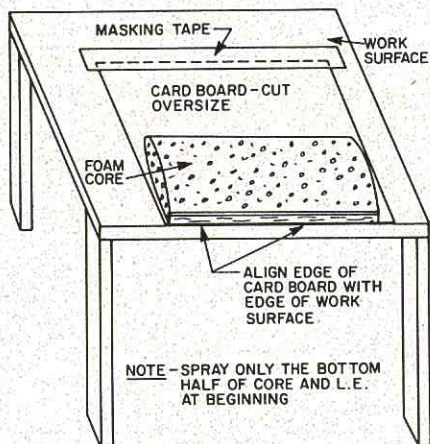


ADJUST SO BRAKE DOES NOT TOUCH TIRE UNTIL 1/3 DOWN ELEVATOR IS APPLIED. FULL BRAKING ACTION COMES AT 2/3 TO FULL DOWN.

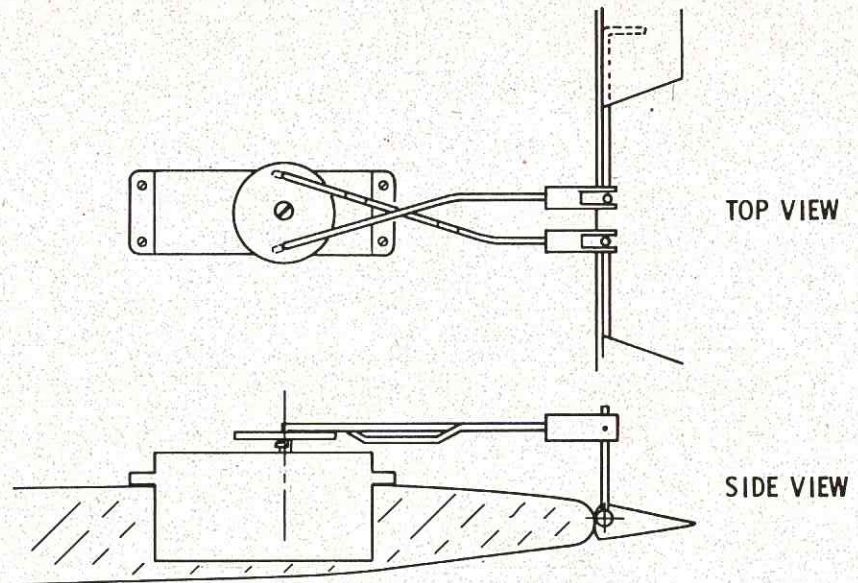


FOR WHAT IT'S WORTH

When wrapping a foam wing core with cardboard have you noticed the difficulty in getting the cardboard and core to stay put as you wrap it — especially when going around the leading edge? Harvey Mitchell, of Lubbock, Texas, eliminated this difficulty as follows: after applying the contact cement to the cardboard and core, he takes a 2" strip of masking tape and overlaps the cardboard about 3/8" and uses the other 1-5/8" to tape the cardboard to the work surface, aligning the cardboard to the surface edge as shown in the drawing. Then he lays the core on the cardboard carefully aligning the trailing edge to the work surface edge. Now, proceed to wrap the core, pulling against the masking tape. This pulls the cardboard nice and tight around the leading edge and no slipping and sliding as you wrap.



When connecting strip ailerons it sometimes happens that the servo action is backwards. Rather than dig into the transmitter to reverse the pot leads, or where it is impossible to reverse the servo, it is possible to cross the linkage with a bit of wire bending. Simply make a couple of offset bends in one link so the links don't make

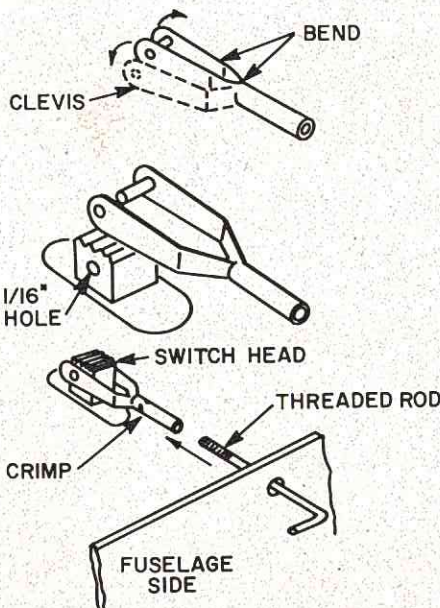


contact where they cross. The servo end may be a "Z" bend or you may use your favorite keeper system. Analysts may discover a trace of differential action in this linkage, but sport fliers will never notice it in the air. This idea was submitted by Ed Gerhardt, of Basking Ridge, New Jersey.

Power switch extensions are sometimes difficult to attach, adjust, or simply remove. This simple switch extension allows easy attachment as well as being quickly adjustable and removable. Lee Simon, of Chicago, Illinois, suggests the use of a DuBro, or similar, clevis with the threaded extension wire.

Bend as shown to the width of the power switch mounted inside the fuselage. Very carefully drill a 1/16" hole through the side of the switch. Now attach the clevis. It has a slight spring action to hold it in place. Drill a hole in the side of the fuselage in line with the clevis end. Insert the threaded rod and cut off to the desired length. To remove the rod, bend the end or solder a washer for a pull. Crimp the clevis slightly out of round so the threaded rod tightens. Now the rod can be easily removed and the switch and clevis may be installed in other fuselages.

Walter Perrin, Jr., of Granada Hills, California, writes that high impact styrene sheet makes excellent foam wing coverings since it is extremely strong as well as economical. The standard sheet sizes are 40" x 72" in white opaque and highly polished on one side. The .015 material sells for \$1.40 a sheet, while the .010 sells for .94 cents a sheet. Other sizes and colors are also available. These sheets are available from Cadillac Plastic and Chemical Co., 2305 West Beverly Blvd., Los Angeles, California 90057. (This company has branches in several other states as well.) If you want to make rivet impressions on your plastic sheet, these can be rolled in from the backside with a clock gear upon which the teeth have been filed round, and which has been mounted in a handle. Be sure to lay your styrene sheet on



top of a soft pine block and guide your "rivet maker" with a straight-edge. Be sure to use contact cement for applying the styrene sheet to your foam wings. Be sure not to use dope or lacquer on styrene when finishing.

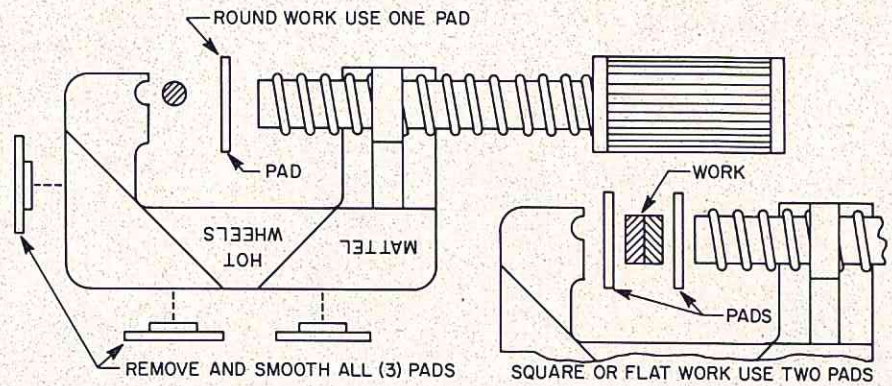
S/Sgt. Henry A. Loos, of Tampa, Florida, suggests that the next time you have to clamp balsa or plywood and are looking for an inexpensive lightweight clamp of tough nylon, try your son's Mattel Hot Wheels track clamp. These units are sturdy and very light in weight. All you have to do is add a small plywood pad to prevent indenting the balsa. You can remove the track holders and shave and use for clamp pads, as in the drawing. These clamps can be purchased at your local toy store.

Most of us use a straight edge of some sort in our shop for cutting out parts from sheet stock of balsa or plywood, but have you ever wondered how to cut a perfectly straight line on your Dremel jigsaw? The answer is simple if you follow this suggestion from Duie Matenkosky, of Pittsburgh, Pennsylvania. First, obtain a 12" metal ruler with a cork backing such as sold in artists and drafting supply houses. Now, when cutting straight lines using your jigsaw, simply place the cork side of your straight edge down on the wood and let the jigsaw blade run down the metal straight edge. This will give you a perfectly straight cut with a jigsaw which can be accomplished quite rapidly.

Richard L. Turner, of Raytown, Missouri, suggests the following method for cutting hinge slots for the thicker type of hinges such as DuBro, Kavan, etc. Dick suggests using the Dremel Moto-Tool and the Dremel Carborundum grinding discs. The thickness of the slot can be adjusted by varying the number of discs on the arbor. This method will give the right thickness of slot and the slot will be straight. It is much easier than using a knife to cut the necessary slot.

Fr. Robert Stemper, of Bremerton, Washington, suggests that the hold down straps for attaching landing gear, or for hatches, can be cut from the ribbons that unseal coffee cans, peanut cans, etc. This metal material is flexible and very strong as well as being readily available.

Darwin Brenden, of Seattle, Wash-

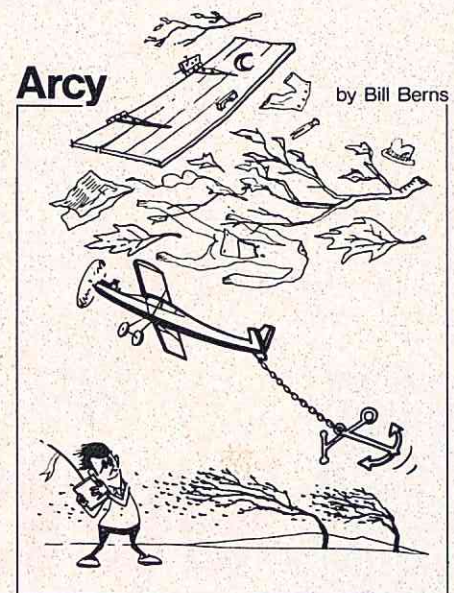


ington, sent in the following information concerning the use of adhesive plastic shelf covering. This material comes in three yard rolls by 24" wide and costs about \$1.30. For covering fuselages and wings, cut your pattern about 1/2" larger than needed so that there is a good overlap. Seal all edges with slight pressure with an X-Acto handle, then use Flecto-Varathane Liquid Plastic, either from an aerosol can or brushed on. Number 90 Gloss or number 91 Satin can be used depending on the type of finish you want. This will seal the seams tightly and provide a fairly hard finish to the plane. Be sure to spray or brush lightly at least three coats. For use on wings which are partly sheeted along the leading and trailing edges, apply the shelf covering from the front, overlapping about one inch, and pulling to rear where it should be tack held. Apply slight heat from a warm iron, then pull tight and overlap. When cool, the covering will shrink tight, similar to MonoKote. Do not touch your iron to the plastic but use the backing between the iron and the covering.

L.L. Hatton, of Waterloo, Iowa, takes the hit-and-miss out of engine mounting when an engine template is not available with the following method. Simply put a drop of lightweight oil on your engine mounting surface at the most difficult hole, usually the rear right. Then, smear the oil around and wipe off leaving only a very thin film. Place your engine on its mount in the desired position. Then put the end of a piece of small tubing in talcum powder so only a very small amount is encased in the tubing. Place this end 1/8" to 1/4" over the hole then blow hard. Lift the engine straight up and you have a beautiful white dot in the exact spot where you wish to drill for your engine bolt. Now drill and tap for your motor mount bolts. Set your engine back on the mount and run the mounting bolt

down firmly and repeat this process until all four holes are drilled and tapped.

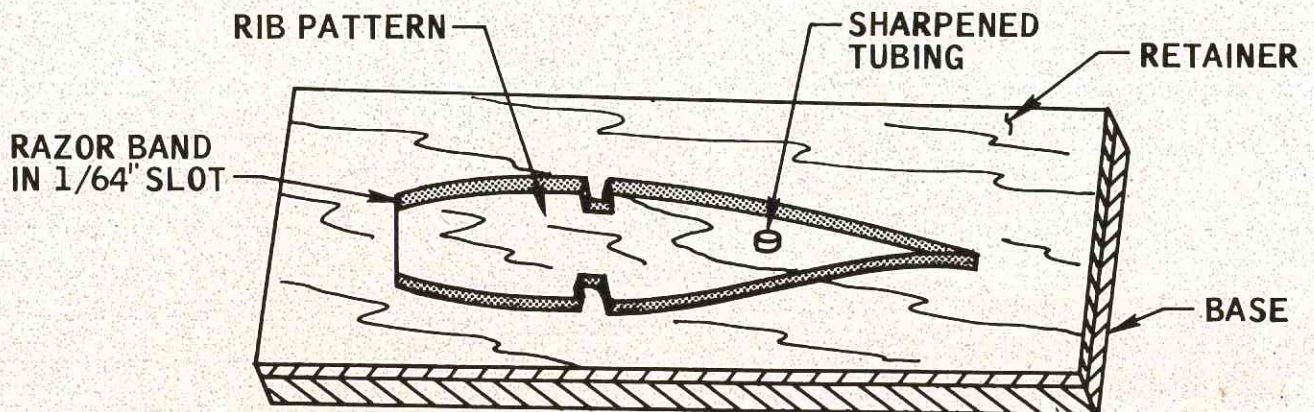
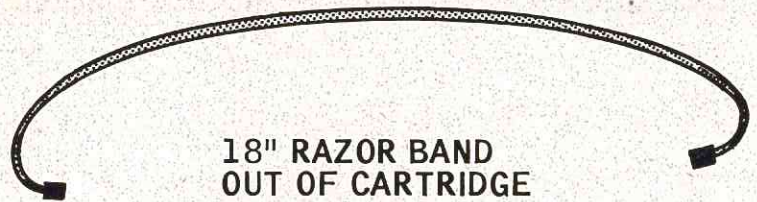
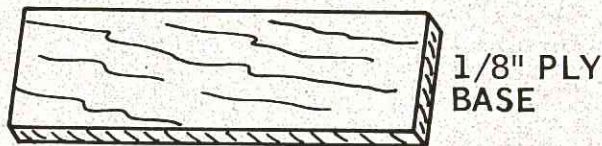
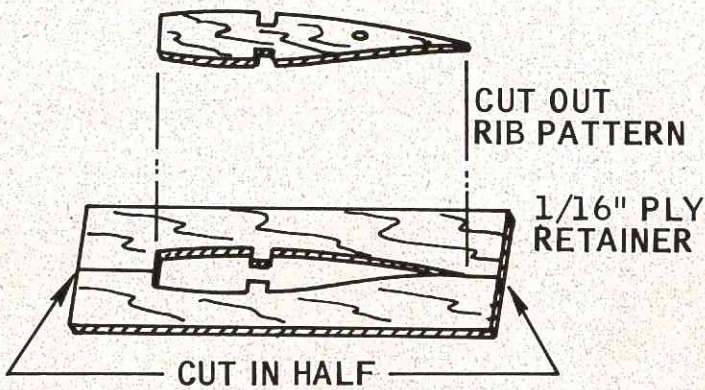
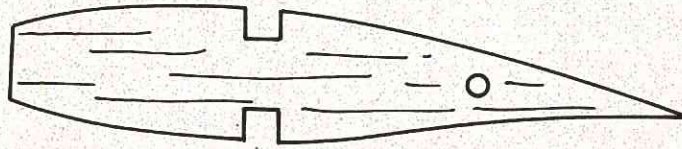
According to Dick Franco, newsletter editor for the Southern Alameda County Radio Controllers, fillets can be made easily by purchasing a new sculpting material called Celluclay, which is readily available at most hobby shops. Follow directions and you will get a papier-mache mixture that resembles clay. This material can be worked into any area and smoothed with a little water and the tip of your finger. Finishing is conventional . . . it can be sanded, doped, silked, etc. One word of caution, however, since it is a water base material, be sure to allow sufficient time for drying. You can easily recognize a dried state since Celluclay will then turn a light gray.



you can make your own RIB DIE-CUTTER

BY BRUCE RUSSELL

HAND DIE STAMP



IF YOU HATE TO BUILD WINGS, HERE'S AN EASY-TO-MAKE TOOL

*THAT WILL MAKE RIB-CUTTING AS ACCURATE AND AS EASY A PROCESS
AS IS POSSIBLE !*

I hate to build wings!

If you are a scratch builder you have probably made this statement more than once. With me, the assembly of the pieces is fun and as the wing takes on its shape as each part is glued in place, I dream a little more of the many flights that lay ahead.

The most numerous parts in a wing (other than the capstrips) are the ribs. This is where the "hatred" of wing building most often originates. This is also the heart of the wing: correct airfoil in each rib, leading edge notches all just the right size, spar slots in same place in each rib, etc. This is a large order and there always seems to be at least one or two errors in hand-cut ribs, to say nothing of the time it takes to cut out a set.

Well, if you have at least a dozen ribs of the same size and shape in your wing, read on

Kits have their ribs cut by die stamping. Given a sharp die and good wood the ribs are like peas in a pod. So let's make a die stamp of our own. Ours will only cut one rib at a time, but if care is used in making the die, along with good wood selection, you can turn out ribs as good as top die-cut kit ribs. The more complex the rib is, the more benefit a die cutter will be. So in an hour or less you can construct this die rib cutter.

MATERIAL LIST

- (1) Plywood: one piece of 1/8" and one piece of 1/16" – an inch longer and an inch wider than the rib to be reproduced.
- (2) One or two Gillette Techmatic Razor Cartridges.
- (3) Epoxy: 5-minute if you wish to finish the cutter in a short time.
- (4) Tools: Hand Jig Saw; Garnet Paper; X-Acto Knife; Scissors; Needle Nose Pliers.

Using 1/16" plywood sheet an inch longer and an inch wider than the rib, draw the rib outline in the center. Include spar cutouts just as you would if you were making a rib pattern. Now carefully cut the rib out with the jig saw and X-acto knife. Start from the outside of the 1/16" plywood sheet at the trailing edge end of sheet. What you should have now is an exact rib pattern and the outside form with a hole shaped like the rib cut in it. The latter should be cut in two halves made by making a cut from the outside to the inside at the leading edge end. The rib pattern edges and the inside edges of the outside form will be a little rough from the saw scar. This should be lightly sanded along with an accurate sanding of good sharp corners and notches.

These three 1/16" parts are to be glued to the 1/8" plywood base. Before gluing, lay the 1/16" parts on the base and cut or sand the two outside forms so that when the rib pattern is replaced in the hole you will have a 1/64" space between the outside pattern and the rib pattern at all edges. The razor band will be epoxied in this groove so the more uniform the space the more accurate the cutter. The three 1/16" pattern parts should now be glued to the 1/8" base. Go easy with the glue, making sure that no glue gets in the groove where the razor band is placed.

The Techmatic Cartridge has about 18" of razor band. The band is quite light but, if handled with care, will work very well. The band may be cut in many sections, each running straight from angle to angle. I find it quite easy to cut the band into lengths so that no more than two bands are put in any one length. If one is clever, he can bend the total length of the band in one piece. The band can be cut with a pair of scissors and is bent with needle nose pliers. When you are satisfied with the band shape, epoxy in place in the holder groove.

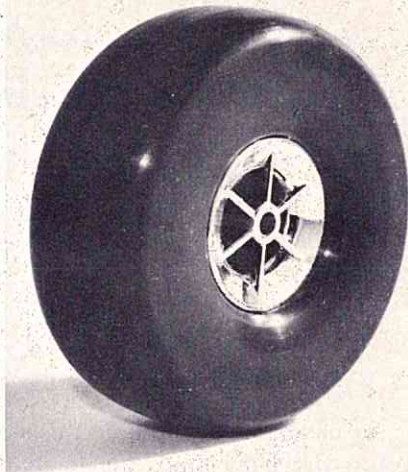
Handled with care this die will cut many ribs up to 1/8" thick. There are no limits to rib shapes: Clark Y, undercambered or symmetrical. Cut-outs for internal holes can be set up by putting sharpened tubing in the center of the die. □

TAKE A LOOK AT THIS..

Technisales, P.O. Box 822, San Gabriel, California 91775, now has in stock for immediate delivery three great new fuelproof multi-color decals from KDH in Germany with rare European-American product trademarks and logos. One sheet is a special Formula I racing decal sheet, while another is for the model scale builder and contains firm designs of the propeller manufacturers such as Hartzell, McCauley, Univair, Flottorp, the Czechoslovakian Avia, Moravan, the German Hoffmann, from Switzerland, Infanger, from Italy, Piaggio, etc., as well as other sponsors. The third is a 1/8th scale decal sheet for R/C race cars with logos of well-known sponsors. Price for the KDH #1147 Prop decals, a 6½" x 8¾" sheet with 88 emblems is \$3.45. KDH #1148 1/8th scale Auto Racing decals, a 10" x 8¾" sheet with 85 emblems is \$4.45, while the KDH #1149 Formula I decals, a 9" x 8¾" sheet with 50 emblems is \$3.85. Dealer inquiries are invited by Technisales. Tested, Approved and Recommended by RCM.

From Aero Precision, a division of Collins Industries, Inc., 322 N. East St., P.O. Box 152, Tipton, Indiana 46072, has a miniature wind sock for your home, office, hangar or workshop. Priced at \$12.50, this unit is manufactured with bronze Oilite bearings, hardened steel shaft, cast aluminum wind directionals and long lasting, flame orange sock from Indian head material. This unit gives wind direction and velocity, helps your friends find your home, as well as letting your friends and neighbors know you're a pilot! Tested, Approved and Recommended by RCM.

Rand Sales Company, Box 20059, Columbus, Ohio 43220, now has MG Air Wheels in stock. These are among the best looking wheels we have seen — they are permanently pneumatic, strong and unbreakable. Available in both scale-like regular as well as low bounce configurations, the inner part of the hub is removable for installation of an electric brake if desired. Prices



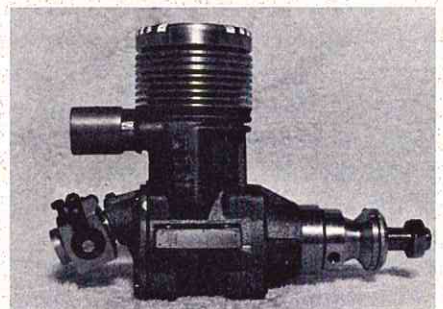
are as follows: 3" at \$2.59 a pair; 2¾" at \$2.39 a pair; 2½" at \$2.19 a pair. These tires are pitch black shiny rubber with a realistic diamond tread.

Kraft-Hayes Products, 450 W. California Street, Vista, California 92083, has released their glass filled Nylon Engine Mounts. Featuring high strength and light weight, they are of a rugged design and constructed from high strength material which combine to make a superb engine mount that virtually has no equal. Offered in a variety of sizes to fit nearly any engine, these mounts offer the strength of metal but are surprisingly light. Prices range from \$2.49 for the KM-19 mount for the .19 size engines to \$2.99 for KM-60B for the .60 size engine. Tested, Approved and Recommended by RCM.

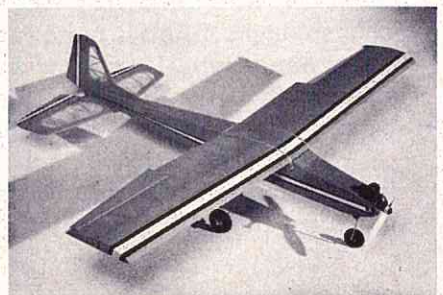
Several new items have been introduced by Sonic-Tronics Inc., 8017 Craig Street, Philadelphia, Penn. 19136. Among these are the "Nifty" Tank Improvement Kit which elimi-

nates "klunk-itis" (pickup getting forward and kinking fuel line). This unit eliminates rotting tank lines and provides a permanent installation of special silicon design with new metal pickup. Available for tanks from 1-3 oz. and for 4 oz. and larger. Price is 89 cents each. Also available from Sonic-Tronics Inc., are quality surgical type tubing available in small, large and super, as well as highest quality silicone tubing in small and large sizes. Another packaged item from this firm is vinyl seating tape and vinyl mounting tape — all are available at your local hobby dealer.

For those modelers who like a little spice in their flying, the Series 70 OPS engine from Shamrock Competition Imports, P.O. Box 26247, New Orleans, Louisiana 70126, is a rear rotor tuned exhaust engine which comes in aero speed, aero R/C sport, race car, and marine versions. At the present time it is produced in the .60 size only. A complete stock of parts is carried by Shamrock Competition Imports for immediate replacements. Free literature on the engine is available upon request. Price of the OPS 60 is from \$69.00 to \$110.00 depending upon the version and model ordered. Coming soon will be an OPS side port R/C 60 aircraft version.



From Dumas, P.O. Box 6093, Tucson, Arizona 85716, comes the Sport Evolution. Now the Dumas Evolution is available with ailerons. This is a great plane for stunts and training to fly pattern maneuvers. Designed for .09 to .19 engines and four channel radio.





presents

Baron von Richthofen's legend

Fokker Triplane

- Detailed Full Size Plans
- Building Instructions
- Formed Nose
- Formed Wing Fairing
- Machined Wood Parts
- Pre Cut Parts
- Full Size Decals
- Hardware
- Easy Balance

Light Weight
VK Quality

SCALE: 2" = 1'
 WINGSPAN: 47"
 WEIGHT: 5 1/4 lbs.
 ENGINE: .49 - .60

FOR FURTHER INFORMATION -
SEND SELF ADDRESSED STAMPED ENVELOPE



SPECIAL - DIRECT ONLY HAND CARVED FOR DISPLAY
 LAMINATED SCALE PROPELLERS \$5.95 EACH
 NIEUPORT - 16" TRIPLANE - 17"

VK MODEL AIRCRAFT CO.

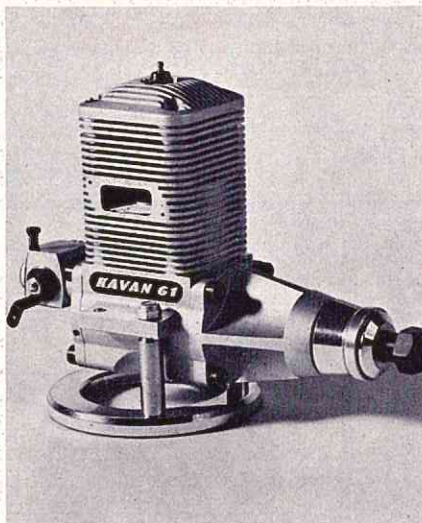
12072 MAIN RD., RT. 5
AKRON, NEW YORK 14001

A newly developed integrated circuit board, Crystal Standard Oscillator, measuring only 3" x 3" x 2" in size, yet with an accuracy of .001% or better has been produced by Midg-Line Instrument Company, Kendall Branch, P.O. Box 487, Miami, Florida 33156. This Dual Crystal Frequency Standard provides a most convenient means of checking receiver and transmitter frequencies or use as a precision frequency generator. An unusual dual feature develops two frequencies simultaneously, thus you can cross check unknown crystals or even the oscillator itself. Any crystal from 10 kHz to 1 MHz can be inserted. Harmonics of the fundamental can be used up to about 50 MHz. Output is 1 Volt RMS (at 200 kHz) and is

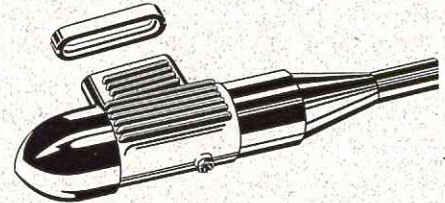


adjustable down to zero. Input requirements: 6 to 12 Volts DC at 20 Ma. A 115 Volt line operated model is also available. Price is \$25.00 and \$35.00 respectively.

From Kavan comes a brand new .61 engine which is a technically fully developed engine which in it's testing run, according to the manufacturer, has already excelled all existing engines in speed. This is a consumer-engine with Schnurle pot and larger



radiator surface, which will be available during 1971. The second item from Kavan in West Germany is their venturi-type muffler which is different from the standard commercial types currently on the market in that it has no loss of speed but, on the contrary, RPM is increased. No resinifying of the piston rings occurs and the muffler can be used on more than 10 different engines by simply changing adapters. The solution of the problem of interchangeability will not only help the distributors and dealers but mainly the modeler who can now use the same muffler when he changes engine size. Delivery is now available.



Perry Aeromotive, 6887 Farndale Avenue, North Hollywood, California 91605, has produced the Perry Air Cleaner, designed specifically for engines equipped with the famous

(continued on page 60)

CANNON
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ITEM	KIT	BUILT-UP
2 CHANNEL (1 SERVO)	\$79.95	\$104.95
2 CHANNEL (2 SERVOS)	\$99.95	\$129.95
3 CHANNEL (2 SERVOS)	\$109.95	\$144.95
3 CHANNEL (3 SERVOS)	\$129.95	\$169.95

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3 CHANNEL (3 SERVOS)	\$149.95	\$209.95
4 CHANNEL (4 SERVOS)	\$179.95	\$249.95

ADD \$10.00 FOR 53 OR 72 MHZ
ADD \$15.00 FOR SINGLE (3 AXIS) STICK

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ITEM	KIT	BUILT-UP
4 CHANNEL (4 SERVOS)	\$214.95	\$284.95
5 CHANNEL (4 SERVOS)	\$224.95	\$296.95
6 CHANNEL (4 SERVOS)	\$234.95	\$309.95

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ADD \$15.00 FOR SINGLE (3-AXIS) STICK

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CUSTOM DECALS

(Reprinted from San Jose Aero Modelers Newsletter)

If you've ever envied the custom handmade decals on a scale modelers ship, and wondered how they were made, the process begins with a visit to the local 5 & 10 cent store (now more popularly known as 25 & 50 cent store). There you can purchase a roll of 2" wide brown package sealing tape, the kind commonly used in a wet dispenser for sealing cardboard shipping cartons. Take this sealing tape and hold it to your building board with masking tape, gummed side up making sure that the masking tape is overlapped 1/8" all around the tape. The second step is to spray a thin coat of clear HobbyPoxy over the entire gummed side of the tape. You can brush on a thin coat of clear if you don't have an airbrush for spraying.

Be sure to allow the clear

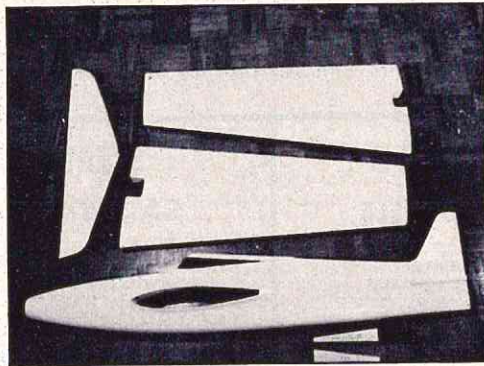
HobbyPoxy to dry thoroughly. Next, with a fine pointed brush held deftly in a somewhat shaky hand, paint the design of your choice over the clear HobbyPoxy and allow to dry. Then, accent or shade your design with another contrasting color and again allow to dry. Use as many different colors as you dare to complete your design, using taste in your color selections so they won't clash when your decal is completed.

When you have finished the hand painting of your decal, spray a coat of clear HobbyPoxy over the entire design and, once again, allow to dry thoroughly before peeling off the masking tape. Trim your finished decal with an X-Acto knife, then soak in warm water and, when sufficiently loosened, slide your decal off the backing onto the wing or fuselage. Pat dry with a paper towel and allow to

stand overnight. For an extra added assurance, a final coat of clear HobbyPoxy should be sprayed on as an overall sealer, and presto! you have one handmade custom decal.

At this point I can hear you moaning bitterly that "at this rate it will take me all week to make a decal." And, in fact, it probably will if you use a number of colors. But, it is also very rewarding to see a creation of your own on your bird's wing and with a little imagination, the sky is the limit as to what you can achieve. By the way, it's a good idea to work out some rough sketches on paper before you start the actual painting. In this manner you will have something laid down beforehand to copy and paint. As an added bonus, these decals are completely fuel proof as they have been made completely with HobbyPoxy Products. □

EYEBALL THIS!



This month we are featuring the Skyglas Eyeball at only \$39.95. At this price you get the sleek perfectly finished fiberglass fuselage complete with installed bulkheads and engine mounts, the accurately cut foam wings, landing gear blocks and cut foam stab. Available as trike gear or as tail dragger.

We also feature the following Skyglas fuselage and foam wing kits at the same low \$39.95: Minnow (Form. I), P-51 with Formula II or sport wing, Twister, Citron, Sun-Fly, Sun-Fly with Kaos wing, Kwik-Fli II or III, Long Midget.

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SPORT DESIGN
FOR GENERAL PRACTICE
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BUILD IT IN
A WEEKEND.

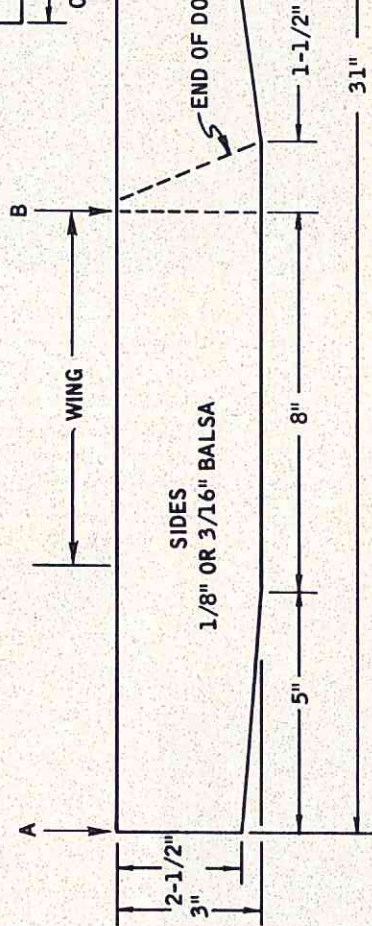
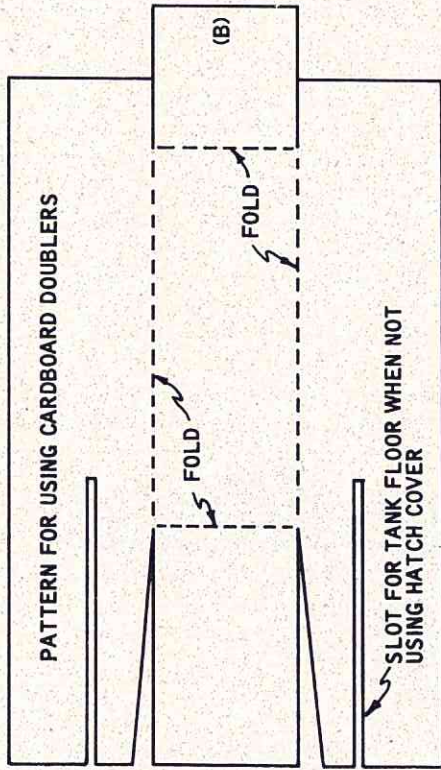
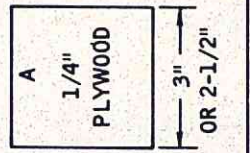
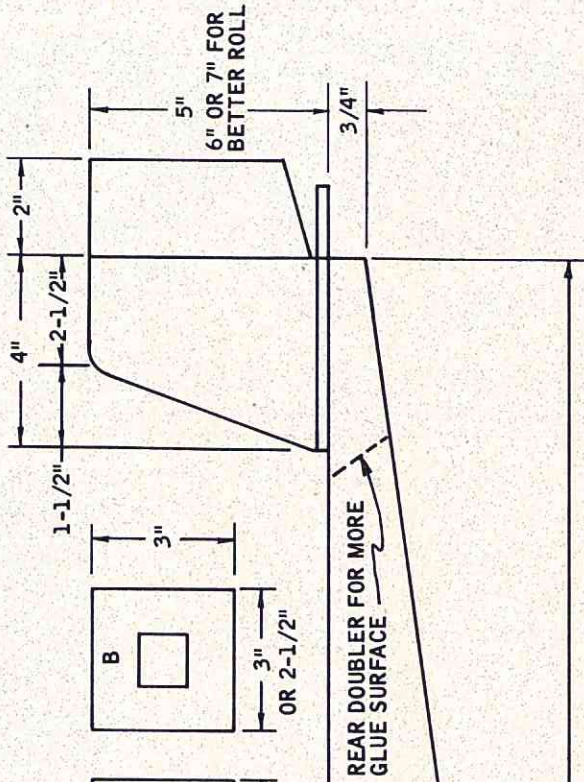
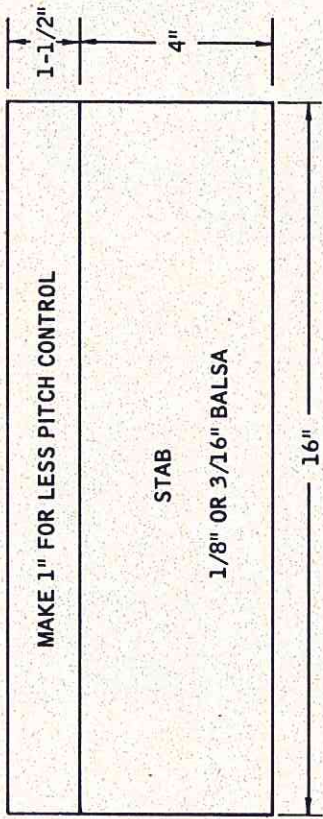
Accompanying this short article are a set of drawings for the Scooter, a "One Design" aircraft originally printed in the "Worksheet" of the Western Ohio Radio Control Society. Full sized wing templates are also included. This is a simple aircraft for which full size plans are not necessary since it contains nothing but straight lines and full dimensions for easy transfer to balsa sheets.

It is suggested that you use 1/8" or 3/16" balsa for the sides, top, and bottom. Use corrugated cardboard saturated with polyester resin for the doublers and rear bulkheads. In actual practice this has worked quite satisfactorily.

Place a cardboard floor in the tank compartment so that the fuel tank can be put in on top of the batteries without a hatch. The cardboard is placed between the tank and batteries to keep the fuel out of the plane. Be sure to reinforce the tail so that there is enough gluing surface to hold it in place.

Sand all edges square. This makes it easier to cover the aircraft with Contact Shelf Paper. After applying the shelf paper covering, try ironing with a warm iron for better adhesion.

This is not intended to be a pretty airplane, but one that is extremely functional and designed for rough field flying and general practice. It would also be an ideal trainer for the new combat event. It can be built in less than a weekend and a full size template is provided for a foam wing of 48 or 50 inch span. If you want to build it pretty, then use conventional building methods with rounded corners, etc. However the Scooter was not designed for this purpose, but, rather a quick and dirty plane for a minimum of expense. □



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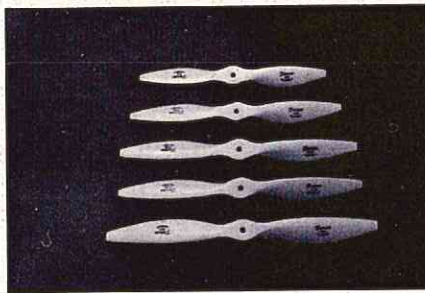
SLIM PAK - packaged straight - & COIL PAK AVAILABLE

Perry Carburetor. It is manufactured in two sizes to fit both the small and the large Perry units. Easy to install, it simply snaps-on into position over the venturi. It consists of only three parts, also making it easy to clean; the cap, filter element, and body. The cap and body are of durable reinforced nylon.

The Perry Air Cleaner improves the low idle, makes for easier starting, and increases fuel economy - at the same time preventing dirt, grit, dust and other harmful particles from entering the venturi, thereby extending engine life. Available at most hobby shops, both sizes sell for \$1.95 each. Tested, Approved and Recommended by RCM.

With their three new fuels, K & B Manufacturing, a division of Aurora Products Corp., 12152 Woodruff Avenue, Downey, California 90241, now offers a choice of 5 blends - a blend to meet every type of flying, and each one reflects the superiority of performance long synonymous with K & B Fuels. The three new blends include: Super Speed, a high percentage nitro fuel designed for R/C Pylon Racing, \$12.00 per gallon; Supersonic 500, formulated for R/C Model Flying

and R/C Race Cars, \$6.95 per gallon; F.A.I. 75/25, for (as its name implies) F.A.I. Pylon, Free Flight and U-Control Speed, \$4.95 per gallon. This latter is strictly an F.A.I. fuel but permits the modeler to practice flying with the same type of "mix" he will receive in F.A.I. competition. Both the Super Speed and 500 will keep engines running cool at peak rpm because of their superb lubricating qualities. Available at most hobby dealers.



The big news at Tatone Products, 4719 Mission Street, San Francisco, California 94112, is a new line of wood props, the "Twisters". A long year of designing, development and testing of propellers both on the field and with independent testing labs

convinced them that they have the best performing propellers on the market. What makes Tatone's propellers better? You have heard it said before - true pitch! Special propeller making machinery was designed to cut a true pitch without exception in every propeller. This is the secret of the "Twister's" extra pulling power and extra performance. Other important factors that make this a good propeller is the special attention to details. Every propeller is cut from selected straight grain wood and both blades are matched in lengths, airfoils and profile shapes. Every "Twister" is carefully balanced and has a fuel resistant finish. Any propeller that does not meet these requirements is rejected. At the present time, the "Twister" is available as follows: 9/6

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computer plotted wing ribs.

precision cut & sanded parts.

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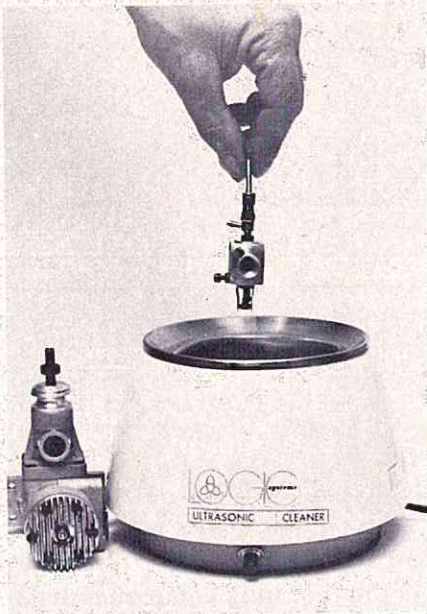
Span 70.5 in.

Area 770 sq. in.

Engine .61

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\$55⁰⁰



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TAKE A LOOK AT THIS

(continued from page 60)

and 10/6 for 75 cents each and 11/6, 11/8 and 12/6 for 85 cents each. This is only the beginning and they will fill in with more sizes and pitches as quickly as possible. Also in the works are special props for R/C pylon, Speed and FAI power events.

Aero Publishers, Inc., 329 Aviation Road, Fallbrook, California 92028, has just released the 4th volume in their Aero Pictorial Series, entitled "Flying Leathernecks In W.W. II". This is one of the few books published on the U.S. Marine Corps' roll in World War II aviation.

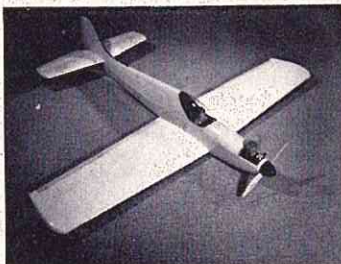
Beginning with the year 1940, the author describes and illustrates the aircraft that entered the Marine Corps service each year through 1945. Such planes as the BG-1s, F3Fs, F4Fs, SBDs, TBFs, F4FUs and many more are shown; thus enabling the reader to

see the changes that took place in Marine Corp aircraft during the war years.

All but a few of the photos presented are of Marine Corps airplanes photographed in their actual locale, and great care has been taken to insure that squadron information and dates are accurate.

Each of the volumes of the Aero Pictorial Series contains approximately 100 pages and 200 photographs. The books are available at airports and bookstores throughout the country, and list for \$3.95 each. □

DRAGONFLY



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Larry Leonard's
"LIBERTY BELL"

\$69⁹⁵

KITS INCLUDE:

- FINISHED GLASS FUSELAGE
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EYEBALL



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(continued from page 41)

will free the shell from the mold. Slide the fuselage off the form, remove the plastic, and begin peeling out the masking tape from the inside of the shell. Remove the masking tape slowly so as not to damage the inside wood.

Take a few moments now, and bounce the fuselage in your hands. Light, isn't it? Squeeze it a little along its length at the sides. Strong, huh? Hold it up at arms length and set your imagination in motion. It can be a cockpit job, cabin type, military fighter, pylon racer, it can be any of these and more, and what's best, you can have as many copies as you like for about five bucks worth of balsa and a few hours of work.

Back to the workbench. Remove the front mold dowel and, using the front of the mold as a guide, mark out the firewall shape on 3/16" or 1/4" thick plywood. Before gluing in the firewall and the bottom nose section, you should fuel proof the tank compartment with Hobbypoxy glue or whatever fuel proofing you like to use. After the firewall is in place and the bottom of the nose section is re-instated, fit in half bulkheads at the leading and trailing edges of the wing saddle. These need be only an inch or so high and a quarter inch thick to provide all the stiffening the shell will need.

The method of wing mounting is up to the builder, but here is a method you might try: Epoxy 1/2" thick by 3/4" square pine blocks at the inside of the four corners of the wing saddle. Measure from the center of each block to the outer edge of the wing fillet and note these distances. Square up the wing to the fuselage, secure with masking tape and mark reference points on the bottom of the wing that coincide with the outer edges of the fillets. Now mark those points on the wing that are above the center of the blocks and drill pilot holes through the wing and into the blocks. Tap threads in the blocks, open up the holes in the wing, and attach the wing with four nylon bolts instead of two and a dowel. Using four bolts allows wing adjustments in any direction needed.

The engine cowling was not made as a part of the shell on my form. However, if you wish to do so, there is nothing to prevent molding all the way up to the spinner. As long as the



Jim Whitley / Winner, 1970 Masters Tournament

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Two Stick Open Gimbal



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Single Stick Open Gimbal



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Kable News Company is pleased to announce a **RETAIL DISPLAY ALLOWANCE PLAN** available to retailers interested in earning a display allowance on R/C MODELER MAGAZINE. To obtain details and a copy of the formal contract, please write to Kable News Company, 777 Third Avenue, New York, New York 10017. Under the retail display plan, the consideration of your acceptance and fulfillment of the terms of the formal contract to be sent to you upon request, you will receive a display allowance of ten per cent (10%) of the cover price per copy sold by you. This plan will become effective with all issues of R/C MODELER MAGAZINE delivered to you, subsequent to the date your written acceptance of the formal Kable News Company, Inc. Retail Display Agreement is received and accepted by our company.

bottom of the nose is removed, leaving the bottom of the fuselage open from the rear of the wing saddle forward to the nose, allows almost any configuration to slide off the form. A recent article in RCM detailed the making of

a fiberglass cowl. One could also be built of balsa and sanded to shape after the engine is in place.

If you have made it this far, you don't need me anymore, the rest is up to you . . . it's your airplane (s). □

ALL NEW

AILERON HORNS WITH SWIVEL & CLEVIS
\$1.59 pr.

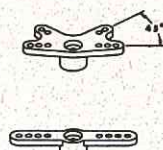


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ABOVE, LEFT: The Gryphon goes up on the Hi-Start. ABOVE, RIGHT: At the moment of release, the chute will return almost to point of launch.

THE 'CAN WINCH'

(continued from page 33)

sidewall. The price is approximately \$6.00. If you cannot obtain the single 100 foot unit, tie two 50' sections together with a square knot.

Next, go to your local sporting goods counter and obtain 400' of 40 pound monofilament fishing line.

Third, have your wife buy three

pounds of coffee so you can steal the can it comes in... this is where the name "Can Winch" comes in. You wrap the monofilament line on the outside and store the surgical tubing on the inside of the can. Put some talcum powder in the can with the surgical tubing and replace the plastic lid to protect the tubing from smaze, smog, ozone and other things which hurt rubber when not in use.

Borrow from your pup tent, large tent, or your friend's tent, one small aluminum tent stake. Now, let's get this whole mess assembled into an RCM Can Winch Hi-Start.

Tie a permanent loop on the stake to which you can attach the surgical tubing. Use a simple knot - two half hitches facing each other does fine. Tie a loop in one end of the monofilament line to which you tied the other end of the surgical tubing using the same simple knot. Be sure to use some type of protective covering, such as heavy duty fuel line, or a piece of the surgical tubing, on the monofilament line where it contacts the tubing in order to keep it from cutting through. Tie the loose end of the monofilament to the bottom of the parachute shrouds. Hook the ring tied to the winch shrouds to your tow hook and start walking 'till you've stretched the whole thing about 250%. Now, with the transmitter on, you are about all set to go. The parachute will stay stretched out until the glider reaches 300-400 feet then pops open pulling the tow ring off the tow hook. At the same time it will float downwind (back to you) keeping your line straight as well as saving you a lot of walking and chasing.

This simple Hi-Start has been used successfully by RCM for the past two years and has proved superior to any other type of Hi-Start currently available. □



the honeycomb wing

strong
light
perfectly molded

The Kaos, Ugly Stick and Sunfli IV wings are available from stock at \$49.95 in grey primer. They are complete with ailerons, hinges, servo box and rails. All orders are prepaid. Freight collect. (We pay freight to western states.) 6 page brochure and technical data on request.

W.A.V.E.

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We have a few factory seconds available at \$24.95 ea.

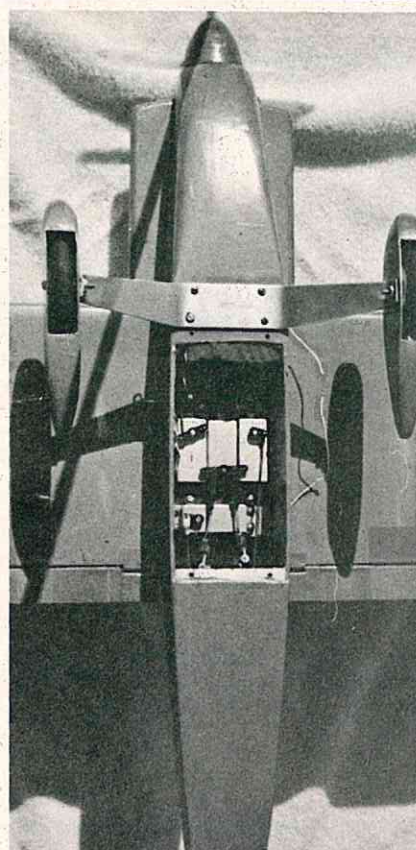


CASSUTT SPECIAL

(continued from page 23)

deck, 1/2" sheet tank compartment floor, 1/8" ply LG mount, 3/16" nose doublers, nose block, 1/16" sheet rear bottom and 1/4" sheet fin. Set it aside, the hard part is over.

WING: Make two sheets of 1/16" x 7" x 36" and pin one down to a flat surface. Glue the 1/2" sq. LE and 1/8" x 5/16" in place. Cut out the 3/32" sheet ribs and mark their placement on the sheet bottom. Glue the ribs and the 3/16" square TE filler down to the sheet and allow to dry. Using white glue or Titebond, glue down the top piece of 1/16" sheet and add the tip blocks. When dry, shape



Radio installation in Cassutt showing location of KPS-10 servos.

the leading edge and the tip blocks and the wing is finished.

Glue the wing and stabilizer in place and add all of the little filler pieces. You are now ready to fiberglass the inside of the fuselage from the firewall back to bulkhead C.

Cut out pieces of glass cloth to fit and position them in place according to the sketch. I use an extra layer around the firewall and the landing gear mount. Pour in the resin and allow it to saturate all of the cloth. Slip in bulkhead A and reinforce with some scrap cloth. Now, while the resin is still fluid, position the airplane so that all excess resin will run out. This procedure takes a few minutes, so don't mix a hot batch of resin. I use polyester boat resin and 6 ounce boat cloth. It is not expensive and is readily available at most hardware stores. Trim off the excess cloth and resin before it is completely cured. There is a short period of time while the resin is like leather and may be easily trimmed with an X-Acto knife.

After carving the hatch and building the section above the wing, add the tail wheel and sand everything and you are ready to finish. Cover the cheeks separately and epoxy in place after the fuselage is covered. Cut away a small



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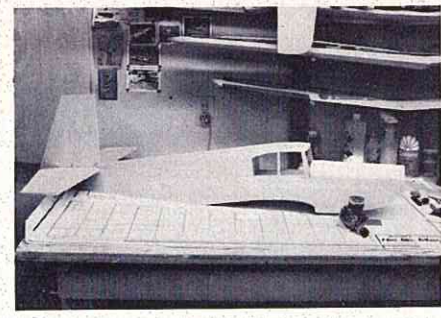
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strip of MonoKote under the cheeks to obtain good adhesion. Wheel pants are optional, but they do dress up the airplane and have proved to be very durable.

When hooking up the control surfaces to the servos, keep all movements to a minimum. Note those long aileron horns. I connected them to the inside holes on the servo arm and this provides adequate movement for racing.

Cut a hatch cover from 1/32" plywood and secure over the radio compartment with four small sheet metal screws. I also used sheet metal screws to attach the landing gear.

FLYING: Make sure the CG is well forward although it does not appear to be too critical. The elevator just becomes more sensitive. For that first flight give the elevator a couple of extra turns of up trim. Mine needed it, and didn't have it, and I was lucky to get a second flight! Once trimmed, however, the airplane has exceeded my expectations. When landing, allow for a fairly long approach and keep the speed well up until on final approach. Just remember, the airplane was designed to win races, not carrier landing. Good luck. □



The fuselage and empennage completely assembled.

KITS & PIECES

(continued from page 6)

and remove the wing jig from the lower front spar position. This is the critical point as to whether you have glued it to the ribs by mistake. If you have worked on both panels at the same time they are now both ready to turn over and, pinning the trailing edge down to your workbench, you can use the same wing jig-leading edge placed under the front spar. This keeps the panel nice and flat. Glue in the other 1/4" square spars at the center section.

We had to trim a couple of these with a sanding block which could have been due to having our ribs off slightly from their proper position. The instructions call for installing bellcrank floor supports. Here, we found that the plans called for 3/16" square floor supports but they have been replaced with 3/32" plywood glued between the spars. This makes a better arrangement, by far. Mount your bellcranks on the plywood floor and install in place. When all has dried, remove the wing and the wing jig. Pin the bottom spar to a flat bench and the 1/4" wing jig now becomes your leading edge. At this point we had to trim the leading edge of a couple of the ribs and discovered the leading edge-wing jig had a slight warp in it so we cut a new one. This worked fine when pinned flat to the bench but we didn't want to take a chance on having a bow at the leading edge of the wing. These could have been water soaked and straightened but it was easier to replace with a new one from a time standpoint.

With the wing still pinned down, glue the top front 3/32" x 4" sheeting in place. When dry, turn the wing over (continued on page 76)



Miss Lou Jeans poses with authors "Sportsbird" aerial movie aircraft. Text and photos illustrate successful method.

AERIAL MOVIE MAKING

WANT TO TAKE COLOR MOVIES FROM YOUR R/C AIRCRAFT? A PROFESSIONAL PHOTOGRAPHER AND ACTIVE RC'ER ILLUSTRATES HOW-TO-DO-IT, STEP-BY-STEP.

By R. Giles Southard

I am a professional movie maker and "Sunday Flyer" who has had success in producing aerial movies shot from an R/C model. If you have been looking for a model that was created just for aerial movie making or would like to try your hand at aerial movie filming, then read on.

This model is an almost-ready-to-fly creation that has a Du-Bro "Sportsman" fuselage and a "Seabird" wing. We might then call it a "Seabird Sportsman." This is a combination model that is available from Du-Bro on special order. I had tried making movies with several conventional R/C models like the DeBolt Cub and Senior Falcon by mounting the movie camera under or above the fuselage and I was never fully pleased with the footage I got. The motor waste blowing back into the camera lens was a nuisance and it was hard to get a good camera angle for ground filming. I looked for a long time for a good stable flying model that would be capable of carrying a movie camera in the nose of the plane with the motor behind the camera, eliminating the problem of the motor waste and enabling us to get the necessary camera angle for good ground filming. If you have never tried aerial movie filming, then you are in for a few surprises. If the camera angle is straight down, you will get a jumpy picture that will give you a headache and possible motion sickness when viewing. A good example of the cor-

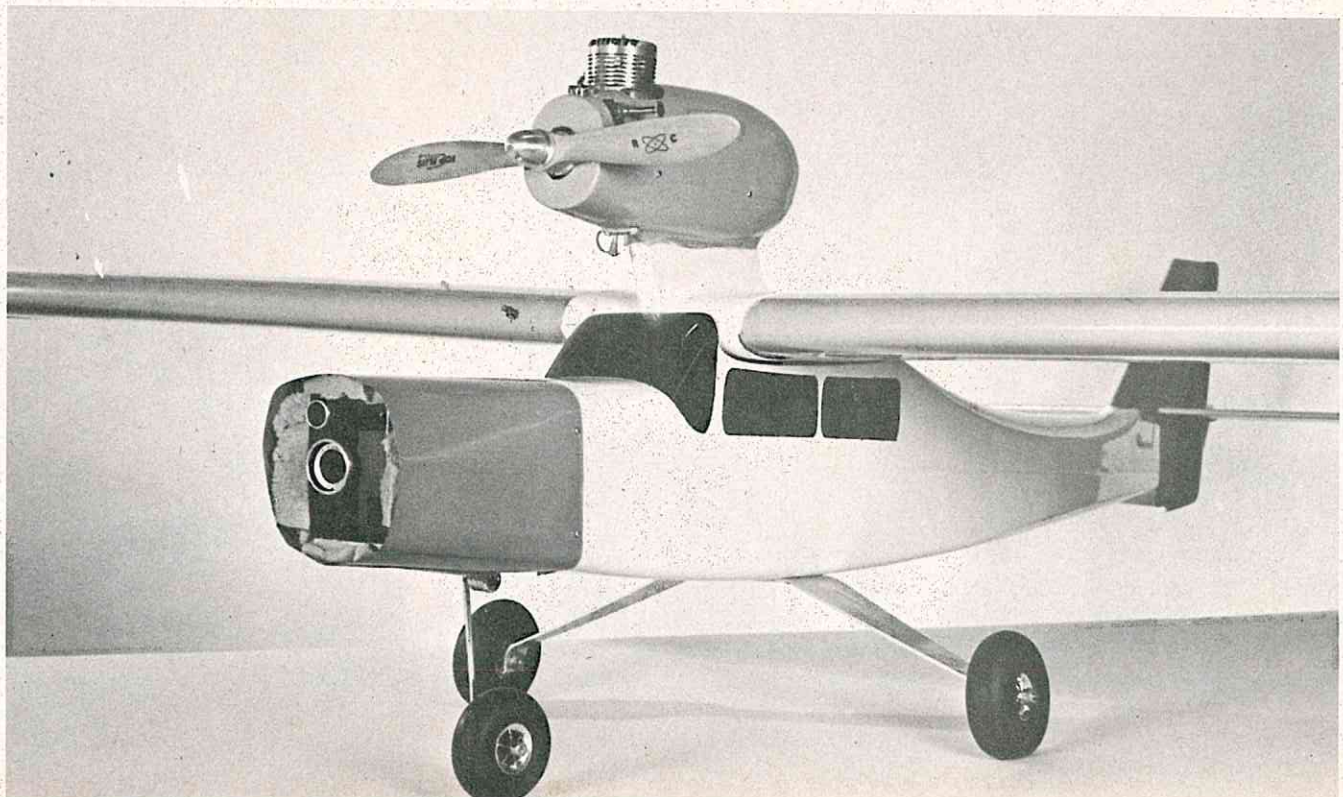
rect angle for filming, and of the problem involved, is to relate it this way: When you are driving down the highway and you look ahead, you have good perspective and there is little visual evidence of the speed that you are traveling. But if you look out the side window and down at the ground, you get a visual image that you are really moving. This fast moving effect is what you want to avoid in aerial movie making and this can be done by mounting the camera slightly down and in front of the model.

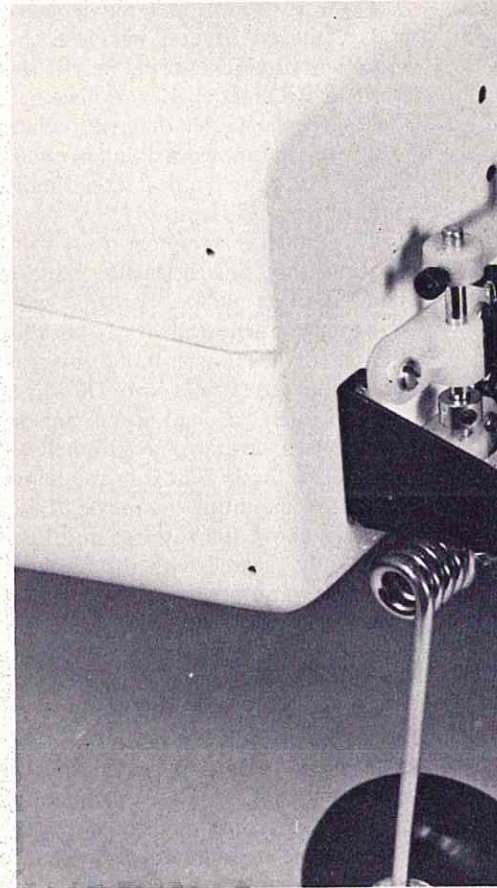
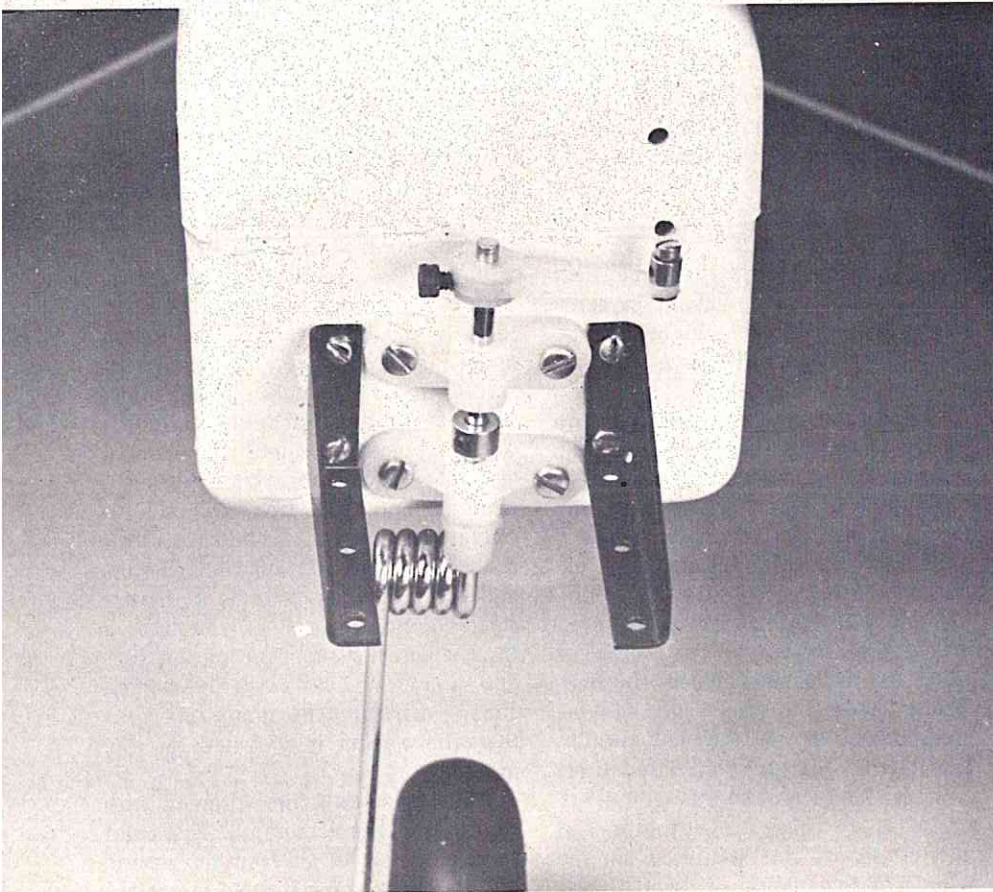
By using a slow speed or glide and straight ahead approach, you can get a somewhat slow motion effect which is most desirable when doing aerial filming. The Kodak Instamatic Super 8 movie camera with an automatic exposure control is ideal for aerial filming as you do not have to worry about lens settings for correct exposure. The plane has a perfect balance, the fuselage is wide and deep and will accommodate any of the new proportional R/C systems. I mounted three Kraft KPS 11 servos across with plenty of space to spare. The motor and aileron servos are mounted in the wing. The installation of the R/C gear and camera are quite simple. I would like to suggest by-passing the camera release button and bore two small holes in the camera case and solder one wire to the battery terminal and solder the other wire just behind the release switch. When the two wires

touch, the camera is activated. This will give you a clean release in starting and stopping the camera. I used a Carl Goldberg Nylon Link and screwed a brass screw into the nylon head and soldered one wire to it. When the linear arm of the camera servo moves forward with the attached nylon head, it makes contact with the second wire from the camera activating the camera. The model is powered with an Enya .60 and the total weight with camera and Kraft Seventy Series with KPS 11 servos is 8¾ pounds. The most desirable R/C gear for flying this model would be a five channel proportional system using rudder, motor, elevator, ailerons and the fifth channel to operate the camera. If you have a four channel system, tie off the ailerons and use rudder for turns as we have a steerable nose wheel. If you have a three channel system, use motor, rudder and elevator and hook the camera control wires to the motor servo so that the camera is activated on low motor.

This model is white trimmed with orange and has a blue tail. This color scheme is easy to see from the ground and the wing stripe is most important as it will enable you to keep the wings level when filming. The model flies like a dream and the average Sunday Flyer should have no trouble flying or assembling this almost-ready-to-fly Du-Bro model. □

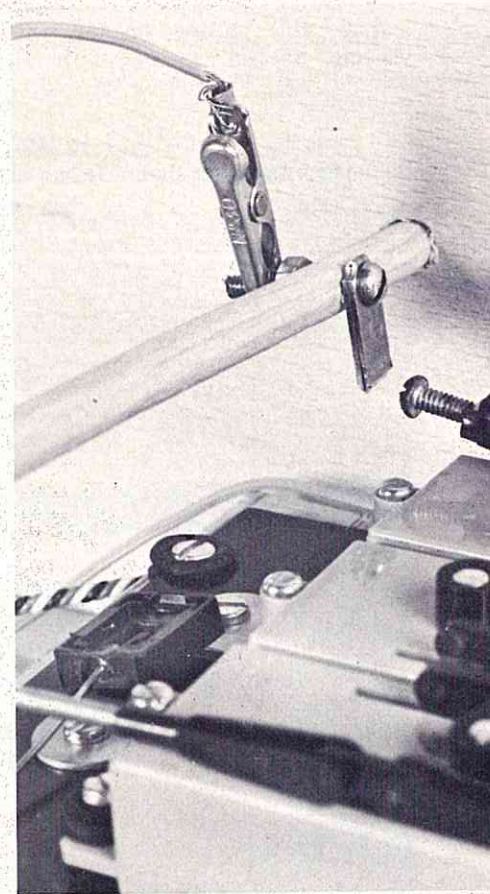
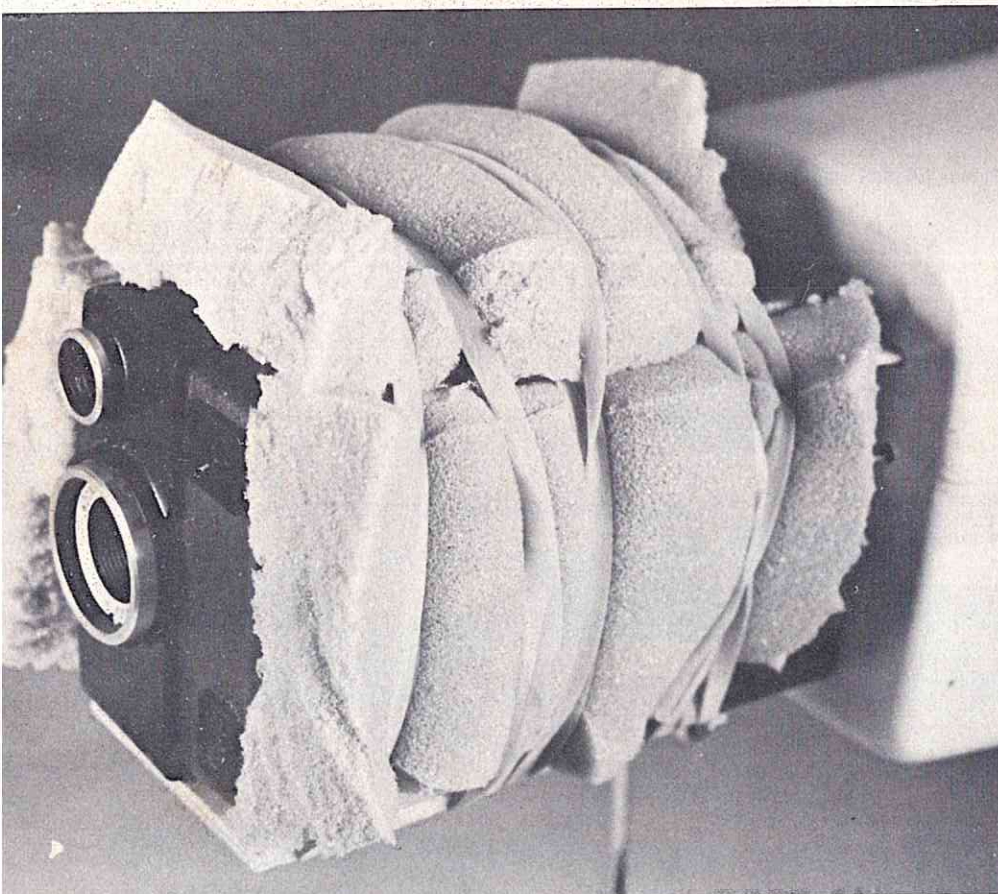
Du-Bro Sportsman with Du-Bro Seabird wing. Tatone fill-plug used under front of motor pod for fueling, de-fueling.

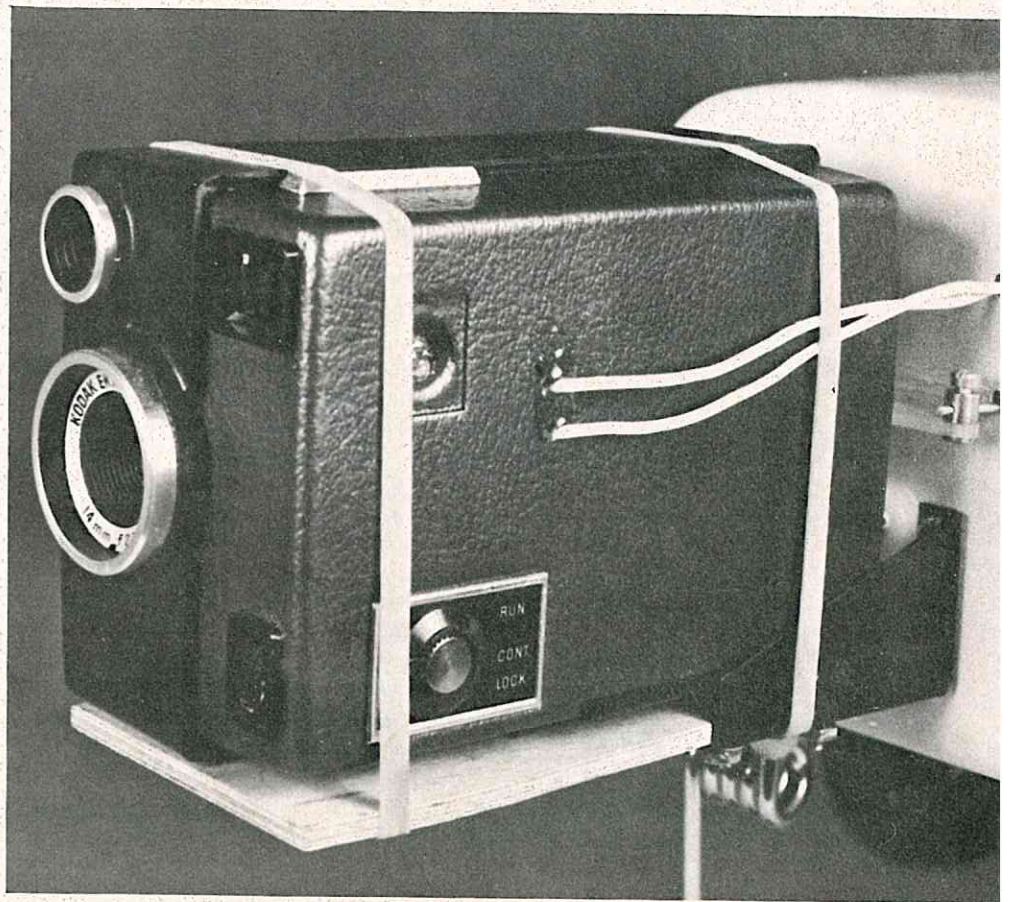
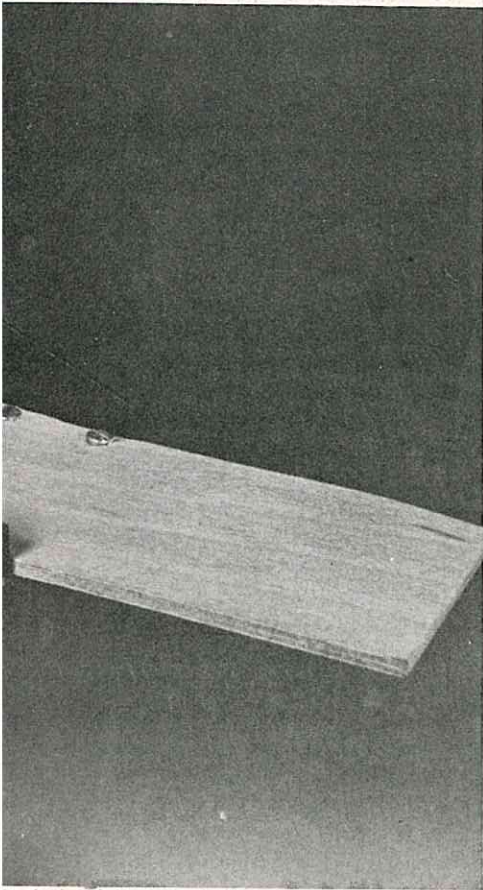




ABOVE, LT: Du-Bro motor mount installed upside-down to support camera mount platform. **ABOVE, RT:** Camera platform installed on mount.

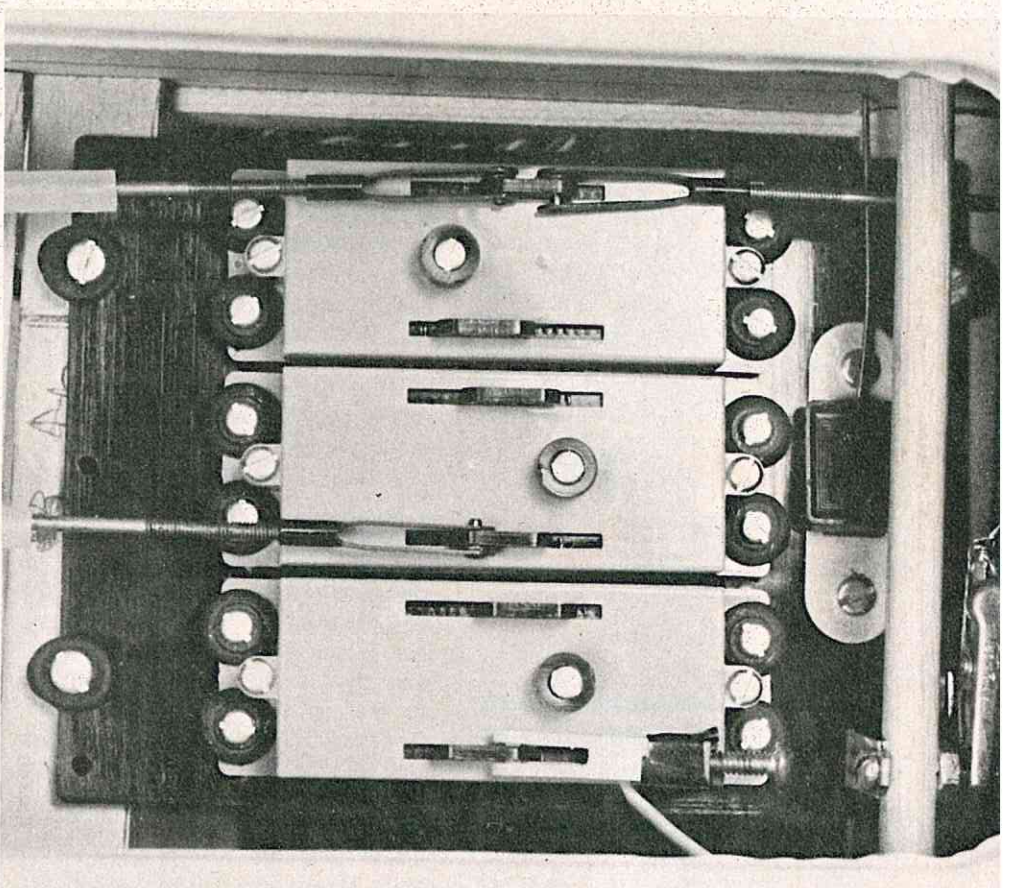
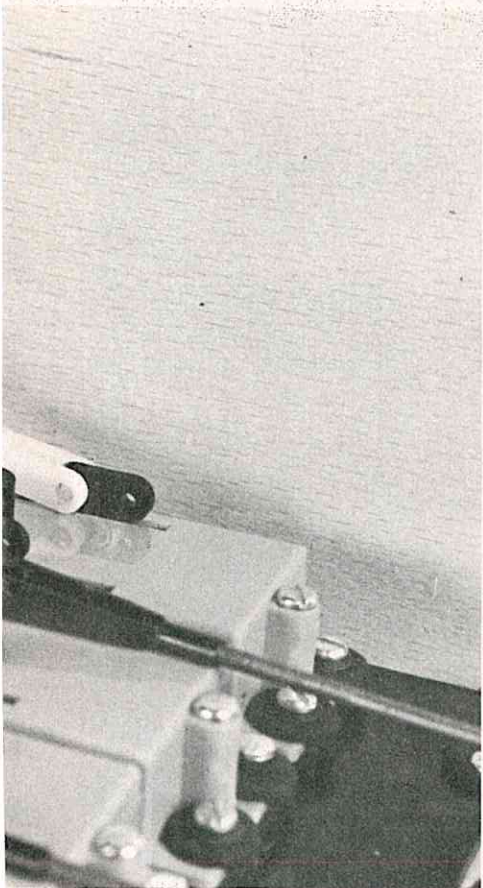
BELOW: Be sure to use plenty of foam rubber around the camera to prevent shock and crash damage.





ABOVE: Kodak movie camera mounted on platform. Note wires going back to actuating switch.

BELOW, LT: KPS-11 servos used. 1st servo for rudder, 2nd for elevator, 3rd for camera. BELOW, RT: Simple actuating switch on servo electrically operates camera.



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KITS & PIECES

(continued from page 70)

and glue the bottom front sheeting in place. This still leaves a large area down the center of the wing that is not sheeted. Epoxy the landing gear blocks and braces in at this time. The plans did not show the plywood braces. We also installed landing gear anchor blocks at this time that the plans did not call for. We felt that this was necessary for additional strength. At this point we checked out the landing gear and found one was approximately 3/16" longer than the other and twisted somewhat. There was no problem straightening them and we didn't figure that the distance between the wheels would matter too much.

After the landing gear mounts are dry, complete your bottom sheeting using three pieces of pre-cut sheeting material. The latter has to be trimmed to fit properly. Put a pinhole through the sheeting to locate the landing gear channel cutout after the wing is completed. At this point the instructions call for installing the linkage from the bellcranks to the servo and also from the bellcranks to the aileron control horn. However, we preferred to join the wing halves together first. Therefore, we cut out the center ribs to allow the dihedral brace to be epoxied directly to the front spars. After checking the plywood dihedral brace we found it was cut for a total of 7½ degrees instead of 5 degrees. We cut a new one although we do not feel that the difference would have created any major problems. In fact, it might even be better to use the one provided since the full scale Chaparral has a total of approximately 10 degrees dihedral. In fact, the next time around we feel that we would build in a total of 7½ degrees to see what difference there is in overall performance.

The next step was to mark off the ailerons, being careful to measure correctly. Cut these out and trim an additional 3/32" from the front of the ailerons and also the wing sheeting. This is for the 3/32" facing pieces. Now glue in the aileron end rib and cut the remaining aileron ribs to the same angle. Glue in the control horn mounting plate and mount the control horn. We use sheet metal screws for this purpose.

Now it is time to install the facing sheets. One is glued to the aileron and

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the other to the wing. The aileron facing was cut too narrow for our wing and we had to replace these pieces. The linkage was then made up to the exact length with the aileron taped in place. The wing sheeting was then completed on top, the tips added, and the completed wing was sanded to shape. Be sure the tips are cut correctly in order to properly cover the aileron gap at the tip. Cut out the servo opening and install the wing dowels in the locations shown on the plans.

Before starting construction on the fuselage, mount the nose gear bearing mounts on the firewall and drill the latter for the type of mount you are to use. Take the 1/4" ply former and note where the dowels are to be located and cut out approximately 1/2" around these two locations. This is for the additional 1/4" plywood wing dowel mounts and for ease of alignment. We proceeded to join the fuselage sides and added the plywood doublers. The fuselage is built around the cabin and servo box. Take the cabin floor and glue the two end bulkheads in place. The front one is of 1/4" ply. The plans show a third bulkhead but it has been found unnecessary and not included in the kit. Keep these bulkheads at 90 degrees to the floor. Add the 3/4" triangular pieces to the bottom of the fuselage sides and 1/4" square to the top of the sides.

Now comes the good part. Take a flat board and draw a center line about 50" long. Also, draw a center line on all of your bulkheads. Nail the firewall to the end of the board leaving a proper amount of firewall above the board to match the fuselage sides at this point. You will note that the fuselage is being built upside down. Measure the distance from the firewall to the first plywood bulkhead which is on the front end of the cabin floor. Align the cabin floor with the center line and pin to the board. Epoxy the fuselage sides to the bulkheads and to the floor. Pull the fuselage sides together at the rear and check once again for proper alignment. If satisfactory, complete the firewall with 3/4" triangular pieces on the back side and 1/2" blocks on the front side. When dry, pull the tail together and add the 1/4" vertical pieces at the tail.

Using another center line, proceed to build the front deck which is assembled in the same manner as the fuselage. We found that two center formers for the front deck had to be sanded some in order to add the 1/4"

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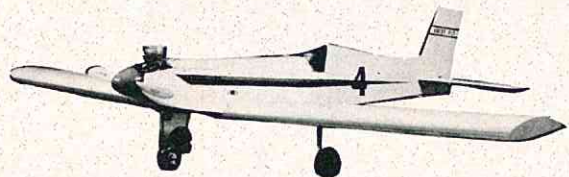
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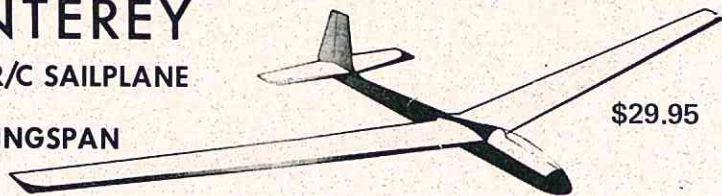
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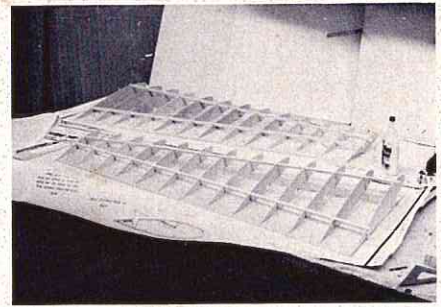
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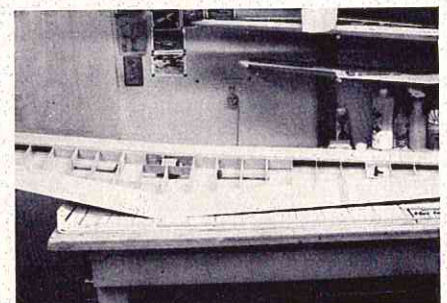
The basic wing panels are constructed over the plans on a "built-in" wing jig.

sheeting. When this top nose deck is roughed out, tack glue in position. Add the bottom nose blocks at this point and, when dry, sand off squarely in front. Add the 1/2" nose piece and carve and sand the entire nose to shape as per the plans. We had to rework the bottom nose blocks as the angle was slightly off. This top deck is cut in front of the windshield area and becomes a removable hatch.

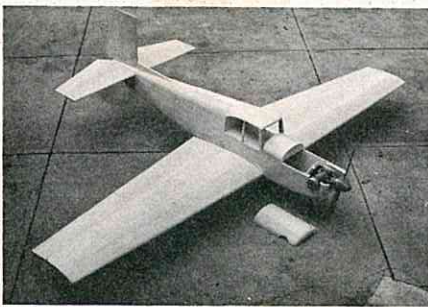
The rear deck stringer locations are not correct on the plans so that the rear formers are not notched. Mark the location of these formers and glue in place. Pin the 1/4" square stringers in place and mark as per instructions provided with the kit. Notch the formers and everything works out quite well. Cut your rear top deck sheeting to the correct size and soak the two top pieces in water and then tape in place until dry. When they are dry glue them permanently in place.

The cabin struts are added and the top of the cabin glued in place. The latter is shaped from a 1/2" x 6" x 7" block. The fin can now be glued to the stabilizer making sure it is a true 90 degrees on each side. Install the 3/8" square tail block at the rear of the fuselage. This fills the gap at the fuselage and also makes a good solid base on which to glue the stabilizer. This block was a little narrow so, rather than piece it, we simply cut a

The wing panels joined together and aileron linkages installed.



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The completed Mooney framework with engine installed and access hatch removed.

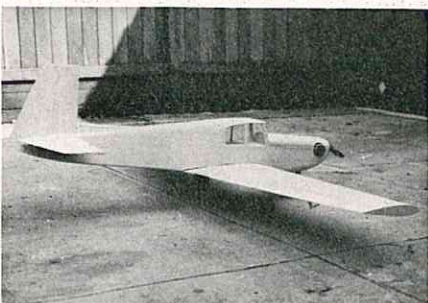
new one.

Now is the time to pin on the tail group and to make up your pushrods for the tail. We mounted the servos and made up the pushrods using fiberglass arrow shafts. The elevators are in two pieces so a "Y" yoke is used. Now the 3/16" bottom sheeting can be glued on the fuselage and completely sanded to shape.

The wing can be fitted and the wing dowel plates epoxied and screwed in place. Cut the rudder and elevator loose and round off the edges. The tail can be covered and then glued on. We preferred to glue it on first. The windows and windshield can be recessed into the wood and glued with 3M Super Strength adhesive and then filled around the areas that will be painted. Sand smooth and proceed to cover and paint in your own favorite materials.

All of the very minor discrepancies mentioned in this article have been reported to the manufacturer and are currently being corrected on all production models. This is one of the finest kits of its type and price range that we have seen to date. R/C Modeler Magazine is proud to award it the Tested, Approved and Recommended Seal and extend their congratulations to Hot Line Models on an outstanding product for the R/C consumer. □

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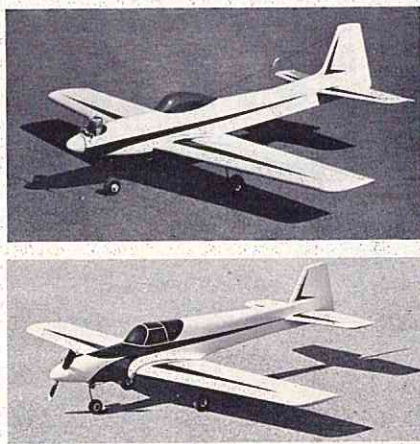
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SUNDAY FLIER

(continued from page 14)

Sinker shot into the air, right into a gust of wind — and here is the result.



In retrospect, what I should have done is take my foot off the contact switch, hung on to the glider, and let the winch run backward. A backlash in the winch is a helluva lot easier to fix than that break in the wing! But, I didn't.

Why not? Two reasons. One, it all happened so fast that there wasn't time to think. Two, I had not really prepared adequately for this particular meet; I was thinking about other things — Level 3, my racing glider, Toledo, Sunset Beach — everything except to concentrate on the immediate objective.

Hopefully, I learned two lessons from this incident. One — never put your foot over the contact switch of a winch until you are completely ready to launch — and remove your foot if there is any distracting action.

Two. Whatever you are going to do, make the decision in advance, and then concentrate on doing it. Stop letting other activities creep into your thinking process, or the chances are that you'll come a cropper.

Somehow or other, whenever you begin to think you've got this sport of R/C flying right in your hip pocket, you find that really you've gotten too big for your britches, and it'll bite you right where your hip pocket is.

Now, with that somewhat mixed up metaphor, I'm gonna humbly close off and try to remember that, like everybody else, I'm just another Sunday Flier.

Ed's memo: The volume of mail addressed to Sunday Flier is so great that personal replies from Ken Willard cannot be undertaken unless the writer encloses a stamped, self-addressed envelope. The only exception to this rule is for servicemen stationed overseas. □

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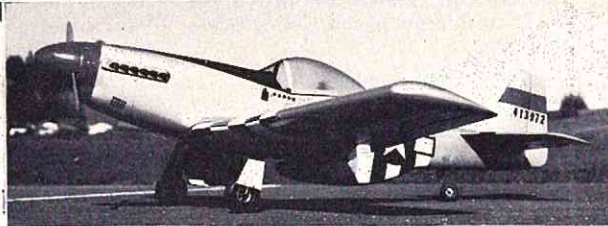
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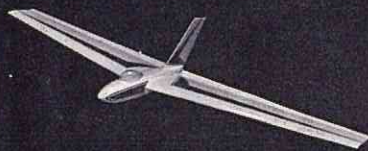
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(continued from page 10)

Does this sound like contamination? Or do you suspect condensation? I would like to hear from you as to what we can do to use the 30 or so remaining gallons.

Yours truly,
Ernie Kraft
Boca Raton, Florida

Ernie, there is one big problem with storing fuel in a 55 gallon drum. As you draw the fuel out it is displaced by air. In your part of the country where the humidity runs 80% and higher, that air is loaded with water. Alcohol absorbs water like a sponge. About the time you have used half of the drum your fuel has absorbed enough water to make the balance unusable. Sitting in a shed where it is exposed to the heat of day and cool of night doesn't help matters either. Although this is often done by fuel manufacturers with a full drum to solidify fats in the castor oil, which sink to the bottom, it is not good practice with a partially filled drum as it speeds up condensation. Water in the fuel will cause the engine to pre-ignite, speeds-up varnish build-up and, in general, makes for a sour running engine. There is not much you can do with your remaining 30 gallons except kill some of the weeds around your flying site. The next time you buy a 55 gallon drum it would be a good idea to pour it off into 5 gallon cans. You will still have a problem but not as drastic since you will be dealing with less volume. The ideal situation would be one gallon cans, but 55 one gallon cans would be hard to come by!

Clarence:

I have been a regular reader of your column since its first appearance in R/C Modeler. I have, however, one question that was not answered by your article on engine break-in. Should you dismantle and thoroughly clean a new engine before beginning the break-in? I have just purchased a new Veco .19 engine and upon removing the back plate I discovered a metal chip. I realize that an occasional chip will be missed during the assembly of an engine and I am anxious to know how carefully you should clean a new engine in order to avoid problems.

Sincerely yours,
Harold Boettger
Pontiac, Michigan

Generally it is a good idea to pull the head and back cover on a new engine and check for chips. As careful as most manufacturers are, engines do get out that have chips in them. How far you disassemble the engine will depend upon your ability. If you have the knowledge it would be a good idea

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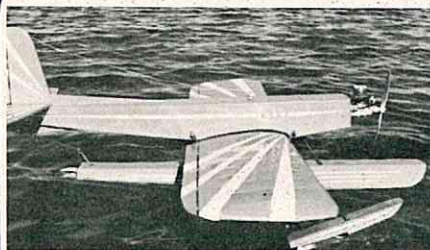
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to completely disassemble the engine and clean up any burrs, casting flash, etc. Those that lack the engine knowledge or who have often been called a 'hacker' by their friends would be better off stopping with the head and back cover and flushing the engine thoroughly. They might cause more damage trying to disassemble the engine further than any good they might accomplish by removing the burrs, flashing, etc.

Clarence:

I have an older style Veco 19BBRC which has given me good service. Finally, I decided to clean it and replace the gaskets, etc. Upon disassembly, and soaking in solvent, I was called away from my task for a few days. Upon returning, and assembling the engine, I noticed that the sleeve ports are STAGGERED!!! Not remembering, or bothering to check before, how they were placed in relation to the crankcase and exhaust, I hesitated to assemble the engine further. Because the piston is worn into the sleeve, I don't want to assemble it backwards and ruin an otherwise good engine. Could you advise me as to which port faces the exhaust and which direction the piston baffle faces.

Thank you from a non-thinker.
George H. Pack

Don't feel too badly, George. You are not the first person to make this mistake. I know of many cases where fellows have replaced the sleeve backwards after cleaning or overhauling an engine and then wondered why it ran so sick. The higher port is always the exhaust and the lower, the bypass. On the piston down stroke you want the exhaust to open first. The baffle always goes on the bypass side.

Mr. Lee:

I have one of the early ST .51's purchased around 1966, and I have a problem. I have never been able to get a reliable idle with it. It will idle for a short time, but it is always spitting fuel back out of the carb. Then, when the throttle is opened a little way, it acts just like a flooded or very rich mixture, and kills the engine about half the time. Sometimes if it doesn't die and you get to about 1/3rd throttle setting from closed, the engine backfires through the carb and dies. The idle never lasts long enough for an approach to land, but on the higher throttle settings from near half to full open, the engine works fine.

I have tried different needle settings and when I get a good idle, the engine is far too lean on the top end. You suggested in one of your articles that the idle mixture hole be enlarged. That has been done, with no apparent improvement. I have used many different glow plugs hot, cold, also different brands of fuel and still no change for the better. All nuts and bolts have been checked for tightness, carburetor included. The engine came with a thick head gasket that was also tried.

The engine is mounted upright, and the fuel tank is mounted a little below the fuel inlet on the carb. It also has been changed to different heights, but still with no improvement.

The engine has lots of power, pulling an 8lb. Sr. Falcon with 11-6 nylon prop.

The idle I do get is between 3000-3500 rpm's with the above troubles.

I'm sure there is something I could do but just can't seem to think of any more ideas. Hoping you can help me.

Many thanks,
Don Wareham
Concord, California

As you can get a good idle with the top end set too lean then it is evident that the idle mixture is still too rich. Either enlarge the air bleed hole more, or notch the top edge of the carburetor barrel. Both will do the same thing - lean the idle mixture. You never want to compensate for an overly rich idle mixture by setting the high speed mixture too lean. If you continue to have trouble, I would recommend you install either a Perry or Kavan carburetor. Both have a means of adjusting the idle mixture and you will obtain much better performance.

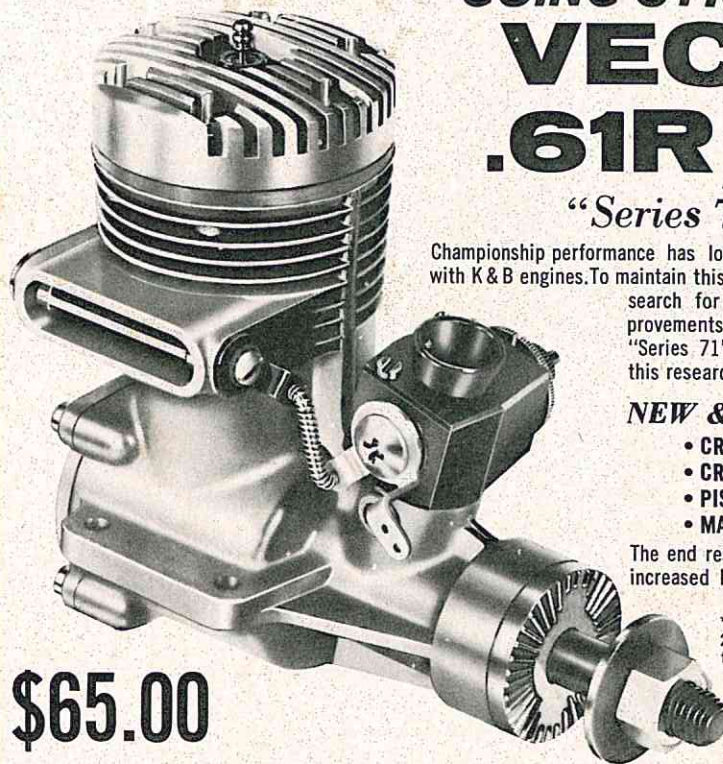
Mr. Lee:

In one of your columns you suggested a way to remove the varnish build-up on the inside of an engine. I seem to have misplaced that issue. I have a Webra .61 with a heavy black build-up on the piston and cylinder head. What causes such a build-up like this in an engine? I have run only K & B 100 through this engine.

Mr. Lee, what causes the head and fins of an engine to turn so brown after a few hours running?

Yours truly,
Ron Plamondon
Flint, Michigan

The only way to remove the varnish and carbon build-up inside of the engine is to disassemble the engine and clean the parts with an SOS pad and water. After recommending the use of an SOS pad in a previous column, I received two letters from irate readers who had used the pad dry and badly scratched their pistons (aluminum). I assumed everyone knew that you used SOS pads with water. The brown gunk on the head and outside of the engine can be removed with Sunbeam Metal Kleen. This is used for cleaning waffle irons, etc., and can be obtained in any of your larger super markets or Sunbeam appliance stores. The majority of the varnish and carbon build-up is cooked castor oil. The nitro methane in fuels also leaves a varnish residue after combustion. A good majority of the brown varnish build-up on the head and outside of the engine can be eliminated if you wash the engine off with solvent, kerosene, etc., after each flying session. The brown mess only occurs after fuel and its residue has been allowed to accumulate on the engine. □



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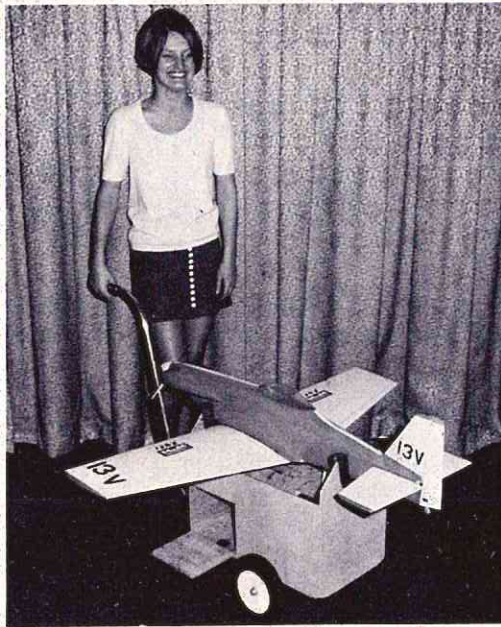
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(continued from page 17)

made by using the stack method again, with F-6 and F-7 as the largest template, tapered down to the end templates. Then glue the formers onto the 1/4" braces on the fuselage and then cut the two other forward formers and sand to shape after they have been glued to the top. The same procedure should be followed for the bottom formers. Now, cut some 1" strips of 1/16" sheet and plank the turtle decks. Care should be taken to get sheeting on smoothly as you can't sand 1/16" wood too far. If you notice on the plans, the bottom turtle deck stops at F-5. In order to fill the gap between the wing and the turtle deck, hollow out a block of soft balsa and sand to fit the wing. Now, add the hatch and bottom blocks and sand to a

rough shape.

Before you sand the blocks to the final shape, it's a good idea to make the fiberglass cowl. Just build up the form from balsa blocks and tack-glue it to the firewall, and sand the fuselage and cowl form to shape. After the sanding is done, remove the cowl core, and finish with a couple coats of dope. Then mix up some fast-setting plaster of paris and spread it over the core (remember to coat it with some kind of mold release). Let it dry, and then, after the fiberglass has cured thoroughly, carefully break the mold. (It's faster to make a cowl this way than to make a first-rate mold.) The cowl should require very little sanding, and when completely cured, has proved to be extremely durable. At this point, mount your motor on the firewall,

using a BK radial backplate mount, and install it with blind bolts. The mount is 1/4" thick, and when the cowl lip is glued onto the firewall, extend it so it comes down flush with the motor mount. To hold the cowl in place, make three angle brackets and bolt them to the firewall, or to the motor mount. Then attach the cowl to these angle brackets, and sand the fuselage so the cowl fits neatly in place.

FILLETS

The fillets are one of the most important parts of the fuselage, because they hold the wing steady, strengthen the fuselage, and I believe they have some aerodynamic value. To construct them, first cut out their shape in 1/32" plywood and glue to the fuselage. Then, fill most of the gap with styrofoam, and then put

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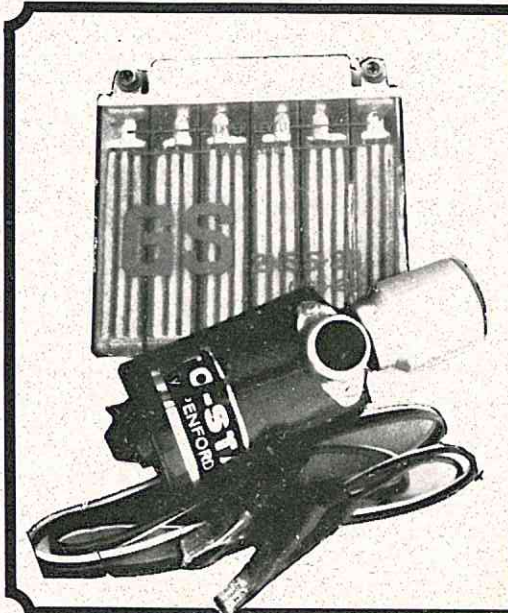


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Epoxilite over this, using a 2" lid from something to smooth on the right shape. (Note that during this process the wing is bolted in place to hold the plywood in place while it dries.) When the Epoxilite dries, sand smooth, and fill any pock marks with Hobbyoxy Stuff. At this point, you are ready to install the stabilizer and vertical stab. (Do not cut out the slot for the stab before the turtle decks have been sheeted.) Now, cut out the slots for the stab and vertical stab, and glue the stabilizer in place. Then glue the vertical stab in, so that it rests on the horizontal stab, and then fiberglass the joints between the stabs and fuselage and vertical stab using fiberglass cloth and fiberglass resin. (Note, this is extremely important.) When the fiberglass is dry, feather out the edges with

more Hobbyoxy Stuff, and then sand the entire fuselage well.

COVERING

Because the turtle deck sheeting is only 1/16" balsa (to save weight), I would not recommend covering the fuselage with MonoKote, but rather use good old silk and dope.

EQUIPMENT INSTALLATION

Since the Pegasus is a small plane, the old type proportional sets are out as far as trying to wedge them into the fuselage. The plane has been designed around the Royal Classic radio gear, using a square battery pack, and any similar radio system should fit. (Make sure it will, though, before you start construction.)

After you have installed your

motor mount blind bolts, glue in ¼" x 1" triangular braces behind the firewall, and then use a generous amount of fiberglass in back of the firewall and fuselage sides. This is, again, extremely important, because the firewall has a nasty habit of vibrating loose in flight if the fiberglass is omitted, and you can really feel like a fool landing a plane with the whole front end dangling loose from the rest of the plane. Also, make sure the engine you are going to use is reliable, because when you have to make a forced landing in the weeds, the plane will flip over violently and break off the vertical stab because of the conventional landing gear. I use the Royal Classic radio gear mainly because of its small size, and because of its reliability. If your radio goes on



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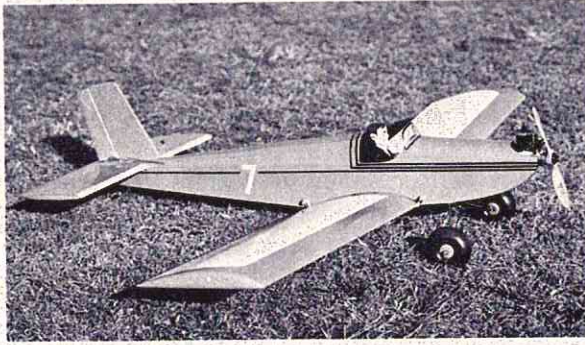
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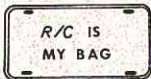
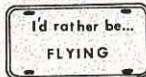
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the fritz in this monster, you'll have pieces scattered all over the country side due to its tremendous speed and sensitive controls.

I would suggest using a ten ounce Pylon Tank, as it fits in the nose like it was molded for it, and will give you about seventeen minutes flying time with the 45's and 50's. The battery pack is located just behind bulkhead F-2 along with the rest of the gear, so the gas tank is sealed off from the radio.

PUSHRODS

I don't use pushrods in the Pegasus because there just isn't room in the back end of the ship. Instead, I use the gold tubing from a Kavan "nyrod", and then slip a piece of piano wire through that. The Kavan tubing then exits at the back of the plane and is epoxied in place (where you would normally cut the slots for a Kwik-Link on a conventional plane). The piece of piano wire is then run up the tubing and a Kavan clevis is soldered on. At the other end, the tubing is epoxied to a plywood guide and the wire then runs directly to the servo. Result . . . friction-free torque rods which are virtually slop-free.

SURFACE MOVEMENT

For the elevators use the second hole down from the top of a Bonner control horn, and use a differential on the servo, so you get slightly more down-elevator than up. The ailerons are given one turn of droop, and you can start with 1/4" up and down and work up from there. **Rudder:** all that is possible.

PRE-FLIGHT

Check the incidence in the wing. It should be 1/8" positive, the engine should look zero, with no right or left thrust, and the stabilizer should be zero. Spend some time in your backyard tuning up the engine to get a good low idle and to work out any bugs in the fuel system. Try taxiing around to get used to the conventional gear. At this point, you will notice that the tail comes off the ground very easily, so make it a habit to hold full up-elevator on tight turns and when taxiing crosswind. By all means check the radio, and if it has been in a crash recently, send it back to be checked over thoroughly, because if the Pegasus hits, it will be either totaled or not scratched at all. It is built for lightness, not crash resistance.

FLYING

The Pegasus is designed for the hot

contest flyer and should be flown as such. If you are not proficient enough, so that you have to ask someone to test fly the Pegasus, you'll have your hands full when you go to fly it yourself.

Anyway, get a full tank of fuel in it and tune the engine out lean, so it delivers all the power it's got (the Pegasus flies lousy on a rich engine, even with a Super Tigre .56). Taxi around for a few minutes, and then point it into the wind. Give it power gradually and then hold onto your hat! The tail should lift up almost immediately, and will be ready to takeoff about ten feet after that! Hold in a slight amount of up-elevator and the Pegasus will lift off smoothly. You may have to hold a slight amount of right rudder, and if you do, don't release it suddenly when you break ground because it will fishtail if you do. Get some altitude before you make your turn, and make it wide, because, as I said before, it's touchy on the ailerons. Fly it around for awhile and get it trimmed out by performing inside loops and then outside loops. When it is trimmed out so that it will do both without any correction, it's time to give it its head. Get some altitude, and then do a wing-over and come barreling down low over the field. Haul back on the elevators and get her heading straight up. Hold full aileron so that you do about four consecutive vertical rolls. Now hold full up-elevator, full rudder, full aileron and it will snap roll three or four times at the top of the Victory Roll. WOW!

Next on the agenda is a spin. Victory Roll up for altitude and then just keep heading up till it starts to tail slide. Hold full rudder and elevator and it will snap and then go into a spin. For the contest-type spin, head the Pegasus up at about a thirty-degree angle and hit low throttle. Make it fall off on a wing, and then hold rudder and elevator and it will start the spin without the snap-roll entry. To recover, just neutralize the controls and pull out. For consecutive rolls, hold about one half aileron and hold slight down-elevator when inverted; easy, huh? To perform the knife-edge flight, get some altitude and then come barreling on down till it reaches maximum speed. Roll it over and hold full rudder and a slight amount of down. The rest of the maneuvers require no mention except for the stall turn. The stall turn is executed on about half throttle, and when the

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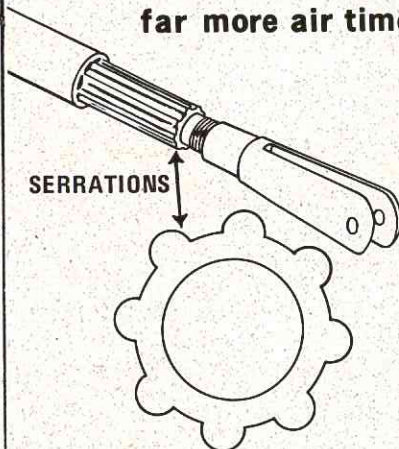
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Pegasus gets about halfway up the stall turn, full-low throttle is held till the full stall is just about to start. Then full power is momentarily given, and full rudder is kicked in. As a result of all this fast action, you get a beautiful stall turn.

Enough for the contest work. For free-style aerobatics, the Pegasus is pretty hard to beat, as it performs some pretty startling maneuvers. The main asset is the speed that the Pegasus develops. With that much power in a small ship, huge maneuvers can be performed. For instance, if you build up speed to go into the tail slide, the Pegasus goes up almost out of sight before it actually stalls. When the tremendous roll-rate is combined with power, several new maneuvers can be performed, such as horizontal eights with two or three rolls at the center, or fantastic snap rolls that are so fast that they are hard to count. But for the real thrill of unlimited acrobatics, nothing matches the LOMCEVAC. To perform the Lomcevac with the Pegasus, I usually do a stall turn down wind and come barreling down toward the center of the field, then I roll the Pegasus inverted and start an outside loop. When the Pegasus reaches the vertical point, I start a slow right roll, then I hit full left aileron and full right rudder and full down elevator. The result is that the Pegasus does an outside snap roll and then starts tumbling head over heels, which slows down into an inverted spin.

The landings have already been discussed in the foreword, so I'll just say good luck with your Pegasus, and I hope that you have as much fun as I do flying this hot little beast. By the way, the optimum flying weight is four pounds even. □

VIEWPOINT

(continued from page 5)

that of a small, select group pursuing a highly specialized hobby, you may not get too much public money to support your hobby.

While the view of affairs in L.A. is not all that clear from where I sit here in North Carolina, it does seem that the L.A. modelers were victimized by an irresponsible newspaper article. Still, if a single article could trigger the reaction described in the Hall letter, the image must not have been so good in the first place.

Now the AMA is, I think, doing a lot to enhance the image of the model airplane hobby as a whole, but it is uphill work, and if it is to succeed at

all, it must be supported at the local grass roots level.

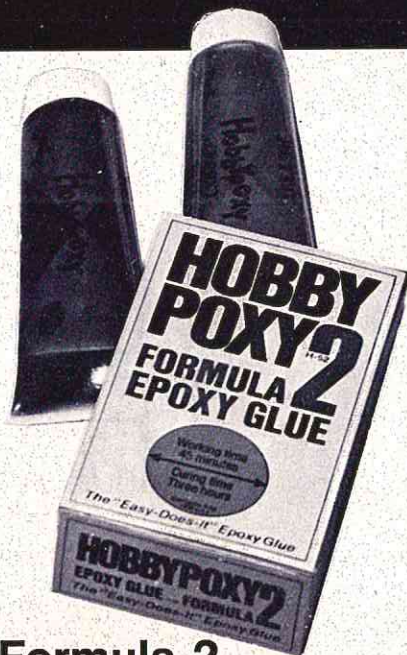
Here are some reasons why it is uphill work:

1. *The average age level of the participants in the hobby is increasing.*
2. *Today's youth are quite sophisticated technically. The idea of a flying model airplane is not nearly as appealing as it was 30 years ago when aviation itself was still exciting.*
3. *Today's youth are faddists, and will not take the time to learn to fly a ready built model, let alone build one, unless they are really encouraged.*
4. *The R/C segment of the hobby is siphoning off the modelers who could do the most to encourage youthful beginners. When I started in this hobby in the late 30's, we were sustained in our failures and helped to success by the older modelers who had the resources to buy the latest engines and airplanes, the experience to fly them with success, and the willingness to help us beginners. They showed us what we could do. Now that kind of modeler always progresses to better and better things, so he is now no longer at the school yard helping the kids with their U/C models, he is at the R/C field where kids can watch, but don't touch, and by all means don't bring any U/C models!*
5. *The R/C segment of the hobby projects an image which will do anything but endear us to City Councils, Recreation Committees, etc., because:*
 - a. *Most R/C modelers are adults.*
 - b. *Most R/C models are expensive, and give the hobby an appearance of extravagance. (There are people who don't earn enough in a month to pay for the damage resulting from a real total crash.)*
 - c. *From the point of view of city fathers, R/C modelers, and all modelers for that matter, represent a small and highly specialized portion of the recreation seeking population.*
 - d. *Most R/C clubs intentionally divorce themselves from the rest of the modeling hobby, i.e. U/C & F/F.*

All of this makes R/C seem to be the key to the problem, which I think it is.

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to get in. Our present trend seems to be the latter route, which ignores the path that would increase youthful participation. And let's face it, until modeling approaches golf in popularity, for example, the only way we are going to get popular support is through youth. A U/C model attached to a 15 year old makes a lot less subjective noise than a muffled R/C attached to a 45 year old. A bunch of kids with hand launched gliders or rubber powered ROG's, or Ringmasters is a lot more attractive than a group of middle aged men with the finest models and equipment in the eye of the average beholder, the one with the votes and tax dollars. I know, guys say, "look, I go out on Sunday to fly models and enjoy myself, not to mess around with kids!" O.K., then you had better get ready to go buy your own flying field and not expect the taxpayers to support you.

If we want to improve our image, the AMA is showing us how. It can't do it for us. I think if R/C would come back and rejoin the rest of the hobby, all would benefit. Common facilities for sport F/F, U/C and R/C would serve a larger segment of the population, and might just increase the participation in the hobby as a whole, which should appeal to you all in the hobby business too.

If you have an image problem in L.A., you have some work to do to fix it. Rejoin the rest of the hobby, help the kids, emphasize the benefits. Go find out how come there are model flying facilities within the city limits in New York, St. Louis, etc. Don't expect someone else to do it for you.

G.F. Abbott

The 1971 Spokane Internats will be a three-day event to be conducted July 9-10-11, 1971, at Spokane International Airport, Spokane, Washington. Selection of these dates is a result of review of U.S. Weather Bureau Climatological records and promises to be optimum conditions for model airplane competition.

Many comments of contestants along with operating experience gained during the past two years, whereas heavy schedules had to be maintained to reach the climax, it has been determined a three day "GO" will better afford contestants, operating officials and exhibitors a better environment. Interest displayed around the Northwest and of our friends to the North in Canada reveals this year's contest may be equal to or even surpass that of

1970.

Some changes which are contemplated, to go along with worthy suggestions, are to: (A) Work in as many "free style" or "fly-for-fun" type demonstrations as crowd pleasers. One of our colleagues remarked that the perpetual maneuvers flown by the pattern crates tends to lose spectator interest especially if they are unfamiliar with the rules of the particular event.

(B) Provide for demonstrations of new innovations or products introduced by manufacturers, clubs or individuals which may not yet have "caught on" in the sport of modeling. These demonstrations will not necessarily be restricted to radio controlled airplanes.

(C) With the sport of Radio Controlled gliders growing around the country, an attempt will be made to prelude this phase of competition by the Baron's Glider Guiders, a new branch of the Baron's Flying Club of Spokane, to be held over Memorial Day weekend. If this "jells" and interest justifies, this phase will be added to our Spokane Internats for 1971. The glider competition will be flown at a site removed from the International Airport, for obvious reasons, and will be under the auspices of AMA rules. However, this will be limited to tow-line launched flights. Engine powered gliders will not be accepted, but gliders with engines may be flown provided propellers are removed.

Pending acquisition of suitable flying sites, some pattern and pylon elimination events will be flown on Friday and Saturday at places other than the primary contest area with Sunday the 11th set aside for final rounds of competition.

It has been decided the Air National Guard will no longer be involved with the Model Aviation Hall of Fame as it will be handled exclusively by AMA.

As soon as all preplanning can be consummated, application forms along with instructions will be forthcoming to clubs. Lt. Colonel Robert R. Hepker, Washington Air National Guard, Spokane, Washington, will again direct the contest assisted by the many cooperative clubs throughout the area.

Any manufacturers who anticipate exhibiting their wares are urged to contact Col. Hepker as there will be a maximum of 40 quality booths available for rent.

(continued on page 92)

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(continued from page 8)

someone and we think you can guess who. Right, it's us!

Because we saw the overall situation and were able to absorb and remember their way to do one particular thing. But, wait! What is to become of the people who are in the "Absolute" rut? Well, who knows? Some we have known become too soon bored and just quit because "it's not interesting." Others "specialize" with the same plane and gear for years until they become "invincible" and we begin to read about these guys on a regular basis. One interesting thing we've noticed is; when we meet one of our friends who's been an "absolute" for some years, and then discovers he has changed "brands" would you care to guess his comment? Yep, he's absolutely sure the present one is "absolutely the best" and boy is he ever glad he finally "woke up!" Are you wondering why we are telling you about these people? Well, we want to influence you to not be one of them. They are okay and, in most cases, are as nice folks as you'd want to know, but not prone to be inventive or creative and, often times condemn the new and unknown to failure without trial.

If you are a student and your teacher is an "absolute," be tactful when you experiment. If you are the instructor and you are an "absolute," try to objectively evaluate the new and different. Let us give you all some true case histories.

Once upon a time an army sergeant wanted to learn to fly RC. He had taken an old drone wing and tail and built a fuselage to hold 'em where he thought they ought to be. He then asked an "absolute" for help and was told clearly that it, "absolutely would not fly." Some few days later the sergeant dejectedly told us of his quandry and, after a 4.5 second preliminary inspection, we acknowledged its possibilities and administered help (mostly in the form of encouragement). The plane (almost 12# with a 60 up front) was the most gentle trainer we've seen to date! (Almost said "absolutely," didn't we?)

There is a rather large town which has as a citizen, a man who is an excellent RC flyer. He has flown with a certain manufacturers gear since

"propo" began and now flies that manufacturers plane design as well. Because he is such a good flyer everyone else in the area flies the same gear and plane design. As long as they are all successful there is still nothing wrong but, lately a couple of this particular manufacturers radios arrived in the town and in the hands of the beginners with small malfunctions. So — they go fly and crash, then want to know why. The town "top dog" says "oh well, any radio has to be crashed a couple of times before it's any good!" We guess that's the epitome of "Absolutely only one radio" case we've ever heard, huh? Have a good look around you and see if and how this affects you and your friends.

If you are a serious competition minded flyer then, by all means, pick a good model and stay with it. That's how the winners do it. But don't put down the new and/or different just because it isn't like yours.

Put yourself in the other guy's shoes. How would you like it if you moved to a new place and people said unkind things about your plane or radio just because they all had low wing planes and pink radios and your high winger with an orange radio didn't match theirs but had already lasted you 3 seasons?

Be friendly, be objective, be helpful, and above all, treat people like you would like to be treated!

And, be wary of "Absolutes." □

OUR APOLOGIES

To Tom Roe whose beautiful and unusual cover appeared on the May issue of R/C Modeler Magazine. Although incorrectly captioned, Tom shot the striking photographs in the Santa Barbara, California area and reached the hearts of every R/C glider enthusiast in the country.

--- Don Dewey
Editor and Publisher

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The League of Silent Flight 1971 R/C Soaring Tournament is scheduled 28 and 29 August. "Hummingbird Haven" gliderport, Livermore, California... available through the courtesy of Jerry Nelson of Midwest Model Supply Company... will be the site of the event. Co-hosts are the North Bay and South Bay Soaring Societies. The Tournament Manager is Chris Christen. Bob Andris, LSF President, is Tournament Director. Details have yet to be firmed, but participation may be limited to 100 contestants plus the top 10 contenders in a new scale sailplane category. Contact League of Silent Flight, P.O. Box 2606, Mission Station, Santa Clara, California 95051.

The Delaware R/C Club of Wilmington, Delaware, will hold its second annual Thermal Soaring Meet on June 6, 1971. Last years event was very well received and enjoyed by contestants and spectators alike and an equally successful contest is anticipated for this year.

Particulars are as follows:
 Date: June 6, 1971; Time: 9 A.M. to 4 P.M.; Location: New Delaware R/C Field, McKennans Church Road, Delaware Castle Farms Recreation Area, Wilmington, Delaware; Fee: \$5.00; Rules: FAI Provisional; Trophies & Prizes: Trophies - 1st-5th places. Trophy for youngest contestant. Lots of valuable merchandise; Contest Director: Tom Sterner, 903 Prospect Avenue, Wilmington, Delaware 19809. Telephone: (302) 764-4861.

Sponsored by Delaware R/C & ECSS, AMA Sanctioned.

MARCS 1/4 midget and sport pylon races will be held at the club field, 1 mile east of Ohio Rt. 306, just south of Ohio Rt. 2. AMA sanctioned and Mentor Area Radio Control Society Rules will be enforced for 1/4 midgets. August 1, 1971. Contact CD Bob Penko, 21151 Westport Avenue, Euclid, Ohio 44123. (216) 951-2220.

Let's end up the month with the following gem from George Gause Ware, Vice President of the Fort Worth 'Thunderbirds'.

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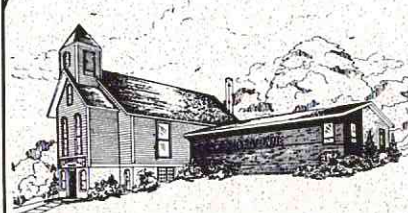
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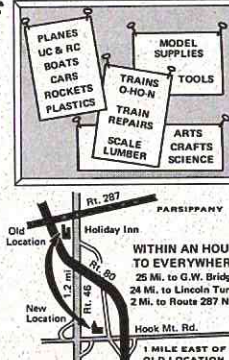
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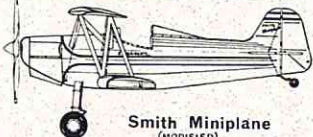
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*It leadeth me into deep waters,
It leadeth me into paths of Stickers
for its names sake.*

*It prepareth a "Glitch" for me
in the presence of spectators.*

*Yea, though it flies through the skies,
Seldom does it land in one piece.*

*I fear great evil when
it is not with me.*

It's servos and engine discomfort me.

*It anointeth my face with castor oil,
its tanks runneth over,*

*Surely to goodness if I follow this plane
all the days of my life, I shall dwell
in the Poor House forever.*

COLD DUCK

(continued from page 25)

this time, the stab can be epoxied to
the fuselage.

The vertical fin is notched to fit
into the stab, then epoxied in place. It
will be necessary to fill in the space
between the back part of the fuselage
proper, and the stab front, with balsa
blocks. Be sure both the stab and fin
are perfectly aligned. The elevators can
now be hinged to the stab and the
rudder hinged to the vertical fin.

Wing

Foam cores can be cut, the trailing
edge glued on, then shaped. Sand the
foam with a long sanding board,
checking that both tips and root air
foils match. Lay out the landing gear
position on the cores. Cut out the
openings for the wheel wells, landing
gear units and openings for linkages
and servos. Countersink and epoxy in
place the 1/4" plywood landing gear
mount. The wing is then covered with
1/16" balsa sheeting. Bevel the root
joints to give 1 1/2" dihedral to each
wing panel, measured from the points
shown on the plans. Epoxy the wing
halves together checking for align-
ment. Install the aileron linkage and
tapered center section trailing edge.
Glass the center section of the wing
with epoxy resin and cloth. Cut out
the servo wells in the wing, and
remove the sheeting covering the
wheel and gear wells. Sheet the inside
of the wheel well with 1/16" balsa.
Before placing the retract gear units in
the wing, adjust the counter balance
spring so that with the wheel well door
and the wheel on the landing gear
strut, the latter will balance approxi-
mately half way retracted. Check all
screws in each gear for tightness.
Install the gear in the wing with 4-40
bolts as shown on the plans. Be sure
the wing is properly aligned when
setting up the wing hold-down bolts.

WING

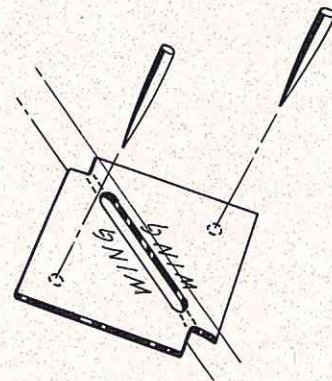
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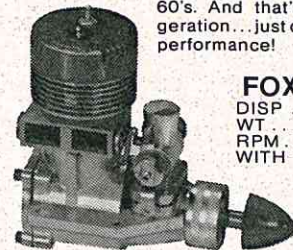
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If you wish to use the modified S4A servo, purchase the servo mechanics kit. The kit consists of: servo motor, feedback pot, mechanics and arc suppression kit. In my schematic, I show R.F. chokes being used. Begin by removing the carbon from the face of the feed-back pot with an X-Acto knife. Epoxy a .005" thickness copper ring in place of the carbon. Solder the copper to the terminals at the ends. With your X-Acto knife, cut two tracks in the copper as shown in the drawing. This will allow the contact wiper to rotate 180 degrees and run off one track. When reverse current is applied to the other track, the servo will then rotate 180 degrees in the other direction and run off that track. The degree of throw is determined by the length of each track. If two servos are used, it is necessary to use a transistor or diode in the system to prevent feedback from one servo to another. My servos use the Hep-52 transistor used as a diode. The control switch is a miniature double-pole, double-throw, snap action slide switch. The switch was modified so that it does not detent. The printed circuit board simplifies installation of the transistors and arc suppression for the limit switch.

When connecting the linkage to the retract gear, it is important that it moves freely without binding at any point of it's movement. The 180 degree S4A out-put gives the proper 11/16" throw to each unit. Adjust your clevises so that the gear comes down and locks, and up and locks. Install your radio equipment. The original Cold Duck utilized a six channel P.C.S., (Yes, Phil, a six channel P.C.S.), with KPS-9 servos. The aircraft balanced with the gear installed in the spaces indicated on the plans. Finish the aircraft by your favorite method. The optimum weight is in the 6-pound range.

Flying

For being a tail dragger, the Cold Duck handles well on the ground. On the takeoff roll, a small amount of up-elevator is used and some right rudder is applied as the throttle is advanced. The rudder is effective almost immediately and the Cold Duck is easily held on the center line. It has little, or no, tendency to ground loop. When lift off speed has been reached, ease back on the elevator, and as soon as the wheels clear the ground, reach for the gear handle, and suck the gear up.

Happy landings. □

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