47783 SEPTEMBER 1971 75¢

RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS

THIS MONTH

One of this month's feature articles is Bryce Petersen's semi-scale AT-6 SNJ Harvard II, designed for the Graupner/O.S. Wankel.

3 **FROM THE SHOP** By Don Dewey
4 **LETTERS** From RCM Readers
6 **SCALE IN HAND** By Dave Platt
8 **SUNDAY FLIER** By Ken Willard
10 **ENGINE CLINIC** By Clarence Lee
12 **EDITORIAL** Kits & Kit Reviews By Clark Kreitler
14 **RCM VISITS** Miller Hobby Shop
17 **MISS SCARLETT** Scale model of first aeroplane by Walt Mitchell
23 **AT-6 SNJ** Semi-scale Harvard II by Bryce Petersen
30 **MISS PLAYMATE** .30 powered tail-dragger by Jerry Smith
34 **BUILDERS BUILDING BOARD** By Jack Iafret
35 **AVOID THE CROWD: USE 6 METERS** By Edward F. Eggert W1EGM
36 **RCM PRODUCT REPORT** Digiace Proportional
37 **RX FOR FLUTTER** By John C. Kidwell
38 **CONSTRUCTION TECHNIQUES FOR FORMULA RACERS** By Frank Morosky
42 **NOTES ON MUFFLER CONSTRUCTION** By Ed Gerhardt
44 **FULL LENGTH AILERON HINGES** By H.A. Lindemann
45 **LOW WING UGLY STIK** By P.A. Hendricks
47 **R/C FOR THE MASSES** By Ted Berman
51 **FOR WHAT IT'S WORTH** Hints & Kinks
54 **SOARING** with Don Dewey
58 **BUILDING THE GRYPHON** By Bernie Murphy
62 **QUICK CHANGE SERVO TRAY** By Al Noren
63 **FLIGHT TRAINING COURSE** Chapter I
66 **TOP OUT** By Jerry Kleinburg

THIS MONTHS COVER

Almost as spectacular as the 'Pentagon Papers' is the release by RCM of a model of the first heavier-than-air craft, kept secret by the Yankees since the close of the Civil War. Miss Scarlett, as photographed by Bill Bell.

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VOLUMN 8 NUMBER 9

SEPT. 1971

FROM THE SHOP

DON DEWEY

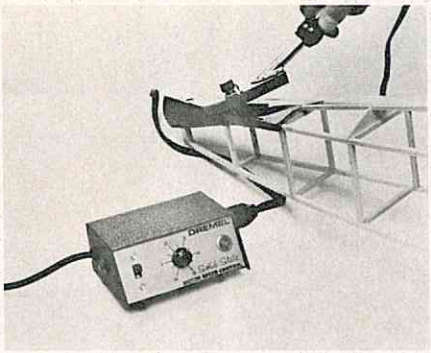
HOW TO CHEAT AND WIN AT CONTESTS . . . . .

This month we were up to our ears with prototype product testing and evaluation for various kit manufacturers. What this means, in simple terms, is that a manufacturer sends a prototype kit to our offices and we build the kit, using a stop watch and a portable IBM dictation machine, making notes of any discrepancies we find between the parts and the plans, or any omissions that we discover in the instruction sheets. As we progress, we attempt to discover any design errors that have crept into the kit or the plans and carry this through to final flight testing. When this has been completed we report the results to the manufacturer in order that he may correct these errors before actual production of the kit begins. Although this is a service that the RCM staff provides to the manufacturers, it is primarily designed as a service to you the reader on the part of both the manufacturer and the RCM staff in an attempt to provide you with the finest quality kits that a manufacturer can produce.

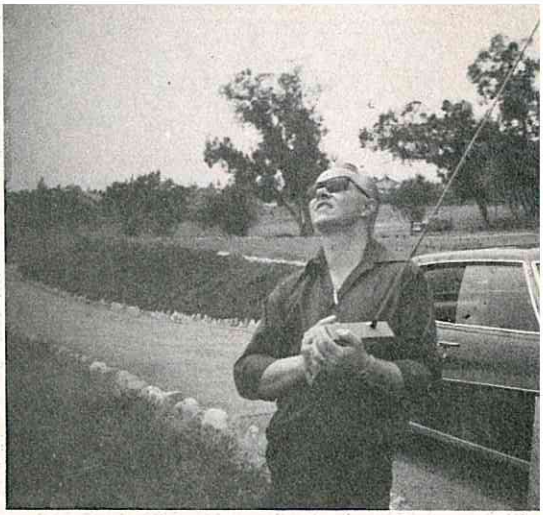
As an example of this process, we have three staff members, in addition to myself, who continuously build two or three kits per month and who, in turn, have two or three other builders working part-time under their supervision along these same lines. Some of these are pre-production units for the manufacturer who wants to know if he has overlooked some small but crucial detail, while others are actual production Kits & Pieces reviews for publication. This is a very time consuming process and, thus, having to personally build three such pre-production units this month, there wasn't too much time to write the usual 'From The Shop' column. So I would like to pass on to you a couple of ideas that were sent in from Frank Morosky who is the Technical Director for Dremel Manufacturing Co., of Racine, Wisconsin.

These ideas concern two new uses for Dremel's Speed Control Accessory which involve the application of shrink-type model covering films and temperature control for electric glue guns. According to Frank, coverings such as MonoKote, Shrink-Tite, and Solarfilm can be applied more efficiently when the Dremel Speed Control is used to control the temperature of the traveling or sealing iron. Moroksy said the precise temperature control is made possible because of the Speed Control's solid state circuitry design and that this not only eases application, but reduces loss of material. While a traveling, or sealing iron, has its own temperature control, the slightest movement of its heat control knob can change its temperature drastically. When using the Dremel Speed Control, plug the iron into it and adjust the iron to its hottest setting. Then use the dial on the Speed Control to adjust the iron's temperature in slight increments.

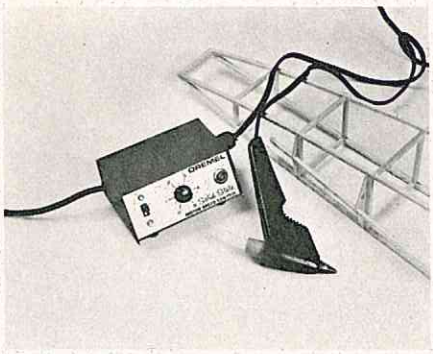
For getting into tight corners, Frank recommends that a soldering iron be plugged into the Speed Control. After setting the proper temperature for the iron, it can be used to apply the film. The numbers on the dial are for reference only and do not indicate temperature. A determination of the correct film application temperature should be made from the film manufacturer's instructions.



A second new application for the Dremel Speed Control involves its use with electric glue guns such as the Wen and Weller. The internal temperature of the glue cartridge can be adjusted with the product. Between applications, the glue temperature can be lowered so it is in an elastic rather than a liquid state. This will prevent the tip from dripping glue when the



gun is set aside for a few moments. The Speed Control can also be used to turn the gun on or off. Although this $16.95 item, which is available at most hobby and hardware stores, is



primarily designed to control the speed of the Dremel Moto-Tool, it has proved extremely useful in our own RCM shop for the applications that Frank mentioned in his report.

As a final touch this month we were quite fortunate to get our hands on a privately circulated sheet entitled, *"How To Cheat And Win At R/C Contests,"* which was printed with fuel soluble ink. The club, who felt that a copy of their rules might fall into unauthorized hands, suggested merely squirting some fuel on it so the print would disappear. Since we promised Frank Schwartz of the Middle Tennessee Radio Control Club that we would not reveal where this material came from, we will reprint it herewith for the benefit of all contest fliers as an anonymous contribution:

The Contest: *It is very easy to win at a contest. You must be prepared to lie a little bit, but most of it can be done by dash and daring. Remember that everyone is going by the rules, therefore, you must go* **around** *them.*

#1 – Registration: *Before register-*

(continued on page 89)

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This contest-quality 4 channel Hobby Lobby Digital Proportional is serviced by EK Products and has a 90 day warranty.

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Letters

Sir:

I would like to first say that I am typing this letter not to be impersonal, it's just that my handwriting is rotten! I'm an RC flier, 15 years of age, and a religious reader of RCM and your column.

I have just read the June issue of Viewpoint concerning safety at the flying site in connection with the RC image. I agree with G.F. Abbott. RC has become too serious, too difficult, and too expensive. Most people who accidently stumble on to a flying site, see equipment that makes a Saturn-V look obsolete! The average "JOE" is overwhelmed at the level of craftsmanship exhibited. Now that he is dazzled by a 100 mph pylon racer doing a reverse turn stall over his head (safety?) "JOE" inquires about the price of the ship. When told he returns to his car, disregarding any thought of entering the sport.

Even if he has the determination and money to go out and build "something simple," no matter how much help he gets from the hobby shop dealer and other modelers, it's an uphill struggle to get a plane in the air.

The point is this – all of the above mentioned discourages the young, such as myself. I think all the gear taken out to the flying field is a way for the modeler to kid himself into thinking RC is a serious, competitive sport that's a world apart from any other models. Just because a neighbor calls them toys, so what? Anything used for recreation is, whether it be a motorcycle or a pair of skiis. When the modeler realizes, and is willing to admit, that model planes are just big toys, that's when the hobby will become popular. And let's do something about the high prices!

Sincerely,
Craig Covello

Sir:

I don't recall having written to a magazine before, but the theme of Mr. G.F. Abbott's letter in your June 1971 issue of RCM stirred some latent regard for fair play.

I agree entirely with the view that AMA can only point the way and has to rely on grass roots support, and also agree that this support is often not forthcoming, but what is this preoccupation with geriatrics? It appears to

me that there is little or no relationship to the basic problem of promoting public support for model aviation. True, one will seldom see pre-teenage or early teenage as proprietors of R/C equipment unless that of the simple single channel variety (acquired through parental beneficence, but one will frequently see at the field, fathers instructing quite small sons on complex RC systems. One will also see young adults, who have bought RC equipment with their own earnings instead of guitars or stereos or cameras, etc. Usually these young people have progressed through the routine of two-bit gliders, c/l and free flight, probably encouraged by the guys who Mr. Abbott says would rather go flying than "mess about with the kids."

Is there anything wrong with a 45 year old spending his money, which hopefully at that time of life, he can afford? Could it possibly be, that these aged gentlemen might possibly inject into the hobby a sense of responsibility and safety? It really is difficult to understand Mr. Abbott's preoccupation with age. One point, however, I thoroughly agree with. There is no doubt that RC'ers do tend to segregate themselves and this really doesn't make sense. Anyone interested in model aeronautics, should be so, in all aspects; without the gliders, c/ls and F/Fs there would have been no R/C. I would join Mr. Abbott in urging R/C clubs (I belong to one) to collaborate with the non R/C clubs, but for goodness sake let's forget the geriatric nonsense!

Yours truly,
J.A. Saintsbury
St. Bruno, Quebec

Sir:

Having read the L.A. Times article, your editorial, Loretta Hall's "open letter," Mr. John Worth's response and Mr. Abbott's letter, I cannot permit myself to let the latter go unchallenged.

While I realize that RCM is not an "open forum," I hope that some of my comments will spur you into an editorial giving an editor's and modeler's point of view.

I have been building models and flying them since the mid forties and I feel that Mr. Abbott should take account of his statements and perhaps he might care to retract a few of them.

For years, I have read the printed words of wisdom and listened to anti-

(continued on page 99)

NEW! Dumas EVOLUTION/2 $13.95

Great flying .049 powered plane. Convertible from 66" to 42" wing. 1, 2 or 3 channel airplane is whatever you want it to be, from a small sport airplane to soaring glider.

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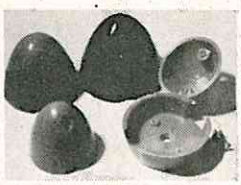
Includes servo case, screws, gears. The more we looked at this the better a deal it looked like. If you add a motor, pot, and amplifier you've got a complete servo. Radio scratch builders take note!

NEW! DuBro 1¼" STEERING ARM $1.25

Includes E-Z Connector and strong socket head screw.



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NEW! Canyon Plastics SCHWEIZER 1-26 SAILPLANE $29.95

The fastest-building ready-to-fly in R/C history. Model Airplane News & June 1971, page 46) shows this Canyon SCHWEIZER being assembled, R/C equipment installed and FLOWN in ONE HOUR and fifteen minutes! 6½ foot span for good soaring performance. Structure is braced with aluminum tubes for great rigidity. You can either put an .049 on it or use a winch for launches.

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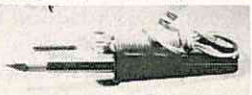

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Cuts plastics, strips insulation, cuts and carves foam plastic. Particularly handy when assembling Lanier, Dee Bee and other plastic planes. Also handy for cutting old glue joints when you're repairing a model.
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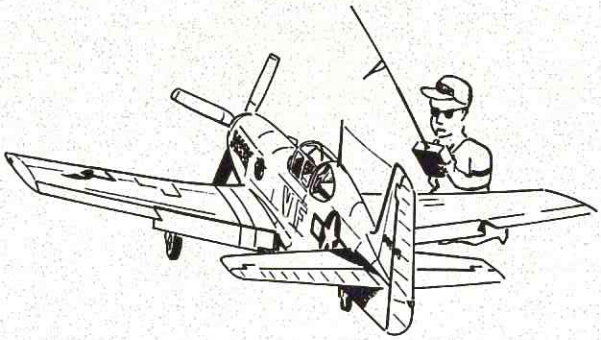


SCALE IN HAND...

by DAVE PLATT
(Designer — Top Flite Models)

As this column is written it is mid-June. The NATS is next month which, in a manner of speaking, is tomorrow. By the time these words are read, the NATS will be history; we'll have a new Scale RC Champ, or maybe Ed Ellis can pull it off again and we'll have the same Champ, now doubly respected. Either way, someone will be traveling home with the trophy for one of the world's finest events for the Ultimate Model Aeroplane, the RC Scale model. And we suspect that his thoughts will be more of his **next** year's model than the one in his car.

The stated editorial policy of this magazine and, therefore, this column, is geared toward how-to features, and we normally toe the line in this regard, and indeed, will be doing so shortly this month, too. But at this point in time, on the threshold of the NATS, it's impossible not to be struck by the poignancy of the moment.

Like probably many dozens of you kindred souls out there, this columnist has his NATS scale job almost ready for the hour of decision – that fateful first flight wherein many months of work, sweat, hopes, skill, and all the rest will, in literally ten **minutes** be suddenly and marvelously justified or else – no, we can't say it!

Out of all this number, perhaps 40-50 of us are going to make it to the NATS with our models. And, let's have no doubts but that these fellows are going to shape Scale thinking for a year.

Even the guy who is 50th is not **last**. He already beat out all those, perhaps with potentially winning models, who for some reason – a tragic crash, a last-minute cancellation of vacation plans, or plain simple **no guts** – didn't make it. This man has every reason for pride.

If this little bit of philosophizing has any point, this is it. **Don't let a modest assessment, of your capabilities stop you from making plans *now* to enter next year's NATS.**

If your capabilities, knowledge of techniques, and chances of winning are small at present, this is totally immaterial. Actually, they're probably better than you think; but anyway, there is no faster route to more successful and satisfying modeling than competition with your peers. Think about it!

★★★

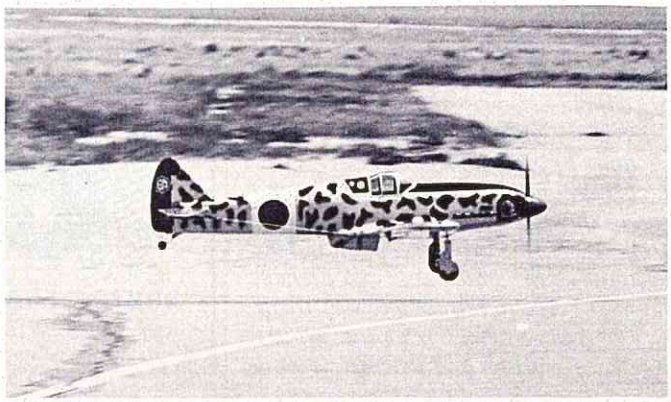
A couple of months ago we promised to give some lowdown on R.A.F. insignias (*roundels* is the correct word in this case) as to their colors and proportions. Ever since, we've been looking for some common objects, such as cigarette packages or chocolate bar wrappers, that could be used as a guide for colors. This turned out to be a dumb idea because there aren't any that are close enough, so far as we've looked. So the best way we can tell you to get the colors is to write a note to the British Standards Institute, 2 Park St., London W.1, England, enclosing a three-dollar bill (try MAD magazine) or three singles. Request a copy of Publication 381C:1964.

Almost all of the colors commonly found on R.A.F. aircraft are exampled with color chips. Note that the red used in roundels during WW 2 is called Camouflage Red in the book. The bright red (No. 539 Red) would be correct on a model of a pre-war or a post-war R.A.F. aircraft but definitely not during WW 2. When you first see this color it hits you as very rustic – a brown rather than a red. In fact, it is due to this extreme variance from a normal red that it is so easy to tell the accurately colored WW 2 models from the incorrect ones.

Again, WW 2 roundel blue (called Royal blue in the book) is almost black and not at all similar to the blue used in roundels before or after the war.

A subtle point, but one worth mentioning here, is that it wasn't until the 1950's that paint manufacturers learned how to make whites that would not "yellow" with age. Consequently, if you are making a WW 1 or 2 ship, or

(continued on page 92)



KEN WILLARD

The June issue of R/C Modeler Magazine contained an article about Hi-Start construction and operation for sailplanes.

For those of you who are interested in this phase of R/C modeling there are certain intricacies which have to be mastered in order to take maximum advantage of the Hi-Start's capability for getting a sailplane aloft. Let's refresh our memory on the basic concept of the Hi-Start. It really is nothing but a long and gentle slingslot, which catapults the sailplane into the air. With approximately 75-100' of either surgical tubing at the end which is attached to a stake in the ground, and approximately 300' of 20-30 pound test fishing line attached to the surgical tubing, you wind up with a 400' long slingshot. There is a metal ring at the end where the glider is attached and approximately 2' in front of that, either a parachute, such as was described in RCM, or alternatively, just a simple hunk of rags, something like a hankerchief, which will serve to disengage the ring from the hook on the glider once the glider has reached maximum altitude on the Hi-Start.

The critical part of the Hi-Start really is the point of attachment of the ring of the Hi-Start to the hook on the glider. If the hook is too far forward, then the glider will go up at too shallow an angle, and will not reach a high enough altitude to really begin a searching pattern for thermals. On the other hand, if the hook is too far back on the glider, the glider will attempt to go up at too steep an angle, will stall out, and you will find yourself in real trouble trying to recover from the stalled attitude.

So where should the point of attachment be? Again, there is no one single point which is "best." It will depend upon the wind conditions under which you are making the Hi-Start. It will also depend upon the way you have your sailplane balanced out So where should the hook be?

Here is a good point from which to start the hook-up procedure. Place the hook just underneath the leading edge of the wing. Then make a trial launch. As the model climbs out, move the elevator forward and back very carefully. If, when you move the elevator into a slight down position, the model goes rapidly forward without climbing, gradually pull back on the elevator and see if you can pull full up-elevator and still not actually cause the model to stall out. If you can, then the hook is too far forward on the bottom of the model. Move the hook back about 3/8"-1/2" and try again. You should immediately notice the deeper angle at which the glider is towed along.

The ideal placement for the tow hook on the glider is at a position where the model will go up very steeply and, in any wind at all, it will be necessary for you to not only stay in neutral, but occasionally give very slight down-elevator in order to keep the model from going up too steeply and stalling. I also want to warn you that this is a critical position, and you should be prepared to use down-elevator throughout the entire climb out because you will be climbing up at very close to a stalled condition. If you don't want to get the hook into such a position of critical alignment, it probably is best for normal sport flying to have the hook in such a position that the model will go up at a good angle with you only moving the rudder to keep it straight. When you have this location for the hook you can then pull up-elevator to go up steeper and you also have the flexibility of down-elevator in the event the wind comes up.

So much for the location of the tow hook on the glider. Now let's talk about your release point and what to do after you've released. The release point, of course, will be determined by a combination of wind conditions, your movement of the elevator, and the length of the tow line. Under mild wind conditions, it is possible to actually go almost vertically above the far end of the Hi-Start and still not release because the glider is being held up by the wind with such force that the Hi-Start is stretched tight. Under this condition it is necessary to actually dive the model slightly to release the tension and then pull it off the Hi-Start. More common, however, is the condition where you are almost directly above the far end of the Hi-Start and the glider releases automatically as the chute or cloth in front of it creates sufficient drag to pull the Hi-Start loose from the tow hook.

Once you have released, it is time to go looking for thermals. Don't start circling; that will get you nowhere, unless luckily, you have released right into a thermal current. Rather than circling, your flight path should be a straight line in one direction until you either see a rising current which will show up on the plane by its actually going up, otherwise you will have to turn and come back towards the field and perhaps glide in for a landing in order to make another Hi-Start.

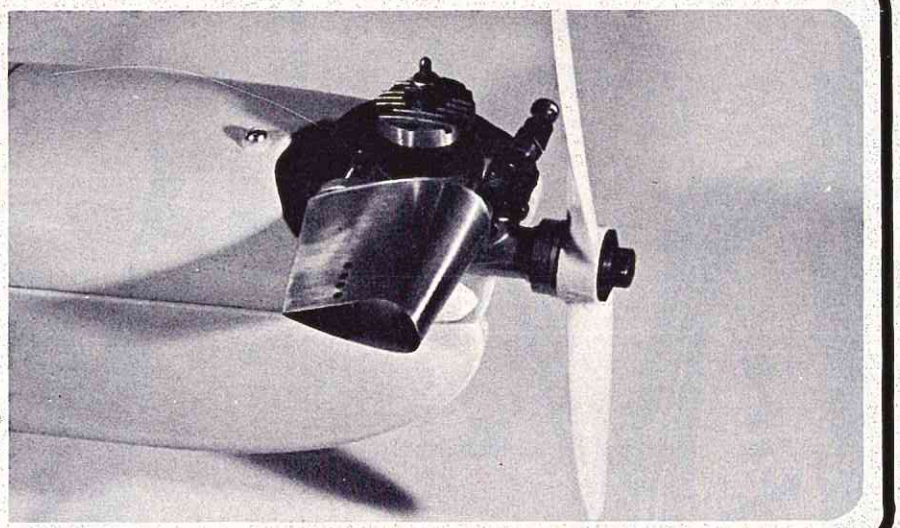
When you are cruising in search of a thermal and you see the model start to rise, that, in itself, is not enough. Remember that the airplane has a radius of turn which, for most models is probably about four or five times the span, or perhaps six or seven times the length of the model. So, as you see the model rise, let it continue on its course for at least four body lengths, and then start a turn to stay in the thermal. Alternatively, if the model does not start to sink at all, then continue to cruise in the straight direction until you actually see the model start to sink. Then you know that you have reached the "backside" of the thermal and will be in a general area of sinking air. This is the time to make a quick turn and return to the area of rising air. Once you see the model starting to rise again, then you can start to circle in the rising air and continue to go up with it.

The diameter of the circle which you make should be as large as possible and still remain within the rising air. The reason for this is obvious; the wings will have more vertical lift if you are in a gentle bank than they will if you are in a steep bank. Thus, you will go up faster if you are able to bank gently. However, if the diameter of the rising current is small, then you should turn as tightly

(continued on page 97)

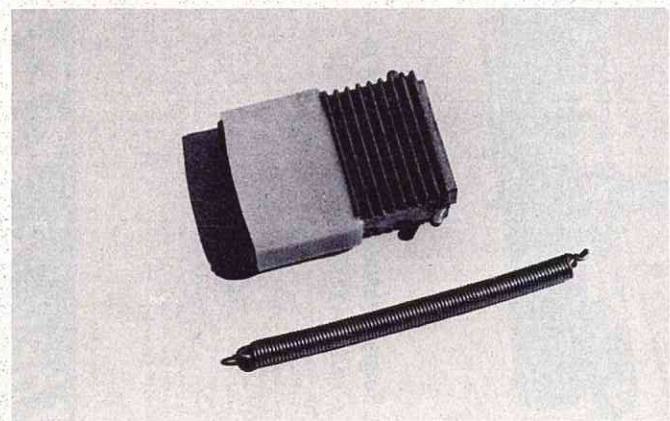
engine clinic

By Clarence Lee



This month we have two new mufflers to report on that look very promising. Up to now the muffler situation has become pretty well stagnant in that nothing really new in the way of design has come along. All of your commercial mufflers now fall into one of two types: The closed expansion chamber models, or the flow-through venturi type. It is refreshing to see something new in the way of design ideas as with the two mufflers we tested this past month.

The first muffler is made here in Southern California by Mike Murphy and, for some strange reason called the 'Murphy Muffler'! Mike has gone about the silencing problem with a muffler completely different from anything you may have seen in the past. How many of you remember the old noise maker 'razzberrys' that you could buy in the dime stores as a kid? (In fact how many of you can remember a dime store?) For those of you who have never seen a razzberry, it was just a wooden mouth piece with a short length of rubber tubing. The tubing was closed at the end with a slit. When you blew through the mouthpiece you got the appropriate noise. The Murphy muffler is very similar in principle. The main body of the muffler is an aluminum die casting over which is slipped a high temperature silicon rubber sleeve. The body has two small chambers through which the exhaust gases must pass before exiting. They do this by expanding the rubber sleeve. At first you might think that this would cause considerable back pressure and a resulting loss of power. However, in actual application, this does not happen. The rubber evidently resonates in frequency with the exhaust pulses and the actual power loss is only 100 to 200 rpm. The muffler is one of the quietest I have tested and would rate right along with some of the power robbing expansion chamber models that can cause up to 1000 drop in rpm in its silencing ability. I tested several different experimental models of the Murphy muffler. Some with heavier walled rubber sleeves were even quieter but did cause more of a drop in rpm. It is possible that Mike may make two rubber sleeves available. One with a minimum of power loss and a heavier sleeve for those who must have the maximum amount of silencing even if it means more of a power loss. The Murphy muffler is the smallest and most compact muffler that I have tested so far. They will be available through your local hobby shop.



The other muffler tested this month is called the 'Airflow' and is manufactured in the mid-west by Al's Hobby Shop, P.O. Box 449, Elmhurst, Illinois 60126. Although the Airflow muffler might be classed as an expansion chamber type, appearance wise it is certainly different than anything that has been available in the past. As you can see from the photograph, it is actually a small airfoil shaped body. Internally it is completely empty with no chambers or baffles. There is a row of six small holes both on the top and bottom just aft of the high point of the airfoil. Evidently the idea here being that airflow over the airfoil creates a negative pressure just aft of the high point, as with a conventional wing, and helps to extract the exhaust gases. However, on the ground with no airflow other than the prop blast the muffler only caused an rpm drop of 150 to 200 which was very surprising. Like the Murphy, the Airflow was very quiet. For the more technical types out there I did check the nose level of both mufflers with a decibel meter. The Murphy registered 98 db and the Airflow 96 db. Both readings were taken 15 feet from the exhaust side of the engine where the highest readings are registered. The two mufflers have an individual type of sound. The Airflow being made of thin steel has a metallic sound. The Murphy has a flatter sound that is a little hard to describe. I would recommend either muffler. Which you may choose to use would be up to you as it is strictly a matter of personal taste. One may adapt to your particular model better than the other.

For a comparison in noise level I also checked the KO expansion chamber muffler and the Silence-Aire flow-

(continued on page 93)

EDITORIAL

BY CLARK KREITLER

In recent months and years, we have been bombarded by articles in model magazine praising the virtues of our radio equipment, airplane designs, and RC engines. The RC gear is reliable, light (to the point of going to minus values so that the airplane will be lighter with radio than without), and generally delightful to use. The manufacturers are responsive to the modelers in both design and quality of service and have given us excellent value for our money. The airplanes fly well, are predictable in performance, and there are more good designs to pick from now than ever before. The engines start easily, idle, and continue to run throughout our flights without the critical qualities present several years ago. New and better carbs and plugs are the main contributions here.

All this praise of the components of our hobby is true and we, as all RC'ers are happy about the goods we buy and use – with one outstanding poor exception. Have we seen any articles or columns praising the quality and progress of our kits? Yes, a few writers have selected some of the best kits on the market for analysis, but for the most part discretion is the better part of valor, and there isn't too much journalistic or public discussion of the quality of RC airplane kits. We are years behind the rest of the industry in the kit field and only a few manufacturers are doing anything about it.

Our complaint is not particularly about price and what material comes in the box, but about the low level of quality we get, and the lack of correlation between plans and materials. Let's take some examples:

1) A plastic cowling which is too small by 1/8" all the way around when compared to the plans.
2) A foam wing core which is bigger than the wing outline on the plans. (Do you cut the trailing or leading edge?)
3) Wood that must simply be thrown away and replaced. The worst balsa wood on the market is sold in some kits! The best comes out of the dealers display case and goes to the smart scratch builder who gets a better, lighter model.
4) Fuselage sides which are supposed to be identical but are not. (Always check the two sides with each other and with the plans – your choice on which is right.)
5) Symmetrical wing ribs which are supposed to be identical but are not.
6) Wings that fold up in flight. How much testing do you suppose was done with the design?
7) Die cut or sawed fuselage members which are just small enough to leave a crack on each side.
8) Kits in which absolutely no piece fits any other piece without considerable alteration.
9) Kits which were designed so long ago that they take into account none of the newer construction techniques or the magnificent materials now available.
10) Plastic parts which are not identified as to the type of plastic used – therefore the modeler must find out the hard way which kinds of glue and paint will work in order to get a proper building and finishing job without ruining the pieces.

Another bad and prevalent kit practice is to leave the tough parts of the construction to the imagination of the modeler. One kit we recently built goes into great detail about the routine wood construction of the fuselage, but when the instructions approach the difficult task of attaching the front and top cowlings, they say, "attach the cowlings." If the builder has never done it before, he's in for trouble. This type of thing can be laughable to the experienced modeler, but can mean a crash to the beginner who follows the plans. One of our recent projects showed two nylon elevator horns in the fuselage to receive two small wood screws through the wing for the wing hold down. At the speeds this model is designed to travel, the wing would very likely come off. Another of our projects, a high-wing model, showed no plywood dihedral braces in the center of the wing, although the wing is in three sections. Straight and level flight would be OK, but a snap roll or two and this wing is splinters. We always read of "modifying" kit designs, and these are some of the reasons it must be done so often. Needless to say the plywood went into our airplane, but how about the builder who has never seen a high wing fold up, as they so often do?

The trend in kit designing and manufacturing is for active modelers to do these tasks, so that the product is realistic in terms of what the RC'er wants and needs. This is a good trend, but it hasn't gone far enough yet. We personally know one model designer who doesn't even know how to fly! One or two test flights by one of his flying friends and the model goes to press! □

When it comes to kit reviews, the model press prefers discretion to valor, selecting only the best for evalution. A matter of 'economics' and rose colored glasses.

Phil Miller displays his own Phantom with retract gear, built from RCM plans.

RCM VISITS MILLERS HOBBY SHOP

As the owner of Miller's Hobby Shop, Beech Island, N.C., Phil Miller has turned his life long hobby of building and flying model aircraft into a business. But more than just a business, it is Phil's way of helping his fellow modelers, with an emphasis on the younger flyer who is just getting started. It is not at all unusual for Phil to receive a phone call at 11 or 12 O'clock at night from a modeler who needs a question answered on how to cover a wing or install a piece of proportional equipment. And, it is not at all unusual for Phil to help one of his customers build a complete model or for him to take that modeler out to the flying site and teach him to fly.

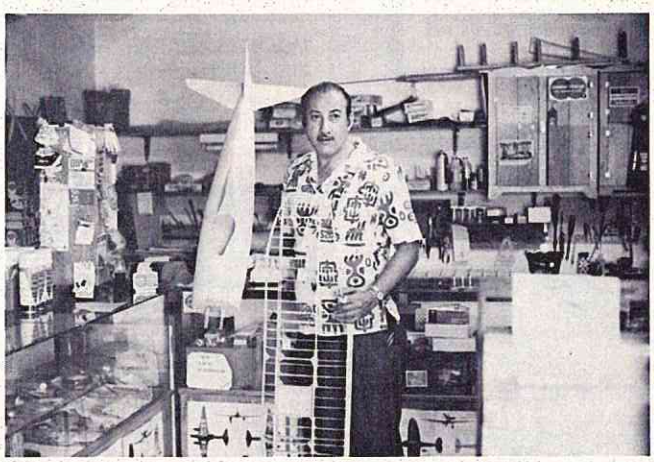
For Phil Miller, his contributions to his fellow modelers may have paid off in actually saving his own life. In December of 1968, Phil suffered a heart attack. Six months later his house burned down taking with it 15 of his models. As a salesman at that time for Paymaster Corp., Phil had travelled extensively across the United States, building airplanes in his motel rooms at night and stopping at every hobby shop in each little town he visited. After the heart attack his doctor told him that he would have to take it easy or the next one could be fatal. Phil then decided to open a hobby shop and help others while providing for his own livelihood.

Miller began his modeling career at the age of 12 with a 10 cent Megow Spad kit put together with banana oil—the latter a modeling material that many of our newcomers will not remember. Later, Phil enlisted in aviation school and then the Navy Air Corps. Even WW II couldn't stop his modeling activities for, while on duty in the Pacific Theatre, Phil even built two more airplanes. After his Navy hitch, Phil went to work for the Paymaster Corp. until he opened up his hobby shop.

Today, as a model builder, Phil's models have won three 1st place awards at the Augusta Exchange Club Fair with this years entry being a model of the Douglas Skypilot. The latter model has retractable landing gear, dropable bombs and gas tanks, as well as operating flaps, light, and the normal full house proportional controls.

In our opinion, Phil Miller represents the epitome of the hobby shop dealer specializing in radio control — the modeler who earns a livelihood in the hobby that he loves best and a man that contributes a great deal of his time towards helping new modelers learn to build and to fly. R/C Modeler Magazine is proud to salute Phil Miller of Miller's Hobby Shop in Beech Island, South Carolina who, in his own words, is "just a Damn Yankee," but in our opinion is an individual enjoying life to the fullest by combining his hobby and business into a full-time interest that benefits everyone who has the opportunity to become acquainted with him. □

As an active RC'er, Phil spends a great deal of time helping his customers over their construction and flying problems . . . .



. . . . and when time permits, Phil works in his own shop on his personal scale and pattern projects.

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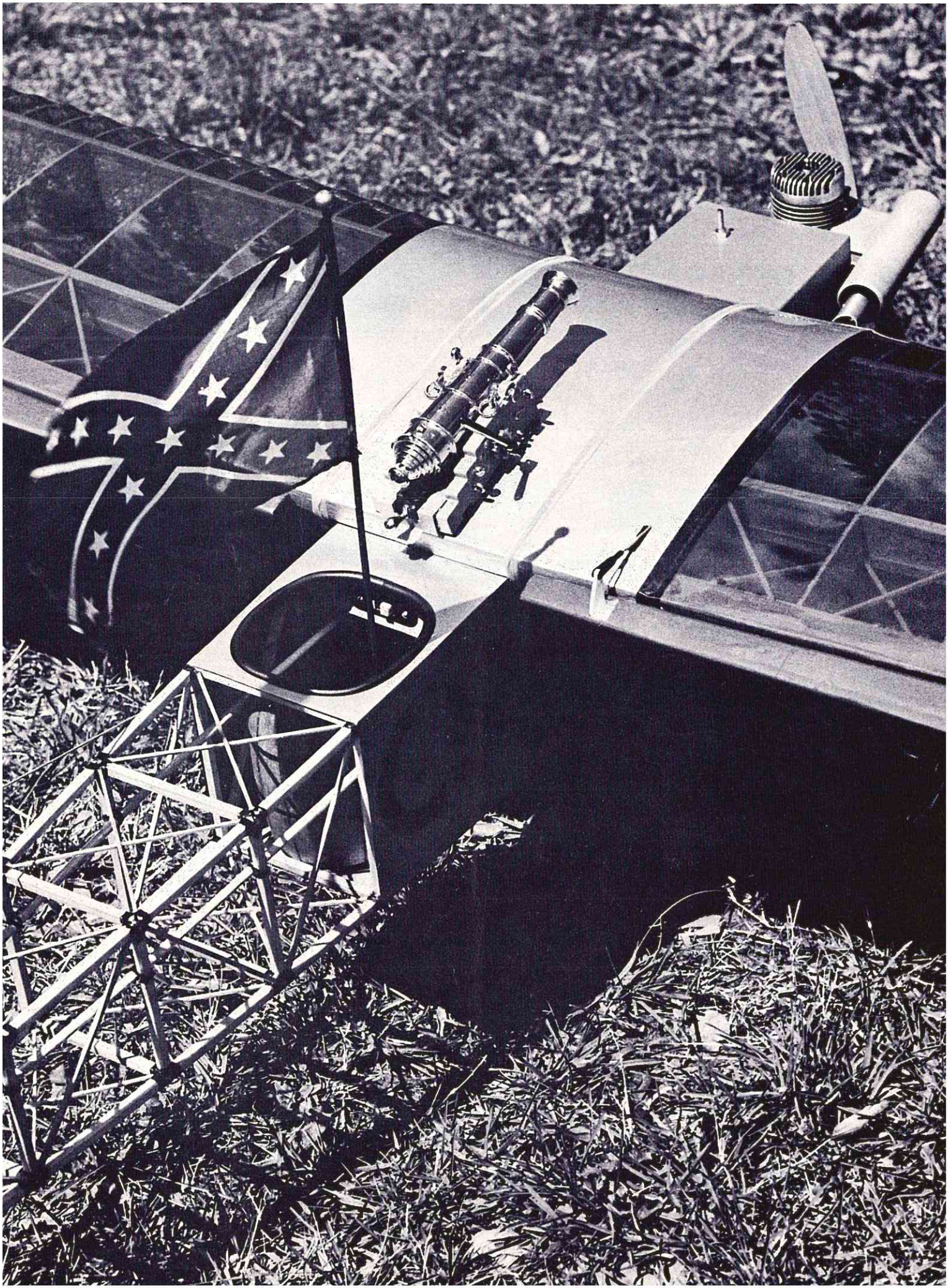


miss scarlett

BY WALT MITCHELL

Photos by Bill Bell

BEING AN ACCOUNT OF THE HEROIC EXPLOITS OF COLONEL BEAUREGARD P. BUTLER, C.S.A.F., WHO ACTUALLY INVENTED THE AEROPLANE, DESTROYING ONCE AND FOR ALL THE CHERISHED YANKEE MYTH OF KITTYHAWK.

A little known fact of history is that Colonel Beauregard P. Butler, inventor of the Mint Julep, also was the inventor of the world's first heavier-than-air flying machine. This will no doubt come as a shock to those steeped in the myth of Kittyhawk, but it is axiomatic of modern life that yesterday's cherished beliefs are today's jellybeans.

Beauregard P. Butler was a true Renaissance man. His far-ranging interests included not only drinking and flying, but also Mah Jong (at which he was a world-class competitor), skittles, and girls. Considered a nefarious miscreant by Atlanta society, his amorous exploits were the talk of the town and he is known to have pinched Scarlett O'Hara's empennage assembly at the Debutante Ball in 1860. Asked why he would do such a thing, he replied simply, "Because it was there . . . "

But I digress. Here we must concern ourselves with Butler's aerodynamic genius and the factors which led him to the invention of the aeroplane.

The War Between The States interfered with Beauregard P. Butler's life to a considerable degree. Conscripted into a Georgia regiment of the Army of Tennessee, Beau soon found himself cold, wet, and hungry, in a muddy trench near Chickamauga. Not only was there not a drink of likker to be had, but the cussed Yankees were doing their best to kill him. All in all, it was not a proper place for a roué to be, glorious cause or no glorious cause. So Beauregard P. Butler, like many a dog-face soldier before and after him, began to figure ways to get out of the infantry. And, like many another, he decided to apply for the air corps. "Better," he reasoned, "to live in fame or go down in flame than to be in this C.S. outfit." Besides, he rather fancied the idea of wearing scarf and goggles, with maybe riding boots and a Sam Browne belt. It was the air corps for old Beau.

Imagine, then, his surprise and alarm when he found out there **wasn't any air corp**! "Great God Amighty!" thought Beau. "There ain't **no way** for Gen. Bobby Lee to win this thing without air support!" And right away he began sketching out a flying machine. Beau had been a modeler before the War made balsa hard to get, and it didn't take him long to come up with a pretty good design which he showed to Gen. Braxton Bragg, Commander of the Army of Tennessee.

Now Gen. Bragg, whatever faults as a military strategist the historians have laid at his feet, was no dummy. Naturally, his first reaction was that young Butler had gone daft; but the more he thought about it, the more he could see that a flying machine might **just** give him the advantage he needed to blow the Yankees right out of Chattanooga, right on up to Ohio, or wherever it was they came from.

He knew that U.S. Grant had taken over command of the Federal Army that occupied Chattanooga. He also knew that Grant had a penchant for strong drink and he figured if he could send some kind of flying contraption swooping down from Lookout Mountain, it just MIGHT get the Yankee general so shook up that he'd take to drinking. And if he could get Grant drunk, ANYTHING might happen. Sober Yanks were crazy enough but a drunk Yank . . . . ? The possibilities were endless.

So he put a fatherly arm around Beauregard's shoulder and said, "Soldier, I am going to give you $100 Confederate. I want you to go on back down to Atlanta and invent us this flying machine you're talking about. And if you invent us a good one, I'll transfer you out of the infantry and give you a promotion to boot. But hurry. Them damn Yanks are not going to hold still forever." The world little noted nor long remembered what transpired at this meeting, but at this precise point in time, the aeroplane was born.

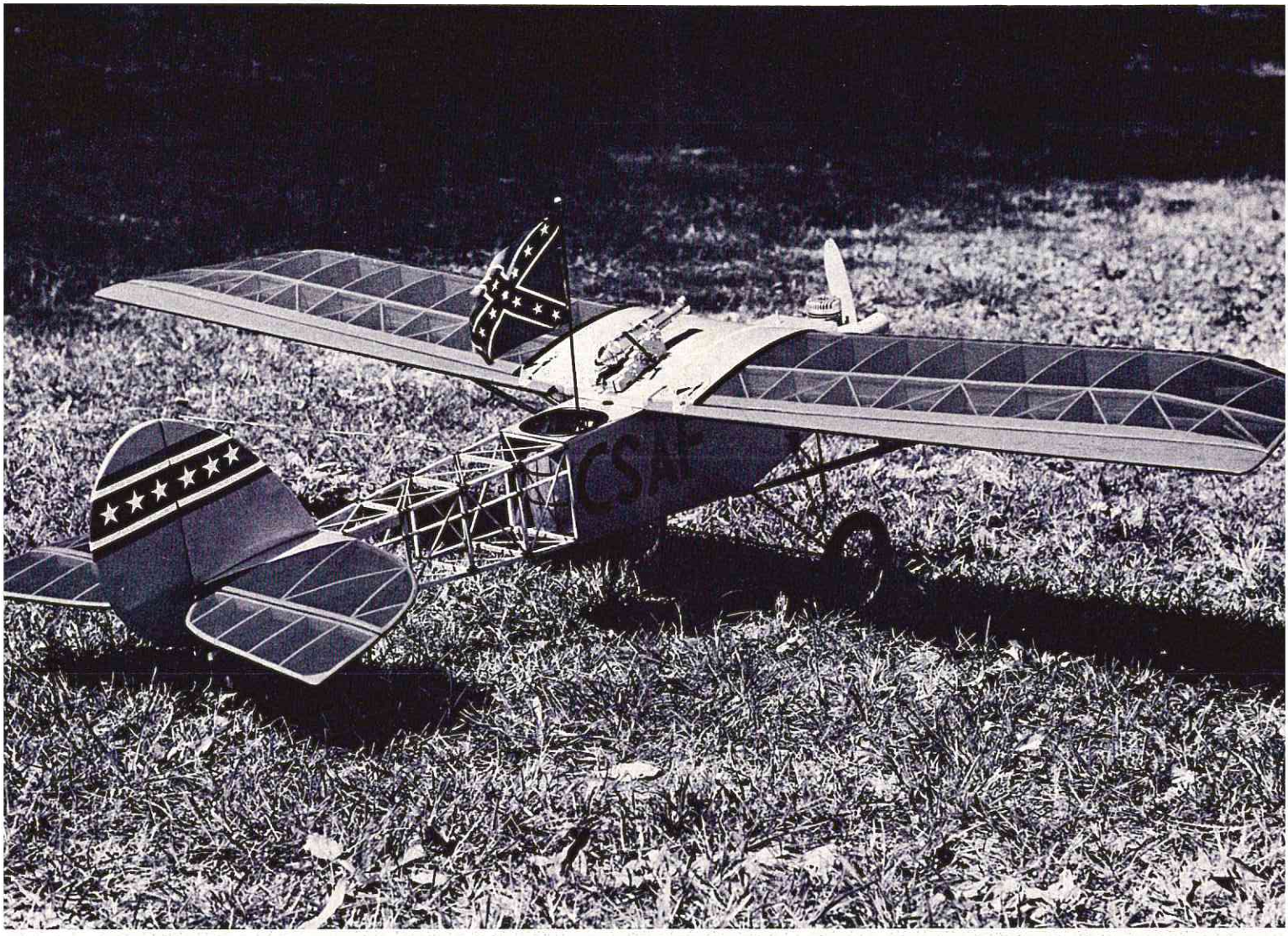
Beau took the night train to Atlanta. His folks were right glad to see him and let him set up a shop in the garage behind the plantation. "I reckon," said his pa, "if old Beau can invent us something that will help run them cussed Yanks off, it won't hurt the Ford none to stand out in the weather."

Beau's modeling experience and his innate genius set him in good stead. Using back copies of RCM for reference, he soon came up with what appeared to be a practical design. Very much like a model it was, but big enough to haul a man inside, provided he had toted up his Reynolds numbers correctly. Construction was mainly of light but strong Magnolia. The wing spars were cut from grit trees, because of the grits' straightness and high tensile strength. It wasn't long before he had the framing complete, and sitting there in the garage, on Honda wheels with a big one-lung Briggs and Stratton up front, it looked for all the world like an overgrown model.

Beau covered the flying surfaces with muslin, installed a barrel seat (the forerunner of the bucket seat) and painted the whole thing red and gray. He named her *Miss Scarlett,* even though that faithless tart had taken up with his cousin Rhett. By the time October rolled around, he was ready for testing.

The morning of October 2, 1863, dawned bright and clear, and the big moment was at hand. Beau pulled the one-lunger through a couple of times and it sputtered to life, setting up such

'Miss Scarlett' flys the stars & bars. Yankee beware, that 24 pounder is not loaded with sofa pillows . . . !



Save yore Confederate money, boys.... the South's gonna' rise (like fly) agin! Beau's 'Miss Scarlett' proves that yesterdays cherished beliefs are today's jellybeans.....

a ruckus you would have thought a fox had got at the chickens. Beau had to scramble to get back in the cockpit and *Miss Scarlett* bumped off across the field with old Beau fighting torque. Pretty soon, though, the tail came up and at about 40 mph, she broke ground.

Old Beauregard was pretty busy there for a while... first one wing would dip, then the other and he like to have stalled her out right off the bat. But is wasn't long before he got the hang of it, and by God, there he was FLYING, just like a big S bird. He tooled her around a bit, then took her up high to see if he could spot his house in town but he couldn't.

Satisfied, he cut the engine and let her come down. His landing was rough and it was a good thing he had the nose skid, because the contraption tried to nose over. But nothing was hurt, including him, and Beau calculated it was a dang sight safer than getting shot at by Yanks or even driving for that matter.

He hauled *Miss Scarlett* back to the shop for final touches, not the least of which was a 24 pounder naval cannon which he bolted to the wing, right where he could take a good sight down the barrel. That would give the Yanks a start! Then he wired Gen. Bragg that he was on his way and took off right down the middle of Peachtree Street, headed for Chattanooga. About an hour later he spotted Lookout Mountain, majestic in the autumn mists. He took a bearing on the summit figuring he would come in just over the top of the mountain, swoop down the side and let the Yanks have a volley of grape shot right in the GHQ.

Old Beau pulled her up some to clear the peak, and in an instant *Miss Scarlett* came hurtling over the top. There was some kind of a terrible fight going on below, with the Yanks trying to storm up the side of the mountain and the Rebs mowing them down as fast as they came. But the thin gray line was having its troubles.

Well sir, when Beau and *Miss Scarlett* came roaring over the mountain, a weird thing happened. Withing two shakes the battlefield was clear, not a soldier to be seen. Yank and Reb alike had dived into their holes, sometimes into the same hole, out of fear of the Thing In The Sky. Beau circled low over the entire Tennessee Valley and there wasn't a creature stirring. The whole battle had come to a screeching halt and a deathly stillness had settled over all. Where the dusky tumult of war had raged there was now only an eerie silence.....

Suddenly, in one of those rare flashes that sometimes come to men, Beauregard P. Butler had the stunning realization that he was tampering with the sweep of history, that he was warping time itself. He sensed that if he persisted, everything would change. There would be no Gettysburg Address, no Lincoln Memorial, no carpetbaggers, no "Fergit, Hell!" bumper

stickers, no "Impeach Earl Warren" signs, and probably not even any Klu Klux Klan.

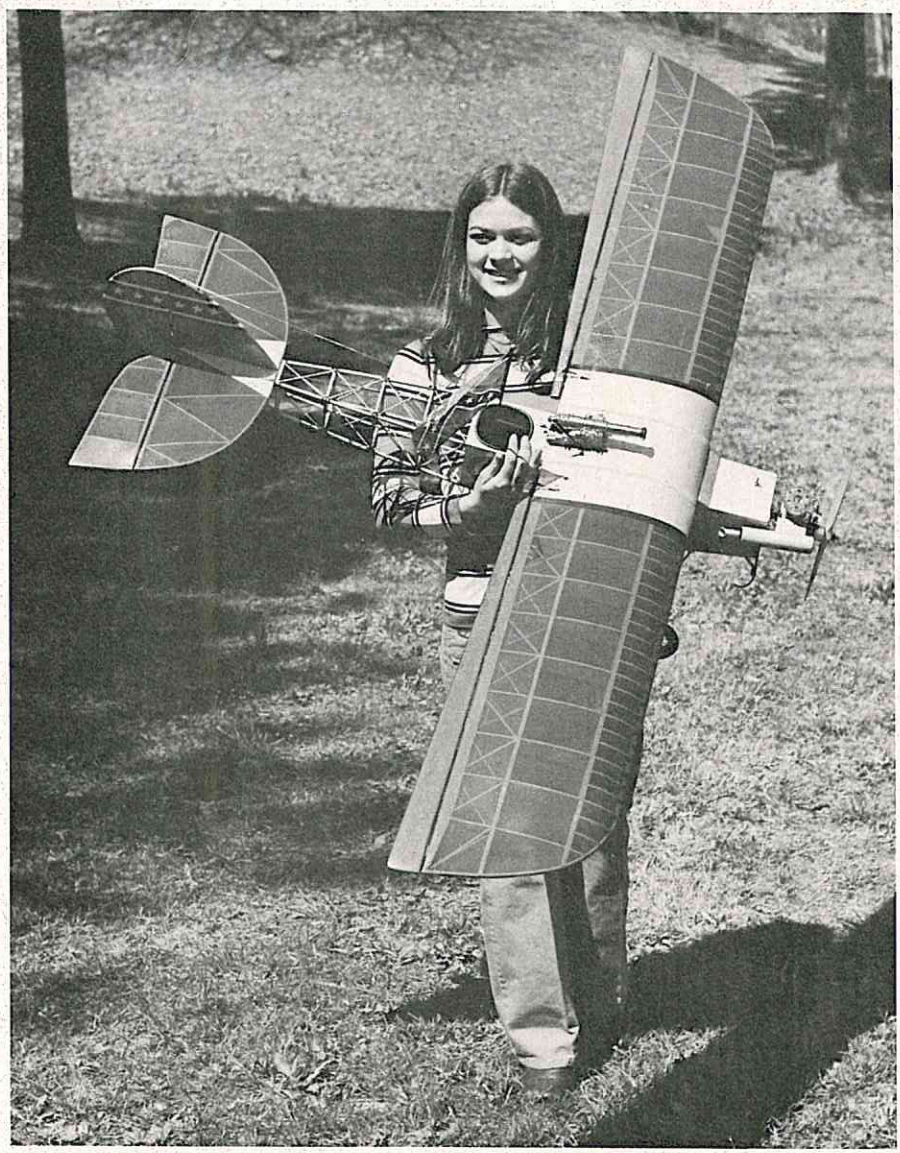
Shaken, Beau hauled *Miss Scarlett* around South and took her on back down to Atlanta, where he quietly stored her away forever, determined to take the awful secret of flight to the grave with him.

Gen. Joe Johnston, who had replaced Bragg, understood also that without his brilliant retreat to Kennesaw, he would not go down in history as one of the Confederacy's top military strategists. So he had Beauregard made a Colonel and asked him to stay home until the War was over, which was not a bad deal, except that Beau drew his retirement in Confederate money.

I have attempted to reproduce *Miss Scarlett* faithfully, working from the original drawings and remnants of the plane which were found in 1967 during some demolition work. By a stroke of luck, I happened to be playing nearby when workmen unearthed the precious find. I instantly recognized it for its true historic value, having read Aunt Margaret's other book, "Gone With The Wing," which described Beau's labors and his departure for Chattanooga on that fateful day. Otherwise, the world's first flying machine might have been lost forever. This book has naturally been suppressed to avoid hurting the feelings of Wilbur and Orville Wright and because the spiteful Yankee press did not want the South to have credit for the invention.

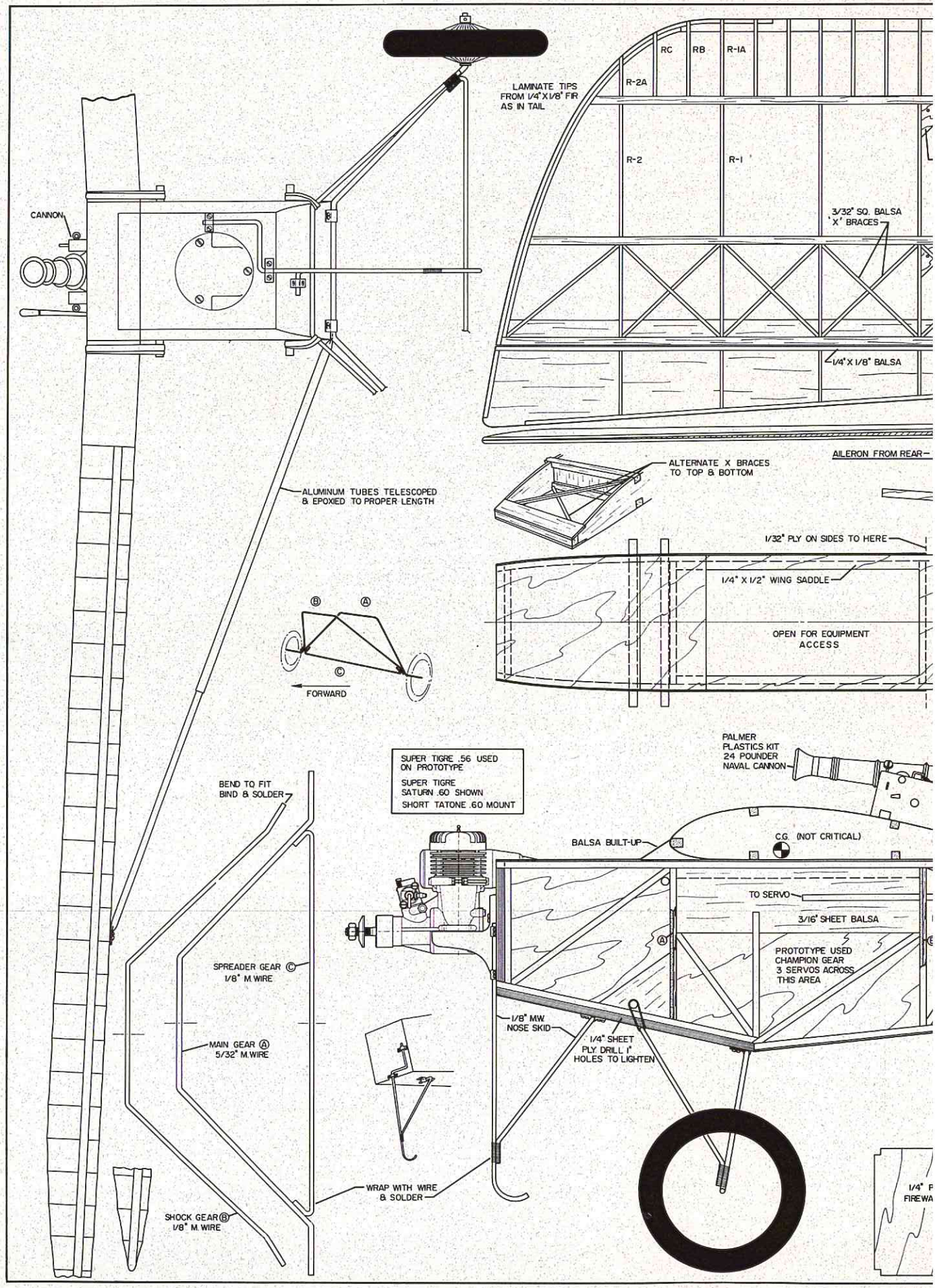
As with any strictly scale effort, this is not a project for beginners. But its construction is simple and straightforward and can be handled by the serious scale buff. The only deviations from the true scale are the ailerons (Butler's ship was rudder and elevator only) and the wheels which are not **exactly** like the Honda wheels used on the real plane. The model has (or rather had) excellent flight characteristics. I say "had" because it suffered a mid-air collision during a dog fight with an H-Ray flown by a certain one-eyed pilot by the name of Dalton C. May, and was destroyed.

May is currently under investigation by the Atlanta Radio Control Club on the charge that he is a Yankee sympathizer. He has stated publicly that some of his best friends are Yankees, but contends that he would not want his daughter to marry one. It is damned liberals like this that cause all the trouble. □

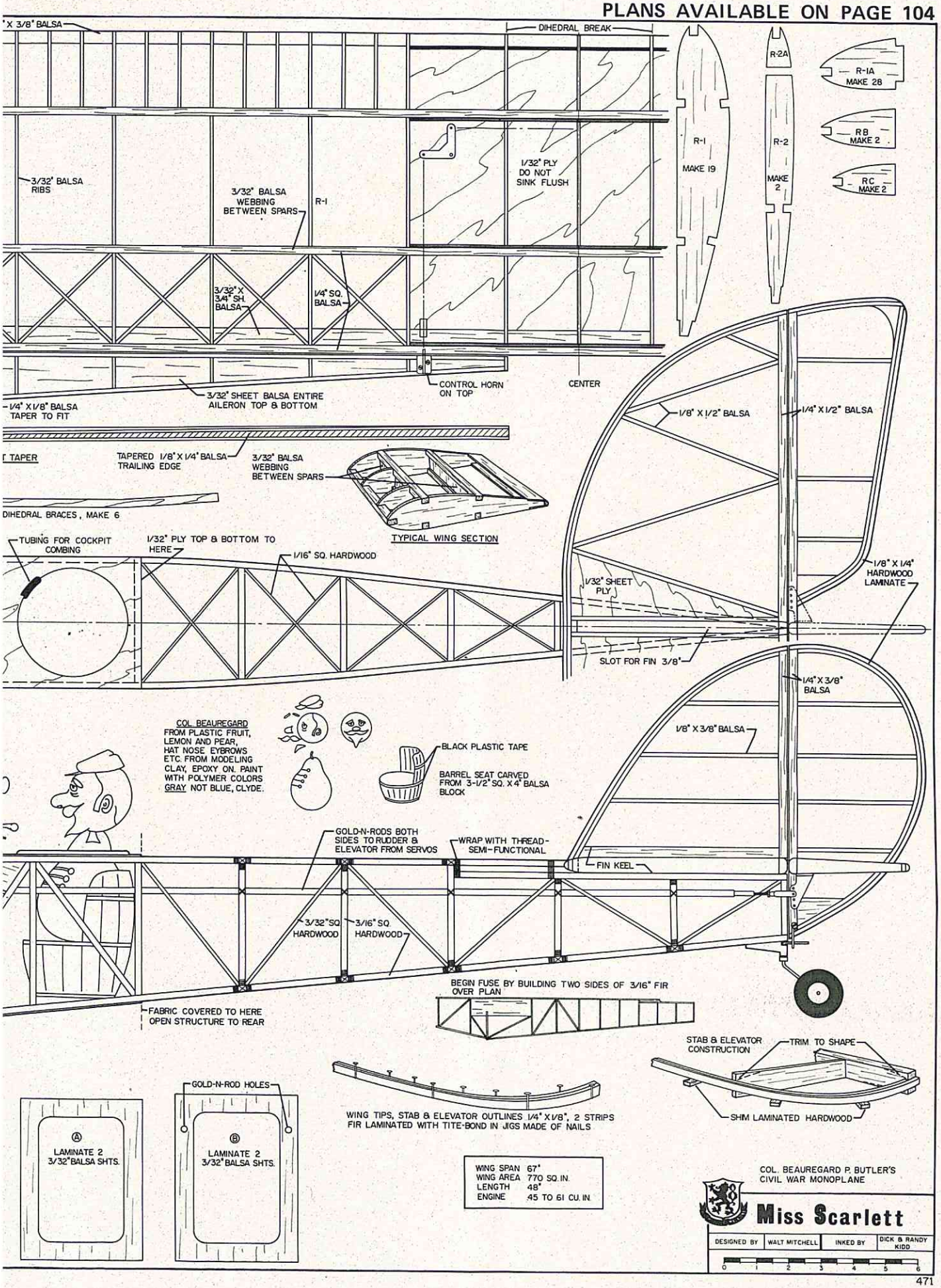


A real Southern Belle, Lavonne Phillips . . . we don't have no ugly girls Down South, Clyde.

Author, a practicing dirty old man, about to fondle 'Miss Scarlett's' empennage assembly.


CANNON
ALUMINUM TUBES TELESCOPED & EPOXIED TO PROPER LENGTH
LAMINATE TIPS FROM 1/4" X 1/8" FIR AS IN TAIL
RC
RB
R-1A
R-2A
R-2
R-1
3/32" SQ. BALSA 'X' BRACES
1/4" X 1/8" BALSA
AILERON FROM REAR
ALTERNATE X BRACES TO TOP & BOTTOM
1/32" PLY ON SIDES TO HERE
1/4" X 1/2" WING SADDLE
OPEN FOR EQUIPMENT ACCESS
Ⓑ
Ⓐ
Ⓒ
FORWARD
SUPER TIGRE .56 USED ON PROTOTYPE
SUPER TIGRE SATURN .60 SHOWN
SHORT TATONE .60 MOUNT
PALMER PLASTICS KIT 24 POUNDER NAVAL CANNON
BEND TO FIT BIND & SOLDER
BALSA BUILT-UP
C.G. (NOT CRITICAL)
TO SERVO
3/16" SHEET BALSA
PROTOTYPE USED CHAMPION GEAR 3 SERVOS ACROSS THIS AREA
SPREADER GEAR Ⓒ 1/8" M.WIRE
MAIN GEAR Ⓐ 5/32" M.WIRE
1/8" M.W NOSE SKID
1/4" SHEET PLY. DRILL 1" HOLES TO LIGHTEN
WRAP WITH WIRE & SOLDER
SHOCK GEAR Ⓑ 1/8" M.WIRE
1/4" P
FIREWA

PLANS AVAILABLE ON PAGE 104



WING SPAN	67"
WING AREA	770 SQ. IN.
LENGTH	48"
ENGINE	.45 TO 61 CU. IN.

COL. BEAUREGARD P. BUTLER'S CIVIL WAR MONOPLANE

Miss Scarlett

DESIGNED BY	WALT MITCHELL	INKED BY	DICK & RANDY KIDD

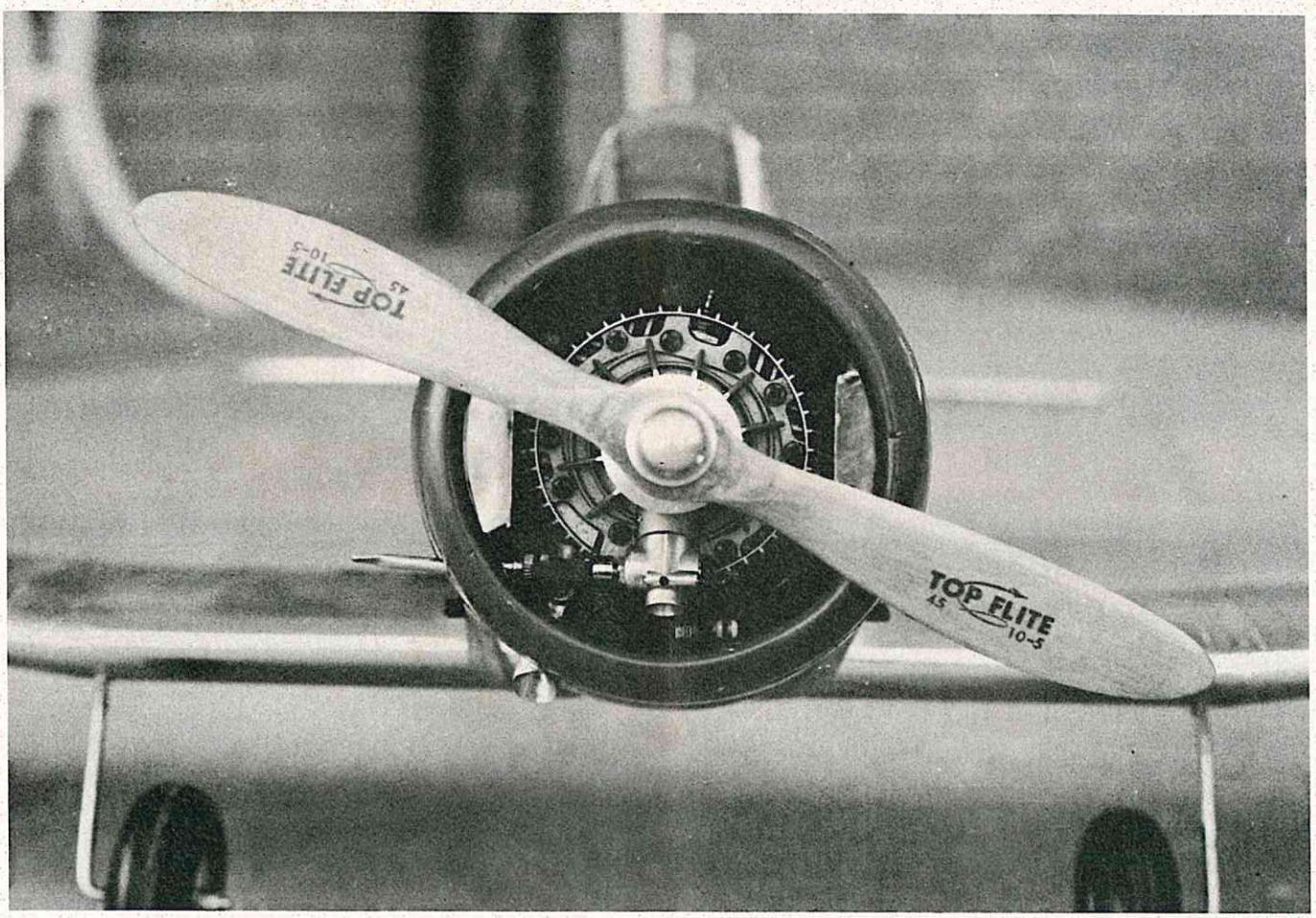
0 1 2 3 4 5 6


NAVY
3
NAVY
503

AT-6 SNJ

BRYCE PETERSEN

A SEMI-SCALE VERSION OF THE NORTH AMERICAN HARVARD II DESIGNED FOR THE GRAUPNER / O.S. WANKEL ENGINE. PATTERN PERFORMANCE ON A .29 TO .40.



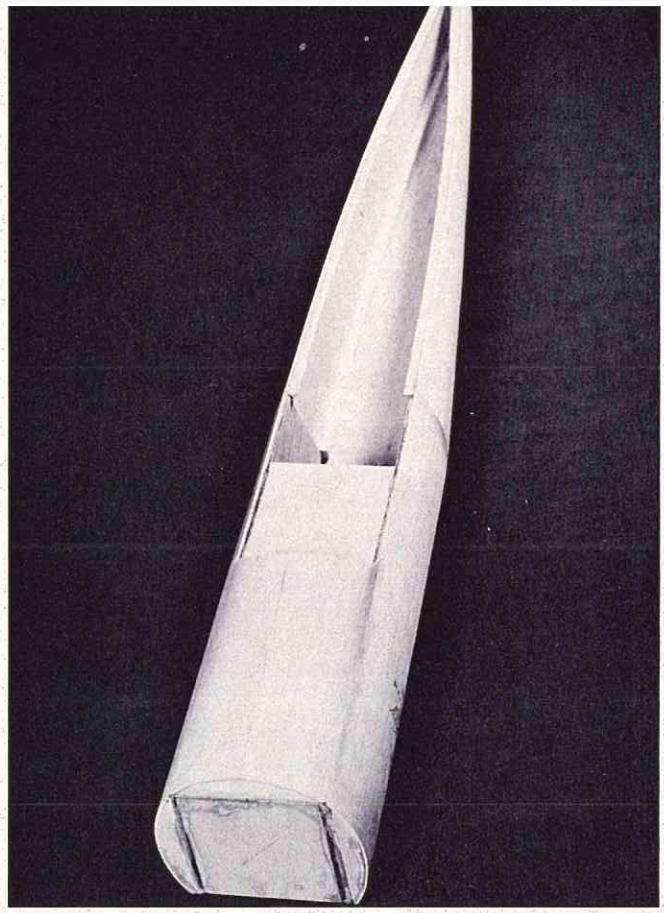
Hello, again. It has been some time since I could join you with a model project. The opportunity presented itself to start a new club here in West Virginia, so I have spent a year or so plunging into the various chores of club activities and training new members. Membership is up to 30 proud, dues-paying members with five competent instructors with "ready thumbs" to help the beginners. This year's election produced eager, new faces and I was allowed to settle back into the background and design models again. We are known as the Mountaineers of Charleston, West Virginia, and all of us extend the invitation to come fly with us.

AT-6 SNJ North American Harvard II

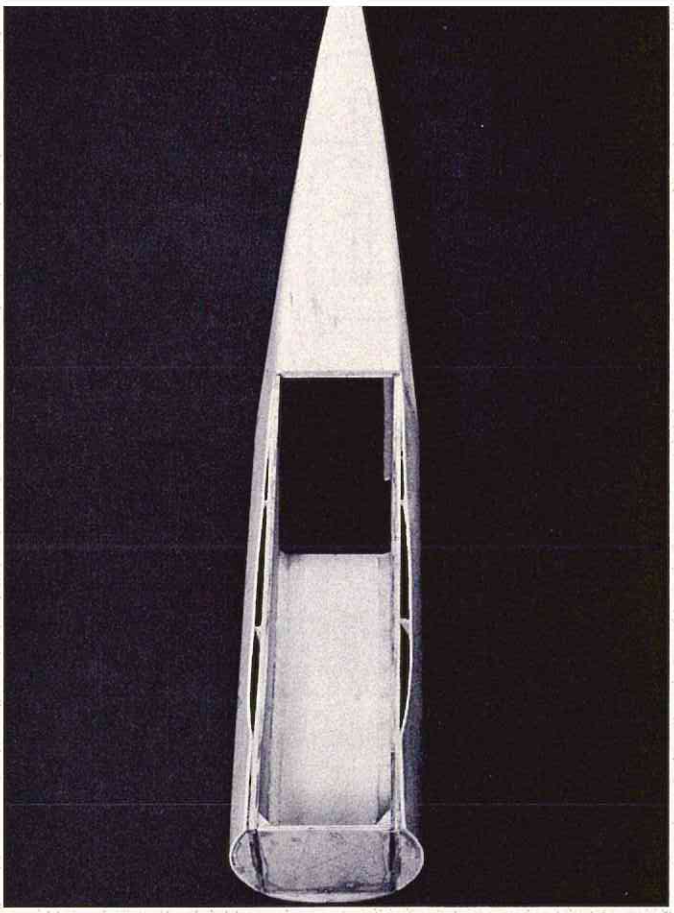
This aircraft needs no introduction to aviation-minded persons. It was the basic trainer for the Army and Navy, produced after the second World War because of its excellent handling characteristics for training. It was first ordered in 1938 by the R.A.F. The popularity of the Harvard II soon spread to the U.S. and over ten thousand were produced in the U.S. and Canada. The design possesses the distinction of having been manufactured in larger quantities than any other basic trainer.

The model presented here is a semi-scale SNJ. It is close enough for stand-off scale events and actually won first place this spring at a contest. The head judge suggested I add instruments and rescale the ailerons for more points, however.

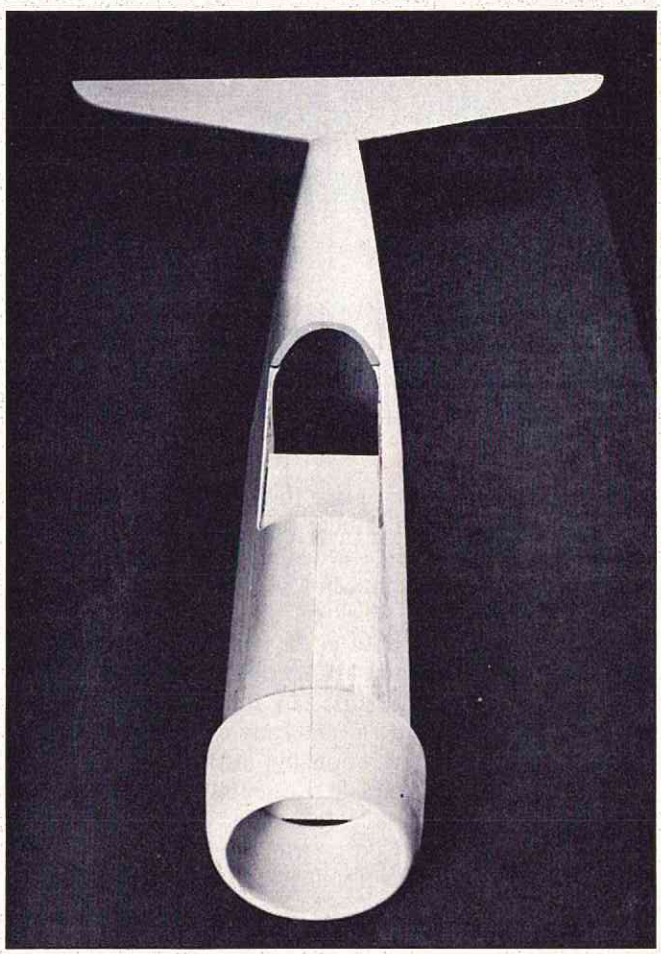
The real plus for this model is its ability in the air. The power, drag, and wing loading ratio is close to perfect. The first few flights were a thrill for me. I found myself doing things that are normally difficult for me. For example, I can pull the stick back, and it will do a **round** loop. With a touch of down trim, you can roll it upside down and it just stays there. Slow it down and point its big nose up into a stall and plop, straightforward to recovery. I went charging into an eight point roll and to my surprise, I did it. I



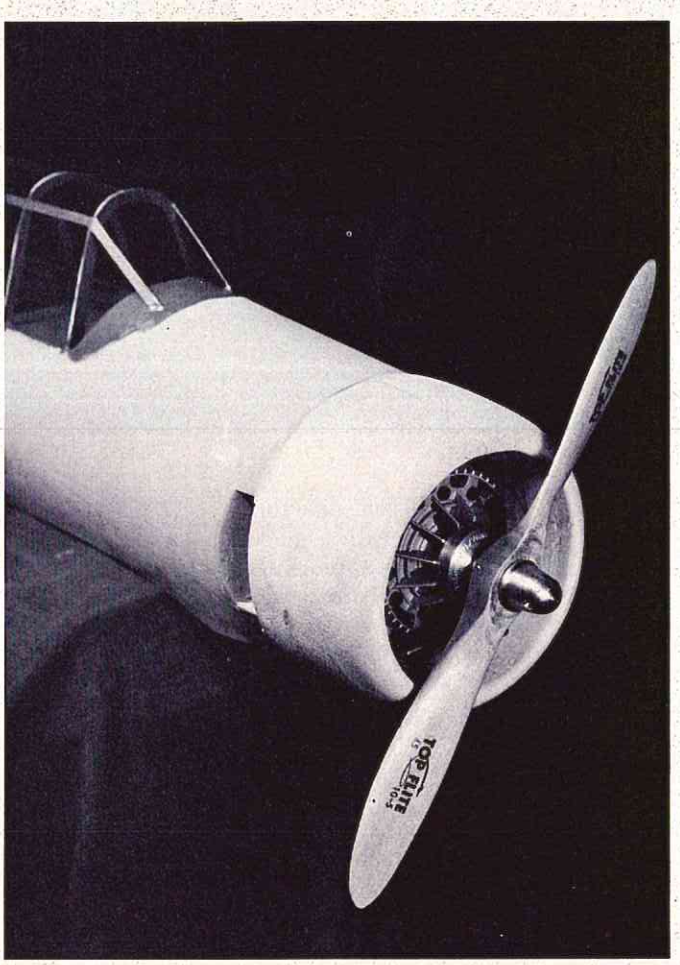
Fuselage with all sheeting in place.



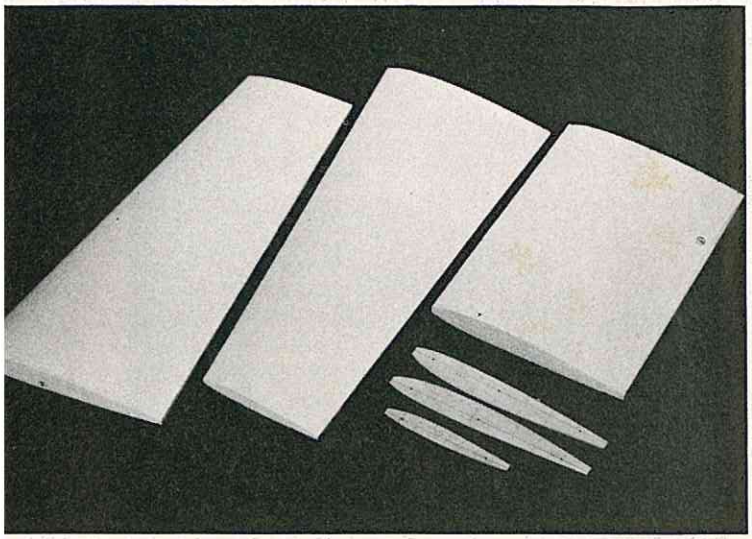
Fuselage bottom view minus the covering.



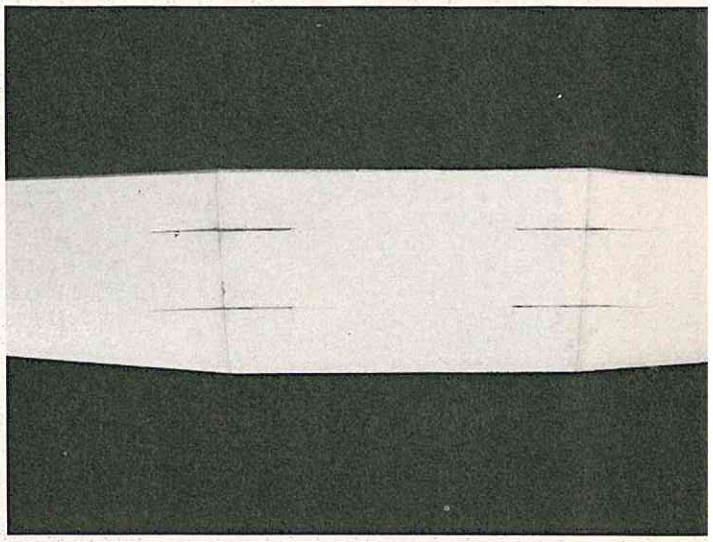
Fuselage with horizontal stab. Ready for cockpit detail.



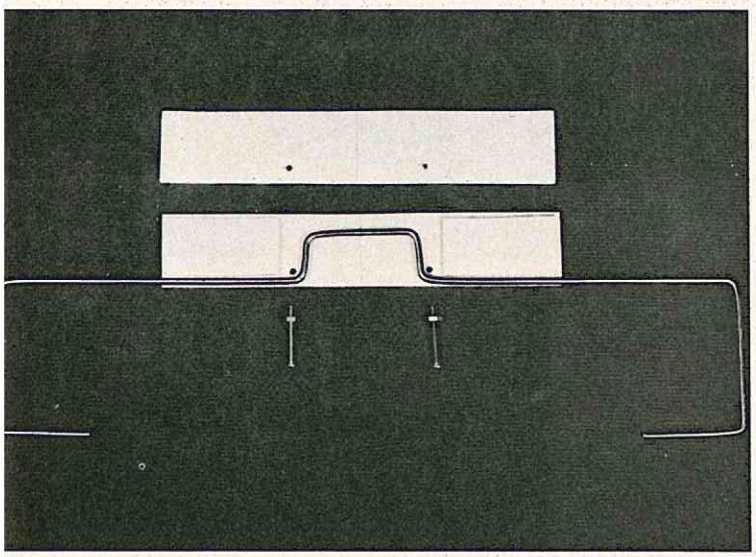
Cowling ready to be epoxy filled and painted. Note vent for Wankel.



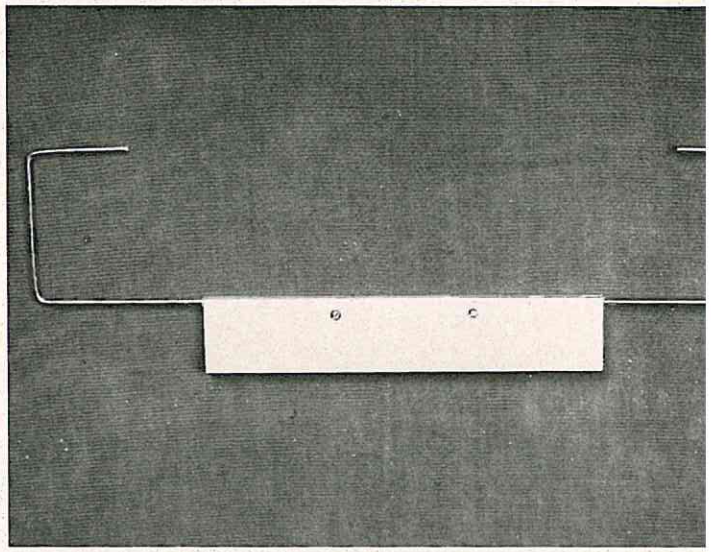
Foam cores with cutting templates.



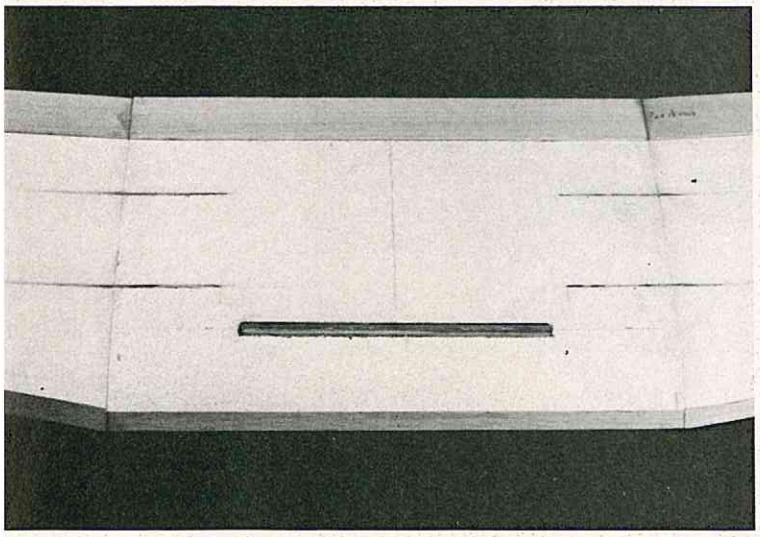
Cores are joined and ready for L.E. and T.E. caps.



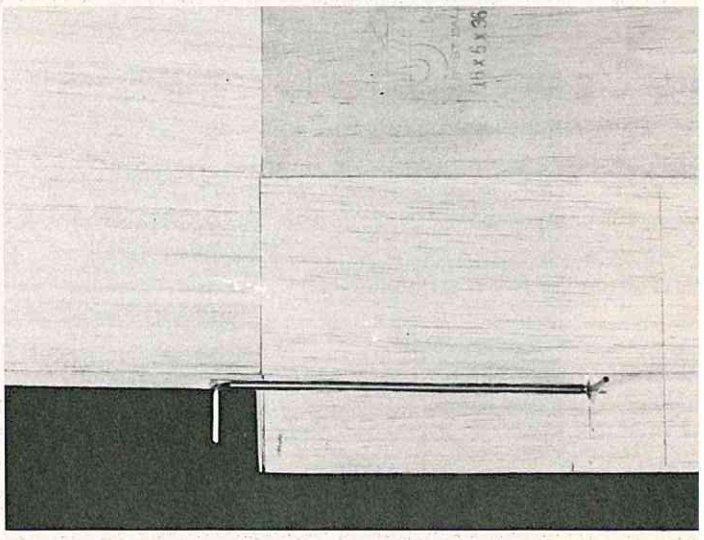
Plywood and metal parts for landing gear.



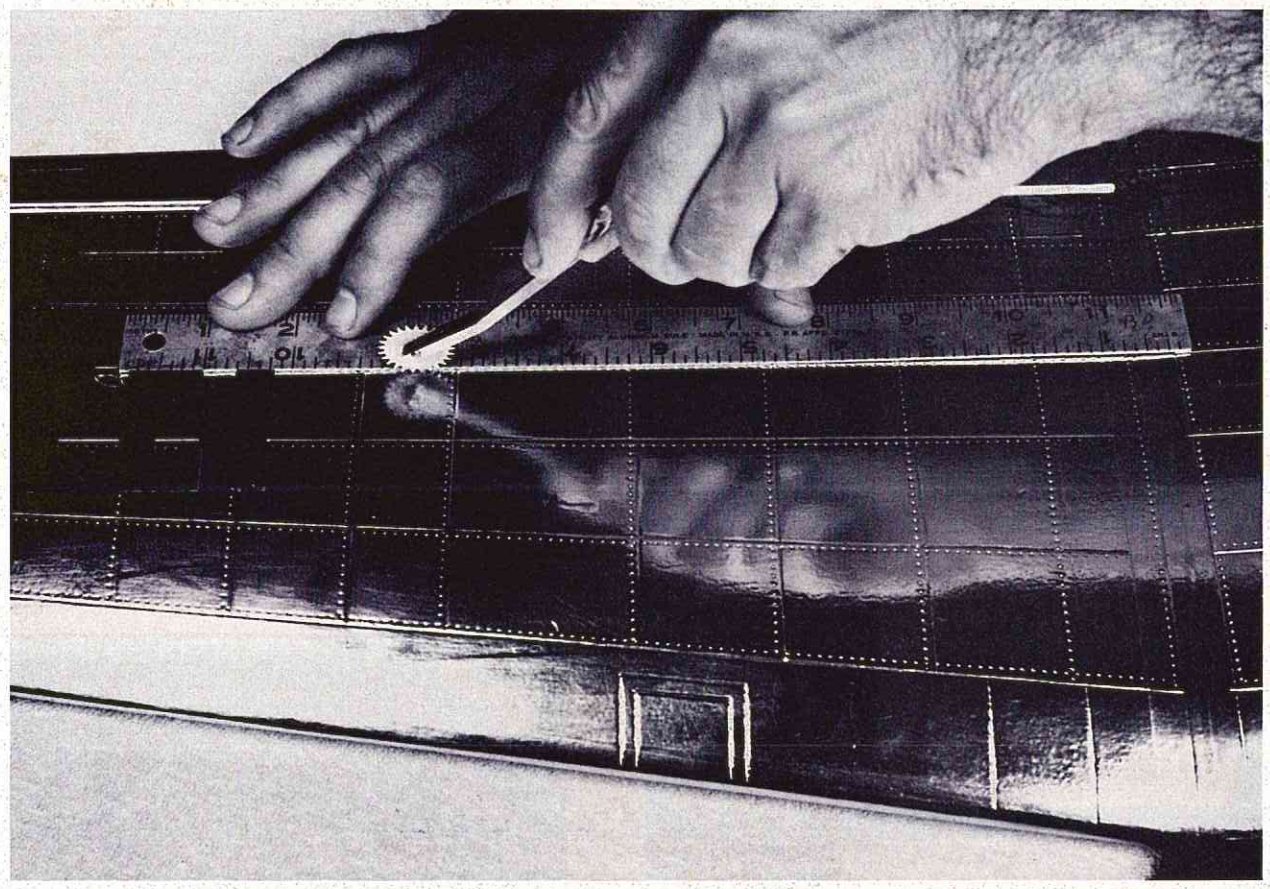
L.G. epoxied to wood pieces and ready to mount in cores.



L.E. and T.E. and landing gear in place. Cores ready for sheeting.

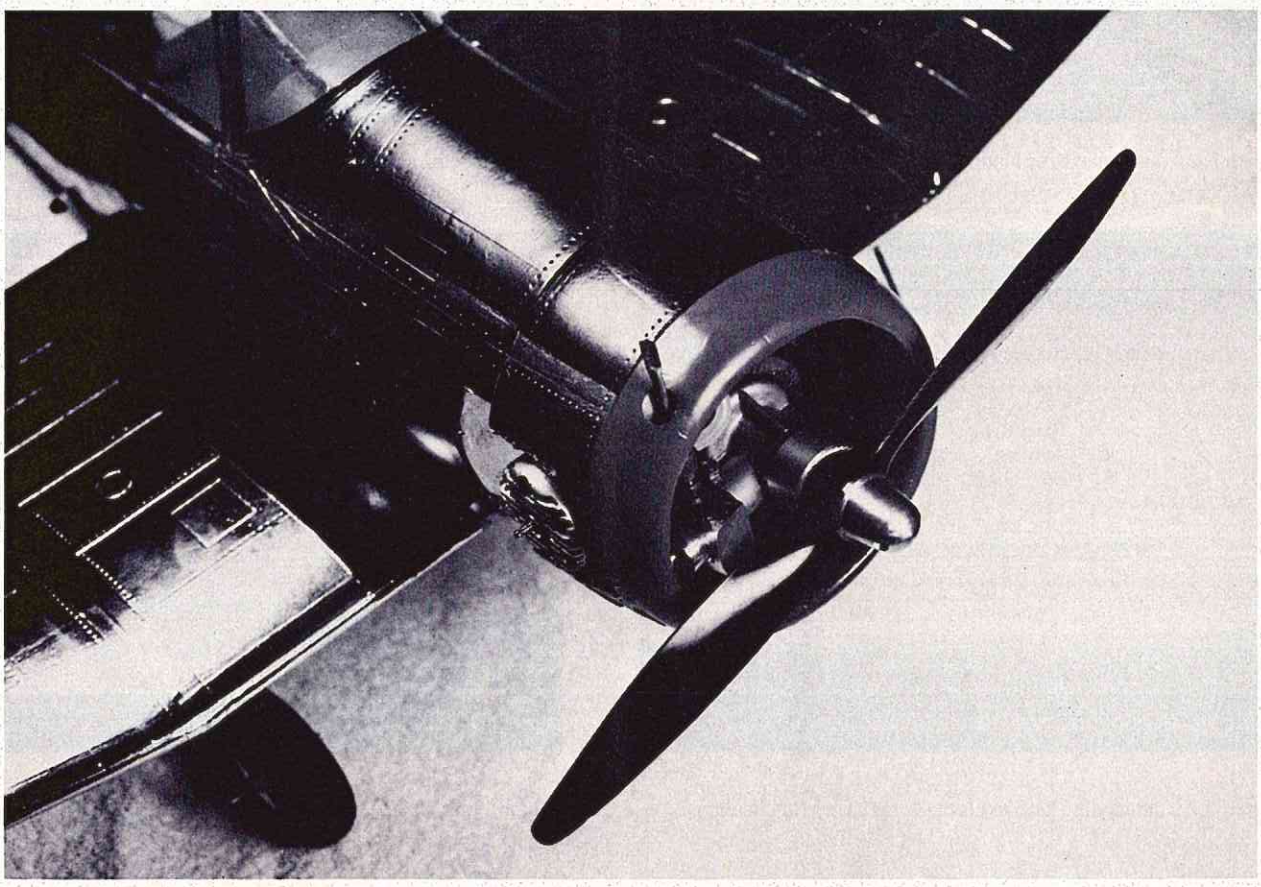


Aileron detail. Top of wing showing wire and plastic tube.



Rivet marks are made using a sewing marking tool and a straight edge. The seams are made with a scribe.

For those who don't own a Wankel, a side mounted .29 to .40 will prove ideal for the Harvard.



Author, Bryce Petersen, with his AT-6 Enya .29 in this prototype.

am so impressed with its flight characteristics I plan to enter it in pattern next month. For a 0.30 powered scale model that brings the "ooh's" and "aah's" on the flight line, then flies like it does, I am quite proud of this one. It has been amazing to me how much trouble some designers go to designing scale models. Why do they make things so difficult to construct? The average modeler is interested in a model that is realistic and flies well. I looked at some of the all-balsa scale models at Toledo this year, and I wonder how many of these kits will be completed and flown by the builder. I believe the modelers of the near future will demand scale appearance even in the beginner-trainer kits.

The model presented here was designed for flight performance first and scale appearance second. Construction is as simple as the average slab side square-tipped monster, but in my opinion, it looks like a real airplane. In order to transmit the construction techniques that I think are easy for the prospective builder, I have added key photographs to answer questions the plans fail to show. I have found that it is almost impossible to communicate with drawings, little ideas that are so easy for the experienced builder and seem to confuse the beginners.

Let us start construction by cutting two fuselage sides from a good grade of medium hard 1/8 in. balsa. Lay them on a flat table and trace your 1/32 in. plywood doublers. Epoxy the doublers to the insides. Cut two hardwood dowels to length and the 1/16 in. plywood center section (F1) that extends into the cockpit area. This extension forms a base for mounting a pilot in the cockpit area. Cut the 1/4 in. plywood firewall and sand all rough edges smooth. On a flat table, turn the fuselage sides upside down and slide the two dowels in place. Slide F1 in place and add the firewall. This will form a box-like structure and everything should fit squarely. Epoxy these parts together except for the dowels. The latter are epoxied after the 1/16 in. sheet sides are in place. Draw a straight line on your work table and a center line on the fuselage. This line will allow you to pull in the tail section to the exact center for securing the tail block. Add the top and side ribs next. The next step is important and will allow the side sheeting to align properly. Sand a small edge on the top side of the 1/8 in. balsa sides to conform with the roundness of the plan. Epoxy this joint first, allowing the glue to set before making the round bend in the sheeting. Because this is a straight line, it is easy to make a perfect fit at this joint. The round bends in the sheeting are slight and will offer no problem.

Elevator: The horizontal fin and elevator is secured at this point. I obtained the 3/16 in. balsa by sandwiching 1/8 and 1/16 in. sheet together with epoxy. This gives you a warp-resistant surface with hard edges. It also used up my overstocked supply of 1/8 in. balsa! Now we can finish the fuselage by adding the balsa rear section (top). I used balsa block for this because the rear sands to a point while curving in. Add your vertical fin and tailwheel hardware at this time. Finish with the rudder.

The cowling is made by cutting a ring from solid block with a bandsaw. This block can be made from several pieces of balsa block epoxied together. The sanded balsa cowling is hardened by saturating it with slow epoxy. The cabin area is the highlight of your model and a joy to build. Epoxy your plywood structure first and finish the area with filler and battleship gray dope. The long flat section is covered first with plastic. Fit wax paper over the structure and mark a pattern on the wax with a pin. This is a quick and positive way to make see-through patterns that fit.

Power: A Super Tigre .29 was first installed for flight testing. Lead was added to bring the engine weight up to 14 oz. to match the Wankel. The performance was amazing. The ship would do anything I asked it to do without the usual hesitation on top. With a fine tuned Wankel up matching the power of a conventional .45, the sky is yours.

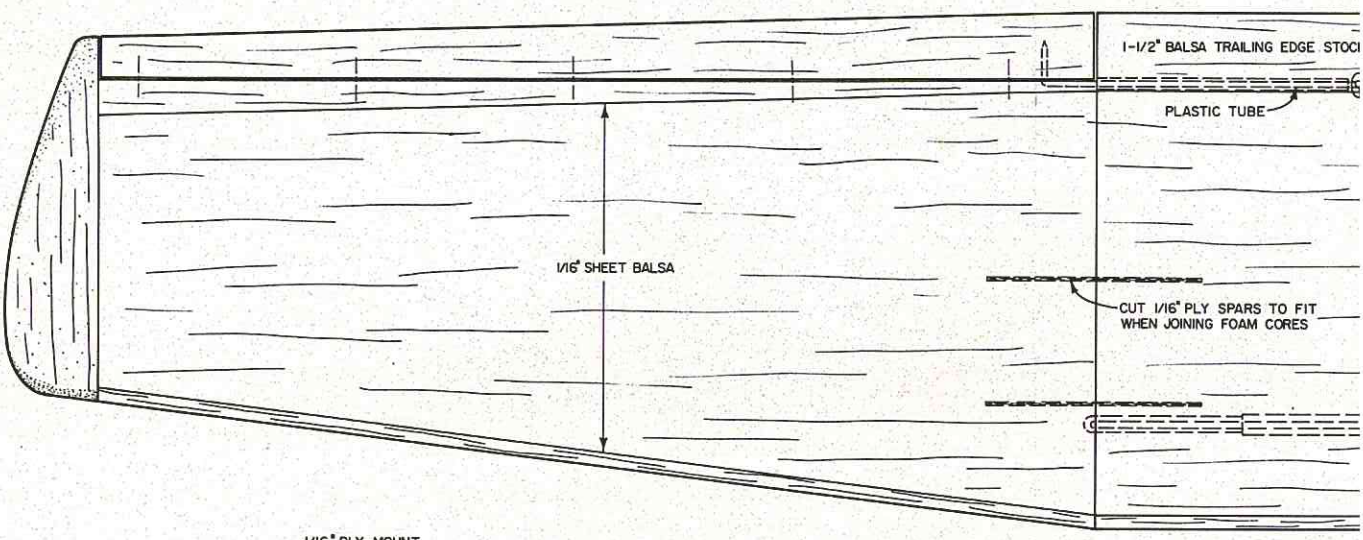
Wing: The foam wing is cut in three sections using three cutting patterns. The three foam sections are epoxied together on a flat table with the tips raised before the balsa is glued in place. Add the leading and trailing edges to stiffen the structure. Prepare the landing gear hardware and epoxy together. Make a slit in the foam the full width of the wire and bury the gear in the foam using a generous amount of epoxy. With contact cement, sheet the wing with 1/16 in. balsa. The ailerons are cut out of the trailing edge and fit back in place after fitting the mechanical hardware in the center section. Add the wing tips, sand, and cover.

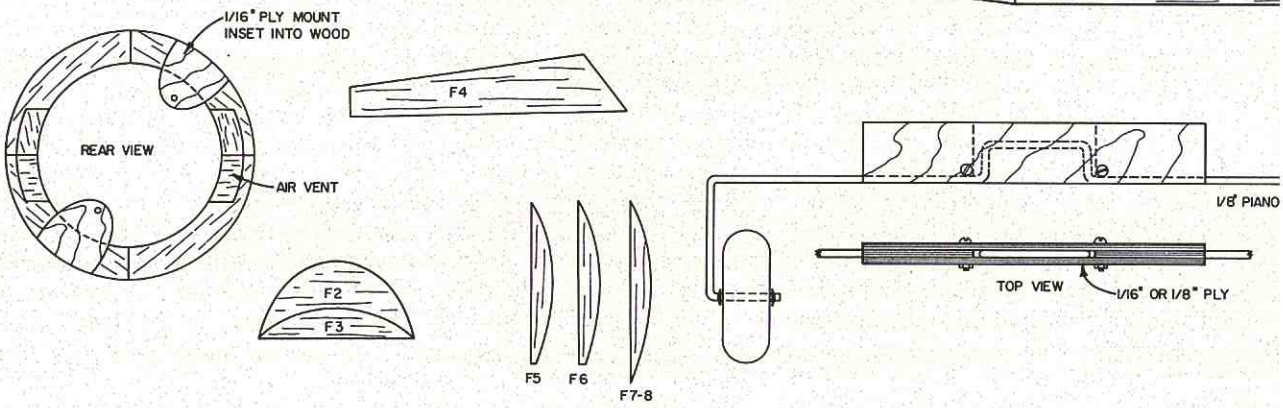
Sand the entire airplane, using your favorite filler. Remember your finished surface is only as smooth as the surface under it. Then cover your entire model with silver Super Mono-Kote.

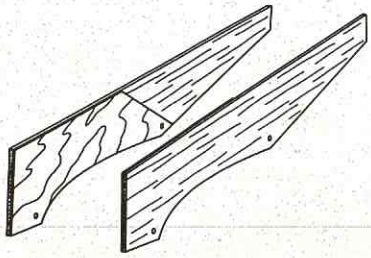
The sheet metal seams and rivet marks will add 100 percent to the appeal of your model and are easy to make. With a scribe and straight edge, simply dent the balsa under the covering. The rivets are punched in with a marking tool used by dressmakers. Do not punch through the covering. Apply just enough pressure to dent the surface. These dents act like little reflectors and show best in the highlight areas of your model.

If you like the model, and if the construction techniques are to your liking, I am sure the project will be rewarding both in the workshop and on the flying field.

Good luck! □

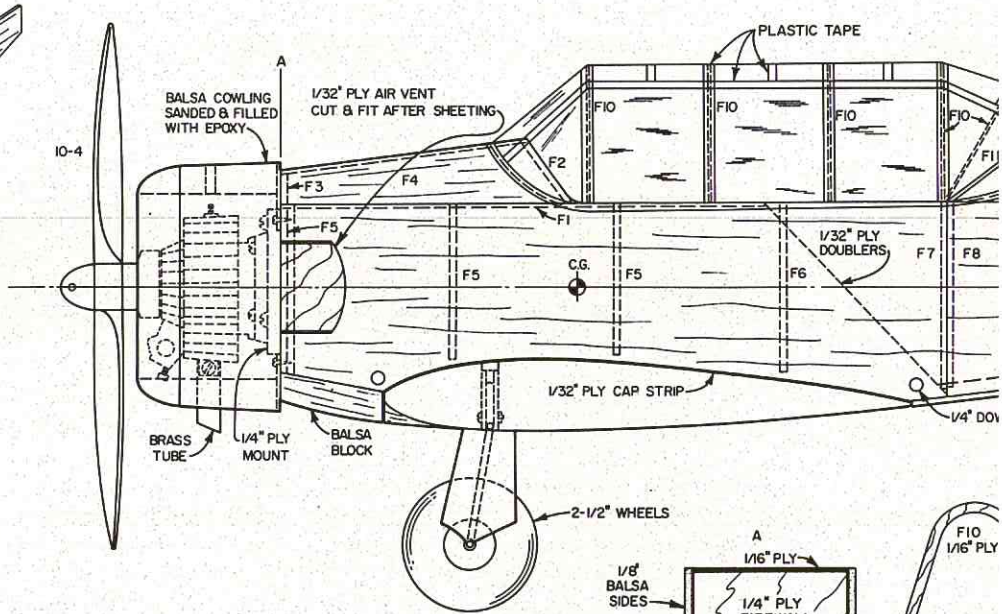


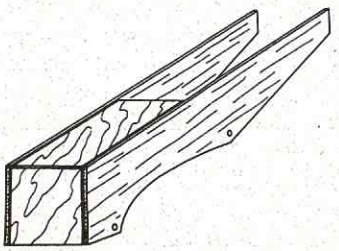




FUSE. STEP 1

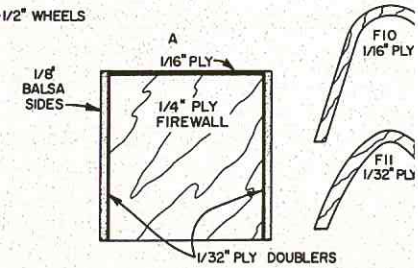
CUT 2, 1/8" BALSA SIDES FROM HARD STOCK & GLUE THE 1/32" PLY DOUBLERS TO THE INSIDE OF EACH.



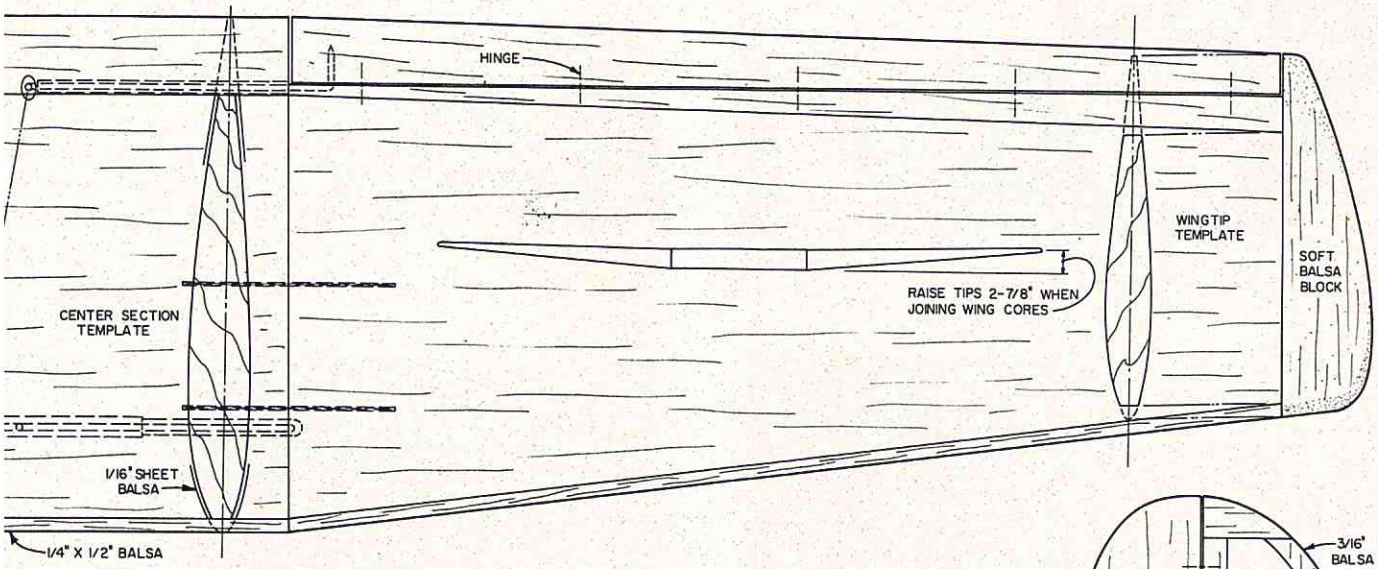


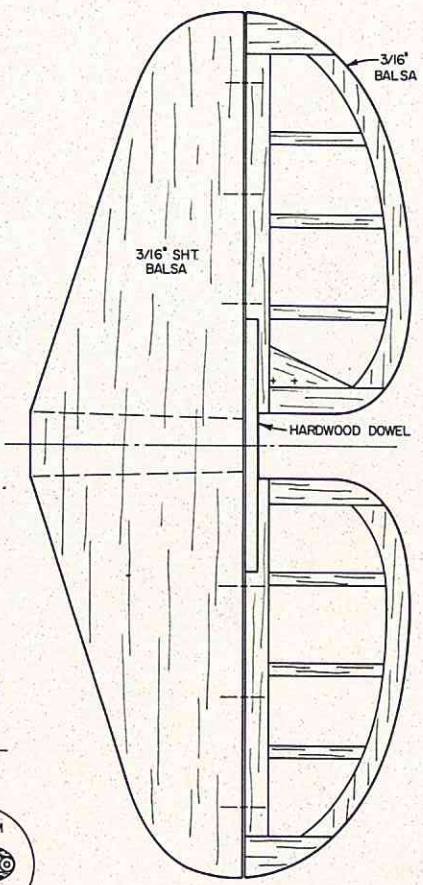
STEP 2

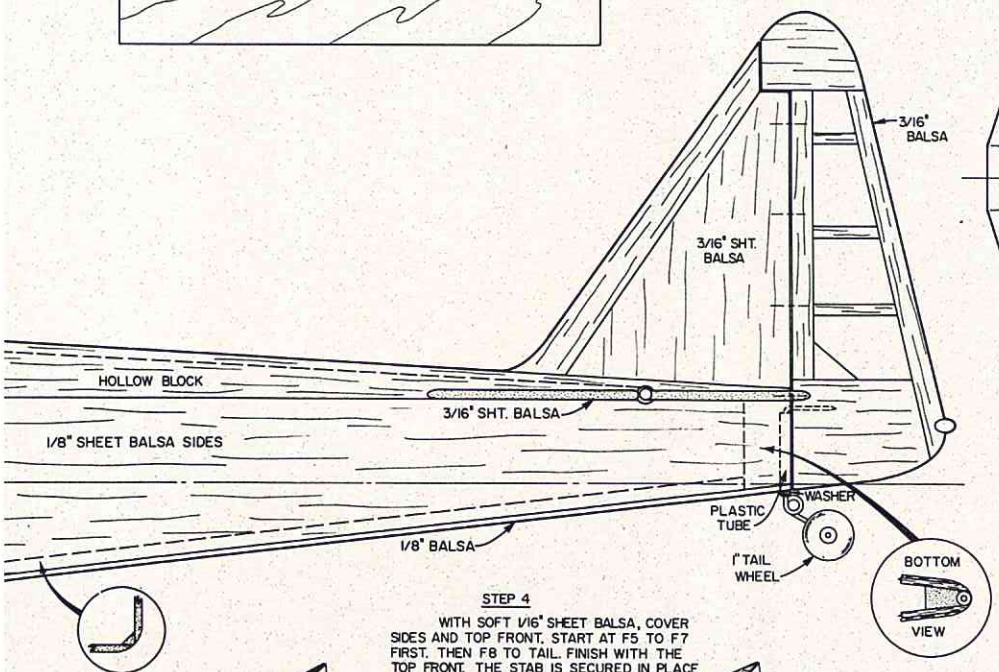
TURN SIDES UPSIDE DOWN AND EPOXY F1 AND FIREWALL IN PLACE AND LET DRY



PLANS AVAILABLE ON PAGE 104

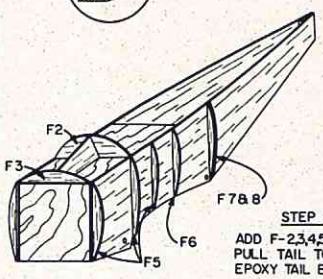






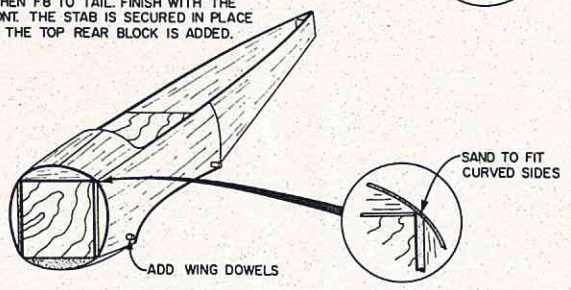
STEP 4

WITH SOFT 1/16" SHEET BALSA, COVER SIDES AND TOP FRONT. START AT F5 TO F7 FIRST. THEN F8 TO TAIL. FINISH WITH THE TOP FRONT. THE STAB IS SECURED IN PLACE BEFORE THE TOP REAR BLOCK IS ADDED.



STEP 3

ADD F-2,3,4,5(4,6,7,8,8 PULL TAIL TOGETHER & EPOXY TAIL BLOCK IN PLACE.



SNJ-AT6-HARVARD II

HIGH PERFORMANCE SEMI-SCALE DESIGNED ESPECIALLY FOR THE .30 WANKEL ENGINE.

WING SPAN—53" WING AREA—416 SQ.IN.
LENGTH—37" WEIGHT—4-1/2 LBS.

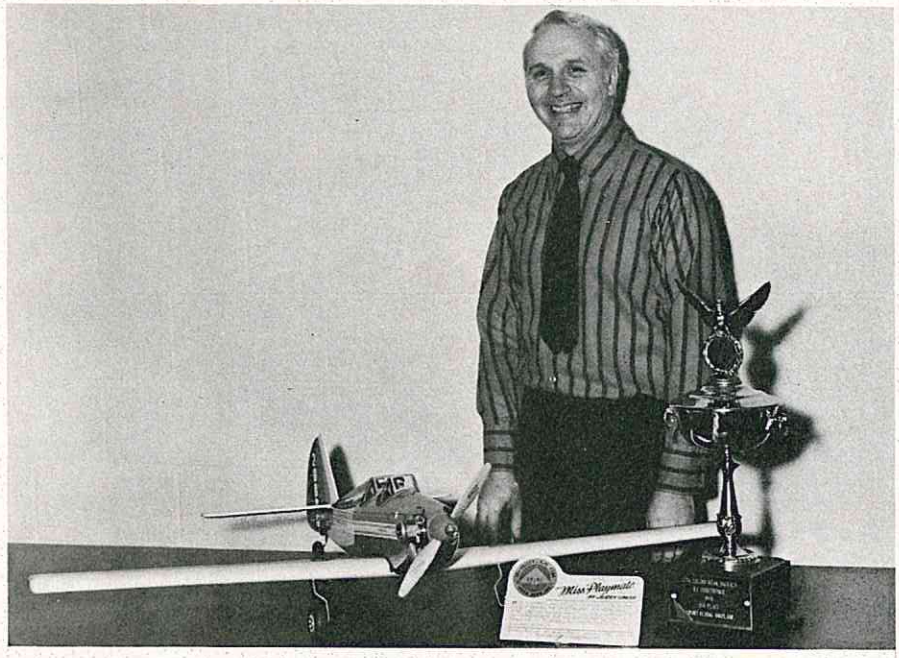
SNJ-AT6

DESIGNED & DRAWN BY	BRYCE PETERSEN	INKED BY	DICK & RANDY KIDD

0 1 2 3 4 5 6

by jerry smith
Editor, Tri-Valley R/C News

MISS PLAYMATE



First place trophy winner for best Sport Aircraft Design at the '71 Toledo Conference, Miss Playmate seems to have a strong resemblance to some vintage sports plane of a by-gone era. Completely aerobatic with a .29 to .35 engine, she is a tail-dragger with plenty of eye appeal.

Miss Playmate! A funny name for an airplane you say? But that's just what she is, a rugged, sturdy little tail-dragger with plenty of eye appeal and flying ability that is bound to capture and thrill the Sunday sports flyer. One can see many airplanes in Miss Playmate as she sits on the flight line poised for flight. A strong resemblance to some vintage sports plane of a bygone era. Or maybe an EAA home-built you saw at Rockford some years ago. It was the desire for this full size realism that prompted the aesthetic lines of Miss Playmate.

Miss Playmate is not a magic design to end all designs. No fancy formulas were used but rather basic fundamental areas and moments make up her design. She is not a hybrid or an aerodynamic wonder; however, she is completely aerobatic, and will do the AMA pattern for the most part.

Flight and utility were also a prime consideration in her design. She is something more than a box with wings and endures the steady trips to the flying field with little maintenance other than cleaning.

Our flying field at Tri-Valley is sod. Although it is excellently maintained by the field owner and fellow club member Cliff Bennett, it is not like flying from a hard surface. In fact, most of my nine years of flying has been from a sod field. For this reason it is necessary for us to use a little more power and larger wheels. The ST .35 represents more power than is needed to fly Miss Playmate, however, weight and field conditions dictate the power requirements for ROG on sod. A good .29 would seem like an average engine size. I used the .35 simply because I had one doing nothing.

Let's discuss the building of this model. Even though you may not intend to build this plane, you may pick up an idea or two making it worth your reading time.

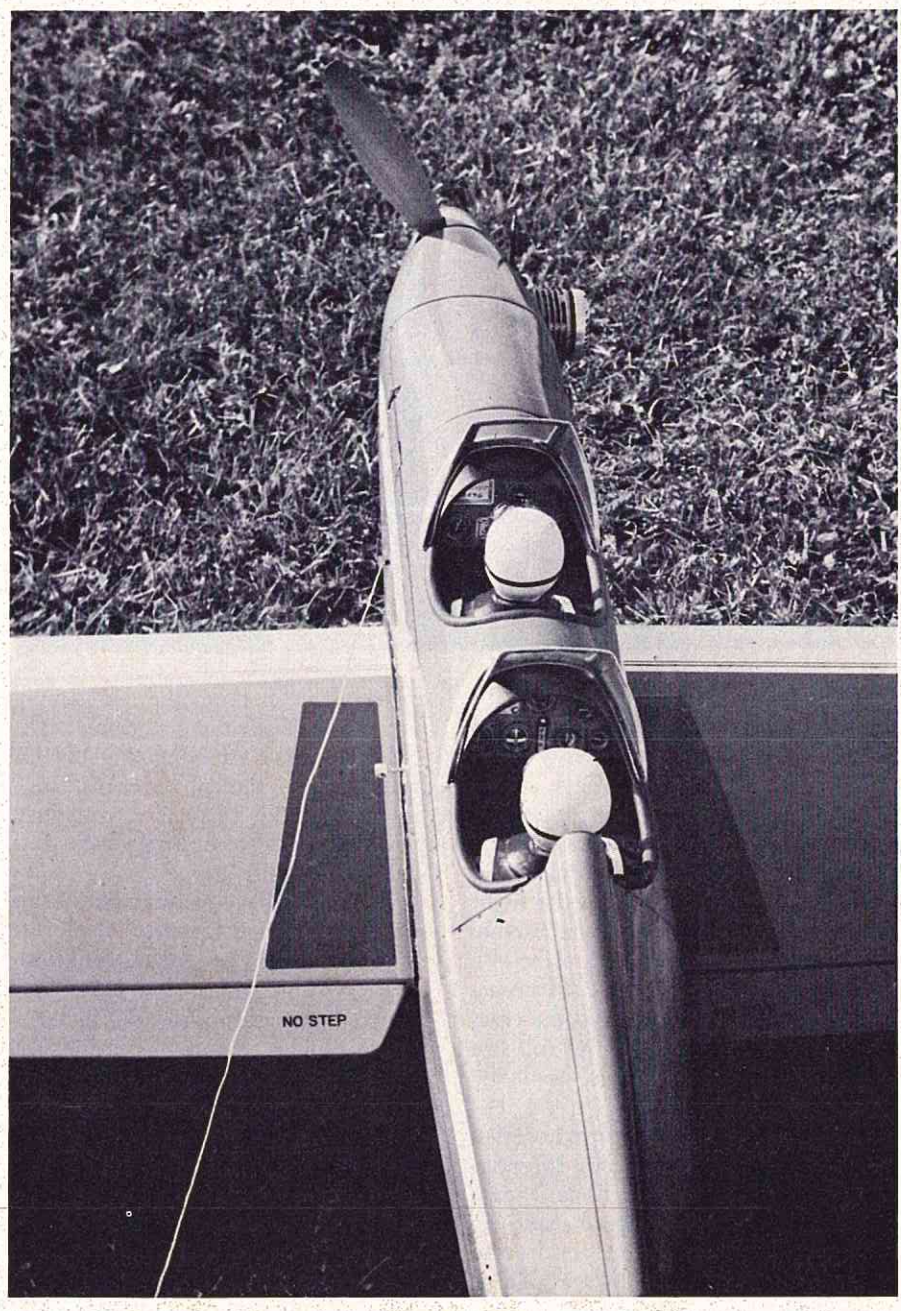
Although the construction of this model is straightforward, I feel it necessary to add some comment with regard to building. This plane was designed to use up-to-date material and techniques. The semi-experienced builder should not encounter any difficulty in building this model, however, I do not recommend it to the pure beginner.

Fuselage

Construct a left and right hand fuselage side. The basic sides are made from 3/32" x 4" x 36" sheet balsa. Select two firm sheets that are much the same density and grain configuration. 1/32" thick plywood doublers are then bonded to the sides fore and aft for added strength. It will be necessary to purchase the plywood 24" long to satisfy the length of the front doubler. The 1/8" x 1/4" balsa side longerons and trusses are added next. Now add the 1/8" balsa wing saddle, completing the sides.

The fuselage sides are absolutely straight from former F2 to F6. Assemble the sides using the top view of the plan. Locate former F1 flush with fuselge side front edge, former F3 with the front edge of the wing and former F6 with the end of the wing saddle. (Use epoxy on all joints). The 1/8" sheet balsa floor should square things up.

With an X-Acto balsa saw, score



and crack the sides at former F6. I said score, Mac, remember? Pull the tail end together, taper the ends to fit, and epoxy. The sides should be straight and not bowed. Fill the cracked joint on each side at F6 with epoxy. Rub in well with your finger. Glue in F7, F8, F9 and the bottom 1/8" x 1/4" balsa crosspieces.

Cover the rear deck with 1/8" sheet balsa, covering the sides first, followed by the top. Rough sand with 150 garnet paper. Next, build up the headrest with 1/8" sheet balsa. Contour and fillet as shown on plans.

The cockpit area can be planked or covered with one piece of material. If you decide to go the one piece route, use a good bendable piece of 1/8" sheet balsa and soak it in water. Use masking tape to hold in place on the fuselage until it is dry. Be sure to locate the tape over the formers or you may end up with a bulgy mess.

The fuel tank hatch is shown as optional. There are pros and cons regarding the need for a hatch, however, I included one on my model. It is useful not only from the utility standpoint in servicing a fuel tank at the field without complete disassembly, but in this case it enables you to locate former F3A after the ¼" wing hold down dowel has been installed. With the hatch removed it is also possible to inspect the servos and linkage clearance with the wing attached. You see, it serves many purposes. But weakness! Who said that? Our models are simply over-designed for the most part. Is that not so, Uncle Don?

Complete the rest of the fuselage by adding the balsa blocks up front and rough sand to shape. Do not cover the bottom, aft of the wing, until the elevator and rudder pushrods are installed.

Tail Group

The stab and fin are straightforward and made entirely of sheet balsa. However, I would like to call your attention to the laminated hinge posts. These are made by simply laminating strips of balsa together with epoxy. As an example, for the horizontal stabilizer, use two strips of 1/8" sheet balsa ½" wide with 1/32" sheet balsa as a center filler. At each hinge location leave out the center filler the width of the hinge. The result? A perfect slot for each hinge. Several other important benefits are derived from this method: Perfect alignment between hinges and absolute central location with respect to stab, elevator, etc., thickness. No more clicking hinges, men! The lamination will end up slightly thicker than needed. Epoxy to stab and block sand both sides to a common thickness with the stab. This idea was used throughout the tail group.

Wing

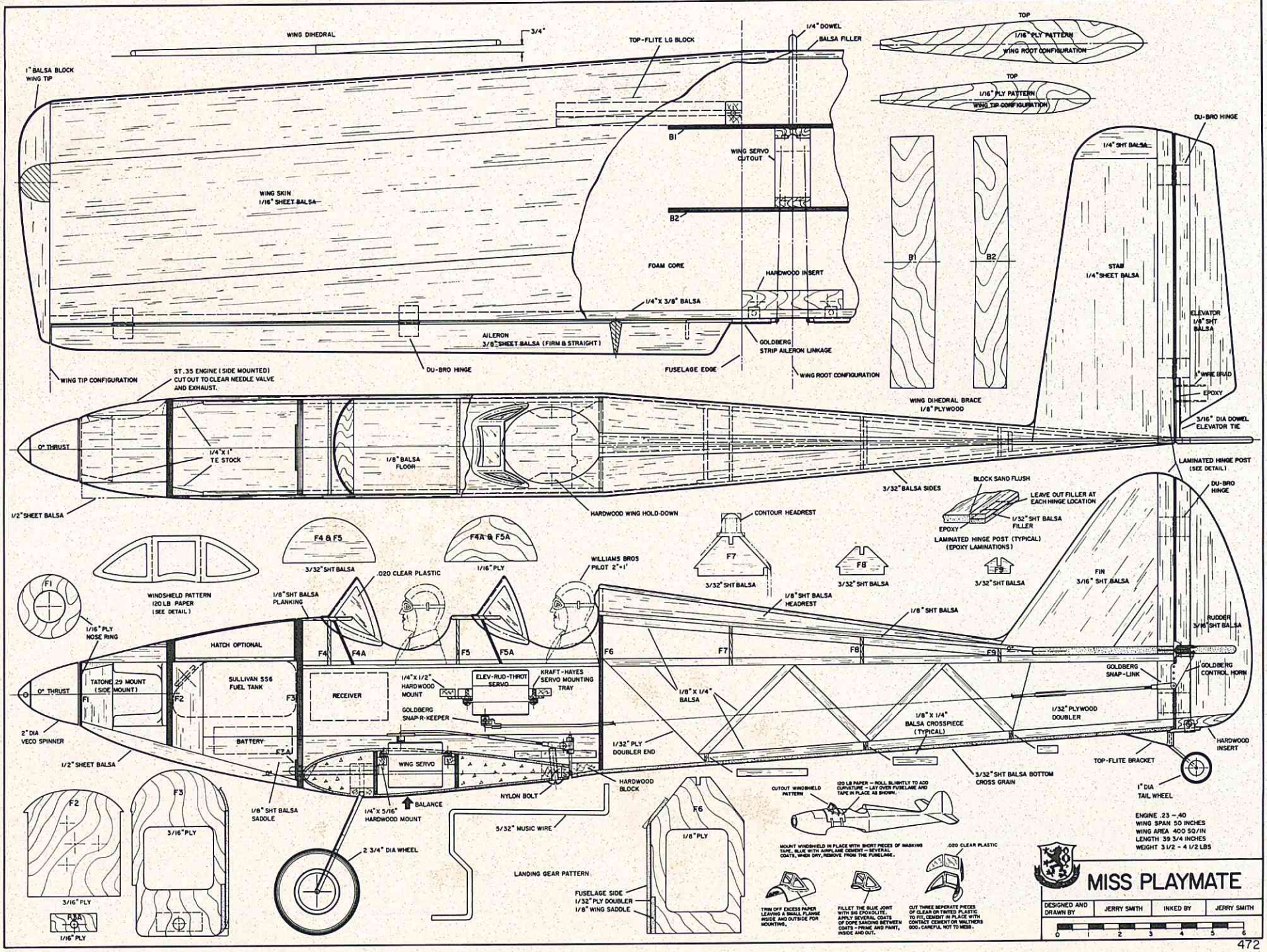
The wing on this model has a foam core covered with 1/16" balsa sheet. For those unfamiliar with foam core wings, I would like to suggest that you send for RCM's Anthology Library series on Foam Wings by J. Alexander. Not only will you gain first hand knowledge on the subject but you'll also make Uncle Don happy. Now what could be better? Seriously, it's a great book and many times worth the $3.50. End of commercial.

If you are familiar with foam wings, proceed with the usual methods of construction. You will note the use of dihedral braces to reinforce the center joint of the wing. This was done in lieu of fiberglassing a band around the center section creating an unnecessary bulge that must be feathered with the wing in order to look neat.

The ailerons are made of 3/8" sheet balsa, firm and straight. Choose your stock carefully avoiding warps and bows. Cut the aileron to exact size and tack glue to the trailing edge of the covered foam core. With an X-Acto spokeshave (an excellent tool), work the aileron to the contour shown on the plans. Sand the wing, aileron, and wing tip together. When complete, cut the aileron loose and finish the leading edge with the proper bevel and hinge slots.

(continued on page 88)

PLANS AVAILABLE ON PAGE 104



The Builders Building Board

by Jack Iafret

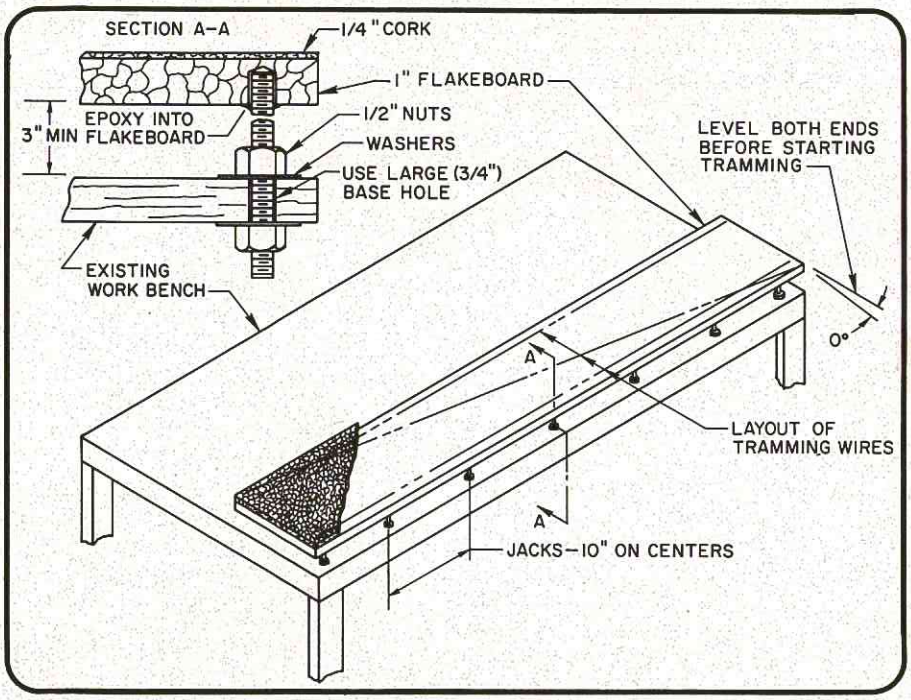
reprinted from the 'Worksheet'

As the title suggests, this article is for the guy who does a little building, not just assembling this week's favorite "rubber ducky." Although I have a couple of good surfaces for building standard sized ships, the purchase of a Graupner Cirrus precluded their use. When you unfold that wing plan you just know a 40" long board is not going to cut it, hence the "Super Board." The parameters for the board were listed before construction began:

a) 6' minimum length to take care of future sailplanes.
b) A material in which pins would work well.
c) Surface of the board to be adjustable or workable for perfect level.
d) Must be portable or able to store when not building sailplanes.

After a few days of thinking of how the job could be accomplished, I was called to a meeting at work in our sample checking department and saw the method used for making and checking tables flat and true. It was an easy transition from work to the workshop. The method used in making a checking table flat is to support the work surface on a series of jack screws that can be used to warp the board into position.

In order to provide a good stable board, the wood, itself, has to be hard and pins don't like hard wood. The remedy was to contact cement ¼" cork onto the work surface of the board. The cork works extremely well and is cemented to a 1" thick flake or particle board. The drawing is self-explanatory so details of construction will not be presented but only a few construction tips.



1) For the jack screws use ½" threaded rod cut to length with the ends re-threaded. This can be done easily by running a die on the rod before cutting, then removing the die.
2) I use tile cement for the cork. It works well and is inexpensive. Allow 24 hours for the installation to dry and then trim the cork.
3) Lay out the jack screws accurately and epoxy into the board squarely using a triangle.

The board construction took less than 8 hours. After the board is built it must be leveled which will take a good one or two hours so be prepared for it. Stretch a very tight string down the two long sides of one diagonal. Place a 1/8" spacer under each corner of the string to hold it off of the board. Now, using another spacer, adjust the nuts until the strings are all the same distance off of the board at **every point**. Now, staple some sort of covering over the cork to protect it from your sloppy glue jobs! I use asbestos drafting mylar but a polypropylene table cloth or construction waterproofing plastic would work great.

Now go build a **big** stick job!

Bill of Materials

1 6' x 1' x 1" flake board at $1.25 (lumber yard).

1 piece ¼" x 4' x 6' cork at $5.60 a yard for 4' goods totaling $4.00 (lumber yard).

Threaded rod (Hardware store)

½-13 nuts at .03 cents each (Hardware store). □

Avoid the Crowd USE SIX METERS

FOLLOW THESE STEPS AND OBTAIN A TECHNICAL CLASS AMATEUR LICENSE

BY EDWARD F. EGGERT, W1EGM

Over the years many problems have been solved in the R/C hobby except one, and that is sufficient frequencies to handle the exploding interest in our hobby. Unlike other problems that are solvable, this one will continue to become more acute, since frequencies are a limited resource controlled not only by our FCC, but by international treaty.

Most of us are aware that the 6 meter frequencies available are going unused since they require an amateur license for their use. The 6 meter band, as available to the amateur, is extremely wide extending from 50 MHz to 54 MHz. Amateur use of this band is almost entirely restricted to 50 MHz – 52MHz, since use of any other frequencies causes havoc with television sets. As a matter of fact, most amateur equipment is built to cover only 50-52 MHz for this reason.

This past year I contacted the American Radio Relay League, which is the equivalent of our AMA, to determine whether or not they would support my petition to allow R/C use of the region 53-55 MHz with a Citizen's Band License. My proposal was not accepted on the grounds that it would open amateur radio bands for citizen band outlaw operators.

Consequently, the RC'er who would like to use 6 meters must still obtain his amateur license, which is not as difficult as rumors would have us believe.

First off, there are many grades of licenses available; but the one that concerns us is the Technician class or "Tech" as it is most commonly referred to. This relatively easy-to-obtain license was originally designed back in the early 50's for the RC'er. Up until that time, all amateur exams had a stiff 13 words per minute code test. The Tech license only requires a test of 5 words per minute which is the equivalent of barely knowing the code. In addition, an exam covering basic electronic theory is required.

The Morse Code, even at 5 words per minute, still frightens most people. It shouldn't, as this is just barely a knowledge of the code. The actual test will have the code sent at this speed for 5 minutes, during which you only have to correctly copy 25 straight words without error.

Your first step then is to memorize the code. When doing so, think and say dit for a dot and dah for a dash. In other words the letter A which is •— would be dit dah rather than dot dash. The reason for this being that these sounds more closely resemble the sound of code being sent.

To practice sending code, a key and door bell buzzer will suffice. Commercial code practice oscillators are also available from Heathkit and many radio supply stores.

If you can get a buddy to learn with you, all the better, since you can send to each other. If you have a tape recorder, practice tapes can be made up or purchased from commercial sources. Long-playing code practice records are also available from radio supply stores or mail order houses.

When you find your receiving speed up to about 7 words per minute (a word is considered to be 5 letters), you have sufficiently mastered the code. The extra two letters are to compensate for exam nerves.

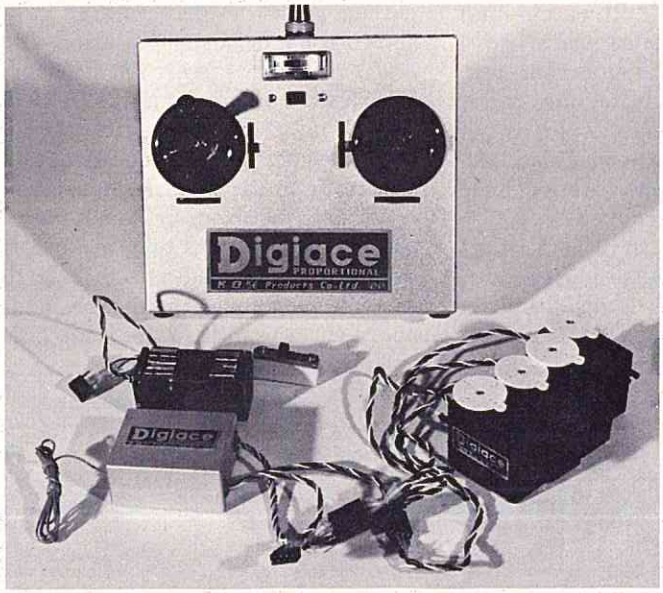
The theory portion of the exam will be 50 questions with 5 multiple choice answers to choose from. A passing grade on the exam is 74%, allowing a wide margin of error. *The Radio Amateurs License Manual* available for $1.00 pp from the ARRL, 225 Main St., Newington, Conn. 06111, contains typical questions and answers from the exam. Although you could pass the exam by merely memorizing the questions and answers, it would be to your advantage to grasp an understanding of the theory, if for no other reason than to learn how your R/C gear works. An excellent text for study is the *Radio Amateurs Handbook* available at most libraries. An excellent study guide will shortly be published by *73 Magazine*, Peterbourgh, N.H. Write to them for details.

Unlike other amateur exams, which must be given by FCC examiners the "tech" exam is given by any General Class or higher amateur who is at least 21 years old.

If you know of no amateurs in your area, try contacting your local Civil Defense office since they usually have a roster of amateurs for emergency communications. As a last resort, look for an enormous antenna and tower in someone's yard, ring the bell and explain your interest in a license. A demonstration of R/C flying will usually go a long way in getting the amateur's cooperation.

When you finally receive your license, you will receive your own set of call letters, which will look great on your transmitter and plane. In fact, most states will even issue auto license plates with your call letters on them.

As you can see, it's not all that hard to get on 6 meters and certainly well worth it when you find yourself the only guy at your field on 53.200 MHz, or for that matter on any 6 meter frequency. □



DIGIACE PROPORTIONAL

HOW MUCH CAN YOU EXPECT FROM A 4 CHANNEL PROPORTIONAL SYSTEM FOR $189 ?

The Digiace-4 is a four channel digital proportional system being imported from Japan by Rand Sales, P.O. Box 20059, Columbus, Ohio 43220, and retailing for $189.00.

What can you expect in the digital proportional field for a price of $189.00? You can expect a four channel digital proportional system with four servos, an airborne weight of 13 ounces, and dry batteries in both the airborne and transmitter packs. You can expect a well made unit without any frills or extras that, surprisingly, has "Volkswagon-like" performance. And, at least on the unit that we tested, you can expect a surprising amount of servo power and resolution for a unit that is being produced to fulfill a certain price requirement. In fact, we have tested radios in higher price brackets that did not exceed the servo performance of the Digiace-4 system.

With regards to the general specifications, the transmitter is a small, thin, lightweight unit with silver anodized case and measuring 1¾" thick by 5-13/16" high by 6-11/16" wide. The weight of the transmitter is 27 ounces. The silver, or satin aluminum case, is designed to prevent transmitter electronics from reaching high temperatures in direct sunlight. The sticks are smooth, positive, and precise. The trims are free and easy to move and are independent of stick action. Mode One is easily converted to Mode Two by the purchaser. The transmitter features a high power output with all silicone circuit and a front panel meter that reads relative power output. The antenna is a base loaded whip removable and collapsable for easy storage. The extended length of the antenna is 51" with a collapsed height of 7½". The RF is approximately one watt with an output of 550 M.W. minimum. Current is 90 mA. Temperature range is from 0 degrees to 150 degrees F. The battery requirement for the transmitter is 8 1½ volt dry cells totaling 12 volts or an optional 12.5 volt 500 mah rechargeable nickel cadmium battery available at additional cost.

The receiver is also of all silicone circuitry with a double tune RF stage and complete AGC. Contacts are gold plated. The strong 1/16" thick satin aluminum case and 1/16" thick epoxy circuit board provides real protection from damage. The construction is double-decked with RF and decoder board securely held in place in special slots in the receiver case. All channel outputs are brought out to a common plug except the aileron channel and power supply plug which are separate.

The size of the receiver is 31/32" x 1-13/16" x 2-3/16" with a weight of 2¾ ounces. The sensitivity measured better than two microvolts and the receiver-decoder current drain was measured at 15 mA. Temperature range of the receiver is the same as the transmitter, from 0 degrees to 150 degrees F. The power supply for the airborne system consists of four 1.5 volt dry cells equaling 5-6 volts as a center tap supply. The size of the battery pack is 1-3/16" square by 2-3/8" long with a weight of 3 ounces. A 4.8 volt rechargeable nickel cadmium battery supply is available which weighs 3¾ ounces and is approximately the same size. The latter is available at an additional cost.

The servos are of rotary output and are built with the widely accepted Mitsumi motor designed specifically for radio control application. Servo size is 7/8" thick by 1-7/16" high by 1¾" long excluding mounting flanges. The weight of each servo is 2 ounces and the thrust is a consistent 3½ lbs. Travel of each servo is 90 degrees rotation with 9/16" total throw. The transit time is 6 seconds for a 90 degree rotation. Output is either a rotary wheel or output arm. The current drain of each servo is 6 mA quiescent or 90 mA during operation.

Each Digiace-4 system is guaranteed against defects and workmanship of materials for a period of 90 days from the date of purchase provided equipment has not been tampered with or damaged.

In tests conducted by RCM, we found the Digiace-4 system to be as specified and advertised by the importer, Rand Sales. As we mentioned earlier, there are no frills or "deluxe features" on a system that is competively priced to reach the sport fliers market. We found the system to have more than adequate servo power, precise servo movement, and more than adequate airborne range. Although this system will not appeal to the contest flier, it was not designed to do so since it's specific function is to be a "Volkswagen," offering trouble free everyday service to the sporting enthusiast who finds little need to drive a Ferrari on Sunday afternoon. We had no chance to test the service facilities for the Digiace-4 system and our tests are based on one production sample only. How well this system will fare in numbers and whether or not it will survive on the American market remains to be seen. Tested, Approved and Recommended by RCM. □

Rx For Flutter

BY JOHN C. KIDWELL

AN AERONAUTICAL ENGINEER LOOKS AT AERODYNAMIC FLUTTER IN R/C MODELS.

It was a bright, clear day, with a few knots of southerly breeze. A modeler was putting his R/C Nobler through its paces with considerable skill when it became apparent that his rudder had become disconnected from the control system. The rudder began to wham its trailing edge from side to side through an angle of about twenty degrees, at about four cycles per second. The hinges took about 20 seconds of this before casting loose, leaving the modeler to land his bird without a rudder – which he managed to do without causing any further damage to it. As it was not my model, I was able to observe without particular emotion . . . "Ah yes, a classic case of control surface flutter."

A few weeks later – same site, same weather – I watched another modeler putting his fast-looking new design into a full-throttle dive. As the speed built up, the elevator started to flutter. This case of flutter didn't last long, but the results were much more impressive. After about three seconds, the fuselage failed just forward of the tail assembly, and the remains, still going flat out, made a perpendicular landing on a macadam road, proving beyond a doubt that a Webra is a powerful engine, going uphill or down. Here was another example of classical control surface flutter, with perhaps a little aeroelastic coupling thrown in to help speed things to the climax.

These two incidents prompted me to try to help R/C modelers by writing a few words about the basics of control surface flutter. Designers of full-scale aircraft began to face these problems in the 1920's, when speeds pushed through the 150-mile-per-hour range. Fortunately, analytical and mathematical methods were available to generate a quick understanding of the phenomenon and to help in the development of methods of avoiding it. My observations seem to show that we are in a similar situation now, with our larger, heavier R/C models, and we need a similar understanding of control surface flutter.

Control surface flutter results from the same physical circumstances that cause a flag to flutter in the wind. In fact, a very early NACA report deals with the subject of why a flag flutters. To explain the basic flutter concept, we will try to jump a couple of hurdles without the aid of advanced calculus. This may simplify or complicate the explanation, depending on your point of view.

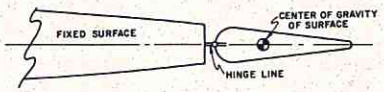


FIGURE 1

Let's look at an elevator whose hinge line does not coincide with its Center of Gravity. (This discussion applies as well to rudders, ailerons, and any other control surfaces you might hang on a model.) In this situation (Figure 1), any vertical motion of the hinge line (due to a vertical movement of the horizontal stabilizer) will cause the control surface to rotate with respect to the fixed surface, as in Figure 2.

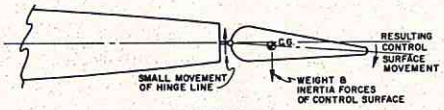


FIGURE 2

Of course, once the control surface is deflected into the airstream, aerodynamic forces will build up and tend to return the surface to neutral. The hinges transmit these airloads to the horizontal stabilizer, however, and tend to make it move even farther in the same direction as that of the initial disturbance. Figure 3 shows how this happens.

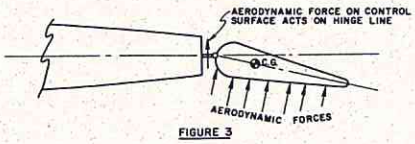


FIGURE 3

When the airloads on the control surface are high enough and the natural springiness of the fixed surface structure comes into play, the control surface will move toward neutral and the hinge line motion will reverse. All movement is toward neutral, which is good, but the elevator hits neutral with key elements in the situation moving at their highest velocities. The inertia of the elevator, coupled with the velocities present, causes the elevator to overshoot – and the disturbance sequence begins again, but in the opposite direction. When the amplitude of this oscillatory motion builds to an appreciable level, the result is a readily identifiable case of "flutter." The path of the surface through the air looks like a sine wave – as you can see in Figure 4.

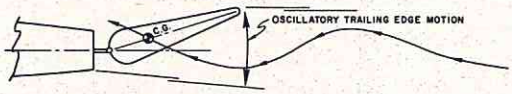


FIGURE 4

It takes large amounts of energy to sustain a violent oscillation like this, and they are handily available in the kinetic (velocity) energy of the model – which amounts to an inexhaustible source of power for continuing and increasing the amplitude of a destructive oscillation.

Now that we've looked at the explanation of how flutter can occur, it's time to discuss some of the ways we can make an aircraft less susceptible to it.

The most common way to alleviate control surface flutter problems is to mass-balance the control surface on its hinge line. This is usually done by adding weight ahead of the hinges. With the control surface Center of Gravity sitting on the hinge line, one of the key elements in the development of flutter is gone. (See Figure 5.)

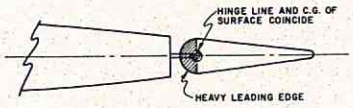


FIGURE 5

Mass balancing, by the way, must be done along the span or at the tips of the surface. The reason for not mass

(continued on page 77)

construction techniques for FORMULA RACERS

BY FRANK MOROSKY

It's hard enough to accept the fact that one little slip of the finger can bring an untimely end to one's racing plane. But, to watch it slowly come apart a little after each race has to be sheer agony.

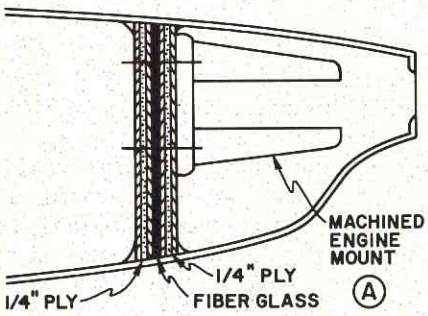
This article will deal with those factors that can cause a seemingly well built plane to deteriorate and the building techniques that can prevent it from occurring. The aircraft in this article will be built from a fiberglass fuselage and foam wing. Fiberglass was selected because a number of builders still do not understand the basics of this type of construction. From personal observations it seems that builders using wood fuselages have a tendency to build a little extra into them, whereas those using fiberglass fuselages, appear to be skimpy in their construction methods.

Before beginning on actual construction techniques, let's examine a fiberglass fuselage. Snap your fingernail against the side a few times. Makes a nice clear sound, doesn't it? What you have in your hand is the same thing that amplifies the sound of a violin – a resonating box. A device for amplifying sound waves (or vibrations).

Now squeeze the fuselage in any number of different places . . . it gives and flexes rather easily. The combination of this flexing and the raw fuselage being a sound (vibration) amplifier can be the hidden villain to many crashes. For instance, let's say that the servo rails were attached to the inside of the fuselage without any surrounding support. As the plane flys along, engine vibration, amplified into the fuselage, has begun to break down the bond of the servo rails to the fuselage. Next, there's a tight turn and the pressure on the wing is transmitted to the fuselage causing it to flex just enough to totally break the bond of the rails. No control – and the result is a crash. Examining the wreckage you will find that everything's loose or broken, so, consequently, radio failure is blamed.

Vibration can also be the chief source of poor engine performance. Up front is that hot mill that you've taken great pains to bring up to racing standards. You've also spent hours balancing propellers and have gone to great lengths to make sure that the engine mounts are dead on. Now, you take this great engine of yours and attach it to a mount which is then bolted to a ¼" plywood firewall. The firewall's only support to the fuselage is around its perimeter, much the same as the skin of a base drum. As a final touch, this whole affair is secured in a fuselage that is akin to a resonating box on a violin. What you have is a potential loss of **at least** 1000 rpm on the performance of your engine. The reason for this loss of rpm's is that engine vibrations are being amplified and transmitted back to the engine.

There are two ways to eliminate this problem. The fast, simple, and more expensive way is to buy one of those beautifully machined engine mounts and attach it to a firewall made of two ¼" pieces of plywood with a fiberglass layer sandwiched between them. Then, very carefully fiberglass this assembly into the fuselage (see illustration A). An alternate



method is to build an engine mounting structure that will dissipate engine vibration within itself.

Begin by cutting cardboard interior outlines of the top and bottom half of the forward half of the fuselage up to the spinner opening. The upper outline should begin just forward of the cockpit area, with the lower outline forward of the wing opening or equipment hatch. Allow for an overlap between these two outlines so that they can be positioned together. Mark their fit to each other and remove from the fuselage. Now make a single template from cardboard as shown in Photo 1 and fit into the fuselage. Position the engine template on the cardboard template for correct location. From this, cut the plywood engine bearers.

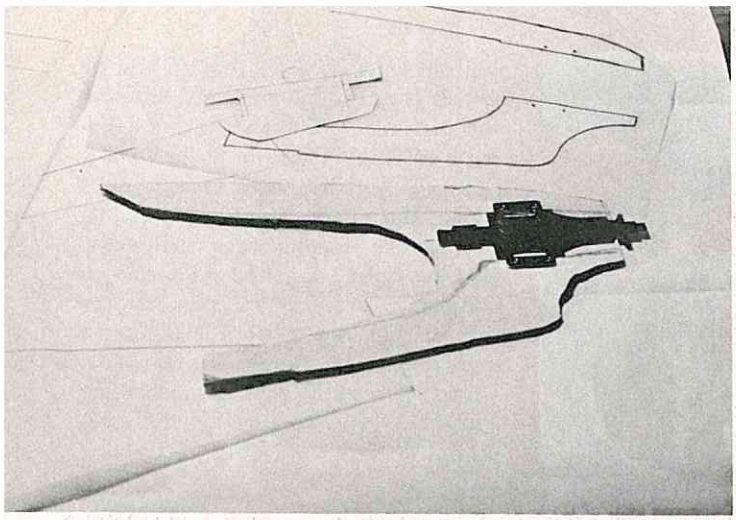
Because engine vibration has a tendency to break down the plywood grain structure directly under the engine hold-down lugs, consider using metal inserts in the plywood bearers. They can be made from pieces of saw blade or any medium-to-hard metal and inlaid into the bearers. By inlaying, you avoid the problems of figuring out and making offset bearers. Inlaying can be accomplished easily on a miniature drill press as shown in Photo 2.

Now, fit the firewall. Make the necessary notches for the bearers to pass through, as well as holes for the tank lines and carburetor air intake. (Photo 3). Remember, with a fiberglass fuselage make sure that all of these parts fit loosely. Forcing the bearers and the firewall in place can cause the fuselage to deform, making the fitting of the cowl and other parts difficult. To fill any gaps between the bearers, firewall, and fuselage sides, make up a mixture of polyester resin and small pieces of fiberglass. Force this mixture into any gaps. Now take 1" squares of fiberglass dipped in resin and begin filleting the bearers and the firewall to the inside of the fuselage. After everything has dried, grind away any slivers or threads of glass that might be protruding. This will prevent those little cuts or slivers you can get when mounting equipment later on.

Empennage

If you intend on using an internal elevator horn, cut an access panel to get to it in the rear of the fuselage. This will save having to cut one after you have the ship painted and find out that you cannot get to the horn.

I prefer building the vertical and horizontal stabilizers from solid sheet. Not that it's easier but, if damage should occur from a flip-over on land-



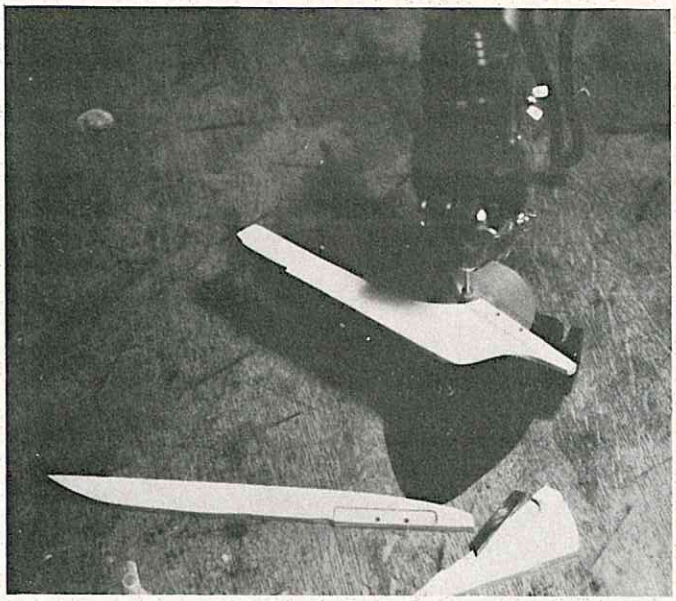
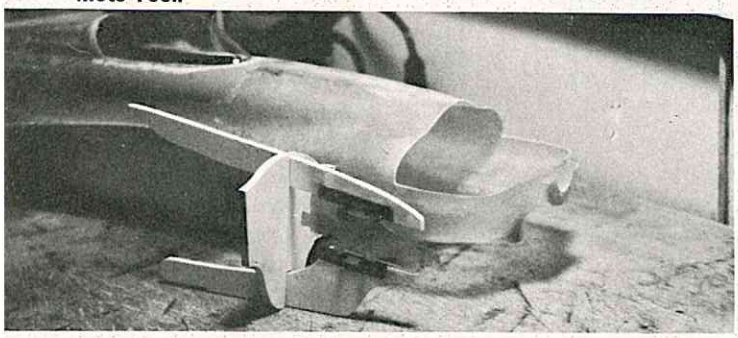


Photo 1, above, shows the final cardboard template used for the fitting of the engine template. Above it are the templates for the ply engine bearers and firewall. Photo 2, right, is the routing of the bearers for metal inserts. Simple with this miniature drill press and a Moto-Tool.



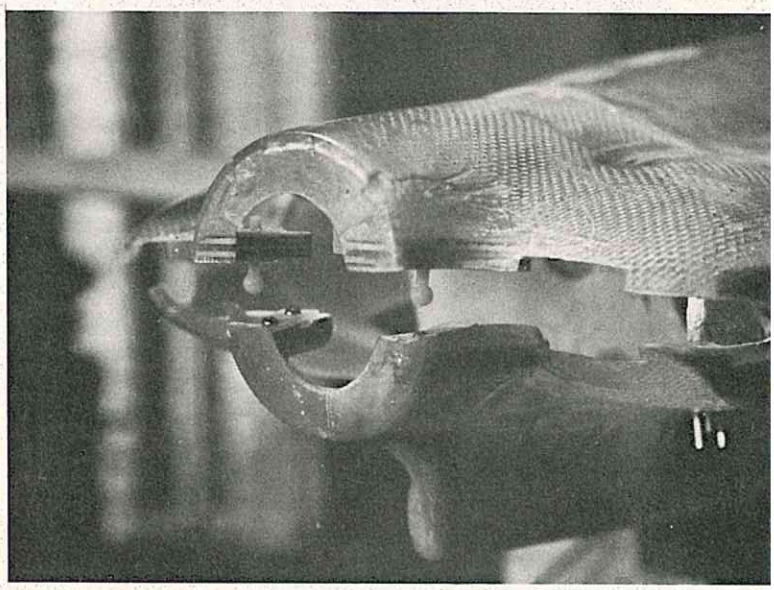
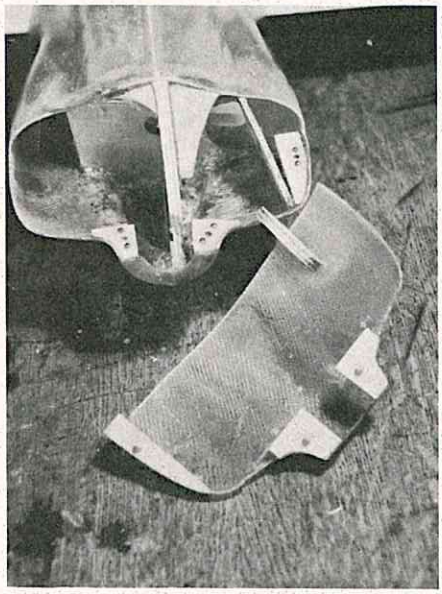


Photo 3, Above: The engine rails and firewall assembly ready for installation into the fuselage. Use engine template to maintain rail position during fiber glassing. Photo 4, Right and Below: Top Flite's ball and socket clips are used to hold cowl in place. Eliminates any fasteners on the outside of the fuselage.



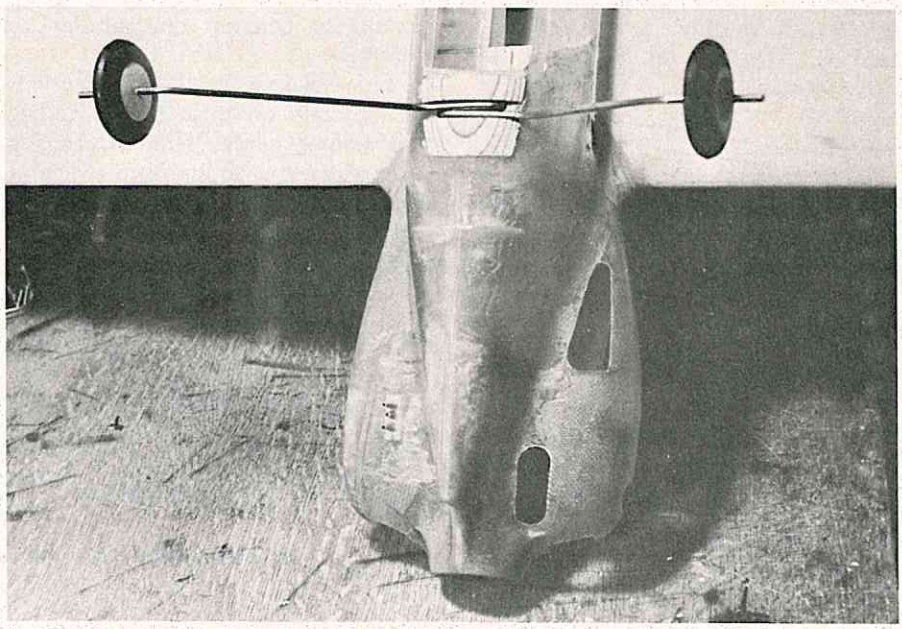


Photo 5, Right: Method of installing 5/32" wire gear. Note large cooling air exit. Also shown are the 1/8" brass tubes for fuel fill and pressure line vent in the cowl.

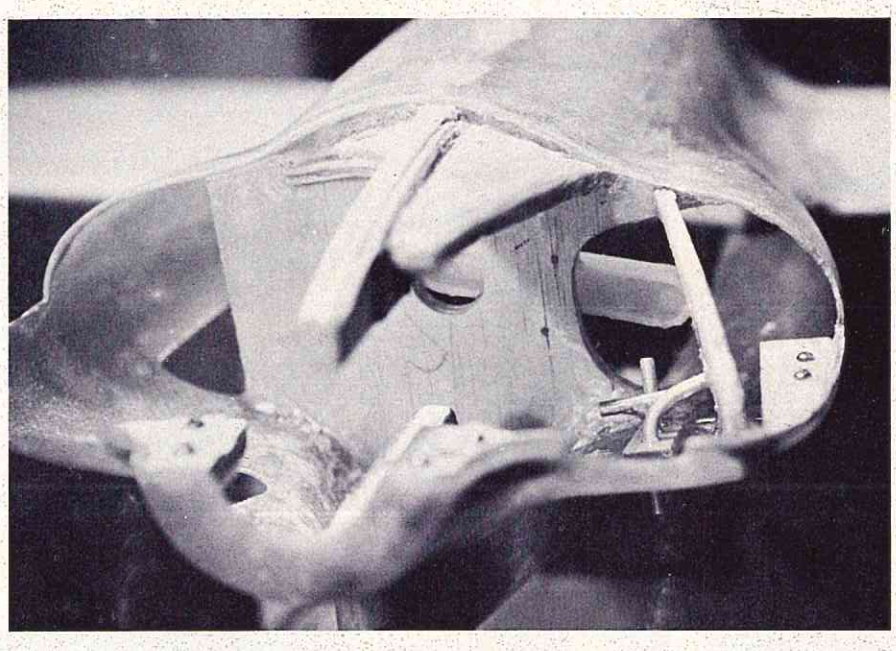
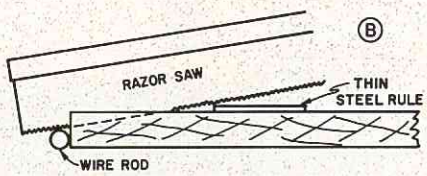
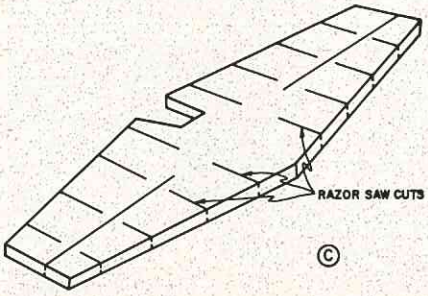


Photo 6: Inside of cowl shows scoop for carburetor air intake, fuel line fill and pressure line vent. The fuel tank lines enter the cowl area to the left of the air intake baffle. With the tank in the left cheek cowl there's plenty of room to the right for the battery pack and receiver.

ing, it should only require a minimum of repair. I've seen too many "built-up" stabs turn into splinters from a landing accident. And, in a contest this could put you out for the rest of the meet.

One reason many builders use built-up construction is that it's hard to get a piece of wood sanded down to a perfect airfoil cross section on both sides. Here's one method of making perfect stabs from sheet. Take a thin steel rule and place it on the apex of the airfoil section. Now, take a round rod slightly larger in diameter than the half thickness of the piece you're working on. Make a series of cuts with a razor saw as shown in illustrations B and C. Now do the same for the



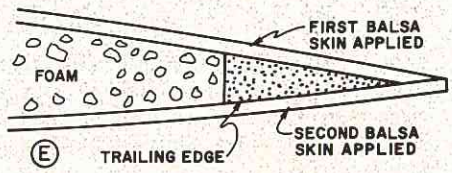


trailing edge, top and bottom. Step up to a disc sander and take it on down to where the saw cuts begin to disappear. Finish the job with hand sanding. The vertical stabilizer and rudder can be done the same way. Several other devices I use to speed the job along are a vibration sander and piece of indoor-outdoor carpeting. The carpeting is an excellent base for sanding. The wood dust drops down into it and doesn't cake up on the work piece causing ridges. Turn the work piece over and rub it a few times in the carpeting and go on to sanding the reverse side.

Wings

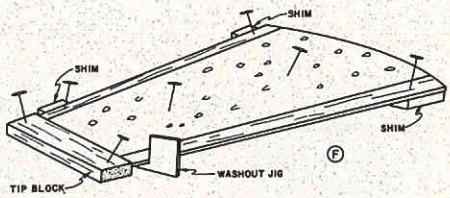
If you've had the problem of wing skins lifting at the trailing edge, or controlling the amount of wing tip "washout," here are some solutions to consider.

First measure the chord dimensions of the foam core including the leading and trailing edges. Trim the trailing edge of the core so that the new chord dimension with leading and trailing edges is about 3/8" less than the original from root to tip. The reason for this construction is as shown in illustration D. By allowing the top and bottom wing skins to overlap and be joined together prevents any differential movement of the skins and eliminates lifting of the skins at the trailing edge. Fit the first sheet to be applied so that there's about an inch extending beyond the trailing edge. After the glue has dried, sand the underside to conform with the airfoil. Now cut the sheeting for the other side about an inch longer and apply to the core. Trim even with the first sheeting applied so that the edge appears as in illustration E.

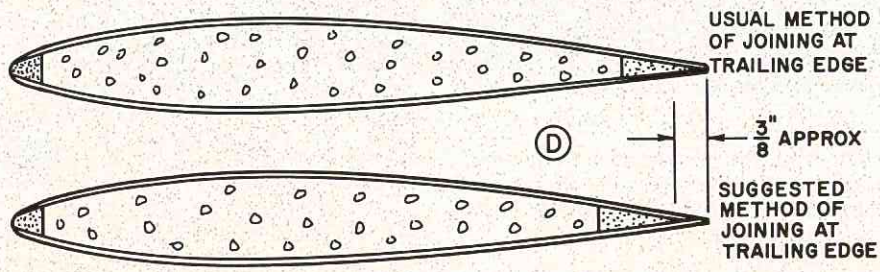


Use contact cement to form the bond between the skins and the foam core. Secure the sheeting with Titebond where it comes in contact with the leading and trailing edges and wing tip. The reason for using glue where wood surfaces come in contact is this . . . contact cement allows the skins to "move" as the wing is flexed. Flex them enough times and the contact cement bond begins to break down and separation of the core and skins occurs. By affixing the wood portions of the wing to each other with glue reduces the amount of flexing thus giving longer life to the wing.

To control the amount of washout desired requires mounting the wingtip block before the wing is skinned. Pin the core to a surface and make a gauge for the amount of washout you desire. Next, epoxy the wing tip block in place as in illustration F.



To maintain the washout sand the tip block so that the wing skins will



glue over it. Be careful in sanding the tips to maintain the same surface plane as the core. Having to force the skin to fit the tip block will destroy the accuracy of the washout.

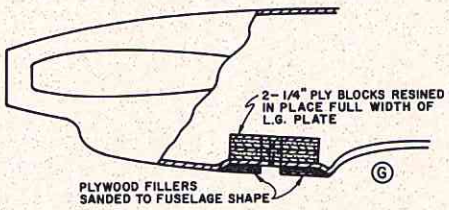
By trapping the wing tip blocks this way you'll find that the wing is stronger and more rigid.

Control Surfaces

One sure way to build up to a disasterous crash is to have control surfaces that "hum" or flutter. Humming occurs when one of several building techniques is overlooked . . . too much space between flying surface and the control surface . . . loose control mechanisms . . . or soft control surfaces. Preventive measures are . . . first build all control surfaces from "hard" stock. This is especially necessary when using strip type ailerons controlled by torque rods. Next, make sure that all connections between pushrods, horns and/or bellcranks are firm, but not to the point of being sticky. Finally, make sure those control surfaces are tucked in tight to the trailing edges. You should be able to see a sliver of light, but not enough space to slip a strip of bond paper through.

Landing Gear

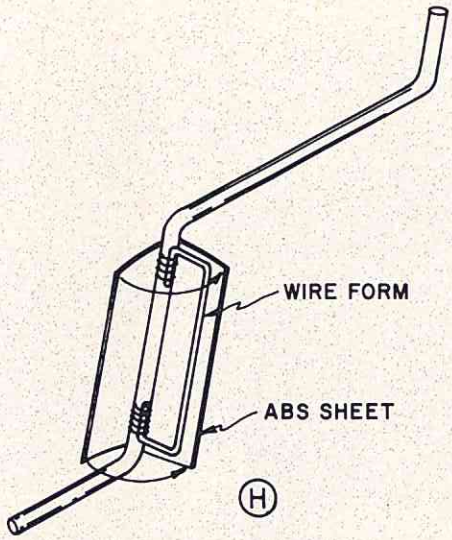
With new racing meets coming up each year the flyer can expect that many of these meets will be run from grass fields. This necessitates having landing gear that has good deflection characteristics to take the field bumps. The flat aluminum plate type of gear is not the most ideal for this situation. That is, unless you're one of those flyers who can put his ship down at its slowest flying speed, exactly where you want it, every time. Otherwise consider good old 5/32" wire gear installed ala Sr. Falcon style. See Photo 5 and illustration G.



There are any number of ways to add fairings to the wire gear. The best method I've found is by silver soldering a wire form to the main gear and then wrapping ABS plastic around the gear and form, illustration H. Next, add some solvent and "melt" the ABS right to the form. Fill the cavity with Epoxilite, Twin-Weld, or epoxy.

Templates and Jigs

I can't stress too strongly the importance of having standing templates and jigs on all critical parts and assemblies for your Formula racer. As one nationally prominent flyer told me: "You should have one plane you're flying, another in the car for back up, and a third on the building board almost ready to go. It's the only way to get in a full season of competition flying."



Templates and jigs are not that hard to make or keep. I use tracing paper for all templates. Jigs are made from tracing paper glued to scrap balsa stock. An inexpensive cardboard portfolio makes a handy storage place for the templates and jigs for a whole airplane.

Write all pertinent building information on the templates and jigs. Important procedures will never get lost that way. Make templates after the final fitting just before the piece is glued in place. Note any centerlines, beveled edges, mounting holes, etc.

Cowling and Ducting

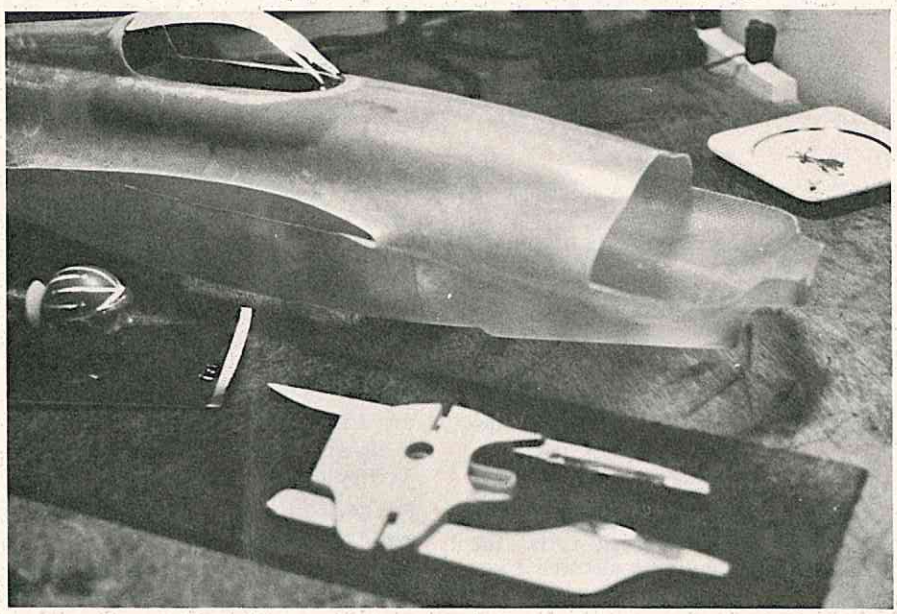
There are a few simple points to remember about cowling and ducting for a racing engine. Both have to do with getting the air to the engine and then getting it away. In the case of carburetion, always have the air pick-up where it will be in the prop blast. Trying to put it farther back on the cowling can end up with it being in a "blind spot" in turns (a place where air is not being pushed into the intake). A number of flyers theorize that this avoids getting heated air into the carburetor. I feel that a few hundred rpm's is a little price to pay in lieu of having an engine sag badly in a turn because of lack of ram air.

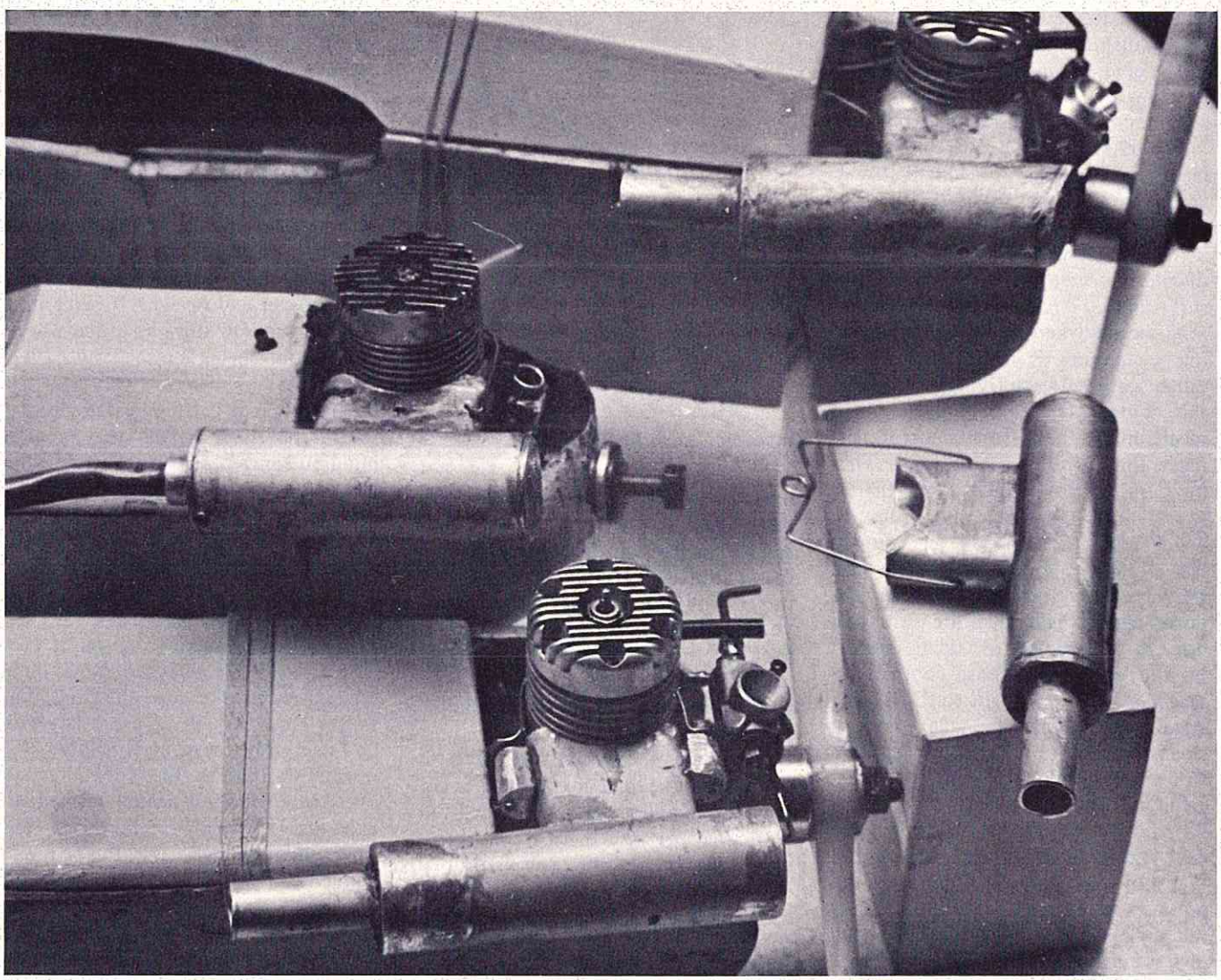
Air for cooling the engine should be considered in two aspects. First, make a big enough hole in the cowl to assure getting sufficient air back to the cylinder head and fins . . . even if you have to make the entry slot larger than scale. Next, make sure that the exit slot is large enough . . . extra large to be safe. The reason is simple . . . remember that as the cool air goes over the engine it is heated. Heated air expands. If the exit for this heated air isn't large enough, the trapped expanded air will limit the amount of cool air that can come into the cowl . . . and before you know it the engine has turned into a mass of hot metal.

The methods of mounting a cowl

(continued on page 78)

Photo 7: Cockpit is completely finished before installing into fuselage. Both it and the canopy are installed from the inside and held in place with adhesive from a "hot" glue gun.





Author's mufflers using construction method per text. Note that every one is different . . . that way Ed excuses the rough finish by labeling them experimental! The one on the left on the O.S. .30 is according to Chuck Cunningham's 1966 write-up. Front, S.T. .40. Rear, S.T. .35.

ED GERHARDT'S NOTES ON

Muffler Construction

The accompanying sketches show not so much a design breakthrough as a practical method of making mufflers.

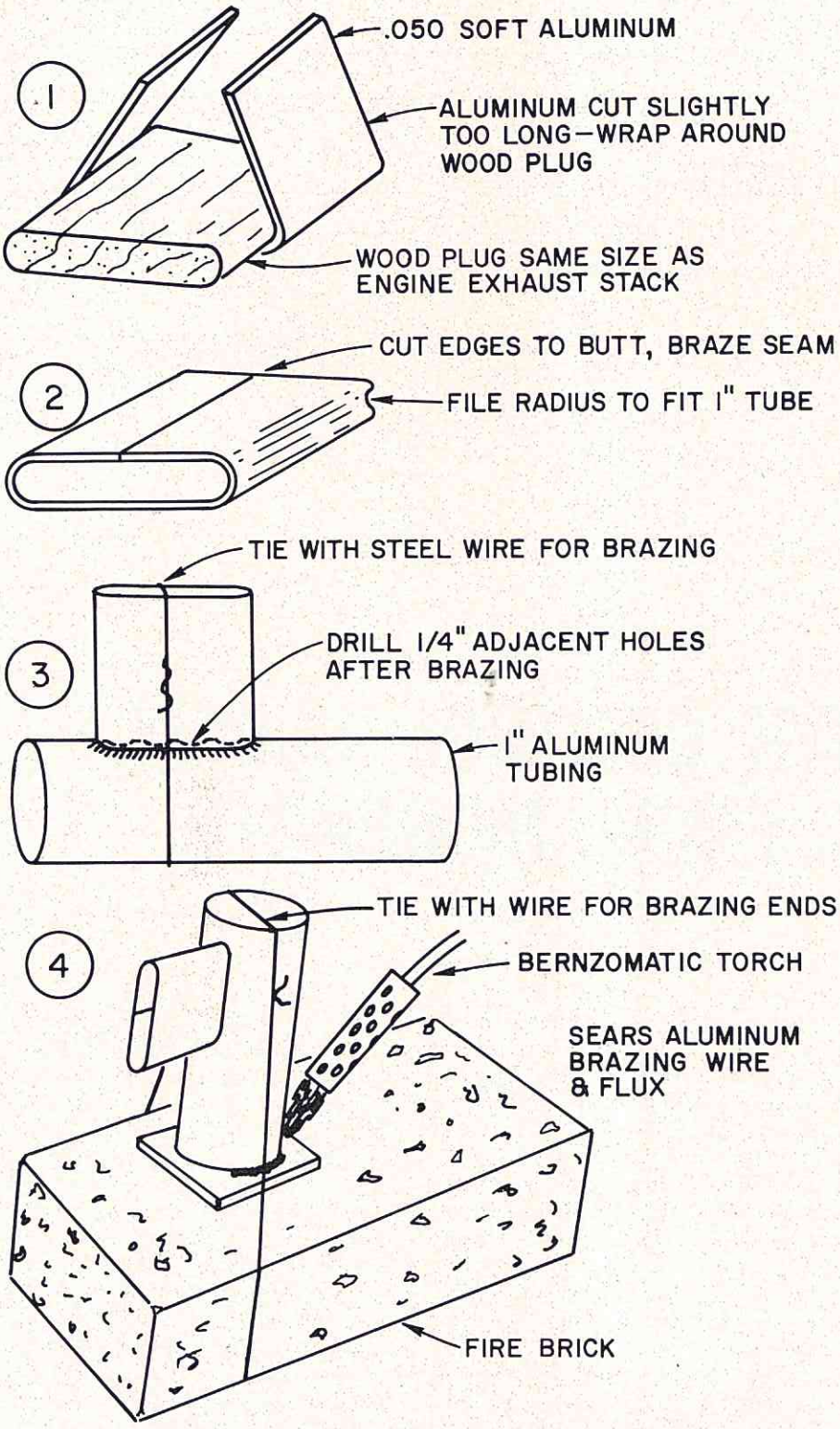
To get to the kernel of the nut, this is an effective silencer and power loss is negligible. I can't quote rpm figures because I don't have a tach, but I have used these mufflers for two years on engines from .19's to .40's. The noise level is as low as any of the commercial mufflers and is much lower than the flow-through types. It also has more effect at high rpms; the exhaust sound smooths out to a drone at top speed.

The design concept is based on Mark's Handbook rule-of-thumb of 6 times cylinder volume. When using 1" dia. tubing this works out to 1" of tubing length for each .10 cubic inch of engine displacement; for a .60 engine, 6" long; for a .40, 4" long; for a .19, 2" long. None of the dimensions are critical, but when in doubt, make it bigger to reduce back pressure.

The exhaust tube is necessary. With just an exit hole, or even small multiple exit holes, much of the silencing effect is lost. The tube seems to smooth out the pulsations. I have used 5/16" tubing on .19's and 3/8" I.D. tube on .40's. Herb Foster has added a ½" tube to a muffler of the Enya .60 type with a remarkable reduction of back-pressure while retaining effective silencing.

Someday, if I lay my hands on a tach and a sound-level meter at the same time, I plan to make a muffler with a movable rear plate. With this variable-volume muffler it should be possible to determine minimum muffler size for a given engine.

The muffler is constructed from 1" aluminum tube from the rack at your



friendly hardware store, and soft sheet aluminum. I use scraps of .050 sheet left over from a roofing job but, in a pinch, the 1/16" soft sheet from your hobby counter is O.K.

Most of my mufflers are assembled with aluminum-brazing wire as sold by Sears. This doesn't melt till you get over 1000°F but has the advantage that previously-brazed joints won't melt when you're making the next one. I have also used 500° solder from Midwest but you do have the aforementioned problem of ruining your previous solder joints. I have also tried the self-fluxing aluminum solders. These are potentially useful but require special solder-joint design since the solder will not flow between the joint surfaces; instead it forms a fillet on the surface.

The Brazing wire is easy to use, provided the work is clean and adequately fluxed. If the wire refuses to adhere, stop, reclean and re-flux. Continued application of heat will result in a melted muffler – I've done it!

A propane torch with a fine tip provides adequate heat provided the work is on an insulating surface such as asbestos or an insulating firebrick.

Start fabrication with the exhaust stack. Make a wood form to match the outside of the stack on the engine. Next, cut an aluminum strip about 1¼" wide and long enough to wrap around the form with some extra length. Start the wrap in the center of one of the flat sides of the form. Bend with pliers, vise, or "brute-force fingers." At the point of overlap, the excess may be cut off with a pair of tin snips. The joint is then matched up and brazed.

File a radius in the stack so it conforms to the 1" tube. This fit does not have to be perfect as the brazing alloy will fill a gap of .010". Position the stack on the tube and fasten with one turn of soft steel wire for brazing. The holes in the aluminum tube are drilled after the stack is brazed on.

The end caps for the tube are cut oversize from sheet and are held in place for brazing by a turn of wire around the tube and whatever you are using for a working surface. When the caps are in place, a hole is drilled in the center of the rear cap and enlarged to the size of your exit tube.

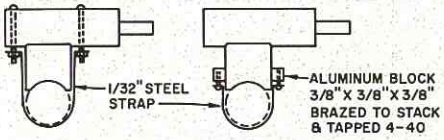
If you don't have a tube of a reasonable size, one may be rolled from sheet around a drill or dowel of the desired inside diameter. The seam of the tube does not have to be brazed. Brazing the tube into the end-cap completes the working part of the muffler.

Mounting the muffler on the engine is perhaps the most tedious part of the job. The muffler inlet stack has to be radiused to fit around the cylinder barrel. The best tool for this is a burr in a hand grinder, although tin snips, a

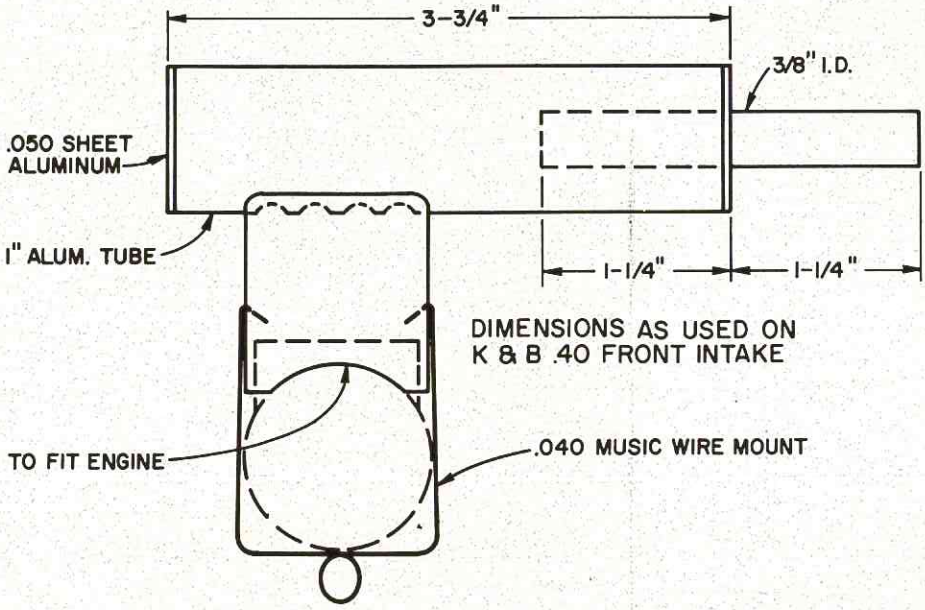
file, and a lot of persistence will also do the job!

The simple spring mount works well on small engines but on .35's and up, the muffler vibrates to some extent. The strap mount has worked well on my ST .40. I'm sure there are more ingenious ways of doing it.

The fabrication process takes a lot of words to describe but I have completed a muffler in an hour and a half when things are going well. When things were going badly it was usually because of brazing problems; dirty aluminum or trying to use the last dregs of flux which had apparently decomposed. □



ALTERNATE MOUNTING METHODS



FULL LENGTH CONTROL SURFACE HINGES FROM MONOKOTE

PUT SOME SNAP INTO YOUR SHIPS PERFORMANCE WITH THIS SIMPLE METHOD

BY H.A. LINDEMANN

FIG. 1

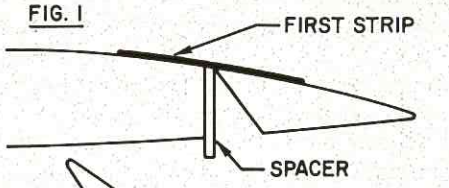


FIG. 2

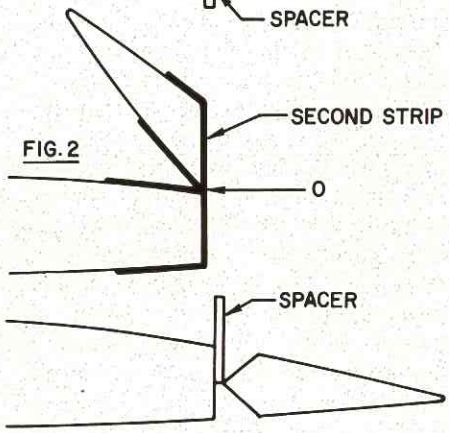
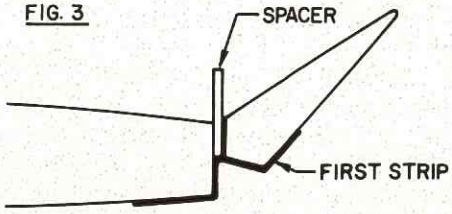


FIG. 3



Poor aileron performance, such as sluggish slow rolls, may be due to an excessive gap between the wing and aileron, allowing air to be sucked in from under the wing and causing turbulence over the aileron's top surface. Having experienced this problem I discovered that a full-length MonoKote hinge cured this completely with a tremendous increase in roll performance. The following is the process for the full length MonoKote aileron hinge.

First, cut two strips of MonoKote as long as your aileron and about 1-1½" wide. Second, iron one strip over both the wing and the aileron while in position as shown in figure 1. Keep the aileron aaproximately 1/16" off the wing using a few spacers. Third, fold the aileron over until the surfaces x-x (figure 2) are in line, then iron on second strip. At "o", a bond will be formed that will never tear apart.

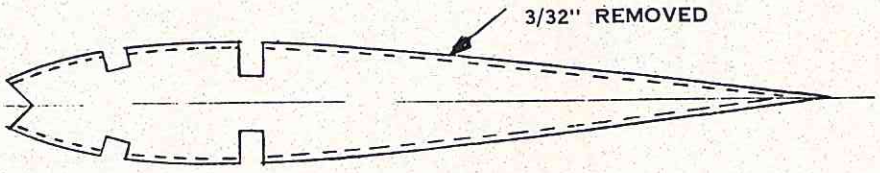
It's just as simple as that. For another type of aileron, as shown in figure 3, you may not be able to get well into the corner (arrow) between the wing and the aileron with your hot iron, depending on it's shape. In this case, a soldering iron will help, but it will melt the MonoKote if it is too hot. To prevent this you may slide it along **quickly**. Try this first on a scrap piece of MonoKote. Alternately, you may reduce the voltage with a resistor or rheostat, or by plugging your MonoKote iron into a standard light dimmer. Another way to control the heat is to remove the copper tip of the soldering iron (if it is removable) and insert a long one – the length to be found by trial and error. It is worthwhile doing this since, once the correct length is found, you will have a useful tool for other MonoKote operations in inaccessible corners such as at vertical and horizontal stabilizer junctions.

The spacers indicated in this article and in the sketches are necessary since, when bending the aileron back, the first strip will form a protruding welt, to which the second strip will adhere firmly and yet there will be no stiffness in the hinge.

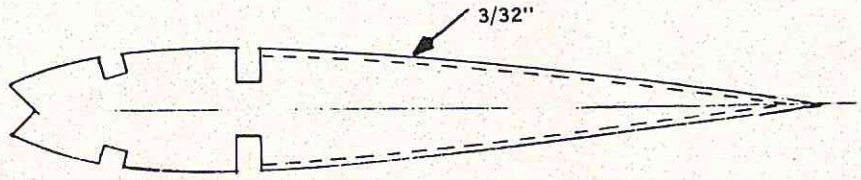
Of course, the rudder and elevator can be hinged in the same fashion. □

you can build a LOW-WING UGLY STIK

BY P.A. HENDRICKS



CENTER RIB & RIBS 1 & 2



RIBS 3 & 4

Several members of the AMPS R/C Club, located in Miami, Florida, have been flying low wing Ugly-Stiks for about two years with excellent results. This modification to the Jenson kit produces a low wing sport aircraft with characteristics unique to the Ugly-Stik design. We would like other members of the R/C fraternity to enjoy the advantages of this effort. The original idea for this modification came from AMPS member Ray Carpenter, who decided to try turning over a Stik after having good luck with a stock one. His original low winger was followed by several built by myself and other club members.

The builder will find this modification produces a superb sport low winger, with all the unique handling features of the standard Stik. The landings are unbelievable as the plane is just about impossible to stall. The landings are nose high at about 5 MPH. I am currently flying one with the stock ailerons replaced with Sig 2 inch trailing edge stock. Half the span is ailerons and the inboard half is flaps. The flaps are operated independently with a fifth servo, and the performance of this plane makes it practically unbeatable in fun type contests. I hope you will try one of these ships; it sounds like a lot of work, but it takes longer to describe than to actually build it. The end result is a truly outstanding R/C plane.

CONSTRUCTION

Starting with a Jenson Ugly-Stik kit, these additional items are needed: a set of Top-Flite or Sig landing gear blocks, a set of Taurus main gears, and 2 or 3 sheets of 1/8" by 3" balsa. Also some scrap 1/16" plywood.

Build the stab and elevators as-is from the plans. The fin and rudder are stock except to saw off the portion of the fin which normally inserts into the fuselage. Add a small dorsal to the fin so it will blend more gracefully into the fuselage.

FUSELAGE:

Take one of the wing ribs and, being careful to keep the rib centerline the same, transfer the top outline of the rib to the wing saddle. Cut out the new saddle outline. Only about 1/16" of wood will be removed from the saddle aft of the main spar area. Fill in all the precut holes in the fuselage with 1/4" scrap balsa as they will not be used. Assemble the fuselage sides to the firewall and the two fuselage formers and pull together at the tail as usual. Take the kit plywood fuselage bottom and use the front part of it for a top hatch extending from flush with the front of the firewall back to 1/2 of the thickness of the first bulkhead. We use 1/4" x 1/2" spruce cemented to the fuselage at the front and rear of the hatch and drilled for 2/56 blind nuts for the hatch holdown. Sheet the remainder of the fuselage top with 1/8 balsa sheet crossgrain. Use the remaining part of the original plywood bottom for the fuselage bottom from the firewall to the front of the wing saddle. Glue well and use the triangular firewall bracing provided in the kit. If super strength is desired, fiberglass around the firewall to about two inches back on the nose. Sheet the rear bottom fuselage from the saddle with 1/8" balsa crossgrain.

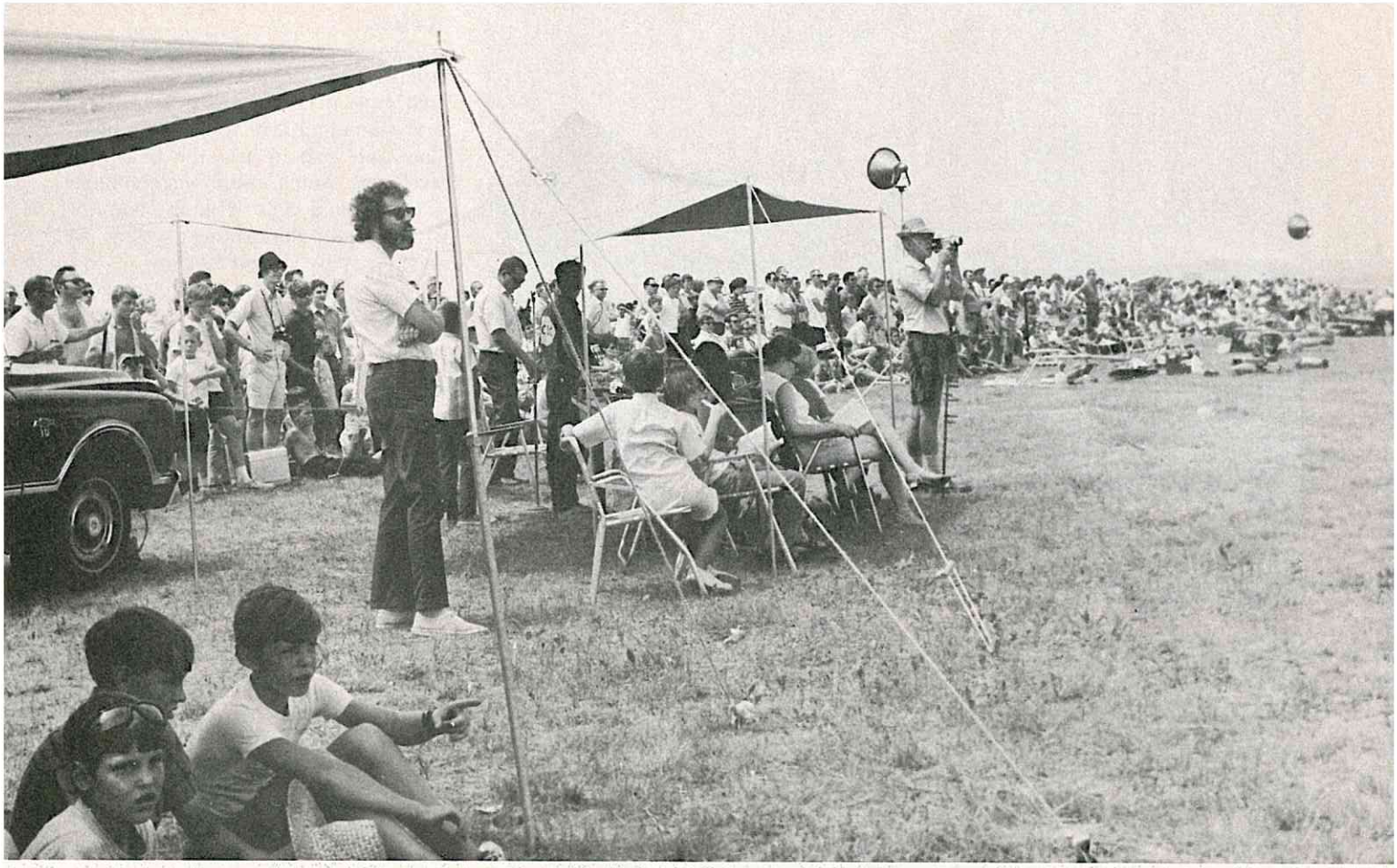
WING:

Assemble the wing spars as per plans, but before proceeding, modify ribs as follows: Take the center rib and the first four ribs in each panel and mark and remove 3/32 inch from each of them from the main spar notch on the bottom and top back. On the center rib and the first two ribs, remove 3/32 inch top and bottom forward of the main spars to the leading edge. On ribs 3 and 4 from the center, leave as original from the main spars forward. Remove 3/32 inch top and bottom from the false ribs between ribs 1 and 2 and 2 and 3. Mark ribs 2,3, and 4 for the gear blocks. Mount the gear blocks against and flush with the bottom rear spar doubler. Camber the gear blocks slightly where they butt against the doubler to maintain the airfoil. Cut the gear block braces from scrap 1/16 plywood for each side of the ribs which take the gear blocks. Start the hole of the blocks at rib No. 2, and move rib No. 4 inward enough so the block will reach it. Use motor mount stock at right angles to the gear blocks for the gear spur. Drill 5/32". This arrangement will give you a main gear track of 23 inches and results in excellent ground handling. After installing the gear blocks and braces, sheet the center section with 3/32" sheet. The sheet runs between the spars from the C/L to rib 4 top and bottom rear of the main spars, and from the C/L rib 2 top and bottom front of the main spars. After sheeting, cut out the servo hole to fit your equipment. We use internal pushrods and aileron bellcranks but normal strip aileron type hookup is O.K.

FINAL ASSEMBLY:

Glue the stab in the fuselage notch and glue the fin to the top of the stab and fuselage. Reinforce the fin and stab with 1/4" square trimmed to triangular shape and glued to the fin and fuselage below the stab. Check the wing fit in the saddle. Drill new holes in the fuselage for 5/16" wing dowels. Sand, cover and finish to your taste. We have been using the Tatone side mount with nose gear to get perfect needle valve and tank alignment. This gear does a good job, but use a nylon link on the aluminum steering arm.

The effort spent on this modification returns a forgiving and ultra-stable model. Looks a lot better too. □



Some of the crowd during the Twin City Radio Controllers show. Note the three P.A. speakers on tripods; bearded man is member Vern Hendrix. Opposite page, left: Full size reproduction of flyers printed by T.C.R.C. Blue ink on pink paper stock.

R/C FOR THE MASSES

TO OBTAIN FLYING FIELDS, TO ENCOURAGE PUBLIC SUPPORT OF R/C, YOU HAVE TO INVOLVE THE PUBLIC. HERE'S HOW THE TWIN-CITY RADIO CONTROLLERS PUT ON A PROGRAM FOR THE PUBLIC AND RAISED $1200 IN THE PROCESS.

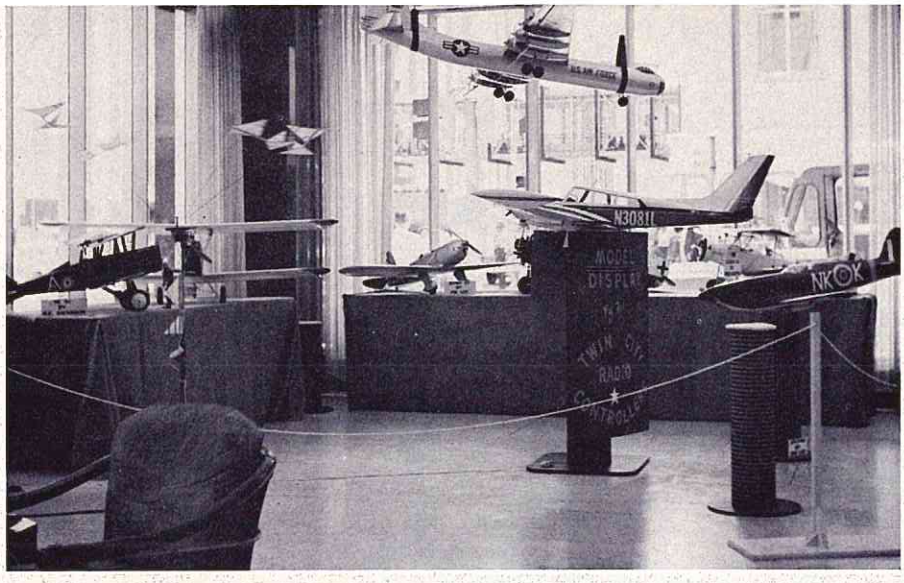
BY TED BERMAN

Many R/C clubs face the problem of raising money to support a yearly contest. They often solve it by earning money during the contest weekend, which is promoted to attract paying spectators. When the people arrive, they take their ringside seats and prepare for an afternoon of entertainment. "Look daddy, the toy airplane is doing loop-the-loop," says the future modeler. Two hours later, after a filling meal of hot dogs, "Daddy, why do the toy airplanes loop-the-loop all day?"

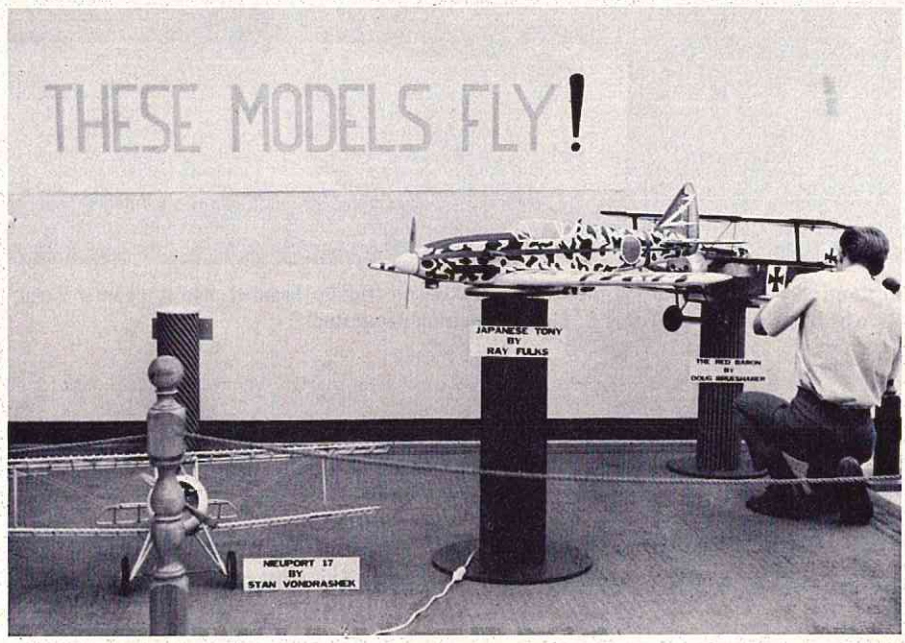
To the average person, inverted reverse cuban eights, and outside loops are almost the same thing. In short, an afternoon of contest pattern flying becomes quite humdrum. Some clubs try to liven things up by interrupting the contest for a thrilling performance by the local fly-boy. He demonstrates low, inverted flying, five hundred feet of knife edge, and snap rolls. (Called Lamcevaks by the announcer.) Meanwhile, Phil Kraft, Norm Page, and the rest of the contestants who drove hundreds of miles, wait on the sidelines, possibly missing a round of flying. Including Goodyear and Scale in the contest stimulates more spectator interest, but still one doesn't hear roars of applause.

Last year, our club, the Twin City Radio Controllers, tried something different – a "model air show" separate from the contest, specifically aimed to please the public. The profits from the air show would then be used to sponsor the contest, which would not be directed toward the public, but rather would be solely for the contestants. (This is not entirely new, since other clubs have also taken this approach.)

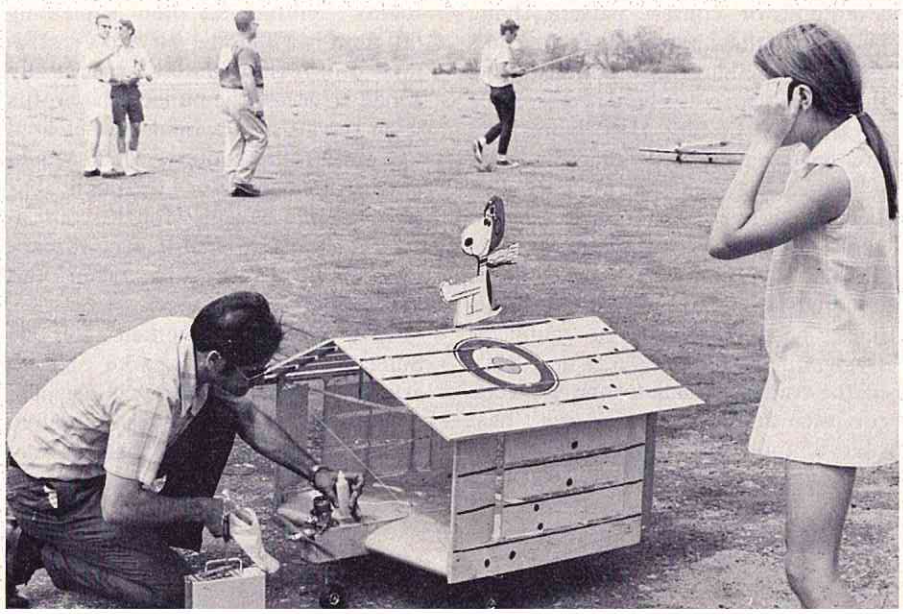
Our experiment worked. On one Sunday afternoon we were able to attract three thousand people and make a net profit of twelve hundred dollars to be used this year for producing a much bigger and better



One area of the bank display inside the Marquette National Bank. Note the spinning Delta Darts to the left of the picture. BELOW: The other area of the bank display. Sherwood Heggen makes sure that the Red Baron is sitting firmly on its pedestal. The electric cord running to the middle pedestal is for the rotater motor.



BELOW: Al Signorino prepares his famous Snoopy's Doghouse. Newest version has extended engine mount, trike gear, and a nose wheel brake. Al's daughter, Kim, looks on.



contest.

The show was held at the club flying field, located about ten miles southwest of Minneapolis. The field is a two hundred foot square of asphalt. Cars were parked near the field on a level area which could accommodate one thousand cars. With the addition of a rented public address system, we were ready to have an air show.

We were lucky to have good weather for the show. It was a partly cloudy, hot day, with winds of ten to fifteen mph. It naturally poured rain, but not until almost all of the people had left. We did not provide for a rain date because of the problems involved in rescheduling. Had it rained all day, we would have taken a loss and hoped for better weather next year. (We expect to lose money once in four or five years because of bad weather.)

The air show was much more than just R/C planes flying pattern maneuvers. We had demonstration pylon races, R/C and U-control dogfighting, formation flying, and scale planes. Al Signorino flew Snoopy's dog-house, and a full size helicopter was demonstrated by a local aircraft dealer. Before the people got tired of looking up, we entertained them on the ground with static displays of airplanes and antique engines, booths set up by two of the local hobby shops, one thousand Delta Darts that were given away to the kids, free programs of events, and, of course, a concession wagon selling food.

We knew that Al Signorino flying Snoopy's dog-house would be a major attraction. Al agreed to come up from St. Louis. Snoopy became the focus of publicity and hit of the show. Al was flying a new version of the dog-house, which flew much better than older ones. A scale, Fokker triplane was ready to shoot down Snoopy. We figured that Al might have trouble getting Snoopy airborn, but surely the Fokker would fly. Just the opposite occurred. Snoopy lifted off beautifully with the Fokker in close pursuit. Within seconds the prop of the triplane flew off. An Aeromaster bipe was on standby for just such things. It got up and promptly crashed. (Much applause.) We found another Aeromaster that was finally able to do combat with Snoopy.

We had planned on Formula I and biplane pylon races, but all except one of the Goodyear planes crashed prior to the show. So open racing was substituted for Formula I. One Shoestring with a K & B .40 R.V. engine

did fly the course, and it was obvious that a Formula I race would have gone over much better than open pylon racing. Pattern planes loaf around the pylons compared to Minnows!

The "Ukie" and R/C combat were very popular with the crowd. During the U-control combat a collision occurred. The 120 mph "flying wings" were instant confetti. Hearing three thousand people simultaneously exclaim "ohhhhh" is not forgotten. U-control was included in the show because it's exciting and easily seen. Many RC'ers (including the author) began modeling in U-control, going on to R/C later.

A full-size glider flight, helicopter demonstration, and C-130 Hercules fly-over had been scheduled for the show. We thought that people might not enjoy a show if just "toy planes" flew. We were wrong. The glider showed up two hours before the start of the show, the Hercules cancelled at the last minute, and the crowd enjoyed the models more than the helicopter.

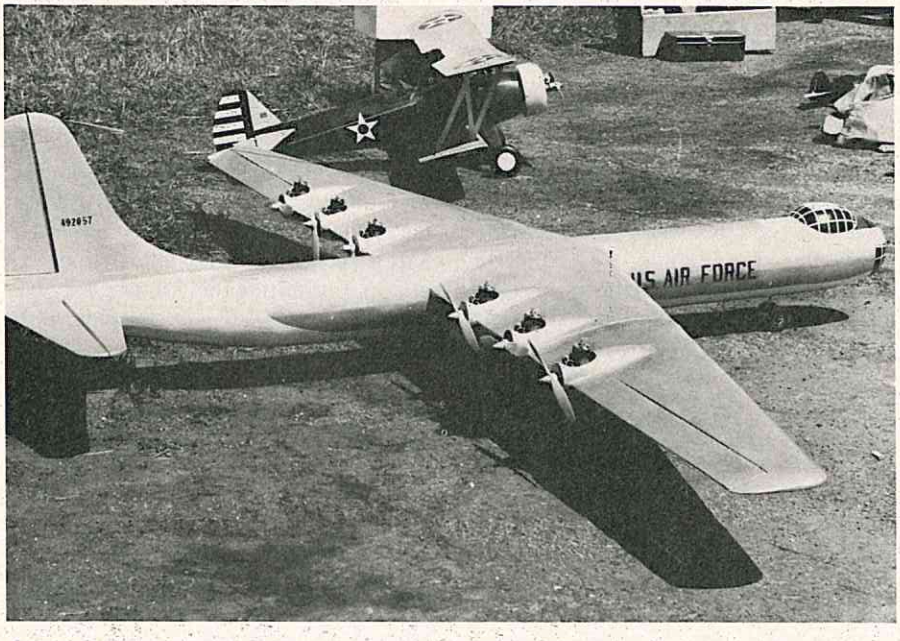
Formation flying of two New Orleanians was hurriedly substituted for the C-130. The planes did a free style pattern in quasi-formation with each maneuver being announced over the P.A. system. The crowd enjoyed it. They appluaded when the planes did simultaneous vertical snaps, spins, and touch-and-go's. This year, two club members are building identical six foot span Chipmunks. After some practice, they should rival Art Scholl and Skip Volk, who fly full size Chipmunks in formation.

Several single engine scale planes flew, but were received indifferently by the crowd. They probably would have enjoyed multi engine models, but we were fresh out. This year we plan to use Sherlock's Learjet, and his 727 painted as a Northwest Orient airliner. Both models fly like pattern planes and should be a hit.

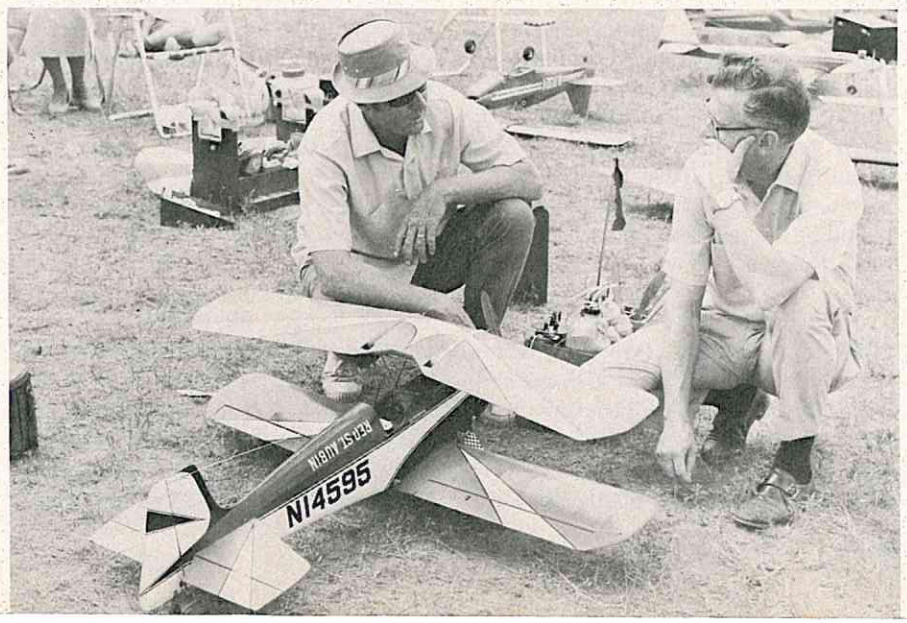
There were plenty of other things for the people to do. The first one thousand children were given a Delta Dart. Flight Training Center, a local Fixed Base Operator, paid the entire cost of the Darts in return for advertising on the wing. F.T.C. also put on the helicopter demonstration and gave helicopter rides all day.

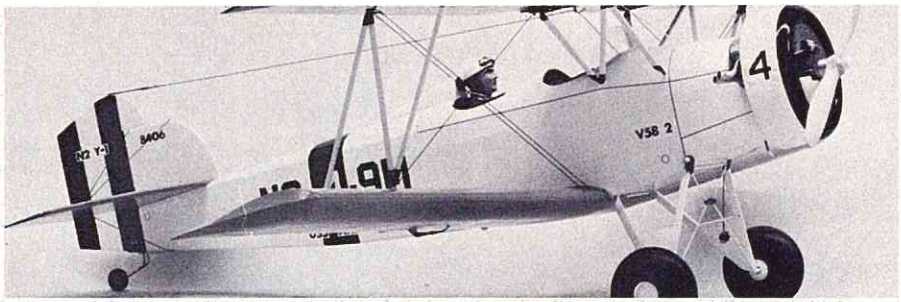
An eight page program of events was given to each adult spectator. It included a schedule of events, illustrated articles on radio control, and several paid ads, which resulted in a profit of $150.00 from the program

Ken Duncan with his scale model Spiggen, which he flew in the show.



ABOVE: Jim Miller's huge B-36, powered by six Webra .20's. It was displayed at the bank and at the airshow. BELOW: Red St. Aubin (l) discusses his bipe with Dr. Stan VonDrashek.





alone. Aircraft dealers and hobby shops were easily persuaded to advertise @ $25.00 per quarter page or $48.00 per half page.

Models that weren't ready to fly were placed in a roped off static display area. A six engine, ten foot span B-36 attracted the most attention.

Hub Hobby and Jolly's Hobby Shop set up large displays under canopies provided by the club. Both shops had numerous R/C kits, engines, and radio systems on exhibit. Within two weeks after the show, they had sold almost one dozen new radios.

The most important non-flying attractions were the concession stand and the johns, although the latter did not make money. The Pepsi wagon sold soft drinks and hot dogs, prepared and dispensed by wives of club members. The food stand was a major source of income. That one wagon made four hundred dollars of profit selling pop @ 15¢ and hot dogs @ 35¢!

The air show was a success because people came to see it and they liked what they saw. How did we persuade them to come watch models? With **publicity** – even the best show would be a flop without it. "The more the better" is a simple maxim concerning publicity. Every little bit counts.

Many banks have areas in their lobbies used for displays, such as snowmobiles, racing cars, and motorcycles. Why not model airplanes? We persuaded one of the large downtown banks to give us a month for a display prior to the show, and arranged to split the cost with them to buy one thousand Delta Darts, which would be given away during the display. (These Darts were separate from those given at our airshow.) Twin City modelers gave us thirteen R/C models to exhibit including a Japanese Zero, Fokker D VII, Spiggen, New Orleanian, and B-36.

Each model was placed either on a table or a pedestal. Two long tables were built from plywood and covered with blue muslin. The pedestals were made from large, very thick mailing tubes, cut to various lengths, capped with plywood, and covered with contact paper. Models on two of the pedestals rotated one rpm by use of a six dollar display motor mounted just beneath the top of the pedestal. (These motors are rugged. They operated five days a week for one month with no problems.)

To complete the display, the B-36, equipped with blinking navigation lights, was hung from the ceiling. Beneath it were four Delta Darts whirling round and round. A twenty rpm motor was used to spin them in a six foot circle. Three foot lengths of music wire were soldered to the output shaft of the motor, attaching the Darts to the end of the wires. We estimated that about 25,000 people saw the display during that month.

Television was another good source of publicity. Woodcraft Hobby stores have a fifteen minute program each Saturday, which they allowed us to use in promoting our show. We also made an appearance on "Lunch with Casey," a local TV kiddies show. On both programs one or two models were brought to the studio. On the kiddies show, a three minute film of R/C flying was aired. "World of Aviation," a program on general aviation, announced our air show one week before the date.

Two thousand 8½" by 11" flyers, and three hundred large posters were printed to advertise the show. The public was told what's happening, where it's at, and how much it costs. A finished proof of the poster was drawn for us, free of charge, by an artist who was a member of the local chapter of the Experimental Aircraft Association. We went "all out" on the poster, using two color printing (black and red) on yellow posterboard. The flyers were made from the poster proof, scaled down, and printed on pink paper stock with blue ink. They were placed, with a "take one" sign, at all the hobby shops, the bank display, and the aircraft dealers. We probably received some secondary circulation from the flyers, because people may have shown them to their neighbors. "Hey Joe, there's a show this Sunday. Some dog on his house is gonna fly!" Two weeks before the show, club members were "mobilized" to put up the three hundred posters in store windows. Excellent spots for them were the bank display, shopping centers, and all the stores where flyers had been placed.

Air show tickets were printed one month prior to the show. Each member was given tickets to sell in advance. Admission was free, with parking $1.75/car at the show, or $1.50/car if the ticket was bought in advance. An incentive for selling was provided by announcing that members selling over five tickets would have a chance to win an Enya .60 in a post air show drawing. Seventy members sold a total of two hundred dollars worth of tickets – good insurance against a rainy show date.

We didn't get much publicity from the newspapers. Press releases were given to the city desks of the two large newspapers, but weren't published. This year we will contact individual reporters and try to get them to do a story. We did learn not to mention the word "publicity" to media men. They like to think that they are publishing news and doing the public a service. The only newspaper publicity was an advertisement that we put in the aviation want-ads.

We did get good radio coverage for the show. Nearly all radio stations have a "community calendar" each day, announcing various public events. Letters were sent one week in advance to all the local stations with a fifty word spot announcement describing the show. Club members reported hearing it on several stations.

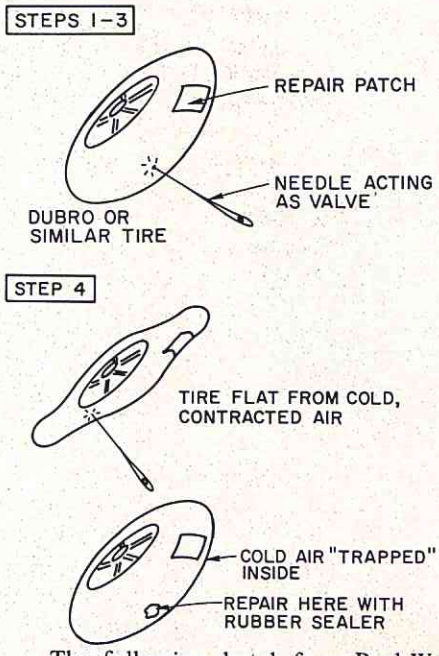
There are some lessons to be learned from our experience. Any moderately large club, in a metropolitan area, can make money by having an air show. (See the Balance sheet.) More importantly an airshow presents R/C flying in a favorable light and stimulates interest in modeling.

Balance Sheet

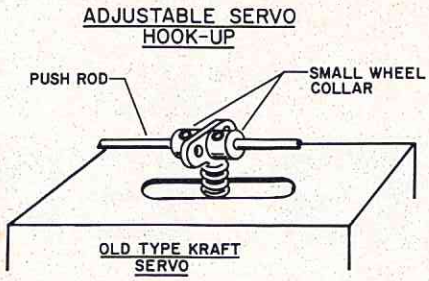
EXPENSES	
300 posters	$150
2,000 flyers	$30
P.A. rental	$59
Program printing	$170
Bank display material	$50
½ cost of 1000 Delta Darts	$90
Miscellaneous	$151
Total Expenses	$700
INCOME	
Program advertisements	$300
Net profit on food wagon	$400
Parking receipts	$1000
Advance ticket sales	$200
Total Income	$1900
Net profit of air show	$1200

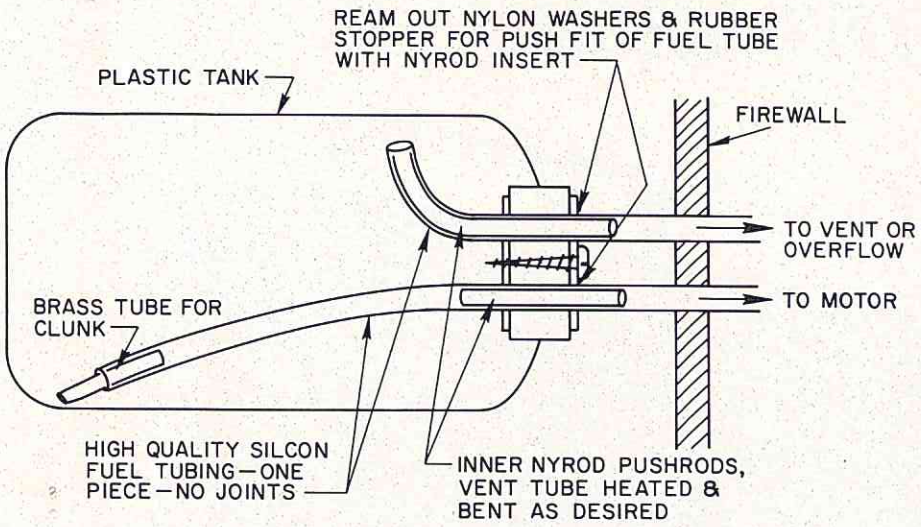
FOR WHAT IT'S WORTH

For repairing non-inflatable balloon tires or rejuvenating older tires that have gone "flat," try this method from Fred Miller, of Kirkwood, New York: 1) Repair tire with regular tire patch. 2) Insert sewing needle in tire at some inconspicuous place. 3) Place tire with pin inserted into freezer of refrigerator. 4) Remove in ½ hour (sounds like a recipe). The tire should be about 50% collapsed by this time. Using the pin as a valve, maneuver to allow additional air to enter. Tire will seek normal equilibrium/size. Remove the needle and promptly seal the pin hole with liquid rubber compound such as Dow-Corning Sealer or another small tire patch. Now, at standard room and summer field temperatures trapped air sealed at freezer temperatures expand inflating the tire. 5) For rejuvenating only, skip Step 1.



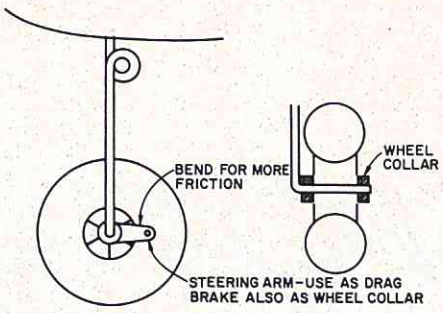
The following sketch from Paul W. Stump, of Liberty, Missouri, is an idea that he uses for servo hook-up on older model Kraft equipment. The sketch, itself, is self-explanatory.



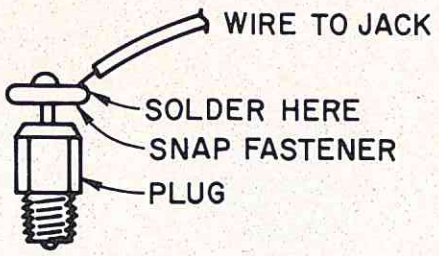


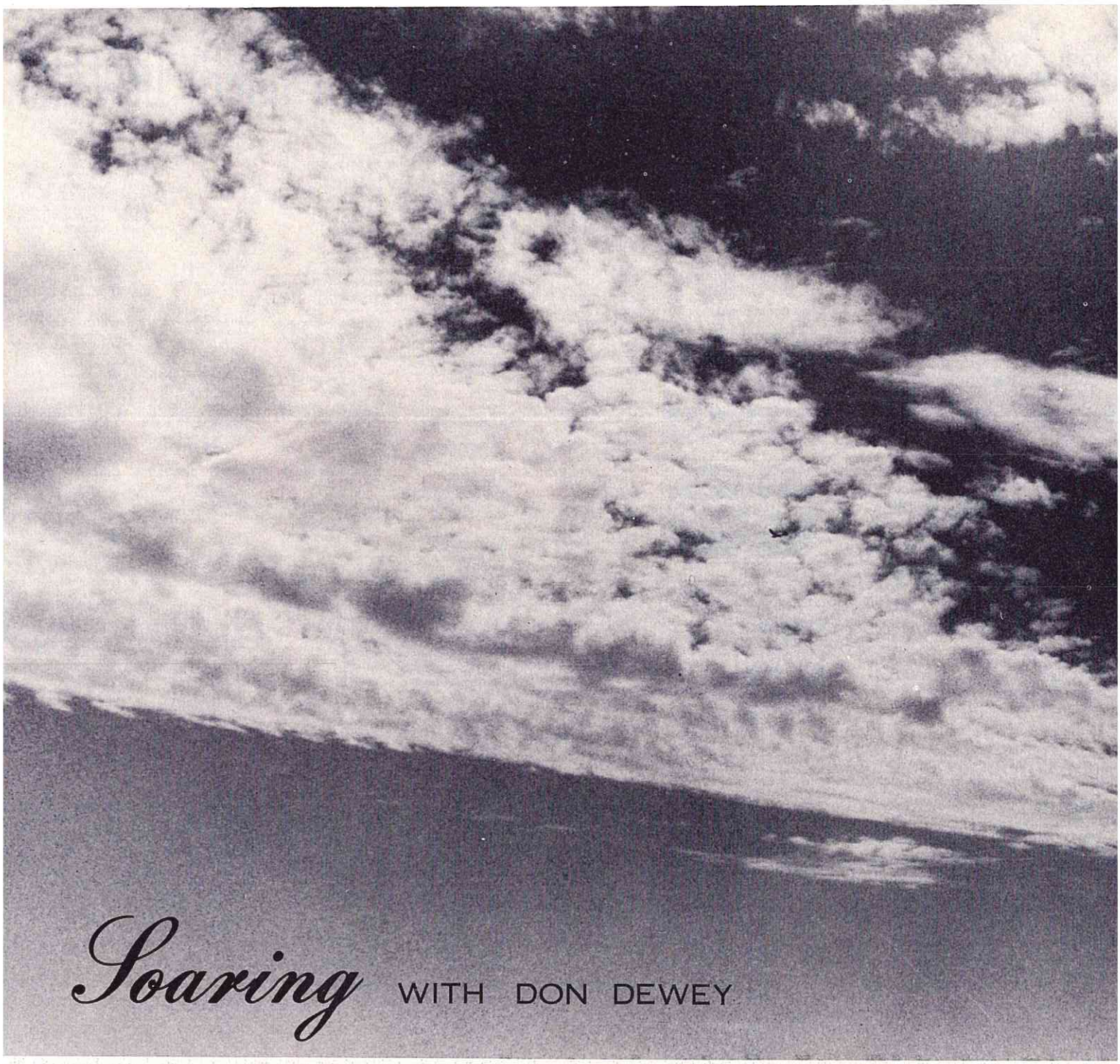
If you build your planes without any hatches for access to the tank compartment, then you have, at some time or another, had a vent line or fuel to the motor line come off and you had to sit and pump a quart of fuel into your radio compartment. Here is one way to solve the problem. Russell Eavenson, of Miami Springs, Florida, cuts a two inch piece of inner NyRod tube and works it up into the inside of a good quality silicon fuel tube to the area of the stopper and washer of the tank. This allows you to have one continuous fuel tube from the clunk to the motor and the vent to the outside of the firewall. There will be no more tubes to slip off on hard landings and no more fuel in the radio area.

Here is a simple and effective method of installing a drag brake on any type of airplane, submitted by Gene Goldstein, of San Antonio, Texas. All you need is a steering arm that fits your particular landing gear wire. Slide it on to the nose gear or any wheel that you do not want to roll freely, and then tighten it up. The amount of friction that you want it to have can be adjusted by bending the arm so that it rubs on the wheel. Gene is now using a Du-Bro short steering arm on an Ugly Stik. Now when he wants to stop, he does not have to run it off the runway and risk breaking a prop!



A common method for running out a glow plug lead in a cowled-in engine is to solder a wire to the plug tip. This leads to trouble when making a field replacement of the glow plug. The method discovered by Bub Apgar, of Frenchtown, New Jersey, works out quite well. By soldering a wire to an ordinary snap fastener of a suitable size and then running this wire along with the ground wire from the engine to the external jack, a quick and efficient disconnect from the plug is obtained. The sketch is self-explanatory. Be sure to select a fastener that gives a good tight fit on the plug.





Soaring WITH DON DEWEY

SCALE AT LSF SOAR–LYMPICS

The League of Silent Flight 1971 RC Soaring Tournament will include the first major scale competition for R/C sailplanes held anywhere in the world. The two-day soar-lympics, to be staged at Ted Nelson's "Hummingbird Haven" Gliderport near Livermore, California, on 28 and 29 August, promises a significant turn-out and turn-on of scale enthusiasts.

Scale Class competition will be conducted in accordance with the LSF Rules Proposal for R/C Sailplanes as published for national review in the Mid-May AMA Competition Newsletter. The LSF proposal is consistent with current AMA Scale Rules and Judging Regulations but provides for modifications appropriate to powerless flight.

Static judging of scale models . . . for fidelity to scale, detailing, workmanship and finish . . . is an art unto itself. Models will be presented for judging at 0800 hours, Saturday, 28 August. During the six hours to follow, the board of judges will measure, review, interpret, analyse, compare and, finally, score each scale entry. Except during flight competition, all scale models will be on view in a secured display area throughout the two-day affair.

Judges for the scale event are each nationally prominent in SSA full-scale soaring or R/C modeling activities. At press time, announced panel members are B.S. Smith, immediate past-President, SSA; Carl Herold, noted soaring competition pilot; Cliff Weirick, former AMA President; Bill Northrop, Chairman, AMA R/C Contest Board; and Don Dewey, President, R/C Modeler Corp.

Of the scale models entered, only the ten which are awarded highest static points will proceed to the second step of challenge . . . flight competition. Scale flight events will be the same tasks as programmed for the

non-scale Open Class models. Scale models will fly Saturday's Duration event and the full Sunday schedule for Precision Time, Speed and Duration. As in Open Class, all Scale Class flights will be launched ROG by electric winches. In-flight operational features will then be utilized as required and accordingly scored in actual competition – not just in demonstration flights.

Flight order for the top scale entries will be the last ten flights of each task. This grouping provides the scale devotee full and just recognition for both presentation and observation . . . and will be the camera-phile's delight.

Scale Class entries expected include the American kits of the Schweizer 1-26, 1-34 and 2-32 and many imported kits. A fiberglass Phoebus is known to be well under way as is a fantastic, 16-foot span Darmstadt D-36. Other configurations likely to be represented are the beautiful Swiss Elfe, at least one Nimbus, a T-53, an antique Primary, a Dutch Sagitta, a Diamant, several Foka's and Cirrus's as well as the ASW-15, a Bowlus Baby Albatross, a Briegleb BG-12 and a Cobra. Others are reportedly in work but are behind guarded hangar doors.

Special trophies are being struck to recognize the outstanding craftsmanship and flying excellence of Scale Class winners. First through third places will be presented.

The largest number of participants at the LSF Tournament will be in Open Class . . . 100 pilots flying the greatest variety of R/C model sailplanes ever collected at one meet. Nearly every kit available . . . domestic or foreign . . . and most published designs will be on the field as will numerous originals. Open Class will be an intense competition among scores of the nation's top pilots flying some of the most advanced R/C sailplanes yet developed. The drama and drive of Open Class provides a tournament of true champions, but it will not overshadow the meticulous workmanship, the demanding research, and the near infinite patience represented in Scale.

As in Open Class, Scale at the LSF Tournament will not promote instant success. Rather, the winners will be selected during two very full, long and tiring days of frustrating, nerve-wrecking, pulse-quickening and wonderfully exciting competition.

The LSF 1971 R/C Soaring Tournament . . . America's biggest . . . the world's most challenging R/C thermal soaring competition . . . is co-sponsored by selected commercial leaders who are heavily oriented to R/C soaring: Du-Bro Products, Kraft Systems, Midwest Products, Model Airplane News, Orbit Electronics, R/C Modeler and Top Flite Models. Hummingbird Haven . . . a full-scale gliderport east of San Francisco Bay . . . is available courtesy of Jerry Nelson of Midwest Model Supply Company.

Co-hosts for the 1971 Tournament are the North Bay Soaring Society, Dick Lemme, President, and the South Bay Soaring Society, Chris Cristen, President. Christen is also Tournament Manager. Bob Andris, LSF President, is Tournament Director.

The League of Silent Flight is a world-wide organization of R/C soaring enthusiasts. Membership in the League is open to any serious sportsman. Information about the LSF and the R/C Tournament may be requested . . . with 16 cents return postage included . . . from The League of Silent Flight, P.O. Box 2606 Mission Station, Santa Clara, California 95051.

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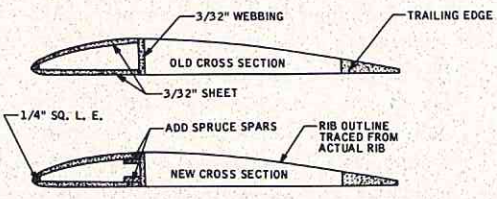
From the Printed Circuit, the monthly newsletter of the North Jersey Radio Control Club, Inc., comes a few notes of interest for sailplane enthusiasts. The Printed Circuit mentions that two of the handiest tools you can have in your shop are the Dremel Moto Shop which will stack saw ribs in short order as well as performing a number of other tasks. The author of the note mentioned that he cut out 32 sailplane ribs in less than ½ hour, which is a feat that you couldn't duplicate with your standard knife while trying to maintain the exact airfoil on each rib. The same jigsaw also cuts plywood without splintering the edges. The second tool is the Razor Plane from Willoughby Enterprises, 14695 Candeda Place, Tustin, California 92680. Priced at $2.00, this is a handy little tool with an adjustable double edged blade which allows fine or coarse cut for trimming balsa, soft woods, or styrofoam. It is die cast in a bright metal finish and comes in a plastic case with five extra blades. One thing it won't do is chew up the wood as have similar products we have used in the past. The Printed Circuit also suggested a modification for the Monterey sailplane which incorporates spars in the wing so that it will withstand strong winch launches on windy days. What is required is some ¼" x 1/8" x 48" spruce, two to each wing, which will make the panels immensely strong, allowing you to bend the steel rod into a "U" before the panels, themselves, will break! Be sure not to leave the webs out for, if you do, a wing foldup will be the result!



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While we're on the subject of new products, I'd like to mention the

Jansson Thermal Sensor, which we are using with a great degree of success. This is a commercially produced, crystal control, lightweight telemetry sensor with transistorized modern circuitry. Packaged in a small crash resistant container, it has a current drain lower than most R/C receivers and provides a range of over one mile. Designed by Dick Jansson, the Jansson Thermal Sensor Model GTS 1 broadcasts barometric pressure changes (thermal air) by a variation in tone. As an example, a low tone indicates that the sailplane is descending, while a high tone indicates that it is ascending. The audibly detected tone stabilizes at about 1,000 Hz and increases (or decreases) at three feet per second rate of change. The circuitry has been dampened to nearly eliminate "stick thermals" generated by the ground based pilot. It will broadcast thermal activity before the effect of rising air on the airborne glider is visibly detected. Therefore, the alert R/C glider buff can really sense thermals by the variation in tone audible through the ground based receiver. This unit will also serve as an actual direction finder in case of a downwind loss of your sailplane. If connected to the airborne battery pack, it will broadcast continuously until the battery is dead, which is about 8 hours on a 500 mah nickel cadmium battery. On our Kraft proportional system, we simply purchased a separate male servo plug from Kraft Systems and wired it to the end of the thermal sensor battery leads. Thus, the Thermal Sensor simply plugs into one of the unused servo holes on the receiver. A separate 250 mah battery can be used if you don't mind the extra weight. Furnished with a pocket sized portable AM/FM Receiver with ear plug and nine volt battery the price is $95.00, while the Jansson Thermal Sensor without matching AM/FM Receiver is $75.00. The unit is 1-5/8" in diameter by 1½" long and weighs 1½ ounces. It has a 35 mah drain and transmits on any one of the following frequencies: 146.385, 146.565, 146.745, 146.925, or 147.285 MHz. You will note that this is on the two meter and amateur radio band and a Technician Class License is required. Be sure to state the frequency preferred and allow two weeks for delivery. The Jansson Thermal Sensor is available from Willoughby Enterprises. It is our conclusion, after using this unit, that we would purchase the Thermal Sensor without the matching receiver since we have found the Lafayette Radio Electronics receiver listed in their catalog to be a more sensitive unit than the one available with the Thermal Sensor.

17 year old Paula Carson holding Orange Julius built by her father, Dick, from RCM plans. 4 hours slope and thermal time on O.J. at time of photo.

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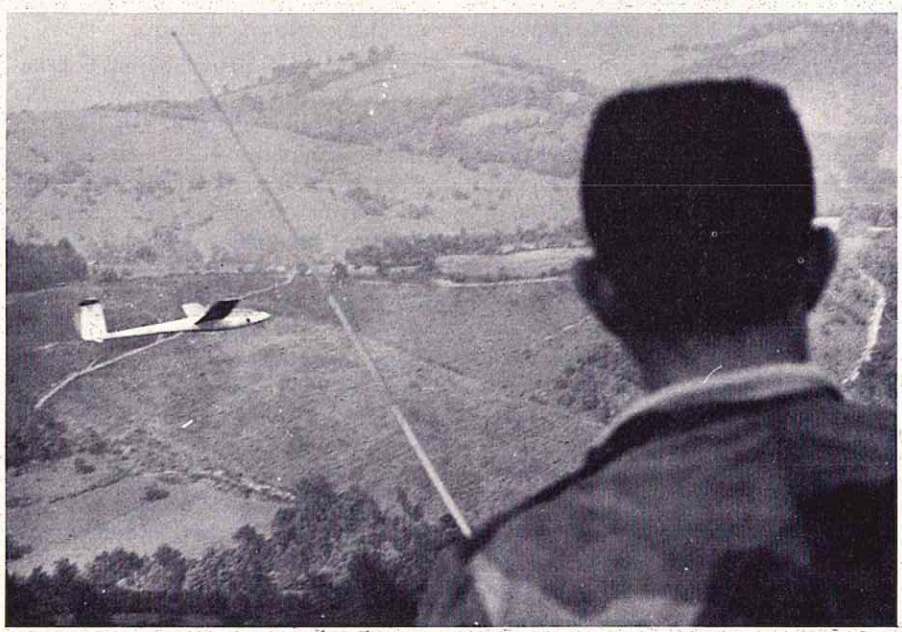
Dick Carson, of Spokane, Washington, has sent us the photo of his Orange Julius built from the plans in the March RCM. According to Dick it really "flew right off the board." His first flights were by winch tow with subsequent slope soaring revealing the need for ¼" washout on the last 12" of the wing. As of June 1st, it had about 4 hours of thermal and slope time using a German Simprop proportional system on 27 MHz. Dick covered his O.J. with red MonoKote on the wing bottom and fuselage with blue on the top and, of course orange tail feathers. The hatch screws in place but ended up with some tape over it in the picture to keep it tight since Dick "bulged" the nose slightly in a landing just before picture taking time. As an AMA Contest Director, Dick mention-

Raymon Brogly, of France, setting a world record in the closed course distance category with a distance of 322.2 Km. Time to accomplish record was 6 hours, 51 minutes. Glider is a stock WIK Kestrel kit, available in the U.S. from Midwest Model Supply Company.



ed that he just finished conducting the first AMA sanctioned contest with LSF rules for sailplanes in the Northwest. Sponsored by the Baron's Model R/C Club of Spokane, Washington, Dick noted that there were four sailplanes built from RCM plans – an Orange Julius, A Slopemaster, and two Windsongs – all of which did well and placed in various tasks of the two day meet.

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Jerry Huben, of Los Angeles, California, chose to build a T-tail glider and investigated other such designs concerning the elevator hook-up but none of them seemed to be simple enough. After some experimentation, Jerry came up with the idea shown in the sketch which eliminates bellcranks and has minimum of friction. The idea has proven to work quite well in the air.

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David Crutchley, of Bloomington, Illinois, sent in the sketch of the method for attaching canopies to your sailplanes. The hinges used are standard Du-Bro type and the entire project takes only a few minutes if you use Devcon 5-Minute Epoxy.

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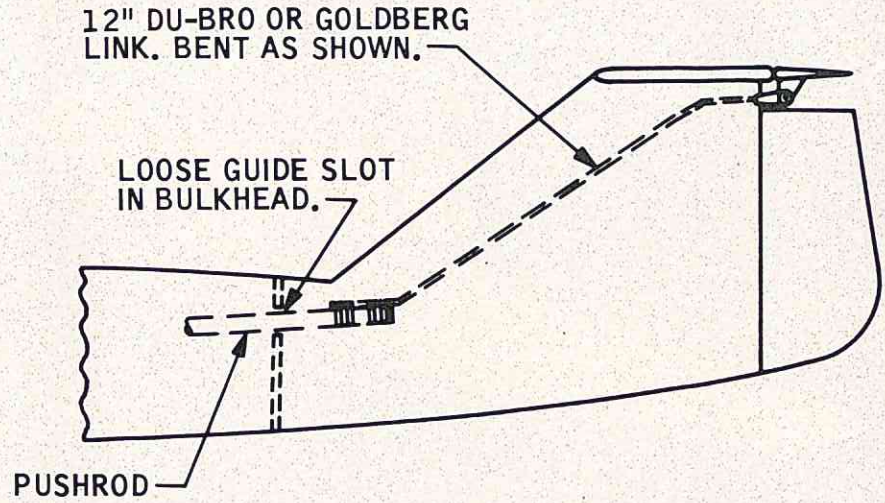
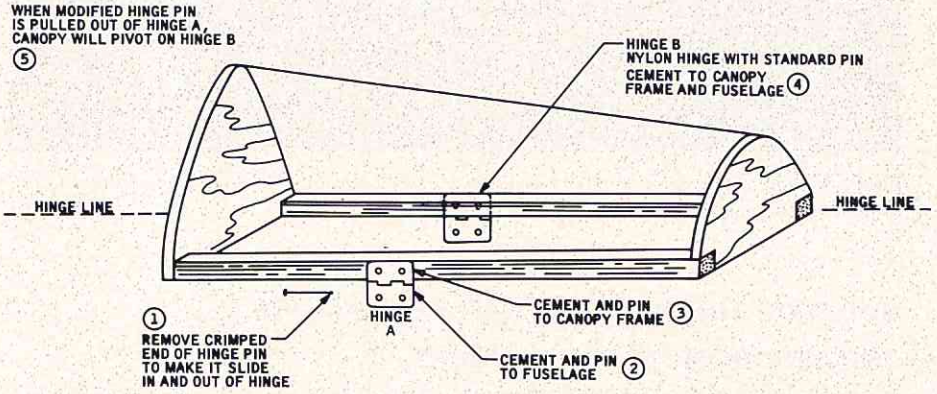
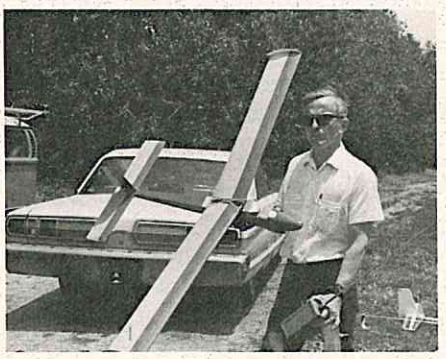
If you suffer from being unable to time your sailplane flights, try sticking a car parking timer or stopwatch on your transmitter case with servo tape, an idea submitted by C.K. Tse, Hong Kong, China. The sketch should be totally self-explanatory.

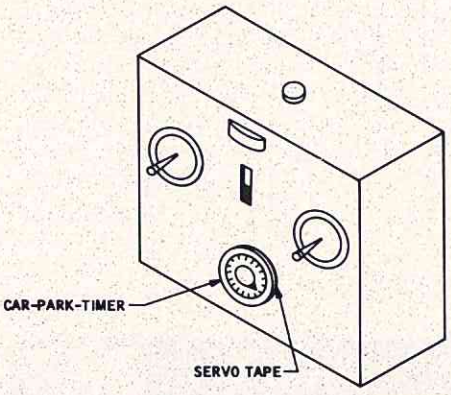




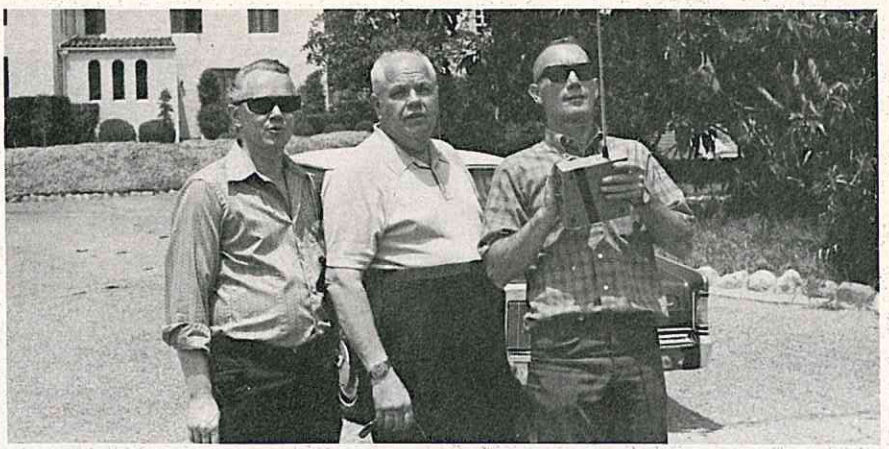
Lee Renaud with his precision event winning Mini-Olympic. Kit by Airtronics can be built in 75 minutes!



Hans Kunske with 'Flowerkraut,' ready to go off the Hi-Start. 'Flowerkraut' is modified 'Dandy.'



Paul Runge of Ace R/C, flies Don Dewey's thermal sailplane.



Bill O'Brien, far right, sets up trim on a Cirrus as Bev Smith of Hobbypoxy, center, and Don Dewey look on. Bev experienced full size sailplane pilot as well as RC'er.

Bernie Murphy's son, Don, about to walk out the Hi-Start for that first flight. Why doesn't somebody put a handle on this thing?

BUILDING THE MODEL DYNAMICS 'GRYPHON.'
TOP AEROBATIC SLOPE MACHINE
CAN ALSO RIDE FLAT LAND THERMALS - - - - INVERTED!

The Gryphon slope soaring glider from Model Dynamics, P.O. Box 2294, Orange, California 92669, is an unusual aircraft, in that it is basically a flying wing, with the fuselage serving only to facilitate proper balance and house the receiver and power supply. The Gryphon is a swept wing design, spanning 71", with an area of 965 square inches, and a fully symmetrical airfoil. The design, as a result, is quite aerobatic, being capable of loops, rolls, inverted flight, etc., yet its light wing loading (5.5 oz./sq. ft. @ 2.5 lbs. total wt.) will allow it to fly in low lift with excellent low speed characteristics. Control of the Gryphon is via elevons, which function as elevators and/or ailerons, and requires two servos for operation.

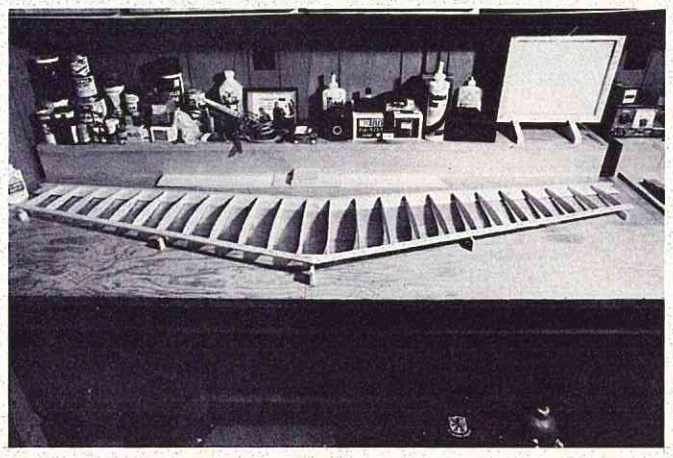
Construction of the Gryphon is a pleasure for several reasons. First, the quality of the kit is excellent, with top grade wood, and accurately cut parts that FIT! Second, the kit is one of the most complete that we have seen. Only two things need be added to finish the ship "ready to fly" – Radio and Covering, all other materials are supplied. Third, it can easily be completed in a weekend, or better still, a week of evenings (leaving the weekend for flying).

Constructional design of the Gryphon is unusual, in that no full-size plans are supplied, and we must admit, are not needed! Very explicit and well done instructions are supplied, making assembly a simple task.

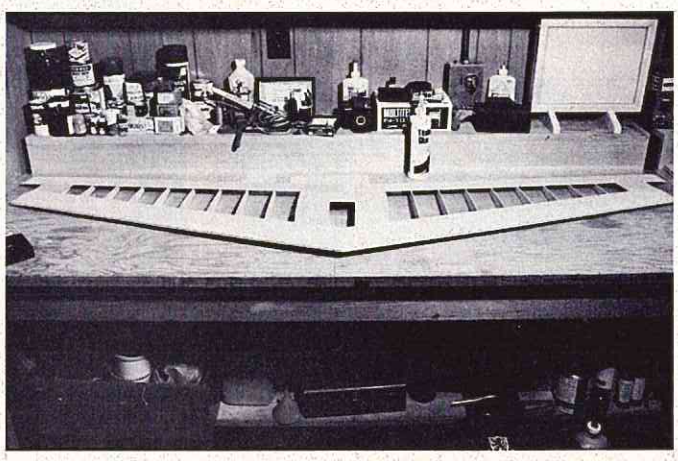
Let's take a look at how the Gryphon is built. You will need a building surface six feet by two feet, since the wing is assembled in one piece. Two lines must be laid out on the building surface, on which the entire ship will be built. These lines represent the wing trailing edge. The leading edges must be trimmed to a triangular cross section before beginning actual assembly. This is the only construction point that could be improved, but since it is a tapered leading edge, it would be difficult to machine.

The bottom trailing edge skin (1/16") is pinned to the table, along the two lines. The notched trailing edge is then glued and pinned to the sheeting. The centers of both the sheeting and the edge are angled so that they join in the center. At this point, the ribs and leading edge are added, leaving the center joint of the leading edge unglued. By this time, the glue between the trailing edge sheeting and the trailing edge should be firm enough to allow the pins to be removed, leaving only those along the extreme trailing edge. The leading edge is now blocked up, using balsa blocks included at five points along the edge. With the wing in this position, the

Basic structure, ribs with leading and trailing edges.

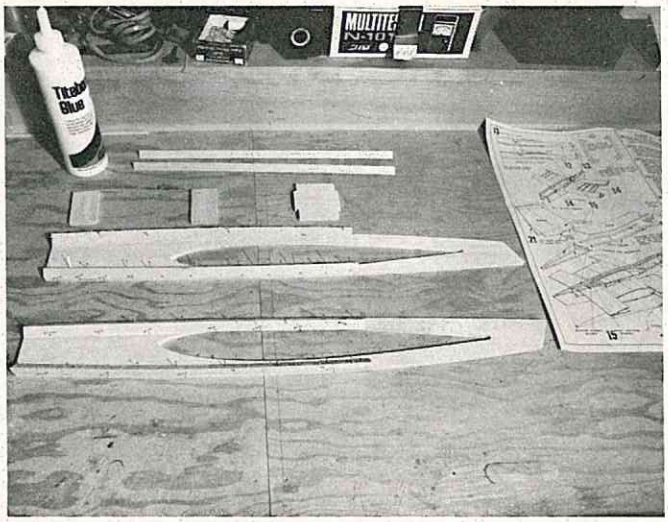


Bottom wing sheeting has been added.

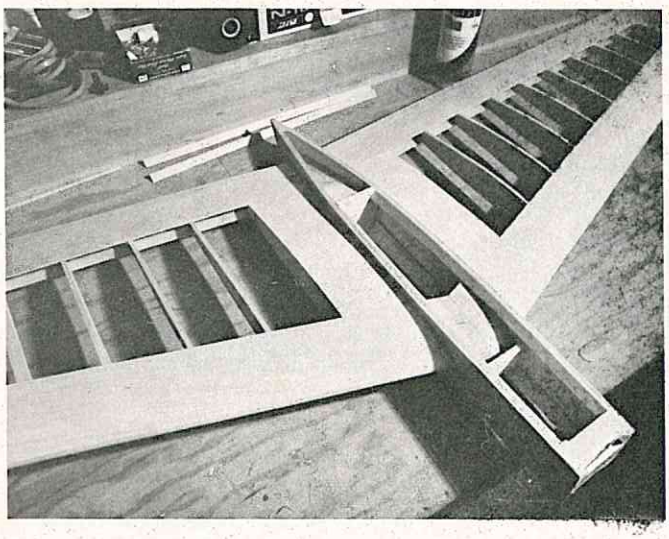


The Gryphon wing is jigged on blocks while the top sheeting is added. Tip blocks in background.

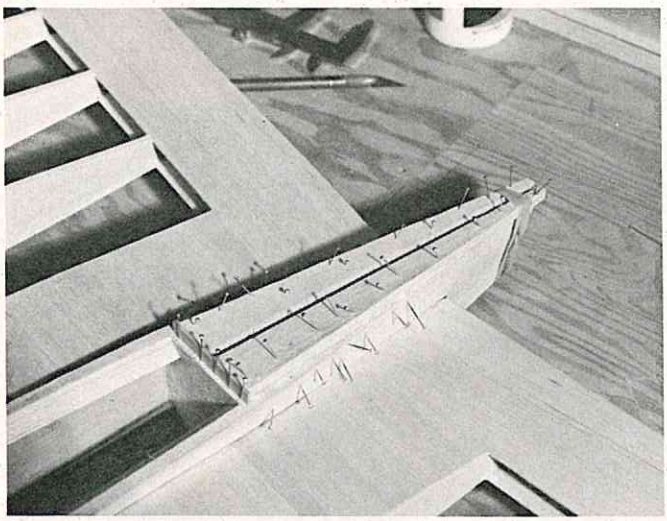
Here we see the addition of the tip blocks, leading edge cap, and cap strips, which completes wing structure.



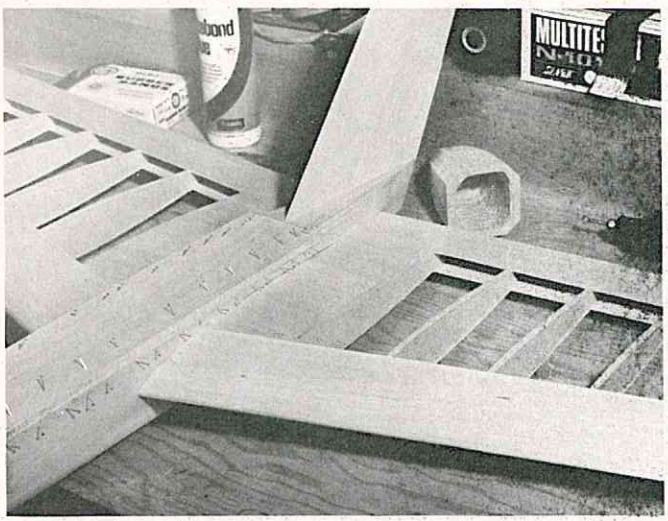
Carving angles (triangular stock) has been added to the fuselage sides, both left and right.



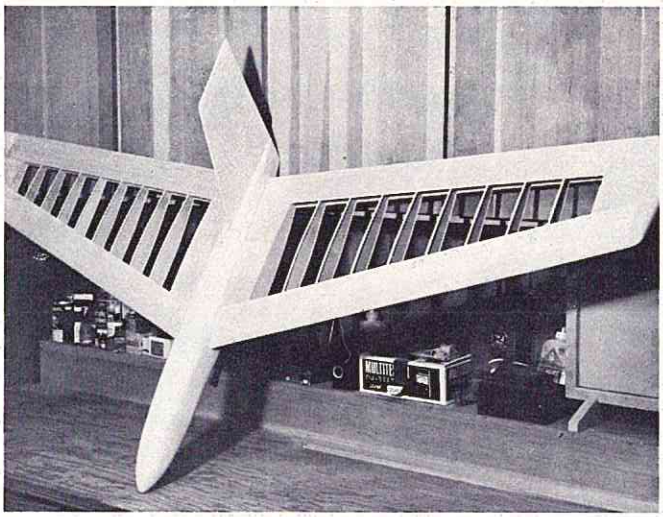
The sides are then installed and glued to the wing. Note the temporary front spacers to aid in correct alignment.



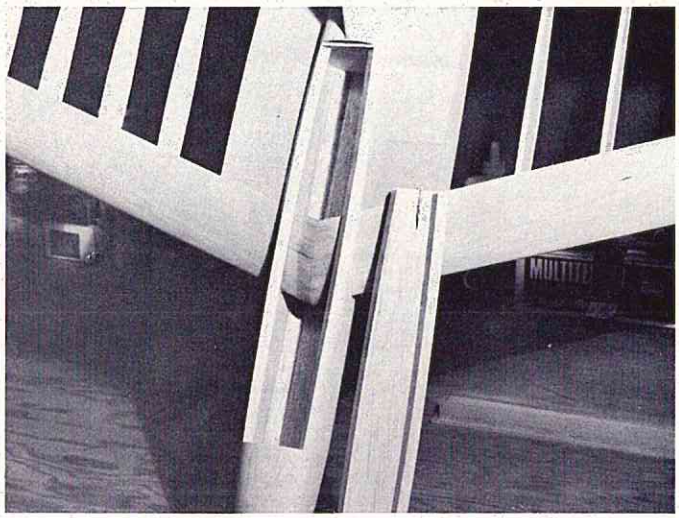
The rear fuselage blocks, as well as the rudder deck and bottom, have been installed. Lots of pins are necessary!



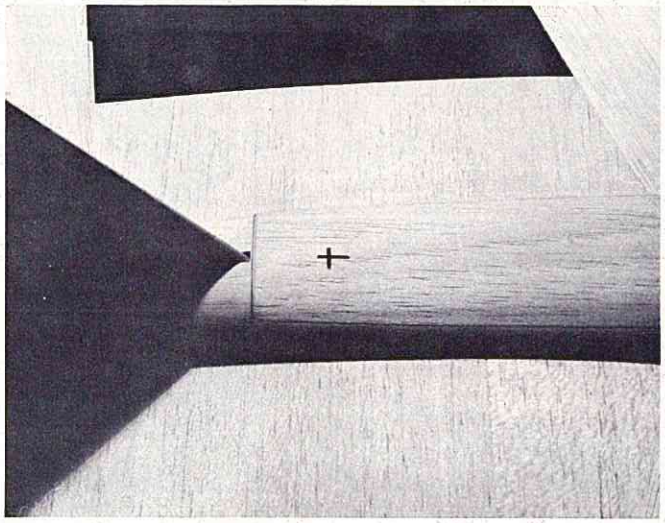
Now the hatch is glued in place and the nose block hollowed out. The rudder is only positioned, but not yet glued in place.



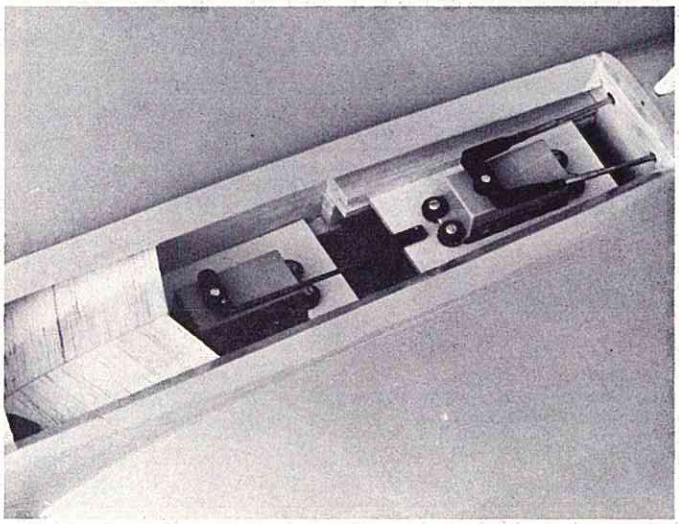
The Gryphon has been carved down and progressively sanded smooth, ready for orange Solarfilm covering. Light, perfectly fitted structure.



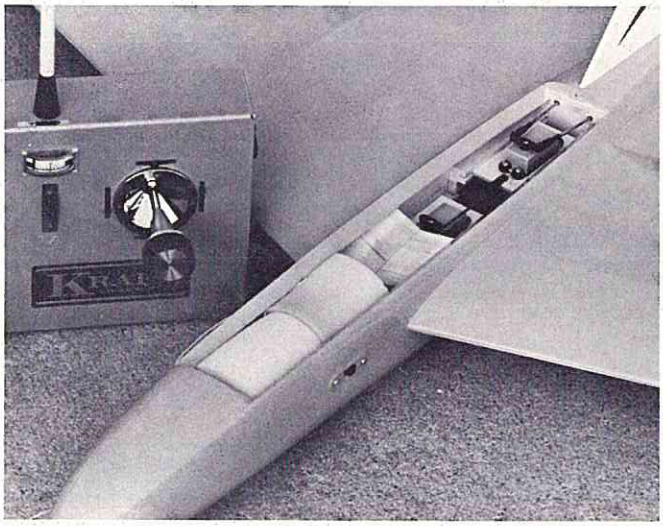
Hatch releases from the fuselage structure as you shape it. The angles form a seat for replacing.



A simple pin and tubing latch holds the hatch firmly in place. Easy to remove.



The Gryphon provides adequate room for a simple and neat radio installation. Forward servo slides rear servo back and forth for elevon action.



Another view of the Kraft installation with single stick transmitter in background.

Young Murphy tries again, even if Bernie did hook the wrong end of the Hi-Start to the Gryphon! How he ever made LSF, we'll never know!

leading edge centers are glued together, and the dihedral block added. This assembly should be allowed to dry.

The wing is now removed from the building surface, and turned over, bottom side up. With the wing laying free (unpinned), the leading edge, center and tip sheeting is installed to the bottom of the wing. As soon as this sheeting has dried sufficiently to allow the removal of the pins, it can be turned over and set back on the jigging blocks, and the top sheeting added. At this stage the wing must be allowed to dry thoroughly.

The addition of cap strips, leading edge cap, and tips, completes the construction of the wing. It should now be sanded smooth, and a 1" wide glass cloth epoxied over the center section joint for reinforcement. The wing should be checked for warps – if constructed as directed, there will be a small amount of dihedral, with no wash out in the tips. Work carefully, as there is no way to remove a warp, short of removing the sheeting and reinstalling!!

The fuselage is built directly onto the wing. First, triangular carving angles must be glued to the top and bottom edges of the sides, being certain to make a right and left side! The sides are slid onto the wing, with a single former in the wing center section. Two supplied spacers are used to position the forward portion of the fuselage, while the rear section joins together. The fuselage sides are glued to the wing and former, while held in this position, and allowed to dry.

Carving angles are added to the rear of the fuselage, followed by the rudder deck and fuselage bottom. While this is drying, the balsa nose block can be hollowed out. A Dremel Moto-Tool is a handy thing to have for this operation. The nose block must be hollowed to allow the batteries to be carried far enough forward. Although the instructions call for the addition of the nose block at this point, we chose to leave it off temporarily, rather adding the hatch. Careful attention must be paid to the instructions when installing the hatch, or you could end up with a non removeable hatch – makes radio installation difficult to say the least. The hatch carving angles are pinned to the fuselage carving angles, then the hatch is glued to the hatch angles and the fuselage sides. When done per the instructions, carving to final shape will release the hatch from the fuselage. A side advantage of this technique is the assurance that the top of the fuselage will be adequately carved, not left as a box. Once the hatch is in place, the front of the fuselage can be sanded flush, and the nose block added, being careful not to glue it to the hatch.

While the fuselage is drying, the rudder parts can be glued together, and the elevons sanded and fitted. The fuselage can then be carved and sanded to final shape. This will release the hatch, and it can be fitted with its retainers.

The radio installation is simplified by the fact that the servo mounting trays and the slide rails for the aileron servo tray are all supplied. Both the elevator servo and the aileron servo operate the same elevons. The elevator servo must make them both work up or down simultaneously, while the aileron servo must operate the elevons in opposite directions. This is accomplished by mounting the aileron servo on a movable tray. The elevator servo is mounted forward of this tray on a fixed tray, and offset to the side so that its output is in line with the center of the aileron tray. A link is tied from the elevator servo to the movable aileron tray. Operation of the elevator servo cause the entire aileron servo to move forward or aft, working both elevons in the same direction. Operation of the aileron servo works the elevons as strip ailerons, and is independent of the elevator servo position. Thus, it is possible to get up and left or right at the same time. The installation as shown with the kit works perfectly, and all of the necessary wood parts and linkages are supplied (sorry, no radio).

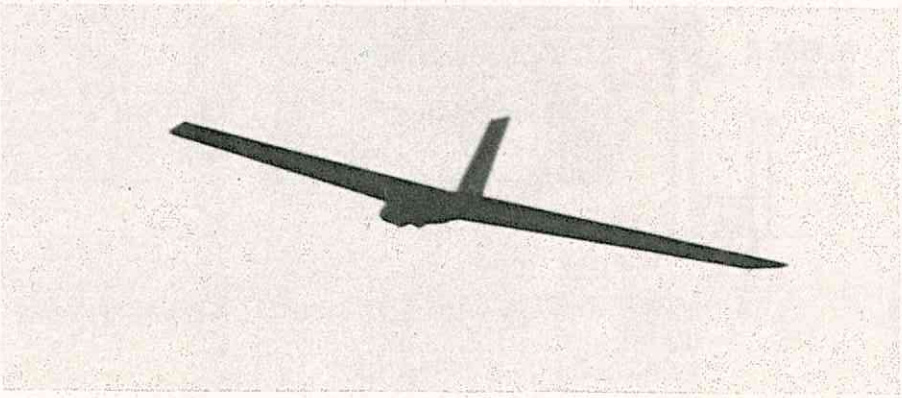
Our ship was covered with orange and white Solarfilm in the interest of saving time. A Kraft System was installed using the smaller KPS-12 servos, and the square KB-4A battery, mounted in the nose block. This brought the balance point of the ship exactly where indicated on the instructions.

Since there is no slope suitable for soaring close enough for a couple of quick test flights, a tow hook was fitted for a towline launch. Due to problems with the towline, and lack of sufficient space at the field, the initial flights were very short, under one minute, from an altitude of 100 feet or less. The flights were enough to check out the responses and glide characteristics of the Gryphon and fire our desire to really see the ship in action. Later the same day, it was decided to try it again, only instead of going to the local flying field (where our towline was not particularly welcome), we would try the nearby school athletic field.

It had been some time since we had flown from this field, and we had forgotten the lay of the land. Here was our slope!! The school sits on the top of a steep slope, about 60 feet above the field, and the wind was blowing dead into the slope. The Gryphon was towline launched from here into a light wind. Light Wind + Small Slope = Low Lift. To our surprise the ship was capable of riding the light lift of the ridge and maintaining and gaining altitude. A limited number of maneuvers were attempted, loops, rolls and inverted flight, with no problems at all. We are now anxiously awaiting the opportunity to try the ship on a high lift slope where there is power to spare.

The Gryphon is a fun ship for slope soaring. The kit is complete and easily built. The materials supplied are of top quality, as is the design. If you haven't tried slope soaring, here is a quick and exciting ship that can have YOU on the slope in a very few hours. Remember, you don't need a cliff for slope soaring – any fair sized hill with the wind blowing toward it will do. The Gryphon, priced at $34.95 has been Tested, Approved and Recommended by RCM.

See YOU on the slopes next week?



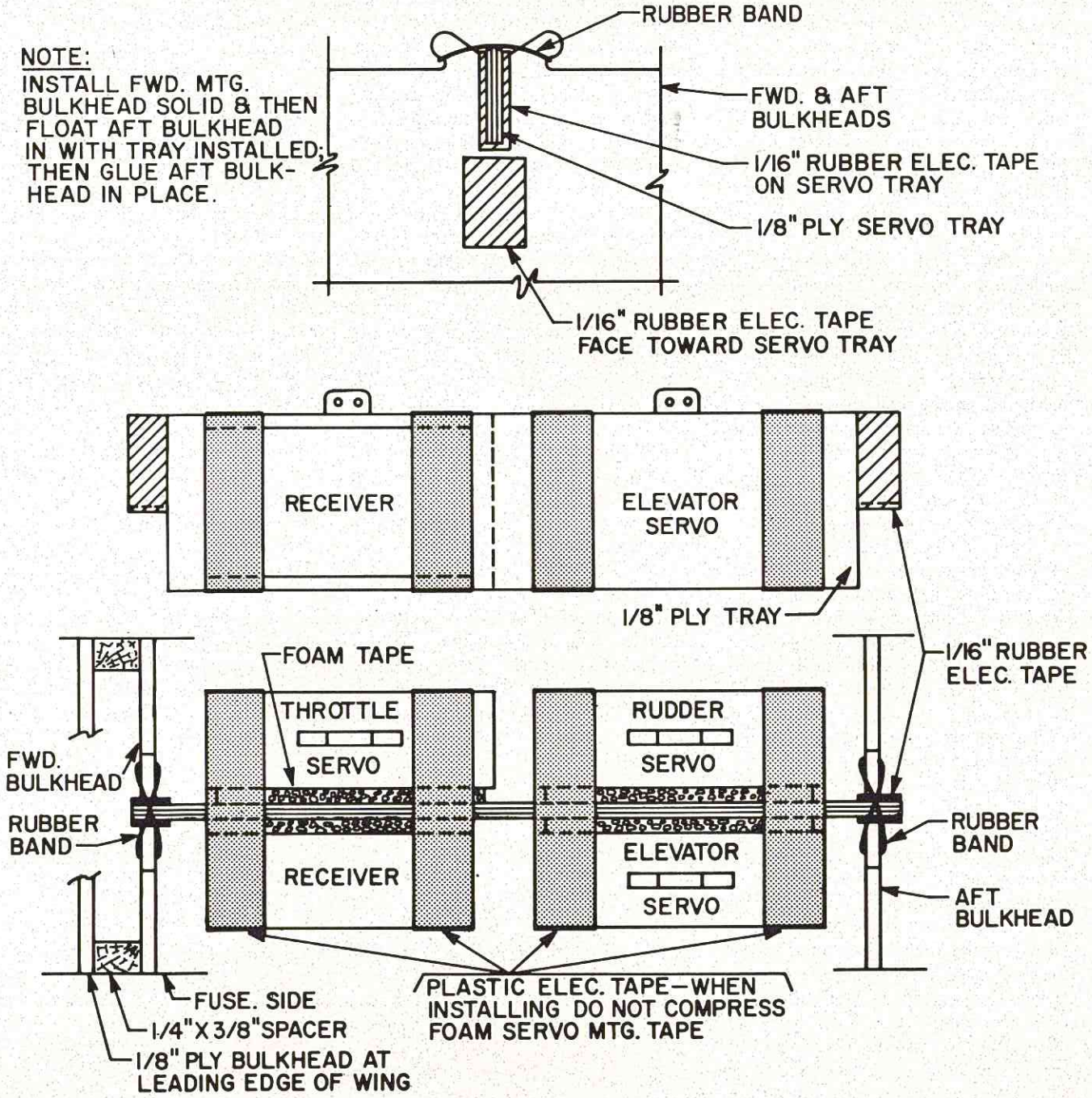
QUICK CHANGE SERVO TRAY

A VIBRATION DAMPENING SERVO MOUNT WHICH CAN BE EASILY MOVED FROM ONE AIRCRAFT TO ANOTHER.

BY AL NOREN

REPRINTED FROM MC DONNELL R/C CLUB 'CARRIER WAVE'

When I purchased my Bonner 4 RS System three (3) years ago and started to mount it in my airplane it became quite apparent that a lot of work was involved in order to mount the equipment properly. The method of mounting that I came up with was to use a 1/8" vertical tray mounted on the fuselage centerline. This tray is mounted on 1/16" rubber tape padding and the servos are mounted with 1/8" double back tape. This provides a double vibration dampening mount which can be changed from airplane to airplane in a matter of minutes. This system of mounting is in its third year of use and at present I have yet to have a single failure in my airborne equipment. This method of mounting has withstood two (2) vertical crashes, one of which resulted in the complete disintegration of the fuselage forward of the wing and the equipment remained in place and intact. This system of mounting is simple and can be easily adapted to most radio control systems available today.



R/C MODELER MAGAZINES

FLIGHT TRAINING COURSE

PREFACE

A truly phenomenal growth in radio control over the past few years has brought with it its own complex of problems. One of these is the unprecendented influx of newcomers to our hobby and sport. While this is beneficial to the present and future growth of the hobby in general, it has created a situation, during those years, of an industry that was, and still is, to some degree, unprepared for the novice RC'er with little or no flying background. This is evidenced by the many magazine construction articles in this and other publications that contain the oft-repeated phrase, "This is not a beginners project," or such statements as, "The construction of this aircraft is straightforward." In addition, the majority of kits on the market today, including the so-called "trainers," do not take into consideration the case of the "pure beginner." More often than not, these "trainers" are intended as a first vehicle for the modeler stepping into R/C, rather than for the non-modeler whose first R/C aircraft will, in fact, be his first modeling venture.

It is certainly true that no hobby publication can be expected to present material each month for the "true beginner" to the exclusion of the experienced and veteran enthusiast. Nor can the kit manufacturers be expected to have a comprehensive flight training manual included with each kit – either one would be economically impractical.

This leads us to another problem – the endless array of construction articles, kits, and radio equipment available to the new RC'er. He is expected to make a choice, and if his choice is wrong for him, he will encounter a great deal of disappointment and frustration, rather than success, in his attempts to get started in the sport of his choice. This quandry in which the novice finds himself is evidenced in the hundreds of letters we receive from beginners each month. These letters literally plead for specific recommendations as to a choice of first airplane, engine, and radio equipment. And, although we have made general recommendations in RCM in the past, it is apparent that more specific recommendations be made. This, then, will be the first installment of the 1971-1972 RCM Flight Training Course which will present a tested and proven program that will literally guarantee you, the newcomer, a relatively high degree of success in building your first aircraft and, subsequently, learning to fly that aircraft. This is, certainly, not the only way to learn to fly – one that is based upon the combined years of experience of a great many people as well as one which eliminates as many pitfalls as possible. The early articles in the series are intended for the brand new modeler and RC'er with subsequent articles designed not only for him, but for the many newcomers to R/C who have not as yet soloed and for the countless others who are experiencing difficulty in learning to fly. The objective is to teach you to fly, with RCM as your instructor. You will be given a thoroughly field tested aircraft on which to learn. You will be shown a professional way to learn to fly with proportional control, using the assistance of one of the more advanced fliers in your local area if one is available to you. As you gain confidence and proficiency, you will be shown how to upgrade your training aircraft to keep pace with your abilities. In short you will learn how to fly radio control. At the conclusion of this series, the RCM Flight Training Course will be available as an RCM Anthology Library Book.

CHAPTER I
WHAT IS RADIO CONTROL?

Radio control, called "R/C" by it's devotees, is the remote control of a movable vehicle by radio. In military technology they are also referred to as RPV's, which, translated, means "Remote Piloted Vehicle's."

Operating on assigned frequencies, and under license by the Federal Communications Commission, radio controlled models range from the simplest form of aircraft, car, or boat, to others that are elaborate beyond description. For example, the novice flier entering this hobby might choose a simple model with a 30" wing span and a tiny engine that weighed only a few grams but develops over 20,000 rpm. This model might be controlled by only one function, such as the rudder, yet it is capable of many basic maneuvers such as climbing, diving, and simple loops and rolls. On the other extreme are the 150 mph replicas of the famous full-sized Goodyear midget pylon racers. Weighing approximately 5 lbs., these small true-scale aircraft compete against each other at phenomenal speeds around a triangular course marked by three tall pylons. The skill of the pilots, and the finely tuned engines that pull the racers around the pylons in close proximity to each other, attest to the highly developed skills of the advanced R/C racing enthusiast. Or, you may see a single individual at the contest performing a prescribed aerobatic pattern with the precision, finesse, and grace that comes only with experience. Behind him are three judges scoring each and every maneuver on a 1-10 point scale. Upon completion of his performance pattern, another pilot takes to the air and, although alone, is competing against each and every contestant by striving to perform the elusive "perfect" aerobatic pattern.

During the same contest you may see judges with scoreboards in their hands, examining the infinite detail of exact scale replicas of full-sized aircraft representing every period since the very beginning of aviation. Some of these scale models are so intricate that they are complete down to the most minute detail. It is not uncommon for a scale modeler to have individually positioned 20,000 simulated rivets on a WW II fighter or duplicated to the last and most perfect detail the exact color of the camoflauge scheme of the plane after which his model is patterned. If you look closely, you will see a completely detailed cockpit with seat belts, instruments, and a miniature pilot complete with parachute, harness, and goggles. When the judging is completed, the individual modeler must demonstrate the flying ability of his creation which, too, must be in keeping with the scale flying characteristics of the full-size aircraft after which it was patterned. After possibly 1,000 hours of work on a model you might wonder how the flyer would have the courage to actually jeopardize his model by putting it in the air and flying the prescribed Scale Pattern. But, it's all part of the sport and hobby.

Other types of radio control contests are held throughout the world, and one of those gaining increased popularity is radio controlled sailplanes. These may, or may not be, exact replicas of full-size sailplanes, and the models, themselves, range from 4-16' in wing span. Whether launched from an electric tow winch, manual Hi-Start, or launched into the face of a slope soaring ridge lift, the challenge to R/C soaring enthusiasts are the invisible and elusive currents that they seek in order to stay aloft. Various forms of competition take place with radio controlled sailplanes including endurance and altitude attempts, precision events, speed attempts, cross country record attempts, and pylon racing.

The sport of radio control provides the outlet – the vehicle, if you will – through which each of us can become a sportsman and enjoy the fruits of our own creation while progressing from an amateur or novice to a highly competent and skilled sportsman or competitor. It provides us with the enjoyment of individual craftsmanship and creation as well as the immense inner satisfaction and enjoyment that comes from the exact response of a machine to our every control. It provides us with an indescribable sensation of seeing our creation respond in its element, be it air or ground, to our every movement of the control stick. It appeals to the technician and craftsman as well as to the non-technically inclined. If your interest lies in the area of tools and a workshop, and the creation and construction of a precision machine, radio control is for you. If you simply want to enjoy the excitement of seeing your own model fly and respond to your control, R/C is for you, as well.

It doesn't matter what your background or your previous fields of interest have been. It doesn't matter whether you wish to strive for the last bit of performance from a competition aircraft, aerobatic or scale model, or simply want to fly around for an hour or two on the weekends, there is something of interest for you in the field of radio control . . . a place for you to express you own individuality and creativity; to challenge your imagination; to offer you a heretofore unknown freedom of expression and judgement . . . a path for you to follow according to the dictates of your own interests.

In the subsequent installments of the RCM Flight Training Course, we will attempt to delve into every aspect of building and flying your first radio controlled model starting with the basic terminology used by RC'ers, and confusing to the newcomer, elementary aerodynamics, the description and functions of the various types of control systems, the types of sport and contest aircraft, as well as general and specific building and flight instruction. But, for this first installment, we will attempt, very simply and in an elementary nature, to explain how radio control works.

Quite simply, the sport of radio control consists of three basic elements. The first is a proportional radio system. The second is a vehicle which is controlled by that system. The third, and most important element is **you**.

It does not take a knowledge of

electronics, not even a fundamental one, in order to participate in this hobby and sport. The radio control systems commercially available today are precisely engineered examples of outstanding electronic craftsmanship produced by manufacturing companies owned and staffed by active radio control participants. Each system is designed for maximum performance and minimal maintenance. Although an over-simplification, the radio control system is, basically, a digital computer. The small hand held transmitter can operate many functions depending upon the number of controls it features. Operating on the 27 MHz, 72-75 MHz, and 6 meter amateur frequencies, the transmitter transmits the signal to the model that is under its control. By moving the control stick, or sticks, the signal is carried to the vehicle and the vehicle responds instantly and proportionately to the amount of control given by the operator – thus, the term proportional radio system.

In the vehicle, itself, is a receiver-decoder, a battery pack, and one or more electro-mechanical servos. The receiver receives the signal transmitted by the transmitter and this signal is decoded and sent to the proper servo. The latter provides the physical energy to move the control surface. The entire system is powered by a re-chargable nickel cadmium battery pack contained in the aircraft itself.

Now, let's take an example of how it all works. Let's assume that you have a fully aerobatic competition pattern aircraft. In the nose of the airplane there is a small internal combustion engine capable of producing up to 1½ horsepower, yet weighing no more than a pound. Behind the engine, in the model, is a fuel tank carrying up to 12 oz. of a specially blended commercially available fuel. After starting the engine, either by flipping the propeller by hand, or by using one of the commercially available electric starters, the RC'er pulls the throttle lever on the transmitter to the idle position. The engine on the aircraft, which may have been turning 12,000 rpm when it was started, responds exactly to the operator's control and drops down to its idle speed of approximately 2,000 rpm. In between full throttle, and full idle, is a complete range of throttle speeds corresponding to the movement of the throttle lever on the transmitter.

On the front of the transmitter is a control stick that is available in various configurations dependent upon the preference of the individual RC'er. If we move the primary stick up or down we will see the elevator on the model aircraft respond exactly to the amount of movement given by the hand on the transmitter stick. If we move the stick to the right or left we will see the ailerons on the wing of the aircraft move in accordance with the amount of movement given at the transmitter. If we move the rudder lever to the left or right we will see the rudder of the aircraft move proportionately to the amount of control given by the operator.

This is what is meant by proportional control. This finely engineered piece of digital electronic equipment allows the pilot to move the control surfaces of his aircraft simultaneously and proportionate to the amount of movement on the control stick of the transmitter in his hand whether the airplane is at rest in front of him or flying through the air some distance away. The range of these systems is up to 4 miles although it would be totally impractical to fly that far away, since we could not determine what the aircraft is doing due to our limited vision.

The more complex systems have auxiliary controls for the operation of retractable landing gear, brakes, flaps, sky writing, parachute dropping, and virtually any other feature you wish, limited only by your imagination and the number of controls available to you.

A radio controlled sailplane uses the primary control surfaces such as ailerons, elevator and rudder, and sometimes flaps and/or spoilers, the latter two devices being used to bring the sailplane down from areas of strong lift. Only the engine is not used in a radio controlled glider.

Advanced R/C enthusiasts with similarly advanced technical abilities, have developed fully operable radio controlled helicopters that perform exactly as their full-scale counterparts, being able to hover, and ascend and descend vertically. Radio controlled autogyros and dirigibles have also been flown experimentally during recent months.

If this issue of R/C Modeler Magazine is the first that you have seen as a complete newcomer to the sport and hobby of radio control, your first reaction to the majority of the material contained within it would be one of interest and excitement as well as another of complete confusion concerning the terminology used and the seeming intracacies and complexities of this sport. The same holds true for any sport or hobby whether it be bowling, golf, photography, archery, or guns and shooting. It is very much like the first day on a job – the amount you seemingly have to learn appears to be overwhelming! But as each day progresses the job becomes simpler and the jargon more understandable. The same holds true in any sport or hobby – you have to take the first step, and each succeeding step becomes easier and easier, until the original complexities become part of your own experience and storehouse of knowledge. Thus, this Flight Training Course is devoted to you. It was designed by the editors of R/C Modeler Magazine and its contributing editorial staff to answer your initial questions, to provide you with the basics and fundamentals of this hobby and sport, and to take you through a step-by-step process of learning to build and fly your first radio controlled aircraft. Although you will find a great majority of the material in other sections of this publication exciting and interesting, we urge you to read it, attempt to understand what the author is saying, and then to simply file the material away for future use. Please confine yourself to this section of the publication, since the first inclination, and the greatest single mistake of every beginner in R/C, is to envision his first radio control project as a full-scale, four engined B-17 bomber complete with retractable landing gear, operating flaps, and the like! And it is at this point that most beginners find themselves confronted with failure and frustration rather than success. It is at this point, too, that the same beginner drops out due to that frustration and failure and never enjoys the challenge and excitement that this hobby and sport has to offer you. We cannot emphasize too strongly the importance of learning the fundamentals, building the specified trainer and following this course step-by-step. If you do, you will soon find yourself a proficient novice flier ready to pursue whatever facet of R/C you have decided to encompass with your scope of interest.

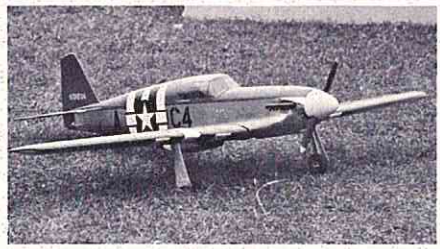
We welcome you and, all of us – the Academy of Model Aeronautics, the R/C clubs, the hobby shop dealers, and each and every individual extend to you a sincere and warm invitation to join us in the worlds most challenging sport and hobby. □

TOP OUT

JERRY KLEINBURG

The flight line – Whirlwinds 1st Annual contest was well organized, had dedicated effort by SW Michigan RC'ers. Pattern and "Stand-off Scale" flown.

Bill Johnson had a top scale entry at Whirlwind meet. Chipmunk outstanding in RCM Stand-off Scale event.



P-51 was Dave Platt entry in scale in 1st Annual Whirlwind contest. Ship placed 2nd, CD, Chuck Ellis, reported.

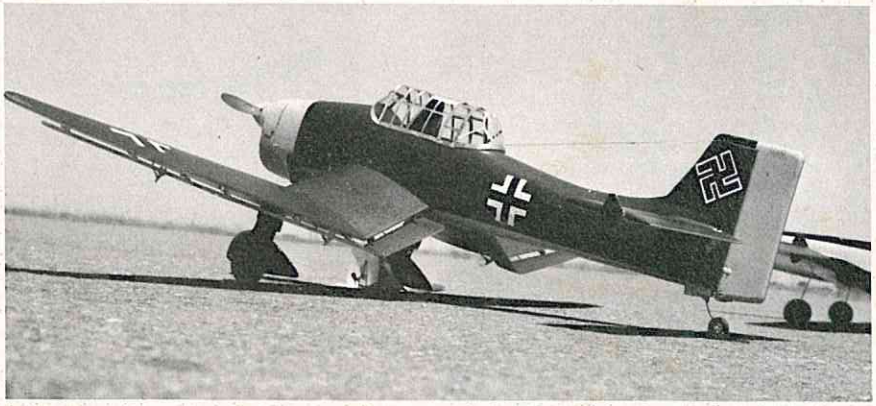
Winners galore – Plenty of hardware and prizes for best scores in Pattern and RCM Stand-off Scale in 1st Annual Whirlwind meet. Jim Grier, 1st in CX, left early . . . . .

"How about more frequencies . . . "

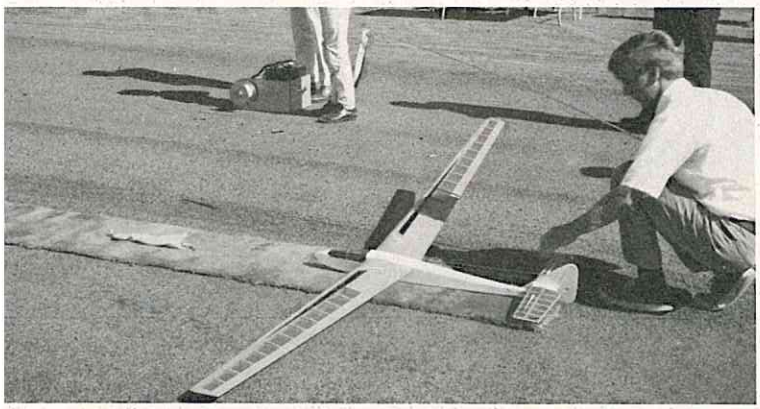
This is always a popular topic anytime a few RC'ers get together. With R/C modeling growing as it is, there's no doubt the question reflects growing problems that fliers increasingly find themselves facing as they try to ply their favorite hobby. More frequencies would sure be fine, but while seeking them we've got to be certain that maximum use is being made of the nine CB frequencies presently available. After all, if we had um-teen frequencies and also got 'chased' from them, would we be any better off? For, isn't it time to recognize that we've got to roll up our sleeves and start working to retain what we do have so that it is useful to us in a maximum way?

When AMA action obtained the five 72 MHz band frequencies for sole aero control use the pressure from interlopers in the 27 MHz band was relieved and we retired from the battlefield, in effect. It's now gotten so that it's downright foolhardy to go into the air in some areas on any of the four original 27 MHz frequencies. In other areas where 27 MHz flying may still be marginal the advice to those having trouble is an indifferent "stop fighting it, change to 72." And so instead of 72 MHz being the big 'solution' it's now seen to be an element of temporary refuge from the problem – an action that weakens us by causing indifference by fellow RC'ers to the plight of those still on 27 MHz. Worse yet, it delays aggressive and firm action needed to re-establish our rightful and protected use of the 27 MHz band. But with boat and car modelers wanting to use 72 MHz, isn't the day of

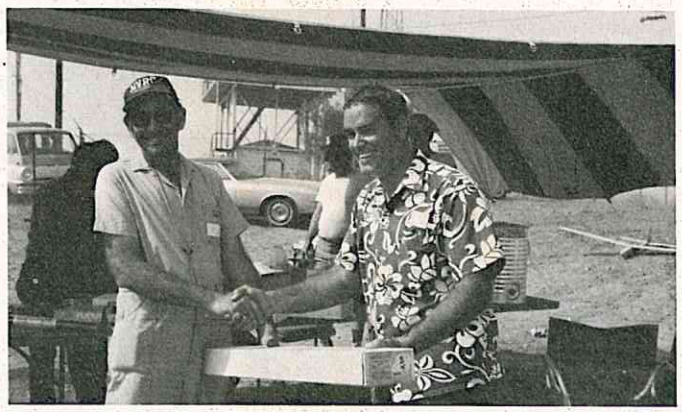
LEFT: Garden Grove WW II meet saw outstanding scale line-up: Stuka by Bob Lofe, Swiss Me-109 by Dan Reiss, Curtiss bipe by Jim Kelley, Don Barton's P-51 and a Kawasaki Hein by Jack Dennis. Bipe won carrier event. ABOVE: Dramatic moment – Rod Smith caught tense scene as Ken Holder (r) readies his Hornet for maiden flight. Don Patton holds. Twin flew OK.



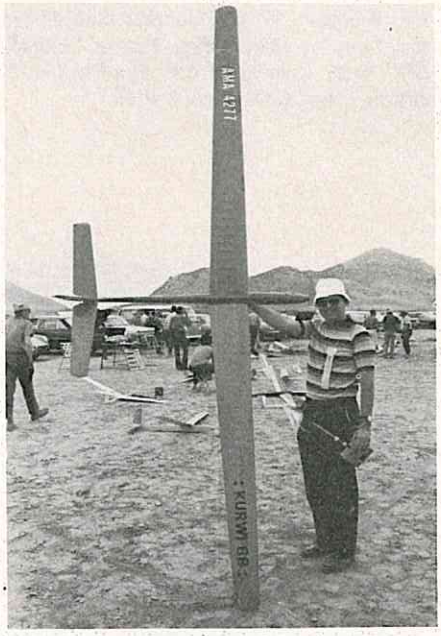
LEFT: Garden Grove meet featured Carrier event. Mark Smith lines up his F-4U for landing pass. Jim Kelley won with Curtiss bipe. RIGHT: Rod Smith pic of Bob Lofe's neat Stuka with Enya .60 mill inverted.



Winning launch – Mark Smith launches Class A Windward II for 1st place at Cotati, Calif. meet. Note simple winch, foot actuated.



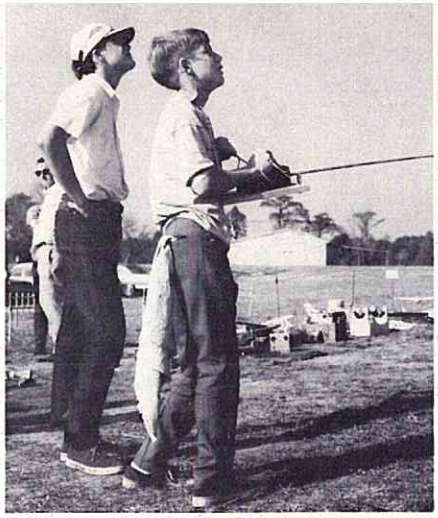
San Bernardino soaring winner was Joe Tschirgi. Major Pete Rawlings presents Windward II kit at MARKS contest. Rod Smith recorded happy moment for NVRCers.

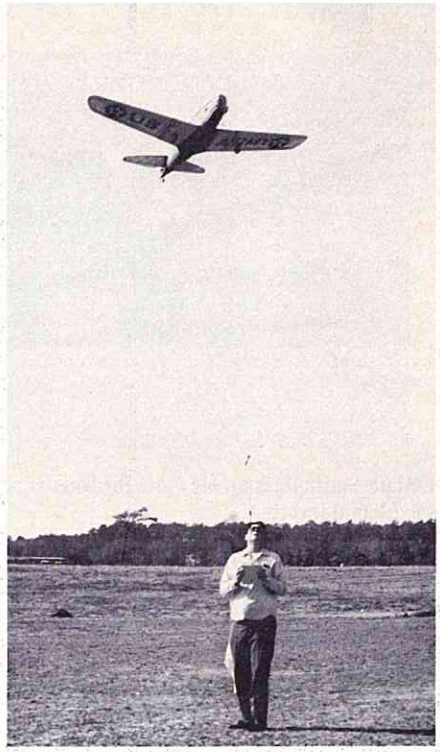


LEFT: Dale Willoughby topped field of 28 at Western R/C Soaring Championships. Kurwi span 12'. Veteran soaring pilot used Kraft radio. Dale to take part in Norwegian Soaring Holiday. ABOVE: Kelly Pike and entry at Western R/C Soaring Championships. Kelly leading pilot from San Diego.

TOP: Smooth green grass of the Coastal Carolina R/C Club is ideal for sport flying. Some members line up for Ted Baxter's camera to show their planes and equipment. Controlaire radios popular. ABOVE: CCRCC flight line. Wide assortment of sport planes flown by members.

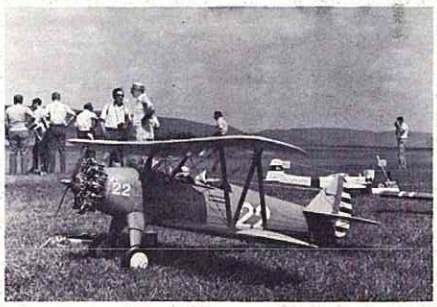
Buck Postewait and his Smog Hog piggy-back ship. 9' Phoebus is 'passenger'. Longest glider flight so far has been almost 2 hours. Log II radio, Max .60 power.

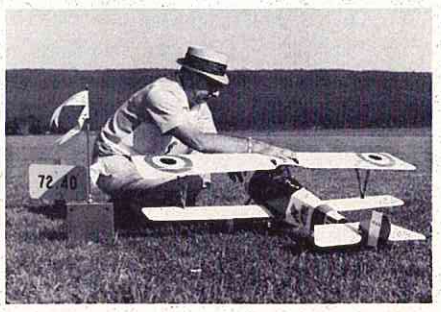




ABOVE: R/C is fun therapy for young P.J. Miller, charter member of the CCRCC. Platform and harness helps overcome handicap. Tom Riggs helps. Blue Max SS radio guides Jenny airplane. RIGHT: O.S. Max .59 powers Tim Dial's PT-19 at New Bern flying site of Coastal Carolina R/C Club. Sterling kit, Controlaire radio.

Genial D.C. May and Sopwith Pup were CCRCC visitors. Atlanta RC'er prominent in Pattern and Pylon also. Pup has 58" span, Enya .60 for power, Kraft radio. Walt Mitchell's nemesis . . . . .

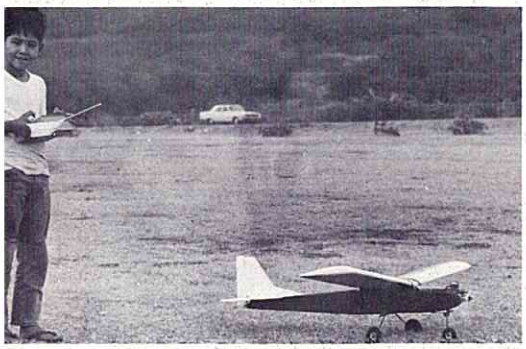


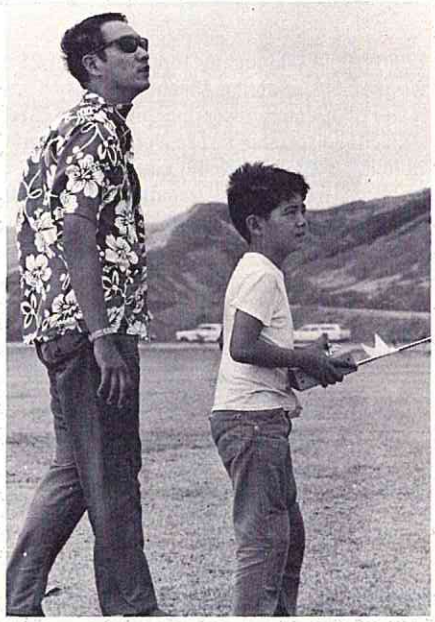


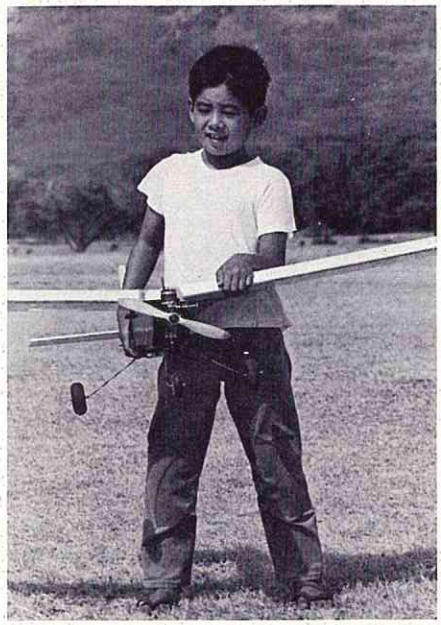
Ship excellent for serious pattern competition. Dick Penrod and Sherlock Lear Jet were entries at Indian Gap Fun Fly. 8½ lb. ship had Enya .60 for power, Logictrol radio. Unusual scale model flies very well.

Scale pinnacle – Bob Grimm's PT-17 represents dream of many RC'ers. Wide open space scene is Indian Gap Military Reservation, site of 13th Annual Fun-Fly. Many fine models on hand.

VK Nieuport 17 was another Bob Grimm scale gem at Indian Gap. Tatone "Exhaust Off" helps keep gunk off. Fun-Fly had 93 entries, is traditional annual affair.







Little 8 year old Arthur Kopama waits for "Go" signal for his O.S. .40 powered RCM trainer. Retracted antenna shows he's overeager. Ah, that's better, as Arthur's dad, Dixon, keeps an eye on the flight at the Sandy Beach flying site of the Kapiolani R/C Club. All's well that ends well. Back on the ground and all OK spell happiness for little Arthur, youngest member of the Hawaiian club. (Jim Miura pics).

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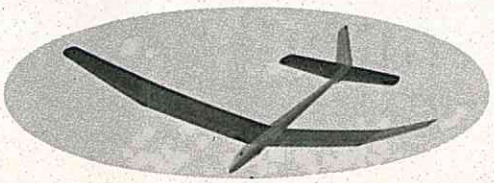

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reckoning at hand for everyone?

To retain the use of all the CB slots set aside for our use it's necessary to recognize one important fact: **Various types of interference causing most trouble are of local origin and can therefore be best dealt with by local RC'ers and clubs.** *It's also true that local efforts can have as much* **stature as any AMA effort if its properly organized and carried out.** *It certainly can be far more effective in confronting the particular set of circumstances and personalities of any given locality.*

About now someone is bound to say, "Oh, we tried getting the FCC in our area to do something but they said they were too busy and so it got us nowhere." While this may be true to a degree of what may have happened in the past, remember, **there are far more RC'ers now, and more importantly, many more organized clubs that are a great deal more able to effectively deal with the problem than ever before!** *It's also necessary to recognize two other facts: AMA headquarters cannot give individual attention to interference problems as it did before, and keeping the air clear requires a* **continual** *program of liaison and assistance with your local FCC field office.*

Club investment has grown greatly in the last year or so. And it's going to continue to do so. Flying field or runways head such expenditures. There are many other items including considerable contest paraphernalia and equipment representing a lot of our money. Comfort conveniences and small buildings also account for some of the spending clubs are presently

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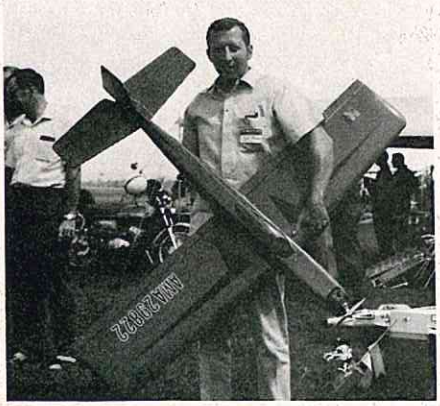
Faye Peoples and well known Mooney were popular pair at Indian Gap. Enya .60 and Micro Avionics. Ship also drew attention at Toledo.

engaged in. Mowers and rollers also add to the costs. All this is in addition to the investment each flier has of his own in planes and radios and tools. However, it's a rare club that has any frequency monitoring equipment in its inventory. Perhaps it's because we've gotten in the habit of believing someone else is best suited to take care of that sort of thing... In any case, except at large contests, when is monitoring equipment manned at a flying site? Are contest fliers the only ones deserving of this protection? How about the "Sunday" sport flier?

As a matter for calm determined decision, it's time for ALL R/C flying clubs to recognize they have been divested of what's rightfully theirs and that the condition is growing at alarming rates. Since the condition is not going to simply go away, clubs must establish action groups properly equipped to detect and record improper use of our frequencies and to work with district FCC officials to 'clean' up

RCM Sun Fli IV was Sid Rosen entry for Indian Gap Fun-Fly. ST .60 and Kraft radio. Ship excellent for serious pattern competition.



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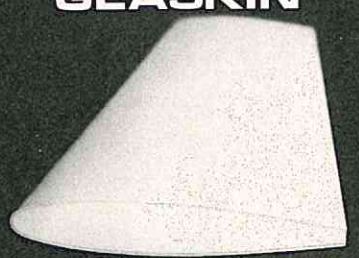

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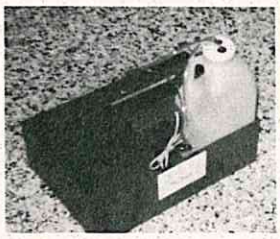

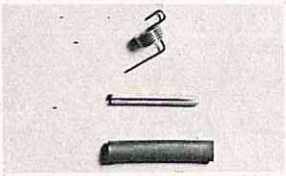

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The Ace High kit features a matched set of foam wings. The constant chord section forms the center, and the taper section forms the outer panels for a graceful, easy to build, strong but flexible, high aspect ratio, wing. This method of construction overcomes the biggest single stumbling block for the beginner to the fine art of soaring. The polyhedral span is 70".

Fuselage and tail assembly is straight forward construction. Balsa and plywood is precision band sawed, and dimension sanded of the highest quality wood available.

Parts for power pod are included (Cox Babe Bee .049 recommended).

Tame enough for the beginner, but he had better watch it--old timers may be wanting to get hold of the stick!

The kit also contains step by step assembly details, matched foam wing sections, hinge material, torque rod and link parts, nylon tubing, and installation hardware for Rudder-Only Pulse Commander. (Standard Commander 10G16 recommended).

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their area. With club FCC licensing we also can make certain our own skirts are clean with regard to proper licensed operation . . .

There's one other important part to the job. That is to fully document your effort – the findings and results of local FCC action together with names, dates and call letters – and forward the information to AMA to keep them abreast of your progress. There the information, representing solid data on a national scale, can be fully developed and action mapped with FCC officials that could lead to more frequencies. Only this time the action could be based upon genuine and real growth needs. Yes, it sure would be nice to deal from a position of strength for a change . . .

WITH THE FLIERS . . .

★★★ Whirlwinds 1st Annual. This first contest was an all-out affair by the Whirlwinds R/C Club to assure a well organized and smooth running meet for Pattern and "RCM Stand-off Scale events." The latter is rapidly finding favor throughout the country as an alternate to the traditional Scale event and one that offers balance for scale buffs everywhere . . . Many members of the Whirlwinds regularly take part in most midwestern contests and they decided it was time to host one of their own. They figured with all that experience they could even bring about some improvements and to make the meet memorable at the same time. From the results it appeared they succeeded in both departments. Bill Hannah trained the judges and level scores showed the results; Roy Pinter put together an original electronic scoring machine that had its read-out in the control center where scores were tabulated immediately; Gene Hand set up a fool-proof (and dog-proof, too . . .) transmitter impound where it was protected but still real handy to the fliers; the Heath Co. provided a P.A. system that everyone at the flying site could hear, and finally, Chuck Ellis, who CD'd the meet, recruited many non-contest type Whirlwind members to man the numerous chores so they could get first hand contest participation. The careful preparation paid off and 7 rounds of pattern were flown along with 2 rounds of scale by 2:30 on Sunday. Jimmy Grier of Chicago carried off top CX Pattern honors while Bill Johnson and a Chipmunk outpointed RCM's Dave Platt and his Mustang in the Stand-off Scale event.

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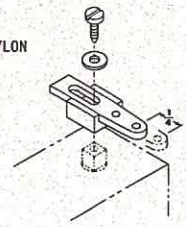

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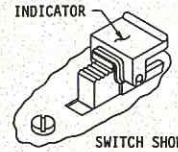

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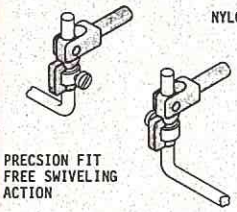

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WATCH HERE FOR
MORE TO COME !!!!!

By the way, the Mustang is something Dave's grooming for a kit release by Top Flite and its flying certainly impressed the St. Joseph fliers.

★★★ A healthy hunk of RC action on the West Coast has been seen in two events lately, WW II Scale and soaring. The Garden Grove R/C Club promoted a Successful WW II meet that saw some outstanding examples of practical scale development which led to a lot of flying time for everyone. Among others, the companion meet to the WW II affair was a soaring contest hosted by the North Bay Soaring Society, a California club that's exercising a lot of leadership in promoting R/C soaring. Prominent in both types of flying was Nats Soaring event winner, Mark Smith, who continues to impress everyone with his modeling know how and flying skill. Mark, with his dad, Rod, is starting to kit his 1970 winning design "Windward II". It promises to become an outstanding standard for beginners and contest fliers alike.

★★★ Although winches are the most popular way to loft RC soaring planes, there are a few rugged individuals who like to do it in a more complex way – flying the glider to altitude fastened to another model with power, that is. In Missouri we find Buck Postewait who uses an old Smog Hog for the power chore. Powered with a Max .60, it usually has a 9 foot Phoebus for a passenger. Buck's wife Jan, who is proud of her AMA 79002, also joins in regularly for the fun and was on hand for their record duration flight of almost two hours with the glider. At times, Jan reports, even a 7-power binocular wasn't strong enough to keep the bird in sight although the Logictrol II radio kept the glider under control at that range.

★★★ The Coastal Carolina R/C Club is rounding out its first year with its 20 members taking full advantage of their smooth grassed flying site on the Trent River 3 miles from New Bern. The field is donated to the club without cost by Miss Marjorie Williams of New Bern. Veteran modeling member Tex Baxter, whose hobby started 42 years ago, has a 7 ship fleet and is a leading member of the N. Carolina club. Don Duffey and Tim Dial have the most R/C flying know how and act as flying instructors for newcomers to the hobby/sport. Dial's experience as a radio technician instructor at Cherry Point Air Base is especially valuable to club members. Bob Meyers is the 1971 president of the CCRCC'ers.

★★★ The excellent quality of Eastern model building was evident at the 13th Annual Fly-For-Fun hosted by the Keystone R/C Society. Planes were slick, sophisticated and swift, and generally reflected a peak in R/C art. Some 93 fliers brought their planes for the 3 day affair that saw perfect weather add to the wide open spaces of the Indian Gap Military Reservation at Annville, Pa. RC'ers from 5 states took part in the action. Walt Maidl was CD of the traditional get together and had the help of Sid Rosen, Dan Steiner, Harold Hassman and Bob Brown. Bill Miller is the 1971 President of the Keystone R/C Society.

★★★ Late report from Mexico showed Feliciano Prat, Salo Feiner and Luis Castaneda had clinched slots on the Mexican FAI team at the Monterrey contest. Now we learn the team faces administrative problems in being able to enter the World Championship at Doylestown this month. After qualifying for the team the RC'ers learned the Mexican Aero Club was in suspension from the FAI body and consequently affiliation was questionable until the administrative matter has been cleared. As an 11th hour problem this has Mexican modelers scurrying to unravel the paperwork technicalities. Looks as

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though it's not enough of a job to fight through all the contests and competition . . . .

NEWSLETTER ROUTE

Newsletter editors – Do you want AMA's monthly mailing sent to you? AMA is collecting names and addresses of chartered club newsletter editors in order to expand distribution of their excellent information publication. Here's what Carl Sheeley, AMA's publications chief suggests: "All we need is a copy of your newsletter and a note asking to be put on the monthly mailing list." The widened circulation is another move by AMA to further improve communications. Club newsletter editors will find the Monthly Mailing full of hot-line poop and official AMA headquarters news, much of it worth reprinting in their own newsletters. There's no charge for the service. It's just one more advantage of being AMA chartered . . .

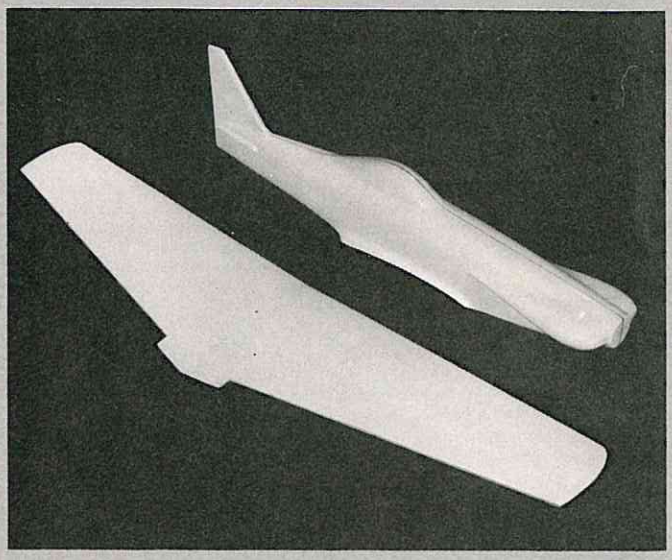
From MONMOUTH (Greg Malinowski, editor) the following spray gun hint: "Ever sprayed an airplane but hated to clean the spray gun? Don't let this discourage you – try this simple gem. Take a sandwich-size baggie and put it into the sprayer jar, hanging the bag's top over the jar lip. Put your paint into the bag, screw on the top, and you are ready to paint. To clean, remove the paint baggie and replace with a clean one; put thinner into this bag and spray away. Presto – a clean sprayer!"

FLYPAPER – Greater Pittsburgh Aero R/C Society (Karen Dempler, editor) – warns of more frequency problems in the offing: "Jack Blanner reports that a lawn mower manufacturer, American Consolidated Industries, is on the verge of production of a Radio Remote Control for lawn mowers. A digital system with 3 channels. Beware!

Clark Besancon who edits PROP BUSTERS for the Rapid City R/C club commented about making newsletters interesting: "Writing newsletters does have its problems for the Editor – believe it or not. Problems, that is, besides the "mechanics" of actually making the rough draft, typing the stencils, doing the mimeographing, gathering, folding, sticking on the labels and stamps, etc., etc. One of the "secrets of success" is to mention each member's name every month . . . " Clark ought to know of all those 'travails', he's been at the same newsletter stand for almost 15 years now and edits one of the better newsheets in these United States. Clark's comment about mentioning the names of club members brought to mind the 'tactic' used by Gary Owens who edits the FLIAR for the Forest City Flyers of London, Ontario. Gary has a ficticious character, Prangley W. Gremlin, who provides the inside story on club members in the best Mahitable and Archie tradition. Consequently, Gary is careful to leave his typewriter loaded with paper where Prangley can get to it. Prangley, like Archie, the cockroach, can't use the shift key and type because he pecked out his messages by jumping from the top of the typewriter onto the keys. Thus, it was impossible to strike two controls simultanously. With this in mind, let's tune in on "prangley" and get the latest 'dirt':

hello glue-head,

i am glad to see you brought your electric typewriter down here to this snakepit you call a workshop. sure makes my life easier. but what really makes life easy for me are all the guys in your club. i mean, youre all a bunch of push-overs. for the past few weeks ive been introducing myself to just about everybody. like for instance, on the 10th when dick hancock had been flying that yellow machine of his around all morning and i undid his wing hold-down blocks so that when he picked the plane up to test it for a lean engine run, his wing fell off. and how ja like my timing when i made stu masons transmitter batteries go dead just



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before he was ready to take off? pretty good work on my part, wasnt it? that was also the day i blew 3 of ted bucks servos in a row. the last one while he was locked in a spin over the trees. the same day i made it over to the other field and jammed basils elevator servo into full down just as he came out of a high speed turn. i only wish there would have been more people around to see the job i did on Vic gianelli and his big plane. if i do say so, it was one of the better wing fold-ups ive done, and ive been responsible for a good many. and as for you, you hopeless twit, you should have seen the look on your face that day i kept making your plane takeoff and land smack in the biggest mud puddles i could find. it took a lot of work on those because i was up all the night before disguising those wet patches to look like dry ground. what was it, 2 nose-overs on takeoff, or was it 3?

when i havent been doing my worst at the field, ive been making a tour of a number of your cronies workshops and screwing up their building. talk about fun. i mean, like tony van eck is one of the better builders and flyers around. right? ok, i decided to try one of the simplest tricks on him; one we usually use on beginners — making them build two left-hand wing panels. i tried it on van eck and he wound up with a cobra wing that looks like a propeller . . . .

OK, about now you get the idea about Gary Owen's "prangley w. gremlin". You'll also note the "narrow needle" judicously applied in mirroring our more common foibles and shortcomings and keeping it all in perspective with a generous sense of humor . . . . □

RX FOR FLUTTER

(continued from page 37)

balancing near the center of the surface is related to the torsional aeroelastic flutter modes. With the mass on the axis of rotation of a twisting oscillation, such as might occur at the aft end of a fuselage, the mass is effectively cancelled out and does nothing to reduce flutter susceptibility. For best response to a torsional mode, the mass must be distributed along the span or be concentrated near the outboard end of the surface, as shown in Figure 6.

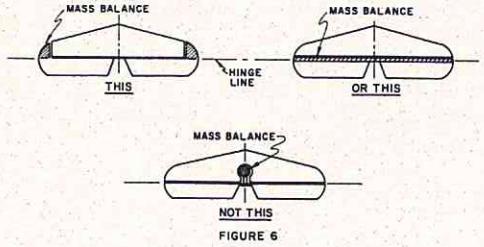


FIGURE 6

Another way to eliminate flutter is to provide stiff, irreversible control systems. This is what has kept flutter from showing up more often in R/C models. The servos, pushrods, and linkages have generally been stiff enough to prevent flutter. If no motion is possible, the oscillations simply cannot develop — even if the forces are acting in the classical manner. To minimize the chance of flutter, all free play in links, servo gears, and control horns should be at an absolute minimum. Pushrods should be stiff with good column strength for taking compression loads without bowing. If the pushrods will bow easily, they will act as spring restraints rather than firm positioning devices. With free play in a control system, it is possible for flutter to develop within the free play movement band. In this case the motion of the surface would be as shown in Figure 7. Although this type of motion is not a violent oscillation, it

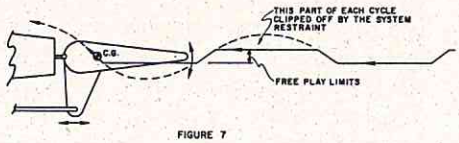
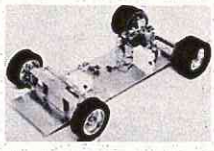


FIGURE 7

MCE PACEMAKER 71 KITS



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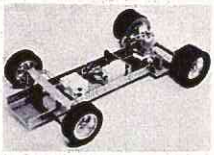

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certainly will be tough on servo gears and control connections.

Of course, any unwanted disconnection occurring in flight throws away all your work on eliminating free play. If this can happen to your model, You'd better have the surfaces mass balanced.

Hingeline friction is another factor that affects susceptibility to flutter. Because the tendency to flutter always increases with increasing airspeed (due to the buildup of the forces with airspeed), higher hinge friction will delay the onset of flutter to higher airspeeds, all other factors being equal. But a good R/C hingeline installation avoids friction in order to keep down the load on the servos. Therefore, the use of friction as a flutter control method is certainly not as desirable as the use of mass balance and minimum control system free play.

In addition to the simple control surface flutter mode that is the primary topic of this article, there are others that are considerably more complex, and which involve large amounts of twisting and bending in the primary structure of an airframe. These fall under the heading of "aeroelastic flutter modes." For the technically-minded reader, a good reference for a start is NACA Technical Report 496, "General Theory of Aerodynamic Instability and the Mechanism of Flutter." But it is probably sufficient to say here that to avoid these modes in model aircraft, the wings and fuselage should have good torsional and bending rigidity. Typical design and construction techniques are adequate. However, if an unusual aircraft configuration is involved, it may need an unusual structural design in order to have adequate rigidity.

To sum up, our primary surface flutter prevention techniques in modeling are: (1) tight control systems with minimum free play, (2) rigid primary airframe structure, and (3) mass balance when necessary. Use them to avoid demonstrating control surface flutter modes which might return your new aircraft to kit status.

CONSTRUCTION TECHNIQUES FOR FORMULA RACERS

(continued from page 41)

are as numerous as there are modelers. An excellent way I recently came across eliminates the use of wood screws, Dzus fasteners, or bolts and blind nuts. In fact, there are no fasteners of any sort showing on the outside of the aircraft. The little gems I speak of are Top Flite's Ball and Socket clips (Part E-51). These clips are used for holding the wing spars on their SE5A. Photo 4 shows how they are used to hold the cowl on the Mike. These clips should be available at your local hobby dealer. If he can't get them for you, write to Top Flite and ask for a source near you.

Fuel Systems

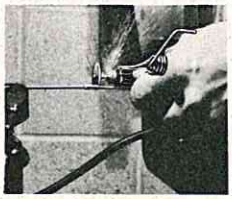
There are complicated fuel systems and ultra simple fuel systems. In some cases both work fine. Illustrated is a system that, if correctly installed, should work well. (See illustration I.) Here are some basic points to remember on pressurized systems.

1. The tank should be in line with the venturi opening on the carburetor.
2. Use lots of foam rubber padding around the tank.
3. Keep all fuel lines as short as practical.
4. Use only "clear" tubing throughout the system.

Mounting Radio Gear and Push Rods

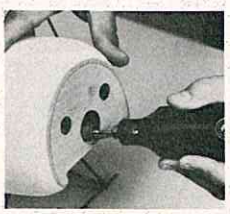
To begin with, make sure the receiver and battery pack are super foam wrapped . . . twice what you would

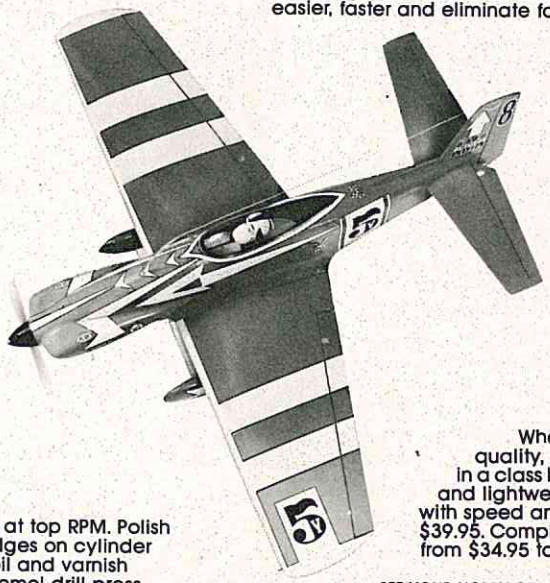
Moto-Tool Makes It Easier.

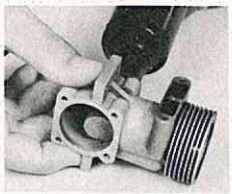


To cut, deburr and polish metal parts. Cut wire landing gears and motor mount plates fast and clean. Deburr and polish solder and weld joints to a smooth finish.

To sand, carve and drill wood, fiberglass and foam parts. Shaping nose blocks and wing fillets can be completed in less time with professional precision. Hollow out cowls and speed fairings, shape wing tips, drill engine and equipment mounting holes. Make moulds for fiberglass parts easier, faster and eliminate fatiguing hand labor.







To keep your engine running at top RPM. Polish intake parts, remove hard edges on cylinder sleeves. Remove baked on oil and varnish from cooling fins. Add the Dremel drill press accessory and you can open venturi intakes to maximum tolerances with pinpoint accuracy.

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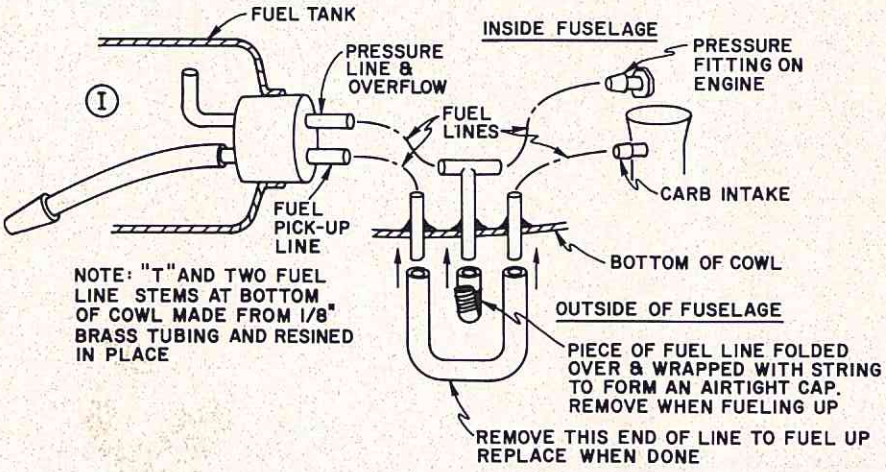

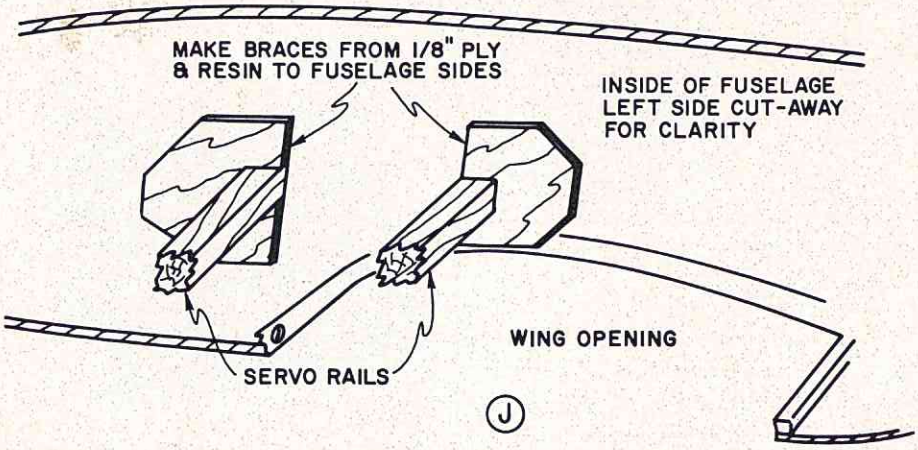

normally use on a pattern ship. Next, make sure that servo rails are braced both fore and aft. (See illustration J.) I recommend the solid type pushrods for the elevator and rudder. If you insist on using NyRod, or some similar product, make sure it is well braced several times in the length of the fuselage and just before the servos. Any slight buckling that may occur during flight will mean a loss of surface movement and control.

Spare Parts

Beside the usual complement of spare engine parts, the competition flyer should give consideration to having several other items handy at a racing meet.

To begin with carry an extra set of landing gears. Having a speed fairing come loose can be hard to repair in the field. A spare set of gears is the fast solution.

If the vertical stabilizer isn't part of the fuselage mold, having a spare one on hand is almost as important as having extra props. In fact, having a complete stab, fin and rudder handy can keep you in the meet should you have a flight line accident. Naturally, along with this assembly should be included razor saw and some 5-Minute epoxy.

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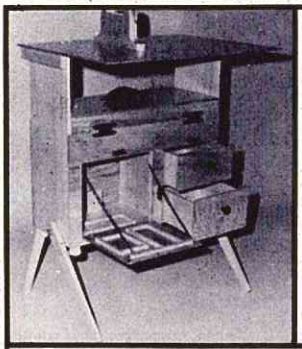

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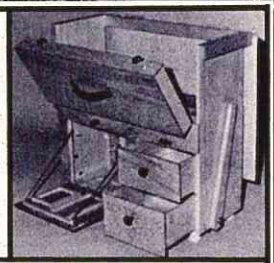

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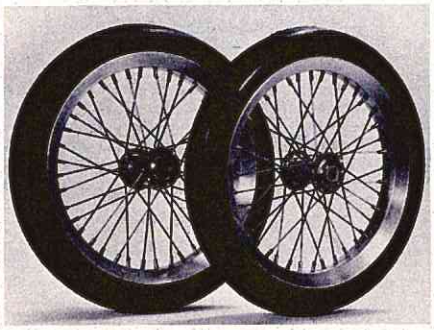
TAKE A LOOK AT THIS..

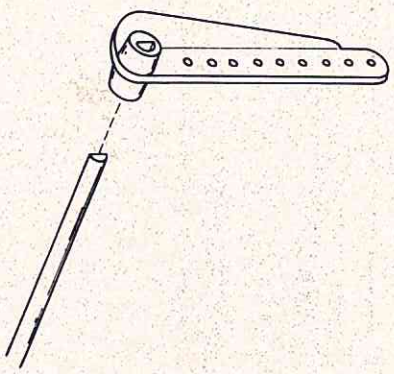
VK Model Aircraft Co., 12072 Main Road, Akron, New York, now has spoked vintage wheels in stock, in 4-3/8" and 5" diameters. These wheels are manufactured by VK and are priced at $29.95 per pair. They feature seamless machined aluminum rims, with individual ferrules on each spoke. These are the finest spoked wire wheels that we have seen, and are a perfect match for the VK Triplane or Nieuport, as well as any other ship of that era. Tested, Approved and Recommended by RCM.



Now available from Sanwa Corporation of America, 2500 Woodbridge Avenue, Edison, New Jersey, 08817, is a line of precision multitesters. The N-101 pictured features DC voltage ranges from 0.3V to 1200V., AC ranges from 6V. to 1200V., DC amps from 30 microamps to 6 amps, and resistances to 50 megohms. The N-101 also features a special transistor scale for load current and voltage. The low voltage and current scales make this

meter particularly useful in checking R/C circuitry, while the wide range on the high side makes it practical for general usage. This versatile multitester is very compact (6" x 4" x 2") and carries a two year warranty. Priced at $46.95, the N-101 has been Tested, Approved and Recommended by RCM.

A uniquely different Nylon Control Horn has been released by Sterling Models, Inc. Molded of virgin Nylon, this large horn is fully 2" long and has 9 adjustment holes. Stressed structural design makes it almost indestructible. Being Nylon, the horn can be cut to desired length, when the optimum hole location has been decided by the modeler. The sketch shows a typical installation of this large control horn. It is used in conjunction with specially milled half round music wire to couple control surfaces, such as elevator halves, flaps, etc., as well as conventional horn installations. Half round wire insures absolute, positive lock of the horn, and perfect alignment of the surfaces with no chance of slippage between the horn and the half round music wire joiner. This also eliminates the possibility of failure of soldered or welded joints, as heretofore used on the all steel type. A choice of position of the horn on the half round joiner remains completely open to suit the precise needs of your model. The width of the joiner is also free to be easily tailor fit precisely to the individual model's requirements. The half round music wire joiner is 6" long. Sterling Model's #111 large control horn assembly set sells for $.40 and is now available at all hobby shops.



For the man who likes to fly his models rather than spend hours building R/C planes, let North Shore Models, 25 Locust Road, Northport, New York 11768, solve your problems. If finding the time to build keeps you "grounded" and if the plastic A.R.F.'s are not your bag, choose an

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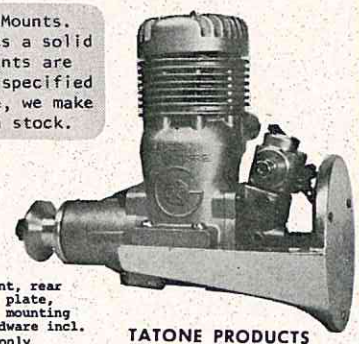

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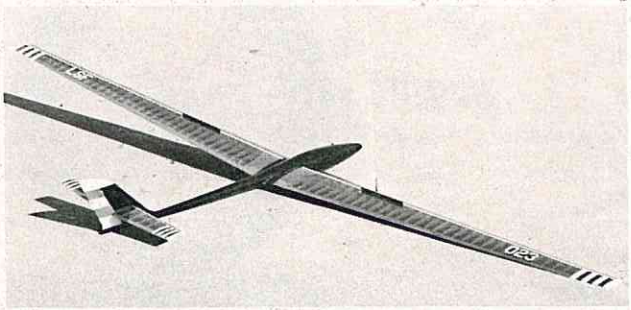

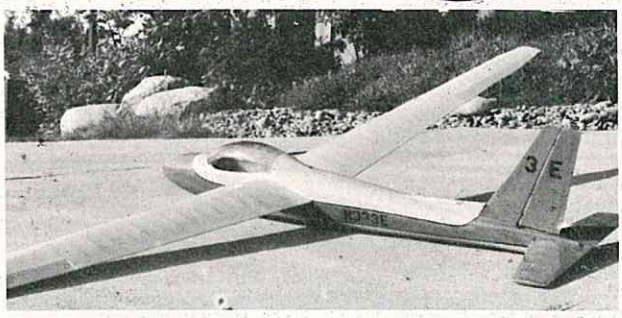

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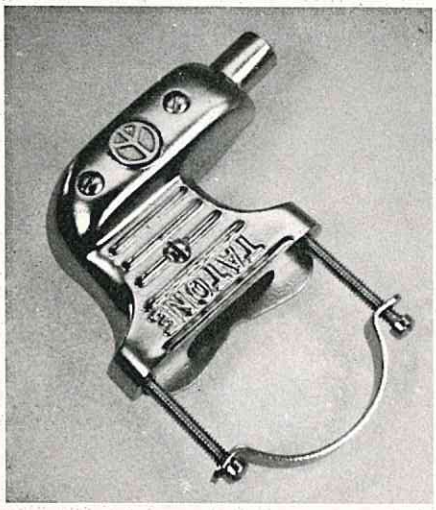
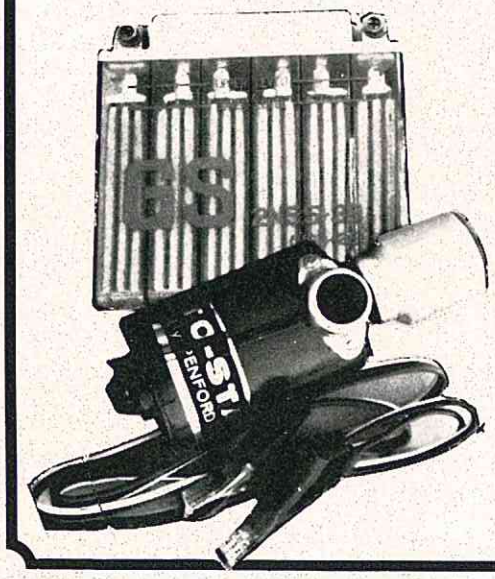
Tatone Products, 4719 Mission Street, San Francisco, California 94112, is now introducing a new series of silencers called the "Calumet" mufflers. (That's injun for Peace Pipe). This new type of muffler was developed to obtain the best degree of silencing with a minimum of power loss. As you know, there is no official ruling for model plane decibel requirements on mufflers therefore Tatone designed the "Calumet" to meet the official California noise abatement ruling and to meet most of the muffler rule proposals suggested by many clubs. These new mufflers have a double expansion chamber, one baffled and set at right angles to the other. This permits a shorter, more compact design and also helps to quiet the hot exhaust pulses. It is cast in aluminum for lightness and has fins to help dissipate the heat. The "Calumet" has a universal type of mounting which





AUTO-START—70

New for 70, Auto-start introduces to the aircraft modeler, a high torque, reversible, small (only 2½" dia.), lightweight, 12 volt electric starter which will start *any* engine, .049 to .80 with ease. A must for all r/c pylon racing, as well as finger saver for the sport flyer. Especially good in extreme cold or hot weather, where starting is a problem. Auto-start comes in two models. M-1 is complete with cord, clips, switch installed. New improved drive unit, 2 sizes inserts for spinners or without. M-2 is the same as M-1, but comes with small hi-amp., rechargeable 12 volt battery.

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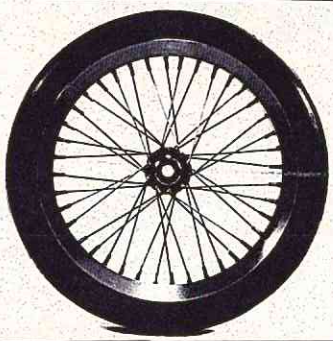

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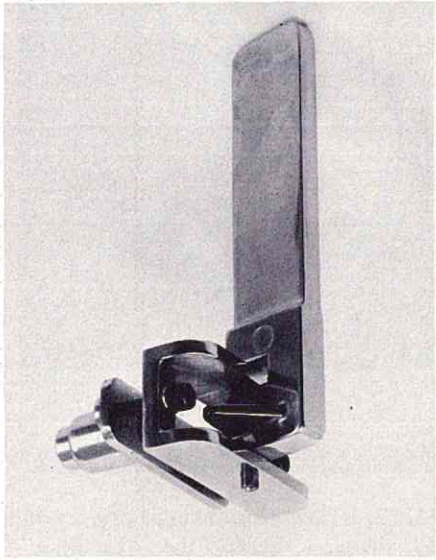
allows them to fit 98% of all available engines. With this mounting it is no longer necessary to buy a muffler for each engine as the "Calumet" can be interchanged from engine to engine in the same class range. Although designed primarily for planes, these mufflers are right at home in cars and boats. Just turn them around for rear facing engines. Included with each muffler are four hardened stainless steel screws, steel strap and a gasket. Sizes and prices are as follows: EM-4 (.09-.19) $4.95; EM-5 (.29-.35-.40) $5.50; EM-6 (.45-.80) $5.95. For the new Testor/McCoy 21 Series engines order: EMT-4 (.15-.19) $4.95 and EMT-5 (.29-.35-.40) $5.50. For those fellows that like to make their own mufflers or need extra parts, Tatone now has a kit that contains four hardened stainless steel screws, a steel mounting strap and a gasket. Price of the kits are 98 cents each. These come in three sizes: .09-.19, .29-.35-.40 and .45-.80.

Marine Specialties, 10216 Pearmain Street, Oakland, California 94603, has produced a precision die cast aluminum rudder assembly for use on all .19 engine powered hulls. A unique, easy to install mounting plate is furnished that provides a waterproof connection to the control system. The rudder blade incorporates the very effective latest wedge design. Price for Marine Specialties #1AR Rudder Assembly is $7.95.



Here's an item of interest to all of you who have written in inquiring about the Wavemaster designed by Ken Willard. Paul Sherlock has sold the rights to manufacture the Wavemaster to Wayne King, of King's R/C Distributors. Wayne tells us that he anticipates shipping the first production models early in October. Deliveries will be on an "as received" basis in response to orders. Everyone who had orders in with Sherlock Aircraft Models will be given first priority. Price will be higher than the $49.50 as announced by Sherlock, since Wayne plans to provide the model in more nearly completed form than the "knockdown" kit which Sherlock had in mind. You can contact King R/C

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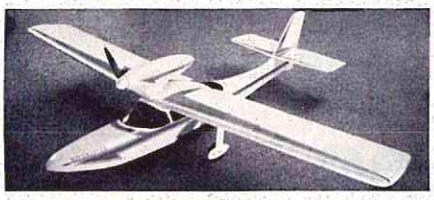
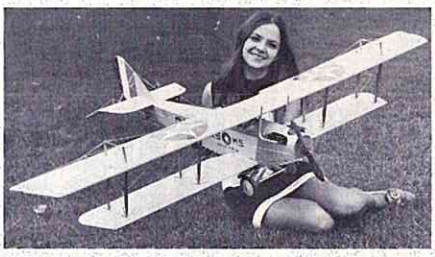
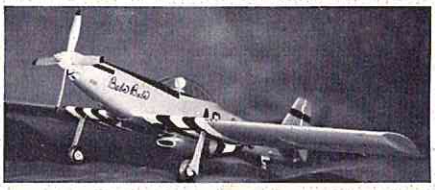


Joy Products Co., Inc., Box 374, Menominee, Michigan 49858, is in production on their Curtiss JN-4D Jenny, a kit scaled from the JN-4D Jenny with 6° downthrust, upper ailerons, and 16" wing stagger. Both wings are removable with all rigging intact. Field assembly time is 15 minutes. This precision kit includes two sheets of rolled plans, rigging cable, control cables, turn buckles for controls, aluminum control horns, aluminum motor mount, all sanded balsa, pinned hinges, all parts diecut and all plywood sanded. Scale is 1½"=1'-0", Span is 66" with a weight of 4½ pounds less radio. Power is from .29 to .49. Introductory price is $49.95.



Fibre Foam Products, 6370 East 22nd Street, Tucson, Arizona 85710, is producing a 60" span P-51 Mustang pattern ship featuring a deluxe fibreglass fuselage with fibreglass covered foam wings. The fuselage is provided with all bulkheads installed and the fuselage, itself, primed for final painting. Engine requirements are from .40 to .60. 630 sq. in. wing area, weight 5-6 lbs. Price is $69.95.



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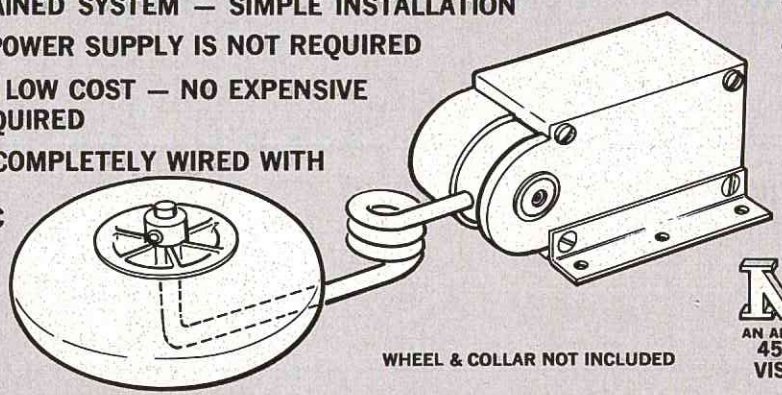

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The pretty young lady in the photograph is holding the Rowan Minnow designed for Formula I racing. Imported from Germany by Midwest Model Supply Co., 6929 West 59th Street, Chicago, Illinois 60638, the kit features a fibreglass fuselage and foam wing cores that are factory covered with balsa sheeting. Wing tips are also installed. The entire wings have been fine sanded and the ailerons cut out at the factory. The airfoil is a laminar section. Price is $79.95.

A 40-page catalog of high quality professional tools has just been issued by the Brookstone Company, Peterborough, New Hampshire. Brookstone tools are available exclusively by mail. For a copy of this catalog, write: Brookstone Company, 2185R Brookstone Building, Peterborough, New Hampshire 03458.

JOIN THE A.M.A.!

MISS PLAYMATE

(continued from page 32)

When joining the wing halves, use epoxy generously. Don't get carried away, however, try to maintain a continuous film of epoxy throughout the joint. Use masking tape to hold the wing panels together until the epoxy has cured.

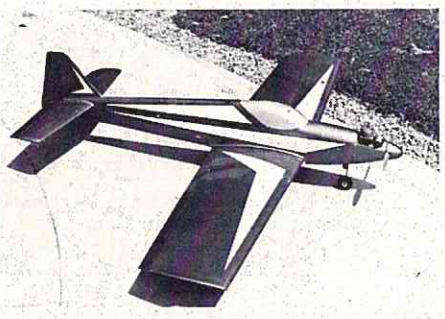
Finish

Decide beforehand how well you want to finish your model. In other words, set a goal for yourself, then work to achieve it. At any rate, your model deserves a good sanding. Spend a little time filling all cracks and gouges. Repair the dents in the balsa by simply wetting with water and applying a hot iron. Zingo! They're out! Finish sanding the model all over with #400 wet or dry paper before applying the final finish.

At this point the finish is up to you; acrylic lacquer, dope, MonoKote, enamel – stay with your own personal finishing experience.

For my model I chose the Hobbypoxy "easy-does-it" method to fill the balsa. After wet sanding with 400 wet or dry paper, the entire model was sprayed with white acrylic lacquer. Several coats were applied in the areas that were to remain white. The trim design was then masked off and the entire model was given three coats of acrylic lacquer color (Hugger Orange). When dry, the masking tape was removed and the entire model was wet sanded with #600 wet or dry paper. (Especially the raw edges left by the tape removal). The final finish consisted of two heavy spray coats of clear acrylic lacquer over the entire

DRAGONFLY — $74.95



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Weight: 5-6 lbs. Span: 55-60 Engine: .40 - .60
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fibre foam products
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Tucson, Arizona 85710

the mustang

This is a deluxe kit, featuring a fibreglass wing and stab. The fuselage is strong and lightweight fibreglass with the motor mounts and bulkheads already installed. Comes primed, ready for final color coat. Plans and instructions – quick and easy to build.
Weight: 6-6½ lbs. Engine: .40 - .60
Span: 59' – Area: 640 sq. in.
$69.95

model. The white undercoat brought out the true color of the orange. This is, admittedly, a little extra work, but produces a lasting finish with no wrinkles. Okay, so go ahead and MonoKote yours!

Windshields and Pilots

Construct the windshields as shown on the plans. The extra time spent in building them is well worth the appearance of the end product. They are easy to build and actually quite strong. Install them only after the model is completely painted. A word of advice – do not epoxy the windshield to the painted surface. It will not stay. Instead, trial locate it and faintly mark a line around its flange on the fuselage. Within this outline dig away the finish down to the bare wood. Work carefully. Now epoxy the windshield in place. Use Hobbypoxy Formula 4. It's great.

Don't forget the pilots and instrument panels. They are fun to paint and add the necessary realism to your model. I fastened my pilots in place by gluing them down and using two #6 x 3/8" sheet metal screws installed from the bottom side up. There is nothing worse than losing a pilot in flight!

Flying

The flight characteristics of Miss Playmate proved more docile than expected. Responsiveness to control movement was very evident as well as clean sharp stalls. No tip stall tendencies were noted. A tight engine terminated the first flight making a dead stick landing necessary. You can imagine, it was hot!

I used no side thrust in the engine making it necessary to hold a liberal amount of right rudder to overcome initial engine torque. This condition is more evident with conventional landing gear, however, advancing the throttle slowly, allowing the airplane to reach flying speed at a slower rate is a deterrent against this condition. Ground handling characteristics proved to be excellent.

The R/C pilot having flown any of the now available low wing sports planes, should not experience any difficulty with Miss Playmate. Remember, because of her size, don't fly too far out. And wait till you see her fly by – the roar of the engine, the pilots silhouetted against the blue sky . . . Miss Playmate in all her glory!

Tom Jones has an excellent way of expressing it in his latest hit song. "She's a lady, she's got style, she's got grace, she's a winner."

That's Miss Playmate! Happy flying! □

FROM THE SHOP

(continued from page 3)

ing, be sure to think up any old number for an AMA number and put it on your plane. Chances are one in twenty or thirty thousand that you might meet someone with the same

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number. Pick a good five digit number. Remember to use the same number on all your planes. This not only makes you look legal, but saves you the expense of buying a AMA membership.

1-b. When you get to the registration, have a borrowed AMA card and flash it at the registration people and tell them the number you are usually using. This almost always works, however, you sometimes meet people who are picky so you may have to tell them you left the AMA card at home or it is in your field kit and you will show it to them later. They always forget to ask later. If this fails, have a friend or acquaintance swear that you are an AMA member, this is the last resort, but works well. If you feel that you might be forced to join up on the spot, make a scene and browbeat the registration people and generally hold up the works. If you can make them believe you are sincere they often back down. So much for AMA Membership.

1-c. FCC license. The same applies for the FCC as the AMA . . . usually the borrowed license flashed at the harrassed registration folks works wonders.

#2 – The Class in which you fly. *It is wise to have looked around to pre-determine who is flying in what class and where the pickings are best. After all if all the good flyers are in, for example, D Expert, you certainly want to enter D novice. This is a good point for arriving early and standing around and waiting till the last minute to register. Ignore any previous class you may have flown in, just pick the one which looks easiest and where the least number of contestants are and you automatically put yourself in a better position to win.*

#3 – Your opposition: *Remember to locate the competition and where they have their planes set up. Stroll around and examine with great interest all the planes. If you feel you might have a tough competitor, be sure to admire his plane and while you are at it give his needle valve a good turn in or out depending on whether you want him to run lean or rich. Often this has such a distressing effect on the contestant, that finding he can't get his engine running right he will often spend the rest of the contest fiddling with his engine and usually is so upset, he flies poorly. Also you can, if no one is looking, step on his stab gently until you feel it crack, then you can be assured it will come off in the middle of one of his maneuvers. Also be* **sure** *to admire all the transmitters in the impound area. Most of them have the owners names on them. Be sure you have changed all the trim levers. This really rattles a flyer and often he is most of the way through a contest before he finds out he is out of trim. Most common response is that they are not flying as good as they usually do,or just, they think, contest nerves.*

3-a. Remember, that a good hunk of sand or dirt down a competitor's engine intake will usually ruin his engine part of the way through a contest, but if his hinges are pinned in on his plane and the heads of the pins are exposed, you can easily remove them while admiring the plane . . . this often has spectacular results.

#4 – The Judges: *This is a critical area. Have a friend calling for you who will say things after each maneuver like, "Say, that was perfect," or "That was the best one done today." This is good for a few points. Also remember to speak personally to all the judges and really work up personal friendships if possible. Some judges are touchy, so you have to be extremely careful.*

#5 – Scoring: *If possible get the judges to let you take the score to the tent yourself; this way, you can appear to be adding them up, but you have a perfect opportunity to change the score up a few points on some maneuvers where the judges don't write plainly.*

#6 – The oppositions' flight: *Stand a few feet back from the judges with your helper and converse between yourselves in a critical manner about each maneuver your opponent does. This really helps make the judges give them low scores. Remarks like, "Did you see that figure M? Worst I ever saw," or "Poor old so-and-so, he usually crashes," or something like, "Well, I don't think I've ever seen him fly worse, usually he does just fair."*

#7 – The direct approach: *It is sometimes wise to actually help the competition. You can call for him. Be late telling him what to do, this causes him to use up his time. Or mix up the maneuvers and then in the middle of it say something like, "For gosh sakes, Harry, I said three loops not a four point roll." This usually blows a whole flight and poor Harry is so shook by this time that he really belives he did*

the wrong thing. Sometimes, if the wind is blowing you can have the call sheet blow out of your hand, this is a good trick. But usually just being in the way when he turns to watch his plane is good. Then you can engage the judges in conversation if they are the least bit talkative and then you can tell them the maneuver the fellow did was only worth a three or four since they didn't see it. One sure fire method is to turn off his receiver switch just as you release the plane.

#8 – The official protest: *This alone is enough to upset everyone and if you think the competition is rough in your class you can single out the best flyer and insist that the contest officials move him to a higher class. Always have carbon and spare paper handy. This alone, the idea of holding up the final results, is usually all that is necessary.*

Remember: You are out to win, it doesn't matter how you do it, you just want to win!!

Goodyear Racing: *The same rules apply to this class as in Pattern, but if you can call for a fast flyer, remember he is watching the plane, not the flag and you can (or your helper) call the turn somewhat late. Also use words like, "do it" or "zap," or anything but, "turn." This rattles the flyer and gets him on edge.*

Be sure to tell him in detail about anyone else who crashes and also tell him how he is being lapped. This pressure is enough to cause him to cut laps. If you think he can be completely confused, call his turn early and you can easily get him eliminated.

Remember to hold his plane straight for takeoff. When the signal is given to go, let go one side of the stab first then give the other side a push (slyly) to the side and he usually will go right into the side of the next plane. This usually eliminates two at once and makes your chances easier to win.

Normally, however, you can turn his needle valve a couple of turns lean just before he is ready to takeoff by appearing to notice that the engine doesn't sound "just right." This almost always burns up his engine, he will think you were trying to help him. Tell him there is a bee on his ear about to sting him. Slap him smartly directly on his ear. He will actually thank you even though he will no longer be able to hear you and his plane has crashed.

If you can disguise your voice say something like, "Hey, Harry, your fly is open." This often wraps up the contest for you.

Also, if it is a two day contest, try to get everyone drunk the first night and tell the desk clerk at the motel (by telephone, so you can't be traced) not to wake up rooms so-and-so (numbers your competition are in) after you are sure they have left wake up calls. This makes them late and they miss flights . . . if they are hung over, so much the better.

If you are flying at the same time they are, try to edge close to him and trip him if you can. Remember, a prone flyer adds up to a crash.

There is always hectic activity on the flight line in Goodyear so it is well worth the trouble to cut or break the wires on their starting batteries. If they are using the hooded kind of plug clip, and you have your trusty needle nose pliers, you can pull out the center contact easily if they get a good grip. This way they crank all day and can't get the engine to run.

Don't forget to change their trims. Sometimes if no names are on the transmitters, one of our members changes frequency flags, providing of course, they are the same make transmitter. This works well.

Bring some high oil contest and low nitro content fuel along and insist that the fast pilot use some of your home-made 'lightning.' This usually puts them last.

Scale: *It is usually better to buy a good scale model built just the way you like it. Why spend all that time yourself? Just be sure your documented scale presentation is changed to match your plane. Have your helper stand near the scale judges and rave about your plane and generally run down the others. This often is enough to get maximum scale points.*

Remember to change the needle settings and transmitter trim setting. Also don't forget that some scale planes only get flown at contests and the flyer is tense as he is not used to the plane. Just stand within earshot of the judges and say something like, "Well, old Harry has that plane he had Johnny build for him in the air again . . . guess we should all run for cover." This likely will destroy Harry and the judges usually come unglued.

Final Notes: *All rules as herein set out are useable in any event. The flyer is cautioned to be careful in the application of these tried and true principles. One must never be suspect, always appear to be a good guy and just always appear to be lending a helping hand.* □

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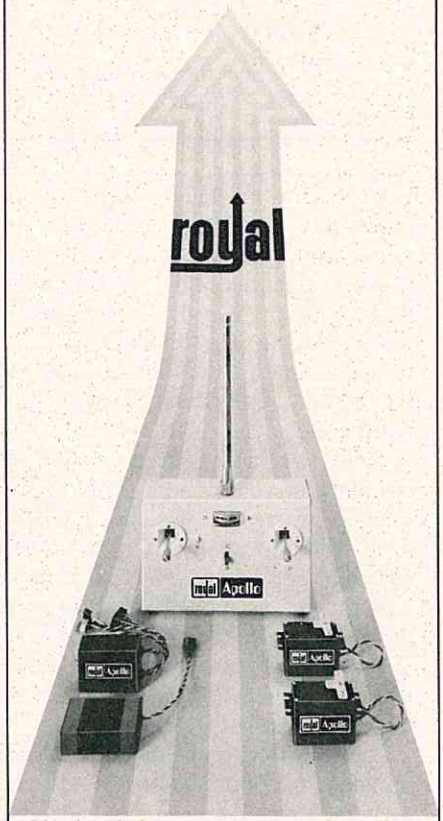

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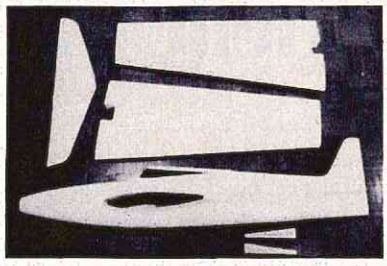

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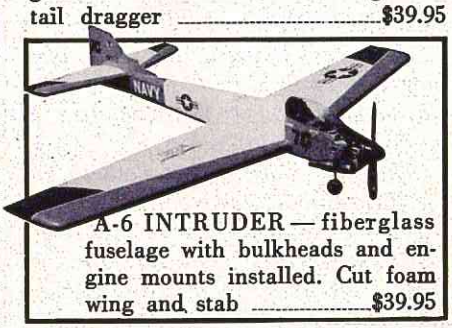

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virtually any pre-1950 subject of any nationality, it is a good plan to pre-age your whites by adding a dash of yellow to send it a bit cream, and a dash of black to make it dirty **before** putting it on the model. We have found it much easier to do this than try to do everything in the final weathering.

The last color used in R.A.F. roundels is yellow and, here, unfortunately, there is a serious omission from the book. Trainer yellow, as used on trainers, and in WW 2 roundels, is not shown. If you have the book "United States Camouflage WW 2", the yellow shown there will do fine for British subjects too, since no difference exists that we can see.

Turning to colors for WW 1 British roundels, we find it's not so easy to be definite, since there was considerable variation in shades used at that time. What we do know for sure, by examination of several existing WW 1 ships in museums etc. which have not been restored (a word which, unfortunately, frequently means completely ruined), is that the blue normally used was quite light, not dissimilar to No. 112 Arctic blue in B.S. 381 C. We'd be tempted to use this color along with No. 446 Red Oxide, and wouldn't expect too much static from scale judges, who cannot prove otherwise, anyhow.

For proportions we're giving diagrams (ref. "Flying Scale Models" by R.G. Moulton) of the most common ones. Fig. 1 shows layout for wing upper surfaces and fuselage sides on a WW 1 ship. If we now take away the white outline, we have the underwing roundel proportions.

WW 2 saw many changes and exceptions, but for the Day Fighter types of 1942-46 most commonly modeled, such as *Mustang, Spitfire, Hurricane, Typhoon,* etc. the proportions shown are right; see Figs. 2-4.

One last word of warning. Do not make the assumption that commercial decal sheets are correct. We've seen many which are wrong, not only on color (where they're almost **all** wrong!) but also on proportions. So if you're making a standoff job of a British ship, check 'em out!

★★★

Our request of a couple of months ago for more inflight photos brought some response, tho' we still could use more. First, the Kawasaki "Tony" (Ki-61-I) in Pic. 1, a standoff scale designed and built by Dan Reiss of Inglewood, Calif., the same gentleman in Pic. 2 with a Me 109 E still earthbound. Interesting piece of info accompanying the shots is that both of these models are slated for future publication here in RCM. Photos by Nate Rambo, who we remember as a onetime NATS RC Scale rival. Where've you been, Nate?

★★★

Yours truly recently had occasion to work out a system for transferring movement from the aileron servo to the ailerons, where the outer panels of

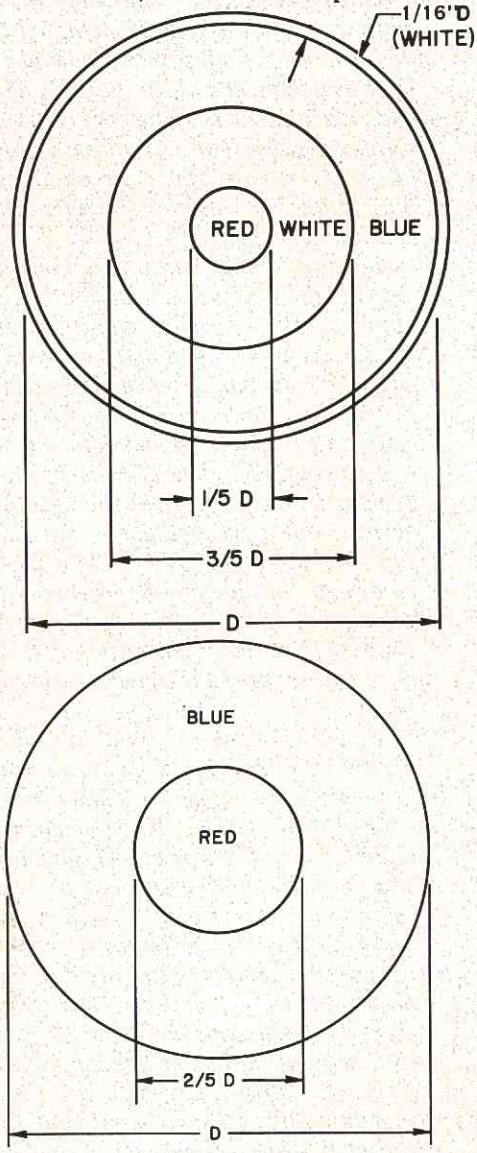

FIGURE 2

the wing were to be removeable.

After coming up with the device shown in diagrams A and B, we felt the idea might interest other modelers. Could be useful for you glider fans; and is a superior system for folding wings than the one we worked out at the time that problem presented itself.

The diagram explains the system adequately.

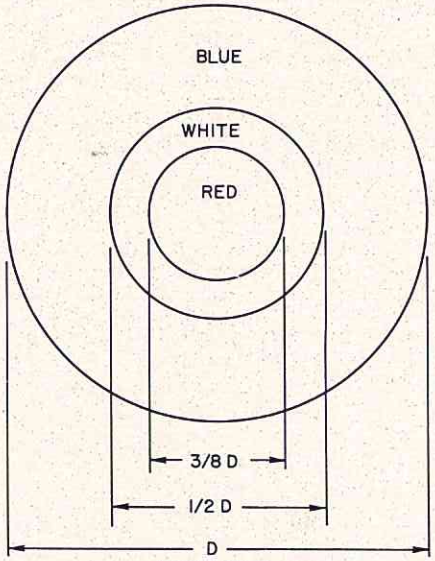

FIGURE 3

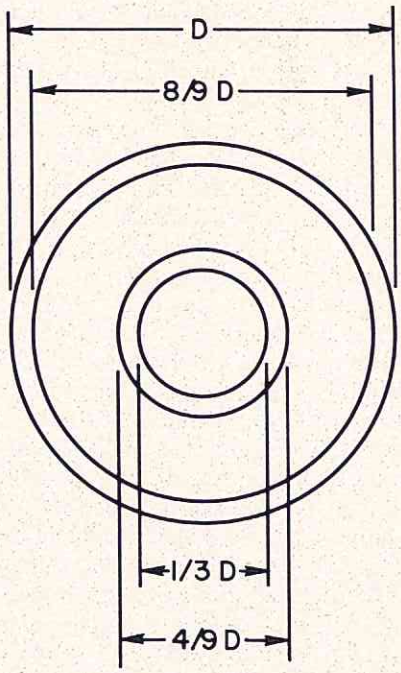

FIGURE 4

Since no part of the aileron drive goes from root panel to outer panel, in the event of the wing coming away, as in a crash, it comes away cleanly without ripping anything. Another way the idea might be used is to transfer, say, engine control in a twin with removeable wings, or flaps, etc.

★★★

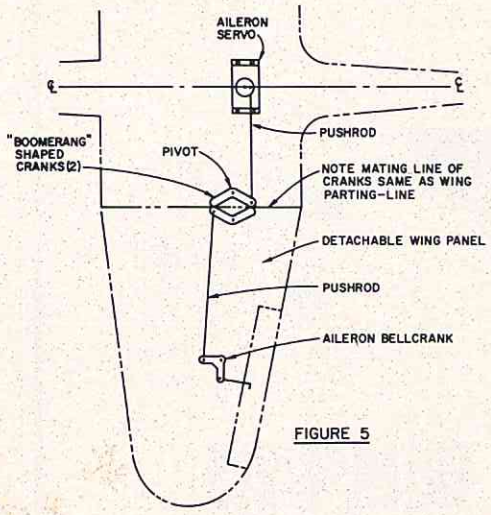

FIGURE 5

ENGINE CLINIC

(continued from page 10)

through muffler that we have reported on in the past. Past tests had shown the KO to be the quietest of the expansion chamber models that caused a minimum of power loss. There are others that are quieter but at the expense of a considerable drop in rpm. The Silence-Aire has been the most efficient causing little or no loss of power but being somewhat noisier. The KO registered 98 db and the Silence-Aire 105 db. All four sound level readings were taken using a Veco .61 and an 11 x 7¾ Top Flite propeller. For any of you who may like to make sound level checks of your own, always be sure and stay with the same propeller for all tests. Engine rpm can make a big difference in decibel readings. A small prop winding up will give a much higher reading than a larger prop turning slower.

Dear Mr. Lee:

I often hear people use the words "motor" and "engine" interchangeably. In the true technical context, we were taught the following discrimination.

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ENGINE – "operates on the principle of transforming (usually burning) a fuel by a chemical process into energy which can then be transformed into rotary mechanical motion. e.g.: Reciprocating engines (gas or steam), turbines (gas or steam), large space rockets (in this case jet reaction)."

I only know of one exception – and this is really a misnomer – small rockets and missiles are said to be propelled by a MOTOR.

And finally, a couple of questions on Enya engines, in that I have several. The manufacturer says for the .35 III (and this is typical for other sizes):

a. Max HP for the regular (needle valve only) engine is 0.80, whereas for the T.V. (throttle valve) engine it is 0.60.
b. RPM for the regular engine is 8,000 to 16,000 while for the TV engine it is 2,000 to 13,000.

Does the addition of a throttle valve restrict the intake so much as to cause that much loss on the high end? And how are they getting the regular engine, with only a needle valve, down to 8,000 rpm? That must be "slobbering rich" and of no real value in flying.

Best Wishes,
R.K. Myers
Reynoldsburg, Ohio

As far as the true technical context your definitions of Motor and Engine are 100% correct. However, when referring to an internal combustion engine the terms motor and engine have become synonomous. So, if in reference to the big noise makers in the nose of our airplanes, either term would be considered correct.

Most R/C engines use a smaller venturi size than the same engine when set up for non R/C use – U-control, free flight, etc. It doesn't take much of a change in venturi size to give a noticeable increase in power. However, at the sacrifice of fuel draw and good idling characteristics. In U-control where no idle is involved, and a considerably smaller amount of fuel is carried, a larger venturi size is usually used which results in a higher power rating. Getting a regular engine to run at 8,000 rpm with only a needle valve is no problem. This would actually be a fast four cycle. Most ukie stunt fliers set their engines this way so that when they pull the nose up to start maneuvers the engine breaks into a two cycle.

Mr. Lee:

I have a K & B .40 F.R. with a Perry carburetor. The engine idles like a champ and really turns on at full throttle but somewhere around half throttle it gives up and quits, sounding like it's going lean. If you try to go to full throttle to catch it, it still quits. If it's run to low throttle the engine goes back to a nice idle. I can't figure it out, maybe you can help me.

I've got one other question that's not too important, but I've been curious about this.

I've noticed this on ringed engines and worn out lapped engines. As long as you turn the engine over counterclockwise it has good compression but when it's turned clockwise it looses compression. My KB .40 does this – why?

Thank You,
Wm. G. Mitch
Merriliville, Ind.

It sounds like you have the relationship between the carburetor barrel and exhaust baffle set incorrectly. If the baffle opens too soon the engine will go rich through the intermediate range. If it is slow in opening the engine will have a lean spot through the intermediate. I would guess that your carburetor barrel is open too far at idle in relation to the exhaust baffle. So at approximately half throttle the exhaust baffle is not open far enough causing back pressure in the engine which, in turn, keeps it from bypassing internally and results in the lean intermediate. Set your linkage so that with the carburetor barrel opened just a hair the exhaust baffle is straight up and down. At full throttle the exhaust baffle should be perfectly horizontal. If it over or under travels bend the baffle arm accordingly to increase or decrease the amount of travel.

I think you have your clockwise and counterclockwise directions mixed up, Bill. It is perfectly normal for well used lapped engines and ringed engines to have more compression when turned backwards (clockwise) than when turned forward (counterclockwise). On the upstroke the piston tips one direction and on the down or power stroke the opposite direction. The parts wear and match in this way. When you turn the engine over backwards you are duplicating the way they match under load.

Dear Clarence:

I have a Super Tigre .40 R/C which is worthless as far as idling goes and I'm planning on trying a Kavan carb on it. I also have an old Veco .45 stunt engine. It's old chronologically (?) but it's almost new as far as running time is concerned. Now for the questions! As compared to the ST .40 R/C front rotor with a Kavan – will the Veco .45 with a Kavan and a muffler give me a better and more dependable idle with anywhere near as much top-end power? Will a Kavan carb even be practical on the old Veco .45 stunt? (It doesn't have a ring on the piston). Kavan makes a carb for the Veco .45 but I've been told that I'll have to do some "drilling and tapping" to make it work. Can you tell me what I'll have to do? I've deduced from some of your answers in RCM that the Perry carb made for the Veco .50 will fit my .45 if I enlarge the intake slightly. Is this correct? Will it work properly? I don't own a lathe or a drill press, so, can I perform the enlarging operation without benefit of these two pieces of equipment? How so?

I don't want to buy but one new carb so which do you think would be my best bet?

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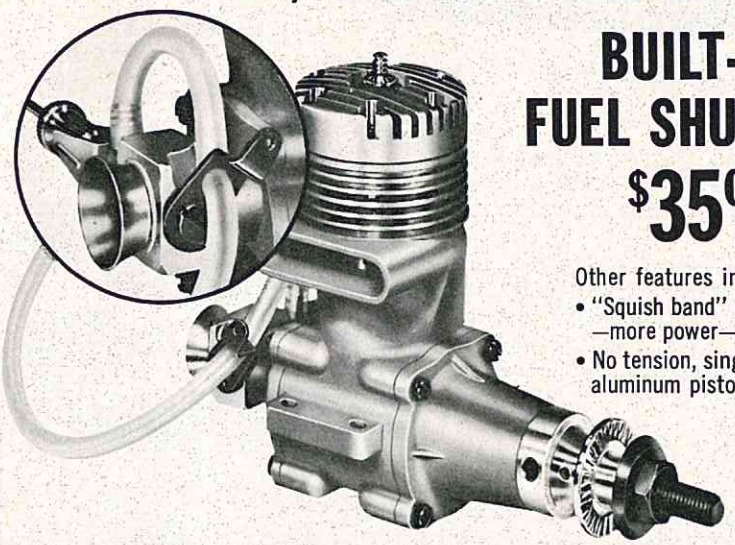

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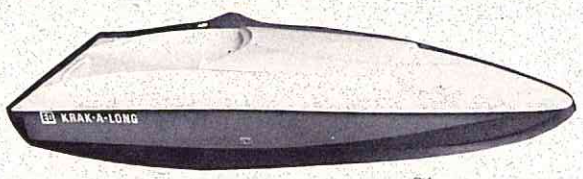

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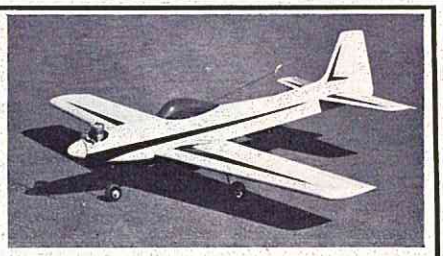

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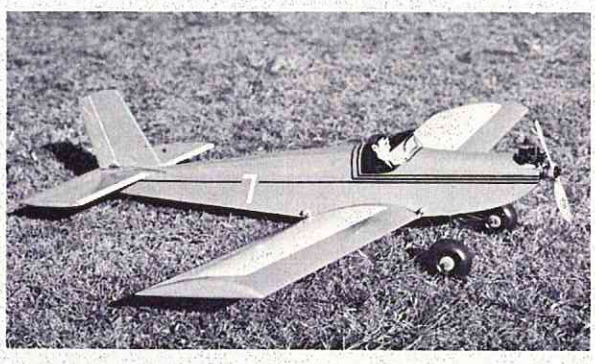

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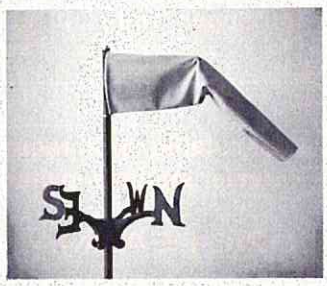

The ST .40 with a Kavan? The Veco .45 with a Kavan and a muffler or the Veco .45 with the Perry (which is made for the Veco .50) and a muffler? The engine will be used for sport flying so I'm interested in a good dependable idle and a good amount of power in this size engine.

Thanks very much for your time, trouble and help.

Sincerely
Curt Bark

There is no substitute for displacement, Curt, so your Veco .45 is naturally going to swing more prop than the Super Tigre .40. The Veco .45 was designed strictly for R/C use. The U-control stunt version was the same engine less the carburetor and associated exhaust linkage. To install a Kavan carburetor on the stunt Veco .45 you will have only to thread the bosses where the present needle valve is for set screws. The thread size is 10-32. To install a Perry carburetor you would have to enlarge the venturi and without the proper equipment I would not recommend you try this. With a Kavan carburetor and a muffler your Veco .45 will idle with the best of them.

Dear Clarence:

I'd like to fly my Antic as slowly as possible, with the Enya 60 III aboard. With this power the big baby takes off in about 10' (elevation here 3000' ASL) and climbs at about 25° out of sight, under full throttle. Cruise is too fast, also, at full throttle. I don't like to putt around at half-throttle due to varnish and carbon build-up, but do need the power to fly the really big loops, Cuban Eights, etc., that look best with this model.

So I had thought to tie a big prop on the engine. I recalled one of your articles saying this wasn't a good deal, and got the article out and re-read same. I still find that I don't exactly understand why bigger props would be so damaging, unless the engine was so loaded down with prop it couldn't turn.

Before I do ruin the Enya, though, I would like to know what you think about the use of larger props (up to 18") on 60-size engines, where more scale-like, slower flying speeds are desired. It would seem to me to be much better to hang the big props on than it would be to fly all the time at low power.

Incidentally, while I was breaking the Enya, a la Lee method with very rich initial runs, I was taking off at 4000 to 5000 rpm with this Antic, and climbing out, though very slowly. The model weighs 6 lbs., 2 oz. dry, and is truly a ball to fly. Sure would appreciate your advice on the big props. Thanks . . .

Sincerely,
Daniel deG. Strong
Midland, Texas

Putting too much propeller on your engine and lugging it down is about the same thing as hooking a house trailer to your car and heading up a mountain road. It is going to work harder, get hotter, and the wear rate will be greatly accelerated. If you were to try and run an 18" prop on your Enya you would be increasing the

bearing loads far beyond anything they were ever intended to handle. In a very short time the wrist pin holes in the piston and upper end of the rod would be badly worn, etc. It would be far better to run the engine at reduced throttle which does no damage and clean out the carbon and varnish once in a while.

Dear Mr. Lee:
I have two O.S. Max .60 R/V RC, one O.S. Max Goldhead F/V R/C and one Enya 60 II R/C engines and they all have the same trouble, advancing from idle to full speed. They all choke and almost stall before reaching full power. I have been using K & B 100 and Midwest Piston Power Fuel, Fox idle bar glow plugs.

Sincerely,
Don T. True
North Augusta, S.C.

The OS Max carburetor does leave a little something to be desired when trying to get a reliable idle and good acceleration. I would recommend you install either a Perry or Kavan carburetor, either of which will help considerably. OS now has a new carburetor for the Goldhead model that is also a great improvement over the old carburetor. Richness through the intermediate range is characteristic of the Enya II and can be easily cured. Plug the hole in the exhaust baffle with a rivet and redrill a 1/16" hole through it. This will help keep the plug hotter and result in better acceleration. □

SUNDAY FLIER

(continued from page 8)

as possible in order to stay within the current.

Thermals, naturally, will drift with the prevailing wind. Your model, therefore, will be circling and drifting with the wind, and as it drifts further and further downwind, you soon will have a decision to make. Should you continue to ride that thermal, or should you come out and come back upwind in search of another? That's always a tough decision. As those of us who have made that decision many times will say, "don't get greedy." Return upwind, even if it means coming down. If you're lucky, you will run into another thermal before you get too low and you can ride it back up to continue your flight.

One of the mistakes that many R/C sailplane enthusiasts make is to try and "steal" a thermal from a fellow flier who is already in one. The mistake they make is in going up and getting underneath the other flier in hopes that they will go up in the same

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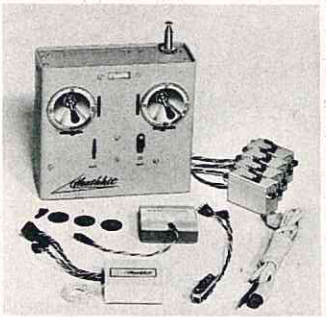

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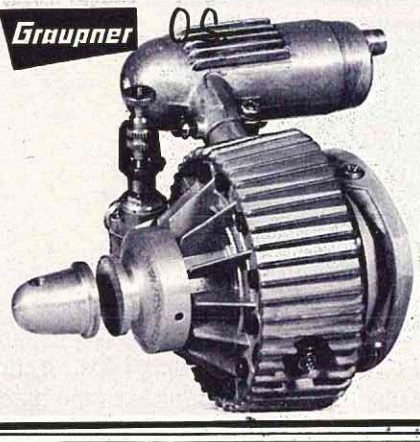

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current. Sometimes this will work, but more often than not, it won't. Instead, the lower model is not in the true base of the thermal current and is in the sinking current just slightly downwind of the true base. Since thermals travel with the wind, and usually the wind at the higher altitude is slightly stronger, then the rising current slants upward in line with the wind, so if you want to get into a thermal somewhat below another flier who is already in one, your best bet is to go slightly upwind of his position, because that is where you are much more likely to find the lower end of the thermal which he is riding.

Finding thermals is a combination of art, skill, and luck. If you are lucky enough, you will launch right into one. If you are skilled, and know where to look for thermals, you are more likely to find them if they are there. There is no assurance, however, that thermals will be where you expect them to be. Normally, if you are flying in an open field, or particularly, if you are flying from a school yard, you can find thermals starting above any flat asphalt area or a plowed field area. From that point, once they have started, they will go up and drift downwind, so it is not always necessary to actually go over the area where a thermal begins. You can frequently pick the thermal up some distance downwind of its point of origin.

How do you know there will be thermals on any given day? You don't. You just take your chances. But there are certain sky conditions which we all know show that there are vertical currents in the atmosphere. Whenever the cottonball fluffy clouds, technically known as cumulus, are present, you know there are vertical currents in the general area. Also, when there is a solid cloud cover in the early morning, and as the day wears on, the sun begins to break through, at that time the vertical currents will usually be strong in the broken areas just to the edge of the remnants of the cloud cover.

One of the things you must always bear in mind is that for every rising current there has to be a sinking current somewhere. There is no general rule as to where the sinking currents will be, nor is there any rule as to how big they will be in comparison to the diameter of the rising currents.

Finding thermals and making maximum use of them is something like playing the piano. It's easy to read the

book but the only way to do it and do it well is to practice, practice, and then practice some more.

This has, purposely been a very elementary discussion of thermal currents, and Hi-Starts, and how to use them. We would like to hear from you and get your opinion whether this is too elementary and, therefore, uninteresting, or whether you would like to have some more of the real beginning type of information in the field of thermal flying. Such things as what is the best available beginners type thermal soaring model or even an original design intended strictly for beginners. □

LETTERS

(continued from page 5)

modeling speeches to all of which I say BALDERDASH and HOGWASH!

Mr. Abbott sounds like he has a bone to pick with the R/C'ers of the world. To him I say, to coin a phrase, "if you cannot stand the heat, get out of the kitchen." Mr. Abbott says that my muffled engine on my R/C stunt ship makes more noise than a 15 year old flying his .60 powered U/C. Am I to assume that the U/C .60 is muffled or unmuffled? Whichever the case, I do not believe that this subject need be pursued any further.

Noise? Mr. Abbott, have you ever heard a power mower, power rake or power roller on a 2-3 hour lawn care program? How about living close to a major road and listening to the sound of diesel trucks which carry only minimum mufflers? I challenge anyone to tell me that my young lad's .049 or a .15 or .60 makes as much irritating noise and please don't tell me about db levels.

Mr. Abbott says that the age of participating people in this hobby is increasing. Why shouldn't it? What do you say to a lad or lassie who has worked all summer to purchase the first model and engine, regardless of size, that there is one more $15 "luxury" they must have – the muffler? What do you tell a youngster when the boys in blue run them from a vacant lot, school yard, and from experience, a 200 acre field, even though you have the owner's permission? Is it any wonder the kids get out quick? How do you explain away all the "nice" things that AMA does or how do you cope with the Federal Government requiring you to part with $20 for an R/C license while

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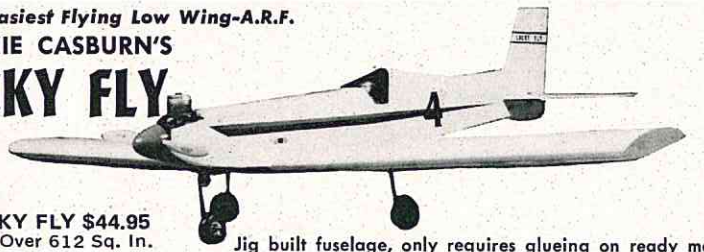

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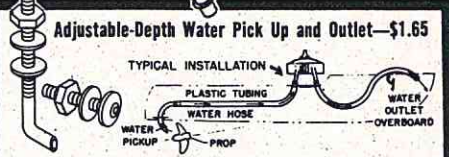

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some clowns make "Walkie Smashies" on the same frequencies? Tell me, Mr. Abbott, for I would love to know, and I am sure there are a multitude of us who would.

A kid is not a faddist. Show me a responsible adult with a youngster and I'll show you a Dad proud as a peacock when the "faddist" asks, "Can I sand this for you, Dad?" Try that one on for size, pal!

Sure R/C models are expensive but have you ever sat down and figured out the ratio to a fully equipped speed job. I quote the price from this months American Aircraft Modeler, $125.00. How many kids do you know who are willing to part with that kind of scratch?

So you see, Mr. Abbott, R/C is not the key to the problem of noise, cost, images, or other such tripe. If you are a modeler, other than gliders and rubber powered, you are just as much a part of this as we mean old R/C'ers are. Don't blame R/C for keeping kids out of the hobby, and if the AMA is showing us how to improve our blemished image, I sure wish Mr. John Worth would tell someone.

Mr. Abbott's letter indicates that there are flying sites within the city limits of St. Louis. I defy him to show me one. In St. Louis County there are several, but you must belong to a club to fly at most of them which is great. Buder Park is open but should you try elsewhere, well, it's the same old story.

In closing, I happen to be a taxpayer and anytime some politician is going to spend my tax dollar to build a park, then I say I shall have a voice in what is planned for that park at the public hearing and if there are enough of us R/C taxpayers, then maybe we can get a place to fly.

Sincerely yours,
Leroy McCormack
Mehlville, Mo.

Sir:

I kinda hate to see Viewpoint fade out. I cannot say it was my favorite section because I am more interested in airplanes than I am in people or issues, but it was a good place to say whatever you feel needs to be said. You have become something of a controversial figure simply because you have the guts to speak out. This does not mean I always agree with you or that you are right all the time, but every group needs someone like you to point a finger and say, "This could be better."

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criticism is not constructive, just like there are some unreasonable people who slam you because your printer goofs on an issue or two without realizing that you must feel worse about it than they do. Personally, I think we need you as much as you need us.

I would not be writing this letter and taking up your valuable time if I did not think it needed writing and have something to say that I think is important . . . and what I have to say is controversial. So be it. If I step on someone's toes it will be for a worthy goal. Your goal can be my goal inasmuch as the bigger this hobby grows the bigger your group of readers. As a simple Sunday flyer, my motivation for wanting the sport to grow is: (1) In numbers there is strength and in strength we can get or retain radio frequencies, (2) As a popular sport we don't have to watch people's expression when we tell them what our hobby is, (3) As already evidenced, growth has helped the quality and competitive prices of radio equipment.

You might add other reasons for growing, but let us now turn to my theory on HOW TO GROW. First, **real** *growth* **must** *come from people not presently in this hobby, and whose daddy is not in this hobby. Otherwise, we just hold our own percentage-wise. I was first brought to the local flying field by a one-inch column in the daily newspaper mentioning the nature of the hobby, the field's location and the fact that they were glad to have visitors. That was back in 1968 and the club has not needed to "advertise" again as it is at a comfortable level of membership . . . which does not mean that there should ever be a "cut off" point because it seems natural that some day there will be a "branching off" and a new field developed on a different side of town for the convenience of those modelers who live near that area.*

Now back to my first visit to the field. I did not visit it for the purpose of joining as I was already "hobby-poor" from various other interests. I visited for the heck of it . . . it was a beautiful Spring day just made for going somewhere. I arrived and watched these jokers taxi out to the strip, gun to clean the engine and then takeoff into the wild blue to do their thing. I can't say that I was excited or even impressed . . . until the great Rex O'Connor showed up and set an Aeromaster before my eyes. Nostalgia and estheticism was then aroused. Next, a

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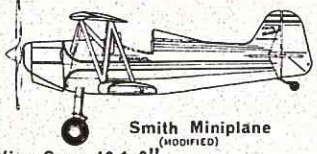

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Waco bipe arrived and when it made a slow, realistic pass just five feet over my head at scale speed I was hooked! The fact that the Waco was single-channel and in trouble (or it would not have been flying low over the pit area) was beside the point. Two of modeling's most beautiful airplanes had just succeeded in making an R/C modeler of me . . . with zero background experience.

To get to the point, I think (and a surprising number of fellow modelers agree) that this hobby is handicapped by the typical pattern aircraft which in no way relates to realism in looks, speed or performance! I venture the hypothesis that the average visitor to flying fields is not inspired by them or what they are doing and thus not tempted to join in. Owners of said aircraft need take no offense because the typical pattern aircraft are simply the products of evolution dictated by existing contest rules. With different rules there would be different aircraft . . . airplanes, that is . . . but the same men flying them.

Great opposition can be expected from those who have spent years perfecting these "aircraft" and developing their skill in flying them. This is human nature. Change would be to their disadvantage (temporarily) and maybe cost them trophies or status. Too bad . . . I felt sorry for the makers of reed radios, too.

The first step is to get the AMA to add an additional pattern event such as was painstakingly outlined in the July, 1968, issue of MAN by Don Lowe. Get real-looking airplanes doing real-looking manuevers at realistic speed. It is said this can be an even greater challenge to the skill of the experts than the present pattern, but the important thing is the public's reaction and appreciation. Does anyone besides another competitor watch the present pattern?

I would never suggest that the present pattern be abolished by the AMA. The addition of the new pattern event would see to that and it would simply and naturally fade slowly away over a period of time like reeds and escapements did . . . mourned by none but often sentimentally referred to by the old-timers.

Mr. Dewey, I am appealing to you for the sake of this sport to exert your influence towards **beautiful airplanes flying like airplanes.**

Yours very truly,
Jim Waterman
(Alamo R/C Society)

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