

ALL ABOUT THE '73 NATS!

AMERICAN aircraft modeler

U.S. ONE DOLLAR / U.K. 60p

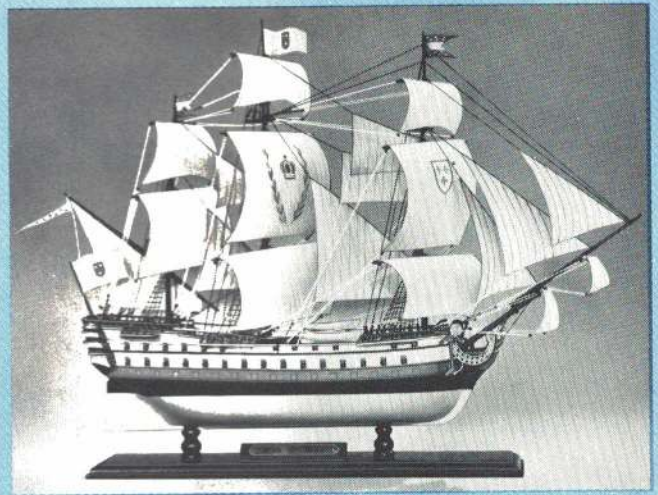
THE LARGEST MODEL HOBBY MAGAZINE IN THE WORLD

NOVEMBER 1973





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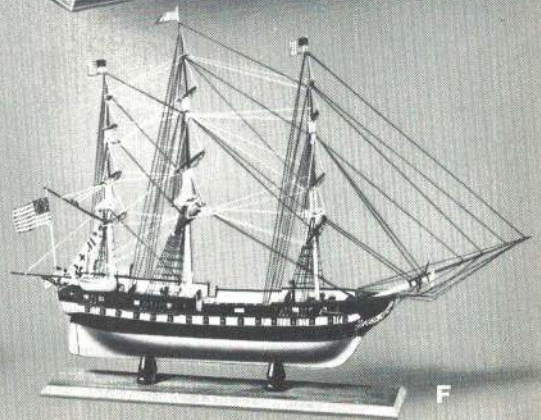
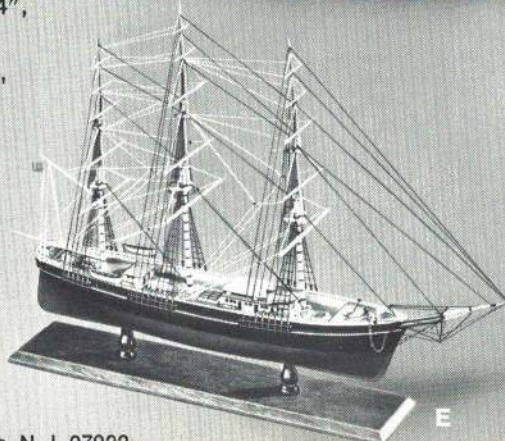
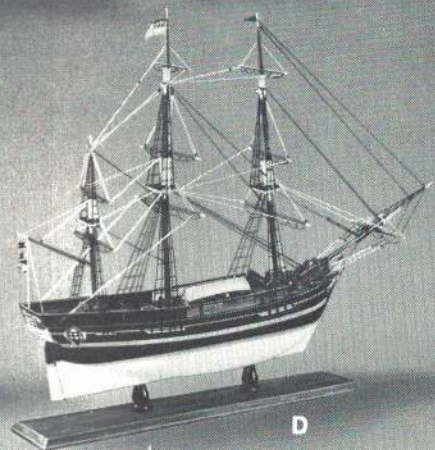
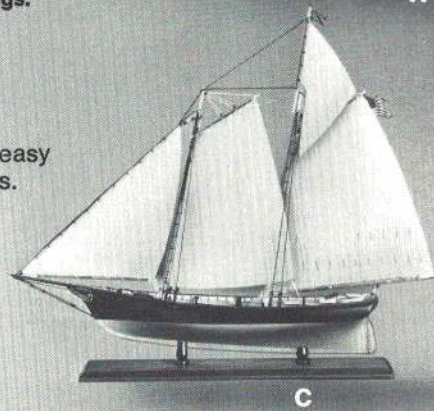
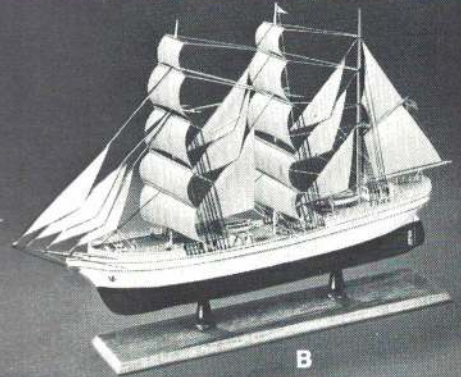
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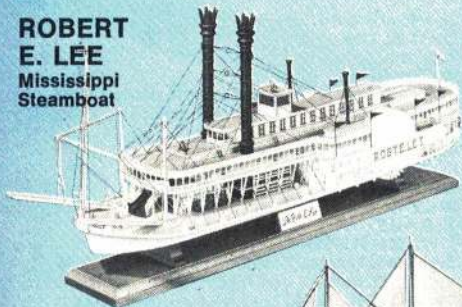
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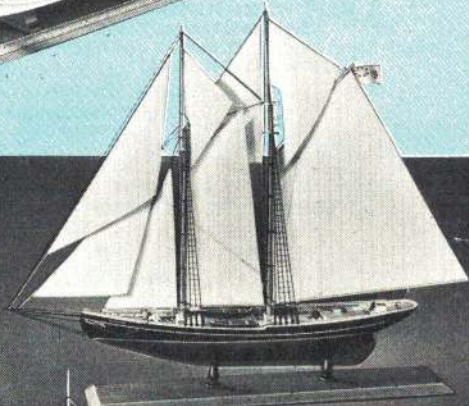
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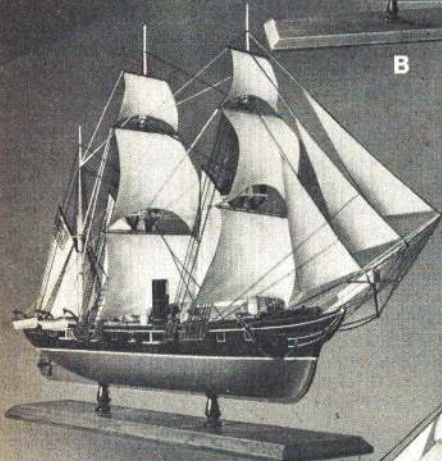
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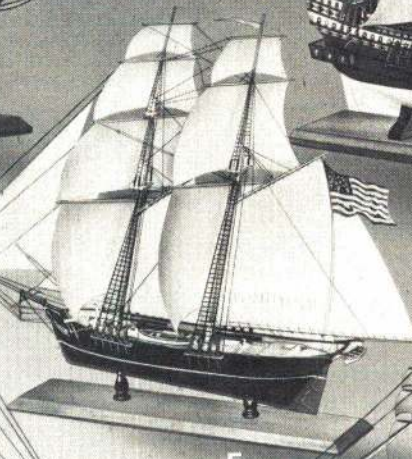
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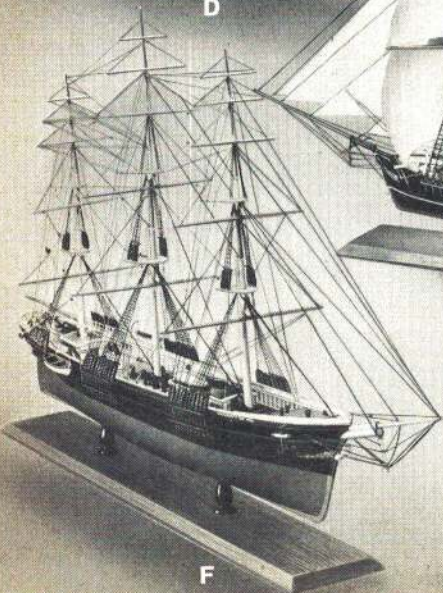
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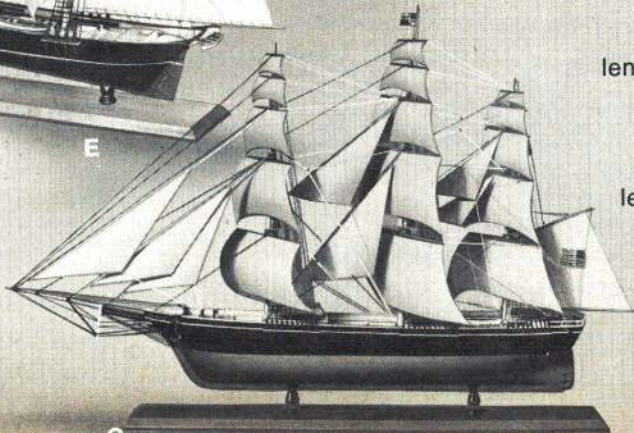
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G

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AMERICAN aircraft modeler

VOLUME 77, NUMBER 5

NOVEMBER 1973

COVER PHOTO

Many girls flew at the NATS in the sanctioned events. In RC fine pilots were Lynda Day, in red blouse, Ramona Schultz and her daughter, right and Sandy Smith, kneeling.

1973 AMA NATIONAL CHAMPIONSHIPS

- 24 BEHIND THE SCENES WITH AMA *by Carl Wheeley*
- 30 RC PATTERN *by Don Lowe*
- 38 CONTROL LINE *by Bill Boss*
- 44 RC SCALE *by Claude McCullough*
- 50 PYLON *by Bob Stockwell*
- 86 FREE FLIGHT *by Bob Meuser*

MODEL WORLD

- 12 ON THE SCENE: GSLMA EASTER SUNDAY AIR SHOW *by Robert Underwood*
- 16 UPLIFT: FLYING FOR CHARITY *by William Treible*

SPORT MODELS

- 20 ELECTRA-FLI *by Bob Boucher and Dave Shadel*

PRODUCTS

- 56 NEW PRODUCTS CHECKLIST *by Eric Meyers*
- 60 AAM TESTS *by Pat Murphy, Duane Lundahl, Jim Mc Nerney, William M. Fuori, Dario G. Brisighella, Sr., and Don Jehlik*
- 66 AAM SPECIAL TEST: THE INTRICACIES OF ELECTRIC POWER *by Jim Mc Nerney*

SCALE

- 72 THE FAIREY FIREFLY— HISTORY *by Patricia Groves*
- 73 THE FAIREY FIREFLY— CONSTRUCTION *by Dave Platt*

ACADEMY OF MODEL AERONAUTICS

- 118 1974 AMA DUES DECIDED, FF WORLD CHAMP RESULTS
- 119 CONTEST CALENDAR

DEPARTMENTS

- 6 EDITORIAL *by Ed Sweeney*
- 8 MODELER MAIL
- 98 AAM PLANS SERVICE
- 121 INDEX TO ADVERTISERS
- 122 CLASSIFIED ADS / QUALITY HOBBY SHOPS

COMPLETE NATS COVERAGE IN THIS ISSUE!



POTOMAC AVIATION PUBLICATIONS, INC.
733 FIFTEENTH STREET, N.W.
WASHINGTON, D.C. 20005

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Published monthly by Potomac Aviation Publications, Inc., 733 Fifteenth Street, N.W., Washington, D.C. 20005. Edward C. Sweeney Jr., President; Walter L. Hulstedt, Treasurer; Harvey E. Cantrell, Business Manager and Secretary.

ADVERTISING DEPARTMENT: All advertisers orders and correspondence to 733 15th Street, N.W., Washington, D.C. 20005. (202) 737-4288. SUBSCRIPTION RATES: In U.S., Possessions and Canada, 1 Year, \$9.00; 2 Years, \$16.00; 3 Years, \$23.00. Elsewhere \$11.00 for one year. Payable in advance. Single copies \$1.00. Six weeks are required for change of address. In ordering a change write to American Aircraft Modeler 733 Fifteenth Street, N.W., Washington, D.C. 20005. Give both new and old address as printed on last label. We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage. When writing the editors address letters: Editorial Office, American Aircraft Modeler, 733 Fifteenth Street, N.W., Washington, D.C. 20005.

POSTMASTER: Send Form 3579 to American Aircraft Modeler, 733 Fifteenth Street, N.W., Washington, D.C. 20005.

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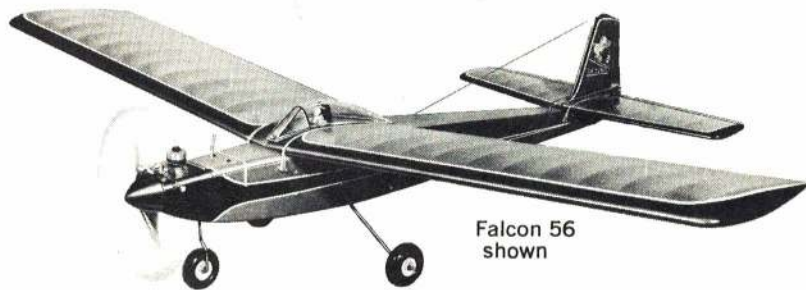
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Falcon 56 shown

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This is just to let you know what a great airplane the Falcon 56 is. Mine has had a hard life as a trainer (my first) and is still going strong. So far I have managed to break off the entire tail section twice, broke the wing in two twice, obliterated the nose three or four times, and landed so hard the gear tore out the whole underside of the fuse. All I keep doing is gluing it back together again and again. I have had 3 radios (from one to five channels) and a 40 and 29 engine in it—flew great with all combinations. If the 56 ever does "buy the farm" I am going to move up only one way—to a Senior Falcon. If the 56 is this good, I can't imagine what the Senior Falcon must be like.

Steve Walker
Ft. Collins, Colo.

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EDITORIAL



NATS WEEK!

Over the last two months various business matters have taken me on four trips—two to California and Colorado, one to Oshkosh, Wisconsin, and another to Dallas/Ft. Worth, Texas. My being in the office has been rare during this time.

With this issue we bring all the readers into the center stage of model aviation—the AMA National Championships. Practically the entire magazine reviews the events of the week of August 6 through 12 at Wittman Field in Oshkosh, Wisconsin. AAM hopes to bring the excitement of the NATS to everyone with this issue, not to only the few modelers who get to see their name or picture in the magazine.

This year's NATS was pretty big. It was a new site for the events and a new experience for the AMA. Wittman Field has been the location of the Experimental Aircraft Association's annual gathering for several years now. It is a large two-runway airport with regular commercial airline flights. The facilities included a building suitable for AMA headquarters, low-ceiling building with space for rows of benches for building and repairing models, a small building for the AMA NATS Hobby Shop and information booth, excellent on-site camping grounds for campers, motor homes or tents, dormitories at the University of Wisconsin nearby and motel rooms. Naturally, Wittman is a private field and had to be rented for the duration of the NATS. All the events had to be run entirely by volunteer AMA members.

The past 25 NATS have been held at U.S. Navy airfields with lots of Navy support. Now, the AMA does it alone depending on its own people and resources. With this in mind AMA deserves great appreciation for giving us another fine National Championships.

Generally there are between 1500 and 2000 contestants at the Nationals each year. Of AAM's readership, that's only 22% in attendance; and only 44% of the AMA membership (based on 2000 contestants, 90,000 readership, and 45,000 members). So few attract so much attention.

These modelers are the country's finest. Traveling from as far away as Puerto Rico to compete, many have competed in national and international meets. They bring their best models. With such talent, it is no wonder so many of us are interested in what goes on at the NATS.

For all of you who fly RC—have you ever seen a big Class C Free Flight ship roar aloft, then drop into a lazy glide? If you were at the NATS, did you see any FF activity? How about Control Line Goodyear Racing, Team Race, or Rat? The modelers flying these events saw your RC model cruising overhead in preparation for another maneuver. Because of a crosswind condition throughout most of the NATS, none of the RC or CL people watched gliding FF models without visiting the FF site. Among the events which are always fun to witness is CL Combat—keeps you alert, to say the least.

AAM always has several author/photographers at the NATS. Our correspondents were easily recognized in their AAM embroidered shirts. They are great people to know; we hope you had a chance to say hello. They are also frequently contestants, sometimes pit helpers and occasionally even officials. Don Lowe competed in RC Pattern, judged for Class A and B and placed fourth in C Expert. Bob Stockwell pitted for his son in Pattern and Pylon. Claude McCullough entered RC Scale, Howard Rush CDed the Combat event. In FF Bob Meuser worked, wrote and photographed throughout the meet, as did Bill Boss in CL. Johnny Smith was helping his son fly and gathered ideas for his column. John Burkam worked as the CD of the RC Helicopter event (unofficial AMA activity at the Fond du Lac Airport). Al Rabe was busy in CL Stunt and won the event and the Jim Walker Trophy.

From our Washington office came Art Director Kelly Matthews to take photos, Circulation Development Manager Joe Wright working the AMA information booth, secretary Jane Blitch assisting in the AMA trophy room, New Products Editor Eric Meyers flying in RC Pattern, and myself taking color photos of all events.

The NATS had its problems, too. Spectators had nothing to see or do (except learn to fly with Testors or Cox) and it cost to get in to do it—a problem to be solved next year. The Free Flight site was pretty lousy, but then the weather was not typical summer weather in Wisconsin and the field was too small. Even here there are solutions for next year.

Anyway, we were there and with this issue will try to bring you there too. See you next year in person? Hope so.

—Ed Sweeney

FIRST PRIZE



GOES TO THE EGGSHELL

MOTHER NATURE DID A TOP-NOTCH JOB WHEN SHE CREATED THE EGGSHELL.

IT'S WATERPROOF. COMPLETELY SEALED. LIGHTWEIGHT, BUT STRONG. SMOOTH AND UNIFORM. IT'S MOLDED TO CONFORM PERFECTLY TO WHAT IT COVERS. IT WON'T PEEL OR FADE. AND IT PROTECTS THE EGG FROM HEAT AND COLD.

BUT, WHEN IT COMES TO COVERING A MODEL AIRPLANE, MONOKOTE IS ALL THESE THINGS, TOO. IN FACT, THERE ARE EVEN SOME THINGS MONOKOTE HAS OVER THE GOOD OL' EGGSHELL.

FIRST OF ALL, YOU CAN COVER YOUR MODEL WITH MONOKOTE IN A LOT LESS TIME THAN IT TAKES A HEN TO MAKE A SHELL.

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THEN, OF COURSE, AN EGG ONLY COMES IN TWO COLORS (EXCEPT AT EASTER). BUT, MONOKOTE COMES IN 18 COLORS, INCLUDING METALLICS AND PAINTABLE CLEAR.

SO, WHEN YOU THINK ABOUT IT, BEING THE WORLD'S SECOND GREATEST COVERING ISN'T BAD . . . BECAUSE, IN THE MODELING FIELD, WE'RE NUMBER 1.

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OPAQUES**
Aircraft Aluminum
Dove Gray
Olive Drab
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THEM AT
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Modeler Mail

OOPS!

The September issue of American Aircraft Modeler contained an erroneous byline. "Curlew" was written by Arthur Schultz, its designer. George Brownfield, who we inaccurately credited as author, was the photographer. Our sincere apologies to Mr. Schultz.

As we are dealing with omissions, another important detail, this time in our October issue, was the identification of the cover picture. It was a beautiful Sopwith Camel from an Ektachrome 2½ x 2½ transparency filmed at the Bealton, Virginia World War I airfield. The photographer is Lt. Col. Charles A. Walters. You will see more of his excellent photography in future issues.

—Editor

Modeling is truly rewarding

After reading about Mark Hagen's problem in the July issue, a rather interesting coincidence occurred. A fellow teacher stopped me and related how the son of a friend of his had been transformed from a poor reader into an honor student as a result of his interesting in modeling.

The boy's father had promised financial support if the son would read the plans and do all the modeling work himself. The ultimate outcome was that the boy not only became a proficient modeler, but also developed pertinent academic and manipulative skills. The father conceded that the return was well worth the investment.

I personally credit modeling with giving me the incentive to learn, to experiment and investigate. I found that it was necessary to learn not only the things mentioned by the editors of modeling magazines, but mathematics, meteorology, drawing, history, and other disciplines associated with the development and theory of flight.

These pursuits eventually enabled me to qualify as a teacher of science, and my desire to acquaint others with the benefits of modeling put enthusiasm into my classroom presentations. Aero-modeling has given me much. I feel obligated to pass these benefits on.

Mrs. Hagen's son could use his time much less advantageously than in building or flying models, or, in fact, than in building the birdhouses facetiously suggested by the Editor. Many young people spend their leisure time in vandalism, lawlessness, and drugs. I have

yet to see a dedicated modeler exhibit any of these traits.

Radio control is expensive; so is education. But both are far less costly than ignorance. We all should encourage our children to pursue this hobby, but, like my friend's son, give them obligations that will make them truly appreciative. Both parent and child will reap innumerable benefits.

Edgar J. Abram, Chairman
National Junior Committee
Oauquaga, N.Y.

Member of Plastic Air Force

The article "Uncle Sam's Plastic Air Force" (September 1973 AAM), brought back many memories for me, and I finally learned what the complete program was about. I'm enclosing a copy of the U.S. Navy certificate I received for



making a Heinkel III model, at Bridgeton High School, N.J. I believe the "rank" was based on how many models you made.

Milton Sheppard, Glen Mills, Pa.

Advice for learning RC

I would like to advise anyone getting into RC flying to first get help from a qualified flier. I have learned how to fly a Falcon 56 on three channels from a member of my local club (Lewis and Clark RC Modelers). He was more than willing to help me, and I think that the people in model airplane clubs throughout the U.S. are generally a great bunch of people.

Stan Armstrong, Lewiston, Ida.

Zillion-to-one chance

Isn't it remarkable how our models and everything else are attracted to each other? Out of hundreds of thousands of cubic feet of air over a given area, isn't it odd how our models and telephone poles, light poles, trees, etc., always seem to occupy the same cubic foot at the same time? The chances may be a zillion to one, but you can always bet that a model airplane will hit whatever there is to be hit!

Dave Gjessing
Granville, Ohio

Safety reminder

Recently an article appeared in the local newspaper about a CL modeler who received second and third degree burns when the model he was flying came in contact with high voltage lines near his home.

(Continued on page 120)



CONFIDENCE

Orbit flyers have it.

SO DOES JONATHAN LIVINGSTON SEAGULL



WHEN THE PRESSURE'S ON
WHEN PERFECTION IS AN ABSOLUTE REQUIREMENT
THE KNOWLEDGABLE FLYER CHOOSES ORBIT.

Although most of the sequences in the Hall Bartlett production of Jonathan Livingston Seagull used live birds, certain "very special" sequences required a "very special" seagull. Mark Smith, of Mark's Models, was given the difficult task of designing, building, and flying a glider that would look and soar enough like a live seagull to fool the cameras, and he had to choose the best radio for the job. He chose Orbit.

As Mark tells it, "First I had to make the glider look realistic. Unfortunately, a glider shaped like a seagull doesn't lend itself to conventional glider controls so I had to learn to fly all over again. By the time we started filming, my Orbit had gone through more of a work-out than any radio deserves."

*Mark Smith
and "Jonathan"
at Torrey Pines,
California*

Mark also described the problems of the "crash scenes", when he would pick up the pieces of one seagull, put the radio in another one, and go on with the next scene. "A camera crew on location costs thousands of dollars a day, says Mark, "so the pressure on me not to be the cause of any delay was tremendous. During the filming, shooting for hours on end, Jonathan Livingston Orbit never "glitched" even once. I was able to concentrate entirely on making him fly perfectly. When you see the movie, I don't think you'll be able to tell the real seagulls from my models, except that real seagulls can't do what I make Jonathan do."

First in R/C Technology since 1954.



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Here's Hobby Lobby's New 3 Channel Radio. Add up what its features are worth, then see if you believe the price!

★ **ULTRA-LIGHT** airborne WEIGHT: 6.5 ounces with 2 servos, and 225 mah. batteries; 8.8 ounces with 2 servos, and pencil batteries

★ Excellent SERVO RESOLUTION and CENTERING for CONTEST work

★ I. C. Servo Amplifiers with ONE-CELL-OUT flight capability

★ Smallest SERVOS made



★ A COMPLETE, ready-to-operate outfit: 3 channel Transmitter, 3 channel Receiver, 2 Servos, Airborne battery holder & switch

★ Same FAR-REACHING Transmitter power as the Hobby Lobby 5

★ Precise 2-axis Control Stick

★ Same selective and sensitive Receiver circuitry as the Hobby Lobby 5

★ PRICE: About HALF of what you'd expect to pay for a top quality 3 Channel radio

The Hobby Lobby 3 is a ready-to-operate 3 Channel Digital Proportional outfit, consisting of a 3 Channel Transmitter, a 3 Channel Receiver, 2 Servos and airborne battery holder and switch.

The Hobby Lobby 3 is manufactured for Hobby Lobby by the same company that makes the unusually reliable Hobby Lobby 5 proportional system. Many items are common to both systems: the servos...HL 3 uses the same servos as the HL 5 Series III 5th Channel servos; and the optional airborne nickel-cadmium battery packs are interchangeable between both systems.

With its optional 225 mah. nickel cadmium airborne battery pack, the Hobby Lobby 3 is one of the true ultra lightweight systems.

The precision of the control stick-to-servo, the 3 1/2 pound servo thrust, the out-of-sight range, and the proven reliability record of the circuits used in the system combine to make the HOBBY LOBBY 3 the finest 3 channel system available regardless of price.

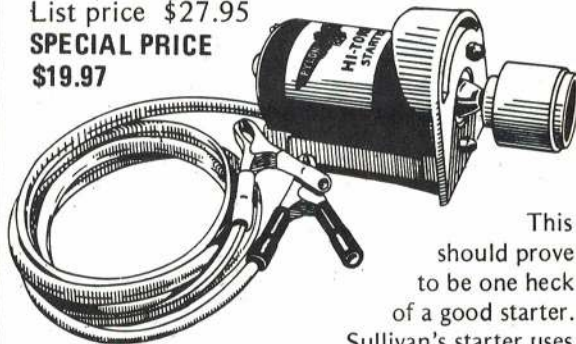
HOBBY LOBBY 3 \$8900
3 Channel (27 mhz, 2 servos)
Digital Proportional \$99
(72 mhz, 2 servos)

27 mhz, HOBBY LOBBY 3 available November 1, 1973.
72-75 mhz, HOBBY LOBBY 3 available January 1, 1974.

NEW! SULLIVAN-PYLON ELECTRIC STARTER

List price \$27.95

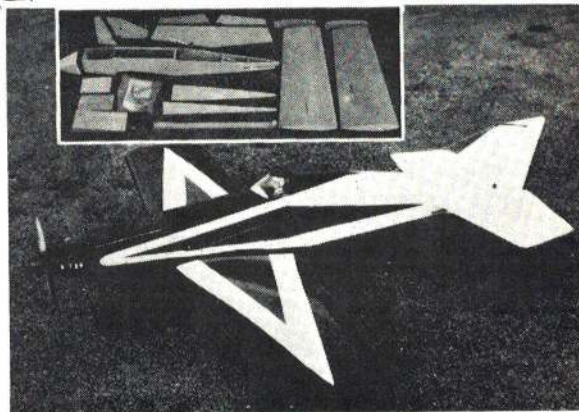
SPECIAL PRICE \$19.97



This should prove to be one heck of a good starter. Sullivan's starter uses a 12 volt motor that lets Sullivan's advertise higher torque and RPM's than any other starter. The starter has a strip switch and a pressure grip to enable you to shove the starter hard against a prop even when your hand's oily.

Starter cone has surgical rubber insert like Penford, but the plastic parts are nylon, which is a nice durability feature. Starter has a 2 year guarantee.

NEW! MALco's "A-TAK" \$49.00



Here's an airplane kit that you probably haven't heard of yet. It's ALWAYS easier for me to sell you a kit from a large well-established manufacturer, and it's difficult to sell a kit from a small, new manufacturer. BUT, THIS KIT IS WORTH YOUR ATTENTION!

First, IT IS UNDERPRICED BY ABOUT \$25.00! The degree of completion of this kit is extraordinary. For a kit that has FULLY SHEETED FOAM WINGS (with balsa wood sheeting, no less!) and for a kit that also has the fuselage 90% assembled, you would expect to pay about \$75.00.

The "A-TAK" is a 50" span sport flying plane for engines in the .40 size range. The design is attractive and the flyability is guaranteed. With its symmetrical airfoil the "A-TAK" will be a delightful Sunday Flyer, and if you're good enough, a Pattern Contest winner.

CALL US FOR FAST C.O.D. or CREDIT CARD SHIPMENTS
Area Code 615 834-2323

TRY US OUT! M. R. did.

"I would like to compliment you on your fantastic service. I was very surprised on my first order with the speed at which I received it. I ordered a Hobby Lobby 5 Radio, and couldn't have been more pleased!!!"
M. R., Belton, South Carolina.

HOBBY LOBBY'S COMPLETELY Ready-to-Fly 3 CHANNEL AIRPLANE

Ready Bird 23

\$19900

The READY BIRD 23 is an almost fully assembled Lanier airplane with an EK Products "Little Red Brick" 3 Channel digital proportional system FULLY INSTALLED, a Fox 25RC engine INSTALLED, and pushrods, wheels, fuel tank, ... EVERYTHING ... FULLY INSTALLED AND ACTUALLY READY FOR YOU TO FLY!!!



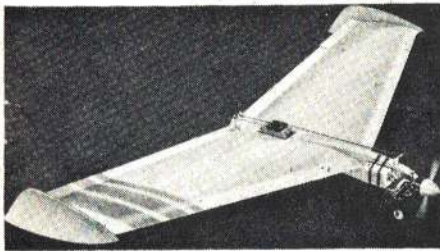
Since we couldn't fit the fully assembled plane into a box you must glue the two wing halves together, and glue the tail to the fuselage. But, this only adds up to about 23 MINUTES WORK, and then you charge the airborne nickel cadmium batteries, gas 'er up, and GO FLY IT!!!

The **Ready Bird 23** comes with a Fox 25 RC engine INSTALLED

We actually have a problem describing the READY BIRD 23 because THERE HAS NEVER BEEN ANYTHING LIKE IT!! The airplane itself is a new 50" span plastic Lanier plane with a symmetrical airfoil wing that gives steady 3 channel handling characteristics even in wind, but retains enough stability to make the plane ideal for beginners. The READY BIRD 23 is designed for 3 channel operation (rudder, elevator, throttle) and your READY BIRD 23 comes with the excellent EK Products "Little Red Brick" 3 channel digital proportional INSTALLED. (You DO need to charge up the rechargeable airborne batteries—sorry about that!)



NEW! Kraft
"WINGMASTER" \$29.95
 and **"WINGMASTER JR."** \$27.95



A WINGMASTER builds up in about 5 hours. They are super-simple RC planes for 2 or 3 channels, and use foam wing cores and cardboard covering materials. They'll fly as "hot" or as gently as you want depending upon engine size.

"WINGMASTER"
 56" span for .40 - .60 engines. \$29.95
"WINGMASTER JR."
 45" span for .15 - .40 engines \$27.95

..... Kraft Accessories

MODELERS CLAMPS

These handy gizmos are molded of glass-reinforced nylon. Glue won't readily stick to them. Tension provided by rubber bands.

Pair of
SMALL
 Kraft CLAMPS
 \$1.29



LARGE Kraft
 CLAMP 98¢

Kraft MANUAL THROTTLE ACTUATOR \$2.49

Permits operation of engine throttle without turning on transmitter.



Kraft ACCESSORY ASSORTMENT \$1.95

Contains push rod exits, hatch bracket, flying stab bellcrank, wheel collars, nylon bolts, long and short control horns, bellcranks with bushings.



NEW!
 Volume II **HOBBY LOBBY**
ILLUSTRATED CATALOG
 \$2.00

Our Volume 2 catalog has more items, more pictures, and better pictures and descriptions of R/C and control-line stuff than we've seen in any other catalog.

We had a lot of guys tell us that our previous catalog was well worth the two bucks it cost them. Volume 2 is even better.



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 and
Fox 40 RC Engine
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SALE \$39.00



Du Bro "Whirlybird" HELICOPTER
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K & B 40 RC Engine
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Ace 2T KIT
 50" span, stable,
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 and
Cox Golden Bee .049 Engine
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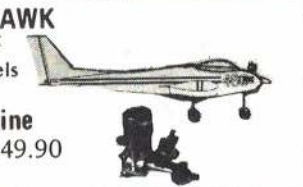
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SALE \$16.00



Ace UPSTART 1/2 A Racer
 34" span, hot
 2 channel and
Cox Tee Dee .049 Engine
 Total list value \$25.60
SALE \$19.00



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 and
Fox 36 R/C Engine
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SALE \$35.00



Sig PIPER CUB J-3
 71" Span,
 4 Channels and
McCoy 35 R/C Engine
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SALE \$38.00



Midwest CESSNA All Foam
CARDINAL A-R-F
 and
Cox Medallion .15 R/C Engine
 Total list value \$40.45
SALE \$28.00



NEW Southwestern Sailplanes
"HONKER" and
Cox Babe Bee .049 Engine
 Total list price \$20.40
SALE \$15.97

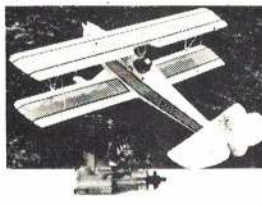


Sterling's Control-Line
RINGMASTER
 and **K & B**
Stallion .35 Engine
 Total list price \$23.95
SALE \$17.99

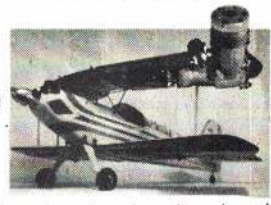


NEW! ☆☆☆☆ **TWO NOSTALGIC BIPLANES** ☆☆☆☆

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 and
OS 60 RC Engine
 Total list price \$144.93
SALE \$99.00



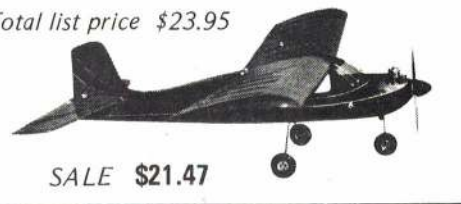
Andrews
 ☆ **AEROMASTER II**
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Veco 60 RC Engine
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NEW!
Sig "KWIK BILT" RC Super Chipmunk
 The new "A-R-F" 4 channel scale plane with unique molded and detailed fuselage halves, foam wings, 64" span for .45 to .61 engine.
 Total List Value \$39.95
SALE \$35.97



NEW!
Sig KADET
 Attractive 3 channel sport flyer and trainer.
 57" span for .19 - .30 engine.
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ON THE SCENE

GSLMA EASTER SUNDAY AIRSHOW: A RACE AGAINST THE FLOODING MISSISSIPPI.

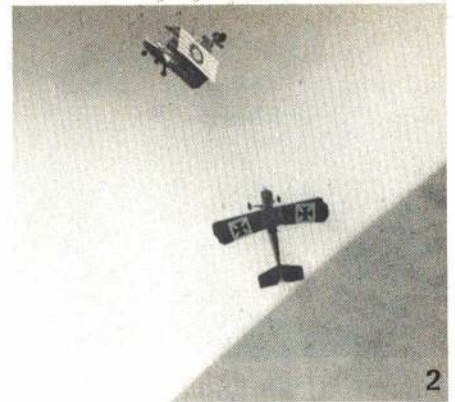
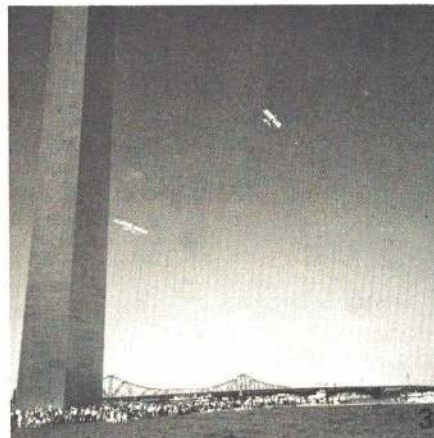
by Robert Underwood

When the concept of a model airplane demonstration at the Jefferson National Expansion Memorial was first advanced, the superintendent of the National Park Service's Gateway Arch laughed at the prospect. "We never care to mention airplanes in the same breath with the Arch," he said. This is because the famous 630 ft. "wicket" has proven to be irresistible to a number of full-scale pilots who have managed to fly through it—illegally, of course.

In spite of the Arch's previous experiences with flying machines, more than 15,000 spectators attended the airshow on Easter Sunday. The event was jointly sponsored by the St. Louis Beautification Commission (who gave away 40,000 trees to the visitors), and CBS Radio Station KMOX. A model flying demonstration by the 12 member clubs of the Greater St. Louis Modeling Association (GSLMA) was the high point of the entertainment.

Many types of models were featured—Control Line, Radio Control, and 100 Delta Darts. Eight Control Lines sped away in a Sport race; Combat models darted in pitched battle; RC Sailplanes soared silently aloft; Top Dawgs raced nimbly beneath the stainless steel arch; Carrier and Stunt Control Line made their appointed rounds; 1/2A Mouse Racers buzzed in angry pursuit; Pattern RC planes shared air space with a vintage Buzzard Bombshell with radio gear. Narrative description was continuous

(Continued on page 100)



(1) The GSLMA on static display at the Visitors Center. (2) Snoopy and the Red Baron fight it out one more time. (3) The greatest pylon in the world? No, just part of the Gateway Arch. (4) Bob Walsh's RC sailplane looking for an "uplift." (5) Three CL sport racers perform against the St. Louis skyline. (6) Mel Hart's RC Buzzard Bombshell getting ready. The Mississippi is creeping up on them.



GREAT THINGS ARE COMING FROM



ACADEMY LINE

Kwik-Cote: The new plastic material covering for all types of model airplanes. It's stronger, more durable, and best of all; Kwik-Cote has a high degree of flexibility . . . which means it is not brittle and therefore Kwik-Cote is highly resistant to shattering. In addition Kwik-Cote requires relatively low temperature for adhering to balsa or foam models. Kwik-Cote can be taken around complex curves without wrinkles appearing, it has a 40% shrink factor.



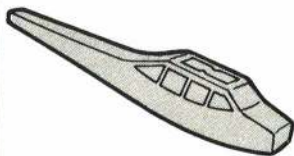
SAVE \$1.00

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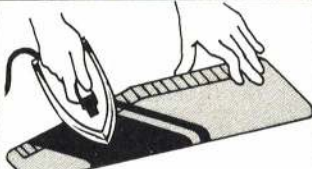
As a special introductory offer, this coupon is worth \$1.00 off the \$7.98 list price of Kwik-Cote at all cooperating hobby shops. This coupon is good until December 1, 1973. Only one coupon good per sheet of material purchased. This coupon has no redeemable value by the retailer.



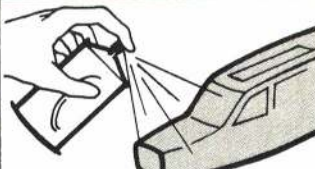
KWIK-COTE COVERS BETTER...



Kwik-Cote colors are opaque . . . covers balsa grain and foam completely.



Kwik-Cote stays in place easily when applying one coat over another.



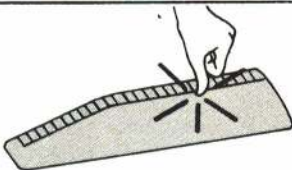
Kwik-Cote can be sprayed or painted with standard fuel-proof paints, after preparation.



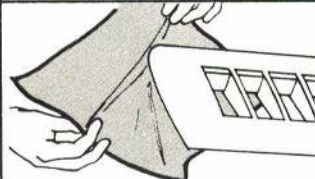
Kwik-Cote colors are opaque —light colors can be used over darker colors, without colors showing through.



Kwik-Cote is stronger than any normal balsa construction. In fact, construction will break before Kwik-Cote will.



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Kwik-Cote has a 40% shrink factor. Now, for the first time, wing tip . . . top and bottom . . . can be covered with a single piece of material.

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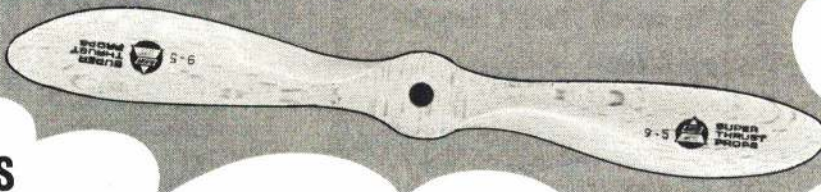
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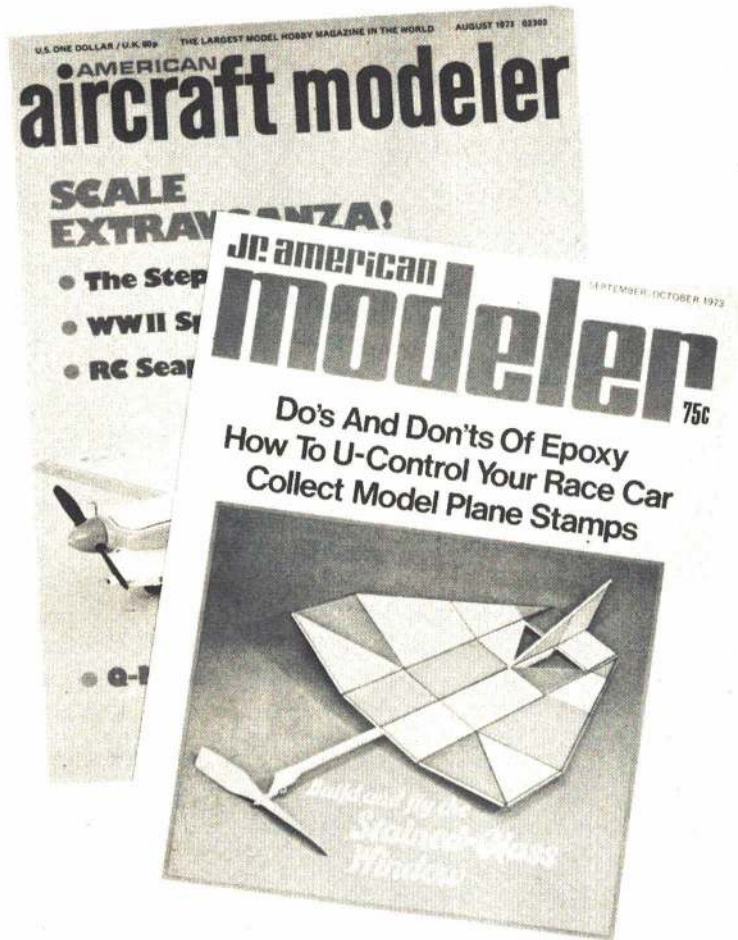


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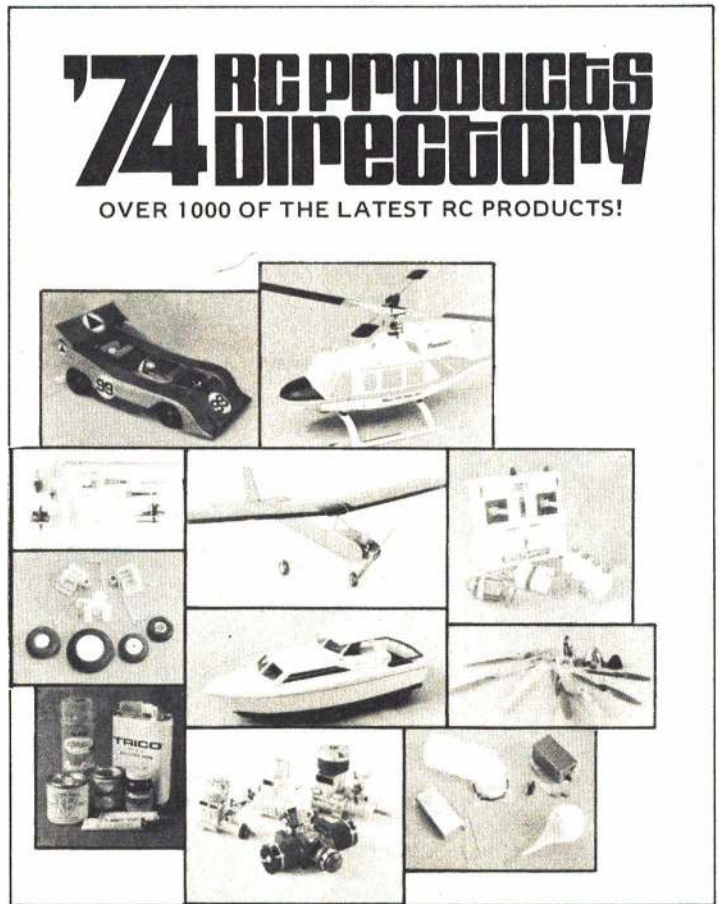
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FLYING FOR CHARITY POCONO MODELERS RAISE \$600.00. / by William Treible

At the tender age of four months, the Pocono Modelers Club (No. 554) pooled the talents of its limited membership and, with a little outside help, staged an ambitious and highly successful dual purpose public fun fly in May.

Objectives of the event were: 1) To raise money for the General Hospital of Monroe County, a 235-bed institution in the midst of a \$1.5 million fund drive to build a primary care wing, and 2) To generate interest in the hobby/sport of model flying.

In the words of program chairman Dr. Joel S. Samuelson, "We did very well on both counts. We raised over \$600 for the hospital, and introduced several hundred Pocono area residents of all ages to model aeronautics. We received excellent publicity from the area's newspapers, radio and television stations, thanks to the enthusiastic support of Bill Treible, Public Relations Director at the hospital."

The show was held on Sunday afternoon, May 13. Fourteen events in all were scheduled including RC Gliders, a variety of RC and CL demonstrations, and C-Combat. We had a good, loyal crowd in spite of the weather—it was cloudy, windy, unseasonably cold, and rain was a definite threat all day. In addition, we made the mistake of holding an event like this on Mother's Day, a holiday that most families traditionally observe at home.

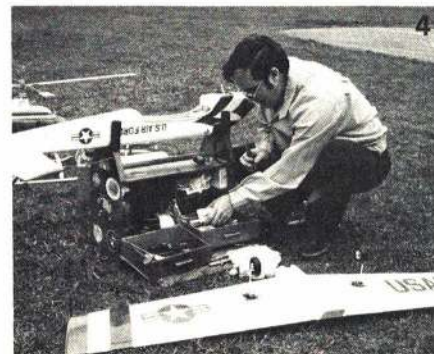
Highlights of the day included Leonard Sabato's (Buchanan, New York) demonstration of his \$5000 prototype RC scale Bell Jet Star Helicopter, and Bob Noll's (Connecticut) spectacular demonstration of precision stunt flying with his scale biplane. Bob pressed the biplane into service after his pattern plane jammed a nose gear when he unsuccessfully tried to take off in rough grass.

Allowing the spectators to fly both the U-control and RC planes was a big hit. The "hands on" opportunity thrilled both gals and guys, young and old alike. One RC model came out on the short end of a low pass through the woods, despite the use of the buddy-box setup. (Pass the epoxy please!)

We earned the \$600 in a variety of ways. The biggest money raiser was a vigorous advance sale of tickets. (A well-known cause with broad local support definitely helped the ticket sales.) In addition, we charged 75 cents for U-Control and \$1 for RC flights, which lasted four to five minutes each. The hospital's mail room multilithed a simple one-color program for us which we sold at

(Continued on page 100)

(1) Club Treasurer Anthony Harlacher, D.D.S., handles the master control and John Tartaglione, D.V.M., assists a young spectator fly Dr. Harlacher's radio-control plane with a buddy box. (2) As a result of their efforts, the Pocono Modelers Club will receive permanent recognition on a nameplate to be displayed in the new Jordan Primary Care Center scheduled to open in 1976 at the General Hospital of Monroe County in East Stroudsburg, Pennsylvania. (3) A delighted crowd watches Leonard Sabato demonstrate his radio-controlled scale model helicopter, one of the few models of its kind in the country. (4) Bob Noll works on his pattern plane after a tangle with rough turf put the nose gear out of commission. (5) Two members of the Pocono Modelers Club, Tony Harlacher, left, and Andrew Tartaglione, turn over a \$600 check to Dr. Claus G. Jordan, general chairman of the General Hospital of Monroe County's fund drive.



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3-Channel System

Get your hands on the new Heathkit GDA-1057 Systems and you fly with dual-axis stick control, and a super slim case with comfortable adjustable hand strap. And what is initially a neat 3-channel transmitter, easily becomes a 4-channel unit with the simple addition of an optional modification kit. That way you can order 3 now, add the fourth later. Or order 4 to begin with.

The Heathkit GDA-1057 System uses the flight proven circuitry found in the popular Heathkit GD-19. The GDA-1057-1 3-Channel Transmitter comes with a 2-axis stick assembly. Add the GDA-1057-4 modification and put 3 channels on the stick with the fourth controlled by a thumb tab. The GDA-1057-1 Transmitter is available on all R/C frequencies, and is housed in a slender new case for positive one-hand action during launch or engine adjustment. Other top-flight features include all nickel-cadmium battery packs with external charging unit, vinyl-covered front panel, telescoping whip antenna, and relative power output meter that doubles as a battery-charging indicator. The new compact GDA-1057-2 3-Channel Receiver has a molded nylon case and connector block for servos and receiver battery pack. It's compatible with all Heathkit servos, and the GDA-1057-4 mod kit converts it to 4-channels too.

SPECIAL SYSTEM PRICE #1 — Order 3-Channel Transmitter, Receiver, Receiver Battery, two GDA-19-4 Standard Servos, \$139.95.*

SPECIAL SYSTEM PRICE #2 — Order same system as above, substituting GDA-405-44 Miniature Servos, \$149.95.*

SPECIAL SYSTEM PRICE #3 — Order same system as above, substituting GDA-505-44 Sub-miniature Servos, \$149.95.*

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Kit GDA-405-3, receiver battery, 1 lb.	9.95*
Kit GDA-19-4, standard servo, 1 lb.	19.95*
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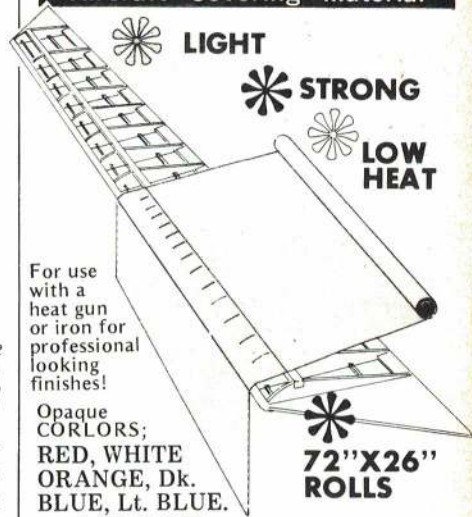
sale
\$14.99

Features on and off switches for the motor and the heating element. Comes with a removable spreader nozzle and does everything it's supposed to do.

"Just thought I would tell you how pleased I am with your heat gun. I have used it for shrinking Solar film (haven't tried it on Flite-Kote as yet), for speeding the curing of epoxy, for shrinking heat-shrink tubing on wiring, etc. Works great! Why would anybody lay out \$25 - \$30 or so when yours does the job so well?" EL Minnesota

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Aircraft Covering Material



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Opaque COLORS;
RED, WHITE
ORANGE, Dk.
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72"X26" ROLLS

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List price \$6.95/per roll



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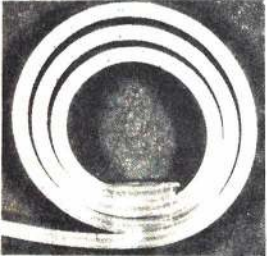
MODEL ASSEMBLY REG. \$2.50/16oz.
KWIK TAK GLUE

Formulated specifically to be an excellent adhesive for gluing hardwood, balsa wood, and plywood parts together in modeling work. Fast setting for short clamp time, bond joint is stronger than the wood itself, and is SANDABLE; sands easily for a good looking finish on model joints.

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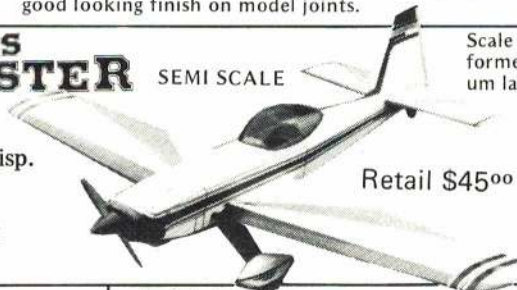
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SPECIFICATIONS:
Engines/ .21 to .40 disp.
Radio/ Full-house 4 channel system.
Wing span/ 54" foam wing cores.



Retail \$45⁰⁰

Scale shaped canopy, vacuum formed wheel pants, aluminum landing gear, hardware!

Sale Price
\$32⁹⁹

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ACRO STAR
R/C SPORT BIPLANE

AND THE S.T. BLUEHEAD
.60 R/C COMBO !!!
IS READY!



\$145 Value
SALE

\$109⁰⁰

50.6 span
820 sq."



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6 CHANNEL ASSEMBLED 6 CHANNEL 2 STICK SPECIAL
Reg. \$340⁰⁰
Discount **\$219.00**

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The HOT Taipan .21 R/CTBR Schneurle is recommended as shown on the construction article accompanying this kit. Low wing design for exciting flying.

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Joe Bridi's new FAST Pattern ship.



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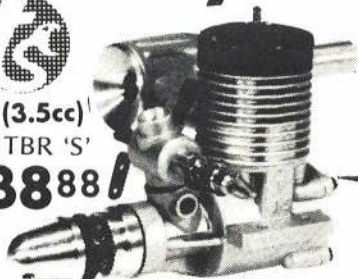
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Taipan



.21 (3.5cc)
R/C TBR 'S'
\$38.88



- .09 DIESEL (1.9cc) retail \$19.95 \$15.99
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"Could you please rush to me, as soon as possible the complete kit of 'The Real Thing' airplane. My husband saw it advertised in the RC Modeler Magazine and fell in love (for the second time)." Love J.V. Florida



If you haven't flown THE REAL THING then you must be flying something else !



ALMOST-SORT OF-GENUINE STAND-WAY-OFF SCALE OF THE REAL THING



46" SPAN
319" AREA
.049 -10 DISP.
All balsa kit.

A real Sport Flyer just for the sake of having fun! Try 2 or 3 channels on a sunny-Sunday for what ails'ya! Self-jiggig construction.

sale \$11.99

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"We really appreciate the Sport Flyer, I look forward to receiving it each time. It's very informative and keeps us up to date with you all. DM Florida

"I have always been interested in R/C. As soon as I saw your newsletter, "The Sport Flyer", and the tremendous bargains that are in it, I immediately decided to join my fellow R/C'ers. Thanks a whole bunch". MS Georgia

"Just received your 'Sport Flyer', find enclosed a small order from it. real savings, good work, and thank you. Nice to know how to save a few \$." GB

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4 mini servos, nicads, charger switch harness and trays.
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at World Engines or Hobby Shack.



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Complete system with only basic construction and inter-wiring left for you
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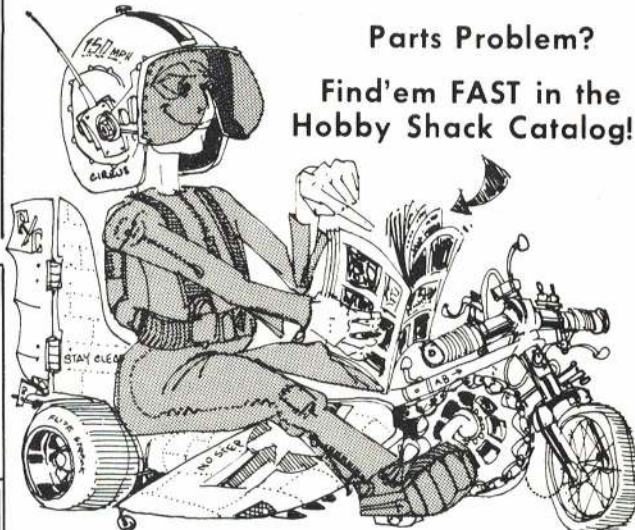
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73-74' MODELER'S CATALOG

Electra-Fli

Silent aerobatics are fun with this two-channel, electric-powered model. Motor/battery system is rechargeable at the field in just 15 minutes. / by Bob Boucher and Dave Shadel

The Electra-Fli was designed while I was searching for a suitable sport-type aircraft for the Astro 10 electric propulsion unit manufactured by Astro Flight, Inc. of Los Angeles.

Several kit designs were modified to accept this system and of these, the Midwest Cardinal and Goldberg Ranger 42 proved the best. They were docile in flight and were good trainers, but it was believed that a lightweight, all-balsa design with similar dimensions would perform even better.

The first original designs resembled the Spirit of St. Louis Electric Pylon Racer flown by Bob Boucher at the 1972 MATS Show, but with larger constant chord wings and an increase in the tail area. We have flown several variations over the past few months, and are quite pleased with their ability.

This ship will ROG from smooth surfaces in 50 to 60 ft. It will perform barrel rolls, snap rolls, inside loops, spins and inverted flight.

If you're interested in a fun-type ship which is easy to build and fly, quiet, and doesn't spew out greasy kid stuff, give electric flying a try.

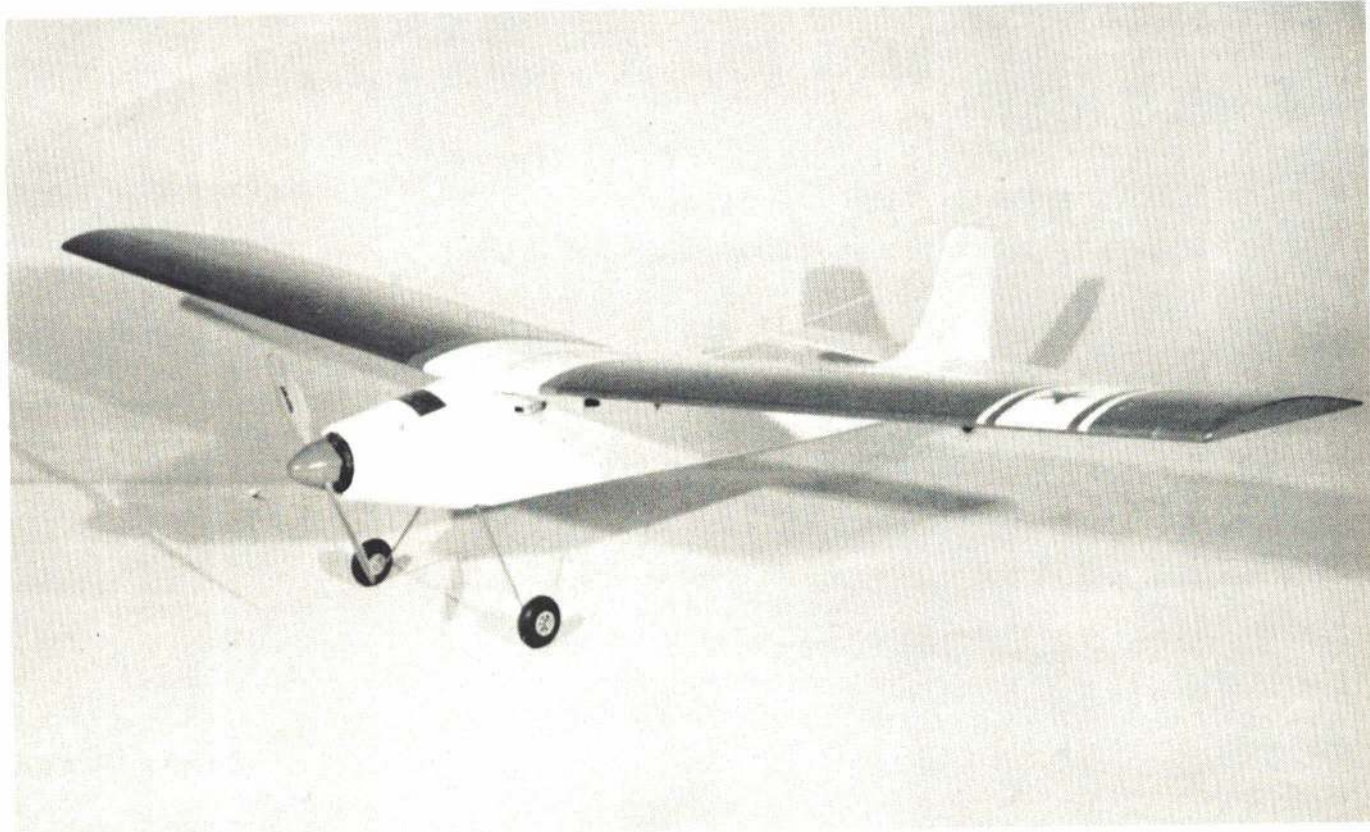
Construction

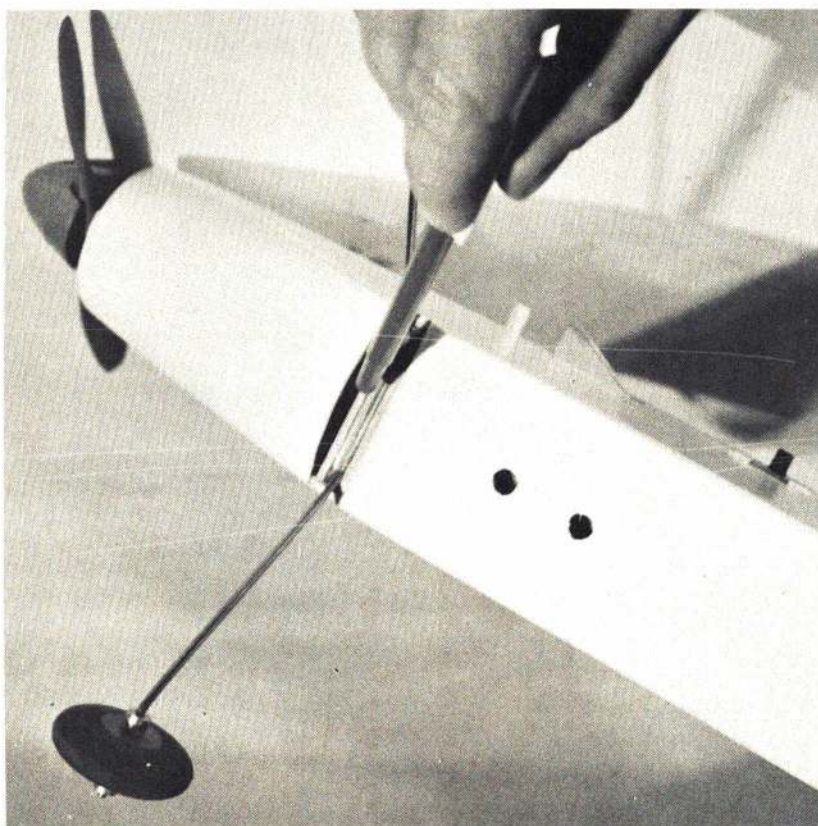
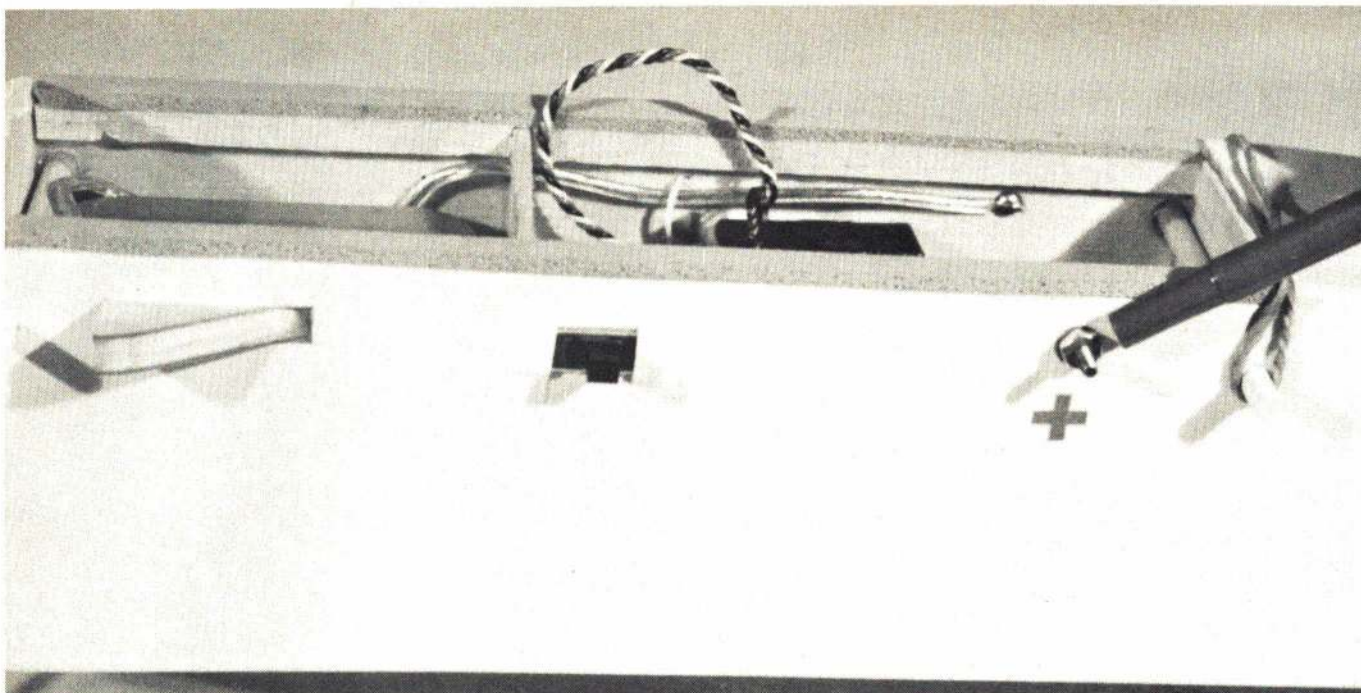
The Electra-Fli can be built and ready for covering in one day.

Fuselage: The fuselage is an all-balsa box with only three formers. The motor tube can be made from a rolled balsa or cardboard tube, whichever you prefer. It must be a snug fit, since no bolts are used to secure the motor. Remember, electrics have no vibration and will not tear out of the mount as glow engines have been known to do.

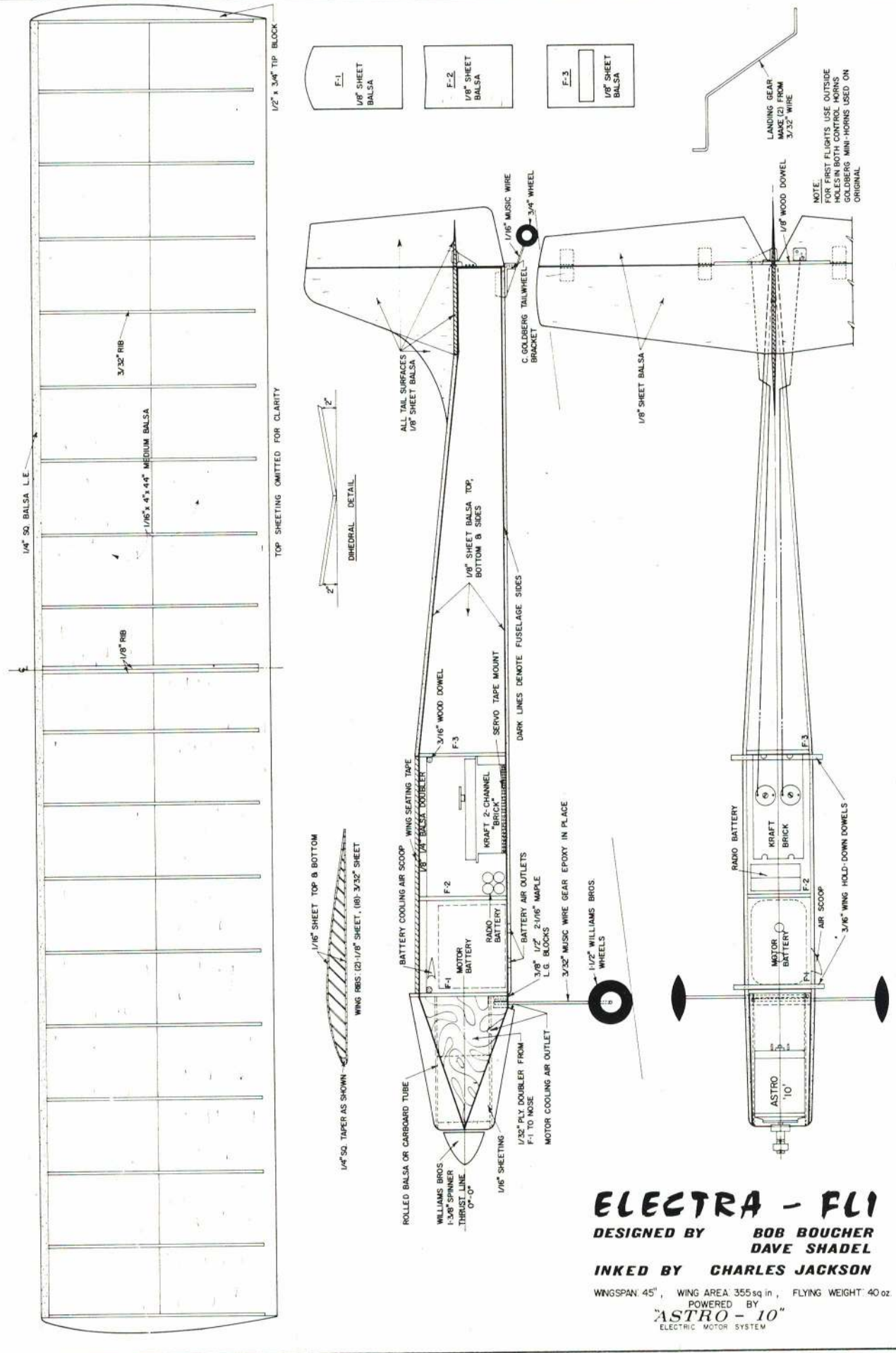
Wing: The wing is of the fully sheeted, constant chord variety, with 1/16"

*Plans on following page
Text continues on page 101*





Opposite: This fast flyer makes quick takeoffs and uses a large lifting airfoiled wing. Really great for in-town school yard flying. Top: Forward is to the left. Note air scoop for battery cooling. Batteries are charged by terminals on each side of the fuselage. Left: Because the battery is a heavy mass, it is kept near the CG and ahead of the radio gear. No radio-controlled on-off switch is needed although one can be added, triggered by full rudder or down elevator command. Above: Cooling the motor and battery is essential. Author points out warm air exit for engine heat outlet.



ELECTRA - FLI

DESIGNED BY **BOB BOUCHER**
DAVE SHADEL

INKED BY **CHARLES JACKSON**

WINGSPAN: 45", WING AREA: 355sq in., FLYING WEIGHT: 40oz.
POWERED BY
ASTRO - 10"
ELECTRIC MOTOR SYSTEM

AMERICAN aircraft modeler

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You must be a recent college graduate in journalism, or a related field.

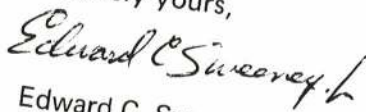
You should know modeling in FF, CL, and RC, and perhaps have some publications experience.

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Please submit resume to:

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WASHINGTON, D.C. 20005

Sincerely yours,



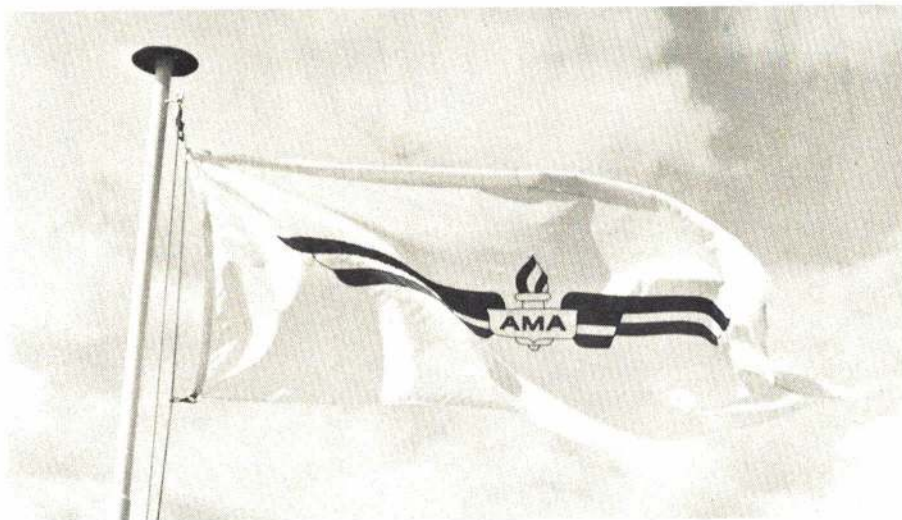
Edward C. Sweeney, Jr.
Editor and Publisher
American Aircraft Modeler

ECS/wpk



'73 NATIONAL CHAMPIONSHIPS

Behind The Scenes



Above: AMA flag flew proudly at the entrance to the Nats runway at Wittman Field except for a brief period when someone had it "stored" for protection from the elements. Flag is the handiwork of AMA HQ's own "Betsy Ross," Micheline Madison. Right: Despite not being in the best of health AMA President John Clemens' dedication to duty would not allow him to miss this biggest of AMA events, the Nats. No "President's Memo" in this issue, because less than a month after the Nats Clemens entered the hospital for a very serious operation. He had just endured six hours of surgery when this was written, and we all are praying for a complete recovery and return to normalcy. Photo shows Clemens presenting his own hand-crafted President's Sportsmanship Award (a nice work of art) to Dolly Wischer who received more recommendations from Nats officials than any other person. Not only did she hand-paint virtually all the new Nats signs, but she was a wealth of information and cheerfulness all week long. Below: Where is all the big Nats gear stored? In two huge trailers AMA has bought just for this purpose. They're used but in good condition, recently repainted by Chicago area club members under the leadership of Bob Vojslavek.



The 1973 National Model Airplane Championships was a curious mixture of delight and disappointment. There were some great moments and some terrible ones, but the most significant result was the successful staging by AMA of a very large Nats without the benefit of military support. With over 1900 contestants and mechanics registered, the 1973 Nats was bigger than the biggest of those previously held at Willow Grove, Pa., and much larger than any of those ever held at Dallas, Tex., or Los Alamitos, Calif.

This Nats was equal in size of numbers to several big ones held at Glenview, Ill., almost as big as the biggest-ever 1972 event which saw just over 2,000 registered. And, despite being a big Nats, it was handled by AMA personnel in good order. In fact, had there not been interruptions due to rain and low visibility, the 1973 event might well have been one of the smoothest operating so far as most contestants were concerned.

Excluding an inadequate Free Flight situation, most facilities at Wittman Field were suited to a Nats operation. Control Line and Radio Control had good surfaces to operate from, and competition problems, except for weather, were minimal. For Free Flighters, except those accustomed to small Eastern-type fields, the idea of two minute maximum flights—which were necessary every day—was appalling. There were many determined threats of "never again" regarding Oshkosh. On the other hand others admitted quietly that it wasn't all that bad. They pointed out that no more contestants seemed to be maxing out at two minutes than had maxed out at three minutes during previous Nationals.

But that's no consolation to those who enjoy Free Flight. The fact is that this was the worst Free Flight Nats situation in many years. It was only natural, therefore, that many Free Flighters felt that they had gotten last preference concerning field position, as compared with RC and Control Line. But the real situation was that there was no choice in the matter. The field layout provided no alternatives—FAA restrictions made it mandatory that Free Flight activity be relegated to the furthest distance away from any full scale aviation activity. So there was no deliberate planning involved, only a matter of trying to live with an unsatisfactory situation.





1



2



3



4



5



6

(1) Indoor Scale judges at work. All Indoor events, including Scale, were flown in the Brig. Richard L. Jones Armory in south Chicago. The Indoor part of the Nats this year was completely self-contained, even to the awarding of trophies. (2) The other half of the Wischer team, Bob, a top-notch RC Scale builder/flier, helped out with the chores—here adding on AMA information to an EAA sign which had been used the week before. (3) Nats AMA HQ was always a busy place. In this shot, L-R, are Ron Morgan, Frank Ehling, Earl Denny, Bob Nier, Bob Vojslavek, John Worth. (4) AMA Show Team performed every day during the Nats, and introduced full-scale plane fans to modeling and the Nats by performing during EAA's airshow. All the favorites shown: Snoopy and the Red Baron, Blue Angels Bearcat replicas, glider and banner towing, etc. (5) CL FAI Team Race event director Phil Edwards, writing, served as AMA photographer for most of the week. Murry Frank, behind, assisted with TR, was CL "properties" man also. (6) What Free Flyers could expect regarding launch locations and retrieval was the subject of this briefing by AMA Executive Director John Worth. Also at briefing, standing, was Nats Executive Committee Chairman Earl Witt.



Top: Registration after the first day was located on the porch of the Nats AMA HQ building. On duty at the time were Joyce Hager and Danny Harrah of the Washington AMA HQ staff, plus Betty Stream from Calif. and Velma Teubner of Texas. Top Nats officials Earl Witt and Ron Morgan also conferring during a rainy period. Above Left: New procedure this year was to mail identification badges and credentials to all properly pre-registered contestants—which eliminated previous long lines. Only a contestant kit with last-minute info needed to be picked up. Above Right: Dolly Wischer made most of the signs in advance, but a few more were needed such as the one she is working on. Below: Transmitter processing with the aid of a Heath Company frequency counter and a Hewlett-Packard spectrum analyser. Thanks to both of these companies for their generosity in loaning this equipment (plus Heath Co. solid state calculators) and to both K&B Mfg. Co. and Sig Mfg. Co. for fuel required to run some events.



There were other problems at the '73 Nats, some of which caused much grief and hardship. In response to FAA pressure it was agreed that model flying would stop when below-minimum flying conditions for full scale aircraft prevailed: visibility less than 3 miles and ceiling less than 500 feet. Several hours of model flying were lost on one day due to this restriction. Fortunately, however, it was possible to catch up by flying overtime after the visibility improved.

The biggest worry of all never materialized. There had been great concern on the part of the FAA, before the Nats, that Free Flight models might get into the full scale air traffic at the north end of the airfield. They didn't. So, for this Nats—which for the first time in over twenty years permitted models and full scale aircraft to operate on the same field simultaneously—the great worry faded quietly.

This was a happy situation because it permitted many AMA people to fly into and out of the Nats airfield with great convenience, either by airliner or private plane. But this unique factor also had its negative aspects. For example; the lights on the runway used for full scale aircraft malfunctioned during the Nats so that, when the visibility turned bad on one day, the Nats runway had to be used because its lights were okay. This caused several hours' delay as noted before.

Another concession to FAA concern caused many extra manhours to be expended by AMA personnel and also deprived contestants of much test flying time. The FAA was reluctant to let the Nats runway be completely closed to full scale flying. After much pre-Nats discussion a compromise was reached—we would have the runway for twelve hours each day (7:30 am to 7:30 pm). At the time this agreement was made it didn't seem too bad. It appeared that the worst effect might be a loss of one to one and a half hours of test time each night. But the loss turned out to be considerably more. This was due to the fact that the FAA insisted that the runway be cleared for two hundred feet on either side. At first this appeared to mean only cars and people. But in practice it turned out to include tents, tables, chairs, and practically every piece of equipment associated with the meet.

The end result was the need each night to start runway cleanup almost immediately after the events ended, and this in turn did away with most test flying after the competition each day. Work crews had to start much earlier than normal to set up, and they worked much later than normal to clean up. The effect was somewhat similar to what happened to the Olathe Nats in 1968, when a twelve-hour daily contest schedule was tried: workers were exhausted at the end of each day. It took a lot of the enjoyment out of the Nats for those affected.

The 1973 Nats was a remarkably clean affair, due largely to the inspiration of the Experimental Aircraft

Special sponsorships by The Testor Corporation and the L.M. Cox Mfg. Co., Inc., provided extra financial support and youth programs for the 1973 Nats.



Youngsters visiting the '73 Nats were given free model flying lessons and souvenirs in a joint effort between the Academy of Model Aeronautics and the two largest manufacturers of ready-to-fly model aircraft. The Testor Corporation exhibit area included full-scale aircraft mockups of a Sopwith Camel and a Bede 5. Testor also provided free kits of their Free Flier model and T-shirts. Both activities (Testor Flying School in progress at left—an array of Cox airplanes at right) were colorful sideshows to the AMA competition events at the National Model Airplane Championships.



1973 NATS ENTRIES

No. of Entrants	Jr.	Sr.	Open	Total
182	246	896	1324	
Entries by Event				
Indoor				
Scale	7	9	35	51
HL Glider	15	28	36	79
Paper Stick	9	10	31	52
Cabin	9	5	14	28
Stick	8	9	30	47
Control Line				
Scale Racing	18	27	86	131
Rat Racing	11	17	54	82
B Proto Speed	9	6	22	37
1/2A Profile Proto	46			46
1/2A Proto Speed	25	15	27	67
FAI Speed	7	8	22	37
1/2A Speed	19	15	25	59
A Speed	13	10	34	57
B Speed	10	10	32	52
C Speed	6	9	31	46
Jet Speed	3	7	28	38
Aerobatics	10	27	70	107
Combat	14	48	105	167
FAI Team Race			24	24
Scale	11	5	26	42
Navy Carrier I	3	9	28	40
Navy Carrier II	3	5	23	31
Profile Carrier	5	19	47	71
Radio Control				
C Pattern Expert		6	80	86
C Pattern Novice	1	6	41	48
B Pattern	1	6	23	30
A Pattern	5	11	37	53
Scale			30	30
Pylon Formula I	1	5	90	96
Pylon FAI	1	1	48	50
Free Flight				
1/2A Gas	43	62	166	271
A Gas	35	51	158	244
B Gas	13	22	109	144
C Gas	9	19	86	114
FAI Power	11	9	51	71
Wakefield Rubber	8	5	32	45
Unlimited Rubber	27	16	60	103
Coupe d'Hiver	9	11	60	80
Nordic Glider	37	32	81	150
HL Glider	57	77	123	257
Rocket Power	15	16	54	85
Scale Rubber	8	6	33	47
Scale Gas	4	4	33	41

1973 NATS SPONSORS

Some of the basic meet expenses and approximately 600 competition awards were provided through the contributions of the following:

AAmco, Inc., Ace R/C, Inc., Al's Hobby Shop, Ambroid Company, Inc., American Aircraft Modeler Magazine, Aristo-Craft, Competition Models, Inc., L.M. Cox Manufacturing Co., Inc., Dremel Manufacturing Co., Dumas Products, E.K. Products.

Fagel Brothers, Flying Models Magazine, Fox Motors, Chuck Gill Models, Carl Goldberg Models, 20/20 Graphics, Grish Brothers, Paul K. Guillow, Inc., Heath Company, Hobby Industry Assn. of Delaware Valley, International Balsa Corp., Jasco, Jetco Models, K&B Manufacturing Corp., Kraft Systems, Inc., Kraus Krafts—Wing Soc.

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SENIOR

Brian Pardue, Greensboro, N.C.

OPEN

Bucky Servaites, Dayton, Ohio

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SCALE CATEGORY

Frederick T. Stark, Florissant, Mo.

INDOOR CATEGORY

Bucky Servaites, Dayton, Ohio

FREE FLIGHT CATEGORY

Robert Watson, Morton Grove, Ill.

CONTROL LINE CATEGORY

Terry Herron, Wichita, Kans.

AMA CLUB TEAM

Chicago Aeronuts (Robert Watson, Charles Markos, Charlie Sotich, Keith Gordey, Mark Kummerow)

NATS TEAM

Dixie Whiz Kids (Charles Schubert, Brian Webster, Mike Langlois, Ray Alonzo, Brian Pardue)

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TULSA GLUE DOBBERS (high time regardless of age, Outdoor HL Glider): Dan Domina, Hillside, N.J.

STOUT INDOOR (high time regardless of age, Indoor Cabin): Robert Randolph, Loma Linda, Calif.

TESTOR'S (best model finish, regardless of age): Claude McCullough, Montezuma, Iowa.

STOUT COMMERCIAL (high time regardless of age, Indoor Stick): Al Rohrbaugh, Ft. Wayne, Ind.

DICK BLACK (high time regardless of age, Coupe d'Hiver): William Bennett, Rochester, Minn.

STERLING MODELS (most Scale static score of any category, qualifying by official flight): William Harney, Wakefield, Mass.

DANNY BARTLEY (Control Line Category Champion): Terry Herron, Wichita, Kans.

JIM WALKER (winner of Junior-Senior-Open flyoff, CL Stunt): William Rabe, Jr., Irving, Tex.

MCNEILL CUP (high time regardless of age, FAI Power): David Rounsaville, Milford, N.J.

EAA HOMEBUILT SCALE. FF Rubber, Ron Martelet, River Forest, Ill., Chambers Chambermaid; FF Gas, Henry Szostek, Prides Crossing, Mass., Bede Jodel B-9; RC, Robert Wischer, Delafield, Wis., Emeraude; CL, Ralph Burnstine, Danville, Ill., Thorpe 18.

Association which had, just the week before, entertained several hundred thousand people (over 20,000 in their campground alone!) on the same airfield. EAA puts tremendous emphasis on cleanliness, and their members set an outstanding example for AMA'ers to follow.

Our people did as well. Whereas Glenview Naval Air Station last year was a trash mover's nightmare, the 1973 Nats at Wittman Field was never allowed to get really messy. Contestants, officials, spectators, and a hired trash pickup crew did an excellent job of keeping the airfield and EAA grounds clean. This helped final cleanup tremendously—the field was turned back to the airport management and EAA in excellent shape a half day after the Nats ended.

But it cost AMA a thousand dollars for the trash pickup service. Fifteen hundred dollars more went for auxiliary police guards to augment AMA volunteers who were collecting admission fees and helping to control traffic. Three thousand dollars more went for portable toilets and servicing of same, and there were other costs—this was the most expensive Nats ever. AMA also agreed to reimburse farmers for damage to crops caused by Free Flight retrievers chasing models through nearby corn and oat fields. The problem almost got ugly as angry farmers, responding to mini-bikes going through their fields, began impounding models. AMA officials got things going again by banning bike retrieval off the airfield property and agreeing to pay for damages. Banning the bikes got a generally good reaction. It put all Free Flyers on the same basis for retrieval, on foot or by car, and property damage by chasers was reduced considerably. In the end AMA paid about \$150 for actual crop damage.

One of the nicest aspects of the '73 Nats was the family atmosphere. Besides the campers, numbering over eight hundred, there were many hundreds more in the nearby dormitories of the University of Wisconsin in Oshkosh. For both contestants and officials, other than those who filled all of the area motels for miles around, the dorms provided economical lodging for families (\$10 a room per night), resulting in many daughters and wives being in evidence at the '73 Nats as compared with previous Nats.

For many officials who brought wives to a Nats for the first time the result was generally a happy one. Whereas husbands had previously gone to a Nats and stayed at bachelor quarters, they now were able to have their wives with them. Many wives learned for the first time what their husbands had been doing in past years. They found that lots of hard work and long hours were involved.

Many joined the effort and worked as officials or assistants for their husbands. Notably absent was the no-man's land of past Nats—the Waves' quarters

(Continued on page 94)



CARL GOLDBERG

"RELIABILITY... MADE CG RETRACTS
OUR STANDARD INSTALLATION"

CG RETRACTS



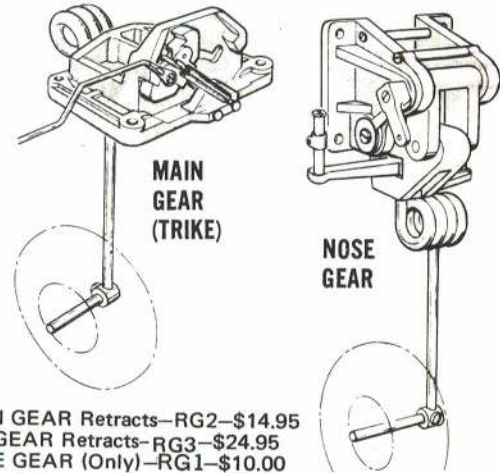
Jack Stafford, manufacturer of a fine line of racing and other models, proudly displays the CG Retracts installation in his stand-off scale Airacobra. Jack has been a constant user of CG Retracts in his pylon racing and scale flying models for over two years. In his own words: "Carl, based on overall system reliability, low maintenance and low cost, we have made CG Retracts the standard installation in our Mustang, Airacobra, Comanche and forthcoming B-24 kits."

Jack Stafford

LONG STRUTS & ADJUSTABLE AXLES

Versatile—and you don't have to bend your own axles. Can also be used in older model CG Retracts.

Twin Gear set RS2—\$3.00
Tri Gear set RS3—\$4.50



TWIN GEAR Retracts—RG2—\$14.95
TRI-GEAR Retracts—RG3—\$24.95
NOSE GEAR (Only)—RG1—\$10.00

UNIQUE SNAP-LINK! Patent 3711134. Now for the first time—you can buy a truly safe link—the SNAP-Link!

- Tiny 45° shoulder snaps through arm, prevents accidental opening. So unique it's Patented!
- One-piece design—no separate pieces that might come apart.

Snap-Link, Regular, with rod SL1 } 29¢ ea
Mini-Snap-Link, with rod MS1 }
Snap-Link-SL2 or Mini-Snap MS2 }
less rod 2 for 40¢



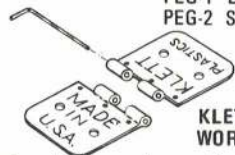
NEW—MAJOR R/C FITTINGS SETS

Here's the economical way to buy the major fittings for your multi-ship. In one set, you get all the horns, links, keepers, bellcranks, or strip aileron linkage, and hinge material—and at a saving. R/C Fittings Set No. 1 for ship with standard ailerons. RFS1 \$3.50
R/C Fittings Set No. 2 for ship with strip ailerons. RFS2 \$3.50

NEW! KLETT PUSHROD EXIT GUIDES

To protect your fuselage and insure smooth operation of your pushrods. Precision made of tough nylon. Easy installation. Large for 5/64" wire, small for 1/16" wire.

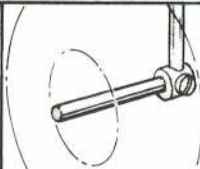
PEG-1 LARGE 4 per pkg. 75¢
PEG-2 SMALL 4 per pkg. 75¢



KLETT HINGES — WORLD'S FINEST!

Designed and manufactured by Roy Klett, originator of world-famous RK hinges. An exclusive with Carl Goldberg, these hinges are made with exceptional care and attention to detail. The small RK2 hinges are so thin all you need is a knife slit. The regular size RK3 hinges are the slickest you've ever seen — try holding one leaf and waving the other! And both have removable music wire pins. Ask your dealer for the best — Klett hinges.

RK2-7 7 for \$1.10
RK2-15 15 for \$1.95
RK3-7 7 for \$1.25
RK3-15 15 for \$2.35



5/32" ADJUSTABLE AXLE

Adjustable axle allows you to easily have the strut length you want. Both the axle and screw are hardened steel. Just file a flat on the strut, and tighten axle in place. AA1 75¢ ea.



STEERABLE NOSE GEAR

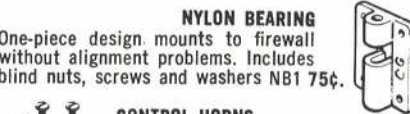
Versatile — steering arm can be to either side, or slightly up or down, or mounted on bottom with extra collar in slot. Steering arm is nylon, stiff enough for good control, yet can flex under shock to protect servo. Collar is hardened steel — won't strip like brass. Screw is hardened steel, too. You can really torque it and get good grip on music wire strut without a flat.

Complete steerable nose gear with nylon bearing, 5/32" plated music wire strut, extra collar, blind nuts, screws and washers G16N \$2.50.



NYLON STEERING ARM

Hardened steel collar and screw SA1 75¢.



NYLON BEARING

One-piece design mounts to firewall without alignment problems. Includes blind nuts, screws and washers NB1 75¢.



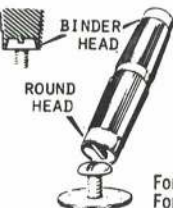
CONTROL HORNS

Our new horns have the upright part rising from the center of the base for maximum stability. Holes are right size for 3/4" wire; nut plate for simplest mounting. Long horns CH1 or short horns CH2, with screws—50¢/2.



NYLON REINFORCING TAPE

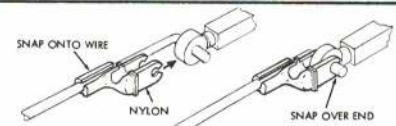
This nylon reinforcing tape is extremely tough when applied with epoxy around the center when joining wing halves. 2 1/2" wide x 5 ft.—N2 50¢. 3/4" wide x 5 ft. N1 25¢



NEW KLETT SAFETY DRIVER SOCKETS DOWN ONTO SCREW HEAD — CAN'T SLIP OFF AND DAMAGE YOUR WING!
Takes Round Head Screws and Binder Head.

KLETT SAFETY DRIVER

For 1/4" Nylon Screws SD1 } 98¢ ea
For #10 Nylon Screws SD2 }

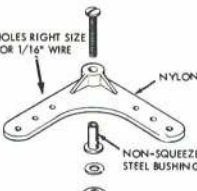


SNAP'R KEEPER

Quickest, handiest way to secure pushrod wire end to servos, horns, etc. Works on wire 3/4" to 1/4" diameter. SK1 50¢ for 4.

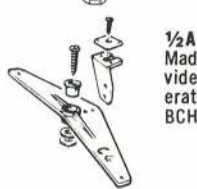
REPLACEMENT FOAM WINGS, ETC.

To go with your own design fuselage. Proven efficient Ranger 42 foam wing gets you in the air quickly — \$3.95. Stab and vertical fin, set \$1.95. Assembled Ranger 42 fuselage, plus bearers, nosegear, etc., \$9.95.



AILERON BELLCRANK

Bellcrank has steel bushing of proper size, so crank can be screwed firmly in place without binding. No electrical noise—all metal parts are screwed tightly together—AB1 50¢ for 2.



1/2A BELLCRANK and HORN

Made of nylon, this new set provides smooth 1/2A control line operation. Easy on dacron lines, too BCH1 25¢.



SHEET METAL SCREWS

Like wood screws, but better. Sharp, clean, full-depth threads, hard and strong. Excellent for mounting servos, etc. Includes washers—#2 x 3/4" SMS2 30¢ for 10; #4 x 3/8" SMS4 30¢ for 8.

P.S. For best service, see your dealer for items you want. If not available, write direct; add 50¢ per item (\$1 outside U.S.). Minimum order \$1.

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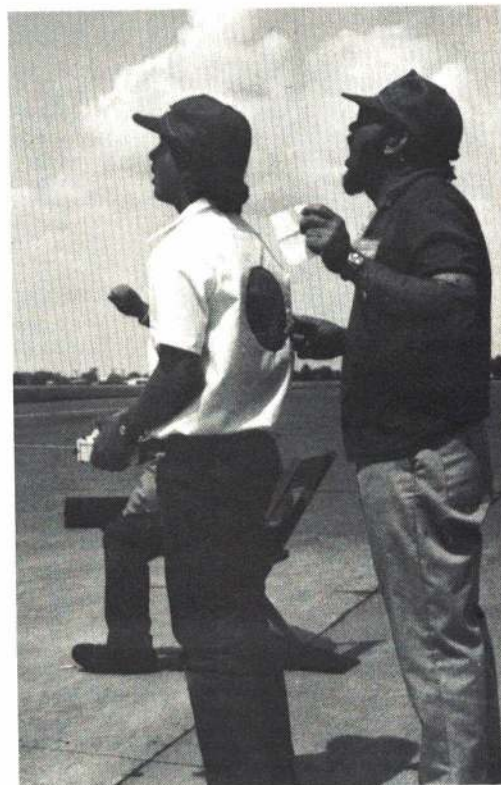
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CARL GOLDBERG MODELS INC.

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RC PATTERN



Above: The Class C Expert winner Rhett Miller and Compensator, his original design aircraft. Rhett put all of us Old-Timers down and showed what natural ability and hard concentration can do! Right: Steve and Ralph Brooke in final Class B flight. Steve won with help of Dad's vocal assistance. Below: The latest Phoenix, Number 6, flown by Don Lowe here pictured with friendly George Hill. A large number of Phoenixes qualified at the NATS. Below right: Mark Radcliff and Dad assemble his Phoenix 5 for a final flight. Mark is one of the rapidly improving youngsters who give us Old-Timers more gray hairs!



RC PATTERN RESULTS

C PATTERN QUALIFYING—EXPERT

Jr.-Sr.-Op.	Points
1. Ralph Brooke	308
2. David Brown	299
3. Norman Page	299
4. Rhett Miller, Jr.	298
5. Don Coleman	298
6. Ron Chidgey	297
7. James Whitley	295
8. Jim Martin	294
9. Philip Kraft	294
10. Stephen Buck	293
11. Jim Oddino	291

12. Mark Radcliff	286
13. John Agee	285
14. Edward Keck	283
15. Steve Helms	282
16. William Salkowski	281
17. Bob Smith	280
18. Donald Lowe	278
19. Mike Mueller	276
20. Alan Dupler	276

C PATTERN FINALS—EXPERT

Jr.-Sr.-Op.	Points
1. Rhett Miller, Jr.	792
2. Don Coleman	790
3. Ron Chidgey	782
4. Don Lowe	780
5. William Salkowski	780
6. Mike Mueller	780
7. James Whitley	773
8. Jim Oddino	770
9. Jim Martin	770

10. David Brown	762
11. Stephen Buck	761
12. Philip Kraft	760
13. Bob Smith	758
14. Ralph Brooke	757
15. Alan Dupler	757
16. Edward Keck	753
17. Steve Helms	745
18. Mark Radcliff	743
19. John Agee	731
20. Norman Page	658

C PATTERN—NOVICE

Jr.-Sr.-Op.	Points
1. Douglas Ferguson	260
2. Dan McCann	254
3. James Vanderwalker	253
4. Thomas Walker	249
5. Allan Cook	244
Best C/N-E Junior	
Brian Richmond	
Best C/N-E Senior	
Rhett Miller, Jr.	

A PATTERN

Jr.-Sr.-Op.	Points
1. Wendall Maakestad	367
2. Terry Rollins	335
3. Richard Russ	330
4. Don Shultz	327
5. Eric Podzielniski	326
Best Junior	
Henry Zincall	
Best Senior	
Eric Podzielniski	

B PATTERN

Jr.-Sr.-Op.	Points
1. Steve Brooke	356
2. Gerald Lucke	340
3. Mike Shafer	336
4. Donald Seals	326
5. Robert Nelson	314
Best Junior	
Steve Brooke	
Best Senior	
Mike Shafer	

DON LOWE

Pattern at this year's NATS followed the same format as in the past few years. Class C, Novice and Expert flew two qualifying days and the top 20 flew Friday and Saturday morning in finals. Classes A and B flew three rounds on Sunday morning. Class C fliers had six qualifying rounds of a short pattern and finalists were given six additional rounds of the complete pattern. Class C fliers totalled about 120 and A and B increased substantially over last year with over 60 entries.

Oshkosh, Wisconsin, this year's site, proved to be a fine facility for RC with a nice, big, smooth runway. We all had great hopes of leaving those terrible Chicago high crosswinds behind, but were sorely disappointed for the first couple of days. Strong winds blew directly across the runway. We also got chased off by a pretty good storm and more than one modeler got soaked. However, Saturday, the last day of C finals, and Sunday, the Class A and B day, were perfect. So there were no excuses—there were ideal conditions to pick the winners.

Judging was good—it looks like the AMA judging plan initiated several years ago is working out. We can't give enough credit to these people—it's a heck of a lot of work. Not only must they put in a lot of hours but they must also give up flying at the NATS.

There were some of us who, having finished flying in C, pitched in to judge A and B on Sunday. Sally Brown, long-time suffering wife of Dave Brown, teamed with me on Sunday and did a great job. Would you believe a number of A and B fliers complimented her on her judging? I believe this was a NATS first. We also had three women competitors in Class A, and they gave a fine account for themselves—Sandra Smith, Ramona Shultz, and Lynda Day (from Canada).

This was a year of surprises at the NATS. Who would have guessed that a 15-year-old (Rhett Miller) would win Class C Expert, putting down the likes of Whitley, Coleman, Chidgey, et. al.? I wrote about this young man after last year's NATS when he just missed qualifying. I could see that he was a "comer." Jim Kirkland thought so, too, and helped get him started. It's too bad that Jim wasn't there to see him win this year. Rhett really arrived with a bang and rose to the top faster than anyone I can recall. The scary thing about it is that he has so many more years of competition ahead of him!

Rhett flew a design that he calls the Compensator. The ship is his own design and shows a strong Kirkland influence. He uses an ST 60 Bluehead for power and a Pro-Line single stick system for control. He was apparently influenced by Kirkland, Coleman, Chidgey and Penrod who do a terrific job with this type of transmitter. Rhett's dad told me that he doubts that he can afford another NATS due to the amount of fuel Rhett burned the month before in practice!

The qualification rounds results had little resemblance to the final standings.



Above: Jim Whitley's Daddy Rabbit X sports one of the new Ross super engines. It really moves. Left: In flight, Richard Bergeron's Shark looks very much like an F4 Phantom and is a capable Pattern machine. You will see it in a future AAM.



Above: One of those nice Tiger Tails from Airborne. It is surely one of the most conventional, real-looking Pattern planes around. A pleasure to fly. This one flown by Donald Seals. Left: Bill Senter displays his Gladiator a Doc Ralph Brooke design flown in Class A Pattern. Below: The Jim Kirkland designed Nutcracker which was flown most expertly by Bill Salkowski. A pleasant, easy flying ship from Airborne Associates.

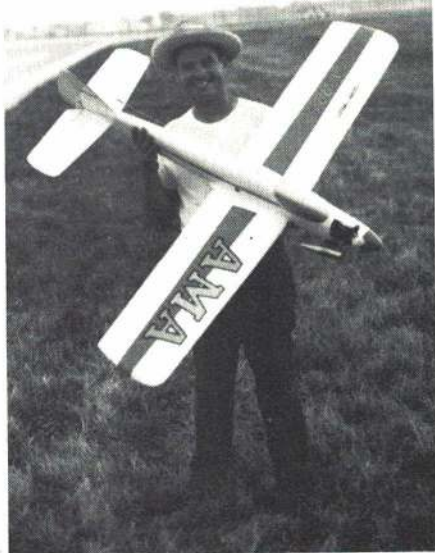




Above: Finalist Al Dupler prepares his Trion for flight. It is a beautiful flying aircraft with ST 60 Bluehead and Pro-Line. Right: Jim Martin flew a plane he said was Kraft's own Toad Fli which Phil said is quite "unfantastic." Looked good to us both in the air and close up.



Above: Leon Schulman flew a semi-scale model in Pattern again this year with the new Top Flite Airacobra. It is equipped with flaps and retracts. Right: Don Shultz, whose wife and daughter are on the cover, performed quite well flying in Class B.



Ralph Brooke was the highest qualifier after putting in an incredible final qualifying flight score. Dave Brown was second highest in qualifying and ended tenth in the standings. Dave says he just couldn't get it all together in the finals, but I think it was at least partially due to the very short pattern used on qualifying rounds and the very high percentage of total points assigned to ground maneuvers (30%). There is a great deal of sympathy for eliminating the doubling of landing points for hitting the spot. Many fliers agreed that prelims were a landing contest. High crosswinds contributed to some fliers' problems, especially in takeoff and landing.

The top five in C Expert included some Old-Timers: Coleman, second; Chidgey, third; Lowe (who's he?), fourth; and Salkowski, fifth. Our International Team placed on down the line for one reason or another. Poor Norm Page pranged his only aircraft during his first flight of the finals and retired to finish a new ship with the Internats coming up fast.

Norm has had some tough luck lately, having just recently bashed two aircraft. There were no other crashes in the finals which we may attribute to good equipment and procedures. This year we used the frequency clothespins. This decision was no doubt influenced by last year's unfortunate crashes of two top contenders (Kirkland and Whitley) due to frequency mixup. The lowly clothespin may seem unnecessary to some, but it certainly is a positive control on frequencies.

The finals saw very little difference in scores determining the placings. There was a point spread of less than 4% between the top ten and total spread of less than 10% between the top 20. Consequently, the flying was good and the judges had a difficult time in establishing the winner. These days the winners are determined by a very small margin—4% is less than an average of 1/2 point per maneuver. Ten percent is about one point per maneuver. The top ten had average maneuver scores on their winning flights in excess of eight of a possible ten points per maneuver. So, you can see that it was a difficult job for the judges and it demanded top-notch flying by the contestants.

John Agee was a finalist in Class C, and he flew the most unique aircraft there. John is a real "idea" man and added wheel well covers (separately operated) and a variable CG device to his airplane. In addition, he had a moveable subfin connected to his rudder which he claims really makes the aircraft track. Some may think that he had too many gimmicks, but they worked! Believe me, we certainly need innovators to try some of these novel ideas, otherwise, how do we progress? John shifts his CG forward for loops and all pitching maneuvers and aft for rolls. He says it really helps. He also has remote fuel mixture control.

Aircraft designs other than John's were rather conventional. Most have moved to more powerful engines through more nitro and improved engine parts, such as the new Ross, the

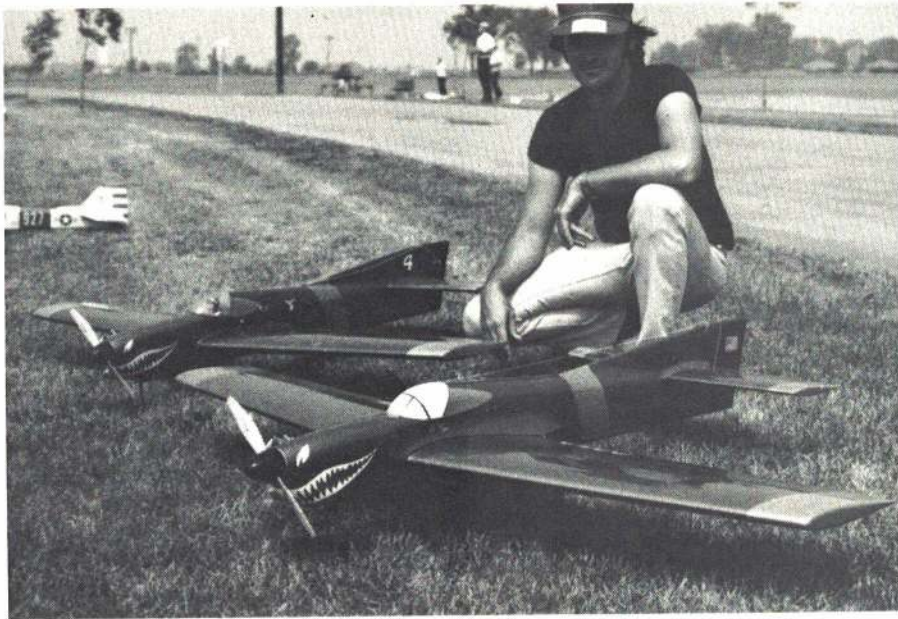


Above left: John Agee, Class C finalist, prepares his very unique craft for flight. It has variable CG, moveable sub-fin, anhedral tail and wheel well covers. Very fast and smooth. Above: This is Harold (Goldy) Goldclank and his fantastic ARK—that's what he calls it. Wait until you hear him tell about it in his coming article. Left: We were all startled when Roland Boucher of Astro-Flight took off with his electric-powered bird—couldn't hear it! Very weird sensation. Seems to fly well as long as the batteries last.



Above: Steve Brooke, Class B winner, and Dad's design. This young man won Class A last year also. Will it be Class C Novice next year? Above right: Carl Goldberg provides a personal touch to one of his retracting systems in a competitor's aircraft. Right: Sally Brown established a precedent at the NATS as the first female judge. She did a fine job of judging Class A and B fliers and was even complimented by competitors—and that's a first, too!





Above: Dennis Donahue and Ross-powered birds at practice field. Below left: U.S. Navy RC team was quite active in Class A and B. They have this message for any interested Navy modelers: Contact MMC Pat Carroll (EOD 6RU-2, Ft. Story, Va. 23459) if they want to officially join the team. Below right: Whit Stockwell shows the knee action nose gear, a Sullivan product, which was seen on several Pattern planes. This feature gives smoother high speed taxiing during landing and takeoff. Bottom: Norm Page and his revised Mach I. Unfortunately, it crashed on first finals flight so Norm retired to complete new ships for the Internats in Italy.



revised ST 60 Bluehead and the revised K&B. Super engines were the standard of the meet, with a sickly sounder being rare. Maneuvers were bigger than ever, if that's possible, and prompted much talk about how we could slow them down and keep maneuvers and turnarounds within reasonable bounds. I know that my Phoenix is moving so fast and far that I have a hard time seeing it in a turnaround, especially on a hazy day! As long as the rules remain the same, the ships will continue to scream along at over 100 mph since maneuvers are simply easier and cleaner!

A major move is underway, promoted at the NATS. Ron Chidgey and Don Coleman are pushing to change the C Pattern to permit competition by slower and different aircraft. Essentially it would establish a list of some 30 maneuvers with varying K factors from which a contestant would choose 15. The proposed maneuvers are such that a group can be selected to fit present aircraft so none would become obsolete. But others can be picked which would favor slower, more maneuverable aircraft. Informal talk among modelers and contest board discussion indicates much sympathy for this scheme so you'll be hearing more about it. It should make a very interesting event with everyone flying different patterns with different aircraft!

Here are some of the features of the new pattern: The takeoff and landing would be judged since they must be performed and take time. (There was some sympathy for not scoring these maneuvers in order to encourage two-wheel gears.)

The group of maneuvers would satisfy the freestyle proponent as well as the graceful style flier since each could choose a set of maneuvers to suit his style.

The maneuver sequence would be the pilot's option and could be changed for each flight. The contestant could even change the maneuver set for each flight.

Landing would be judged for quality and presentation (position) just as other maneuvers, but there would be no doubling of score for spot landing.

So spectator and flier interest would be heightened. I can just see the contestants watching their competitors' choices closely to seek advantages for their own flights.

A new Pattern organization headed by Rhett Miller Sr. was spawned at the NATS. This group will function in an advisory capacity to the AMA in a fashion similar to Racing's NMPRA. Watch for more news about this in my regular column.

This organization was actually the brain child of John Agee. John saw the need some time ago and contributed some of the original thinking, but had to give up actively pushing the proposition due to the pressures of earning a living. There are lots of Pattern ideas kicking around these days which require careful assessment.

Jerry Nelson is also up to his old tricks and showed a beautiful semi-scale

(Continued on page 37)

FUTABA PROPORTIONAL SERIES

New FP-6DN

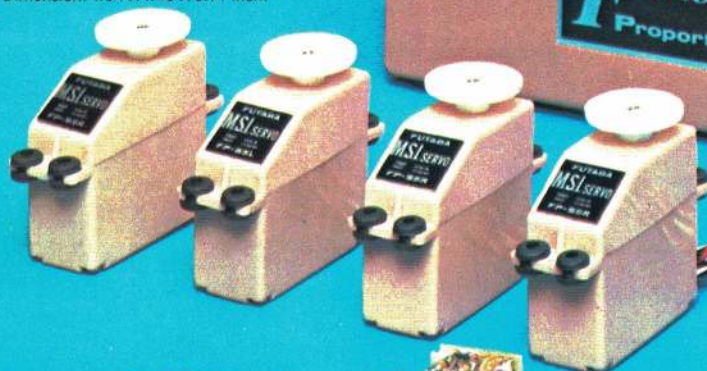
6-CHANNEL RADIO CONTROL

The FP-S5 is uniquely designed with Futaba Custom ICs and a 3-wire, gold-plated 3P mini-connector for compactness, light weight and powerful torque with low power consumption. A highly advanced servo.

FP-T6D 6-channel transmitter complete with 8/450mAH nickel cadmium battery package. Built in battery charger.

FP-S5
Compact, 3-wire servo.
Power consumption: 7mA
Weight: 1.3 ounces
Dimension: 1.54 x 1.48 x 0.71 inch.

4/450mAH nickel cadmium battery package



Futaba Custom IC servo amplifier



16mm Mini-motor

FP-R6D
6-channel IC receiver
Weight: 1.96 ounces
Dimension: 2.71 x 1.57 x 0.75 inch.



The Futaba Tx, Rx and Sx are all interchangeable due to consistent quality control plus design and production to rigid specifications. Use them as a set for maximum performance.

Transmitter (FP-T6D)

High maximum output assures complete 6-channel control. Throttle position can be varied (mode 1, mode 2). Smooth control with the ball-bearing equipped stick mechanism and the neck strap makes the transmitter the easiest ever to use.

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A light, compact and rugged unit including an 8-bit decoder and a 3-wire, gold-plated 3P mini-connector. Includes 2 low power ICs, 8 silicon transistors and 7 silicon diodes. The RF and OSC coils are housed in a shielded case making them strong against spurious signals.

A constant voltage circuit guarantees stable operation from 4V~6.6V (guaranteed from 0~150°F). A double-tuned pre-selector circuit is included.

Servo (FP-S5)

Futaba's original BA-607 and BA-606 monolithic ICs, 16mm mini-motor and 3-wire, gold-plated 3P mini-connector makes the unit compact, light weight and rugged and provides high output torque (2~2.5 kg/cm) and high resolution with low power consumption (7mA). A temperature-guaranteed constant voltage circuit gives complete control up to 4V without mutual interference from servos.

The BA-607 monolithic IC has 73 transistors, 13 diodes and 79 resistors—a total of 165 parts.

The BA-606 monolithic IC has 2 PNP and 2 NPN type high output (500 mA) transistors, 4 diodes and 4 resistors—a total of 12 parts.

Futaba's new Proportional 6-channel Radio Control (FP-6DN)

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RC PATTERN

(Continued from page 34)

Pitts Bipe. It is intended to fit a new Biplane Pattern/Racing/Scale event which he will be promoting. Looks like interesting times ahead in Pattern flying.

The youth theme carried over into Class B Pattern with young Steve Brooke, son of former Internats winner Ralph Brooke, beating all comers. This young man is making this a habit having won Class A last year. Will it be Class C, Novice, next year?

What NATS is complete without the humor of Harold Goldclank? Goldy did his usual thing with a unique shoulder wing design that he calls the "shoe." He told me that he designed it very scientifically by building a wing and tail and then hooking it all together in a fashion to house the engine, equipment and to make the thing balance. Well, Goldy was plowing through his pattern at the NATS—all the while dodging Ed Keck who was also flying on the adjacent line. Goldy lined up for his next maneuver, called his heading and proceeded to mid-air with Ed. Unruffled and with debris showering down, Goldy calmly informed the judges, "Gentlemen, I seem to have lost my heading!" Harold may not win many contests but he really epitomizes what it's all about. He keeps his sense of humor and has fun in spite of adversity.

At the NATS as at any contest we all want to win but only a few make it. Most lose, but there's always hope for the next time and it sure is fun trying!



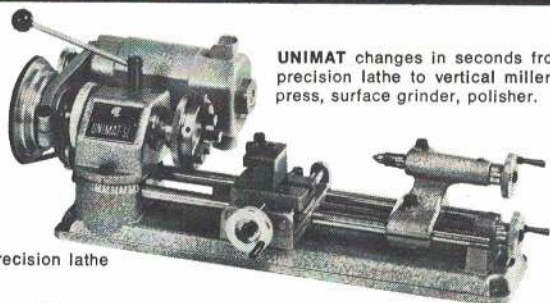
Above: On takeoff—the Fakir II, our Super Design Contest winner, by Howard Mottin. Left: Mister Midwing himself, Art Schroeder, flew a low wing ship at NATS! Must have been temporarily out of "eyeballs!"

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The most popular of all Control Line Speed events is $\frac{1}{2}$ A Proto. Youngsters in the Junior AMA age class may fly either profile fuselage models, such as the yellow model held aloft, whereas Senior and Open fliers compete with full-bodied airplanes like the red model on the ground. Cox TD engines reign supreme in $\frac{1}{2}$ A, which places competitors very much on an equal footing.

BILL BOSS

Well, the Big One is over for another year. The 42nd National Model Airplane Championships took place at the Experimental Aircraft Association Headquarters, Wittman Field, Oshkosh, Wisc., during the week of August 6-12. This was the first time in over 25 years that the Academy of Model Aeronautics had to go it alone to set up and run such an immense contest. It was a contest organized for and by modelers since many of the normally competitive fliers gave up a chance to participate in their favorite events to take on the chores of event directors and judges.

To those competitors that may not have been satisfied with this year's competition, remember: this was a first time effort by the Academy on such a grand scale. I'm sure that not all problems could have been anticipated, and therefore, everything may not have been run to your liking. I can only say this—if you have criticisms, make them constructive. If you feel you can do a better job and improve on the overall operation, volunteer, the Academy can use you. In the months to come, the Academy will probably be looking at the overall operation of this year's NATS with a close eye. The results of that review may shape the scope of future NATS.

It appears the big push toward semi-scale stunters has slowed considerably. The majority of planes flown in this year's competition were of the more conventional stunt configurations. This reversion to the more standard configurations would tend to indicate that the semi-scale type planes do not lend themselves to control line aerobatic flying without a great deal of experimentation and work by the flier.

Scoring of this year's event used a system based on the standard 10-40 points per maneuver rather than the K factor scoring used last year. Judges marked up a score sheet that had the 10-40 points broken up into ten parts with each part a certain percentage of the 40 points allowed for each maneuver. After judging a maneuver, the judge marked the box 1-10 that corresponded to his impression of what the maneuver was worth. This method of judging was used in an effort to obtain more consistent judging and good separation in the overall scoring. It appears that the system did not work as well as planned as the final scores indicated.

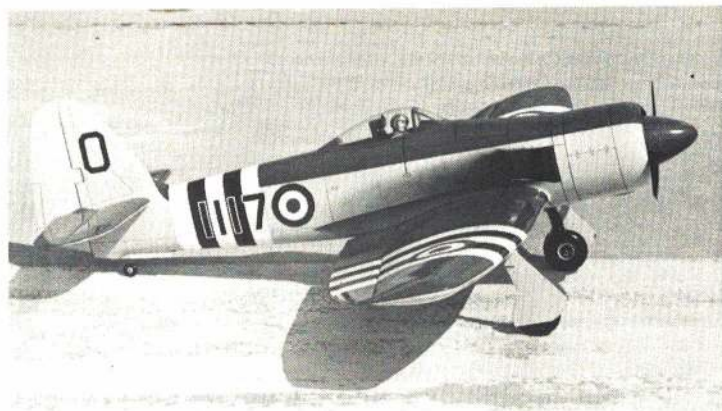
In the Junior category only seven and a half points separated the first three places with only one point between first and second. In Senior 18 points separated first and third, while three and a half points separated first and second. The Open category was the only one that showed considerable separation with 36 points separating first and third and 25 points between first and second.

Al Rabe, Irving, Tex., does it again: Al put his 73 oz., ST 60-powered semi-scale Seafury stunter through its paces to capture Open Stunt, thus retaining for another year the title of "Stunt National Champion" attained at the 1972 NATS. Al beat the first round



Top: V-Tailed Snoopy, an original design by Archey Adamisin, Taylor, Mich., features four-wheeled landing gear, tail, main fuselage, and wing tip wheels. Above: After eight years away from Stunt circles, Bob Gialdini puts his 1965 NATS-winning Eclipse through a fine pattern. Left: Junior Stunt winner Bobby Paterson, San Diego, Calif., shows off his 45 oz., OS Max 35-powered Tempest Stunter. Below: Hawker Hurricane by Jack Sheeks, Indianapolis, Ind., makes a fine looking semi-scale stunter. One of the few seen at this year's NATS. Wingspan is 50 in., weighs 41 oz. and is powered by Fox 35.



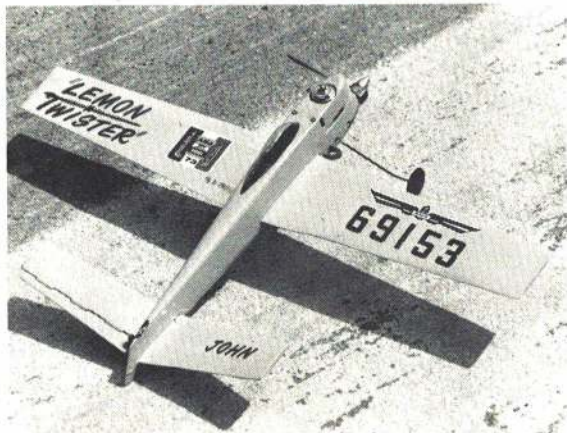


Above left: Alan Adamisin, Taylor, Mich., gives brother Archey signal to release his V-tailed Original for winning flight in Senior Stunt. Above: Seafury stunter by Al Rabe, Irving, Tex., weighs in at 73 oz. and is powered by ST 60. Rabe flew the Seafury to capture the Open Stunt title for the second year in a row. Left: Open Stunt winner Al Rabe is flanked by second and third place winners Gene Schaffer, New City, N.Y., and Les McDonald, So. Miami, Fla. Rabe also won the coveted Jim Walker Stunt Award.

Above: Fine detail work and good finish earned Carlos Aloise, Los Angeles, Calif., highest finish points for his original Stunt design in Senior category. Below: The Bartley-Garner-Huff Team are caught during a moment of relaxation in their busy Speed event schedule. They topped all Open C-Speed Class fliers by turning 188.60 mph. Bottom: "Lemon Twister" by John Westbrook, Los Angeles, Calif., took first place in 1/2A Proto event by turning 86.59 mph on TD 049 power.



Above: A Hoyt Sidewinder powered by a reworked Dyna-Jet by Seymour Olson, Fargo, N.D., is a fine example of the many jet planes flown at this year's NATS in this fast growing event. Below left: Michael Bussell, Dallas, Tex., went great guns in the Speed events by setting new records in the B-Proto (138.35 mph) and B-Speed (171.03 mph) events. Mike holds his record-breaking B-Proto plane. Below right: The Andrew Keiller family came all the way from Melbourne, Australia to fly in NATS Speed events. (L-R) Andy, Anthony, Ruppert and wife Doreen.



leader Gene Schaffer, New City, N.Y., in the second round fly-off by 25 points to capture the Open title.

Alan Adamisin, Taylor, Mich., kept up the family tradition of winning at the National Stunt circles by placing first in the Senior category with his V tailed Original. Alan posted a 337 score to beat Mark Hardman, Saginaw, Mich., by only two and a half points.

Robert Peterson, San Diego, Calif., who finished second in the 1972 NATS, managed to beat out Joe Musumeci, Richardson, Tex., by only one point to capture the Junior Class. Robert flew a Bart Klapinski-designed Tempest powered by an OS MAX 35.

This was not the year for the Speed people. Many had come with great hopes of breaking many records, but as it turned out Old Man Weather just didn't cooperate. The first two days of competition in which the 1/2A events took place were rainy, cool, cloudy and windy. As a matter of fact there wasn't a day throughout the week in which the wind didn't approach 25-30 mph.

The wind was disastrous for almost all the 1/2A flying, making it nearly impossible to control these small ships. It is also thought that the weather also helped to prevent fliers from even approaching record times in the 1/2A events. Throughout a whole week of Speed flying only four records were established. They were in Senior FAI Speed, Junior and Open B Speed and Junior B Proto Speed.

Scott Snyder, Fresno, Calif., established one of those records by posting a 118.92 in Senior FAI. Michael Bussell, a Junior from Dallas, Tex., set two of the records mentioned. His efforts were in the B and B Proto events. Bussell turned in a 171.03 mph in B Speed to better the National record held by Kelly Poe



Left: Brian Pardue, Greensboro, N.C., Senior National Champion displays his first place (160.65 mph) B-Speed ship. Brian placed in several Speed events in his quest for the National Championship. Below: Joe Mickel, member of the Polish Pit Crew, launches plane for Billy Vojslavek in match with Glen Wolff in semi-final rounds. Match had to be reflown as Vojslavek's streamer did not unfurl. Vojslavek won rematch and went on to become Junior Combat Champ.



CONTROL LINE

1/2A SPEED

Junior	MPH
1. John Westbrook	96.84
2. Glen Vansant	92.27
3. Michael Bussell	92.08
4. Jimmy Clem	90.96
5. Charles Lieber	87.51

Senior	MPH
1. James Wade	102.58
2. Brian Pardue	101.65
3. Mike Langlois	98.21
4. John Comerford	89.87
5. Ross Legg	89.78

Open	MPH
1. John Shannon	111.34
2. Charles Legg	109.98
3. Warren Kurth	108.91
4. Bartley/Garner/Huff	105.72
5. Mark Valerius	103.53

A SPEED

Junior	MPH
1. Max Snyder	147.85
2. Jimmy Clem	140.35
3. Michael Bussell	134.17
4. Patrica Hempel	127.70
5. Glen Vansant	125.65

Senior	MPH
1. Mike Langlois	158.53
2. James Wade	146.05
3. Scott Snyder	143.83
4. Arnold Kosby	131.62
5. Wayne Trivin	124.17

Open	MPH
1. Bartley/Garner/Huff	168.95

2. Beatty/Newton/Nightingale	166.75
3. Robert Heminway	160.65
4. Dub Jett	159.94
5. Richard Shannon	159.79

B SPEED

Junior	MPH
1. Michael Bussell	171.03
2. Patrick Hempel	155.78
3. Glen Vansant	144.17
4. Max Snyder	143.71
5. Rusty Parsons	128.52

Senior	MPH
1. Brian Pardue	160.65
2. John Comerford	160.36
3. James Wade	159.94
4. Mike Langlois	156.05
5. Bruce Bina	128.80

Open	MPH
1. John Shannon	188.01
2. Dub Jett	176.57
3. Thomas Upton	175.03
4. Glenn Lee	174.69
5. Robert Heminway	173.01

C SPEED

Junior	MPH
1. Max Snyder	160.08
2. Patrick Hempel	151.45
3. Glen Vansant	147.97
4. Chris Smith	111.27

Senior	MPH
1. Mike Langlois	181.93
2. Allen Swanson	167.06
3. Ray Alonzo	160.36
4. Wayne Trivin	144.06
5. Brian Pardue	122.32

Open	MPH
1. Bartley/Garner/Huff	188.60

2. Frank Garzon	181.93
3. Robert Mathison	179.93
4. Ted Black	179.03
5. Glenn Lee	175.88

JET SPEED

Jr.-Sr.-Op.	MPH
1. Myrtle Hoyt	189.80
2. Billy Hoyt	188.80
3. Mike Langlois	187.62
4. James Wade	182.11
5. Mike Olson	181.20

FAI SPEED

Junior	MPH
1. Glen Vansant	112.98
2. Charles Lieber	111.35
3. Rusty Parsons	87.86

Senior	MPH
1. Scott Snyder	118.92
2. John Hohensee	109.60
3. Mike Langlois	100.67
4. Brian Pardue	83.41

Open	MPH
1. Beatty/Newton/Nightingale	136.90
2. Carl Dodge	134.92
3. Robert Heminway	134.51
4. Alfred McCarthy	127.39
5. Glenn Lee	125.53

1/2A PROTO SPEED

Junior-Profile	MPH
1. Clarence Westbrook	77.42
2. Jimmy Clem	77.35
3. Bruce Pallet	77.16
4. Chris Smith	76.73
5. Glen Vansant	76.66

Junior	MPH
1. John Westbrook	86.59
2. Glen Vansant	83.96

3. Jimmy Clem	82.73
4. Michael Bussell	80.65
5. Clarence Westbrook	80.58

Senior	MPH
1. Mike Langlois	95.91
2. James Wade	94.06
3. Brian Pardue	82.61
4. Ross Legg	81.30
5. Ray Alonzo	79.19

Open	MPH
1. Kirn/Kirn	93.28
2. Bartley/Garner/Huff	92.60
3. Warren Kurth	91.61
4. Charles Legg	89.69
5. Thomas Hartvigsen	85.48

B PROTO SPEED

Junior	MPH
1. Michael Bussell	138.35
2. Max Snyder	134.17
3. Patrick Hempel	133.78
4. Glen Vansant	117.91
5. Rusty Parsons	103.67

Senior	MPH
1. Mike Langlois	142.40
2. Brian Pardue	122.73

Open	MPH
1. Thomas Upton	156.59
2. Bartley/Garner/Huff	154.38
3. Anaston/Bussell	151.45
4. Finn/Lank	147.48
5. Terry Herron	134.48

AEROBATICS

Junior	Points
1. Robert Peterson	295.5
2. Joe Musumeci	294.5
3. Kenneth Stevens	288.0
4. Robert Craven	283.5

5. Gerald Solomon	272.5
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Senior	Points
1. Alan Adamisin	337.0
2. Mark Heldeman	334.5
3. Paul Masanek	319.5
4. Mardy Huston	318.5
5. Randy Hancock	315.5

Open	Points
1. William Rabe, Jr.	520.5
2. Gene Schaffer	495.0
3. Les McDonald	484.5
4. Bob Whitley	480.5
5. Bill Simons	480.0

COMBAT

Junior	Points
1. Bill Vojslavek	
2. Lee Green	
3. Glen Wolff	
4. Larry Hoffman	
5. Joseph Servizzi	

Senior	Points
1. J. Russ Green	
2. Robert Lee	
3. John Corso	
4. Allen Swanson	
5. Mark Daniels	

Open	Points
1. Mark Pattie	
2. Max Mearns	
3. Ron Esman	
4. David Reitz	
5. Sherwood Buckstaff	

FAI TEAM RACE

Jr.-Sr.-Op.	Min/Sec
1. Albritton/Joy	4:43.65
2. Dunkin/Wright	4:40.9
3. Oesterle/Fischer	4:50.3
4. Jolly/Kusik	4:50.9
5. Nelson/Mearns	5:01.45



Top: Mark Daniels and Ron Colombo, Detroit, Mich., compare differences in Fast and Slow Combat ships. V-Tailed Slow Combat ship was inspired by the Adamisin V-Tailed Stunter design, and is said to do a full pattern. Above: Russ Green, Dallas, Tex. (L), and Robert Lee, St. Paul, Minn., fought it out in Senior Combat. Green won match which made him Senior Combat Champ for the second successive year. Above right: Russ Green is flanked by pit crew Norman Johnston and Bill Rutherford. Center right: Mark Patte, Evansville, Ind., and wife Anna share a happy moment as Mark emerged winner in Open Combat. Below right: Bruce Paillet, Glenhead, N.Y., Junior National Champion shows us his 1/2A Proto Profile plane that earned him third place in the 1/2A event.

by about 14 mph. The B Proto record, however, wasn't as easily attained, and with as clear cut a speed margin as the B record. Prior to NATS time the Junior B Proto record was held by Max Snyder, Imperial Beach, Calif., at 133.03 mph. Before noon at the NATS, Snyder beat his own record by posting a speed of 134.17 mph. At about 4:30 P.M. Bussell countered with a 138.35 mph run breaking Snyder's new record. Snyder then used his last attempt to try and beat Bussell. On the second lap of his run, however, he came too close to the ground, and clipped the prop, thus ruining his chances of beating Bussell, who for now stands as the Junior B Proto record holder and NATS Junior B Proto Champ.

The fourth and last record to fall was also in B Speed, and was set by John Shannon, Garland, Tex., at 188.01 mph. Shannon's record was achieved through the use of a brand-new engine built by himself and Dub Jett, Seagoville, Tex. The DJS 29 features a homebuilt case, front plate, sleeve and head, and a two bearing crankshaft support. The remaining parts of the engine were stock ST rotor, shaft, piston and rod.

While that's the extent of the records to be set, some other noteworthy performances were turned in at the Speed circles. Brian Pardue and Mike Langlois, both of Greensboro, N.C., did well for themselves. Pardue not only placed well in several Speed events, but also captured the Senior National Champs crown. Langlois walked off with at least six awards, four of them first places. In Open C Speed the Bartley-Garner-Huff Team won with 188.60 mph. In Jet it was Myrle Hoyt, Newton, Iowa, with 189.80.

NATS Speed contestants had the pleasure of having in their midst the Andrew Keiller family of Melbourne, Australia. Boy, that's a long way to go for a contest! While talking to Andy I learned that he, his wife Doreen and two sons, Anthony and Ruppert, had made this year's NATS a part of a visit to the U.S. in which they met with many modeling friends they had only known previously through correspondence. Their visit started out in California, then to Pennsylvania and finally to the Nationals at Oshkosh. Andy and Family—we hope that your brief stay with us was a pleasant one, and hope that we again have the pleasure of seeing you and your family at a future U.S. NATS.

The number of Combat entrants at this year's NATS was not as spectacular as last year's. In 1972 we had over 200, while this year's entries stood at 131: 80 in Open, 40 in Senior and only 11 in Junior. In spite of the lower number of contestants, however, the action was as fierce as ever: Mid-air collisions, line entanglements, the unearthly thump of planes hitting the ground and yes, a couple of fly-aways, one with lines and handle.

While there were the inevitable close calls on mid-air, etc., and close decisions on when a match should be ter-

(Continued on page 80)

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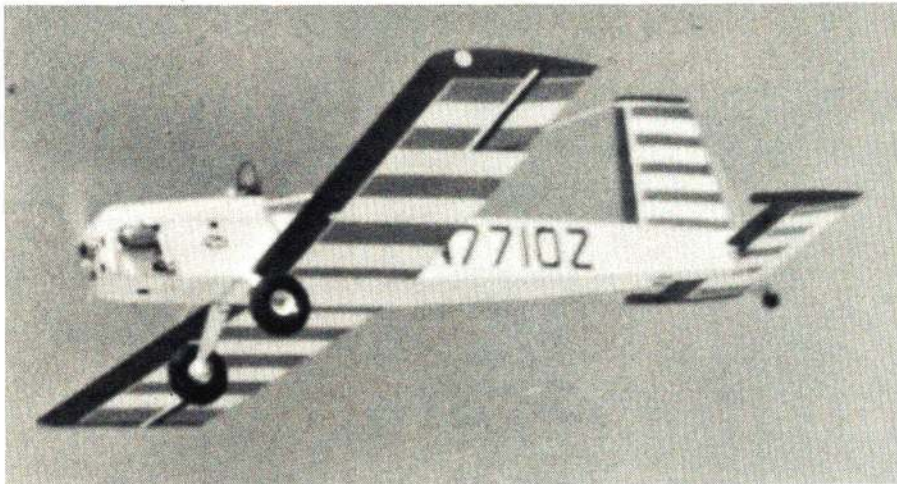
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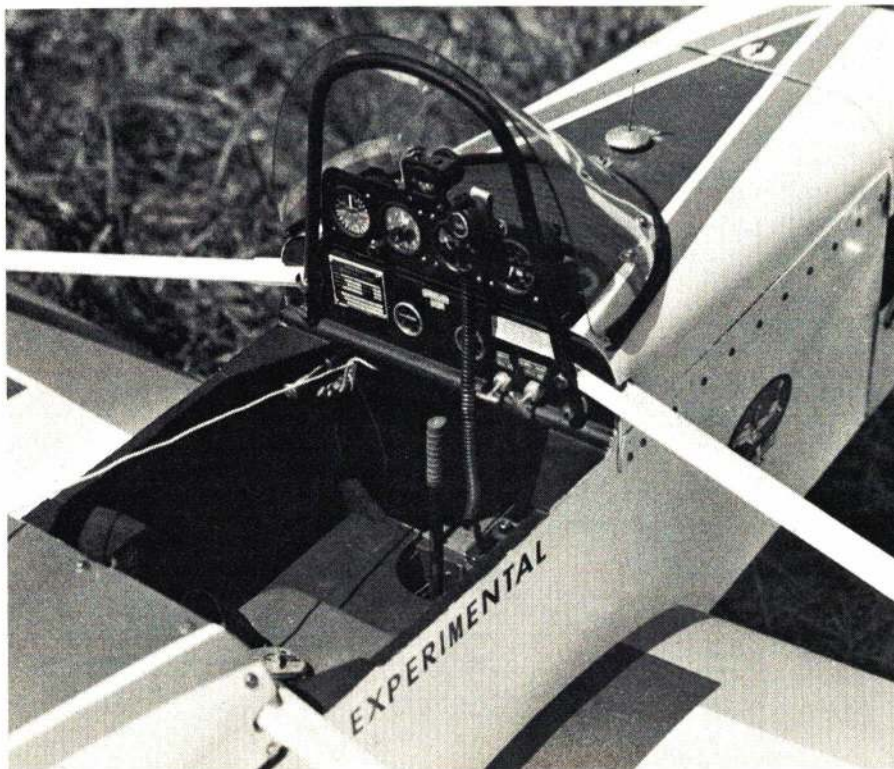
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RC SCALE



Above: Smoothly flying its pattern, the Volksplane is ideally powered, sized, and shaped for a model. Of course, the real plane is just a big model anyway. Right: John Roth won the Scale event with his extremely precise Volksplane and leads our next World Champs Scale team. Below: Cockpit detail of the Roth Volksplane.



CLAUDE McCULLOUGH

Even the most highly skilled fliers in the Nationals RC Scale event had problems with the stiff crosswind that blew continuously on Friday and intermittently with less intensity on Saturday across Wittman Field. Concrete makes a very coarse grade of sandpaper and few models made it through the six-flight schedule without having wing tips, cowling bottoms and pant edges scarred. Takeoffs and landings were all over the runway and few aircraft escaped without at least one flight ending up in a ground loop or nose-over.

The wind came burbling over a large grove of trees on a small hill downwind of the runway side and the resulting turbulence pitched even the heaviest wing loaded ships around. Some appeared to have glitchy radios, so bumpy was the air at times.

Radio problems and interference did in fact take down several models. Dick Graham's beautiful Piper Pawnee was well on the way to a good first flight when it suddenly veered over and went in. The load of powder that the plane was carrying for a scale operations crop dusting demonstration added to the effect of an explosive impact with a miniature mushroom cloud. The Pawnee was literally wiped out to the rear of the cockpit, ruining hundreds of hours of careful detailing.

Bill Johnson's Ryan STA dove into the deck at a slightly inverted angle with such speed it appeared that little would be left. Amazingly, the cowling and engine took nearly all of the punishment and it appeared to be repairable in a short time. Not so with Josh Titus's well-known Ansaldo WWI biplane, crumpled in a stomped orange crate mess of balsa and patiently hand-decorated covering.

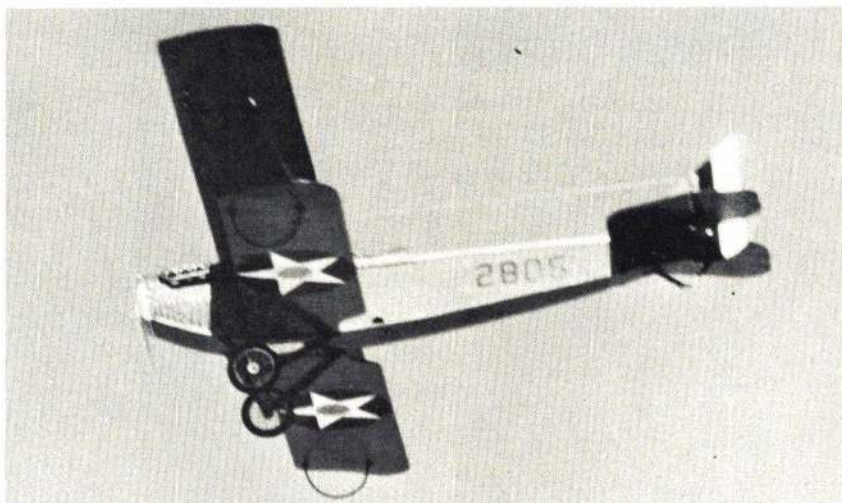
Bill Bertrand's big and lightly loaded Aeronca L series low wing did an amazing job of battling the adverse conditions. His flights were nearer to Scale speed and appearance than most of the entrants. Instead of throwing in the towel and flying the pattern with the wind, he put the bird into a realistic crab angle and flew right up the edge of the runway in the crosswind after passing over the judges' heads.

Nelson's Jenny was another large entry that performed as though only a breeze was blowing. The several hundred flights he had on the model, probably more than the total of all the rest of the entries, could be seen in his familiarity with the handling characteristics of those barn door wings.

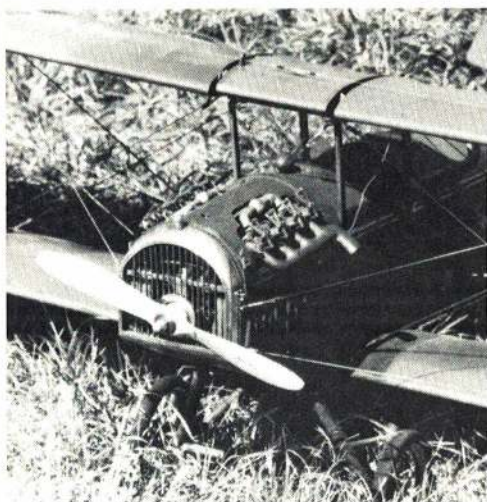
Consistent flights by John Roth with his World Championship team Volksplane put him on top. The spectacular flying of Bob Karlsson's Corsair helped him secure third place. The plane was certainly the crowd favorite as the largely model-oriented gallery cheered and whooped at the streaking low fly-bys



Above: Bob Karlsson's exceptional flying Corsair. The gear retracts in scale manner with wheel rotating through 90°. It secured third place—the only winner with the used look typical of a war weary fighter. Power is an 80. Above right: Gorgeous cockpit detail in the Corsair. Note complicated flaps work, too.

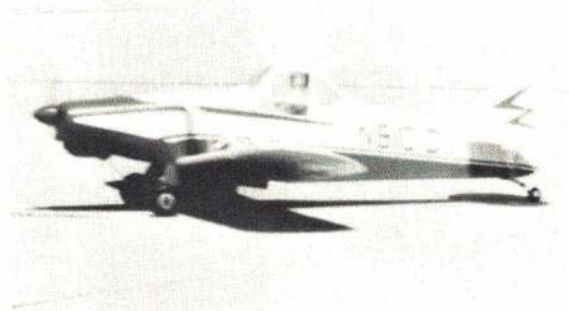
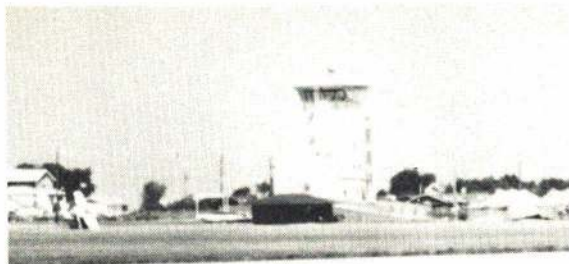


Above: The olive drab Jenny in flight. The gusty winds did not seem to bother this plane. Left: Close up on the OX-5 in the Jenny. Below: Charles Nelson has been flying his Jenny for a couple years, so he really knows its handling characteristics. It has amazing engine detailing. He even sport flies it for fun.

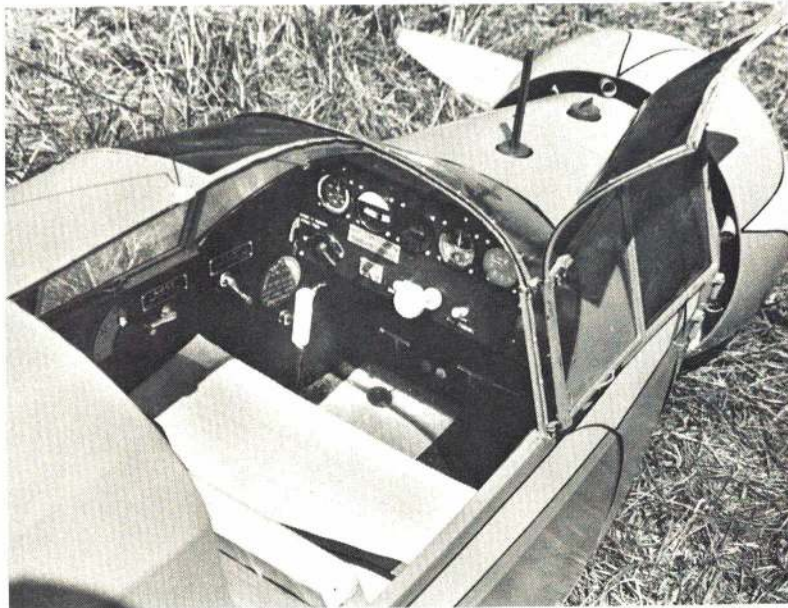


SCALE

Jr.-Sr.-Op.	Points
1. John Roth Volksplane	17461.9
2. Ralph Jackson Windecker Eagle	17295.5
3. Robert Karlsson F4U-1A	16546.0
4. Walt Moucha Fly Baby	16482.8
5. Frank Nosen P-47D	16305.3
Best Flight Achievement	
Bob Underwood	



Above: Your correspondent, Claude McCullough, came with his improved Shinn and more flying time on it. It is just as well-detailed as any of the winners, and a natural for model building. Right: Bill Bertrand always brings the biggest model to RC Scale. This year he brought a very smooth flying Aeronca LB 1936 with 9-ft. span and over 900 sq. in. area. Even at 14 lb. the Webra 60 handles it very well.



Above: It was sad to see Dick Graham's well-detailed Piper Pawnee take off easily, climb out into a radio malfunction or interference situation, and crash on its first flight. It carried powder to simulate dusting as a scale action, and when it crashed, the dust made it look like an explosion. Above right: Cockpit of Bertrand's Aeronca. Right: Photographers have a good chance to shoot these big, realistic flyers in flight without long telephoto lenses.





Above left: Cockpit detailing in all entries was superb. Here's the P-47. Above: Bud Nosen's heavy but good flying P-47. Like the real Thunderbolt, the model has safe handling characteristics. It is also kitted by Bud. Left: Walt Moucha and his brand-new or much rebuilt Fly Baby abounds with new details. Still flies just as easily and smoothly. Wonder if he'll try the biplane version of the aircraft next. One flight with one wing, and a second flight with two wings.



Left: Interior of the Emeraude is immaculate. Even the pilot doll fits. Note control column system is all there, too. Wing fillets are realistically reproduced. Above: Dolly and Bob Wischer prepare for a flight on the easy flying Emeraude. Canopy is open for access to the on-off switch!



Above: Another beautiful flying scale model with plenty of power. The winds did affect it and caused a bad landing (repairable). It is a Cherokee Arrow by Don Condon. Right: Gently flying but almost over-powered, the DH-2 takes off. Very pretty model by Norm Evans. He does throttle down after takeoff to keep it realistic. Below: Electric flight appeared in a Scale event. Bob also flew in A Pattern with another plane. The Fournier did quite well, but needed to hurry through its maneuvers as climbing out with rough winds wasted much time. Power was surprisingly strong but mysteriously silent. Pilot is Bob Boucher of Astro Flight himself.



and fighter-like maneuvers of the F4F. Bob's larger Corsair, which he crashed at the 1972 NATS ended up over 15 lb. after repairs so a new version was built for this season. Smaller, but still using an O.S. 80 swinging a 14-6 prop, this one weighed out at 10¼ lb. without fuel. It was mostly foam construction. The fuselage is based on a balsa box with foam glued to it and sanded to shape. Except for the headrest, the thickest foam is about 3/4". Outer wing panels and the tail sections are foam core. The fabric-covered metal frame control surfaces of the full-size plane were simulated by putting down 1/8" masking tape at every rib location and on the trailing edge. The 1/16" balsa sheeting was then sanded to look like the typical fabric dip, down to about 1/32" thick in the middle between ribs. Seams, riveting, inspection panels and an aged and chipped finish gave it the look of a line Corsair in the thick of the action.

The difficult problem of the 90° rotation of the gear while retracting backward was worked out in his own home-made unit powered with special Rom-Air cylinders having a two-in. stroke. They appeared to operate reliably and, coupled with the scale-like flaps, a realistic picture was completed for the judges as the blue plane took off and cleaned up the configuration. Bob had some minor problems on Friday and lost his fifth flight on Saturday. The sixth and last flight put it all together for a placing.

Ralph Jackson placed second with his Windecker Eagle that he also used at the '72 NATS. He has been kiddingly accused of cheating because the prototype is a plastic airplane without a seam or rivet to be seen on its glass-smooth surface. His model authentically duplicates the prototype and had the fifth highest static score among the 24 entries.

As the highest scorers at Oshkosh, Karlsson, Roth and Jackson were automatically selected as the RC portion of the U.S. Team for the 1974 World Scale Model Championships. All appeared to be flying models that met FAI loading and weight limitations and Karlsson intends to convert his Corsair to a 60 engine. Thus no marathon building sessions for new airplanes is required to get ready for the World meet unless the team member wants to undertake a new model or a backup.

Walt Moucha had completely reworked his Fly Baby and the added detail scored 300 for third in static judging. His best flight gave him a close fourth place and the first alternate spot for the team should any of the other three not be able to fly next year. Last year's winner, Bud Nosen, was unable to complete his new Zero because of business pressures and, since he had lost his Skyraider at Glenview, flew his reliable P-47 into fifth place on the trophy list.

The advancement of the average quality of RC scale models was evident at Oshkosh. Only four of the entries went below 340 scale points and the top

(Continued on page 117)

GRAUPNER

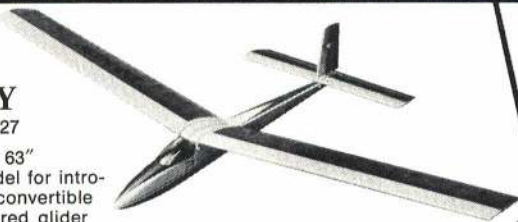
*the brandname
for top quality!*

R/C SAILPLANE MODELS

DANDY

Ind. No. 4227

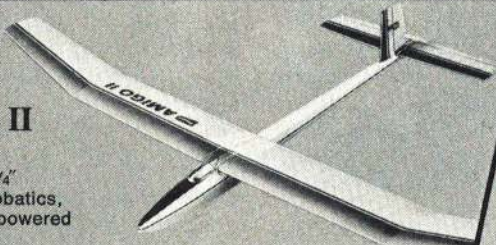
Wingspan 63"
ideal model for intro-
duction, convertible
to powered glider



AMIGO II

Ind. No. 4219

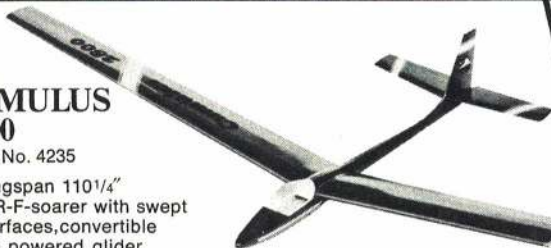
Wingspan 78³/₄"
for simple aerobatics,
convertible to powered
glider



CUMULUS 2800

Ind. No. 4235

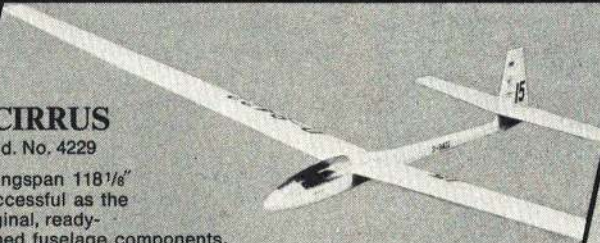
Wingspan 110¹/₄"
A-R-F-soarer with swept
surfaces, convertible
to powered glider



CIRRUS

Ind. No. 4229

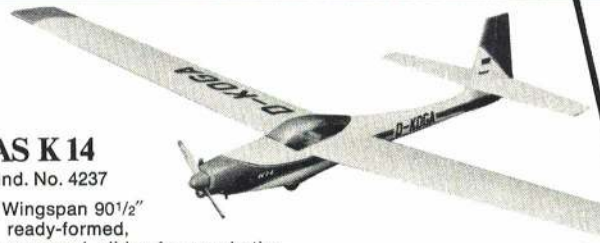
Wingspan 118¹/₈"
successful as the
original, ready-
formed fuselage models,
convertible to powered glider



AS K 14

Ind. No. 4237

Wingspan 90¹/₂"
ready-formed,
powered glider for aerobatics,
for engines of up to .15 cu. in.



R/C POWER MODELS

TERRY

Ind. No. 4635

Wingspan 41³/₈"
handy introduction
model, for engines
of .09 cu. in.



TAXI

Ind. No. 4625

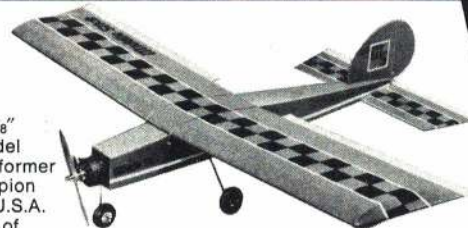
Wingspan 59¹/₁₆"
R/C trainer for engines
of .15-.35 cu. in.



MIDDLE STICK

Ind. No. 4631

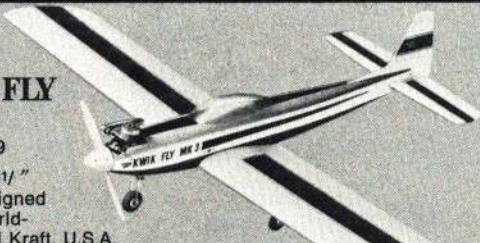
Wingspan 55¹/₈"
aerobatic model
designed by former
World-Champion
Phil Kraft, U.S.A.
for engines of
.40 cu. in. and the NSU/Wankel model airplane engine



KWIK FLY MK 3

Ind. No. 4629

Wingspan 59¹/₂"
low wing designed
by former World-
Champion Phil Kraft, U.S.A.
for engines of .60 cu. in.



CESSNA 177 cardinal

Ind. No. 4633

Wingspan 61"
for engines of
appr. .30 cu. in.
semi-scale after
the new CESSNA type, ready-formed components



AHM, Associated Hobby Mfrs.,
Inc.
621 East Cayuga Street
Philadelphia / PA 19120

French Motor Co. Inc.
33, Berry Street
San Francisco / Calif. 94107

Midwest Model Supply Co.
6929 West 59th Street
Chicago / Illinois 60638

Royal Products Corp.
6190 E. Evans Avenue
Denver / Colorado 80222

PYLON



Top: Start looked pretty much like this with different colors and people. That's Violet tuning for Telford who also qualified and flew quite well. Above left: Team Violet-Telford easily won Formula FAI again. There is disappointing little national interest in FAI. It is certainly not much quieter than Form. I, but the planes seem much easier to handle—more should try it. Above right: Bob Smith skillfully won Formula I Pylon. He and Cathy are quite a handsome team at any meet. His plane is a K&B motivated Miss DARA.

Quite a few interesting facts emerged from the NATS Pylon Racing this year. Bob Smith is now a two-time winner. He did it with a Minnow and a K&B in 1970. This time he won with a K&B—but not one of the new 1973 engines—and a Miss DARA which he and his brother Chuck designed and now produce in kit form.

The only other two-time winner, Cliff Weirick, seemed to have the fastest airplane there, a Stafford Ricky Rat, powered by a very special engine, No. 98 of the 1972 K&B engines, owned and much modified by Roger Theobald, who was the big brain in the engine design. (I wish they had left it the way he designed it.) Weirick turned the fastest legitimate time—1:27.9. He was beaten in a fantastic race in the second round by Harold Coleson, and again by Bob Violet in the fifth round when he cut inside the second pylon with a lead of more than half a lap.

Second-best time was turned in by Dan McCan, 1:28.9, also flying a Miss DARA with a 1972 engine. Smith was third with a 1:29.0. The interesting fact is that all three of the fastest times were turned with those incredible 1972 K&B engines.

Only one of the 1973 engines broke 1:30—Kent Nagy's with a 1:29.4. Most of the others looked more like 1971 times, in the high 1:30s and low to mid 1:40s. It seems that the changes made in the case for the 1973 production engines (they are otherwise identical except for minor details, and the parts are interchangeable) were unwise. Hopefully, this situation will change.

A week after the NATS, at the Pop White Memorial Races at Whittier Narrows in Southern California, the trends begun at Oshkosh were strongly reinforced: Smith turned 1:22.4 with his 1972 engine; Larry Leonard turned 1:27.5 for eleven laps with a 1972 engine that was allegedly down 500 rpm from most of the others; Kent Nagy turned no better than 1:27.4 with his 1973 engine; and the rest of the 1973 production engines turned from 1:35 to 1:45 in the hands of the more competent fliers. It seems as if a Ford or Chrysler type recall to modify the engines would be in order.

Second place winner of the NATS was Jeff Bertken, the caller of the BS Team and the "mouth" of that team in every sense. That's quite an accomplishment when one team takes *both* first and second at the NATS! Jeff had to beat Kent Nagy in a fly-off, which he did rather handily to the considerable surprise of everyone who has watched Kent fly—I wouldn't have bet a plugged nickel that Jeff could beat him.

The contest management goofed and set up a short course for the qualifying rounds. No one is quite sure how it happened, but *all* of the top 20 qualifying times were 1:30 or below (down to Smith's 1:21.0, which he missed by eight sec. in the finals), and *none* of the times in the finals were better than six sec. slower, with weather conditions that were as good or better. I think no one,

PYLON FORMULA I

Jr.-Sr.-Op.	Points
1. Bob Smith	20
2. Jeff Bertken	19
3. Kent Nagy	19
4. Cliff Weirick	18
5. Dan McCan	15
6. Harold Coleson	13
7. D.C. May	13
8. Ron Sheldon	13
9. Walt Schroder	11
10. Tom Christopher	9
11. Irwin Funderburk	9
12. Terry Prather	9
13. Bob Violet	9
14. Don Downing	8
15. Ed Rankin	8
16. Joe Bridi	6
17. Whit Stockwell	6
18. Gregory Doe	5
19. R.B. Moncrief	5
20. Rick Kuiper	0

Best Junior

Brian Richmond

Best Senior

Keith Davidson

PYLON FAI

Jr.-Sr.-Op.	Points
1. Bob Violet	20
2. Ron Sheldon	20
3. James Booker	18
4. Tom Pownall	15
5. Bob Root	14
6. Kent Nagy	13
7. Tom Baker	13
8. Cliff Telford	12
9. Bob Noll	11
10. Bob Reuther	10
11. Jeff Bertken	10
12. Terry Prather	9
13. Mike Helsel	9
14. Tom Christopher	8
15. Pete Reed	7
16. Gus Geissinger	6
17. Doug Spreng	5
18. Irwin Funderburk	5
19. Dan McCan	4
20. Balko/Browning	3

Best Junior

Brian Richmond

Best Senior

Phil Viney

least of all Glen Spickler, had any doubt that the goof on measurement was for real. It didn't really matter, however, since everyone had the same chance. But you can well imagine that the new K&B engines were looking fantastically good for a while, when fliers who had rarely broken 1:40, and had never broken 1:30, were turning in easy 1:25s and the like. You can add six or seven sec. to the faster qualifying times, and at least eight or nine sec. to the slower ones, to estimate the real speeds. Seen in that light, they were not impressive at all.

Because of weather conditions on Monday and Tuesday, only two qualifying rounds were flown in each Racing event. After a couple of crashes there were only 30 left in FAI Pylon, so only ten non-qualifiers traveled all that way for only two flights. But in Formula I, *more than 60 entrants* had only two flights. This is a sad situation, and at least half a dozen very solid competitors told me that they do not intend to return to the NATS unless there is a guarantee of more racing opportunity.

It doesn't make sense that just anyone who happens to have a fliable Stunt ship and the gall to count himself in Class C should have a near-guarantee of six six-min. qualifying flights. There ought to be some sort of regional eliminations to cut down the number allowed in *both* events, so that those who do qualify can count on a full racing rotation.

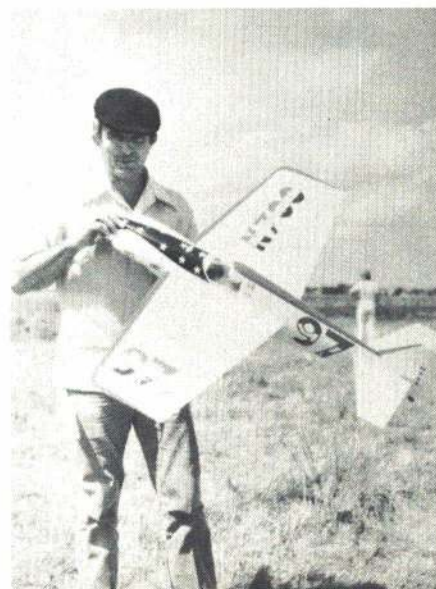
FAI Pylon looks like a dying event in this country. The Telford/Violett team, Ron Sheldon, Jim Booker, Bob Reuther and a few others made it look like a real Racing event, but on the whole it was a sad show. The starting order, for the most part, determined the finishing order. After the first round you could quite accurately predict the winners of subsequent heats except for flame-outs and cuts. One of the members of the Doylestown team didn't bother to compete (Bob Smith), and a second one (Terry Prather) obviously didn't take it very seriously. There were six of the Violett BobCats in the finals, but they did not appear to have any advantage over the quite conventional aircraft of Ron Sheldon.

You didn't have to be spectacularly fast to do well, as Tom Pownall demonstrated by finishing fourth with a best time of 1:56.5, or Bob Root by finishing fifth with a best time of 1:55.3. But those are times which we flew easily in 1969 in Formula I. They just don't turn on either the crowd or the competition. If we really have to have a second Racing event at the NATS, maybe it should be Quarter Midget, not FAI—unless somebody does something about making FAI an official event of international stature with a team sponsored for the Internats the way Pattern fliers do it.

The one unarguable fact to emerge from the FAI Racing was that Telford and Violett are champions of the caliber of Smith and Weirick. They now have two national championships and two international championships to their credit.



Above: The what? Certainly Kent Nagy and Charlie Shaw think so. Left: Brother and sister team Dan and Marion McCan are frequent competitors at West Coast meets in Pylon Racing. The Miss DARA is currently the most popular Formula I plane. Wonder what will be most common next year?



Above: Kent Nagy with a Miss B.S. P-51 wound up sixth in FAI and third in Form. I with this nice Miss DARA. Left: The only Ole Tigre in the finals was Tom Christopher's. He proved that low aspect ratio wings can go fast if one carefully contours the wing so that it still has laminar airflow even in a high "G" pylon turn.



Above: Bob Root and his wife with a Phoney Folkerts and Jim Booker and mechanic with another of these unique planes. Design, to be an AAM feature, can be made scale-like with retracts or very FALish with fuselage contained wheels. Either way it is fast. Bob placed fifth and Jim placed third. Right: Talented in all RC events and a kit maker too, Joe Bridi, who qualified with a Minnow. Below: Monty and Sheryl Moncrief with their very nice K&B-powered Miss DARAs.



Above: Although he doesn't look too happy here, Jeff Bertken was mighty happy to win fly-off for second against Kent Nogy, thereby giving the BS Team first and second in Formula I. Right: You just can't have a NATS without fun-loving gentleman D.C. May. He made the new K&B go with the best of the old ones, but lost out on sixth in fly-off with his buddy Harold Coleson.



A particularly interesting fact about the top five in Formula I—i.e., Bob Smith, Jeff Bertken, Kent Nogy, Cliff Weirick, and Dan McCan—is that they are all in the same frequency group and therefore never raced against each other. Nogy, Smith and Weirick have been on the same frequency all season; Bertken moved onto it for the NATS because he calls for both Smith and Nogy; and Dan McCan, who is on a different six-meter frequency, was naturally put into that group because he was the only other six-meter qualifier.

Dan nosed over on a downwind takeoff in his final heat or he would certainly have been in the fly-off for second with Nogy and Bertken. It is my opinion, judging from his speed in other heats and the quality of his flying, that he would have won that fly-off quite easily. He was in the very last heat when he nosed over, and the wind had shifted only minutes before that. Monty Moncrief and Ron Sheldon also nosed over in that same final heat, and only Whit Stockwell, who had been able to do nothing else right all day, got in the air to turn a spectacular 2:17 for 11 laps. (Both he and I were laughing too hard at this curious turn of events to pay attention to the far pylon on the first lap.)

McCan was beaten in his second round by Terry Prather, Nogy was beaten in his first round by Ron Sheldon (the only two Supertigre G-40s that qualified). Cliff Weirick should also have been in that fly-off for second, but he had eliminated himself with one of the most completely unnecessary cuts I've ever seen him take—it wasn't even necessary to fly moderately tight at that point.

There were 17 K&B engines in the finals, 2 ST G-40s, and 1 HP. Of the 17 K&Bs, the top three—by a good solid margin—were 1972 engines. Of the remainder, the ones that D.C. May set up and broke in for the Southern contingent, and the one that Cliff Telford set up for Violett, were the best even though they didn't place in the top five because of the heat makeup noted above.

Coleson and May came in sixth and seventh, and if Terry Prather had been performing consistently up to his ability so that there would have been a more equal spread of speed among the frequency groups, they would surely have placed higher. (Terry had nearly half a lap lead on Smith in their first heat when he blew a plug.) Terry also had a problem with his elevator linkage which he solved a week later by changing to his backup airframe and beating both Smith and Nogy in head-to-head races at Whittier Narrows, when they were going even better than they were at Oshkosh.

In the fly-off for second between Nogy and Bertken, the race management goofed again by turning in nine-lap times. Since they were only 3/10 sec. apart, another lap might well have changed the results.

This is the first time in six years at the NATS that a Stafford Minnow has not been first; in fact, not even in the

(Continued on page 116)



Above: This is the unofficial timer system which was used throughout the NATS to demonstrate a possible better way to time all Pylon flights. You will see more of this equipment in a future issue. Thanks to Jim Brown for bringing it to the NATS. Above right: The ever-present humorist and good guy, Harold Goldclank found Bob Violett's Cosmic Wind of more than passing interest. Yes, the model flew with the added "feet" in order to satisfy some Formula I rule about a model being scale enough that a pilot could conceivably be seated inside. Left: Stafford's Rickey Rat. This one built by Dave Lane with Roger Theobald's special 1972 K&B was flown by the capable thumbs of last year's champ, Cliff Weirick, who flew to fourth place this year. Right: Outstanding Supertigre performer is Ron Sheldon with a perfect score in FAI—had to fly off with Violett for first place. Airplane is an "Avanti."



Above: Top starting position went to Gregory Doe with his two absolutely beautiful, highly-detailed Segal Minnows. That's the K&B truck seen at all Speed events at the NATS. Left: Two Texans display their Miss DARAs, Ed Rankin (L) and Don Downing (R). Ed is current NMPRA President.

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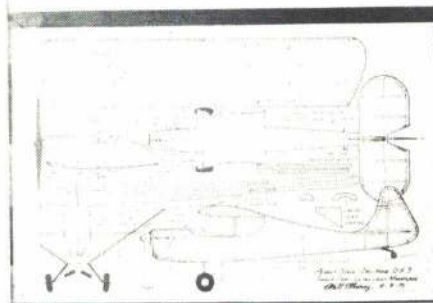
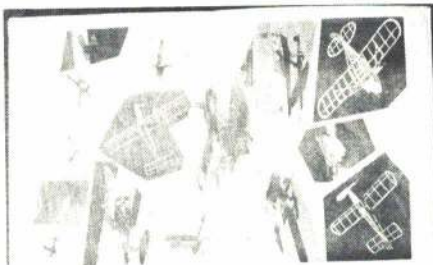
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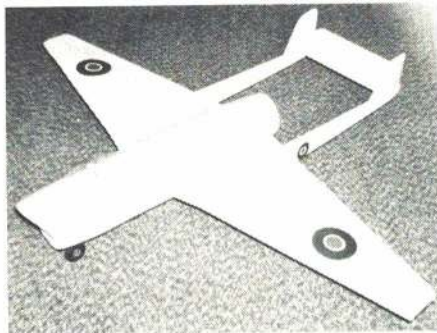
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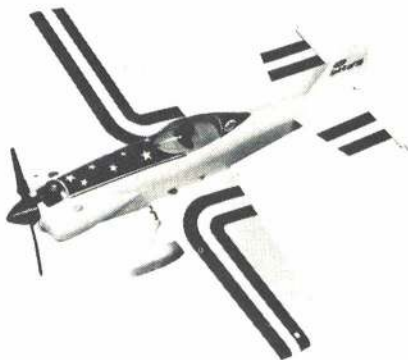
ERIC W. MEYERS



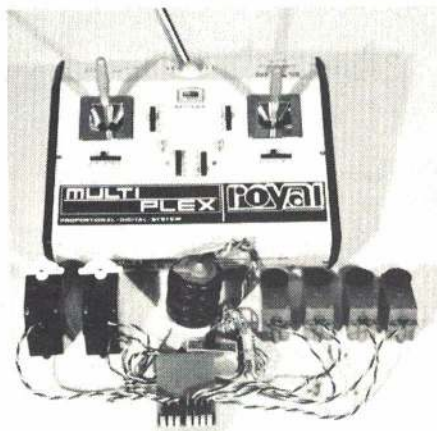
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Rom Air/Line Couplers. At last, a simple way to connect pressure lines from fuselage to wing has been devised in these small fittings. Couplers screw together by hand and will not leak. \$1.50 each. Rom Air International, Inc., 924-65th St., Brooklyn, N.Y. 11219



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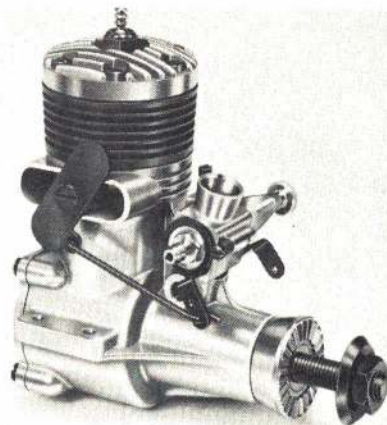
Mini Flite/SS Model. This six-ft. wingspan Stand-Off Scale model of the Anderson Kingfisher is the latest kit from Mini Flite. All-balsa constructed, the model is fine for water or land flying with the addition of wheels. Plane uses power pod on top of wing. \$54.95. Mini Flite Co., 48 Princeton St., Red Bank, N.J. 07701



Fibo Craft/Cruiser. 1/2" scale Tri-Cabin Cruiser is second in a series of small scale boats. This attractive ship has a 26" length and uses a gas 09 to 15 or electric motor for power. Kit features a fiberglass hull for quick building and includes all deck and cabin parts as well as plans and instructions. \$39. Running hardware (prop, shaft and tube, rudder) also included in deluxe kit. Electric—\$46.95. Gas—\$49.50. Fibo Craft Models, P.O. Box 489, Bay Shore, N.Y. 11706



Southwestern/Honker. The ultimate in simplicity, this small, light 049-powered, two-channel trainer has an assembled and sanded wing with a box-type fuselage. All parts are machine cut; plans, instructions and hardware included. Plane can be modified for higher performance with an 09 engine. \$13.95. Southwestern Sailplanes, 917 Princeton SE, Albuquerque, N.M. 87106



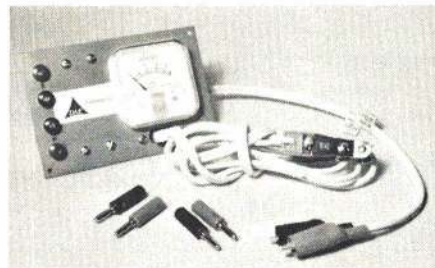
K&B/RC Stallion. Engine popular in the U-Control circles for years now has carburetor and exhaust baffle for radio control use. New powerplant is ideal for beginners as it offers power, performance and dependability for \$19.95. The 35 engine uses an exhaust baffle for a reliable idle. K&B Manufacturing, 12152 Woodruff Ave., Los Angeles, Calif. 90241



Fibre Foam/Q.M. Racer. The clean lines of the Miss DARA racer have been put into this new kit for Quarter Midget racing. Plane has all-balsa construction and foam wing. 301 sq. in. of area, for 15 engines. Quick and easy to build, ship is a hot performer. \$34.95. Fibre Foam Products, 6370 East 22nd St., Tucson, Ariz. 85710



Sig/Super Chipmunk. New style of construction in this ship—a 1/2" balsa and hardwood profile structure with formed plastic fuselage halves around the profile. Shell is complete with rivets, fillets, seams all molded in. Wingspan is 64". Kit also includes foam wing core, hardware pack, canopy, cowl, etc. This Sport scale ship should build fast and fly well. \$39.95. Sig Manufacturing Co., 401 South Front St., Montezuma, Iowa 50171



DA/Power Panel. Power all electric operations (starter, pump, plug) from this one source which operates from a 12 volt battery. Mating plugs, glow plug cord and battery cord are included. Panel measures 3x5 for easy mounting on field box. Three versions are available—ammeter is optional and pump voltage is either 4V or 12V. Prices are \$14.95 to \$18.95, or \$25.95 to \$29.95 with charger. DA Enterprises, Box 335, Haubstadt, Ind. 47639

\$3.95

DOUGLAS

TBD-1
'DEVASTATOR'

Aero
23

Aero Publishers/Aero Series. One of a large series of scale airplanes is this 52-page book on the Douglas TBD-1 Devastator. The books contain many informative pictures and drawings for scale documentation and good reading. The paperback book sells for \$3.95. Aero Publishers, Inc., 329 Aviation Rd., Fallbrook, Calif. 92028

TRICO

"NO WAX"
POLYESTER RESIN

CAUTION
FLAMMABLE. VAPOR HARMFUL.
See cautions elsewhere on label.

NET CONTENTS
ONE QUART

Trico/No Wax Resin. New type of polyester resin has no wax in formula, thus alleviating need for sanding in between coats, prevents paint separation and offers good adhesion to balsa, fiberglass or itself. The resin is flexible and will not become brittle with age. No primer needed. Cure time is adjustable according to the amount of hardener used. \$5.45 per quart. Trico Hobby Products, 6007 Washington Blvd., Culver City, Calif. 90230



Mac's/Muffler. American-made flow-through design muffler is constructed of turned aluminum. Aluminum is then heat-treated and buffed. These mufflers take very little power from the engine and fit specific engines to be sure of a good fit. 60 size mufflers sell for \$12.95. Pressure fitting can be tapped into muffler. Mac's Products, 8020-18th Ave., Sacramento, Calif. 95826



TOWER

P.O. BOX 543

CHAMPAIGN,

All prices in this ad and in our current catalog are subject to change without notice.

HOT LINE MODELS



MOONEY CHAPARRAL

SPAN 70.5 AREA 770 ENGINE .61
RETAIL \$55.00
ONLY \$35.00



SIERRA TRAINER

SPAN 67 AREA 670 ENGINE .40-.60
RETAIL \$44.95
ONLY \$28.50

SOARING . . .

AIRTRONICS:	RETAIL	TOWER PRICE
Olympic 88-99	\$ 39.95	\$ 32.00
Mini-Olympic	19.95	17.00
Questor	26.95	21.50
Grand Esprit	119.95	92.50
Acro-Star	69.95	55.00

ASTRO-FLITE (AFI)

ASW-17	\$ 69.95	\$ 53.00
Monfery	34.95	24.75
Malibu	25.95	19.25
Fournier RF-4	29.95	21.50

DUMAS:

Hi-Pro Glider	\$ 39.95	\$ 29.00
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MARKS:

Windward	\$ 25.95	\$ 19.50
Windfree	34.95	24.50

MIDWEST:

Lil "T"	\$ 18.95	\$ 13.50
Ez Juan	29.95	20.50

JP MODELS:

Dart	\$ 55.00	\$ 47.00
Dart II	64.50	55.00

RC ENGINES . . .

ENYA:	RETAIL	TOWER PRICE
.09 III TV	\$ 18.98	\$ 14.25
.15 III TV	21.50	16.25
.19 V TV	24.50	18.50
.19 BB TV	37.98	27.25
.29 IV TV	27.98	21.00
.29 BB TV	35.98	26.00
.35 III TV	29.50	22.25
.45 BB TV	51.50	37.00
.60 III BB TV	76.98	50.50

FOX:	RETAIL	TOWER PRICE
.15 RC	\$ 17.95	\$ 12.75
.19 RC	21.95	15.50
.25 RC	21.95	15.50
.29 RC	26.95	18.50
.36 RC	26.95	18.50
.40 RC	29.00	19.75
.60 RC Falcon	37.95	25.50
.60 RC Eagle	59.95	39.75
.78 RC	74.95	49.50

K & B:	RETAIL	TOWER PRICE
.40 RC W/Perry	\$ 40.00	\$ 27.75
.15 RC W/Perry	40.00	27.75

NORTHFIELD-ROSS

Twin Cylinder Aluminum finish	\$125.00	\$106.00
Black Anodized	145.00	124.00

O.S. MAX:

Per .099 RC	\$ 12.98	\$ 11.00
.10 RC	17.98	14.25
.15 RC	22.98	18.50
.20 RC	24.98	20.50
.25 RC	26.98	21.75
.30 RC	29.98	23.95
.30 RC Wankel	87.50	68.00
.35 RC	29.98	23.95
.50 RC	52.98	36.95
.60 RC Goldhead	69.98	51.00
.80 RC	95.98	70.00

SUPERTIGRE:

G 21/29 RV ABC	\$ 33.98	\$ 25.00
G60 RC Bluehead	69.98	55.95

VECO

.19 RC	\$ 33.00	\$ 23.75
.61 RC W/Perry & new muffler	74.95	52.50

WEBRA:

.40 RC Blackhead	\$ 81.50	\$ 52.00
.60 RC Blackhead	109.00	69.75

ROM-AIR RETRACTS	
TRIKE GEAR	MAIN GEAR
RETAIL \$100.00	RETAIL \$70.00
TOWER \$ 69.50	TOWER \$48.50

A-justo-jig

FULL-HOUSE INCLUDES WING JIG AND FUSELAGE ADAPTERS

RETAIL \$45.00 TOWER \$37.00

RADIO CONTROLLED HELICOPTERS

DOMESTIC MANUFACTURER MEANS READILY AVAILABLE PARTS



RC Helicopters Inc. Bell Jet Ranger

RETAIL \$400.00
SUPER SALE \$299.00

DEVCON EPOXY

"5-MINUTE"

SMALL 1 OZ. \$.90
LARGE 2.5 OZ. \$1.60
GIANT 16 OZ. \$6.50

ALL NEW!!

"Dev-Tube" 1 oz. of Devcon in revolutionary new 2 in 1 dispenser. Can be refilled. ONLY \$1.25



SUPER Monokote

6 FOOT ROLLS

OPAQUES: Red, White, Orange, Yellow, Clear, Aluminum, Gray, Blue, Dark Blue, Black, Chrome, Olive Drab
Retail \$8.10
TRANSPARENTS: Yellow, Red, Orange, Blue (NEW!)
Retail \$9.00
ALL NEW FLAT FINISH: Olive Drab, Dove, Gray, Aircraft Aluminum
Retail \$9.00
METALLICS: Plumb crazy, Green, Blue
Retail \$10.50

NO MINIMUM NO LIMIT!

ONLY \$5.00

\$5.60

\$5.60

\$5.60

\$5.60

\$5.60

\$5.60

SOLARFILM

6 FOOT ROLLS

OPAQUES: Dark Red, Bright Red, Dark Blue, Light Blue, Orange, Yellow, White, Black, Silver
Retail \$6.60
TRANSPARENTS: Yellow, Orange, Blue, Red
Retail \$7.50
METALLICS: Green, Gold
Retail \$9.00

ONLY \$4.00

\$5.00

\$5.00

\$6.00

\$6.00

\$6.00

\$6.00

"POLYTHERM"

ELECTRIC HEAT GUN

A Must For Monokote & Solarfilm

- Adjustable Flow
- 1000 Watts of Heat
- Focused Heat Beam

Retail Value \$36.00

ONLY \$28.00
TWO FOR \$54.00



HOT LINE Me-109

Span 72" Area 770 sq. in. Engine .60

RETAIL \$59.95
TOWER PRICE

only \$38.00



SEALECTOR SEALING IRON



Adjustable From 300°F To 550°F

RETAIL \$14.95
DELUXE MODEL ONLY \$11.50

DELUXE MODEL WITH ROBERT SUPER SHOE

Total Retail \$17.93
ONLY \$13.50



X-ACTO

86

KNIFE AND TOOL CHEST

Includes: Knives, Blades, Planer, Sander, Gouges, Routers, and More

RETAIL \$17.95 TOWER \$15.25

370-C MINI VACU-VISE

No Screws-Just Flip Lever. Holds Tight On Non-Porous Surfaces.

RETAIL \$2.98 TOWER \$2.60



MOTO-SHOP

Includes Sanding Disks and Saw Blades

RETAIL \$39.95 TOWER \$32.00

DREMEL

DRILL PRESS STAND

210

RETAIL \$19.95

TOWER \$16.95



HOBBIES

ILLINOIS 61820

PHONE

217-356-4294

POWER . . .	RETAIL	TOWER PRICE
ANDREWS:		
S-Ray	\$ 18.95	\$ 13.75
H-Ray	21.95	16.00
A-Ray	29.95	21.50
Minimaster	30.95	22.25
Aeromaster	44.95	31.95

BRIDI:		
RCM Basic Trainer	\$ 27.95	\$ 20.50
RCM Trainer	44.95	34.50
RCM Trainer Wing Kit	21.95	17.50
Kaos	49.95	38.00
Kaos Wing Kit	24.95	19.75
Super Kaos	57.95	42.50

GOLDBERG:		
Falcon 56	\$ 19.95	\$ 13.95
Senior Falcon	36.95	25.50
Skylark 62	36.95	25.50
Skylark 56	22.95	16.75
Ranger 42 ARF	19.95	13.95
Shoestring 54	29.50	20.75

HOTLINE:		
Me-109	\$ 59.95	\$ 38.00
Comanche	54.95	35.00
Mooney Chaparral	54.95	35.00
Sierra Trainer	44.95	28.50
Cassutt Racer	29.95	19.50
Mini-Comanche	29.95	19.50
Cricket	16.95	11.75

J & J:		
Mark V Eyeball	\$ 54.95	\$ 42.50
J-Craft	45.95	32.00
1/2 Midget Mustang	34.95	25.00
Banshee	54.95	38.00
Troublemaker	59.95	42.00

JENSEN:		
Das Ugly Stick	\$ 49.95	\$ 39.00

MACO:		
Jet Star	\$54.95	\$35.00
Vaga	\$52.95	\$34.00

MIDWEST:		
Mach 1	\$ 54.95	\$ 37.95
Chipmunk	24.95	17.00
Cardinal	23.95	16.50
Little Stick	24.95	17.00
Sweet Stick	35.95	24.75
Tri Squire	19.95	13.95
Lil Tri Squire	13.95	9.75
Cardinal Squire	39.95	27.25

TOP FLITE:		
P-39 Airacobra	\$ 49.95	\$ 33.50
P-51 Mustang	45.00	30.00
P-40 Warhawk	49.95	33.50
Kwik Fly III	45.00	30.00
Contender	34.95	23.75
SE5A	47.50	32.50
RC Nobler	29.95	20.75

VK:		
Corben "Super Ace"	\$ 34.95	\$ 24.00
Navajo	41.95	28.35
Cherokee	41.95	28.35
Cherokee Babe	28.50	19.95
Nieuport 17	47.95	32.40
Fokker Triplane	49.95	33.75

HOT LINE MODELS

COMANCHE



RETAIL

\$55.00

SPAN 70.5
AREA 770
ENGINE .61
ONLY
\$35.00

GOLDBERG

RETRACTS



MAIN GEAR
RETAIL \$14.95 TOWER \$10.50
TRI-GEAR
RETAIL \$24.95 TOWER \$17.50
NOSE GEAR ONLY
RETAIL \$10.00 TOWER \$8.00

RETRACT POWER SYSTEM



RETAIL \$29.95
NEW!
SUPER SALE \$21.95

FOCKE-WULF TA 152

Span 58" Engine .30 - .45



RETAIL \$39.95 TOWER \$27.50

AERO PRECISION

AT-6 TEXAN

Span 53" Engine .29 - .40



RETAIL \$38.50 TOWER \$27.00

TOUCHDOWN

Span 42" or 48" Engine .15 - .25



RETAIL \$21.95 TOWER \$15.50

WARNING: THE HOBBY GENERAL HAS DETERMINED THAT BUYING FROM TOWER HOBBIES IS HABIT FORMING!

BRIDI SUPER KAOS

ONLY
\$42.50



RETAIL
\$57.95

Span 58 1/2"
Area 644 sq. in.
Engine .49 - .60

TOWER HOBBIES NYLON SPINNERS



High impact nylon true running high gloss finish spinners at the lowest prices anywhere. These rugged spinners are held together with 2 screws. Perfect for electric starters.

1 1/2" WHITE \$1.00 2 1/2" WHITE \$1.95
2" WHITE \$1.20 2" RED \$1.20
2 1/4" WHITE \$1.40 2 1/4" RED \$1.40
2 1/2" WHITE \$1.75 2 1/2" RED \$1.75

TIGER TAIL

Span 68" Engine .60



STANDARD TIGER TAIL KIT
RETAIL \$64.95 TOWER \$55.00
DELUXE TIGER TAIL KIT
RETAIL \$94.50 TOWER \$80.00

SOUTHERN R/C PRODUCTS

BOBCAT

Span 52" Engine .29 - .40



RETAIL \$48.50 TOWER \$41.00

SWEETATER

Span 66" Engine .60



STANDARD SWEETATER KIT
RETAIL \$64.95 TOWER \$55.00
DELUXE SWEETATER KIT
RETAIL \$94.50 TOWER \$80.00

SATISFACTION ALWAYS GUARANTEED AT TOWER HOBBIES!

In addition to all the items listed and pictured in this ad, TOWER HOBBIES carries all of the following lines: Andrews Aircraft, Lanier, Austin Craft, Du-Bro Accessories, Dremel, Fox mufflers, plugs, and engine mounts, Goldberg accessories, Hobbyoxy, Kavan electric starters, Midwest spinners, Perry carburetors, Robart accessories, Semco mufflers, Sonic-Tronics accessories, Sullivan fuel tanks, Tatone mufflers, Titebond Glue, Top Flite Props, Universal Wheels, X-Acto tools, Kraft and MRC radios, and several imported helicopters. All are in our new Fall '73 fully illustrated catalog --- at the lowest prices, of course!

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CALL 217-356-4294
for IMMEDIATE
COD SHIPMENT.

WEEKDAYS: 10:00 A.M. TO 9:00 P.M.
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JUST RELEASED FALL '73 CATALOG

The Fall '73 catalog is twice as big as the Spring '73. Over 75 manufacturers of kits, radios, engines, and accessories at the lowest prices anywhere! Send 25¢ (mailed 3rd Class). For first class mailing, send 50¢. FREE WITH ANY SIZE ORDER

FULLY ILLUSTRATED!



JACK'S CUSTOM MODELS PRIMER PAT MURPHY



The concept behind this kit is to make it easier for the beginning builder/flier to be successful in his first RC model endeavor when there is no experienced modeler around for instruction.

A complete hardware package plus all the wood necessary to build this plane is included. I checked the parts for size and shape and found them all to be very good. The kit also contained well-drawn plans and a complete instruction manual.

After studying the manual, I proceeded to build the plane following the well-planned sequence of instructions. Approximately 20 hours of building time was required until the plane was ready for covering with Solarfilm.

Also included in the manual are instructions on what type of glue to use and where to use it. Few beginners would have this knowledge.

Covering methods were explained and defined. This is a plus factor.

The radio was installed as shown on the plans and it made the plane balance where it should according to the plans. Steering was set up for no more than 5 to 7 degrees of travel either side of the centerline. This made the plane easier to handle on the ground while still having adequate control in taxiing. The other controls should be set: rudder—1/2" at bottom in either direction; elevator—1/4" up, 1/4" down from neutral. Be sure to double check these throws. It will make the plane easier to handle.

I test flew the Primer and then had four different beginners fly the plane and found that the instructions included on how to fly the plane are very good.

I have flown the Primer several times myself and find it to be a most forgiving airplane. After flying Pattern aircraft for the last two years, this was a most pleasant change of pace. I believe this is a good design. A wing kit is available that is a semi-symmetrical airfoil with ailerons. Overall this is a good beginner's airplane and should help you get started in our hobby.

Specifications: Wingspan: 56"; Wing Area: 470 sq. in.; Engine: 19 to 25; Radio: Three-channel; Price: \$25.

KRAFT SERVOS KPS-14,15,15H,16 DUANE LUNDAHL



Kraft has introduced three new servomechanics to their line, now making five different servomechanics that are available. All servos have been tested for accuracy and torque using a Kraft Series '73, five-channel dual conversion system (see July 1973 AAM).

The KPS-11 and 12 are continued from previous years. The 11 is the only Kraft servo with linear rack outputs and the 12 is the smallest Kraft servo.

KPS-14: The KPS-14 is essentially the same as the 12 but has been made significantly more rugged. It shares the same motor as the 12 (12 ohm, 16 mm dia.) and the same IC amplifier, as do all the servos. The case has been enlarged to allow rounding of corners and screw assembly. The new gears unique to this servo are of graduated thickness, the final pair being 5/32" thick, to help prevent crash damage to gear teeth.

KPS-15: Another of the totally new mechanisms for '73, the KPS-15 replaces the KPS-10. It utilizes the 10 ohm, 20 mm dia. Mitsumi motor used in the KPS-11. (The same motor is used in the KPS-16.) Again the gears are graduated in thickness and appear indestructible. When placed beside the KPS-14, it is apparent how little difference there is in size between the 14 and 15 despite the use of a larger motor.

KPS-15H: This servo is identical to the KPS-15 with one exception: The motor is a 6 ohm unit which gives increased torque. The servo is primarily intended for actuating higher load devices such as retract landing gear.

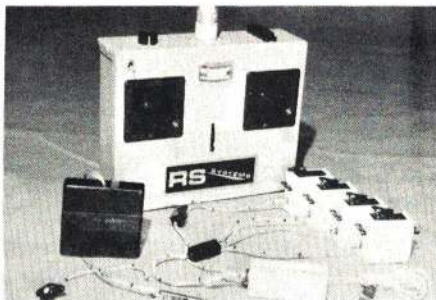
KPS-16: If you want to retract your fixed gear, here's the servo that will do it. The KPS-16 is really a KPS-15 with additional gearing so that up to 50 in.-oz. of torque is available. The additional gearing slows things a bit, but the resulting action is more scale-like. The 90° and 180° rotation versions of this servo were tested. Maximum thrust was nine lb. at a radius of 11/32". The servo gears in all the servos tended to jump teeth just prior to servo stall. However, I doubt the modeler will ever load one to the stall point. In the 180° configuration, travel time is three sec. The final output gears are .3" thick and graduated from there down.

So how do you pick? There's something to be said for each: The 11 has rack outputs; the 12 is smallest; the 14 is small but rugged; the 15 is rugged, uses the larger motor yet is still small; and the 16 will warp your wings if you don't watch out!

	14	15	15H	16
Weight (oz.)	1.4	1.8	1.8	2.1
Torque (in.-oz.)	18	26	30	46
Travel time (sec.) (100°)	.5	.5	.5	1.6
Length (in.)	2.01	2.28	2.28	2.28
Width (in.)	.75	.92	.92	.92
*Height (in.)	1.49	1.49	1.49	1.98

*Not including output arm.

RS-6D DUAL STICK RADIO JIM McNERNEY



The latest RS radio uses new D&R sticks and D&R servomechanics. Total airborne weight can be as little as 5.91 oz. for a two-servo system. An all-up four-servo system with 500 mah battery is only 10.54 oz. Receiver size has also been reduced. A six-channel receiver with double-tuned front end occupies the space of a pack of gum. And with all the compactness the RF section is a plug-in unit for ease of frequency change.

The system was flown in a glider and then installed in the new Cox Control Line Sport Trainer. The plane was modified for aileron and elevator and a Cox 049 Tee Dee was installed. The radio fit very nicely into the Sport Trainer fuselage using two servos and a 225 mah battery pack.

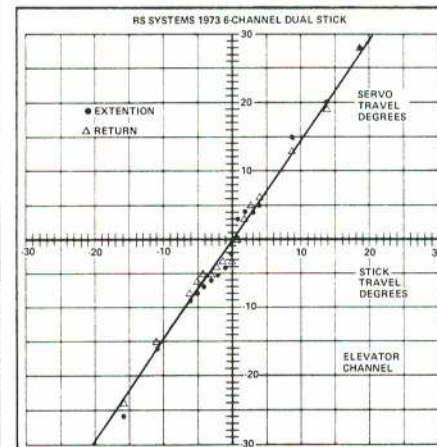
Transmitter: The box is smaller and lighter than most. RF and encoder boards are separate. The RF board is easily removable by removing two screws and unplugging two plugs. The transmitter battery pack can be removed by loosening two screws and unplugging a single plug. A safety cover on the on-off switch will not close if the switch is on—a good feature. The D&R sticks provide some features of other open and closed gimbal systems and are of the open gimbal type, but all nylon. Friction adjustment is provided for vertical stick movement. Trim is obtained from separate trim pots like other open gimbal systems. Provision is made for a buddy box cable attached through the charging plug.

Receiver: The receiver is a standard superhet with double-tuned front end and three stages of IF. The decoder uses two ICs. Three pigtailed from the receiver terminate in a power plug and two three-section servo plugs.

Servos: The servos are D&R mechanics and utilize the World Engines IC bridge amplifier with built-in output transistors.

Charger: The set has a separate, transformer-equipped charger. Transmitter or receiver batteries can be charged separately or simultaneously. Separate lights indicate satisfactory operation. The airborne switch harness is equipped with a separate charge plug.

Specifications: Transmitter Power—95 ma at 9.6 VDC or 912 mw input, 700 mw output; Frequency—72.96 MHz; Receiver Power—20 ma at 4.8 VDC; Receiver Sensitivity—3 microvolts; Receiver Wt.—1.3 oz.; Servo—LDR-2; Idle Current—7.5 ma; Thrust—37.8 oz. at .25 in.; Wt.—1.2 oz.; Operating Range—0°-150°F.

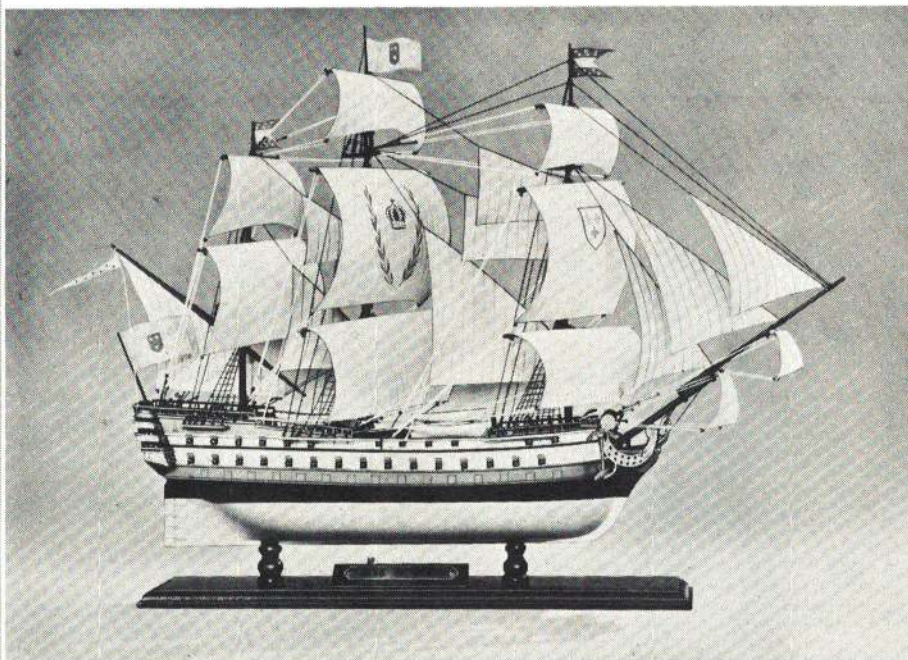


More tests on page 64

New from

SCIENTIFIC

The kits that make Authentic Ship Modeling easy!



Authentic, museum quality replicas of the famous ships of history now with carved wood hulls and precision cast-metal fittings.

These historic models include antique finish cloth sails, colorful flags and decals, tapered hardwood masts and yards, rigging materials, pre-ruled decking, wood display stand, handsome nameplate, and complete, easy to follow step-by-step assembly instructions.

MAN O'WAR French 17th Century 96 Gun Ship

The Soleil Royal was the symbol of French sea power throughout the 17th Century and considered superior to English counterparts. Her better lines, maneuverability and armament advantage made ships like her a threat to England's mastery of the sea, until 1672.

Kit 185, \$21.95
Length, 17" Height, 13"

THERMOPYLAE FAMOUS CLIPPER

She was the majestic clipper ship that dared to challenge the unrivaled speed of the Cutty Sark, New York to London, circa 1868. Designed by Bernard Waymuth and launched, Aberdeen, Scotland, she was 212 ft. LOA, with a 36 ft. beam.

Kit 182, \$49.95
Length, 31" Height, 19½"

See your Dealer. If kits are not available at dealer, you may order direct from the factory, adding \$1.00 for postage and handling. Outside U.S.A. add \$2.00.

**SEND FOR
CATALOG, 25¢**

**SCIENTIFIC
MODELS INC.**

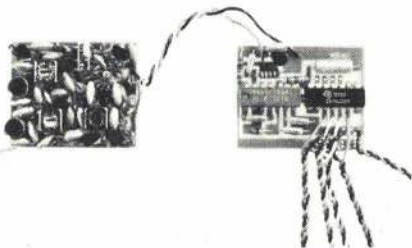
340 GH Snyder Avenue
Berkeley Heights, N.J. 07922



NEW! NEW!
1 TO 8 CHANNEL CAPABILITY!

**ACE R/C digital commander
 KITS**

- * Compatible with any modern digital transmitter: 4, 5, 6, 7 or 8 channels. Must be on same RF frequency. Use it as an extra flite pak.
- * Available on 26.995, 27.045, 27.095, 27.145, 27.195, 53.100, 53.200, 53.300, 53.400, 53.500.
- * Receiver-Decoder in its case measures 1.45 x 1.72 x 1" deep. Weight is 1.4 ounces.
- * May be used with positive pulse servos.
- * You can begin with 1 or 2 channels if you want to start simple. Adding channels is easy; no conversion required--all you need are a servo and connector for each channel.
- * Performance counts! Hundreds of letters from satisfied flyers attest to the fact that the Digital Commander is up there with the best! Kits CAN be assembled with little experience--following directions is a MUST, however!



digital commander (1-8)

RECEIVER-DECODER KIT

Up to 8 Channel Capability!

Here is the Ace Digital Commander (1-8) Channel Receiver-Decoder Combo. This is the ultimate of the 2 channel system developed by Fred Marks, which received a great reception and met with fantastic success in the field.

Voltage regulator has been added to replace original filtering of power supply--this results in outstanding improvement of performance.

With the new decoder you have your option of going with 2, 3, 4, 5, 6, 7 or 8 servos--whatever your transmitter provides.

The Ace Digital Commander Receiver-Decoder Combo will work with any of the present day transmitters available, provided they are on the same RF frequency. It will not work with the Jerobee, ACL Digilog, or Digitrio.

The unit is just as simple and easy and straight forward to wire as the 2 channel. The secret is using IC chips.

May be used with the Ace Digital Commander servos or any positive pulse servo. Provisions for three or four wire output from the decoder.

Unit in its vacuum formed case measures 1.45 x 1.72 x 1" deep. Weight of the receiver decoder is 1.4 ounces.

Kit includes ABS formed case. No connectors are furnished. Step by step instructions.

No. 12G18--Digital Commander (1-8) Channel Receiver-Decoder Kit \$34.95

* Available on the following frequencies: 26.995, 27.045, 27.095, 27.145, 27.195, 53.100, 53.200, 53.300, 53.400, 53.500



**digital commander
 SERVO KIT**

Housed in the D & R Bantam DS3P mechanics, uses WE 3141 IC for ease in assembly. Kit contains motor, pot, wiper and all components required, with step-by-step manual.

Weight for the DS3P servo is 37 grams: 1.3 ounces. With the DS2P servo, 44 grams: 1.55 oz.

- No. 14G20--Digital Commander Servo Kit \$21.95
- No. 14G20L--As above, except with D & R DS2P Linear Mechanics (Less connectors) 22.95

**digital commander (1-8)
 FLITE PAK KITS**

Offered in Two Versions

We are offering the Digital Commander 8 channel Receiver-Decoder Kit with servos and the new Deans Block Connectors for both convenience and economy.

Available in two versions--8 channel Receiver Decoder with 2 servos; and with 4 servos.

If you want only two channels, our 2 channel Flite Pak (12G30) is your most economical approach. But if you want the capability of going 3, 4, 5 or more channels later, use the Digital Commander 8 combo. No modifications or conversions are needed! The only extras you will need are servos/connectors for as many channels you want to add.

With the Flite Pak Combos you get Deans 3 pin three connector block, with mating 3 pin plugs, battery connector, on-off switch and guard, and hardware. With the 4 servo combo you also get extra 3 pin plug, and a 3 pin connector set for aileron. (Less batteries)

Flite Paks compatible with most existing transmitters.

- No. 12G18-2--Digital Commander (1-8) Receiver-Decoder with 2 Bantam servos-connectors \$74.95
- No. 12G18-4--Digital Commander (1-8) Receiver-Decoder with 4 Bantam servos-connectors \$114.95
- No. 12G18-2L--As above, but with D & R Linear servos \$76.95
- No. 12G18-4L--As above, but with D & R Linear servos \$116.95

Please specify frequency



ALL STAR

BIPLANE KIT BY ROMAN BUKOLT

Uses two sets of Ace Foam Wings for ease of building. For use with .09 to .15 power and 2 or 3 channel digital. Do NOT overpower! Beautiful Experimental Aircraft Association type plane.

131200--All Star Deluxe Biplane Kit \$21.95

COMING!

**digital commander
 ASSEMBLED UNITS**

Our Digital Commander kits have been extremely popular. However, there have been numbers of requests to have them factory assembled. In fact, the response has been so great that we are going into it.

First we will produce the Digital Commander servos. Being small, they are intricate to solder, and do require precision. When they are built right, they are among the finest servos available today.

We will offer the assembled units in two versions--the submini D & R Bantam and the D & R Linear.

Factory assembled, tested and cycled, they will be offered as three wire units less connector. They are positive pulse units and will be compatible with any system of this type.

- No. 14G20C--Digital Commander assembled Bantam servo \$29.95
- No. 14G20LC--Digital Commander assembled Linear servo \$30.95

We will be happy to supply your Flite Pak Kit with assembled servos--just add the price differential of \$8.00 per servo.

Watch for the announcement of the factory assembled 1-8 channel Digital Commander Receiver-Decoders. Soon!

NEW 4.8 VOLT BATTERY PACKS

Using the new Gould National-Burgess 450 SCL battery, which is sintered and vented, and probably one of the highest performance type batteries available to the R/C modeler today, Ace now is proud to introduce 2 battery pack configurations using four of these cells for 4.8 volts for digital systems.

These are center tapped for use with older systems, although most current systems use only two leads.

Available in either a Square Pack or a Flat Pack, depending on your installation.

The Square Pack measures 1 15/32" square by 1 15/64" tall. Weight is 76 grams or 2 11/16 ounces.

The Flat Pack measures 2 27/32" long, is 25/32" wide, and is 1 15/64" tall. Weight is 78 grams or 2 3/4 ounces.

Housed in vacuum formed case for crash resistance, and also easy disassembly for service if required.

- No. 38K56S--4.8-450 SCL Square Pack \$12.50
- No. 38K56F--4.8-450 SCL Flat Pack 12.50



Builds either P51B, Hurricane Mk IIc or ME109E. Designed by Roman Bukolt. Kit contains precision band sawed and machine sanded parts. Portions of the wood are blank to let you make the variations required for model of your choice. Kit uses Ace Foam wings for easy construction.

Each War Bird has a span of 42", and an area of 225 square inches. For docile performance use a Cox Babe Bee or Golden Bee and Pulse Commander Rudder Only. Or use a Tee Dee .049 with a 2 channel digital for commanding characteristics.

No. 13L110--Ace War Bird Kit \$17.95

OUR 21st YEAR



pulse commander Price Reduction!

Sales for the Pulse Commander have continued high, and since we are also buying additional components for the Digital Commander, we are getting volume price breaks. We have also become more efficient in our line assembly. As a result we've come up with savings--and we're passing them on directly to you!

The Pulse Commander has the same high

THE SIMPLE SYSTEM--

--From 2.5 oz.

--WITH Nicads and Charger

RUDDER-ONLY PULSE IS:

- * **LIGHTEST WEIGHT**--2.5 oz. for Baby.
- * **LOWEST COST**--WITH airborne nicad batteries and charger--begin at \$59.95!
- * **SIMPLEST**--only one moving part, easily serviced and maintained; noise free.
- * **VERSATILE**--Arrange to suit your particular installation. You can go up or down in size with out obsoleting receiver or transmitter. Simple changes of battery pack and actuator allow change.
- * **FULLY PROPORTIONAL**
- * **INTERCHANGEABLE**--Plug-in wiring allows quick switching of receiver from plane to plane.
- * **INEXPENSIVE**--Initial cost of system, airplane, and engine is low; one transmitter and receiver can be used for many different styles and sizes of planes.
- * **SIMPLE**--Easy installation; actuator has one moving part. Minimum maintenance.
- * **GREAT for Beginners--FUN for Experts.**

TOTAL Flite Pak Weights--

Unit	Weight	Recommended
Baby	2.5 oz.	Pea Wee .020 Up to 48" gliders
Baby Twin	2.7 oz.	Tee Dee .010-.020 Up to 72" gliders
Standard	3.7 oz.	.049 to .10
Stomper	4.1 oz.	Tee Dee .049-.23

IMPORTANT: You can save an additional weight on the Standard and Stomper packs by using the Ace 225 ma Stack Pak (38K37) instead of the 500 ma buttons which are supplied. This will come up to weights of 3 ounces for the Standard and 3.4 ounces for the Stomper. This Stack Pak will give you one hour plus flying time between charges. Specify on your order

quality that thousands of R/C modelers have come to respect, with topnotch excellence of performance. Features the Drain Brain for less receiver-actuator drain; more transmitter power output; four sizes of powerful magnetic actuators to choose from.

Join the thousands who fly the Pulse Commander "Just for Fun"!



pulse commander R-O Systems

Completely wired, tested and guaranteed with airborne battery pack and charger, but less transmitter battery.

10G15--Baby System	\$59.95
10G15T--Baby Twin System	62.95
10G16--Standard System	61.95
10G17--Stomper System	64.95

26,995, 27,045, 27,095, 27,145, 27,195

Please Specify Frequency

SELECTION OF PLANES FOR R-O PULSE

There are many good plane kits on the market for the Pulse Commander. In addition to the Ace Foam Wing Dick's Dream, Ace High and Skampy, there are the House of Balsa Nomad, Micro Models Replica Old Timers--Super Buccaneer, Mercury and Miss America, Sterling's Cirrus and other kits in their line, Dumas Mod Pod, also kits by Goldberg, Midwest, Top Flite and others. Kustom Kits will soon be having their RCM Jalvero.

Many builders are designing their own small ships using the Ace Mini Foam Wings.



SWING-IN KEEPER

- * Simple to connect
- * Bend wire first--then
 - 1 Insert
 - 2 Swing
 - 3 Snap
- * No stress on installation
- * Clevis type guide keeps wire from going too far into the hole

36L196--SK-Swing-In Keepers, pkg. of 4 .60

FIBERGLASS REINFORCING TAPE

These tapes, in three widths, are specifically for reinforcing wing center sections, nose sections, landing gear areas, and any other areas where extra strength is needed. Have interwoven edges to prevent unsightly unravelling.

36L193--FT15-Fiberglass Reinforcing Tape	.75
1 1/2" wide x 60"	
36L194--FT3-Fiberglass Reinforcing Tape	.90
3" wide x 60"	
36L195--FT6-Fiberglass Reinforcing Tape	1.50
6" wide x 60"	

VINYL TAPES

Just peel and apply.

All of the Ace tapes are made of closed cell vinyl by 3M. This means this is the best grade available. Will not discolor or absorb fuel. The strength of the adhesive improves with age.

Seating Tape

This is used for wing seatings and hatches. Great for waterproof seating and boats. Tape conforms easily to any contour.

36L191--ST838-Vinyl Seating Tape	.70
1/8 x 3/8 x 36"	
36L192--ST1614-Vinyl Seating Tape	.60
1/16 x 1/4 x 36"	
36L142--ST814-Vinyl Seating Tape	.65
1/8 x 1/4 x 36"	

Double Coated Mounting Tape

Excellent for instant and positive mounting of servos in any variety of items. Absorbs vibration so installation is shock resistant.

36L264--DT116-1/16" Double Coated Mounting Tape, 1/2" wide x 36"	.75
36L276--DT18-1/8" Double Coated Mounting Tape, 1/2" wide x 36"	.79

AILERON--ELEVATOR HORN BEARING

- * Simple, neat, sturdy
- * Reduces friction
- * Avoids metal to metal contact

36L190--AEH-Aileron and Elevator Horn Bearing, pkg. of 4 .75

TRY YOUR DEALER FIRST--if he does not have it, order direct using coupon for fast and courteous service.

Canadian Commander Customers

All Canadian customers for the Commander series of Pulse or Digital Units should contact H & W Enterprises at Box 972, Regina, Sask., Canada S4P 3B2.

R O PULSE HANDBOOK
WITH
UPDATED CATALOG
Only \$1.00
Refundable First Order

Handbook has expanded data on How Pulse Works, Installation, How to Fly... and much more. Most complete information on Pulse Rudder Only available anywhere.

New catalog is completely updated. Includes many items from major manufacturers.

Price is \$1.00 via THIRD CLASS BULK MAIL. If you wish faster delivery, add 50¢ for turn around FIRST CLASS service.

ACE RADIO CONTROL, INC. * BOX 301 * HIGGINSVILLE, MO. 64037

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

QUANTITY	STOCK #	NAME OF ITEM	PRICE	TOTAL

Master Charge or BankAmericard No.

Add \$1.00 shipping-handling for direct mailorders except catalog

GRAUPNER CUMULUS 2800 DR. WILLIAM M. FUORI



After hearing nothing but raves about this kit, I finally got it and understood why. The model was virtually completely assembled, and what an assembly job. The wings and tail surfaces were completely planked with super-light balsa. This had been done so well that it was impossible to detect a joint on these surfaces. The plastic wing and stab root stubs come already attached to the wings, rudder, and stabilizer, providing a perfect match to the fuselage as well as a dentproof edge.

The fuselage comes assembled and is made of a tough, lightweight polyamide plastic (nylon) material that provides a high degree of flexibility and is exceptionally strong—ideal for such applications.

The instructions suggest that the white fuselage be degreased with thinner, wet sanded with 400 wet-dry paper, and painted with a couple of light coats of varnish, wet sanded with 400 grit paper between coats. To avoid any unnecessary weight buildup, I simply light sanded the fuselage seams with 400 paper and compounded it to a smooth "light" finish. All that remained was to install the towhook.

The tail surfaces required no sanding or hinging. The rudder came prehinged and the glider uses a flying stab (the entire stab moves—no separate elevator) and eliminates the necessity for hinging an elevator. Even the elevator control horn came installed.

Radio equipment installation takes about an hour. There is plenty of room for any make radio. I used a Kraft six-channel dual conversion receiver and 2 KPS 11 servos. For balance, however, the battery must be located in the forward fuselage compartment. With this battery position, the model only required 1/4 oz. of lead weight in the nose to balance it perfectly.

The stabilizer is held in place by a friction fit on the two piano wires which extend three in. out both sides of the fuselage—an exceptionally tight fit. The wings are held in place similarly, but with the additional protection of a couple of rubber bands extending from one wing panel through the fuselage to the other panel.

After one night's work, I was ready to fly. After a powered ascent with an O9 power pod, the model glided exceptionally well. The descent rate was slightly greater than I had experienced with the Cirrus, but its flight characteristics were unmatched in a wind of 10 mph or greater. The swept wing gives exceptionally good stability and penetration. It also has very good landing characteristics. It lands so slowly and predictably that it is no great task to land the model right in the hands of your helper.

I also tried towing the model up. The model goes up quite well and requires little or no correction during towing if it is initially aimed directly into the wind.

Specifications: Graupner Cumulus 2800.
Wingspan—110 in.; Fuselage Length—45 in.;
Wing Area—753 sq. in.; Stab Area—108 sq. in.;
Weight (Ready-to-Fly)—58 oz.; Wing Loading—10.71 oz./sq. ft.

MRC/KAVAN BELL JET RANGER DARIO G. BRISIGHELLA, SR.



Having built a few helicopters from scratch, it is evident that the MRC/Kavan Jet Ranger kit is a work of art. Deliberation and careful engineering are most evident throughout.

The kit is complete and offers a few unexpected goodies! White glue, paint, a fuel system, a good 60 engine and a radio system (four channels and five servos) are all that is needed for the kit's completion. A prime prerequisite is obtaining a metric scale and a metric-to-decimal conversion chart for sorting out the many sizes of screws and bolts. The necessary metric wrenches are supplied, as are the special cements, blade covering material, Loctite and alignment fixtures. Even the muffler is included.

The instruction manual is somewhat marginal, but for whatever was lost through translation there are detailed photos and assembly drawings to make up the difference. I found the sequential order-of-things quite scattered.

The only additions I made to the model were several layers of fiberglass resin and cloth at the landing gear attachment points. I would advise both "ole pro" and novice alike to follow suit.

I found the well-made fiberglass body shell only needed filling in a few voids at the seams—no primer paint was necessary. The epoxy finish was applied directly onto the fiberglass. After only two weeks of spare time building, my model was finished and ready for testing.

Although not spelled out in the manual, most of the listed adjustments are only starting points from which to begin! Care is needed in making the connections to the throttle and collective pitch servos. These servos operate off one channel (throttle), while the control action of the collective pitch servo is very linear in nature, the control action of the throttle servo must be installed to provide a very non-linear action at the throttle barrel.

Some confusing statements regarding the collective pitch system needed straightening out, so I consulted the factory. For those who have the old manuals, the main rotor blades should be at +3 degrees when the throttle lever is at the neutral positions—not at the stated +1 degree.

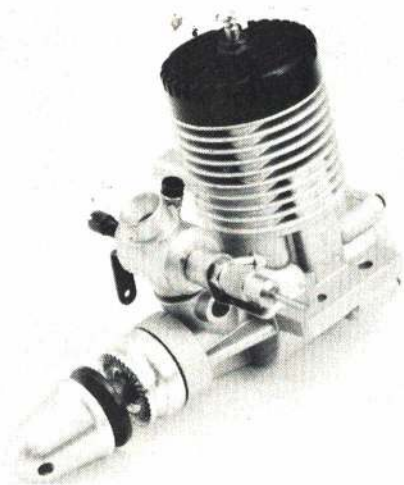
Unlike the more common fixed-pitch types of systems, the collective system of the MRC/Kavan Jet Ranger, or any other similar system requires some meticulous adjustments. "Once made though, these collective system really prove their worth. . . ."

After establishing the proper adjustments for my own model and some airtime, I appreciated the performance of collective pitch. It took only a short time getting accustomed to the change. There is no waiting or anticipating various power requirements, response follows command without hesitation. Rotor energy is constant and is available instantaneously!

The model performs much like a yo-yo, only without a string! From a hover position add more collective and the model skyrockets upwards, reduce the collective and the model drops straight down. When it's a few feet from the ground add in the collective and it shoots straight up again, almost without a pause at the bottom end. The acceleration rate is breathtaking, and a real crowd pleaser. The model displays super-stability in most any mode throughout its flight envelope.

The MRC Jet Ranger is also equipped with a proportional mixing bar, which automatically readjusts the tail rotor collective, compensating for the torque changes as the collective pitch is changed.

TAIPAN 21 DON JEHLIK



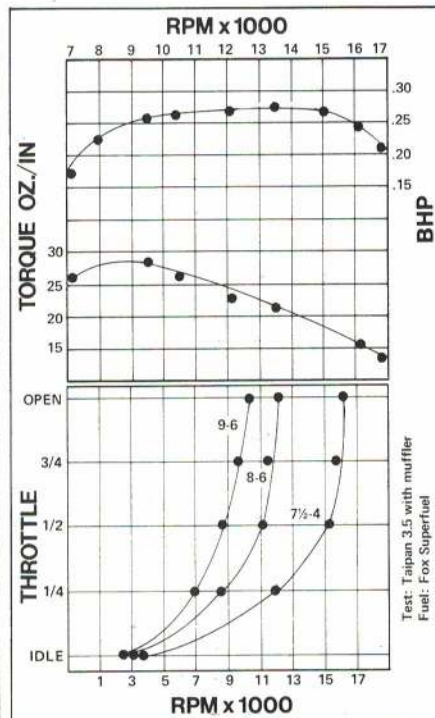
Produced in Australia by Mr. Gordon Burford, the Taipan 3.5cc RC engine is notable in several respects. The engine is of Schnuerle-boost port design. The crankcase is split into an upper and lower half, thereby facilitating casting of the intricate transfer ports.

If you are not familiar with Taipan engines you will be pleasantly surprised by their quality and long running life. Fits, tolerances, and selection of piston-sleeve materials are the best I have observed to date.

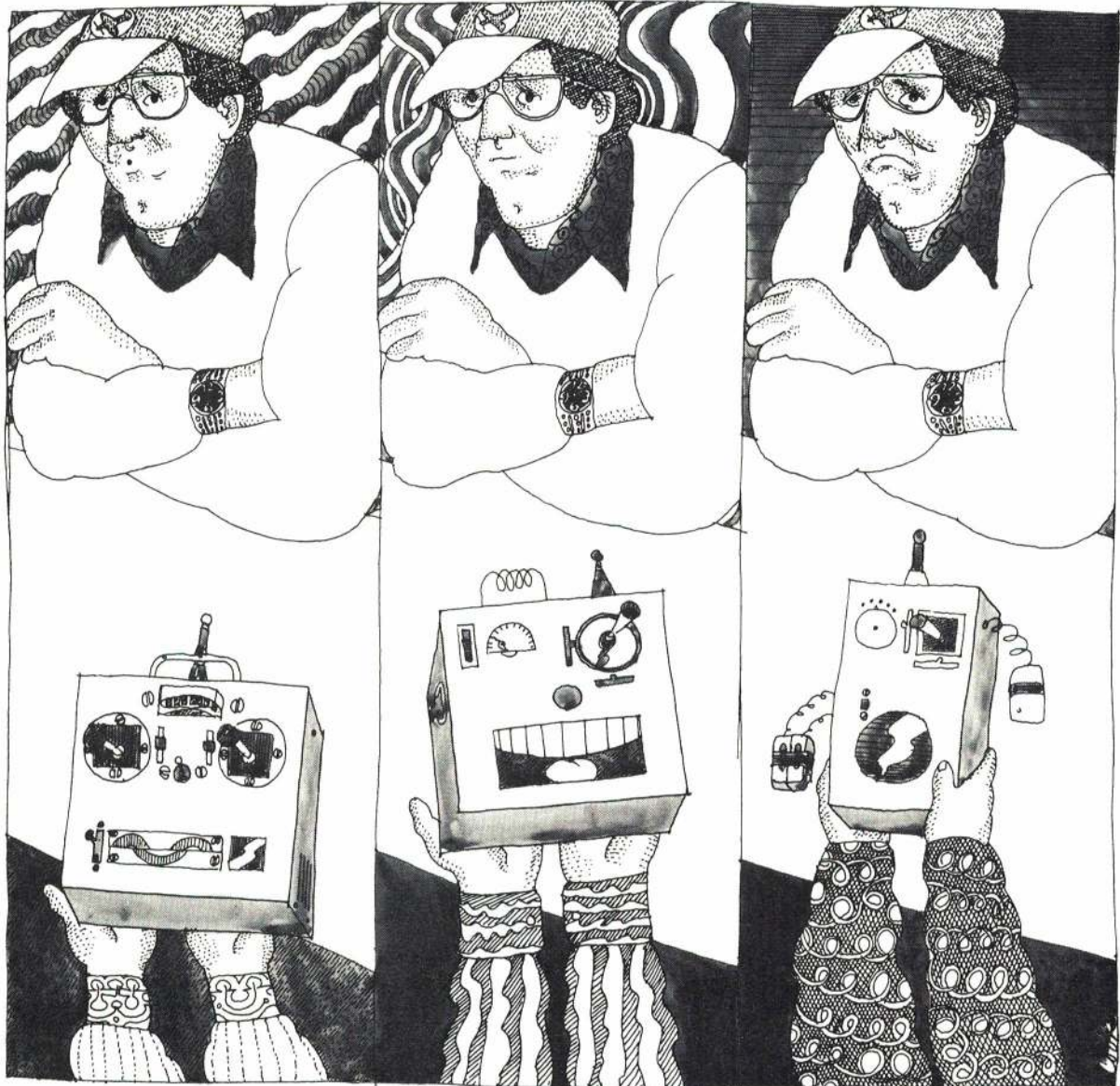
Running test procedures were normal. The engine hand starts hot or cold. When hot I found a single choke followed by several flips did the trick. Remember, it's good procedure to break in any engine without the muffler. I have long believed in using a single brand of fuel throughout the life of an engine as well.

The graphs show one interesting feature of this engine. The top of the power curve (BHP) is really almost constant from 9,000 to 16,000 rpm! This should allow a wide selection of props for planes of varying size. I am sure RC cars and boats can also benefit from this feature.

In summary, the Taipan 3.5cc is designed specifically for RC operation. It is the first I have tested that produces its maximum power at a realistically low rpm consistent with normal flying props. It is an excellent engine.



The experienced flyer is a pretty tough customer.



He demands power. He demands control. He demands reliability. He's the kind of flyer who can't accept failure and the Champion is his perfect companion.

The experienced flyer expects accuracy and selectivity. The Champion gives him full six-channel control, a tuned RF front end with four IF stages and a new I/C decoder. The servos are the smallest, lightest produced anywhere and use our specially-designed I/C full-power servo amplifier.

And because every flyer is an individual, all Champions feature precision mono-ball sticks, with the tension adjustable to the flyer's own individual preference, giving him maximum response and a smooth, sensitive feel.

There's no fat on a Champion, no fat in the Champion's price: \$349.95 for the two-stick Champion, \$369.95 for the one-stick Champion.

EK-logictrol Champion—the one unit that's won over a lot of tough customers.

Now also featuring a one-year warranty that's renewable for a second year.

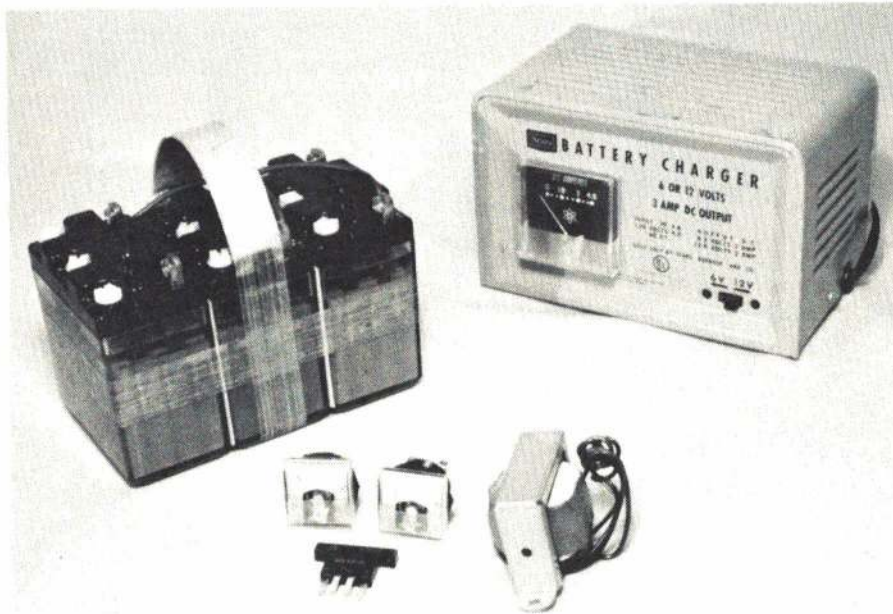
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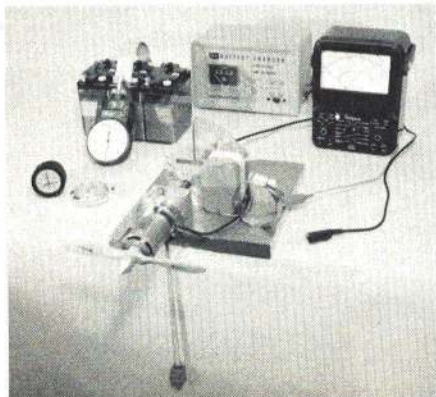
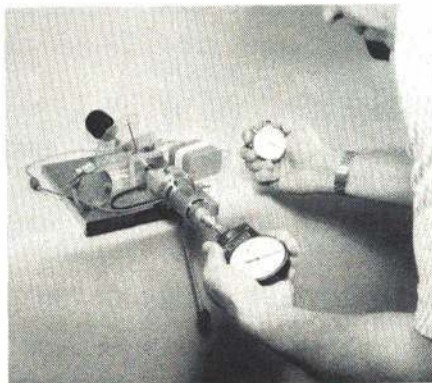
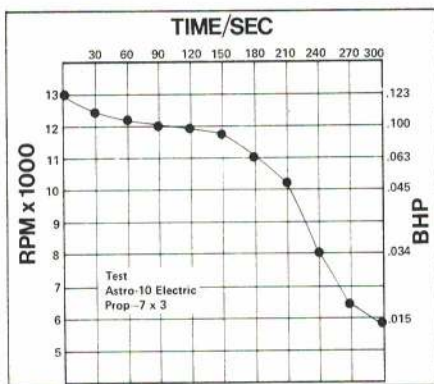


AAM SPECIAL TEST

THE INTRICACIES OF ELECTRIC POWER / by Don Jehlik



Above: Equipment used to charge flight battery pack: motorcycle batteries (three 18V), charger, ammeter, voltmeter and transformer. Below right: Tachometer, stopwatch and torque meter measure motor performance. Bottom left: Test stand arrangement with torque meter, tach, stopwatch, and multimeter used in tests. Bottom right: Motorcycle batteries charge the flight batteries, watch and multimeter used for accurate measurements.



For AAM's October issue we reviewed the Astro Flight 10 electric motor in the same manner and with the same equipment as with glow plug engines. In doing so we used a series of test props without realizing that the motor and/or the battery could be overloaded. In fact, the graph we published shows a 9-5 prop in use which caused such a high battery drain that duration of useful peak power is only about a minute. Furthermore, the current drain exceeds the engine's rating. This excessive load was brought to our attention by Roland and Bob Boucher of Astro Flight and the discussions caused us to reevaluate the test with a different set of conditions.

Note: The use of props larger than 8-4 is not recommended. Both battery pack and motor are designed to operate with 7- to 8-in. props. A 7-3 represents the flight performance of the 7-4 and the accompanying graph uses this prop.

Astro-10 produces flying power for approximately three min., then cruising power for two more min. The battery pack reaches 120° when a 7-in. prop is used. This is normal and does not exceed the temperature limits of the pack. Instructions with the motor caution that the pack should be cooled in the model by the use of an air scoop directed at the pack.

I found that no two test runs produced identical results. In a typical model application, one isn't likely to discharge the battery pack the same amount each run, or to have the motorcycle batteries changed to the same level, etc. However, I don't believe I should be concerned with the slight variation I noted in the bench test. I'm sure I wouldn't while flying Astro 10 in a plane.

With the 7-in. prop, what kind of model performance can be expected? Well, the plane would be quite different than one powered by a piston engine. An electric-powered model airframe can be built much lighter as it does not need strength for vibration resistance. It won't need heavy firewall or engine bearers. It won't need thorough fuel-proofing. Now add the electric power system and you have a model only slightly heavier than it would have been if designed for gas power. The Electra Fli model published in this issue shows what a typical electric model would be like if fast flying and aerobatics are your bag. Another approach would be an electric-powered sailplane.

Electric power also means a completely different set of support equipment. You don't need starting motor and battery, extra glow plugs or tools, mufflers, fuel as such, fuel pumps, etc. Instead you will need a field charging system and a home charging system. With the high rate NiCad batteries used in the Astro system the flight batteries can be recharged in 15 min. from an 18 volt lead-acid storage battery. Your storage battery can be three Honda 6 volt 6 amp motorcycle units wired in a series. Their 18 volts does a neat job of recharging the Astro battery about ten times per day for that many flights. You

(Continued on page 112)

Du-Bro "HUGHES 300" semi-scale, R/C HELICOPTER

RADIO CONTROLLED MODEL HELICOPTER KIT

COMPLETE O & R 1.34 CU. IN. GLO FUEL ENGINE, GEAR BOX, AND INERTIA CLUTCH . . . ENTIRE UNIT READY TO BOLT ON

SPECIFICATIONS H-300

OVER ALL DIMENSIONS
 LENGTH 59 1/2" . . . WIDTH OF MACHINE
 AT SKIDS 16" . . . WIDTH OF PASSENGER
 COMPARTMENT 8" . . . HEIGHT 22 1/2"

PREFORMED PARTS
 PASSENGER SEATS . . . INSTRUMENT
 CONSOLE . . . MANY STEEL, ALUMINUM
 AND BRASS COMPONENTS ALL CARE-
 FULLY MACHINED OR PRE-FORMED,
 READY TO BOLT TOGETHER . . . CLEAR
 PLASTIC CANOPY . . . ONE PIECE AIR-
 CRAFT PLYWOOD SIDE FRAMES FOR THE
 FUSELAGE UNIT.

ENGINE
 O & R 1.34 CUBIC INCH DISPLACEMENT
 . . . CUSTOMIZED FOR GLO FUEL BY
 DU-BRO PRODUCTS . . . SPECIAL R/C
 CARBURETOR DESIGNED AND MANUFAC-
 TURED BY DU-BRO PRODUCTS . . . USES
 REGULAR R/C GLO PLUGS . . . PULL
 STARTER BUILT IN . . . GEAR BOX AND
 CLUTCH ARE ALL ONE UNIT, READY TO
 BOLT IN PLACE . . . FUEL TANK SUS-
 PENSION BRACKETS ARE DESIGNED TO
 CARRY A SULLIVAN 12 OZ. SS12 PLASTIC
 TANK (INSTALLATION OF LARGER TANKS
 EASY TO DO BY THE INDIVIDUAL OWNER)

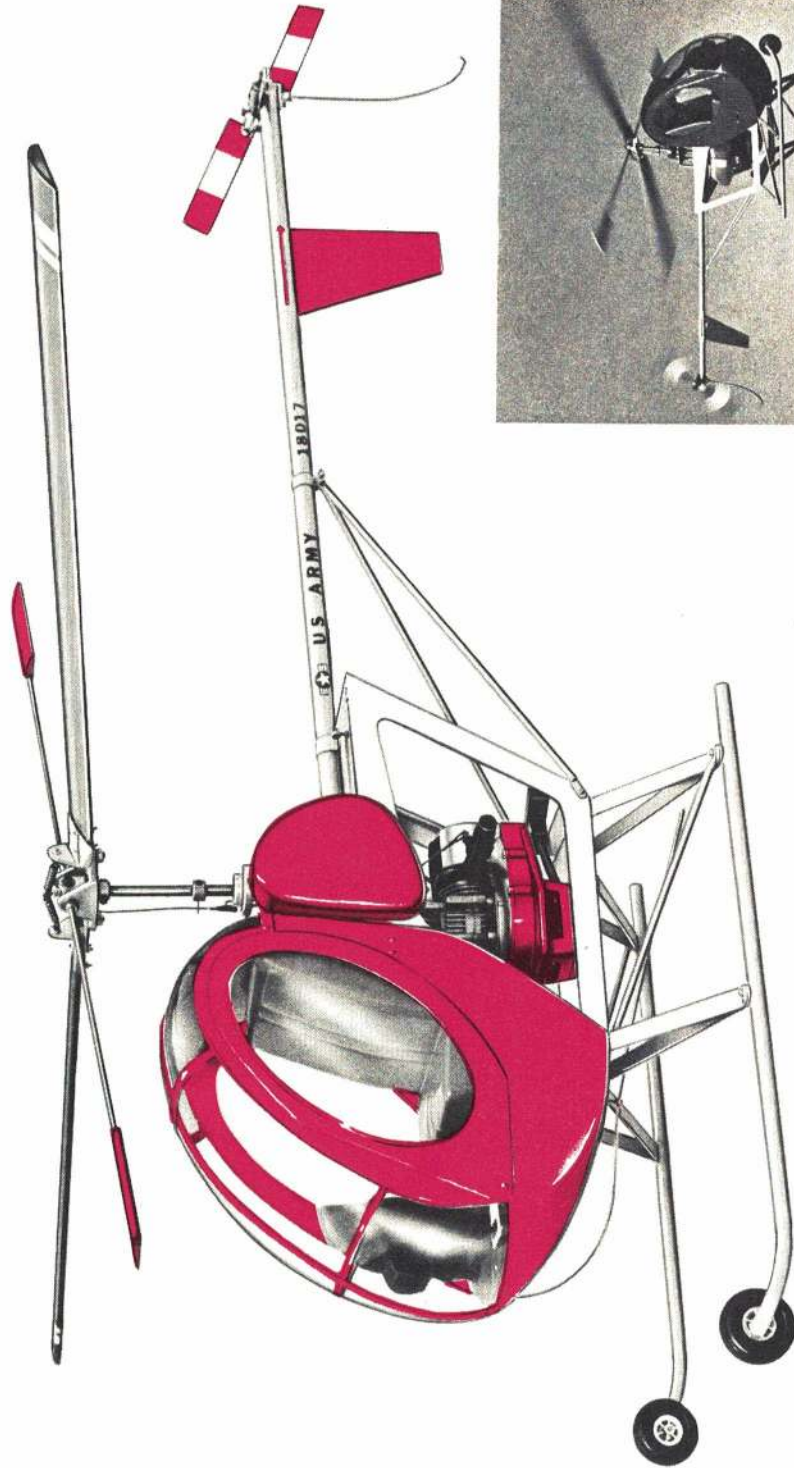
MAIN ROTOR (SHAPED)
 BASS WOOD . . . SPAN 57 1/4" . . . CHORD
 2" . . . AIRFOIL, HIGH LIFT SECTION . . .
 HILLER TYPE SEMI-RIGID ROTOR.

TAIL ROTOR (SHAPED)
 BASS WOOD . . . DIAMETER 12 1/2" . . .
 CHORD 1 3/8"

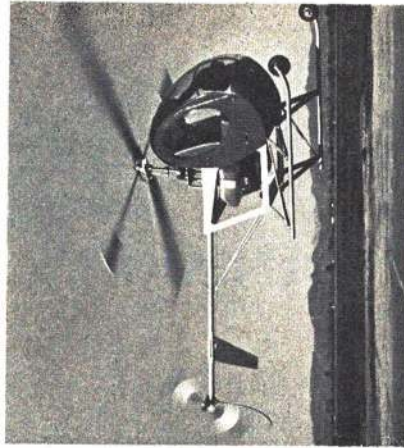
FLY BAR
 STEEL ROD . . . SPAN 28 1/2" FLY BAR
 WEIGHTS, EXTRUDED ALUMINUM, AIR
 FOIL SECTION.

WEIGHT
 FLYING WEIGHT WITH FULL TANK AP-
 PROX. 14 POUNDS.

PERFORMANCE DATA
 TOP SPEED FORWARD ESTIMATED AT
 70 MPH . . . PROPERLY TRIMMED, WILL
 FLY HANDS OFF . . . ALTITUDE OUT OF
 SIGHT . . . CLIMBING STALLED TURNS
 . . . STEADY HOVERING . . . EXCELLENT
 CONTROL ON VERTICAL RISE OR DE-
 SCENT 360° TURNS HOVERING OVER ONE
 SPOT . . . FLIES FORWARD, BACKWARD
 OR SIDWAYS . . . HAS BEEN FLOWN WELL
 IN 40 MPH WIND GUSTS.



"THE DU-BRO HUGHES 300"



ALL OF THESE FINE PERFORMANCE FEATURES PLUS DESIGN AND MANUFACTURING QUALITIES THAT ARE THE ULTIMATE IN THE ART AS IT STANDS TODAY . . . THIS BEAUTIFUL MACHINE IS A "BOLT TOGETHER" ASSEMBLY WHICH, OF COURSE, MEANS MAINTENANCE, REPAIRS OR PARTS REPLACEMENT CAN BE ACCOMPLISHED WITH EASE . . . AN OVERSIZED UNDER CARRIAGE AND "LANDING SKID ASSEMBLY KIT" IS ALSO AVAILABLE FOR TRAINING R/C PILOTS JUST GETTING INTO THE CHALLENGING AND FASCINATING SPORT OF R/C MODEL HELICOPTER FLYING . . . \$350

CAN YOU PICTURE A RADIO CONTROLLED FOURTEEN POUND FLYING HELICOPTER MODEL THAT DIVES, ZOOMS, DOES STALL TURNS, VERTICAL BANKS, SNAP TAIL TURNS, FLIES FORWARDS OR BACKWARDS, OR SIDE TO SIDE, CAN RISE AND HOVER OVER ONE SPOT? IT'S A PLEASURE POSSESSING SO MANY REFINED DESIGN FEATURES JUST TO LOOK AT IT.

ADVANCED R/C MODELERS AND FLYERS CAN NOW OWN SUCH AN OUTSTANDING AIRCRAFT . . . "THE DU-BRO HUGHES 300" HAS

designed and manufactured by **DU-BRO PRODUCTS INCORPORATED** wauconda, illinois 60084 u.s.a.

*RADIO EQUIPMENT . . . EPOXY . . . FUEL TANK . . . GLO PLUG . . . 225T WHEELS AND DECORATING MATERIALS NOT INCLUDED WITH KIT
 PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

MAIL ORDERS F.O.B. FACTORY

Billing® Boats

(DENMARK'S FINEST MODELS)

Billing Boats® Reg. U.S. Patent Office



DRAGON International Racing Class.
31" long. Kit \$20.00 Fittings \$12.00

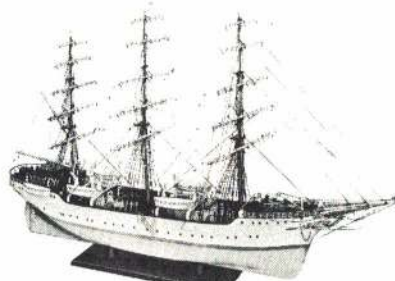
"Pirate"
Racing Yacht

Approx. 24½" long. 33" overall height. Mast 27" high. Excellent quality wood construction kit including keel plate, ribs, and planking. Detailed instructions and plans.

Kit \$11.00
Fittings \$ 6.00



LILLA DAN. 26¾" long, 4¾" wide, 19¾" high.
Kit \$18.00
Fittings \$24.00

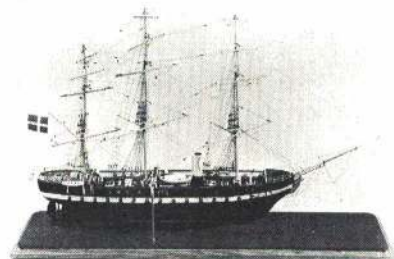


DANMARK ... Kit \$27.00
Fittings \$58.00

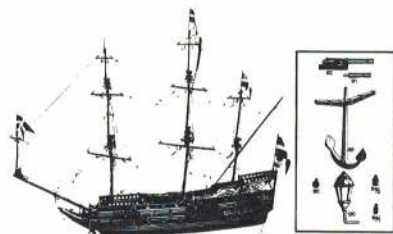
This training ship of the Danish Merchant Navy is a real beauty. Kit has wooden planked construction, and is complete with turned brass fittings. Scale 1:75 Length 35½", 23½" high, beam 5½".



BLUENOSE. 35" long, 27" high. Beam 5½"
Kit \$20.00 Fittings \$30.00



JYLLAND Frigate. 39¾" long, 24¾" high. Kit \$27.00 Fittings \$44.00



WARSHIP WASA, original built in 1628. Sunk on maiden voyage. Located and lifted in 1960, now a museum piece. Beautiful model—23" long, 23" high. All wood kit with fine, precision brass fittings. Kit \$20.00 Fittings \$26.00

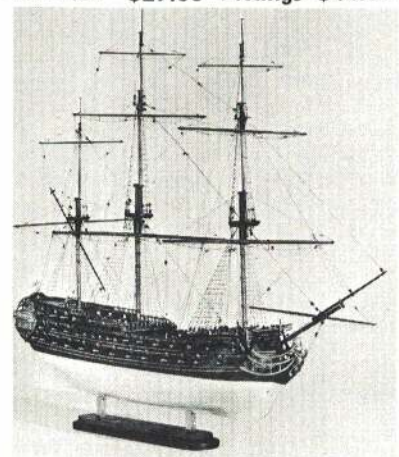


ZWARTE ZEE tugboat. 30¾" long, 11½" high, 5" beam.

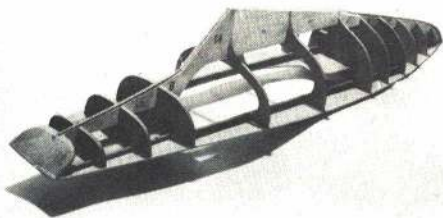
Kit \$27.00
Fittings \$32.00



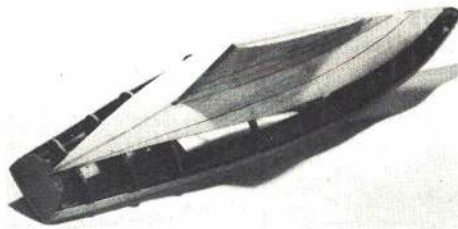
VIKING SHIP Exciting, authentic reproduction, scaled down to 26" by 6½"
Complete \$18.00



NORWEGIAN LION, a warship of 1765 era complete set of fittings includes 70 turned brass cannon. Challenging, rewarding kit to build.
Kit \$38.00 Fittings \$65.00



STEP 1. The ribbed hull of a typical Billing Boat® kit. No short cuts; you become the skilled modeler!



STEP 2. Planking is being laid in place. A simple challenge for any careful model builder.

NEXT STEP:
Pick Your Kit
& Get Started



SEA KING

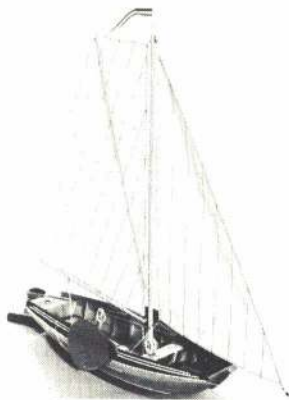
Famous for real planked hull construction in all of their other boat kits, BILLING now introduces a durable vacuum formed polyester hull. This 28" model does have a frame, deck, and cabins of wood. Real brass fittings. Shelf model kit.

Kit 40.00
Fittings 16.00



CUTTY SARK is scaled 1:75. Builds to a 44" show piece. Planked hull construction. A real modelers' challenge.

Kit \$36.00
Fittings \$75.00



"SCHOUW" or Scow. Netherlands Canal freight barge. Easy to build this satisfying kit. Makes a 26" model with planked hull const., cloth sails, all fittings. Complete kit. **\$16.00**

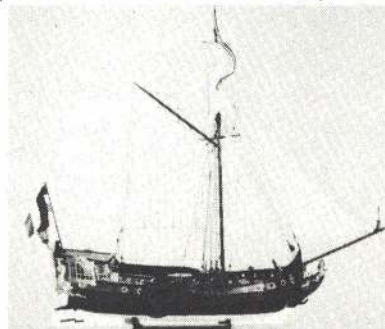


North Sea Cutter 21" long, 16" high. Complete with fittings. **Kit \$16.00**
Fittings \$20.00



"Samson" Sea-going Tug. Unusually fine quality wood kit, with keel plate, ribs and planking. Excellent detailing includes rubber bumper on bow. Approximately 23½" long.

Kit \$14.00
Fittings \$12.00



"STATENJACHT" was what the Dutch called original Royal Yacht. Planked hull const. with hardwoods. Builds to 36" long by 8¼" wide and 33" high.

Kit \$36.00 **Fittings \$26.00**

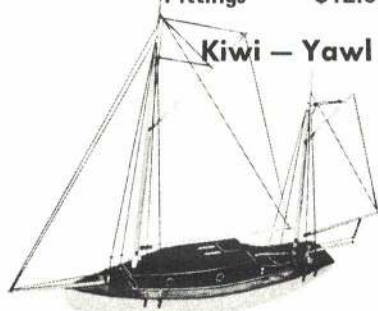
FITTINGS NR 432
SANTA MARIA



SANTA MARIA. 21½" long, 17¾" high, 5" beam. **Kit \$16.00** **Fittings \$10.00**



SPERWER — Model of Dutch Canal Boat, in scale of 1:15. Length 23½", Width 9", height 32". Kit comes complete with sails and decorative side paddle. Complete with fittings of brass. **Kit \$24.00** **Fittings \$12.00**



Kiwi - Yawl

Excellent quality construction kit. 22½" long by 19½" high. Includes ribs, planking, cloth for sails.

Kit 10.00 **Fittings 6.00**

All Billing Boats scaled from originals. Planked hull construction with hardwoods. Turned Brass Fittings. Authentic Replicas.
Billing Boats® Reg. U.S. Patent Office

See Your Hobby Dealer . . .
Dozens of beautiful models; some advertised in recent issues of this magazine. If dealer does not stock, send check or money order for direct, prompt shipment. California orders must add 5 % sales tax. Satisfaction guaranteed.

KAYEFF, INC.
511 Campesina Road
Arcadia, Calif. 91006

The Great Age of Sail . . . Lives Again

in these Authentic Scale Model Kits

THEY'RE EASY TO BUILD

We know it seems unbelievable, but it's true. New techniques in the heretofore difficult rigging installation and ratline making, are simplified so that almost anyone can produce a craftsman-like job. Density selected prime balsa wood is a real pleasure to work with, and the step-by-step plan is simple and complete.

THEY'RE COMPLETE*

With machine carved hulls, that require only a little trimming and sanding. Kits include many finely detailed cast metal fittings (as required for each kit) such as: Cannon, Life Boats, Windlass, Anchors, Steering Wheel - Wheel House, Water Cask, Lights, Stern Castles, Figure head, etc. Brass Chain, Black and Tan rigging line, Printed Cloth Sails, Decals, Display Pedestals and much more . . .

* Dry Kit, paint and cement not included.



**USS FRIGATE
CONSTITUTION**

KIT G2 — Length 11"

**SPANISH
GALLEON**

KIT G1 — Length 10"

**SCHOONER
BLUE NOSE**

KIT G3 — Length 11¼"

THEY'RE UNIQUE

Because such amazing detail and authenticity is achieved in kits that are relatively easy to build. Plans include full size, as well as assembly drawings for each step of the way. Authentic color scheme shows on full color kit box lid.

THEY'RE HISTORIC

Plying the Spanish Main, the Galleons carried the treasures of the New World back to Spain. Outfitted with cannon they were used both as merchant men and warships . . . The Blazing Guns of the *Constitution* helped to establish our Nation. Now enshrined in Boston Harbor, it is the oldest commissioned vessel in the U.S. Navy . . . Built by Angus L. Walters the *Bluenose* was one of the finest Schooners to take the water. It came to world-wide fame racing against the *Gertrude L. Thebaud*. *Bluenose* captured the hearts of U.S. and Canada to such an extent, that today it is on the back of every Canadian Dime.

THEY'RE ONLY

6.95
ea.

- CARVED WOOD HULLS
- CLOTH SAILS
- CAST METAL FITTINGS

AND THEY'RE AT YOUR DEALERS NOW

GET OVER AND SEE THEM . . . BUY ALL THREE!

You don't have to STAND OFF to admire this

SPECIAL THANKS

The beautiful Citabria is manufactured by one of the oldest and respected names in American Aviation, The Bellanca Corporation, who so graciously provided us with the plans, photos and details of the full size aircraft. With this illustrious lineage, it is not surprising that the Citabria is just about unbeatable as a fun plane. Primary trainer, or for Aerobatics.

CITABRIA IS FOR YOU

If you're a Sport Flier, if you have a feeling for Scale, if you love R/C*, then this is your ship. It's a beautiful machine that builds easy—goes together fast—plenty of room for any equipment—rugged for hard use—flies great—and is just about the right size.

CITABRIA



Span 54" Area 415 sq. in. Length 36" For Engines .23 to .35 Scale: 1.61" Equals 12.0"

ABOUT THE KIT ITSELF

This kit is a real joy . . . Balsa Wood is the finest grade, density-selected and sanded to micrometer tolerance; as is the imported Finland Birch Plywood. Every part is numbered to insure fast and accurate assembly as shown on the easy step-by-step plans.

* Can be flown Control Line too—instructions on plan.

THE FUSELAGE

Fuselage sides are die cut full length. Cabin sides and inner doublers are plywood as are the firewall and landing gear bulkheads. It's easily assembled with die cut balsa bulkheads, nose block, formed music wire landing gear, custom dural engine mounts, etc. Cowling and wheel pants are rugged plastic.

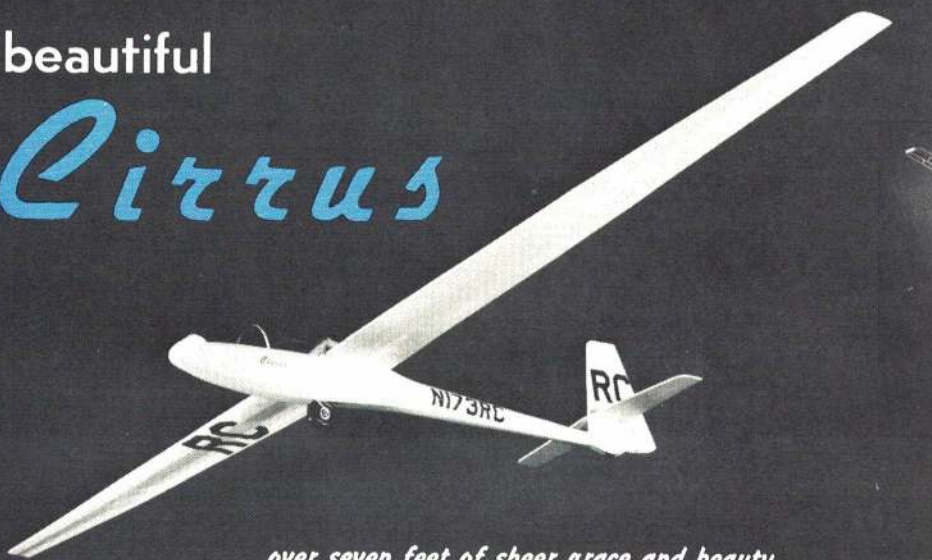
WING AND TAIL SURFACES

Complete wing is built on work bench without having to remove it—so it's flat and warp-free. Parts are die cut and carved. Balsa sheet cover makes for tough wing. Wing is installed like it ought to be—with dowel pins and nylon screw in wood nut-block. No unsightly rubber bands to deteriorate,

break or slip. Rudder and Stab are die cut sheet for simplicity and no warp. Included is all the linkage hardware: pushrods, aileron and elevator horns, bellcranks, clevis, connectors, etc., plus giant authentic decals, plastic windows, etc., etc.

beautiful

Cirrus



over seven feet of sheer grace and beauty . . .

STRUCTURE

Frame Photo reveals the excellence of the design engineering of the kit. Although structure is relatively simple, it is one of fine detail and great strength.



SPAN: 87 $\frac{1}{16}$ "
LENGTH: 37 $\frac{3}{4}$ "
WEIGHT: 12 oz.
SCALE: 1.5" Equals 12.0"

KIT E7
11.95

GREAT FLIGHT PERFORMANCE

A real soaring machine is this model Cirrus. Eiffel 400 soaring wing section seeks out and takes full advantage of every thermal current. Can be flown Tow Line - Free Flight, Single Channel or pulse R/C for Slope and Thermal Soaring. Large Cockpit area provides ample room for R/C Equipment.

A FINE KIT

Top quality Balsa used throughout. All parts accurately die cut and numbered to insure fast accurate assembly, as shown on the detailed plan. Also included are shaped trailing edges, finished nose cone, giant clear canopy, authentic decals, full size plans with step-by-step drawings and instructions, etc.

STERLING MODELS • BELFIELD AVE. and WISTER ST. • PHILA., PA. 19144
If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., \$1.25 minimum outside U.S.)
 Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories; etc. 25c enclosed.
 "Secrets of Model Airplane Building" Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.
 "Secrets of Control Line and Carrier Flying" Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed. No checks. Only U.S. money orders or currency accepted.

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SCALE

THE FAIREY

A brief history of this great Royal Navy fighter from its WWII beginnings through the Korean War. / by Patricia Groves

HISTORY

At the onset of WWII the Fleet Air Arm of the British Royal Navy had no aircraft equal in quality to the venerated Hurricanes and Spitfires of their land-based brethren in the Royal Air Force. The fortunes of the Fleet Air Arm were such that when hostilities began on September 3, 1939, except for the Blackburn Skua, all other ship-borne aircraft were of the biplane variety.

The Fairey Aviation Company had produced a two-seat, single-engine monoplane fighter, the Fairey Battle, which had been in active RAF service for some years. Although at this juncture the Battle was, as one Englishman put it, "nothing to go to war in," it was, nevertheless, easy to fly, a tried and true design and adaptable to the peculiar needs of Fleet aircraft. Because of stowage limitations, the need for folding wings, arresting hooks, extra safety gear, etc., ship-borne aircraft were required to be, operationally, as multi-functional as possible. Based on the Battle, the Fairey Fulmar joined the Fleet in the summer of 1940.

Similar in appearance, although smaller than the Battle, introduction of the eight-gun Fairey Fulmar came rapidly, and filled the slot while the Fairey Firefly developed on the company's design boards.¹

The Fairey Aviation Company had been a supplier of military and naval aircraft since WWI, and during the '20s and '30s was the major supplier of naval aircraft. This long-standing reputation, no doubt, influenced the powers-that-be in mid-1940 to issue a contract for 200 fighter/reconnaissance airplanes, based solely on the company's mock-up design.² Without prototype or further ado, the Fairey Firefly went into production.

(Continued on page 78)



FAIREY FIREFLY

An insight into the process of selection and design of a NATS-winning, scratch-built RC scale model project. / by Dave Platt

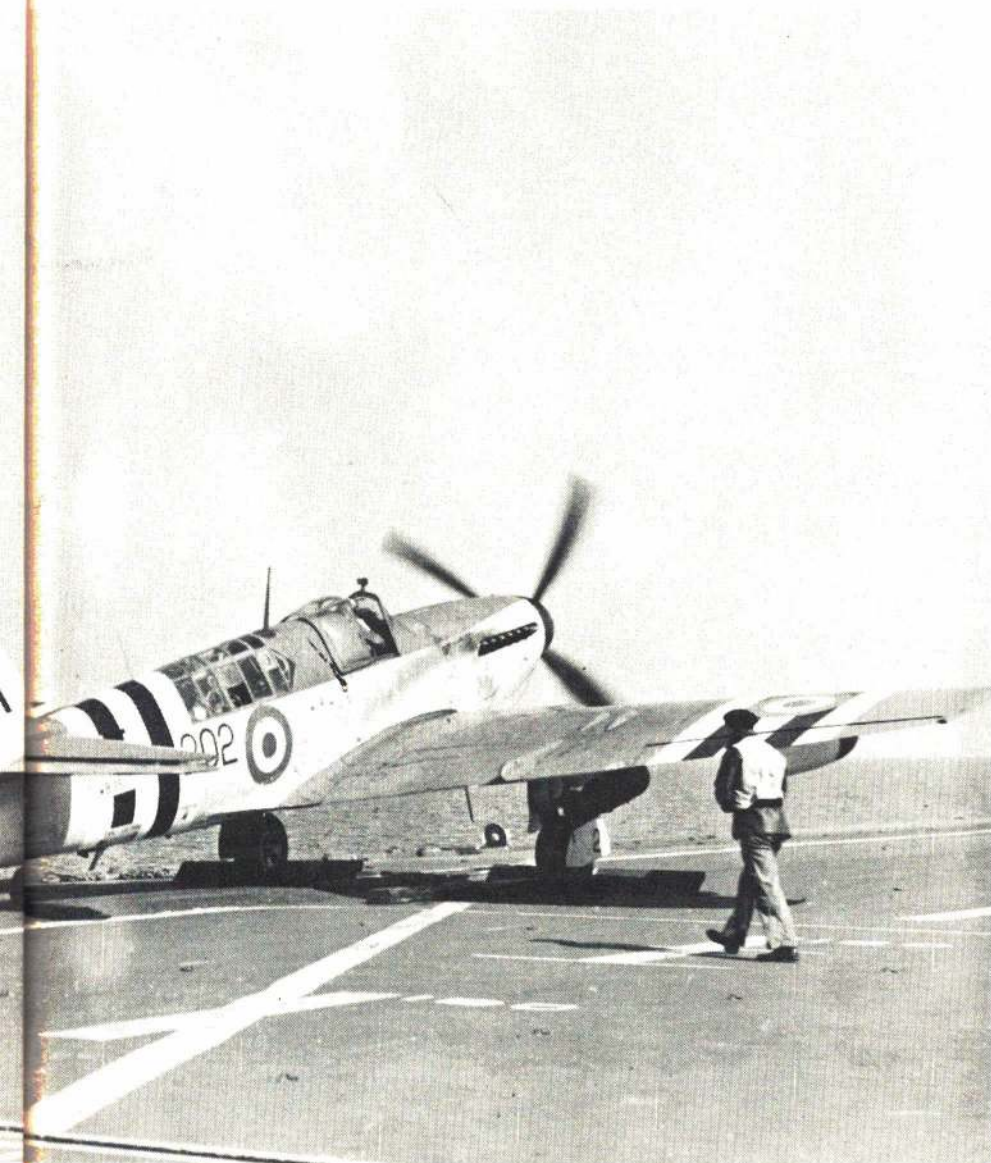


Photo courtesy of the Imperial War Museum

CONSTRUCTION

The Fairey Firefly MK 5 presented here was drawn in early 1967 with the intent of constructing a NATS-standard RC scale job. For various reasons, mainly connected with my move to the U.S. that same year, the model was never designed or built. The airplane has much to offer, however, and I hope that some modelers will take up the challenge.

It is not my intent here to cover the design history or even the combat record of this ship. Patricia Groves has written a fine article on these aspects of the plane and it is presented in this issue.

The drawing shows a good-looking plane with many interesting shapes and details. Plenty of glass always adds to the effectiveness of a scale model, and the Firefly is well endowed in this area. The mainly straight tapered wing gives a clipped ellipse impression due to the curved TE on the ailerons. With wing root intakes, the total effect of the wing is quite pleasing. Ample nose movement guarantees a good CG position without recourse to nose weight or ultra flimsy rear end structure.

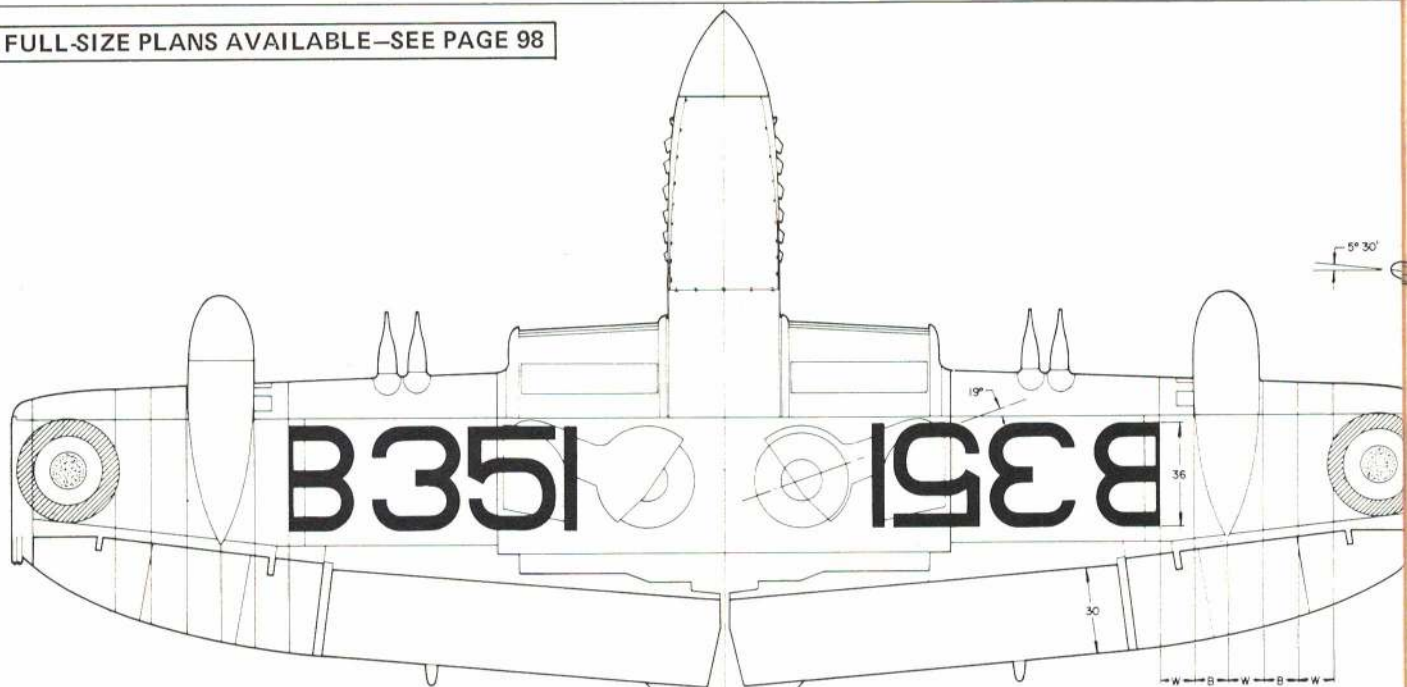
Tail movement and stabilizer area are both ideal for a true scale model. Wing and tail sections can also be used; scale incidence settings of these surfaces will work well with a CG placed around the 30% position.

The slender fuselage will make the most of available power. (Radial-engined subjects are often harder to sufficiently power for good flying performance.)

Due to these aerodynamic qualities, a more perfect or attractive airplane can not be found. Indeed, an excellent stand-off scale model could easily be de-

Plans on following page

Text continues on page 76



HISTORY OF FIREFLY V

MK5 DESIGNED 1948, BASICALLY SIMILAR TO EARLIER MK4 HAS SAME ROLLS-ROYCE GRIFFON 74 ENGINE, BASIC AIRFRAME SIMILAR, DIFFERENCES MAINLY INTERNAL. REVISED NOSE CONTOUR ONLY EXTERNAL CHANGE.

MK5 IS PRODUCED IN 3 VERSIONS; THE A.S.V. (ANTI-SUB) THE F.R.V. (FIGHTER RECONNAISSANCE) AND N.F.V. (NIGHT FIGHTER).

AIRCRAFT ILLUSTRATED, WB 351 #202 SERVED WITH THE 817 SQDN, ROYAL NAVY ON BOARD THE AUSTRALIAN AIRCRAFT CARRIER H.M.A.S. SYDNEY (K ON FIN REFERS TO SYDNEY'S COMPLEMENT). THIS CARRIER, WITH FIREFLIES INCLUDING THIS ONE, AND SEA FURIES, SERVED A TOUR OF OPERATIONS DURING THE KOREAN CONFLICT LASTING 3 MONTHS FROM NOVEMBER 1951 TO JANUARY 1952.

BASIC DIMENSIONS:
 WING SPAN - 41'-2" LENGTH (LEVEL) - 38'-9" WING AREA - 300^{sq} ft

PERFORMANCE:
 MAX. SPEED ----- 386 MPH AT 14,000 FT
 CRUISE SPEED ----- 220 MPH
 RANGE ----- 1,300 MILES

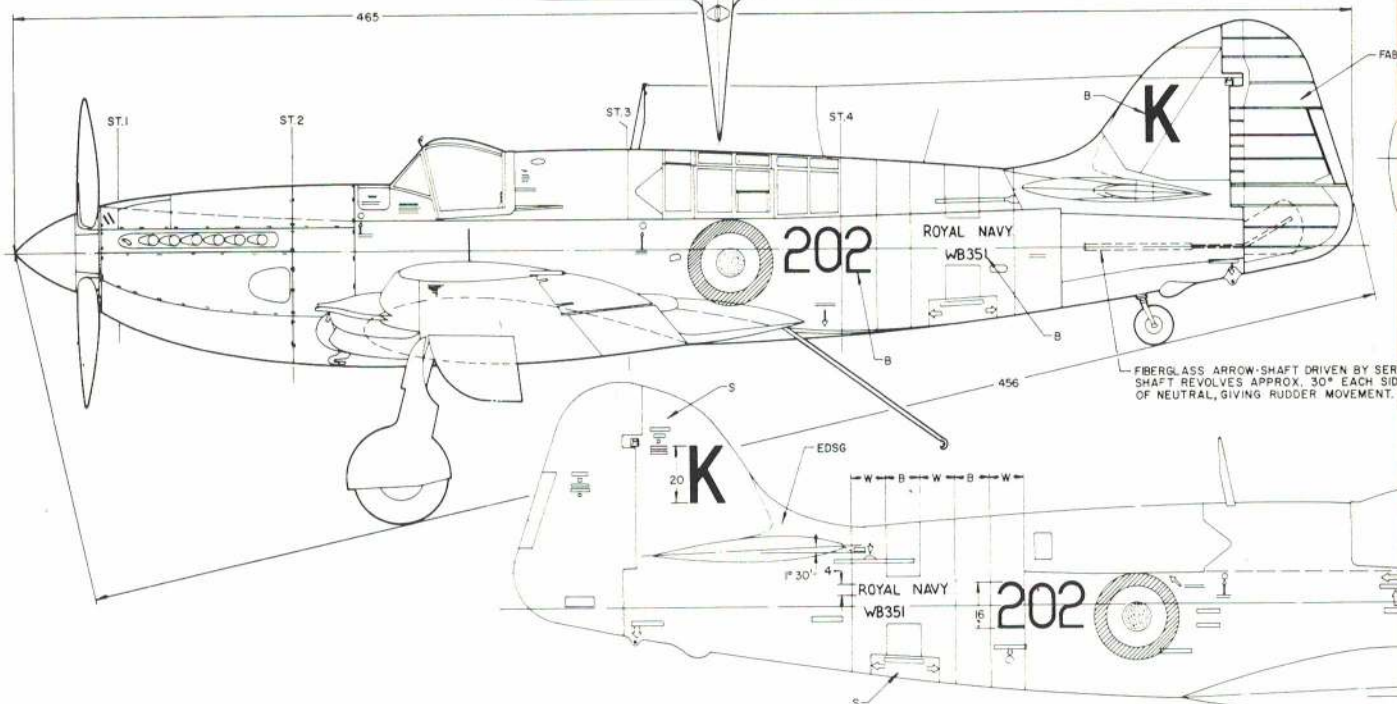
COLOUR NOTES

UPPER SURFACES PAINTED "EXTRA-DARK SEA GREY" 10B/3.5/1 (GLOSSY). LOWER SURFACES "SKY" 5-GY-7/2 (GLOSSY). SPINNER, AIRSCREW, IDENTIFICATION BANDS AND SERIAL NOS AND CARRIER LETTER "BLACK" (GLOSSY). IDENTIFICATION BANDS "WHITE" (GLOSSY). STENCILS OVER "EXTRA-DARK SEA GREY" "YELLOW" 10YR/7.5/12, WHEN OVER "SKY" COLOUR IS "NIGHT" N.1.

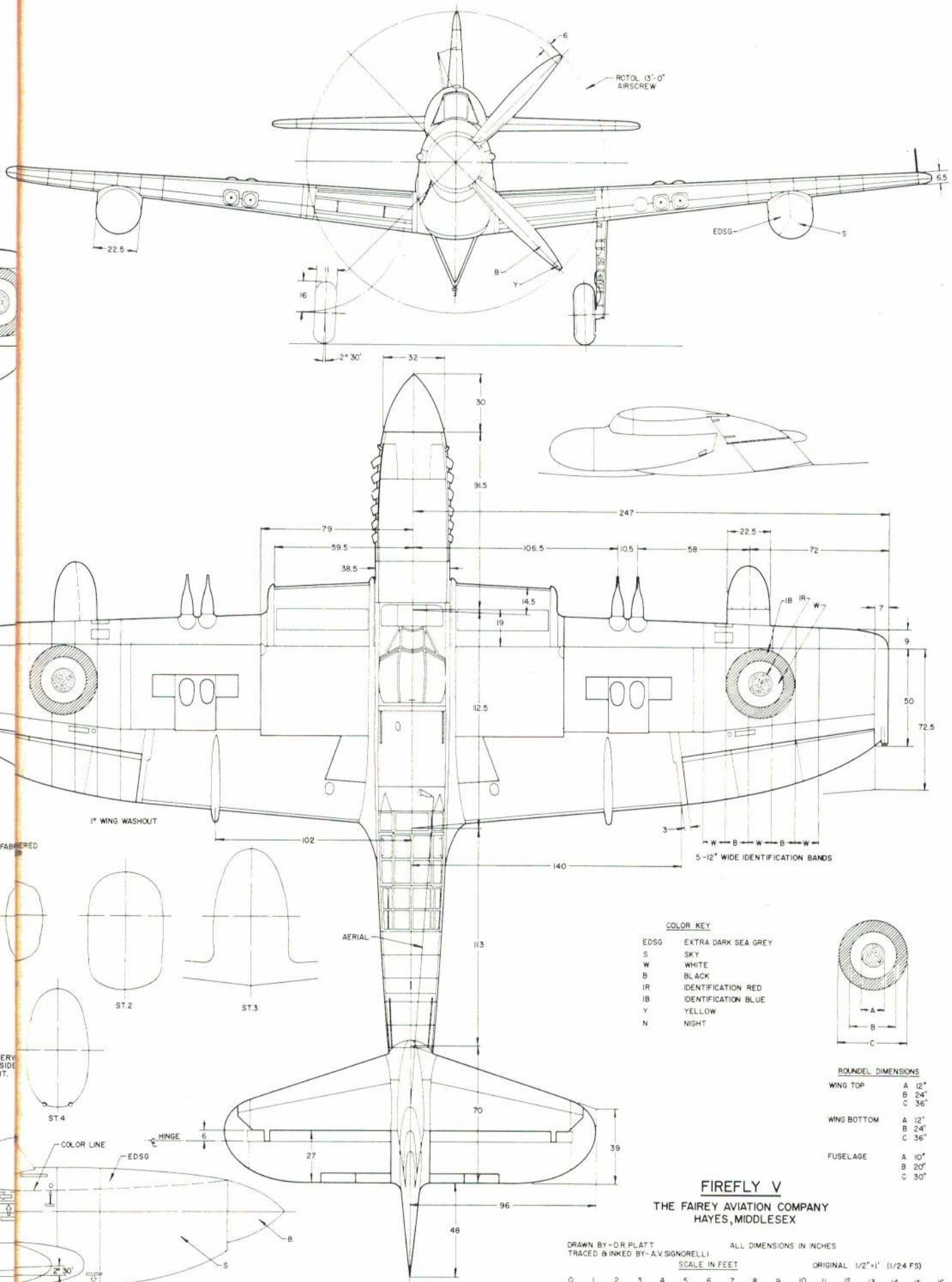
NATIONAL MARKINGS: BLUE 7.5 PB 1/4 - WHITE AND RED 2.5 YR 3.5/4.

IN SERVICE AT SEA AIRCRAFT VERY RAPIDLY BECAME MATT DUE TO CORROSION OF SEA WATER AND EXPOSURE TO SUN & WIND. UNDER SURFACES SOMEWHAT LESS AFFECTED.

EXHAUST BURNS, PAINT CHIPPING, FADING AND OIL STAINS ALL COMBINED TO GIVE A VERY WORN APPEARANCE IN A VERY SHORT TIME.



FIBERGLASS ARROW-SHAFT DRIVEN BY SERVO SHAFT REVOLVES APPROX. 30° EACH SIDE OF NEUTRAL, GIVING RUDDER MOVEMENT.



FAIREY FIREFLY CONSTRUCTION

signed by scaling up the plans line for line, using fixed LG, no flaps, etc.

Most scale modelers, however, do not consider any model of a retract-gear or flapped subject as "scale" unless it has these features working; a true scale-outlined model with fixed gear, etc. counts as semi-scale because 75% of the problems were left unsolved.

It is in the solving of these problems that the Firefly, like so many subjects, becomes a "bear." In this case, aerodynamic suitability is merely a prelude to much head-scratching!

Among these problems we can list:

(a) Non-standard-size spinner. (b) Some difficulty in complete enclosure of engine, and in cooling it. (c) Retracting landing gear (no longer the problem it used to be with the advent of the high-power pneumatic RLG systems). (d) "Fairey-Youngman" flaps work in such a way that they move *out* from the wing as they go down. In full down position the flaps are further back than when up, and an air slot is created to deflect air over the flaps. (e) Arrestor hook. (f) Rudder which has no external horn to drive it, calling for some internal method of accomplishing rudder control. (g) Placement of all equipment, including any pushrods, so they are invisible through any of the cockpit areas.

Actually, the real Firefly has folding wings, too! They were power operated, however, so no purpose is served by incorporating them into an RC model.

Making a Start

Size is the first problem to be resolved. Remember: The model is a full-fledged NATS or World Championship model. Working backwards, so to speak, make a guess at the probable ultimate weight. Using at least six channels, and with all the mechanical features involved, it is probably in the 9½ to 10½ lb. range. This approximation assumes a concentrated effort at saving weight. I use only the lightest stock balsa wood as a standard practice; nothing over 6 lb./cu. ft. finds its way into one of my scale jobs. (Wood of greater density is relegated to "hack" models.) Hardwoods and ply in the barest minimum are used at essential places only.

To support this weight a wing area of 650-750 sq. in. has been indicated by past experience. Converting this figure into Firefly terms, a scale of 1½" = 1' (1/8 full-size) is ideal and should enclose an engine, with a bit of effort. The resulting dimensions are: 61-¾ in. wingspan, 740 sq. in. wing area, and length of 58 in. Wing loading, at 9½ lb. weight, will be 30 oz.

I always find it helpful to purchase a plastic kit if available, and build it up to convey some sense of three-dimensional form in the design stage. Sometimes I buy three or more kits, leaving one unbuilt, one built but not painted (so not to cover panel lines, etc.), and the other built and painted to settle on the most desirable color scheme. The only kit of the Firefly MK 5 is made by Airfix (England) and can be found in the bet-

(Continued on page 106)

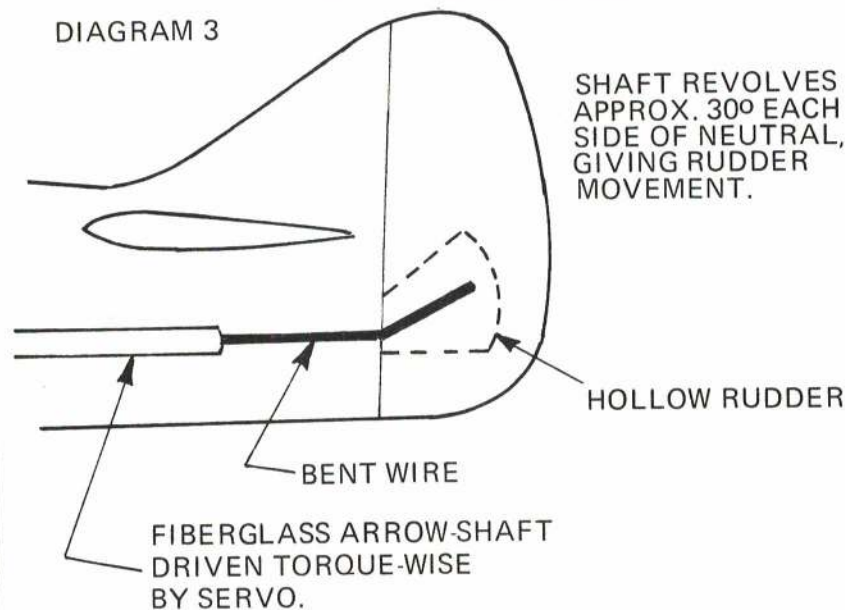


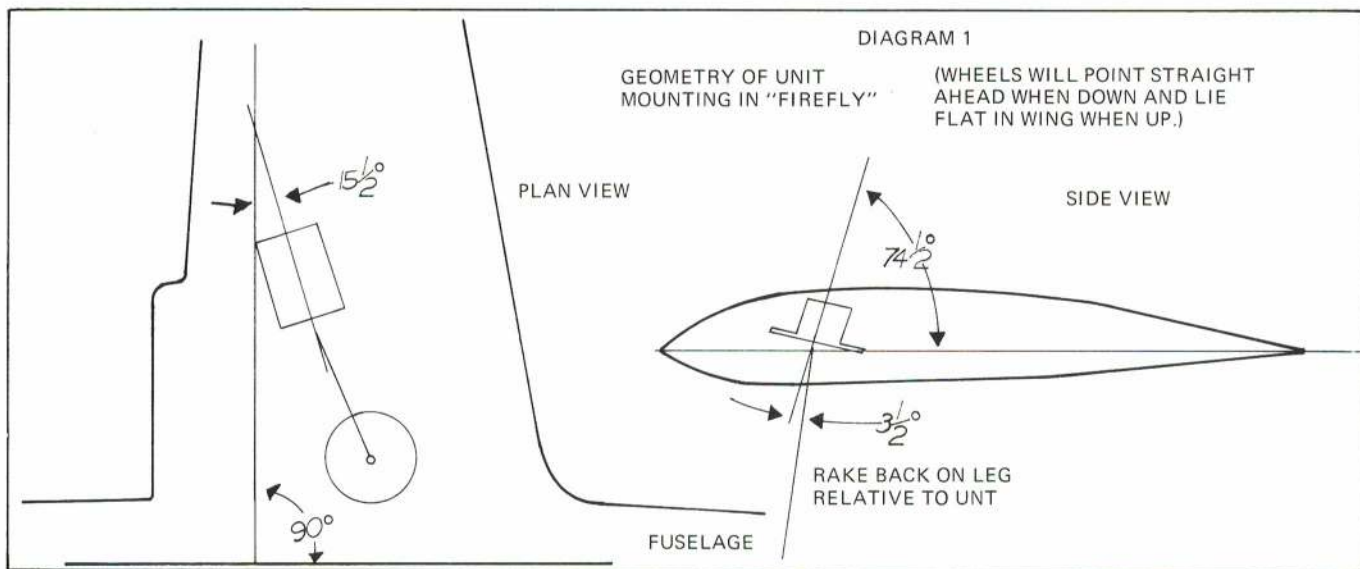
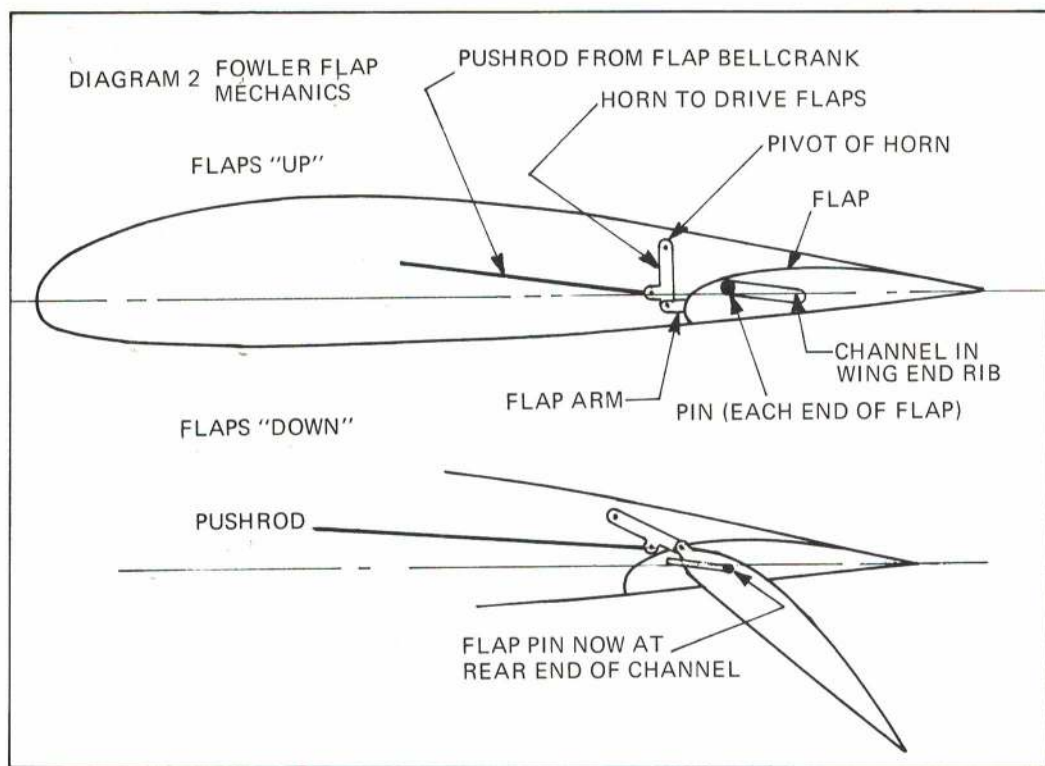
Even with all that drag hanging on the wings, the Firefly was a great performer: Max speed was 386 mph at only 14,000 feet. And it was a heavy plane at 16,096 lb.

An anti-submarine Mk5 with wings folded. RC wing folding would be a neat trick. Good luck trying.



DIAGRAM 3





Shown in pre-Korean War markings, the Mk5 Firefly in action captured by the camera of the well-known aviation photographer Charles E. Brown.

Photos on opposite page courtesy of the National Air and Space Museum, Smithsonian Institution

FAIREY FIREFLY HISTORY

Initial production aircraft were designated to serve as prototypes, and on December 22, 1941 the first of these was test flown.³ After a trial period in which the inevitable changes occurred, delivery of actual in-service models began in March 1943. From then on, ship or shore-based Fireflies served the Fleet as front line aircraft until 1956.

Basically, the Firefly was a single-engine, two-seat (tandem), low-wing monoplane. The two-man crew requirement is indicative not only of the normal navigation and communication limitations of the day, but of the era's "four eyes are better than two" approach to reconnaissance. The Firefly's armament consisted of four 20 mm wing cannons and, depending on the mission, varying under-the-wing bomb and rocket loads.

The company completed development of an innovative construction technique about the time the Firefly went into production. Its oval Alclad fuselage, built in two halves, was fitted side to side. Inherent strength came from the outer skin and an inner structure of four extruded longerons and 22 U-shaped frames. Its folding wings were of two spar construction with a variable geometry capability.

This interesting feature came about through the use of Fairey-Youngman flaps developed by the company. Hydraulically operated, these novel flaps performed two functions. Giving the Firefly high marks in maneuverability and slow flying characteristics, the fully-retractable flaps could be extended beneath the trailing edge of the wing to almost horizontal with the line of flight. In combat they could be used to tighten up the turning radius. On takeoffs and landings they operated in standard flap fashion.

The fundamentally sound design of the Firefly was able to absorb changing operational requirements and the variety of duties surprisingly well. But, as is often the case with fighter/reconnaissance aircraft, as its strike/reconnaissance abilities came to the fore, greater loads were hung in it and on it.

Seeking ways to combat these changing conditions, the factory developed the Mk II variant. But with the Mk II, attempts to accommodate new and updated technical equipment within the confines of the original airframe upset its normal CG. Lengthening the nose forward the firewall helped some, however the Mk II design was abandoned after a more satisfactory method of housing the radar (in a pod under the original airframe) was developed. Thus modified, Mk Is continued on the production line.

All along, either through converted or experimental prototypes, the company continued to test various engine upgrades and design changes. However, by the time the Mk IV was chosen to succeed the Mk I on the production line, the war was just about over. Without that impetus, the Mk IV leisurely phased into postwar Fleet service. Noticeably different from the original

(Continued on page 102)



Prototype Mk IV on an early flight. The big "P" on the fuselage is in bright yellow designating the prototype as such.

Great detail shot of the undersides shows gear door arrangement and the aft movement of gear retraction. Platt article explains how it is done in an RC model.



A line-up of Firefly IVs purchased by the Royal Netherlands Navy. The words "KON MARINE" painted black are six in. high. National marking is blue, red and white with orange center. Fin flashing is red, white and blue.



MIDWEST PRODUCTS COMPANY

U-CONTROL PROFILES FOR SLOW COMBAT, SPORT AND STUNT FLYING.

DOCILE ENOUGH FOR THE NOVICE — MANEUVERABLE ENOUGH FOR THE EXPERT.



All models feature top grade shaped MIDWEST MICRO CUT balsa fuselage, wing and tail parts, formed landing gear, all hardware, engine mounts, shaped plywood parts, crystal clear moulded canopy, covering tissue and decals. Also included full size, detailed easy to follow plans loaded with sketches and finishing instructions.

Kit #244

WARHAWK

48 in. span .29 to .35 engines

WARHAWK

Kit #242 .15/33 in.— \$7⁹⁵

1395

Kit #245

SKYRAIDER

48 in. span .29 to .35 engines

1395



MESSERSCHMIDT

Kit #241 .15/33 in.— 895

Kit #238 .35/48 in.— 1395

MUSTANG

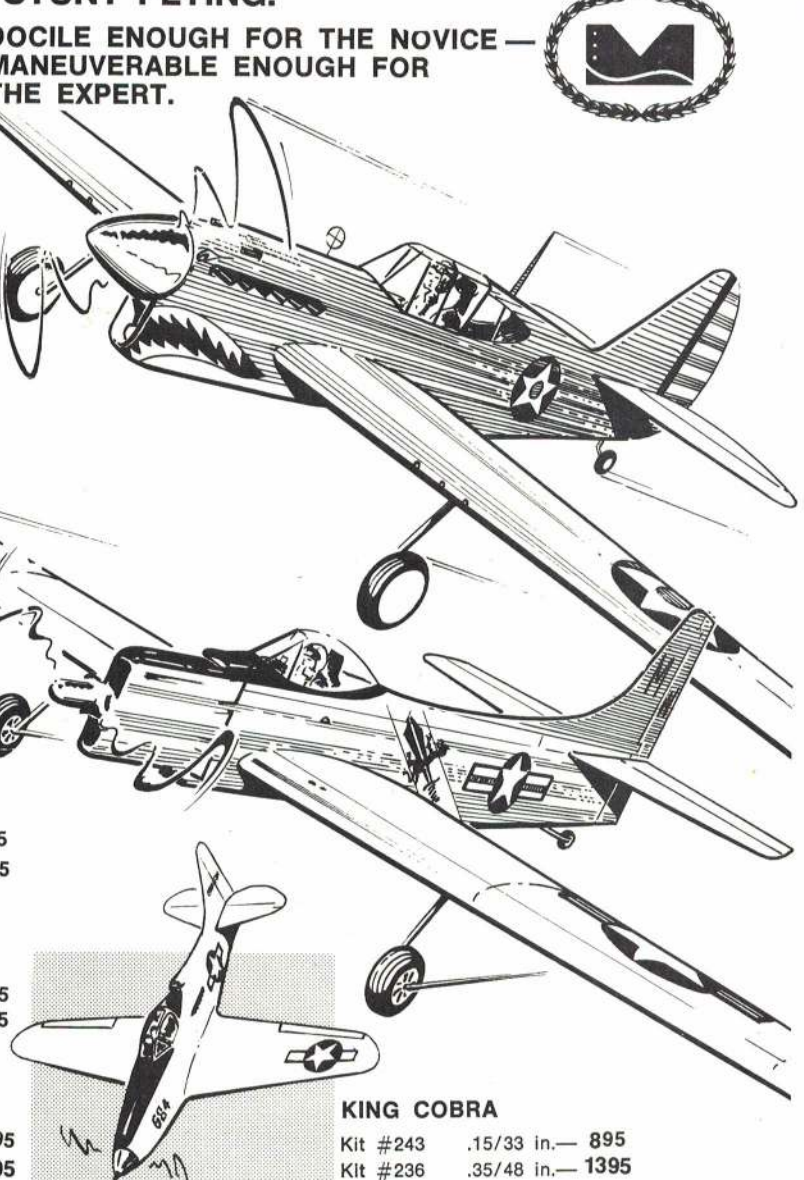
Kit #240 .15/33 in.— 895

Kit #237 .35/48 in.— 1395

MAGICIAN

Kit #215 .15/34 in.— 895

Kit #235 .35/48 in.— 1395



KING COBRA

Kit #243 .15/33 in.— 895

Kit #236 .35/48 in.— 1395

½ A SIMPLE U-CONTROL PROFILES, 20½" SPAN FOR .049 ENGINES.

Fuselage, wings and tail ready cut from first grade MIDWEST MICRO CUT balsa. Formed landing gear. Wheels and hardware included plus big decal sheet. Tough plastic bellcrank, elevator horn and the new MIDWEST "QUIK-MOUNT" tough, crash resistant engine bracket. (Hey! Use those 'goodies' on other 'planes, too.) Full size easy to follow plans with lots of step by step pictures. No special tools needed. ASSEMBLE IN MINUTES — PRACTICALLY CRASH PROOF.

WARHAWK

Kit #250



MUSTANG

Kit #251



MINI-WARBIRDS

AIR COBRA

Kit #253



MESSERSCHMIDT

Kit #252



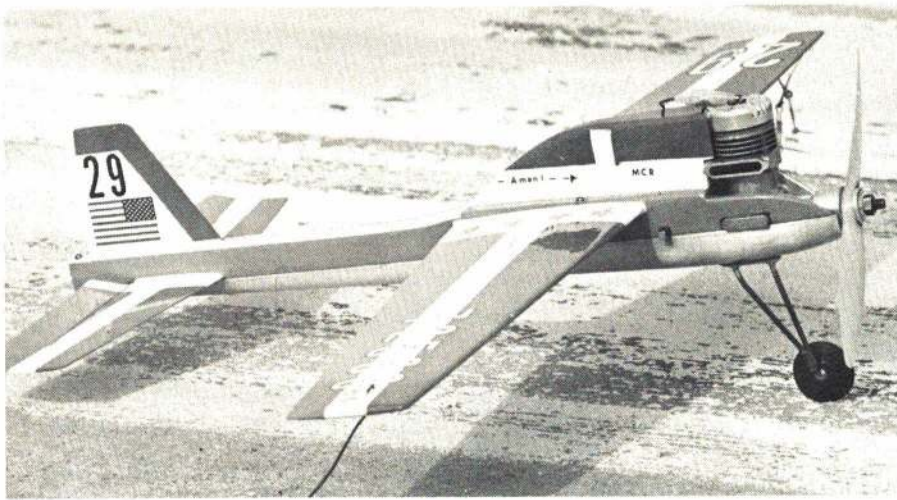
\$3.95ea

Please send me your illustrated catalog of models and accessories. I enclose 25¢ to cover cost.

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Top: Amen!-Chauvinist Rat is by Senior Stephen Klaus, Durham, N.C. ST40RR engine, 8-8 fiberglass prop. Above: Charlie Melcannon, Baton Rouge, La., performs pit chores for Stephen Klaus. Right: Junior Jeff Ackerman, Indianapolis, Ind., can give much of the credit for his winning Rat Race time of 5:22.5 to his pit man Norris Sparks, Cincinnati, Ohio. Bill Keller Rat, HP-40, Bartel 8-8 prop and Custom Blend fuel. Below left: John Huntsverge, Centerville, Ohio, (Senior Scale Racing winner is happy over his feat as this was his first entry in a National competition. John Ackerman (L) and Gary Fentress (R) provided pit action for his win. Below right: "Color Me Gone" was John Ballard's, Louisville, Ky., theme in Open Rat as he left all others in the dust while taking first place honors. Norris Sparks and John Ackerman gave support in the pit for a great time of 4:53.2 HP-40 engine, 8-8 Bartel prop.



CONTROL LINE

(Continued from page 42)

minated, the judges managed to avoid major confrontations with the contestants. A consensus of contestants' opinions indicates that this year's judging was the best in quite a few years.

There was nothing really new in the plane designs, engines or fuel systems. The pacifier fuel system was used by almost all entrants. ST 35 (ball and plain bearing types) and Fox 36X engines were popular with the ST 35 being the dominant choice. In the plane department, the Howard Rush Nemesis design was favored while others used the Tyrantula, Dinosaur, Sneeker, or some modification of these standard type Combat ships.

Combat competition was being touted by many as the "Texas Combat Nationals" because of the high entry from the Dallas-Houston area, with hopes of a complete sweep of all categories. The final results, however, proved otherwise. In the Junior Class Billy Vojslavek, Woodridge, Ill., took first place slot. In Senior, Russ Green, Dallas, Tex., worked his way through the Combat pyramid to retain his Senior Combat crown for the second year in a row. Russ repeated his win with the same Sneeker and ST 35 configuration used to win in 1972.

Open Combat was taken by Mark Patte, Evansville, Ind., using a Nemesis and ST 35. In the Open Class Max Mearns, Morgantown, W. Va., and Ron Esman, Houston, Tex., took second and third place respectively with the Nemesis and ST 35 combination.

Incidentally, Howard Rush's Nemesis was a feature construction article in AAM August, 1972. Plans are available from Sudden Service. See page 98.

While nosing around the NATS Scale and Rat Racing circles I overheard some comments that indicated speeds were about 10 mph slower than last year's times. This statement was not borne out by the results; Junior and Open categories beat last year's time in both Rat and Scale Racing while the Senior Class did go a slight bit slower in both events.

Two rather good performances were seen in the Rat and Scale Racing circles. One by Doug and Bud Harris, a father-son team in Scale Racing, and the other by the Chambers Team in Rat Racing.

Bud and Doug Harris, Bethany, Okla., the father-son team, captured first place in Open and Junior Scale Racing. Bud posted a 6:50.4 time which was about four sec. better than last year's time, while his son Doug posted a most impressive time of 7:18.0, an improvement of over one min. in the 1972 Junior winning time.

John Huntsverge, Centerville, Ohio, took the Senior Class with the rather slow time of 8:31.2

The only female entrant in Scale Racing, Linda Wheeler, Mesquite, Tex., beat out John Ballard, Louisville, Ky., in one of the final heats by only a few sec. to take fourth place in the Open Class.

Ballard, however, redeemed himself by winning the hotly contested Open

Class in Rat Racing. Open Rat teams posted times that ranged from Ballard's winning time of 4:53.2 to Norris Sparks' fifth place time of 5:21.4. Only 28 sec. separated the five Open winners. Also in the Open Class, a great performance was turned in by the Chambers Team, Art Chambers, Michael Schmieder and Dave Chambers, all of Jacksonville, Fla., taking second, third and fourth places.

Howard Hess, Willingboro, N.J., took the Senior category with a 5:34.0 time. Jeff Ackerman, Indianapolis, Ind., flying a Bill Keller Rat, won in the Junior Class by turning in 5:22.5 which is about one and a half min. better than last year's Junior time. Much of the credit for Jeff's good time must be given to Norris Sparks for his good pit action.

As for equipment, the HP 40 was the dominant engine in Rat while the Rossi 15 was widely used in Scale Racing. Bill Keller's Rat Kit, consisting of a formed fiberglass fuselage top, and precut and shaped bass wood wing and tail surfaces, was about the only new item seen in the plane department. Keller's design was flown by Ballard and Ackerman for their wins in Open and Junior.

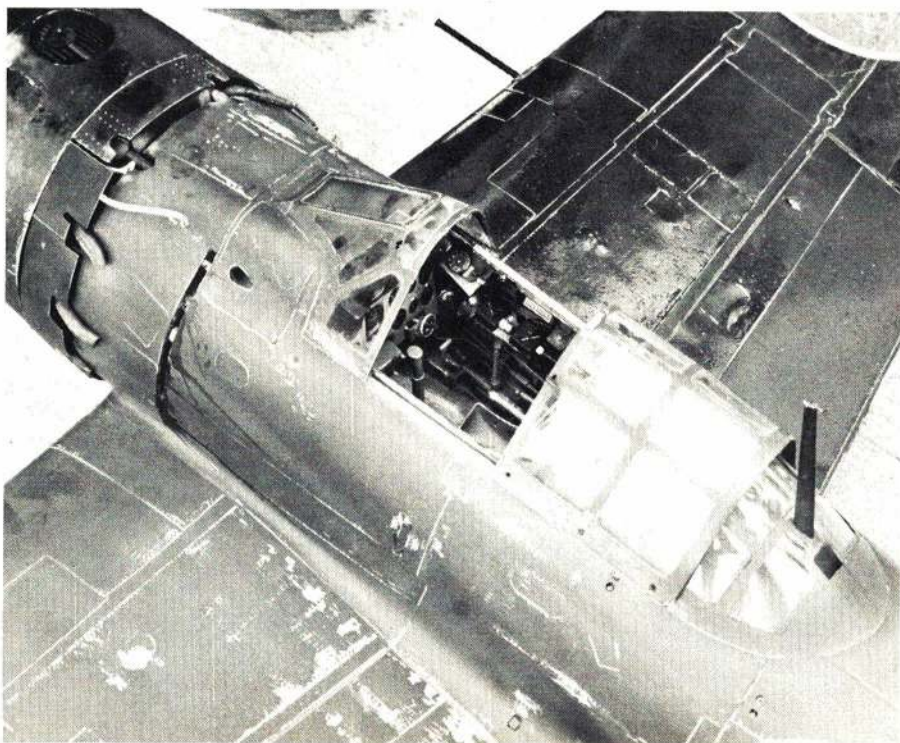
The Scale event, with about 30 entries, was the best we have seen in quite some time. Of the total number, Junior made a very good showing and accounted for 11 entries, while the Senior Class had the worst showing in many years with only two entries.

The range of models entered this year was spectacular. Among others, Dr. Charles Kirkland, Chicago, Ill., (remember his 1904 Philips Multiplane last year?) entered Clement Ader's 1890 Eole, and the U.S. Air Force showed a B-52 Bomber. Almost all other periods in between were represented: Trainers of the 30s, WWI, WWII and present day civilian and experimental aircraft.

Unlike last year, when few operational features were seen, this year they were plentiful, especially in the Open Class, where the winners will have the opportunity of representing the U.S. in the 1974 Scale World Championships. Almost all planes had throttle control. Flaps were operated by linkage off Robert's type systems on several planes, while Ralph Burnstine, Danville, Ill., used an electric motor drive for flap actuation on his Thorpe Experimental Aircraft. Other operating features included sliding canopies, control surfaces working from cockpits, shock absorbing landing gear, access panels and hatches, bomb and tank drops, interior and exterior lights, and get this—instrument needles that operated in Bill Harney's Japanese Zero. Retracting landing gear was also employed in at least five of the Open entries. Bill Harney, Wakefield, Mass., had a homebuilt system in his winning Japanese Zero; Both Mike Stott, Montezuma, Iowa, flying a Meyers 145, and Mike Gretz, also of Montezuma, flying a Zlinn, used Rom-Air systems in their second and fifth place planes; Mal Meador, Lexington Park, Md., used Centrak in his third place Spitfire; and Ron Norgood, Davenport, Iowa, used a Goldberg system in

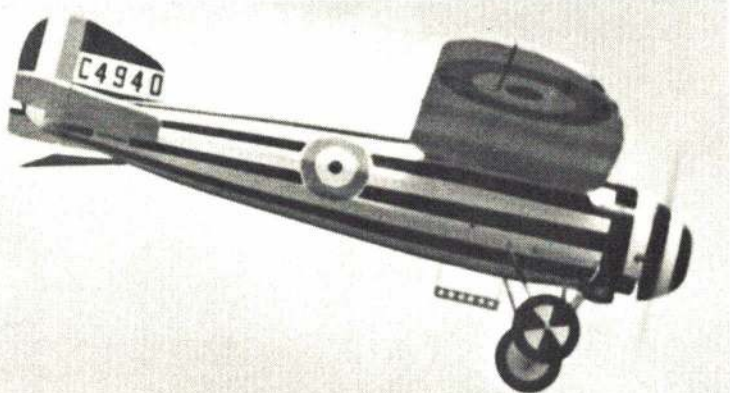


Above: Tom Osdoba, Mankato, Minn., shows good form as he releases Scale racer for brother Dan in Junior event. Left: Patrick Hempel's, Garland, Tex., F6F Hellcat is given a very careful launch by Dad. Weighing only a few ounces and powered by a TD 049, the plane completed required ten laps to qualify for fourth place in Junior category. Below: It's detail that counts, and is the thing that made Bill Harney's, Wakefield, Mass., Japanese Zero the top plane in the Open class. Retracting gear, aluminum finish, working lights and instrument needles and aux tank drop are but a few of the features incorporated in this excellent Scale model.





Above: Fairey Swordfish by Bill Hoover, Wauwatosa, Wisc., weighing in at 8 lb. and powered by ST 60, put in a great flight to capture first place in Junior Scale. Above right: Dr. Charles Kirkland, Jr., Chicago, Ill., entered this scale model of Ader's 1890 steam-powered Eole. Silver-soldered wire framework provides a wingspan of 45 in., covered with glass resin-filled Silkspan. Below: Senior Scale winner Mark Bauer, Norridge, Ill., with his nicely done Bristol M1-C, powered by an Enya 45 and throttle control. Below right: Florian Pierkowski, Enola, Pa., is assisted by Mike Domzalski, Philadelphia, Pa., during starting of Florian's AT6 Texan. High winds proved too much for the model and caused it to crash.



Above: Real or unreal? Look closely and you'll be able to see the McCoy 40s that powered the U.S. Air Force entry in the Open Scale event. The B-52 was flown by M. Sgt. Gordon Ford which put in a most spectacular flight. Left: Meyers 145 by Mike Stott, Montezuma, Iowa, with landing gear up looks great and just like it is climbing out of the local airport. The Meyers 145 earned Stott a second place in the Open category.

his fourth place P-51D Miss America Unlimited racer.

In addition, Open entries by Bill Harney (Zero), Florian Pierkowski (AT 6G-Texan) and Mike Domzalski (P-51D Sharpshooter) featured excellently executed aluminum coverings.

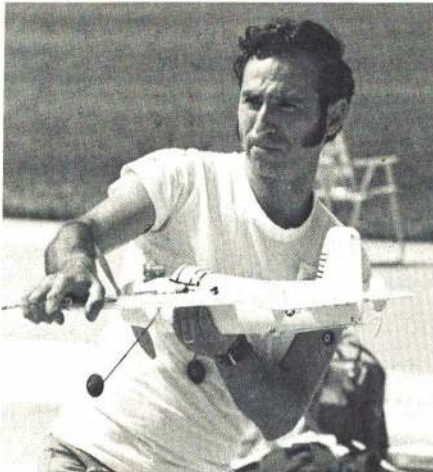
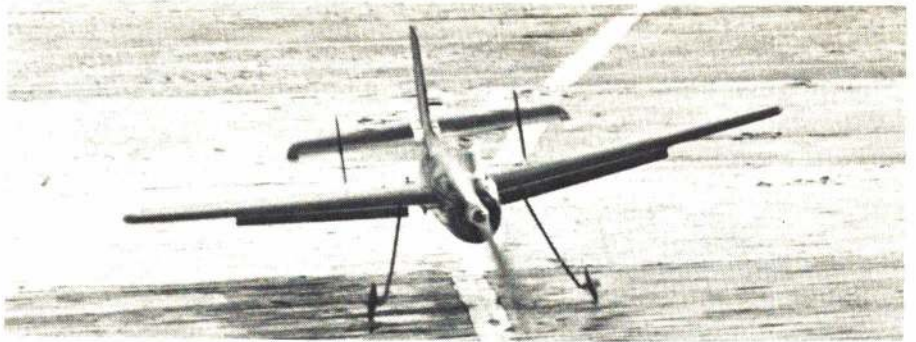
The flying portion of the competition resulted in disaster for many as high winds developed early in the flying schedule making control of the models almost impossible. About 50% of all planes flown suffered damage on landing, mostly to landing gear, while three or four met with total disaster. Even the most experienced fliers had some difficulty.

The Senior category went to Mark Bauer, Norridge, Ill., with a Bristol M1C while the Junior Class was won by Bill Hoover, Wauwatosa, Wisc., flying a Fairey Swordfish. Just the right amount of power up front and good balance permitted both of these youngsters to put in excellent flights in spite of the wind.

The Navy Carrier event was, for the most part, a repeat of 1972 with the Guardian as the dominant plane. In addition, the MO-1, Skyshark A2D1, N5B Kate and Judy (both Japanese), Latecoere (French) and the Fairey Spearfish (United Kingdom) were flown by various contestants. The only new ship seen in Carrier was the Short Seamew by Capt. Richard Perry, Wright Patterson AFB. The Seamew is a midwing, high tailed configuration, and was used by the Royal Navy in 1952-1953 for submarine warfare.

In the engine department KB-40s were the primary power plant for Class I, while the Rossi 60 was used almost exclusively in Class II. Throttle control was provided by various combinations of slide and rotary exhaust valves, and fuel metering systems.

At last year's competition there was one name that seemed to pop up in the winner's circle of each Carrier class. That name was Sawicki. Well, it wasn't any different this year, only the name



Above: Good landings in Carrier are worth 100 points and can make the difference between winning or losing. Landing was made by Jim Finely, Wichita, Kan., for a third place in Open Class II. Left: Henry Dawson, Plymouth, Mich., puts a strain on his Class I Guardian during pull test before flight. Below: Short Seamew of Royal Navy was entry in Class I Carrier by Capt. Richard Perry, Wright-Patterson AFB. Seamew was used for submarine warfare in 1952-53. Powered by ST G40, plane weighed in at 33 oz.



CONTROL LINE

RAT RACE

Junior	Min/Sec
1. Jeff Ackerman	5:22.5
2. Richard Green	5:41.7
3. Dwayne Blanc	8:46.7
4. Tim Stone, Jr.	DNF

Senior	Min/Sec
1. Howard Hess	5:34.0
2. Galen Blackburn	6:09.3
3. Alan Stone	6:53.8
4. Bernard Varnau	7:07.9
5. J. Russ Green	8:58.6

Open	Min/Sec
1. John Ballard	4:53.2
2. Arthur Chambers	5:04.6
3. Michael Schmieder	5:09.0
4. David Chambers	5:17.4
5. Norris Sparks	5:21.4

SCALE RACING

Junior	Min/Sec
1. Douglas Harris	7:18.0
2. Steven Zick	9:31.4
3. Jeff Ackerman	11:19.3
4. Cass Caldwell	DNF
5. Robert Hager	DNF

Senior	Time
1. John Huntsverge	8:31.2
2. Howard Hess	9:09.9
3. Jeff Rein	DNF
4. Mardy Huston	DNF
5. Paul Masanik	DNF

Open	Time
1. Ulous Harris	6:50.4
2. Timothy Gillott	7:03.9
3. Charles Novy	7:17.3
4. Linda Wheeler	7:29.4
5. Fred French	7:32.8

NAVY CARRIER PROF.

Junior	Points
1. Robert Dambrowski	311.65
2. Joseph Tappainer	234.86
3. Chris Servizzi	229.34
4. Jack Tappainer	222.15

Senior	Points
1. Jeff Rein	324.13
2. Tim Sparks	322.79
3. Jim Petro	310.22
4. Bruce Bina	254.54
5. Scott Fuller	223.20

Open	Points
1. Harry Higley	376.23
2. Dennis Downs	373.27
3. George Voitik	344.29
4. Glenn Simpson	340.08
5. David Engel	336.55

NAVY CARRIER I

Junior	Points
1. Robert Sawicki	521.36
2. James Potochnik	264.16

Senior	Points
1. Mark Dombrowski	514.83
2. Gary Dombrowski	428.62
3. David Heinzman	369.12
4. Kris Sabin	324.07
5. Kevin Jones	189.52

Open	Points
1. Richard Sawicki	572.71
2. Michael Bedard	571.13
3. Marion Sawicki	566.78
4. Leon Ryktarsyk	550.36
5. Tony Maccarato	528.90

NAVY CARRIER II

Junior	Points
1. Robert Sawicki	509.84
2. James Potochnik	504.37

Senior	Points
1. Paul Tegell	465.28
2. Mark Dombrowski	447.18
3. Kevin Sabin	437.72

Open	Points
1. Terry Herron	591.02
2. Harold Wallick	589.84

3. James Finley	550.90
4. Savin/Schaefer	546.22
5. Richard Sawicki	544.44

SCALE

Junior	Points
1. William Hoover	291.00

Fairey Swordfish	
2. Andrew Arhelger	286.00
Smith Miniplane	
3. Paula Bauer	225.00
Volksplane	

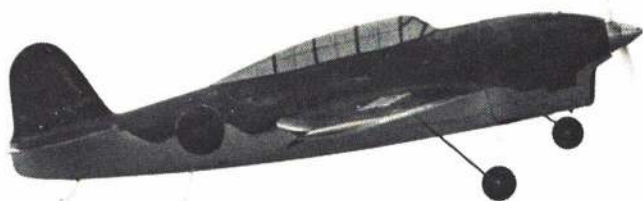
4. Patrick Hempel	220.00
ME 109	
5. Matthew Bauer	214.00
Volksplane	

Senior	Points
1. Mark Bauer	260.00
Bristol M1C	

Open	Points
1. William Harney	512.00
A6M5 Zero	
2. Mike Stott	507.00
Meyers 145	

3. Malvin Meador	492.00
Spitfire Mk IIA	
4. Ronald Norgard	380.00
P-51-D Miss America	

5. Michael Gretz	374.00
Zlin	



Above: Terry Herron's, Wichita, Kan., Japanese Judy looks great as camera captures plane in slow speed run. OPS 65-powered and equipped with his own design slide bar throttle and fuel metering system, the Judy took first place in Open Class II Carrier. Right: George Votik, Evanston, Ill., counts out slow speed laps for pilot Dennis Downs, Downers Grove, Ill., during Profile Carrier event.



was pronounced a little differently. It was pronounced "Detroit Carrier Team." Here are the first place wins made by the team: Class I (Open) Richard Sawicki 572.71; (Senior) Mark Dombrowski 521.36; (Junior) Robert Sawicki 521.36; Class II (Junior) Robert Sawicki 509.84; Profile (Junior) Robert Dombrowski 311.65. In addition, several other places were taken by the team in the various classes of the Carrier events.

Special note should be made of Robert Sawicki's performance. Not only did he beat his own Class I record of 519.56 with his winning 521.36, but this is the fifth straight year that he has captured the crown in both Class I and II Junior Carrier events.

The big battle of the day, however, was in the Class II Open category between Terry Herron, Wichita, Kan., and Dave Wallach, Elyria, Ohio. The battle over first place lasted until the closing minutes of the competition. Herron, flying an OPS 65-powered Japanese Judy, turned in a score of 591.02. Wallach, flying a Rossi 60-powered Guardian, made a great effort to beat Herron's score, but only posted a 589.84 falling short of a winning score by less than two points. It is ironic that Wallach had an excellent chance of winning since had a high speed in the order of 15.5 seconds, and was doing very well in the low speed run, when someone on the sidelines was heard yelling at Wallach, "Don't be a hog! You've got it!" It would seem that this swayed Wallach from trying to coax just a little slower speed out of his plane. Just a few more seconds would have made him the winner.

It should also be noted at this time that Herron topped his great performance in Carrier by going on to take the title of Control Line Category Champion.

Other major winners in the Carrier event were: (Senior Class II) Paul Teagel, Williwick, Ohio, 465.28; (Senior and Open Profile) Jeff Rein, Bothell, Wash., 324.13 and Harry Higley, Glenwood, Ill., 376.23.



Above: Detroit Carrier Team and their fleet of planes. The Team took first in Junior, Senior and Open Class I, first in Junior Class II, and first in Junior Profile. In addition they took several awards in the second to fifth places in all Carrier events. Left: Getting engines set up right is half the game for good high and low speed runs in Carrier. Kevin Sabin, Convent Sta., N.J., holds MO-1 for Tom Schaeffer, Westfield, N.J., while Tom tries engine throttle. Right: Pete Simonson, Minneapolis, Minn., shows off original design Delta Wing Profile Carrier plane "Hooker." Veco 35 and weighs 28 oz.



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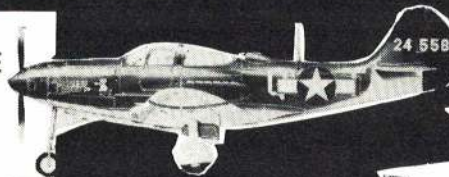
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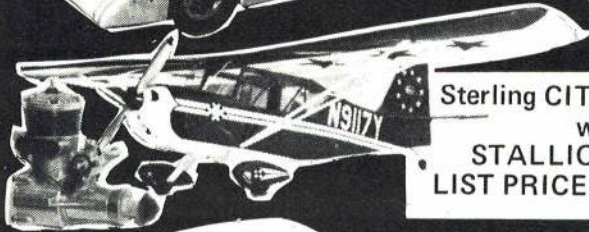
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Above: Placing second in B Gas with his Supertigre-powered Mel Schmidt Shocer helped Robert Watson become Free Flight Champ. Right: Bill Hunter might be maxing still with his C-Satellite if the NATS hadn't ended at 1 P.M. He had nine at that time. Wreck enroute to NATS destroyed half of Team Satellite's models. Below: Mindi Linstrum, age 12, needles-up the Torp on her Pearl-Duster with an assist from Red Johnson. Mindi won Junior C-Gas.

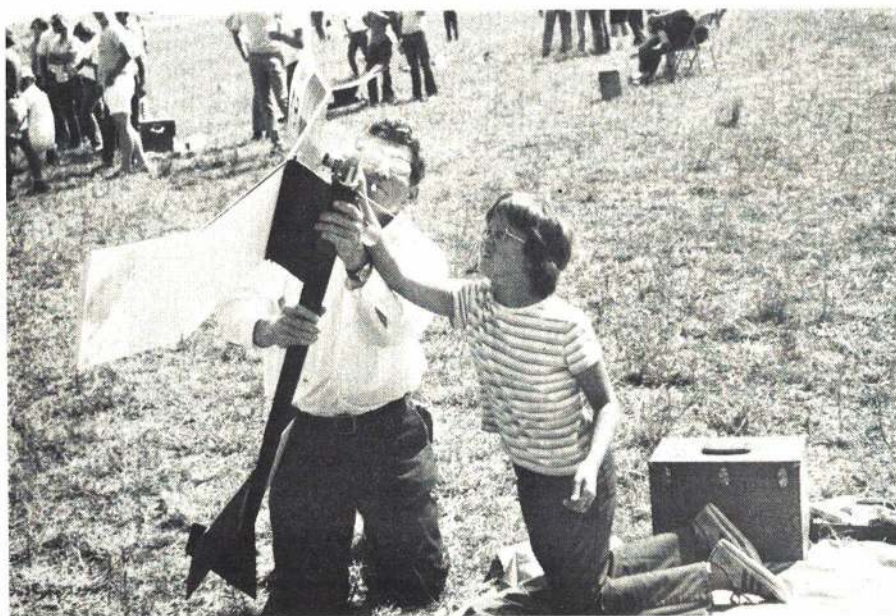


While the NATS RC and CL events were in full swing along the north-south runway of Wittman field, a small-field free-flight contest with two-min. maxes was in progress in a 100-yard-wide weedpatch a half mile off the south end of the runway. A local club meet perhaps? No, this was the Big One, where national heroes were being created and destroyed, where new homes for the historic Mulvihill, Tulsa Glue Dobbers, and Dick Black trophies were being selected—the one many had been working toward for a year, or perhaps a lifetime. This was Free Flight at the 1973 NATS!

Wittman Field at Oshkosh was a last-minute second choice, and contestants were warned, via AMA's Competition Newsletter, of what to expect, but that knowledge gave little solace to those who came and had their models destroyed. Can you imagine conditions so bad that, even with two-min. maxes, only two contestants maxed out in Unlimited Rubber and none maxed out in Wakefield? The wind was almost always from the west across the narrow 0.3-mile dimension of the field. At the edge of the field was a 50-yard-thick patch of trees, and between the trees were almost impenetrable thorn bushes. Beyond and to the sides were cornfields, wheatfields, a few fairly open fields and occasional trees. The one access road turned out to have a barricade which could be circumnavigated only by driving through a mudhole. At one point even the detour was barricaded by an irate farmer. Apparently the PR operation to soften the natives, promised by AMA, had not been effective. Winds were so strong and in such a direction that most two-min. max flights went into the farmland. But, those who came did their best to fly and compete, although none seemed very happy about it. (At the National Free-Flight Society General Meeting a motion that the NFFS go on record as opposing Oshkosh for all future NATS was cheerfully acclaimed.)

Free Flight at the NATS started not at Oshkosh, however, but at the Brig. Gen. Richard L. Jones Armory in Washington Park, Chicago, 160 miles to the south, where the Indoor events were held. Hand Launch Glider had previously been dominated by "modified Sweepettes" (e.g., anything with a span under 20 in., a straight trailing edge, and a curved leading edge), but a large number of Ron Wittman-designed Super-sweeps were entered this year. (See June 1973 AAM, page 18.) Bucky Servaites flew a light straight-dihedral version of the SS22 to first place on the Open age class with a two-flight total of 132.1 sec.: the best he or anyone else has done at a NATS at that site.

Robert Watson was the most consistent flier: Four of his seven flights were better than 62 sec. Watson flew a 15-gram, 20-in. model that has earned him and its designer, Dennis Kargol, a number of NATS trophies. Third place in Open went to Rudy Kluber who took first in 1969, '71, and '72, flying a blunt wingtip model based on Otto



FREE-FLIGHT



One characteristic of talented free fliers is their ability to have and capably fly a large variety of planes. They don't usually fly only one event. Joseph Mekins of Barberton, Ohio is one such talented flier. Count 'em up, how many are here? That's not all of the models he brought and flew at the NATS. Joe did mighty well in competition as you can see in the official AMA listings.



Above: With his Coupe d'Hiver model wound and ready, David Cleveland, Tullahoma, Tenn., waits for good air before having George Perryman light his fuse. Right: Bob Meuser's Rubber-Power Speed model was one of four in the pusher-tractor idiom entered, none of which were successful. Event was won by Jack McCracken's light tractor. Below: George Perryman readies his California Champion Old-Timer rubber-powered model with an assist from Michael Bailey. A Baker-Ingelhart design of 1939. Below right: Dan Domina won Open Hand-Launch Gliders with his Flanger, Larry Connover design.



Heithecker's 1962 NATS-winning design.

Seventeen-year-old Robert Hayes demonstrated that persistence pays by winning Senior Hand Launch Glider with a creditable total of 123.7 sec. Hayes tried the standard designs with little success, then about 18 months ago switched to a high-aspect-ratio design with which he had had considerable success in Outdoor flying. Concentrating on Indoor Glider almost exclusively for the past year, he put it all together for his last two flights of 61.9 and 61.8 sec.

Although participation was poor, the general level of flying seemed higher; there were 15 flights of 60 sec. or more. None of the top placing gliders went much higher than the lights—70 to 80 ft.—while a few years back some were threading their way through the girders.

The official Indoor Scale event, together with the unofficial Peanut Scale and Navy Scale events, brought forth the usual number of crowd pleasers. Keith Ward won the Open official event flying a large Yellow Taylorcraft pulled by a store-bought plastic prop. Tom Stark followed, on a course that would lead to the Scale Category Championship for the second time, flying his Monocoupe 110, soon to be kitted by Sig. Tom's daughter Rebecca flew her Sig-kit Mr. Mulligan to first place in Junior, and later flew the same model to second place in Outdoor Rubber-Power Scale. The author received highest static judging points with his 29" Blackburn 1912 Monoplane, then failed to make a successful official flight. Bob Randolph, who usually reserves his talents for the Rubber-Power Duration events, built a superlight Peanut Scale Naismith Cougar just to have something to fly at a recent Southern California Indoor Scale meet. He brought it to the NATS, and while he received a *minus* 15 points in the static judging—the lowest ever awarded—he won the event hands down with a three-flight total of 751 sec., 300 sec. ahead of the nearest competitor. Perhaps this will add impetus to some much-needed rules changes, for superlight models capable of four- or five-min. flights are not what Peanut Scale modelers like to build.

Dennis Jaecks won the unofficial





Above: Charles Wiese, Detroit, won Senior Coupe d'Hiver with his simple Maxwell Mk II, his own design. Two-piece wing and detachable tailboom facilitate transportation. Right: Rowena Barron retrieved brother Andrew's Mini Pearl from the cornfield. Below: Lee Campbell made three maxes in the Rocket-Power event, the only one to do so, with his Sundancer.



Above: This beautiful rendition of Phil Klintworth's Hi-Fin earned Mark Kummerow of Chicago first place in Senior Nordic A/1 A/2. Last flight was made after the 2 P.M. deluge. Above right: Carol Allen's torquemeter and recording thermal detector helped him fly his sophisticated Wakefield model into first place. Prop has symmetrical airfoil, true helical pitch, theoretically "ideal" blade shape. Right: Engine tuner Doc Anderson's little boy Roland flies most Indoor and Outdoor events. This Unlimited Rubber model got him the Mulvihill Trophy for the second time.



Pennyplane event for the third successive year with a time of 12:19, 6 sec. off his 1972 time, with a model only slightly different from last year's. Richard Hardcastle took second with a tandem-wing model, the Philadelphia Penny, making three flights of over 11 min., and Bob Randolph took fourth with a biplane. Considering the low overall NATS participation, that 46 actually entered this unofficial event is rather astonishing. But, that no one has proposed that Pennyplane be an official AMA event is even more astonishing.

During the Rubber-Power Duration events the National Guard moved trucks and equipment around at one end of the building and the large doors were opened quite frequently. Even with the doors closed the drift was quite bad, and about twice as many models hung up on the lights or in the rafters as in previous years. At 4 P.M., when an attempt was made to lower one of the lights in order to recover a model it had snared, the ancient hardware fractured and the lamp crashed to the floor—the same thing happened last year. This left an unobstructed "hole" in which to fly, and of course everyone tried to fly there at once. The predictable result: several mid-air collisions.

Times in Paper Stick were not particularly exciting. Dennis Jaecks won Open with 20:14, almost a minute short of his second-place time of last year. In Senior the top three places were taken by members of the Detroit Balsa Bugs: Paul Shailor, Bill Shailor and Dick Doig. Paul was in third place until his last flight. After a mid-air collision ruined his first attempt, he put up his last flight to win with the only serious Indoor model he has ever built: a 1961 Ron Plotzke design.

Bucky Servaites put up a beautiful Cabin flight with his Bilgri Trembler in the early afternoon, but was disappointed that he had fallen a few seconds short of Ron Plotzke's record set at the 1970 NATS. It turned out that Ron's time was lower than Buck had thought, and he had broken the record. But his victory was short lived. Bob Randolph put his retractable landing gear model up into "the hole" for a 23:19.5 flight, beating Bucky by a scant 4.5 sec. That is the sixth national record for Randolph's Fat Cat.

John Magnus, holder of the Junior record for Microfilm Stick models in Category III (unlimited ceiling height), set a Category II record at the NATS, then discovered that he had done it with the wing on backwards! So, he put the wing on the right way and beat his own record. It didn't last long—Jimmy Clem put up a late flight to beat him by a minute.

At the 1972 NATS Al Rohrbaugh entered a huge high-aspect-ratio Stick model with a 24-in. prop that turned only a little over 30 rpm. It flew well, but a collision prevented it from demonstrating its potential. This year Al put it up for a flight just barely above the lights, without hitting any of them, for a winning flight of 29:04.6—a bit short of Jim Richmond's winning flight of 33:54 in 1971 when he hit every light in

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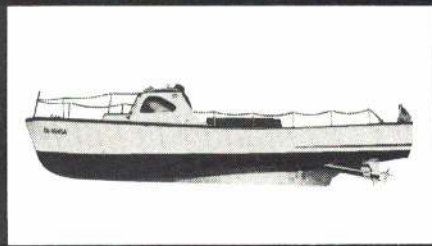
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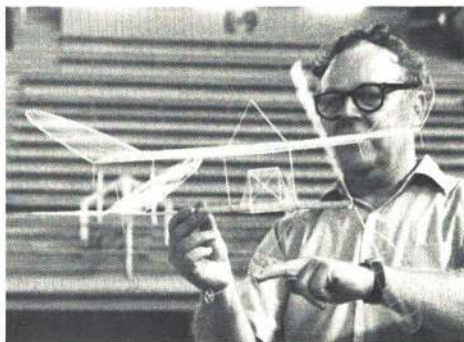


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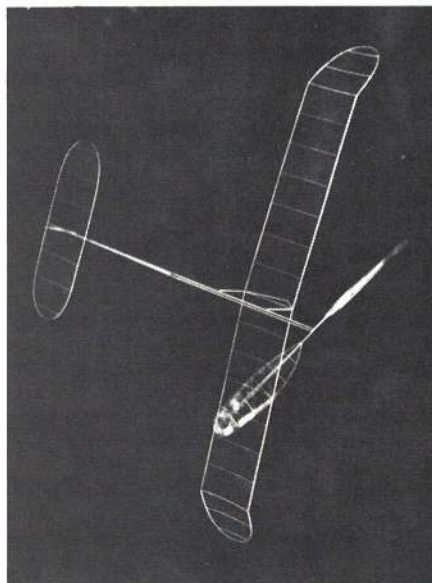
Kit S-100 \$16.95



Above: Judy Servaites cranks in the final turns that enabled Bucky to break the Indoor Cabin record, and helped him become Indoor Champion, and Open National Champion for the *fifth* successive time. Right: Lt. Col. Bob Randolph let Bucky Servaites hold the Indoor Cabin record for only an hour, beat him by 4½ sec. His V-tail retract-gear model now holds three National records.



Above: Dennis Jaecks won the unofficial Penryplane event for the third successive time. Despite low attendance at NATS, there were 46 contestants in this unofficial event, more than any Indoor event except HL Glider. Above right: The prop on Al Rohrbaugh's winning 51-in. span Indoor Stick model took nearly two seconds to make one revolution. Model barely went above the lights on winning flight. Right: Former Indoor Champ and three-time NATS Indoor Champ Jim Richmond wiped out all of his models early in the morning, spent the rest of the day rebuilding them.



the armory at least once. By the way, what happened to Jim Richmond, Indoor Category Champ at the three preceding NATS? He crashed all of his models early in the morning and spent the remainder of the day building new parts and making repairs. He didn't place in one event!

Wednesday morning, the first day of Outdoor Free-Flight competition, the drift was moderate and straight down the long runway. A glance at the weather predictions told FF Director that the good weather wouldn't last, and he invoked a two-min. max rule from the start. Engine runs were to be seven sec. for regular flights, five for fly-off flights. The wind steadily increased, and at 2 P.M. a rain squall hit. After it cleared about an hour later, the wind blew hard from the west across the narrow dimension of the 0.3-mile-wide field, and stayed that way through Saturday.

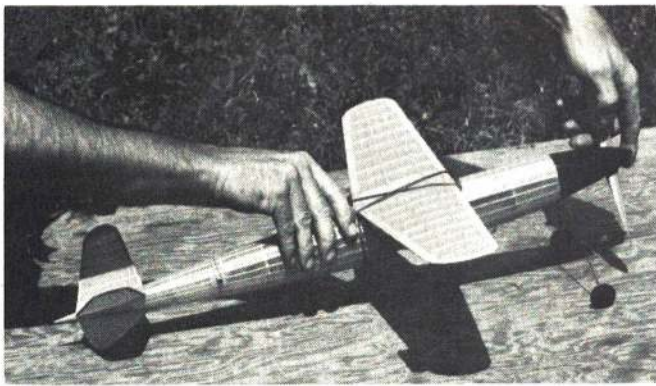
By 11 A.M. Aeronuts Charles Markos and Robert Watson had completed their flights in B-Gas, both posting six maxes, and were in first and second place respectively. Although others were in contention, none knocked them out of those positions later. Markos flew a rear-fin Galaxie 585, Watson a Shocer; both used Supertigre 23s, the most popular B engine.

Mark Kummerow placed first in Senior A/1-A/2 Nordic Glider, and second in B-Gas. His last Nordic flight was made after the squall had drenched everyone and after he had repaired the broken fuselage on his Klintworth Hi-Fin Nordic, one of the prettiest and best-performing Nordics in the business.

Wakefield is the perfectionist's Rubber-power event, where recording thermal detectors, auto-rudders, machined front end assemblies, torque-meters, super-clean models, and carefully contrived turbulated airfoils abound. Carrol Allen used all of those things to win. (His torque-meter appeared in the April 1973 AAM, page 36.) His model, designed in cooperation with Don Edson, employs a thin, high-camber, turbulated airfoil and a high aspect ratio: a combination usually thought to be best suited to still-air flying, but the model responded to the strong, turbulent wind as if it enjoyed it. The prop has a uniform pitch, rather pointed blades, and a thick symmetrical airfoil—a prop design we have not seen before.

The wind usually conserves its strength to expend on Scale day it seems, but this year it was relatively calm until about 9:30; relative to the 30 mph winds that prevailed, that is. Only one sec. behind Rubber Scale winner Tom Stark was Ron Martelet flying a Chambermaid, Thompson Trophy Racer of the late '30s. Ron's model spent its whole flight time within 20 ft. of the ground. Ralph Kuenze's Folkerts Racer employed a timer-operated retractable landing gear. Jack McCracken's Gas-Powered Scale entry, a D C Dart diesel-powered Sopwith Tripe with pendulum-controlled ailerons, received the highest

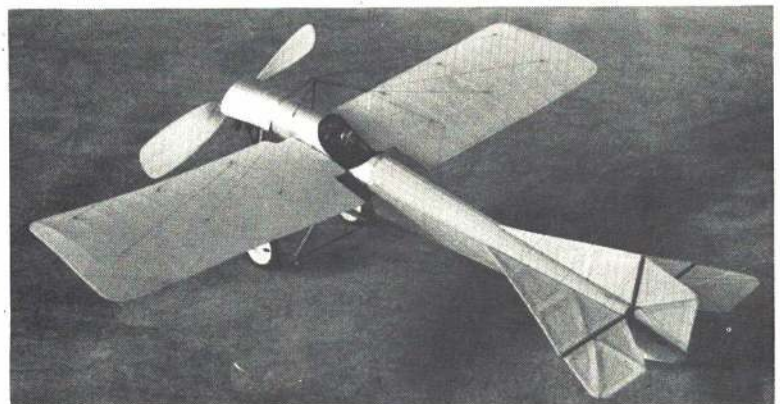
(Continued on page 112)



Above: Sleek speedster won the newly revived Rubber Power Speed event for Jack McCracken with an average speed of 51 mph from a standing start over 200-ft. course. Model proxy-flown by Bill Warner. Right: Rebecca Stark, age 14, won Junior Indoor Scale and placed second in Outdoor with her Mr. Mulligan, built from the Sig kit designed by her father Tom. Below: Ron Martelet flew his Thompson Trophy racer Chambermaid to second place in Outdoor Rubber-Power Scale without getting higher than 30 ft.

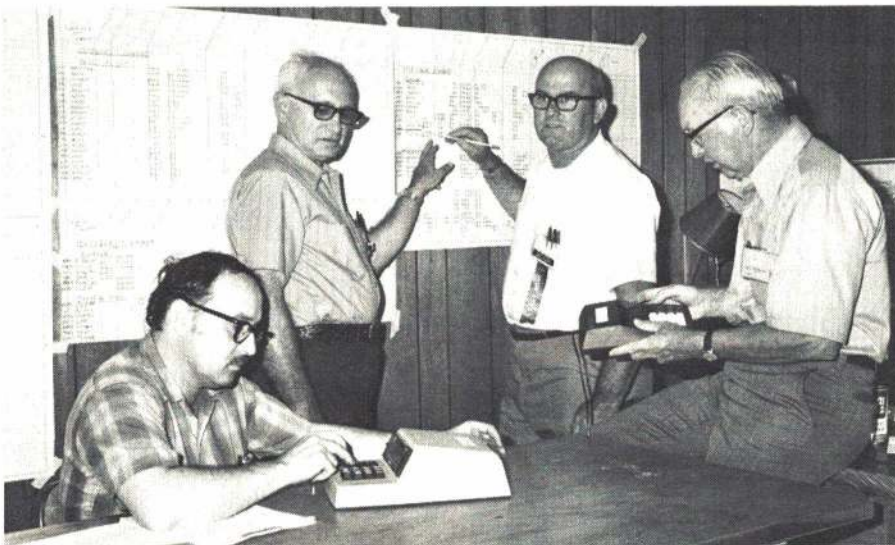


Above: Tom Stark won Outdoor Rubber-Power Scale and placed second in Indoor Scale with his Monocoupe 110, soon to be kitted by Sig. Tom is again Scale Category Champion. Below: Tony Naccarato flew an electric-power Aeronca C-3, built from a Berkeley kit, in the Gas Power event. Fuse-operated switch turned off motor, got several flights from one charge of the NiCads.



Above: Rebecca (L) and Laurie (R) Stark took second and third with Mr. Mulligan and Wittman Tailwind in Outdoor Rubber-Power Scale. Rebecca earlier won Indoor Scale with Sig kit model. Above right: Bob Meuser's 29 in. Blackburn 1912 Monoplane, completed at 4 A.M. on day of event, received top points in static Judging for Indoor Scale—failed to make an official flight. Right: Bruce Mathews gets an assist from dad. Rubber-power Puss Moth model designed by Bill Warner has 49½-in. span, weighs 11 oz.





Top: Part of the Nats tabulation crew, seldom seen but mighty important to the event. Cliff Piper, second from right, has been in charge of tabulations for many years. Above: Three of the Scale static judging crew caught while going over Ralph Jackson's RC Windecker Eagle. Johnnie Casburn, L, was RC Scale director. Left: William Harney's metal-covered A6M5 Zero CL model received the most static points of all Scale entries to win the Sterling Models Award (the attractive plaque shown plus a \$100 check!). Right: This is what the late entry and "problem" areas looked like on Nats Monday. Below Left: With this year's contest completely run by AMA members, on-site recruitment was needed to fill vacancies; Horrace Cain manned the desk. Below Right: RC Manager Kemp Bunting checks in with Pattern tabulators Lee Ann Smith and Pat Kendall. Behind, at phone, is RC Pattern Director Hank Wachter.

where about a dozen female Nats workers previously had to be segregated from their husbands (due to military taboos concerning co-ed lodging). For these gals and guys it was a much happier Nats due to the togetherness of the campus quarters.

A big problem resulted from the back-to-back scheduling of the EAA Convention and the AMA Nats. It had been expected that the air show on Sunday, which ended EAA's week, would provide transition time to enable AMA people to get ready for the Nats operation on Monday. It worked out that way for some things but not concerning use of the Nats runway. This was because EAA had arranged for a huge Air Force C-5 cargo transport plane to fly in for the air show. The problem came when it did not fly out until just before noon on Monday.

It was parked on the Nats runway, right in the center of the spot where RC Pylon qualifications were to take place on Monday. The airport management had expected the C-5 to take off at the end of the air show. But it didn't. All Monday morning AMA workers were prevented from preparing the Nats runway for competition activities. It was a frustrating beginning to Nats week. Then, when the runway was finally turned over to the Nats operation, the rains came, and there was more lost time. But even when the rain ended the delay problem didn't—visibility was poor for several hours afterward.





There were other behind-the-scenes problems. AMA volunteers had appeared on Saturday and Sunday before the Nats but could not be put to work, for the most part, until Sunday night when the EAA buildings were made available to AMA after EAA people moved out. Fortunately, some AMA people were able to work over the weekend in a corner of a parking lot—repairing and painting carrier decks, RC pylons, workbenches, and other gear previously brought to Oshkosh from Glenview, where it had been left over from the '72 Nats.

On Sunday night it was also discovered that EAA's exhibit building, to be used by AMA for a contestants' workshop and for the usual Scale model and trophy displays, had very little in the way of lighting. EAA used the building primarily during the day, whereas for AMA the building was needed both night and day. Ingenuity and hard work solved the problem—an AMA crew rigged up strings of wires and about two hundred bulbs to light the building.

Another serious problem was caused by a requirement that the general public not be allowed in the competition areas—the EAA and FAA were reluctant to let any except AMA members and their guests near the Nats runway. This requirement caused a complicated double admission gate system to be set up. The first gate permitted AMA members and guests to pass without charge, but the



Above: Johnnie Smith, L. in previous years has been on the other side of the CL Speed model processing table as CL Speed events director. But this year he and his brood competed, and Bev Wisniewski stepped up to take over, assisted by family members Mindy and Bill. Left: AMA film man Jay Gerber is in the process of shooting more good footage for AMA films to be released in the months ahead. Here he's getting detail shots of Bill Bertrand's big RC Scale Aeronca LB.



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Above: Pylon Race timer/counters did an excellent job in conjunction with starter Jerry Christianson and lineman Jack Fabri. Above Right: One of the nicest parts of the EAA facility was the campground. This is where campers signed up. Below: Two of the hobby shop crew, John Patton and Dave Strieter, change over EAA's registration building to hobby shop use. Right: Dick Sherman came to Oshkosh a week early to help set up the Nats, got a chance to fly a friend's home-built Foo Fighter during the EAA Convention.



general public had to pay. But at the second gate the general public could not pass, and AMA members and guests could get through upon payment of a fee. The system was necessary to help pay for the use of the EAA facilities—AMA had contracted to rent them for \$15,000!

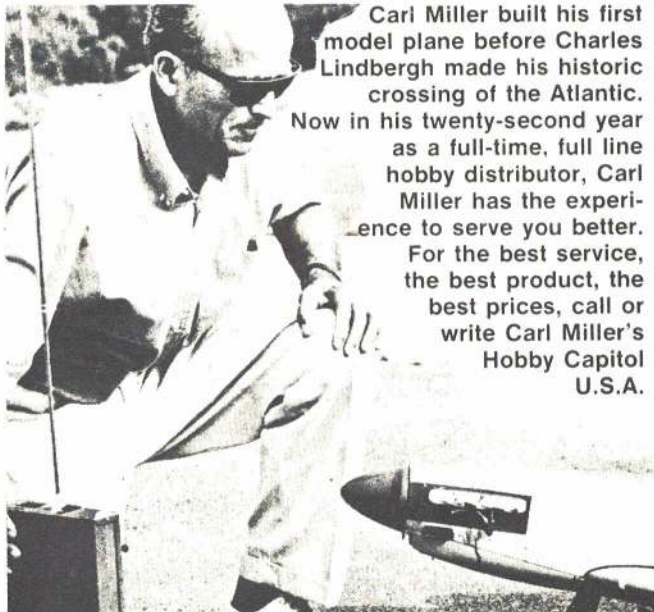
As a result of this system, there were two sources of complaints. The first was from the public when they realized they could see only part of the Nats—everything except the competition. The second source of complaints was from AMA members who felt they should get to see the Nats free, as in past years. Most of the AMA's who came as spectators finally saw the need when the cost situation was explained.

Inherent in the dual admission problem was the need for considerable manpower and security guards to collect the fees and to control who could go where. AMA volunteers tried to do it almost alone at first, but the problem quickly became too much to cope with. In the end AMA had to hire more auxiliary police than originally budgeted, eventually utilizing eight, each at \$3.60 per hour. In the end there was a feeling that the cost and complications of controlling the situation made the income benefit a doubtful one, particularly from a PR viewpoint.

The Nats West Coast charter flight was another example of plans being sabotaged by circumstances. It was or-

(Continued on page 108)

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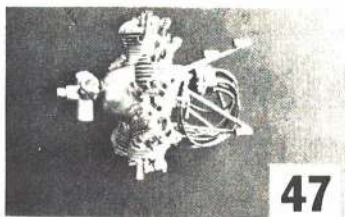
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No. 0631, **Upper Crust**—Very strong 1/2 A FF ship has a pre-stressed wing with full ribs in a geodetic-type construction. Has English-style fin located behind stab on a mostly triangular cross-section fuse. \$2.50

No. 0632, **Prairie Duster**—Small, lightweight RC pattern ship uses built-up balsa wing with built-in ailerons and a plywood wrapped fuselage. For retracts and 60 engines. \$5.50

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No. 1122, **Sweet Pea**—"V" tailed CL stunter by Dennis Adamisin is consistent winner with semi-scale Good-year-racer appearance. Takes smooth 35 or muffed 40. \$3.50

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AAM will present up-dates on the design during 1973 as experience of readers and designer shows need.

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No. 0723, Quickie Mk 4—RC competitor for Class A and B. Conventional looking low winger flies easily, builds very fast. \$2.00

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ON THE SCENE

(Continued from page 12)

throughout the show and added to the spectators' enjoyment.

Mike Tallman and Lew Woolard, both of Wichita, Kansas, displayed incredible skill and precision. Their matched Control Line models arched in graceful swirls and dives in a follow-the-leader fashion. They culminated in a one inverted, one upright position, and then soared overhead in a wingover only inches apart.

The airshow's grand finale brought the crowd-pleasing Snoopy and his doghouse to the front. Pursued by a nasty Red Baron, Snoopy looped under the Arch and downed his foe.

The flying was hampered by an almost completely water-covered site, a limited area, and a very swollen Mississippi River. All the RC flying and landing approaches were made over a raging record flood.

Meanwhile, in the underground Visitors Center, 98 models were on view and judged in a static display by a group of non-modelers. The trophies were awarded on the basis of what turned on the judges. Awards went to Bob Mattes's A-2 Nordic, Tom Stark's scale Monocoupe, Gus Voegel's Sopwith Camel, Joe Minellono's Acrobat, Herm Haynes's scratch-built Huey Helicopter, and George Sauer's P-38.

GSLMA's exposure to thousands of spectators was gratifying and worth all the time and effort. The real thrill, however, was flying through that vast, beautiful, gleaming Gateway Arch.

UPLIFT

(Continued from page 16)

50 cents a copy. Hot dogs and other refreshments were sold by the Auxiliary of the Antoine Dutot School and Museum of Delaware Water Gap as a fund-raising project for their non-profit organization. Pocono Mountain Jaycees and other volunteers parked cars, provided crowd control, took tickets, and sold programs. A knowledgeable commentator and a good PA system were a must and we were fortunate that club member Dwayne Walck was able to provide both.

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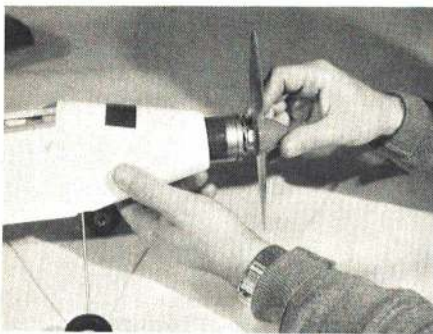
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There's no doubt about it. This won't be our last fun fly. The next one is already in the planning stages. We feel it's a real benefit to the club and to any civic organization we might assist in fund raising.

It's encouraging to learn how many people were willing to pitch in and help us with our project. Volunteers kept the cost down, and because of them, it was possible for us to contribute all of our proceeds to the hospital. A lot of credit goes to the modelers who devoted much time and effort to the preparation and presentation of the show. They must also be commended for their generosity in allowing others to enjoy the thrill of flying their highly prized models. We really feel that our fun fly emphasized that model flying is not just a pastime for youngsters, but that there is a definite place for many levels of interest.

ELECTRA-FLI

(Continued from page 20)



Motor, located in a balsa or cardboard tube, is simply retained by friction. Cooling air is forced to pass through engine and into back of mounting tube. See plan.

balsa top and bottom skins, 3/32" ribs and a 1/4" square leading edge. With the constant chord wing, no washout is necessary, so the wing may be built flat on the board.

Tail: The tail surfaces are simply 1/8" medium sheet balsa, with the edges sanded to streamlined shape.

Finishing: MonoKote or Solarfilm is used throughout for beauty, strength and light weight.

Radio: The Kraft two-channel brick or equivalent is used with a lightweight battery pack consisting of four alkaline AAA cells taped together. This battery

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This Volksplane covered with Super Coverite won 1st Place at the 1973 Nats in Oshkosh. The builder is John Roth.



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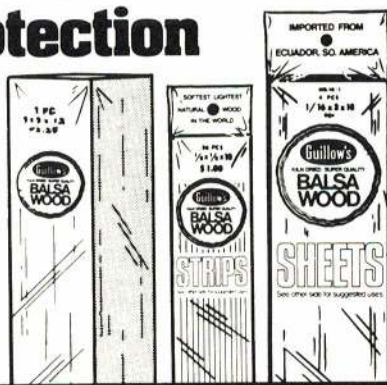


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Flying

Before flying, be sure that the CG location is as shown on the plans, and that there are no warps in the wing or tail. Also check that neutral trim settings result in neutral tail surfaces. The landing gear and tail-wheel lengths must be as indicated on plan, so that the plane ROGs properly. Some of our test ships experienced difficult ROGs due to excessively long tail-wheels.

If everything checks out, charge your batteries from your field charger and turn on your radio system. Check controls once again and place the ship on the runway. Flip the motor switch on and release the airplane. It should accelerate quickly and be airborne in 50 to 60 ft. Let the ship gain speed and make a fast climb to maneuvering altitude. Once around the field should put you at a 200+ ft. altitude. Try some stunts, wring it out a little. It's fun and quiet, too!

During the last 30 sec. of the motor run, the batteries will sag and you should compensate by putting in some back trim to maintain altitude. Set up your approach now, back to neutral trim and bring the ship in.

It will float a little with the remaining power, but once the wheels touch, there is enough drag to keep it down.

Shut the motor down as soon as possible to avoid completely discharging the battery. Turn off your radio, then stand back and admire your new machine.

Get your field charger and recharge for 15 min., then go back up again. Notice that the noise has attracted no one, and also notice that at the end of your flying session there's no oil on your hands, clothes, or most importantly, your new airplane.

FIREFLY / HISTORY

(Continued from page 78)

Firefly design, its introduction was an important forecast of the highly successful Mk 5 of the Korean War years. (The change from Roman to Arabic numeral designations took place in general post-war reorganization.)

The quest for more speed and better performance at high altitudes, over the years, had increased the Firefly's horsepower from its original 1730 to the Mk IV's 2245 hp, two-speed, two-stage, super-charged Rolls Royce Griffon 74. Working up to this horsepower had led to a whole "new look" to the airplane.⁴

All through previous experimental stages, increasingly larger engines took up more and more room in the nose. Attempts to stick with its original radiator-in-the-nose concept only resulted in a bulbous nose and rotten flying characteristics. Overall changes were needed.

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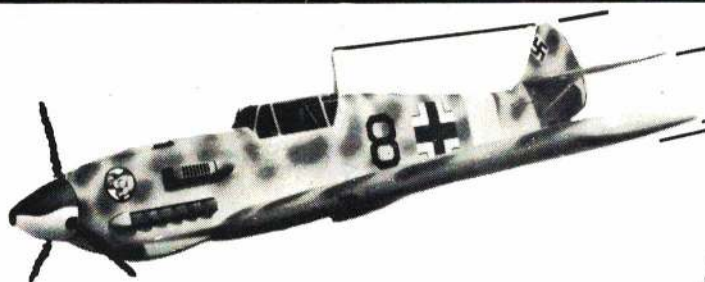
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Moving its coolant radiators into extensions on the center sections of the wings made for a sleeker, more aerodynamically advantageous nose. On the other hand, it created a problem. Since the center wing sections formally contained auxiliary fuel, another place had to be found for that. Coincidentally, in developing the night fighter Mk IV, the radar pod was moved from its belly location on the Mk I to a fairing under the starboard wing. Then in order to maintain symmetry and pick up some of the displaced auxiliary fuel, a matching fairing was installed on the port wing. On the day fighter Mk IV, both wing pods carried fuel.

Flight characteristics now diddled with, the Firefly's formerly rounded wings were clipped and squared off at the tips, the fin area enlarged and extended at the leading edge. Completing the new look, a four-bladed prop replaced the previous three-bladed one.

Since the Fairey-Youngman flaps

continued to earn high marks, they were retained. These and the twin-seat stipulation were just about the only "old" that stayed with the Firefly—besides its name.

During these immediate postwar years, Fireflies survived an overall reorganization of Naval manpower, equipment and priorities. Mk 1s and 4s served in home defense units and with Her Majesty's Forces in overseeing British interests abroad. Numerous brushfire incidents kept British airmen at fighting sharpness. After 1947, changing military and political conditions fostered the technological growth of the submarine plus co-development of advanced counter-measures—new detectional devices and operational techniques. With this in mind, the Firefly Mk 5 was introduced into Fleet Air Arm service in January 1948.

Since the Mk 4 and Mk 5 carried the same basic airframe, external differences are almost microscopic. The Mk 5 was

produced in any of three operational versions: The F.R. 5 (a day fighter/reconnaissance), the N.F. 5 (a night fighter/reconnaissance) and the A.S. 5 (for anti-submarine patrol). Their differences were mainly internal and depended on the type of equipment within. And, by now, the passive observer was no longer just a rear seat rider, but an active systems operator.

Early Mk 5s were produced with the same manually-operated folding wings as all previous Fireflies. However, during its early production days the company was finally able to perfect an hydraulically operated wing-folding mechanism. Activated mechanically by the pilot inside the aircraft, rather than manually operated by the ground crew, this new development resulted in quite a time-saver during carrier operations.

On the Firefly Mk 5, the Griffon 74 and a 13 ft. four-bladed prop pulled a maximum takeoff weight of 16,096 lb. Maximum speed now was 386 mph at

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14,000 ft. Cruising at 220 mph, its normal range was 660 mi., or with additional fuel, up to 1300 mi.⁵ With updated reconnaissance equipment, four 20 mm cannons in the wings and carrying either sixteen 60 lb. rockets or two 1000 lb. bombs underneath, the Firefly 5 was prepared to meet any military situation. And the "situation" was just around the corner.

As a result of a military decision implementing the surrender of Japanese forces in August 1945, Korea north of the 38^o North Latitude was occupied by elements of the USSR army, while territory south of this line came under the jurisdiction of the U.S. 24th Army Corps. In November 1947 the United Nations General Assembly established the U.N. Temporary Commission on Korea in order to facilitate the reunification of the country. However, considerable political maneuverings within the General Assembly kept this from being put into effect. As Assembly proceedings dragged on, antagonism between the Korean north and the Korean south grew more intense. During 1948-49 both repeatedly proposed invasion of the other. Then, before dawn on June 25, 1950 units of the North Korean army, supported by tanks, artillery and planes, launched an attack across the 38th Parallel.

Post WWII reorganization had reduced the British Naval inventory to the point where its Far East Fleet had only one aircraft carrier, the H.M.S. Triumph, within response range.⁶ Although momentarily due for rotation to its home port, three days after the June 25th event the Triumph was on-station off the Korean coast. Her Supermarine Seafires and Fairey Fireflies completed 895 ground attack sorties before being relieved, a few weeks later, by the H.M.S. Theseus. In the following six months, the Theseus's 35 aircraft (Hawker Sea Furies and Firefly Mk 5s) flew 4446 sorties against the opposing forces.

Throughout the term of the conflict, rotating carrier assignments brought Firefly squadrons into continuous service. Teamed up with the Sea Furies, these squadrons racked up a distinguished record of operational sorties during the War. Quick turnaround capabilities, often under the most adverse

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weather conditions, earned Firefly crews high honors. Their highest honor, however, came from the small loss rate per sortie ratio.

In 1956 the Firefly 5 and its successor variants, the A.S. 6 and 7 were phased out of front-line carrier-borne service. After 13 years of active service life, it was retired to more prosaic duties. Remaining Fireflies functioned thereafter as trainers, target tugs and pilotless drones to as late as July 1958. A total of 1702 Fireflies had been built since 1941, and, of these, nine are distributed among British and Commonwealth museums today.

And there's one more! The Canadian War Heritage of Toronto, Canada rescued and restored to mint condition the Canadian Navy's Firefly, WD 901.7 Now under the Canadian registry of CF-BDH, it flew during the EAA's annual Oshkosh festivities in 1972 before returning pilot Dennis Bradley home from another mission safely accomplished.

Notes

- 1 *The Aeroplane* XXX, 26, June 23, 1926. This wasn't the first airplane to be designated "Firefly" by the company. In 1924 Richard Fairey came to the U.S. to study Curtiss operations. In 1926, the Fairey Firefly (using either a Curtiss D.12 or a Fairey Felix engine) went into RAF service.
- 2 "A Masterpiece for Matelots," *Air Enthusiast* II, 3, Mar. 1973, p. 140.
- 3 Kenneth G. Munson, *Aircraft of World War Two* (London: Ian Allen, Ltd., 1962), p. 70.
- 4 Owen Thetford, *British Naval Aircraft Since 1912* (London: Putnam & Co., 1971), p. 174ff.
- 5 Owen G. Thetford, et. al., *Aircraft of the Fighting Powers* (London: Harborough House, 1946), p. 9.
- 6 W. Green and J. Fricker, *The Air Forces of the World* (New York: Hanover House, 1958), p. 142.
- 7 *Sport Aviation* XXI, 10, Oct. 1972.

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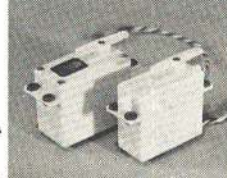
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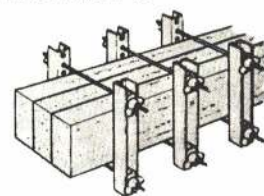
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FIREFLY / CONSTRUCTION

(Continued from page 76)



ter hobby shops. The kit is accurate and of good quality.

My original drawing presented here was to 1/2" = 1' scale (1/24 full-size).

Prints to this size can be ordered through AAM. It's then a simple matter to scale up the drawings three times for our 1 1/2 in. scale.

Solving the Problems

The spinner, at 4 in. dia., is fairly large. Two are needed, one for flying (two-blade prop), and an otherwise identical one with four blade slots for the scale prop to be used when photographing the model and during static judging at contests.

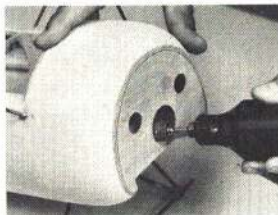
A quick check shows that a short extension shaft of approximately one in. (I never go over 1 1/2 in.) will provide enough clearance for an enclosed 60, mounted inverted. If there is any way to overpower a model such as this one, I've

yet to find it. Bear this in mind when choosing your engine. You'll need your best 60. My choice would be a rear valve OS 60 Goldhead, with the carburetor turned through 180° so it remains upright while the rest of the engine is inverted. This is a handy feature unique to this engine and helps greatly when establishing idle settings and starting.

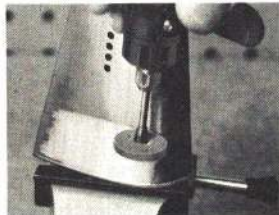
For cooling, an intake of small but probably sufficient dimensions is available. But no amount of wishing will create an air exit where none exists—one will have to be provided, as well camouflaged as possible.

Landing gear pose a special problem since the units must be mounted at a dual angle within the wing in order to achieve the "forward-when-down, back-

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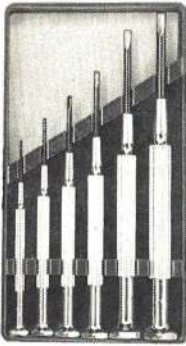
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when-up" configuration. Refer to the diagram showing this setup.

Due in part to the angled mounting, but mostly because of the usual size-and-weight problems associated with scale model landing gears, I would use a pneumatic (Freon gas) landing gear unit for this and other similar subjects. In all retract gear models, my advice would be to use a radio channel for the gear; do not trust gadgets that are supposed to work from motor control or some other existing function.

AAM ran a drawing of a mechanical device suggested as a method of working Fairey-Youngman flaps in the September 1970 issue, page 34. The linkage shown was quite clever and might well be used in this case. Research that one. Failing that, the diagram shows a suitable starting point from which to work.

The arrester hook is a reasonably simple device and (unless a whole spare channel is available with which to drive it), can be best operated by linking it to flaps or motor control. Down-hook with down-flap probably is best.

The diagram shows a method of completely internalizing the rudder service system. This method is borrowed from early single-channel RC models and has been used with success. My FW 190 used such a device.

Today's miniature servos have solved most of the problems encountered in gear placement out of cockpit areas. In the Firefly, the receiver battery, receiver, motor servo, switches, etc. can

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all be placed ahead of the front cockpit, while the rudder and elevator servos will fit in the solid area behind the front cockpit and ahead of the rear one. Aileron, flap, gear servos and the Freon storage tank will be placed in the wing center section.

Finally, a word about colors. The Firefly was finished in the extra dark sea grey and sky scheme commonly used for British Royal Navy aircraft of the period. To acquire chips for these colors you may buy small pots of plastic enamels of these shades. (Get the Humbrol brand enamels which are usually of good accuracy.) Or you may send \$3.00 to the British Standards Institute, London, England and ask for a


copy of B.S.I. Publication 381C. Your three dollars will pay for air mail return postage. This small book gives dozens of chips for all the R.A.F. and R.N. aircraft colors, and will be handy if you ever tackle another English subject.

I hope that the methods described here will assist anyone contemplating a scratch-built RC scale model of any subject similar in configuration to the Firefly.

BEHIND THE SCENES

(Continued from page 96)

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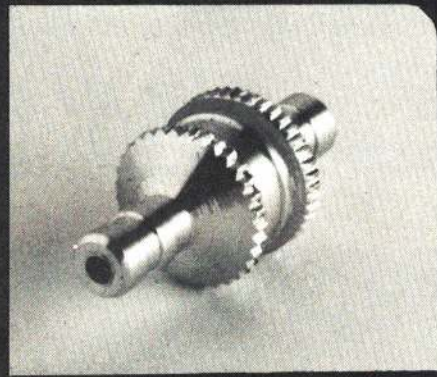
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tinue the Nats without military aid. The Testor Corporation had previously shown such support by donating \$5,000 to AMA for the Nats effort.

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But it turned out that this was not allowed (to the considerable consternation of Cox and AMA officers!). The

only way that was "legal" was for the Cox people to charter 40 seats and for AMA to charter the balance—56 additional seats. Although awkward, it seemed feasible: the Cox people would pay for 40 seats but let AMA officials have 33 of them. Of the total charter bill, the L. M. Cox Mfg. Co., would pay about \$5,200 and AMA would cover the balance—about \$7,300.

No risk seemed to be involved—the 56 seats would sell for only \$132 each, round trip: a savings of over \$120 per person. This was obviously such a good bargain that no problem in selling the seats was anticipated. But two gremlins intervened. First, the negotiations to come up with a workable arrangement



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took so long that there was only a little over 30 days available to sell seats when the contract was signed at the end of June. Secondly, it turned out that only one plane was available, and it could not leave Los Angeles until 10 pm Sunday night before the Nats.

The lateness of the flight and the lateness of information concerning the charter resulted in only about 30 people buying seats. This meant two dozen empty seats for a total loss of about \$3,200. Or, looking at it another way, instead of AMA getting West Coast officials to the Nats free, the cost came out to be about \$3,200.

To make matters worse, the runway lights at Oshkosh were not working when the charter jet was due to land, so the flight was diverted to another airport. The net result was an extra bus cost of about \$150 to get the charter passengers from the other airport to Oshkosh. So the charter situation went from bad to worse, at least financially since it otherwise worked out okay. At press time there was hope that a campaign to solicit industry donations might offset the charter flight cost to AMA, so the final verdict on this operation remains to be seen.

One of the very bright highlights of the 1973 Nats was the successful performance of the newly formed AMA Show Team. This group of about twenty, including fliers, ground crew, and announcer, performed daily, including EAA's Sunday Air Show. They put on very professional performances to show the public what today's miniature aircraft are capable of. The show included aerobatics, rocket firing, formation flying (with circa 1950 Blue Angels Bearcat models), parachute drops, banner and glider towing, Snoopy and his flying doghouse versus the Red Baron, and other special acts. Having previewed at two pre-Nats shows on the East Coast, the AMA Show Team was also invited to perform at the famed Cleveland Air Races over the Labor Day weekend. The daily Nats air shows, therefore, provided intensive practice and perfection opportunities for the team. They also resulted in requests for appearances at other forthcoming shows.

Another bright spot of the 1973 Nats was the great way that volunteers



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came forth to help run the event, as they did in 1972. But there was a major difference this year—distance. In 1972 many Chicago area AMA members were able to help by commuting from home each day. But the '73 Nats was over 150 miles further away, so commuting was not practical. Many came anyway and worked for several days or the whole week. Also, a small but enthusiastic group of modelers from the Oshkosh area helped take up the slack.

Overall, the best result of the '73 Nats was that AMA proved it could go it alone for the future. Having accomplished that, AMA is now in a better position to negotiate for improved Nats conditions. For example, AMA might go back to Oshkosh in '74, but only if significant improvements are assured. A number of such possible improvements are currently being explored. Meanwhile, the Air Force is interested in hosting the '74 Nats at Chanute Air Force Base in southern Illinois, and the '73 Nats contributed materially to that possibility. This was because AMA had invited Air Force observers to the '73 event. After three days of studying all details of the Oshkosh operation, the Chanute representative was very favorably impressed and promised to submit a strongly positive recommendation to his superiors.

But simply having the Air Force willing to host the event is not all that's required. This is because much expense by AMA would still be needed, yet compensating income from public admission fees would not be available. The Air Force indicated that it would not be able to budget any funds for Nats support, so AMA would have to assume the full financial load.

Where the '74 Nats will be held was still a big question at press time. Both Oshkosh and Chanute had major problem areas to be resolved. The overall story of what it takes to put on a Nats needs to be told to gain greater understanding of why AMA doesn't simply go to some abandoned air base. That story may be published shortly to enlist additional help in finding future Nats sites. In the meantime, efforts are continuing concerning where and when the 1974 Nats will be held—announcement will be made as soon as possible in this magazine.

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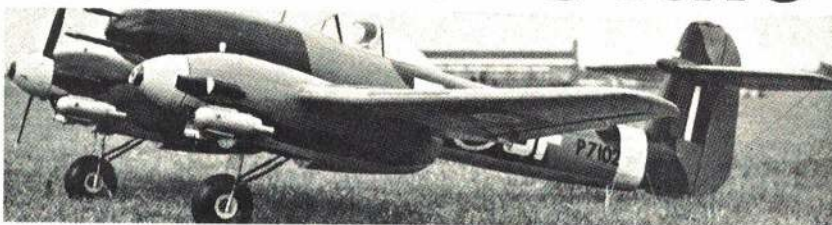
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ELECTRIC POWER

(Continued from page 66)

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Thus ends our League of Silent Power Flight test. No grease on hands and clothes—the family didn't know a test was in progress until they wandered by the shop. Now they'll probably think I'm a nut to go back to noisy engines for next month's test.

FREE FLIGHT

(Continued from page 92)

points in the static judging, as well as the highest flight point score.

The unofficial Rubber-Power Speed event, sponsored by the National Free-Flight Society in an attempt to rekindle (*Pun intended? Ed.*) interest in this exciting and challenging event of the '30s and '40s, boasted 12 entrants. The course was 200 ft. long, with a 100 ft.-wide finish line—an exasperating narrow target. There were four rather spectacular pusher-tractor models entered, all of them having high wing loadings, and none of them successful. A pair of similar models entered by Chuck Retay and Tom Kelly of Parma, Ohio, used 50 strands of 5/32" Pirelli to drive left- and

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right-hand 9/6 nylon gas model props. Upon hitting the ground next to the launching table, the prop unwound its 300 turns in about a second, chewing itself down to about six-in. in dia. in the process. That figures about 18,000 rpm on the ground. What would it have been in flight?

An all-wood twin pusher built in 1927 was entered by Donald Lockhart, but like the other high-wing-loading models it failed to get far beyond the end of the table. Well after the start of the contest, Hardy Brodersen disappeared to return an hour later with a complete speed model he had built in the meantime: Aluminum tube fuselage, solid sheet wing and tail, gas model prop, and the whole thing stuck together with Satellite City "Hot Stuff." Its fate was similar to the other heavy-weights. When it was all over, Jim Noonan of Oldtimer Models ended up in third place with a model built from plans appearing in a 1934 issue of *Model Aircraft Engineer*; Charlie Sotich took second with a simple, light, all-balsa stick model pulled by a plastic prop; Jack McCracken's model, proxied by Bill Warner, won with a speed of 51.4 mph. McCracken's 20-in.-span model was of light stick-and-tissue construction, had a 7½-in. low-pitch hardwood prop driven by six strands of ¼" Pirelli, and weighed 107 grams all up. It took off in a steep left bank, straightened out quickly, and cut grass until it zoomed upward just ahead of the finish line, sounding like a motorcycle as the knotted rubber unwound.

As if there hadn't already been sufficient comic relief, at the last moment Bill Bennett, winner of the Coupe d'Hiver event, entered an Ajax sport model built from a \$1.95 Kielcraft kit. By then the wind was blowing directly across the course. Bill launched the model about 45° upwind of the course centerline, and it drifted over the finish line sideways for an average speed of 15 mph.

Those present were enthusiastic about repeating the event next year, and possibly adding a Scale event.

Always-a-bridesmaid-but-never-a-bride George Perryman, who has been within tissue-paper thickness of winning the Mulvihill Trophy half a dozen times, chucked his Unlimited Rubber model

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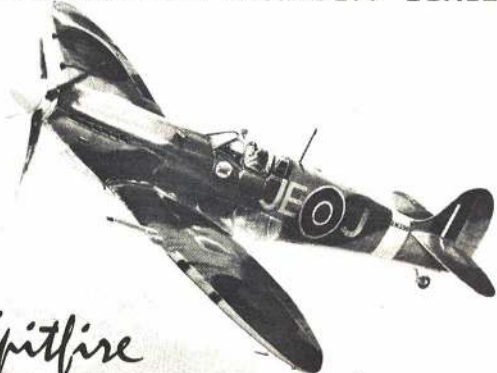
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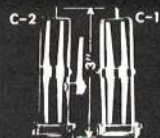
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into the cornfield for a six-sec. fourth flight, leaving first place to Ron Anderson whose 300 sq. in. flat-bottom wing model has won the Mulvihill twice for him and once for Bob Sifleet. His latest version, intended for short-max NATS competition, has a sheet-covered fuselage, a 36-in. motor of 14 strands, into which Ron cranks 650 to 700 turns, a 23/23 prop, and a weight of 8 1/4 oz.

The Rounsavilles dropped by the NATS on their way to the Free-Flight World Champs long enough for Dave to win the FAI-Power event, which he also won in 1972. George Versaw's chances of winning went sour when the trip wire on his Seelig timer jumped a notch causing the auto-tail mechanism to function too soon before the engine quit. The result: A folded wing.

The Satellite series of gas models (May 1972 AAM, page 22) has achieved rather spectacular success during the past three years, particularly in the West, and Bill Hunter was awarded an

NFFS Model of the Year award for the design. With plan and kit sales booming, this seemed like the year for Team Satellite to go to the NATS to demonstrate that the Satellite isn't simply a West Coast phenomenon. So Bill bought a new truck, camper and trailer, boxed up some 50 models—his own, his father Bob's, and those of Hulan Mathies (the fourth member of the team, Mike Schwartz, couldn't make it) and took off for the NATS. Bob and Hulan were to follow via the Cox charter flight. But disaster struck in Evanston, Wyoming. Bill went off the road, totalled the rolling stock, many of the models, and the three motorcycles they were carrying. Bill rented a big van and trundled the whole shebang back to Los Angeles where they Hot Stuffed together as much of it as they could. Then they got the remains aboard the Cox airlift.

Bob Hunter's models were totally destroyed, so he spent his time at the NATS timing, retrieving, helping teen-

agers fly, and Hot Stuffed broken models. Bill and Hulan did much of the same when they weren't flying, and they were on hand at the NFFS Symposium where Bill received his Model of the Year award, and told about the development of the Satellite. But by Saturday, their total score on the Official Results consisted only of a fourth place by Hulan in 1/2A Gas. It all went together, though, on the final half-day of flying. Bill put up max after max with his Satellite 1000 until the NATS ended and Hulan placed second. The huge 1000 sq. in. flying billboards got up high with only a five-sec. engine run, but lost a third of their altitude in the climb-to-glide transition. Their phenomenal glide, however, assured them of maxes unless they bumbled into really bad air, and the air was quite good, for a change.

Hardy Brodersen's seven-ft. model went up in a steep spiral making a slow motion version of a hand-launch glider

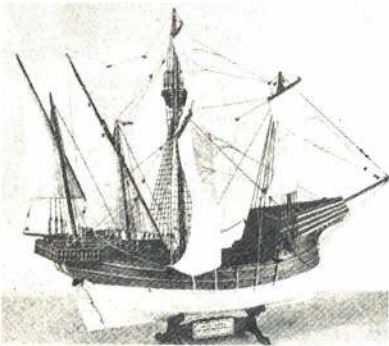
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type of recovery when the engine quit with little loss of altitude. But, a declared overrun knocked him from third to fourth place. Meanwhile in the Junior department, Dave Linstrum's 12-year-old daughter Mindi, by now a veteran in many Free-Flight classes, was working the bugs out of her combination of parts from a Midi Pearl and a Starduster 600, ably assisted by big Red Johnson, and cheered on by Red's daughter Penny. Seeing her start the engine, needle it into tune, and chuck the monster aloft was a memorable sight. Deservedly, she took first place.

From a Free Flighter's viewpoint, it was certainly the worst NATS in recent history. But considering that this was the first NATS without Navy support, that it was the second-choice site, and that the weather was on the bad side of normal for that place and season, it really wasn't all that much worse. No NATS has even approached the basic requirements for a good Free-Flight contest. Considering the complexities of a NATS operation, perhaps it is unrealistic to assume that a site that has good conditions for Free Flight in addition to all of the other requirements exists anywhere in the U.S. What then? A National Free Flight Championships separate from RC and CL? A true National Championships where only regional champions compete? Or continue the traditional NATS concept, with the expectation that Free-Flight conditions will be far from ideal? At this point there are certainly more questions than answers.

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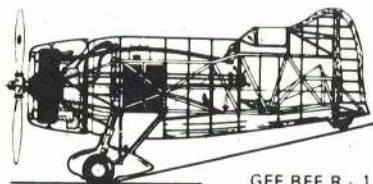


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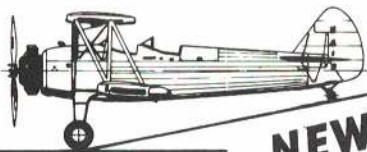
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PYLON

(Continued from page 52)

top five! The Minnow has a truly remarkable record in Formula I, and the one built by John Brodbeck Jr. and flown by Kent Nagy still holds the record Formula I speed, set at Mile Square earlier this year. I hardly think it is over the hill.

In spite of the nine-lap goof and the short qualifying course, race management this year was superb. There were three groups involved. The first was the California contingent headed by Glen Spickler, the event director, and his two associates, Jerry and Jeanie Christensen; Jan Sakert and Joe Stream at the ready line; Jack Fabbri getting hoarser by the minute as he called out the identification of aircraft on the starting line; Howard Nupen as head lap counter and Steve Franetovich as head flagman; Gary Nupen, Loretta and Ken Hall and Bob Upton counting laps; and Linda Schorr assisting Jeanie on the tabulations.

The second group came from the Chicago Pylon Club. This included the flagmen and the operation of the digital time recorder, in particular Frank Morosky, Lyn Hamon, Ken Gabbani, Buddy Neeley, Wanda Morosky, Art Zinkle, Jim Bachman, Lyn Stevens, Frank Morosky Jr., Gary Heithold, Bob Hall, Ron Piorek, Eddie Morosky, Glen Heithold, Bob Browning, Phil Heithold, Bruce Balko, Dan Kane, and Ray Neeley.

Finally a third group, all volunteers on the spot, were enormously helpful, especially John Deneke, who worked at lap counting throughout most of the contest, and Franklin Meyer, Walter Kroll Jr., Desmond Cook, Paul Cress, Don Bunting, George Rotter, David Nelson, Jack Burns, Alan W. Parshall, H.R. Cook Jr., and Carrick Smith.

There is always some disagreement about the handicap judging that determines starting position, but contrary to the views of some of the other qualifiers, I believe the judging this year was excellent, and for a very good reason: The emphasis was put on scale fidelity.

First position went to Gregory Doe, and there just isn't any question that his two Minnows were more precisely and beautifully detailed in all scale aspects, except for the right-hand cheek cowl,

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than any other plane entered. Way down toward the bottom (so they started last in most heats) was the Violet Cosmic Wind, which had been cut away from scale outline and shape about as far as it is possible to go and still meet legal dimensions.

The judges also did not excessively penalize airplanes that had been in a number of previous contests and therefore had minor repairs and dings. It has always irritated me that airplanes which happen to be brand-new at a particular event get upgraded over better planes which have managed to survive a few races with a scrape or ding here and there. Another nice aspect of the judging was that basic white planes had no edge. White is the easiest of all colors to apply and make look good, and yet in 90% of the events we attend, white paint jobs seem to impress the judges most favorably. Our event, Formula I, is intended as *Scale Racing*; it is not *Scale Racing*, nor is it *Scale Racing*—it deserves proper weight on both aspects.

RC SCALE


(Continued from page 48)

ten were well bunched around 400. Intricate details, formerly seen on only a few models, such as rivets, seams, opening canopies, complete cockpits, aging effects and full-scale retracting gears were commonplace. This was a competition to be decided mainly on the flight line and an interesting affair it made, with placings changes about every round.

Because of the multiplication factor, scoring a very high flight can overcome a considerable lead in scale points so many of the highest static scored models ended up well down the results list. The day of a minimum qualifying flight

(Continued on page 120)

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National Contest Reports Begin on Page 24

The editor of Aircraft Modeler feels that a better presentation is made of the National Model Airplane Championships highlights and list of winners when his authors and AMA's join forces in a unified effort, rather than separately, and we agree. That's why the number of pages under the "AMA News" masthead is only two; AMA coverage of the Nats, together with reporting by AM's columnists, begins on page 24.

ATTENTION NATS NO-SHOWS

For those who entered the National Contest but were not able to attend, attention is called to a new procedure this year. In order for such persons to obtain credit or a refund of the basic entry fee (event fees cannot be credited or refunded), the no-show entrant must do one of two things depending upon the status of his entry.

If the no-show entrant received his Nats identification badge (2" X 3" cloth patch with green print and self-stick back), indicative that processing was completed and okay, then the unused Nats identification badge must be returned to AMA HQ. If the no-show entrant received only a photocopy of his Nats entry form, noted to report to Nats desk P or O, indicative that processing was incomplete, then the photocopy must be returned to AMA HQ.

WHEN TO DO. Right away if a cash refund is desired. If no-shows want credit of the basic entry fee applied to AMA membership dues, wait until applying for 1974 AMA membership. The important message is that obtaining such credit is not automatic this year; it requires action on the part of the no-show as described above.

1974 AMA Dues Decided

As indicated in this section for September, AMA's board of directors, known as the Executive Council, would decide on the 1974 adult AMA member dues, in regards to the new optional magazine arrangement soon to

be implemented, during its Nats meetings. The council has done so, and here are the results.

The 1974 adult member (Open, Contest Director, Leader member) will be \$12, including the "AMA News" as published in Aircraft Modeler Magazine. For an additional \$4 the entire Aircraft Modeler Magazine, including the "AMA News" section, will be sent monthly.

In another action the council approved continuance of the current arrangement, for 1974, whereby adult members receive the NAA magazine, National AERONautics, as a dues benefit; approval is contingent upon the AMA purchase price not being increased.

The council dealt with many other items of business which will be reported when the meeting minutes have been approved.

CL Rat Race Special Ruling

Effective immediately is a special ruling which, generally, restricts races in the Rat Racing event to two flyers. Previously, races could be with either three or two flyers.

The particular changes to the 1973 rule book which have immediate effectivity, based upon approval of the AMA president and Control Line Contest Board chairman, plus ratification by the CL Content Board, are: (1) revise para. 19.8.2 to read, "All races shall be run with exactly two (2) flyers except in the event an odd number of flyers have entered. In that case, NO MORE THAN ONE heat will be flown with three (3) flyers."; (2) revise paras. 19.10.7.1 and 19.10.7.2 to read, "Three main events..."; "Four main events... the 8 lowest combined times... divide into four groups of two each..."

The special ruling was sought for reasons of safety, it being reported that the marked performance increase of these models in the past two years has created some very dangerous situations when they have been raced three at a time.

First implementation of this special ruling was during the 1973 National Contest at Oshkosh. Nats management also considered it necessary to waive the mandatory restart condition of 19.9.5 (when only one model completes the first lap of a race).

Free Flight World Champs

Basic results of the Free Flight World Championships, Wiener Neustadt, Austria, August 14-17, as supplied by Dave Linstrum, U.S. team manager:

POWER. Horcicka of Austria was the individual World Champion, while France had the top team. U.S. team members were 13th, Tom McLaughlan; 33rd, Henry Spence; 37th, Frank Wolff. The U.S. team was 7th.

WAKEFIELD. Loeffler of E. Germany was the winning individual flyer, and his country was also the team World Champion. U.S. team placing: 5th, Bob White; 27th, Jon Davis; 69th, Frank Parmenter. Our team was 13th.

NORDIC. A Russian, Ekhtenkov, was the individual World Champion, and Russia was also the team World Champion. The American team was 15th, resulting from individual placings of 13th, Hugh Langevin; 56th, Paul Crowley; 63rd, Vince Croghan.

Linstrum related that there were 12 competitors in flyoffs for the Power and Wakefield events and 41 (!) for Nordic.

U.S. 1974 Indoor and Scale Teams Selected

The 1973 AMA program to competitively select the U.S. three-man team for the 1974 Indoor World Championships culminated in a

Chartered Club officers who receive the AMA Monthly Mailing found out in September what was September's big modeling news. Did you? If not, ask your officers why not!



Team Finals in a big American Airlines 747 maintenance hangar, Tulsa, on August 17-19.

Three new faces emerged as victors to capture the team slots: Larry Cailliau of Westlake Village, Calif., was first with a two-flight total of 59 minutes and 9 seconds. Ed. Stoll, Mt. Clemons, Mich., came in second with a 58:43, and Bucky Servaites of Dayton, Ohio, fresh from his Nats triumphs (Grand, Open and Indoor Category National Champion), was third—58:22.

The 1974 Indoor World Championships likely will be held in either Poland or Roumania.

Scale Teams

U.S. teams for the 1974 Scale World Championships (Control Line and Radio Control) were selected based upon National Contest performance in these events by those who entered the Scale Team Program. Those chosen:

CONTROL LINE. Bill Harney, Wakefield, Mass.; Mike Stott, Montezuma, Iowa; Michael Gretz, Montezuma, Iowa.

RADIO CONTROL. John Roth, Prospect, Va.; Ralph Jackson, Endicott, N.Y.; Robert Karlsson, Wilmington, Dela.

CONTEST				
	1	2	3	4
7	8	9		13
14	15		18	19
		24	25	26
29	30	31		

CALENDAR

Note: For quick response and as a favor to those staging, administering and directing the contest, be certain to send a stamped, self-addressed envelope along with your request to the listed Contest Director (CD) for additional information.

OCT. 6—PLYMOUTH, MICH. (A) Greater Detroit Soaring & Hiking Soc. Dual RC Meet. Site: Plymouth Training Home. D. Corven CD, 32364 Gainsborough, Warren, Mich. 48093. Sponsor: Greater Detroit Soaring & Hiking Society.

OCT. 6-7—CHICAGO, ILL. (AA) Chicago Pylon Club Midwest RC Championships. Site: SAC Field. A. Schwimmer CD, 340 N. Ridge Ave., Evanston, Ill. 60202. Sponsor: Chicago Pylon Club.

OCT. 6-7—SPOKANE, WASH. (A) October Fest RC Meet. Site: Spokane Polo Grounds. D. Carson CD, W. 3029 Hoffman, Spokane, Wash. 99205. Sponsor: Aeronautic Radio Controllers of Spokane.

OCT. 6-7—DENVER, COLO. (AA) Great West Rocky Mountain 8th Annual FF (Cat. II) Championships. Site: E. Colfax Airpark. G. Larrabee CD, 3203 W. Saratoga, Englewood, Colo. 80110. Sponsor: Magnificent Mountain Men.

OCT. 6-7—BEAUMONT, TEX. (AA) Beaumont Open RC Meet. Site: Beaumont. D. Still CD, 306 Orleans, Beaumont, Tex. 77701. Sponsor: Beaumont RC Club.

OCT. 6-7—SOMERS, N.Y. Golden Era RC Meet. Site: RC Club Field. L. Perretti CD, Juniper Dr., Lake Lincolndale, N.Y. 10540.

OCT. 6-7—S. EL MONTE, CALIF. (A) San Gabriel Valley RC Pattern Meet. Site: Whittier Narrows. J. Garabedian CD, 909 N. 3rd St., Montebello, Calif. 90640. Sponsor: San

Gabriel Valley RC Club.

OCT. 6-7—SAN LUIS OBISPO, CALIF. (A) R.C.M. RC Trophy Race. Site: S.L.O. Flyers Slope Site. L. Ledson CD, 1864 Lima Dr., San Luis Obispo, Calif. 93401. Sponsor: S.L.O. Flyers, Inc.

OCT. 7—SHAKOPEE, MINN. (B) 3rd Annual Minn. State RC Championships. Site: T.C.R.C. Field. D. Heywood CD, 6811 Elliott Ave., S., Minneapolis, Minn. 55423. Sponsor: Twin City RC'ers Inc.

OCT. 7—VAN NUYS, CALIF. (A) N.A.R. Flightmasters Annual FF Meet. Site: Sepulveda Basin. J. Kusik CD, 9172 Wilhelm Cir., Van Nuys, Calif. 92646. Sponsor: N.A.R. Flightmasters.

OCT. 7—BRISTOL, CONN. (AA) Mum Classic CL Meet. Site: Edgewood School. J. Scott, Jr. CD, 265 Witches Rock Rd., Bristol, Conn. 06010. Sponsor: Hornets Model Airplane Club.

OCT. 7—SOUTHFIELD, MICH. (AA) Cloudbusters 15th Annual Scale FF & Indoor Meet. Site: 11 Mile & Franklin Rds. R. Kuenz CD, 14645 Stahelin, Detroit, Mich. 48223.

OCT. 7—ALLIANCE, OHIO (A) Alliance RC Speed Final. Site: Barber Airport. G. Villard CD, 3301 23rd St., NW, Canton, Ohio 44709. Sponsor: Alliance Balsa Bees.

OCT. 7—LINCOLN PARK, N.J. (A) 15th Annual CL Model Air Show. Site: Lincoln Park. K. Purzycki CD, 273 Marcella Rd., Parsippany, N.J. 07054. Sponsor: Garden State Circle Burners, Inc.

OCT. 7—LAKEHURST, N.J. (AA) 1973 Eastern States RC Championships. Site: Lakehurst N.A.S. L. Shulman CD, 1114 Raritan Rd., Clark, N.J. 07066. Sponsor: Central Jersey RC Club.

OCT. 7—NORFOLK, VA. (AA) Norfolk Aeromodelers Fall FF & CL Meet. Site: Norfolk. E. Regan CD, 4200 Mayflower Rd., Norfolk, Va. 23508. Sponsor: Norfolk Aeromodelers.

OCT. 7—NEAR ALBANY, ORE. (A) Silence Please FF (Cat. II) Meet. Site: Parkers Field. E. Pape CD, 819 NE Colorado Lake Dr., Corvallis, Ore. 97330. Sponsor: Willamette Modelers Club, Inc.

OCT. 7—PLYMOUTH, MICH. (A) Silent Order of Aeromodeling by Radio Dual RC Meet. Site: Plymouth Training Home. N. Liptak CD, 325 O'Neil St., Joliet, Ill. 60436. Sponsor: Silent Order of Aeromodeling by Radio.

OCT. 7—SALINA, KANS. (A) Great Plains RC Pylon Racing Championships. Site: Old Municipal Airport. D. Moden CD, 410 Hart, Salina, Kans. 67401. Sponsor: Salina Accurate Flying Eagles.

OCT. 7—PHOENIX, ARIZ. (AA) Air-Zona M.A.C. 7th Annual Fall CL Contest. Site: Turf Paradise Race Track. T. Kilday CD, 6544 N. 13th St., Phoenix, Ariz. 85014. Sponsor: Air-Zona M.A.C.

OCT. 7—UNIONDALE, N.Y. (A) Long Island Drone Society Quarter Midget Championships. Site: Mitchell Field. G. Berko CD, 1 North Pl., Glen Head, N.Y. 11545. Sponsor: Long Island Drone Society.

OCT. 7—LUKE AFB, ARIZ. (A) Condors Second Annual Fun Fly for RC. Site: Luke A.F.B. K. Peterson CD, 4202 W. State Ave., Phoenix, Ariz. 85021. Sponsor: Condors, Luke, Ariz.

OCT. 7—COLUMBUS, OHIO Capital City Controllines Fall CL Fun Fly. Site: Lockbourne A.F.B. J. Everett CD, 4661 Larkhall Ln., Columbus, Ohio 43229. Sponsor: Capital City Controlliners.

OCT. 13-14—DALLAS, TEX. (AAA) Dallas Rounders Fall CL Championships. Site: Hobby Park. W. Kuhn, Jr. CD, 2247 Home-way Cr., Dallas, Tex. 75228. Sponsor: Model Aircraft Club of Dallas.

OCT. 13-14—FOUNTAIN VALLEY, CALIF. (A) Valley Flyers RC Air Races. Site: Mile Square. C. Smith CD, 8509 Lennox Ave., Panorama City, Calif. 91402. Sponsor: San Fernando Valley RC Flyers.

OCT. 14—WASHINGTON, D.C. (A) 1st Annual Fall Quadrathon. Site: Anacostia Naval Air Station. J. Greene CD, 5902 Cherrywood Terr., No. 101, Greenbelt, Md. 20770. Sponsor: Sky Lancers of Washington, D.C.

OCT. 14—GLASTONBURY, CONN. SAM-7 Old Timer Fall FF Rally. Site: Meadow Road. J. Whittles CD, 43 Farview Ave., Saybrook, Conn. 06475. Sponsor:

Society of Antique Modelers Chapter 7.

OCT. 14—LINCOLN PARK, N.J. (AA) 15th Annual CL Model Air Show. Site: G.S.C.B. Club Field. J. Miske, Jr. CD, 415 Clifton Blvd., Clifton, N.J. 07013. Sponsor: Garden State Circle Burners.

OCT. 14—CHAGRIN FALLS, OHIO (AA) 4th Annual Midwest All-Scale FF & Indoor Meet. Site: Savage Road. L. Reichel CD, 3301 Cindy Ln., Erie, Penna. 16506. Sponsor: Erie Model Aircraft Assn.

OCT. 14—DAYTON, OHIO (AA) O.P.R.A. RC Championships. Site: Dayton. W. Hager CD, 5200 Rye Dr., Dayton, Ohio 45424. Sponsor: Dayton Wing Masters.

OCT. 14—FT. LEWIS, WASH. (A) 4th Annual FF (Cat. I) Power Bash. Site: Harts Lake Prairie. H. Smith CD, 1417 NW 191st, Seattle, Wash. 98177. Sponsor: Boeing Charterhawks.

OCT. 20-21—BURLINGTON, N.C. (A) RC/NC Anniversary RC Meet. Site: Burlington. R. Earp CD, 2836 Wagner Dr., Burlington, N.C. 27215.

OCT. 20-21—ABILENE, TEX. (A) Abilene RC Annual Meet. Site: Sea Bee Park. R. Howard CD, Rt. 4, Box 120, Abilene, Tex. 79603. Sponsor: Abilene RC.

OCT. 20-21—SUMMERVILLE, S.C. Charleston RC Society Fun Fly. Site: Summerville. D. Martin CD, 4361 Helene Dr., Chas. Hgts., S.C. 29405. Sponsor: Charleston RC Society.

OCT. 20-21—LAKESIDE, CALIF. (AA) San Diego Drones RC Pattern Meet. Site: Lakeside. G. Lewis CD, 1624 Chiswick Ct., El Cajon, Calif. 92020. Sponsor: San Diego Drones, Inc.

OCT. 21—MAUI, HAWAII (B) Maui CL Air Show. Site: Puunene, Maui, Hawaii. W. Fuchsberger CD, 87-263 Helema St., Waianae, Hi, 96792. Sponsor: Hawaii RC Club.

OCT. 21—SACRAMENTO, CALIF. (A) Thirteenth Annual Stockton Old Timers Meet. Site: Sacramento. R. Douglas CD, 5303 Calderwood Ln., San Jose, Calif. 95118. Sponsor: Oakland Cloud Dusters.

OCT. 27-28—LAS VEGAS, NEV. (AA) Las Vegas RC Open Meet. Site: Las Vegas. B. Mearns CD, 5412 Holmby Ave., Las Vegas, Nev. 89102. Sponsor: LVRC, Inc.

OCT. 27-28—OKLAHOMA CITY, OKLA. Model Hobby Fair. Site: Fair grounds. R. Freeland, Jr. CD, 7308 N. Western, Oklahoma City, Okla. 73116.

OCT. 28—VALKARIA, FLA. FMPRA FI RC Meet. Site: Valkaria. M. Holland CD, 1201 Willowbrook Tr., Maitland, Fla. 32751. Sponsor: R.C.A.C.F.

OCT. 28—FRESNO, CALIF. (A) F.G.M.C. Monthly FF (Cat. II) Meet. Site: Ave. 12, Road 36½. F. Ginder, Jr. CD, 5740 Ashlan Ave., Fresno, Calif. 93727. Sponsor: Fresno Gas Model Club.

NOV. 4—TAFT, CALIF. (A) 7th Annual Texaco Class Event. Site: Taft. B. Chandler, Sr. CD, 7858 Farralona Ave., Canoga Park, Calif. 91304. Sponsor: Southern Calif. Ignition Flyers.

NOV. 23-25—TUCSON, ARIZ. (AA) Winter RC Nationals. Site: Marana Airpark. W. Hempel CD, 6370 E. 22nd St., Tucson, Ariz. 85710. Sponsor: Tucson Radio Control Club.

NOV. 25—FRESNO, CALIF. (A) F.G.M.C. Monthly FF (Cat II) Meet. Site: Ave. 12, Road 37½. F. Ginder, Jr. CD, 5740 E. Ashlan Ave., Fresno, Calif. 93727. Sponsor: Fresno Gas Model Club.

NOV. 25—VAN NUYS, CALIF. Northrop M.A.C. 7th Annual "Flying Wing Contest". Site: Sepulveda Basin. C. Hatrak CD, 3825 W. 144th St., Hawthorne, Calif. 90250. Sponsor: Northrop Model Aircraft Club.

DEC. 2—TUCSON, ARIZ. (A) Cholla Choppers M.A.C. Winter Slow CL Fest. Site: Rodeo Park. B. Reynolds CD, Rt. 8, Box 51, Tucson, Ariz. 85710. Sponsor: Cholla Choppers M.A.C.

DEC. 9—ELSINORE, CALIF. (A) Jumbo Peanut Scale 5th Annual FF Contest. Site: Lake Elsinore. C. Hatrak CD, 3825 W. 144th St., Hawthorne, Calif. 90250. Sponsor: N.A.R. Flightmasters.

DEC. 30—FRESNO, CALIF. (A) F.G.M.C. Monthly FF (Cat II) Meet. Site: Ave. 12, Road 37½. F. Ginder, Jr. CD, 5740 E. Ashlan Ave., Fresno, Calif. 93727. Sponsor: Fresno Gas Model Club.

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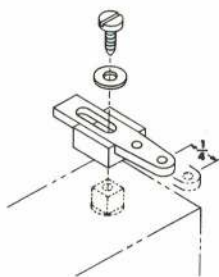
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RC SCALE

(Continued from page 117)

being sufficient for a top static scorer to place seems over, so much have the flying standards improved. Conclusions based exclusively on this year's meet may not apply next year because a new set of equations will be on board.

Meeting during the NATS, the Scale Contest Board accepted the changes proposed by Clark Macomber for flight procedures along lines used in Sport Scale. After years of complicated mathematics, a simple 50-50 split between static and flying had the force of an idea whose time had not only come but was past due. Seven required maneuvers—Taxi, ROG, Fly-past, Traffic Pattern, Landing Perfection, Spot Landing and Taxi Return—will be supplemented by seven chosen by the contestant from an options list and a 15th score will be awarded for Flight Realism.

As past experience has shown, it is hard to tell exactly what will happen when paper parameters are put into action on the field. In this case, however, it seems fairly certain that the winners under the old system will still be on top with the new setup, but it will be a lot easier for all concerned to understand how they got there.

MODELER MAIL

(Continued from page 8)

Let this be a reminder to your readers of the dangers of flying too close to power lines. It seems that those who should have the most sense about this matter don't. Often someone who has flown for years is careless and this sets a bad example and can become fatal.

I support those who propose using safety thongs on control line handles. It would be a great help if all the manufacturers of handles started incorporating a safety thong in their designs.

Robert Farr II,
201 W. 6th St.,
Fowler, Ind. 47944

P.S. Does anyone have information on the He 152A German WWII jet fighter? Are there any models of this plane?

Needs help with Olson 60 engine

Does anyone know of someone who has parts or could repair an Olson 60 ignition engine.

I've had this engine for quite some time and am anxious to get it back into shape.

Also need the electrical components, coil, condenser, etc.

Nick C. Nicholau
2329 Hall St.
Marysville, Calif. 95901

Ideas from a Tenderfoot

I just got an idea. Couldn't you make or buy an electric plane for control line and use light electric wire for the lines? The wire (after bellcrank) would then go to the motor. Meanwhile, on the other end, the lines would go to the handle with a slot car (or smaller) reo-

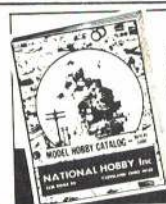
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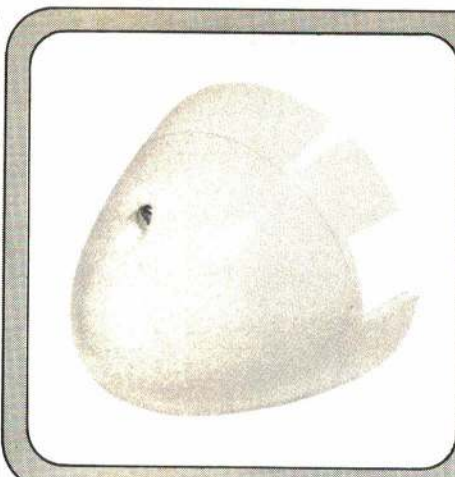
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INDEX TO ADVERTISERS

A.H.M.	13
A & L Distributors	100
Academy Products, Ltd.	111
Ace Radio Control, Inc.	62, 63
Aerotec Engineering	102
A-Justo-Jig Co.	116
George Aldrich Model Prod.	104
American Edelstaal	36, 37
Bluejacket	120
Boyd Models	115
Broz Enterprises, Inc.	101
C & H Sales	120
Cannon Electronics	113
Cleveland Model & Supply	100
Coverite	101
L.M. Cox Mfg. Co., Inc.	43
Jim Crockett Replicas	110
DA Enterprises	117
Diane Publishing Co.	115
Dodgson Designs	114
Dremel Mfg. Co.	106, 107
Du-Bro Products, Inc.	67
Dumas Products, Inc.	91
EK-logicrol	65
F.A.I. Model Supply	120
Flyline Models	109
Fox Manufacturing Co.	108
Futaba Denshi Kogyo Co., Ltd.	35
G.E.M. Models	108
Goldberg Models, Inc., Carl	5, 29
Graupner, Johannes	49
Grish Brothers	116
Guillow, Paul K., Inc.	102
John Hathaway	11
Heath Co.	17
Hobby Capitol U.S.A.	96, 97
Hobby Helpers	120
Hobby Hideaway	120
Hobby Lobby	10, 11
Hobby People	85
Hobby Shack	18, 19
Bob Holman Plans	11
In-Flyte Products	103
Inky, Flite Boxes by	120
K&B Manufacturing	100
K&S Engineering	107
Kayeff, Inc.	68, 69
Kraft Systems, Inc.	Inside back cover
Long Island Hobbycrafts, Inc.	111
Maco Model Aircraft	102
Major Electronics, Inc.	95
Midwest Model Supply Co.	121
Midwest Products Co.	79
Miniature Aircraft	108
Model Materials, Inc.	107
Model Rectifier Corp.	Outside back cover
Morgan, Sid	105
National Hobby Supply	120
Bud Nosen	121
Octura Models	9
Orbit Electronics	9
Pactra Industries	112
Phil-Leys	121
Dave Platt Models	113
Pro-Line Electronics, Inc.	110
RC Hobby Shop, Inc.	116
RS Systems	115
Randolph Hobby Distributors	103
Randy's Corner	112
Rocket City Specialties	120
Scientific Models, Inc.	Inside front cover
Shamrock Competition Imports	3, 61, 83
Sig Manufacturing Co.	54, 55
Sonic-Tronics, Inc.	114
Sterling Models, Inc.	70, 71
Superscale	117
Su-Pr-Line Products	108
Sure Flite Products	109
T&L Glassflite Wings	109
Tatone Products	110
Tern Aero Co.	117
Terry Plane	106
The Testor Corp.	99
Top Flite Models, Inc.	7
Tower Hobbies	58, 59
Williams Brothers	106
World Engines, Inc.	104, 105
X-Acto, Inc.	117
C.A. Zaic Co., Inc.	99



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stat hooked on. From there it would go to a bigger battery, or if there's a plug located conveniently in the ground, a model railroad reostat. This would not be a great advantage, but would be a cheaper one.

I just got another idea: The wire would make some drag, but since you're using more electricity than you need, it would make the plane go faster, thus balancing it out. What do you think?

Bruce Salvisbergh
Fairfax, Calif.

Control line electric-powered planes have been flown many times with the power being transferred to the model through the control cables, Bruce. It is not really a very good way to go flying because of the tremendous loss of power through the long lines and also because insulated lines have to be used which are hard to obtain and much heavier than regular control lines.

—Editor

Seeks Curtiss Hawk cockpit info

I am building a Curtiss Hawk P-6E. I would like to know if anyone could help me with the cockpit detail. I need to know how the seat, instruments, the stick and other details are arranged. Your help will be appreciated.

Joel Quisenberry Jr.
5841 Snead Dr.
Huntington Beach, Calif. 92649

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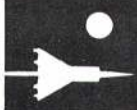
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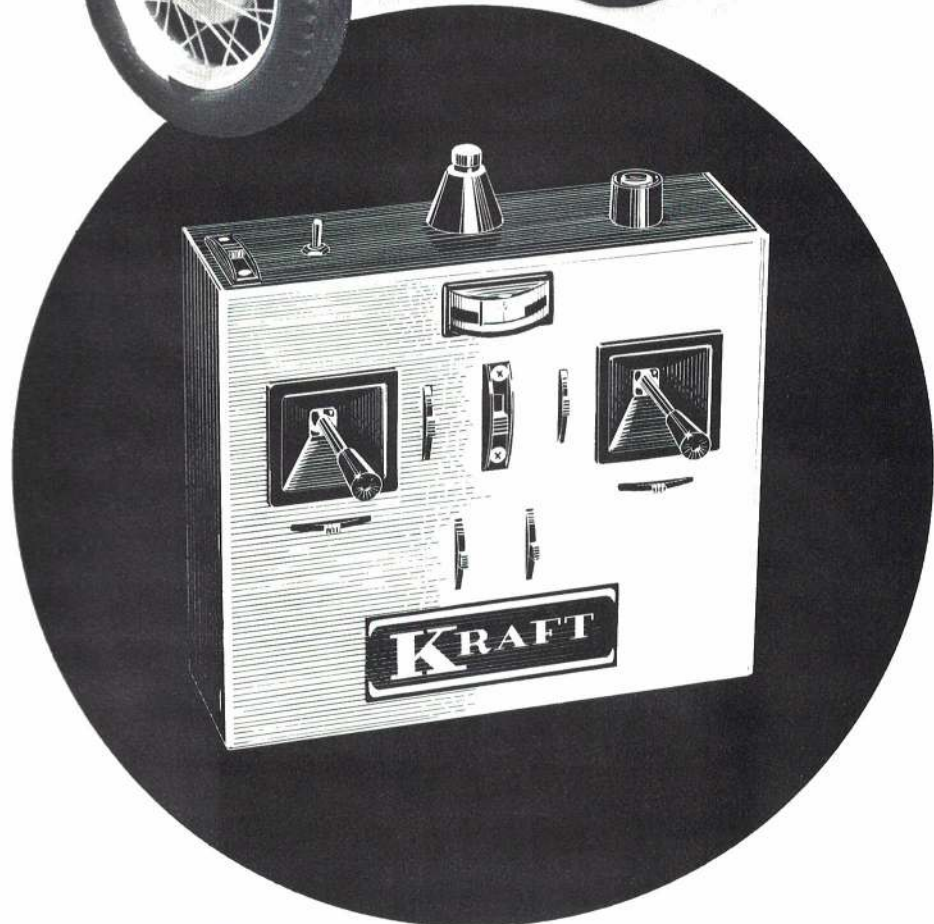
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