



RC MODELER

THE WORLD'S LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS

1971 WORLD CHAMPIONSHIPS REPORT

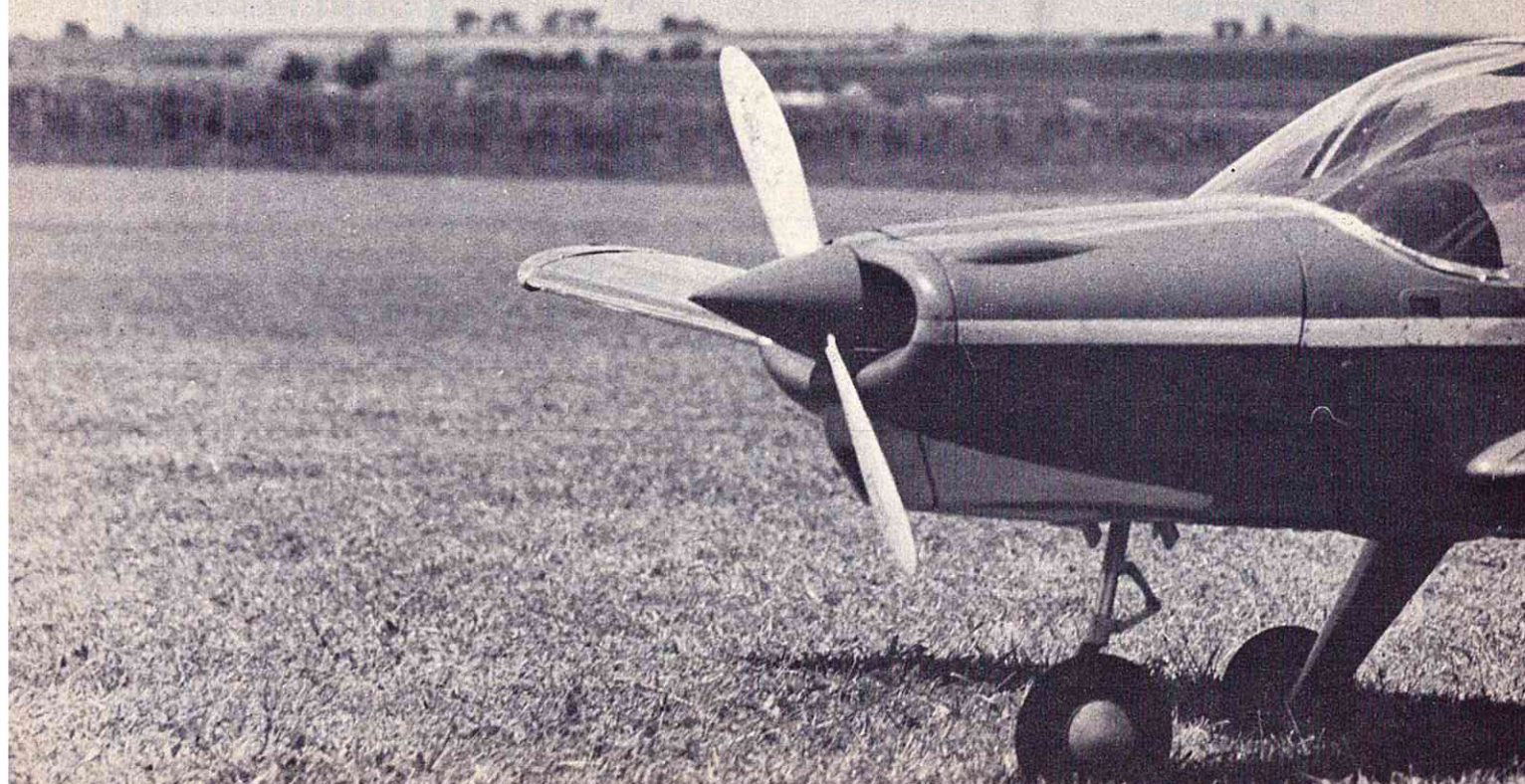


THIS MONTH

VOLUME 8, NUMBER 12

- 4 **LETTERS** From RCM Readers
- 6 **FROM THE SHOP** by Don Dewey
- 10 **ENGINE CLINIC** by Clarence Lee
- 12 **SCALE IN HAND** by Dave Platt
- 14 **CUNNINGHAM ON R/C** by Chuck Cunningham
- 16 **DOUGLAS DOLPHIN** Scale Amphibian by Eric Fearnley
- 25 **ARROWBILE** Semi-scale Waterman by Earl Witte
- 35 **1971 WORLD R/C CHAMPIONSHIPS**
- 47 **1971 WORLD R/C CHAMPIONSHIPS:** F.A.I. Pylon
- 49 **1971 WORLD R/C CHAMPIONSHIPS:** F.A.I. Thermal Soaring
- 54 **FOR WHAT IT'S WORTH** Hints and Kinks
- 56 **FLIGHT TRAINING COURSE** Chapter III
- 58 **SOARING** with Don Dewey
- 62 **LEAGUE OF SILENT FLIGHT** 1971 National Soaring Tournament
by Ken Willard
- 66 **RCM'S MODEL OF THE MONTH CONTEST**
- 69 **A BEGINNER GOES TO THE SOARING NATS** Part II by Jim Simpson
- 70 **ARCY**
- 74 **SUNDAY FLIER** by Ken Willard
- 80 **TAKE A LOOK AT THIS** New Products

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, California 91024. (213) 355-1476. 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. Copyright 1971 R/C Modeler Corporation. All rights reserved. Reproductions in whole or part without permission is prohibited.





DON DEWEY / Editor and Publisher
PATRICIA CREWS / Executive Editor
DICK KIDD / Technical Art Editor
ED THOMPSON / Technical Editor
BARBARA RICHARDSON / Graphics Editor
SUSAN STEELE / Art Editor

KEN WILLARD / **JERRY KLEINBURG**
BERNIE MURPHY / **CLARENCE LEE**
CHUCK CUNNINGHAM / **DAVE PLATT**
LOREN DIETRICH / **J. ALEXANDER**
JIM BONAR / **JIM SIMPSON**
JERRY NELSON / Associate Editors

JOE BRIDI / **DICK SONHEIM**
BILL O'BRIEN / **JACK ALBRECHT**
BEN HERMAN / Contributing Editors

JEAN O'BRIEN / Customer Service
PAT JOHNSON / **SHERRY PATTON**
SHEILA PIERCE / **JANE WALL**
Office Staff

THIS MONTH'S COVER: Miss Marlene Smith of Garden Grove, California poses in the Mile Square Park. Model is a Travel Aire 2,000, designed and built by photographer Dick Tichenor. **FRONTISPIECE:** BEAGLE PUP by S.A. Holloway. All metal beauty powered by Ross twin fitted with R.C.S. digital equipment. Photo by Henry J. Nicholls.



You'd expect to pay four hundred dollars for such a radio

RCM Magazine says (November 1971 issue Product Report):

"As a conclusion to our tests of the Hobby Lobby 4 radio, one would expect that a digital proportional system with a price tag of \$200 could not possibly equal the "higher priced systems". Nothing could be further from the truth. The Hobby Lobby 4 proportional system equalled in performance and quality any of the radios we have tested to date and, in fact, surpassed a number of them"

The control sticks have adjustable tension and will center perfectly even when adjusted for only 2 ounces of control pressure.

Its tiny servos have the highest resolution and tightest centering of any servo made.

It's a complete 4 channel outfit with transmitter, receiver, 4 servos, nickel-cadmium batteries for transmitter and receiver, and built-in charger.

The total airborne weight is only 11½ ounces and this includes a big 500 ma. battery pack.

The servo electronics are housed in the receiver case - there's less chance of shock damage that way.

HOBBY LOBBY 4

Digital Proportional

27mc...\$199., 72-75mc...\$209.

HOBBY LOBBY

INTERNATIONAL

Route 3, Franklin Pike Circle, Brentwood, Tennessee 37027
24 Hour Telephone Ordering Service - 615/834-2323

Letters

Sir:

Last week one of my customers lost the wheel bracket on the nose gear of his plane. On Saturday I wrote to Tatone Products in San Francisco, California, for a new bracket and by Tuesday morning the part was in my shop. Service like this is not found too often and I think Tatone Products deserves a hand.

Belltronics Hobbies
Glenwood Springs, Colorado

Manufacturers often get a lot of brick bats when their products aren't up to expectations but very few plaudits such as this when their products or services are noteworthy. We appreciate the compliment on behalf of John Tatone.

Sir:

My career as an R/C modeler began just a few weeks ago but I've wanted to get into it ever since I first read a book entitled, *Model Aircraft Handbook*, written by Howard McEntee. I also read another book that I do not remember the title of that was also interesting. I read both of these books in March of 1971 and have been keeping up with magazines since about January of '71. I visited a local R/C club and was told that I should get an Ugly Stik and a basic 4 channel system since you can use this in most any type of plane. I was planning to do this and was busy planning my income from a paper route for the next year or so. Then my dad said that if I could earn 3/4ths of the money I needed he would advance me the other 1/4th. After I did my money planning, I obtained an August '71 issue of *R/C Modeler Magazine* and read Cunningham on R/C and decided I would change the program a bit. I decided to buy my basic 4 channel system, a Midwest Products Das Little Stik and a name brand .19-.23 motor, as I know about as much about motors as my little sister!

I have not bought anything yet but I plan to have the plane and possibly the engine before school starts. I plan to buy a Heathkit GD-19M with their new IC servo and should have no trouble building it since my dad and I have built other kits. I am now a Novice licensee and plan to get an amateur Technician or General Class

license soon. This is not supposed to be an advisory column but I think that this would probably work (my program) for anyone interested in R/C who hasn't got the best finances in the world. If you do try my program then drop me a letter and tell me how it works for you.

Tim O'Brien
2615 Aspen Drive
Anchorage, Alaska 99503

Sir:

The cover of the August issue prompted me to extend my subscription to the West Coast girlie magazine, but why did you louse up an otherwise good picture by putting in a toy airplane?

Ed Lowe
Holdingford, Minn.

Sir:

Stop putting semi-nude girls on your covers. This is not a Playboy magazine and is in very poor taste. The beautiful airplanes that appear on your covers are all that is necessary.

Anonymous

You can't please everybody, but we try. As a matter of fact, the contents of the magazine are predicated on the results of the Reader Interest Survey we run every two years. 96% of the replies indicated a preference for "girlie" type covers.

Sir:

As a fledgling who has not yet conquered his Falcon .56, may I put in my 2 cents worth? I was reading the letter by Leon Hamilton in your August issue. I flew a Piper J-3 and an Aeronca just enough in the past to substantiate what he says. In fact, I may have to go back and learn some more if I hope to be any pilot from the ground! That's what R/C is all about. After the engine, the radio, the plane, etc., are all working satisfactorily, then comes the piloting. As numerous repairs to my Falcon will testify, beware of climbing turns. The stalling speed goes up in a bank and your plane can slide in on one wing.

I also have a rudder only with a TD .051. I used a polyhedral wing from my old free flight days. Three times with the .051 doing 18,000 rpm and me beginning to worry about O.O.S. possibilities, I gave her full rudder to lose altitude. But it seems that polyhedral wings will stay in a spin. Each time I picked up the pieces. What fun

To page 98

Dee Bee CARDINAL R-T-F KIT



Please write or call for price.

**Special — Devcon 5 MINUTE
EPOXY Large size reg. \$2.25
Special Price — \$1.35 each.**
Price in effect 'til Nov. 30, 1971.



PRO-START ENGINE STARTER \$19.95



Very light weight with reduction gear box. Enough torque for all engines.

NEW — DuBro SKY- MASTER 600 R-T-F KIT List Price \$59.95 Hobby Lobby price \$49.97



62½" span, 610 sq. inch area. Low wing contest - capable multi. Extensive hardware as in other DuBro kits.

"GLASKIN" WINGS \$29.95 To fit: Dragon Fli, Kaos, New Orleanian, Eyeball, Cutlass (MAN), New - Banshee Wing Cutlass Supreme, Triton, Sun Fli IV, Citron (Lanier), Intruder.

NEW — BRIDI KIT "RCM TRAINER"

672 sq. inch area for .40 to .61 engines. 6 hour assembly time. Please write or call for price.



NEW! Hot Line Models "COMANCHE" KIT List Price - \$55.00 Special Price — \$43.97

71" span semi scale kit. Nicely crafted. Sawn and sanded parts. Good hardware. Ideal for retracts. Price in effect until Dec. 31, 1971.



CHRISTMAS GIFTS FOR R/Cers

We have made up a list of Christmas gift items for R/Cers. Most of these items are in the \$10 to \$50 price range and our list is designed for wives of R/Cers who call

us up every year for gift ideas for their husbands.

Please write or call up for this list right away because we do run out of some items just before Christmas.



TRY US OUT: G.P. Did! "I couldn't believe how fast you sent my last order. I received the order within 6 days from the time I sent it, and that included Labor Day weekend." G. P., Pueblo, Colorado.

World Engines S-4 SERVOS



RS-4B KIT	\$15.97
RS-4B SEMI KIT	\$19.97
RS-4B ASSEMBLED	\$23.97
S-4C-D KIT	\$16.97
S-4C SEMI KIT	\$19.97
S-4C ASSEMBLED	\$24.97
S-4D SEMI KIT	\$19.97
S-4D ASSEMBLED	\$24.97

**World Engines S-4 SERVO
Mechanics Kit \$2.95** Includes case, screws, gears.



Blue Max 4 CHANNEL SEMI KIT

\$159.00

The Blue Max SEMI kit is the least expensive way to acquire a reliable full house deluxe digital. Since the difficult assembly of the printed circuit boards has been done at the factory, you only have the mechanical assembly and p/c board interconnects to accomplish. Complete with semi kits for transmitter, receiver, 4 servos, all ni-cds, charger, wiring harness, instructions.



ASSEMBLED
KIT SHOWN

NEW — Dremel No. 219 SPEED CONTROL \$16.95

While this was designed for use as a speed control for the Dremel Moto Tool, several other uses were suggested in Sept. RCM: 1. Reducing heat of soldering iron so it can be used for "close quarters" Monokot-ing, 2. Adjustment of internal heat of glue guns, 3. Closer adjustment of Sealactor iron heat.



24 Hour Telephone Ordering Service - 615/834-2323

Hobby

Lobby

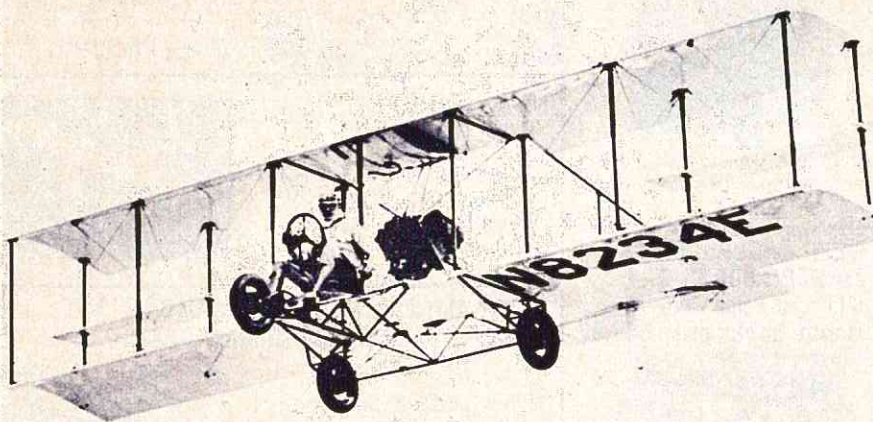
INTERNATIONAL

ROUTE 3, FRANKLIN PIKE CIRCLE, BRENTWOOD, TENNESSEE 37027

DROP YOUR ORDER IN THE MAIL BOX, THEN JUMP BACK BECAUSE WE SHIP FAST! We pay postage on all orders accompanied by check or money order. The U. S. Post Office requires that all shipments have your ZIP CODE. Be sure to use your ZIP CODE. Satisfaction guaranteed or money refunded. Phone 615/834-2323 Store hours 10 a.m. - 5 p.m. except Sun.

FROM THE SHOP

DON DEWEY



A 1910 Curtiss Pusher biplane will share star billing with Lassie, when THE LASSIE NETWORK airs an episode titled "The Flying Grandpa" in December. Lassie, the most famous collie in history now has her own network; will be seen this year on 200 stations around the country. For "the Flying Grandpa" airdate, check local newspapers for time and station.

In this Lassie episode, the plane is piloted by veteran impressionist-comedian Richard Haydn, as "The Flying Grandpa." The Pusher appears through the courtesy of Tallmantz Aviation Inc., of Santa Ana, California. It was originally part of a controversy that raged long ago between the Wright brothers and Glenn Curtiss, and resulted in a series of lawsuits.

Revolutionary in concept, the Curtiss Pusher's ailerons were mounted between the wings. Previously, aircraft of this general design were steered by the pilot leaning his weight to the right or left when making a turn. Patent infringements were claimed by both plane builders.

The Lassie assignment constitutes a rare appearance for the plane which boasts a 28' wingspan; stretches 18' in length, weighs 824 pounds and is powered by a 65 HP Continental engine. Its top speed is 45 mph; its fuel capacity gives it a maximum range of 90 miles.

Specifications notwithstanding, many persons may have seen Curtiss Pushers parked at air shows or exhibited in air museums, but few have seen the once-controversial biplane in

actual flight — a situation soon to be remedied, thanks to the producers of Lassie.

How many times have you looked at a magnificently finished model with a blemish free surface that reflected your image like a mirror and wondered how it was done?

And, how many times, after finding out the step-by-step procedure used by the builder of that model, were you disappointed to find out that your days and days of elbow grease following that procedure resulted in something far less than satisfaction with your own effort?

During the past eight years, since the inception of this magazine, I have built approximately two dozen models per year for various test reviews of kits, engines, and last but not least — finishing products. Unlike Chuck Cunningham and Bill O'Brien, whose models look like they had applied one coat of liquid fertilizer to the bare balsa wood using a garden sprayer on the end of a hose, I did manage to come up with the "spectacular" finish once out of every nine or ten attempts with different materials. And, as Chuck Cunningham once said about one or two of my more "successful" attempts, "You're the only guy I know who could add three more pounds to a four pound airplane just by painting it."

The moral of the story is that there are numerous materials that are compatible with the fuels we use today. I think that over the period of years I've tried virtually every one that is avail-

able in our industry, starting with nitrate and butyrate dope, enamels, epoxies, Schwinn bicycle paint with Fuller's Plast over the top, as well as the numerous other finishing materials that can be found in boat supply stores, airports, and hardware stores. Each of them had certain advantages and disadvantages, but none of them could be considered the "ultimate" finish. And one thing all of them had in common . . . to obtain a really outstanding paint job, you ended up with a lot of excess weight. And if you've ever noticed, the skaggiest looking airplanes at the field usually fly the best — simply because of the fact that excessive weight, be it added in the building stage or by successively applied coats of a finishing material, only detracts from the flight performance of the model. So it ends up that the "builder" adds a pound or more of weight to his model with successively applied hand rubbed coats of a particular type of finish and ends up with a plane that could win a best finish award at Toledo. On the other hand, the "flyer" builds the airplane simply to fly and says, "to hell with the finish."

So, when K & B Manufacturing Company, world renowned for their K & B and Veco line of engines and fuel, asked us to test their new product called K & B Super Poxyc® Ultimate Finish, our only feeling was . . . "here we go one more time!"

At the time we received the material from John Brodbeck at K & B, we had just finished the structure on a joint aircraft design by Chuck Cunningham and myself called the Hot Pants which will appear in a forthcoming issue of RCM. This is a .19-.29 low wing airplane with a fully sheeted foam wing and somewhat resembling a Goodyear racer. Since it was completed and ready for final sanding, it was decided that this would be the test bed for K & B's so-called "Ultimate Finish."

At the outset, we decided to keep a close check on the weight of the model from the time of final sanding to the time that the finish was completed. These are the steps we took in finishing the model, the time involved, and at the conclusion, the total weight

To page 95

engine clinic

By
Clarence
Lee



Dear Mr. Lee,

You recommend disassembling and cleaning a new engine to remove chips. I have a new Webra .61 and have done this. I did not take the piston out of the sleeve for fear of not being able to get the ring back in properly. However, my question involves the ring. When putting the sleeve and piston back in the ring must have slipped (rotated) because upon turning the engine over by hand I noticed a "hard spot." Upon investigation, I found the split in the ring had moved to the exhaust port and was hanging up on the edge of the port. My question is where exactly should the break in the piston go? Should it go toward the front or the rear of the engine? I would like to know for sure before I begin breaking in the engine.

Would it be worth changing from the stock carb to a Perry just so I can have an air filter on the engine? I have been told it would be a bad move because the carb on the Webra is a good one. However, I am worried about the dirt problem. I don't want to wear my engine out prematurely.

Sincerely,
Frank C. Carney

It doesn't matter whether the ring gap is towards the front or rear, Frank, just be sure it is straight forward, or straight back, so that it rides in the area of the sleeve between the bypass and exhaust ports. You never want the ring gap in line with one of the windows until the engine has had some running time. As you have found out, quite often the ends of the ring will hook. As for an air filter for your carburetor — K & B now markets a small universal filter that does an excellent job and will fit most engines. It is held in place with a small rubber band, so the only requirement is a carburetor that does have a flare, or bell, at the mouth over which the rubber band can slip for retaining the filter.

Dear Mr. Lee,

I have got Super Tigre Trouble! I have a new G .60 with almost two gallons of fuel through it, and I just cannot tune a decent idle in it. With the Mag II carb that came in

it, it won't run below about 3500 rpm's but the real problem comes when I open the throttle — it dies acting very rich to me. It seems like it is loading up yet if I tune the idle needle any leaner it won't run at all on the low speed end. It appears to do this worse if the throttle is advanced slowly than if it is opened fast. Also, if I just open the throttle a little bit the idle gets rougher and even slower sometimes. This leads me to believe the lower mid-range is too rich. By the way, this Mag is the one where the spray bar assembly is held in with two screws and there is a spring pushing the drum to the outside (retained by the pin in the groove).

Next, I tried another mag that I had in a Saturn .60. This one was much older; the spray bar assembly was pressed into the body and there was no spring to control end play in the drum. Well, I got a much slower idle, about 2600 rpm's and much smoother, but the rich mid-range still persists, I still couldn't get the idle lean enough without it dying and still get it to open up without dying apparently rich. When this does die it doesn't act quite like other engines I have had when they are loading up, in that when I open the throttle it will accelerate in what sounds like a normal response, but then, after running what seems to be full speed or very near full speed, it will sometimes just die and never fire again. Sometimes it will fire a few more times with a real barking sound, not like a normal four-cycle.

Well, now I have a Perry Carb in it. It idles about 3000 rpm's and somewhat rougher than the second mag, but the recovery is much better. After idling for much over a minute it still sounds rich when I open it up but not to the point of dying. I should think that it should idle slower than that and I really shouldn't notice this tendency to load up at all, or am I expecting too much?

I should mention that this engine acts strange in other ways, too. It will not really run decently in four cycle at all. It acts much like the K & B .40's we used to run in Rat Racers. When you try to richen them up they get very ragged sounding and usually die. This never shook me up too much on those big throated, pressurized engines but on this Super Tigre I would expect it to four cycle. It does seem to four cycle if the battery is left on but not without the battery. This would suggest to me that I had cold plugs so I tried different plugs; Fox, K & B, and Super Tigre, but they seemed to make no difference. I normally use Sig Champion fuel, but having these problems I tried some Fox Superfuel and K & B 100 and got no change there either. I have the

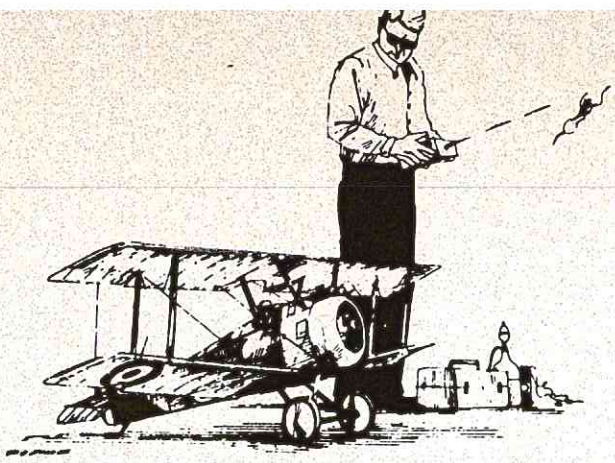
C1 of the tank about 1/2" below the needle valve but I have tried it higher and lower but no help. When I first realized I had the problem I thought it might be something in the aircraft installation so I took it out and have been working on a test stand now, so I don't think it can be tank related.

I am at my wits end. Have you got any thoughts on this? If you have no ideas I guess I'll send it back to World Engines and see if they can find it. \$60.00 is too much to pay for an engine and have it run like that! Well, thanks for your time.

Sincerely,
D. Michael Lewis
Cedar Rapids, Iowa

Mike, the clue to your whole problem is in the fact that your engine will not run properly in a four cycle without the battery connected. If, at any time, you remove the starting battery and notice a marked drop in the rpm of the engine, it is generally caused by either the fuel or glow plug being too cold. This is not a carburetor problem and no carburetor in the world is going to cure it. You may be able to regulate the idle mixture a little better with one carburetor than with another which will, in turn, help slightly, but you have not cured the overall problem. If an engine drops rpm when you remove the battery and will not four cycle properly, then you are never going to get it to idle and accelerate properly. First, you have to cure the problem of a drop in rpm when removing the battery. This is a common problem with many home brew fuels that do not contain enough nitro methane. Fox Superfuel is an excellent break-in fuel due to its high lubrication content but some dropping off of rpm will occur in some makes of engines due to the cool running characteristics which was an advantage during break-in. The dropping of rpm should not normally occur with either

To page 91



SCALE IN HAND...

Is there any such thing as a "best" airplane for Scale RC?

This is a question asked by many a newcomer to this type of flying, and still pondered by most of the experts. For the chap who is planning to get into this event and build a model for the next season's contest, this question becomes so complicated that he can form no definite opinion. This is due mainly to a lack of experience in the judging techniques, etc., that he will meet.

So now, for the first time anywhere (commercial!) we are going to show that there most certainly is, if not a best airplane, a best TYPE of airplane for scale contest use.

Take a look at the table we've drawn up, and then we'll explain what it all means and what it proves.

equal skill. The difference occurs because it is obviously simpler to make a dead-accurate Acromaster (using plans of the real ship and copying the construction stick-for-stick) than, say, the Spitfire, which cannot be made identically to the real one. Also, the further we get down the list, the more fussy it becomes to reproduce such items as the cockpit detail or the landing gear.

Anyway, it is obvious that an Acromaster which scored 420 points (out of 450) is some kind of model. Our point here, is that a Spitfire which could draw 370 is equally some kind of model. And so on, down the line.

In this connection, we'd suggest that the current emphasis, noted at the Nats among spectators or less-scale-inclined modelers, on who got the

that part of the flight where you show what your model can do. An Acromaster, for instance, would be limited to 25 possible points since it doesn't have retract gear or multi engines and can only do the aerobatic options. Moving down the list, we see that a Spitfire (or similar ship) could get 30 points (retract gear 20, plus flaps 10). Though, theoretically, five options could be chosen by the Spitfire, in practice we can only find two because a Spit didn't drop cargo and clearly a parachute-drop on a single seater would be most inappropriate!

Further down, we find a P-38 can get up to 60 option points and the B-17, 100.

These points are now **added** to the static points as our table shows. This total of static + options is now **multiplied** by the flight score.

Unlike the option points, the possible flight marks are the same for any ship, at 55. Thus, our third column shows what we consider to be a realistic maximum earnable by the subjects shown, for flight. Experience has proven beyond doubt that the simpler airplanes fly somewhat more smoothly and invariably gain very high flight marks; frequently over 50.

At the far end of the list, a B-17 is doing **extremely well** to get 45 points.

Alright then; what has happened? The table shows a predictable advantage to be gained by the simpler subject, gradually becoming worse as the airplane gains complications, and all this is in spite of the high "option" points attainable by the multi-engine jobs. In fact, for the B-17 to **equal** the Acromaster's score, it would need to get 425 static points, which is clearly impossible.

In order to summarize our findings here, and present this data in a form most useful to the would-be RC Scale contestant we come up with a number

To page 90

MODEL	STATIC	+	OPTS.	X	FLT.	=	SCORE
Spinks Acromaster	420	+	25	X	53	=	23,585
Ryan PT-20	410	+	25	X	53	=	23,055
S.E. 5a	400	+	25	X	52	=	22,100
Spitfire	370	+	30	X	48	=	19,200
Curtiss Helldiver	360	+	40	X	47	=	18,800
Lockheed P-38	350	+	60	X	45	=	18,450
Boeing B-17	320	+	100	X	45	=	18,900

For the purposes of the exercise, we are going to assume that one single individual with a certain level of modeling skill, and a certain "winter-building project" amount of time, has made a list of airplanes he could build. We have carefully graded these ships, ranging from the dead-simple Acromaster to the super-complicated B-17. In addition, the table shows many other aircraft, each one typical of a certain level of challenge.

The first column shows our estimate of the static points which a really excellent example of the ship chosen would likely get in a contest. Remember, each ship has been built with

highest static points is, of itself, meaningless. It is necessary to relate the points achieved to the subject; for example: a Spitfire which got "only" 370 points while an easy ship got 390, is actually the better model by quite a margin.

This will explain to some of you fellows who, hearing a group of the scale "in-crowd" agreeing that one certain model was the best there, when the figures show it didn't get the highest points, how this apparent contradiction occurred.

The next column shows the maximum points which each of these ships could get for the "options" —

CUNNINGHAM ON RC



Now it's Winter, and a lot of modelers are looking out of the window at the snow and cold winds, and longing for the Spring and a chance to, once again, flip a prop and take to the air. If you're an old hand at this game you are probably spending your winter wisely by getting things in shape for Spring and next Summer flying. If the R/C bug has just recently bitten you, then there is a good chance that you are wasting the winter just waiting until next year when you can get all set to learn to fly. You might spend the Winter with Don's Flight Training Course, and cram a lot of special knowledge into your head, but along with all of the knowledge, you may be missing a great time to get a little building done.

Let's suppose that you are a 'medium old hand' at this sport, and by that I mean that you have been interested for a while now, and that last Summer your flying ability really progressed, so that landings were more that just a controlled crash, and the high cost of flying was diminished somewhat by not having to replace the prop with a new, unshattered one after each flight. Or, even one step further, last summer you really began to know what it was all about and entered a few contests and found that you had a pretty good touch on the control sticks after all. So what to do with all of that good building time during the Winter? Lots of guys spend that time in building a super scale ship, or an aircraft with the most superior type of finish this side of the automobile show. They spend all Winter on just ONE project. When Spring comes along they hurry out to the flying field with the new bird, plunk it down in the grass and stand back, buttons bursting with pride, to see if anyone has constructed a prettier or 'more scale' bird. "Fly it, heck no, 'ya crazy man, all of that work to bring it out to crash, not on your life buddy — fly it, NEVER!" Great, wonderful, you have

a thing of beauty and joy forever, you even made a superior radio installation, one that will be totally unaffected by vibration . . . what vibration?

Does this ring a bell, are you this type of RC'er, or do you know someone that is? Well, there is nothing wrong with this type of builder . . . but why not be a builder, and a FLIER. Generally speaking, the most outstanding scale ships are built by men who live in the North and Northeast part of the country. The most outstanding flying is done by those living in the South, Southwest, and Western part of the U.S. (*Thanks, Chuck . . . you just deluged us with irate letters!* — Ed)

This year, why not plan ahead and be a little bit different. If you just have to build that super scale ship, go ahead. If you simply must put on a finish weighing seven and a half pounds, go to it. But, if you are interested in finding out what it REALLY feels like with your hands wrapped around a transmitter controlling an active and beautiful flying aircraft, then this Winter do things a bit differently.

How? Well, how about starting out to spend your time building not one, but three or four airplanes this Winter? If you haven't learned to fly, build several trainers, two, or possibly, three. You should know by this time that you can almost never hope to learn to fly on just one airplane. Perhaps that crash won't really be totally devastating, but if you rack up your one and only bird, you might spend several weeks just repairing it again. If you are an experienced pilot, why not build several pattern type aircraft at the same time? Have you ever thought how easy it is to "mass produce" your models if, instead of building one part, you build two or three identical parts at the same time?

Give a thought to this: Suppose that you purchase a popular kit, such as the Ugly Stik to use as your trainer.

Great choice, there's almost no better kit on the market for the beginning flier. But, what if you also purchased a stack of balsa at the same time that you purchased the kit? I know, the stuff costs lots of money now, the kits have taken a big jump in price, along with the cost of balsa wood, but if you skimp and save on some of the painting materials, etc., perhaps you can reduce the drain on your pocketbook. Anyhow, let's assume that you came up with enough gold to make the purchase of a kit and a stack of balsa wood. Unpack the kit, and trace out all of the parts on new, fresh pieces of balsa. Mark fuselage sides, rudders, etc., on to new wood. Then as you build up the kit you have a second or third "kit" just waiting for you to cut out the pieces.

As you glue the fuselage together, cut out the parts for the second and third model and build them at the same time. Simple, and in the long run, a lot cheaper. (*More irate letters — from the kit manufacturers, this time!* — Ed)

Even if you are building an aircraft from magazine plans, and you feel that this aircraft is really the one that you want to fly next Spring, then do the same thing, rather than build one, build two. If you have a favorite pattern design that you have developed over several years the same idea holds true for you, make several at the same time that you're building the initial one. When it comes time to paint the airplanes you can paint them all alike, or paint each one in a different color scheme, and you will find that they all look somewhat different.

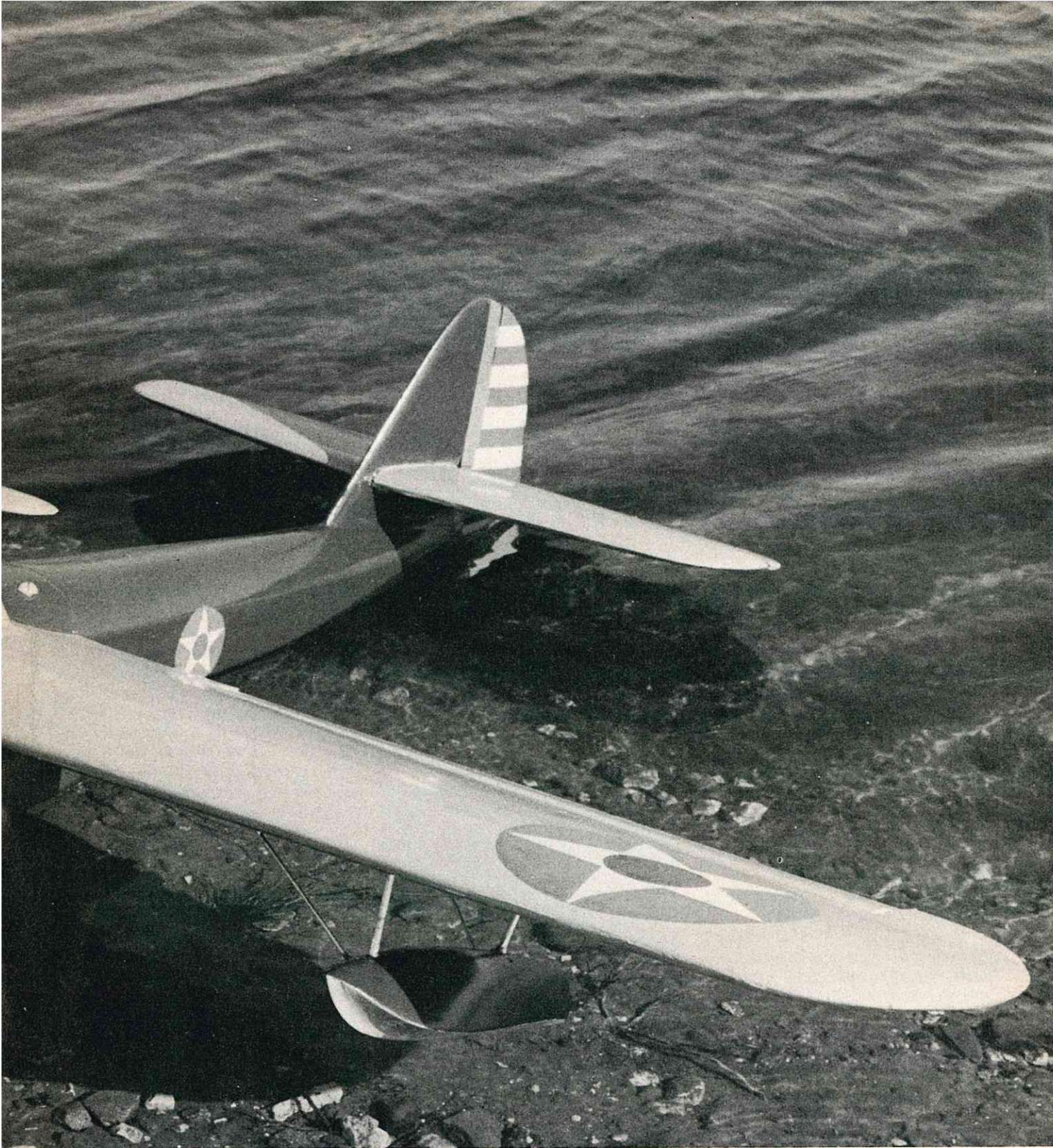
The easy 'extra plus' for this type of thinking is that if you build three Ugly Stiks rather than one, you will have a bunch of interchangeable parts in case only one piece gets damaged. If you bash a wing on landing, strap on the wing from number two airplane, etc.

Another thing to think about over the Winter months is what to do with your radio equipment. You can let it gather dust on the shelf if you like, or perhaps you can figure out a way to use it, both to keep your fingers limber, and to keep your batteries in good shape. If you live in a climate that is too cold for anything other than skiing and sledding, then charge and discharge your batteries at least once each month and wait for Spring, but, if you live where Winter's grip

To page 89



DOUGLAS



BY ERIC FEARNLEY

DOLPHIN



The Douglas Dolphin taking off from the Royal AFB, Strubby, England, May 9, 1971.

With all the big time scale builders going for rule-fitting low wing light planes we are in danger of going stale. There is not much inducement to do the "way out thing" as contest rules stand at this time. I seldom enter contests anyway, being a member of that select class of scale buff who builds what he likes, when he likes, just for fun. There is a wonderful world of aviation in that golden era of the 1930's, when men made them fly with guts, and designs were modified in chalk on the hangar floor. When they stopped using wood and dope, all the glamour went out of flying.

I have had a go at most things, even to taming a .61 powered Hellcat into a week-end sport job, and my mind went back over and over to the multi engine ship. I had to get it out of my system, so I decided on a twin. Reading up on all the trials and crashes in the magazines, I wondered why they were all so big and heavy, needing two .61's to get airborne. The cost of feeding two such beasts, and the expense of crashing all that wood at one go, paled me into thinking in terms of a smaller twin. It did not appear to have been done, but there was no reason why it couldn't be accomplished. I figured a 60" sport job weighing up to 17 lbs. would fly with .40 power. Two .19's, working out on the wings in clean air should be ample. This was my basic formula. After a lot

of study, I chose the British Short Scion as a prototype. It was a six seater using two 90 h.p. engines, and flew very slow and safely. With a wingspan of 63" I matched every part, using hard wood for the essential load carrying frame, and light wood for the scale superstructure. The result was 6½

DOUGLAS DOLPHIN

TYPE Amphibian
SCALE 1" = 1'0"
SPAN 60"
POWER (2) O.S. .19
WEIGHT 6½ pounds
CONSTRUCTION Wood
LANDING GEAR Steel Tube
NACELLES Fiberglass

lbs., even with seats and pilot added, and the two O.S. 19's were more than enough to fly it. In fact, it is best to takeoff at reduced power, even then the ship is soon too high and needs throttling back. I learned a lot with the Scion. Sooner or later one engine is going to stop. There is a lesson to be learned here. Whether it flies on one or not is dependent on the flying speed. At high angles of attack, on full power, near the stall, is the most

dangerous place to lose an engine, and the port is the worst one to stop, as you have torque, as well, working against you. I was playing to the crowd with a steep climb out at full throttle when the port engine quit. The single remaining .19 snap rolled the 6½ lb. airliner four times before I could shut my mouth. Fortunately, the resulting crash was not too serious, and I was soon flying again. I learned to take much more care in setting up the engines, tuning with the tanks only half full to allow for the leaning out process as they emptied. I learned to set slightly rich, which meant that, at half settings, there was a strong risk of the plugs going cold on the low grade fuel used, necessitating up-grading to 15% nitro to prevent sudden failure. I learned to set up the ailerons to give a two up to one down differential throw, allowing a single engine flight to be made using ailerons only (holding in rudder as well is very tricky) and I found that as long as I flew high, there was plenty of time to throttle back after an engine failure, and fly it in on one. More often than not single engine landings were the rule.

Elated by my success with such a comparatively small twin, I started looking around for another fence to jump. Among my collection of rare plans I found the Douglas Dolphin, used by the Army in the early '30's, and later by the Navy in small numbers. It was pressed into service during the last war, and the Coast Guard also used them so there is plenty of scope for the paint job. Even a civil one was used in Australia, later pressed into R.A.A.F. service in the war, so red, white, and blue roundels are also correct. The part that grabbed me was the position of the engines. The two 9" props on a 60" model met at the middle with only ½" between them. This was the ultimate in twins for one engine flying and I guessed that the swing would be minimal. They were also well forward for c.g. and, in clean air, with a sub wing added for smoothing out torque, as well as stiffening the nacelles against vibration. The problems included hiding the engines in the dummy Whirlwind engines, and getting enough tankage in the tear drop nacelles. Twins want plenty of running up on the ground, and small tanks are a danger. I got over this by using fiberglass with a custom made tank in metal fitted snugly inside. The engine mounts are very rigid. I had a rough landing which tore out the wing fixing, but the engines were untouched by the

jolt. The dummy engines were made from 1/4" ply, half rounded, and epoxied to the front part of the fiberglass nacelle which is removed for access to the engines. The Townend rings are 1/16" ply wrapped round the engine profile, after which is added 1/8" cross grained balsa fairings. I chose the Whirlwind engines rather than the later Wasps because the front exhaust ring, made from nylon tube, hides the cylinders so well that it is not necessary to fit fins or elaborate detail, saving a lot of time and extra weight. The O.S. engines just fit in the Townend rings, protruding a little at the rear, but as they are side mounted, are unnoticed. You could fit them inverted, but starting is not too easy this way, as I found on the Scion. When one engine is howling, it's not easy to hear or 'feel' if the second is right, and flooding is all too easy. This means out with the plug, all of which becomes very frustrating.

The main rule for twins is, "keep

up the flying speed well above the minimum necessary for the particular model you are flying." At high speed and in straight flight, the loss of one engine can be unnoticed. Slower flight gives a sudden swing, calling for immediate correction, and a throttle reduction on the remaining power plant. Do not chop the engine right off since the model will lurch about like a lame duck, losing a lot of height which you may not have enough of, if you see what I mean!

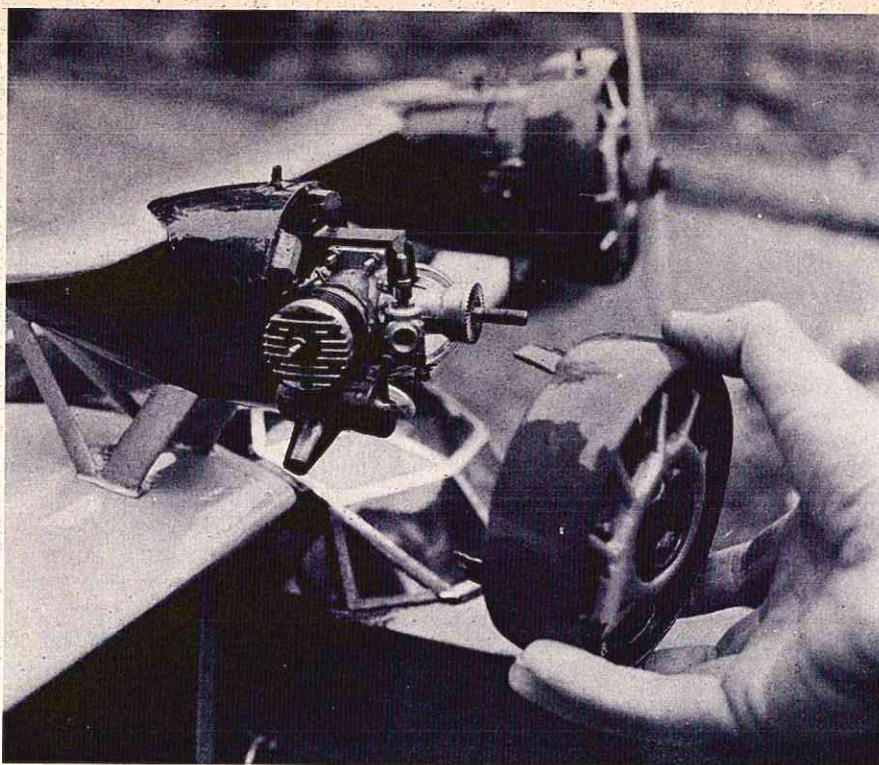
During slow flight, near the stall, loss of one engine can mean a write-off. Low passes for the photographers have killed off more twins than anything else! When you throttle down, commit yourself to a landing. If you must open up again, do it gently, not suddenly, and set up the throttles exactly the same. I use piano wire for a feeler gauge to get the throttle opening the same on both sides. After a prolonged idle, the smaller engines don't always open up clean. In the

case of the Dolphin all the above problems are halved. The close-in engines make it almost up to a single engine in power swing, and the loss of one is not nearly as serious, with any reasonable pilot being able to cope with the situation. I have taken off on one engine, using full rudder until the speed built up. I cut the throttles after the wheels left the ground, however, being a chicken hearted pilot. On it's first flight I got into trouble because it was too stable! It was flying away so straight, and ailerons would not answer at all. I had set the throw low as they were almost full span and looked frightening. I know why, now! Forced to a landing way upwind, my eyes failed me, and I had to down it as best as I could, luckily with only a little damage. The ailerons were soon altered to the throw shown on the plan, where they answer smartly when applied.

I won't bore you with a lot of detailed building instructions. If you

Author Eric Fearnley with his R/C version of the 1930 vintage U.S. Army Douglas Dolphin amphibian. Full scale model used two Wright Whirlwind engines.





Close-up of the silencer detail for the O.S. Max .19's. Note pressure pipe.

cannot read the plans, then do not attempt it. It is essential that you have some experience in flying Scale models before trying this job. With "Plank" flying models, stability is automatic. The scale model flies like the real one, and needs the pilot's hand on it the whole time.

GENERAL CONSTRUCTION

There is nothing difficult about the construction, but some accuracy is required to prevent having to fight the warps, etc., when the time comes to fly.

The hull is built on a marine ply keel, with plywood formers. The 1/8" sides, with stiffeners of 1/4" x 1/4" are added, and the chine to keep fitted as well as back end sheeting, etc. The steerable tail wheel is coupled before the top is finished. If you are water bound, a small metal rudder could be added to the tail wheel for water control at the beginning of the take-off. The back end is near the waterline at the stationary position, so watch the rudder outlet control. I used a nylon tube with wire, but if you do, put some silicon grease in it to keep out the water. Fly off sea water at your peril, as the corrosive action is very dangerous. Be sure to seal off the hull well. It is surprising how it can leak after coat upon coat of dope.

The wings are easy, but the fitting

of the nacelles is tricky. Cover the wings before finally fitting the struts. I set the struts into the open nacelles with plenty of epoxy, holding them until set on the wing through the retaining holes, but not gluing them as yet. A balsa jig was pinned to the wing to find the exact position for the engines until set. They were then removed for the time being, and the front ply radial mount, tank, and engine control fitted and epoxied in position.

After the wings are painted, the whole unit can then be epoxied to the beams, ready drilled to take the struts. The control cable has to be taken through the wing to the forward center section, ready for the servo. The wings must be very fuel proof, since they receive most of the exhaust residue. I used plastic covering over the sheet, and then a coat of enamel yellow and, finally, fuel proofer. This should keep out the worst!

The landing gear fits onto the hull sides with king pins into brass fittings epoxied to hardwood cross bearers. The internal sprints of 18 gauge wire have only a limited use, as the hull soon bottoms on the keel, having only a couple of inches of ground clearance. The scale undercarriage could be wound up by hand only when the aircraft was in the water, never in the air. If you are contest-minded, it could

offer a nasty little problem to the judges over marks!

For simplicity, it is possible to remove the pin and raise the u/c for water takeoffs. This is not strictly scale, but near enough for a practical flying enthusiast. If you want the real thing, good luck to you.

The whole design concept was based on the valuable experience gained with the Short Scion, and I realized that the complication of the nacelles and struts would most likely put up the a.u.w., however, the Short had a good reserve of power, so I was not too worried on that score. To offset the extra plywood in the hull, and other excess weights, I thought it prudent to watch the finish, so the hull, which I knew from free flight experience splits easily, was nylon finished, while the wings were Solar-filmed over the 1/16" sheet. The resulting colour was not right, so a coat of enamel was added. The insignia was matt enamel for maximum cover, and as the fuselage, sorry, hull was cellulose, the only known proofer was Tufkote.

There is a problem of priorities. The nacelles have to be finished, tanks fitted, and throttle cable added; then the 1/4" ply firewall and radial mount slipped into the front of the rear half of the nacelle only after the struts of 10 gauge wire are epoxied in place in the nacelles, using plenty of resin on the insides. I used a balsa jig to hold the nacelles in place on the wings while the struts set. They were then faired with spruce, and removed from the wings. The fuel seepage on the wings is considerable so it is now necessary to cover the wings, sealing off everything carefully. The enamel finish helps to seal the edges of the film. The nacelles are finally epoxied in place, but now the problem is to get the motor control through the wing to the center section. With everything jiggled up as straight as possible the sub wing is added and faired with fiberglass filler. The sub wing not only strengthens the whole against vibration, but smooths out the airflow and reduces torque effects. It also makes a useful carrying handle!

One of the worst problems was the wheels. Why do we have so many hopelessly out-of-scale fat wheels on the market? Slim Williams smooth contour were too modern. Vintage wheels are too big and too old. I was lucky to find a pair of American Universal wheels, with alternative spokes — exactly right for a Mustang

or Hellcat, or the cover discs which I used on the model. They may not be perfect, but they look right, and they are thin, as scale wheels should be. How about some better designs from the firms instead of the copycat "doughnut" types we have in many makes?

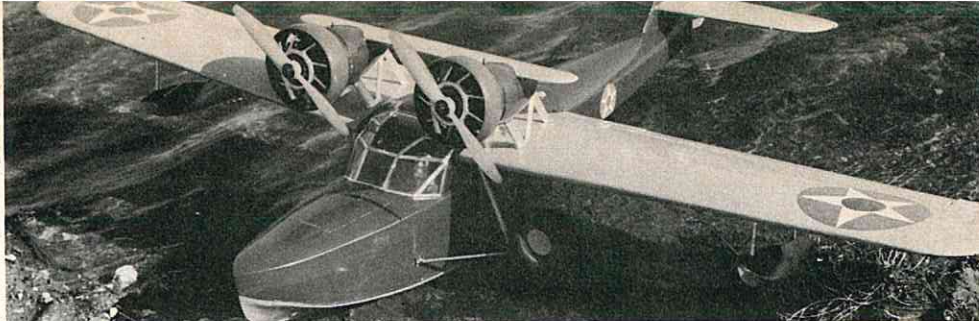
And, so, at the end of a long hard winters work, the finished model. All my armchair confidence gave way to wondering, "Will it work?"

I spent a whole afternoon taxiing it up and down, and got the impression that it lacked a little directional stability, so as a precaution, added a little to the fin area away from true scale. My almost unflyable Hellcat was turned into a sport model by adding extra fin — snap rolling is caused by lack of fin area, not tip stalling as so many say. Washed out wing tips hold off the snap a bit, but it's the stalled tail with too much elevator applied against a small fin that causes the break.

FLYING THE DOLPHIN

In common with any twin scale model, there are certain pre-flight checks that just have to be made. Small .19's are O.K. at full throttle, and have a good idle, but they do not like prolonged running at partial settings. This is too bad as this is a likely way they will be run in practice. I found that by fitting Fox Idle Bar plugs (with an extra washer in to clear the piston top) and using the best 15% nitro fuel, the engines are well-behaved. On the wrong plugs and poor fuel, one click of the needle, and we have a rough engine. I fitted clear tubing to the fuel line. Any sign of air bubbles in the line, and you will have trouble. A brass pipe is fed off the silencer to pressure feed the tank. The remaining vent has to be plugged, of course. This gives even fuel feed, and allows lean settings to be used without the fear of a flame-out at lower tank levels.

Every prang, or bad landing I have had on twin scale has been the result of one engine going sick at low altitude, usually after a long run at intermediate settings on the carbs. Do not throttle down the engines if the model is climbing too much. It's much better to add down trim and keep the flying speed up. Speed is safety. A spin, following a stall, cannot be corrected at low altitude. Fly high and fast, and if one engine goes out you will not only minimize the swing at speed (the tail is working well when fast) but you also have altitude to give you a fighting chance. There is a lot to



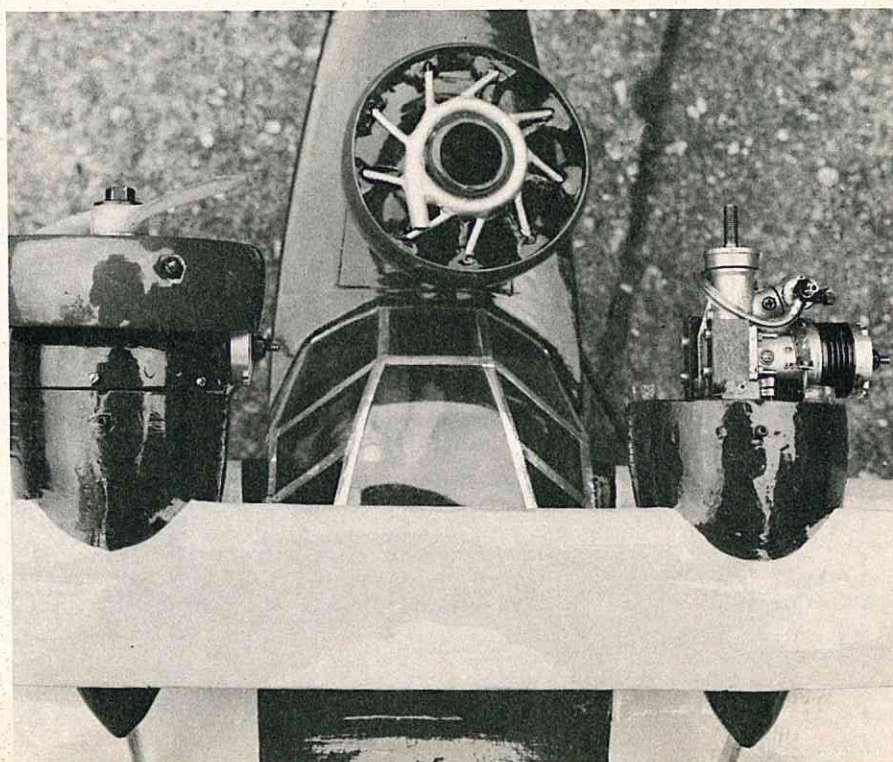
be said for having the engines "stop-pable" at the low setting. You can then kill the remaining engine and glide in from a height safely. If you have a classic snap roll, the result of a stall, loss of speed, and too much elevator, and a sick motor thrown in, the only cure is to put the nose down, gain speed, and when the tail areas are working again, ease out with a little elevator. This needs altitude, so once again, don't fly low, even if the photographers are calling for low passes. If you must do a low run, do it at full throttle, and down elevator, never letting the speed off. The Dolphin relies a good deal on the prop blast on the tail to maintain stability. If you lose the engines, don't be afraid to keep the nose down, and speed up, since this is your safety line. Takeoffs are easy. If your engines are in sync., the run will be dead straight. A little up-elevator to hold the nose off the ground — it may skid on it's keel if

your wheels are not too free. If there is a strong swing, and your u/c is O.K., then check the engines since you have probably got a rough one on one side. If it goes straight, ease it off, and it should soar up at a good rate of climb. It is a good idea to test fly without the Townend rings on. The engines may want attention, as they will probably become loose, and the extra power will help. The overall weight must not exceed 7 lbs. in order for the .19's to have a little reserve power.

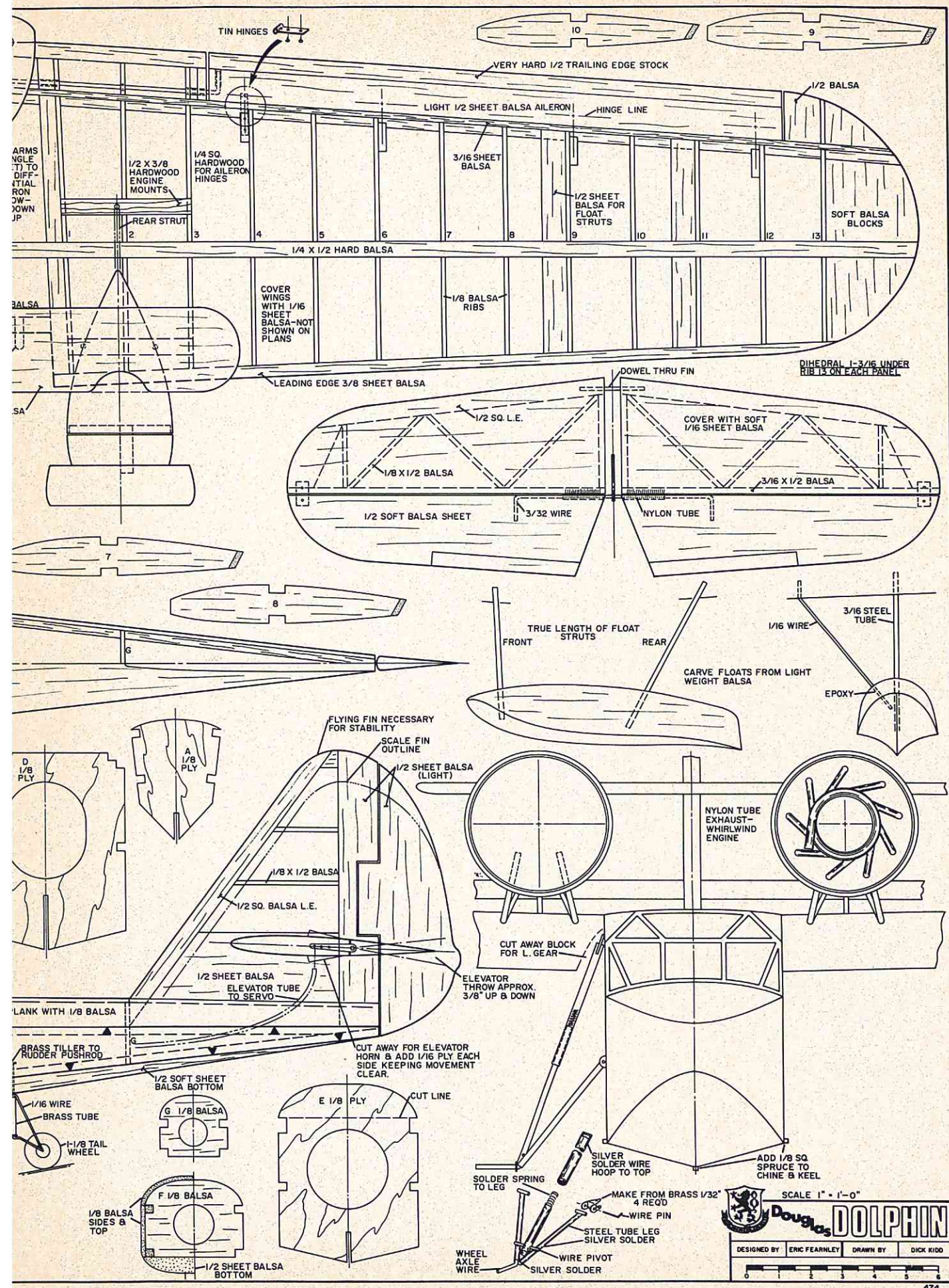
I had a little vibration trouble when the cowlers were removed which is hard to understand. This was cured by trimming the prop blade on the piston side about 3/8" to counter the unbalanced engine. I have not tried it on water yet. Based on land experience, it has enough power, but I would guess that a bigger fin to stop early swinging would be a necessity, or a water rudder which could be easily fitted.



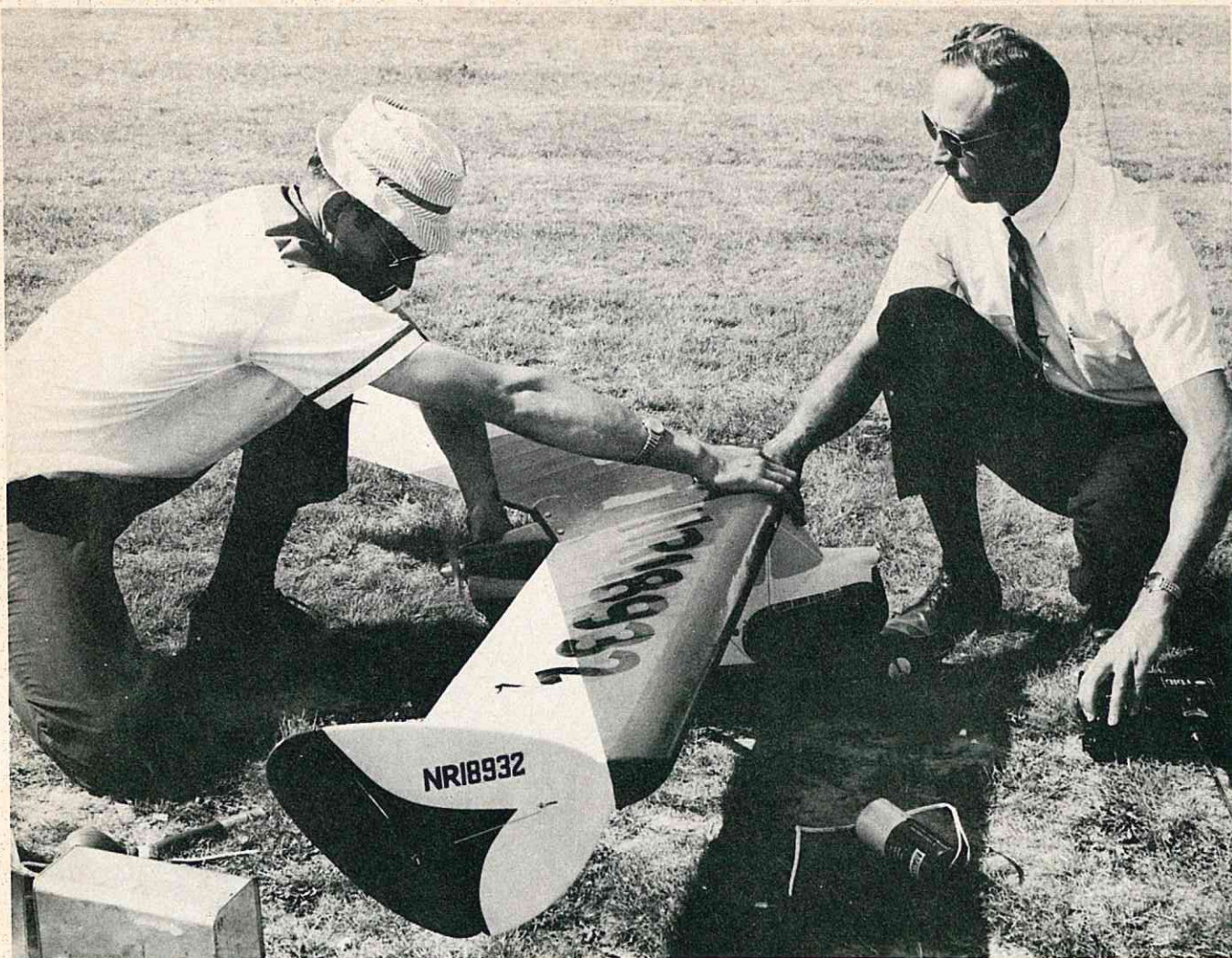
The O.S. Max .19's are almost completely hidden by the Townend rings.











the waterman

ARROWBILE

A SPORT SCALE MODEL OF WALDO WATERMAN'S UNUSUAL AIRCRAFT. ADD OR DELETE SCALE DETAILS AS YOU LIKE, AND IT WILL STILL ADD UP TO A GENTLE AND STABLE MODEL THAT WILL STOP THE ACTION AT ANY FIELD.

BY EARL WITTE

Photos by BILL CRAME

With the advent of the new lighter and more reliable equipment, it was bound to happen. This happening is Sport Scale, and why not? Now the radio doesn't restrict the airplane's design like it did in the past. Let's face it, we all like to fly planes that look like their big brothers. Check the Goodyear racers, since they are good

examples of sport scale designs that look and move like their bigger twins. Maybe you are already an expert builder and flyer — maybe not. Either way you have a great choice in this hobby. Perhaps you have been reading Dave Platts inspiring scale articles and you're hot to go scale. Good. You might try one of the more tried and

true models or maybe something different.

In my case, my bag is always "something different." It seems like I can never build the same model twice. I am always scrounging around for details of unusual designs, either vintage or modern.

A while back when I was at the



Lou Waterman (l), and Charlie Litzau (r), assist author-designer, Earl Witte, in putting the wing on the Arrowbile.

library — I mean hobby shop — I picked up one of the Historical Aviation Albums. You can really find some gems in these magazines. The first time I read through this book, nothing really caught my eye. However, after reading the article about Waldo Waterman's Arrowbile for about the sixth time, I had it! Something about this plane really grabbed me. The more I looked at it, the more I thought — it can't fly — but it does fly and well,

too. This Waldo Waterman had to be a genius. Just study the design carefully and you'll see he really built an engineering masterpiece.

Take the rudders for example. Look simple, don't they — they are. But only one works at a time. For example, when turning left, only the left rudder moves outward. This efficiently works as a combination of drag and deflection. My model actually turned better on rudder than aileron

before I coupled them together (via wiring harness). How about the combination of constant chord, sweep and 4° washout to give the wing safe and stall free flying characteristics? There are many more goodies built into this design, not even mentioning that it makes into a lousy racing car.

Complete information on this plane can be found in Historical Aviation Album, Volume III, available from Paul Matt, P.O. Box 33, Temple City,

California 91780. I would like to take this opportunity to thank Mr. Matt for helping me to obtain the approximate C.G. from Mr. Waterman. More about this C.G. problem later. Did you notice the beautiful photos? That's what I call close-ups. These photos were taken by our club lens genius, Bill Crame. Bill is one of the unsung heroes of our club — The Signal Chasers of St. Louis. Bill takes thousands of club publicity photos for gratis only.

Back to the Arrowbile. This plane makes for an excellent model subject. It could be built by the very serious scale modeler as 100% scale. With all

of the small details — radiator, handles, grilling, etc. — a real scale builder could go the limit. My version is more the sport scale type, although I tried to make the plane as close to scale as practicable. The main outlines of length, span, and height are scale. The main gear tread is widened from scale, and I had to add some non-scale engine cooling scoops. Being an experimental model, I also chose painted-on windows and pantless wheels for strength and simplicity. If you decide to build the Arrowbile, you can add or delete details as you prefer. The version I built was NR 18932 featured on the Historical Album plans. I

finished it in scale red and white, and it is a beautiful ship. The Historical Album can be used for a scale presentation, however, there are no actual color photos of the plane.

To me, flying wings were always the great mystery posing many unanswered questions. How can they be stable without a tail? How do the controls react? What type of controls are used? Will it tip stall? How does it glide without power? How about take-off and landings?

Maybe you had the same thoughts yourself about flying wings. Reading about the Arrowbile's gentle and stable flying characteristics was not

Earl attaches the wing struts before flying the R/C version of Waldo Waterman's Arrowbile.





The Arrowbile, engine revving, prepares for takeoff.

enough, I had to build it and find out myself.

I wish I could say that it flew off the board but it didn't. The first trip to the field was uneventful. All we accomplished was to put about 8 miles of taxiing on the speedometer. We did manage to flip it upside down testing the durability I claimed it had! Unscathed, but unflown, I trudged back home.

My test pilot, Crash Litzau, and I talked this non flying problem over. The violent ground oscillations we had on the first attempts were thought to be caused by tail heaviness. As a consequence I added many ounces of nose weight.

The second attempt was similar to the first, except with all that lead even

the nose didn't bounce. Obviously, this was a step in the wrong direction. Needless to say, these unsuccessful attempts were discouraging. Even Crash looked a little shaken.

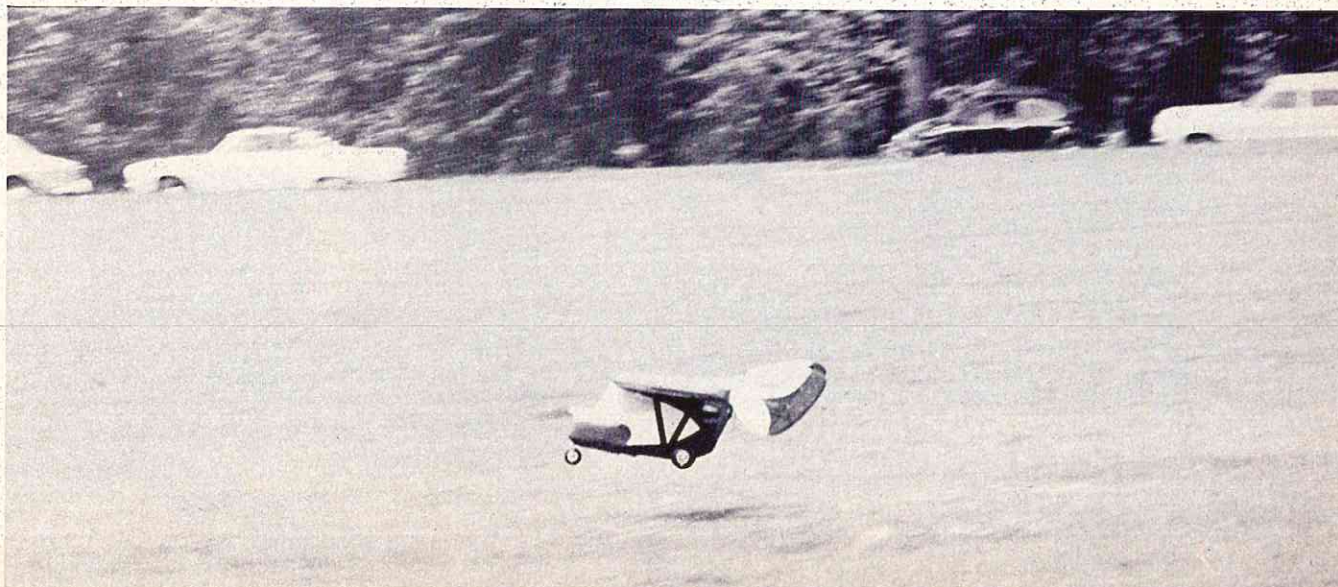
Back home again, and I knew I had a basic problem with the C.G. I decided on a most drastic measure — what I call the “Einstein mind link.” I accomplished this by carefully consuming 3 to 4 containers of foaming beverage while listening to Country Western. *Flash* — it happened. The answer was clear. It was nose heavy, but how much? I referred back to Paul Matt's letter from Waldo Waterman. He stated the C.G. was around the fuel tanks on his full-sized plane. My model balanced about $\frac{1}{2}$ " in front of this point. I added tail weight to move the

C.G. back about $\frac{3}{4}$ " and cooling scoops to the engine compartment. Engine overheating was also a problem.

Now full of confidence, I called Charlie for a flying date. After telling him about my latest modification, he regained some of his initial enthusiasm.

The third attempt was now at hand. The engine was all fired up. Charlie signaled OK, and let it go. At first it waddled slowly, but soon it was rolling faster and faster. Charlie hits full up — look, it's breaking ground. Up and up it climbs. It's no longer the ugly duckling on the ground. Now it's at home in the air like a soaring eagle. Shortly after, the engine quit and jolted me back into reality. The glide

After the flight, Earl lands the Arrowbile with a slightly nose high attitude.





is beautiful — twice as far as one would expect. Safely down in the grass, I let out an Indian moose call that they still talk about in Canada. With the pressure off, we got in two more flights that day. Later in the article I will discuss flying the Arrowbile in more detail. However, I will say again — it does fly, and well, too. It's a real challenge for you avid RC enthusiasts.

I am going to deviate from the usual step by step construction sequence. Instead, I will just hit the main points of the craft.

FUSELAGE

The fuselage on this type of ship has to be very strong and robust. You will notice plenty of plywood and

balsa blocks. This makes the fuselage almost indestructible. There is room for equipment installation, also your lunch, TX, and tools! The receiver and battery pack locations should be left to last. Try to use them to balance the ship instead of using lead weight. Needless to say the C.G. location should be exactly as shown on the plans. My ship weighed over 12 lbs. Some of the overweight was my fault; I built some weight into the leading edge of the wing that I did not need.

The landing gear incidence is very important. Double check this against the plans. Too much of a nose high attitude will cause porpoising. I had to shorten my original nose gear to eliminate this. I recommend two coats of

Sig Epoxy brushed on with a solder acid brush. This eliminates filling the grain and adds strength. Also, I would recommend using some type of internal ducting for engine cooling. Air scoops work fine but they are not scale.

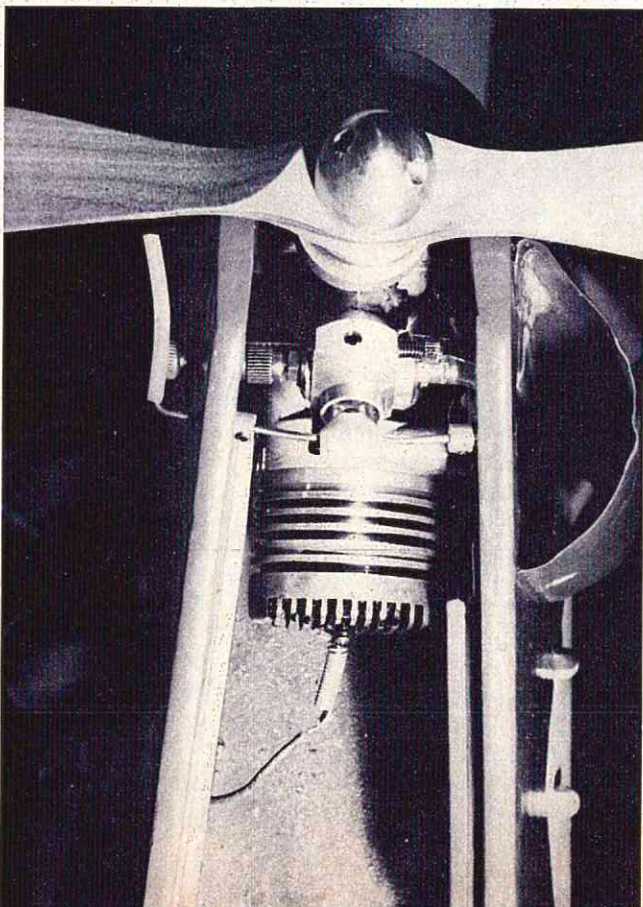
ENGINE

The engine for this size plane must be at least a sixty, well broken-in. Converting a motor over to a reverse crankshaft is not too difficult. I am using a Merco .60. However, I recommend an Enya .60 because you can convert it to a left hand crankshaft with main bearing in less than 5 minutes. This way you can switch it back and forth at will. Efficient engine cooling is a must. If you want to

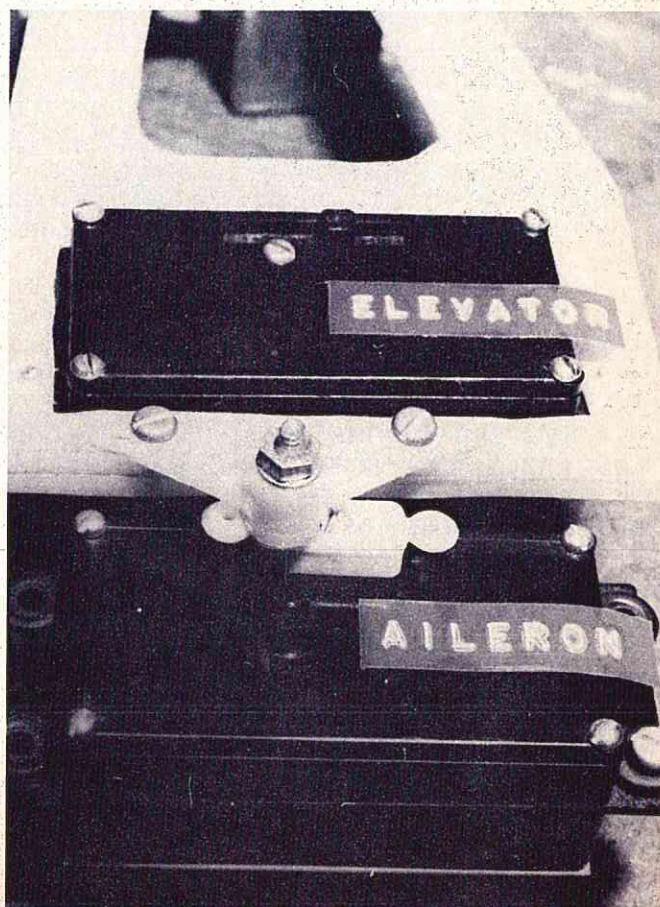


Close-up of rudder linkages.

View of inverted engine. Experimental choke was removed and not recommended.



Close-up view of aileron-elevator (elevon) linkage. Modified bellcrank attaches to servo tray.



mount it upright, it won't look as good but it will start easier and run cooler. If you mount the engine inverted, use some kind of starting jack. It is not safe to start the engine without one. Also, a word of caution about starting any pusher type plane . . . have someone hold the plane securely from the front and make needle valve changes on low motor.

WING

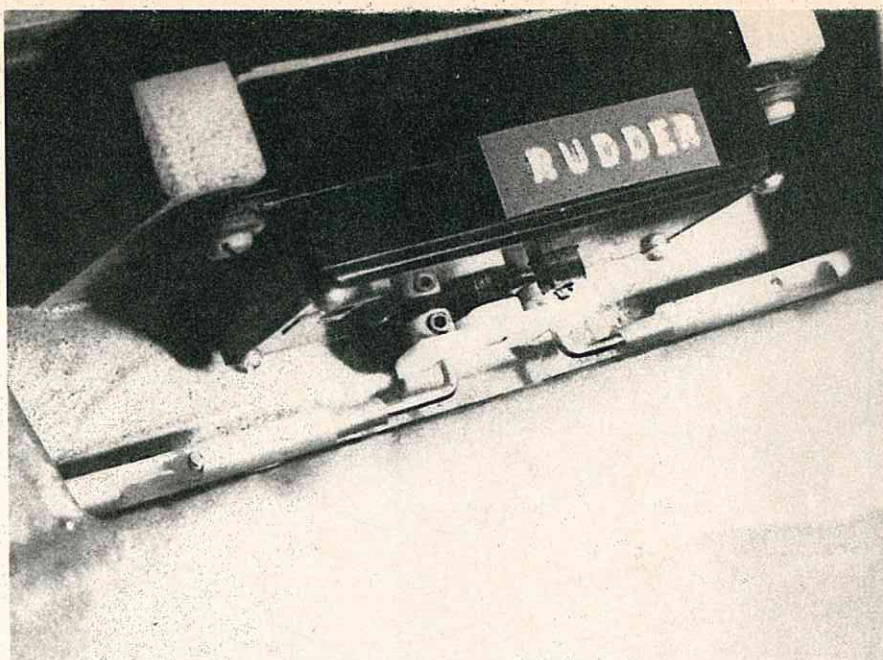
Before starting to build this wing be sure you have a clear mental picture of all the important details. The ideal building board for this wing is a standard interior door. Usually you can get a second for \$4.00 to \$5.00 at your local lumber yard. Double check it for warps. Since the two main root ribs are basswood, they make ideal patterns for the rest of the balsa ribs. After you string all the ribs on the two main spars, place them directly over the plans and align the spars and ribs with a small T square. Jig up the spars for the 4° of tip washout. Now spot glue the ribs in place. After they are dry continue with other spars and sheeting. When the wing construction is complete give the entire wing one coat of Sig epoxy and an additional coat for the center section.

CONTROL SURFACES

Probably the most difficult part of building this ship is the control surface hookup. Due to the size of the elevons, they must be statically balanced. I used NyRods throughout my plane. Whichever way you prefer, be doubly sure all linkage works **freely** with **no** slop. Note the servo linkage setup for combining your aileron and elevator servos to obtain elevon control. Also, note the rudder servo linkage to get one-way action for rudder deflection. Note how the NyRod slips in one direction but pulls in the other. You must make a simple wiring harness to couple your rudder and aileron servos to the aileron control. Hook your steerable nose gear servo to the rudder control. Set all control surfaces for maximum throw as shown on the plans. Remember, you don't have propeller blast over these surfaces.

FLYING

After completing your model, you are ready for the first flight. Naturally, you have tested everything and are ready to go. Be sure your motor can be relied on for maximum power. Since most of us fly off grass strips, don't expect this ship to jump into the air. For your first test flights, use all the strip available. Let the engine build



View of rudder servo linkage. See text for linkage details.

full power before releasing the ship. Crank some up trim on the elevons. Hold full down half way down the strip in order to hold the nose down. When sufficient speed has been obtained, ease back to full up, and hold. The ship should break ground and possibly start to settle back down. Hold in your up elevons and soon you should be climbing out in a normal attitude. Start a large, gentle left turn easing off on the elevons. If successful so far, continue to climb to a fairly safe high altitude. Try some right and left turns, then prepare to land. If you go dead stick don't panic, it glides better than you will imagine. The glide seems to be twice as far as any other plane I have flown so keep this in mind so you don't over shoot the runway. If your motor is still running, then set up a large left hand landing pattern and cut the power back. With the motor on, your glide path will be slower and with a faster sink rate. Try to land as slow as reasonable, touching down on the main gear first. Now that the first flight is over, check over any trim changes it might need and try it again.

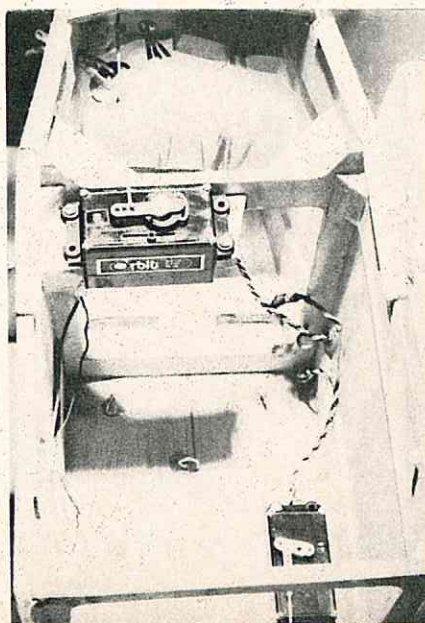
Let's sum up the flight characteristics of my prototype. I believe, in general, they will be accurate for most Arrowbiles.

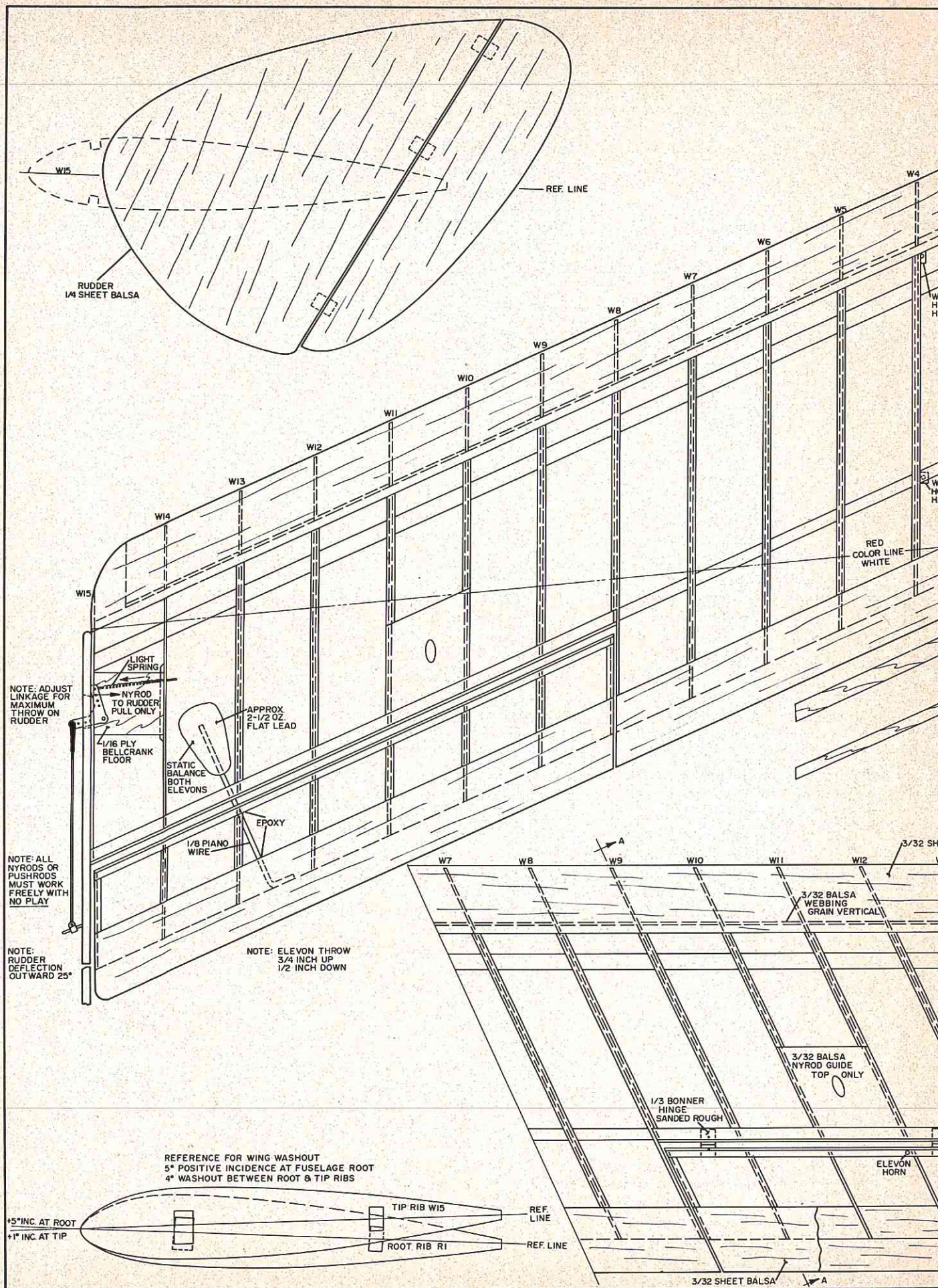
The Arrowbile design does fly with good built-in stability. Yes, it is even more stable than some more conventional designs. The controls have a soft feel. You do get positive control in all aspects, but with a slower and more

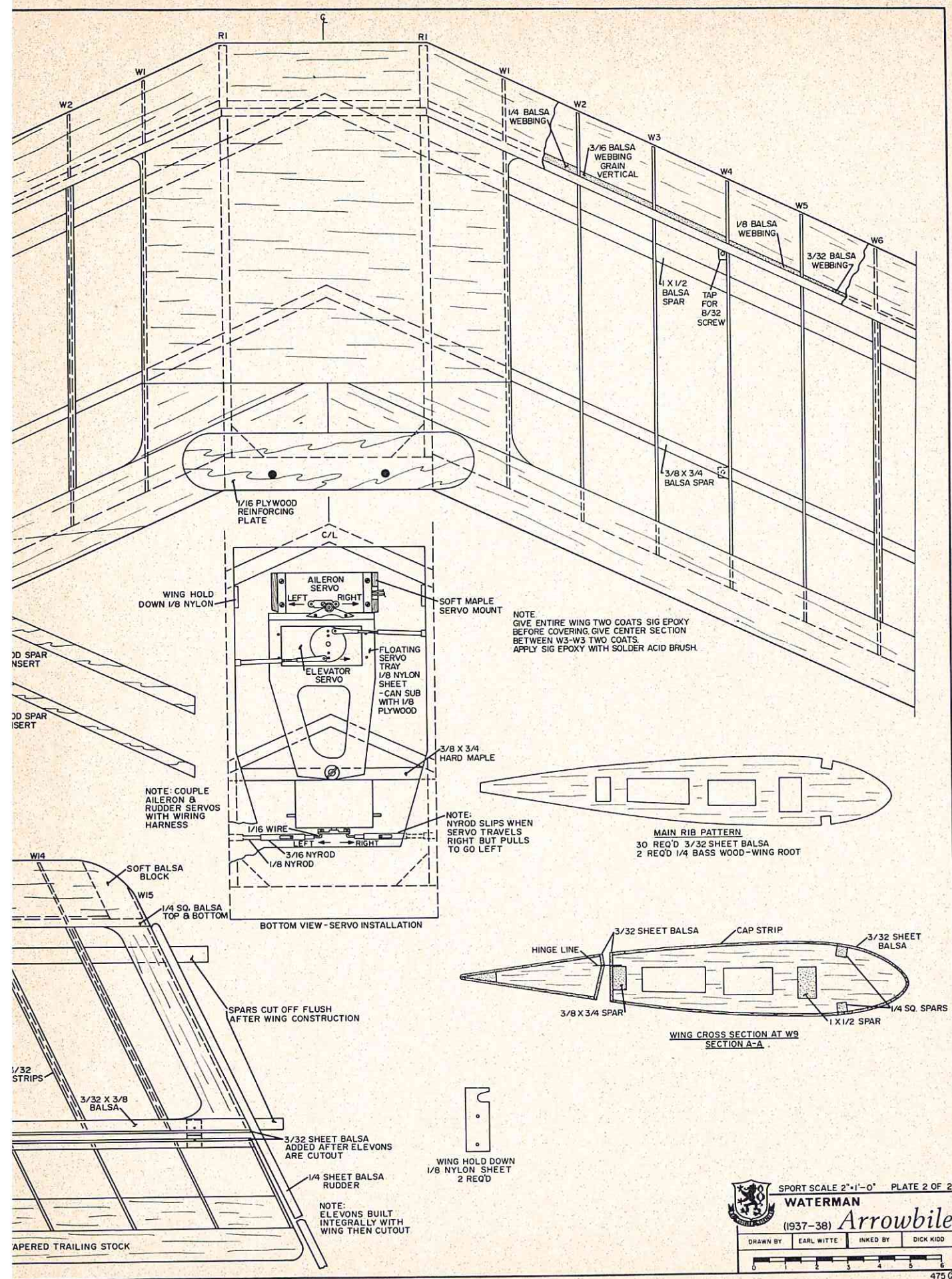
gentle response. I have not found any tendency for the Arrowbile to tip stall. The glide is very good — fast and clean with very little drag. Taking off is the hard part since the ship is heavy and requires good speed for lift off. Landings are not too difficult but stay off the nose wheel as long as possible to avoid porpoising.

If you try this design, I would like to hear from you about any comments, and, I hope, success stories. Please forward them through the magazine. Till next time — good luck and good flying. □

Throttle servo and linkage.







SPORT SCALE 2"=1'-0" PLATE 2 OF 2

WATERMAN

(1937-38) *Arrowbile*

DRAWN BY EARL WITTE INKED BY DICK KIDD

0 1 2 3 4 5 6

475 2



1971 WORLD R/C CHAMPIONSHIPS

RCM PHOTOS BY BERNIE MURPHY

BRUNO GIEZENDANNER OF SWITZERLAND, WORLD CHAMP.
U.S.A. WINS TEAM VICTORY AT DOYLESTOWN.



ABOVE: Bruno Giezendanner of Switzerland hoists victor's cup as World R/C Aerobatic Champion.

Giezendanner, current world champ from 1969 Internats.

Original design 'Marabu' totaled impressive 20,315 points for best three flights.

RIGHT: Victorious U.S. Team, L to R Phil Kraft, Jim Whitley, Ron Chidgey and team manager, Jim Edwards. Presentation made by Pennsylvania majority leader K. Leroy Irvis.





Switzerland's Giezendanner's Marabu has 775 sq. in. area, weighs 7 lbs. Digi-Fly radio. 1st, 20,315 points.



Giezendanner's Webra .61 powered Marabu in landing pattern after victorious flight.

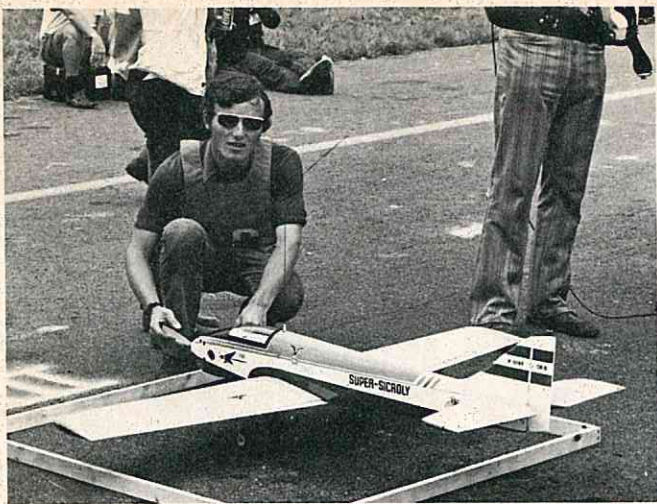


ABOVE: Wolfgang Matt of Lichtenstein, 2nd with 20,275 points. LEFT: Matt's original design 'Super Star 2.' HP engine, Simprop radio. 659 sq. in. area, 8 lb., 2 oz. Matt 6th in 1967 and 1969 Internats.



ABOVE: Phil Kraft, '67 World Champion, 3rd at 7th RC/WC with 19,455 points. Cliff Weirick calls. RIGHT: Kraft's original Firefly has 666 sq. in. area. 8 lbs., 8 oz. Webra .61, Kraft radio.

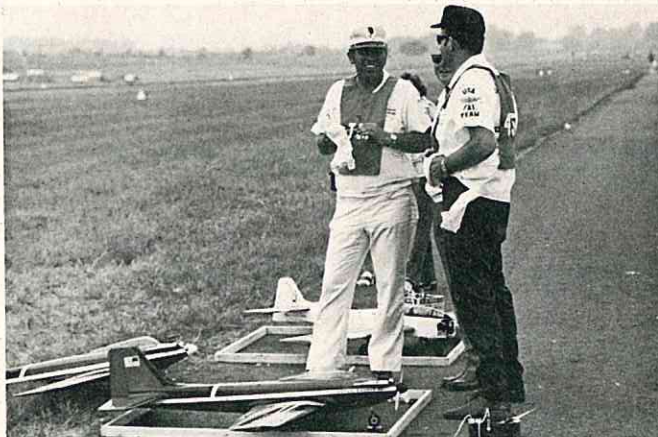




Hanno Prettner, Austria, 4th with 19,095 points. Modified Super-Sicroly, Webra .61, Dirigent-6 radio. 66" span, 9 lbs., 4 oz.



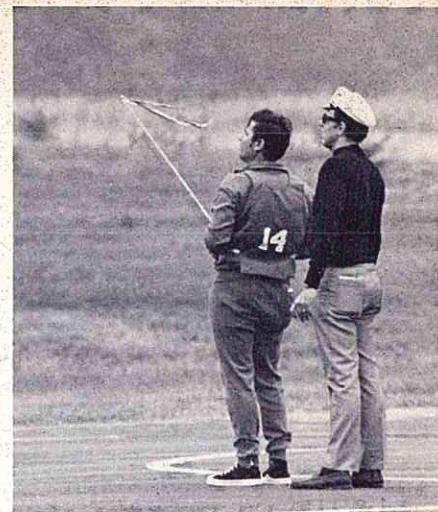
Josef A. Wester, Germany, 5th, 19,090 points. 'Flipper 3 Spezial', Rossi .61 engine, Graupner radio. 65" span. Wester, 3rd, 69 Internats.



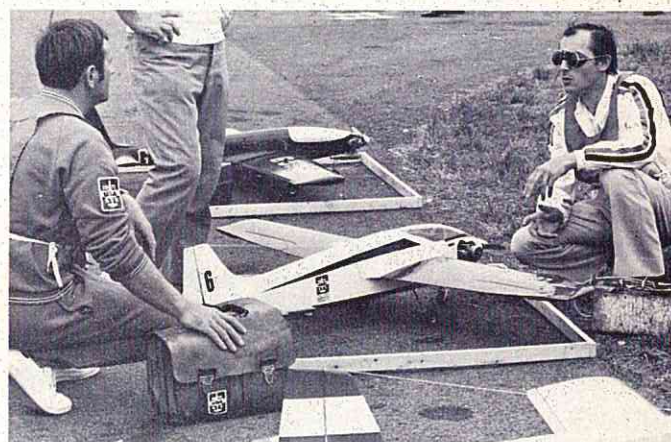
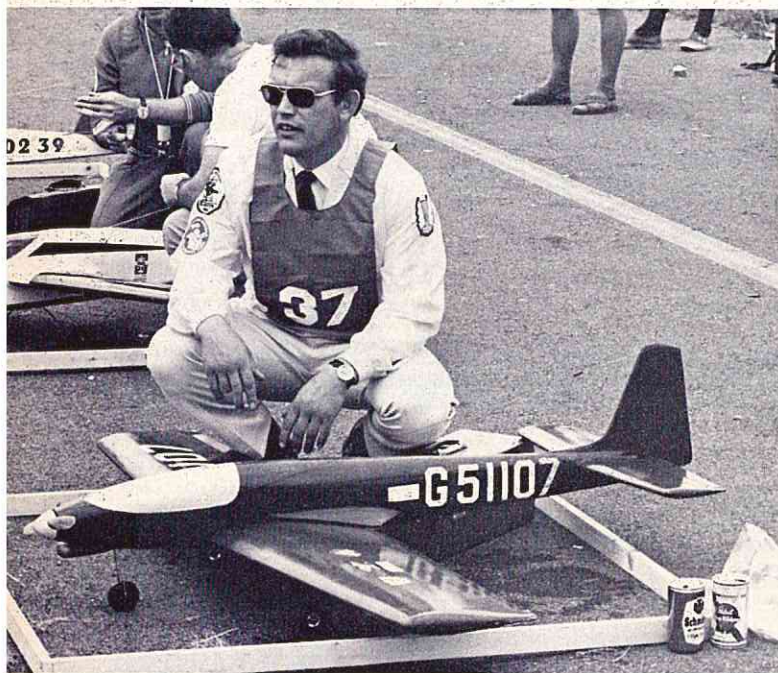
LEFT: Ron Chidgey, U.S.A., 6th, 18,750 points. 1971 Nats winner. Original 'Tiger Tail,' Pro-Line radio. **ABOVE: Jim Whitley**, 7th, 18,495 points. With original 'Daddy Rabbit VII.' Team Manager, Jim Edwards, at left.



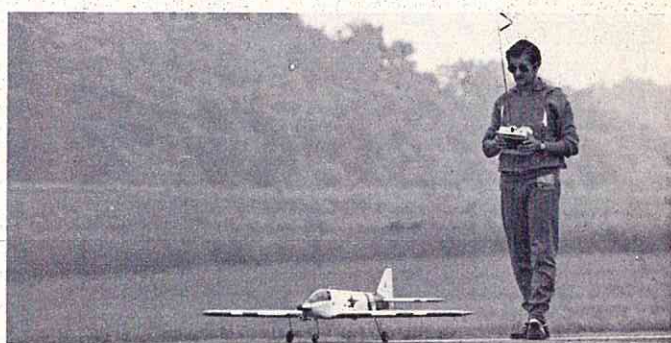
LEFT: Ferdinand Schaden, Austria, 8th, 18,225 points. Original 'Condor 71,' H.P. .61, Digi-Fly radio. **ABOVE: Yasufumi Sugawara**, Japan, 9th, 18,160 points. Original design, O.S. .60, O.S. Digitoron radio.



ABOVE, LEFT: David Hardaker, England, 10th, 17,990 points. HP .61 powered 'Superstar,' Skyleader radio. CENTER: Kazuo Shimo, Japan, 11th, 17,815 points. Original 'Froster' design. O.S. .60, Degicon-6 radio. RIGHT: Benito Bertolani, Italy, 12th, 17,660 points. Original design 'Italia 1' powered by S.T. .60, Robot radio.



LEFT: Michael Birch, England, 13th, 17,405 points. Original design, 'Capricorn IV,' 650 sq. in., 6 lb., 8 oz. ABOVE: Pierre Marrot, France, 14th, 17,320 points. Original design, 'Diablo' powered by Rossi .60 engine, Radio-Pilote proportional system. 7 lb. model. Marrot, champion of France for 9 consecutive years.



LEFT: Emil Giezendanner, Switzerland, 15th, 17,085 points. Original 'Marabu,' Webra .61, Digi-Fly radio. ABOVE: Graziano Pagni, Italy, 16th, 17,070 points. Original Morris HF, S.T. .60, Pro-Line radio.



LEFT: **Gustaaf Cappuyns**, Belgium, 17th with 17,005 points. Approaches landing circle. ABOVE: Cappuyns' original 'Tavi 1' design powered by H.P. .61, Rowan Propcontrol radio. 620 sq. in., 8 lbs., 2 oz.



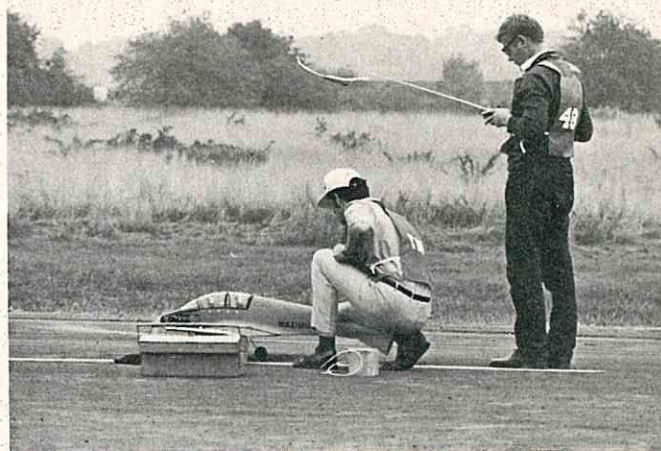
Warren Hitchcox, Canada, 18th, 16,790 points. Original 'Firebird IV.' Webra .60, CRC Orbit radio.



Gunter Hoppe, Germany, 19th, 16,685 points. Original 'Sultan III,' Webra .61, Micro-Prop radio.



Terence Cooper, England, 20th, 16,415 points. Original 'Bulldog' powered by Meteor .60, Mid West radio.



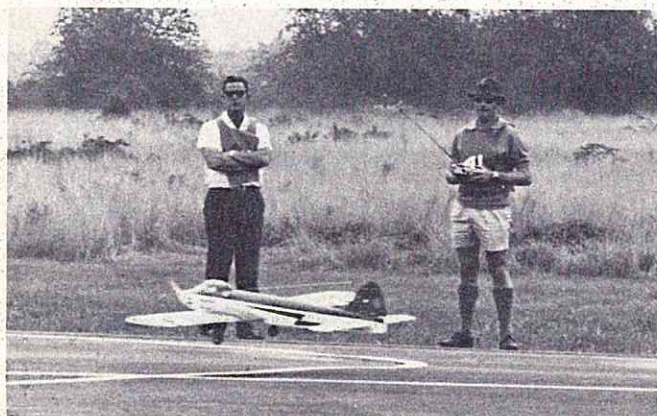
Poju Stephansen, Norway, 21st, 16,410 points. Original design 'Maximum 10' powered by H.P. .61, Kraft radio.



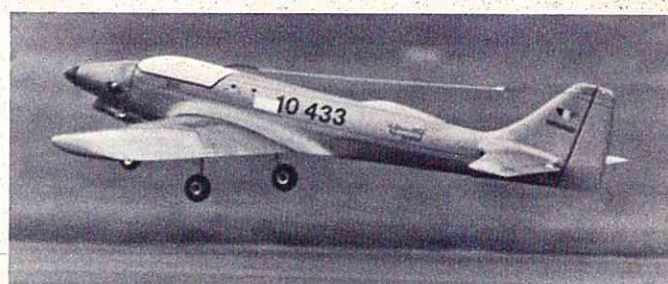
Goran Ridderstrom, Sweden, 22nd with 16,255 points. 'Bumling' powered by H.P. .61, EK Pro radio.



Wolfgang Kosche, Germany, 23rd with 16,200 points. Original 'Charlie 14' powered by Rossi .61, Graupner radio.



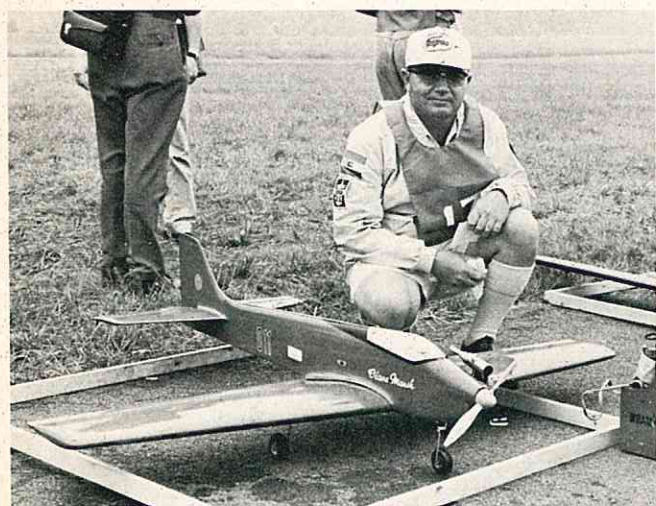
ABOVE: **Rich Brand**, So. Africa, 24th with 15,855 points. Original 'Atomicpanzer' powered by H.P. .61, Skyleader radio. RIGHT: **Guy Hardy**, France, 25th with 15,740 points.



LEFT: **Knut Aker**, Norway, 26th, 15,360 points. Modified 'Mini Delfin' powered by S.T. .60. Nortrol radio. 558 sq. in. area, 7 lbs., 1 oz. ABOVE: **Gerard Werion**, Belgium, clears takeoff area.



ABOVE: Gerard Werion, Belgium, 27th, 15,355 points, starts takeoff run. RIGHT: Jan Van Vliet, Netherlands, 28th with 15,345 points. Original 'Boemerang,' S.T. .61, Simprop radio.



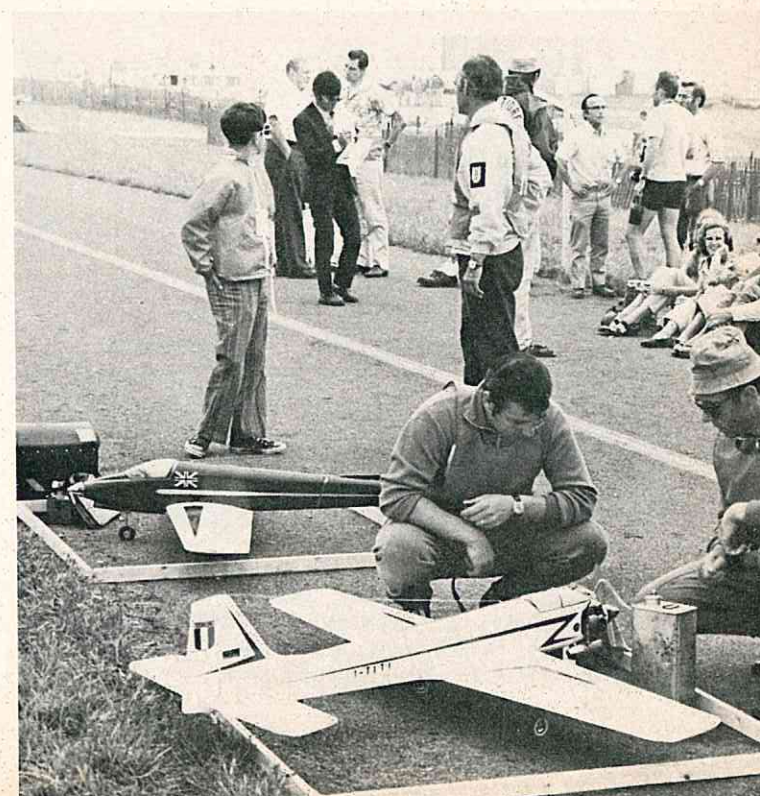
Charles Marincowitz, So. Africa, 29th with 15,135 points. Modified Delfin, Webra .61, Rowan radio.



Masahiro Kato, Japan, 30th, 15,100 points. Original Blue Angel Mk-2. O.S. .60, Kraft radio.

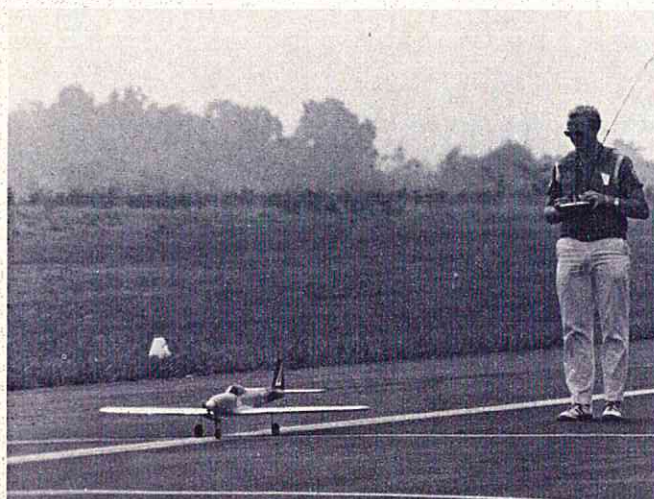


ABOVE: Ron Chapman, Canada, 31st with 14,875 points. Original 'Fury II' powered by Webra .60, Orbit radio. RIGHT: Giovanni Bettini, Italy, 32nd with 14,785 points with kit-built 'Titi.' S.T. .60 engine, Robot professional radio.





ABOVE, LEFT: Renato Ragoni, Switzerland, 33rd, 14,740 points. Original 'Super-Star,' S.T. .61, Simprop radio. ABOVE: Denis Chabert, France, 34th, 14,535 points. S.T. .60 powered 'Flipper III.' RIGHT: Konrad Weixelbaumer, Austria, 35th, 14,390 points. Modified 'Phoenix,' H.P. .61 engine, Graupner radio.



Ivan Kristensen, Canada, 36th, 14,385 points. Kristensen Canadian Class C Novice Nationals winner.



Bert-Eric Stovling, Sweden, 37th with 14,195 points. Poses with Christer Gillgren's ship.

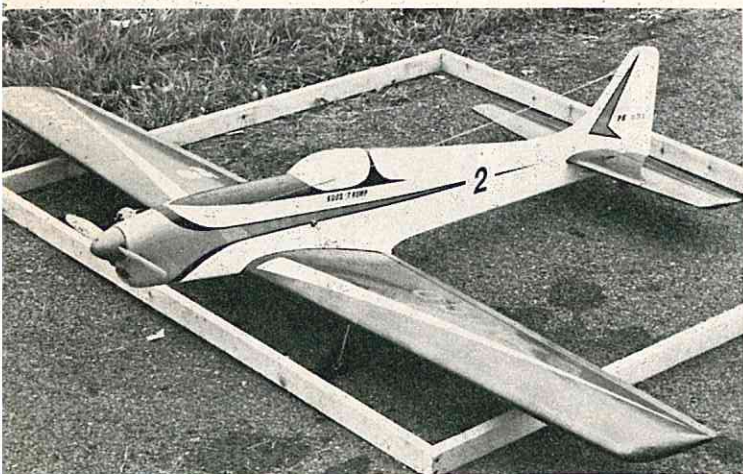


ABOVE: Salo Feiner, Mexico, 38th, 14,120 points. 'Kaos' powered by H.P. .61, Orbit radio. RIGHT: Feliciano Prat, Mexico, 39th, 14,120 points with original 'Olympico' design powered by H.P. .61. Pro-Line radio used.





ABOVE: Chris Sweatman, So. Africa, 40th, 13,905 points. Original 'Lady Luck' design, Webra .61, Skyleader radio. RIGHT: Chris Gillgren, Sweden, 41st, 13,890 points. 'Bumling' design, H.P. .61 engine, Micronic radio.



ABOVE: Koos Tromp, Netherlands, 42nd, 13,610 points. 'Mico' design, Webra .61, Microprop radio. RIGHT: Brian Green, Australia, 43rd, 13,375 points. 'Dragon Fli' O.S. .60, Kraft radio.



Edward Vandermeulen, Belgium, 44th with 12,665 points. 'Super Star' design powered by Webra .61. Multiplex-Digitron radio used. 8 lb. model carried to flight line by Vandermeulen and Team Manager.



LEFT: Hannu Riihela, Finland, 45th, 12,100 points.
ABOVE: Erik Toft, Denmark, 46th, 11,650 points. Original 'Profile' design, Merco .61 engine, Controlaire radio.



ABOVE: Krijn Sliedrecht, Netherlands, 47th, 11,425 points.
RIGHT: Carl Mollerup, Denmark, 48th, 10,700 points. Original design, Royal Classic radio.



Luis Castaneda, Mexico, 49th, 10,650 points. Original 'Olympic' design, powered by H.P. .61. Pro-Line radio used.



Pierre Hoffmann, Luxembourg, 50th, 9,835 points. Flew original design powered by S.T. .61. Simprop radio used.



LEFT: **John Dible**, Ireland, 51st with 9,360 points. Original 'Snafu III' design powered by O.S. .60. Skyleader radio used. ABOVE: **Bob Young**, Australia, 52nd, 8,620 points approaches spot. Original 'Phoenix' with O.S. .60, Silvertone Mark VII radio.



ABOVE: **Kari Lautala**, Finland, 53rd, 8155 points with Sandy Pimenoff, President of F.A.I. Committee for International Aeromodeling.



ABOVE, RIGHT: **Howard Menary**, Ireland, 54th, 8085 points with original 'Manana' design. RIGHT: Rossi .61 powered 'Manana' lifts off for official flight. Futaba radio used on 7 lb. model.



LEFT: Paul Behm, Luxembourg, 55th, 7,450 points with modified 'Flipper 3.' Rossi .61, Simprop radio. ABOVE: Jens Jorgensen, Denmark, 56th, 6,855 points. Original 'Tai-Pan' design powered by Webra .61. M.A.N. radio.



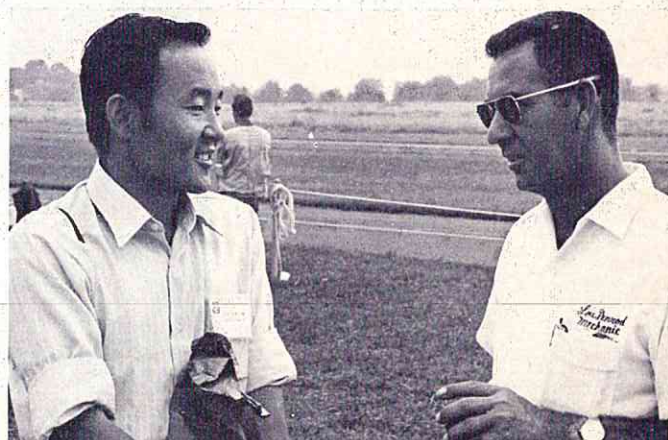
Fred Buick, Ireland, 57th, 6,655 points with original 'Dumbo' design. H.P. .61 engine, Kraft radio.



ABOVE: Tore Paulsen, Norway, 58th, 5,995 points with 'Scarabi.' Webra .61 powered ship in takeoff sequence. Heath radio.



Norbert Bertemes, Luxembourg, 59th, 4700 points with S.T. .61 powered original. Simprop radio, 744 sq. in.



Tae Sik Kim, South Korea, 60th, 2715 points., talks with Lou Penrod. Kim flew Dragon Fli, Enya .60, EK radio.



F.A.I. PYLON

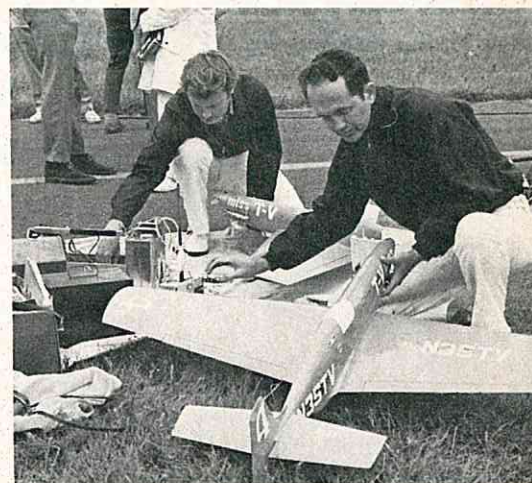
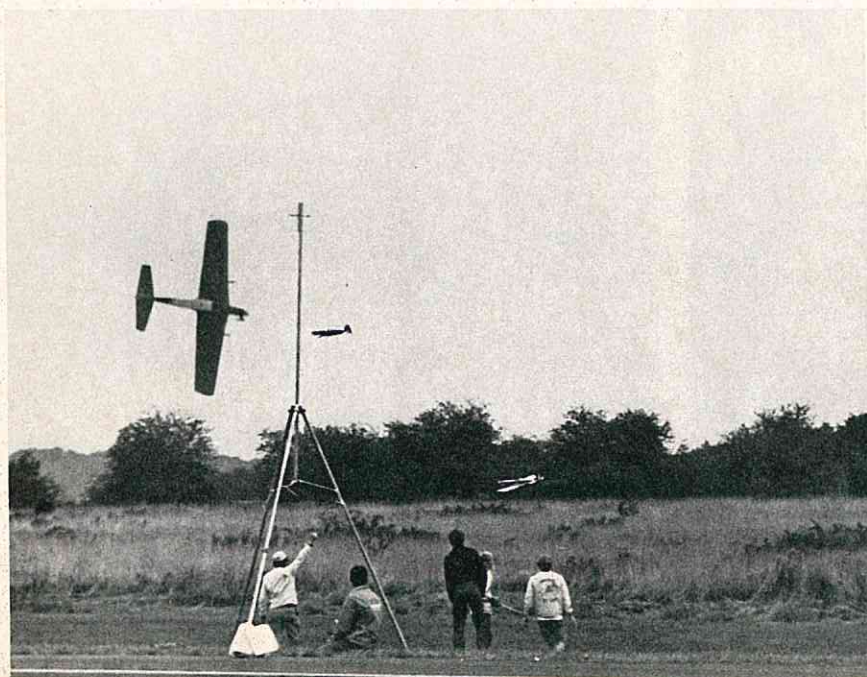
TELFORD-VIOLETT CAPTURE PYLON CROWN; U.S. WINS TEAM HONORS

RCM Photos by Bernie Murphy

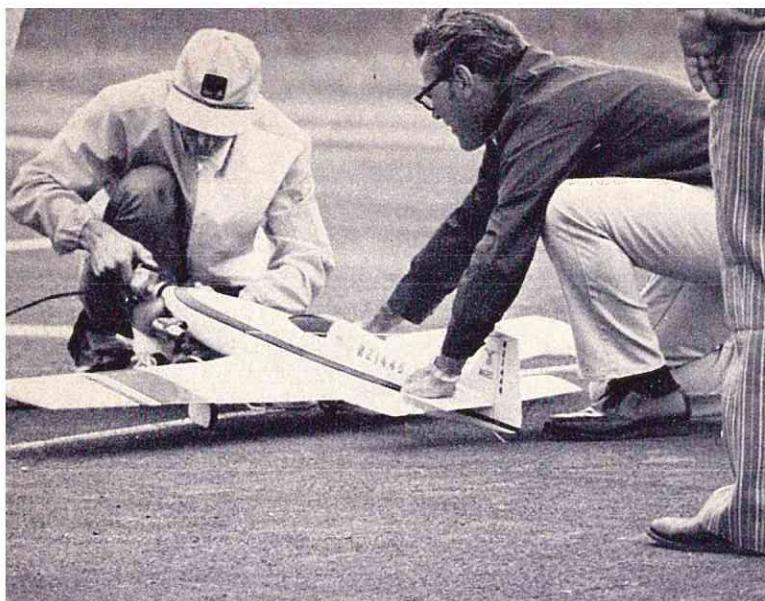
INTERNATIONAL FAI PYLON RESULTS – SEPTEMBER 19, 1971

<u>PLACE</u>	<u>CONTESTANT</u>	<u>COUNTRY</u>	<u>POINTS</u>	<u>BEST TIME</u>
1.	Telford-Violett	USA	16	1:57.5
2.	A. Mann	ENGLAND	16	2:05.2
3.	A. Dowdeswell	ENGLAND	13	2:28.2
4.	T. Prather	USA	12	1:53.6*
5.	B. Smith	USA	10	1:56.8
6.	G. Shaw	CANADA	10	2:17.7
7.	B. Castaneda	MEXICO	9	2:48.9
8.	R. Svenningsson	SWEDEN	7	2:05.0
9.	J. Sederholm	FINLAND	7	2:58.2
10.	Y. Murakami	JAPAN	4	2:28.8
11.	P. Pilsworth	ENGLAND	4	2:37.5
12.	B. Ball	CANADA	3	2:26.5
13.	H. Bando	JAPAN	2	2:25.7
	M. Sierra	MEXICO	0	
	L. Castaneda	MEXICO	0	
	T. Isobe	JAPAN	0	

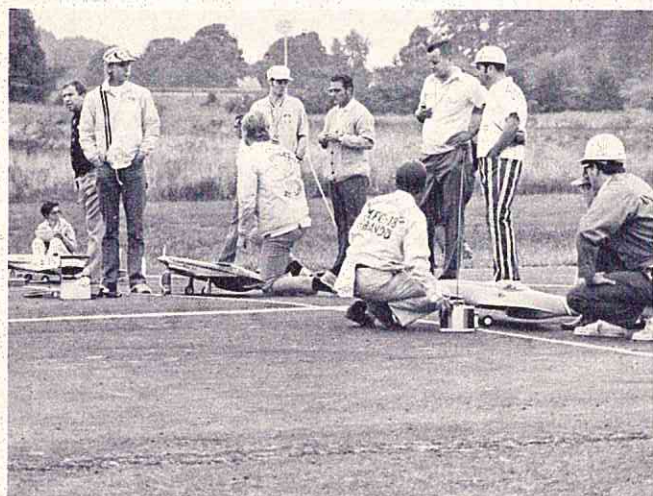
* Best time of the day



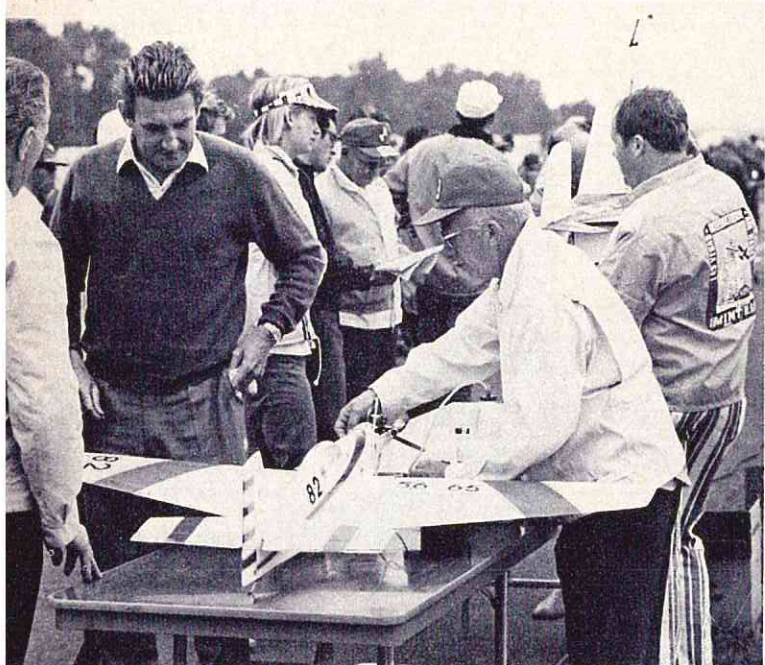
Telford-Violett repeat Nationals win at 1971 World Championships F.A.I. Pylon Races. Total 16 points with best time of 1:57.5. Photo at left illustrates pylon action.



LEFT: Terry Prather, US Nationals Formula I winner, placed 4th at World Championships after unlucky break. Had best time of 1:53.6. Joe Bridi assists. ABOVE: Bobby Smith, 5th had 1:56.8.



LEFT: Three nation heat — U.S.A., England, Japan. ABOVE: Mexican team looks on in disbelief as C.D. Maynard Hill decides to change pylon course at last minute.



A. Mann, England, 2nd with 16 point total and best time of 2:05.2. Mann fuels at F.A.I. fuel table. Bob Smith weighs in in background.



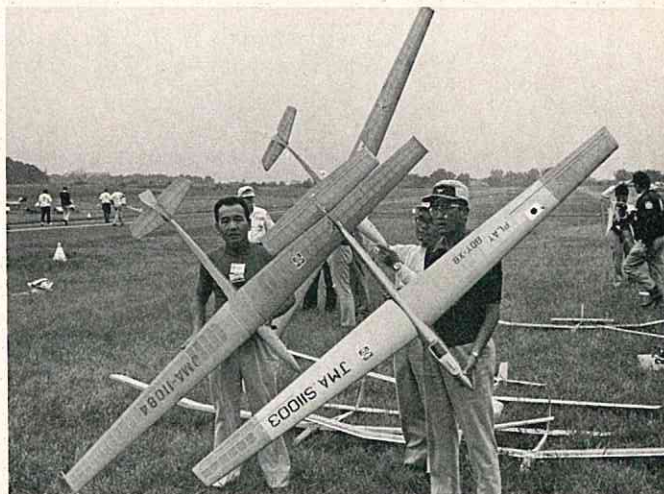
R. Svenningsson, of Sweden, 8th with 7 point total and best time of 2:05.0. Beautifully finished racer.



F.A.I. THERMAL SOARING

SANDY PIMENOFF, CIAM PREXY,
WINS WORLD THERMAL SOARING
CHAMPIONSHIPS

RCM Photos by Bernie Murphy

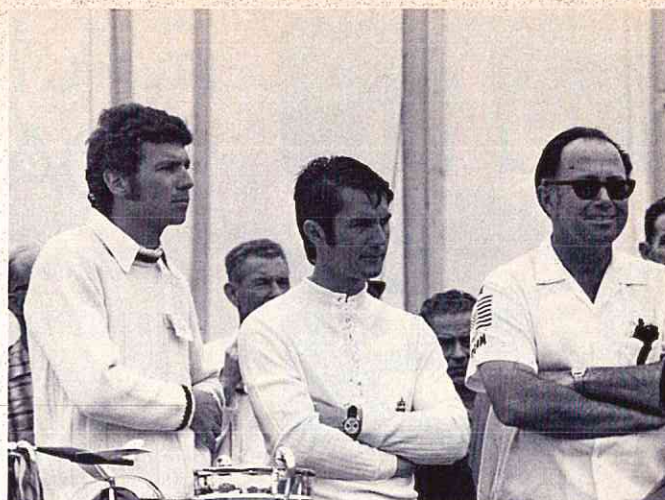


LEFT: Sandy Pimenoff, World Soaring Champion, at start of final flight. ABOVE: Members of Japanese soaring team pose for RCM's photographer. BELOW: Timer watches for release of contestant's sailplane. BELOW, LEFT: Member of Japan's soaring team prepares to launch modified MaxiSailer.





A display of a few of the magnificent trophies and medals awarded at the 1971 World Championships, Doylestown, Pennsylvania.



The top three in the seventh radio control aerobatic world championships. Left to right: Bruno Giezendanner, Switzerland (1st); Wolfgang Matt, Lichtenstein (2nd); Phil Kraft, U.S.A. (3rd).



The presentation of trophies to the F.A.I. Pylon winners. Left to right: Violet-Telford, U.S.A. (1st); A. Mann, England (2nd); A. Dowdeswell, England, (3rd).



Former A.M.A. President Patton makes F.A.I. soaring presentations during official World Championship ceremonies.



Ron Moulton, F.A.I. Jury Chairman, and noted English publisher addresses the crowd at the presentation ceremonies.



Academy of Model Aeronautics President, John Clemens, speaks on behalf of the Academy and the hosting United States.



The impressive display of the flags of all countries fielding a team for the 1971 World R/C Championships.



Close-up photograph of the special commemorative paperweights made by A.M.A. President Clemens and presented to all competitors.

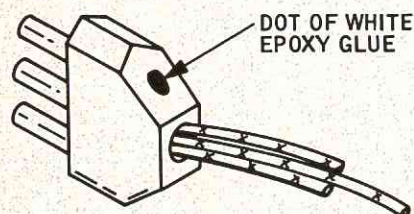


ABOVE, RIGHT: Johnny Clemens, A.M.A. President with Pennsylvania's Governor, Milton Shapp. RIGHT: RCM Editors tribute to Executive Editor, Pat Crews, and Associate Editor, Bernie Murphy, for their coverage of the Seventh R/C World Championships.



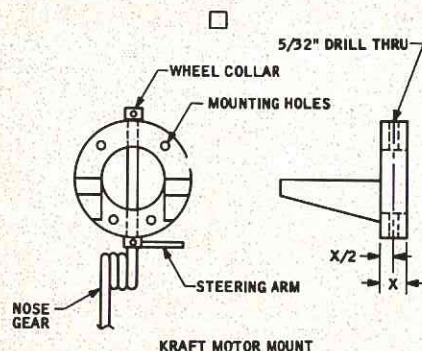
FOR WHAT IT'S WORTH

Thomas M. Wood, of Sidney, N.Y., finds that a small "dot" of white epoxy glue on the EK black connectors makes a fool proof polarizing reference point. The sketch is completely self explanatory



EK-CONNECTORS

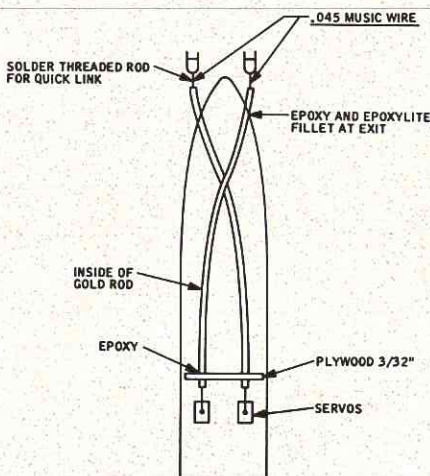
Doug Dorton, of Salt Lake City, Utah, submitted this sketch of how he converted a Kraft-Hayes motor mount into a steerable nose gear mount. All that was required was to drill a hole through the mount ring. The easiest way to do this was to place the mount upside down on a drill press with the ring hanging over the edge. Doug used the 60-B mount and 5/32" music wire. For a smaller engine and mount use a smaller diameter wire.



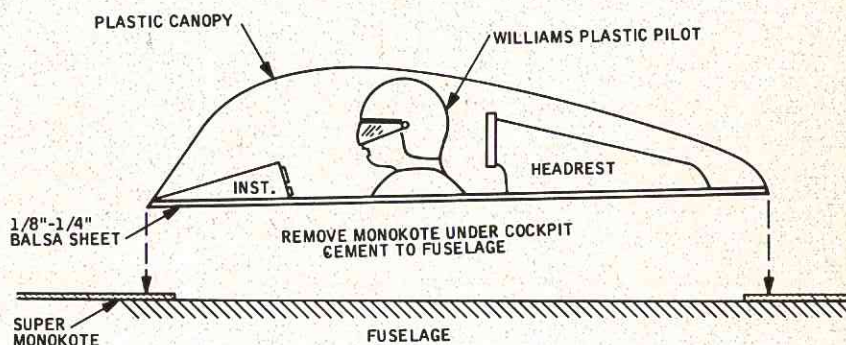
KRAFT MOTOR MOUNT

Jim Wilmot's construction article on the Pegasus in the June '71 issue of RCM mentioned pushrod substitution of gold inside NyRod with music wire running through it. This worked so well that it should be elaborated upon according to Al Altemeier, of Los Angeles, California. It is far superior to cable and other methods as it requires no bracing of the nylon outer rod. Al has used this method on a modified Nobler with over 100 flights on it and there was absolutely no play between the coupled flaps and elevator or on the rudder. This enables the builder to have the exit in almost any position

desired for appearance and convenience. The important thing is to use .045 music wire and not 1/16" as the latter will not follow a curve without excessive binding.



Since it is practically impossible to permanently fasten a plastic canopy to Super MonoKote, Mel Hart, of St. Louis, Missouri, found the following idea works quite well. Using a piece of 1/8" to 1/4" balsa as a base, build the entire cockpit, instrument panel, pilot, etc. Paint the interior of the cockpit and cement the canopy to the balsa base, trimming it flush to the bottom of the base. Place the cockpit on top



FRONT VIEW

of the fuselage which has already been covered with MonoKote and mark along the edge. Using a sharp knife, cut out the MonoKote under the cockpit leaving about 1/4" all around extending under the edge of the cockpit. Finally, cement the completed cockpit to the bare balsa top of the fuselage.

If you're having trouble getting glue into those hard to reach spots, try a 1 1/4", 20 gauge Veterinarians hypodermic needle over the end of a tube of Testors glue. This will not only get into those hard to reach spots, but will produce a uniform glue flow. This idea was submitted by Richard Linhart, of Culver, Indiana.

Just after his plane got off the ground, Ben Strasser's engine quit. From about five feet altitude he made a rough landing in the field at the end of the runway—rough enough to break both of the plastic hold down straps on the right main gear of his low wing plane. After he had asked everyone around if they had an extra set they could part with, and with no luck, he was about to pack up and go home with not even one flight to his credit for the day. Then Ben saw a pull-tab from a soft drink can laying on the blacktop. That was it. Ben bent

TRIM FUSELAGE MONOKOTE ABOUT 1/4" INSIDE COCKPIT PERIMETER

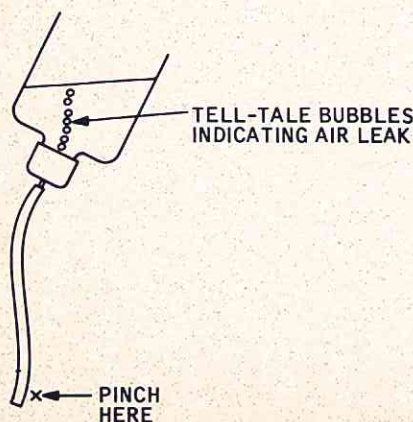
the ring part back and forth a few times to break it from the tab. Then, using one of his remaining hold down straps to locate the screw holes and a piece of music wire as a punch, two screw holes were easily made in the aluminum tab. After the screws were in, the field repair proved to work beautifully. And, Ben Strasser, of Northridge, California, did his bit for the environment, too!

□

If you don't like using "kitty litter" for cleaning up your greasy rubber bands, try putting $\frac{1}{2}$ " of your wife's corn starch into a wide mounted peanut butter type jar. After a flying session, deposit the greasy rubber bands, cap securely, and shake vigorously. The next time out, upon removing your rubber bands from the jar, snap once to remove the excess corn starch and apply in the usual manner. This idea was submitted by F.J. Seiler, of San Jose, California.

□

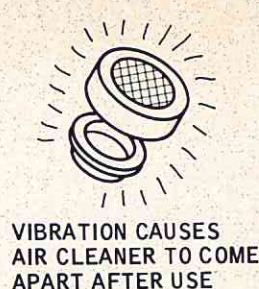
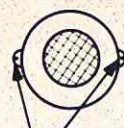
E.C. Roberts, of Victoria, Australia, submitted this easy and foolproof method of checking fuel lines for air leaks. The method involves the use of a clear plastic squeeze bottle which is partially filled with fuel. Attach the fuel line to be checked and, while holding the bottle upright, squeeze out the air. While holding pressure on the bottle, pinch the end of the fuel line, invert the bottle, then release the pressure. The bottle will try to fill, drawing air through any air leak or pin hole, causing bubbles to appear in the fuel. The method can be extended to check fuel lines inside by first emptying the ship's fuel tank, then squeezing the air from the squeeze bottle and finally, by sealing the tank. Edwin found that the easiest method of sealing a tank was to connect a fuel line between the air bleed and filler tube. A few bubbles will appear immediately after pressure on the



SIDE VIEW



TOP VIEW



squeeze bottle is released as negative pressure is built up in the fuel tank. A permanent stream of bubble indicates you've got problems. Edwin has used these methods and finds them very convenient.

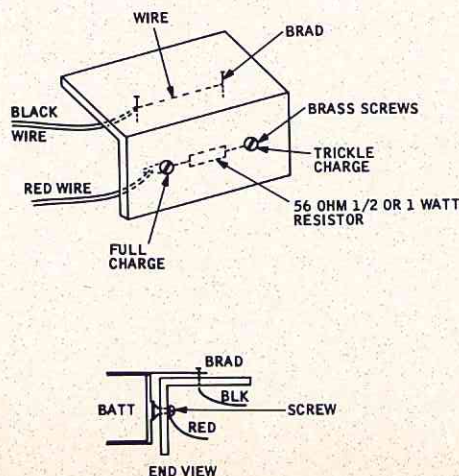
□

Here is an idea suggested by Alex Perez of the Fort Worth Thunderbirds, and shown to Ken Galbreath, Club newsletter editor. It works like a charm and solves one of the few problems we have had with the Perry carburetor aircleaner. After some use and a few fuel baths, the friction fit that keeps the aircleaner together tends to let go. The aircleaner can then vibrate apart. This method assures that nothing short of a total crash can wipe out the aircleaner.

□

For those modelers using Tatone booster starting batteries, here is a simple accessory for both full charging or trickle charging. The booster can stay on trickle charging the full time without damage to the booster. Mount brads and screws at your convenience to fit your particular needs. The mount can be a solid block of wood with wiring externally or a wood angle with the wiring done beneath as shown. This could also be a corner of a box with a charger inside. Just hang the booster on it as if it were hanging on the motor. This idea was submitted by John P. Menerick, of Bristol, Tennessee.

□



J. Elliot Brown, suggests taking a lesson from the industrial users who spray a combination of epoxy or polyester and chopped fiberglass. They use a spray gun for the catalyzed resin with a chopper mounted on the gun so as to mix the chopped glass and resin in the air before it impinges on the work. This results in a structurally powerful coating. The R/C modeler can obtain as good results by cutting strands of fiberglass into $\frac{1}{8}$ " lengths and either mixing it into the epoxy before application, or applying the epoxy first to the work and, with a stick or toothpick, adding the chopped fiberglass. This enables delicate repairs which are stronger than the surrounding structure. For fast chopping, remove a strand of the warp from a piece of fiberglass mat so that the woof strands project slightly. Then, shear the woof strands, then withdraw another warp, shear, and so on. Mixing the glass and epoxy first works best for large repairs and fill jobs such as fillets requiring high strength. The separate application, that is, placing the epoxy first and then adding the bits of glass with a toothpick works best for fine work and hard to reach areas.

□

Felix N. Howard, Jr., of Danville, Virginia, has found another use for the inner rod on the new type Golden NyRods. By firmly clamping part of this rod and applying heat at the edge of the clamp (a match will do), it is possible to bend this rod in excess of 90 degrees without closing the hole. This reshaped rod is perfect for running brake cables from the brake line exit point through any bulkheads and as close to the servo takeoff as desired. Felix uses silicone rubber for installing this rod. Another use for NyRods concerns the outer rod. For conventional aileron hookups with bellcranks, Felix runs a piece of this outer NyRod through the wing ribs and then runs $\frac{1}{16}$ " music wire or welding rod through this rod for his hookup.

□

FLIGHT TRAINING COURSE

CHAPTER III

FLIGHT: STABILITY AND CONTROL OF R/C AIRCRAFT

Stability is when our radio controlled aircraft will fly straight and level **without** a control signal being transmitted from the ground. This is a great characteristic for a sport ship to have, and if it will fly nearly straight and level for quite an indefinite distance, we'll say this ship is inherently stable — its stability is designed into it by use of proper dihedral, positive wing incidence, proper center of gravity location, and modest controllable power with off-setting drag and sufficient wing-generated lift to offset the models weight.

This ship, however, is **not** highly controllable like a high performance pattern ship. Rather, it's a great sport job for sport and Sunday flying and generally uses rudder, elevator, and throttle control or three proportional channels. It could also be a contest-winning R/C glider that is obtaining forward motion by sliding down an imaginary inclined line to obtain its equivalent of thrust. In this chapter we will attempt to teach you how inherent stability works. We will then compare this with our radio controlled models that have little or no inherent stability.

Typical of the popular R/C ships with built-in stability are the cabin-styled, high-winged, dihedralized, modestly-powered designs that all of the larger kit manufacturers feature. Similar designs also appear in plans published by R/C Modeler Magazine.

About 75 years ago, before the Wright Brothers flew, Samuel P. Langley successfully flew model aircraft for distances of nearly 1/2 a mile — even before the first full sized aircraft flew. The greatest self stabilizing force in Langley's model was



dihedral, the use of which the Wright Brothers apparently overlooked!

Dihedral is the slight upward sweep of a wing that causes the tips to be higher than the center section. Let's see why it works and what it does as indicated in the sketches below. In Figure 1, the model is flying toward us in a straight and level flight with both wings lifting equally. In Figure 2, the model is flying toward us with the left wing momentarily low. In the latter sketch the dihedral is shown slightly exaggerated. The effect of dihedral, the upward sweep of the wings, is to level the wings to the position shown in Figure 1 so that straight and level flight may resume. Distance "B" can be seen to be greater than distance "A" above. The lift from both wings is vertical as indicated by the small arrows, but the lift from the left wing is greater because it works over a **greater distance**. So, the left wing raises until its lift is no greater than the right wing's lift. At this point level flight is resumed. If the right wing had been low, the exact opposite would occur to bring back level flight and inherent stability. So, we can say that dihedral basically keeps our wings level.

Now let's look at Figure 3 in which

our model is flying straight and level toward us and we have just signaled for right rudder so we can turn right. For every action there is an equal and opposite **reaction**. Since our rudder has started to move in the direction of the arrow the air will strike the rudder and force the tail to start the swing in the **opposite** direction. Let's see what dihedral will do for us now as shown in Figure 4.

The turning of the rudder starts the tail to yaw left, and as soon as it starts to swing, notice how the angle of attack of wing "B" has **increased**, and notice how the angle of attack has **decreased** on wing "A". Wing "B" lifts more than wing "A", and our ship rolls toward the right while the nose yaws or turns right (our tail went left) and we start our right turn. To stop the turn, the rudder is neutralized and we assume our ship to be as shown in Figure 2.

Dihedral generates rolling action which results in turns when we yaw or turn our ship around a vertical axis with the rudder.

Now let's discuss the three axes of movement for our radio controlled cabin job with dihedral. These are shown in Figure 5.

Number 1 axis, the yaw axis, is controlled by the rudder as we saw in Figure 3. Number 2 axis, the roll axis, is controlled by the wing-leveling action of dihedral. It is over-powered with a yaw action induced by rudder movement. Sufficient yaw action, along with dihedral, skill, and sufficient thrust, will give beautiful barrel rolls. With a touch of down elevator, while inverted, and a touch of up elevator while upright, you can do them consecutively.

Number 3 axis, the pitch axis, is controlled by the elevators. If we move the elevators **down**, the air will

strike them and force the tail up and the nose will pitch down. Our ship will then dive.

We can use a bit of right thrust in our engine to offset the torque, or twisting force, that our prop generates as it turns and tends to make our ship turn left a bit.

We can adjust our elevator trim and throttle setting to control the pitch axis to achieve level flight.

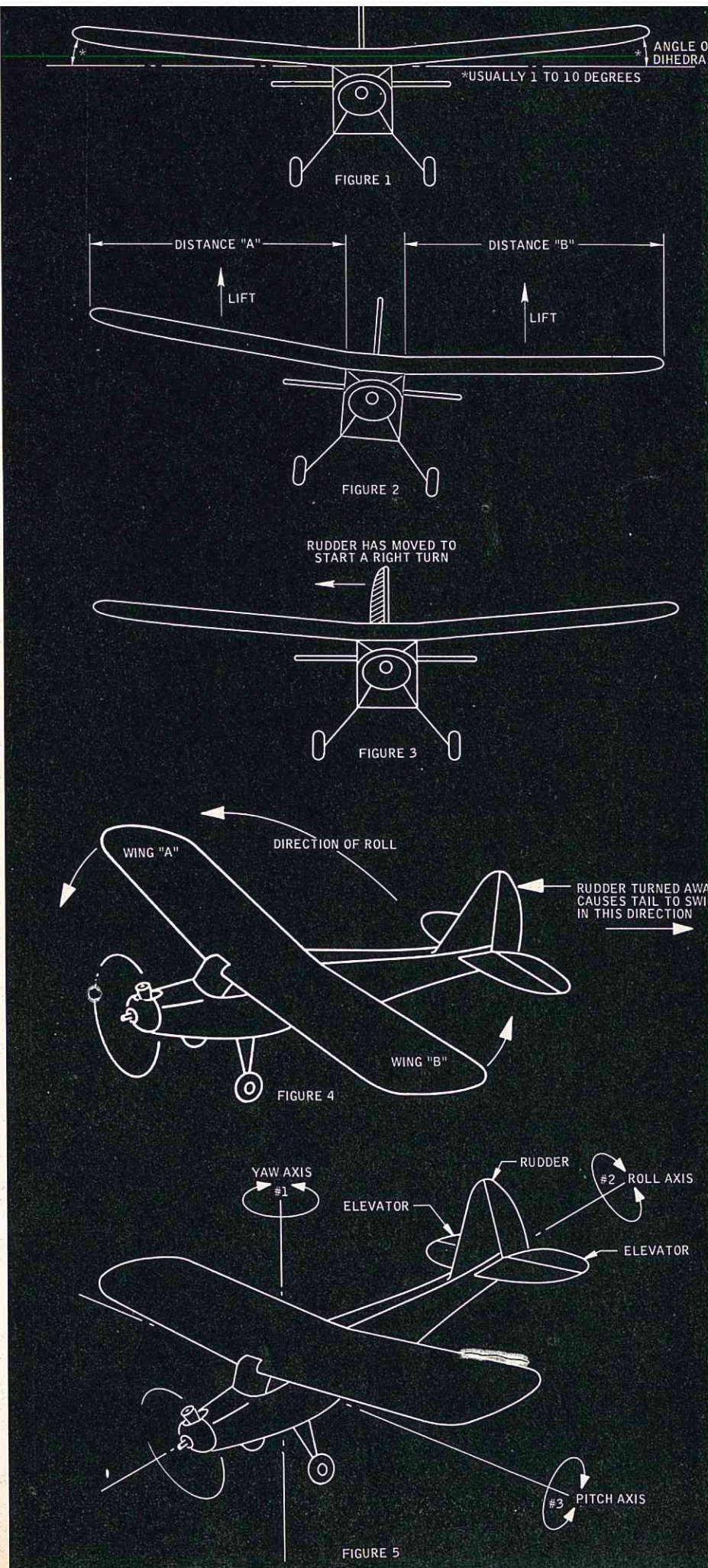
So with this situation we have learned why our sport flier or trainer type aircraft is so stable, but controllable. However, if control fails, this ship could easily fly away and be lost.

Now, let's take a look at a contrasting type of aircraft, the hot contest-type ship whose claim to fame is controllable performance. As we mentioned earlier, if the radio should fail on the stable high wing type aircraft the aircraft will fly away. If the radio fails on the high performance aircraft you won't have to walk too far to pick up the pieces since our contest winning type ship has **no** built-in stability and it won't take too many seconds for it to hit the ground if something fails.

We'll call the ship in this discussion the Zipper. We're using a .60 engine with a black, silver, gold or blue head. Our available horsepower is **one plus** and our 7 lbs. of weight is carried on a 600-750 square inch wing for a wing loading that is nearly 22 ounces per square foot. Our Zipper has a swept look from the needle-nose spinner to the swept back fin and rudder. It is streamlined to the point that maybe even the wheels retract and disappear on the climb out. If this happens to be similar to your first R/C ship, this portion of this chapter is for you! The best advice is to put your Zipper aside, pull out the radio gear, and build the RCM Trainer, the high wing cabin job with dihedral and moderate power, and follow the instructions in the rest of this book. Unless you're the one in a million exception to the rule, you will not learn to fly with your Zipper!

Because your Zipper is a proven contest-type winning design, and you have faithfully followed the plans, don't believe it will fly well for your. The truth is simply that winning contests is mostly a matter of training your reflexes and, although a good ship is certainly needed to win, hours of training your reflexes is what is of prime consideration.

And that's what this course is all about.



Soaring

with Don Dewey



The third ECSS Soaring Contest was held on June 20, 1971. Sponsored by the District of Columbia Radio Control Club and held at the Prince George's Radio Control Flying field at Croom, Maryland. This flying field was an abandoned airport, recently acquired by the County for a park. Some 2000 feet square, the field offers some of the finest thermal soaring terrain in

the area, surrounded by woods and bordered by the Patuxent River.

Sixty-three contestants attended this meet to make it the biggest Thermal Soaring Duration Contest in the country.

The weather was the finest thermal producing air the ECSS has ever experienced during a contest. Twenty-two contestants (35%) totaled flight

points over 1200, that's better than 7 minutes a flight. Forty-six flights were over 9 minutes.

Tom Carey, DC/RC president, Jay Stargel, Contest Director, and Don Gray organized the contestants and frequencies for the 189 flights and kept things moving smoothly all day. A system was developed for retrieving towlines by calling the succeeding con-

There were few identical sailplanes in the top ten winners, but one fact remained consistent. All ships had wing loadings near 8½ ounces per square foot. This is true of all three ECSS contests this year, and may be a figure for designing in the future.

DC/RC awarded the winners Gold, Silver and Bronze Medallions, displayed with an orange ribbon through 3rd place, and merchandise through 10th place.

Prince George's Radio Control Club provided the concession manned by Richard Booth, Theresa Freeman, Jack and John Spaulding and B. Keyes.

The hottest pilot of the day was Paul Byrum with flight times of 597, 579, and 598, making 50 points for a spot landing. He totaled 1824 points for the day out of a possible 1950. Paul is a consistently good flier and has an 87.87% in the ECSS percentage point system. Paul flies a Kurwi 68.

Dick Connors from Parsippany, N.J., won second place with flight times of 575, 586, and 582, making one spot landing to give him a 1793 total for the day. Dick flew a beautifully trimmed blue and white Cirrus and is another flier in the high points at every contest. He has a standing of 85.58% in the ECSS percentage point system.

Third place went to Dave Burt of Evanston, Illinois, one of four S.O.A.R. members who drove from the Chicago area to attend the contest. Dave was flying a German import. A balsa sheeted wing and tail with wood fuselage. Having an 8.2 oz. wing loading this large ship (1088 sq. in.) is being imported by someone in the Chicago area and is very popular there. Dave has installed dive brakes on top of his wings. These dive brakes work to perfection and allow him to stay in a thermal until the last minute. His flight times were 513, 366, and 597, making 150 points landing in the spot for a total of 1626.

A tie resulted for third place as Walt, ECSS Board Member from Bethesda, Md., duplicated Dave Burt's score of 1626. The tie was resolved by giving the third place to the flier with the highest single flight of the day. Walt was awarded fourth place with flight times of 596, 592, and 338, and 100 points for landing.

Fifth place was won by Don Gray of Rockville, Md. Don held a double duty all day as he helped with the running of the contest as well as flying. His scores were 597, 536, and 381, with 100 points for landings

totaling 1614 points. Don flew an Iris in the contest.

Fred Schneider from Connecticut flew one of the first Kestrels seen on the East Coast to 6th place. His times were 309, 590, and 596, with 100 points for landings totaling 1595.

Ray Smith, ECSS Board Member from Silver Spring, flew a pod and boom glider of his own design to seventh place. His unique sailplane features a pod of fiberglass, a boom of fiberglass, using a pool cue for a mold. The wing is foam covered with fiberglass sheeting. The tail is built up from balsa. Ray's flight times were 582, 583, and 292 with 50 points for landing giving him a total of 1507. Ray has an outstanding ECSS point system percentage of 86.45%.

Dick Jansson from Wellesley Hills, Maine, flew a 7 foot K-68 to eighth place with flight times of 304, 596, and 600 (a perfect 10 minute max.) for a total of 1500 points. Dick was using his "Jansson Thermal Sensor" during the contest.

Earl Pell of Clawson, Michigan, flew a Cirrus to ninth place with flight points of 597, 592, and 197, with 100 points for landing, totaling 1486.

ECSS Treasurer, Tom Rankin, flying an Osprey 120 won tenth place with flight times of 582, 153, and 599, making 150 points for landings totaling 1484.

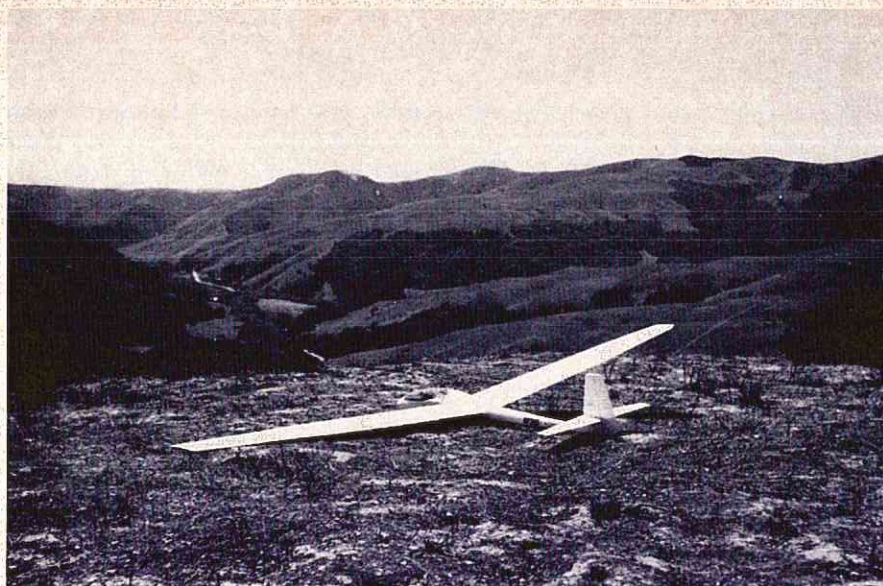
Don Clark, ECSS Secretary placed 11th flying a modified Kuri with 1453 points, Edmund Smith of Hampton, Va., place 12th with 1439 points and ECSS President, Carl Maroney, placed 13th with 1419 points.

The competition is getting keener every year in the ECSS contests. Nine fliers hit the landing circle all three rounds during the contest and 23 fliers made the spot twice with very close landings during the third attempt. Five fliers made flights just 3 seconds short of 650 maximum points obtainable. Even the flight times from 11th to 20th were in the 1200 points.

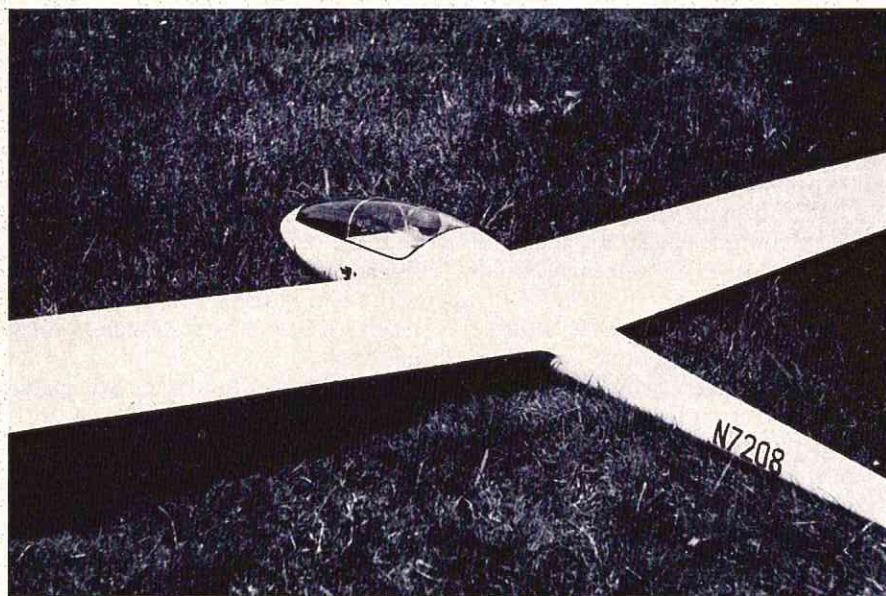
On Sunday, July 18, thirteen contestants turned out to contest the DC/RC Intra-club Soaring Plane title and to vie for points in the annual points contest. The first round was fully in operation by early afternoon and thermals were being caught almost immediately. Small complications ensued, however, as the variable winds put the Hi-Starts and the winch right into a down wind position. Thermals were caught through the first round and several max flights were recorded.

testant to retrieve the line as each contestant was called so that a flier never had to wait for a towline.

While the Cirrus sailplanes were very plentiful they did not entirely dominate the scene. There were 13 Cirrus sailplanes, 6 Kurwi's and a list of almost one-hundred other sailplanes of every description. Twenty contestants flew their own designs.



ABOVE AND BELOW: Dr. A. Hartwell Jewell's beautiful Cirrus, marketed by Francis Products. Note beautiful slope site.



After the first round, the winches and Hi-Starts were re-oriented into the wind and then height and launch performance increased. It is a good thing that it did as throughout round 2 the air was virtually dead. Only the still air gliders made any headway and no maxes were recorded. Between the first and second rounds, the sky clouded up heavily and small showers were in the vicinity. Then, as the third round was beginning, the thermals began to appear with the lightening of cloud cover and occasional peeks at the sun. Several maxes occurred during the last part of the third round and after the third round several more handsome long flights were noted.

The contest was decided on the basis of two rounds out of the three flown. The third round was closed

down at 4:00 p.m. and general flying went on from there. Not only were a number of contestants there, but they brought their families, friends, and spectators from the power contingent of the DC/RC Club also were in attendance. We note that while if one is flying sport or demonstration flights at a power field, the spectators appear from nowhere and one can gather a sizable crowd with a sailplane demonstration.

It is interesting to note that Bob Denney, the contest director for the DC/RC Intra-club Glider Contest had an innovation — frequency pins clipped to his clipboard on which he kept score. This proved to be an excellent way of keeping track of the frequencies being used. As the contest ended up Walt Good was first with

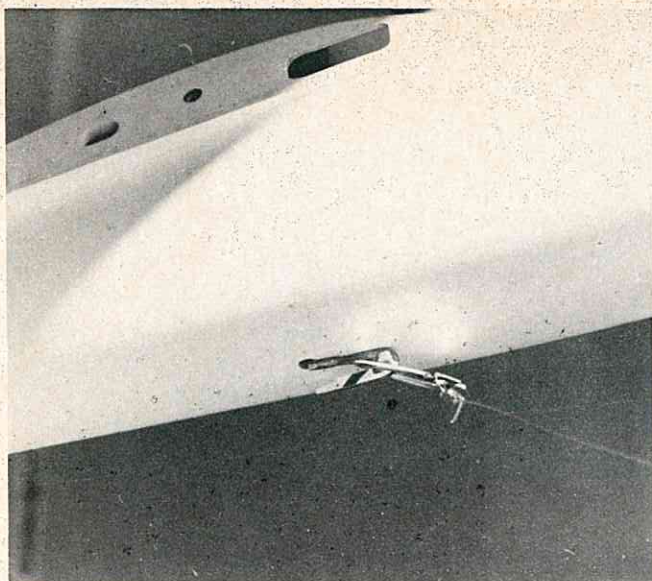
1,089 points racked up by his Cumulus 2800. In second place was Tom Rankin with 1,073 points flying a Ray Smith designed Osprey 120. Carl Maroney was third with 977 points also flying an Osprey.

Dr. A. Hartwell Jewell sent us the photos of his near scale Cirrus, which is marketed as a beautifully turned out fiberglass fuselage, canopy, and wing and stab plans by Francis Products, in Cupertino, California. As you will note from the photographs, the scale fuselage gives ample room for complete enclosure of your radio gear as well as the scale pilot and instrument panel. This is the third such Cirrus that Dr. Jewell has built with prior models using a fully sheeted foam wing in one instance and a fully sheeted built-up wing with dowel and tubing mounting in the second. His present Cirrus, which he has been flying for the past year, utilizes a partially sheeted wing with Dural tongue and plywood box wing mounting which he has found vastly superior to the usual tubing and wire wing mounts in the event of the occasional hard landing or collision. The present section the Doctor uses is an Eppler 387 and seems ideal, giving good penetration and good speed, yet with plenty of ability to rise in thermals out over the valley. All-up weight is 4 lbs.

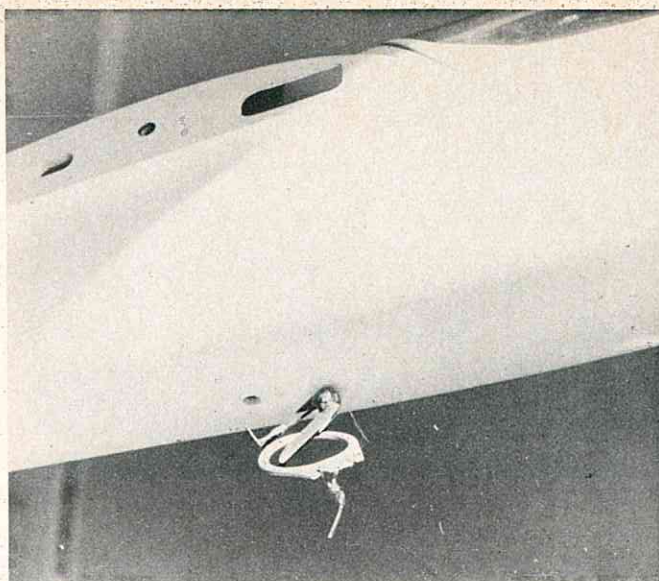
Bob Francis also makes the Del-Gavilan fuselage which Ken Willard has mentioned in his column several times, as well as the Sagitta, an almost 100% scale model of the beautiful, but now defunct Dutch Sailplane.

Ian Laing, of the Durban Model Aircraft Club of Natal, South Africa, one of RCM's regular correspondents, mentions that R/C glider design has, in the past few years, progressed at a very remarkable rate. But, one facet seems to have been ignored... that of an automatic radio controlled tow line release. Granted, the curtain ring and hook method has been developed and simplified by the free flight boys and until now it is almost foolproof with "almost" being the operative word. But, only too often, Ian has seen an R/C glider, under tow, catch a gust of wind and, before corrective action can be taken, the glider is in a suicidal dive, unable to recover because the ever increasing tension in the tow line prohibits the ring from slipping off the tow hook.

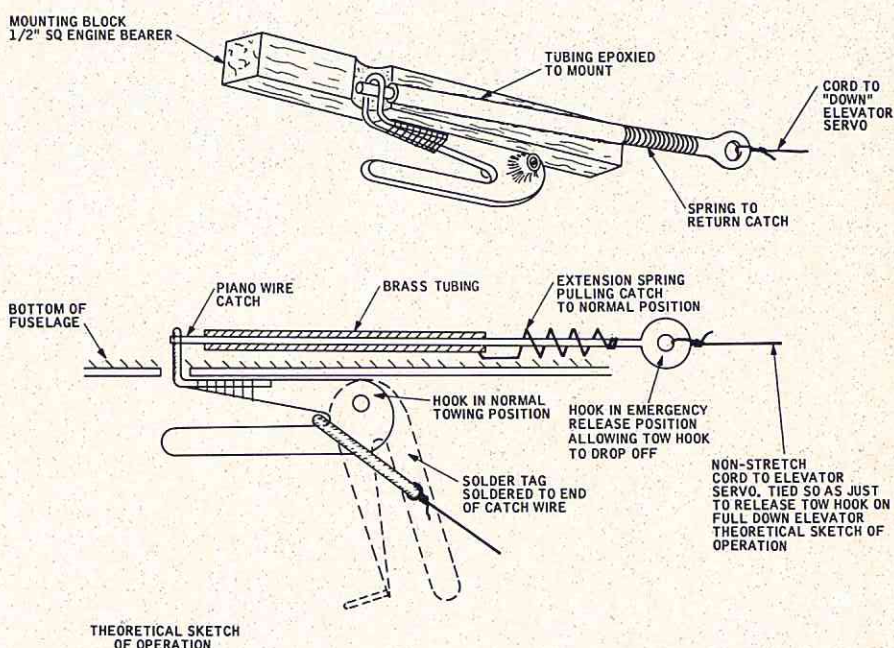
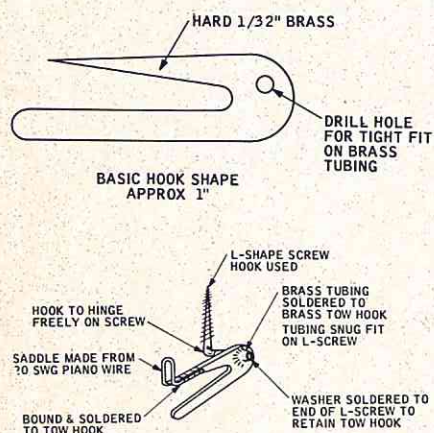
Not wanting to depart from the



The tow hook and line in the normal position.



The tow line in the act of being released.



tried and proven method of attaching the tow line to the glider, but, at the same time, wanting an emergency release method if needed, an idea was slowly borne, modified, and hacked about until the final result is presented in the photos and sketches shown with this column. The sketches tending to be more explicit than any written explanation, show the assembly and theoretical operation of the release. After a normal successful tow, the curtain ring slips off the hook in the normal method, but in an emergency Ian's theory of operation is as follows: If during the tow an emergency occurs, the majority of the time down elevator is used to level the glider out of its climb. The tow release mechanism is adjusted to release the hook only when extreme down is used. This way, in an emergency, there is no need to have to think and operate another control on your box just to release the line, the normal natural reactions of getting the glider out of its difficulties have, in them-

selves, released the line for you. This full down elevator is rarely used during thermal flying, there is very little chance of activating the release in normal flight.

So much for theory, as Ian's photos show, he has installed it on his Cirrus and it really does work and has proven itself out under deliberately induced emergencies. The knowledge that you've got that "something extra" on your side during the tow adds tremendously to your feeling of well being.

Although we feel, here at RCM, that this is an excellent idea, we would go one step further and use a locking mechanism that would allow you to keep the sailplane on the line since this is often a problem with an electric winch. Whereas it is very easy to stop

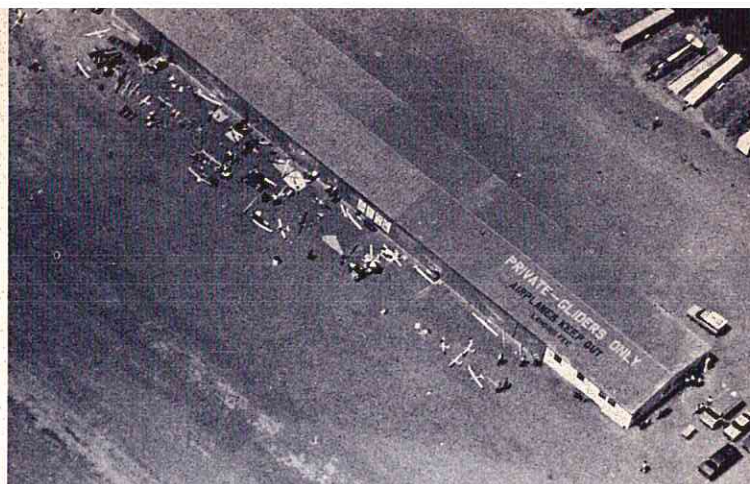
the winch and immediately come off the line, it is more of a problem under some conditions to stay on the line. Ian's own mechanism could be modified so as to lock the line onto the tow hook until such time as it was released by activating the elevator.

Rod Smith, the 1971 Nats Soaring Champion and part of the father and son team of Mark's Models, P.O. Box 2134, Escondido, California, sent us the photograph of the winch turnaround that they have been using. This received a trophy at the Nationals for Best Technical Achievement. Mark's son, Brian, designed the piano wire guards. The original design came from the Northern California Sailplane

To page 85



Aerial shot of launch area and judges control center. Photo by Ed Miller of Vandenberg Air Force Base.



Part of pit area, 56 R/C sailplanes. Note full scale trailer rigs at upper right. Ed Miller aerial shot.

LEAGUE OF SILENT FLIGHT 1971 NATIONAL

Soaring Tournament

BY KEN WILLARD

Photos by Ken Willard and Bill Holliman

On August 28-29, 1971, 103 contestants, with about 200 sailplanes (most brought along a spare) gathered at Nelson's Hummingbird Haven Gliderport, just outside Livermore, California, to compete in the second annual LSF National Soaring Tournament for Radio Controlled Sailplanes.

On August 28-29, 1971, at the same location, approximately 150 dust devils (California "dirty thermals") went swirling through the launch area at diabolically timed intervals to plague contestants and officials alike — to say nothing of the spectators.

To page 72



ABOVE, LEFT: Ted Nelson's Hummingbird, takes Don Pruss for a hop into the thermals. Ted Nelson up front. Great guy — great sailplane. ABOVE, LEFT: Tournament director Bob Andris welcomes contestants. The record keepers — heartbeat of the tournament: Ginny Wolfram, Donna Christen, Jeri Street, Dolly Cremins, Shirley Baxter, Helen Christian, Connie Lillie, JoAnn Balga.

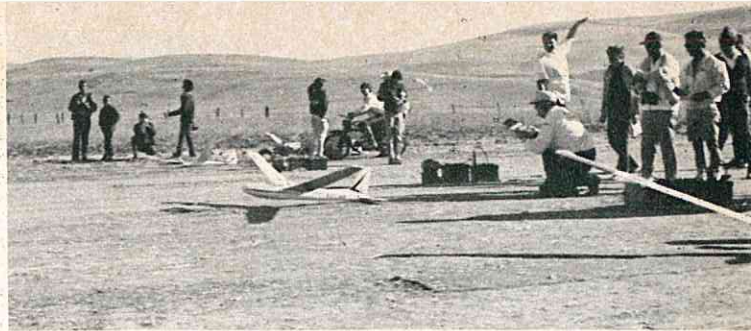
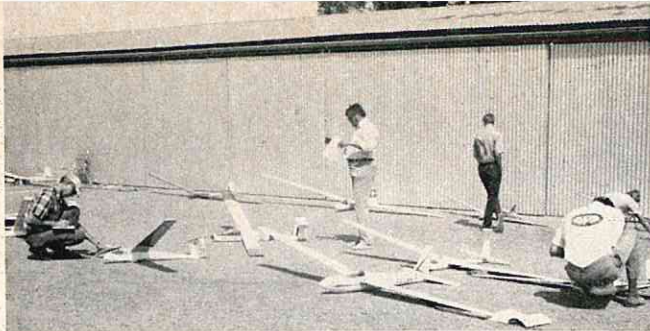


Phil Kraft came up from Vista in his Fournier sailplane.

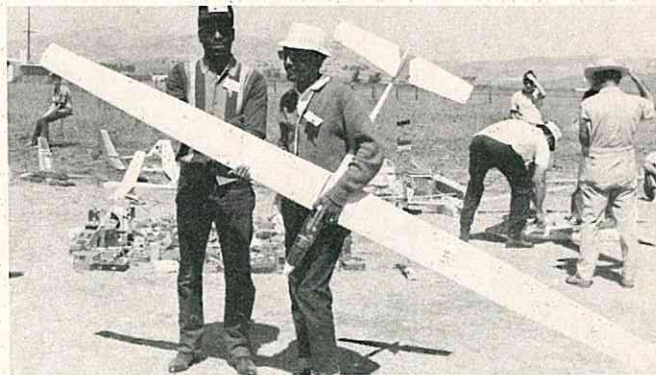
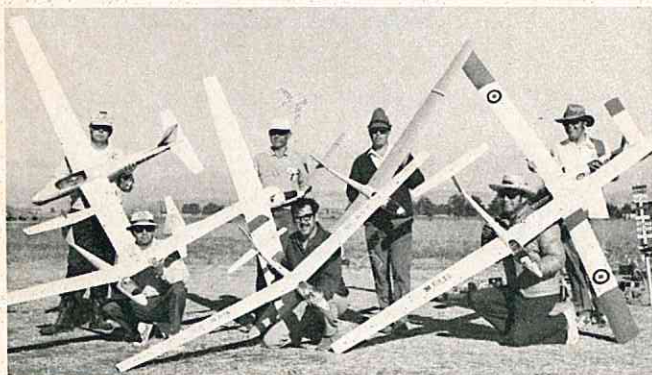


From far and wide they came. Currie Lee, Hawaii; Bill Fenton, San Diego; Dick Derize and Tom DiMarco, Seattle; Harley Michaelis, Walla Walla; Val Hutchinson, Amarillo; Dan Pruss, Chicago.



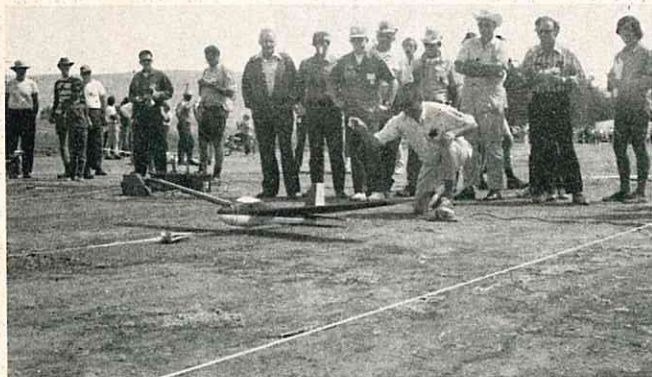


LEFT: Scale judges at work. B.S. Smith, 1970 President of the Soaring Society of America, at left; Hugh Stock, center; and Floyd Carter, noted scale builder, right. **RIGHT:** Winch lineup with scale jobs. Marshal Watson's Schweizer just getting airborne.



Scale entries. John Donelson, winner, front row, left.

Willie Richards 'explains' why he's flying a Cirrus instead of his "GUS". Mardel Tubbs suffers through the story.



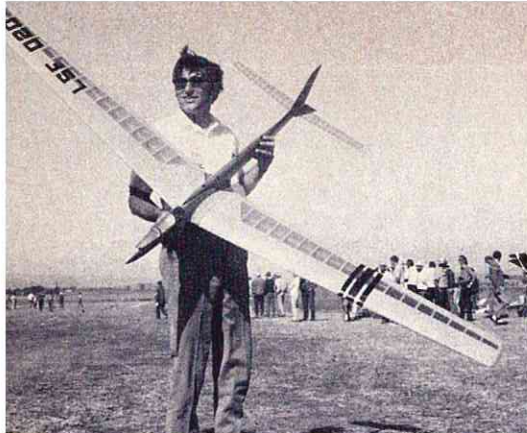
Historical event. Phil Kraft enters sailplane tournament! Flies Val Hutchinson's foam Schweizer. Broke 100! (Placed 99th but only entered Saturday's events for fun. Blamed it on Val's Pro-Line equipment).

Ken Willard and prototype Topsailer.



LEFT: Harley Michaelis and Miskeet. **RIGHT:** Frank Culver and Santa Ana. **ABOVE:** Bob Andris and scale Diamant.

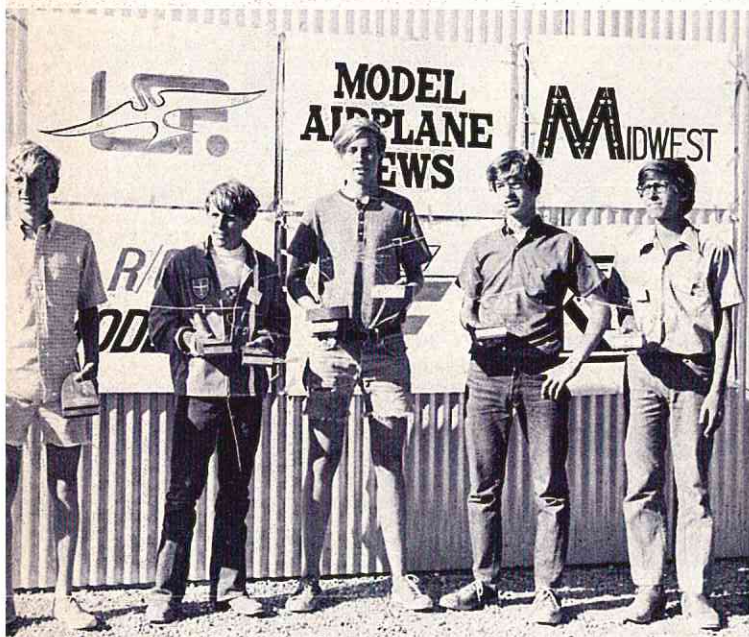




Floyd Carter and unusual low wing original.



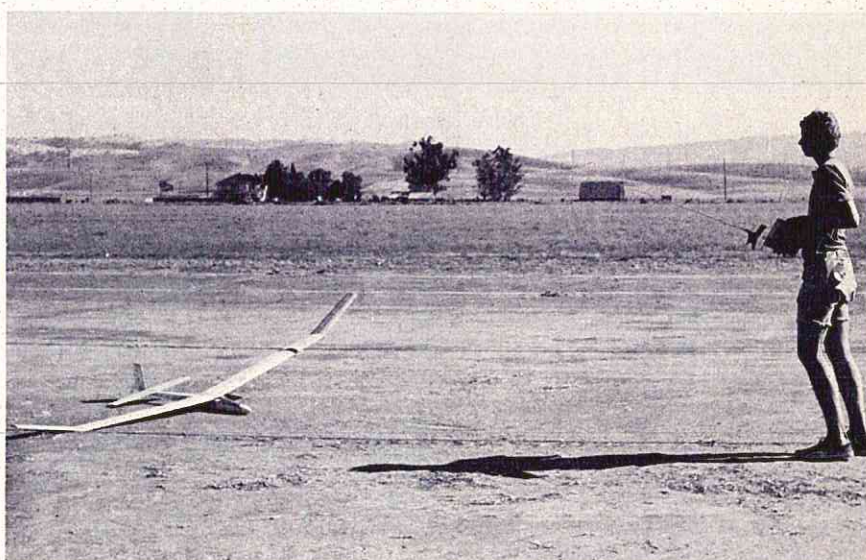
ABOVE: Roland Boucher and electric powered Fournier. Note 2½# battery pack. RIGHT: Bill Chase and original. Bill is 17, from Stockton.



LEFT: Where are the Juniors? Winning sailplane contests, that's where! Chris Mauntz, Paul Christian, Rick Walters, Stu Horten and Ed Rempalski with trophies. ABOVE: All the winners: Rear row, the Whiz Kids again. Front row, John Baxter, John Donelson, Paul Steiner, Bob Andris, Bob Thacker, Jay Brehm.



Chris Christen presents grand champion trophy to Rick Walters.



Champion in action! Rick Walters makes perfect runway landing for perfect score in duration.

A BEGINNER GOES To The SOARING NATS



by Jim Simpson

PART II

Last month we discussed a beginner at the Soaring Nationals. Now, let me share some observations with you. Keep in mind these are by a rank beginner in soaring and, for the most part, are things which were told to me or which I overheard in regard to the operation of sailplanes. What I write here is my humble contribution to the total effort. It is done in good faith and hopefully will be of some benefit. It is not infallible and it is not the 'only way', but rather, just one way.

Let's begin with the plane. Any kit is capable of flight. Some fly better than others and, of course, which one does the best will be determined by many variables such as: Slope or Thermal soaring, large or small area, summer or winter, pilot experience, weight of the plane, and so forth. A wise step then, would be to follow the advice of someone who is successful, if such a person is available to you. Chances are, however, that you will be the 'first' in your area to try it or you will be the only one. This condition will only be temporary, however, so go ahead and get started to avoid the rush.

I can't name one single plane (I'm not that familiar with 'em nor is it politically sound to do so) that is best. Just study them, pick one, build it strong and light, and practice, practice, practice! Example — I did not know

the Foka was supposed to be so hard to fly (there is even an article in one of the East Coast Soaring Society (ECSS) newsletters on how to make it easier to fly) so, because I followed kit instructions and had faith in the design, I have mine flying pretty well.

Once it is built and checked for true surfaces, (no warps) center of gravity right on (not off 1/2" or so), reliable radio operation, and so forth, then, and only then, stair-step up to flight. First, hand glide it by aiming at a point about 25 feet in front of you on the ground and try to hit it with the nose of the plane. Don't hesitate to use your radio if needed to save a poor test glide. Also, once it is 'trimmed,' then practice turns and landings over soft grass. If your plane stalls when test gliding, add nose weight until the glide is as flat as possible. Conversely, if it dives, remove nose weight or add tail weight to obtain the flat glide.

After you're used to your radio and the plane and after you can make good smooth easy landings, the next step is some altitude! Unless you have an 'expert' free flight or sailplane specialist available, forget the hand tow as it is inviting disaster. (If you do have an expert listen to him — you don't need me!) Also, forget the 'piggy-back' and power model tows as they're for real experts and that also leaves me out! What it leaves you with is the high start. Drive a substantial stake into the ground, attach one end of 100" x 3/16" surgical tubing such that it doesn't chafe. Tie a 300" x 30 lb. test monofilament line to the other end so it doesn't chafe. To the monofilament attach a small (approximately 12" in diameter) parachute and to, or through, (depending on strength) the apex of the chute attach a short line with a tow ring ('pop-top' can ring will do). With the ring on your tow hook (and the tow hook directly under the leading edge of the wing for these first attempts), the radio on and working and your plane in left hand (if controls on right stick), back up until you're chicken and let go into the wind. The plane should climb steadily at a 35° — 45° angle and level off before it's directly over the stake, at which time the tow ring will slide off the hook and you are on your way. If the plane didn't climb like that you didn't stretch it enough, the plane is too heavy, or the Center of Gravity is wrong. So fix whatever is the matter and try again. On the other hand, if it climbs too steeply give down elevator

to get off the line (likewise, if in trouble or if it veers sharply left or right) then readjust the Center of Gravity back or the tow hook forward. Normal rudder commands are used to obtain a straight climb and, with practice and a light breeze, you can 'fly' back and forth, to and fro on the towline after level off and before release.

After the release, look for thermals by adjusting your plane for slow flight (short of a stall) and a turn left or right. My plane is set up so that the elevator is neutral with the elevator trim in full down and rudder neutral with full left. Thus, when released from towline, I run in full up trim and full right trim which results in an automatic right turn. As you soar about searching for a thermal, you may see the left wing rise sharply (meaning the thermal is on the plane's left) so turn left to enter the column of rising air. (The opposite applies to the right side, OK?) Also, if the nose suddenly pitches up, turn either way as the thermal is straight ahead.

Once in the thermal continue the turn (tightest at low altitude and wider higher you glider guider!!). Take care not to drift too far downwind (too far is when you can't return to land safely at your feet) as it's not very professional and bad for our new public image to have to go more than about 30 feet to get your machine! Finally, to escape the thermal you simply set the ship for straight flight with slight nose down trim and fly home. Do not spin or spiral as it is hard on the wings (most fold where they once were rigid) and, also by so doing, you are still in the thermal (column of rising air of small diameter low to the ground and so huge and powerful at higher altitudes that full sized sailplanes can to to 40,000 feet or so in them). The point is to simply fly out by going straight ahead. Usually while circling in a thermal your plane will drift downwind so, when leaving, fly way upwind, then do a 180° turn and fly back and forth so that the descent looks like a series of inclined ramps instead of a spiral staircase.

Landing sailplanes is a real art especially when you are trying for accuracy! I saw many awful landings (which were on the spot) at the Nats. They were done using too much down elevator. I never did manage to hit the spot so, again, have no expertise of my own. From what I saw, though, the nicest landings were done exactly like full size planes do — with a downwind

Look for the **NYROD**[®] trademark on every Push Rod!

NYROD[®]

**NOW BETTER
THAN EVER!**

**SU-PR-LINE
PRODUCTS**

"THE Flexible PUSH ROD"

PLAINFIELD, ILL. 60544

SLIM PAK - packaged straight - & COIL PAK AVAILABLE

pass, turn to base leg, turn on final approach and land. This procedure allowed the skillful pilot to 'play' the final turns to allow a gentle spot landing as opposed to a 'spear' landing which occasionally resulted in a 'flip-over' in which case no points were given.

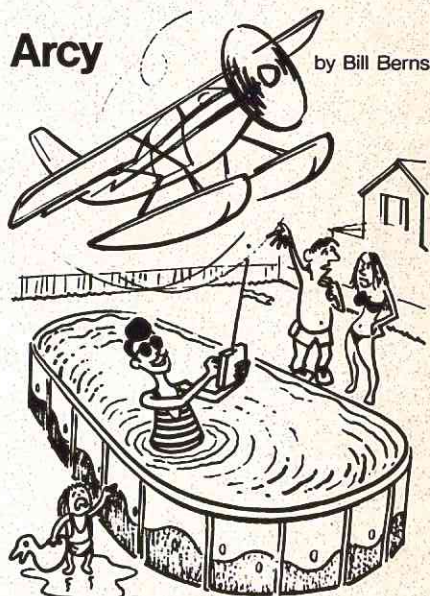
So, there you have the fundamentals of thermal flight. About slope soaring I know naught except that I did read someone has actually slope soared a Formula 1 pylon racer which is why I'm not going to throw my racers away. Essentially all you must do is; in the face of a gale, step forward to the cliff edge and throw your plane over. It is supposed to climb like mad whereupon you commence to make all turns into the wind and fly until the batteries fail!

Back to the thermal game. The Hi-Start is an easy, relaxed one man operation. Next in line is the power winch - gas or electric. And finally the hand tow. The key factor in all these is your plane's wing strength! The effect of your airfoil is to create a terrific upward bending force when the fuselage is on the towline. Naturally, if it is too great a force, you will

hear a loud report - followed by wing separation and down come the remains acting for all the world like a ballistic missile at terminal velocity. To prevent this you must lessen the towline pull; on a Hi-Start you cannot move the stake so you must shallow out the climb with judicious application of down elevator. On an electric winch you 'pulse' the on-off switch such that the effect is a slower tow - or, if necessary, stop altogether. Finally, on a hand tow the towee stops running or, occasionally, backs up if necessary. I have never seen a gas powered winch and can offer no help regarding it.

As for the friendly thermal, they abound everywhere and nearly all the time. Their source is any area hotter than the surrounding area. Chimneys, asphalt parking lots, plowed fields, etc., all start the thermal. Where the 'game' comes in is finding one, staying in it and finally remembering that close by there is a down draft which is replacing the rising air of the thermal. The little puffy white clouds are thermal caps and will draw your plane to them. The black bottom clouds are beginning downdrafts so avoid them. There are hundreds of books written

about sailing in the ocean of air. I can't speak for you but, as for me, I shall go forth and glean much information about this at the good old public library (it's just past Joe's Bar and Pool Hall), so see you at the flying field. Bring your sailplane and never mind the fuel and batteries! □



"Well, how did I know when he asked if he could use our pool?"

**R/andy's
Corner**

R/C SUPPLIES

406 WEST WASHINGTON • HOOPESTON • ILLINOIS • 60942
PHONE (217) 283-5710 AFTER 4:00 P.M.



MonoKote 3—\$18.00, 4—\$23.00, 10—\$55.00, Trans. 4—\$25.60; GRAUPNER Clou—\$31.00, Amigo II—\$18.50; DUMAS Mod-Pod—\$12.00, Evolution—\$15.00; MIDWEST Little Stik—\$16.50, Tri-Squire—\$13.50, Sky Squire, Aristo-Cat—\$23.50, TOP FLITE Mustang, Quick-Fli—\$28.00, Contender—\$25.50, Headmaster—\$12.50, Top Dawg—\$10.50, Tarus—\$27.00, Tauri—\$18.00; GOLDBERG Sr. Falcon, Skylane 62—\$25.50, Ranger 42—\$14.50, Falcon 56—\$15.00, Skylark—\$16.50; VK CHEROKEE, Navajo—\$28.00, Triplane—\$35.00, Cherokee Babe—\$20.00; A-JUSTO-JIG—\$29.99; JENSEN Ugly Stik—\$40.00; STERLING Lancer—\$18.50, Rimfire—\$21.00, Schweizer 1-26D—\$15.00, 1-34—\$20.00, PENFORD M-1—\$19.00, M-2—\$32.00; J & J Eyeball—\$40.00 @ 2/\$78.00; WEBRA .61—\$61.00, .40—\$45.00; VECO .61—\$43.00, .50—\$31.50, .19—\$21.00; K & B .40—\$24.50; HP .61—\$56.50; Enya .15—\$12.00; FOX .36XR/C—\$16.80, .78—\$40.00, .40—\$18.25; KRAFT servos \$32.00, 4/\$116.00, retracts with amplifier—\$80.00, without amp.—\$58.50. TOP FLITE PROPS SPECIAL 48 or more less 35%; CANYON Schweizer 1-26—\$22.00; Sileron 10/yds./\$9.50; Hobbypoxy II—\$2.40, II—\$6.30; Fox idle bar long glow plugs 6/\$4.00; BRIDI Kaos—\$38.50, Trainer—\$37.00; WINDWARD GLIDER—\$18.50; SUPER TIGRE Bluehead G.60—\$42.00; MERCO .61—\$37.50, .49—\$34.00, .29—\$21.00; MRC servos linear \$28.00, rotary \$25.00, F710—\$236.50 (with linear servos on 27); Du-Bro ball wrench set—\$3.00; TF trim sheets 10/\$6.30. Kavan muffler and adapter \$9.00. Enya .60 III—\$40.00; DU-BRO-Sea Bird, Sportsman 600, Sky Master—\$45.00; WING retracts \$15.00 ea., 3/\$44.00, DREMEL Moto Shop complete—\$43.00; HOT LINE - Comanche, Mooney Chapparat—\$44.00; DEVCON 3/\$4.80.

ALL POSTPAID — INSURANCE ADD \$.30



Your old R/C set is worth a lot to you at Hobby World when you trade to a newer set of your choice. Trading it in the "Bob Reuther Way" is simple! Send your old gear to me, Bob Reuther, for appraisal . . . you will be told what trade-in value it has . . . if it isn't worth what you think it is, I'll send it back to you and the postage will be on me.

When you get my deal, you'll be happy you let Hobby World show you how to save the BOB REUTHER WAY!

BOB REUTHER'S **HOBBY WORLD**

6602 HIGHWAY 100
NASHVILLE, TENNESSEE 37205, U.S.A.
24-HOURS
DAY (615) 356-1225
NIGHT (615) 352-1450

**TENNESSEE'S
LARGEST
SHOP**

Service is our Strong Point

BANKAMERICARD and MASTER CHARGE credit card orders accepted.

NATIONAL SOARING TOURNAMENT

From page 64

Only one word is needed to describe the weather — MISERABLE!

And only one word is needed to describe the contestants — FANTASTIC!

For a slightly longer description, yet brief and accurate, I'd like to quote from the Newsletter of the Torrey Pines Gulls of San Diego. Irv Stafford said it all when he wrote:

"Onto a 200 by 2000 ft. runway, place approximately 150 assorted R/C gliders, 114 tournament entrants (8 scale); 100 to 500 spectators and four winches. Add liberal amounts of experience, youthful vitality, maturity, skill, excitement, club rivalry and the individual competitive spirit, sprinkle in ground turbulence, boomer thermals, 25 knot gusts and dust devils; cover with a blanket of warm friendship and cameraderie, stir well with a 10-15 knot wind and bake under cloudless skies for 2 days. This is the recipe for the 1971 LSF Soaring Tournament."

The pictures on the accompanying pages tell the story more graphically. But here are a couple of items as I observed the action:

1. Even with four winches, when you have more than 100 contestants, the time to complete a round is too long. Some way has to be devised to speed up the action. And when duration is an objective, it looks like the only way is to reduce the number of contestants, or use two sites several miles apart — which means more problems for the officials.
2. The speed and duration events were reduced to one each, with two accuracy events included. Main reason was the logistics involved in setting up the speed course. Two public address systems would have helped solve it.
3. The amount of litter that collects always seems to be bigger than the trash cans available. This always means the contest sponsors wind up on "cleanup detail," and that's mighty small thanks for the work they put in.

But — as you must know by now — in spite of the minor problems, which hopefully will be solved by next year, this was probably the greatest R/C Soaring Tournament yet staged in

DESIGNED BY MARK SMITH, 1ST PLACE WINNER CLASS A SOARING, 1971 SOARING NATIONALS.

Windward by **MARK'S MODELS**

1971 R/C SOARING
NATIONALS
STANDARD CLASS
CHICAGO, ILL.
**** 1ST PLACE ****
WINNER

1971 WESTERN R/C
SOARING CHAMPIONSHIPS
ENDURANCE PRECISION
SOUTHERN CALIF.

\$22⁹⁵

Dealer inquiries invited. California residents add state tax. Price subject to change without notice.

SPECIFICATIONS

WING SPAN 72.00 in.
WING AREA 532.00 sq. in.
LENGTH 41.00 in.
WEIGHT 24.00 oz. (Orbit PS-3)

ALL BALSA CONSTRUCTION • COMPLETE INSTRUCTION BOOK • CLEAR.
EASY TO FOLLOW PLANS • TESTED, APPROVED AND RECOMMENDED BY RCM.

MARK'S MODELS, P.O. BOX 2134, ESCONDIDO, CALIFORNIA 92025

the United States – or, for that matter, in the world. Consider, for example, that five men tied for first in the soaring event, and in the flyoff, another tie occurred, requiring a second flyoff before Rick Walters nosed out John Donelson to win.

Here are the results:

OVERALL STANDINGS

PLACE	NAME	PTS
1.	RICK WALTERS	3590
2.	J. BREHM	3439
3.	JOHN DONELSON	3415
4.	CHRIS MAUNTZ	3388
5.	PAUL CHRISTIAN	3054

PRECISION CATEGORY

1.	RICK WALTERS	1980
2.	CHRIS MAUNTZ	1835
3.	STU HORTEN	1700
4.	JOHN DONELSON	1675
5.	JAY BREHM	1620

DURATION CATEGORY

1.	RICK WALTERS	1000
2.	JOHN DONELSON	1000
3.	ED REMPALSKI	1000
4.	BOB HAHN	1000
5.	MARK SMITH	1000

(Ranking reflects results of five-man flyoff)

DISTANCE CATEGORY

1.	GEORGE STEINER	1000
2.	JOHN BAXTER	957
3.	PAUL CHRISTIAN	914
4.	JAY BREHM	869
4.	MARSHALL WATSON	869
4.	BOB HAHN	869

SCALE

1.	JOHN DONELSON	1973
2.	BOB THACKER	1723
3.	BOB ANDRIS	1678
4.	MARSHALL WATSON	1617
5.	R. BOUCHER	1429

Let the pictures tell the story – except special mention for Le Gray, one of the founding fathers of LSF, whose rare wit and dry humor made all the attendees at the banquet overlook the somewhat inadequate fare and made the banquet a success in sociability and friendship.

And as for me? Well, I can hardly wait until next year! □



You're Looking at the Pro-Line Systems

the ones the winners use

QUALITY PERFORMANCE RELIABILITY

EXCLUSIVE



Retractable Landing Gear Sets Now Available!

For the Easy Winning Touch

write for our new 1971 Catalog Free!

Dealer Inquiries Invited



P.O. Box 7733 Phoenix, Arizona 85011 Phone (602) 266-5471

Forget ABOUT LIST PRICES

TOP FLITE – P-51 MUSTANG
Reg. \$39.95 NOW \$29.95

JOY PRODUCTS – JN4D JENNY
Reg. \$49.95 NOW \$39.95

HOT LINE – MOONEY
Reg. \$55.00 NOW \$42.95

ENYA .60III BB TV
Reg. \$59.95 NOW \$42.50

One of Michigans finest hobby dealers has gone INTERNATIONAL. Send for our complete mail order discount listing. Over 400 manufacturers and THOUSANDS of Items. All at discount prices. Send check or money order. Sorry, no COD orders. Your order will be on its way to you the same day we receive it. Satisfaction is GUARANTEED.

ALL AMERICAN HOBBY
20417 Stafford
Mount Clemens, Michigan 48043

*Kraft – MRC – Mini-X – Proline – EK – Webra – Enya – K & B
HP – Merco – Fox – Robbe – Hegi – Graupner – Andrews – Du-Bro
Debolt – Dumas – Goldberg – Hot Line – J & J
many, many more.*



= EASY TO BUILD



EXCELLENT FLIGHT CAPABILITY



ATTRACTIVELY PRICED =

Flight performance is very outstanding and KM Co. kits are used by more than 90% of U/C enthusiasts in Japan.

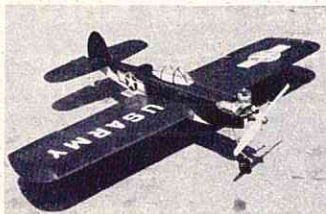
ARE YOU FAMILIAR WITH
U-CONTROL AIRPLANE KITS SOLD UNDER THIS TRADEMARK?
THESE ARE USED BY THOUSANDS OF FANS AROUND THE WORLD.

Semi-scale & Stunt airplanes with more than 50 different models,
complete with all necessary components.

DRAWING SHOWING ACTUAL SIZE COMPONENTS IS PROVIDED TO FACILITATE ASSEMBLING.

TRY A KM Co. U/C KIT

AND YOU WILL REALIZE IT'S WHAT YOU HAVE BEEN LOOKING FOR.



Manufactured by

KIMURA MODEL CO., LTD.

6-10, 2-Chome, Honjo, Sumida-Ku, Tokyo, Japan

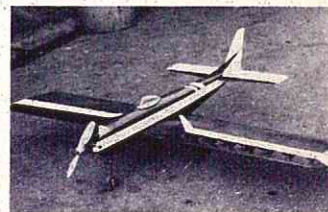
Telephone: (03) 622-1049

Exported by

S. KOSAKA CORPORATION

P.O. Box No. 10 Abeno, Osaka, Japan

Distributors Invited • Write for Catalogue and export price list



SUNDAY FLIER

by ken willard

The mail has been pretty heavy recently. Most of you have enclosed a return envelope with postage, and I've sent answers directly. Some of you haven't, so unless your questions were of general interest to modelers I haven't been able to answer because of the volume. But several of your letters have been about the same problems. So, I'll try to answer them all at once. Some of them, anyway.

For openers, how about this one: "There are so many systems advertised that I don't know what to believe. Which one do you recommend?"

Now there's a question which could make me one friend in the manufacturers' fraternity, and umpteen enemies. Yet in its own way, it is a fair question. So how can I answer it, and still stay on reasonably good terms with the trade? The only way I know is to answer as truthfully as I know how.

During the past several years, I've used many makes — Cannon, Orbit, Micro Avionics, Bonner, Kraft, Citizenship, to name a few. And there are others, now long departed — Deltron, Babcock, Pioneer, Min-X (from the superregen era) and Otation. By and large, they all worked — and at one time or another, they all failed. Sometimes because I goofed, other times

because the unit I had, came with a defective or short-lived component. And there were a couple of times when inadequate circuit design showed up. Not that I found it, you understand. Just that I was a victim of the malfunction which resulted. In both cases, when I reported the incident to the manufacturer, complete with symptoms, he was able to analyze the problem and correct it.

I do not know of any manufacturer in business today who does not honestly believe his equipment is the best you can buy at the price which he asks for it. Also, I do not know any manufacturer who does not have his share of units which do not perform to specification and, somehow, gets through his inspection and test and into the hands of a consumer. It's possible there is one — Pro-Line. They advertise that their equipment costs more (and it does) because it's made better. And I have never personally heard of an operational failure with Pro-Line equipment, although I know that it has been used in some very demanding programs. Pro-Line's best advertising doesn't appear in any magazine. It shows up at the flying fields. But let me hastily add that the same thing is true — although to a lesser degree, perhaps — with most of the less expensive systems.

Now although I've never personally used the Pro-Line equipment, I can recommend it because of the experience of other R/C flyers who have used it and have universally praised it. A clean sweep for Pro-Line at the '71 Nats also bears this out.

As for my personal experience,

everyone I fly with knows that I use Kraft. When the Series 70 came out, I was offered the opportunity to participate in the testing program. During the program I experienced a couple of servo problems. I wrote to the factory, told them what happened, and sent them the servo. They, in turn, fixed it and I have had no similar problems since. On completion of the test program I bought the set, and have been using it ever since, without a single failure, other than a detuning which occurred during the testing of some seaplanes when the combination of crashes and water dunking apparently did something to the receiver. This was corrected, and I've had no further problems. So, I consider the Kraft equipment to be fully reliable, and recommend it.

I am not in a position to either recommend or not recommend some of the other systems. By and large, though, I am inclined to believe that you will get what you pay for. For example, RCM reviewed the DigiAce system in the September 1971 issue. The review described the unit, and also mentioned its limitations. Perhaps these limitations preclude it for the serious precision pilot, but it will do fine for a Sunday flier. And the MRC F-713 (three for fun) certainly is moderately priced. I've never used one, but if it is as good as their other imports, it should work well. Depends on whether you want to limit yourself to three channels — as I have for many years until I designed the Wavemaster.

In the final analysis, though, perhaps the most important factor is the service which backs up the unit. They

RC MANUFACTURING

— Radio Control Division

AIRBORNE SYSTEMS IN PRODUCTION NOW

RECEIVER

Receiver uses 8 channel IC decoder.

Receiver is wired with cable connected 6 channel multicon plug block for maximum installation flexibility and safety.

8 channel operation requires only additional connectors.

Single deck 1/16" P.C. board construction in rugged nylon case for superior receiver protection.

Double tuned RF, band pass tuned IF amplifier and total AGC for outstanding performance at any range.

SERVOS

Servos use exclusive lifetime guaranteed Motorola integrated circuit.

Ceramic feedback element guaranteed for lifetime.

Versatile, powerful KPS 11 available now — others in development.

Computer selected timing circuit components.

POWER

500 MAH batteries standard, high capacity 250 MAH optional. Dual, shock protected charger.

Transmitters will be in production as soon as inventory is completed. 8 channel IC encoder will be standard on all units.

All design and production under direct supervision of Ed Thompson, whose designs since the inception of digital control have had a profound effect on the Model Industry.

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

FOR THE KIT BUILDER

Ed Thompson's new design for R/C Modeler Magazine will be offered in kit form. Delivery will be concurrent with articles (watch for them soon).

Prices to be announced. Service Center inquiries invited.



all work. But they all crash, sooner or later, and in ninety nine cases out of a hundred it is due to some outside influence over which the radio system has no control — like the pilot, mainly, and then repairs are a must. I've heard some pretty bad stories about units being at the factory for repairs for several months — or being returned with the note, "It works fine now," only to malfunction on the next flight. How much truth there is you can never tell — but reliable, fast service is just as important as the requirement that the unit work properly in the first place.

So before you buy, listen to the stories. About performance, and about service. It seems to vary according to what part of the country you live in. If the majority of modelers in your area

are satisfied with some particular brand more than the others, that's a pretty good indication of what you can expect. And I've told you what I think.

Does that answer the question?

Next question: "How do you feel about mufflers?"

Well, as you know, I've been concentrating recently on sailplanes, and the need for mufflers hasn't come up. But sometimes, in the evenings, I'll get out my Showmaster and fire up the Cox QZ .049 and fly around the front yard. Now the only complaint I've ever had was from a neighbor who griped that he didn't hear the plane and so wasn't able to get out and watch!

But — I'll bet that that same neighbor would have a completely

different gripe if I were to go out at 6 a.m. on Sunday and fire up the QZ. Sure, the decibel level is the same at 6 a.m. as it is at 6 p.m. But there's a vast difference! At 6 p.m. there's traffic, kids, dogs, lawn mowers, teenage hi-fi's, backyard gossip, and a zillion other noises. And, my neighbor is awake.

At 6 a.m. on a Sunday morning, when you're trying to sleep, any foreign noise, irrespective of the db level, will awaken you, and then keep you awake. And you resent it. What is the db level of a mosquito at three feet? Whoinell cares? It's too doggone loud!

My point is that there are times that no muffler — unless it is a total silencer, which doesn't exist — will reduce noise to a level where it doesn't



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

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

Sample issues with full-size plan and plans list may be ordered against \$1. — prepayment from

Verlag Technic und Handwerk,

Iburgstrasse 38,

D-757 Baden-Baden/Federal Republic of Germany

GLADIATOR CONQUERS 1971 SPOKANE INTERNATS



WING SPAN — 68"
AREA — 740 SQ IN
ENGINE — .60 CU IN

\$59.95

All orders prepaid or COD. Retail orders shipped postpaid. Send 25¢ for catalog.

C-Expert — 1st — Ralph Brooke
3rd — Steve Ellison
Class B — 2nd — Dennis King
Class A — 2nd — Don Miller
Best Finish — 1st — Dennis King
3rd — Ralph White

OTHER 1971 VICTORIES

PORTLAND — Class A - 3rd —
Class B - 1st — C/E - 3rd
MRRCS — Class A - 2nd — C/N - 1st
RAMS - C/E - 2nd
SRAC - C/E - 2nd
EUGENE — C/E - 1st

LET THE GLADIATOR PUT YOU IN THE WINNER'S CIRCLE.

KIT FEATURES: Joined fiberglass fuselage, foam wing cores, fiberglass wing tips and belly pan, hardware, all necessary balsa and hardwood (except wing sheeting), and detailed plans.



P.O. BOX 98851
DES MOINES, WASH.
98188
TR 8-8352

irritate. And probably the best example of such a time is early Sunday morning. Yet that is also the best time for beginners to find quiet air in which to practice since most of them have to work all the rest of the week to make the money to buy the equipment to fly on Sunday! But if the beginner persists in flying at that time, and there are houses within earshot, the inevitable result will be a loss of the flying site.

So you have to work out a compromise. And the way I see it is, that if you fly your airplanes at a time when the engine noise is acceptable to the general noise level, then perhaps a muffler is not necessary. But the evidence is overwhelming that the general noise level for a muffled engine will include most flying sites in urban

areas — and exclude an unmuffled engine.

There are times when a muffler can actually detract from the excitement and pleasure of flying. That occurs when pylon races are scheduled. The sound of a perfectly tuned engine pouring out the power is music to the racing fan — and that goes whether the races are with airplanes, cars, motorcycles, or speedboats, full size and model alike. Now if you hold the races at a scheduled time, in a location that is well publicized in advance, and with full permission of the local authorities, you will undoubtedly get some complaints, but they will not be representative of the community. And if, for the flying sessions other than racing, you tool around the sky with a muffled engine — and at a time which

is reasonable with the surrounding noise level, you will have licked most of the problems.

So don't bother to go into learned discussion of db's of airplanes versus motorbikes, lawnmowers, etc. It'll get you nowhere. Fly your airplanes, muffled, at a place — and time — that is acceptable to your community. And if you want to have a race, make the arrangements well in advance, invite everybody, and let them enjoy the thrill of the sound and speed of a hot pylon racer. Suggestion — at some time between races fly a muffled sport job, and explain the difference and why you muffle your engines except for racing. You'll make a lot of converts, just by showing that you're making a sincere effort to keep the noise level down when it is appro-

World's Finest Unit is backed by the World's Finest Service

AUTHORIZED SERVICE STATIONS:

R/C Service (Sune Jonsson)
Lavendelvägen 30
58258 Linköping, Sweden

RCS Engineering (Jerry Pullen)
11015 Fenway
Sun Valley, California 91352
Phone (213) 768-1519

Kraft Southeast (Bill Johnston)
P.O. Box 2572
1429 Flamingo Lane
Montgomery, Alabama 36105
Phone (205) 288-9726

Kraft Northeast (Tony Bonetti)
161-175 Linden Street
Hackensack, New Jersey 07601
Phone (201) 343-5008

G. G. Electronics (Gary Garabian)
497 Central Ave.
Seekonk, Mass. 02771
Phone (617) 761-6268

Redleys
Box 10095
Johannesburg
South Africa

Omega Systems (Steve Baxter)
10643 59 Street
Edmonton, Alberta, Canada
Phone (403) 466-7479

R. C. Electronics Repair Center
(Loren Tregellas - Mike Murray)
P.O. Box 2077
Wichita, Kansas 67201

Control Engineering (Denton Birch)
P.O. Box 2700
485 Greenway
Satellite Beach, Florida 32935
Phone (305) 262-6175

Antonio Baptista Rincon
Calle 79 No. 17-77 "Quinta Claret"
Maracaibo, Venezuela, South America
Phone 70772

Kohlman Co. (Dennis Kohlman)
8213 N. 29th Avenue
Phoenix, Arizona 85021
Phone (602) 997-0656

Midwest Model Supply Co.
6929 W. 59th Street
Chicago, Illinois 60638
Phone (312) 586-7101

Wintronix (Ivor W. S. Winby)
622 Miller Avenue
San Jose, California 95129
Phone (408) 257-2461

Geoff Franklin
98 Grasmere Street
Leicester, England

H & H Radio Control (Loring & Ken)
1617 Sylvan Dr.
Plano, Texas 75074
Phone (214) 424-5840-424-9357

KRAFT SYSTEMS EUROPE S.A.
(Marcel Van Gompel)
35, Rue Neuve
Huy, Belgium

Neal's R/C Service (Neal Strutzenburg)
Manson, Iowa 50563
Phone (712) 469-2427

KRAFT SYSTEMS AUSTRALIA
(Barry Angus, Brian Green)
23 Retreat Rd., Hampton 3188
Victoria, Australia

Northern Virginia R/C Service (Hal Peterson)
6501 Oakwood Drive
Falls Church, Virginia 22041
Phone (703) 256-6665

Dwight's R/C (Ken Dwight)
21 Saunders Road
Scarboro, Ontario, Canada

Kato Model Aircraft Co. Ltd.
No. 8-1, 2-Chome, Esaka-Cho.,
Suita, Osaka, 564, Japan
Phone (06) 384-2654

Sankyo Radicon Factory
No. 19, Ohara-Cho,
Itabashi-Ku, Tokyo, Japan
Phone (03) 960-7466

TV Central (Roy Hauser)
40 N.E. 28th Ave.
Portland, Oregon 97232
Phone (233-6328)

Kraft Great Lakes (Jack Yarger)
Akron/Canton Airport
P.O. Box 2113
North Canton, Ohio 44720
Phone (216) 499-8310 (24 Hours)

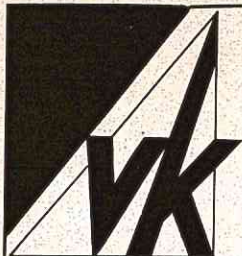
Kraft South Central (John Swanson)
2601 Lincova Drive
Nashville, Tenn. 37214
(615) 356-1225

KRAFT
SYSTEMS, INC.

Write for Free Catalog

450 WEST CALIFORNIA AVENUE, VISTA, CALIFORNIA 92083

World's Largest Manufacturer of Proportional R/C Equipment



NIEUPORT "17" WINNER!

2nd TIME AROUND



SEND SELF ADDRESSED STAMPED ENVELOPE
For Literature On Other Kits And Accessories

WIRE WHEELS

RUGGED & REALISTIC
Custom Built

TWO SIZES

4 3/8 in. Dia. and 5 in. Dia.

ONE PIECE MACHINED RIMS
DELTRIN BEARINGS



\$29.95
pr.

DEALERS -

These handcrafted items available
direct from factory only. Write.

Unpainted
\$3.50 ea.



The Captain
(SCALE: 2 INCHES = 1 FOOT)



The Rittmeister
(SCALE: 2 INCHES = 1 FOOT)

LIGHT!
RIGHT!

FRANK KNOWLES
ONT., CANADA



60 Eng. - 14" Dia., 6" Pitch Prop.

CANADIAN NATS - 1st Scale - 70,71

Rhinebeck - 1st Maneuvers - 70,71

VK MODEL AIRCRAFT CO.

12072 Main Rd., Rt.#5

Akron, N.Y. 14001

priate.

Yes. I'm in favor of mufflers at all times other than during races. Then I admit I love to hear those engines sing!

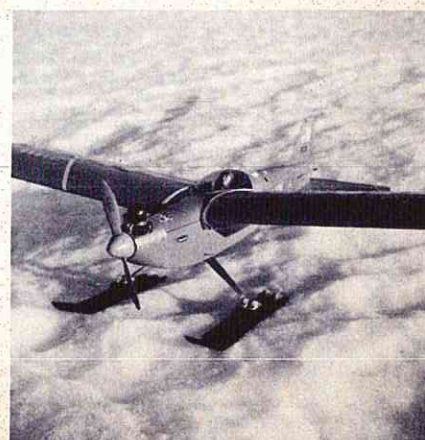
Speaking of pylon racing, I recently received a letter from H.G. Oliver, of the Spirits of St. Louis R/C Flying Club, which tells about their "Dawg" Racing.

Twenty enthusiasts built twenty "Top Dawgs" from the Top Flite kit - with individual modifications like bolt-on wings, clipped wings, even one-piece airframes with hatches for access. Sort of a "one class modified" race. They put out press releases, sent out photos, received good newspaper

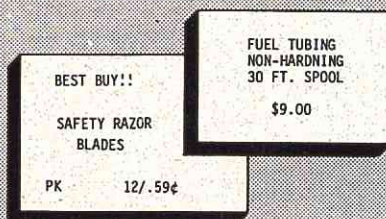
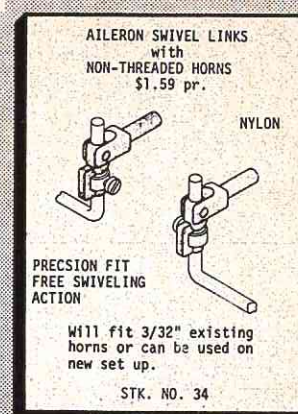
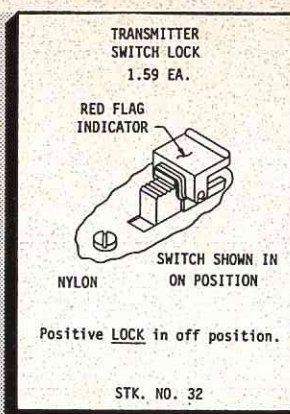
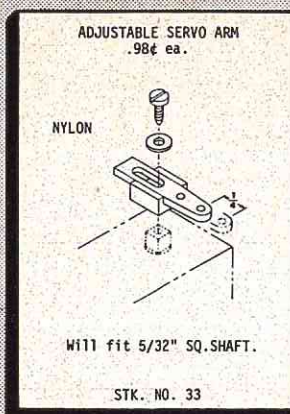
coverage, and all in all, had a very successful event. Even had a "Race Queen." Wish I had a print of the picture they had published in the St. Louis paper - twenty pilots with twenty racers - but the two photos they did send give you an idea of the thorough way they promoted the event. The sport needs more and more of this enterprising promotion, and the Spirits of St. Louis R/C Flying Club is to be commended for their efforts.

Shortly after this column appears you Sunday fliers in the central northern and midwestern states will be looking forward (??) to the winter

snows. So, just to keep in tune with the times, here's a couple of shots of Commander Phil Veatch's Top Dawg on skis, taildragger style. Note the tailski - steerable yet! Phil sent these pictures to me when he was finishing up his work on his Master's Degree (didn't tell me what subject) in Rochester, New York, where there's plenty of snow for ski-planes. Thought the photos might give some of you an idea for some winter flying. Hey - wonder if you made the skis just a mite bigger, just enough to float the plane, would it lift the tail ski out of water and then take off with the main skis? Anybody wanna' give it a try?



ALL NEW



ROCKET CITY
SPECIALTIES
103 WHOLESALE AVE. N. E.
HUNTSVILLE, ALA. 35811

R/C

Include 25¢ for postage and handling. 5 or more accessories sent postpd.

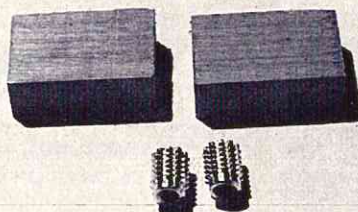
OUR COMPLETE LINE OF ACCESSORIES					
Stk. No.	Description	Price	Stk. No.	Description	Price
01	Standard Control Horns	.59 pr.	21	Nylon Strip Hinge	.59 15"
02	Long Control Horns	.79 pr.	22	Wing Bolts 1/4-20 x 1-1/2"	.59 pr.
03	Mini Control Horns	.79 pr.	23	Wing Bolts 10-24 x 1"	.59 pr.
04	Easy Action Wheel Brakes	2.00 pr.	24	Fuel Tubing-Large-30 ft. Sp1	9.00 ea.
05	Aileron Links	.79 pr.	25	Nose Gear Bracket	.59 ea.
06	Push Rod Ends	.59 pr.	26	Control Stick Tips (Kraft)	.59 pr.
07	Push Rod Retainers	.59 4	27	Antenna Exit	.59 4
08	Push Rod Exits	.59 4	28	Throttle Detent (Kraft)	1.29 ea.
09	Steering Arm	.59 ea.	29	Aileron Swivel Links w/Horns	1.59 pr.
10	Shock Absorbing Steering Arm	.59 ea.	30	Safety Back Razor Blades	.59 12
11	Missing Link	.79 ea.	31	Servo Output Arms (Kraft)	.98 2
12	Missing Link w/o hardware	.79 pr.	32	Transmitter Switch Lock	1.59 ea.
13	Dual Output Servo Screw	.59 3	33	Adjustable Servo Arm	.98¢ ea.
14	Quick Mount Servo Tape	.79 yd.	34	ail. Swivel Links/Non-Thd.Hn.	1.59 pr.
15	Throttle Eze	.98 ea.	35		
16	Bellcrank for Orbit Servo	.98 ea.	36		
17	Connector Locks	.79 4	37		
18	Override Device (Kraft)	.59 ea.	38		
19	Override Device (World Eng.)	.59 ea.	39		
20	Override Device (Log III)	.59 ea.	40		

WATCH HERE FOR
MORE TO COME !!!!!

TAKE A LOOK AT THIS..

Kaiser Models, 1216 Juneau Drive, Billings, Montana 59102, has produced a new item called E-Z wing mounts. They consist of two birch blocks and two aluminum inserts threaded to take 1/4" diameter nylon wing mounting bolts. With these, anyone can obtain proper alignment for mounting the wings to the fuselage on one try. The wood blocks are temporarily tack glued in the fuselage and the wing is then placed in position for proper mounting. Using a 1/4" diameter drill bit, and having the holes in the wing act as a guide, you simply drill the

holes into the birch block. The two blocks are then broken free and the holes re-drilled with a 5/16" drill bit. The aluminum inserts are placed in the hole and pounded down with a hammer and then the units are epoxied into place. E-Z wing mounts are perfect for beginners and experienced builders alike and you will no longer experience any trouble with the bolt and threaded hole being out of line. Retail price will be 50 cents a set. Tested, Approved, and Recommended by RCM.



One of the strongest trends in hobbying today is the use of high visibility colors on the wing tips and tail sections of R/C models. The result is sharply increased interest for participants and spectators as well as higher

visibility. Pactra Industries, Inc., 6725 Sunset Blvd., Los Angeles, California 90028, as a paint manufacturer, was one of the first to feel the fluorescent trend. Several months ago intensive work was begun on a new formula that would be compatible with the materials used on model aircraft as well as with the company's own hot fuel proof Aero Gloss Dope, long a standard finish for model airplanes. The four most wanted fluorescent colors and undercoater and thinner are now available. To indicate their affinity with Aero Gloss, they have been given the name of AeroGlo. As



AT LAST. A TWIN THAT'S EVERYTHING A TWIN IS SUPPOSED TO BE.



The Northfield-Ross Twin 60: Compact. Lightweight. Powerful.

And—most important of all—so vibration-free that it cannot possibly cause radio failure.

It's the first twin-cylinder engine that actually performs the way a twin-cylinder engine *should* perform.

And it does because famed engine-designer Louis Ross has developed an entirely new design, and has joined forces with a company known for high-precision manufacturing, the Northfield Precision Instrument Corporation, to produce what Peter Chinn in *Model Airplane News* called a "fascinating piece of work."

All the fascinating details are contained in a new brochure we'll be happy to send you absolutely free.

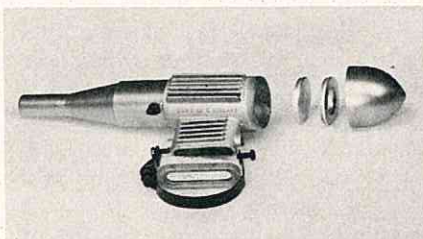
Just write to Northfield Precision Instrument Corp., 4400 Austin Blvd., Island Park, N.Y. 11558.



well as being hot fuel proof, this new product has a further advantage of being non chipping under stress. Mercury Red and Apollo Orange, and the official Mil Spec shades, together with Saturn Yellow and Gemini Green are being manufactured in 4 oz. jars to retail at \$1.00 and 1 oz. jars to retail at 39 cents. Each of the colors should be used in connection with Aero Gloss White Undercoater which gives the fluorescent tones their maximum brilliance.

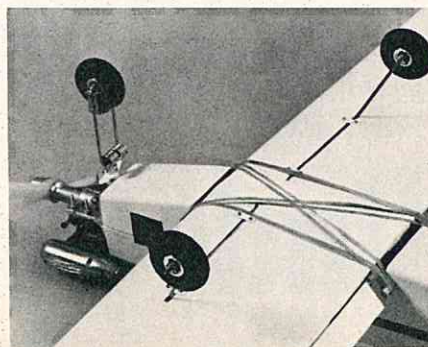
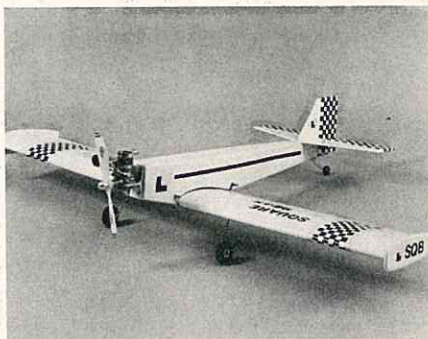
Royal Products Corporation, 6190 E. Evans Avenue, Denver, Colorado 80222, is the U.S. distributor for the Kavan Muffler. By using a series of adapters, this muffler can fit many different engines. Each Kavan Muffler comes equipped with two disc insert options as shown in the photograph. The venturi disc eliminates any power loss and still subdues the noise to a tolerable level. The solid disc causes a slight power loss and increases the resulting amount of silence. The muffler features prime hold, light construction, oil injection spout, and pressure fitting adapter. Royal Products tested the prototype muffler on a O.S. Max .60 and actually experienced a slight increase in power when using the

venturi disc. As expected, the solid disc did cause a slight decrease in power while also reducing the noise level. When testing the same muffler on a Webra .61, the power remained about the same. Price of the muffler is \$9.95 with adapters priced at \$1.95 each, available for the following engines: Veco .61, Webra .61, Enya .60 MK III, Merco .61, MK I, Merco .61, MK II, O.S. Max .60, Super Tigre .51-.60, Super Tigre G-60-F1-RV, Taipan .61, HP .61, and the Rossi .60. Muffler extensions are also available.



The Mini-Flite Company, 48 Princeton St., Red Bank, N.J. 07701, is announcing the introduction of a new balsa wood kit line. First deliveries are expected in December 1971 of a 55" span Bucker Jungmeister. Mini-Flite is also releasing the Square Bear, a 47" ABS plastic ARF, full house .19-.30 size low wing trainer. The Bear will be

convertible from a tail dragger to trike gear by simply reversing the main gear and adding a steerable nose gear of your choice. The Bear will accommodate virtually any size servo. Flying weight is 3½-4 lbs. Mini-Flite has also just acquired the entire stock of Jeco



TIRED

of being put on and put off by so-called fast service mail-order dealers? Tired of sending off an order and then waiting—waiting for an answer—sending your money and hoping it wasn't lost—even waiting weeks or months just to get a catalog?

There's really no need for any of this but there are reasons.

If you order from a big diversified dealer, your order probably goes through three or four people before it's shipped—there's all the paperwork—there's the big warehouse to go through. Plus, flying models is only a part of their business. All this causes delay even if they're trying hard.

If you order from one of the relatively small hobby shops that advertise nationally, you avoid the problems the big dealers have, but you probably won't get any better service. The small stores simply aren't set up for a high volume mail order operation. Their biggest problem is maintaining an adequate inventory—they might even have to take your money and then go out and try to buy what you want. Again, you end up waiting.

Everybody has problems, but you don't have to be put upon because of someone else's problems. lindco ended all these needless delays—ended your supply problems—and ended the poor service that's given mail order a bad name. lindco was organized to give you the fastest possible service, the lowest possible prices, to handle only flying models and to stock them in depth.

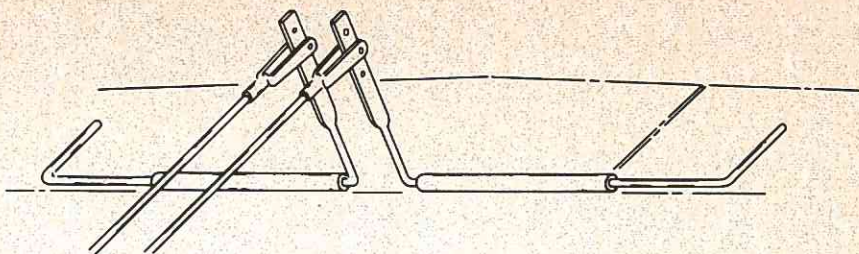
If you order from lindco, and send a money order, your order is filled within 12 hours after it's received—and 80% of you will have it 72 hours later! If out of stock, you'll get an immediate cash refund—you'll never get a backorder or substitute.

Get lindco's catalog. Read the two pages of policy and shipping information. Then end your problems—deal with lindco.

FREE DISCOUNT CATALOG

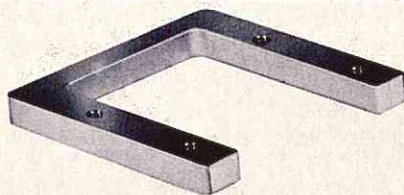
lindco

BOX 543, SOQUEL, CA. 95073



Imports and will continue to import the Graupner and Hagi lines as his successor to Jeco. Anyone wishing to order Graupner or Hagi kits can do so from Mini-Flite Company, 48 Princeton St., Red Bank, N.J. 07701.

A new Engine Mount Nut Plate has been designed by K & B Manufacturing, Division of Aurora Products Corp., 12152 Woodruff Avenue, Downey, California 90241, to be used with their Veco .61 Series 71 engines. Pre-drilled and tapped with 6-32 thread, it fits under the hardwood beam engine mount. The cross bar created by the "U" shape of the Nut Plate ties the beam mounts together. Stamped from 3/16" aluminum, it is sturdy and increases rigidity while it reduces vibration. Thus, engine, engine-mount, and plane become an integral unit. This Nut Plate is available at your hobby shops for 89 cents. Also available is an undrilled Nut Plate for most popular .60's priced at 79 cents.



A Strip Aileron Linkage, of a new and simplified design, has been announced by Sterling Models, Inc., of Philadelphia, Penn. Zinc plated carbon steel is used for the rods, which have been swagged at one end with a number of holes provided for precise adjustment to suit any model. A special size virgin nylon tubing provides a bearing surface which is smooth, positive, drag-free, and free of electronic noise. The opposite end of the steel rod is bent to provide a mounting spur. Sterling claims that this Linkage will withstand any G-force used on modeling today without fear of failure as may be occasionally experienced on multiple-part strip aileron linkage installations. The sketch shows how the installation is made by drilling a hole and inserting

the spur in the strip aileron secured by cement. Nylon tubing is cloth wrapped and securely cemented to the trailing edge of the wing. The alignment of the linkage is positive and simple. Suggested connections are made with Sterling Nylon Ny-Link Clevis and rods, as shown in the sketch. Sterling's #115 Strip Aileron Link comes in a set of one each left and right and is now available at all hobby shops for 59 cents, complete with installation instructions. Tested, Approved and Recommended by RCM.

Bevco, P.O. Box 5023, Glendale, California 91201, has an illustrated 20 page catalog which describes their complete line of quality metric hand tools and sets. This catalog features a wide variety of precision made metric tools and sets for craftsmen and modelers. Listed are measuring devices, measuring microscopes, wrenches, tap and die sets, nut drivers, hex keys, torque tools, socket sets and a broad selection of anvils, hammers, scissors, drawplates, tapping dies, punches, gauges and burrs, as well as a wide variety of the famed EREM brand of pliers, cutters, tweezers, screwdrivers, vises, saw frames, deburring tools, and files. Price of the catalog is 50 cents, refundable with your first order to Bevco.

Bevco

P.O. BOX 5023 • GLENDALE, CALIFORNIA 91201

METRIC tools



Better jobs begin with the right tools

The Link Trainer Company, 14046

The Only EASY-DOES-IT Epoxy Glue!



Formula 2

The true epoxy glue that modernized model building. For balsa, styrofoam, laminating, finishing. The multi-purpose epoxy for every use. Always flexible, fuel-proof, water-proof, strong. Made especially for the "Easy-Does-It" Methods.

Formula 2

Working time: 45 minutes
Curing time: 3 hours
Two-tube set (8 oz.): \$3

Try these other Hobbypoxy Glues

Formula 1

the Original epoxy glue
Working time: 15 minutes
Curing time: 1 hour
Two-tube set: \$1

Formula 4 QUICK-FIX

NOW IN TUBES TOO
Working time: 4 minutes
Curing time: 15 minutes
Two-tube set (2 oz. net wt.): \$2
Five double pocket packets: \$1

HOBBYPOXY PRODUCTS

Div. Pettit Paint Co., Inc.
507 MAIN ST., BELLEVILLE, N. J. 07109

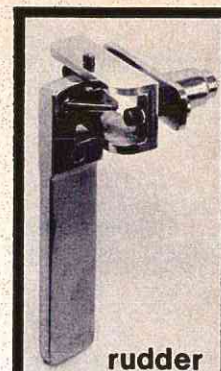
E. Oak, Whittier, California 90605, is producing framed up aircraft of some of today's most popular R/C models. These aircraft are individually framed up from the original plans and ready for sanding and installation of hardware, covering, and your radio equipment. Prices range from approximately \$55.00 for the ever popular Ugly Stik to \$80.00 and \$85.00 for aircraft such as the Sun Fli IV, Kaos, and III Perfection. These are available to dealers throughout the country at dealer discount and, if your dealer does not carry a Link model in stock, you may order direct from the Link Trainer Company. However, the Company specifies that you must give the name of your local hobby shop dealer since full credit for the sale will be given to your local dealer and the dealer discount remitted to him. For further information write direct to the Link Trainer Company.

Also from Royal Products Company, 6190 E. Evans Avenue, Denver, Colorado 80222, is an imported Italian Cessna 182, designed for .45-.61 engines, sporting a 72½" wing span. A fiberglass fuselage is provided in the kit which is 54¼" long. Total wing area is 677 sq. in. This is a complete kit of a very popular scale model, complete with all hardware and accessories. Price from Royal and their dealers is \$99.95.



New from Taran Products, 466 Giannini Drive, Santa Clara, California 95051, is a Hi-Volume Fuel Pump, which is designed to fit right in the top of your gallon fuel can. A replacement lid with a cutout in the center is provided for your fuel can along with a sturdy metal fuel pump that delivers 1 oz. of fuel per manual stroke. This is an excellent and most convenient fuel pump which is extremely well made and durable and should provide years of trouble free service. Priced at \$6.95, it is Tested, Approved and Recommended by RCM. □

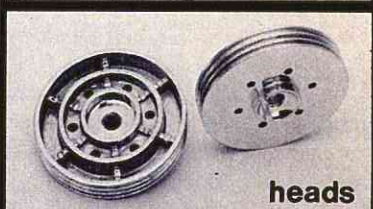
What's Our Line?



rudder



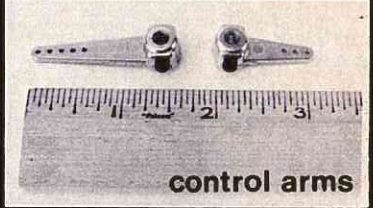
skegs



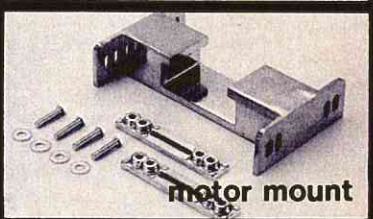
heads



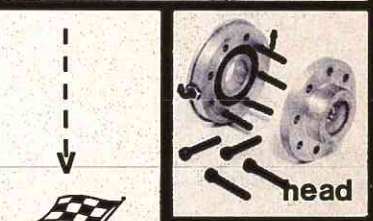
struts



control arms



motor mount



head



Dept. R
10216 PEARMAIN ST OAKLAND CA 94603
CUSTOM MODEL BOATING HARDWARE
Free catalog upon request
Dealer inquires invited

STATEMENT OF OWNERSHIP
MANAGEMENT AND CIRCULATION
(Act of October 23, 1962; Section 4369,
Title 39, United States Code)

1. Date of Filing: September 24, 1971.
2. Title of Publication: R/C Modeler Magazine.
3. Frequency of issue: Monthly
4. Location of known office of publication: 171 W. Sierra Madre Blvd., Sierra Madre, Los Angeles, Ca. 91024.
5. Location of the Headquarters or General Business offices of the Publishers: 171 W. Sierra Madre Blvd., Sierra Madre, Los Angeles, Ca. 91024.
6. Publisher: R/C Modeler Corporation: 171 W. Sierra Madre Blvd., Sierra Madre, Ca. 91024. Editor: Donald W. Dewey, 171 W. Sierra Madre Blvd., Sierra Madre, Ca. 91024. Managing Editor: Patricia E. Crews, 171 W. Sierra Madre Blvd., Sierra Madre, Ca. 91024.
7. Owner: R/C Modeler Corporation, 171 W. Sierra Madre Blvd., Sierra Madre, Ca. 91024. Stockholders owning or holding 1 percent or more of total amount of stock are: Donald W. Dewey, 1325 N. Michillinda Ave., Pasadena, Ca.; Patricia E. Crews, 289 E. Grandview Ave., Sierra Madre, Ca.; Charles Cunningham, 5333 Wooten Dr., Ft. Worth, Texas; Richard Ludden, 1965 Liliano Dr., Sierra Madre, Ca.; Ken Willard, 665 Riviera Dr., Los Altos, Ca.; Dick Kidd, 1723 Morada Pl., Altadena, Ca.
8. The known bondholders, Mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None.
9. Paragraphs 7 and 8 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner: Names and addresses of individuals who are stockholders of a corporation which itself is a stockholder or holder of bonds, mortgages or other securities of the publishing corporation have been included in paragraphs 7 and 8 when the interests of such individuals are equivalent to 1 per cent or more of the total amount of the stock or securities of the publishing corporation.

10.	Average no. copies each issue during preceding 12 months.	Single issue nearest to filing date.
A.	Total no. copies printed (net press run) 66,163	70,000
B.	Paid circulation	
1.	Sales through dealers and carriers, street vendors and counter sales. 50,000	50,388
2.	Mail subscriptions 12,000	13,856
C.	Total paid circulation 62,000	64,244
D.	Free distribution by mail, carrier or other means.	
1.	Samples, complimentary and other free copies. 2,000	3,000
2.	Copies distributed to news agents, but not sold. 200	200
E.	Total distribution (sum of C & D) 64,200	67,444
F.	Office use, leftover, unaccounted, spoiled after printing. 1,963	2,556
G.	Total (sum of E and F — should equal net press run shown in A) 66,163	70,000

I certify that the statements made by me above are correct and complete.

Patricia E. Crews

HIGH POWER KPS-9 SERVOS \$24.95

Silicon Motor Driver Transistors Guaranteed 5 Years KPS-9 . . . Still the most versatile servo ever offered for Radio Control, now with increased power. May be used with any of the systems below after we fit with the proper plug and adjust centering to match your system. These BRAND NEW servos, assembled at the Kraft factory, have been updated with SILICON output transistors of the high current MPS 6560 series. Order by plug type and mention the brand and year of your radio system.

4-pin MULTICON	4-pin BRUNNER
Kraft Series 70 or 71	Kraft Gold Medal
Classic '70 (1971 version)	PCS 4 Channel
Orbit or Micro 70 or 71	Classic '70 (late 70, early 71)
4-pin HEATHKIT	6-pin FLAT BLADE
Heathkit GD-19	Kraft 67 and earlier
Heathkit GD-57	PCS 5 Channel
	Heathkit GD-47

Guaranteed 90 days against defects in parts or workmanship. While they last—\$24.95 EACH or 4 for \$96.00, prepaid USA.

Contact Radio Guidance Systems
7160 Wheatland Road N.E., Salem, Oregon 97303

WANT AN RCM DECAL?



Send a self-addressed
stamped envelope to: RCM DECALS
P.O. Box 487, Sierra Madre, Calif. 91024

SOARING

From page 61

group, but was modified to eliminate the eye bolt they use to guide the line.

John Dillon, of Selma, California, built the RCM Can Winch after it appeared in the magazine and decided that he needed a tow hook for his Windspiel. The following details are for John's Quick and Dirty E-Z Mount Tow Hook.

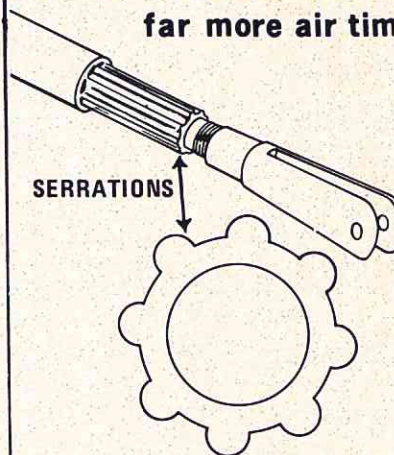
First, take a 4" x 4" piece of tin and fold it in half. An old fuel can works ideally for this purpose. Cut the tin as shown in the drawing. Mount it to a fiberglass or plastic fuselage with servo tape and then reinforce the mounting with machine bolts and nuts for rigidity. On wood fuselages, use a plywood plate on the inside to give a firm mount for at least 6-8 machine bolts and blind nuts for easy removal when you decide to fly from the slope. A Quick And Dirty was mounted to a Cirrus using a thinner form of tape without bolts, however this is not recommended because a weak hook can quickly lose a glider!

John also mentioned that his Wind-



for the **FINEST** in
RADIO CONTROL
ACCESSORIES

NOW...NO JAM
GOLD N/PUSHRODS
far more air time



The new serrations on no-stretch Gold N/Push rods, with only 8 contact points, assure a frictionless fit in the tube. No worry about oil and dust causing internal binding. No jam, no stretch, no worry . . . just better flying. Low cost, too. 36" size priced at 2 for \$1.25.

Recommended for snaking

Flexible GOLD N/PUSH RODS 36" 2-sets \$1.25
Flexible GOLD N/PUSH RODS 48" 2-sets \$1.50

Recommended for Relatively Straight Installation — Elevator & Rudder on Large R/C Aircraft

Semi-Flex GOLD N/PUSH RODS 36" 2-sets \$1.50
Cable Type GOLD N/PUSH RODS 1-set \$1.00 (Cable Size .030" O.D.)
Cable Type GOLD N/PUSH RODS 1-set \$1.00 (Cable Size .062" O.D.)

Basically for Push & Tork Rods, Wing Spars & Struts

Rigid Fibre Glass GOLD N/PUSH RODS (Arrow Shaft Type) 5/16" O.D. 2-sets \$1.50

NEW: Slant Style Fuel Tanks in 7 Sizes 2 oz., 3 oz., 4 oz., 6 oz., 8 oz., 10 oz., 12 oz.

Watch for new Pylon Brand **FUEL CELL TANKS** for R/C race cars.

PYLON BRAND

Sullivan Products

535 DAVISVILLE RD.
WILLOW GROVE, PA. 19090
PHONE (215) OL 9-3900

Year End Specials!



"Popular" Little Hawk Kit reg \$20.95
Fox 15RC engine reg 14.95
reg \$35.90

SPECIAL Both for \$2998 ☐
(Offer good until Dec. 31, 1971)

DeeBee Alpha ARF reg \$47.95
Fox 59RC engine reg 34.95
reg \$82.90

Terrific Buy — Both for \$6395 ☐

Penrod Auto-Start M-2 with 12V battery
reg \$39.95 **SALE \$32.96** ☐
OS Max 40 RC engine
reg \$31.98 **SALE \$21.98** ☐

FOURSOME SPECIAL!!! SAVE \$55.00

*Blue Max 4 channel deluxe digital
proportional semi-kit reg \$215.98
Little Hawk Kit reg 20.95
Fox 15 RC engine reg 14.95
3" MG Scale-Like Wheels reg 2.99
reg \$254.87

SALE \$199⁸⁷ for all 4! ☐
Unbelievable Offer!

*BEST BUY! Easy to assemble. Only needs
final interconnecting assembly! Includes ni-
cads and charger. Very reliable system.

Look Closely At This Savings...

Kraft KP-4B 4 Ch 2 stick
with 4 servos reg \$400.00
Pilot Cavalier ARF reg 69.98
Supertigre G60RC Blue Hd reg 59.98
MG 3" Scale-Like Wheels reg 2.99
reg \$532.95

Exceptional Value! only \$422⁰⁰ ☐

While They Last . . . Wheels

Scale-Like Regular Wheels

☐ 3" reg 2.99 **NOW \$2.49**
☐ 2 3/4" reg 2.79 **NOW 2.33**
☐ 2 1/2" reg 2.59 **NOW 2.19**

Low Bounce Wheels

☐ 3" reg 2.59 **NOW \$2.19**
☐ 2 3/4" reg 2.39 **NOW 1.99**
☐ 2 1/2" reg 2.19 **NOW 1.85**
☐ 2 1/4" reg 1.99 **NOW 1.69**

Treat yourself to these terrific values!

Postage and Handling: To \$10.00 Add 65¢
\$10.00 to \$25.00 Add \$1.50
\$25.00 to \$50.00 Add \$2.50
Over \$50.00 Add \$3.50 **R12**

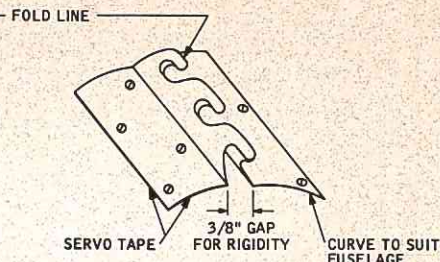
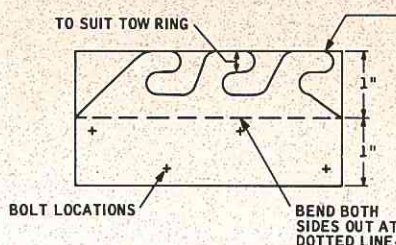
☐ \$ money order or check
☐ BankAmericard No.
☐ Master Charge No.

Name
Street
City
State Zip

We have many more spectacular values!
☐ Check here and we'll rush our mailer
right back to you!

Drop us a line or phone
phone us at (614) 457-1515

herb abrams rand sales
box 20059, columbus, ohio 43220



spiel glider has a fiberglass fuselage to which epoxy doesn't stick to as well as he liked, so he borrowed a trick from the Canyon Schweizer 1-26 — get a block of foam and carve it to the inside shape of your sailplane. Then "cut" servo holes with a soldering gun to a tight fit around the servos along with channels for wires and plugs. John also cut out a space for the receiver and switch which he padded with foam. Mounting the gear in this manner will not hurt because of the low vibration environment. John likes to put the receiver in back of the servos simply because of the added protection and easier balance. Then, epoxy the foam in place. The added gluing area makes it stick better and the foam provides "crunch" protection.

In his letter, John also mentioned that he uses G.E. Clear Seal to glue his hinges in place. He has used this on all of his planes because it sticks to the nylon hinge material better and has a longer working life. Use it like epoxy and wipe off the excess with a paper towel. Unlike epoxy, however, it doesn't stick to and bind the moving hinge parts. The only problem you will encounter is that you might have some trouble removing the hinge afterwards, but I'm sure that you won't consider that a disadvantage, considering that it won't come out except by destroying the surface in which it is mounted.

In closing off this column for the month, I would like to mention that soaring in the U.S.A. needs help! We are so divided in various parts of the country that we cannot field a team that would truly represent the U.S.A. with our best sailplane-pilot combination. It was evident to the West Coasters attending the Nationals in Chicago that sailplane design in contest activities and, even the winches and methods of towing, differed completely from our own concepts here. All of the pilots from the various parts of the country attending the Chicago Soaring Nationals were truly gentlemen and ardent soaring enthusiasts. Yet, the differences in types of soaring

contests and sailplane designs varied greatly from the East to the Midwest and out to the West Coast. Thus, R/C Modeler Magazine would like to invite all of you to use the Soaring Column as your sounding board for opinions as to just what rules should be adopted in the U.S. for sailplane activities. Your opinions will be published in this column and rebuttals to those opinions will also be published. We hope, in this fashion, to sort out the differences so that soaring will be on an equal footing regardless of the part of the country in which you live. As an example of this difference of opinion, I, personally, am a member of both the LSF and ECSS. With regard to my own personal sailplane interest, I lean more towards the Eastern endurance and precision events more than the California multiple task event. However, I am a strong advocate and supporter of the LSF Achievement Program which I feel is one of the finest programs ever adopted in modeling. With a basic interest in thermal flying, I do not personally care for slope soaring or in speed events. On the other hand, some of my fellow flying enthusiasts in this area would rather fly slope any day of the week than to hunt for the elusive thermal. And, a great many of these sailplane pilots are firm believers in the multiple task event which dictates endurance, precision, speed, etc. Yet, it is impossible for one part of the country to be flying one particular set of events while another concentrates heavily on a different set of standards. Something must be done to consolidate these ideas and concepts so that soaring can be on an equal basis throughout the United States. We hope that you will take the opportunity to use this column to express your own opinion.

We would also like to invite all club secretaries to send in their club's soaring emblem as well as their address and person to contact so that new sailplane enthusiasts in the area can find a group and place to fly.

Until next month, stay in the green air. ☐

From page 14

relaxes every now and then, give some thought to using your radio equipment for something else. If you're really not interested in going the full R/C car route, perhaps you may get some kicks from building a simple little aircar. You can use an .049 to .10 engine mounted in a pusher position on a plank, strap four wheels to it, steer the front wheels, plop your radio onto the plank, guard it from fuel, and you are in business on any parking lot. I've made several like this and, although they were not things of great beauty, they were fun to drive, and cost almost nothing.

You can use basically the same idea and make a snow boat out of a block of styrofoam, a small engine and your radio equipment. Or, you can take one of your young son's electric cars and convert it to R/C and drive it around the living room. Gets kinda boring after a while, but the kids enjoy driving the cars, and it does give you an outlet for your creative ideas. You might even take one of your old trainer type airplanes, fit skis to the landing gears, leave off the wings, and fire the engine up and run this contraption around in the snow, or over the ice. If you let your imagination run, you can think up lots of ideas for your radio equipment, what to do with it, and how to use it during the Winter.

Currently, I have a very big gripe. I have been building foam wings with cardboard covering for a number of years with no problems. For a long time I used a brush-on type of contact cement and never had any trouble. Then I switched to 3M-77 and have never been really happy since. The 3M-77 is simple to use, but the long run results are terrible. At least mine have been. While I was storing the wings in the house under more or less controlled heat and humidity conditions, I didn't have any trouble but, when I moved outside to a workshop that is cooled and heated only when I am working in it, the effect on the wing collection has been unreal. The wings of the original New Era II, the

FIXUM from INDYFLITE

Don't Throw Out Your Broken Plastic
ARF R/C Airplanes

Repair them stronger than new with FIXUM

Use FIXUM to Repair - Modify - Strengthen
Stop Cracks from Growing

FIXUM is Fuel Proof - Sandable
Dopable - Paintable

See Your Dealer or Send \$2.00 For 4 Ounces
(Enough for a Bunch of Crashes)

INDYFLITE SALES

R.R. 3, BOX 208 FAIRLAND, IND. 46126

Indiana Residents Add 3% Sales Tax
Works Great On Plastic U/C Planes Dealer Inquiries Invited

*Already Flown

Playboy Bipe, and my small bipe for .35 to .45 engines, the Playgirl, have all been ruined by the covering material parting from the cores. What a mess. Frankly, I have talked to a number of modelers that have had this same trouble this past year, and my advice to you right now is don't use 3M-77. My good buddy Ed Rankin has been using a different 3M product that he purchased in an automobile paint store, it's used for holding on types of auto trim. He tells me that so far the skins have been sticking pretty well. If you must use 3M-77 then take the precaution of using a lot of epoxy laid in a criss cross pattern over the core, and along the trailing edge. Most of the popping loose problems that I have experienced are along the leading edge where the stress of wrapping the cardboard around the leading edge radius puts a pretty good pull on the ad-

When contacting an advertiser,
please let them know
you saw it in
R/C MODELER MAGAZINE

100 R/C WINGS

The new G-88 and G-99 R/C Wings are identical to Thermic 100 except for 100 outline, two-piece wing construction. Write for free reduced plans. Checks payable to F. Zaic.

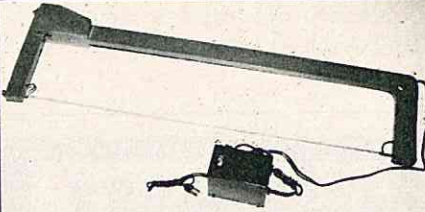
W/S KIT	"100"	G-88	G-99
SPAN	100 in.	88 in.	99 in.
AREA	810	699	799
A.R.	12.1	11.1	12.4-1
PRICE	12.75	11.50	12.75

(F/S plans 25 cents) Prices P.P.P.

r/c wings BOX 135
NORTHBRIDGE CALIF. 91324

hesive. Old Uncle Don, the Sage of the West, also has a solution. He sprays each portion, the covering and the core, with a good coating of 3M-77 and then lets them set for an hour. Then he wraps the covering around the wing, with a liberal dose of epoxy along the trailing edge. Then he seals the covering with a coat of sprayed on dope or epoxy to seal up the covering material to eliminate the penetration of moisture. So far, he hasn't experienced too much trouble. One word of caution, if you live in an area where the humidity gets rather high, then I think that you are going to have trouble with 3M-77.

If any of you have come up with a real good solution to this problem, write and tell me and we'll spread the word. Until next month, I'll see you at the snow bank, and watch out for my airplane, the wings are shedding. □



FOAM WING CUTTER

Now you can cut foam wing
cores comparable in quality
to purchased ones

WIVES! Perfect gift; pays
for itself in first
two or three wings

FEATURES:

- Rugged $\frac{3}{4}$ " plywood frame (painted) with all metal hardware.
- Perfectly safe, isolated power supply - only 5 volts supplied to cutter.
- Heavy .037 piano-wire cutter tensioned to 30 lb. for accurate, smooth cuts.
- Wire tension easily adjusted and indicated by deflection of compression spring.
- Completely preset—no temperature adjustments to make.

\$ 24.95

INSTRUCTIONS INCLUDED

Shelor Hobby Products
P.O. Box 893
Covington, Va. 24426

I wish to order _____ of your FOAM WING CUTTERS at \$24.95 each.
Price includes postage for cash orders east of Mississippi.
Others include \$1.50 per cutter.

Name _____

Address _____

City _____ State _____

Zip _____

Va. residents
add 92¢ tax
per cutter

Send C.O.D. ☐ Total Enclosed _____

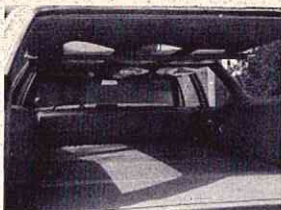
MODEL ENGINEERING

3655 CALUMET ROAD • DECATUR, GEORGIA 30034



TOMORROW'S IDEAS TODAY

Dealer Inquiries Invited
Prepaid Orders Postpaid



WING CARRIERS

Price: \$9.95

Postpaid

AT LAST, an end to damaged in transit wings. Designed to fit all station wagons and most sedans. Installs in minutes. Complete set includes heavy duty plated no-twist rods, mounting brackets, and space age material that is treated so that no slippage occurs even under heavy breaking and no securing rubber bands or tape required. Just lay wing on rack and forget it. Holds up to 6 wings in standard station wagon. Removal in 1 minute when not in use.

FIELD BOX

Price: w/pump and tank: \$19.95
Field Box only: \$12.95

The Model Engineering Field Box is of all metal construction. It has a fuel proof "crinkle" finish. The Field Box features the all-new Model Engineering fuel pump that will fuel or de-fuel your tank. A one half gallon tank, complete with fuel filter and all hoses, is incorporated in the Field Box.



PROP BALANCER

Price: \$2.75

HERE IT IS! A true static propeller balancer that will balance any prop, wood or plastic. It does not need a level surface to operate and features a self lubricating bearing. A balanced prop will improve engine idle, reduce vibration, and increase engine and aircraft performance.



MALIBU WINS WORLD RECORD!



Aug. 30, Oahu, Hawaii. Bob Boucher piloted his two channel R/C glider "Malibu" to a new closed course distance record of 189 miles in 11 hours, 9 minutes. More than 1½ times the previous world record.

For your slope soaring, power pod, or thermal flying pleasure you can get the pre-fab, all balsa kit. It's easy to build. Easy to fly \$22.95

OR, ONE OF THESE OTHER KITS

RF-4 Fournier Scale R/C \$29.95
EL MIRAGE ½ A Contest FF 5.95
TORREY PINES A-1 Nordic 5.95
Sandpiper 36" Fun Glider 4.95
Monterey 100" R/C Sailplane 29.95
Astro-Start 250 meter Hi Start 29.95

See Your Hobby Dealer — If not available, order direct. Wholesaler inquiries invited.

ASTRO FLIGHT INC.

Department 104 — 2301 Cheryl Pl.
Los Angeles, California 90049

SCALE IN HAND

From page 12

of criteria:

- Choose a dead-simple subject — the simpler the better.
- Choose only a subject for which you can personally examine a full-scale prototype.
- Monoplanes will give you better chances, since biplanes have more areas in which to lose static points.
- Tricycle landing gears are much

more practical on the flight line and will probably give you more of those vital flight marks. One flight mark is worth nine static marks.

e) World War I ships can be easily beaten by the simple home-built any time, assuming equal quality from each model. You might give this one a try, however, so long as you can satisfy item (b) above. Just be prepared to lose by 1,500 points if a good quality simple model turns up at the contest.

f) World War II — forget it! There is simply no way the most excellent of WW II models can do well, because it loses all around. It gets less static points and less flying points. Notice that the biggest drop in total points in our table occurs at the point where a WW II model enters.

g) Reading the rules, one is tempted to think the multi-engine points might swing the balance. They do, too, as our table shows. But not enough — you still lose by several thousand points.

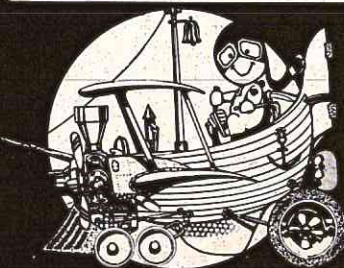
h) Those 50 points for "Documents Presentation" cannot be treated lightly. Making a good presentation will form the basis of a future column, but meanwhile, read the rules carefully and make sure you have everything asked for and nothing not asked for. More presentation points are lost for too much information than too little. Swamping the poor old judge with five three-views, the Erection & Maintenance Manual, Pilot's Handbook, and nine assorted books showing pictures, is a good way to get 10 points out of 50! Work on this one; 50 is a lot of points.

It is hoped that the above discussion on choosing a subject will serve two purposes. First, to help the newcomer to scale find a ship that will give him a good chance (if only by showing him which subjects to eliminate out of consideration).

Second, to demonstrate with virtually unarguable figures, the fact that under the present system, a rounded-out selection of different types of airplanes is a remote chance at a modern RC Scale contest. True; there are a few people around who will build what they want to make and disregard the fact that they have no chance in the event — your columnist is one — but these guys are few and getting fewer, because even these few are beginning to re-examine whether

HP HOBBY PEOPLE

THE ONLY ALL-IN-ONE HOBBY CATALOG



MODEL AIRPLANES • RADIO CONTROL • HO • O • N MODEL RAILROADING
• R/C BOATING • HO ROAD-RACING • R/C CARS • SHIP MODELS
• PLASTIC MODELS • CRAFTS • TOOLS • EDUCATIONAL SCIENCE

they can justify the effort involved.

So for this month, the column will close with the sad observation that competition RC Scale is a dying event, and unless something radical is done very soon it will die from technical starvation.

Comments are welcomed. □

ENGINE CLINIC

From page 10

the Sig Champion or K & B 100 when used with either the K & B or Fox idle bar glow plugs. If a large drop is noted, and the engine will not four cycle properly when using either of these fuels and glow plugs, then the problem has to be in the engine. Several factors within the engine could cause this, such as rings not sealing so that combustion pressure is too low, compression ratio not high enough, etc. In your case I would suggest that you do return the engine to World Engines for servicing.

Dear Mr. Lee,

I bought a K & B FR .40 '71 after having read good reports about it. As I usually do with a new engine, I removed the back plate at home to admire the insides and to look for any chips and burrs. I was rather surprised to see that there appears to be no counterweight to reduce vibration. I am wondering whether I could improve smoothness by grinding next to the crankspin, as is done by many other manufacturers. Would this not reduce vibration if properly done? Would the performance suffer from decreased packing in the crankcase?

Sincerely
Richard R. Weber
Bowie, Md.

Take another look at your crankshaft, Dick, and you will notice an aluminum sleeve pressed over the outside of the crankshaft disc. The crankshaft has been balanced internally by cutting away material on either side of the crank pin, leaving a thin fore and aft wall. The aluminum sleeve is then pressed over the disc to pack the case.

Dear Mr. Lee,

I am flying a Veco .19 on a Tri Squire. When the engine was new it would peak out at top rpm and lift the Squire off grass with no trouble. After I have had several flights on it which I consider well broken in, the engine won't peak out and the Squire can hardly lift off by itself. I have been tossing it for the last several flights. Am using the same prop 9-6. Have tried wood and plastic. Have tried several different brands of fuel. The engine cranks good, runs good, idles good, but just won't peak out. When I adjust needle valve for top rpm, it just cuts right back or off. Have adjusted air bleeder and it seems to have no effect on rpm. Have found out if air bleeder is not set right, engine will cut off after about one minute in flight. Would appreciate any suggestions on



* Their performance speaks for itself!

PERRY AEROMOTIVE

6887 FARMDALE AVE. • NORTH HOLLYWOOD • CA. 91605

AIR CLEANERS

— available in 2 sizes—
for engines

.15 to .50, .51 and up \$1.95

CARBURETORS

— available in 3 sizes —
for engines

.15 to .35 \$ 8.95

.40 to .50 9.95

.51 and up 11.95

my problem.

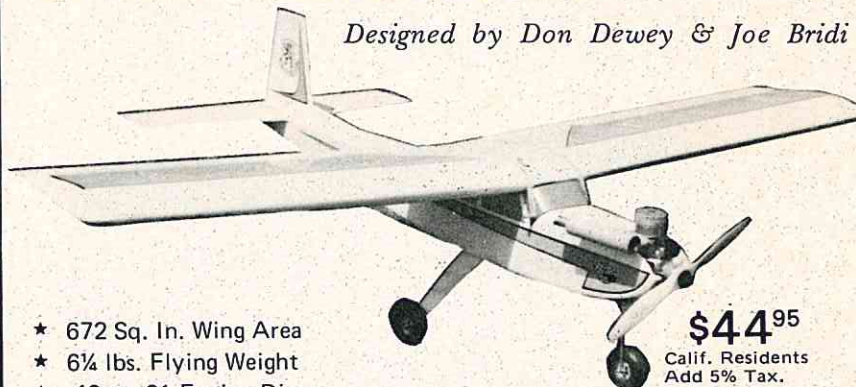
Donald A. Worsley
Elizabethtown, N.C.

First off, Don, the 9-6 is too much prop for your Veco .19 or any make of .19 for that matter. The smaller displacement engines have to wind up

to develop their power and you are lugging your engine down too much. It has probably become hot and went over its peak. This is indicated by the shutting off at top rpm. When an engine is well worn and past its peak the top end two cycle range will be

now available — RCM TRAINER

Designed by Don Dewey & Joe Bridi



- ★ 672 Sq. In. Wing Area
- ★ 6½ lbs. Flying Weight
- ★ .40 to .61 Engine Disp.
- ★ Fully Prefab. Kit
- ★ Hardware Included
- ★ 6 Hr. Assembly Time

\$44.95
Calif. Residents
Add 5% Tax.

SEE YOUR LOCAL HOBBY SHOP
Dealer Inquiry Invited

BRIDI HOBBY ENTERPRISES

23625 PINEFOREST LANE

HARBOR CITY, CALIF. 90710

Manufacturers of:

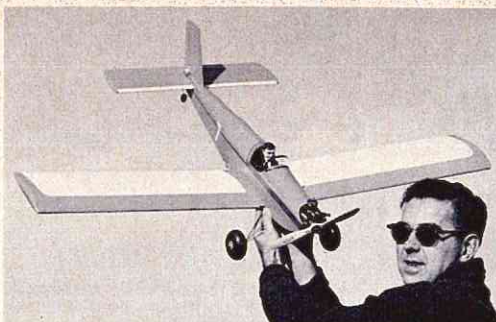
KAOS
KAOS WING KIT

\$47.50
\$22.95

KAOS FUSELAGE KIT \$29.95
DART CART III \$29.95

BRYCE PETERSEN'S

TOUCHDOWN \$21.95



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

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

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

formed and soldered
landing gear with
screw-on hubs

foam wing
balsa fuselage

wing options -
• 48" trainer
• 42" performance
(semi-sym wailers)

Available Nov. 1st -
Bryce Petersen's

AT6 - SNJ

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

High performance semi-scale
Engines .29-.40
Wingspan 53"
Length 37"
Wing area 416 sq."
Weight 4 1/2 lbs.

\$34.95

see your dealer
or order direct



Aero Precision

COLLINS INDUSTRIES, INC.
322 N. East St., P.O. Box 152
Tipton Indiana 46072
317-675-4371

dealer & jobber inquiries invited

INTRODUCING for 1972... "Nifty" THE ALL NEW! Challenger

**2 YEAR
WRITTEN
GUARANTEE**



The **STARTER** with **PROVEN PERFORMANCE.**

WRITE FOR DETAILS,
JOBBER AND DEALERS ARE INVITED.

\$35.95

SONIC-TRONICS

8017 CRAIG STREET
INC. PHILA., PENNA. 19136

The Worlds Largest Manufacturer of Model Engine Electric Starters.

very narrow. The engine will break from a four to a two cycle and one or two more clicks of the needle valve will cause it to just shut off as if you had pinched the fuel line. An engine in good condition will have a broader two cycle range and start to slow or sag slightly as you lean the mixture too far rather than just cut clean. You had best have the engine rebuilt and in the future use a 9-5, 8-6, or 10-4 prop. The 9-5 being better for larger ships such as the Tri-Squire, Falcon .56, etc., and the 8-6 for the Flea-Fli, etc. As for the air bleed, this is strictly an idle mixture adjustment - it has no affect on top end performance at all. If your engine cuts in flight it is due to leaning out of the high speed mixture (also an indication of a worn out engine) the airbleed having nothing to do with this.

Dear Mr. Lee,

Per your suggestion I installed a Perry carb on my O.S. Max .60 Goldhead and it worked great on the first flight. After that it will work loose and draw air. I have removed the motor from the plane and refitted the carb several times, but it still works loose. You can take your finger and move the carb back and forth. The carb came with a long screw and nut that goes all the way through and this is what I used. I tried to use the screws that held the regular carb in but the Perry is not threaded. I held the carb in very tight and tightened the screw but it will only stay for one flight. I would appreciate any help you can give me.

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

When you have trouble with the carburetor repeatedly working loose, the chances are pretty good that you also have an excessive vibration problem. Check your propeller for balance. If you are using a nylon propeller replace it with a wood one. Even though you balance a nylon prop statically the flexing of the blades throws them out of balance dynamically. If you are using a plastic spinner try running the engine without it. If the problem still persists I recommend you drill and tap the carburetor base for the regular holding screws. This is an easy matter and most hobby shops stock a small tap set.

Dear Mr. Lee,

I am a U-control flier, but subscribe to R/C Modeler and enjoy reading your column.

My problem concerns a Veco .35 engine which I purchased in Feb. 1968. It has had several gallons of fuel run through it (mild stuff, K & B 100, Fox Superfuel, a little Duke's), yet it continues to freeze up, always at the end of a tank, and frequently earlier if not set for a good rich 4-cycle run. It is not very reliable for this reason, and can be stunted only in great fear and trembling.



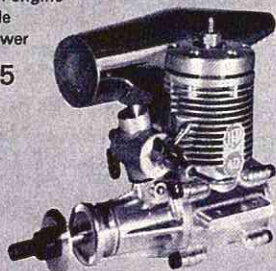
72 Series Hirtenberger Engines

The most powerful muffler equipped R/C engines in the world!

HP40F-RC

Ideal pattern engine
Excellent idle
.90 horsepower

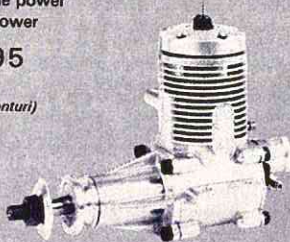
\$5695
(with muffler)



HP40R-PR

Perfect for RC pylon
Dependable power
1.2 horsepower

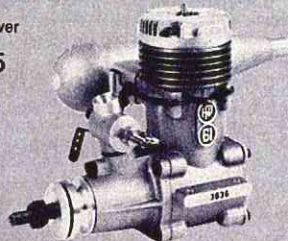
\$5995
(with RC
mixture venturi)



HP61FR-RC

Pattern and scale leader
Brute power
1.3 horsepower

\$8495
(with muffler)



HP61RR-RC

Open pylon and marine use
All new disk rotary valve
1.52 horsepower

\$9295
(Marine version
\$102.95)



HP ENGINES...THE NEW BREED!

Muffler as part of integral design
World Championship performance with handling qualities so gentle they are ideal for sport flying
Schneurle ported for competition power
Lowest vibration of any high powered 61
Coolest running of any 61 engine
Old World craftsmanship and care throughout

ALL HP PARTS CARRIED IN STOCK-IMPORTED BY



NELSON MODEL PRODUCTS

6929 WEST 59TH STREET • CHICAGO, ILLINOIS 60638 • (312) 586-7101

XL-ENT NICKEL CADMIUM BATTERY PACKS

Vibration-Proof!
Fuelproof!
Waterproof!

DEALERS-JOBBERS
Regular Discounts

SEND FOR
XL-ent's 1971 Catalog
50¢-REFUNDED 1st ORDER
"IT'S 48 PAGES of XL-ENCE"



XL-ent Nickel Cadmium packs are made from Eveready 500ma high rate cells; the cells are welded into packs, prewired (with 12" leads), sealed in plastic epoxy, and covered with white vinyl. XL-ent packs are waterproof, fuel proof, and vibration proof.

Approx. wt. — 1 oz. per cell

2.4v	\$3.98
3.6v	5.98
4.8v, 2.4v ct	7.98
6.0v, 2.4v, 4.8v, ct	9.98
9.6v (xmtr)	15.98

516-744-1500

HIGHEST QUALITY-LOW COST
XL-ENT PRODUCTS, BOX 347, PORT JEFFERSON, N.Y. 11777

Is this engine abnormally tight, or is it just not broken in yet? Various people have told me to disassemble it and polish it with crocus cloth, jeweler's rouge, Bon Ami, run several tanks of Blast through it, etc., etc.. I thought you might be familiar with this problem, and would appreciate any helpful suggestions.

Yours truly,
Donald H. Stewart
Mobile, Alabama

If, after a gallon of fuel, the engine still wants to stick-up there is something obviously too tight. A lot of Veco .35's that seemed to take forever, and then some, to break in, were caused by sleeves that were slightly tighter at the bottom than at the top. So, check the fit of the piston and sleeve. Wash them in detergent and water. Absolutely dry, the piston should slide through with very little or no drag. If any tightness is observed it should be only at the very top. If the fit of the piston is loose at the top but tight at the bottom, this is your trouble. Use some 400 grit wet-or-dry emery paper and light oil and loosen up the bottom of the sleeve. If, by chance, the piston is tight all the way through, then work on the whole sleeve. Also, check the fit of the crankshaft in the bronze bushing. If it is tight, use some 400 emery paper on a dowel and free it up. Be very careful as it is very easy to go too far. As for running rouge or Bon Ami through the engine — rouge can be used but the problem here is that while the tight parts are being loosened, the already loose parts are being loosened even more. Never use Bon Ami as it is far too coarse of a lapping agent and you can bring an engine in and put it over the hill all at the same time!

Dear Clarence,

Not that it means anything but this is my first time to write to you. I have a couple of questions for you. I have an OS Max-H40P R/C engine that doesn't run correctly. It has about 2 hours running time on a mixture of 75% methanol and 25% castor oil. It will hold its rpm at top speed. It runs fine at top speed (leaned out) and it idles pretty good. Running anywhere in between the two extremes it is a complete failure. It loads up (I think) and dies. I've tried screwing the air bleed screw all the way in and I've tried taking it completely out of the throttle and everywhere between. It doesn't make enough difference to matter. All of this is using the 75%-25% mixture and swinging a balanced 9-8 prop. I've got 6 OS R/C engines ranging from the .10 to the new Goldhead .60 and they're all great. Have I got a dog with this .40? Is there some way I can correct it? Can it be corrected by the factory? What do you think is wrong? Under normal circumstances, would the regular OS .40 R/C be more docile than .40P R/C?

Since it's cheap, I use my 75-25 mixture for running almost all the time. Without any detergent in it, will carbon build up faster than normally? Will Midwest's "Peak Power" help clean it out? Will putting 10% American white gasoline in my fuel hurt my

engines or help economy and not hurt the engine? What else besides nitro can I put in my fuel mixture to improve it?

I hope the number of questions that I've asked doesn't scare you off.

Thanks for your time and trouble. You'll probably be hearing from me again.

Cecil Park
Mobile, Alabama

Your Max-H 40P is a high performance engine and as such is not going to operate properly on straight methanol-castor fuel. In fact few engines will without the compression ratio being raised. Try adding 5% and preferably 10% nitro methane to your fuel and you will notice a marked improvement. Straight methanol-castor fuel will not carbon any faster than nitrated fuels, actually less. Running 'Peak Power' through the engine periodically will help to hold down the carbon and varnish build up. Adding 10% white gas to your fuel will increase the economy but at the expense of increased operational temperature. Although many fellows are using it, I do not recommend the use of white gas, myself. There are a lot of fuel additives that will pep up the fuel a little, but none are cheap, and none will do the job that nitro methane does. □

FROM THE SHOP

From page 6

gain due to the finishing material.

The entire sheet balsa surfaces were not silked but were simply given one brushed on coat of Francis Products Building and Surfacing Resin. As we mentioned in a previous issue, this is applied with a standard dope brush and is a catalyst mixture. After 30 minutes drying time this was dry sanded with Norton No-Fil Durite Finishing Paper Type 4. This silicon carbide OpenKote paper is a most remarkable product and one sheet will last you for an entire aircraft since it simply does not load up. I used 220-A grade for sanding the first coat of Francis's Surfacing Resin. After wiping off the residue with a tack cloth, I brushed on another coat of Surfacing Resin trying to avoid, as much as possible, any runs. Thirty minutes later this was sanded with 180 grade No-Fil Durite paper.

At this point, I mixed up equal portions of K & B Super Pox Primer and applied one spray coat to the entire aircraft. The temperature outside was approximately 85 degrees and the primer was dry to the touch in 5

NOW! SUPER POXY by K & B

Consists of Epoxy Base Paint and Catalyst
(ALL MIXING ONE TO ONE)

MIX and USE • NO WAITING TIME • NO HAND RUBBING

It's NEW! It's BETTER!
GOES ON GLOSSY • STAYS GLOSSY



- Fast curing cycle — dries in short time
- Sets up rapidly — minimum dust adherence time (none quicker)
- Longer lasting high gloss — least affected by ultraviolet sun rays
- Least affected by manufactured fuels

AVAILABLE IN 6 BASIC COLORS

Red, Blue, Yellow, Orange, Black, and White

4 oz. — \$1.15 ea. 8 oz. — \$1.85 ea.

CATALYST: 4 oz. — \$1.15 8 oz. — \$1.85

21 additional colors available by mixing basic colors — Send for color chart with complete ratio mixing instructions. 50¢

Clear and Primer: 8 oz. only — \$1.70 each Thinner for use only with K & B SUPER POXY
Primer Catalyst: 8 oz. only — \$1.70 Pints \$2.25 Quarts \$3.50

K & B MANUFACTURING

DIVISION OF AURORA PRODUCTS CORP.

12152 WOODRUFF AVENUE • DOWNEY, CA. 90241

Tatone cast aluminum ENGINE MOUNTS

Engines run smoother and cooler on Tatone Engine Mounts. The cast aluminum absorbs engine heat and provides a solid support for better engine performance. Tatone mounts are one piece and easy to install and are most often specified on magazine plans and in kits. For your convenience, we make a mount for 98% of all engines made and always in stock.

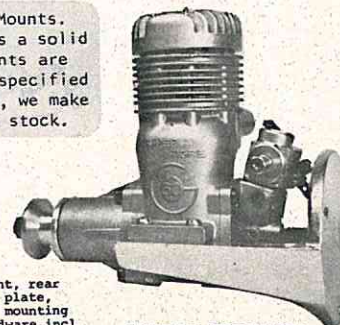
1/2A	Short or Long	-- \$1.75
.09	Short only	-- 2.25
.15	Short or Long	-- 2.25
.19	Short or Long	-- 2.25
.29-.40	Short or Long	-- 2.50
.45-.59	Medium only	-- 3.00
.40RV	Long only	-- 3.00
.60	Short only	-- 3.00
.60RV	Long only	-- 3.50

* Custom mounts
for McCoy 21
series engines
now available

R/C PYLON MOUNT
for .40RV engines

NEW!

NOTE: Specify engine, model
number and displacement.
We will drill mount for your
engine at no extra charge if
requested, undrilled otherwise.



Mount, rear
nut plate,
all mounting
hardware incl.
only
4.95

TATONE PRODUCTS
4719 MISSION STREET
SAN FRANCISCO, CALIF. 94112

YOU'VE LOOKED AT THE REST, NOW BUY THE BEST!

"JET START"

The Geared Engine Starter



**FREE
BROCHURE
ON REQUEST**

Propeller-only adapter and flywheel adapter available separately at \$4.95 each.

- Smallest • Safest • Most Powerful
- Reversible • Most Economical


.049 to .80 engines and twins. Available at your local hobby shop now: If not, order direct. Standard "Jet Start" has spinner-cone adapter.

\$29.95 \$44.95 with battery

Patchogue Hobby Center

240 Medford Avenue
Patchogue, L.I., N.Y. 11772 Ph (516) 475-8856

Add \$3.50 for postage; balance refunded to individual. New York state residents add 5% sales tax.



**THE MOST COMPLETE STOCK OF
AERO AND BOATS IN THE FAR EAST.
HANDLING EUROPEAN, U.S.A. AND
JAPANESE RADIO CONTROL,
KITS AND ACCESSORIES.**

ORDER FROM:
RADAR CO., LTD.
2, Observatory Rd., Kowloon,
HONG KONG



**NEW
SEMCO ADAPTO-MUFFLERS**

Three mufflers fit most engines.

Small	.15 — .25
Medium	.29 — .40
Large	.45 — .78

All Flow-thru type, gold anodized, low power loss.

Mufflers \$11.95, Adaptors \$2.98. Specify engine sizes and make for proper adaptors. Discard that drawer full of mufflers, one SEMCO will do.

SEMCO MODEL ENGINEERING CO.
113 Graniteville Rd., Chelmsford, Mass. 01824
Dealer & Jobber Inquiries Invited

NOW! in kit form. The highly acclaimed Classic '70 Digital System.

Kit features:

- Same attractive vinyl clad transmitter case as factory assembled model.
- Ultra sensitive receiver.
- Versatile servo selection with the KPS-9, KPS-12, PS-3 or PS-4 mechanics.
- Flying weight comparable to lightest systems available.
- Choice of airborne power supply: 450F, 600F, or 225F.
- 4 or 6 channel (Royal or Kraft Sticks).
- Simplified wiring system has reduced construction time.
- Available in 27MHZ, 50MHZ, or 72MHZ.

Delivery on or before Jan. 1, 1971. Write for prices and complete catalog (available 12/1/70). List of nationwide service centers and sales on request.

ROYAL ELECTRONICS CORPORATION 2119 SOUTH HUDSON, BOX 22204 DENVER, COLORADO



Get it all together.



minutes. Two hours later I started to sand the primer and found it took only a very light sanding with 180 grade Durite paper. This white primer is one of the finest materials we have used since it powders beautifully and fills any small pit marks that might have been left after sanding the resin. The purpose of using the resin was to toughen the wood — which it does most remarkably! Unlike using epoxy glues on the wood, however, the Francis Surfacing Resin dries extremely rapidly and is very easy to sand. Any small pock marks or slight cracks in the wing sheeting that were still left after applying the K & B Super Pox Primer were filled by using spackling putty. This was then sanded off with Durite paper.

Immediately following the sanding of the primer the entire aircraft was wiped off quite carefully with a tack cloth and I mixed up equal portions of K & B Super Pox Blue. This was immediately put in the spray gun and the aircraft was sprayed. I was amazed to find that it took 1/8 of a pint of color mixed with 1/8 of a pint of catalyst to completely cover the airplane with the highest gloss finish I had seen to date! Even though it is recommended that two mist coats be applied one right after the other, I layed the finish on heavy to find out if there was any tendency to run — there was not! In less than 10 minutes the entire aircraft was dust and tack free. I had deliberately not used our professional type spray gun but, rather, had used a very inexpensive spray unit which had anything but desirable adjustments for different types of spray material, feeling that this would be more akin to the average modelers spray facilities, and would also be equivalent to the small aerosol spray units that are available in most hobby shops and hardware stores. For this reason I did obtain some light "orange peel" affect that commonly occurs with epoxy paints if the air mixture and/or thinner mixture is not applied properly. By the way, speaking of thinners, the Super Pox was thinned 25% with Super Pox Thinner stock #8120.

It was immediately apparent that no additional coats of paint were necessary since this material covers like nothing we have used to date. I had begun to finish the aircraft at 8 o'clock in the morning and by this time it was 3 o'clock in the afternoon. At that time other projects demanded our attention and I didn't return to

the shop until 7:30 that night. Since I knew that I could have sprayed the material without any orange peel effect (a test which I applied on another panel just for my own satisfaction), I decided to see how tough the surface was, and I soon found out! DuPont White #7 Rubbing Compound wouldn't even blemish the surface and Red Rubbing Compound, both DuPont and Sears, had very little effect upon it. Raw fuel of the highest nitro content can be poured on the surface and does not even leave a blemish no matter how long it is allowed to remain. I tried Scotch-Brite rubbing materials and succeeded only in slightly dulling the mirror like glaze on the aircraft. I then took #600 wet-or-dry paper and sanded the entire aircraft using the paper wet and applying substantial pressure. All of the orange peel and any remaining pit marks were completely removed.

The following morning I applied black vinyl electrical masking tape and masked off for an area of white which I brushed on simply to find out if the material could be brushed. It flowed out remarkably well and that night it, too, was wet sanded. Finally, I masked off for red trim and followed the same procedure again finishing off with a light wet sanding. In each case, the finish was dust and tack free in 5-10 minutes and completely cured within 4-6 hours. Finally I rubbed out the entire finish with DuPont #7 White Rubbing Compound and obtained the deepest, most beautifully hand rubbed finish that I have ever obtained on a model. Now, if you go back over what I have written in the preceding paragraphs, you will see that the entire process took less than a weekend. And for the clincher, the total weight gain of the aircraft from the time of final sanding of the wood structure to the final rubbing out of the model was 3½ ounces!

K & B Super Poxyl Ultimate Finish is available in 6 basic colors: white, yellow, orange, blue, black, and red and also in clear. A color chart is available for 50 cents which tells you exactly how to mix any one of 27 custom colors using these basic color components. Available in ¼ pints at \$1.15 for Part A and \$1.15 for the Catalyst Part B, the material is also available in ½ pint cans at \$1.85 each for the color and catalyst. Super Poxyl Clear is available at \$1.70 for Part A and \$1.85 for the clear catalyst (the latter being the same catalyst as used for the pigmented colors.) The Primer

CANADIANS

New G 40 Space Commander. A quality 4 chan. digital system, complete unit with 4 servos, nicad paks, built-in charger, parts & service in Calgary, 3 month warranty. Snap in type servo trays (two with set). Any 27 MG freq. All this for only. \$249.00.

----- SEND FOR FREE BROCHURE -----

SOLARFILM

All Opaque colors95 cents per ft.
Metallics in green, red, blue \$1.35 per ft.
Transparents in red, orange, yellow and blue \$1.10 per ft.

NEW COMPLETE-A-PAC PLANS

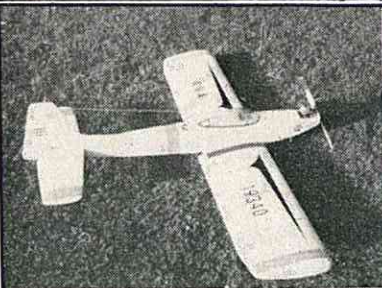
Hurricane 60" \$4.95
Topsy 54" \$3.00
Delta Sport 54" \$4.00

For Fast and Efficient Service, Write
CALGARY HOBBY SUPPLY LIMITED
Box 3173 Stn. B • Calgary, Alberta

Send 50 cents for my 55 page Catalogue. Price refunded on first order over \$5.00

If Visiting Calgary, call in at our Shop: 114-40 Avenue N.W., Telephone 2774664

The Model Shop Whose ONLY Business is "Model Aircraft"



DIRECT SALES inc.

P. O. Box 19001

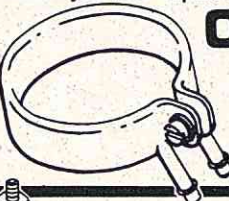
SALT LAKE CITY, UTAH 84119

**PRESENTS ALMOST READY TO
FLY ¾ Size KWIK FLY III**

Introductory Price **\$34⁹⁵**

Wing Area 500 sq. inches. Length 48 inches.
Fuselage ABS Plastic Vacu. Formed With All Bulk Heads Installed. Wing & Stabs Covered in Kromekote. This Model Can Be Ready To Fly in 4 Hrs. Immediate Shipment With Certified Check or Money Order. Comparable to **\$55.00** Kits.

Convert your model airplane engine for marine use . . . easily . . . instantly . . . neatly . . . with the



OCTURA KOOL KLAMP

UNIVERSAL WATER COOLING JACKET

No disassembly of engine required . . . installs in 30 seconds . . . efficiently converts any air-cooled model airplane engine to R/C boat use. Proven performance. No possibility of water leaking into engine. Glo-plug readily accessible. Vibration proof . . . corrosion resistant.

only
\$3⁹⁵

plus 10% for postage and handling

Adjustable-Depth Water Pick Up and Outlet—\$1.65

ENGINE	SIZE	ENGINE	SIZE
Enya 15 & 19	3	Super Tigre 15 & 19	3
Enya 60	12	Super Tigre 29	6
K & B 19	4	Super Tigre 60 & 65	12
K & B 29 & 40	7	Veco 19	4
OS Max 15	1	Veco 29 & 35	6
Ross 160	11	Veco 45	10

To determine the size of Kool Klamp for engine not listed: measure diameter of cylinder head and the no. of 1/16's over 1" is the size to order.



OCTURA MODELS

If dealer cannot supply you, order direct. Add 10% for postage & handling. Illinois customers include Sales Tax.
8140 N. MILWAUKEE AVE., NILES, ILLINOIS 60068

FUN
TO
FLY

Tested, Approved
and Recommended
by RCM



WING SPAN: 71 IN.
WING AREA: 965 SQ. IN.
LENGTH: 34 IN.
AIRBORNE WT.: 2.5 LBS.
RADIO EQUIP.: 2 CH.
ELEVON CONTROLS

GRYPHON

AEROBATIC R/C SLOPE SOARING GLIDER
RELIABLE • PROVEN DESIGN • STABLE

Easy to Assemble

Building Time:
12-18 Hours

- * SELECTED BALSA
- * PRECISION MACHINED PARTS
- * SLOTTED L & T EDGES
- * PARTS EASILY IDENTIFIED
- * BUILDS FLAT ON TABLE
- * NO WING JIG NECESSARY
- * STEP-BY-STEP INSTRUCTIONS
- * ALL HARDWARE AND CANOPY



FLYS LIKE A POWERED MULTI

Aerobatic Flight — Spins — Inverted Flight — Rolls
Inside-Outside Loops

F.O.B. ORANGE **\$34.95**
California residents add tax If not at your dealers
Dealers Inquiries Invited order direct

Mfg. by **MODEL DYNAMICS** New Dimensions in Model Aircraft

P.O. BOX 2294 • ORANGE, CALIFORNIA 92669 • PHONE: (714) 639-3393

ELECTROCONE *

GLOW PLUG WITH "IDLE BAR"

R/C HOT
FOR NORMAL FLYING
CONDITIONS.
R/C COLD
FOR TEMPERATURES
OVER 90°



HOT OR COLD

\$1.29
EACH

STANDARD LONG AND
STANDARD SHORT 75°

JOE BRIDI—WORLD KNOWN CONTEST FLYER: DESIGNER AND
MANUFACTURE OF "KAOS"

"I found the R/C hot plug to give an excellent top end and
the dependable idle that I need."

JACK R. TRANSUE—CONTEST FLYER: DESIGNER FOR DUMAS
PLANES

"I have compiled many wins over the last few months using
the ELECTROCONE GLOW PLUGS. They really are the
greatest!"

JOHN BARBOZA—EDITOR, "MODEL BOATING WORLD NEWS"
ACTIVE BOATING CONTESTANT

"Your glow plugs are everything you say they are, and more.
I have tested them and now I use them."

TERRY PRATHER—1970 DISTRICT N.M.P.R.A. CHAMPION, 1970
GRAND N.M.P.R.A. CO-CHAMPION

"When I needed glow plug performance for rigorous racing
conditions, I knew I could depend on the ELECTROCONE
plugs."

TESTED AND RECOMMENDED BY R/C MODELER MAGAZINE

DEALERS INQUIRIES INVITED

If Your Dealer Cannot Supply You, Write To:



HOBBY PRODUCTS

130 EAST 33RD STREET
LOS ANGELES, CALIF 90011

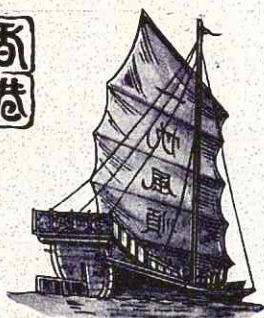
WINNING

MODEL & HOBBY SUPPLIES

2A AUSTIN AVE. KLN.

HONG KONG.

TEL. K - 684184; CABLE - 5625



S. T., ENYA, WEBRA, H. P., FUJI,
KRAFT, SIMPROP, SPACE
COMMANDER, HINODE, FUTABA,
IM, KÖ, SILENCE-AIRE, SOLAR
FILM, T/F, STERLING, MIDWEST,
R/C CARS, BOATS, WINNING
PRODUCTS, ETC.

is available in ½ pints at \$1.70 with
the Primer Catalyst also available at
\$1.70 per can. Thinner is available at
\$2.25 a pint and \$3.00 a quart.

Thus we went one more time
around the finishing route and ended
up with the most beautiful paint finish
we have ever achieved with the least
amount of work. K & B Super Pox is
called the Ultimate Finish. At this
point we must agree with them for it is
the most beautiful, tough, and durable
finish that we have ever used and one
that can achieve these results with an
absolute minimum amount of work.
You are going to like it and we urge
you to try it. It is Tested, Approved
and Recommended by R/C Modeler
Magazine. ☐

LETTERS

From page 4

*it is. On the Falcon I have an old Enya
.19 and a Rand Ace Fast Pulse system.
Just one thing bugs me besides natural
pilot error and that is, that upon the
throttle change, it may or may not
settle back to normal. But throttle
change it must be, else either climb or
get dizzy! So, if I had to do it over
again, I'd start with a 4 channel digital
system and use the fourth channel to
heat the glow plug on idle. The begin-
ner must learn to climb out, throttle
down some, keep it over the field,
then land in one piece. From then on
in its a long way from engine start to
Lamcoviks or whatever!*

Sincerely,

Rice Hobbies

Littleton, New Hampshire

Sir:

*You really know how to hurt a guy
don't you? I'm referring to my letter
that I just mailed to you a week ago
about how to copy magazine plans.
Two days ago a buddy brought me the
July issue of RCM. There on page 52 is
an article of just about the same thing.
I say black and white film is best for
line drawings and nowhere near the
cost of color. Enclosed is one of mine
made from the Sky Squire series. I do
not think the authors stressed enough
that the projector must not be tilted,
but kept level with the wall. Otherwise
a condition known as 'Keystone
effect' will result. This simply means
the top of the projection will be wider
than the bottom causing distortion in
the end result.*

*Here is another idea using the black
and white method that can be used by*

PRECISION FOAM WING CORES

* All low wing aircraft complete with
landing gear trunion blocks. All wings
complete with 4" fiberglass tape and
instruction sheet.

MISS BIKINI
(RCM Plan)
\$6.95

PROFESSOR
(RCM Plan)
\$8.95

INSTRUCTOR
(RCM Plan)
\$7.95

*NEW ERA
(RCM Plan)
\$5.95

UGLY STIK
\$8.95

SHOW OFF
(RCM Plan) (2 wings)
\$10.95

SUN-FLI IV*
(RCM Plan)
\$9.95

KWIK-FLI III*
(MAN Plan)
\$9.95

LI'L SWINGER
(RCM Plan)
\$5.95

KAOS
(RCM Plan)
\$9.95

RCM EXPERT
(RCM Plan)
\$7.95

III PERFECTION
(RCM Plan)
\$9.95

NEW ERA II
(.40 size 500 sq. in.)
\$7.95

RAPIER
(RCM Plan)
\$9.95

KWIK-FLI
(Tapered Wing)
\$9.95

SCOTCH LASS
(RCM Plan)
\$5.95

GRADUATE
(RCM Plan)
\$7.95

All orders shipped postage pre-paid.
All orders must be accompanied by cash, check,
or money order.
No COD orders.
Texas residents add 4% sales tax to order.

INTERNATIONAL MODELS

P. O. BOX 16154
FORT WORTH • TEXAS 76133

**ONE OF THE WORLD'S FINEST
PROPORTIONAL SYSTEMS.
PERSONALLY HAND CRAFTED
AND TEST FLOWN BY**

TED WHITE

2 Channel	\$200
3 Channel	\$225
4 Channel	\$270
5 Channel	\$300

Available on any 27 Mhz or 6 meter frequency. Mode I or Mode II.

Complete repair service for all F&M radios.

GALAXY COMPANY

P.O. Box 60494

Oklahoma City, Okla. 73106

MINI-OLYMPIC

R/C SAILPLANE

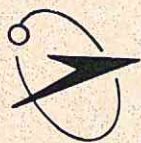
FOR FUN SOARING AND SPOT LANDINGS

"Build It Tonight and Fly Tomorrow"

Tested, Approved and Recommended by RCM

If not available at your local dealer, order direct.

SPAN: 42"
LENGTH: 34"
AREA: 240 sq. in.
only
\$16.95 postpaid



AIRTRONICS

P.O. Box 132
Sierra Madre, Calif. 91024

the scale fans. They go to great lengths to duplicate cockpit details. One thing missing from most of them is a clipboard of flying maps. These can be duplicated by photographing road maps or even flying maps. Take the 35mm negatives down to a local photographer and ask him to CONTACT print these on a matte finish portrait proof paper. This is not the same thing as the reddish brown proof paper that fades in daylight. Portrait proof paper looks just about like bond paper. Now the tiny prints that you get back can be trimmed to the right size and look real when placed in a cockpit pocket or clipboard. How about running a short article with small reproductions of small maps that readers can cut out for just this use. The whole thing could be done on one page, but leave the reverse side blank so there isn't any printing on the other side to ruin them. Several could be included on one page, battle front WW I & II, east coast, west coast, etc. I would like to do this piece if you think the readers would be interested.

I really 'dig' the Rumpelstadt model. This looks like my next project after my Royal Coachman. The articles for the Sunday flyers are really great so keep them up. All of us aren't ready for the high speed aerobic types.

Sincerely,
TSGT Carl W. Holland
SHAPE (Shoc Maint)
APO New York,

The following letter was sent to AMA President John Clemens with a copy to the various publications. We thought you'd like to read it:

Dear Mr. John Clemens,

So much has been said about publicity of the RC hobby, both good and bad that I would like to relate the story of our club, The Flying Sparks of Elmira, N.Y.

In the year of 1969, we lost another in a long list of flying sites, and our membership dropped to 6. In the fall of that year we somehow picked up 4 new members and with new blood in the club we drew up a new set of long range plans for the club.

These plans were:

1. A committee of 2 to try and meet with the county and convince them we need county land to fly on.
2. Plan exposure of the club by means of a show at the Mall shopping center.

FOX

**MODEL AIRPLANE
PRODUCTS**



NEW!

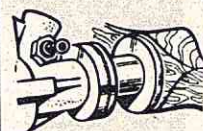
**FOX
MUFFLERS**



IN THREE
DIFFERENT
SIZES...

A... \$4.95
B... \$6.95
C... \$8.95

SIZE A
fits Fox 15-19
SIZE B
fits Fox 25-29-
36 & Stunt 35
SIZE C
fits Eagle 60



**PROP SHAFT
EXTENSIONS**
fit all 1/4" size
shaft motors

Aluminum or Steel-3/4" or 1/2" ... 1.75

Made in America!

FOX MFG. CO.

5305 TOWSON AVE.
Ft. Smith, Ark. 72901

FROM PRO-LAND

**MODERN MATERIALS TESTED,
PROVEN AND USED BY THE TOP "PROS"**
FLEX-ALL

A plasticizer for acrylic lacquer and primer and butyrate dope. In acrylic it completely eliminates cracking and spiderwebbing and aids in gloss retention. In dope, it helps reduce shrinking. One bottle is enough for use on several airplanes. 4 oz. bottle \$1.69.

SKYLOFT

Revolutionary new covering material to replace silk and silkspan. Characteristics include extreme strength, ultra light weight, ease of manipulation, and tremendous "fillability" (completely filled with three coats of dope). 3 sq. yd. package with complete instructions, \$2.50.

SORGHUM

A Super contact cement for sheeting foam wings and tail surfaces boasting the following: extremely light weight, tremendous adhesion, very non-critical 'open' time, 30 minutes to 3 or 4 hours. Brush on thin as possible and a 6 oz. bottle is enough for a wing and stab. 6 oz. bottle \$2.50.

LIFELINE

The fuel tubing you've always wanted. Perfect for external tank connections whether pressure or crankcase feed — actually "grows" to metal tubing. Its name is no accident as it is extremely hole and split resistant and guaranteed for a lifetime against adverse fuel effects. 4 ft. package \$2.00.

Mail orders please include \$0.25 per article for postage and handling. Dealer inquiries invited!

SOUTHERN R/C PRODUCTS

527 PECAN STREET
CITRONELLE, ALA. 36522
PHONE: AC 205 — 866-5544

CLEVELAND MODEL
 WORLD-FAMOUS DESIGN QUALITY "SINCE 1919"
 HAS INSPIRED 50,000 NOW IN AVIATION

Cleveland-Designed models are the world's most authentic designs and not too costly, but if you want the best for your hobby, there's no other line to look for. What is good is usually somewhat costly today when \$5. doesn't go as far as \$1. did in times past.

BEFORE IT'S TOO LATE! START TO COLLECT FOR YOUR RETIREMENT NOW!
 Thousands of old buffs are returning to good modeling thankful they can still get Cleveland Designs (since they learned we never did close our doors). . . You, too, can now enjoy them—especially the great new designs never available before, all are just loaded with many more authentic details than ever, which really serious modelers and collectors demand.

STOP YOUR WORLDS TROUBLES RIGHT NOW—RELIVE THOSE BLISSFUL BOYHOOD MODELING DAYS
 Catalog Service—It's just loaded with many of those famous designs some of you have been looking for all your lives. Early Birds, WWI, Golden Era Military and Commercial, Racers, WWII, and Moderns. Many Free-lance too. Urge your dealer to write for our Franchise Setup in your area.

EXTRA CATALOG COPIES NOW AVAILABLE—\$50 EA.
ACKNOWLEDGED WORLD LEADER IN AUTHENTIC MODELING
CLEVELAND MODEL & SUPPLY CO.
 60307RC Detroit "Since 1919" Cleveland, Ohio 44102

Factory Authorized Sales & Service
PRO-LINE ELECTRONICS

EASTERN TECH.
 ELECTRONICS & HOBBIES

P.O. Box 804 No. Chatham, (Albany) N. Y. 12132

Hobby electronics our specialty
 New units and parts in stock
 Radios accepted trade-in after appraisal
 Fast guaranteed repair service
 Guaranteed used radios
 Kraft 6 ch. single stick, 72 MHz.,
 5 servos like new \$295.00
 Factory authorized sales and service
 for the top line PRO-LINE
 PHONE: (518) 439-6907

Discover cancer.
Early enough
to do something
about it.

American Cancer Society
 Fight cancer with a checkup and a check.

VINTAGE R-C PLANS


 Cessna 140 (1946-47)
 Ryan ST-A (1936)

Available in two scales

Cessna 140 65-1/2" wing span—multi 32-3/4" — 3 chan. 2" scale plans \$5.95	Ryan ST-A 60" wing span—multi 30" — 3 chan. 1" scale plans \$2.95
---	--

Free 71 Catalog Dealers inquiries invited
SID MORGAN
 13157 Ormond, Belleville, Mich. 48111

3. Map a publicity program using the free services of the radio, TV, newspaper, posters, and TV Cable service.

4. Started a club newsletter.

Needless to say little if any progress was made with the county. We did seek and get a 10 minute spot on a Kids Clubhouse TV program and the Mall show exposed us to approximately 3000 people from 4 counties and 2 states, and we picked up 9 new members and were offered private land to fly on.

We chalked up the first 6 months of 1970 as a success, and in the fall of that year we started to lay plans for 1971. To add to this we were offered and accepted the use of a room at the Chemung County Airport as a meeting room for our club.

The first 6 months of 1971 shaped up as follows:

1. Started a junior program.
2. Received a full free 1/2 hour on TV Channel 36, Elmira and with no commercial ads whatsoever.
3. Articles in the local newspapers.
4. Mall show doubled with 64 adult displays and 17 junior displays.
5. Picked up 11 members at the show and 9 from publicity for a present total of 39 adults and 8 juniors.
6. Received and accepted offer of land from the county government.
7. Invited to display and fly our planes at the Chemung County Airport during a Fly-In-Breakfast as an added feature.

Yes, the first half of 1971 was a huge success for our club.

A word about our county land. It is located on Harris Hill, Elmira, near where the Famous Harris Hill Soaring field is located. We fly the same skies as the big gliders. We are on a lower level (about 700 ft.) than the glider field but we keep a spotter out while we are flying to keep an eye out for gliders in distress since they would use our field for emergency landings. We received the blessing of the Elmira Soaring Society for our activity and so far the rapport between us has been excellent.

Our advice to other clubs: Make a few simple long range plans, publicity and exposure and lots of luck.

Thank You.

John C. Hampton,
 P/R and Editor
 The Flying Sparks
 c/o 224 Scott Lane
 Horseheads, N.Y. 14845

PS: Our club is primarily the Sunday flyer type.

THE HOBBY HANGAR

"Everything for the Aeromodeler"
 The newest Hobby Shop in Australia.
 Radio and Engine Specialists

Fast Mail Order Service. Send S.A.E. for Quote on all items.
 We stock or can obtain any Radio or Engine you require.
 Complete Radio Repair Service for all Current Makes.
 We stock Webra, Fox, H.P., Rossi, Taipan and Enya Engines.
 Futaba, Kraft, Space Commander, Sankyo Radios.
 Trade-Ins accepted.
 I.M. Accessories, Plane Kits, Slope Soarers.
 Wholesalers write to us for Stock and Price Lists.

THE HOBBY HANGAR

1 Derby Road, Caulfield East, Vic. 3145
 Telephone: 211 4788 — 211 4984

RADIO MODELLER

Britain's leading r/c magazine for the everyday enthusiast.

Written and compiled by practical modellers.

Available from leading U.S. model shops or send international Reply Coupon (six coupons for air mail) for free sample copy and details of preferential subscription rates.

RADIO MODELLER

64 Wellington Road, Hampton Hill,
 Middlesex, Great Britain

RADIOMODELISME

The French "technical leisure review" brings you, monthly, details of the most exciting up-to-the-minute hobby — electronics — and its application in models of all types.

When ordering your free specimen and subscription details, add four International reply coupons for Air Mail postage charges in writing to:

Radiomodelisme
 21 rue des Jeuneurs.
 75 — PARIS (2), France

MFG.—JOIN NOW!

The Radio Control Industry Association is an association of manufacturers endeavoring to promote radio controlled model aviation as a sport. We are working with the AMA and other trade associations to try to promote radio controlled aircraft competition as well as a sport and fun-time utilization of our products. We also are mindful of the race car and marine applications of our equipment. Dealers, jobbers, and friends of the sport may join as associate members at the rate of \$10.00 per year. For further information write to John Maloney, c/o R.C.I.A., 8960 Rossash Avenue, Cincinnati, Ohio 45236.



RADIO CONTROL INDUSTRY ASSOCIATION