MARCH 1970 75c

rc Modeler

The Leading Magazine For Radio Control

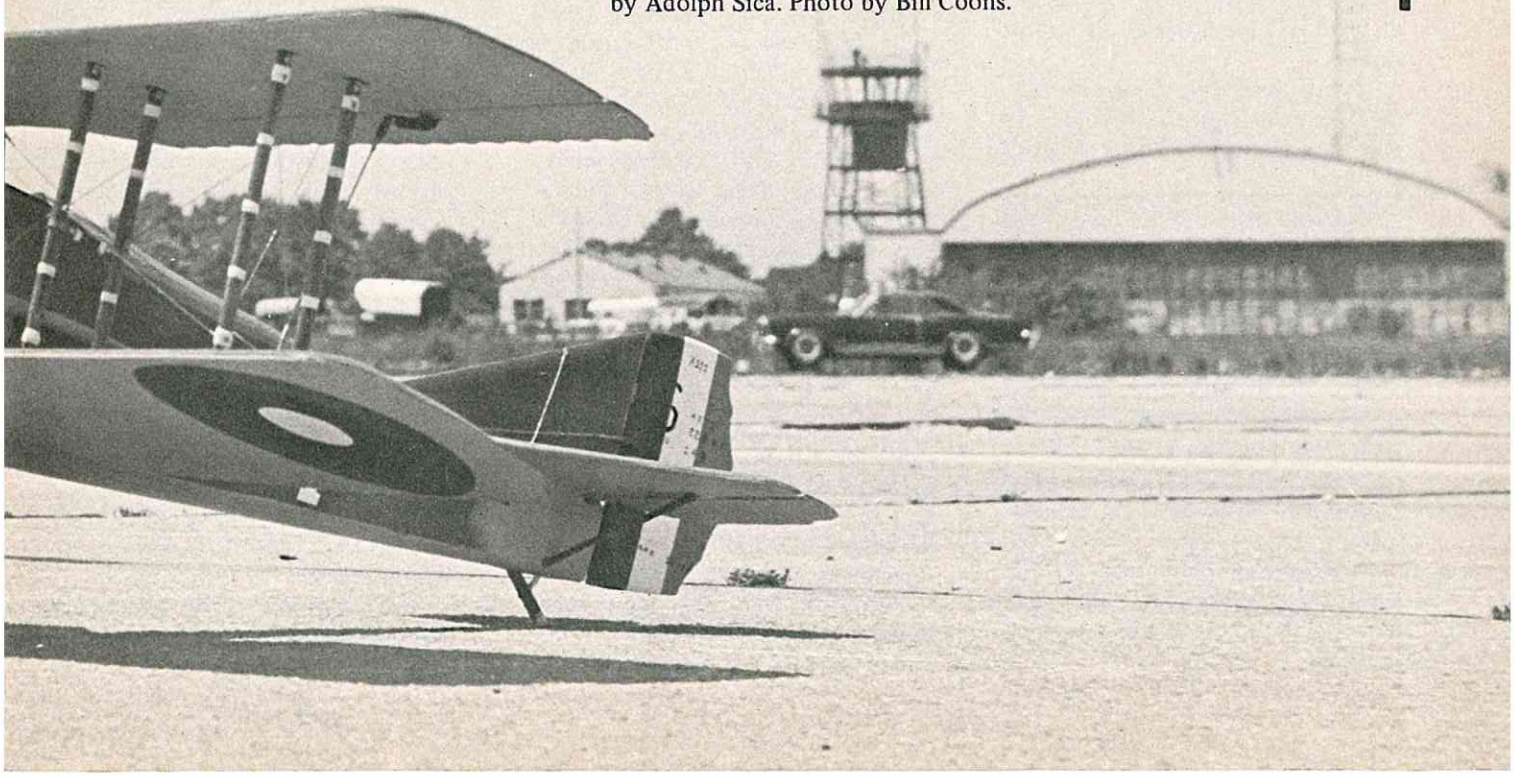
THIS MONTH

VOLUME 7, NUMBER 3

VIEWPOINT	Don Dewey	4
SUNDAY FLIER	Ken Willard	6
CUNNINGHAM ON R/C	Chuck Cunningham	8
ENGINE CLINIC	Clarence Lee	10
SCALE IN HAND	Dave Platt	12
GEMS	Jim Simpson/Jim Bonar	14
FARMAN MOSQUITO	Hurst Bowers	16
R/C VISITS RCM	Ian O'Carre	20
OLE TIGER	Frank Johnson	24
GUS	Willie Richards	28
1969 RCM WINTER NATIONALS	Jerry Kleinburg	30
QUEEN CLASSIC TRANSMITTER	Bryce Petersen	36
MODEL SCALES	Jack Headley	42
FOR WHAT IT'S WORTH		46
PRODUCT REPORT: MRC PROPORTIONAL		48
COUPLED FLAP-BRAKE SYSTEM	Ottar Stensbol	50
PRODUCT REPORT: ELECTRIC R/C CARS		51
SOARING	Jerry Nelson	52
WAGGER	Loren Dietrich	61
RCM ARTICLE INDEX: 1969		85

R/C MODELER Magazine is published monthly by R/C Modeler Corporation, Don Dewey, President. Editorial and Advertising Offices at 171 W. Sierra Madre Blvd., Sierra Madre, Calfornia 91024. (213) 356-1066. Entered as second class matter at Sierra Madre, California and additional offices. Subscriptions $7.50 per year, $14.00 two years. Single copies 75 cents each. Add $1.00 for postage outside U. S. and Canada. (Except APO's.) Change of address notices, undelivered copies and orders for subscriptions are to be sent to P. O. Box 487, Sierra Madre, California 91024. Not Responsible for unsolicited manuscripts, which must be accompanied by return postage.

COVER: Two exciting models in front of San Francisco's Golden Gate Bridge. Phyllis Sherlock, the attractive wife of Paul Sherlock, holds the 1:9 scale model of a Gates Lear-jet 24B. The .60 powered Lear-jet from Sherlock Aircraft Models is an exciting scale model that is easy enough to fly and maintain to make it an ideal sport model. A real show stopper!
FRONTSPIECE: A Spad 13 from Aero Tech Engineering plans, built by Adolph Sica. Photo by Bill Coons.



VIEWPOINT

BY DON DEWEY

In this issue you'll find, among other things, what is commonly referred to in writing circles, as a "Biterbit" piece. In other words, something that is just the reverse of the usual. In this case, it's Ian O'Carre's article entitled, "R/C Visits RCM." As one of our readers, Ian came up with the idea of reversing the 'RCM Visits' feature. So, to add to this vignette of RCM's home office doings, here's a page from the manual we give to each of the new girls to read on their first day with us:

RCM TERMINOLOGY FOR EMPLOYEES

Under Consideration: Never heard of it before.

Under active consideration: We are looking in the files for it.

Expedite: To confound confusion with commotion.

We will look into your subscription problem: By the time you receive your next issue, we assume you will have forgotten the problem.

Board Meeting: A mass meeting by the insecure masterminds of this corporation.

Reliable Source: The modeler the editor just met.

Informed Source: The modeler who told the modeler the editor just met.

Unimpeachable Source: The modeler who first started the rumor the editor sets down in print as fact.

Clarification: To fill in the background with so many details that the foreground goes underground.

We are making a survey: We need more time to think of an answer.

We will advise you by return mail: If we figure out what we're doing, we'll let you know.

Editorial: A long, confused and inaccurate statement of absolute fact.

A respected member of the modeling fraternity: One who agrees with the editor and subscribes to RCM.

Advanced, first class copy: A reject from the printer, mailed to staff members and advertisers, without binding, in "do-it-yourself" form.

Typographical error: Computerized typesetter failed to spell properly, causing misprint.

Printer: A combat-ready team of professional agitators perpetually on a seek-and-destroy mission.

Advertiser: A bankrupt modeler too lazy to work for a living.

—O—

And, in case that might lead you to believe that everything is completely serious around here, I'd like to pass on this little gem. Frank Garcher and I decided we'd jointly design a six foot Piper J-3 that was totally scale. Frank had the preliminary drawings done and sent them out to me for additions, corrections, etc. Since this project was intended to be a construction article when completed, Big Frank decided to do the construction article. It read as follows:

PIPER CUB J-3 INSTRUCTIONS

This design is the result of extensive efforts of the design and engineering staff of Midwest Products.

Using the best yardstick available free from the local hardware store plus other precision instruments, it has been certified authentic by Mr. Piper himself. (That's Sidney Piper the local truck driver that delivers Balsa wood.) Sidney, (affectionately known as "Moose") took one look at it and said, "Dat's a Piper Cub"! He also called our Das Little Stik a Piper Cub too.

Begin by taking a 3" x 3" x 48" balsa block and shaving it down 1/4" x 3" x 48" with a carpenters plane, then slice it in half with a razor to make two 1/8" pieces for the fuselage sides. Use 8 penny nails and tack the fuselage down to your new drawing table. After glue is dry remove nails with a wrecking bar.

The wing, stab, and rudder construction is straight forward. I don't know what that means but they always say that in the magazines.

Now install the radio equipment. Glue the thermothrocle in place with wood screws and wire it to the cranisfore. Run a wire through conduit to the fleabastat and connect it to the phutstule.

Cover the entire structure with old R/C Modeler covers.

—O—

In a somewhat more sober vein, the consolidation of production facilities for Micro-Avionics, Inc. and Orbit Electronics was announced simultaneously with news of the appointment of Carl E. Maas as Marketing Manager.

Previously headquartered in Ontario, Calif., Micro-Avionics will move its manufacturing and engineering facilities into the buildings now occupied by Orbit in Garden Grove, Calif. Both companies are leading designers and manufacturers of electronic systems for radio controlled model airplanes, boats, and autos. Each company will continue to produce guidance systems for the radio control industry.

At the same time, Carl E. Maas was named Marketing Manager for both companies. For years, Maas has been involved as a hobbyist in radio controlled flying, recently entering national competition. Prior to his new assignment, he served as personnel manager for Datatron, Inc.

A graduate with a bachelor's degree in education from the University of Minnesota, Maas spent thirteen years as a teacher, atheletic director, and coach in the Norwalk-La Mirada school districts prior to joining Datatron.

In July 1969, both Orbit Electronics and Micro-Avionics merged with Datatron, Inc., manufacturers of digital data systems, high performance timing instrumentation for the aerospace program, computer controlled IC testers, electronic editing systems, and IBM compatible disc packs.

"Our mergers with Orbit and Micro-Avionics was prompted by a realization that there were many

engineering and manufacturing techniques we developed in our high reliability space work that could be applied to manufacturing RC systems," Datatron president, Arthur L. Purcilly, stated.

"What I didn't realize at the time, was the pleasure and excitement in this hobby," Purcilly added. "Both Donald Degraffenreid, our vice president-technical director, and myself have become thoroughly involved. In addition to models now under construction, we have been attending many of the recent competitive events including the RCM Winter Nationals in Tucson."

—O—

Since we try to pass on news of R/C activities in out-of-the-way places, we thought you might be interested in this letter from Capt. Tom Gealta, U.S.A.F., member of the 'Mid-Atlantic Aeromodelers':

Dear Don:

Just to let you know that R/C modeling is really being pursued out in the middle of the Atlantic ocean in no uncertain terms, let me tell a little of the "Mid-Atlantic Aeromodelers" based at Lajes Field, Azores. The club is composed mostly of hard headed, persistent and extremely dedicated R/C modelers. You have to be at least hard headed here to stay in the hobby because we have more problems to cope with than the average bear. First of all, the wind blows almost all of the time (20-30 knots, gusts to 45 are common), and about fifty percent of the time there is water in the wind. As a result calm days are directed by God and we have many dances and prayers to effect some calm. On the good side we have the entire inactive runway to fly on, and are given complete control of it when we are using it. The area is relatively free from obstacles except the Skeet range which is a restricted area below 500 feet, and the ocean which is off each end of the runway. Fortunately we haven't lost an airplane to the sea yet, and we've only lost one over the Skeet range and he was buzzing (a direct hit at 25 feet, 12 gauge skeet load, and there must have been 5 million pieces). We've had very little interference on 27 mcs, but most of the guys are going to 72 to get away from the Walky-Talky probability (the Air Police

(continued on page 55)

SUNDAY FLIER

By KEN WILLARD

CAUTION! R/C flying may be hazardous to your health! OK. How many of you smiled indulgently, flicked the ashes off your cigarette, and decided to read on and see what the old Chief Sunday Flier had to say this time? .....

Well, this is the general idea; you've all seen that warning on your cigarette package, but you don't give a damn so you go ahead and smoke anyway.

Does that make you a member of the "National Don't Give a Damn Society?" The AMA (American Medical Association) thinks so.

Then you go out to the flying field, and even though there are a lot of spectators there, you test fly your new model, it gets away from you for one reason or another and crashes, nearly decapitating a bystander.

Does that make you a member of the "National Don't Give A Damn Society?" The AMA (Academy of Model Aeronautics) thinks so.

Well, I don't. Either for smoking your cigarette (which I don't happen to do) or crashing your airplane (which I do happen to do).

I prefer to think that you (if you do the above things) are more accurately identified as a member of the "National Don't Know The Difference Society."

And why don't you know the difference? Personally, I don't believe it's because you don't give a damn, like both AMA's seem to feel. I believe it's because the AMA's tend to equate ignorance with stupidity.

Smokers have been warned, but they've decided the risk is worth it, so they go on smoking. Stupid?

R/C modelers, however, haven't had the explicit warning that smokers get every time they buy a pack of cigarettes. So they put their airplane together and go out to fly it without any real feeling that it is hazardous — or even if they have given it a thought, they decide the risk is worth it. Stupid? Or ignorance?

P. 56

CUNNINGHAM ON R/C

Have you taken a good look at the 1970 automobiles yet? They're shiny, loaded with chrome, have lots of power, air conditioning, and all kinds of good things. But, they are pretty much like their 1969 predecessors. As a matter of fact, they really aren't much different from the 1965 automobiles. Or, the 1961's. They have a few facial changes, but the engines and power trains are pretty much the same. On some models, the brakes have been changed to disc types, and there are certainly more belts and hooks and hangers on the inside then there were a few years ago, but after all of the frills are stripped away, the basic car is just about the same as it has been for the past ten years.

How about in houses? If you have a home constructed in the past ten to fifteen years there's a good chance that all of the built-in's are about the same as are being used in todays new homes. Dishwashers, garbage disposals, heating and air conditioning are pretty much the same. There really hasn't been anything new introduced for either automobiles, or homes in some time. Unless the car wears out from use, or the home becomes too small, there isn't any real reason to buy a new car, or a new home. (At least, that's a pretty good line to tell your wife!) Naturally, you may want to move to a better neighborhood or get a more spiffy auto to show off in, but the new car is, mechanically, pretty much like the old one.

The same has not been true in the radio business for the past ten or fifteen years. These years have seen very abrupt and sweeping changes take place in our control systems — changes that have made radio equipment obsolete in just a couple of years. First, the big change from single channel escapement type radio and aircraft to the five channel ree drigs came to the forefront, only to be replaced by the ten channel reed sets, then the eight channel reed rigs came to the forefront, for only a short time before proportional radio pushed them off of the market. Then the miniaturization of radio equipment became popular with the introduction of the small Bonner set almost three years ago. Then virtually all of the radio makers jumped on the new trolley and came out with their own small equipment. For at least two years now the radio sets have been just about the same size. Some rigs have been smaller, an eight ounce flying weight has been attained, as opposed to twelve and thirteen ounce rigs but, what the heck, how small does it need to get before it simply fades away? A four ounce weight reduction is nothing compared to the drop from thirty-two to thirty-five ounces down to thirteen ounces that we experienced just a couple of years ago. I feel that radio development will just about stabilize at the current size. Perhaps some more shrinkage will take place, but not much. There really isn't any place to go. The next big push can, and will, be in reliability, but even this has to be based upon the reliability of the components that go into the system.

So, what's the reason to buy a new radio rig? Really, not much, just like the automobiles, and the houses, now, there are not very many drastic changes to be had, so why buy a new rig? This is the problem facing the model industry at the present time. Many, many of the past sales of radio equipment were for the replacement field. With this business drying up, sales of equipment must be found in people new to the sport of R/C flying.

Ok, then, so its tough for the *(continued on page 71)*

ENGINE CLINIC

BY CLARENCE LEE

Many new products come into the RCM office each month and are written up in the Kits & Pieces section of the magazine. Many of the manufacturers with products related to the engine field have asked that I review their offering. Before I will do this I have to feel that the product is really outstanding, something that is needed by the modelers, and serves a useful purpose. In other words, I have to be 'turned on' myself before I will give it a review. I will not be using this column to plug new items unless I feel that they are of real value and merit.

This month we have two items from the same manufacturer. The first is a line of machined aluminum motor mounts. I first saw samples of these mounts at the Santa Barbara pylon races last spring. Gary Korpi was showing them around and had most of the fliers drooling! Being a machinist, I can appreciate the time and effort that goes into the turning out of a product such as this. Many of you are probably saying, "so what's new about aluminum motor mounts? Tatone has had a line on the market for years." Right, the Tatone mount is a fine product and the only type of radial mounting of which I approve. Just as General Motors makes both Chevrolets and Cadillacs, the Chevys for the masses, and the Caddies for the more prosperous who like better quality, these mounts could be considered the Cadillac of the motor mounts. They are machined from solid bar stock aluminum and provide a dead true, rigid, mounting surface. The price, like that of a Cadillac, is a little rough raging from $10.50 for the smaller sizes to $12.50 for the larger. It is actually surprising to me that they can even be sold for this price. There are several hours of machine work involved, besides the initial cost of the bar stock aluminum. If you appreciate quality and like the better things, then I recommend you hang your engine on one of these mounts. Especially the Formula 1 racers where a dead true and solid mounting surface is very essential. The mounts are manufactured by International Products, P.O. Box 1313, Los Altos, Calif. 94022.

The second item from the same manufacturer is a machined aluminum exhaust extension. I think that this is going to be the real sleeper of the line .This has been a long needed accessory in the model engine field. I would guess that International Products will have a hard time keeping up with orders on these. Actually the prototypes sent to me were a little heavier han need be, the wall thickness being rather thick which, in turn, cut down on the size of the opening. I recommended to Rudy Thomas who is the big chief at International Products, that these be lightened up considerably. I hope the production model extensions will reflect this recommendation.

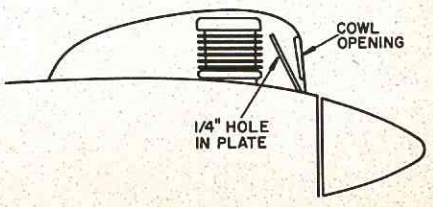
* * * *

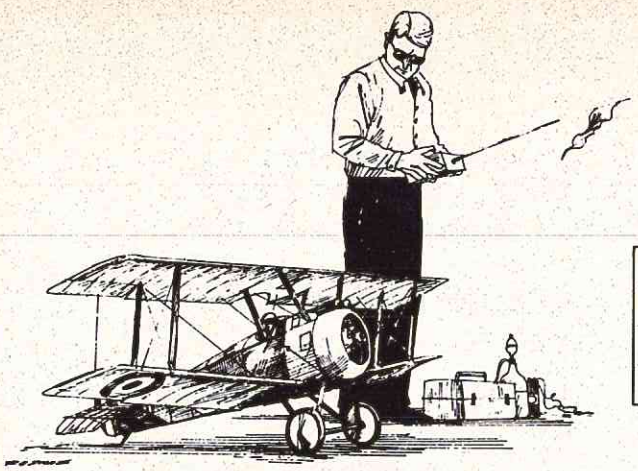
As most of you who are flying the Formula one racers know, overheating can be a big problem. Especially on the starting line if you have to run the full two minutes waiting for one of the other crews to get their engine started, or by deliberate 'sand bagging' which is becoming far too prevalent in this area. Several pilots are purposely letting a full minute go by before making any attempt to start their engines, in hopes that one of the other pilots who did start his engine when the starter said top, will overheat and be out of the race. This has worked, and will eliminate some of the competition from the race to begin with, but sure places doubt in my mind as to the sportsmanship involved. I would rather see the race won in the air, myself. An easy solution here would be to have a one minute starting time from the time the first engine starts, with a two minute maximum. I imagine something of this nature will be worked out very shortly for next season.

In the October Engine Clinic we talked about the importance of proper cooling, and how to achieve this by correct baffling of the engine. Jim Nightingale has come up with an idea for cooling that is a little different and presently being used by some of the top competitors. The teams of Joe Bride-Lou Stanley, and Lerry Leonard-Bud Anders to name two that I know of. Jim works in the motor division of K & B as engine designer, tool maker, and machinist, and was one of the developers of the .40. K & B's 'no tension' ring presently used in the K & B .40, and Veco .50 and .61 was also Jim's development, having worked on the ring for many years before coming to K & B. Jim should know as much about running and cooling these little monsters as anybody.

Jim's idea is to place a plate directly in front of the engine fins, behind the cowl opening. The incoming air is directed up and over the head which is the hottest part of the engine. A very small hole, or slot, is cut in the center of the plate to let a small amount of air to the fins. A ¼" dia. hole seems to be ample. Engines that are presently using this system run very

(continued on page 78)





by DAVE PLATT
(Designer — Top Flite Models)

SCALE IN HAND...

Once upon a time, there used to be a columnist in an English magazine whose monthly offering was nothing more than an account of his own personal doings of the month. Had these been interesting and educational this would not have been necessarily bad, and some columnists, who happen to be especially interesting people, do it all the time and do it well. But this one luckless chap's efforts were a warning to this author never to print personal accounts unless it is felt the account will be of general interest. This is an explanation for those of our correspondents who constantly query why we don't give more workshop news.

However, this month we're going to break this self-imposed rule. If, after reading the following you feel we shouldn't have, feel free to write and complain and we'll shut up for ever more.

After the usual 2 month go-round of trying to settle on a subject for this year's **Nats** (See! You're not the only one with this trouble!) we finally settled onto the **Hawker Sea Fury F. B. 11.** Apart from the many other attractions of this beauty, the one thing that really offered a challenge was the power-folding outer wing panels of this Korean War carrier fighter.

How to solve it? That was **the** question.

Looking at the basic breakdown of the problems we get —

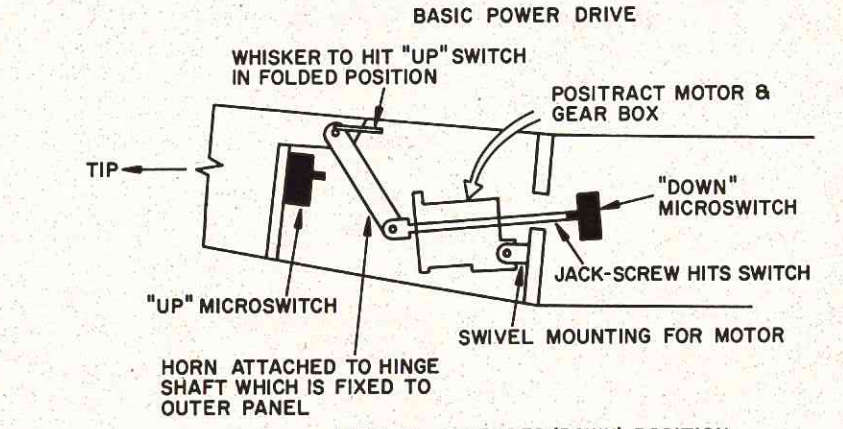
1) The panel must be hinged to fold up correctly thru the required angle (109°).
2) When folding, the aileron and outer flap section must disengage, and, more important, must re-engage **exactly** during the extend cycle.
3) A positive latch must hold the wing against flight loads in the down position. **Or else**!
4) This latch must be disengaged somehow to allow the wing to fold before the wing itself **starts** moving.
5) The latch must engage after the wing **stops** moving in the extend cycle.
6) The wing panel prime-mover must stop automatically when the wing position is correct, up and down.

When we look at the diagrams of how this was solved and read the description, everything is so simple and obvious that we're not going to embarrass ourselves by admitting how long it took to figure out!

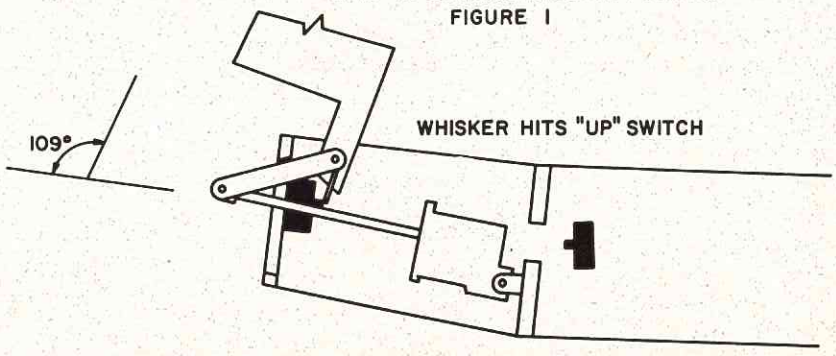
In order to clearly explain the system we're going to take it in 3 stages — the Basic Power Drive, which folds the wings; the Latch System, which holds the wing when extended; and the Aileron Linkage, which looks after the proper alignment of the ailerons (and) flaps.

STAGE 1. The wings are hinged as close as possible to the upper surface and some ½" in from the fold line. Outer panels are driven by a Positract motor/gearbox unit

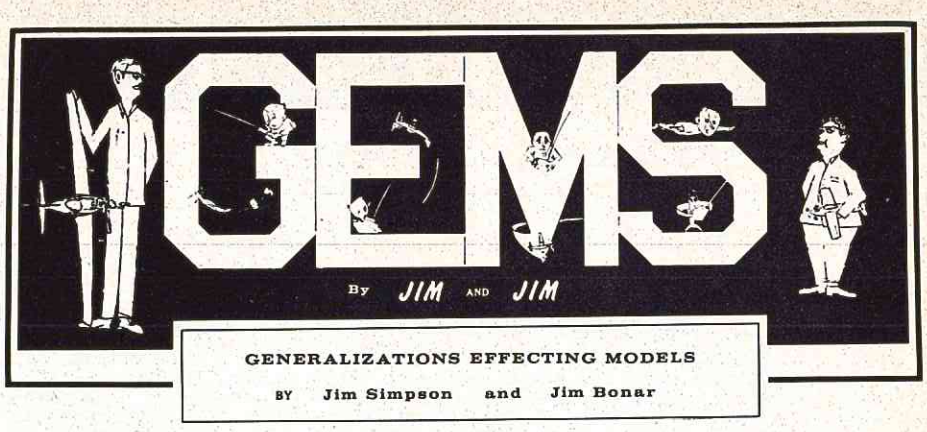
(continued on page 65)



WING IN EXTENDED (DOWN) POSITION
FIGURE 1



WING IN FOLDED (UP) POSITION
FIGURE 2



GENERALIZATIONS EFFECTING MODELS

BY Jim Simpson and Jim Bonar

First, you must decide **when** you are going to fly. A 15 minute prior decision won't get it!

You must begin planning a flying session at least 10 hours prior to leaving for the flying field. The main reason for this advance planning is to enable you to charge the Nickel Cadmium (NICAD) battery pack. There has been considerable research done on these marvelous power packs and the essence of this vast knowledge can be summarized as follows; There are many battery packs for radio controlled miniature aircraft in service today which are 4 or 5 years old. Their lifespan is determined to a great degree by their usage. A nickel cadmium battery pack can develop a memory, that is; If you fly only one day a week and only two flights that day, and faithfully recharge your pack prior to each flying session then, in a given period of time, your pack will only deliver two flights use then need recharging. So, if you decide to fly three or four flights on the next session after this faithful cycle began you are vulnerable to battery pack failure which, if it occurs in flight, may lead to a crash! (UGH) The preventative measure in thi scase is to, at random periodic intervals (like once every three or two months or so), turn on your radio and "play" with it till the servos run slow and then recharge it!

OK! lets go fly tomorrow. So — tonight, before you go to bed, plug in your chargers and check that charging is actually taking place. Now is also the time to check your support equipment! Make sure your supply of fuel, props, etc. is adequate because the hobby shop may be closed tomorrow and it sure is disgusting to have to quit flying early because you (and everyone else) is out of your size of props!

The next morning has arrived and it's time to go flying. After disconnecting your chargers, plug in your gear, put your plane together, and check all the control surfaces for full movement as well as freedom of movement. If you do all this before you leave the house you'll agree it beats driving out to the flying field only to discover your radio has failed! The senior repairmen for two major radio control equipment manufacturers assure me that more failures occur when the equipment is first turned on (from current surge) than any other time. In addition if you perform this checkout before you go to the field you can confidently bet on "first one in the air" conditions without worry! The last bonus for this is saving your "face." We personally know several instances of people actually taking off with aileron servos being connected backward and at least two cases of a person taking off with the aileron servo disconnected completely! Then for "jollies" we remember getting our engine started first out of a four ship Formula I pylon race only to have it quit on the takeoff roll! The reason? The throttle servo was hooked up backward so high throttle was actually low and vice-versa! So — don't do as we do, do as we say!

After you have loaded the car, use this short checklist to insure, that you arrive at the field with all the necessary items for an enjoyable afternoon:

1. Lawn chair or lounge
2. Cold drink cooler
3. Ice for cooler
4. Cold drinks for cooler
5. Plenty of smokes (if applicable)

(continued on page 67)

FARMAN 'MOUSTIQUE'

By HURST G. BOWERS

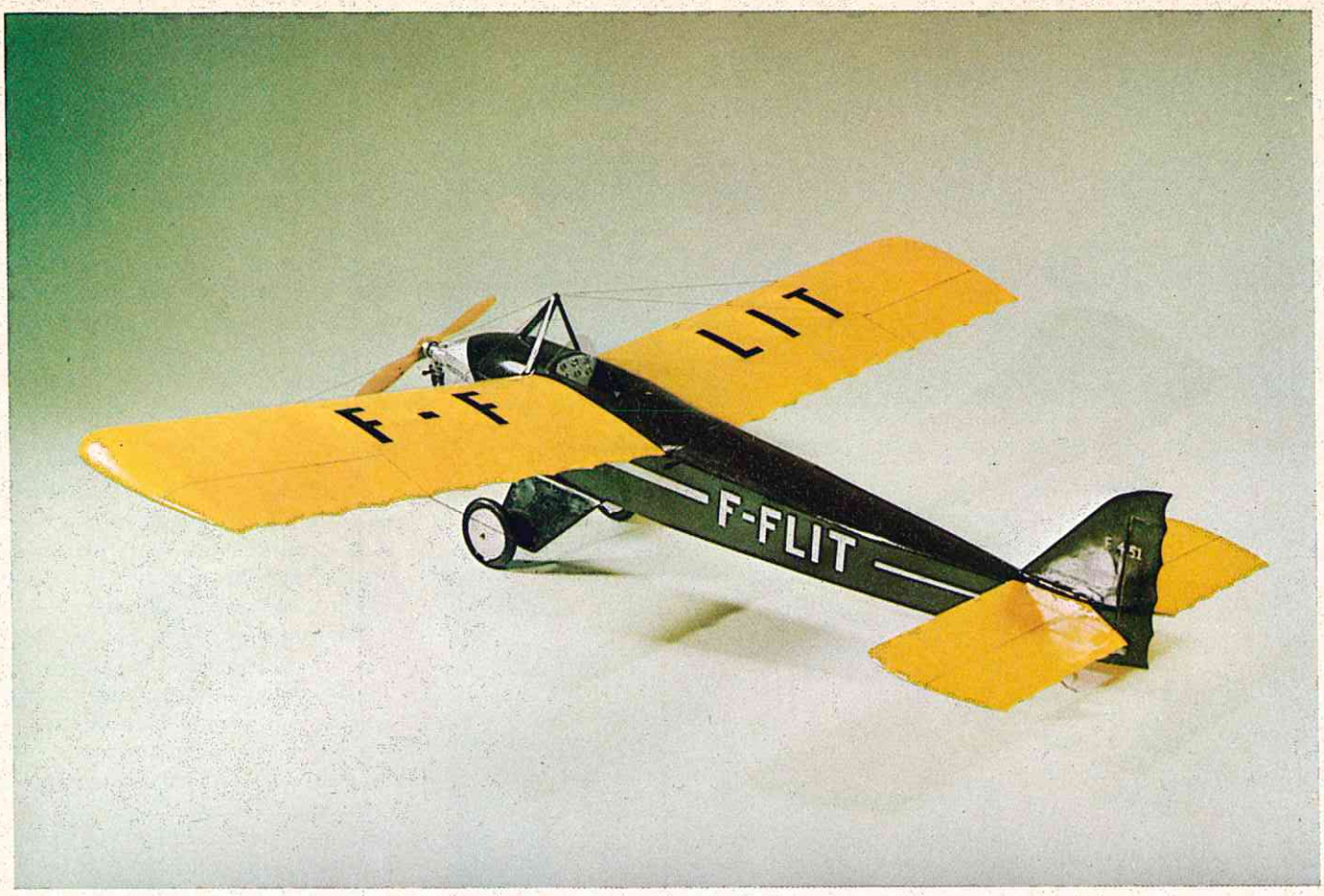
For .15 engines and anything from Galloping Ghost to full-house proportional, this scale French Farman looks as if it had been lifted right out of the Musee de l'Air at Chalais-Meudon.

My affair with the Farman Mosquito began on a cold spring day in the lovely little Paris suburb of Chalais-Meudon. My old friend, Maurice Bayet, the director of France's leading model publication, had called my office that morning and asked me to join him and another guest, Ron Moulton of England, for a visit to the Musée de l'Air. What a wonderful opportunity. To take part in a privately conducted tour of one of the world's greatest collections of aviation history, accompanied by two such leading authorities, is something that happens once in a lifetime. Needless to say, I accepted with pleasure and, since I lived in the suburb of Garches during my three years assignment in Paris, Chalaias-Meudon became one of my favorite haunts during the remainder of my stay in France.

The collection of aircraft at Musée de l'Air is overwhelming, but I found myself particularly attracted to a little cream, shoulder wing exhibit that looked to be more of a model than an airplane. It was wire braced, had massive landing gear struts, and was powered by a little twin cylinder 30 hp AVA engine that reminded me of the old Aeronca mill. The lines and configuration were amazingly simple and I vowed to myself that this would be the ultimate choice for a radio control scale model. On each subsequent visit to the Musée de l'Air this opinion became more confirmed, but construction would have to wait until I returned to the U. S.

A couple of years later while I was commanding a Military Airlift Command squadron at Charleston Air Force Base, South Carolina, I began to thumb through my drawings and pictures of the Moustique and the old itch started again, so during the very limited spare time that I could muster I began to draw and build a rudder-only job powered by an old Arden .099 which in itself was a antique. The model flew beautifully and since that time I have built another in which I used proportional radio gear for rudder, elevator, and throttle. In all, I know of seven other Moustiques which have been built from my sketches, and flown in every configuration from galloping-ghost to full-house proportional. With the exception of a jammed galloper during initial test flight on one of the models, all have been extremely successful. It is a refreshing change to see a model that looks and flies like a real airplane, and there is something about those flying wires and that landing gear that makes the Moustique intriguing.

I have seen this model powered with everything from the old Arden .099 that I mentioned to a Super Tiger .23, but I would not recommend the latter. After all, the original airplane only flew at about 60 mph. The optimum engine for this bird is the O.S. MAX .15 R/C, as



shown on the plans.

Flying this airplane, like building it, is simple and fun and it will do just about everything in the book. There is one word of caution here, however. Plackard it against spins. It will spin like nothing you have ever seen before, but with the limited fin area, recovery is something else! If you value your model don't try it. Pierre (Ernie) Greene has bumps on his head to prove it.

Have fun; Bon Appétit; etc., etc.

Before you start with the construction you should know something of the subject, so I will relate all that I know about the little Farman creation. It all began with the 1924 "Tour of France" race; a grueling 1123 mile affair compressed into a 15 day time frame. The 15 entries would fly one day and make repairs the next until, ultimately, the Farman monoplane emerged the winner, covering the distance in 20 hours and 41 minutes flying time. It attained an average speed of 54.4 mph, however; between the first two official stops it

covered the distance at a blistering 69.2 miles per hour!

There were two Farman monoplanes in existence at that time; one being equipped with a 15 hp Salmson engine and the other with the powerful 35 hp Anzani, but only the latter competed in the race. The wingspan was 23 feet and the fuselage was 18 feet long. The empty weight was only 265 pounds, but maximum gross weight was 518 pounds. The wing loading ran about 4.8 pounds per square foot.

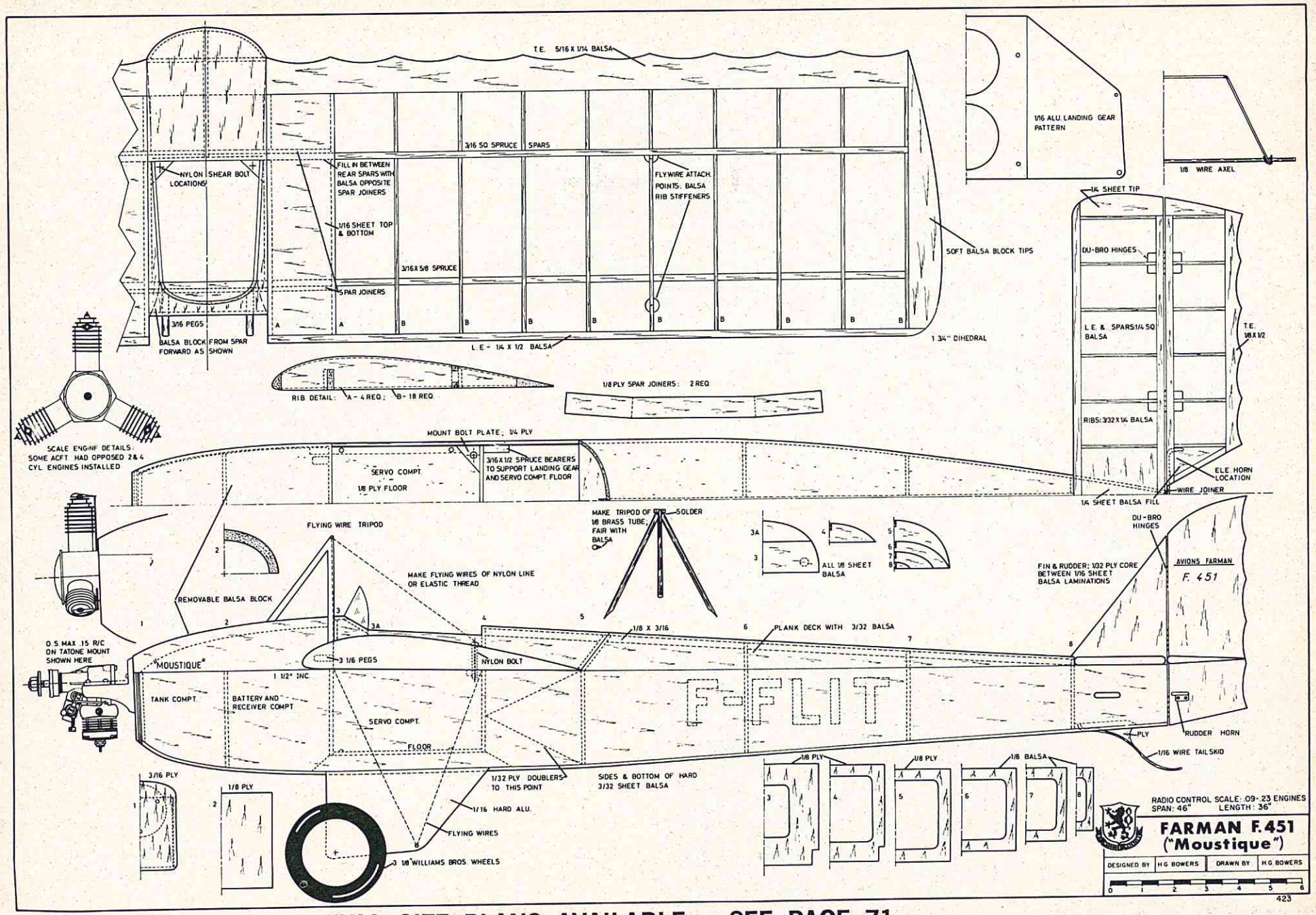
During the early 1930s several other aircraft were built with slight modifications and varying powerplant installations and they became quite popular light sport planes. It was during this era that the name "Moustique" was acquired.

Like the prototype, the construction of the model is amazingly simple. The only area where trouble may be encountered is in the rather sharp bending of the sides at the firewall. Any problems here can be overcome by using clamps and lots that are shown on the drawings are of epoxy. The landing gear struts made from aluminum, however; they can be made from 3/32 steel wire with plywood used to fill in the area between. I have used both methods and each has its advantages, one being simplicity and the other strength and resistance to bending.

As you will note, there is ample room for easy access to the radio compartments and the little Controlaire S-4 servos fit like a glove under the cockpit. The top nose block may be made removable for easier access to the fuel tank and battery/receiver compartments and the elastic thread flying wires clip to the tripod top and to the rear landing gear strut.

To go into lengthy construction details would be an insult to the intelligence of the average model builder. It is so simple that there really isn't anything that needs to be said except keep it straight and true, and free from warps. All of my models were covered with silk. One was finished in cream and the next in silver. Both looked good. Use your choice and the chances are that there really was a Moustique that color; only Henri knows.

Photos by JOHN PRESTON



FULL SIZE PLANS AVAILABLE – SEE PAGE 71

R/C VISITS RCM

Since its inception nearly seven years ago, RCM has been its readers magazine. This month, one of those readers takes you on a behind-the-camera tour of the RCM offices.

PHOTOS AND TEXT BY

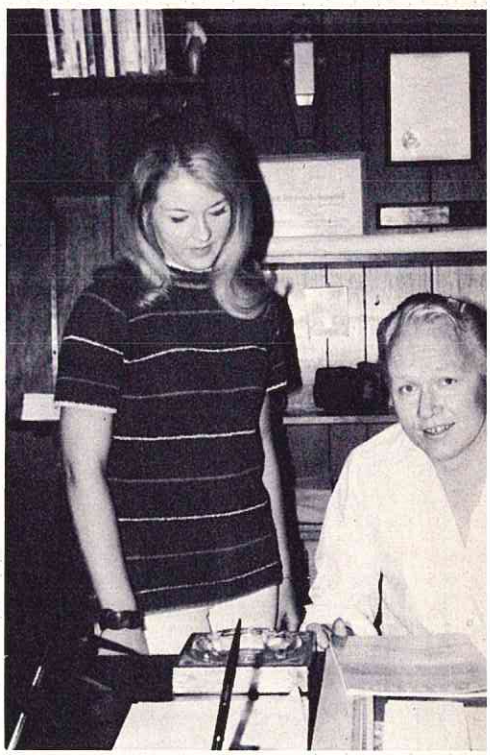
IAN O'CARRE

There can be little doubt that, since its inception nearly seven years ago, R/C Modeler Magazine has been instrumental in elevating RC to the sophisticated, increasingly popular sport we know today. As the first, and in many ways the only, adult-oriented publication in the field, it has, through communication, been our vehicle from kindergarten to college - helped us grow, so to speak.

If the staff is justifiably proud of RCM - of its role in RC - we readers should be doubly so. Because RCM is **our** magazine; we've made it what it is. Though twenty-three editors and office personnel, plus foreign correspondents, are responsible for mechanics of production; without our ideas, support, and free-lance submissions it could not exist. And nobody - but nobody - is more aware of this fact than the RCM staff.

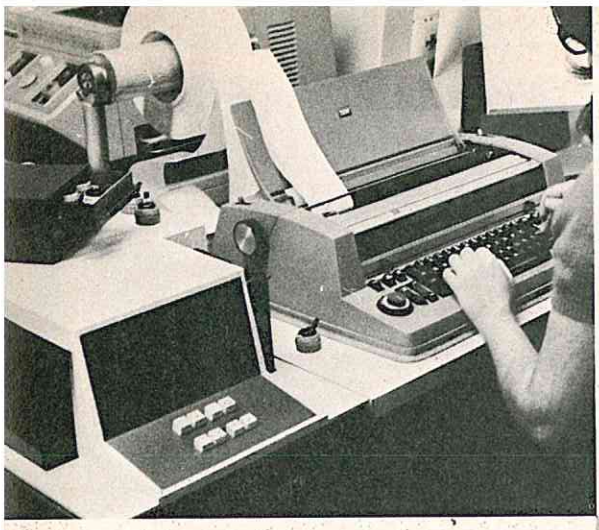
Since the magazine is nearing another anniversary and has so often visited us through the mails and 'RCM Visits' series, it seems somehow fitting we use the occasion to have R/C Visit RCM - return the compliment. So let's take a behind-the-camera tour of the RCM offices and meet a few of the people seeing to it we get our copy each month.

Now the RCM office, like any other, has a receptionist. And, like any other receptionist, Trudi is beautiful, talented, and possessed of a dulcet-toned voice that's warmed the heart of many an RC'er.

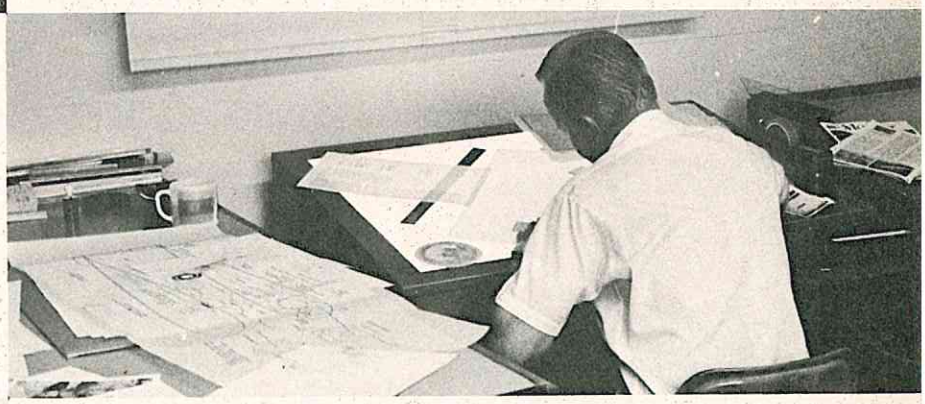


Pretty blonde Kris Bergen, Art Editor and Don Dewey, RCM's Editor-Publisher, have an early morning conference in Don's office, better known to his all-girl staff as the "Lion's Den".

There exists a myth, carefully nurtured, that the American business tycoon is omniscient master of his corporate ship. But a close look usually finds one person without whom the ship would probably sink. In the case of RCM, that "one person" is vivacious Pat Crews, RCM's Executive Editor and Corporate Secretary-Treasurer, a personable gal with boundless energy who seems everywhere at once. She is responsible for managing the more than $300,000 annual cost of publishing RCM. In her spare time you'll likely find her at contests or trade shows reflecting the distaffer's view of RC, such as in this profile taken at the 1969 RCM Winter Nationals.



Did you ever wonder how columns of magazine print are kept so even? This is one of two consoles on RCM's I.B.M. 360 MTSC computerized composer-typesetter. All material is first taped on the input console, then fed into this unit. Each letter is then computer-spaced and spewed out in columnar form on rolls of "repro" paper resembling adding machine tape, ready for the Art Department and page lay-out. The enormity of the job of the MTSC lies in the fact that every word printed in RCM must be processed through this machine.



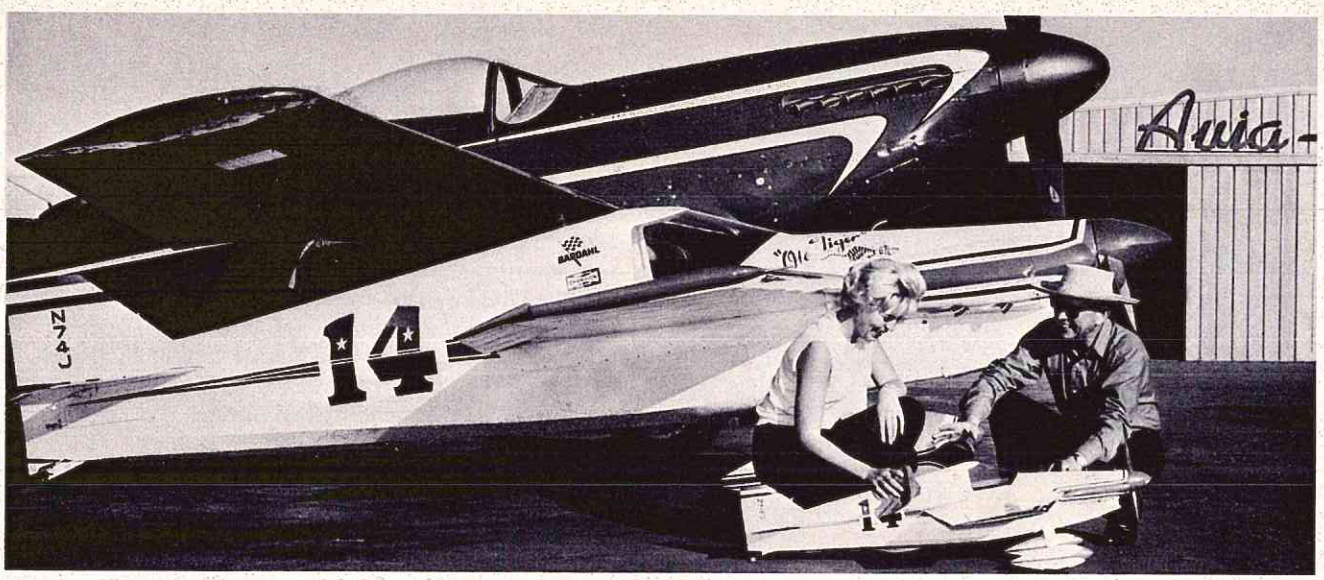
Here's a portion of the composing room where the pages of RCM are put together. This is where the columns of print, photos, and art work are made ready for printing. There's another myth, peculiar to the publishing field, that it takes years of schooling and experience to be an editor. Actually, one needs only be good at anacrostics and conundrums (puzzles, Dewey) with some aptitude for paper dolls!

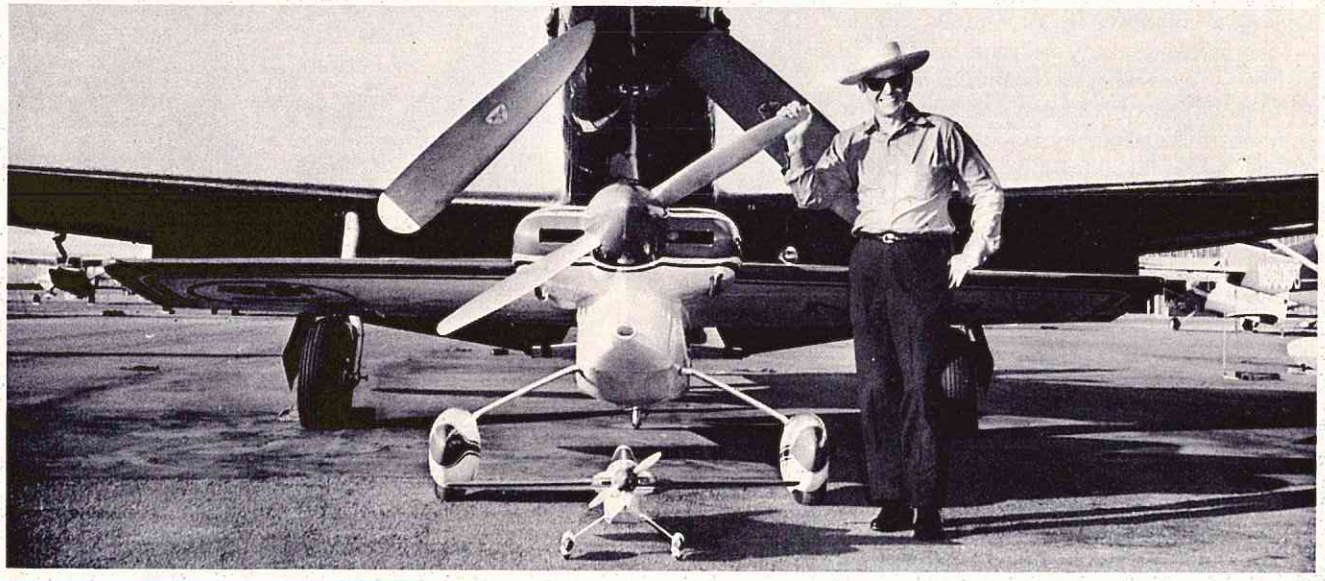
Two big jobs of any magazine are circulation and customer services, which deal with address changes, orders, and subscriptions. On the left is Carol Ludden, Circulation Manager, and on the right, her two assistants, Sheila and Michele.

The popularity of RCM plans is evident in this partial view of the storage area where we see numerous sets awaiting shipment. And here's one of the Ozalid machines they're produced on.

"I do not lose things!"

"You lost this!"





OLE TIGER

A full scale 600 sq. in. class racer designed by Frank Johnson, ardent RC'er and Crew Chief for Bob Downey's Miller Special.

By FRANK JOHNSON

I'm not much at writing articles, but due to numerous requests, and several threats for Bob Downey, to get these plans out, I decided to try my hand at it.

Regarding the history of the "Little Gem, (Ole Tiger") it was originally built in 1948 by Jim Miller, then of Fort Wayne, Indiana. It raced in the 1948 races at Cleveland, but as with most new aircraft, it didn't do so well. Throughout the years Jim made several changes to the aircraft. He used three different wings at one time or the other. (No, not at the same time.) He also changed the tail section twice, and various changes were made to the fuselage and cowling. Finally, he came up with a real bomb. Unfortunately some little airport manager from Warwick, New York managed to turn his aircraft into a potential bomb at the same time. In case you don't know who I'm talking about, it's "The Red Baron," "Grim Reaper," or whatever name we can thing or dream up to call him. As most of you must have guessed by now it's, Bill Falk and his famous "Rivets."

This guy and airplane has been Bob and my nemisis for the last four years. Now every racing season we look forward to each race, with only one thought in mind. **BEAT FALK!** Every time we manage to squeeze another mile or two per hour out of "Ole Tiger," Bill manages two or three miles per hour out of "Rivets." But one of these days . . .!

Well enough of this and on to the model. It was fairly easy for me to get accurate dimensions for this model, because I became the crew chief of the real "Ole Tiger." If you can't find what you want, then go about it the hard way. It was necessary to go this route, for, according to Jim Miller, there wasn't any drawings made for this aircraft. Everything was drawn on the garage floor and literally built from the ground, (would you believe floor), up. The wing airfoil is a composite of several drawn together on the floor and then selecting the one that looked the best. (Some way to build a winner).

Once again I was sidetracked, but I keep remembering these little things, and I thought you would be interested in them. Now, here we go again! My model was scaled 3" to the foot, simply because it's easier to figure Quarter scale than it is to figure 2.6" to the foot. I'm slightly lazy. And this puts you in the 600 sq. in. class.

For you guys that are too impatient to wait for the small version, then you can scale these plans down (or up, depending if you spring for the full size plans or not). I don't know why you can't wait a little longer. I only started the smaller version plans in 1965.

The fuselage can be built either with sheet sides, or for you scale buffs (like me) then build with 1/4 sq. balsa for built up sides and fuselage. The only real hard part of the fuselage is the nose, from the front of the wing and 2B forward. This area really squeezes down, so be extremely careful with this part. I planked the top of the fuselage from 4T to the nose with 1/8" x 1/2" strips, however, the block method would be much easier anad simpler. Each modeler has his own method so I'll not try to tell you how to build your version.

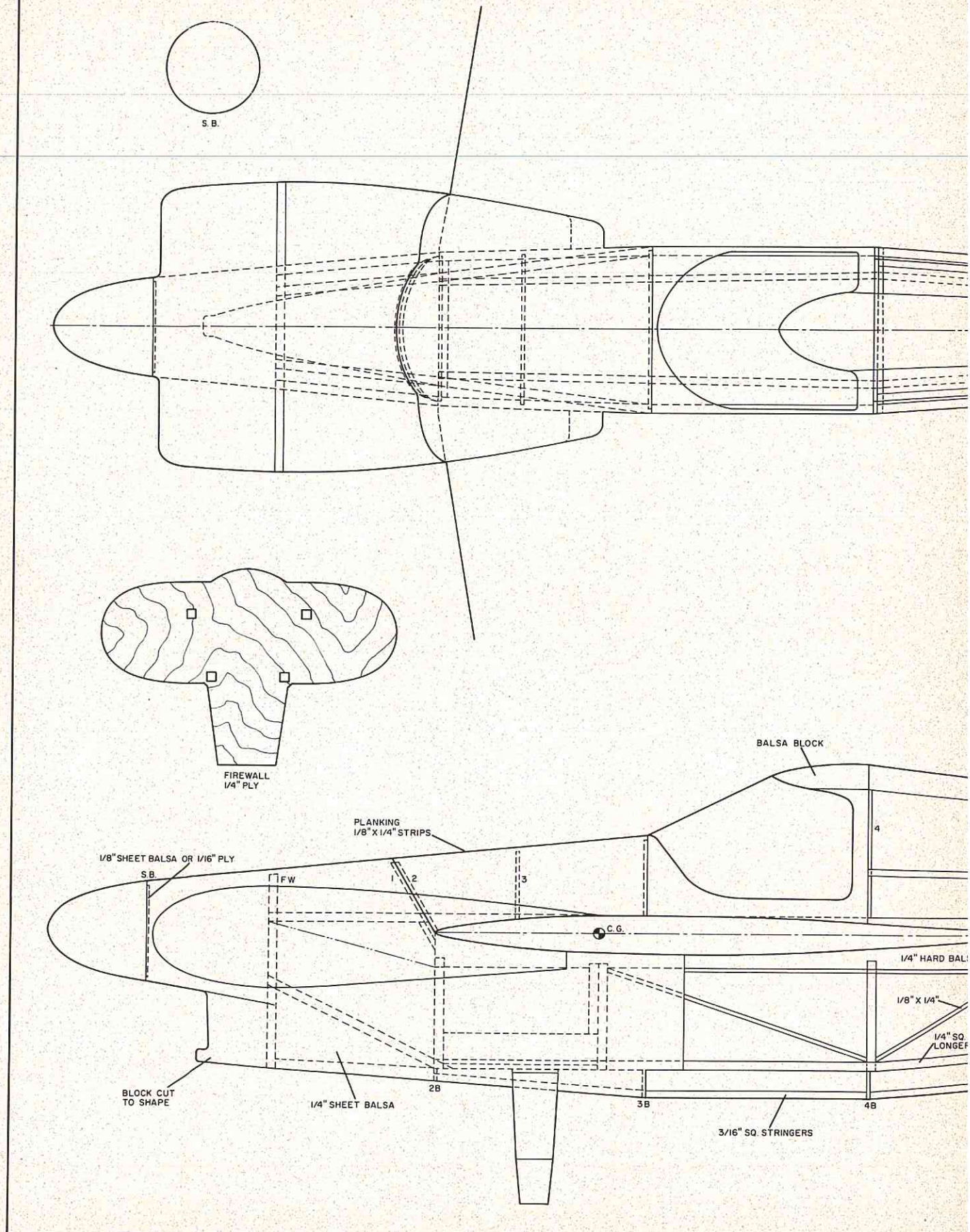
K & B's 45 with the extension shaft and a K & B radial mount will fit the firewall as it is shown on the plans. If you use any other engine or mount be sure to move the firewall to suit your particular needs. Some change of the firewall dimensions may have to be made.

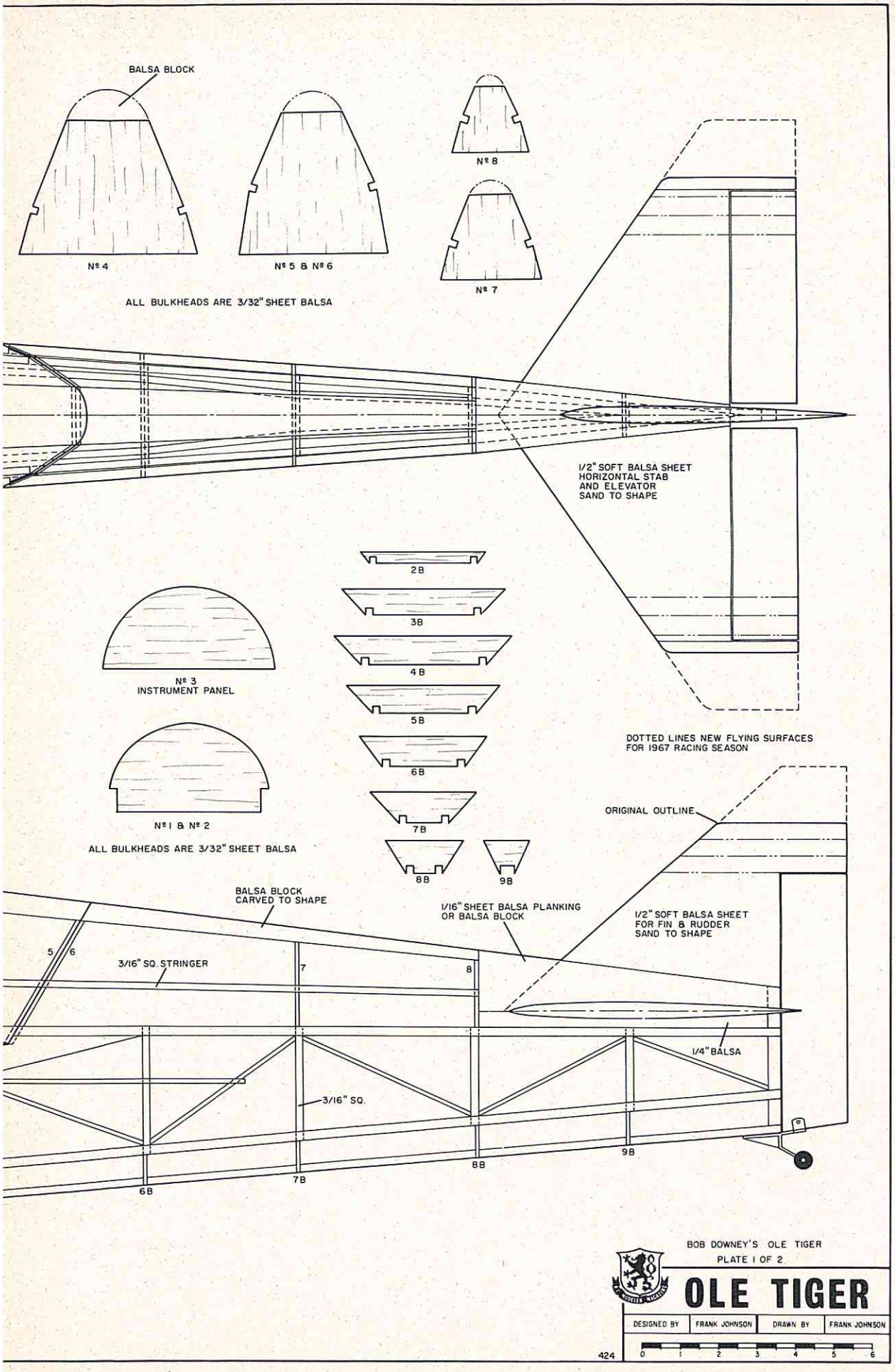
The top of the fuselage of the real aircraft has a metal wrap around the top of the bulkheads. This is the reason for the balsa block shown on the plans. Install a hard sheet of 1/4" balsa at the front and rear of the wing cutout. Glue these in well, making sure they are flush with the top of the wing cutout. These blocks are the wing hold downs, so don't spare the glue. Install 1/4" ID or 3/8" ID aluminum tubing from the bottom of the fuselage to the bottom of the wing hold down blocks.

Place these tubes as near the center of the blocks as possible and fasten them in securely. Due to the Mid-wing design of this aircraft, it is easier to put the bolts for the wing hold down through from the bottom. The tubing helps center the bolts and keeps them from getting lost in the fuselage. Use 1/4 x 20 bolts. I used two 4-40 bolts and haven't lost a wing yet, but why not be safe and go the 1/4 x 20 route?

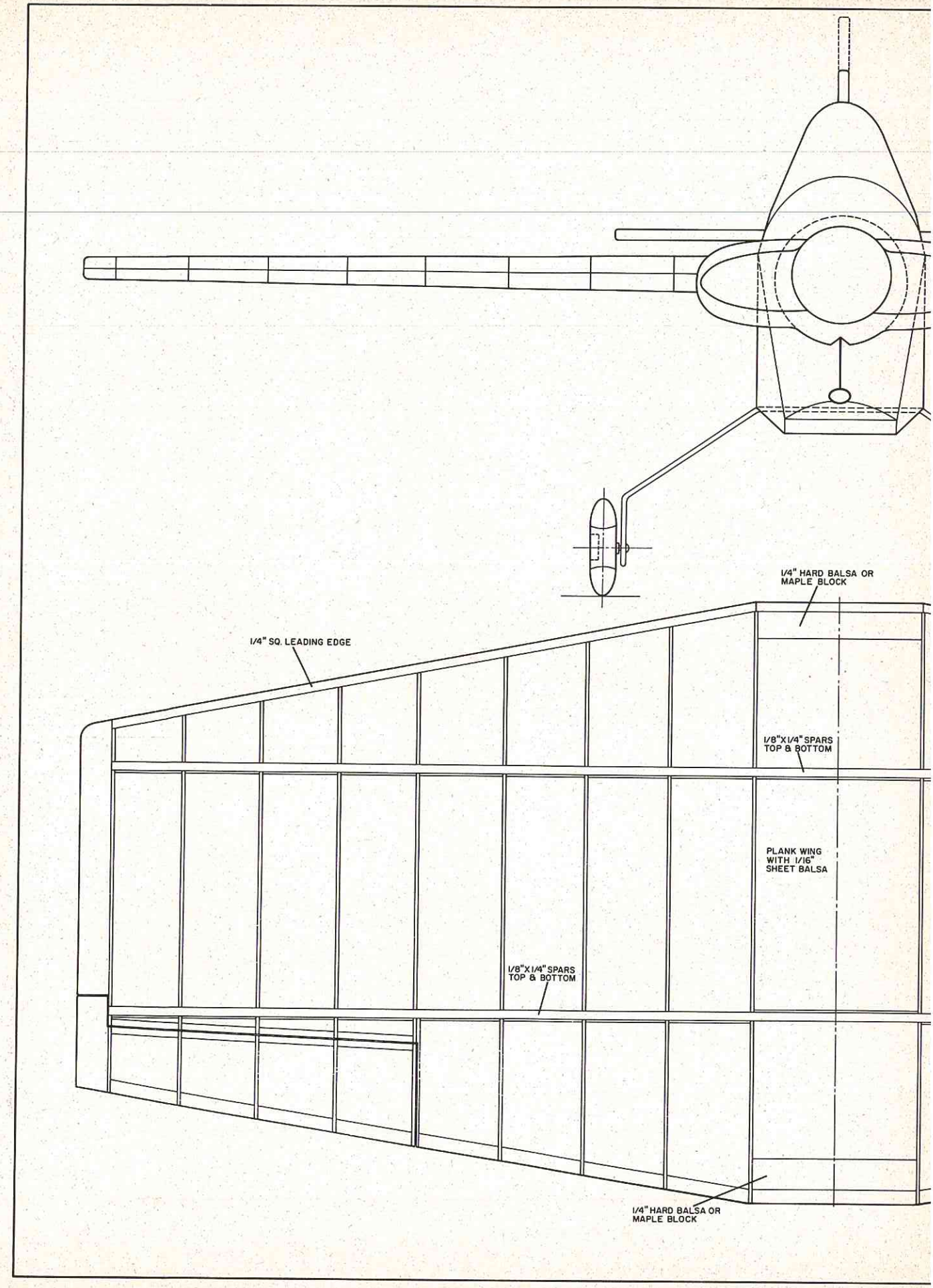
The tail shown is only 12% of the total wing area. It will work, but it is tricky to handle. Therefore, by using the dotted line outline you increase the area to 14%. (15% would be better, everyone keeps telling me, so do as you see fit). The full size aircraft had the tail surfaces slightly enlarged for the 1967 racing season, so you scale guys will be OK with the larger

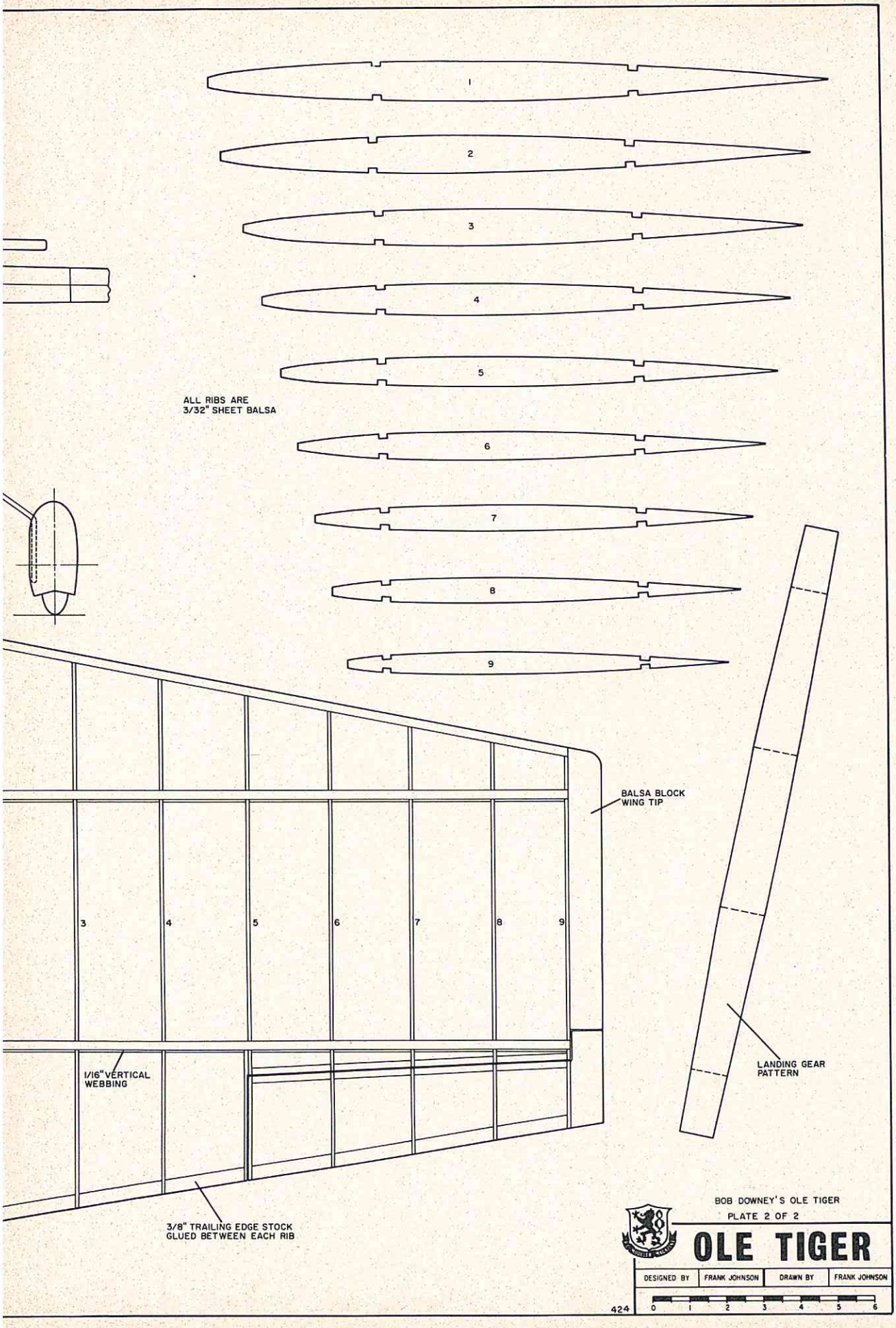
(continued on page 75)


S.B.
FIREWALL
1/4" PLY
BALSA BLOCK
PLANKING
1/8" X 1/4" STRIPS
1/8" SHEET BALSA OR 1/16" PLY
S.B.
F.W.
1
2
3
4
C.G.
1/4" HARD BAL
1/8" X 1/4"
1/4" SQ.
LONGER
BLOCK CUT
TO SHAPE
1/4" SHEET BALSA
2B
3B
4B
3/16" SQ. STRINGERS



FULL SIZE PLANS AVAILABLE – SEE PAGE 71


1/4" HARD BALSA OR MAPLE BLOCK
1/4" SQ. LEADING EDGE
1/8"X1/4" SPARS TOP & BOTTOM
PLANK WING WITH 1/16" SHEET BALSA
1/8"X1/4" SPARS TOP & BOTTOM
1/4" HARD BALSA OR MAPLE BLOCK



FULL SIZE PLANS AVAILABLE – SEE PAGE 71

Willie Richards poses with MonoKote covered prototype of 'Gus'. One of the best light-air machines we have flown at RCM.

GUS

By WILLIE RICHARDS

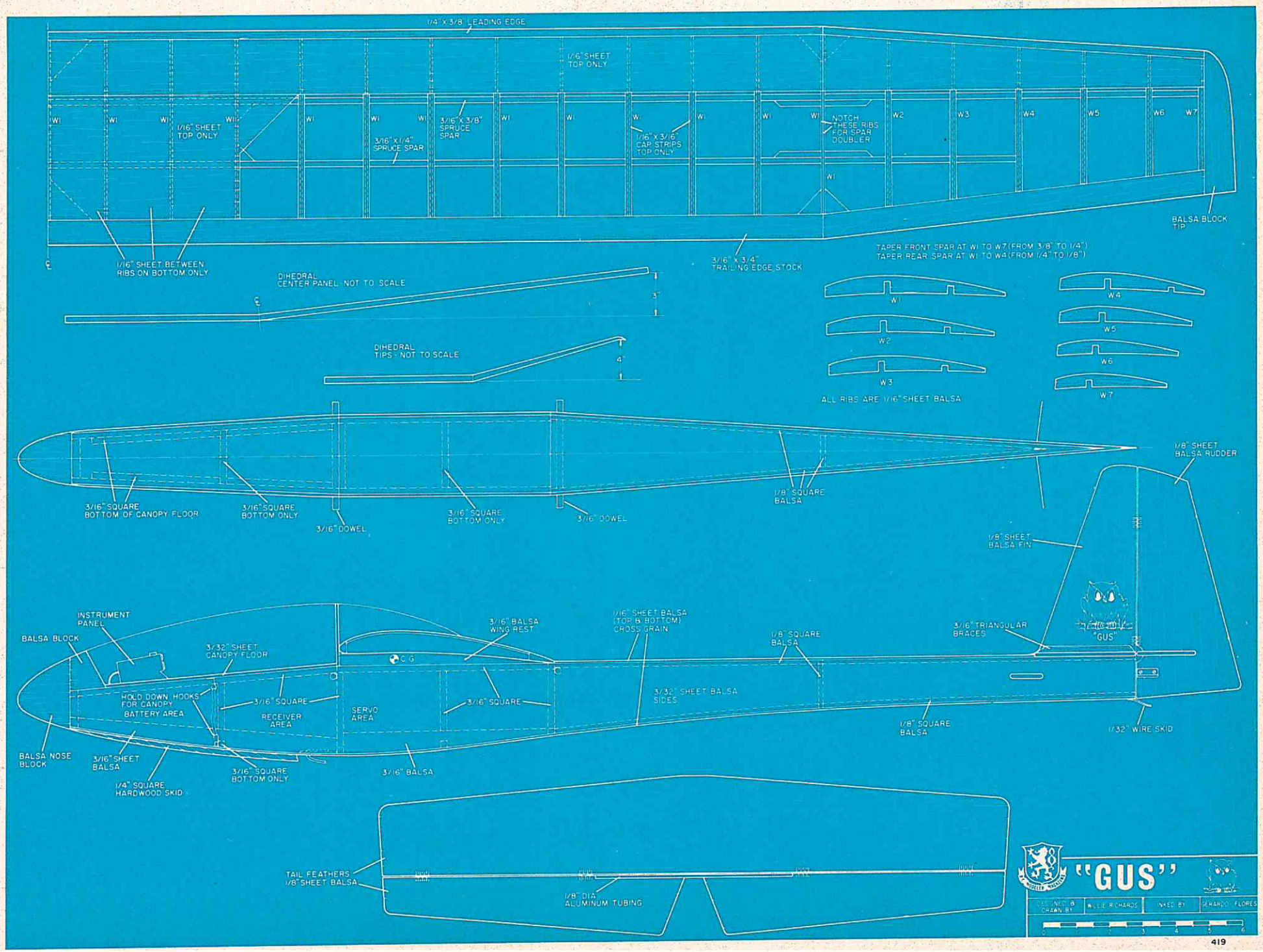
This thoroughly tested glider is the answer for light air and zero sink conditions. A magnificent performer. It is as easy to fly as it is to build.

There is a condition which is not very common among model sailplanes that is called zero sink. This condition is often overlooked by most slope soarers and very few designers & flyers enjoy it's benefits. This is when lift is equal to the pull of gravity either in thermal or almost nil wind conditions on a slope.

Dr. Rolph McPherson, noted designer and glider flyer, once stated that these conditions provided the best time to soar. GUS was designed to need 10 to 20 knots of wind blowing on a slope for adequate lift. Several visits to our local site showed that I needed a sailplane that would fly as well in weak as in strong lift.

Subsequently, I began working on a wing loading and airfoil combination, that, along with scale appearance, would give a clean design. Gus would have very good penetration ability without the loss of performance. Several wings were used employing different airfoils: flat bottoms, symetrical and undercambered. The undercamber proved to be the better airfoil for my purpose of having good lift at low speed — even down to about two mph of wind on the hill. There were even times when flying the GUS that we thought we were breaking the sacred laws of nature. We saw many fine high performance sailplanes setting on the ground while we enjoyed this condition which is known as zero sink. All things had to work and carry their own in the final design — even the fuselage is aerodynamically de-

(continued on page 76)



FULL SIZE PLANS AVAILABLE – SEE PAGE 71

"Daddy Rabbit", tops again! Jim Whitley and latest original topped C-Expert Pattern. Super Tiger mill, Pro-Line radio.

1969 RCM Winter Nats Champ, Tony Bonetti (r.) accepts RCM award from 1968 Champion Ted White. Rock steady flying . . .

R/C MODELER MAGAZINE'S

1969 Winter Nationals

Whitley, Bonetti, Leonard best field of 129 contestants as top competition pilots from 16 states gather at Marana Air Park for year's top R/C event.

By JERRY KLEINBURG

Larry Leonard – tops in Pylon I, 2nd in CX. U.S. RC champ showed sustained ability in 1969 Winter Nats.

As 1969 RC action approached the closing weeks of the year some of its brightest moments were seen during the Thanksgiving holiday in Tucson, Arizona where 129 top competition pilots gathered from 16 states for three days of pattern and pylon pyrotechnics. And the flying was serious.

Larry Leonard led the way over 41 pylon entries with 6 perfect heats in Pylon I and was in contention for the top Pattern place right down to the wire to prove that his Philadelphia performance (where he won the U.S. RC Championship) was based on solid ability. Heading the 88 pattern pilots, Jim Whitley of the U.S. 1969 FAI Internats team was first in the aerobatics event only to have Tony Bonetti outpoint him in the post-competition fly-off for the big RCM Winter Nats crown.

In pylon, spirited heats saw a virtual neck-and-neck race between 6 pilots. Behind Larry Leonard, Chuck Jones settled for second place, one point behind. Third place ended in a 3-way tie between Jack Hirtenstein, Gayle Helms, and Joe Bridi who settled things in that order after an exciting fly-off heat. The hot competition took its toll with 5 crashes, one a spectacular No. 3 pylon mid-air in the 2nd race of the meet that took the new 1969 U.S. Champion, Whit Stockwell, out of the pylon meet. However, the 15 year old RC'er from Los Angeles, showed his stamina by going on to record his 2nd win in C-Novice Pattern with a Lanier Citron. The fastest pylon heat was turned in by Pete Reed of Connecticut. Time was a blistetring 1:43 flat! Joe Bridi turned in the fastest win-

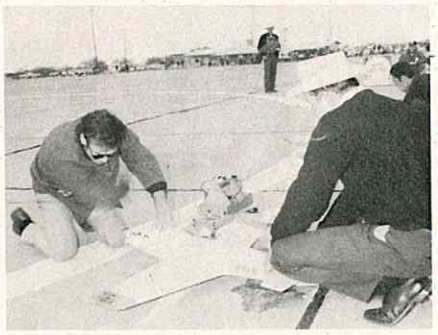
Best in pattern – aerobatic pilots came to Marana from all points. Salkowski, Oddino, Whitley, Bonetti, Leonard, Reed, and Kraft confab. Al Barker peeks around Phil's shoulder.

Contest impressario – Ben Herman, and Art Gyles check meet progress. Marana Air Park ideal contest location.

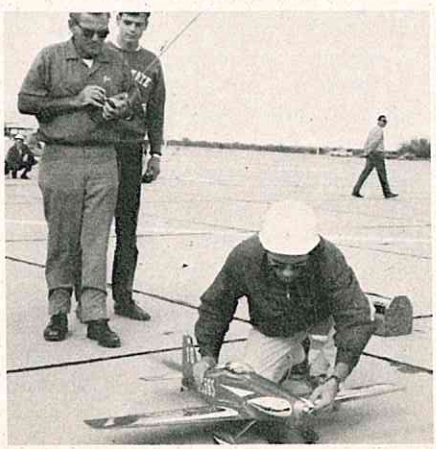
ning average of 1:50 even for 5 heats.

The 4 flight lines for pattern saw an outstanding field of aerobatic artists fly through 4 rounds of competition that had scores tightening with every successive round. With C-Expert pilots regaining their spirit and poise after the Internats comedown, flying performances were serious and purposeful throughout the aerobatic competition. Following Jim Whitley and his "Daddy Rabbit" in C-Expert were Larry Leonard flying his Nats-winning Kwik-Fli III; Tony Bonetti and a new retract-gear Trouble-maker; Norm Page and his new FAI Avenger; Bill Salkowski and another K/F III; Ted White and a tail draggin' El Gringo; and 1967 Internat's Champ Phil Kraft and a new unnamed original. Rounding out the top ten of the 20 entry C-Expert field were Bob Smith, Pete Reed and Jim Oddino . . . In C-Novice, following Whit Stockwell, were Mike Barna, Bob Green, Clete, Brow, and J. R. Graham. The field of 22 in B pattern saw Bill Hebestriet of the BIRDS fly his original Undone 1 to the top spot. John Greenshields, Gerry Martin, Orbit's John Elliot, and Max Hopkins were the rest of the top five to win merchandise anad trophy honors in the B event.

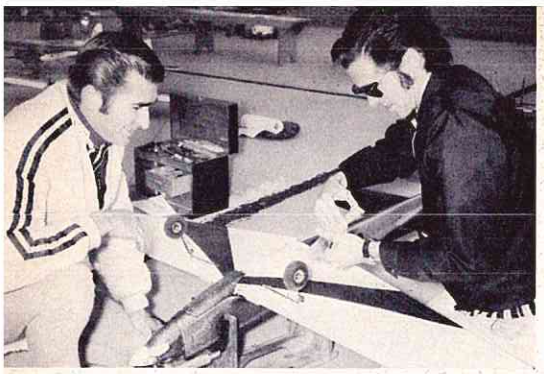
The post-contest fly-off, practiced mainly in western meets (it's been a regular feature of the Buckeye Southwesterns for many years) heightened pattern interest at this 2nd Annual RCM Winter Nats as it did last year in Tucson. And, as it happended last year, the fly-off finish order was a flip-flop of the



Above: Hirtenstein hits it! Jack and famous Super Tiger powered Mustang were main pylon threat. Finished 3rd Jack, named U.S. Pylon I Champion. Right: Dan Gray gathers 1st place trophy for Class A. Bob Angus, TRCC Prexy, does honors.



Above, Lt: Tony Bonetti and Trouble-maker. Tucson fly-off winner had new ship with retracting gear, Webra B/H, Kraft radio. Lt: Joe Bridi awaits needle set by Denny Schauer. Ballerina best in 5 heats. 5th due to blown engine. Terry Prather called. Above: Chuck Jones, 2nd in Pylon I – only one point off pace. A trophy and $50. Marana contest site ideal for racing. Tucson RC Club ran smooth operation.



Another needle – Lloyd Nickleson pumps wheels of Willie King's Skeeter. Pair from Denver Mile-Hi RC Club.

Larry Leonard checks Jim Whitley's new Daddy Rabbit V. 6¼ lb. 640 sq. in. Silence-Aire muffler. Many mufflers seen at Marana.

Girls, too . . . Debbie Hannon of BIRDS did well in Class A. Graduated from UC combat competition. A triple threat . . .

Above: Norm Page (R) shows Jim Fosgate new "FAI Avenger" original. Retract gear, muffler. Both items use on increase. Rt: White trio – George Reis Jr. of Phoenix, Ted White of Albuquerque, and "Lucky" Gibson of El Paso flew White designs at Marana. Ted 6th in CX.
Far Rt: Phil Kraft's new plane needs a name. Enya 60, Silence-Aire. Placed 7th.

finish order of the contest itself. Last year it was Ted White who did the trick; this time it was Tony Bonetti's turn. Tony, with his "Trouble-maker" and its performance-enhancing retracting gear, continued his string of exceptionally impressive flights by out-pointing 2nd place Leonard and 1st place Whitley. The round was a cliff-hanger that brought appreciative response from a large crowd who hardly made a sound during each of the flights of the fly-off. The Trouble-maker, with its Kraft radio, Webra Black-head engine, and Positract landing gear, was a sure attention-getter with its firm, swift, scale flight appearance. With Tony's handling, the ship's steady and smooth flight capabilities were evident. It responded readily to commands and translated the many power changes Tony used in a flowing manner that made it the favorite to watch by fliers and spectators alike. The plane and its flight truly seemed to be a reflection and extension of its creator's poise and character . . .

Class A Pattern had a whopping 41 entry turnout and the race there was almost as exciting as the expert class go-round. When the sun finally started to settle behind the Tucson mountains on the final day, it was young Steve Buck who took top honors in the event. He was followed by Steve Buck, Orville Brixey Jr., Roy Riedel, Terry Prather, and Bob Allen.

In the equipment arena this RCM Winter Nats showed some interesting trends. Mufflers were used on a higher percentage of planes than in previous major meets of 1969 with Technisale's Silence-Aires being the most popular. Retracting landing gears, spurred on by Internat's results and by the impressive results in Bonetti's Troublemaker and in Norm Page's FAI Avenger, received added attention. A broad range of radio equipment was used by the 129 contestants at the Tucson meet (actually flown at Marana Air Park which has to be the most ideal model contest site anywhere . . .) with some 14 different brands being identified along with an original home made rig by Wayne Skousen. The impound was an impressive array that was jealously guarded by Bill Watson of the Tucson RC Club who continually checked to see that no transmitters were used improperly . . . Ready-to-Fly plastics were significantly numerous in A, B, and CN events and accounted for about 35% of the ships flown. Citron's were most popular. By far, the favorite balsa plane was Joe Bridi's Sun-Fli IV. Phil Kraft's new ship continues to employ the stringer construction identified with a long line of "Fli" aircraft Phil has created over the years. (Phil hasn't given the new plane a name as yet and we suggested he give his many fans and radio customers a chance to get in the act by suggesting a suitable designation for this one. So shoot him a card at Kraft Systems at 450 W. California St. in Vista, Ca. 92083. It isn't necessary to send any Kraft transmitter tops in with

Lt: Pattern lineup. Jac-Mac group await turn in efficient 4 flight line set-up Ventura Co. RCers active in contests. Above: Active RC family. Son, Terry Prather, 5th in Class A. Helped by Dorothy and Al Prather. Pylon racer had rudder chewed off on landing accident. Rt: Bill Salkowski and Jim Oddino, top west coast pattern team. Jim's "Retarded" uses Pro-Line radio, VECO 61, Silence-Aire. Bill 5th, Jim 10th in CX.

Lt: Pit scene. Bridi's Ballerina gets fast operation. Above: J.R. Cox and "Vortex" original. N. Mexico RCer had Galaxy radio in 6¼ lb. 62" ship. Above, Rt: Transmitter impound control by Bill Watson assure interference-free meet. Dan Parson and Me. 110. Enya 60's, F&M radio.

your entry, Phil says . . .)

In other equipment highlights it was Crawford fuel (at $16 a gallon) that was the racers' favorite. One and two dot cans were seen in most racing pits indicating 40 and 60% nitro fuel was being used in the cool moist Arizona air. The new K & B glow plub was also preferred for the almost universal K & B 40's used in the slick 450 square inch racing planes of Pylon I. Jack Hirtenstein continued to play the "spoiler" with his growling Super Tiger 40 in the pylon event. (It's interesting to note Jack won 2 of the favored K & B racing mills during the meet . . .)

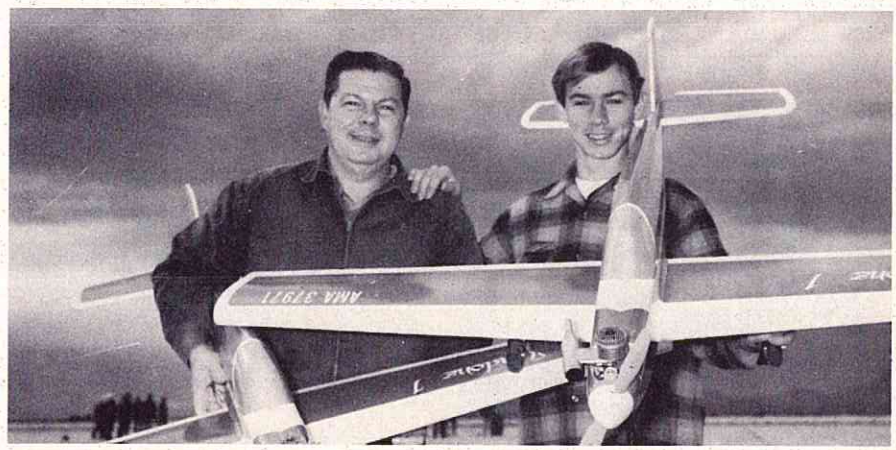
The Winter Nats was again the occasion for the award ceremony of the National Pylon Championships of the NMPRA. Time and place was the Saturday night banquet at the Marana Air Park where an excellent restaurant facility was available and convenient for contestants, families and friends. Sharing the award-giving honors were Tom Protheroe, 1969 President of the NMPRA, Gil Horstman, and Ed Shipe. Recipients this year were Whit Stockwell who was named the 1969 U.S. Pylon Racing Champion for accummulating the highest number of win points in both Pylon I and II. Jack Hirtenstein took the Pylon I Championship while Harold "Pappy" deBolt took National Championship honors in the Pylon II event. In addition to original trophies presented each of the 1969 Champions, distinctive shirts and merchandise were given to the top racing pilots. It was noted that the number of points it took to win the top spots was considerably more than in 1968. And it appears it's going to take a lot more to top the 1970 awards after observing the enthusiasm building in both pylon events. (It also appears as if 1970 will see added development of an FAI racing event that will closely follow the NMPRA pylon I pattern . . .)

No meet can be a success without capable people to organize and run it. The RCM Winter Nats was blessed with over a score of dedicated Tucson Club members who reallly made it all possible. The man on top of it all was Ben Herman who kept the multitude of details happening and smoothly meshing together for the three days. He had five stalwart right hands sharing the monumental task in the form of Bob Angus, TRCC prexy, Dave Lyons, Art Gyles, Dick Schofield, and Ken McDaniel who CD'd the meet. Filling in at the registration and operations desk were RCM staffers Kathleen Acton and Pat Crews along with Harry Grabow. Sylvia Schofield and Ernie Allenbaugh also

Retracting gear graces Ed Sweeney's RC Nobler. MAN's Walt Schroder gets close look. Ed, editor of AAM.

A pair of gems. Bev Smith (R) liked Hoby Poxy finish on Ballerinas by Bror Fabor and Howie Nupen. Bror, BIRD mainstay, also member of FAST, speed specialists.

Lee Summer and new "U-Neeka". Unique Models chief used Enya 60 and Kraft. 6¼ ship has original airfoil.



Lt: Old timer-gone-RC. Lowell Drown and 31 year old Custom Cavalier. Forester 99 on ignition, Cannon radio. Ignition radio problem. Above: Father-son team. Bill and Chuck Hebestriet of BIRDS with pair of "undone 1" originals. ST 60's Orbit and Kraft, mufflers.

Lt: Lloyd Nickleson and new "Super Skeeter". ST 60, 7 lbs. 66" (643 sq. in.) span. Fiberglass fuselage, curvy. Rt: Scale in Pattern. Duke Crow's Volksplane flew very well. K & B 45, Kraft. 48" span 4½ lbs. Flying stabs as on prototype.

did valuable yoeman service in keeping tabs on scores and frequency control. Judging, pylon timekeeping, lap counting and flagging, and a host of other tasks were handled by TRCC'ers (with an assist or two by the Phoenix ARCS): Dean Ayers, Hardy Benson, Paul Bohardt, Chuck Brown, John Cook, Dick Flansbaum, Ken Forbus, Karl Friedbacher, Walt Glosson, Bob Goodrich, John Hedspeth, Bill Hempel, Roy Iley, Bill Jackson, Sherman Madere, Tom Prescot, Bill Plunket, Ed Rutherfurd, Chuck Taylor, Homer Tegart and Walter Angus. ARCS were Bob Burandt, Hector Guzman, and Chuck Watkins. Ron Jones came in from Mexico to also lend an important hand in the show.

Thanks also are due to all the members of the RC industry who responded to the request for merchandise prizes and helped make the 1969 RCM Winter Nats the outstanding occasion it was:

A/L Specialties
Andrews Aircraft Models
Canadian Solarfilm Dist.
Competition Models
Cox
Dumas Products
D & R Products
Carl Goldberg Models
Hobby People
Jac-Mac Models
K & B Manufacturing
Model Covering Co.
Model Plan Service
Pactra Industries
Pettit Paint Co.
Phillips Custom Models
R/C City
R/C Engineering
RCM
Rocket City RC Specialties
Sig Mfg. Co.
Sterling Models
Tatone Products
Top Flite
VK Model Aircraft
Warner Industries
Wing Mfg. Co.

BS Racing Associates, Bob Smith and Jeff Bertken, personable RC team did well in Pattern and Pylon I. Smith (L) 8th in CX.

Pete Reed and Aeromaster. Connecticut entry had VECO 61, Silence-Aire, Orbit. Pete hot in Pylon too . . .

Chicago's Jim Buchman (R) gives Gil Horstman details of Stafford Minnow, Kraft ST 40. Chicagoland RC MAC.

1969 pylon racing Grand Championship went to Whit Stockwell (R). 1968 Grand Champion, Granger Williams offers congratulations.

Dr. Gayle Helms, Ft. Worth Thunderbirds, checks flag for Marana heat. 4th.

Jack Hirtenstein, 1969 Pylon I Champion, received award trophy from Gil Horstman. Ed Shipe with distinctive NMPRA champion shirt given top U.S. racing pilots.

Lt: A/L racing team . . . Larry Leonard and Bud Anders 3rd in Pylon national championship. Below: Planes, planes everywhere . . . RCM Winter Nats at Marana Air Park saw wide range of entries from across U.S.

THE QUEEN CLASSIC

By BRYCE PETERSEN

Looking for an easy to build, economical and highly presentable transmitter case you can build at home? Look no more, here is a beauty. Mr. Petersen designed his case to house the RCM Classic but it could house your pet G.G. or digital rig as well. Bryce is a master at PC board layout and functional design of almost anything; read his article and be convinced. --Ed Thompson

In the constant search for a better way to do things, we sometimes create a different approach that really isn't better, but simpler, so I wish to present to you the 'Queen Classic' that stands next to the King Classic.

Circuit-wise it is the same as Ed Thompson's famous design and the only difference is the way things go together.

The size of the transmitter is a product of 4 prototypes that were all smaller and lighter, but after spending two wonderful flying seasons with the Orbit 7-14, the smaller transmitter seemed less comfortable with one exception and this was thickness.

A thinner box fits the hands better but the darn thing falls over on the ground, so with all these things in mind I created the 'Queen' - a different approach.

The box can be built in any home workshop and any type of sticks can be used.

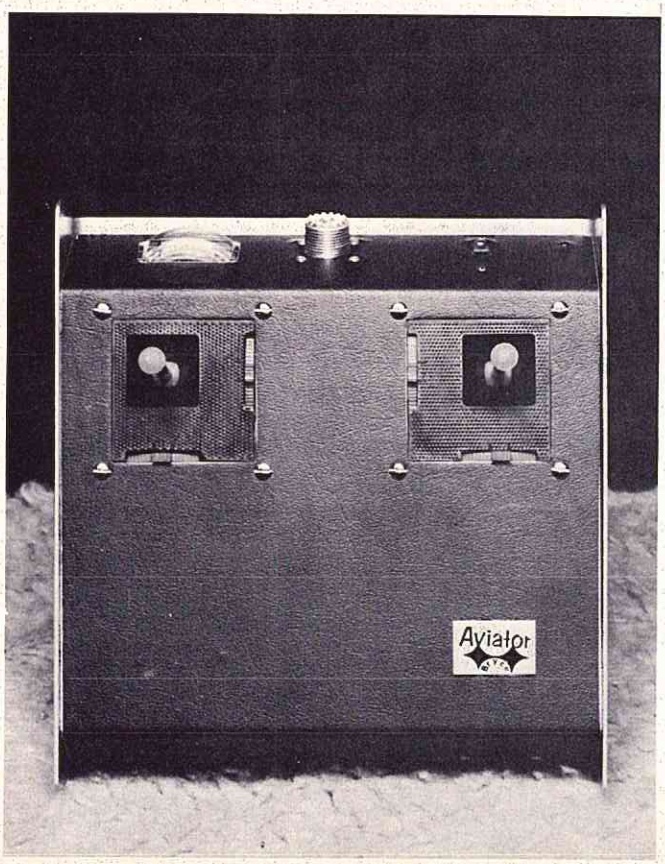
Here are the things that make the difference in the design:

a. Rounded back for hand comfort.
b. Instrument panel top for switches and meter.
c. Raised bottom for mud protection and tummy comfort.
d. Improved antenna placement while flying and on the ground.
e. Good looks and easy maintenance.

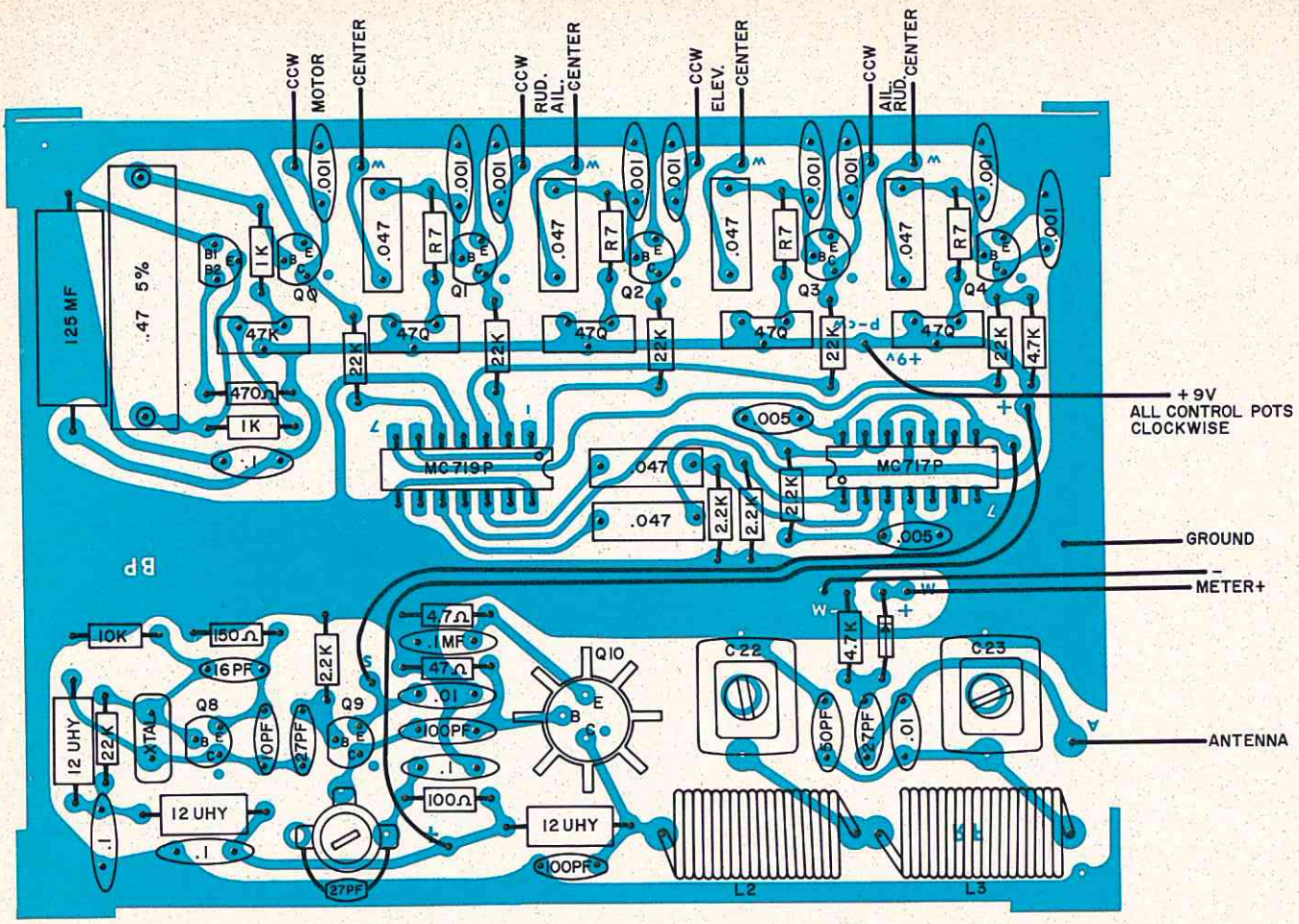
Of course, good looks are a matter of opinion. Mine is gold and black two-tone and I think it is an improvement. As to maintenance, it looks to me like the manufacturers make things difficult to get to in order to keep your big fat hands out of it and, in general, this is a good idea.

When you take on the challenge of building it yourself you just have to learn HOW it works and WHY it works or chances are it isn't going to anyway, so with this in mind, easy access to the trims and screws can be to your advantage. I can actually set the span of a certain control on the flight line in about 1 min. with my engine running (ever need more up for spins?). Just don't out-span your servo feedback pot. Ed Thompson is going to hate me for that last crack because I just messed up his scope alignment. It is true the FCC doesn't allow you to adjust the RF section once it is set (unless you have a commercial ticket) so don't fool with this part.

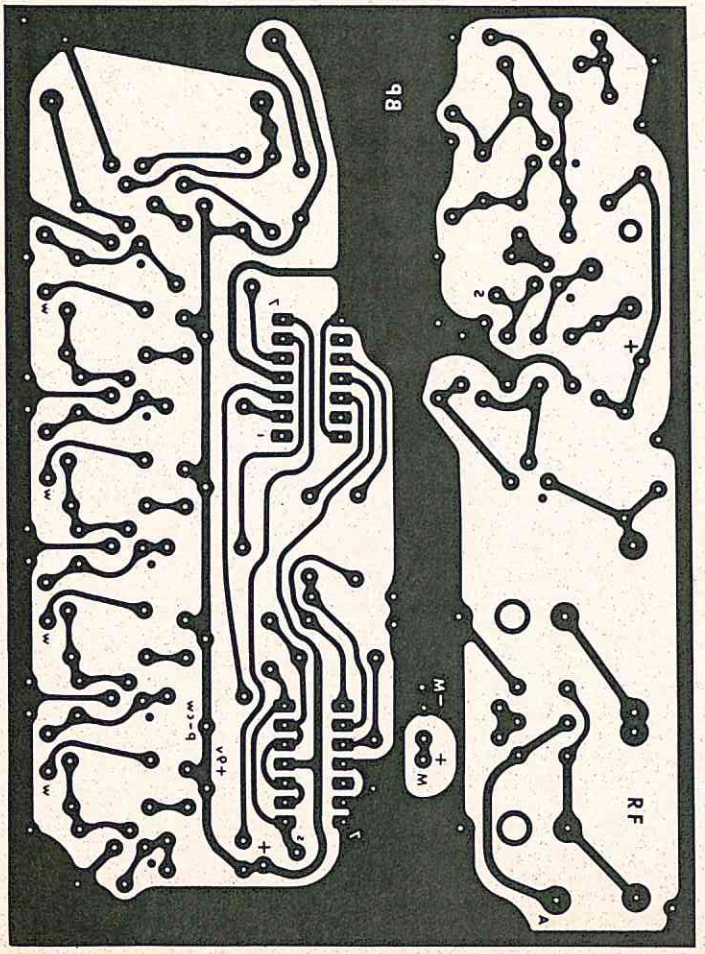
The completed Queen Classic transmitter.

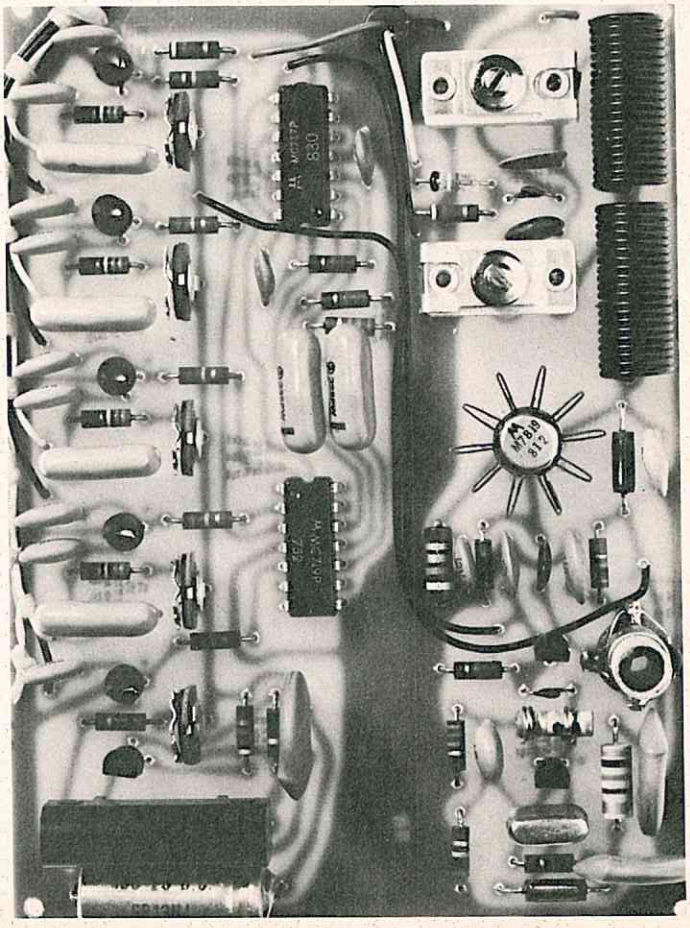


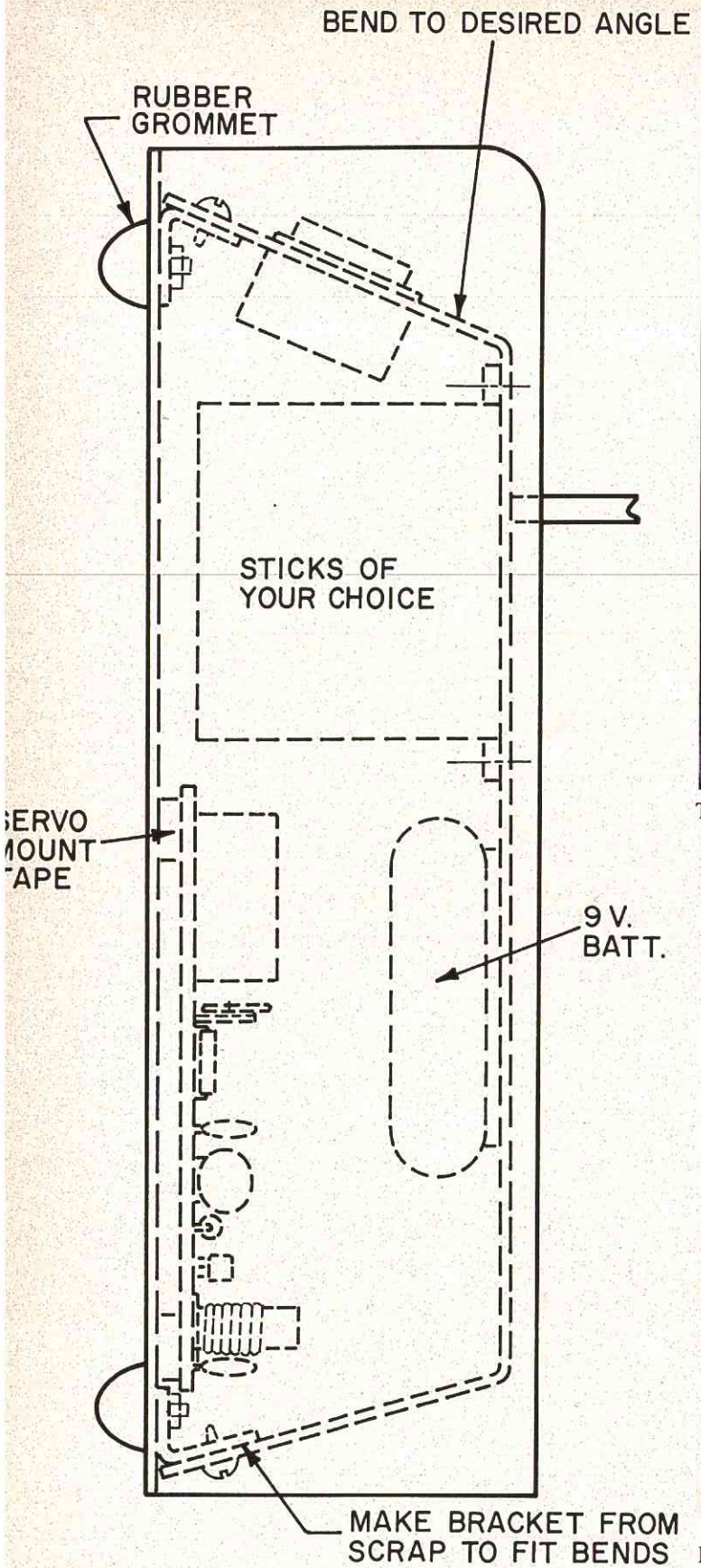
Smooth lines of transmitter apparent in this photo.

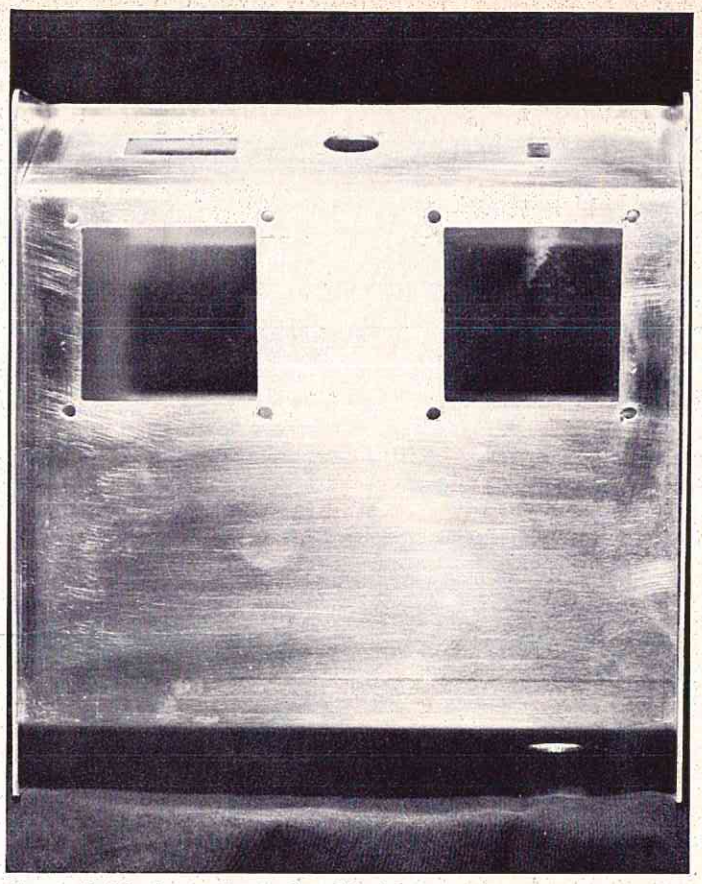


XMTR PC BOARD COMPONENT OVERLAY (QUEEN CLASSIC)

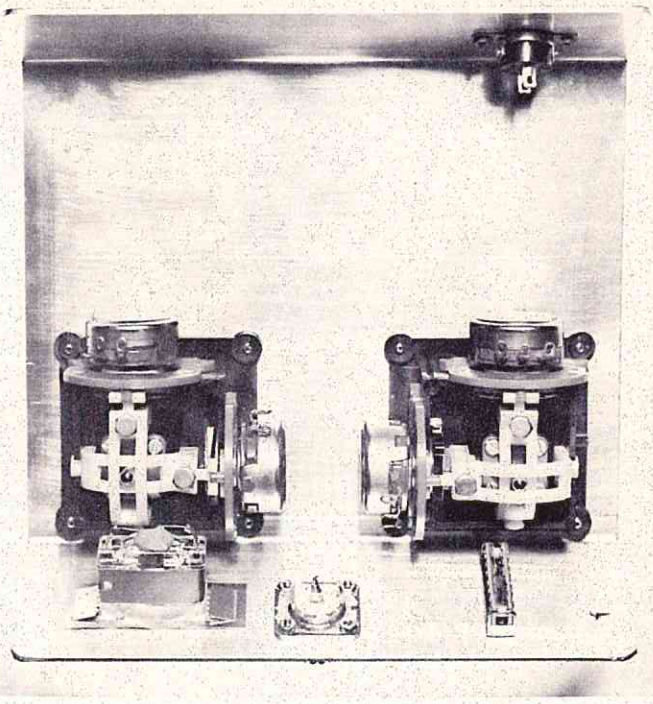








The unfinished case formed and holes cut.



Bonner sticks and miscellaneous hardward installed.

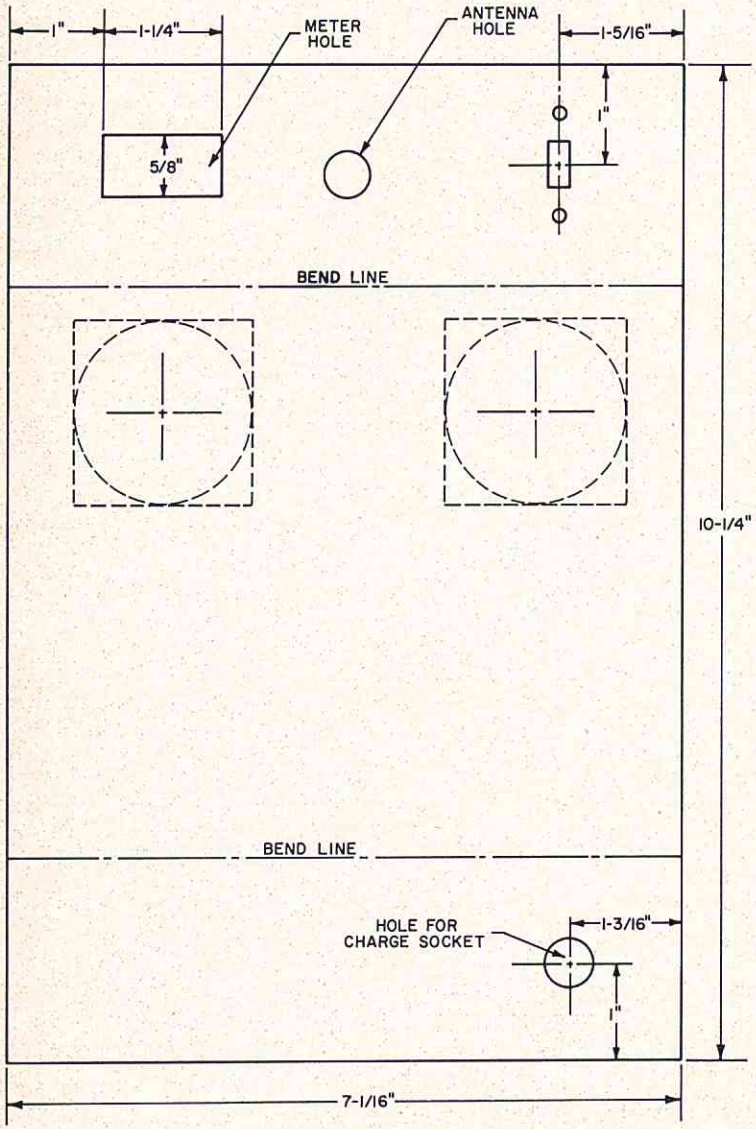
Construction

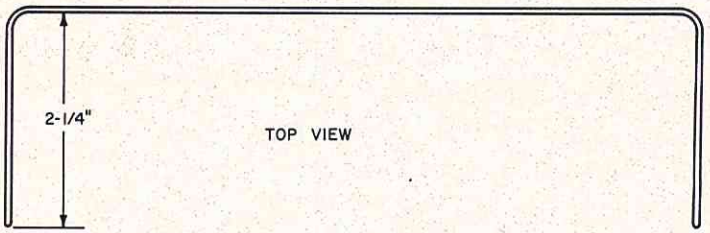
Precut cardboard patterns and a quick trip to the local sheet metal shop was the quickest and cheapest for me. Just have them make the square outside cuts from 1/16" aluminum stock. Four quick bends on the brake and you are on your way. The rest of the holes can be made by drilling a series of small holes and filing the edges. The holes for the sticks will depend on the type you have chosen. If Rand sticks are chosen, they are mounted on the backplate and shimmed to fit the faceplate.

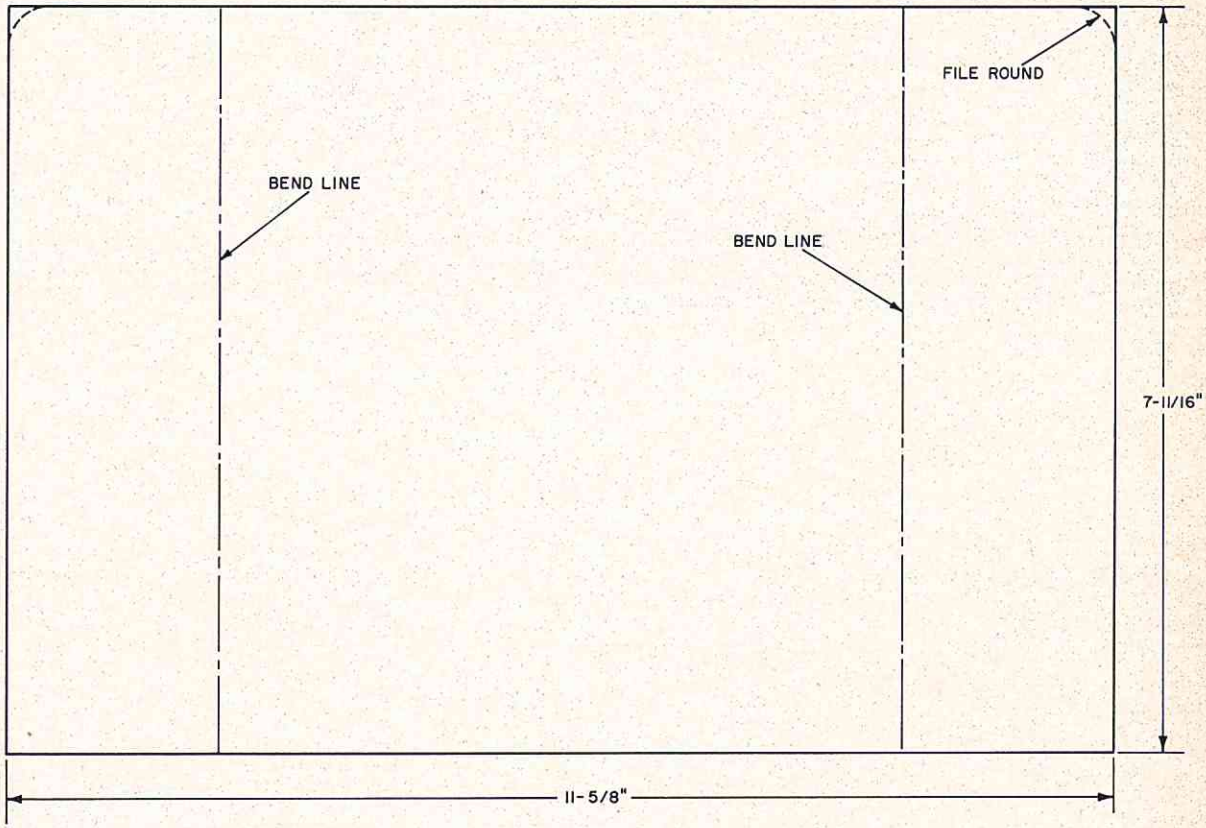
Electronic Wiring

The same parts list for the Classic 4

TRANSMITTER CASE DRAWINGS SHOWN HALF SIZE

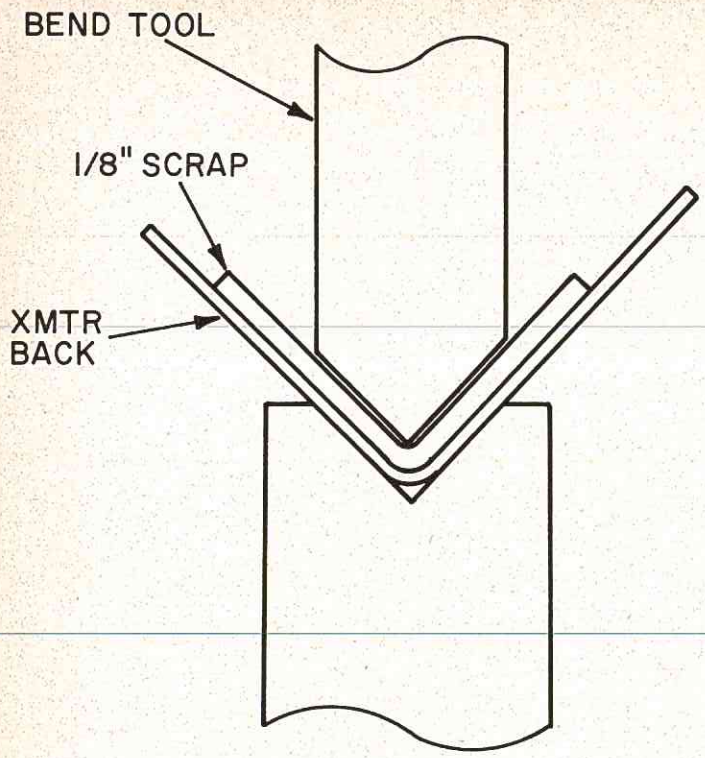






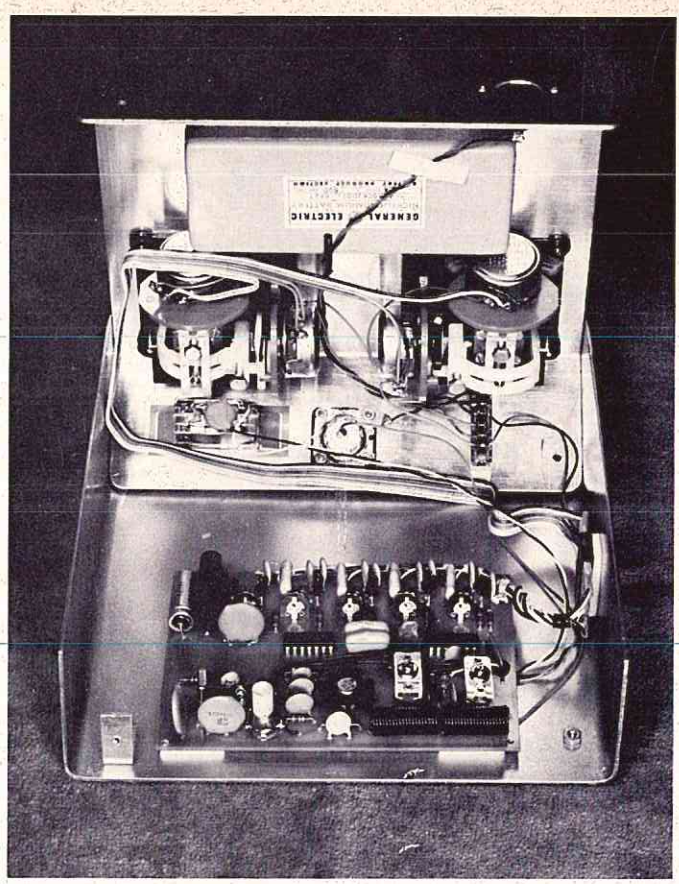
ALL STOCK 1/16" ALUMINUM
BACK-FINISHED GOLD
FRONT-FINISHED BLACK LEATHER

CLASSIC CUSTOM XMTR HOUSING



HOW TO MAKE ROUND
BEND FOR XMTR BACK

FIRST BEND 1/8" SCRAP
TO JIG ROUND BEND



Queen Classic transmitter ready to button up.

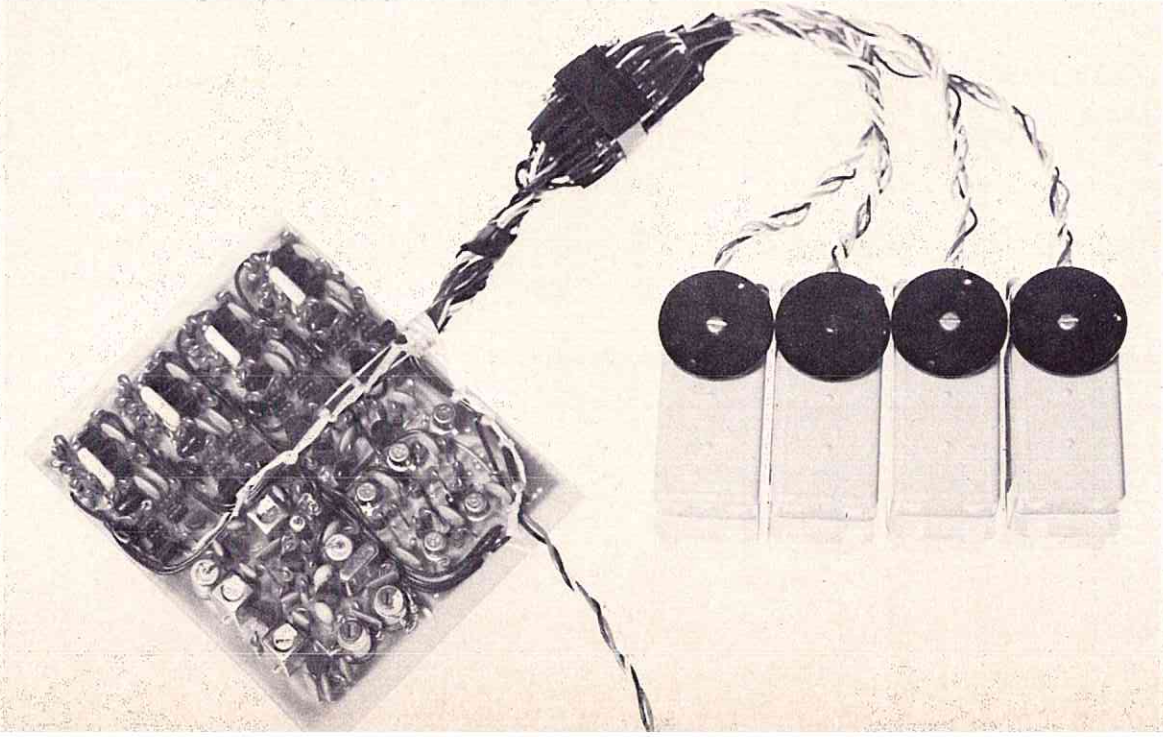
channel transmitter is used, except for the hardware and PC board. Wiring and checkout is also the same. The PC board and battery are mounted with servo mounting tape. This is a good shock mounting system and eliminates the bolt heads in the front and back. It also eliminates the possibility of a strain on the board that can cause trouble.

Finish

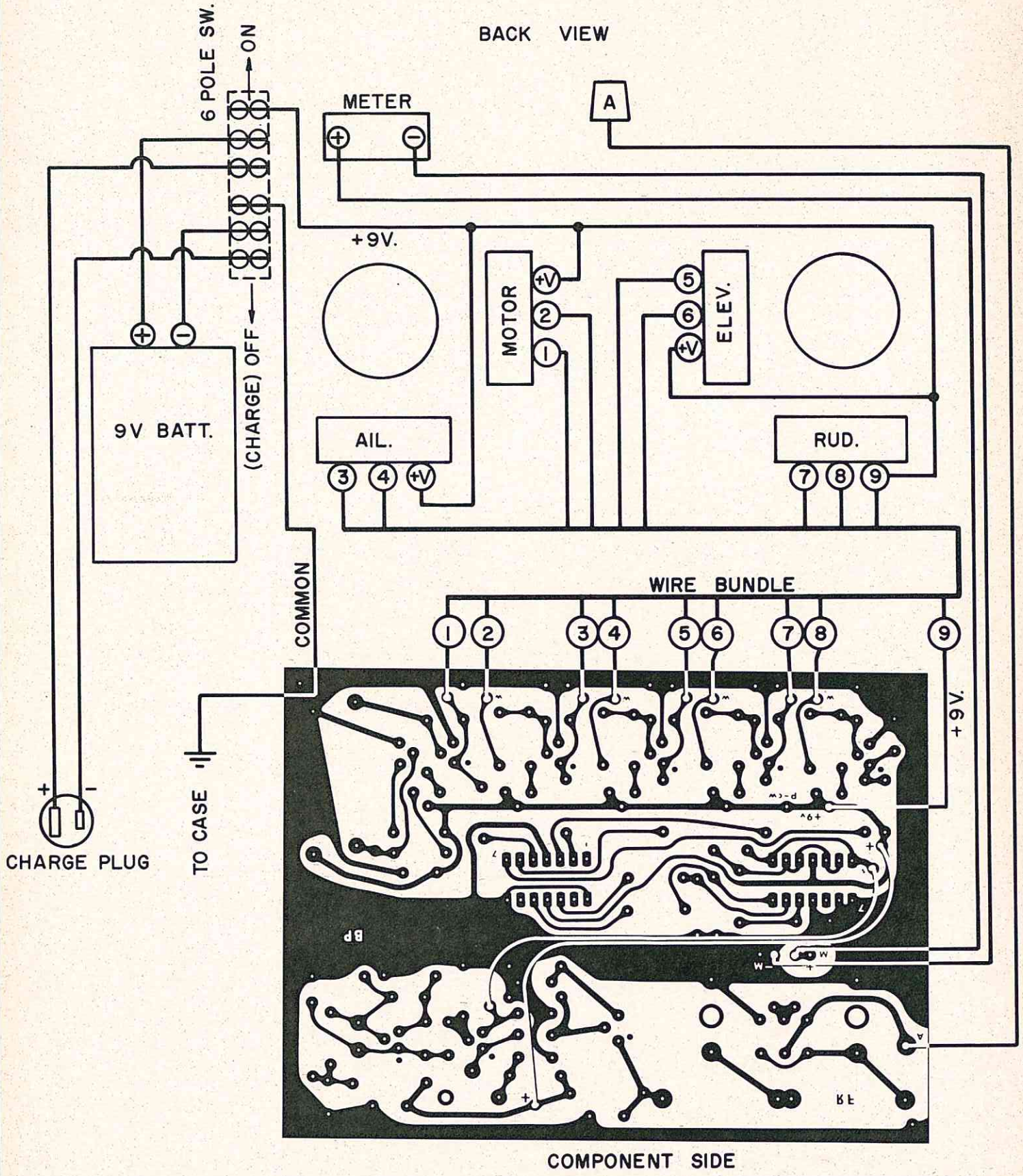
The back is cleaned and finished with metallic gold acrylic lacquer. The front is covered with black leather using contact cement.

Four rubber feet are bolted to the back four corners. These same bolts can secure the front panel using 'L' braces but, actually, the faceplate can be secured in many different ways - a hinge on the top, for example.

So from here I leave it to you and your imagination. If you build it, I am sure it will add to your enjoyment of RC as it has mine.

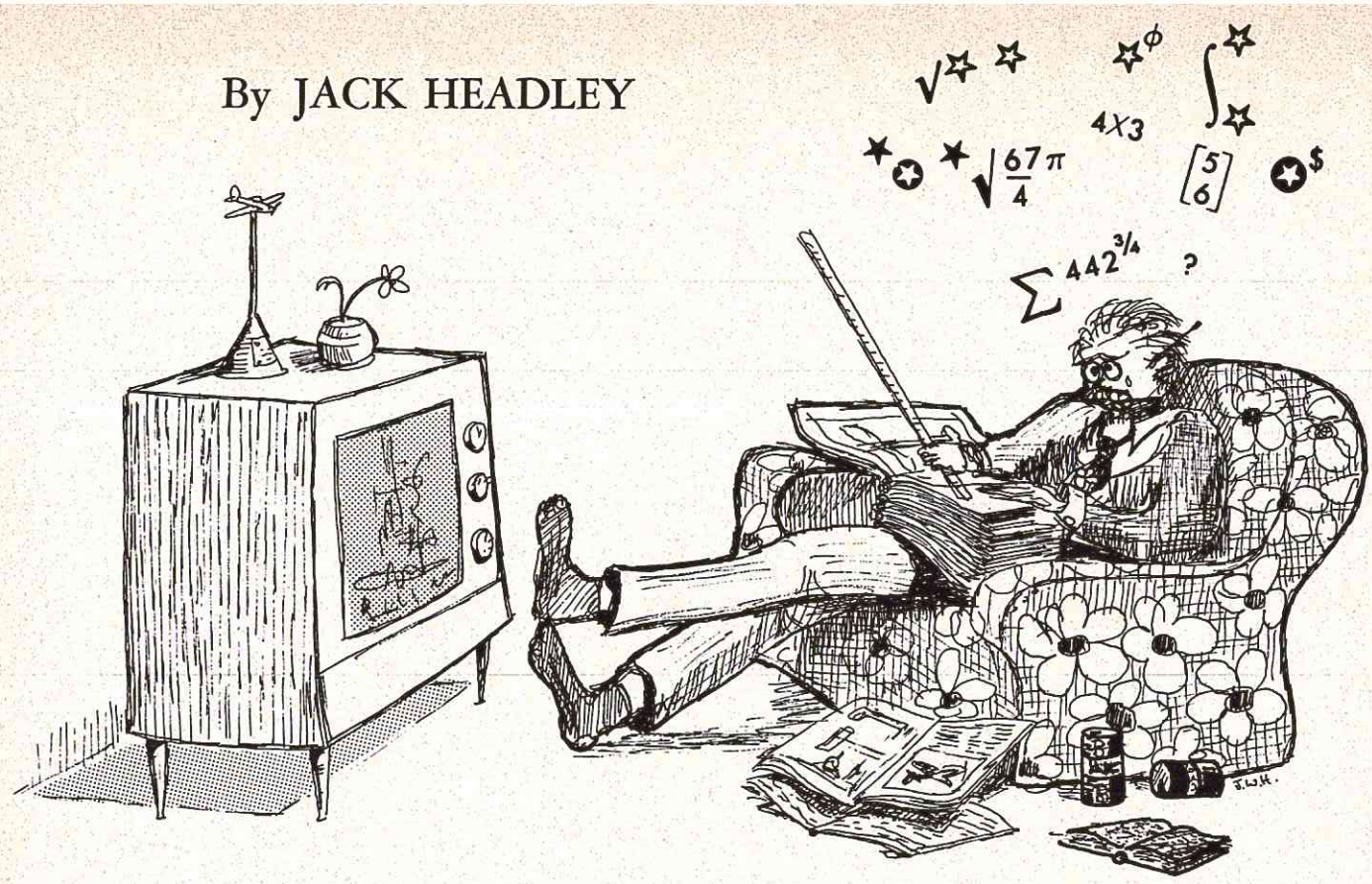


The airborne portion of the Queen Classic– another project Bryce is working on. Receiver, decoder, and 4 servo amp's on one PC Board.



XMTR WIRING DIAGRAM FOR QUEEN CLASSIC

By JACK HEADLEY



MODEL SCALES

If you're tired of having to multiply magazine plans by 5.87392486732½ in order to enlarge them to full size, try Jack's full-size Wonder Scales. They'll work for enlarging our competitors plans too!

"Groan, groan - another set of crummy scales," you say. "Why the — does the Editor keep putting these things in, why not some pictures of models holding models, or even models without models?"

Don't despair - read the following testimonials to our Wonder Scales. "I used your scales, and look where it got me!" S. Agnew.

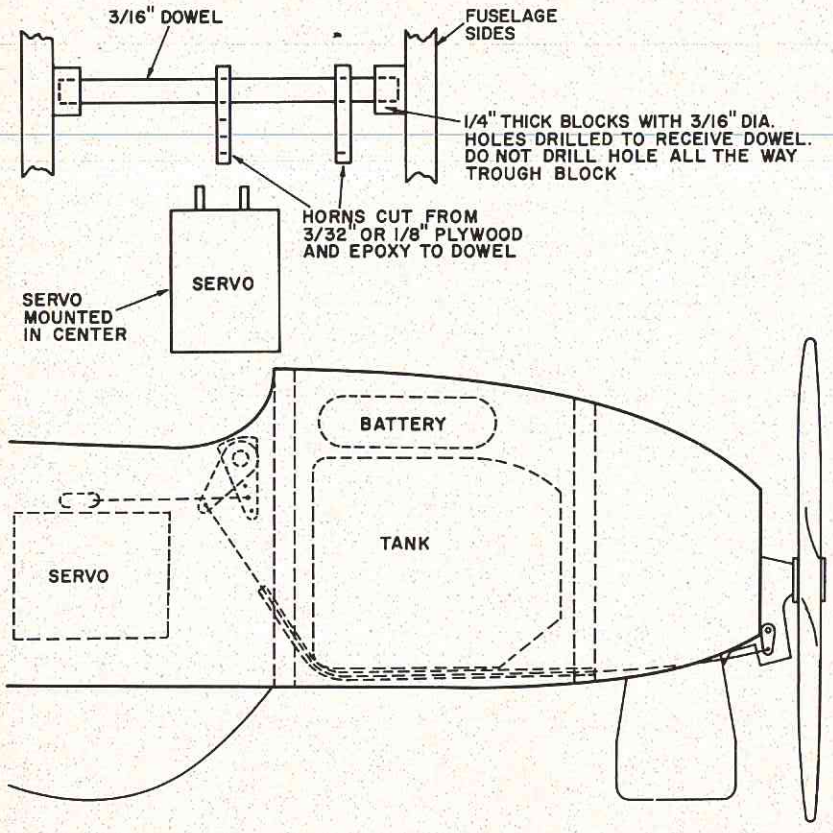
"After using your scales for 40 years, I've now lost 50 pounds." T. Tim.

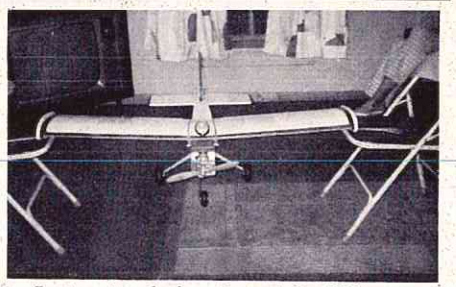
Life without our scales (with Menthol, too!) is unbelievable, as we see from observing the habits of one Joe Modeler. There he is happily watching the T.V. with one eye, while the other is scanning the tattered pages of his treasured collection of old model books. Suddenly his eye sees . . . IT!! The perfect subject for the next scale contest. The next thirty minutes are spent trying to find a ruler to measure the d— plan with, but the only thing available is a yardstick left over from the last visit of the house painters. This curious device resembles a ruler, and it's marked in approximate inches, some of which are almost equal to each other, but what else can you expect to find at 11:30 pm? A few mental divisions and subtractions later, Joe discovers that to get a model with a four foot wing span, he simply has to multiply the dimensions on the plan by 5.87392486732½. About now there is the sound of a heap of magazines being hurled to the floor and shuffling noises in the direction of the bedroom.

Now, if Joe only had had our wonder scales (with M.F.P.) by now he would be knee deep in balsa shavings as the contest winner rapidly took shape. How did we invent the scales, you ask incredulously? (You do, don't you?) Well, sitting one night, watching T.V. with one eye while with the other we were scanning our treasured collection of old model books, it occurred to us that scale plans are usually drawn to fill up a page, so that the wing spans often come out at around eight inches. So-o-o, all we need is to decide on the size of model we are going to build, say 50" wing span, have a scale 8" long divided into 50 parts, and away we go. While we were busy drawing this one, we did a few more to cover models from 60" span to 35" span. So, Joe, here's what to do. Carefully glue the scales to a piece of cardboard, cut out and hang on a convenient nail, and while you're at it, toss out that yardstick - please? ●

60 INCH SCALE
55 INCH SCALE
50 INCH SCALE
45 INCH SCALE
40 INCH SCALE
35 INCH SCALE

FOR WHAT IT'S WORTH





Instructor balancing at its CG as suggested by John.

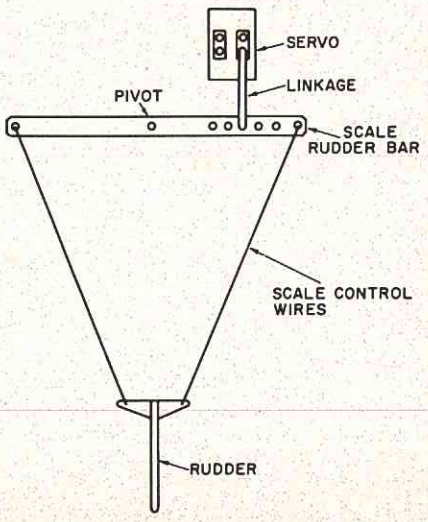
In connecting the throttle servo in his RCM Expert, Sam Carruba of Houston, Texas ran into a problem, the solution of which he thought might be of interest to our readers. Because of space, 3 servos had to be mounted side by side toward the front of the fuselage. The throttle servo had to be placed in the middle and created a connection problem. The attached sketch shows Sam's solution which consists of first cutting two square blocks from 1/4" thick plywood, and drilling 3/16" diameter holes to a depth of approximately 3/16" to receive a 3/16" diameter dowel. Next, two horns were cut from 1/8" or 3/32" plywood. These were drilled to slide over the dowel and were epoxied in place. The blocks were then placed on the dowel and epoxied to the fuselage sides. This arrangement gives a straight push on the throttle wire and reduces the give due to bending.

Tom Alden of Vancouver, B.C., Canada, suggests what he considers the best method for filling balsa grain and smoothing the surface prior to covering or painting. The first step is to sand the surface flat and smooth with a block using 120 or 180 paper. Second, brush on a coat of Hobby-Poxy Clear, or color; 30 minutes later brush on a second coat. Allow this to harden a minimum of 24 hours. The third step is to mix 1 part talcum powder with 1 part clear dope and 1 part thinner - Tom uses nitrate dope thinner. Brush on two coats, and again, let dry 24 hours. Finally, sand off all the powder with 180 or 240 grit paper used dry. Now you will see the advantage of the HobbyPoxy - it hardens the surface so that you can't break through to the bare wood unless you really work at it. If you used colored HobbyPoxy, a disappearance of color is evidence that you are sanding too much, but clear is satisfactory and is also a bit lighter than the pigmented enamel. A final coat of clear will seal the powder left in the grain pores.

John Steinkamp of Rensselaer, Ind., suggests that the next time you want to balance your model, borrow two of your wife's wooden spoons and see if it isn't easier than trying to get her to find the balance point for you! The plane in the photo is the RCM

Robert J. Urban of Lebanon, Connecticut, has found that, by tinting printed circuit boards (especially small receiver decoder boards), he can speed up parts mounting and also transfer less heat to the components. Prior to drilling the board, Bob polishes the copper with steel wool. Next, he coats the board with a very thin coat of a good non-corrosive flux such as Nokorode soldering paste. Applying a small amount of solder to the tip of the soldering iron, he then draws the iron across the copper lands of the board. A very thin layer of solder, approximately 1/64", is all that is needed. Be careful not to cover any drill holes. Next, clean the board and drill the holes. Apply another thin layer of flux, then mount the components and solder. Afterwards, clean off all flux and resin using dope thinner or the equivalent. By using this method Bob has found that less heat is needed because the solder flows more readily to the board and the mounted components.

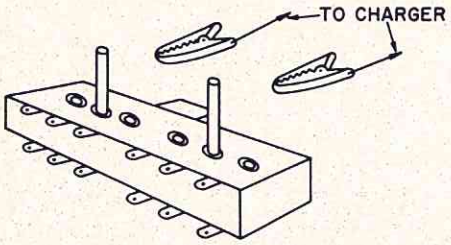
John P. Reichling Jr. of Sheraton,



Illinois, suggested the following method which he uses to provide scale control wires to the rudder as well as having a pilot that pivots with rudder deflection. Using this method, a scale pilot can be made to actually look as if he is working the controls by by fastening his feet to the rudder bar, hand to the stick, etc. The drawing is self explanatory, and is the method used in John's 2½" = 1' scale Pietenpol Aircamper.

Albert Niessner, Jr., of Boalsburg, Pa., says that in order to relieve the necessity for disconnecting the receiver battery when charging your proportional rig, a connector can be added to the receiver switch. The normal system hook-up is shown by the solid lines in the sketch. The extra connector is added as shown by the dotted lines. The charging cable from the transmitter plugs into the charging connector. The receiver switch must be off before the battery can be charged. When wired as shown, the charging indicator in the transmitter will not light when the receiver is on and the charger cannot be connected to the receiver.

Sidney Kauffman of Durham, No. Carolina, suggests a quick and easy way to charge your airborne battery pack where it is impractical to unplug the battery connector from the receiver. Simply solder two 3/8" stubs of number 20 solid wire to the appropriate switch eyelets. Aligator clips can then be used for charger connections. Be sure to watch your polarity when charging.



For proper flight characteristics, a good balance is essential for your model aircraft. Generally, a slight nose down, or nose heavy attitude, when balancing around the center of gravity location, is desirable. To achieve this frequently requires the addition of weight to the nose or tail section. Philip Gabler of Winter Park, Florida, suggests the use of an easily obtained hardware, drug store, and hobby shop product known as Liquid Steel. This product is packaged by the Woodhill

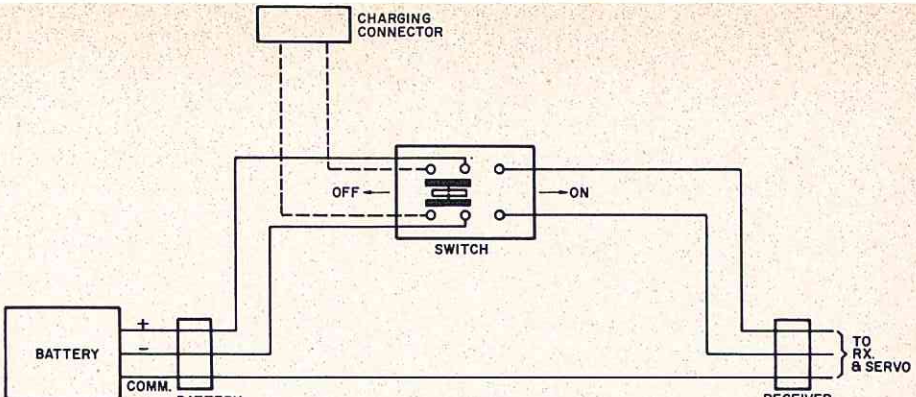


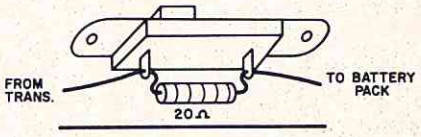
FIGURE I
AIRBORNE BATTERY & SWITCH HARNESS

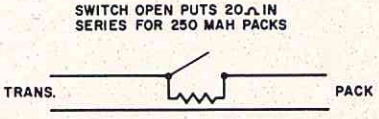
Chemical Corp., of Ohio, and is made of atomized steel particles held in an air hardening, self adhesive, vinyl pastic putty binder. The weight per volume is high and it is sold in tubes or cans of various sizes and will stick firmly to balsa, plywood, screwheads, etc. Simply squeeze the amount needed into the appropriate spot to achieve the proper balance. Additional amounts may be added at any time and small amounts may be removed by grinding, filing, sanding, etc., after it has completely hardened.

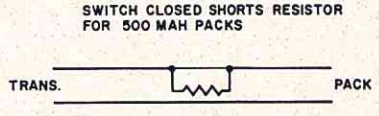
In his training flights in RC, Meric Murphy of China Lake, Calif., found that his wing got banged around quite a bit. This caused him to wonder if the dent on the outside damaged any of the spars, ribs, etc., on the inside of the wing. To find out, he used a high intensity lamp and pressed it against the back of the wing, which showed an outline of the inside of the wing. By moving the lamp around he was able to check the leading and trailing edges, the wing spars, and the ribs. One should be careful when doing this to MonoKote because of the heat given off by the lamp. For best results during your inspection, this should be all accomplished in a darkened room.

If you're always rummaging through your house in a constant search for 'wiping rags' to take along to the flying field, you will appreciate Duie Matenkosky's (of McDonald, Pa.) suggestion. Visit your local barber and beauty shop supply store and buy a box of barber's paper towels - the kind big enough to use at the flying field, of course. A box of 500, which is more than enough for an entire flying season, should set you back $5.00, plus tax. This is a small price, considering no more frantic pre-flight searches, or messy take home rags.

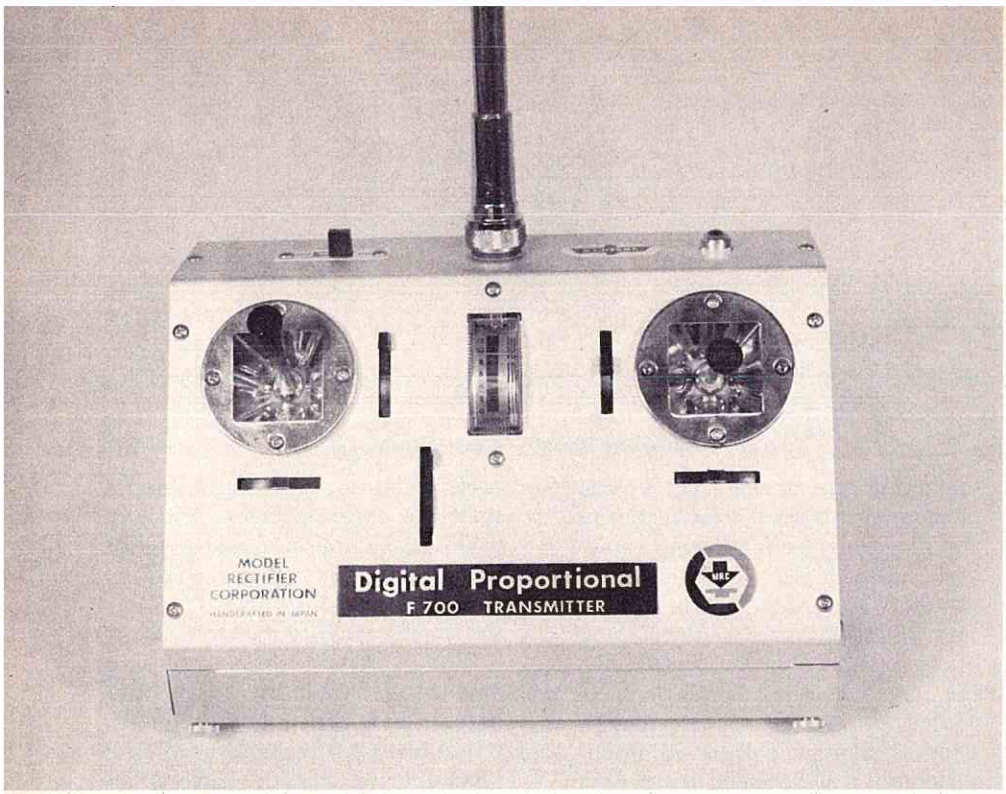
The new small RC equipment with the choice of a large or small battery pack seems to cause confusion to some on how to charge optional packs. Nick Ziroli purchased his outfit with both a 500 mah receiver battery pack and a 250 mah unit. To charge the smaller capacity pack, one would have to purchase a separate charger or modify the built-in one for a lower output. Nick ran into this problem with his Controlaire system and wanted to be able to charge either pack without using a resistor jumper cord. Therefore, he modified the receiver pack charging lead as shown in the accompanying sketch. Now he has the choice of 250 or 500 mah at the flip of a switch. The modification takes about 15 minutes. Be sure to wrap the switch with tape and mark the appropriate position 250 and 500.







Pouring dope or paint from their containers is usually a mess, particularly in attempting to keep the paint out of the lid lip. Dan Corbett of Cincinnati, Ohio, suggests packing Kleenex-type tissue in the lip, which is discarded after you pour the necessary material from the can. ●



Designed for ease in handling and perfect balance, the unusual configuration of the transmitter reportedly provides a more effective radiation pattern.

RCM PRODUCT REPORT:

MRC F-700 DIGITAL SYSTEM

By DON DEWEY & BILL O'BRIEN

During the past few months RCM has been in the process of flight testing the MRC F-700 Five-Channel Digital Proportional System which made its appearance earlier in 1969.

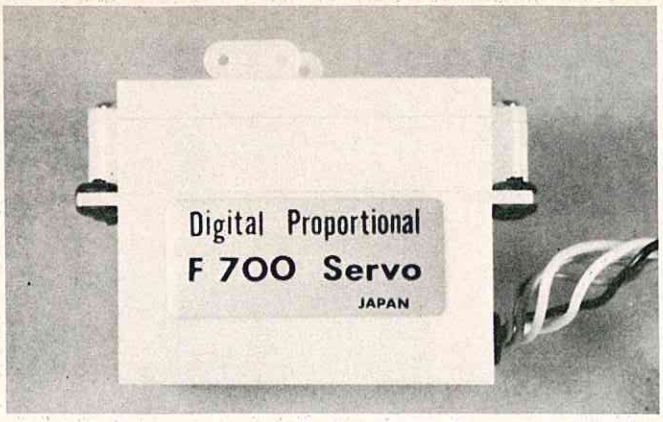
For the purposes of our tests and evaluation, we obtained two separate MRC F-700 proportional systems at two different times in order to test the performance of one against the other. Manufactured in Japan for Model Rectifier Corporation, a company known throughout the RC industry for their MRC-Enya engines, the first noticeable difference is the unusual configuration of the transmitter. Housed in an anodized metal case, the transmitter is designed for absolutely perfect balance while being held by the flier. The antenna angles up from the top of the transmitter case, rather than straight out the top as commonly seen on most domestic systems. This is not only designed for ease in handling, but, according to the manufacturer, provides a more effective radiation pattern. The modern packaging of the transmitter is complimented by its light weight and its over-all size of seven and one half inches by six inches by two and three quarter inches exclusive of sticks and antenna. The weight is three pounds including batteries. The transmitter voltage is twelve volts D.C. with a Pulse Width of 1.5 milliseconds neutral, varied one milliseconds-two milliseconds for full control. The Frame Length is sixteen milliseconds. There is a built-in transformer type battery charger as is standard with virtually all proportional systems. Transmitter sticks are of the closed type, with transmitter trims located in the standard position adjacent to the sticks. The fifth channel lever is located to the left and below the vertical output meter which is located in the upper center portion of the transmitter face. The on and off switch is located on top of the transmitter and to the left of the antenna, which goes a long way toward eliminating the accidental operation of the switch during flight. The charging indicator light is located on the opposite side of the top of the transmitter. The antenna is of the standard collapsable screw-on type. The transmitter interior is accessible by three panels — the bottom panel is removable by two thumb screws which allows access to the battery compartment. The side panels are both removable with the left side containing the battery charging connector.

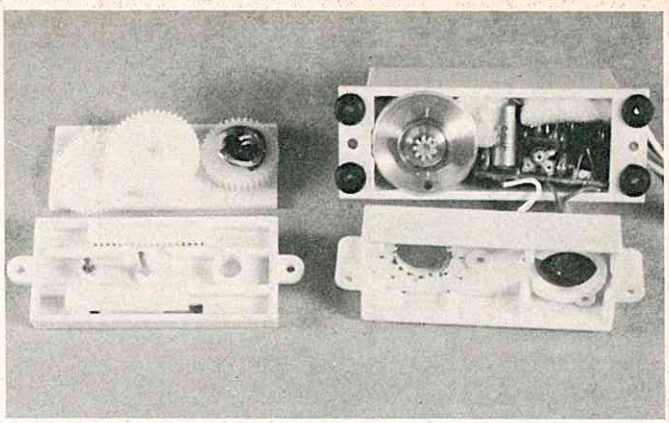
The F-700 receiver utilizes a very efficient mounting method for the P.G. Board. Should be available on 72 MH soon.

The NRC F-700 Digital Proportional System is available in both Mode I and Mode II operation. The left hand control stick operates throttle for Mode I systems or throttle and rudder for Mode II systems. To the right of the stick is a trim lever which controls the idle position of the throttle servo. Directly below the stick is a trim lever for Mode I, Aileron, or Mode II, rudder servo neutral position.

The right hand control stick operates rudder and elevator for Mode I systems or Aileron and elevator for Mode II systems. The trim lever, located to the left of the stick, controls the neutral position of the servo which is activated by moving the stick vertically.

The trim lever located directly below the right control stick is used to control the neutral position of the





On the left, the linear output F-700 servo. On the right, the partially disassembled servomechanism. Weight is 1.84 ounces each with a transit time of .6 seconds. Quite precise and powerful units.

servo that is acivated by moving the stick horizontally.

The auxiliary, or fifth channel, is controlled by the lever located just below and to the left of the output meter as previously mentioned. Each of the four main controls is trimmable by the four trim levers. The auxiliary or fifth channel is not independently trimmable. Two sets of control stick knobs of different lengths are supplied with the system, since individual preferences for control stick length may vary. Stick knobs are interchanged simply by pulling the knob directly away from the stick. The replacement knob should be pushed onto the stick until it is seated.

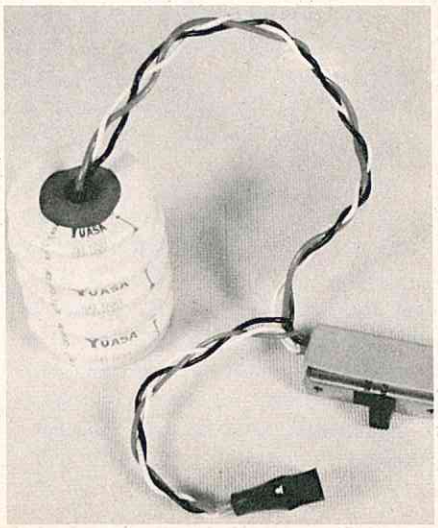
The complete airborne system for the MRC F-700 consists of a receiver, four servos and battery pack, including switch and harness, and weighs fifteen ounces with the 450 MAH nickel cadmium battery pack supplied. Voltage for the airborne system is 4.8 volts D.C. The receiver is enclosed in a metal case with the internal printed circuit board locking into the case ends by means of a tab on each end of the P.C. board, a very efficient mounting method devised several years ago by Don Mathes. The physical dimensions of the receiver are 2.340 inches by .835 inches by 1.580 inches. It's weight is 1.84 ounces. The receiver has an automatic gain control (AGC) circuit for maximum noise suppression. Attached to the receiver is the antenna, one seven pin plug and two jacks. The seven pin plug connects to the receiver battery pack and supplies power to the receiver and servos. The multi-connector jack is for the rudder, throttle, elevator, and auxiliary channel servos. The single jack is used to connect the aileron servo. The receiver connector has a white dot on one end which indicates the female connection for the fifth channel servo.

The servos are quite small in size and measure 2.250" x 1.50" x .830" and weigh only 1.84 ounces each. With a voltage requirement of 4.8 volts D.C., the servos are quite powerful and have a transit time of .6 seconds lock-to-lock with a thrust of four pounds claimed by the manufacturer. Our own tests of each servo in the systems equaled or exceeded this figure in each case. The servos are of linear output. Our photographs show both the complete servo, and a knocked down version so that you may see the well-made interior of these units. The functions of the servos supplied with the system are interchangeable. Since the motion of the two arms of the servo are inversely proportional, the servos can be made to exert either a pulling or pushing force simply by moving the pushrod from one arm to the other. The manufacturers recommended installation for the servos are to mount them on ¼" x ⅜" hardwood rails. Place the servos in position and mark the location of the mounting holes. Drill pilot holes into the wood mounts, fasten the servos to the rails with wood screws and the washers provided with the system. The mounting screws should be tightened until the washer beneath the screw head contacts the rubber grommet, and then tightened one half turn more. The servos must be securely mounted so as to be protected from vibration and shock. As with all proportional systems, the pushrods and linkages must move freely without binding or sticking, especially the throttle servo. Make sure the latter does not jam against the motor stops at either the high or low speeds. If the servo travel is impeded, this will cause an abnormal amount of current flow through the servo and possibly result in excessive battery drain, and even more serious, may damage the servo internally.

Each of the MRC F-700 systems comes with a ninety day Warranty from Model Rectifier Corporation, guaranteeing the system against defects in materials and workmanship. Model Rectifier Corporation has a fully equipped service center for any and all necessary repairs and service on the F-700 system at their New Jersey factory and is currently in the process of selecting a location for the establishment of a center on the West Coast. Current repair service has been reported as extremely prompt.

(continued on page 70)

The F-700 battery and switch harness.



COUPLED FLAP-BRAKE SYSTEM FOR GLIDERS

By MAJOR OTTAR STENSBOL

Progress in RC-soaring goes FAST, even faster than most of us realize. Not only within the field of building-techniques and materials used in order to achieve a smooth surface, but especially in the field of design and layout. Today you can find a clear tendency towards scale and semiscale. A lot of refinements such as air-brakes, retractable landing gear, wheel-brakes etc.; are now in use among the top-flyers. I would, however, like to raise a warning finger right here and now. Take a close look on those gadgets. Are they all really necessary? And don't forget the most important factor: do they increase flying performances and the beneral flight characteristics? If your Queries turn out with a negative or doubtful answer, just leave those gadgets alone. DON'T build them as they generally tend to increase weight and produce weak points.

If and when you have reached such a state of the art of "RC-soaring" that you really want and can handle more sophisticated controls, you should only bother with those improving overall flying performances. And that, my friend, is NOT that very many. For instance, How the h . . . . does a wheel-brake help your birds fight for lift?

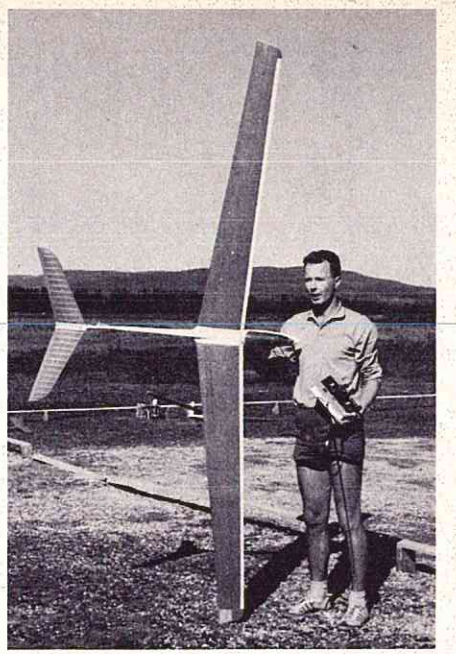
Now that all of this is said I think it is urgent to throw the ball at you i.e.; to describe a fairly simple, but still very valuable gadget that WILL help you a lot. It can generally be described as a trailing flap with a multipurpose role. The Basic idea was to design a flap which could be used as a lift-increasing device in slow flight with a secondary role of serving as an efficient spoiler in an elevated position. These criterias were previously not believed easy to combine in the very same flap, however, here it is. A couple of drawings are far better than many words so I have made up the following:

I think you will agree, this is pretty logical way to use a flap system. And by using the combined flap/brake as outlined on my drawing, the following significant advantages should be noted:

1. Much lower landing speed.
2. Steeper descent at slower speeds.
3. Much lower terminal velocity.
4. Permits safe landings in shorter fields.
5. Increase longitudinal stability.
6. Improve stall characteristics.
7. Improve thermaling performances by permitting safe turns of much smaller diameter.
8. Lighten wing structure by eliminating structural cutouts.
9. Improve performance by eliminating air leakage and contour discontinuities at critical location on the wing.
10. Can, if used, lower towing speed (high-start, bungey etc.).
11. Reduce potential landing damage in rough fields (See para 1).

For competition work the most useful feature is that mentioned in item 7. With flaps down to optical setting (found by trials) the pilot can keep the bird circling in a much smaller area.

A trained RC-pilot can, with intelligent use of the flap/brake, obtain considerable increase in the overall flying performances. It is, however, important to understand the aerodynamics behind these flaps. Also, it is essential to use very accurate servos in order to work the system accurately. Most important is to get back the exact neutral position from any off-position. If you do not, you will not be able to trim your bird for maximum performance. For those who want to install the described system I will strongly recommend thorough and careful work, on the push-pull connection. A very tight, trimable system is an absolute MUST. But once this is aaccomplished you have obtained a mode of control never before achieved in our RC-soaring circles. ●



Ottar Stensbol with original design, Ghost 8. High performance soarer uses authors coupled flap-brake system.

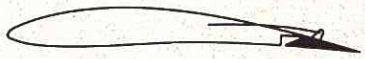


FIG. 1 FLAP IN NEUTRAL POSITION

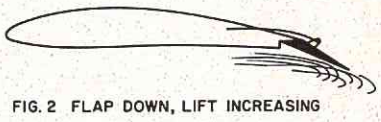


FIG. 2 FLAP DOWN, LIFT INCREASING

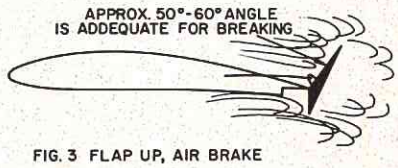
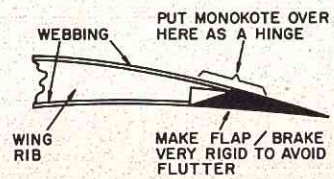


FIG. 3 FLAP UP, AIR BRAKE



Control Technology racers travel in style! No fuel, no starting batteries, no noise!

RCM PRODUCT REPORT:

CONTROL TECHNOLOGY R/C CARS

By CHUCK CUNNINGHAM

Control Technology, Inc. has introduced a line of electric powered race cars that can be controlled by almost any radio equipment now on the market or even by the older radio equipment. These cars are well made, with a heavy aluminum chassis, and high impact plastic outer shell body. Power to the wheels is by two Pitman electric motors, one motor to each rear wheel. Several different gear sizes are available to reduce the top speed of this car. These cars are capable of attaining speeds of twenty miles per hour, which is plenty of speed for a closed circuit race course. Optional brakes may be had, such as braking the car by reversing the current to the drive wheels. The standard mode of the car is brakeless, which is not a drawback in normal racing. Electric power comes from two twelve volt wet cell batteries, located in the center of the car. The receiver and one servo mount in the front section, and the battery pack rides ahead of the front axle.

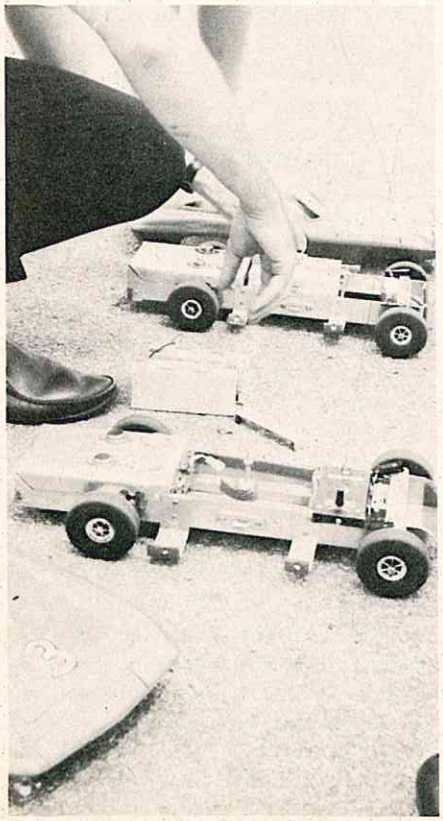
Steering and handling of these cars is very clean and precise. The overall appearance reminds you of an Indy racer. The shells come uncolored and unpainted, so that you can put your own pin striping and racing number on them.

One of the chief "plus" factors for electric race cars is that they are quiet. This can be a slight detriment, since some of the thrill in racing is noise, but, with more and more governmental agencies harping on pollution, whether it be in the form of dirt, or sound, the lack of noise means that you can race almost anywhere that you can find a paved surface. Lack of starting problems and fuel spattered clothes again make a very big plus for this type of vehicle.

Control Technology sells these cars either with or without radio. If you wish to use your own radio, the installation is very simple. One servo is used for steering. The speed control servo is built into the car. You need only attach a male plug to the two wires coming from this servo, and plug this into your receiver and you are in business. The cars are very rugged, and a smash into another car will do no damage other than to the drivers ego. Racing these cars is fun, and provides the beginner with a good entry to further R/C enjoyment, and gives the expert a challenging racing test.

Manufactured by Control Technology, Inc., 344 Hamilton, Birmingham, Michigan 48011, these kits have been tested and are approved and recommended by RCM. ●

An inside look at the early prototype cars. Body shells removed.

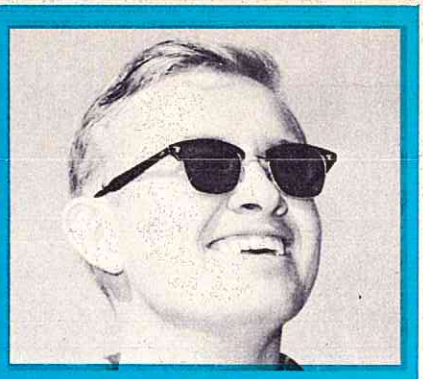


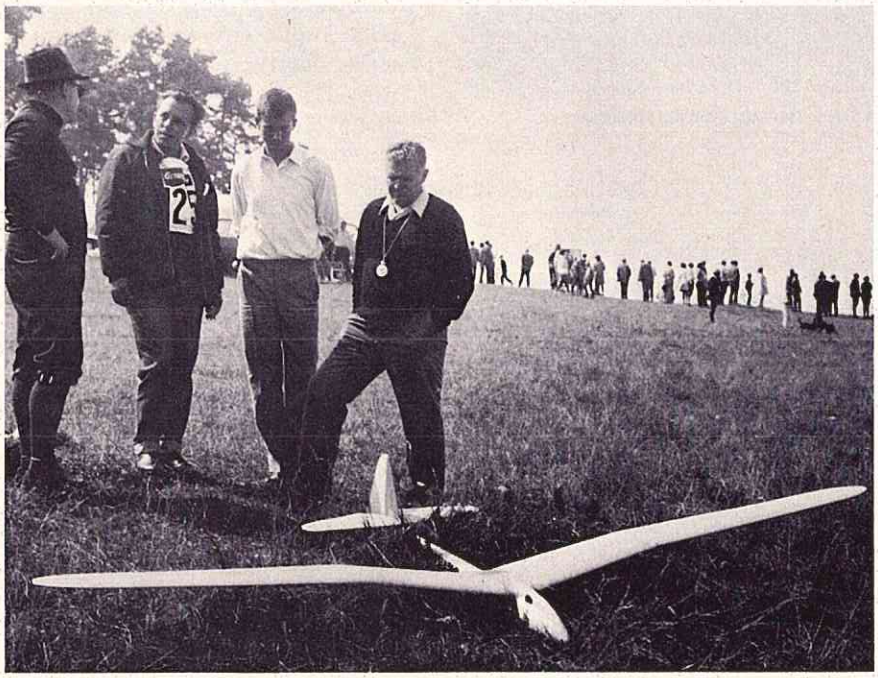
Bob Luther and Jack Evans of Ft. Worth 'Thunderbirds' almost neck & neck.

SOARING

WITH

JERRY NELSON





Glider enthusiasts discuss a scale model of a 1930 vintage German sailplane, the Fafnir. Note the gull wing, popular in the thirties. Builder is Mr. Ostertag.

We need an active soaring association in the USA so that we can increase the RC Soaring movement. More modelers enjoying the sport of RC Soaring will mean more enjoyment for ourselves. When such a national association is operational then we can go to the AMA asking for official rules status. But for now we have to prove to the Academy that there is a unified group in the USA that will support a national set of AMA soaring rules.

As many of you know I was connected with a group of modelers interested in forming the National Radio Control Soaring Society, the NRCSS. I, and several others, started promoting the NRCSS the best way we could with what time we had available. However, we found that we didn't have the time available to spend on the NRCSS. As a result the Embry Society hasn't grown the way it should. It did prove, however, that there is an interest for such an organization and it did help lead to the establishment of the League of Silent Flite, the LSF.

The instigators of the LSF, Lee Gray, Keith Brewester, Scott Christensen, Duane Hyer, are a very enthusiastic and hard working group of individuals. I know this to be a fact since they are friends of mine. Because of the proven organizational ability of the powers to be in the LSF, it is my suggestion that the NRCSS transfer its efforts into the LSF and drop the name of the NRCSS. There is no need to have two organizations duplicating their efforts. The LSF has proven its ability (at least to me) to function as a national and international organization.

I will be willing to gladly resign as temporary chairman of the NRCSS and give what support I can to the LSF. The only problem at hand is what to do with the treasury of the NRCSS. One idea would be to turn what monies are left over to the general fund of the LSF. Another idea would be to return, in equal amounts, the monies directly to paid NRCSS members. And still another idea would be to use the monies to help defray the costs of the proposed 1970 RC Soaring even at the Nationals this year.

Personally I would like to see half of the treasury of the NRCSS donated to the LSF general fund and the remainder of the treasury given to the organizers of the proposed 1970 RC soaring event at the nationals. One way or another I think the move to the LSF is for the good. The $5 given for the NRCSS by the individuals was given

Builder, Mr. Gerhard, holding scale model of World War II German groop glider.

more for promoting soaring in any way possible than to become a NRCSS member. The loss of the NRCSS is not so important. The only real change is in the name. If the NRCSS is transferred into the LSF and the national soaring promotional efforts are to be made via the LSF, I believe that one of the original members that proposed the NRCSS be involved in some way, at least for the first year, with the decision making of the LSF. This would help with the overall goal of promoting RC soaring.

At this time the LSF does not have any actual aircraft design rules or specifications nor does it have regulations and standards set up for national records such as distance, duration, and altitude. These items are needed later on. The accomplishment program set up by the LSF is more than enough to kee pthe organization going. The actual design rules and record categories will follow as a matter of course. Therefore, I am asking all of those who have written in for NRCSS membership to write me on this proposal of joining the LSF. Also, indicate how you propose to handle the monies in the NRCSS treasury.

It should be noted that the LSF is a organization directed towards national efforts. It started out as a local idea but only after a short period of time it was obvious that the LSF was more suited for a national organization. The LSF is looking for qualified RC'ers interested in promoting soaring via the principles of the LSF. If you are interested in helping out in the LSF program write to the following address.

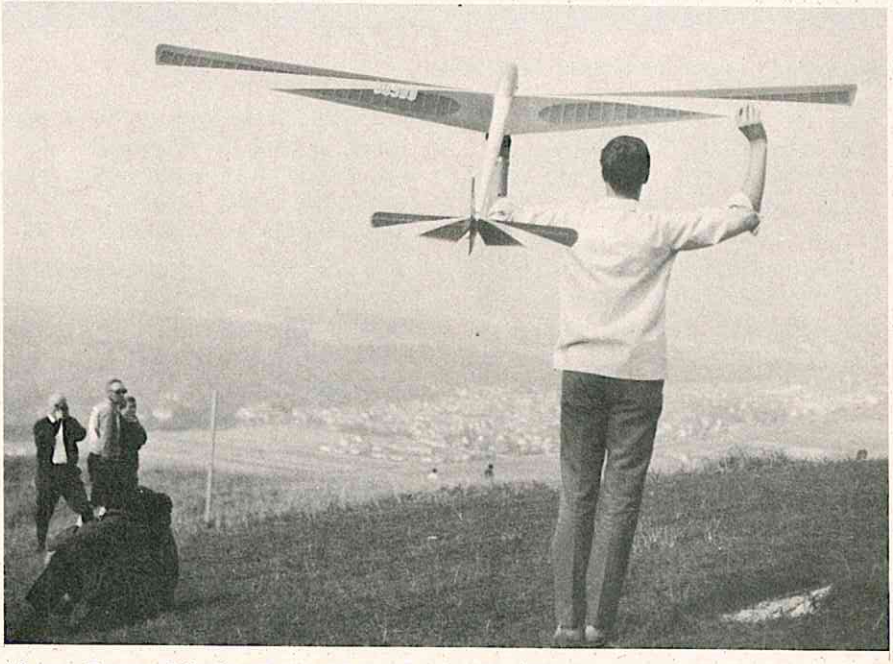
League of Silent Flight
545 Shawnee Lane
San Jose, Calif.
phone 245-3050

Since the LSF is currently working on a minimum of capital and lots of free help all inquiries should be accompanied with a self addressed regular envelope prestamped.

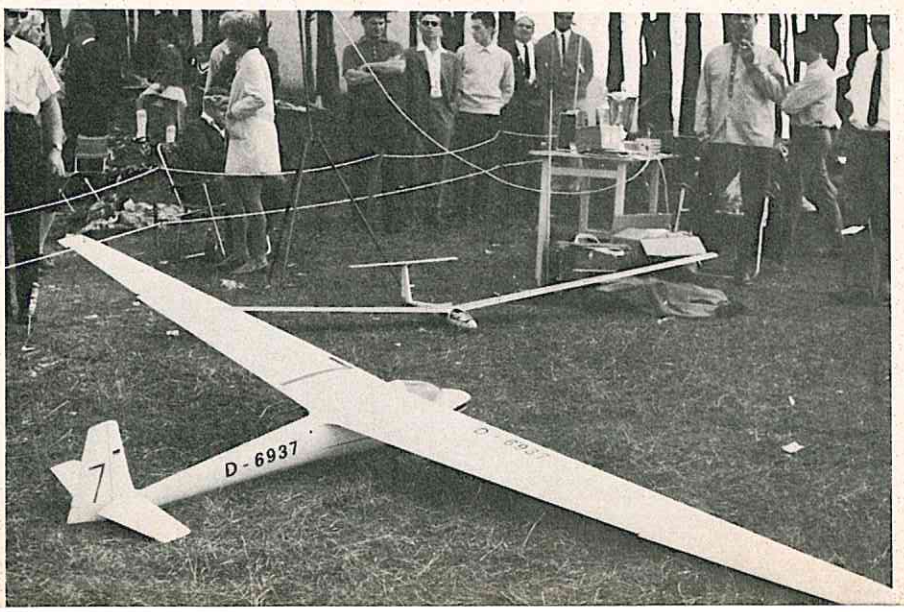
RC SOARING EVENT AT THE 1970 NATIONALS IN CHICAGO

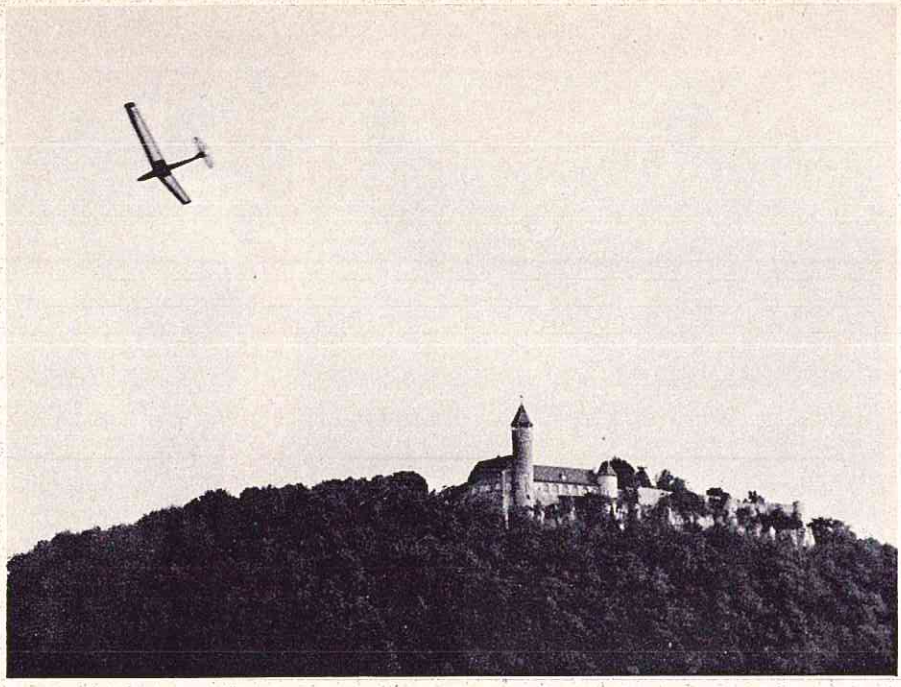
Two very active RC soaring enthusiasts in the Chicago area, Dave Burt and Dan Pruss, have offered to help organize an RC soaring event to be held in conjunction with the 1970 Nat's in Chicago.

George Frederick with original Uranus, the most popular fibreglass fuselage design in Germany, and current holder of two world records.



Above: Rowan Windspeil, kitted by Rowan Co. of Germany.
Below: A KAGE built by Mr. Heinrich from Nelson plans in Flug and Model Technik Magazine.





Soaring in front of the famous Teck castle.

Lets give them all the support we can. Here is their suggestions:

Ask the AMA Nationals committee to help out with the publicity via its monthly publication and competition newsletter. The AMA will also be asked to help out with the registration and distribution of the event rules and site maps as required. If manpower is supplied by the RC glider enthusiasts, then I am certain that a lot of help can be given by the AMA.

The site for the glider competition will be held other than at the Nationals. In no way could we find room, or time, to run an RC soaring event along with stunt, scale and pylon racing. Another site for glider flying is a necessity. A suitable site is available that will cause no interference problems with the regular RC events.

The sponsors of the event are you and I as (RC Glider enthusiasts). This will be an event that we will sponsor, not someone else. Most likely trophies will be obtained from the RC industtry, but Dan and Dave certainly will need offers to help run the meet. If you are interested in helping out in the first RC glider nationals write to David Burt, 3048 Central St., Evanston, Ill. 60201. A word to the AMA headquarters voicing your support would be appreciated.

The basic rules for the event will be given at a later date. However the basic rules will probably be a duration event with a spot landing bonus. All flying will be done on a flat land site with winch towing.

Note beautiful site at recent German contest.

FAI RC SOARING RULES

Last November the FAI rules planning meeting was held in Paris. The following rules were proposed. (these are only the basic rules mentioned)

The objective of the rules is to provide standards for two classes of competition for radio controlled soaring gliders. Class A competitions are for thermal or flat land competition while Class B are for slope soaring. If only a single site is to be used, the organizer must select either Class A or Class B, depending on the type of site available for the competition. The very nature of the two classes precludes the possibility of holding both the competitions at the same site. However, organizers may run a contest for both Class A and Class B using two separate sites at a near by location if they so desire. The rules are presented in three parts. Part 1 contains rules in a general nature. Part 2 contains rules for thermal soaring and Part 3 is for slope soaring rules.

Part 1.

Maximum wing surface area 150dm²
Maximum weight 5kg
Wing loading including wing and stab 12 to 75 g/dm²
Simultaneous flying to be used.

Part 2. Thermal Soaring rules (Class A)

Hand tow, high start, or winch tow allowed
300 meter line
One point awarded for each second of flight up to 360 points (6 min. max.)
One point deducted for each second flown in excess of 6 minutes
50 additional points awarded for landing within a 20 meter diameter circle. No landing

points given if the flight time exceeds 6 minutes.

Score will be the total number of points earned for three official flights.

Part 3. Slope Soaring Rules (Class B)

The competitor controls the model in such a way that the model flies along the slope following a path similaar to horizontal eights and passes two vertical mutually parallel planes perpendicular to the slope, the distance between which is 100 meters. The number of completed eights is scored together with the landing on a rectangular place 50 x 50 meters.

For every finished eight, irrespective of the direction of flight the competitor is awarded 50 points.

Landing in the marked area is scored 50 points.

Only the eights and the landing completed within 6 minutes from launching are scored.

Five points will be deducted from the score for each second flown over 6 minutes.

Total of best two flights used to determine winners.

Complete details were also given on how to actually run the meet and some additional points were given, but these items are not so important at this time. I don't know about you, but I think that hese rules look prety good. Whether or not the rules were passed or not, I don't know at this writing but will pass the word in the next column.

Don't forget to write in for answers to your question. As I mentioned before, I can't answer all of them, but I will do my best. ●

VIEWPOINTS

(continued from page 5)

are getting some). We also have the most beautiful slope for coaring in the world. It's about 500 feet high and only two miles from the base situated well inland. However, flyaways are our big fear here and so far my Foka has been the only threat to the countryside. As far as radio equipment is concerned, Military pay being what it is, Heathkit has just about sold the island (15 in operation, all worked perfectly out of the box, and 5 more under construction). We have 10 more on order along with my Orbit. The slowness of the mails and the whole ordering process is another one of our problems, but one we live with. The rest of the guys are using various forms of GG and they wouldn't fly anything else. They are having very good success. I also have a Kraft system and it is working perfectly also.

We have a fantastic physical layout for modeling and a few minor problems that are being overcome. We are going to begin a series of contests to test the success of mind over wind and perhaps we will evolve a modeling mecca. Come on over and join us, but bring plenty of equipment because the first thing I missed when I got here was the ability to phone the factory or rush down to "Franciscan Hobbies" for that one very critical item. Our very critical item right now is 12 x 6 propellers, and you laugh and say "use an 11 x 8 or 12 x 5 or something," well we don't have any of those either. But we have fun.

—0—

As you've probably already heard through the grape-vine, and through magazine advertising, the Westchester Radio Aeromodelers, Inc. (WRAM's) are sponsoring their Second Annual RC Jamboree and trade show at the Westchester County Center in White Plains, New York on March 14th and 15th. They got off to a flying start last year with about 30 manufacturers exhibiting and over 2,000 attendees. Not bad for a first-time one day show! This year, they've stretched the treasury to the limit and taken over the entire Westchester County Center with roughly four times the floor space they had at last year's show. Plus, they've gone to a two day affair. This Second Annual RC Jamboree will be held on March 14th and 15th at the Westchester County Center, White Plains, New York. At the present time, indications are that at least 50 manufacturers will be exhibiting. The entire ground level floor of the County Center will be utilized for exhibitions and booths on both days of the show. This is approximately four times the space available for last year's show. Lots of static events will be staged for all types of models including best of show, best WWI, best pattern, etc.

Merchandise and trophies will be awarded through 3rd place in all events. The "Swap Shop" will be vastly expanded since it proved to be one of last year's more popular events. More than 100 models of all types were on display at their first show, and WRAM's expect to be virtually swamped this year. Just about everyone in the Northeast is building something to put on display.

All RC'ers are cordially invited to attend this modeling extravaganza.

—0—

We were saddened to be notified of the passing of Ron Pawlowski, a fine modeler, craftsman, and draftsman. Ron worked for Carl Goldberg Models for three and a half years, and his name in the lower right hand corner of plans in CG kits was familiar to many. He was full of life and energy, and the news of his sudden passing, at the age of 30, is almost unbelievable. Ron was a true modeler, and we'd like to dedicate the following to him. It was authored by George S. Smith of Toronto, Ontario, Canada. We think he would have liked it:

THE pursuit of happiness .... Hither and yon above our landscape searching out the sweetness of life, like bees over a meadow of white clover, wing more model aeroplanes than take to the air in the combined remainder of the world, theirs a pursuit germane to the whole unfolding human story — the pursuit of happiness. It is neither adequate nor accurate to suppose that those flying the models are flying for the sheer fun of it. Of a certainty they find moments of lightness of heart since the pursuit of happiness is rarely a grim ordeal, but their satisfactions touch a deeper chord than gaiety alone. Once upon a time the man flying the model aeroplane was a boy in a Spitfire over the English channel or in a P-47 over Iwo Jima or a Liberator over Aldenhoven. He was about the business of buying a future for himself — and for the land now beneath the wings of his model. That was indeed grim business. But this is what he bought and it is anything but grim — This Ontario countryside of his on a warm summer's day. ●

SUNDAY FLIER

So what I'm trying to say is that they don't know the difference — and a good part of the blame rests with those of us who grew up with the sport, know of its dangers, but haven't educated the latecomers sufficiently so they won't do some of the things that, on the face of it, appear stupid, whereas it really is ignorance on their part.

Then there's another factor. The pleasures of smoking keep smokers smoking, even though they know it's unhealthy. And you have to admit that there is a certain pleasure in going out to the field with a beautiful new ship and flying it for the first time. There's the anticipation, the tension, the slightly shaky hands — and the excitement is heightened if there are spectators. So is the feeling of accomplishment, after a successful test flight — and some modelers think it's worth the risk. The difference, however, is that the smoker is only endangering himself, while the modeler could be endangering others.

Somehow, though, I don't accept the flat generality that the Sunday Fliers are "National Don't Give A Damn Society" members. In every sport there are a certain percentage of participants who don't give any thought to the rights of others — and I have seen some pretty well known contest fliers take that attitude on occasion.

So, doggone it, I resent the term NDGDS — and you should too. And I don't think we should perpetuate it. National Sunday Flier Society? Or Sport Flier Society? Yes.

So, if you haven't already responded to J. Alexander's plea to drop a card to the "NDGDS" then send in a card — but address it to the:

NSFS
c/o R/C Modeler Magazine
P.O. Box 487
Sierra Madre, Ca. 91024

We Sunday Fliers have got to stick together. Tony, who?

* * * *

OK. Enough of the soapboxing. Let's get on with the flying problems — like wing tip stall.

Some time ago I wrote a short piece about wing tip stall and how to overcome it on foam wings that don't lend themselves to warping so that wingtip washout can be used.

Now, along comes a letter from Karl-Heinz Denzin, of Jahnstr. 15, 7134 Knittlingen, Germany, to remind me of the simplest cure of them all, that I totally forgot about when discussing the problem. He writes:

Dear Mr. Willard,

In your RCM column I read about about the tip stall problem with Midwest foam wings. I have never seen such a wing yet, but I know the problem since many years and a very simple cure, too.

Just stick some scrap balsa strip to the wing root nose (5% of half span on each side is ample) and sand it to a pointed edge on the airfoil center line as per attached sketch. Thereafter, the wing will always stall at it's root first.

I have successfully tried it on Clark Y and NACA 2415 wings and am pretty sure it will work with any airfoil and even permit

intended spins after some fiddling to find the optimum length.

Full size aircraft designers apparently know this problem and its simple cure since many years, as I first saw and could try it on the Heinkel He 162 ("Volksjager") jet fighter early in 1945. In the mid-fifties I saw that pointed root L.E. on a Beechcraft Bonanza, but don't know if that was the standard configuration. Incidentally, Harold deBolt used this method on his "Champion" kit model. Asking him about it, he answered he first saw it during WW II on a four engine flying boat.

Have a try!

Yours truly
Karl-Heinz Denzin

If you have the problem, try his solution — it really works.

* * * *

The Top Dawg goes into its third year in 1970, and I still get photos from modelers who decide to modify it and try something different. One such letter, which I misplaced for several months, turned up during a cleanup session, and so, belatedly, here's Gene Card's letter from New Bern, N.C. Gene writes:

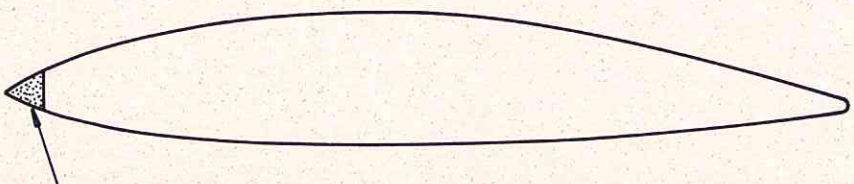
Dear Ken:

Thought you would like to see Top Dawg on floats. Maybe she should be called the Sea Dawg, or Salty Dawg?

I thought the pictures had a familiar look to them so I went to my "Racing Planes and Air Races," Vol. II, by Reed Kinert and there she was, on page 24, the Supermarine S-4. Do you happen to be a Schneider Trophy fan? You know your Lil Swell and Shearwater look a heck of a lot like the Macchi M-33. This bugs me with the start of an idea if I can dig up any more interest around here, like why not a miniature Schneider race run somewhat like the present Goodyear races. Should stir up a lot of water.

Meanwhile the aircraft in the pictures hasn't flown yet. I am presently in the Gallumphing Ghost class and though the Shearwater managed to stagger around the atmosphere in sort of a controlled crash, I do not think the Dawg would be comfortable with this system, so she will sit until I can sneak a 3 channel system past my wife who would rather I take her fishing.

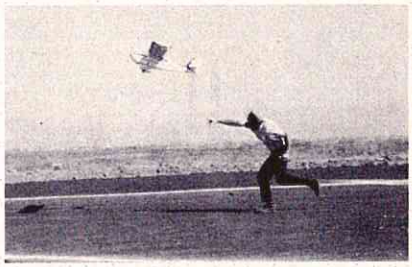
If Sea Dawg gets airborne this



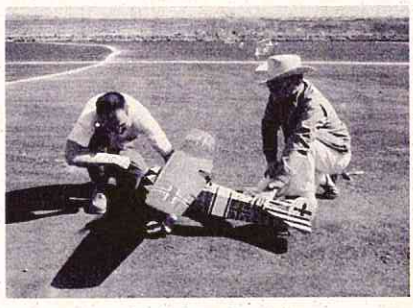
summer I'll let you know.
Sincerely
Gene Card

Y'know, I never did hear from Gene whether the Sea Dawg flew — but it sure looks good.

Dave Platt, our scale specialist, can tell you all the intracacies of scale building, but I saw some scale flying at the recent Pioneers contest which was a little unusual, to say the least. Ken Empson had a scale Citabria, powered by a Taplin twin diesel. Beautiful job — but the scale pants somehow interfered with the wheels, and on his first two attempted takeoffs he nosed up and broke the only two props he had that were the right size for the engine. Now a diesel has a very good lugging power, and will turn a big prop almost as fast as it will a smaller prop, so it doesn't do anything from a power standpoint to use a smaller prop — in fact, it results in less thrust. But Ken wanted to get in an official flight, so he tried a couple of takeoffs with a smaller prop. Nothing. So, enlisting the aid of redoubtable Jim a Sunday flier — Ken says "Let's that whenever he goes flying, he's a Sunday fler — Ken says "Let's try a hand launch." The photo shows Jim Sunday heaving that monster with all the adrenalin he could muster, and throughout the rest of the flight the model only got a few feet higher than Jim's catapulting right arm threw it to begin with! Look at that form!



At the same event, Whitey Pritchard and Bill Boone collaborated to get Bill's Fokker into the air — only to have it conk out and nose over after a few seconds of airborne action. Some wag remarked that "Bill's Fokker didn't have enough dihedral, and Whitey's hat had too much!"



Probably one of the wildest scale paint jobs I've ever seen — yet authentic in nature — was on a P-47 "Jug" built by Jim Sunday. The picture is a little ancient, but in the light of the increasing interest in scale these days, I thought I'd let you see it. The model was complete, with retracting gear and all the goodies, and several good flights were accomplished before the

final, heart rending demise due to a stalled snap roll too close to the ground. Anyone for hari-kari?

So far, the response to my query as to reader interest in a 75" racing glider category has been 100% in favor of it. The fact of the matter is, I only received one letter — and that was from Abbott Lahti, of Cambridge, Mass. He writes:

Dear Mr. Willard:

I would like to second your idea of the 75 inch (or to be international about it, the 1.9 meter) class for glider competition.

Sometime would you comment in your RCM column on the relative merits of polyhedral, "V" dihedral, and "gull" dihedral for R/C sailplanes.

Keep up your good work.

Abbott W. Lahti

Obviously, if that's all the interest there is, then even though Abbott agrees with me, it's really not worth pursuing any further — so I won't. Guess I'll have to build one of the monsters if I want to compete at all.

But Abbott's question regarding the relative merits of the various forms of dihedral brings up some interesting factors. There's always been some difference of opinion in this regard — but there can't be any difference of opinion regarding the aerodynamics. Let's look at them — and then you can decide for yourself.

First though, it is important to remember that dihedral is a stabilizing force —and if you use ailerons, the need for dihedral is reduced greatly, and in fact can be detrimental to the effectiveness of the ailerons for certain maneuvers. So let's just talk about dihedral as it applies without the use of ailerons.

Consider simple, or "V" dihedral. When you apply left rudder to an airplane (either powered or sailplanes) it first makes the airplane skid, with no bank. As the plane skids forward, note that the angle of attack of the right wing becomes greater in relation to the air through which the surfaces are passing, thus causing the airplane to bank to the left due to the greater life of the right wing.

The same thing happens with tip dihedral, polyhedral, or the gull wing. However, the location of the banking force is different. With tip dihedral, the banking force is further out on the wing, and thus more effective. With polyhedral, it is distributed somewhat unevenly, with the tip dihedral still being most effective, but aided by the slight dihedral of the center panels. In the case of the gull wing (assuming that there is no dihedral in the other panels, the banking force is in close to the center of the wing, and thus is least effective.

So, insofar as the banking force is concerned, you could equate simple "V" dihedral action with that of strip ailerons, and tip dihedral with wingtip ailerons, and polyhedral would be a combination. The gull wing would be like having

RADIO CONTROL MODELER MAGAZINE

ANNOUNCES ITS

1970 R/C DESIGN CONTEST

Sponsored by R/C Modeler Magazine and its advertisers

TO PROMOTE AND ENCOURAGE CREATIVE DESIGN EFFORT IN ALL PHASES OF RADIO CONTROL

OFFICIAL RULES

1. Contest is open to any individual except employees of R/C Modeler Magazine or their immediate families.
2. Competition is officially open November 1, 1969 and closes midnight, April 1, 1970. Entries postmarked later than midnight, April 1, 1970 will not be eligible.
3. All manuscripts must be typewritten, double-spaced on standard 8½"x11" white paper. Photographs must be black and white glossies, measuring 5"x7" or larger. Special consideration in judging will be given to those articles which include, in addition to black and white photographs, one or more color transparencies, 35mm or larger. Artwork accompanying manuscripts must be original work (no blue lines), and neatly drawn in pencil or ink. Entrants must include their name and address in upper right hand corner of each page of typewritten manuscript, on the back (or otherwise affixed to) each photograph, and on all artwork. A mailing envelope, self-addressed, with sufficient return postage must accompany each submission if the entrant desires return of his material. No entry blank is necessary.
4. Entries must be mailed to: R/C Modeler Magazine, Design Contest Editors, P.O. Box 487, Sierra Madre, Ca. 91024.
5. Entrants must submit an aircraft design, consisting of (A) full size construction plans (pencil or ink); (B) manuscript of no less than 2,000 words; (C) black and white photographs consisting of at least two photographs taken during construction of the aircraft as well as at least two photographs of the completed aircraft, said design to conform to the following design parameters:

   Aircraft must be an original design of a radio controlled model aircraft intended for competition under existing (a) Academy of Model Aeronautics, or (b) National Miniature Pylon Racing Association, or (c) F.A.I. classes of competition, or under rules established by the League of Silent Flight or other national associations for slope and thermal soaring; or an original design of a radio controlled model aircraft intended for sport flying; or an original electronic design of a radio control system for operating model aircraft, boats, or cars; or electronic design of shop and/or field equipment designed for use by radio control hobbyists; or design of individual electronic accessories to be used by the R/C hobbyist; or an original design of a specialized radio control project such as a radio controlled helicopter, race cars, boats, etc.
6. Entries will not be judged in separate categories, but equal consideration will be given to each class. Emphasis will be given, in judging, to creative design, originality of design, technical and mechanical accuracy, and neatness and extent of presentation.
7. Winners will be selected by the Editors of R/C Modeler Magazine and all decisions are final. Winners will be notified by mail of the judges' decisions and their names published in R/C Modeler Magazine in the August 1970 issue. All entries remain the property of R/C Modeler Magazine unless return has been specifically taken care of as mentioned in paragraph 3. Any entry that has been previously published, or is published in any publication during the period of the contest will be disqualified. The Editors of R/C Modeler Magazine reserve the right to purchase any entry for publication in R/C Modeler Magazine at the rates in existence at the time of publication.
8. The R/C Modeler Magazine 3rd Annual Design Contest is void wherever prohibited, taxed, or restricted by federal, state, or local regulations. Any state, federal, or other taxes imposed on a prize winner in this competition will be the sole responsibility of the prize winner.

ailerons located at the center area of the wing.

But there is another factor, and that is loss of lift due to dihedral. Wingtip loss is greatest with tip dihedral, least with the gull wing. But with the gull wing, another force, even though small, does come into play. The flow over the gull section tends to be held in a line perpendicular to the wing, so that even when you apply rudder to start a skid, the rudder action is not as effective as with simple dihedral since the air tends to continue to flow uninterrupted.

So which configuration is best? Except for high powered contest free flight designs, where tip dihedral, either with or without dihedral in the center panels, is standard in order to handle the balance of forces needed when going from the high powered, almost vertical climb, into the floating glide, you can argue in favor of all of them, with the possible exception of the gull wing, where the principal thing it has is its good appearance.

By and large, for general sport flying, the simple "V" dihedral does everything you need to provide the

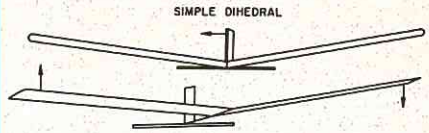


FIG. 1

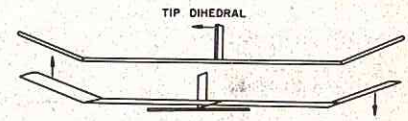


FIG. 2

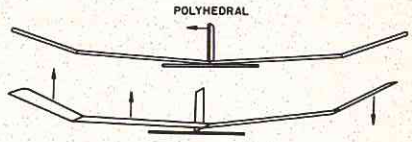


FIG. 3

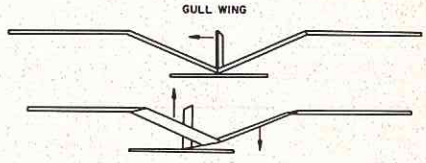


FIG. 4

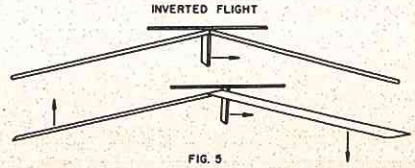


FIG. 5

turning force and the righting force to return to level flight. It also is the simplest to build into the wing.

Finally, it is interesting to note that when an airplane is inverted, dihedral acts counter to the turning force of the rudder, and actually overcomes it. Thus, even though you only have rudder control, when you are flying inverted you still give left rudder to go left.

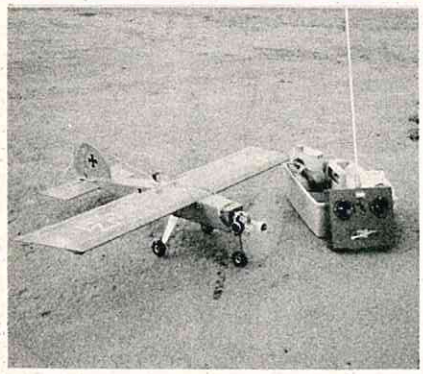
The above description of forces is shown in the accompanying diagrams, figs. 1 through 5, where the arrows show the direction in which the surfaces are forced when rudder is applied. Note that in inverted flight, even though the rudder is trying to turn the airplane to the right, the dihedral is making it bank to the left, and so it turns to the left.

Now you can make up your own minds which type of wing to build.

End of lecture and lesson for this month. Let's go build. ●

WAGGER

A dog,'s EYE VIEW . . .



Fellas, (said Wagger while Walt had left the room to get a fresh supply of Danish cheeses), do you know what I read other guys' articles for? First: to see if this ship excites me enough to build it. Second: to see if he has used a technique that I can apply to my own missiles. Now, if each of the three major magazines presents two airplanes an issue, higher math will soon tell us that **nobody** is going to build and fly 72 airplanes a year! Therefore, most "how to"

articles are **never** built; rather, they are read for interest and to pick up someone else's techniques so they can be applied to your own situation. True?

So it occurred to me as follows: Walt and I have accumulated a heck of a lot of information that never seems to find its way into articles about a particular airplane, and yet they are just the kind of thing that all of us read magazines in order to obtain! Since they are left-over "goodies," we thought we'd call them bon-bons and just serve up a whole platefull all at once. So, fellas, I'm just going to pull the stopper and let some of the bon-bons flow out. Take what you want, and if you find something you disagree with (or want to add onto) just drop a line to fat old Wagger at RCM. We'll work you into a later column! That's a promise.

SUPER MONOKOTE I don't plug any product unless we use it here in the shack. This stuff is **good** now, and make no mistake — it's easy to apply, comes in lots of colors, and is fast to use. Let's face it, you old coots, you've got more money than time and that's why you use so many foam wings. So get on the bandwagon, already, and try this stuff on the next quickie project. Now for some tips on using it.

You should have one of the small, Teflon coated irons for applying it. I don't. I'm using a wife-type hand-down because the price was right. As Great-Uncle Balderdash Bassett always says, the money you save on irons you can use to buy MonoKote. Buy the special iron later when you're hooked on this stuff.

Proceed in this order: build a small airplane. We took the "Liddle Stik" and scaled it down to 36 inches; whee! Build it. Sand all structure, ending up with 400 grit Wetordry. Draw a sketch, planning how to cover this thing with MonoKote which is 26 inches wide and a maximum of 6 feet long. (Our Mini-stik used 4 feet of it.) Go buy the Monokote in your favorite colors. Bring it back and cut it to shape. Peel off the plastic (and save it for making a clean workbench surface while taking engines apart!) and then lay it on the structure. **On open frames:** use the iron to make little spot-welds about every two inches around the outside edges, then take the iron and seal down all edges. After covering the entire structure, use the iron to shrink the MonoKote. It's not necessary to use tissue paper here, since the MonoKote clings to the iron and you will want to watch the shrinkage. **On solid or sheet balsa structures:** don't seal with dope if you can help it, since the MonoKote is airtight and will trap bubbles. However, seal if you have to and then do this: lay the MonoKote over the solid structure, and tack-weld as before but do **not** come back and seal all the edges! Rather, lay tissue paper over the part and then lay on plenty of heat with the iron while you apply pressure. This forces all air out the edges and gives a solid bond to the sheet. **Then** you finish sealing the edges for a finished job.

For trimming with Super MonoKote, you'll have to punch the MonoKote below full of pinholes or use the spot weld technique. Use regular MonoKote if you want, but be sure to seal the edges with epoxy or decal-proofer. And, by the way, investigate the new **transparent** Monokote. Instead of flying a dark shadow, try flying some glistening and glowing wings for a change! Besides, that exposed structure takes you back to the old doped silk days. (**And** allows you to **continually** inspect that aileron linkage besides.) The better decals will work on Monokote, but be sure to get the air bubbles out and then let it dry a day or two before coating with decal proofer. (That's Aero Gloss Fuel Proofer or Gloss Top Coat. Get a bottle of this; it lasts forever and is indispensable for sealing surfaces and edges from the action of fuel.)

PRESS-ON LETTERING After I finish an aircraft and have put it through its test flights, my palms start itching for **decoration**! I don't just mean lots of stripes, now, but little details for that semi-scale look. For instance, the "Mock 15" in November '69 RCM was supposed to have an X-15 flavor. You can tell that the X-15 had a lot of Air Force money in it because it was literally plastered with every sign but "keep off the grass"! Forget trying to stick on decal letters one at a time, friends; help is available in the form of letters and numbers printed on the **back** side

of a plastic sheet. Just lay the sheet over the proper spot, (the plastic sheet is transparent), rub gently over the letter wih a smooth object and viola! The letter is now attached to the surface, as sharp and professional as you could want. You'll have to restrain yourself from writing your autobiography on the wing with these. Where do you get them? Most art supply and stationery stores carry "Prestype" in Gothic, but usually black only. For the "Mock 15," I found a crafts store that carried "Instantype" in white letters as small as 1/16"! In addition, the "Instantype" sheet (L-1014) has dashed lines between the rows that can be pressed around the lettering to look like the edges of access doors. That's not enough? Then get some 1/32" slot car striping tape in colors and lay **that** down for door and panel edges. When you're all done with this madness, protect it from fuel with the fuel proofer I mentioned. If it's on the fuselage near the engine or in the goo blast, better give it a coat of epoxy. Incidentally, use of these letters is a little chancy on Monokote because it is so slick; you can usually make them work over areas that are backed up with wood, however.

SAILPLANES This is a beautiful sport for the guy who enjoys working **with** the elements instead of blasting through them. I'll never design a sailplane because there are so many fine ones in kit form now. Now for some bon-bons: use transparent MonoKote on the built-up wings and tail, opaque Monokote on the fuselage unless it's plastic. (For plastic, use epoxy paints for scratch resistance.) Unless you're blessed with good hills and winds, build a wingspan of 7 feet or so and use a power pod with an .09 or .10 engine. I mount a small fuel tank of about one ounce right on the pod, and let the engine run out of fuel at altitude after about 2½ minutes. With 2 channel propo on rudder and elevator, you can do everything you need to do including holding it down to a reasonable altitude if it is getting too high on the power run. Incidentally, the power flight is a dandy time to circle around and check for light air. Then, after the power quits, cruise back to the area where the activity was noted; use a normal glide and slight turn. The thermal will usually be like a big mushroom of rising air. If you hit it straight-on, the ship will nose up and stagger; forge on with down elevator, then get a turn established. If you pass to one side of the thermal ,it will raise a wing and throw the aircraft away from it; get that wing down and turn immediately in that direction. When you have plopped neatly into the thermal, the natural turn of the ship will tighten as though it was going down he drain; pull in full nose-up trim and let it ride it up. If the ship pops up and over the side of the thermal, roll it back in. With a little practice, you'll find that the ship's native abilities to signal light air makes gadgets unnecessary. Incidentally, don't apologize for your power pod; if you want the maximum flying for the least amount of gadgetry and time, this is for you. When the lift is there, the loss of performance is negligible. Don't use any offset thrust adjustments in the engine; it will make the ship crab through the air.

Concerning sailplane wings: I like the feature of sliding the wing panels onto plywood or metal "tongues," then using a couple of strips of masking tape to add confidence in the arrangement. I had a rudder servo lock full over once, giving me a chance to see what this arrangement does in a spiral dive. After 5 screaming turns, one wing broke (by **compression** in a spruce wing spar at a high stress point!) before the centrifugal force threw the other wing off. The wings sustained no damage beyond that point. This also proved to me that Super Monokote is adequately strong for the stresses in a sailplane this size, besides giving beautiful visibility at high altitude. (Transparent, of course.) Anyway, you flatlanders, don't miss this sport just because you don't have ridges. Go get those thermals over a nice green field on a warm day with a light breeze blowing. A tip: if that field has a small rise or bank on the downwind side, the thermals will slide across the field and then break loose at that bank. If you fly back and forth across the bank at 200 feet or more, you can soar the bubbles just like it was a windy ridge!

DRAG BRAKES If you use

simple drag brakes on your wheels after the fashion of Phil Kraft, you can make them more effective by making a simple change. Picture the usual piece of wire (applied by pulling a string with down elevator) pressing down on the tire. The trouble is, we usually mount this pivoted wire directly over the centerline of the wheel. Next time, mount it vertically, allright, but about 3/8" **behind** the wheel centerline. This way, the forward rotation of the wheel will move the wire forward and make it bite in to the tire better because the tire is **bigger** there. O.K.?

WASHING If you put an aircraft away dirty, the castor oil undergoes an oxidizing reaction that makes it practically impossible to remove. Go to the laundry tubs and clean that ship after **every** flying session, even if you fly several times a weekend. I keep two cellulose sponges in the laundry cabinet, one for scrubbing down with undiluted Mr. Clean and the other for rinsing. I wash and rinse every inch of the ship, using a small brush to help with the areas around the gear and brakes. Yes, I clean around the engine too; you can keep it out of the insides by making sure the shutters and throttle are closed and then being **careful.** After this, I put a few drops of 3 in 1 oil in the engine and rotate it a few times. Then you don't have a balky engine after the ship has sat for a week or two.

By the way, you Monokote users know that even a good washing leaves an oily scum on the surface. Relax. Just get some clean rags and some Ajax foaming window cleaner in the pressurized can. Spray this over the whole ship and wipe it down vigorously, polishing to a shine. Like new! Sailplane fans, this is all you **ever** need to do. Another good reason to try soaring, right?

As Uncle Balderdash Bassett once said, cleanliness may be next to Godliness but on an R/C ship it's next to impossible. However, if you work at it you'll be amazed at how much longer things last!

FUEL TANKS While trying to get something bigger than a 2 ounce tank in the "Mini Stik," I used a plastic bottle from the drug store which went about three ounces. It was snug, but I wedged it in place with foam rubber to prevent shifting. You wouldn't believe the foaming that was caused by the vibration being transmitted through that packed-in foam! Once removed, foaming stopped. I then hastily proceeded to remove the packed-in foam from the receiver compartment, where the fit is rather tight. Loose foam is best, but USING NOTHING is better than using **tightly packed** foam. Wherever possible, of course, do what the manufacturer suggests.

Eventually, by the way, I crammed a **6** ounce tank into that iddy-biddy space. It's all buckled out of shape, bent under a wing dowel, and almost impossible to wiggle in or out. Would you believe that it works beautifully and foams less than that foam-packed tank? And that, kiddies, is how you can get long flight times on a .19 powered 36 inch "Mini Stik"!

Here comes Walt with the cheese, so no more bon-bons for now. Maybe more later if you guys indicate they're worthwhile. Y'all write? ●

(continued from page 12)

with the jackscrew moving the horn. Since the horn moves in an arc, the motor must be mounted on a shaft and allowed to swivel a few degrees. Micro-switches are arranged to cut off the motor at the two correct positions as shown in Figures 1 and 2. Wiring diagram is given in Figure 3. The Positract Switcher Unit is actuated by a servo on an auxiliary channel. We're going to make this servo do more than just switch the Positracts — as we shall see later. The same battery as powers the whole radio can power the Positracts too, since we are only going to operate the folding device while the model is on the ground. Alright, you Jokers, we know what you're thinking! Seriously; it might be a good plan to have a safety device on the transmitter. That lever, if operated in flight, is a sure way to lose height. Instant landing! Our Micro transmitter has a switch-safety on the Wing Fold channel so old Dauntless Dave can't move it accidentally.

To return to the point. What we now have is a wing which folds

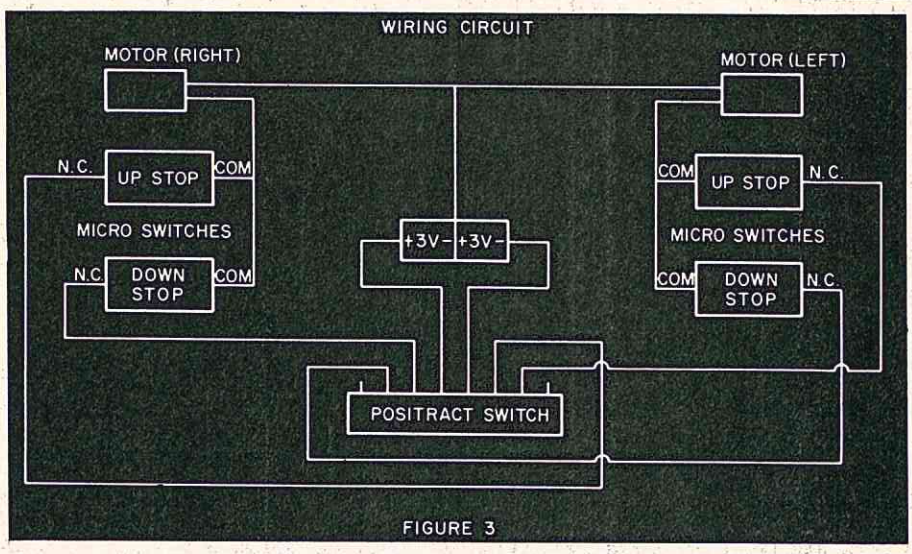


FIGURE 3

and extends on command from the transmitter and switches itself off at the right places.

STAGE 2. Study Figs. 4 and 5. We now make and install a latch into each outer panel. The latch, made of ¼" high-grade phenolic, is pulled up against the shear pin in the inner panel by a small spring. The latch has a "lead" on its inner end so that it will ride the pin and self-engage at the bottom of the extend stroke. What we now have to do is arrange a system to disengage the latch at the beginning of the Fold cycle. This job is done by our friend the servo, operating a small bellcrank to lever the latch down a few degrees at the same time as it was making contacts on the Positract switcher for us.

It will be seen that the servo moves the bellcrank out of the way at the start of the Extend cycle, enabling the latch to snap into engagement with the shear pin at the

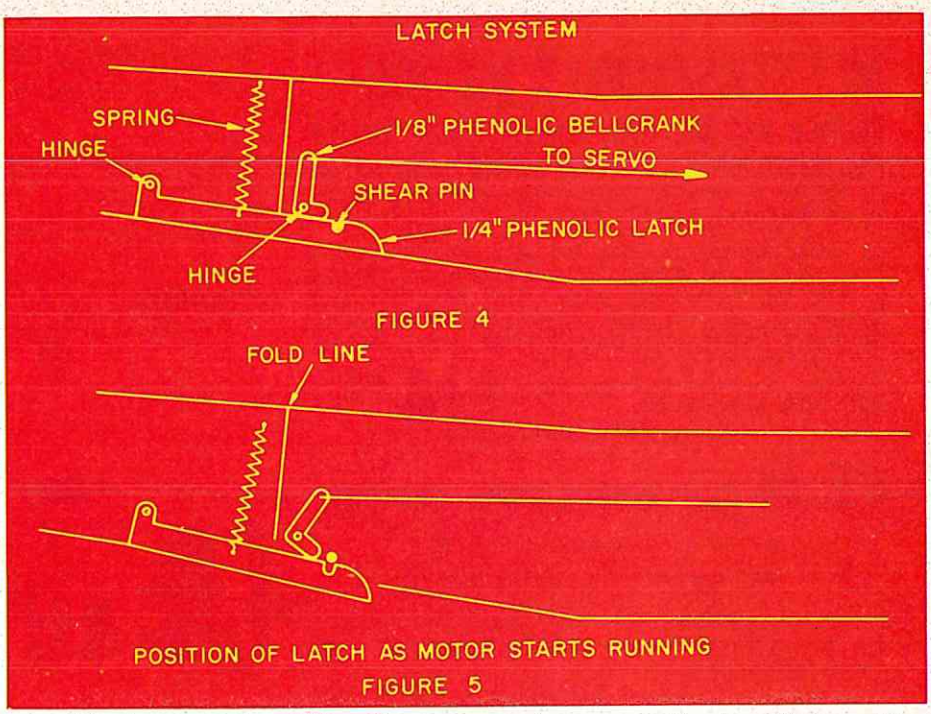
end of the Extend cycle when the wings are level. What we hear during Extend, is the motor buzzing away and a loud click as it stops.

Our shear pin is made of 1/16" piano wire and should be ample for the job (it says here). If you don't trust it, use a ½" drill or something.

STAGE 3. For all you rudder-only types who build folding-winged scale jobs (don't all rush at once) the whole job is finished. But, the rest of us greedy devils who want all this **and** ailerons, have more work yet.

After messing with various schemes, the one shown was evolved and works well. (Fig. 6) The square brass tubes should **not** be oiled; they will slip better dry. All clearances in the entire aileron system must be kept **very** close, or excessive backlash will result and the aileron neutral will be a ½" wide band instead of a point.

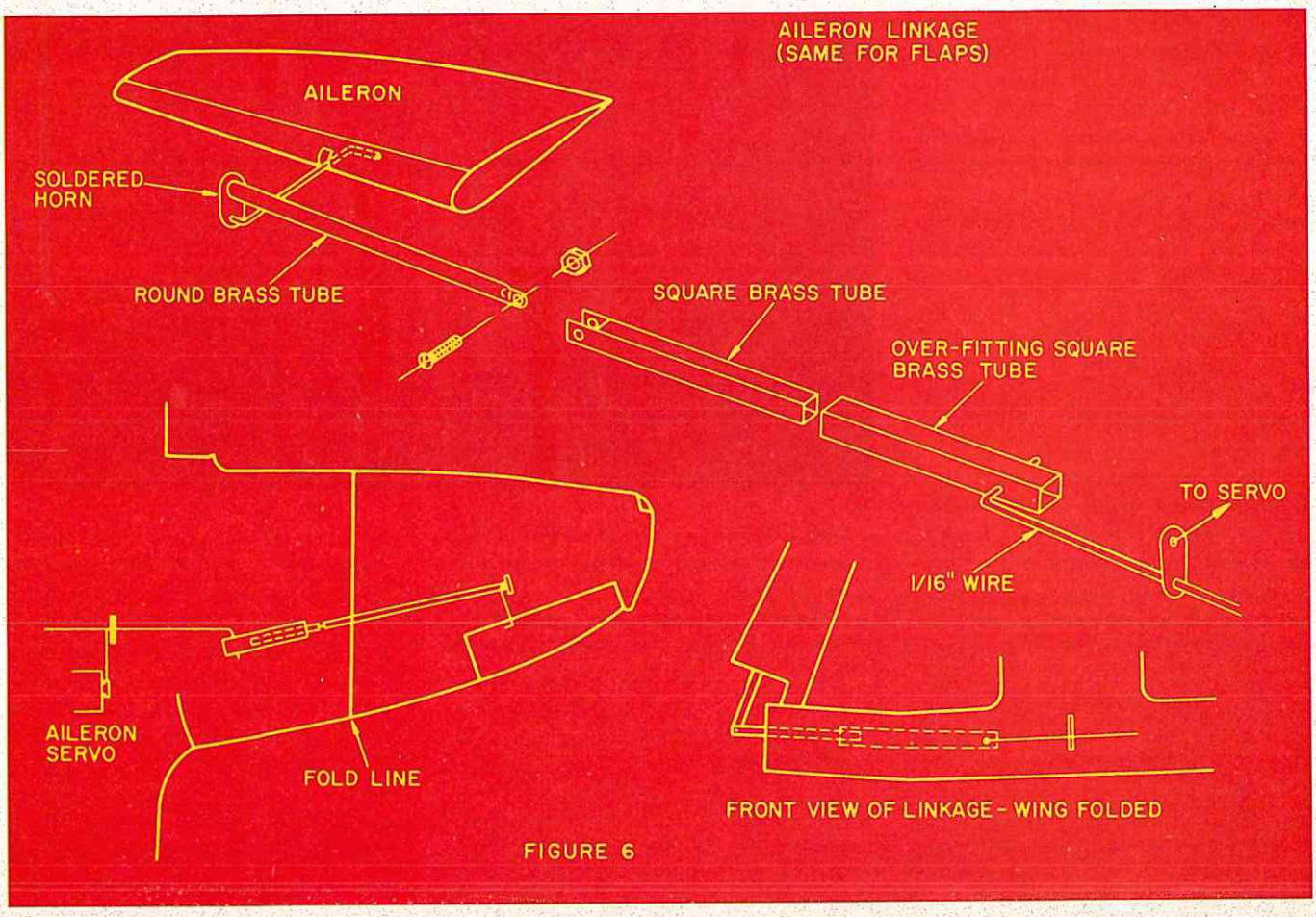
This whole idea is offered on a for-what-its-worth basis. It has NOT been flight-tested yet, but will be by the time you read this. If you're in a real hurry to know how it stands up, write or call (312) 581-7198 and we'll tell you. We'll report later in the column anyhow.



That's about it, fellas. As we said in the beginning, if you regard this sort of feature as a waste of space in your column, tell us so. We won't be offended; we want to provide what YOU want.

* * * *

We are most happy to welcome our friend and fellow scale nut Claude McCullough on the magazine scene. Claude will be writing his scale column in **American Aircraft Modeler** and, far from being rivals, we hope to spread the gospel together. For our part, we're only delighted that yet another magazine has a scale column. Of the world's English-language magazines, that makes five down and two to go! Here's to you, Claude. ●



GEMS

(continued from page 14)

6. Insect repellent
7. Hat
8. Sunglasses
9. Shade tent for an all day session
10. Lunch or snacks
11. Money and drivers license
12. Fuselage, wing, fuel, battery, transmitter

We would be hard put to edit this list any shorter and are afraid to say which would be mandatory and which would not. We have heard of a few spartan souls with only all of part of item #12. Imagine that!

On the way to the field (instead of driving along with a blank mind) we suggest you think about what you're going to do while flying. We know the "hot" pattern flyer does this automatically, reviewing in his mind the mechanics of maneuver placement or the ones that trouble him, etc. Likewise, the pylon racer pilot gives thought to his needs but YOU, what are YOU gonna do once you're airborne?

We offer the following flight plan for your edification and amusement. Be advised, however, that it is our favorite basic flight school repetoire and has been used very successfully on well over 100 students! Once the engine has been started and adjusted (both at full power and idle), the flight controls checked (direction and movement) and you have amazed your onlookers with your ability to taxi your plane to the end of the runway, your moment of truth is now at hand. Consider this; takeoffs are optional but landings are mandatory! So — before you "pour the coal to her" let's be sure we know in our minds exactly what we're going to do!

Not just for the take off but, rather, for the whole flight! Takeoffs are made by aligning the airplane with the runway and wind (hopefully both are coincident but if not, line up with the runway and take off cross wind if you have a small short runway, vice-versa if runway is unlimited!) Now, take a deep breath, let it out slowly and advance the throttle control smoothly to maximum power. As the airplane accelerates it may veer off to one side or another. Assuming you have an adequate runway don't be concerned so much with getting back on the "line" as just stopping the turn! One very funny takeoff we saw involved Sammy Showoff! Ole Sam sez, "Watch me everybody, I'm gonna take off on the center line! And he slammed in full power. The torque effect caused his plane to veer left sharply and he, being slower of thought than action, shoved in right rudder. His plane veered back across the center line much too sharply. He then over corrected to the left and this time, when the plane came across the center line, it dug the other wing tip. More over correction and the next time across it got the prop tips too, followed by still more over correction and then a flipover on its back. Sammy's plane was 150 feet from where it started but had only been on the centerline a total of 9 feet! It cost Sammy a rudder tip, both wing tips, one main gear tire, the prop and acute embarrassment! So that's why we say, just gently stop the turn. As the airplane

gets to flying speed, (that's where you feed in some up elevator and it goes up) feed in up elevator and watch it go up! As it goes, concentrate on keeping the wings level! Just climb at a steady rate and once you have achieved an excess of 100 feet of altitude make a gentle left (left's are easier) turn and, if possible, continue the climb as you do. Here's a word of sage advise about turns. **You must**! A Miniature aircraft flown by remote control can, in no way, return to land where it took off without some form of turn involved **unless** the wind velocity exceeds the airplane's air speed and, in that case, (if you are a beginner) you have no business flying in such weather anyway!

The standard, and most preferred turn, is accomplished by rolling into a gentle bank (using ailerons) and causing the turn by inducing some amount of up elevator. These things must be felt out by experience so just fly GENTLY!

All right now, once your turn is complete and you are flying back toward yourself, pick the portion of sky away from the sun, throttle back on the power, and establish straight and level flight. No day dreaming now! Remember, as long as your plane is airborne it's moving and you can't just "freeze" it in place. What we want you to do now is fly a "race track" pattern of about 100-150 feet above the ground (higher for beginners), offset to one side of your self and preferably away from the sun. Make your turns to the left at first and until you are relaxed and enjoying yourself. Sure it takes practice. You didn't learn to drive a car in 5 minutes did you?

Time out for a second — we want to make another big point here. Look, you are the builder and owner of your plane — that makes you responsible for it. We don't mean to be gruesome but, if improperly used, your bird is a lethal weapon. So, be **responsible for and with it.** The two things that upset us the most is a guy who comes out to the field half drunk and guzzles the 'ole brew by the gallon during the flying session. We are relatively safe from drunk drivers once off the roads but you tell me where we are safe from drunk pilots? The other situation which is just as fatal is an undisciplined beginner. By this we mean the guy who you "can't tell a thing" and who gets his plane airborne and just drives it around at random until it gets into an unusual attitude or trouble. Then the fun! Usually one of the following is the result; his aairplane crashes and he sez, "Why didn't old Harry Hotflyer help me recover it?" His plane goes through a wild series of gyrations and just before the crash he tosses the transmitter at Harry, who catches it inverted as the airplane does a double inverted vertical snap roll ten feet off the ground, then crashes. Whereupon Nick Nowitall screams, "I thought you were a good flyer Harry, Why didn't you save my plane?" Or, lastly, after a wild series of gyrations Nick luckily recovers control and continues to "drive" it around the sky until it gets into trouble and eventually crashes! Usually, 90% of Nicks crashes could have been prevented if he had known what he wanted the plane to do **before** the plane did it, and **if** he had the discipline to **make** it do what he wanted it to instead of letting it go along its merry way. Do you see the point? **Know** what you want the plane to do and **make it do it!**

Once you have become proficient at 180 degree level turns, or 90 degree level turns, and can fly straight legs between turns so your "racetrack, you should try "figure eights." The only difference is you hold the turn a little longer and every other turn is now to the right. Calm down and notice it is not as easy to turn right as it is to turn left. (Wonder if that will stir up as much controversy as the "turn downwind stall" did?)

One of these articles we'll explain why (when we find out), but for now just expect it and learn what is necessary to make **level** right turns for your figure eights!

There comes a time in every flight where the mandatory maneuver must be accomplished! **Now** is the time. If your racetrack pattern was in the right location your problem is half solved. A big, tall good natured dentist from Los Angeles was the first person we ever heard use the term "inspection pass" and it was at a large well attended pattern contest on the west coast, in the early "60's." What he was inspecting was the location and

height of a TV antenna which had already claimed a couple of planes at the meet! We have since then adopted the term and the maneuver as follows; provided your engine is running you accomplish the "inspection pass" from downwind to upwind of yourself on the heading on which you intend to land and over the area on which you intend to land. As you fly overhead you can look up at the plane and your transmitter antenna will be in your line of sight. Check the direction of wind (if any) by looking at your frequency flag (a couple of pieces of yarn about 24" long looped around the antenna and tied at the top is quite sufficient and is light enough to indicate the wind properly).

However, if you are a "status symbol" seeker and must have the very "expensive" accessories, send us $10.00 per antenna, be sure and state frequency in mega-hutz, and we will send you one exclusive hand selected custom deluxe model of the above mentioned flag insured, post paid! As you fly over correct heading as necessary. Now, while the plane flies upwind and is going away from you, you can check the runway for obstacles and run less chance of losing sight of your bird. Once the landing area has been "inspected" you are clear to begin your approach. Execute a level 90 degree turn, fly 150 feet, do another 90 degree turn and reduce power until you have established a rate of descent. Once the descent is established, you the pilot and responsible owner, must exercise good judgment and execute your last two (or three) turns in such a manner as to arrive over the spot of intended touchdown with zero altitude and minimum airspeed, wings level and wheels on the ground. (When you can do this consistently you are a fully qualified radio controlled miniature aircraft pilot!)

That condition is not as difficult as it may seem so here's **our** way. Continue flying downwind in a descent until past the point perpendicular to the approach end of your runway. Execute a gentle 90 degree left turn to the base leg using

minimum bank angle, continue the descent, and as you roll out of this turn (roll out means recover with wings level) your final judgment is made. If, at this point, you think you are too low head straight for the runway and make the small final turn over the runway. If you think that everything is all right when you turn on the base leg, continue flying straight ahead until you are at a point in line with the runway you will use. Here you execute the turn to final approach (gentle 90 degree turn minimum bank angle) and continuing the descent concentrate on holding the wings level to touchdown! We suggest you turn your body and fly "over your shoulder" when heading toward yourself. That eliminates the "reverse stick condition." OK, now let's go back to the downwind turn to base leg. If you think you are too high roll out just as you did for the "perfect" pattern and fly past the runway heading while continuing your descent. Then, at the appropriate time, according to your own judgment, turn little more than 90 degrees (flat and gentle) and fly toward the end of the runway. Now just as with the "short" approach make a small turn to final heading and again concentrate on keeping the wings level until touchdown. If the "short approach procedure" wouldn't be enough to get to the runway put on the power and execute a missed approach; that is, fly over the runway and try again, only this time start a little higher. Likewise, if the long, or high approach, leaves you too high execute the missed approach and start your next landing pattern a little lower. Lastly, try not to worry too much about the touchdown. Remember it's easier on your plane and gear to hit a little hard with the wings level than to either "flare out" (that is give final up elevator) too high, which results in a stall and crash (usually nose first) or give too much up too quickly and "snap roll" which usually results in an inverted crash.

Well, Sir; now that you have arrived at the field and have carefully followed all the previous directions there's nothing left but to "do as we sez, not as we duz!" May all your landings be grease jobs and don't forget to write if you get work! ●

MRC F-700 PROPORTIONAL

(continued from page 49)

FINDINGS

We could not help but be impressed by the modern, attractive packaging of this proportional system. his first impression is further enhanced by the complete "naturalness" and ease in handling afforded by the design of the transmitter. Once you have flown with this type of design, it is somewhat more difficult to go back to the more conventional style of transmitter. The airborne system is small and compact and extremely easy to install in virtually any aircraft. Both of our systems were obtained on 27 megahertz, since there is very abrupt interference on these frequencies in our area, and we wanted to check both systems under such conditions of interference. During several periods of such interference, we found the MRC F-700 digital proportional system to have such a high power output that it was virtually the only system on the field, during those times, that could fly during these conditions. In fact, the purchaser of the system is warned in the instruction manual not to operate the transmitter with the antenna collapsed for more than five minutes since operating under this condition for extended periods may seriously affect its output. Under no circumstances should the transmitter be operated with the antenna removed since this will cause the transmitter to overheat and might result in permanent damage to a transistor.

After well in excess of one hundred flights on the two systems, we are completely satisfied in every respect with the performance of the Model Rectifier Corporation Digital Proportional System. In all categories it has equalled or surpassed any proportional system we have tested in the past. Tests of the two systems were conducted at various fields, under various conditions, and in aircraft ranging from .15 powered ships to the larger .60 competition aircraft. No failures or malfunctions of any kind were experienced, and the system equalled or exceeded the manufacturers specifications on all points. As a point of interest, Bill O'Brien of the RCM staff con-

ducted the majority of the flight tests, and for its very first flight in a brand new aircraft showed up at the Whittier Narrows Field in Southern California only to find a Fun Fly contest in progress. In order to put the first fronts on the system, he entered the contest and, in front of hundreds of spectators, proceeded to win first place in one of the events on the first flight of a test program that was to extend over the next several months.

The MRC F-700 Five Channel Digital Proportional System is priced at $330 and comes complete with transmitter, receiver, four servos, battery pack, and wiring harness. The retail price is $330, and is distributed by Model Rectifier Corporation, 2500 Woodbridge Avenue, Edison, New Jersey 08817. R/C Modeler Magazine has tested, approves, and highly recommends this system for your consideration. We predict that this system will be one of the top selling proportional systems in 1970. ●

CUNNINGHAM ON R/C

(continued from page 8)

radio manufacturers, they have to either come up with new customers, or watch their business dwindle because they made too good a product. But what has that got to do with 'Joe-Average-Sunday-Flier?' Well, the problem is really the same for all of us in this hobby, whether we are engaged in the business end of it, or in the fun and games end of it. Like any other organization, or group, if you stop growing you begin to perish. Keen thought for the day, isn't it? But, it's true. It's true in the human body, as well as in any human idea, or organization. If we stop our growth process, we begin to wither away and die. For the average flier, if he doesn't push himself to grow better and better in his flying, his interest will begin to decline, and the sport just won't be as much fun any more. For a club to stop growing and stop looking for new members is a sure way to start the rapid dive into oblivion. If a club fails to bring in new, active members, then the old heads will become tired of mowing the grass, of planning the contests, and of

putting out the newsletter. This is one of the reasons that R/CM is sponsoring the National Fun Fly Championships, to push growth of this hobby into a new direction — to give the average pilot a place to grow, an area to excell in without the demands of pattern flying, or the expense of pylon racing.

1970 is going to see some changes in our sport. We may see the demise of some well known radio manufacturers, as well as some kit manufacturers, and hobby shops for that matter. The discount stores are dealing the local hobby shops a pretty hard time. The consumer, naturally, reaps the benefit of the discount house, but the local hobby shop simply can't exist on selling props and rubber bands, with a tube of glue thrown in now and then. My old buddy, the Friendly Hobby Dealer, Edd Alexander, has chided me for a number of years, on the idea that I was dedicated to keeping the modeler out of the hobby shop and in the corner hardware store. This is true in part. I've tried to point out all of the ways that I could think of to save money while having fun in this sport. But, the money saved by using your head could be invested in a new engine, or an upgraded radio set that otherwise might never have been attained.

I'm not advocating that each of us dash out and buy a new radio set just because someone needs to make a sale, far from it. What I **am** advocating is that each of us, no matter what phase of the hobby we are interested in, had better watch his situation very carefully this coming year, 'cause some big changes are happening. Changes in available money, overpopulation and subsequent loss of flying fields, and in the interest of new people. If we are really interested in making this sport grow, and grow so that all can benefit from that growth, then it would be a good idea to see what your club, or you, as an individual, can do to bring this sport to the attention of people that would otherwise not know about it. Demonstrations in shopping centers, and at schools, can be a good way of interesting new people. Talking up the hobby to your friends, and getting them interested is another good way to spread the word. After all, this sport is nothing to be ashamed

of. Sure, a lot of people think that we are a bunch of silly grown men playing with toys, but we are not. We are not silly, and they are darn sure not toys. They take a lot of dedication and skill to fly successfully. If you stop and think about it, the Apollo Space ships are pretty similar to our radio control craft. The unmanned space flights are first cousins to our type of aircraft. Helping newcomers to learn how to put these things together, and then helping them to fly can be the most rewarding aspect of all. This would be an ideal way for clubs to get 'with it' as far as bringing in new blood. A real, concrete program for the new flier would be the best thing that a club could accomplish. If, because each of us is too busy in his own little area, we allow this sport to begin to die for lack of growth, we shall all suffer . . .

The other day I was having a hard time obtaining a special part that I had purchased for my company. Production of a large contract had been stopped because the supplier had shipped the wrong part. All of the paper work was correct, but the guy in the shipping department had put the wrong size part in the box. The correct parts had to be air freighted in and, even so, the project was held up for four days. A friend of mine in the suppliers office mailed me an article clipped from an Electrical Engineering magazine. It was titled, "Edsel Murphy's Law Governing Inanimate Objects." Perhaps some of you have been exposed to Edsel Murphy's Law, or know what it is. Simply stated it means, "Whatever can go wrong, will." Or, expressed mathematically $1 + 1 \rightarrow 2$, where the symbol $\rightarrow$ means "seldom ever." The article went on to point our many applications of Murphy's law as it related to electrical engineering. These seemed to be related to the sport of R/C. I've included some of Murphy's laws as shown below:

1. **All warranty and guarantee clauses become void upon payment of invoice.**
2. **The necessity of making major design changes increases as the fabrication of the model approaches**

completion.

3. Original drawings will be lost in the mail.
4. Any error that can creep in, will. It will be in the direction that will do the most damage.
5. Any wire cut to length will be too short. (The same goes for a piece of balsa wood.)
6. Identical units tested under identical conditions will not be identical in the field.
7. The availability of an item is inversely proportional to the need for that item.
8. A dropped tool will land where it can do the most damage. (Also known as the law of selective gravitation.)
9. A device selected at random from a group having 99% reliability, will be a member of the 1% group.
10. The probability of a dimension being omitted from a plan or drawing is directly proportional to its importance.
11. Interchangeable parts won't.
12. If a prototype functions perfectly, subsequent production units will malfunction.
13. Components that must not and cannot be assembled improperly will be.
14. If a circuit cannot fail, it will.
15. The most delicate component will drop.
16. A fail-safe circuit will destroy others.
17. A transistor protected by a fast-acting fuse will protect the fuse by blowing first.
18. A failure will not appear until a unit has passed final inspection.
19. If an obviously defective component is replaced in an instrument with an intermittent fault, the fault will reappear after the instrument is returned to service.
20. After an instrument has been fully assembled, extra components will be found on the bench.

My thanks to "D. L. Klipstein" who authored this article in the first place. If you can't find a bunch of parallel situations in our hobby, be it in construction aircraft, or repair of radio sets, then you'd better get back to work, and skip all of this reading jazz.

Good luck, and good flying. When the snow melts, that is! ●

OLE TIGER

(continued from page 24)

tail.

The scale gear location works well, and the wheel pant sare shown with the gear legs going inside near the top of the pants. (Or should I say wheel fairings?)

The wing is built by laying the front top spar on the plans. Pin down on a straight, flat building board. Block up the rear of each rib as you install and glue them to the spar. After all ribs have dried, add the leading edge next. Stop at the inboard rib on each side and glue a small piece between the center ribs.

Add the bottom front and rear spars at this time. Plank the entire bottom of the wing. Let dry completely before removing from the plans. Now turn the wing over and add the top rear spar and 3/8" trailing edge stock between each rib. Now glue 1/8" plywood or 1/4" maple blocks (again depending on the hold down bolt size used) behind the leading edge and in front of the trailing edge stock in the center section. Be sure to glue well to the ribs and bottom planking. After this dries completely place the wing and fuselage hold-down blocks. Make sure the holes are close to center of the tubing. This is extremely important as the complete wing line-up depends on how accurately you do this. If you use 4-40 or 6-32 bolts be sure to install blind mounting nuts at this time. (Sure is hard to put them in a completely planked wing!) You can tap the maple block for 1/4 x 20 at any time before you need to fasten the wing on. Install the aileron bellcranks, pushrods, and aileron to bellcrank at this time. After double checking to make sure everything has been done, plank the top of the wing. Add the wing tips and sand to shape.

Mark and cut out ailerons. Add the plywood plate for the aileron horn now. Glue the Aileron leading edge and wing cutout trailing edge in place, making sure to cut out enough material to clear the added pieces. Install the hinges and aileron

horns.

The finishing and painting is done by whatever way comes natural to you. I finished my model in scale colors and scale striping. Those three color paint jobs are really lots of FUN? Oh well, you never can tell, some of you might be as nuts as I am!

Be sure to balance "Ole Tiger" well forward, especially if you used the small tail section. Landing speed **must** be slightly faster than you are normally used to. That small tail section just doesn't work at slow speeds.

Well, for those of you that have asked and those who read this magazine, here it is. Hoping you enjoy having a TIGER by the tail. Lots of luck and win races.

Have a ball and let us hear from you;

Frank Johnson
and also, I'm sure,
Bob Downey.

●

GUS

(continued from page 28)

signed to carry some of its weight. In some comparison flights the performance is along with that of the famous Little-T, Barnacle, and Malibu. These are some of the standard class sailplanes which have fine performance even down to winds below 5 mph when the weight is kept below 32 ounces. The weight of the GUS was a flat 21 ozs. ready to fly!

Along with scale-like appearance we wanted our ship to look, as much as possible, like the real sailplanes. Several modifications have been made from the original GUS to bring its appearance to these standards. With cockpit details, such as, instrument panel, pilot and clear plastic canopy GUS becomes a real sharp looking sailplane.

This model was designed as a thermal as well as a slope soarer to meet the standard class sailplane requirements. We hope that this will some day become a class where such sailplanes, as mentioned in this article, and many others that are under the 100 in. mark, may compete against each other in local and open competition.

GUS has, also proven to be a fine sailplane in the hands of the ab-

solute novice. This was my first sailplane, not only to design, but to have successfully flown. (It has taken 12 months of building & flying this design to give us our present version.) Gus has, also been flown rudder only . . . showing very little loss of performance without the aid of elevator. I have never flown it with any of the Galloping Ghost or pulse rudder systems but I am sure it is docile enough for them. For best performance, keep the weight under 25 ozs. ready to fly.

CONSTRUCTION

WING

The wing is simple and straight forward in construction. Cut out all ribs from medium hard quarter grain stock of 1/16 sheet balsa. The leading edge is medium hard balsa, with spruce spars and balsa trailing edge. The wing is jigged to get the true airfoil shape as shown on plans.* Use ½" square pieces of 1/32" sheet under the trailing edge of each rib; The forward portion of the trailing edge.

The wing is built in 4 panels. Dihedral is then put in giving the center section 1½" under each panel. The tip panels will have 4" Dihedral each. All gussets and bracings are added along with the top sheet planking and cap strips. Finally, add the wing tip blocks. When the wing is finished, sand to shape. We covered our first model with silk using 4 coats of 50-50 dope and thinner. Later versions have been covered with Super Mono-Kote. Use the covering of your choice.

FUSELAGE

The fuselage is a simple box-type for simple construction. Pick two evenly matched straight grain sheets of 3/32" balsa. Add all bracings, publers, and stringers to the fuselage sides. When making your box, make sure you have proper alignment. Add the hose blocks and sand to shape. The canopy is cut from a 10-12" commercial type turned in the reverse position. At this point, the floor should be sprayed black and all cockpit details added. Then canopy is cemented to the floor along with the re arcanopy bulkhead. Hold down hooks on the canopy floor and the bottom of the fuselage should be installed. A switch can be eliminated by just lifting canopy to un-

plug the battery pack from the receiver in just a few seconds. The fuselage top and bottom planking is added and sanded to shape.

TAILFEATHERS

Rudder and stabilizer is cut from medium 1/8" sheet and sanded to shape. Use hinges of your choice. A piece of 1/8 dia. aluminum tubing is used to join the elevator halves.

ASSEMBLY

Add tailfeathers to fuselage checking for true alignment. A 3/16" square strip is beveled at the bottom of the fin on the stab. The entire model is to be sanded to a fine finish & then covered with your choice of material. But whatever you use, be careful to keep the weight down — **below 25 ozs.**

FLYING

Be sure that GUS balances at the point shown on the plan and there is no warps in the wing. If there is, be sure to carefully steam them out or twist with heat if Mono-Kote is used. I balanced my model by shifting the radio gear until the desired point had been reached. I have had some horrible experiences with power and sailplanes that had improper CG locations. NOW FOR FLYING — GUS is very docile and easy to fly. A gentle launch into the slightest breeze will get the ship airborne. Be sure to go out at least 20-30' from the hill before making your first turn. Your turns should be smooth and responsive on this little sailplane with a minimum of skid. The nose will drop slightly in those turns. From this point on, no one can really tell you how to fly YOUR SAILPLANE. HAPPY SOARING TO YOU! ●

ENGINE CLINIC

(continued from page 10)

cool, even on the ground. A cool running engine will have a much longer life, be easier on glow plugs, and will permit the use of higher nitro fuels. You Formula one and Open pylon fliers might give Jim's idea a try. The results will pay off. ●

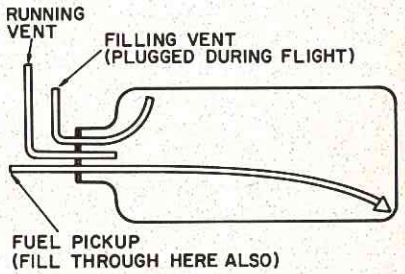
Our first letter this month has a sketch of a modification to your fuel tank that should result in a more constant head. I have not had a chance to give it a try yet myself, but it does look to me as though it will work.

. . . I have experienced an odd occurrence with my Veco 61 which I would appreciate your commenting on.

For break-in, I ran the engine on Sig fuel, about 1½ gallons rich 4 cycle, in flight. Then gradually leaned to rich 2 cycle for next 5 gallons or so and performance increased about as it should. Aside from poor performance when new, the engine was good. After this time I ran about 1/2 gallon fuel with 5% nitro and 'Ucon' oil. The last run was VERY lean, so I aborted the flight after about 5 minutes. (This was a competition flight.) After that time I went back to Sig fuel. For the next 5 gallons, idle was good, but fuel draw was terrible. Starting at 4 cycle on ground, the engine would go too lean toward the end of a 12 oz. tank. Recently, however, the engine has started running okay again, holding consistent needle settings. About the time that running got better, I also switched from 11-8 Top Flites to 11-7 Top Flite. (All previous running has been on 11-8's.) I think there was no difficulty with the tank, since the same tank was used throughout and pick-up lines were checked and changed to be sure there were no holes. All flying has been in the same airplane.

My theory is that the rings and cylinder were severely scored by the lean run on the Ucon oil, and the engine had to literally be broken in again. Would you give an opinion? (Unfortunately, I didn't remove the head and look at the cylinder. The rings didn't look any different.)

Speaking of tanks, here's a vent idea which I've used for a couple of years. It does seem to give more consistent runs, due to a more uniform fuel head during the run. When level, the fuel has to be drawn against the reduced fuel head since the vent is submerged (until half empty). But on climbs, the vent is uncovered, thus letting atmospheric pressure into the tank, and keeping effective head more nearly constant.



Mel Richardson
Clemson, S.C. 29631

I think your theory was, for the most part, correct. Many times the rings and sleeve will be badly scratched or scuffed by a lean run. Compression and fuel draw are affected and the engine performs badly. With additional running the rings and sleeve polish in again, and the engine will once again, perform satisfactorily. This isn't meant to say that every time you damage an engine by lean running it will 'heal itself' with additional running, but many times it will. Especial-

ly if it is just a case of the rings being scuffed. In addition, I do think the change from an 11-8 to a 11-7 helped. This put less load on the engine allowing it to turn up a little more which, in turn, increased fuel draw and performance.

. . . advice on the Super Tigre 40 Formula I engine - the problem I'm having is the piston ring constantly rotates when the engine is running. Therefore the ring won't seat when rotating.

Frank Stacker
Vancouver, Wn 98665

You do not have any problem, Frank. It is perfectly normal for the ring to rotate. The only way this could be stopped is by pinning, which is not necessary. The fact that the ring is rotating means you have a nice round sleeve. If the sleeve were out of round, the ring would take a set out of round also, and not rotate. Actually the rotation of the ring has an advantage. If you should get in a lean run and scratch the ring and sleeve, the rotation will misalign the scratches, helping to restore compression.

Several months ago I bought a Webra .20 Glo-Star, and proceeded to bench run it. For the first few minutes it was run on an 11 x 4 prop., and then on the 9 x 6 recommended for running in. It has now been run for approximately an hour, and I have changed over to the prop recommended for radio work, i.e. a 10 x 4. The idle is good, and it will run through a 4 oz. tank at full throttle without tightening up. However, if the throttle is moved slowly through its full range, either from fully advanced to fully closed or the reverse, at about 1/2 throttle the engine starts to run very rough. If the throttle is held at this position, the engine will continued to run rough and eventually shakes loose the mounting bolts, carburetor or both.

If the throttle is moved rapidly through its range, the rough spot is not as noticeable but is still present. By experimenting with the air bleed screw, it is possible to alter the position where the rough spot occurs, but not eliminate it. In its present state I don't think the motor is usable in a model, and so to date it has only been bench run. I've tried every cure I can think of without success. Below is a list of what has been tried more or less in correct order.

1. The short reach Webra plug burnt out fairly early on. The motor was then run for a short while on a long reach plug. No change. A short reach plug with idle bar was then used, first with a single plug washer and then with two plug washers - still no improvement.

2. Initial running was done with a standard 75%/25% methanol/castor oil mix. This mixture with additions of 12%, 6% and finally 3% nitro was then tried. Wouldn't run continuously on the 12%, nearly amputated my fingers by backfiring on the 6% and ran as before with the 3%.

3. At about this time it was noticed that the engine, if set up to run at full throttle,

ran rich and died on the idle. If set up on the idle and then opened up, it started to die lean (it was never allowed to do so). A friend then noticed that the holes in the spray bar were straight up and down in relation to the carb. intake. The spray bar was turned 90%, and the motor would then idle and run at full throttle on the same needle setting - the rough running period in the throttle range however, was still present.

4. After re-reading one of your early Engine Clinic articles, I made an adjustable link between the throttle arm and exhaust wiper baffle, and gradually shortened this link, eventually reaching the stage where, on idle, the baffle did not close the exhaust port. No improvement. At this stage I ran out of patience and tried running it without the exhaust baffle - no dice, and the idle became unreliable.

5. The carburetor screws into the crank case opening, and is locked with a big nut. It was in the lowest possible position originally and I tried raising the whole carburetor one complete turn at a time. No appreciable improvement but the engine was possibly a shade smoother with the carburetor one turn above the lowest position. Raising the carburetor increases the distance between the throttle arm and wiper baffle, and provided that the original link is used, one result of raising the carburetor is that the wiper baffle opens sooner.

6. An 11 x 7½ Rev-Up prop was substituted for the 10 x 4 nylon. The engine then ran as smooth as silk at any throttle opening. Not that this is any consolation as obviously this is much too big a prop for a .20. It was only tried as an experiment.

7. Apart from returning the engine to Germany (and I can't decipher the German address on the guarantee), writing to you for advice seemed the only thing left to do.

Peter Allanson
Lismore, Australia

Pete, I think you have been barking up the wrong tree trying to cure the mid-range rough spot through carburetion. All engines have a rough spot somewhere between 6-8000 rpm due to crank balancing. In some engines it is more pronounced than in others. If you were to try and balance the engine to get rid of this mid-range rough spot, the engine would then be rougher at high speed. It is impossible to balance a single cylinder engine. This vibration period works in multiples. If the engine is rough at 8,000 rpm, it will also have a rough spot at 16,000 rpm, although not as bad. More than likely, your engine was loading up slightly right at this vibration spot which intensified matters. Playing with carburetion smoothed the roughness caused by the rough mixture, but did nothing for the vibration.

I have not worked with enough Webra Glo-Star .20's to know if they all do this or not, but I would guess that it is a characteristic of the engine.

I have read many times about damage that might result from running an engine too lean. Just what kind of damage takes place? The reason I ask is that I had a lean run on my O.S. Max H40 R/C in my Trainermaster. Somehow it does not put out anymore. Upon examination I found that there is a lot of play in the conrod and the wrist pin, and the wrist pin and the piston. When I flip the prop over I hear a clicking or clacking sound. If I replace the piston, ring, conrod, and sleeve, will this restore the engine? I would appreciate hearing from you.

I sometimes use K&B Hi-Lo fuel, which is not on your recommended list. If I put 3 ounces of castor oil (I purchased a bottle of McKesson and Robbins) in a gallon, will this provide adequate lubrication?

Do you recommend the additive that Midwest puts out which you place into the intake of the engine at high speed for removing carbon and varnish?

James S. Miura
Honolulu, Hawaii 96816

You have just found out the damage that takes place when you run your engine too lean. The upper end of the conrod and wrist pin holes in the piston will be the first places to show wear. Replacing the piston, ring, conrod, sleeve, and wrist pin (if it is scored), should make the engine as good as new again.

K&B Hi-Lo uses half castor oil and half Ucon for lubrication. The addition of 3 ounces of extra castor will provide plenty of lubrication. However, I still like K&B 100 myself which is all castor.

I recommend running either Peak Power or Glow Life through the engine every time you have used up a gallon of fuel. They both help keep down the carbon and varnish build-up, although nothing has come along that will completely eliminate them.

I am writing to you with the hope that you might suggest something I might try to correct a problem I am having with a Merco II .61 RC engine (two ring model).

The engine appears to have good compression and runs well at both ends but since I have no instruments to make measurements, I am judging its satisfactory performance from sound. My complaint is that it loses fuel from the front bearing and the loss increases as RPM is increased. The loss is quite heavy and fuel can be seen to be escaping from the bearing and is blown away as the engine runs. There doesn't seem to be excess play at the front bearing. I will very much appreciate any suggestions.

Bob Turk
San Jose, Calif. 95129

A little leakage out of the front bearing is normal and, actually, desirable. It assures lubrication to the front ball bearing and helps flush any dirt away that has accumulated. If the fuel comes out like a spray gun, the fit between the crankshaft and the housing is too loose. The only way this can

be corrected is by replacing the crankcase. Sometimes a leak like this will look worse than it actually is. Try timing a tank full of fuel on the bench. You should get about 12 minutes with a 12 ounce tank. If you get more, you have no complaint. There is not enough fuel leaking to matter. If you only get 9 or 10 minutes, the leakage is excessive.

Can you send me the clearance of the piston, rings, and sleeve for Enya 60 and Super Tigre 60?

Bob Latham

Engine clearances are pretty well standard for all makes of engines. The piston skirt should have .003" clearance, and the head or part above the top ring .005". The ring end gap should be .006"-.008". You didn't say which Super Tigre .60 you have. Some of the newer ones are using a high silicone aluminum that has less expansion than regular aluminum and can be set closer. It would depend on which model of the month you have. I often wonder how Super Tigre ever keeps track of their inventory!

I have an HP 61 RC that I just got back from the factory because of a recall on all the early models. Supposedly it is in A-1 shape. It does have a lot of power, but a very rough erratic idle. Fuel dribbles out of the intake venturi and it is very messy.

You tune it to a lean 4 cycle so it doesn't lean out too much in the air and then you are too rich inverted. I have it in a Kwik Fli III and wonder where should I locate the tank because the venturi is so low. I use a Sullivan SS10 with two vents because it's hard to hook up the feed line.

Could I adapt a Perry or Kavan carb to this engine? All our material must be mail ordered because of no hobby shops nearby.

Also, we fly at about 5600 feet elevation. Altitude-engine performance tips might be a good topic for one of your columns. We normally use a 60 where the plans call for a 45 or say a 45 instead of a 35.

When the weather does get hot here (about one week in August) the air really thins out. No floaters then. Prop size agrees with what you have already discussed. . . .

Joe Forbes

Tank position is a real problem with the H.P. I have already told you where the tank should be positioned in the first portion of the column. How you can achieve this with an H.P. is a good guess, especially with your Kwik-Fli! The only logical solution I have, is to side mount the engine. The next recommendation is to get rid of the carburetor and replace it with a Kavan. That, in itself, will improve the idle tremendously. Perry does not make a carburetor for the H.P. at this time and I do not recommend substituting one intended for another make

of engine. The fuel regulation is a little different in the Perry and each make of engine has a different requirement. John matches his carburetor to the engine's requirement. In other words, some engines go lean through the mid range, others rich, etc. John matches this. For this reason you should not use a Perry carburetor intended for the Veco on a Webra, or a Super Tigre on a H.P., etc. The Kavan carburetor for the .60's is the same internally for all makes, the only difference being in the o.d. of the body where it slips into the venturi. Kavan does not make a carburetor expressly for the H.P., but any of the .60 models can be turned down to fit.

My first problem is that I recently purchased a plane, a Sterling Ringmaster, with a Super Tigre G21 R.V.; the engine is a 35. The problem comes from air in the fuel line. The tank is mounted in the right level with injector. The engine starts very nicely but then develops air in the fuel line. I'm not sure but I contribute this to either an excess of tank vibration or the orifice in the RV is pointing in the wrong direction. The tank is a perfect No. 10. I would appreciate any information you could help me with.

Problem 2: Is there any way in which you can convert my Super Tigre to a R.C. engine? I am very much interested in R.C. and this would help me greatly. . . . I would appreciate any help that you could give me and thank you for your articles.

Larry J. Smith
New Florence, Pa. 15944

Hey man, the Ringmaster is a U-control model! This column is supposed to be for R/C problems. Seriously though, Larry, I did fly U-control myself, from 1943 to 1955, before going radio, so can speak with some knowledge. Your problem is fuel foaming and probably caused by an unbalanced propeller. Also, if you are using a plastic spinner, take it off and see if this cures the trouble.

It would be pretty hard converting your G .21 R.V. Super Tigre to R/C use. You can stick a carburetor on any engine and use it in R/C, but there would be a lot left to be desired in the idle department. You would need something in the way of an exhaust baffle and there are no commercially made ones available. Even if there were, the position of the venturi would make connecting the baffle to the carburetor difficult. You could use a muffler to keep the plug a little hotter, but in the long run you would still have many headaches. I would recommend purchasing an engine intended for R/C use when you decide to go R/C, and save yourself some problems. You will have enough! ●