

MODEL BUILDER

NOVEMBER 1975

volume 5, number 47

\$1.25



NEW!

Kraft Systems is proud to announce our new Signature Series custom radio control system. Combining entirely new electronic design concepts with custom assembly and a cost-be-damned approach to component selection, it is the only choice for the serious radio control enthusiast.

THE WORLD'S FIRST PROGRAMMABLE RADIO CONTROL SYSTEM

SIGNATURE SERIES



\$795⁰⁰

TYPICAL LAYOUT SHOWN. MAY BE VARIED TO CUSTOMER REQUIREMENTS.

Panel label is engraved with purchaser's name and date of manufacture.

RETRACT LANDING GEAR
Accurate Battery Voltage and R.F. Output Meters

ELEVATOR TRIM
DUAL TRAVEL ELEVATOR

Super precision instrument-type conductive plastic control potentiometers assure better than 0.1% resolution, less than 1% non-linearity, and virtually unlimited life. Their very low friction design provides exceptional control feel.

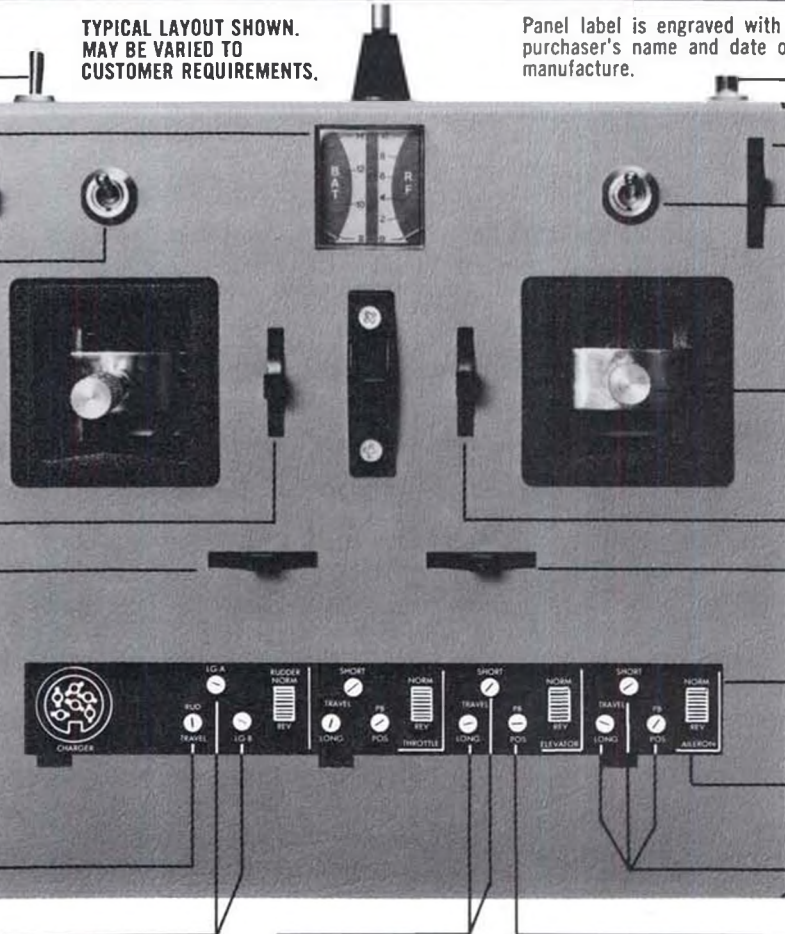
AUXILIARY NO. 2
RUDDER TRIM

Front panel slips off easily providing access to set up controls and adjustments. Controls can even be adjusted in flight.

Customer may select location and function of programmable controls. Each set is custom tailored to the individual's requirements.

Adjusts travel of rudder servo approximately $\pm 10\%$. Dual rate not available on this channel.

These adjustments control both the direction and amount of travel of the retractable landing gear servo. Since over-all travel can be increased, a special 180° servo is not required to ensure positive locking action.



SLOW ROLL BUTTON
THROTTLE TRIM
DUAL TRAVEL AILERON

AVAILABLE IN DUAL AND SINGLE STICK TRANSMITTER CONFIGURATIONS.

Open type control sticks are meticulously assembled to exacting tolerances. Stick lengths are adjustable.

AUXILIARY NO. 1
AILERON TRIM

New multiplexed linear ramp encoder permits programming, is virtually drift free and gives linear control response.

These four switches determine direction of travel for controls specified.

Four turn instrument quality pots provide smooth, precise adjustment.

These adjustments control the amount of servo travel. The "long" or normal position of the dual rate selector switch may be adjusted for a variation of travel of approximately $\pm 10\%$. The short travel position of the dual rate selector switch may be adjusted to select a reduction of up to 50% from the long or normal travel. Servo neutral is not affected by these adjustments.

Adjusts pre-determined control position selected by a push-button control. This could be, for instance, a slow roll switch, a spin button, or low speed throttle button. This control is customer specified. Push-button control selection may be requested as an addition to the dual rate controls. In other words, you may select both control options if desired.

Limited production under the supervision of Steve Helms ensures meticulous quality and personal contact with the purchaser. Mr. Helms will also oversee repair service and follow-up.

DUAL-CONVERSION RECEIVER

Is a specially designed companion unit to the Signature series transmitter. A new, improved linear A.G.C. and 11 pole piezo-electric ceramic filter provide the most interference-free reception of any receiver on the market today. It is the result of a continuous two-year design effort.

SPECIFICATIONS

Size: 2.6"x2.4"x0.8" • Weight: 2.6 oz. • Batt. Voltage: 4.8v nominal • Current Drain: 16 ma. nominal • No. of channels: 7 • Sensitivity: 1 microvolt nominal • Spurious Response: Image—70db down; all others greater than 70 db down • Selectivity: 3 db down at ± 5.4 KHz; 60 db down at ± 8.07 KHz • All standard frequencies.

SERVOs

Any of our standard servos may be selected. Each will be custom assembled and tested to $\pm 0.25\%$ resolution and $\pm 1\%$ linearity. All servos are directly interchangeable and only one direction of rotation is required.



WRITE FOR FREE CATALOG

World's Largest Manufacturer of Proportional R/C Equipment
450 WEST CALIFORNIA AVENUE, P.O. BOX 1268, VISTA, CALIFORNIA 92083

SUPER PACER

DESIGNED BY OWEN KAMPEN

A .23 POWERED PATTERN SHIP
FOR SPORT AND COMPETITION



13K109 Super Pacer
\$32.95

FIRST CAME THE PACER--it started a whole new revolutionary category of model planes, the 1/2A pattern ship. Then people wanted a larger, fully competitive version with the same features--good looks, easy construction, sensible design, light weight, fuel economy, and solid performance at an affordable price. Here it is, the Super Pacer. For the economically minded pattern ship flier.

All balsa and ply construction. Quick to build, light and sturdy to last long. It has to be a sin to get so much enjoyment out of the performance obtained at so little expense.



SPAN: 46 in.
AREA: 408 sq. in.
LENGTH: 40 in.

WEIGHT: approx. 3 lbs. all up
FUNCTIONS: 3 or 4 Channels
ENGINE: .23 to .25

Try your dealer first. You can order direct if he doesn't have it.

- Send me a Super Pacer. Enclosed is \$32.95 plus \$1.00 handling.
- Send me your complete catalog. Enclosed is \$1.00 (add \$.50 for 1st Class mail return.)

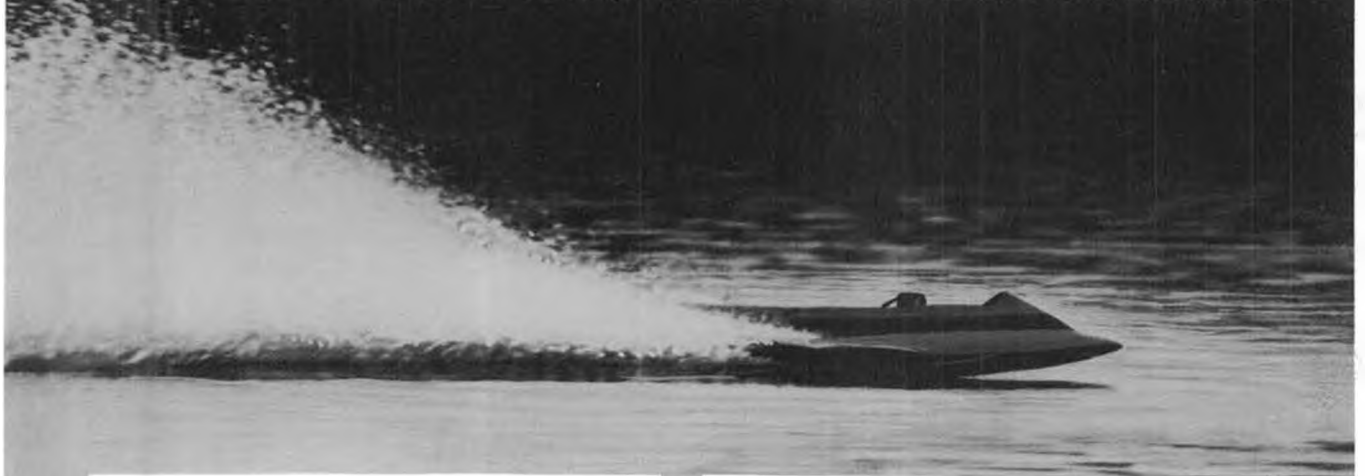
MB

ACE R/C, Inc.

BOX 511, HIGGINSVILLE, MO. 64037

EASY RIDERS

DUMAS R/C HYDROS FOR LOOKING AND LAUNCHING



ATLAS VAN LINES AVL-40

1" scale of winningest unlimited hydro in the Gold Cup Circuit. Pickle-forked bow provides maximum control. Sturdy birch and mahogany plywood construction. 36" long, for .40 engine. A good, basic competition hydro for .40 engine.



DRAG 'N FLY 40 MK II - HY2A

A hot competition racing model for .40 engine. 36" long, pre-cut birch plywood construction. Includes plans (only) for realistic topside hatch to help keep water out and create a streamlined shape for top speed. HY-3-28" available for .20 engine HY-1-44" available for .60 engine.



NEW - PAY 'N PAK PP-20

This new stand-off scale model of the national unlimited hydroplane champ is 30" long, 15" beam, designed for .20 engine and radio control running. Rugged plywood construction. A great performer . . . even for the beginner!

They don't come any faster, better designed, or better built. These kits are the leaders in stand-off scale as well as all out hydro-class competition. Stable and sure in the turns, and you can pull out all stops on the straightaway. ■ In calm or rough water, for fun or competition, Dumas has the easy riders . . . from hydro to deep vee. ■ Now available: Pre-packaged hardware kits with everything you need for running. Props for all models also available separately. A hardware kit for every model. See Your Local Dealer. If He Can't Help You Write Us. See your hobby dealer or send 50¢ for our complete catalog

dumas
boats

Dumas Products, Inc., 790 South Park Avenue, Tucson, Arizona 85719



CARL GOLDBERG

The Best in Flying with...



SHOESTRING STUNTER—42" Top stunt model for .19-.35 engine. G9 \$11.95



WITTMAN BUSTER—40" Sharp stunt model for 19-.35 engine. G14 \$11.95



COSMIC WIND—43" span for .19 to .35 engine. G17 \$11.95



LIL WIZARD—Shaped balsa wing, die-cut fuselage, 21" span for .049 engine. G5 \$5.95



STUNT MAN 23—Die-cut balsa 23 3/4", for .049-.09 engine. G6 \$5.95



LIL JUMPIN' BEAN—21" span Favorite 1/2A stunt model. For .049 Eng. G8 \$5.50



LITTLE TOOT—Sporty Biplane, for .049 engine, all die-cut balsa. G4 \$5.95



SWORDSMAN 18—Die-cut balsa 18" span, for .020-.049 engine. G3 \$5.50



P-40 FLYING TIGER—18" span, all balsa pre-fab for .049 engine. G11 \$5.50



COMBAT
LIL SATAN—19" span, 1/2A combat-stunt for .049 engine. G12 \$4.95



NEW!
LONG BOOMS!
and **NYLON HORN!**
VOODOO—38" combat-stunt for 19-.35 engine. Single kit G13 \$6.95
Double kit DG13 \$12.95



JUNIOR SATAN—29" span, combat-stunt, for .15 to .19 engines. G20 \$5.95

12 Great CONTROL LINE MODELS, from stable trainers — to stunt — to the exciting world of combat!

3 Well proven FREE FLIGHT MODELS, from simple to contest ships!

5 RUBBER-POWERED MODELS, so easy to build, such fun to fly!

RUBBER POWERED MODELS



SHOESTRING RACER—18" span. All die-cut balsa. D2 \$2.95



RANGER 21—All die-cut balsa parts. 21" span beauty. D3 \$2.95



RANGER 28—My "pre-fab plus paper" 28" span, 2 colors D5 \$2.95



CESSNA 180—The champion of business liners, 21" span D4 \$2.95



SPIRIT OF ST. LOUIS
A miniature duplicate, 21" wingspan. D1 \$2.95

VIKING—48" span. Hi-thrust for .049-.051 engine. \$7.95

FREE FLIGHT MODELS



1/2A BLAZER—Die-cut balsa, tissue, 40" span, for .049 engine. G1 \$6.95



RANGER 30—Die-cut balsa 30" span, for .010-.049 engine. G2 \$5.95



SAFTI-FLITE 1/2A HANDLE

Best handle made. Including lines, only 79c. H1



1/2A FLYING LINE
Dacron Thread—56 lb Strong, min. stretch. For small control line models, hinging, etc. HL1 25c



1/2A BELLCRANK and HORN
Nylon provides smooth 3/4A control line operation. Easy on dacron lines, too. BCH1 25c



ENG. BRACKET for COX "290"
EB1 59c

ALL ITEMS AVAILABLE IN CANADA

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.

CARL GOLDBERG MODELS INC.

4736 WEST CHICAGO AVE. • CHICAGO, ILLINOIS 60651

NOVEMBER 1975

Carl Goldberg Models Inc.
4736 W. Chicago Ave., Chicago, IL 60651
I am sending 25c for 8 pg illustrated Catalog with Basic Explanation of R/C Equipment and Radio Control Definitions
Name _____
Address _____
City _____
State, Zip _____

MODEL BUILDER

AND

PANA-VISE®

presents the

MASTER MODEL BUILDER of the month CONTEST

Send all entries to:

MODEL BUILDER/PANA-VISE CONTEST

1105 Spurgeon St., Box 4336,
Santa Ana, California 92702

COLBERT INDUSTRIES, manufacturers of PANA-VISE, the unique hobby vise which turns and tilts to any position, in conjunction with MODEL BUILDER magazine, is sponsoring a design competition for MODEL BUILDER readers.

This monthly contest will be judged for originality and/or craftsmanship for all types of models (excluding plastic static scale). Entries will be judged purely on the basis of photographs and drawings supplied by the builder of the model. Emphasis in judging will be on originality, technical achievement, and craftsmanship, as found in the submitted material.

A MODEL 301 PANA-VISE WILL BE AWARDED EACH MONTH TO THE WINNING ENTRY



Requirements for entries:

1. Any type model may be entered (aircraft, cars, boats, etc.). Kits may be entered if significant modifications have been made to the stock kit.

2. Do not send the actual model. Send only black and white photos, showing at least three views of the model. Include some familiar object in at least one photo to indicate the size of the model. Try to include photos of any significant details.

This month's winner is Capt. TOM NALLEN, F.A.C., Chicopee, Massachusetts. His entry is a rubber powered scale model of the experimental Curtiss XP-55 "Ascender." This unsuccessful World War II design was of a tail-first or canard configuration, and as such, it's name, if pronounced with the right inflection, was very appropriate.

The model was more successful than the prototype. Designed and built for the fabled Flying Aces Club's Spring 1975 contest, it proceeded to take first place, using a combination of bonus points (15 for low wing, 10 for pusher, and 20 for unorthodox), good scale points, and a best official flight of 36 seconds.

As might be expected, the forward stab went through various modifications, finally ending up as three laminations of 3/32 balsa plugged into a 1/32 ply tongue. The 19 inch span model weighs 1.1 ounces, is covered with tissue colored with Floquil tinted nitrate, and is powered by two loops of 3/32 rubber turning a 7-1/2 inch prop. Best flight to date is 42 seconds.

3. If photos cannot offer sufficient information about the model, the construction drawings may also be submitted. Drawings should be clean, pencil drawings with all pertinent dimensions indicated. A print of the drawing is acceptable.

4. A written description should be included with photos and drawings, explaining in fair detail any unusual features of the design, and explaining any unique technical difficulties that the model may have achieved.

5. Please do not submit any designs that have been accepted for use in another publication. MODEL BUILDER requests first option on publishing any submitted design. Payment for published designs will be at our regular rates. Any prizes awarded do not represent an agreement to publish any design.

6. Entries will be judged by the modelers on MODEL BUILDER's editorial and art staff, and all decisions of the judges will be final.

7. Postage must be furnished if return of submitted entries is desired.

8. Deadline for entries in the first contest of the series is July 1, 1975, and winners will be announced in the September 1975 issue. Subsequent entries will be due the first of each month and winners will be announced the second month following each closing.



MODEL BUILDER

NOVEMBER

1975

volume 5, number 47

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Cover: Don't bother digging out your Post World War I Naval Aviation books, we've just "discovered" a new modeling category . . . "Composite Scale." This particular conglomeration was put together by George Clapp, Central Square, New York. It spans 6 feet and lumbers along at "scale" speed with a Supertigre .40 rear rotor. See page 8 for the construction article. George was also indirectly the creator of Jeff Bradbury, who's holding the ship. He's George's No. 4 grandson! Kodachrome transparency by Mark Cowles.



While in Germany, we visited the Graupner company, in Kirchheim/Teck, for the second time in 7 years. On this occasion, we brought with us U.S. Team member Rhett Miller III, his mechanic . . . and father . . . Rhett, Jr., and AMA Pres., Johnny Clemens. Above: Mr. Johannes Graupner, a very gracious host, stands between Rhett Miller and MB's editor. We hold the "Mosquito," a powered glider, and Rhett holds a Graupner Cirrus, built and flown by the late Howard McEntee, and donated to the Graupner collection by his wife, Elinor McEntee.

from Bill Northrop's workbench . . .

• The bad news first. Beginning with the January 1976 issue, MODEL BUILDER will increase its single copy price to \$1.50. Subscription prices will become \$15.00 for one year and \$27.50 for two years, effective January 1, 1976. If you've been thinking about subscribing, get your order postmarked before January 1, and take advantage of the current rates of \$12.50 and \$23.00.

We won't bore you with the reasons for increasing the cost of MODEL BUILDER, they're the same ones we've given for previous increases . . . rising prices of postage, paper, and services. Of course, postage always catches most of the blame, but we recall one case in New York City a few years ago where it was the reverse. It seems that the Post Office employees found a rather smelly package which was addressed to the city dump. Upon investigation, it turned out that a bachelor resident of an apartment had found it was *cheaper* to mail his small amount of weekly garbage to the dump than it was to pay the trash collectors to TAKE IT THERE! BAR FLI, ANYONE?

In the process of making our recent house move, we came across several cartons of die-cut balsawood. The majority of it turned out to be complete sets of die-cut parts for Phil Kraft's Bar Fli, a design which was published in the August 1968 issue of M.A.N., at which time we were the R/C editor. The die-cuts were a little side business we had going at the time.

The Bar Fli was a trike-gear pattern ship, on the small side, but .61 powered.

The wing span and chord was 56 and 10 inches respectively, the airfoil not quite full symmetrical. We also came across a fair supply of the M.A.N. printed plans, which we had purchased in bulk. Until the supply runs out, we'll sell these die-cut and drawing sets for a flat \$6.00, including postage. If you just use the wing parts alone, it could be a bargain. Address your orders to MODEL BUILDER Die-Cuts, Box 4336, Santa Ana, CA 92702.

WE STARTED SOMETHING

Our brief comments about AMA Nationals history and the question of when it actually started, based on info from long-time modeler Bert Pond, appeared in this column, July 1975 issue, has really stirred up some controversy. So far, letters from Bob Meuser and Jim Noonan would seem to confirm that the 1976 Nats just might be the 50th, and if it is, there probably ought to be more made of it.

We're cramped for space this month, because of our extended ranting and raving about the R/C Pattern World Championships (Next month is "equal time" for free flight. We'll have a report from team member Don Chancey on the F/F Championships in Bulgaria), so we'll give you a run-down on the Nats history thing in a future column. It's a sorta fascinating.

BULLETIN BOARD

Cliff Weirick, formerly of Kraft Systems, Inc., will join the staff of KGL Model and Supply Co., 6787 Wales Rd. N.W., P.O. Box 2482, North Canton, Ohio 44720. Phone (216) 494-5583.

This is not rumor, but fact, as supplied to us by John Yarger, president of KGL. Cliff becomes Vice-President and General Manager, and was to assume office on or about October 20, 1975. We wish him the best in his new location.

* * *

The Remote Control Association of Central Florida, Inc., announces the 8th Annual Tangerine International R/C Championships, December 27, 28, 29, and 30, 1975. Events will include Formula I, Sport Scale, A, B, DN, and DE Pattern, and Sailplanes (Tasks I, IIA, and III . . . Stand and Open classes). Contact Clint Smith, 106 Hillcrest St., Altamonte Springs, Fla. 32701, (305) 831-3492 for power events, and/or Stan Pfof, 2110 Venetian Way (a blind alley no doubt), Winter Park, Fla. 32789, (305) 628-4298.

* * *

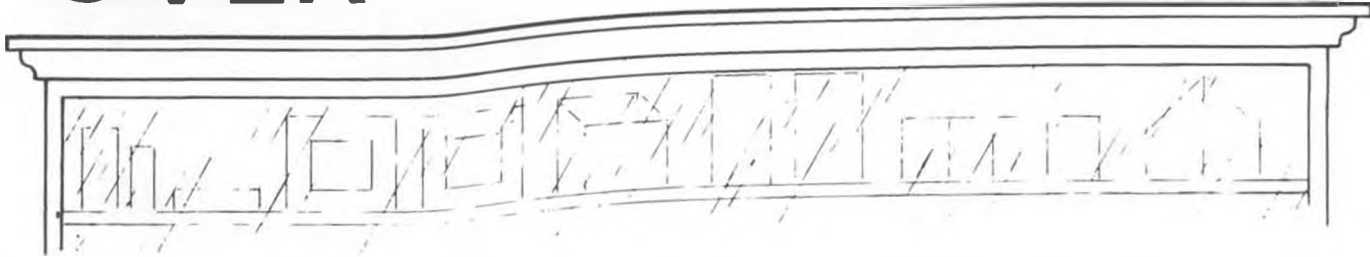
The Fourth Annual Miniature Air Expo will take place on November 29 and 30, at the Registry Hotel, 7901 24th Ave. South, Bloomington, Minnesota. For registration and display information, contact Miniature Air Expo, Inc., 1458 97th Ave. N.W., Coon Rapids, Minnesota 55433, (614) 757-1554.

The corporation is made up of 441 members, all from model and aero clubs in the Minneapolis area, including C/L, F/F, R/C, IMPS (plastic modelers), and American Aviation Historical Society chapter members.

* * *

The good news? This is the end of the column! Have a pleasant Thanksgiving! wcn. ●

OVER THE COUNTER

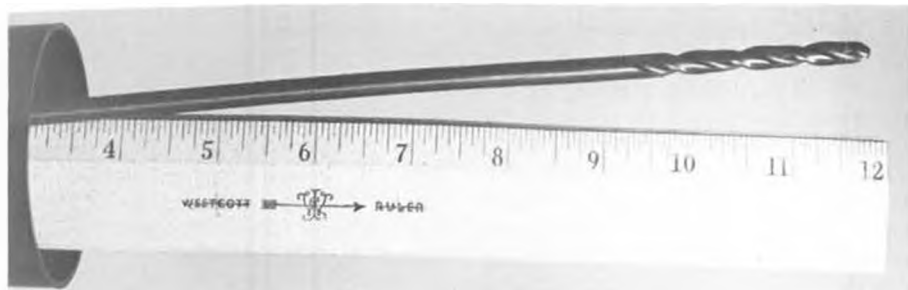


Astro Flight's R/C System Analyzer/Rapid Charger.



Sig's "Twister", C/L stunt ship for .29 to .40 engines.

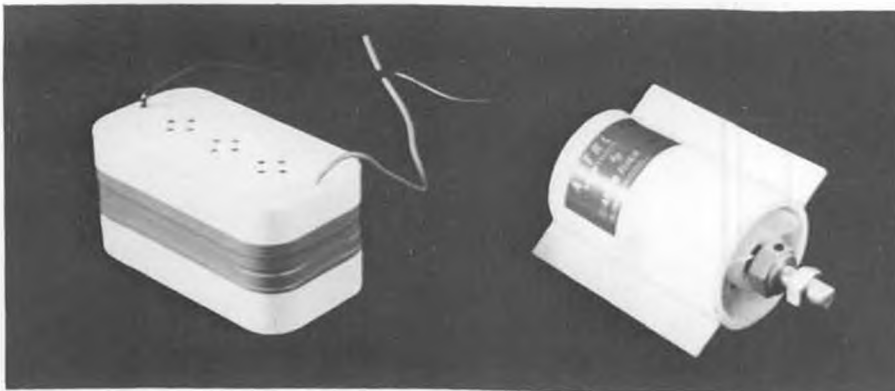
• Need a pilot for that new Messerschmitt or Focke-Wulf? Aircom Ltd., Box 302, Bloomfield Hills, Mich. 48013, has just what you need. Its first offering is a 1-1/2 inch scale World War II Luftwaffe fighter pilot. Molded from a lightweight plastic material, the full figure pilot features incredibly complete detail, including parachute, goggles, life jacket details, flexible oxygen hose and mask, compass, parachute belting and boot straps! Each kit is packed in a four color blister pack with color photo views of the actual model. Each pilot figure comes with authentic archive photos and descriptions suitable for contest reference. Aircom has other pilots in the development stage, including American and R.A.F. figures. The Luftwaffe pilot is available now from your dealer or direct from Aircom, Ltd., priced at \$12.95.



SEMCO long shank drill bits.



SEMCO 1/4-32 drill bit and tap set.



Astro Flight's Astro-10 Marine power system.



SEMCO 1/4-32 die (glow plug thread size).



"Airborne pack voltage analyzer by Cyt-4 Industries.



"Cheeter-Stiks" by Sonic-Tronics.



"Series Fifty" scaled-down Powerhouse for R/C by Cal Aero-Model.

CYT-4 Industries is marketing a clever electronic "gas gauge" for use with R/C transmitter and receiver battery packs. This 1/8 ounce unit utilizes a light emitting diode (LED) that glows brightly while the radio is operating. The sensing circuit in the unit measures the voltage put out by the battery pack, and when the voltage drops to a critical level, the LED goes out, indicating that there is approximately ten to twenty minutes of power left in the battery pack. The LED bulb is mounted in a snap-in plastic housing which can be installed through

a 1/4 inch hole in the fuselage side. Many versions of the Power Cyt are offered, depending on voltage and the type of battery being monitored. For more information, contact Cyt-4 Industries directly, at 617 South East Ave., Oak Park, Illinois 60304.

* * *

Sig Mfg. will soon be marketing Mike Gretz's control line Twister. This 48 inch span profile stunt design will feature coupled wing flaps for precise maneuvers. The kit will be of the usual Sig high quality, and will include a shaped

Glo-DEVIL PLUG

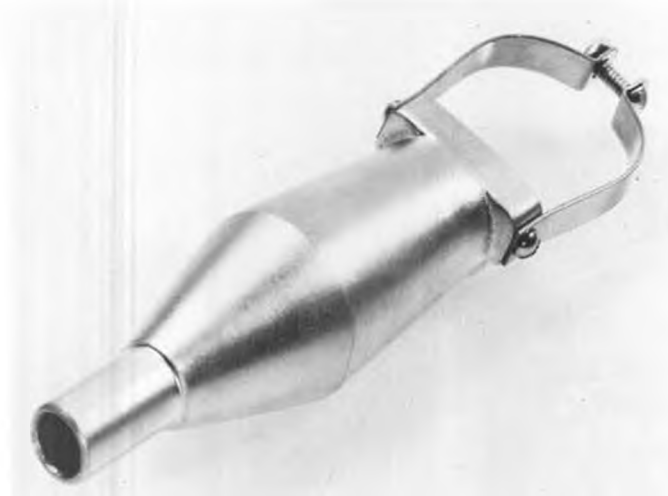


New "Glo-Devil" glow plugs by Sonic-Tronics.

balsa profile fuselage, die cut ribs, die cut doublers, and pre-bent push rods and landing gear. The 490 square inch Twister is designed to be powered by .29 to .40 size engines. Watch Sig advertising for availability and price.

* * *

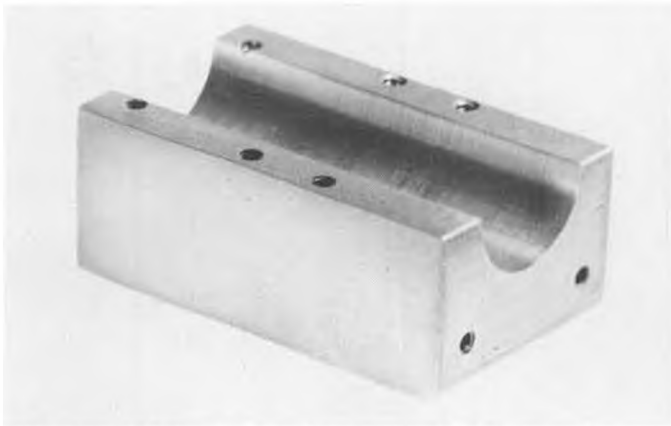
"For any type of linkage hook-up



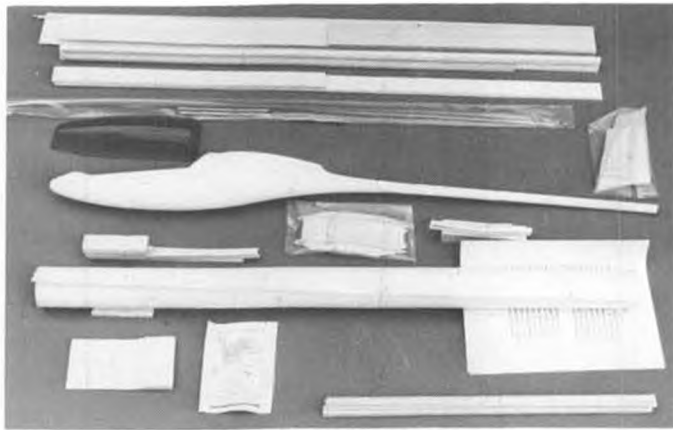
Tatone muffler for .19 powered R/C race cars.



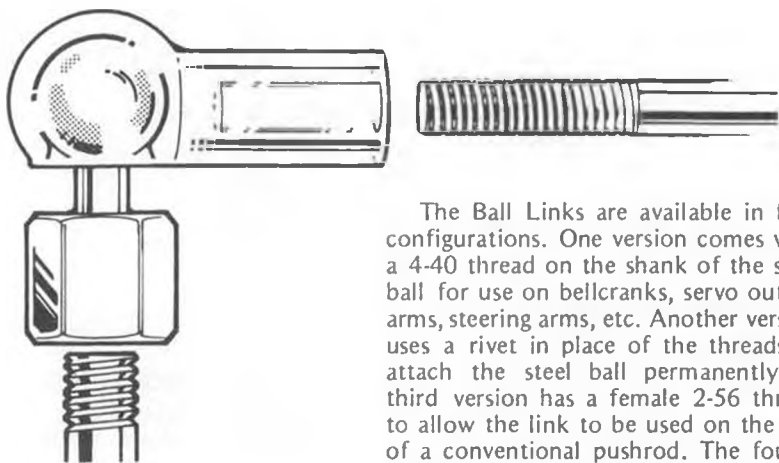
World War II Luftwaffe pilot to 1-1/2 inch scale, by Aircom Ltd.



Quick-change .049 motor mount by Thunder Road Automotive.



Standard class "Albatross", by MH Manufacturing.



Ball links, in four configurations, by Du-Bro.

...corrects for any misalignment and eliminates binding"...such are the claims for Du-Bro's new Ball Links. These unique replacements for the conventional control clevis use a molded nylon hollow ball which snaps over a steel ball, similar to a ball type trailer hitch. The swiveling action of the link allows for considerable misalignment in the linkage without binding. Since the links snap on and off, they are ideal for linkages that must be removable in order to disassemble the plane...such as spoilers on gliders, for instance.

The Ball Links are available in four configurations. One version comes with a 4-40 thread on the shank of the steel ball for use on bellcranks, servo output arms, steering arms, etc. Another version uses a rivet in place of the threads to attach the steel ball permanently. A third version has a female 2-56 thread to allow the link to be used on the end of a conventional pushrod. The fourth version has a female 2-56 thread on each end to allow two take-offs from a servo, such as is needed for aileron installations. The single take-off links retail for \$.85, and the dual aileron link sells for \$1.00. All are available from your hobby dealer or direct from Du-Bro Products, Inc., 480 Bonner Road, Wauconda, Illinois 60084.

* * *
Span Aero Products, Wildwood Lane, Norwalk, Conn. 06851, ran Art Schroeder's famous Eyeball design through the dryer and shrank it down to an Eyelash. This 42 inch 1/2A performer uses a foam wing and two channel control to do maneuvers not thought possible with a small airplane. Weight with



Ball-Driver wrenches for Allen head bolts, from BWT Systems.

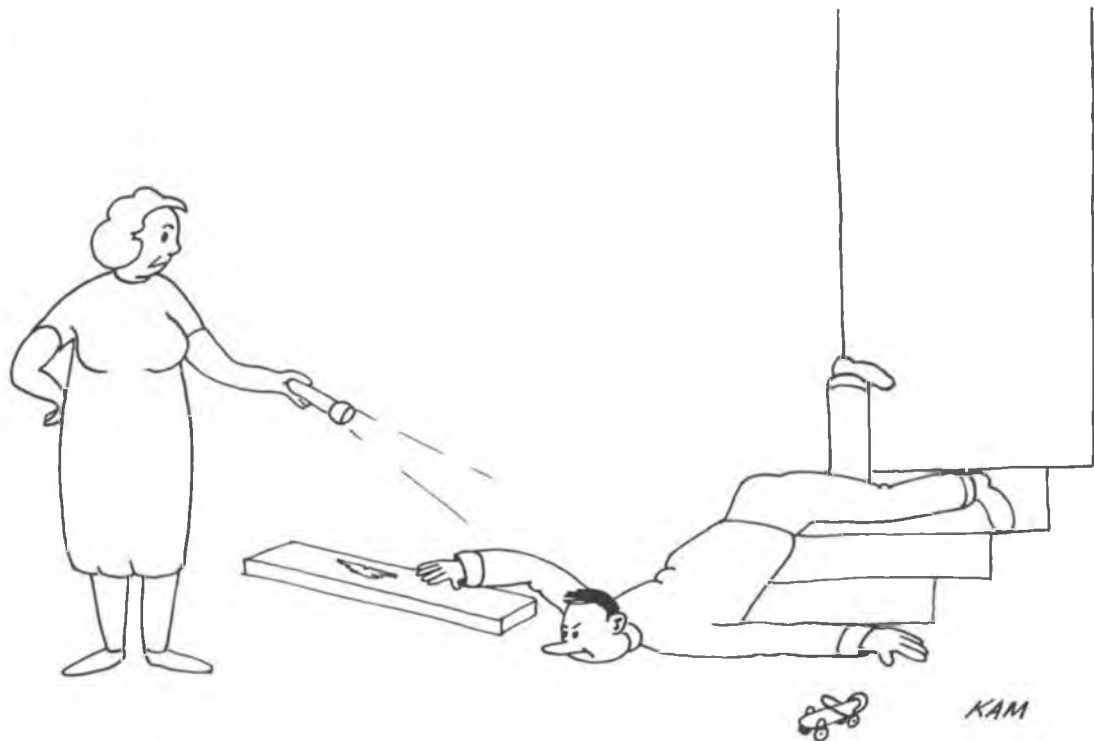
two servos for aileron and elevator is 20 ounces. The kit is delivered with foam wing cores cut to size, motor mount, and spinner, for \$23.95.

* * *
A time-honored nemesis of modelers has been solved by Wilhold Glues, Inc. There has never before been a neat, simple, and strong way to glue plastic canopies to wood or fiberglass fuselages. Wilhold's new R/C 56 Adhesive is specifically designed for this purpose. The

Continued on page 83



The "Eyelash" for .049 engines, by Span Aero.



"John, are you trying to sneak another airplane kit into the house?"

FOR Ms ONLY

(Mrs.) CHAR ROHRING
4494 Tanglewood Trail
Saint Joseph, Mich. 49085

• Christmas nears, and once again all R/C families can look forward to that night when the modeling gear must be put away to make room for the tree. At our house, we call this joyous occasion "All Hobby Eve." Naturally, an R/C family might have other hobbies, too. Everything must be cleared away. It's time to clean our house, anyhow. I came to that realization this fall when the kids in the neighborhood started calling the family room "The Digs." All of us must pitch in and put stuff undercover to make room for decorations and atmosphere. Dan's TR-3 motor must be moved from the coffee table. Becky's giant rug-hooking project could go into her room. Even the two card tables holding my innocent collection of bulletin board clippings have to be put away. On All Hobby Eve there are only two options. Change religions by Wednesday or start cleaning up the mess!

At least buying holiday gifts for your modeler is no problem. It's nice to know there are 5,000 items he needs. Flip the pages of this magazine and let your finger drop anywhere. He wants it. He wants it even if he already has one. You'll never go wrong. With us women, we think one of everything is enough. For example, it doesn't cross our minds to have two kitchen shears. It doesn't occur to us to put a second shears in the picnic basket. We never think that

we could lend the extra one to a friend . . . who is using her mother-in-law's sterling embroidery shears to cut chicken parts. We don't think ahead to realize we could save that extra kitchen shears to swap for a cheese grater at the annual garage Sell 'n Swap. Modeling is a hobby where two is always better than one. If this isn't so, how can your husband live so contentedly with seven transmitters on top of the hutch?

If you want to be super secretive about giving the right Christmas gift to the modeler, you might try asking his fellow club members. They know what he needs, wants, and should have. I keep a Christmas list going all year. If Bill mentions a wanted article, I jot it down. Then when shopping time comes around, I simply refer to the list. There were 26 modeling items under Bill's name by May!

At our house we give Bill's gifts to him toward the end of the festivities. The minute he gets a modeling gift he has to unwrap it carefully, spread it out slowly, examine each section thoroughly, hold the parts up to the light testily, smell any little bottles cautiously, read the directions completely, and rub the box on his cheek. The celebration starts to go downhill as he escapes into the Land of Planes. Other gifts don't make him carry on this way. He tears through regular presents like a customs inspector. We can give these gifts any time during

the evening. Only the ones with a small "R/C" on the gift tag get saved for last. Then the rest of us go to bed.

The real wonder of Christmas is that the modeler thinks any gift he gets should be used at once. If you give him an Olympic kit on Christmas Eve, you'll find him bleary-eyed in the morning almost ready to sand the wings. If you give him a new stopwatch, be prepared to have everything you do checked out to the fraction of a second. Who really cares how long it takes you to brush your teeth, or to get the weather report from the Coast Guard station?

What we women need to do is exchange some unusual hobby related gift ideas. I'd like to offer checking your state license bureau to see if you can get him one of those lettered plates for his car. I saw "I FLY RC" at the glider nationals. You could make up something like "RC 4 ME" or "POWER RC" or "I DIG RC." "RC WHOPEE" is cute but I think it's one letter too many. In most states you're too late now for the 1976 personalized plates. In Michigan the deadline for 1976 was June of 1975.

This year one of my friends in Wisconsin is giving a home-made coupon book. The coupons read something like this. "Good, anytime, for one half hour of wing holding during final Monokote smoothing. Smiles included." Another reads, "Good for one evening of abso-

Continued on page 67



1920's Navy Flying Boat

This model looks just about like any Navy flying boat you might have seen back in the early 1920's (if you happened to be around at the time), and flies in the same lazy manner.

By GEORGE CLAPP

PHOTOS BY MARK COWLES

• U.S. Navy flying boats of the World War I and twenties era were many, and varied greatly in plan form. There were two general types, one similar to our

model, and the other with hull and outriggers to the empennage, such as the Curtiss NC-4 of transatlantic fame. But I think it's safe to say that all were bi-

planes with rigging far more complicated than this non-scale subject.

About 1964, M.A.N. published Ken Willard's "Little Swell," a monoplane flying boat. Right away, I saw the possibilities of making it into a boat such as I had been thinking of building.

The hull of a flying boat can take considerable experimentation and building trial and error before you hit upon the right design. After reading that this was Ken's third try, I decided to stick with his hull design and blow it up two times in size. The rest of the ship is my idea of a composite of all of these great old Navy Flying boats. Also, it is of great satisfaction to see it lumber along until it hits that last ripple and becomes airborne. It then cruises around with no great performance, much as those ships did. There is little doubt that it could stand a 60 for power, but I preferred the challenge of a strong 40, such as the Super Tigre ball bearing rear valve it now has, for realism.

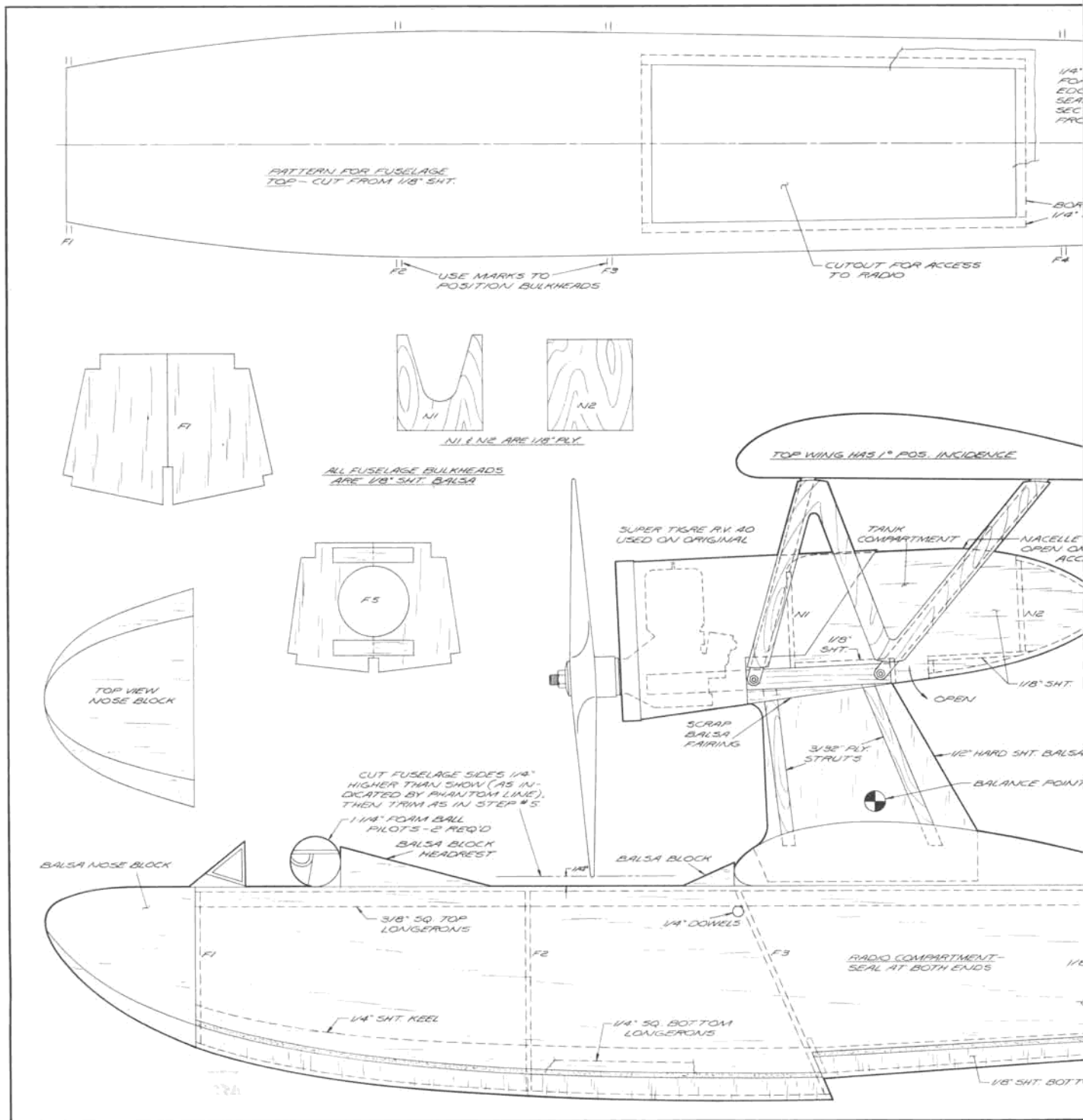
HULL CONSTRUCTION

The hull is quite simple to build, with 6 steps clearly shown on the plans. It should be noted that the top view lines represent the exact shape of the top piece of the hull.

1. Use the top pattern right off the



Todd Bradbury, the author's No. 3 grandson, poses with the Navy flying boat. Hmmm . . . wonder what frequency George is using?



plans. As the top of the hull is flat, it makes an easy foundation for building the hull upside down.

2. Draw center line on top skin and install bulkheads.

3. Lay keel and bottom longerons.

4. Lay top longerons and sand angle on these, using bottom longerons as guide. This should sand angle back to top skin. Now cut out radio access below wing and border with 1/4 inch balsa between top longerons and bulkheads.

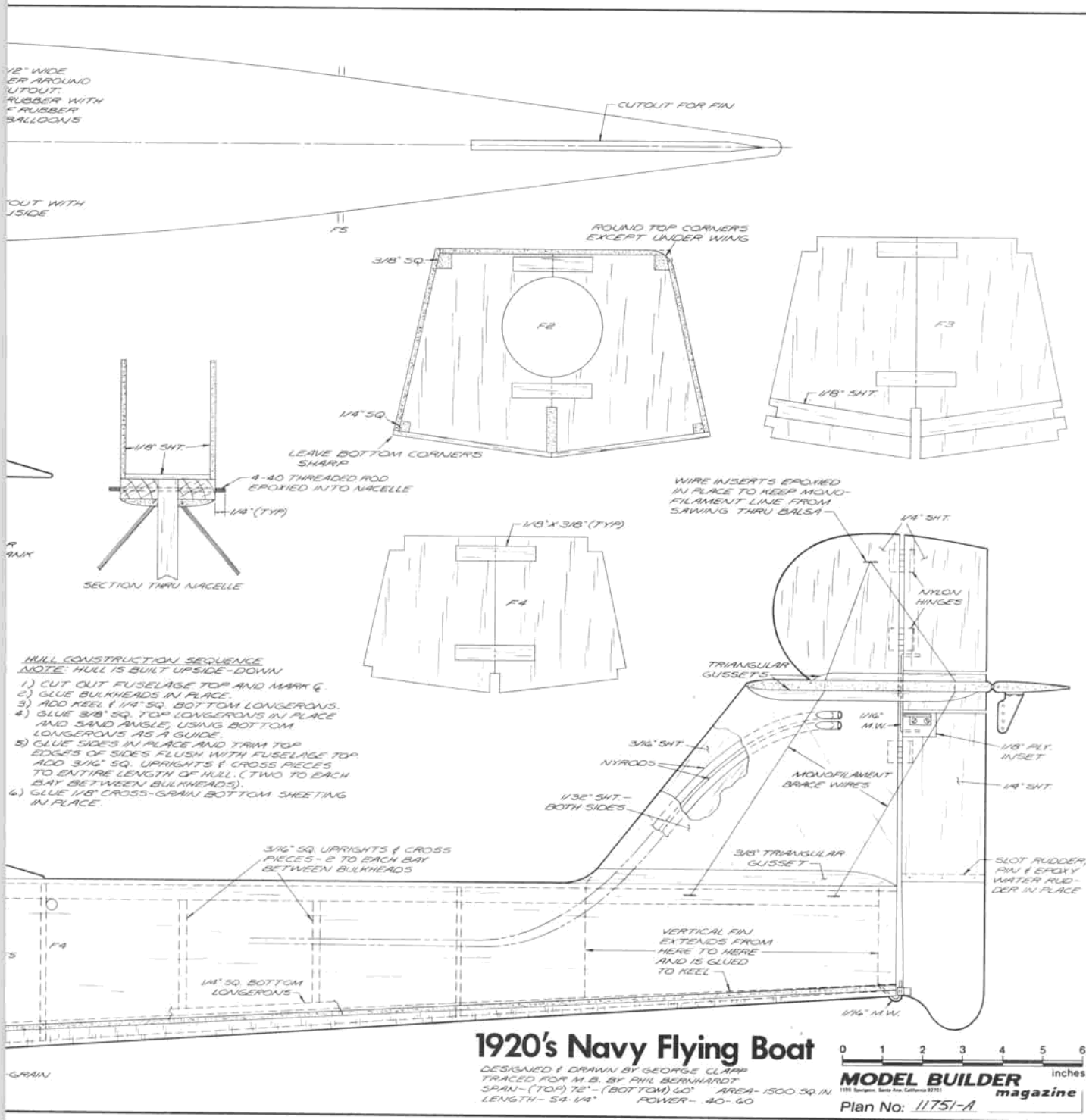
5. Make outside skins from 1/8 inch medium balsa, using side view as pat-

tern. Note 1/4 inch excess added to top. Top will then have to be fit to allow for angle of sides of hull. This will make a gentle curve on the top of side pieces. Sides are then glued in place. Now add 3/16 sq. hard balsa cross pieces. These should be two to each bay between bulkheads, except between F-2 and F-3, where one is enough.

6. Bottom is then layed on, cross grain, for strength. Add block to nose and sand entire hull to shape. Then add block for wing to butt against at front, and pilots' head rest (two pilots).

TAIL SURFACES

Make vertical stabilizer, using 3/16 medium balsa. Then cut out way for Nyrod and sandwich 1/32 hard sheet balsa to both sides. Make curves for Nyrod as gentle as possible. Nyrod will have to be glued in at same time that 1/32 sides are applied. Make sure Nyrod is long enough to go to radio area of hull. It was feared at first that this would bind Nyrod too much, but it works very well. Note that entire vertical fin goes through fuselage and down to keel. Add fillet at base of fin.



FULL SIZE PLANS AVAILABLE - SEE PAGE 88

Now make horizontal stabilizer and glue or epoxy to top of vertical fin. The entire hull, vertical fin and horizontal stab are then silked and doped with several coats of clear. Rudder and elevator are then made, silked and doped. Nylon hinges are installed. Water rudder is then made of .020 galvanized steel. It is pinned and epoxied to groove cut in bottom of rudder. Tab on water rudder is then formed around .062 piano wire, wire being bent as per drawing.

Tail section is now complete. Note small pieces of wire inset in fins. This

keeps No. 20 monofilament leader brace wires from working in balsa.

TOP WING

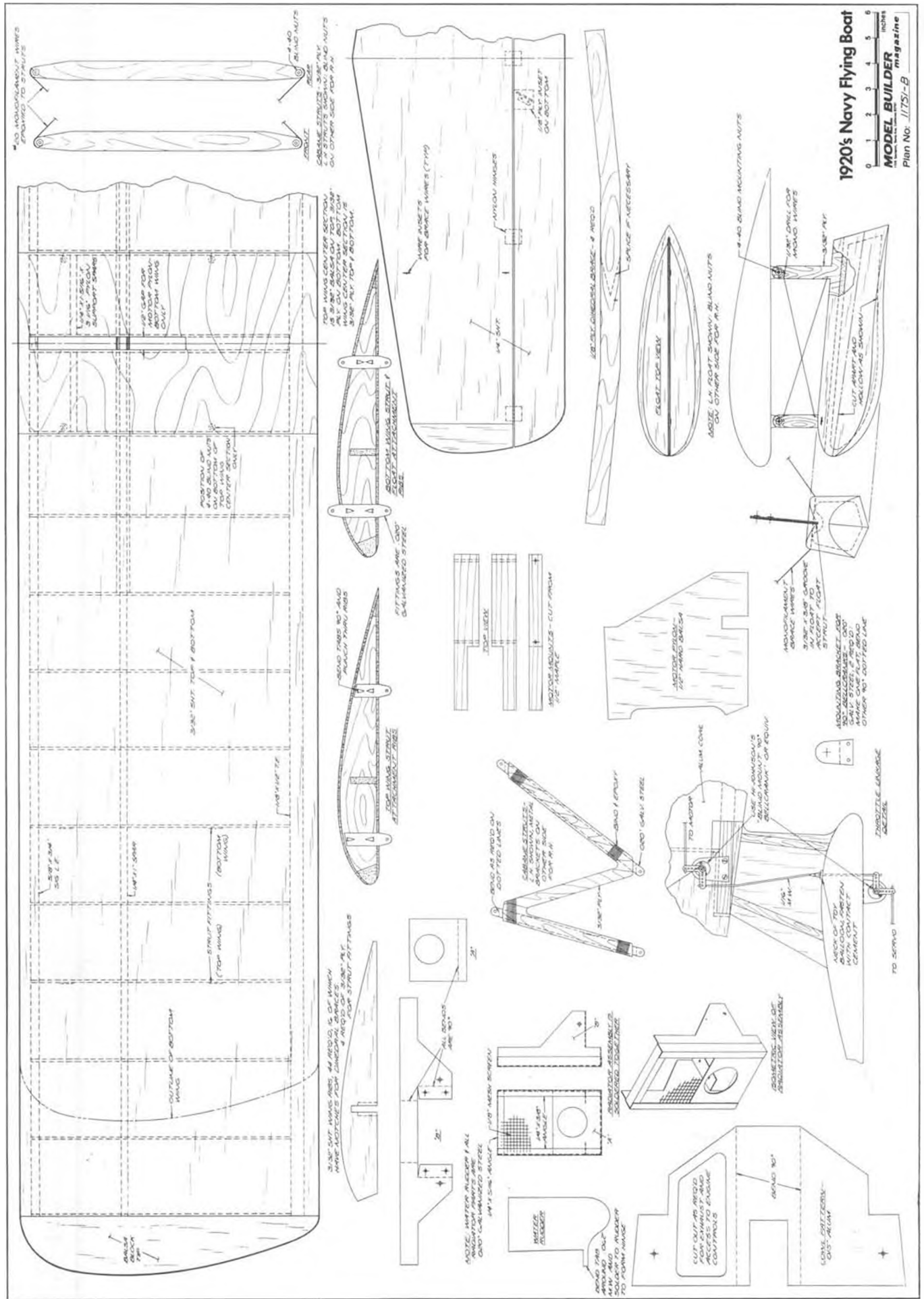
Wings are both pretty much alike in construction. Lay 3/32 bottom sheets and pin down. Now add spar, ribs, trailing and leading edges. Note center section on top wing is 3/32 plywood on bottom surface only. Now add dihedral, glue wing splice in place, and 3/32 outside panels to plywood center section. Next, add blind nuts to center section and epoxy strut fittings to out panels. Finally, add top skin to top wing.

BOTTOM WING

Bottom wing is very similar, but both bottom and top surface of the center section is 3/32 plywood, and it has short pylon spars. Entire center section is epoxied. Of course, pylon has to be installed before top skin. For strut fittings shown, I made a small die and punched burrs in them. But they could be made with holes and pinned to ribs. Tips on both wings are made from blocks.

TIP FLOATS

These were made of a solid block,



1920's Navy Flying Boat
 MODEL BUILDER magazine
 Plan No. J1751-B
 0 1 2 3 4 5 6
 inches



Close-up photo of engine mounting. Note waterproof shield around throttle linkage where it comes up through the lower wing. "Rustic" cowling is very typical of early 20's era . . . certainly no problem with cooling. Note fuel lines from tank to upper surface of top wing.

split to hollow out, then glued back together. Slot in top accepts one-piece plywood struts.

MISCELLANEOUS

The struts, motor mount, cowlings, engine, dummy radiator, etc., are pretty much self-explanatory on the drawings.

WATER TIGHTNESS

This cannot be stressed too much. You will note the toy balloon neck around throttle exit. Also, good quality sponge rubber around radio access opening covered with toy balloon sections.

Cement down sponge rubber, then be careful not to get contact cement on sponge when attaching membrane over it.

RIGGING

Entire wire bracing is done with No. 20 monofilament fish leader. After installation, it is heat shrunk. Make sure you get a line that will shrink. I had some that would not, and had to replace it.

CONCLUSION

I would like to thank Harvey Saddler,

of Phoenix, Arizona, who helped me with the construction of this airplane while I was there, in 1967-68. This ship is over six years old and has dropped from about 20 feet up after a stall (I got excited and forgot to extend transmitter antenna) into the water, with the only damage being a missing windshield. This is the advantage of building them like a brick **CENSORED** (*Shame on you, George! wcn*). May you get as much enjoyment out of building and flying it as I have. ●



Our cover star, Jeff, gives us an underside view of the flying boat. Ship is a slow and realistic flier with the .40 rear rotor Supertigre.



The author poses in an appropriate background. The floats are rigged on a Cessna 172.



The airport at Belp, about 10 miles south of Bern Switzerland, scene of the 1975 R/C Pattern World Championships. At the far left, you are looking south, toward the Alps. Just above the nose of the Dan-Air transport is one of the flight lines. The huge tent in the center housed the displays, the team pit area, the cafeteria, and the dining space. The other flying site is off to the right, at the north end of the runway.

1975 R/C PATTERN WORLD CHAMPIONSHIPS

Photos and text by
BILL NORTHROP

• Have you ever seen an R/C pattern ship perform a "Langsam-Eh Rollah," an "Ocho Cubano," or a "Sombrero de Toppa?" Did you ever hear a judge called a "Punkterichter?" (We've heard 'em called just about everything else!) If you haven't heard of the former maneuvers, then you've never witnessed an R/C Pattern World Championships, and as for the latter, the Swiss either don't have a word for "judge" in their language, or they simply prefer to give these hard-working pattern officials no grander a title than "point writer."

The above introduction doesn't even begin the "foreign" flavor which characterizes world championship competition, and of course, the case in punkt . . . er . . . point is the Weltmeister . . . cripes

. . . the World Championships of R/C Pattern which was held in Bern, Switzerland, on September 8 through 13, 1975.

This writer was fortunate in being invited to be one of the ten judges to officiate in Bern, along with Tony Aarts (Holland), Dave Henshaw (Canada), Egon Gstohl (Liechtenstein), Camille Gerard (Luxembourg), Walter Burger (Switzerland), Loris Kannevorff (Italy), Pierre Pignot (France), Owen Giddings (England), and Heinz Freundt (Austria). Actually, there were eleven of us, as Joe Dible was there from Ireland as a standby, if needed.

It would be no problem to write a book about all of the main and sideline features experienced during this two

week adventure, and just figuring out how to start is bad enough, let alone trying to condense it into a single article. We'll attempt to do it by chronicling our own experiences, as well as discussing the contest itself. First, the travelogue.

Transportation to Europe was provided for the team members, the team manager, and this judge, by AMA, through the National Aeronautic association, and MATS. In our case, it meant leaving an unfinished October issue (that's why it was later than usual!) and having to come back as soon as possible, or not go at all . . . the choice was obvious.

We were accompanied on the flight to Frankfurt, Germany by team members Mark Radcliff and Rhett Miller, and manager Don Lowe. Third team member Dave Brown had taken an earlier flight, with AMA President Johnny Clemens. Johnny and Dave, along with Papa Rhett (why couldn't they have been Tom and Dick, or George and Harry, instead of Rhett and Rhett!?), who had flown in commercially on Lufthansa, eventually(!) met us at the airport, having previously rented two VW Micro-Buses and one Bug.

After cramming model boxes, suitcases and people into the three vehicles, and making several excursions around



Bruce Turner, New Zealand, with Manager Tom Prosser holding his model.



A. Masetto, of Argentina, who finished 72nd.



Emil Giezendanner, brother of former World Champ, Bruno, Team Manager Kurt Muller.



Benito Bertolani, Italy. Team wives had a unique way of collecting autographs, on them!



Defending World Champ, Tsugutaka Yoshioka, tweaks the needle.



the U.S. Air Force portion of the Frankfurt Rhine-Main Air Base in search of a place to exchange some U.S. dollars for German marks, we finally all lined up on the same autobahn (German version of a Freeway) headed in the same direction, and took off for Heidelberg.

There were several reasons for going to Heidelberg; 1) it was on the way to Bern, Switzerland, 2) it was too early to arrive in Bern, because we flew over when MATS said "Go," and our hotel rooms in Bern couldn't be occupied for several days, 3) Dave Brown had a modeler friend near Heidelberg who would find us a place to stay, 4) there were model flying fields in the area where the team could practice, and, 5) why not go to Heidelberg, it's a beautiful and historic spot!

With Dave in the lead, the caravan arrived in Heidelberg and we got out and stretched while Dave called his friend in the nearby town of Ketsch. By now, we had discovered a heretofore unknown fact about Dave... he had been stationed near Heidelberg for part of his hitch in the U.S. Army in the 1960's, had joined a model club there where he *learned to fly R/C*, and had gained fair command of the German language... well, let's call it "pigeon German"... but it worked, and we had us a built-in interpreter!

Dave's German modeling buddy, Herbert Fuchs (pronounced "Fooks") showed us to a delightful little hotel on a lake just outside of Ketsch, which was about 15 miles from Heidelberg, by

way of Schwetzingen... yeah. The next day, Johnny Clemens and this writer drove to Heidelberg and spent hours nosing around the city streets, the intriguing shops, and the fabulous old castle. The streets and buildings are spotless, gardens and window boxes are full of beautiful flowers, the girls are gorgeous and wholesome and appear to have no visible means of "support," the beer is cool and tasty and plentiful, and prices are so high they're out of sight!

Dinner at the little See Hotel was excellent, and partaking of it was a ceremony. When young Rhett asked for ice

for his luke-cool Coke, the waiter finally caught on and brought in a dinner plate with a large spoon, and planted in the middle of the plate... one ice cube!

The following day we all went to the club flying field so this writer could critique the team flying. What a field! Many of our clubs should be so fortunate. The property, surrounded by a low cable-and-post fence, was out in open country, bordered on two sides by small, two-lane gravel roads. The third side was the entrance road, and the fourth side was backed by a farm field. The whole area was covered in



West Germany's Gunter Hoppe strolls over to his position in front of the judges.



Mark Radcliff, about to make first flight for the U.S. team. Manager Don Lowe stands by.



Ricardo Fombella, of Spain. Concentrating on judging can be difficult at times!



Rene Schumascher, Switzerland, Manager Muller, and time keeper Willy Boni.



Pujo Stephansen, Norway, with ever present cigar, "winds up" his "Maximum II."



Belgium's Gerard Werion prepares his ship as Team Manager Yvon Werion chats with Willy.



A cheery "Good morning, suh!" from Isao Matsui, president of I.M. Products, Japan.



Ben Castaneda, Mexico, turns to announce his takeoff to the judges.



Jeff Tracy, Australia, sets his throttle before starting the engine. Looks like a Phoenix.



Louis Castaneda, Mexico, with his beautiful daughter-in-law, with Ben's "Dirty Birdy."



Ruggero Pasqualani, Italy, does a deep knee bend while our friend Graziano Pagni holds.

lush, close-cropped, championship golf course condition, green grass, about 100 by 200 yards in size. In the center, but nearer to the fourth, and a longer side, was a smooth, paved strip, with painted landing circles. Along that fourth side was a club house with a porch and latticed pavilion outside. The club house contained tables and chairs, and a store room to keep that luke-cool beer and coke. On the other side of the pavilion was a shed-type building which housed toilets, a storage space for the *club tractor* and *mowing machine*, and a semi-work/storage room for models. How do you like that!?

After watching each of our fliers and then having a group conference and discussion on ways to score well at the championships, we left the team to their practicing, and along with Johnny, drove back to Heidelberg to look at some more . . . er . . . flowers.

Next day, Sunday, we left the team to more practice, and drove on to Bern, passing from Germany to Switzerland in the city of Basel. There were uniformed guards at the border, but unlike the movies and television, there was no gate, no machine guns, no tense music, and Claude Rains didn't come out to check our passports! We stopped on the Swiss side and turned in our German marks for Swiss francs. The music in the little exchange office was American rock!

Once we were within about 100 kilometers of Bern, we left the autobahn, preferring to take the small roads and



Judge Owen Giddings, England.



Judge Camille Gerard, Luxembourg.



Judge Egon Gstohl, Liechtenstein.

sightsee. It is a most beautiful country. If only one word were permitted to describe Switzerland, it would have to be "spotless," though Germany is similar. It's impossible to find an empty bottle, or can, or scrap of paper lying along the roadside, whether in the country, or when winding through the narrow, picturesque streets of the small towns.

Well . . . please excuse the MODEL BUILDER Travelogue, but this writer doesn't have the opportunity of traveling to a foreign land too often, and we can't resist the temptation of telling *somebody* about it. Wish you could have been with us, the two Rhett Millers, and Johnny Clemens, when we took a cable car ride to the top of the Schilthorn, 10,000 feet up in the Alps and ate dinner in a rotating restaurant. It was 68° when we left the base, and snow was blasting past the windows as we dined on . . .

Being a judge at a World Championships has its good and bad points. On the good side; you get a free ride part way across the world and back, you get free room and meals during the days of competition, and you have a front row seat on the scene of the action. On the bad side; you are "chained" to your duty from the very first through the very last flight every day of the contest, you have to watch the same set of 16 maneuvers approximately 156 times or about 2490 all together, and score every one of them accurately . . . and worst of all, you have very little opportunity to



Aria Goldberg, Israel, and team members. As a reminder of the ugly outside world, their car was repeatedly checked for booby traps.



Sally and Dave Brown, with Don Lowe holding. It was chilly and windy during this flight. Shades of Hutchinson!



Canadian Garry Reusch applies the starter as his father, Brent, holds on. They produce several kits with fiberglass fuselages.



Rhett Miller, Jr., Rhett III, and Don Lowe, before Rhett's first flight on Wednesday afternoon, the only complete day with good weather.

meet and talk with the fliers or to examine and photograph their models.

As the fliers alternate from one flight line ("Piste" in Swiss!) to the other in succeeding rounds, each judge obviously "sees" each contestant for two of his four flights. Even as a "footloose" reporter, it would be hard to see more than that, even if you were equipped with a motorcycle to run back and forth between . . . er . . . pistes. And chances are, there would be two hot fliers up at the same time, so you'd have to miss one of them anyhow.

The worst part of judging at a World Championships . . . or we should say . . . the most frustrating, is to be so close to all of these modelers from all corners of the earth, and not have the opportunity to spend time with them and to learn more about them and the models they are flying. Between flights, the contestants spent most of their time in the huge tent that was erected on the airport grounds. Inside, there was a fenced-off area with bench/tables for each team to assemble, park, and/or work on the models. Along one side were manufacturers display booths, and at the opposite end were tables, benches and a complete kitchen for preparing meals. In Switzerland, whether in daily routine or at an airplane contest, there seems to be no such thing as a snack, or sandwich. You sat down to a bowl of hot soup, a platter of hot vegetables along with some kind of meat, and a dessert of ice cream

smothered in fruit sauce, or what have you. To wash it down, you drank beer, wine or coffee. If you asked for water, milk, or iced tea, you got a blank look . . . Oops, back to the models.

Between flights was a great opportunity to meet and talk . . . or attempt to talk to the contestants. Luckily, most European and Far Eastern countries teach English in their schools, and with only a few exceptions, it was possible to communicate. As for those who spoke no English at all, sign language and universal modeling terms bridged the gap.

Unfortunately for the judges, there was no such thing as "between flights," and this brings up one complaint we had with the organization of this World Champs. Prior to the affair, it had been indicated that each night, a different hotel which housed contestants would be designated as the host for the evening, where everyone could gather. This never happened, and it really was a shame, because once back in Bern each evening, everyone went their own way. In contrast, at the World Champs in Doylestown, Pa., 1971, AMA held an open



P. Constantinos, the only flier from Greece. Crashed shortly after takeoff on third flight.



Flying in the rain, with an umbrella to keep the transmitter dry, Paul Behm, Luxembourg.



The new World Champion, Wolfgang Matt, of Liechtenstein. Hanno Prettner, Austria, 2nd.



The Complete Judge's Stand. It was too high to write on, but it sure looked nice!

house every evening in a large banquet room of the one headquarters motel. There was much more opportunity to socialize and talk over the mutual problems of airplanes, engines, fuels, competition rules, etc. In our opinion, these gatherings are as important as the contest itself.

Oh . . . the contest . . . you probably thought we'd never get around to it. As we said, the opportunity of traveling to a foreign land and meeting and talking with so many fine people from so many different countries, can easily outshine the competition itself. However, on with the flying, which started Wednesday morning, Sept. 10, 1975.

Jean Tonnar, (66 . . . number is final ranking) of Luxembourg, had the honor of being our first contestant . . . which reminds us of what we believe was an innovation in R/C competition which this writer introduced and which met with success and approval by all the



Judge Tony Aarts, Holland.



Judge Pierre Pignot, France.



Semi-scale Spitfire, by Tore Paulsen, Norway, flew very well, and was one of the fastest at the contest. We have a construction article coming on this one.



Geoff Franklin (left), Team Manager, and Keith Maundrell (rt.), pilot, of the British team. Sorry, but we didn't get the name of the mechanic holding Keith's plane. Some rain, huh Geoff?

judges and jury. The judges were "warmed up" by having two unofficial pattern flights to score immediately prior to the first official flight. This gave us the opportunity to "adjust our sights" and more or less get used to the background relative to the placing of the maneuvers. With only four flights per competitor, we're sure the first few to fly appreciated the fact that the judges were "in the groove" at the very beginning.

Anyway, Tore Paulsen (41), of Norway, followed Tonnar's less than average flight with an above average score. Tore's aircraft was particularly interesting because it was a tail-dragging, semi-scale Spitfire! One of the fastest to be seen, it was the only "scale" model entered, but we hope it might start a trend. It

didn't suffer in takeoff or landing because of the two-wheel gear, and it sure looked impressive in the air. In fact, we talked Tore into a construction article for sometime in the near future.

Next was Domenico Bruschi (71), from the little Italian-speaking country of San Moreno, and we couldn't help but feel that Bruschi and his teammates could have done better without their caller yapping at them constantly and tapping them on the shoulders while they were flying. He talked them through every inch of every maneuver to the point that it's a wonder the pilot didn't wrap his transmitter antenna around the guy's throat!

Pujo Stephansen (45), Norway, a W/C contestant for many years, still tucks his transmitter up under his chin



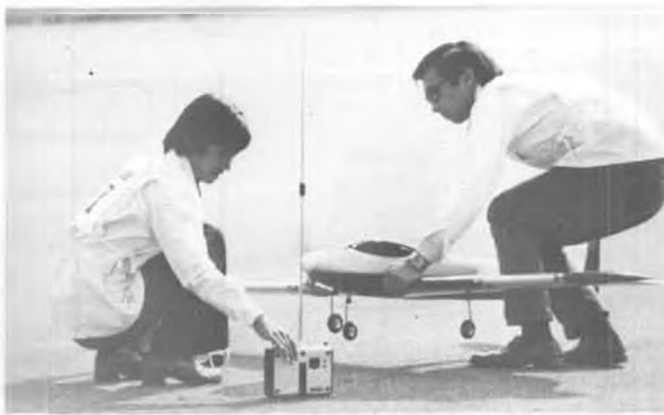
Bengt Lundstrom, of Sweden, solved the problem of strip aileron flutter. Now just eliminate the inner portion that doesn't do much . .



French team members; Jean-Claude Lavigne, Manager, and Guy Hardy, pilot. Apologies to mechanic on right, we didn't get his name.



Bruno Giezendanner, Switzerland, ex-World Champ in 1969 and 1971, awaits go-ahead from timer.



Tetsuji Okumura (left), member of the third place Japanese team, placed 5th in spite of losing complete flight from engine problems.



Note huge tuned pipe/muffler under ship flown by Slavko Policar, of Yugoslavia, also used by the Austrians. It didn't seem to be very effective, either for rpm, or quietness.

and keeps a cigar going throughout the flight.

Tsugutaka Yoshioka (4), the 1973 World Champion from Japan, showed right away that he hadn't lost his form, and drew the first round of applause from the spectators.

Salo Feiner (63), of Mexico, scored about a 5 average, his maneuvers way out of position and far away.

Mark Radcliff (6), put up a good flight as the first American to appear, but was off position on his 'M' and Top Hat, and turned way out of his landing roll heading.

Japan's Tetsuji Okumura (5) never got off the ground because his engine refused

to throttle back.

Aria Goldberg (69), of Israel, was there to learn.

P. Constantinos (76), of Greece, made two passes before starting his 'M,' thus zeroing every maneuver. It was a misunderstanding, but he took it good-naturedly and undoubtedly will never make that mistake again.

Bruno Hedegaard (62), Denmark, was followed by Ricardo Fombella (75), Spain, whose engine cut after takeoff, then Gerard Werion (16), of Belgium, who averaged between 7 and 8. Next came Gichi Naruke (19), Japan, then Jose Roho Ara (59), Spain, Louis Castaneda (56), Mexico, who appeared with

his wife Naomi, both very nattily dressed in matching red and grey outfits, then Jeff Tracy (38) of Australia.

Rhett Miller (9), was up next and did very well, though off to the right in position on several maneuvers. In his Horizontal and Rolling Eights, his "Compensator" actually disappeared behind our pen with which we were aligning his maneuvers for accuracy. You can't do much better than that!

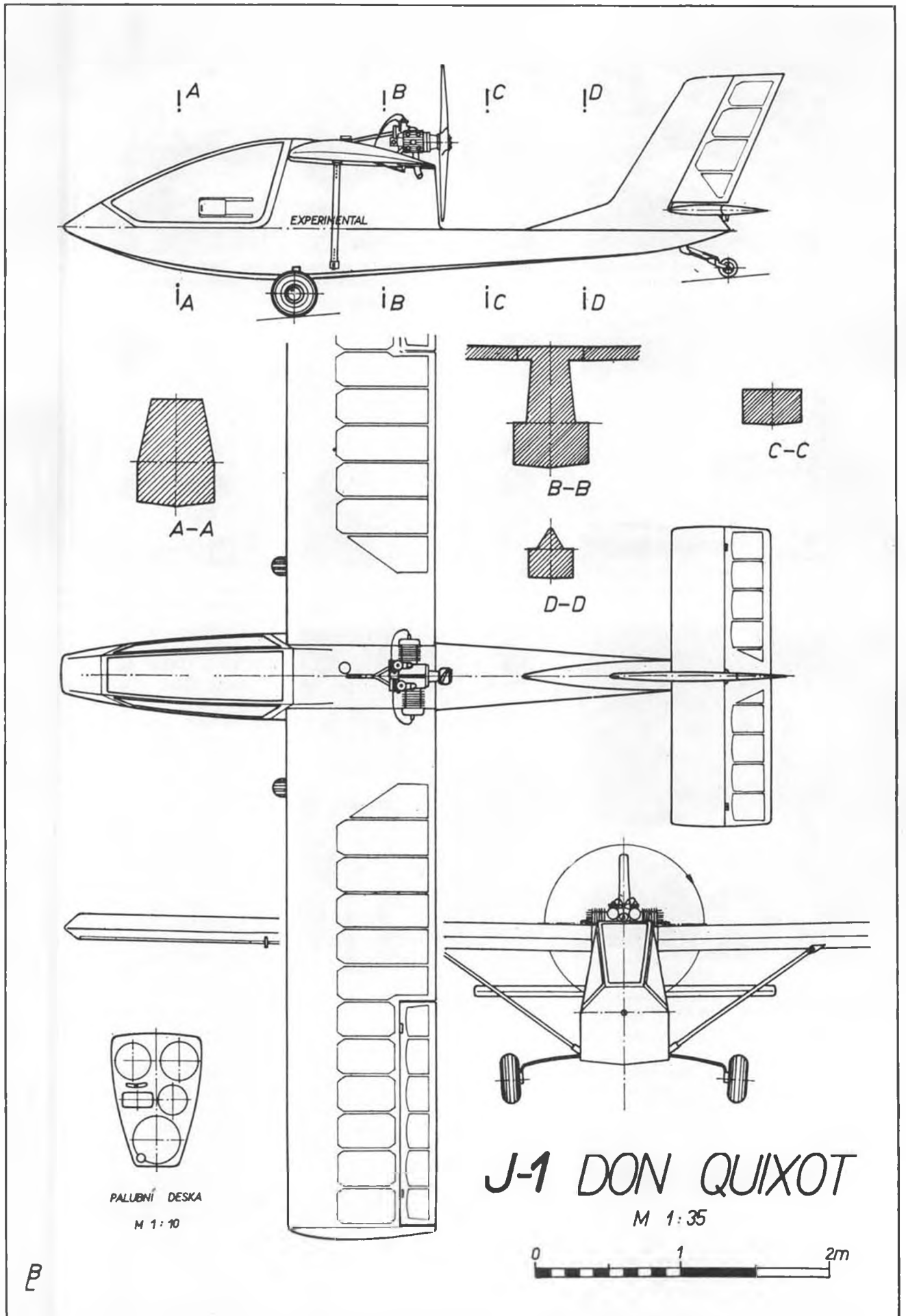
M. Somenzini (60), Argentina, had to follow Rhett's act, and twice former World Champ, Bruno Giezendanner (17), Switzerland, was next. His new design, we felt, actually hindered any success he might have had. It had a very short nose moment, long tail moment, tapered leading edge/straight trailing edge wing, and a fin and rudder that looked as though it had once been higher before being chopped off low in a straight line. Sorry, Bruno, we gotta say it was . . . ugly!

Young Gary Reusch (25), Canada, was next, followed by V. Amenduni (67), Argentina, and then Benito Bertolani (20), Italy, who ran out of time just 3 feet before his roll-out stopped, zeroing the landing. Mama mia!

Warren Hitchcox (28), Canada, with wifey Shirley calling, missed his spin. A. Masetto (72), Argentina, dug his prop into the paving on takeoff, but had time to change sticks to complete his flight (Zero for T.O., of course).

Emil Giezendanner (18), Switzerland, finished next to brother Bruno with the

Continued on page 85



B



Storage compartment side of molded jug is sufficient for the modeler who doesn't have to take half of his workbench to the flying field.



Pump side of jug. Complete pump/charger/glow plug power unit can be removed for charging, leave the jug in your car or garage.

PRODUCTS IN USE

RG's R/C PIT PAK . . . By Taylor Collins

● The R/G's R/C Pit Pak is very appropriately named. It combines all of the essential pit accessories for power R/Cers into one neat and compact package. It combines a fuel storage container, a fuel pump, a rechargeable power pack, battery charger, glow plug power source, and tool box into one neat, easy to carry unit.

The high density polyethylene container is available in red, blue, or green. The tank, which will hold 1.3 gallons of fuel, is molded to house two brushed aluminum cases. One side opens to serve as a tool and spar parts compartment, while the other side houses the fuel pump, batteries, and battery charger.

The fuel pump operates on 2.5 volts, and at a current of slightly over one amp, will pump 12 oz. per minute. The

Pit Pak pump will fuel even the largest gas guzzlers in under two minutes. Tests showed that the pump would pull 10 inches of mercury on an automotive vacuum gauge. This means that if the pump were located 10 FEET above the fuel level, it would still draw fuel. The pump is wired with a reversing switch which allows defueling as well as refueling the plane. The nickel cadmium batteries (which are supplied with the Pit Pak) are wired in series in conjunction with a dropping resistor to provide current for the glow plug clip.

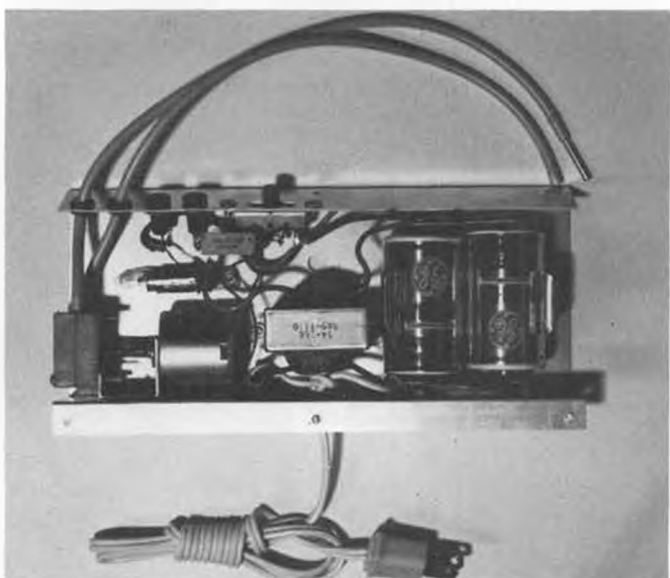
The charger unit uses a power transformer which is wired through a #44 light bulb. This bulb drops the charging current to a safe level for the "D" size batteries which come with the Pit Pak. Extra heavy duty 4 amp hour nickel



Pump unit pulling almost 12 inches of mercury on automotive vacuum gauge. It will lift fuel better than 10 feet above the container.

cadmium batteries are available as an option for \$17.95 per set. These heavy duty batteries can be charged with the built in charger by changing to a #45 bulb.

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Detachable power unit, complete with charger and 110 power cord, fuel pump, batteries, and dropping resistor for glow plug outputs.



Glow plug clip line has connecting pins installed. Jug holds 1.3 gallons of fuel. Bottle comes in three colors. A very compact unit.



Bill Nibley, first in Unlimited at the 1975 LSF Tournament, flew his Pierce 970 "Alice." San Fernando Valley Silent Flyers member.



"The Colonel," Bob Thacker, flew this scratch-built, straight wing version of the Hobie Hawk to first place in Standard Class.

R/C SOARING

By
TAYLOR
COLLINS

The 1975 L.S.F. Tournament story and results.

● Some guys have all the luck! One fellow I know of has a corner on the market of both varieties . . . good and bad. One week before the L.S.F. Tournament, Loren Blewett's Windrifter took off for parts unknown. It seems as though his radio just got tired and took a nap. So naturally, his Windrifter, being the stable creature that it is, reverted to a free flight mode, and disappeared straight overhead. Efforts to locate the missing plane from a full size plane were fruitless, and after considerable searching from the ground, the search was given up.

Since Loren was already registered to fly in the L.S.F. Tournament, he thought he may as well try to borrow a plane and fly. Tom Williams had a left-over prototype of the SD 100 Windrifter, a plastic and plywood hybrid with con-

siderably rounder lines than the usual Windrifter. Loren scrounged a radio on the proper frequency, put it in the borrowed SD 100, test flew the combination once, and headed for Mile Square and the Tournament. Two days, and five grueling flights later, Loren found himself in serious contention for first place in Standard class.

The final flight task was a ten minute duration flight, with three minutes after the max to get down. There were one hundred bonus points to be earned by nailing the center of the landing circle. Fortunately, Loren got a good launch. Unfortunately, there was little but sink to be found. Fortunately, Loren was able to find a few sparse patches of lift. Unfortunately, Loren wasn't able to get the full ten minutes, but fortunately, he was very near to the landing circle.



Bob King, Phoenix, Ariz., with his own-design "Jaws." Shark's head attaches to wing roots.



Col. Bob Thacker releases his Baby Bowlus (Sept. '75 MB). Soaring Nats Scale winner placed third at the LSF Tournament. Ship could fly in power scale with Nelson engine conversion.



Bottom view of Bob King's "Jaws" is pretty ominous. He'll CD Southwest Regionals.



Soarcraft's Hugh Stock with Magnum 12. Kit to be released shortly. Radio problems at LSF.



Dave Peltz with prototype Rubber Duck Co. "Mother Goose." Span 154", 8-1/2 lbs.



Joe McClaran, Visalia, Ca., shows the rudder dive-brake on his "Split Tee" design.

Unfortunately, he flew through a blast of sink and landed outside the circle. It could be said that Loren . . . Blewett . . . but he didn't really. He came in third in standard class, against some of the toughest competition I've ever seen. Not bad for a borrowed airplane, and a borrowed radio. But like I said, some guys have all the luck.

This was the year of the potpourri

L.S.F. Tournament. The tasks were one round of two-minute precision duration, one round of seven-minute duration, one round of ten-minute precision duration, one round of speed over a one mile course (four laps around two pylons) and one round of ten-minute duration.

Mile Square Regional Park provided its usual motley assortment of weather, lift, and sink conditions. Both days of flying started with fog thick enough to cut with a knife. Around ten or eleven in the morning, the fog would lift, the sun would come out, and the lift would be good for around a half an hour. Then the wind would come up, the lift would get spotty, and I'd get called to fly! It just ain't fair . . .

The speed round separated the men from the boys . . . and from the hangar pilots. All you had to do was cover the four laps and you got an immediate 450 points. Speed points were awarded for completing the course in less than four minutes, according to a progressive scale. It was possible to earn as much as 1000 speed points for a time of 1:00 minute or less. The fastest time posted was 1:55, by Fred Weaver. The trouble was that there were a lot of people who didn't finish the course. Several tried



Mike Reagan with his "White Trash", best selling MB plan, designed by Rick Walters.

ballasting their planes . . . some quite heavily, and some not so heavily.

As it turned out, the whole trick was to fly through lift on the course. Rick Walters nearly landed in the middle of the course after completing only one lap, but found a small thermal and worked it downwind to gain enough altitude to finish the course in over six minutes. Others found lift and zig-zagged downwind between the two pylons to stay in the lift, yet still did not have to stop to thermal turn. Still others (myself included) managed to find enough lift to stay in close to the pylons and complete the course in fair time. I weighted down my borrowed Dart II with a pound of lead and went through three laps at about 100 feet. Just after I made the last turn and was heading for the finish line, my rudder servo got bored and went to sleep. I managed to land the Dart a half mile downwind with only the elevator functioning. But like I said . . . some guys have all the luck.

Colonel Bob Thacker flew his modified Hobie Hawk through the speed course in the zig-zag fashion and wound

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Terry Koplan gets both feet off the ground while launching Don Edberg's second place scale "Duster."



Bob Elliot, of EK Logictrol, applies body English to his Soarcraft Glasflugel 604 scale ship. Looks a little high for the spot.



Manfred Heid, Kavan's test pilot, demonstrates the Alouette for our Chopper editor. Beautiful flying site is outside of Nurnberg, Germany, home of the Kavan production facilities.

CHOPPER CHATTER

By JOHN TUJCKER



• Vacation time, or "Holiday" as the British call it, is over and it's time to get back to the workbench. Awaiting my return from Europe was a beautiful new DuBro "Tri-Star" kit with Hughes 500 body. A rather cursory examination of the parts and mechanical components told me that I'd better clean off the table-top and start building 'cause it looks like a real winner. I won't go into details now because the complete report will be in next month's issue of MB . . . but, I'm about 75% finished and can hardly wait to get it into the air. It's another fast-build model, full of engineering surprises, and has a certain quality which can only be described as superb . . . and the price tag, in the very low two hundreds, just has to make the Tri-Star a top contender for sales!

Let's get rolling this month by welcoming some new builders into the Kopter Korner and listing their present projects:

John Pritchard, 8183 Elmer Hill Road, Rome, N.Y. 13440. (315) 339-2365. Completed RCM Polecat, will share building and flying.

Alfred E. Cave, M.D., 519 Magnolia Blvd., Long Beach, N.Y. Completed Hughes 300, now building DS-22 and Bell 212. Wants first 3 issues of Model Helicopter News.

Robert G. Benson, 71 Old Orchard Ct., Cedar Grove, N.J. 07009. (201)

239-3174. R-BEE 110 and R-BEE 210, Has access to machine shop, will assist others.

John Ellson, 165 Kennedy Road S., Apt. PH3, Brampton, Ontario, Canada, LGW3L3. (416) 453-4051. Kavan Jet Ranger in building. Will share electronics skills.

I also received a card from John Burkam in which he mentioned his 3 lb., 10 oz. "Anita" scratchbuilt chopper. It's powered with a Super Tigre .23

and really climbs like a homesick angel! Johnny, how 'bout sending us more details, photos, sketches, etc. on "Anita"? This chopper sounds like it would have tremendous appeal to the experimenter (and it has to be good if Burkam designed it!).

John also mentioned that the instability, at low RPM, which is often encountered with the non-teetering rotor heads, such as Schuco Hegi "Carden Head," is probably caused by not enough



Dieter Schluter, the man who really pulled the cork that made R/C helicopters possible. His Heli-Baby is sold and distributed in this country by MRC.



Karl-Heinz Denzin, R/C designer/manager of Krick Modellbau . . . also chief packer.

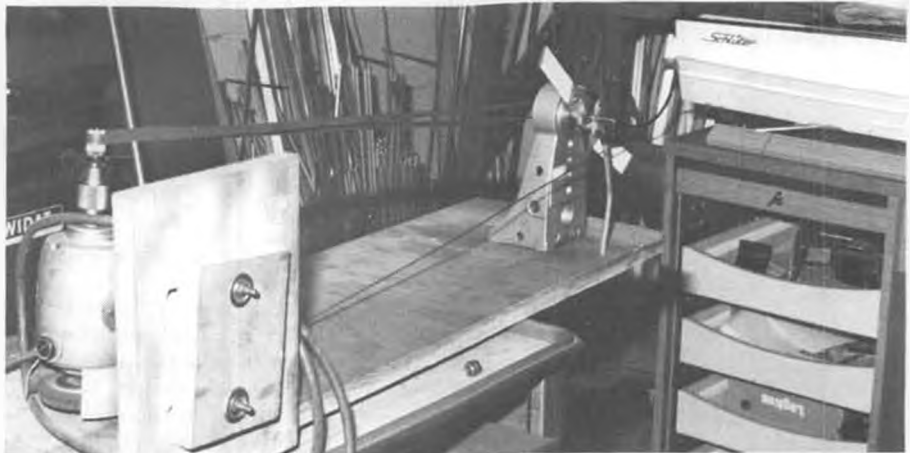


The "Helix" autogyro, by Wik-Modelle. A product review is planned in the future. The flat pool under the fuselage is explained in the text. Try to guess first, it'll blow your mind!

forward sweep of the rotor blades ahead of the feathering axis. I remember a couple of years ago, one of my favorite choppers, the Kalt Cobra, exhibited this same instability as power (RPM) was reduced for the landing approach and descent. It got so bad at low RPM that it was almost out of control, and full power was required in order to regain an element of control. Getting such a model back on the ground is really quite a chore! Anyway, one of the solutions was to sweep the main rotor blades forward a few degrees, and this produced a much greater amount of stability.

THE EUROPE SCENE:

After arriving in London, on British Airways, I spent the next 5 days visiting as many hobby shops as I could and trying to secure information on the popularity of R/C helicopters in England. There was not too much evidence of an overabundance of activity, nor were there many kits in the shops for customer selection. I did, however, take a train to Mick Charles Models, at Kingston-Upon-Thames, and found his shop



Schluter's rig for testing the drive belt used in the Heli-Baby. Looks like the aft end of a deep V hull in the right side of the picture.

reflected a huge stock of heli-kits, spare parts, radios, etc., and his personnel were quite knowledgeable. As you might already know, Mick was World Champ in R/C scale in 1970 and 1971, and is also well known for his helicopter flying ability. At present, he is utilizing most

of his shop time in turning out a fleet of R/C models for the movie industry.

We next flew on Lufthansa to Frankfurt, Germany, where I rented a car and drove through Germany and France for the next 2 weeks. First stop was Mulh-

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A Kavan automatic machine in action. About 5 separate operations taking place at once. Note solid oil stream in center of photo.



Close-up of the rotor head on the Kavan Alouette.



MB's modeling friend from Czechoslovakia, Milan Kacha, built this CO₂ powered New Ruler from printed sheetwood and plans by Ed Toner. The stretched nose is a little out of scale, but was necessary to make up for the extremely light Brown motor. Photo by Miroslav Kvapil.



PLUG SPARKS

By JOHN POND

• Did you stay for the second half of the "Double Feature?" The columnist, of course, is referring to the Denver SAM Championships over the July 27-31 week followed by the Old Timer Events at the Lake Charles AMA National Model Airplane Championships for the week of August 3-10. Ya didn't? Then you missed a second helping of this most enjoyable phase of modeling.

Quite a few of the modelers who took in both ends of the "doubleheader," made side trips when traveling from Denver to Lake Charles, Louisiana; a trip of 1100 miles. Having four days to travel this route, quite a few detours were

taken to enjoy the scenic wonders of the U.S.

Tim Banaszak reports, after having seen the movies on early railroading and silver mining at the Coors Brewery, that the Silverton Railway system is indeed everything as shown in the movie. The sides of the cliffs are practically sheer, leading Tim to speculate what great lift for soaring gliders. A true modeler, even on vacation!

The columnist arrived Saturday afternoon and promptly commandeered enough materiel and benches to erect the Old Timer Booth and model display area. In less time than it takes to tell about it, the modelers, engine collectors, and old timers took over the booth with swag meets and bull sessions.

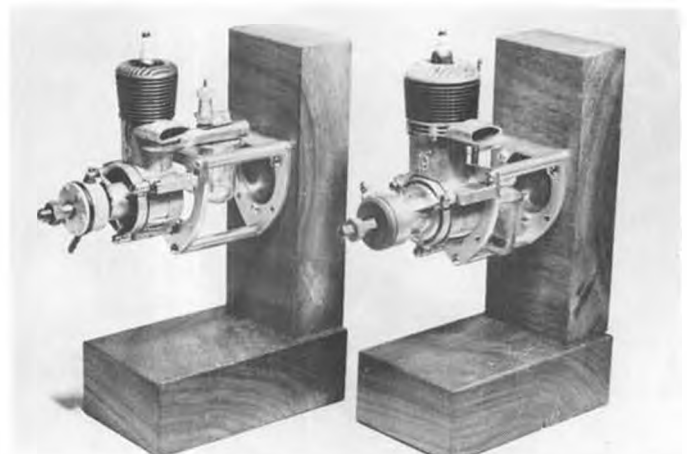
This year, with the O/T booth being next to the Work Hangar Hobby Shops, many of the models put on display were hung on the walls in attractive poses. Some of the more outstanding works of art were placed in the more prominent position for the benefit of the spectators and shutterbugs.

THE ACTION

As was prominently advertised at the Old Timer Booth, this year marked several new innovations in old timer activity. John Law, who has been actively promoting old time control line stunt, gave several exhibitions in the control line area after the circles had been closed for the day's competition. John drew quite a crowd of interested spectators despite the lack of a P.A. system to announce



Ben Shereshaw's "Pioneer" from January 1938 Flying Aces, built by Les Payne, Boulder, Colorado . . . at SAMChamps. Plans in next issue.



Radial engine mounts for Ohlsson, Forster, and K&B Torpedo engines by Jim Crockett Replicas. Mounts for .29s coming first.



Puerto Rican modelers and their Old Timer planes at the Nats (l to r): Charles Paz, owner of Hobby Centro (and the Powerhouse), Germanico Becerril, Pete Moreno (Gen. Mng. of Ch. 7TV Puerto Rico), and Jose Perez, owner of the Buzzard Bombshell. Anita thanks you for the rum!

when the show would be given.

In keeping with this same line of thought, the writer has contacted Jerry Imboden, President of Western Associated Modelers, in regard to establishing an old timer stunt event. Although John Laws, in his demonstration, was using glow engines, Jerry states the emphasis will be on ignition engines, just like Jim Saftig's Zilch series employed. A careful look will be given to the rules as outlined by John Laws, with an eye to limiting the number of models that are eligible utilizing ignition engines.

In addition as promised, Tim Banaszek staged his Compressed Air Event during the evening hours. Tim displayed the fancy plaque he had worked up as a perpetual award for the new compressed air event.

Although, Tim was the only entry and the only one to fly, he still claimed the win for 1975. C.D. Pond, timing the flight, noted that the flight was only 22 seconds and therefore should be disqualified as the time was under 40 seconds. A good natured argument ensued, where Banaszek, the originator of the rules, claimed the flyer could declare any flight regardless of time. When asked to produce the rules, the sheets were conveniently stored in the hangar some distance from the flying. When asked to make another flight, the tire pumps promptly blew out! The battle is still going on! Haw!

Despite the above levity, the event does present an attraction if for no other reason than the fact that it is an event that employs a different method of power. It is Banaszek's hope that the event will grow and become a standard O/T event at the Nationals. Tim has announced (based on his "success") that he will challenge Hughes Hobart's compressed air record of 1932. Rotsa Ruck, Tim!

ANECDOTE TIME

While sitting around the old timer booth in a first class bull session with

a gang of the old Hampton Roads "Brain Busters," consisting of Dodson, Marchall, Johnson, Parmenter, and Taibi, Sal told of the time when Joe Ott visited the Brooklyn Skyscrapers Club in early '39. Ott described the hot flying models in the Chicago area, but as Sal said, they discounted it as strictly Chicago hokum.

Driving down the street adjacent to the Chicago Municipal Airport where the Nationals were being held, Sal yelled, "Stop the car, I want to see that model go." After viewing the climb, the Brooklyn Boys had to admit Ott was right, but it still could be beat. However, another Zipper appeared, followed by Zipper after Zipper, all with the same spec-

tacular climb. Sal said all those deep bellied designs took a beating that year. Matter of fact, Sal ruefully admitted he placed 56th in Class C, it was so bad!
WEDNESDAY, THE O/T RADIO ASSIST EVENTS

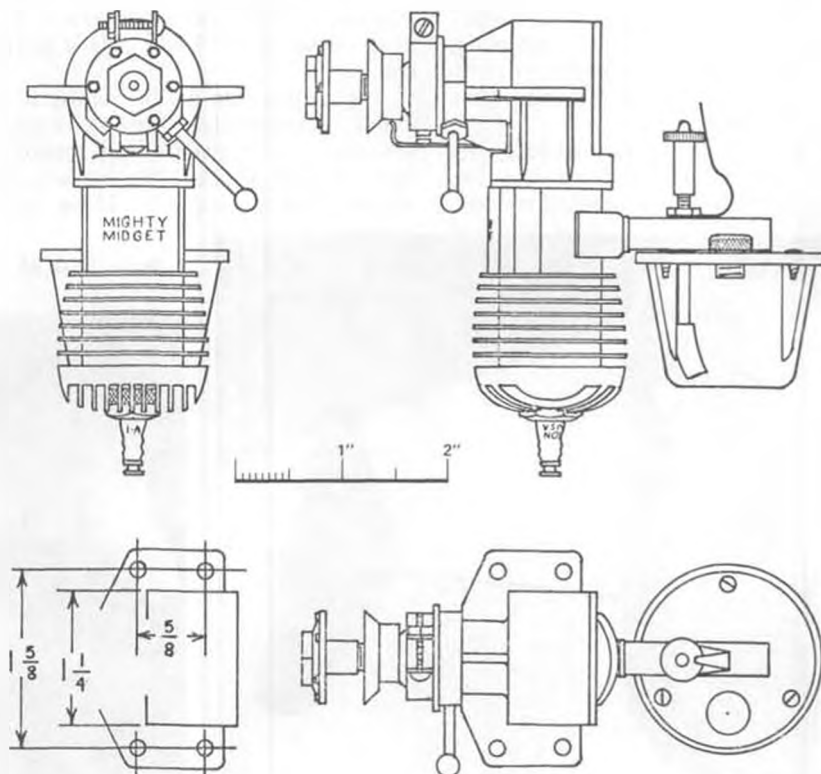
For a minute or two, the O/T F/F radio assist events held at Larks' Field looked like a repeat of last year's showing (or lack of it). Things brightened up considerably with the arrival of Jack Bolton, Doc Bob Lane, and the New Jersey contingent, headed up by Al Schwenkart.

Without waiting for any favorable flying conditions, Bolton immediately fired up his Playboy Sr., and before the boys knew it, he had wrapped up both limited engine run contests!

The writer, fresh from a Texaco first at Denver, (and after considerable engine tuning) proceeded to win the Texaco Event with the engine running for the incredible time of nine and a half minutes. Most models weren't even topping this with total flight times!

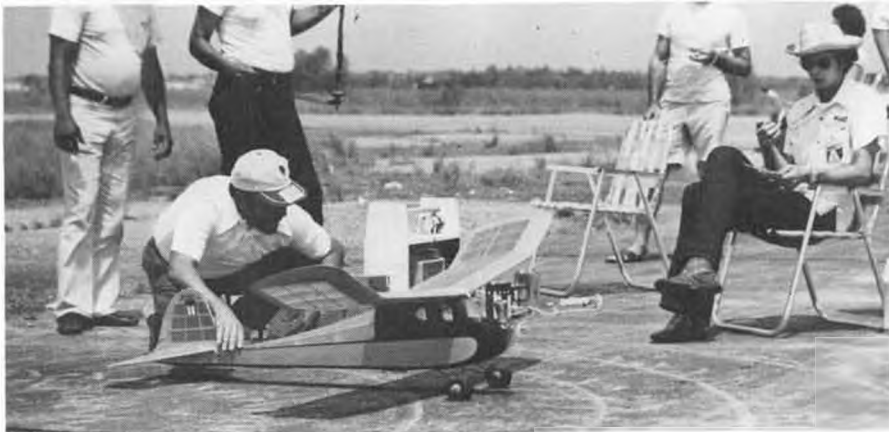
Although it had rained earlier in the week (a real frog strangler!) the weather was beautiful, with huge cumulus clouds overhead inviting all models to soar in the updrafts. It was then that Bob Lane decided to fly his Saddler Pacemaker low wing. After looking over the assorted warps, it was the consensus of opinion that all were counterbalancing. Bolton volunteered to fly the pretty magenta and white model powered with an ignition Ohlsson 60.

In less time than it takes to flip a prop, the model was airborne, making



MIGHTY MIDGET

Drawn by TEX NEWMAN



Jose Perez, of Puerto Rico, releases his Buzzard Bombshell (Super Cyke) while Tim Banaszak acts the part of a hard-working timer. Naturally, he's facing downwind!

a spectacular sight against the clouds. Like all beginners, the rudder and elevators had been made too small for controlling the glide. Gotta make the elevators at least 30% of the stabilizer and the rudder 40% of the fin, men!

FRIDAY FREE FLIGHT ACTIVITIES

The eleventh year of the Old Timer events at the Nationals enjoyed one of the finest flying days seen at Lake Charles in a long time. The day was simply great, with the drift just right, running down the cross revetment of the main runways.

To start things out right, George Perryman took the first flight, only to be frustrated by a 1/2A gas job. Having just completed winding his rubber stick model, the 1/2A whistled right through the fuselage, cutting it and the wing in half. Undiscouraged, Perryman finished his cabin rubber flights and then went back to the hangar to repair and again fly the stick job to a very convincing win. There are flyers and there are competitors... no question about what "Gorgeous Gawge" is!

In the flying, several anecdotes developed, among which there was Joe Dodson, who built two identical models.

Last year he cracked up his model and found he was using the wrong stabilizer. Guess what this year, after stacking his model? He had the wrong wing on! Just don't pay to build backup models.

About the proudest dad on the field was Dick Johnson, when his boy, Guy, cleaned house on the old regulars with three perfect flights using an Atom powered Strato-Streak. Garami couldn't have done it better!

For the first time since the inception of the Frank Ehling trophy for the best performing Antique model with a span over 6 feet, Sal Taibi finally won this coveted perpetual trophy with some very fine flights by his Forster 99 Powerhouse. Strangely enough, he will have to carve a small replica of his Powerhouse for the trophy to replace the Powerhouse put on by Dave Sweeney for his win in 1974! Hopefully, Sal will color it in his standard orange and green colors. The next winner in 1976 will indeed be real lucky!

The author would be remiss if he didn't acknowledge the tremendous amount of help given at the recording desk by Carl Hatrak. Missing was the whistle that generally could be heard



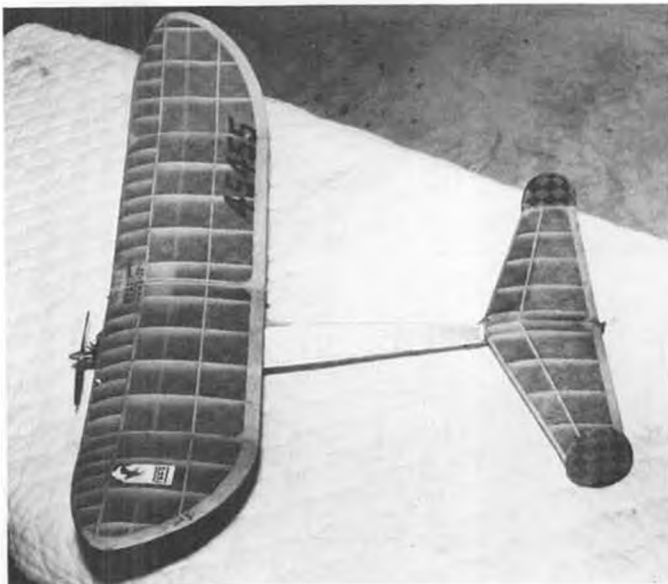
Moments after this shot was taken, the rubber in G.L. Cochran's Korda let go with a BANG!

all through the contest while directing traffic. The whistle was heard loud and clear at quitting time! Tireless timers Bob Land and Frank Tartaglia should also be commended for making the contest directors life a little bit easier.

Tim Banaszak was again claiming a record of having three different twin engines in his Powerhouse for the last three Nationals. This year, through the generosity of Herb Wahl, Tom mounted a Hurleman Twin up front. Although the motor was not fully broken in, between Tim and Herb they were able to get the engine operating well enough to register three official flights. This new twin Hurleman by Wahl looks and runs well. Right now, they are collectors items, but eventually the writer hopes to see more of them used for flying.

Puerto Rican Invasion! That about sums it up this year at Lake Charles. Luis Rodriguez, his son, and a big gang came in from the island just for the old

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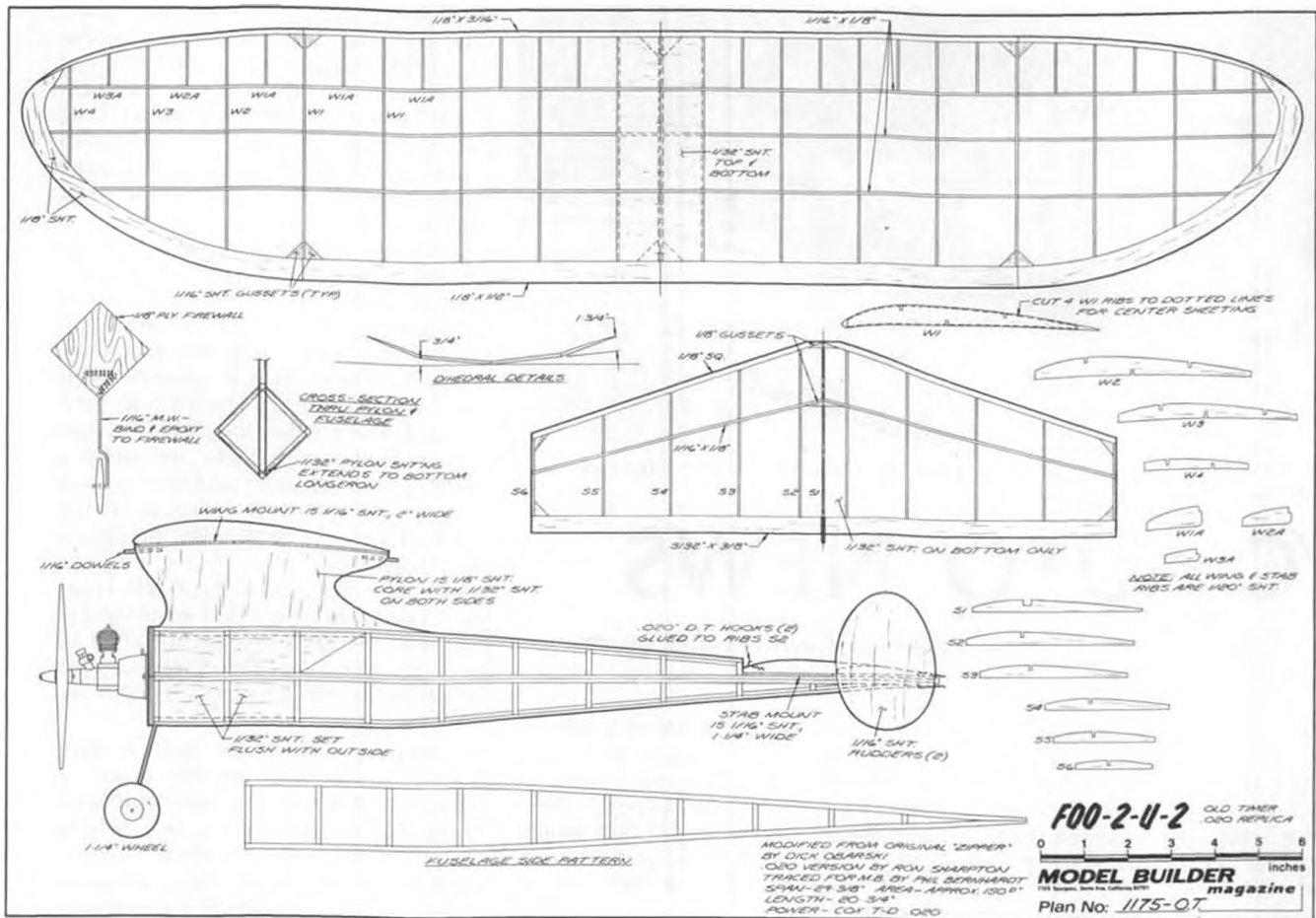


Ron Sharpton's Foo-2-U-2 in .020 Replica size. Plans on the opposite page. A great flier and easy to build.

Join S.A.M.



Ron is really hung up on Foo's. The full size job is powered by a Forster .29. Uncovered ship in back is Scientific Flagship, O&R 60.



FOO-2-U-2...

OLD TIMER Model of the Month

Original design by: Dick Obarski
 Replica design by: Ron Sharpton
 Redrawn by: Phil Bernhardt
 Text by: John Pond

● Full credit for preserving this Dick Obarski design should go to Ken Freese, a transplanted Chicagoan, now living in the Sacramento area. Ken was so struck by Dick's continuing development of the Zipper, that he made scale three-views of the design and had them pre-

FULL SIZE PLANS AVAILABLE – SEE PAGE 88

served on film. Photos which substantiate the design are dated April 1939, hence the reason for classifying it as an old timer rather than an antique.

The name "Foo" was taken from the very popular comic strip, "Smokey Stover," which featured a black cat generally in the corner of the end block saying "Foo." This became so popular that some of the large aircraft were called "Foo Fighters" and there was even a "FOO" Squadron. As close as can be determined by the writer, the word "Foo" was short for a popular derogatory phrase of the time, "Foey on you." (Remember the "Notary Sojac"

signs that showed up frequently in this strip? wcn)

This month's .020 Replica design is the brainchild of Ron Sharpton, a Florida modeler, who did very well at the Nationals old timer events, placing no less than third in a field of 35. The model had been scaled to approximately 150 sq. in., which has been found to be the optimum size for .020 Replica types.

Foo-2-U-2 designs fly exactly like Zippers (from which the model owes its ancestry), i.e., right turn under power, and glide right. The model trims out very quickly and is a consistent soarer. Try one, you'll like it! ●

PLUG SPARKS (continued) . . .

timer events. Despite hard luck, dad and son, each managed to win a trophy. Next year, the gang threatens to win them all! Great stuff!

Ron Sharpton, of Florida, showed up with an Obarski Foo-2-U-2 that flew excellently (plans to be featured in a coming MODEL BUILDER issue). The columnist had a hard time selling a banquet ticket to Ron, as he modestly stated he hadn't won anything. All those southerners play possum . . . Ron garnered two at the banquet!

One could go on and on describing the good flying, but needless to say, everyone had a good time. The Mexican

(new for this year) team failed to place this time but that won't last! They had some good flyers who ran into tough luck. And talking about luck, Joe Dodson was mumbling all afternoon after watching many a model "max" out from low altitudes, when his Stratostreak flown early could manage only two minute flights from fantastic heights.

Interestingly enough, these old timer events, will bring out all the old timers eventually. This year, Caldwell Johnson (Slick Stick fame) came out for the first time since 1941. Joining with Taibi, Paul Marchall, Joe Dodson, and Frank Parmenter, "Cadwell" (as he is called) had to admit he has missed a lot of years.

Only one remedy for that! OLD TIMERS REUNION BANQUET

Seeing that we had a good meal at the Belmont Restaurant last year, the banquet was again scheduled for the same spot, and 88 showed! This time the crowd practically took the play away from M.C. Pond. When presented with an A.M.A. fellowship, one wag hollered "Now say something." It's a little tough to think of something clever especially when the Reunion featured speakers such as John Worth and AMA President John Clemens. Clemens displayed a pod and boom design he had cooked up in 1946 and with it, some

Continued on page 74



Excellent driver's stand gave a good view of the track. Driver's name and home state were posted for the benefit of the spectators.

R/C AUTO NEWS

By CHUCK HALLUM . . . A first-hand report, with results, on the 1975 R.O.A.R. Nationals.

• Well, the 1975 ROAR Nationals for 1/8 scale cars is over. I had a good time, and thought the races were conducted in a very professional manner. However, there were many disappointed racers when the last day of road racing was rained out.

The oval program (two rounds of qualifying and the twin main events) was completed on Friday, Aug. 22, 1975. Saturday saw the first round of road qualifying completed and the drag racing program was run Saturday night. On Sunday, the second round of Amateur road qualifying was completed, but then the rains came. The second round of Expert road qualifying and the main events for both Amateurs and Experts were rained out. Since rain was expected the next day (and it did rain), and many of the race personnel had to work Monday, the remainder of the road race schedule was called off. The final road positions were based on the completed rounds of qualifying.

I was disappointed to see the road

event called, but I understood the qualifying times would be used in case of rain. Besides, I did the best I could in that first round of qualifying. There were many racers who felt they would have done better in the second round of expert qualifying and the main events, including myself.

The tabulated results of the 1/8 scale



The author's Expert Oval Main winner. Layout had battery, fuel tank, and steering servo to left, same as in his 1974 car. Dig the fancy resting spot!

ROAR Nationals shows who won what. The oval results are based on average lap times for the main events, and the road results are average lap times for qualifying (only one round for experts). Drag racing results are based on elimination rounds. Concours was judged on appearance, engineering, workmanship, and operation.

The track at Rattey's Raceway is something else. When the '75 Nats entry package came in July, the track looked confusing because of the numerous adjacent lanes going in opposite directions. I also thought the lack of space between lanes would make it difficult to turn marshal. Upon seeing the track, the confusion disappeared, since the driver's stand was 6 feet high and gave a good over-view of the tight portions of the track. The lanes were wide enough in the switch-back parts of the track to have a turn marshal on the track. However, retrieving a stalled or troubled car was difficult, since the pit man had to look at each lane and dodge cars or stand on the dividers to reach and bring back the car.

Condition of the track and site were terrific. Traction was terrific, probably because the whole area was resurfaced in April. The banks on the two outside end corners added something new for most drivers. Before the Nats, we heard that you had to turn in the opposite direction to get around the banked cor-



Marker team pit, with Dell Fisher (left), Tom Wisvader (seated left), and Dave Bloom (right). Tom was fast oval qualifier.



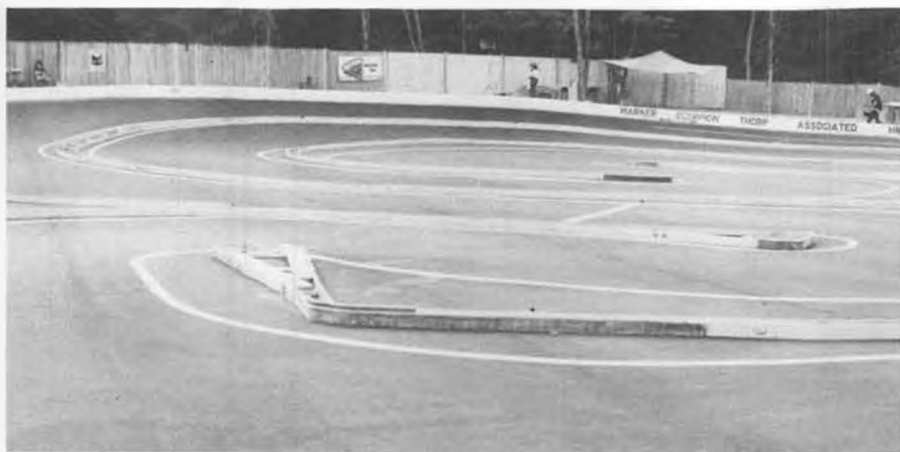
Mike Morrissey (seated) and Bill Jianas getting ready for oval qualifying. Jianas placed 3rd in Expert Oval Main.



Mike Morrissey's top expert road qualifier. Typical, but tank raised to help fuel feed.

ners . . . to which Roger Curtis replied "Boy, those guys sure must go slow." The banking did help the cars turn, but not as much as I expected.

One thing I didn't consider was that the trim adjustment on the road course had to be made in the racing lanes. On the oval, some outside portions of the track could be used for trim adjustment. Also, if a car had problems, it had to be driven all the way around the track to get back to the pits. All in all, though,



The large banked turn and the tight portions of the track . . . it was not as confusing when viewed from the driver's stand! A beautiful custom built track.

the track was super, and I think the local area racers are really lucky to have the track and a fellow like Bill Rattey.

I arrived at the track Tuesday evening after getting to Boston at about 5:30 pm. Only a few racers were practicing, since it was almost dark. Arturo Carbonell was on the track motoring around smoothly, with the engine in a fast four-cycle. The engine didn't have its typical bark, but I knew that would change by race time. Team Associated had their canopy erected in a convenient spot and Marker, Delta, Scorpion and B&S Specialty/Magnum also had their

areas located. I was to set up the HRE pit down the line and next would be MRP. The Thorp pit was on the other side of the drivers stand. It looked as though most of the car makers were to be represented.

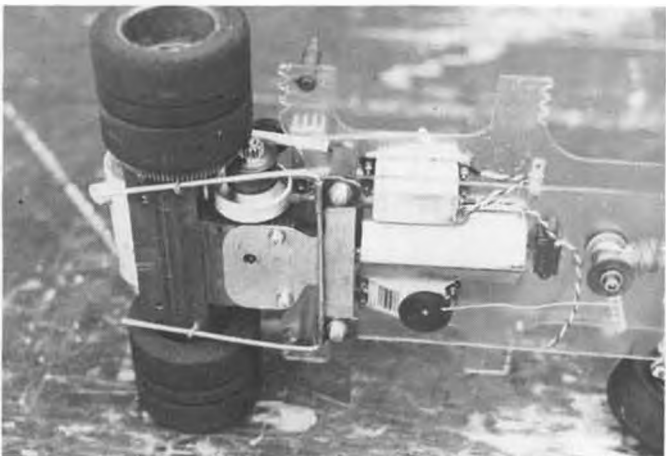
At the Holiday Inn, Team Associated was thrashing. They had been practicing since the previous weekend and most of their cars looked like they had been through a war . . . little did I know what my cars would look like the next day. Word had it that Gene Husting, Earl Campbell and Carbonell were down un-
Continued on page 77



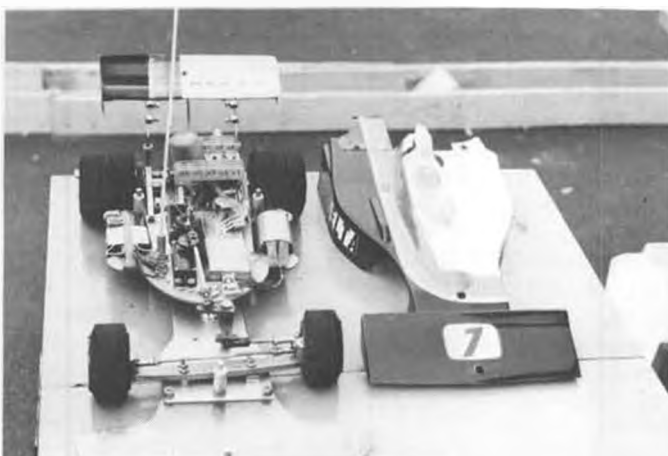
Gil Anderson's concours winner. He passed away 3 weeks before Nats, so car was shown by Ray Dixon and Ed Heck.



There's a Veco 19, exhausting through the manifold, under the scale V-12. Belt drive to left rear wheel barely noticeable.



Ted Longshaw, from England, ran this rear suspension car. Appears to have only torsional flex, but ran well.



Arturo Carbonell's oval car. Battery and fuel tank to the left for weight bias. Note the staggered front axle.



Capital R/C Model Boat Club 12 Meter fleet shows how tight one-design racing can be. The Stars 'n' Stripes in the back of the pack belongs to a past National Champion. A beautiful scene.

STRICTLY SAIL

By ROD CARR



● August is typically the month that marks the culmination of the sailing season. Starting with the July-scheduled Gosport Regatta in England, to which skippers from many countries traveled, we have word that AMYA's M-class secretary, John Ball, placed second in that class, with Byron Sansom, from San Diego, taking 6th place. Hope that we'll get some more detailed information on that event in the AMYA Newsletter, especially on the winning Swedish skipper who took both M and 10-r class events!!!

Here in Washington, D.C., we hosted the 50/800 ACCR on the lake adjacent to Dulles International Airport. After two days of tough competition the standings wound up: 1st — Chuck Black, BINGO; 2nd — Rich Matt, BINGO; 3rd — Stan Goodwin, WARRIOR; 4th — Bert Lott, WARRIOR; and 5th — Forest Godby with a boat of his own design. A good portion of the action was video taped by John Huson of Leisure Products, and is providing exciting viewing for all.

On the following week-end, the heavens opened up and it poured all day on the skippers assembled for the STAR

45 ACCR. This was the premier event for the STAR Class, which will probably be held in Pitman, New Jersey next year, according to Dave Holmes, the 1976 Class Secretary. When the fog had cleared we found: 1st — Rod Carr, 2nd — Forest Godby, 3rd — Bob Harris, 4th — Pat DeGroot, 5th — John Hemmalin. With over 2500 of the STAR 45 kits having been sold, the potential exists for an exciting one-design class. We found that a well tuned STAR will point much higher than a starved EC/12 and that one could tack within an angle of 75-80°. Next month we'll discuss in detail the configuration of the winning boat, with suggestions for rigging and construction changes to the stock Dumas kit.

* * *

This past week-end, we helped the 2nd Mini-America's Cup into the record books. Here is a ritsy-snitsy event, it is sailed in East Coast 12's and is by invitation only. This year's selection of contestants was enough to give pause to the faint hearted: The 1974 Mini-America's Cup Defending Champ Buddy Black from Tampa, Fla., 1974 ACCR

Winner Ron Stephanz, 1973 Class Secretary and Eastern Divisional Champion Bob Harris, Major Hull producer Bill Huson from Leisure Products, 1976 Class Secretary Ray Ihlenburg, Chairman of the Mini-America's Cup Committee John Wing, and local hotshot from Richmond MYC Tom Ihlenburg.

With no frequency conflicts, the committee set up a schedule of 21 match races, allowing each skipper to sail every other in head-to-head combat. The two top skippers at the end of the day were to slug it out on Sunday in a best 4 out of 7 series. We managed two rounds for a total of 42 individual races and the scoring ended up as follows... Harris 10 wins, Black 8 wins, and Ray Ihlenburg 8 wins. The tie for second was broken by Ray having been beaten twice in his two meetings with Black during the day.

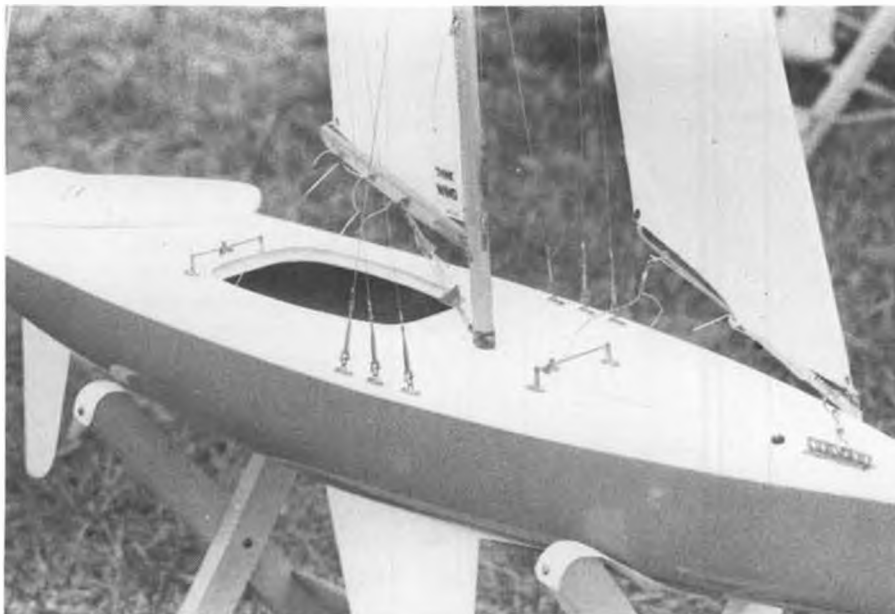
With the stage set and a crowd of 300 on hand, Sunday started with commentary from Rich Palmer of Rich's Hobbytowne. Harris immediately put the pressure on by winning the first two heats. Black came back to even the score at 2-2, then traded victories for a 3-3 tie going into the last race. Watching the shifting winds, Black hovered to weather of the starting line with 30 seconds to go, then abandoned his previous starboard tack start, to start on port and ride a lift all the way to the weather mark, opening up a lead that was neither spread nor reduced for the rest of the race, an indication of just how well



Gene Stagner's 776 Santa Barbara sailed in the "Big Boat" division of the Indy regatta.

matched the skippers were. The race committee, consisting of Rod Carr, Cas Woodbridge, and Joe Schoonover, declared Buddy Black the winner of the 2nd Mini-America's Cup. We are lucky to have again captured this amazing series on video-tape, with John Huson manning the camera and Chris "Cosell" Harris providing the commentary.

The local 36/600 fleet has been experimenting with an interesting variation on team racing. The fleet is divided up into two 3-boat teams. The object is to sail the course one-team member at a time, passing an imaginary baton by tapping the next team boat that is to



Chuck Black's 50/800 winner, "Bingo". Note the strong boom vang used to control leech tension off the wind. Rig weight was 14 ounces plus.

sail the course. A windward-leeward arrangement is used with the starting line half way in between. The spice comes when the boats are on the leg between the leeward mark and the line. While here, and only here, they may be assisted or interfered with by the other boats on the course . . . according to the rules of course . . . such as port gives way to starboard, leeward boat can luff, etc. Getting your three boats around the course like a relay team then becomes a matter of cooperation among team members, and maximum hindrance among the enemy.

While such a game will probably be OK for 36/600's, I'd be a bit careful if M's were scheduled to race, and would give long thought to anything bigger being suitable. Of course, some enterprising designer may come out with a boat with a rubber gunwale and bow like a seagoing "bump 'em" car. The skippers who have played report that some of the guys who take home the trophies all the time don't do so well at this when required to exist right in the center of a 4 to 6 boat pack. And conversely, some of the tail-end Charlies are so used to being jostled that they are downright superb. Let me know if you try it, and what variations you adopt. Might make an interesting format for inter-club challenge racing!!!

I am happy to report establishing a communication link with Max Lewis of the Sidney (Australia) MYC. Max is the editor of ROUND THE BUOYS, a monthly newsletter that is trying to pull together the scattered Australian model yachting effort. I will be excerpting news of interest from his monthly effort, and am happy to say that he is joining our AMYA as a means of getting the straight dope on American model yachting activity. He has put me in touch with a number of active skippers "down



Ray Hickock's LJ 50 No. 618, another participant in the Indy regatta. Chuck Black's 50/800

under," including some designers. I hope that this may lead to increased interchange between skippers here and abroad. And with some luck we may be able to persuade them to let us publish some of the new designs that are available. One I'm most interested in is an "A" boat which is reported to displace only 28 pounds!!!! ZIPARDEDODAR, designed by Adrian Brewer of the Albert Park MYC took the RA class Australian championships with the boat this year. He has also done a new 50/800 called SONIC BOOM, and just from the name alone it has got to be an interesting hull form.

I have some requests out for photographic coverage of the Australian brand of our sport and will include in upcoming columns anything that comes my way. Max reports that they have been known to sail from within automobiles with the antennas sticking out a partially opened window when the rains got too heavy. I'd say that they have the exact same form of the disease that so many of us have in the US.

I've been asked a number of times why more material is not published from around the country. The simple answer is that I am not sent any to speak of from the clubs who are active. Happily there are a few exceptions to the rule and one is that sparkling new Indy MYC that I announced last month. They have held their first regatta, and the following was sent by their President Ted Brindle. Thanks Ted, I wish there were many more like you. Next time, fill us in on exactly what each skipper

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Jim Parsons with his Smoothie at the BMA contest in Seattle. Trans. Monokote on open areas, DJ stripe, white dope on the rest.



Dist. XI V.P. Homer Smith is basic FF freak, but has been flying some .049 Combat lately. It's Dirty Dan's "GollyGeeWhiz" design.

Control line

By "DIRTY DAN" RUTHERFORD

● As promised last month, we're going to have a sing-along this month. Now sing-alongs aren't what you are used to running across in this column, but if you'll just hang loose and play along, it might be fun. Then again, it may be a bummer. Let's find out.

This song was written by a flying buddy of mine, good ol' Jeff Rein. At a recent contest, Jeff came over to a group of us and asked if we would like to hear his song about Slow Rat. Now Jeff is basically a little weird and I already knew for a fact that he couldn't sing very well, so I started looking for a reason to leave. But Jeff tied me to his 189 lb. tool box with his best set of Combat lines and I resigned myself to

sitting through a very embarrassing and painful few minutes.

After warming up on a whole bunch of boop-de-boops, bop-bop-shooo-bops, etc., etc., Jeff finally started to sing. Looks of "what am I doing here" were passed around. Somebody wanted to know what Jeff had been smoking. I knew what he'd been smoking. That's why I had wanted to leave in the first place! By then, Jeff was into the second verse and we were all listening and actually enjoying it. Further into the song, people were tapping their feet, using tool boxes for drums, and a crowd was gathering. By the end of the song, Jeff was the hero of the day.

The song is based on that old classic

(?) Hot Rod Lincoln. If you don't remember that song, better find somebody who does, so you'll be able to sing along.

I am going to write down all of the verses, but you're going to have to make up the stuff between verses on your own.

Ballad of the Folken "A"

"Intro: The CD said, "Son, it's a real disgrace to fly a Combat plane in a Slow Rat Race."

"Well, you've heard the story of the Slow Rat Race when the Fox's and the 'tigres were setting the pace.

Well, that story is true, I'm here to say, I was flying' my Folken "A."

"It had a 'tigre motor that was really hopped up, that Folken "A" body made her look like a pup.

I honed the cylinder as I recall, high nitro fuel, it just don't stall.

"It had pressure feed and a piped exhaust, with an 8-8 prop you can really get lost.

I wore a safety thong, but I ain't scared, the lines are good, bell-crank fair.

"I went racing down in Eugene late in May, the sun was shining on that windy day.

I was going so fast you should have seen my mill, passing planes like they were standing still.

"All of a sudden, in the wink of an eye, a black Flite Streak just passed me by.

I said, "Boys, that's a mark for



Ron Scoones trying for a needle setting on his Rossi powered Goodyear. A "Doc" Anderson Rossi, the open end megaphone makes the ear muffs a necessity. (What did you say??)



A top CD in the N.W., Suzanne Saterlee works all C/L events but is especially good as a Combat CD! Who could argue with that smile!?



Don Schultz, judging stunt at the BMA affair, indicates landing and appearance points earned by DD . . . combined!



David Aoyama tuning his Mo-Bipe Profile Carrier plane. He placed 3rd in this event at the '75 Nats, Senior category.

me." by then the rudder was all you could see.

"Well, the fellows started ribbing me for being behind, so I thought I'd make the Folken "A" unwind.

I had her high coming downwind, and man alive, I pulled her into a dive.

"I wound her up to 110, my stop watch said I had hit top end. I whipped that plane like never before, that's all there is, there ain't no more.

"I pulled a wingover and side-swiped Tom Tuck, crossed my fingers just for luck.

Our wingtips were clicking, we

crashed almost. The guy beside me was white as a ghost.

"Well now, the boys all thought I had lost my sense, they were getting scared and a little tense. I got too close, he said "Go around." I held my course and forced his plane into the ground.

"Flames were coming out of the stack when I started to climb on that Flite Streak's back.

I knew I could catch him, I started to drool. Wouldn't you know by then I'd be low on fuel?

"I figured it was time for me to make my move. I got that Folken "A" right in the groove.

I said, 'Look out boys, I got a

license to fly' and that Flite Streak dropped down and let me by.

"Well, just when I thought I had the race in the bag, my hopped-up 'tigre started to sag.

First it started smoking, bearings started to squeal, my Fireball plug blew a seal.

"I still had a chance with five laps to go, but then my crank decided to blow.

I knew right then I had lost the race that day. I was so mad I yelled, 'Folken 'A'.

"Well, the CD came over to look at my plane. He shook his head and said, "Man, you're insane."

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Here he is, folks, the author/singer of that famous "Ballad of the Folken A." The model is "Foamesis", foam winged "Nemesis."



Kit Gerhart (left), 1st in Combat, and Ron Ridgeway, 2nd. Kit used modified "Nemesis," Ron a VooDoo with long booms, bladder tank.

'TWIRP'

By DAVE GIBSON

Designed for a 4-H Aeronautics Project, this little fuselage model embodies many of the important basics that will be used by modelers throughout their hobby career.

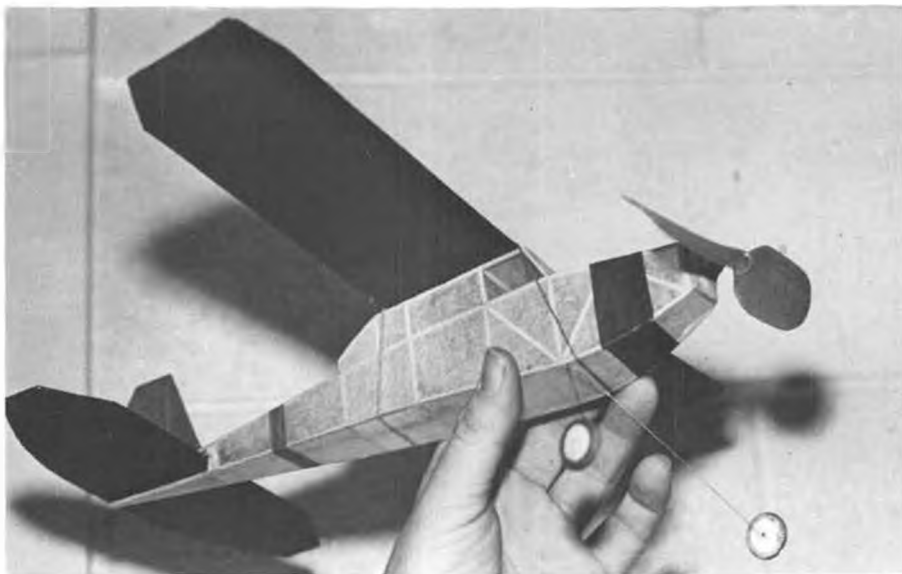
INTRODUCTION:

● In developing this 4-H project, one of the basic philosophies I tried to live up to was: Provide the maximum opportunity for long duration flight through simple planes that build quickly. The phrase to understand is "long duration." To me that means a flight so long that the laws of gravity are exceeded in the novice's mind, and the experience spreads across the ego like a blush.

This feeling is not limited to novices, of course. At a recent contest in this area, I heard a gym-full of experts applaud the flight of Charlie Sotich's Volksplane peanut, when this anti-gravity feeling engulfed the crowd as Charlie's plane flew almost forever.

The idea is to generate this feeling in the members quickly, and to allow them to achieve it without all the search and frustration that follows the beginner who tries to get into the hobby on his own. It is the thrill and the accomplishment of flight which, I feel, are prime motivations.

The side of our hobby that frequently shows itself to the novice is the difficult kit in a mass merchandising outlet (where perhaps no model plane magazines are sold), and because the plane appeals to him and he has fantasies about its flight, he enters the hobby. Disappointment may turn him to other interests.



Framework of the TWIRP discloses the simplicity of the structure.

If, at one time or another in your life, you struggled with manhole-cover-kits of rock hard balsa that refused to fly on the rubber strip provided, you know what I mean.

I know there are people who say, "The heck with him! If you want to succeed in this hobby, you have to try and try again, on your own, like I did!" To those people I would suggest that they are rationalizing their own selfish interests. They are defending themselves



Beth "Twirp" Gibson, for whom the model was named. Builder of planes and collector of beer cans, also winner of President's Physical Fitness Award, push rods, bellcranks, and all!

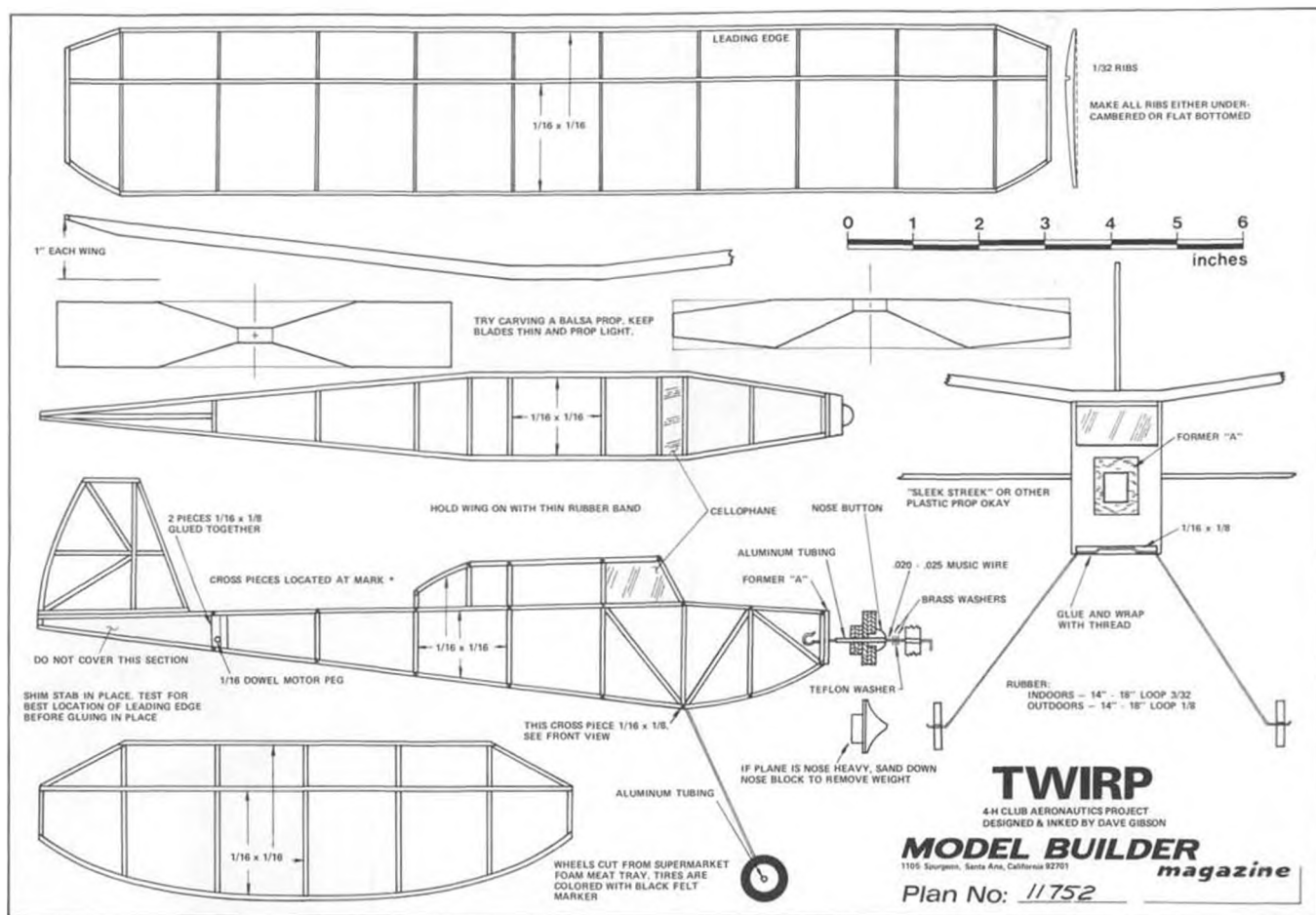
so they will feel no guilt because they do not share what they know with those who want to know. Fortunately for all of us, I also know many other people who do not feel this way. But as I have worked this project out, and as it has gone on for so many months, I cannot forget that it was the 4-H and the School Department that made it all possible. It



Meetings of the 4-H Aeronautics Project include some building, some flying, and some listening. Leader (author) preparing blackboard for discussion on incidence and thrust adjustments.



This "4-H-er" stick model, held by Mark Theis, builder/flier, is prerequisite to TWIRP project.



was not the hobby, its organization or clubs, nor the hobby industry that did it; and that is something we should think about, isn't it?

In planning what each plane in the project should be, the costs, the new learning experiences each should provide to the members, and so on, I decided on a paper airplane, a North Pacific "Sleek Streek," and after that I would have to design some planes. Four planes make up our first indoor flying season. In addition, but not a required part of the project, the members have access to my many plans for building other planes. And to break up the program, we have paper airplane and "Streek" contest

nights. As we move from the indoor program to outdoor flying, the traditional evening is an outdoor project of building and flying the "Flash X-18," from Frank Zaic.

Our operation was established from a cost standpoint, so that after an initial payment, small dues would pay for the project through the indoor season and the construction of the first outdoor model, as well as for glue, pins, building boards, and materials... also soda, cookies, and prizes on contest nights. The theory here is that the time period in which a plane is built and flown allows the accumulation of funds to pay for it and to make a dent on the next project.

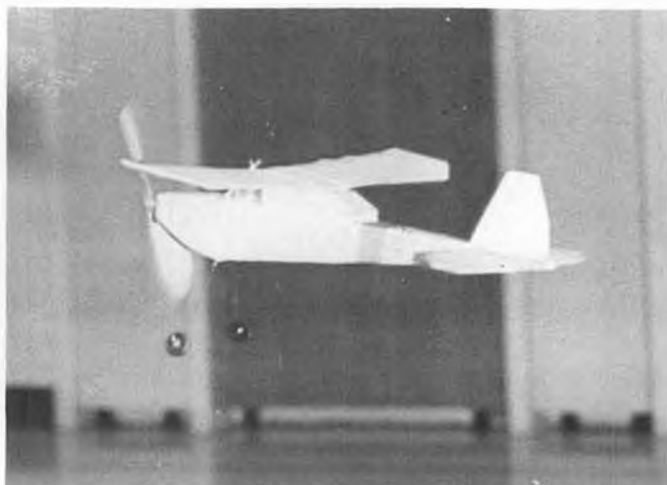
As more complex and more expensive projects are undertaken, we think in terms of fund raising. That may seem impossible to some people, but the 4-H can organize for this sort of thing. Another 4-H project in this area raises about \$500.00 each year on a chicken barbeque, and there are popcorn sales at public events, cake sales, paper and can recycling projects, and so on.

The project itself can't provide the total learning experience, and to augment what is presented during the meetings, the reading of magazines is encouraged. Youngsters find the cost of model plane magazines high, but I felt

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Does the last name ring a bell? Steve Kurth at work on a TWIRP. He's a project record holder. Note forest of pins.



What it's all about. A model that will stay up longer than it takes to fall to the floor! Ross Jahnke's TWIRP after ROG. He's 11 years old.



Jack McCracken's Folkert's SK-4. It'll make a believer out of anyone who thinks rubber powered scale model racers don't fly.

FREE FLIGHT SCALE

PHOTOS BY FERNANDO RAMOS
AND WARREN SHIPP

By FERNANDO RAMOS

• I have quite a few items that I want to cover this month. For starters, I want to take the time to thank all of you who have written, and say that I'm slowly getting all of the letters answered. I have several responsibilities that often make it impossible for me to get to my correspondence as quickly as I would like . . . but rest assured, I'll answer your letters.

In preparation for the Thompson Trophy contest, I built a model of the Folkert's SK-2, using the Cloudbuster's Racewing drawings (see ad in this issue). For the first time ever in a model, I incorporated Jim Dean's adjustable thrust bearing. Well, I learned what not to do when using this clever device. My first error was to use a plastic pearl. (Yes, I know that I recommended using these . . . but I'll explain). On the plans for the Folkert's the motor peg is shown considerably below the thrust line. This in itself puts a tremendous strain on the prop shaft (see Fig. 1). Add to this the necessity of down thrust, and you can see what is happening. This continual strain on the prop shaft eventually elongated

the hole in the plastic pearl. This in turn caused the model to lose its thrust adjustment as the motor unwound (less tension). With all this going on one can see that trimming a model is quite difficult.

My first six flights or so were pretty much the way I wanted them, but as I increased the power and the winds, my problems really began. As I launched the "Toots," it would go straight up, roll over on its back, then straight down. I was in a quandry as to what was causing the model to behave the way it was, especially after the great flights I was getting from it with lower power. I checked the thrust, and it was where I thought it should be, yet each time the model was launched, it did the same thing.

Well, after all but destroying the Folkert's I finally figured out what was happening. In appearance, the thrust bearing looked like it was holding its adjustment, but as the tension of the motor pulled downward on the shaft (due now to the elongated hole in the plastic pearl), up thrust was occurring!



A couple of "Vultures" from Las Vegas, Chuck West (left) and Bob Haight.

So . . . the moral of the story is, at all times try to keep the motor peg on, or as close as possible, to the thrust line. This will avoid any difficulties in hold a thrust adjustment. Don't use a plastic pearl (other plastic spheres may be more suitable) on a model that requires quite a bit of power. I eventually ended by using 10 strands of 1/8 inch rubber. This amount of power, along with the bind, caused too much wear on the plastic pearl. Glass or metal would do much better here.

Another lesson I discovered too late, was that the adjustment screws on the



Close up of Bob Haight's Turner Special, "Miss Champion."



Howard "Mike" by Granger Williams (Williams Bros.). Flies well with M-6 airfoil.



Steve Wittman "Bonzo" by Larry Moss, has only 13 inch wingspan, Peanut size!



Art Chester "Jeep" by Tom Laurie, uses the R.A.F. 34 airfoil described in the text, also has trick stab incidence adjuster.



Winner of Flightmaster's Thompson Trophy event, Vince Costanzo's "Chambermaid."



Second place winner in Thompson event, Wedell Williams by George James.



Our intrepid FF Scale editor with his Art Chester "Goon" and Folkerts SK-2.

thrust bearing were installed from the front. What's wrong with that, you say? It just happens that the Folkert's has a spinner, and with the spinner installed, you can't get to them for adjustment. Who says you can't teach old dogs new tricks!?

One major modification I made to the



Contestants lined up for the simultaneous launch required for the Thompson Trophy event. Last one down is the winner of the heat, second from last is 2nd, etc.



"And awaaaay we go!" From the foreground, we see Ramos, McCracken, Haight, Moss, James, and West. If the scale factors don't get you, the mid-air will!

Folkert's was to use an entirely different airfoil than the plans called for. For one, the plans show an undercambered airfoil, and the Flightmaster Thompson Trophy rules do not permit the use of undercambered airfoils. Several years ago, a friend of mine in England wrote to me about the merits of the RAF 34 airfoil (don't confuse this with the RAF 32), for racing type airplanes. He had experimented with both rubber and gas powered models with incredible results. In fact, several of his models flew out-

of-sight!

Armed with this secret weapon, I talked Jack McCracken and Tom Laurie into using the airfoil. Jack was building a Folkert's SK-4, and Tom an Art Chester's Jeep. All three of us went out together to test fly and to my amazement each model was unbelievably stable. The more the models were flown (including my SK-2, until I ran into trouble as previously mentioned) the more we realized the potential of this airfoil.

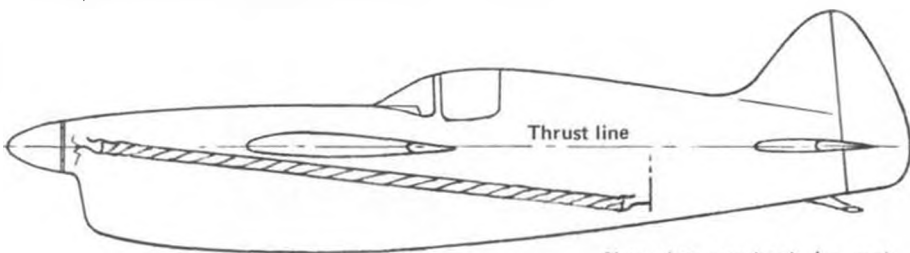
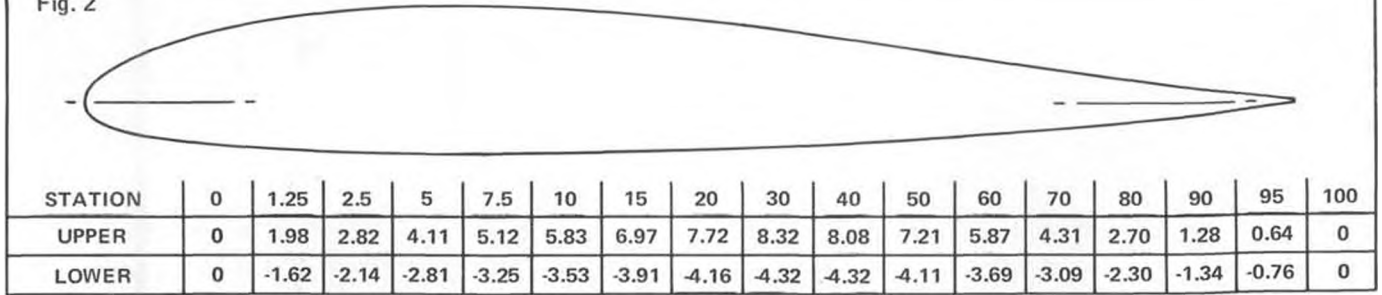


Fig. 1

Note that rear hook (or peg) position is very low in fuselage.

Fig. 2



R.A.F. 34

In Fig. 2 you will see the coordinates for this sensational airfoil. I would like to see more experimenting with this airfoil for low and mid-wing scale models using either gas or rubber power. One very important item involving the use of the RAF 34 is to incorporate 3° of washout on the tips. *Don't leave this out!*

I'm presently working on a jumbo rubber model of a Czechoslovakian Zlin XII. This is a low wing, high aspect ratio design that will have the RAF 34 airfoil. I'll report back after the flying begins. I might add that I also plan to install an .020 Pee Wee into my Folkert's as a test bed. If it works out as anticipated, I would like to build two more, one for rubber and the other for gas.

With the contest only a few days away, and my SK-2 about as ragged as a model can look after all the prangs it took, I resurrected an Art Chester's Goon I had built about 5 years ago. It is rather ironic that when I first built the model, I could never make it fly. Fortunately, this changed for the contest.

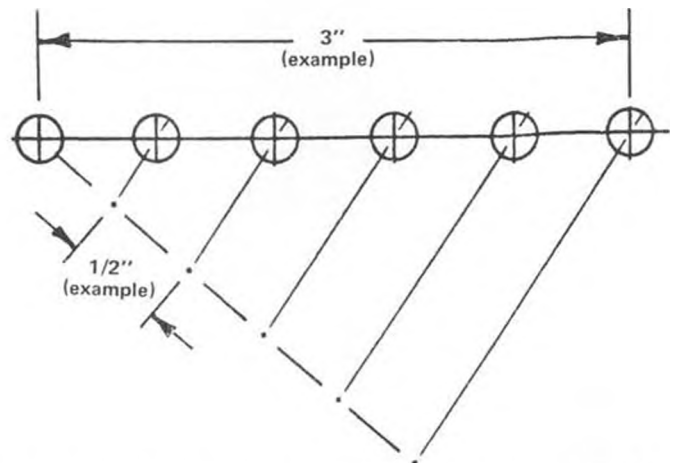
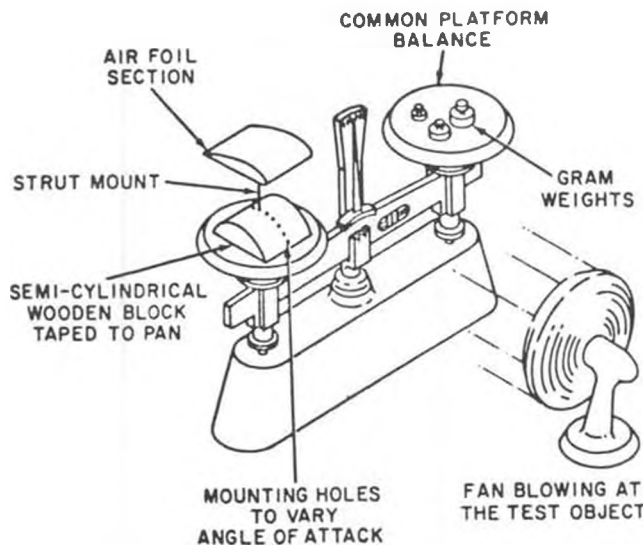
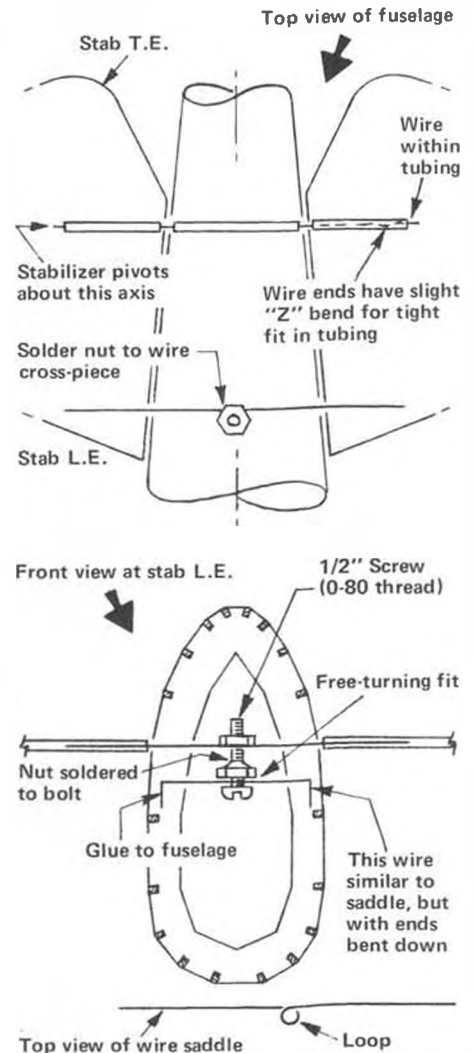
The Flightmasters held their Speed Contest at San Marcos, with beautiful flying weather throughout the day. After the speed events were over, the Thompson Trophy Race was held. There were 12 entries for this first outing, which isn't too bad. These 12 models were first judged for scale, using the Mooney system (that's ranking them from 1 through 12, with 1 being the

most scale, etc.). Each "pilot" was to draw a number (1 or 2) to see which heat his model was to fly in first. Thereafter, the models were changed around so that those not doing so well would not always have to compete with those which were.

There were 6 models flown in each heat and there were 6 heats. This gave each model a chance to be flown three times. With the models fully wound, each "pilot" was waiting for the count down to launch. I want to tell you that Tom O'Brien was right (July '75 F/F Scale column). There is no sight quite like that of seeing 6 scale models take to the air at the same time! Most every model flew exceptionally well. The first model down was given a score of 6 while the last model down was given a score of 1. This occurred for each heat. Then all of the flight scores were added to the scale scores to determine the winners. This system isn't fool-proof, but it did work out satisfactorily for the first time around.

Granger Williams had a super Howard Mike which had an M-6 airfoil. The M-6 is very similar in appearance to the RAF 34, and the flight performance of the Mike indicated that the M-6 is also an airfoil worth considering. The winner, Vince Costanzo, was flying a Chamber's Chambermaid that he modified from another Racewing drawing. Vince used

Continued on page 77



The two bottom sketches were mistakenly left out of last month's FF Scale column. Above that is Tom Laurie's incidence adjustment gimmick.



ANNOUNCING!



MODEL BUILDER magazine's

SECOND ANNUAL INTERNATIONAL

Parcel Post Proxy Peanut RUBBER SCALE CONTEST!

EVERY PEANUT MODEL, FROM NEAR OR FAR, WILL BE PROXY FLOWN, INDOORS, BY SOME OF THE U.S.A.'S BEST RUBBER SCALE FLYERS INCLUDING WALT MOONEY, BILL HANNAN, CLARENCE MATHER, BOB PECK, FERNANDO RAMOS, BILL WARNER, AND MANY OTHERS.

LOCAL MODELERS WILL BE ALLOWED TO ENTER, BUT THEIR PLANES MUST ALSO BE PROXY FLOWN, AND NO VERBAL OR PHYSICAL HELP WILL BE ALLOWED FROM THE OWNER . . . ONLY WRITTEN INSTRUCTIONS TO THE PROXY FLIER, AS ALLOWED FOR ALL ENTRIES.

Open to modelers from all parts of the world... any nationality... any age... any sex... come one, come all!

AWARDS to include TROPHIES and MERCHANDISE . . . ALSO, a KRAFT RADIO SYSTEM to the

GRAND PEANUT of 1976!

(HIGHEST OVERALL COMBINED STATIC AND FLIGHT SCORE)

Other prizes include such items as; Peanut Scale kits and materials, Astro Flight and VL Products electric motors, Brown Jr. twin and single cylinder CO₂ engines, Uber Skiver knives and sets . . . over 50 trophy and merchandise awards altogether!

Contest Director: CARL HATRAK

Competition will be divided into five (5) classes: Pioneer, World War I, Golden Age, World War II, and Modern. There will also be individual awards such as; most distant entry, best shipping container, entry most damaged in shipping (Don't try hard for that one!), best entry built from Walt Mooney plans, best model by a female, best entry by any modeler under 15 years of age, oldest qualifying contestant, youngest qualifying contestant, best biplane (Big John Award!), best entry built from a Peck-Polymers kit, longest flight, most static points, plus a few surprises.

Chief Static Judge: RUSS BARRERA

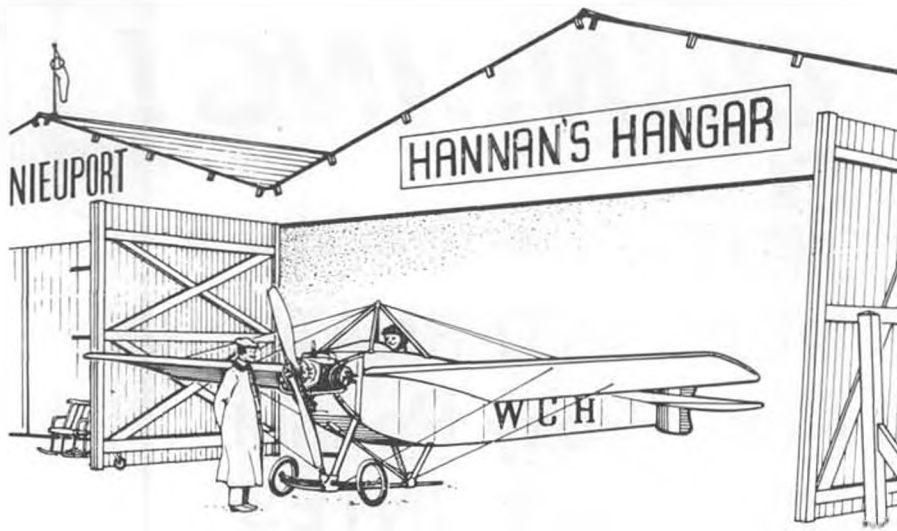
Scoring will be based on the total of each entry's static scale points (100 maximum) and flight points (100 maximum). Static judging will be according to AMA Indoor Rubber Scale rules. Flight points will be the average of the two best flights out of four official flights (10 seconds minimum, 100 seconds maximum). Ties will be broken by highest single score, or a fly-off. Number of attempts to be limited, subject to size of total entry. DO NOT SEND UNTESTED MODELS! A three-man jury will preside over all decisions.

SCHEDULE: Register by mail on or before February 1, 1976.
Models to be on hand on or before April 1, 1976.
Contest to be held approximately April 15 to May 1, 1976.

Send in now for your registration form, which includes an entry blank, a complete set of rules, and other particulars. Write to:

MODEL BUILDER PROXY PEANUT CONTEST
P. O. Box 4336
Santa Ana, California 92702
USA





... flying on air is somewhat akin to walking on water ...

CLASSROOM VOLKSPLANE

● Some time ago we reported on a Granada Hills High School aviation program conducted by L.B. Cotter, Jr. Initially, the class project was building Walt Mooney designed Volksplane Peanut Scale models, followed by a "Change the Volksplane" contest, with modifications left up to each student. To help inspire the budding enthusiasts, two of

the "texts" used are SPORT AVIATION and MODEL BUILDER magazines. The ultimate school project is constructing a full-size Evans VP-1, and we'll be looking forward to seeing photos of it when completed. HMMMMM!

In a recent television interview, a 94-year old man credited his vigor to eating peanuts every day of his life!



Beautiful Miles Sparrowhawk from Mooney/MB plans, weighs 1/3 of an ounce. Photo and model by Bob Clemens. Prop is free-wheeling. See the bent-over shaft?



"And now, a Four Peanut Roll." So there, nobody's perfect ... even Bill Hannan flies R/C! F/F rubber flier Mark Smith watches.

WHITTLE OUT AN AEROPLANE?

Bad pun, perhaps, but we needed an excuse for mentioning the book *Jet, The Story of a Pioneer*, Sir Frank Whittle. This is the man, of course, who did so much toward making the jet engine a practical concern. And, as in the case of so many successful aviation innovators, he was a model builder who: "... devoted hundreds of hours, often when I should have been elsewhere. It would be difficult to over-emphasize the importance of the Model Aircraft Society to my subsequent career, partly because of the absorption of the large amount of aircraft engineering knowledge which went with it, and partly because my abilities in model-making compensated in the eyes of authority for certain shortcomings in other directions." Thanks to Frank Zaic for bringing this item to our attention.

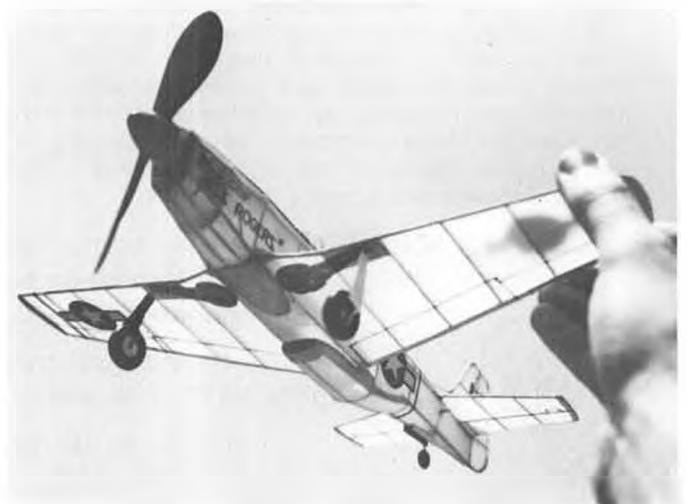
ADDRESS CHANGES:

Harold Swanson of Modernistic Models reports a change in Zip code. His P.O. Box is right where it always was, but the bureaucrats evidently felt the need to change something. Why not send a stamped envelope for Harold's latest list? Modernistic Models, Box 6932, Burbank, Ca. 91510.

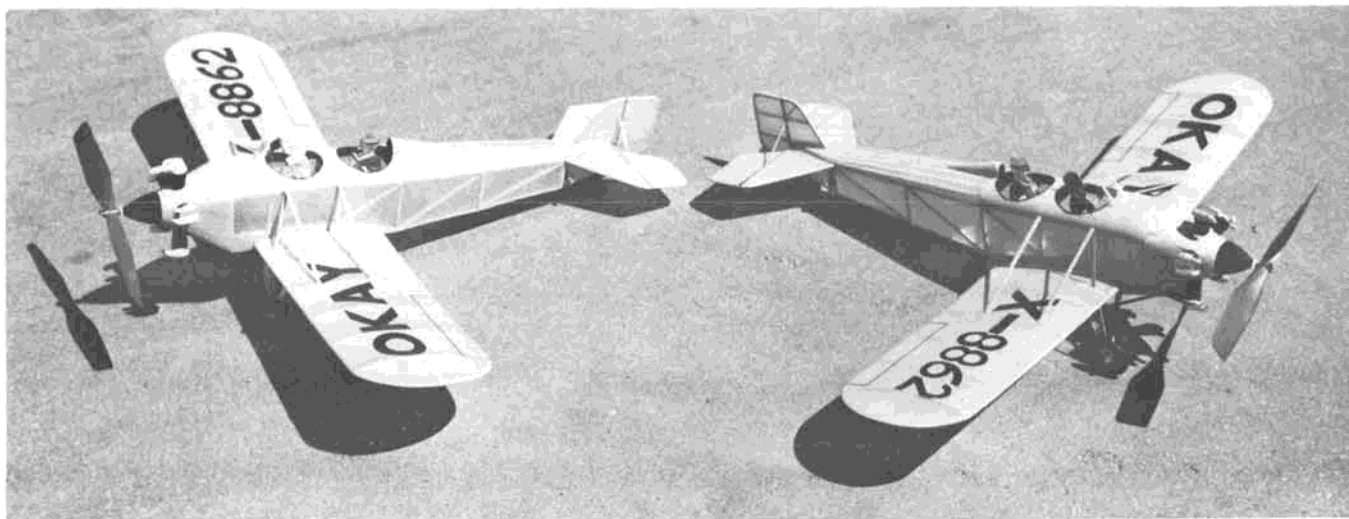
Continued on page 72



Realistic air shot by Doug McHard of his rubber powered Bf-109E. Plans are in the "Flying Scale Models of WW II" book. See p. 70.



P-51 Mustang, constructed by Steve Walton, from a Peck-Polymers Peanut kit. Photo by Daniel Walton.



PHOTOS BY AUTHOR

It's an OKAY Peanut!

By DON BUTMAN Our guest Peanut author presents a little-known aircraft . . . it didn't last long enough to be remembered, but it's designer/builder is still involved in aviation history.

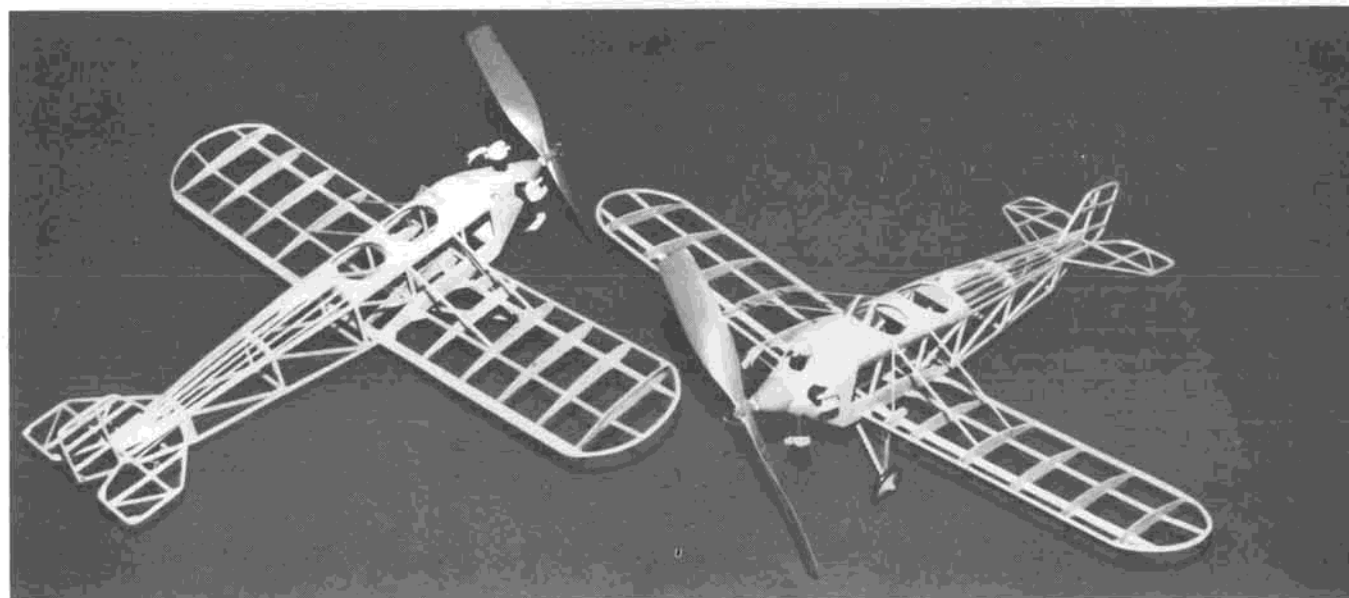
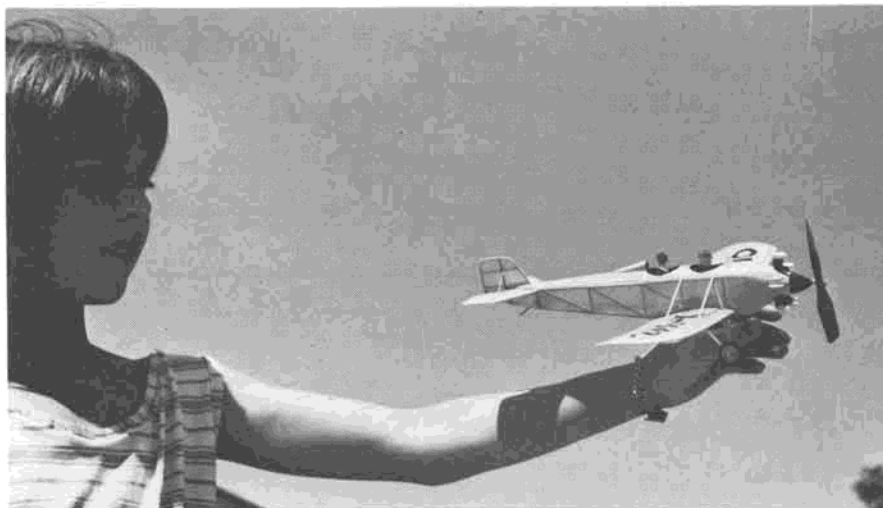
"It is an Okay Airplane," John Leland Atwood insisted to himself. Thus, "Lee" Atwood's career started in 1929 at Okay, Oklahoma, and led to the Space Division of Rockwell International at Tulsa, Oklahoma, 30 miles away and 40 years later!

The Okay Airplane Company became a victim of the "Great Depression," after producing the one plane presented here. The Okay airplane was never licensed due to stability problems and fell into disrepair after "Losing a Jug" of its Kinner engine, and landing in a cow pasture.

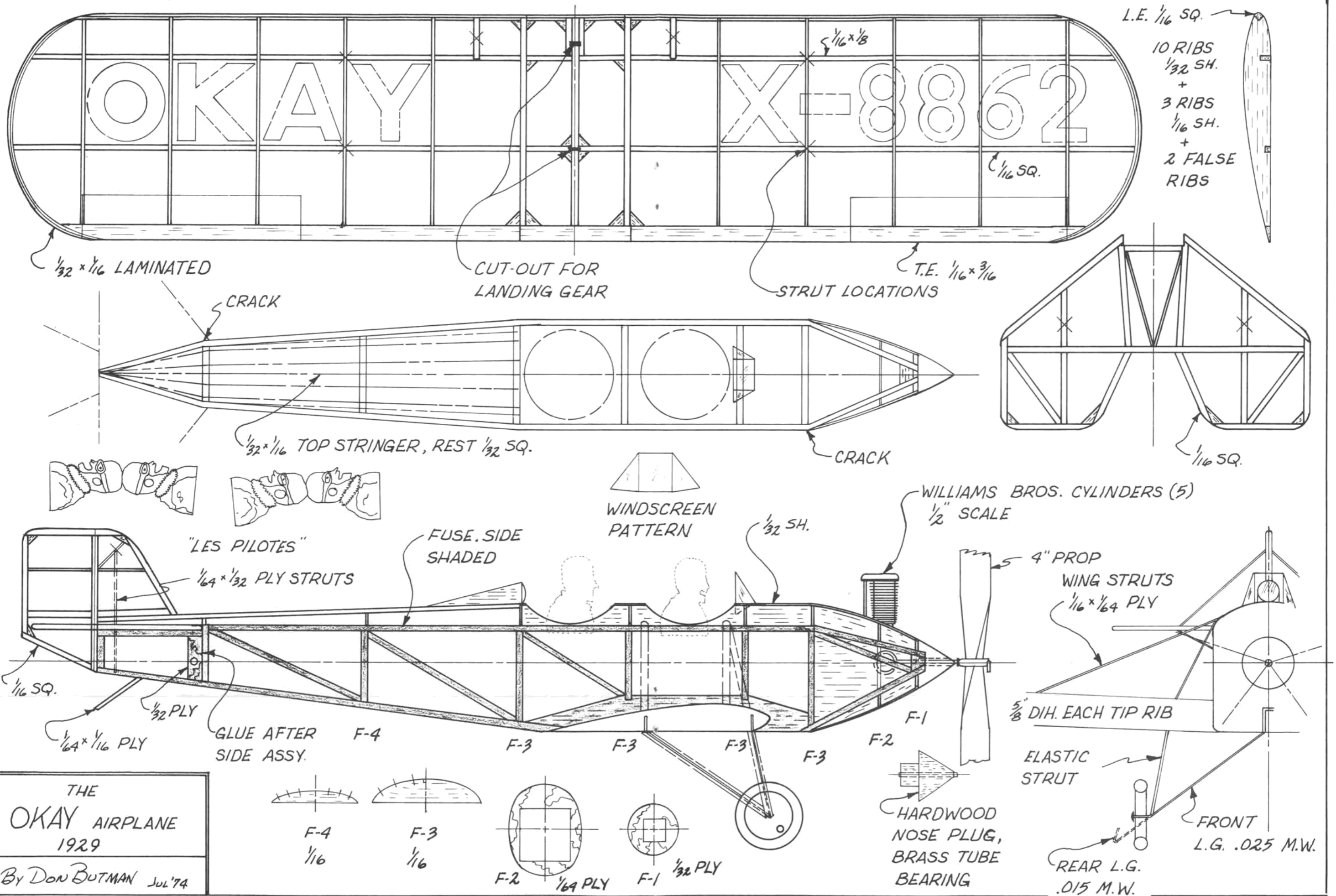
The model is of typical "stick-'n-tissue" construction. Covering was yellow.

Continued on page 74

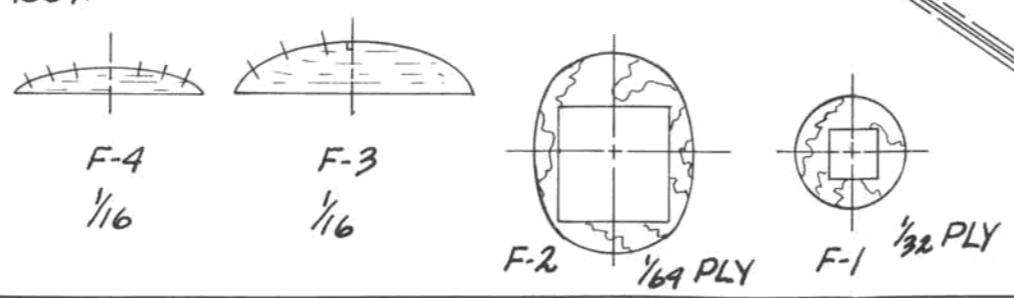
Right: Lisa Butman has no trouble holding the Okay peanut at arm's length.

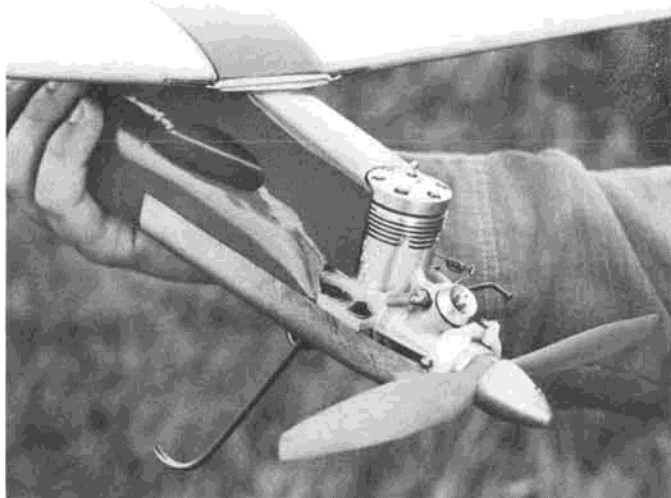


"I thought YOU went to pick up our clothes at the cleaners!"

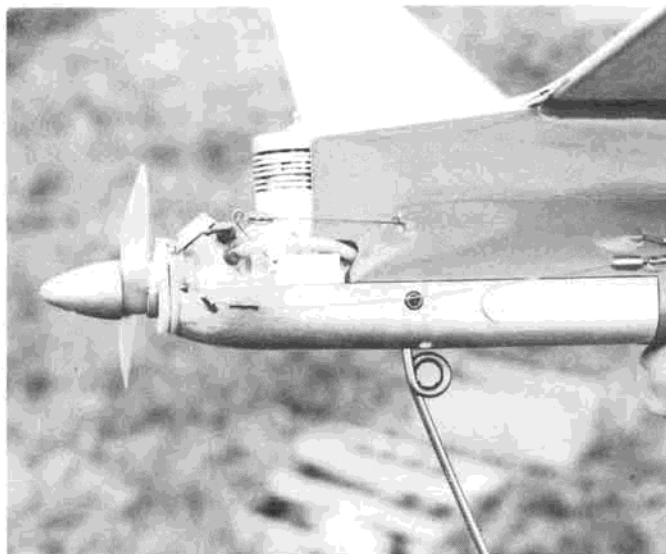


THE
OKAY AIRPLANE
 1929
 By DON BUTMAN JUL '74





Kerr Prop-Brake installation on Charlie Martin's FAI Power model. Most engine pans must be modified in order to accept brake.



Another view of Prop-Brake installation on front of Rossi engine. Note substitution of metal arm, to clear prop arc after release.

FREE FLIGHT

By BOB STALICK

• There were two really surprising events during the past month. One was when I ran into Dirty Dan at a recent contest and he informed me that he was going to be writing the control line column for MODEL BUILDER, and the second is when I received my October issue of MB and sure enough, Bill N. actually let him write it! I should note that Dirty Dan has had a standing challenge to Dist. XI V.P. Homer Smith and me that he can beat us in 1/2A Combat. So far, neither of us has taken him up on the offer. Since he, Dirty Dan, does occasionally toss a beat-up 1/2A gassie into the air, he claims that we "owe" him a combat match.

Haw!, as John Pond says.

One event during the past month really didn't surprise me. I didn't qualify for the U.S. FAI Team Finals. It must be time to build some new ships and practice flying them.

MYSTERY MODEL

One of the first U.S. A/2 gliders which used European influence in an American design, and was successful enough to compete for the U.S. FAI team, was this ship. Featuring such advancements as plug-in wings, short nose moment and flat center sections, it was a precursor to the kinds of ships which are flown today... except, of course, it didn't feature such exotic devices as circle tow. If you are the first to identify the ship and to send its name to Bill Northrop in care of MODEL BUILDER Magazine, he will give you a goody.

Mystery Model subscription winners for July, August, and September are as follows:

M.L. Gregory, Dayton, Ohio, was first to identify Lud Kading's (the "K" of K&B) "Funster," the super-little K&B

Infant powered gassie in the July issue. It was published in June 1952 M.A.N.

We had a tie (darn it!) for the August Mystery Model, Denny Davis' "Sandy Hogan," which was kitted by Berkeley in the early 1950's. Both Mike Loew, East Islip, N.Y., and Jack Balaam, Morrisville, Pa., had the same postmark, and mailed from the same zone.

Artie Jessup, of Hampton, Virginia, really knew "Woody" Blanchard's "Duzit" in the September issue, because he's a friend of Woody's and also built a copy of the model.

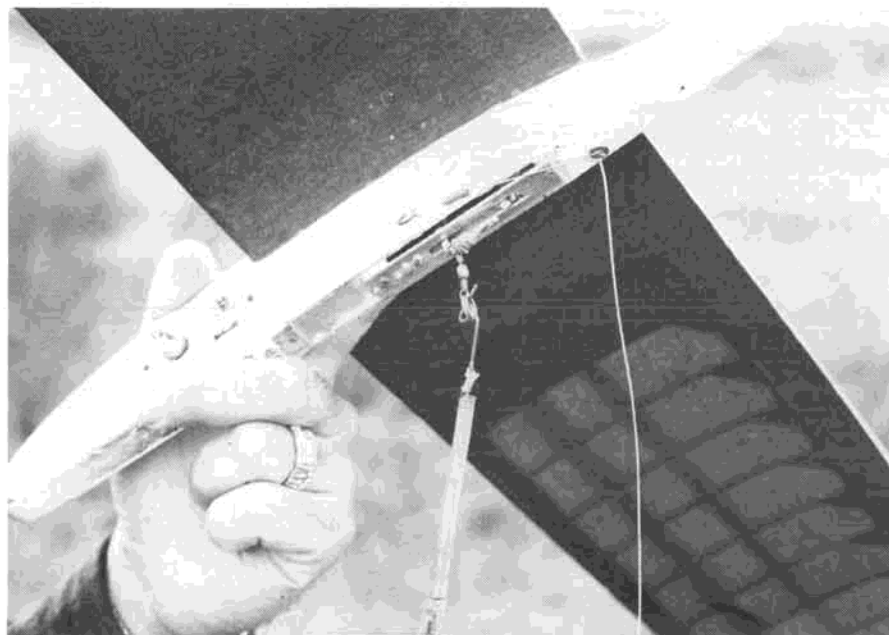
THREE-VIEWS OF THE MONTH

This month, rather than a single plan 3-view, you have several devices or ideas for your information. Thanks to Scatter,

the newsletter of the Southern California Aero Team, MODEL BUILDER brings you:

1. The Kerr Propeller Brake. This brake is available in several sizes... from 1/2A to Class C, at a cost of \$3.98 each. And what it does is keep your engine from sputtering and hacking its way to an overrun. As engine runs become shorter and shorter, the need for a positive shut off, such as an engine brake, increases.

Coupled with a flood-off, or pinch-off, system, the Kerr brake will stop a 25,000 rpm Rossi in about 7 to 10 revolutions! That is pretty fast. The brake itself is a one-piece casting of Delrin and doesn't have a separate arm,



Tom Huchinson's "Dragmaster" equipped with circle towhook. "Zoom" function has been eliminated in favor of Swedish style "spring-and-ring" release. More on this next month.



FOX GLOW PLUGS

In less than ten years Fox Glow Plugs have become the World's largest selling glow plugs; primarily, we like to think, because we offer advanced design and quality products at moderate prices. Some of the features that have made Fox Glow Plugs more successful than others are as follows:

1. Gold plated core pieces: This has a double advantage of providing a superior weld between the electrode and the core piece and in addition, makes the best possible contact with the glow plug lead. You will have virtually no contact problems with Fox Glow Plugs.
2. The second feature, discovered and originated by Fox, although now used by some of our competitors, is the use of a Rhodium-platinum element material, rather than the iridium-platinum generally used in yesteryears. The Rhodium-platinum combination has the advantage of igniting the fuel at a substantially lower element temperature than the iridium-platinum alloy. This means that when you do a touch-and-go or a similar maneuver your engine is less likely to quit when you hit the throttle.

Standard Series

Long
R. C.
40602



Short
R. C.
40502



Long
Standard
40201



Short
Standard
40101



2-Volt Series (Lead Acid Batt.)

Long
R. C.
40603



Long
Standard
40203



Short
R. C.
40503



Short
Standard
40103



Racing Series

Long
Idlebar
40604



Long
Racing
40204



Short
Racing
40104



3. The third feature originated by Fox, and as far as we know still exclusive with Fox, is the use of a patented space-age insulating material. This material will withstand a higher temperature than glass but is not brittle and will not crack under stresses introduced by tightening the plug.
 4. A fourth feature that has made Fox Plugs popular is our method of manufacturing the idle bar housing where the idle bar is an integrally machined portion of the housing. This virtually eliminates the risk of a weld failure and having a piece of the plug drop into and destroy the engine.
 5. A fifth reason why Fox Glow Plugs have been successful is that most engines seem to run better with them. The way they got that way is that we have made thousands of plugs with varying dimensions and selected the ones that seemed to work best on a wide variety of engines.
- The standard series of plugs are our best sellers. These are usually used with a hobby battery or in some cases a NI-Cad. The short standard and long standard are generally used in control line motors where idling is unimportant and the short and long

idle bar plugs are used in throttle motors, as these have a better capability of keeping the element warm during prolonged idle periods. The 2-volt series are similar to the 1.2-volt series except that the element is slightly smaller in diameter and longer in length and provides the resistance necessary for use in lead acid batteries. A lot of people use a motorcycle-type battery and tap off one cell to provide current for the glow plug. The racing series plugs are not for general use and are intended only for use in engines which have very close squish bands and seem to be unable to hold an element in a standard plug. Our racing series plugs have elements made of a different material which is much stronger at operating temperatures and can resist the shock waves which a close squish band will set off. This, unfortunately, makes it unsuited for use with a standard hobby battery or NI-Cad. Some sort of a rheostat controlled power source must be provided that will limit the input amperage between 5 and 6 amps. The benefit, however, is a virtual end to element failure.

FOX FOUR WAY WRENCH



The Fox Four Way Wrench is a professional grade tool specifically designed for those who like the four way design but are not satisfied with the low grade die cast tools now on the market. The Fox Four Way Wrench is the finest you can buy. The beautiful chrome finish of the Fox Four Way Wrench doesn't work one bit better than if it were a dull, battle-ship gray, but it does a world of good for your morale and pride and isn't "pleasure" what modeling is all about?

Fox 4 Way Wrench70104

FOX TWO WAY WRENCH



The Fox Two Way Wrench was originally developed in our own shops for the convenience of our own employees in working with Fox Engines. The small end of each of these wrenches are all broached to fit the Fox Glow Plug and are necked down so that they will reach inside of the fins. The length of the T-bar is enough greater than certain die cast wrenches that it often makes the difference between the propeller staying on or being thrown off in flight. Use a Fox Wrench and you will not be throwing propellers.

Fox 2 Way Wrench - Fits 3/16 shaft motors 70101
 Fits 1/4 shaft motors .70102
 Fits 5/16 shaft motors 70103

FOX 15BB

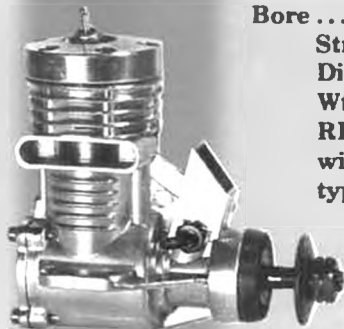


Bore590
 Stroke550
 Disp ..15 (.25 cc)
 Wt.....6 oz.
 RPM26000
 With big-throat carburetor and racing prop

The new Fox 15BB is an all new motor unlike any that you have seen before. It uses the basic Schnuerle porting concept. However, the motor has been put together in an altogether new fashion, which makes it possible to shape and contour the bypasses the way the motor wants them. Also, the structure is more rigid and warp free than most conventional design 15 engines. The flanged type carburetor mount makes possible a wide choice of carburetion. The Fox 15BB has probably the largest main bearing and crankshaft port of any 15 size engine available in the world. The main diameter is .450 and on the OD and racing enthusiasts can safely grind the ID out to 3/8ths diameter. Unlike conventional ball bearing motors, the new Fox 15 runs loose balls directly on the crankshaft in the highly loaded rear position and runs an SAE 660 cast bronze bushing in the front position. This loose ball arrangement completely bypasses the retainer failure problem. Another unique feature of the Fox 15BB is the unusual curvature in the two primary by-passes. This curvature directs the by-pass gas over the top of the piston and against the back wall directly and then as the piston lowers, sweeps upward, resulting in better piston cooling and a more complete cylinder fill than conventional straight bypass arrangements. It is rare that a motor will perform outstandingly in a medium RPM range; and with no change in port timing can be fitted with a small propeller and a big carburetor and will perform equally well in the racing range. The Fox 15BB is truly an exceptional motor

FOX 15BB with Suction N. V. Assem11600
 with Needle Valve for Pressure11700
 with Throttle for Sport Flying21600
 with Throttle for Racing21700

FOX COMBAT SPECIAL

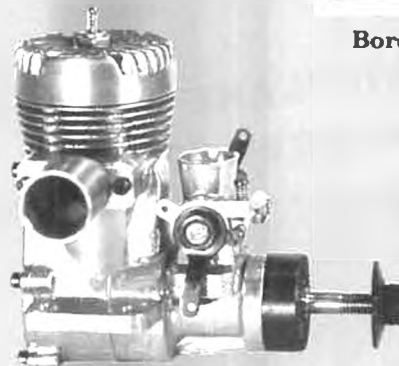


Bore800
 Stroke715
 Disp359
 Wt7 1/4 oz.
 RPM19,000
 with an 8-7 combat type prop

The Fox Combat Special is a specialized type of motor designed especially for Combat flying. Its needle valve assembly is designed to hold the pressure of bladders and to give reasonable adjustment with a pacifier or bladder tank. Construction of the engine itself follows normal double bearing practice except that the nose is very short to minimize turning radius inertia. The piston is lapped meehanite and the piston and cylinder thickness have been so matched that the cooling rate on both are nearly identical, which is what you need for superior hot restarts. In keeping with best construction practice, the crankshaft main is a full half inch diameter and made of alloy steel. The connecting rod has been machined from bar and is bushed on the lower end. The cylinder arrangement follows a proven Schnuerle porting arrangement. Considerable experimenting has been done with the porting to achieve a setup that will give an almost flat power curve over a fairly wide range of mixture. What this means, of course, is that if your bladder fails to maintain constant pressure your engine still doesn't sag on you in a match. The Combat Special is also suited for free-flight models and rat race type models. It should be clearly understood that the Combat Special is not a motor for beginners and it was not intended to function on a conventional suction type fuel system.

FOX 36BB Combat Special13700

FOX 40 BB

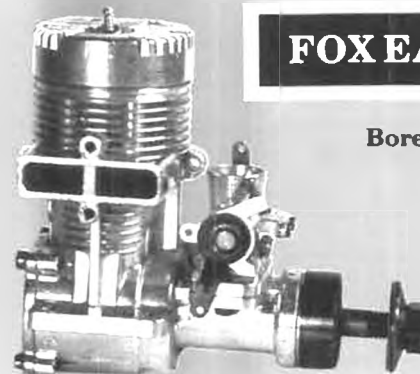


Bore800
 Stroke790
 Disp399
 Wt11 oz.
 RPMwith racing carburetor and prop with 60% nitro fuel 28,000 RPM with pattern carb and 10-6 prop - 13,500

The Fox 40 BB offers many interesting possibilities. With a conventional small throat carburetor it makes an excellent pattern engine for the medium size radio control pattern type airplanes. For high speed work the same carburetor used on our Fox 78 will bolt right on and will provide enough flow for the engine to run quite smoothly in the 20,000 plus RPM range. The big .590 diameter crankshaft can be ground out on the inside to over 7/16th diameter, which is a bigger hole than you can get on any 40 size rear intake. The cylinder porting follows the most modern Schnuerle type thinking and the round exhaust stack provides excellent attachment possibilities for a carry away tube, standard concept muffler, or a tuned pipe. A variety of cylinder options are available. It is normally supplied with a single ring aluminum piston and a nitrided cylinder. However, soft steel or brass cylinders liners can be ordered. Also ABC type alum pistons can be ordered. With all of these options at your disposal you have a wider choice than is available from any other manufacturer. The Fox 40 BB was intended to be a competition engine but it has none of the crankiness often associated with competition engines. For average sport flying you will be amazed how it will run and run and run and give you no problems at all.

FOX 40 BB with suction type needle valve assem14100
 with pressure type needle valve assem.....14200
 with pattern type carburetor24100
 with racing type carburetor24200

FOX EAGLE 60



Bore907
 Stroke937
 Disp604
 Wt14 oz.
 RPM ...12,000
 with 11-8 prop

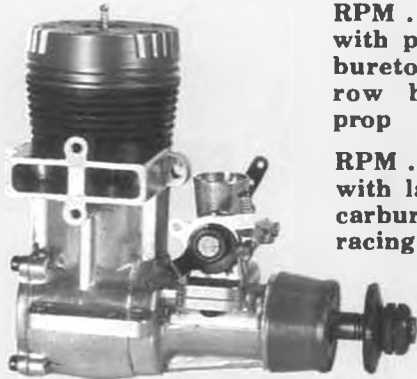
The Fox Eagle 60, first introduced in 1972, has now undergone several minor redesigns and has evolved into one of the World's most practical sport grade 60's. While it lacks a few hundred RPM of being the equal of our new Schnuerle ported Fox Hawk, it is undoubtedly one of the easiest starting motors on the market. It always starts, hot or cold, and no starter is necessary even for beginners. A simple straight-forward construction makes repairs easy to make if you should be so unfortunate as to have a vertical landing. The Fox Eagle has the remarkable capability of running as fast and reliably after 100 or 150 hour use as it does when it is brand new. Basically the loop scavenge arrangement on our Eagle is a more economical design to produce than the Schnuerle port arrangement of our new Hawk and we think that for a great percentage of sport flyers a few r.p.m. is of less significance than the dollars involved. Construction-wise the latest Eagle features a muffler mount that can be removed by means of two screws from the bypass side without removing the engine from the airplane. Like all larger Fox Throttle Motors, the throttle can be operated from either side and above or below the barrel. The cover over the front bearing protects it from dirt and grime. The con rod is now bushed on the lower end. The Fox Eagle has two conventional type rings with the result that cranking compression is probably better than any other 60 on the market. The Fox Eagle 60 is also lighter weight than most 60s and can often be used in airplanes planned for 45s without any balance problems. Furthermore, remember that when you fly with an American made Fox Eagle you have parts and service as near as your telephone.

FOX Eagle 60BB with Suction type needle valve assem. 16099
 with standard pattern type carb26099

FOX MOTORS with BALL BEARING MAIN BEARINGS

FOX HAWK 60

Bore907
Stroke937
Disp604
Wt15 oz.
RPM13,500
with pattern carburetor and narrow blade 11-7 prop
RPM23,000
with large throat carburetor and 9-7 racing type prop

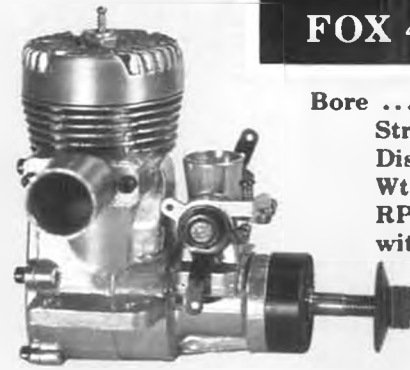


The new Fox Hawk 60 is undoubtedly America's finest pattern 60. In matters of power, fuel draw, smoothness and life, the new Fox Hawk 60 is equal or superior to the glamorous imports selling for \$150.00 or more. Every part has been made carefully and attention has been given to make it look attractive as well as function well. For instance, the cylinder head is made from bar stock and anodized an attractive red. The cylinder section is made with integral steel fins, which make the cylinder liner so stiff that there is very little likelihood the cylinder liner can warp out of round in compression areas. The cylinder liner itself has been nitrided and is file hard. The piston is made from a very special ultra-hard low expansion aluminum which is manufactured under patent protection. Each piston has more than twice the strength of ordinary aluminum pistons and has an expansion rate comparable to that of iron, which makes it possible to fit the piston itself much closer with no seizing problem should the motor go over lean. If the motor does go over lean about all that happens is that you lose power and perhaps burn out a glow plug. The connecting rod is machined from bar and is bushed on both ends with bearing bronze material. The wrist pin is retained with large aircraft style snap plugs. Another important feature of the Fox Hawk 60 is its remarkable capability to put out as much power on alcohol fuel as most ordinary engines do on nitro mixes. You will find that the Fox Hawk 60 will put out a good solid 1/4 horsepower on a FAI type fuel. If you do a lot of flying, the extra few dollars of a Fox Hawk 60 costs can quickly be repaid by the fuel cost savings in burning a lower priced fuel. Of course, if you do want to burn more expensive fuels such as Missile Mist, then you really do have a world beater.

**Fox Hawk 60 BB with needle valve assem for suction .16100
with carburetor for pattern flying .. 26199
with oversize carburetor for racing . 26198**

FOX 45BB

Bore850
Stroke790
Disp45
Wt12 oz.
RPM ...14,000
with 10-6 prop



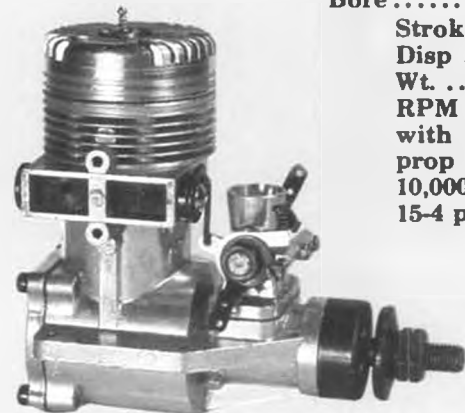
The Fox 45BB is brand new for 1975 and introduces a whole new bag of tricks for the enthusiast to explore. The exhaust stack is round and will accept a 5/8 diameter soft alum tubing extension so the exhaust can be routed at your convenience. The crankcase rear cover is extended upward to form a generous size rear by-pass and make possible a matching front by-pass. Note these are substantially wider than on most Schnuerle motors. All walls on the crankcase casting are 3/32 thick. The crankshaft is mounted on the same two ball bearings our Eagle and Hawk are and has a more generous gas passage than any shaft rotor 60 we have seen. The flanged carburetor mount, besides providing a more warp free than usual way of mounting the carb, also makes possible a better intake intersection design than possible with a drilled hole. The con rod is machined from alum bar and is bushed on the lower end. The cylinder has been carbonitrided and is virtually wear proof. The piston is cast aluminum and is fitted with a single Hi-tension ring that has been specially processed for a perfect cylinder fit.

The Fox 45BB will fly a plane about as fast as most loop scavenged 60's. It weighs less, is smoother running, burns less fuel, and costs less. The use of a 10" prop helps ground clearance problems. The Fox 45BB runs very nicely on FAI Fuel, yet will utilize nitro fuels to full advantage. We think our Fox 45 is the highest state of the art offered today.

**FOX 45BB - Suction Needle valve assem 14600
Needle valve assem. for pressure 14700
Throttle for pattern flying 24800
Throttle for racing 24700**

FOX 78

Bore1.00
Stroke ..1.00
Disp78
Wt.19 oz.
RPM ..13,500
with an 11-8 prop
10,000 with a 15-4 prop



The Fox 78 started out as a 74, ten years ago. Over a period of years the stroke was increased to make it a 78. The by-pass was deepened. The 3 by-pass ports became 4. The piston was re-designed several times as was the crankshaft. The old 2 plug head was abandoned in view of today's reliable glow plugs. A great deal was learned about fits.

Today's Fox 78 has more torque and power over a wider RPM range than any comparable motor. It is light enough to fit in most airplanes calling for 60's - yet has the extra steam to fly hi-drag, power consuming scale models. Independent tester Peter Chinn rated the Fox 78 as top choice in its field.

**Fox 78 with suction type needle valve assem17800
with RC type carburetor 27800**

FOX MOTORS with CAST

FOX 15



Bore590
 Stroke540
 Disp15 (2.5 cc)
 Wt.....4 oz
 RPM12,000
 with an 8-4 Prop

This outstanding little motor has been manufactured now over ten years with only minor modifications. Its success has been so great that a whole family of 15 sized profile model kits have been produced around it. The main bearing is a full 3/8ths inch in diameter and the engine is ported generously throughout. The piston is machined from meehanite bar and the cylinder is from leaded steel. The newest series features an improved needle valve assembly which can be readily replaced in the event one of your landings is less gentle than you had planned. The main bearing is cast SAE 660 bronze which wears longer and has less friction than powdered metal bearings.

Fox 15 with Suction Type Needle Valve Assem..... 11500

FOX 19



Bore650
 Stroke600
 Disp19
 Wt5½ oz
 RPM15,000
 with an 8-4 prop

This is the third year of production for this new series Fox 19. During these three years of production it has been rated by independent testers as the most powerful of all bushing 19's and equalled only by a couple of double ball bearing 19's whose price is more than twice that of the Fox. However, remarkable power output is only one of the things that make it such a desirable motor. All the functioning parts are generously proportioned and with normal use you can expect well over 100 hours life. Under crash conditions it survives remarkably well. In the event you really give it a rough landing you will find it the easiest motor to disassemble and repair you have ever worked on. The carburetor flange mount is distortion free. The cylinder liner is thick and sturdy. The crankshaft main is a full 7/16th inch in diameter. The motor starts very easily. The weight is light enough so that it will fit readily in most airplanes designed for 15's and give you the extra power necessary to get it off grass or drag an overweight airplane around.

Fox 19 with Suction Type Needle Valve Assem.11900
Standard type R. C. Throttle21900

FOX 35 STUNT

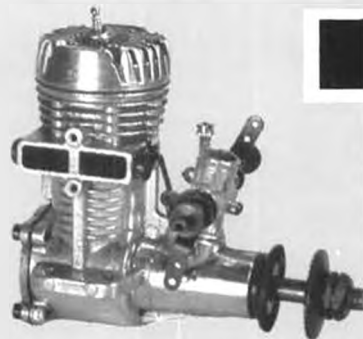


Bore800
 Stroke ...700
 Disp352
 Wt.....6½ oz
 RPM9500
 with 10-6 prop

The Fox 35 Stunt is probably the most successful model airplane motor of all times. First introduced in the winter of 1948, it was skyrocketed into the limelight by winning first in the 1949 Stunt Nationals. In virtually unchanged form it has continued to win more control line stunt contests than all other makes combined. In the year 1974 the Fox 35 Stunt powered the World's Championship winning control line stunt model and powered the first place Open and Junior winners at the Nationals and also powered the Walker Flyoff trophy winner. These fantastic successes are not the result of any super promotional schemes or luck. This particular motor has running characteristics that make it uniquely adapted to control line stunt. The RPM change with airplane attitude in such a way as to anticipate what the model needs. The Fox 35 Stunt also makes a very excellent beginners engine because its low compression ratio makes for easy cranking. For 1975 the crankcase die has been completely rebuilt so that the castings are clean and accurately made and in addition two small lugs have been provided for an improved type muffler attachment. This muffler attachment is so arranged that the muffler can be installed or removed within a minute's time. The Fox 35 Stunt is offered in only one configuration and one carburetion arrangement. That is the same one that has won over 16,000 contests.

Fox 35 Stunt Motor with standard needle valve assem 13500

FOX 36

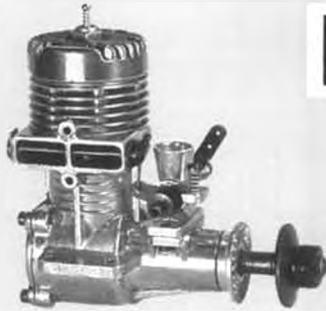


Bore800
 Stroke .715
 Disp ..359
 Wt. . .7½ oz.
 RPM 11,000
 with a 10-6 prop

The Fox 36 powerhead is a direct descendent of the Fox Blackhead Combat Special introduced in 1957. Through the years minor modifications have been made to each part as experience dictated. Today's 36 features a full half inch diameter main bearing, meehanite piston, leaded steel cylinder and of course a Fox one piece crankcase design. The normal carburetion model is ideally suited for sport flying in beginner type airplanes of the Ringmaster, Flight Streak, Magician category, as well as the built up types. For high performance applications, such as combat or free flight where a bladder or pressurized tank is planned, the open throat model is indicated. This is the same motor except the intake has been chopped and bored and the needle assembly has been replaced with our combat type needle assemblies. With the RC version you have a choice of two carburetors — a smaller carburetor is the one that should be used for normal sport type and pattern type flying. The larger type carburetor is useful only where the tank placement is very carefully controlled and the engine is intended to be used in racing type events. With these applications the propeller should be selected so that the engine will turn right at 15,000 RPM on the ground. With a larger propeller the carburetor does not function properly.

Fox 36 With Suction Type Needle Valve Assem13600
Fox 36 Large Intake with Combat type needle for
pressure tank or bladder tank 13800
Fox 36 With pattern Type Throttle 23600
Fox 36 With optional oversize throttle 23800

BRONZE MAIN BEARINGS



FOX 25

Bore680
Stroke ...680
Disp25
Wt6 oz
RPM ...12,000
with 9-4 Prop

The Fox 25's power output is far greater than you would expect from an engine of its size. It will easily fly most airplanes designed for 35 size engines and yet give you the lighter weight and fuel economy of the smaller displacement. On the other hand if you are visualizing a 15 size airplane going like a bomb, the Fox 25 fits right into this thinking, as its weight is identical with average 15's. The difference in power is remarkable. The Fox 25's construction is conventional but quite highly refined. The main bearing is a full 7/16ths of an inch in diameter and is generously ported. The piston is machined from cast meehanite bar and the cylinder is from leaded steel. The connecting rods are machined from bar. Under normal use you can reasonably expect the Fox 25 to give you over 100 hours running time. The flange type carburetor mount has proven to have less distortion than the types held in with set screws or clamps, and it makes it an easy switch from one type throttle to another.

Fox 25 with suction type needle valve assembly12500
with pattern type RC carburetor 22500

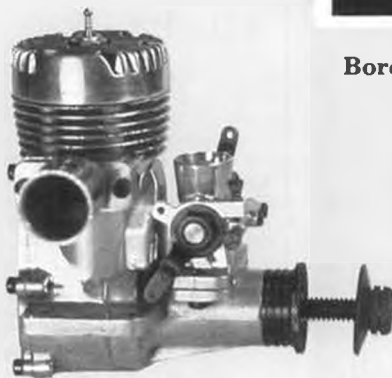


FOX 29

Bore738
Stroke ...700
Disp29
Wt7½ oz.
RPM .. 12000
with a 9-6
prop

The Fox 29 has been in production since 1956, when it was first introduced as a racing engine. It was quite successful in dominating B speed and B proto for several years. As years have gone on we have shaped the Fox 29 into a sport type product which is more docile to handle and we have worked some of the temperament out that is characteristic of racing motors. In the Fox 29 the throttle version has a longer crankshaft than the control line version to provide the clearance the throttle needs. Therefore, on the Fox 29 there is more involved than just changing the throttle to get a throttle or non-throttle motor. The mechanics in the motors, however, are identical — the cylinder, the piston, the rod, wrist pin, head, crank throw, mounting lugs and power head dimensions.

Fox 29 with suction type needle valve assem.12900
with large intake and combat type
needle valve assem13000
with pattern type RC throttle22900

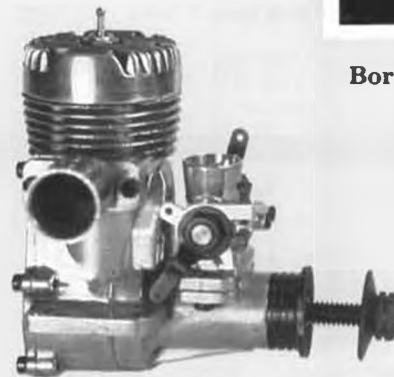


FOX 40

Bore800
Stroke ...790
Disp399
Wt11 oz
RPM ...13,000
with 10-6 prop

The Fox 40 Bushing Motor is brand new for 1975 and is chock full of interesting innovations. The cylinder porting follows the new Schnuerle layout. The crankshaft is a very generous 9/16ths diameter. The crank case is a very rigid one piece casting containing the cast bronze main bearing. The rear cover has been enlarged in a manner that makes it possible to make the three bypass cores to the dimensions dictated by best engine design, not by the manufacturing limitations. This arrangement has been patented and is not found on any other brand motors. The castings themselves are very thick and sturdy and will withstand a surprising amount of abuse. Performance-wise you can confidently say that your Fox 40 will easily outrun any other bushings 40's on the market today and most of the ball bearing 40's — all of this with no sacrifice of easy starting or docile performance. The piston is made from meehanite metal and has been ground, honed and lapped to the leaded steel cylinder. The flange carburetor mount provides a quick and easy method of varying the carburetion for a variety of specific applications. When fitted with a normal RC type carburetor this engine is ideal for the medium size pattern type RC airplanes. For control line use intake stacks are available in standard diameter, which would ordinarily be used on a control line sport model or a wide open throat model which could be fitted with a pen bladder type tank for the highest possible RPM.

Fox 40 with suction type needle valve assem 14000
pressure type needle valve assem 13900
pattern type carburetor24000
racing type carburetor23900

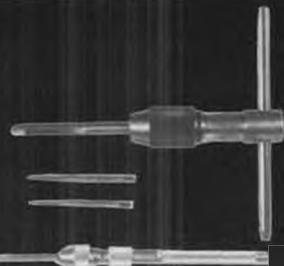


FOX 45

Bore850
Stroke ...790
Disp45
Wt11 oz.
RPM ...14,000
with 10-6 Prop

The Fox 45 is a brand new engine for 1975. It is built in the same one piece triple bypass type casting as our new Fox 40 and it utilizes the same lower end parts. The additional displacement is gained by a larger bore. Its power output is about equal to the old loop scavenged 60's of three or four years ago. The advantages, of course, are that the 45 size engine weighs less, burns less fuel, has less vibration, is less sensitive to weather variations or fuel mixes. One rather unique feature of the Fox 45 RC is its round exhaust stack. This was designed with the thought in mind that a soft aluminum exhaust extension could be readily fitted into it and could be bent around in a manner most convenient for the airplane builder. The simple, sturdy, patented construction makes repair a simple matter if you happen to have a misfortune. A great deal of thought has been given to the design of the Fox 45 from a maintenance point of view. For instance, a moderately rough landing that might bend the crankshaft of some engines would only bend the prop stud on the Fox 45 and this could be unscrewed and replaced at a nominal charge. The patented Fox Crankcase is quite heavy walled and is highly resistant to crashes. The cylinder liner and piston both are of substantial proportions and moderate cost and can be replaced should the need arise. The Fox 45 Crankshaft has a very generous 9/16ths diameter main bearing which virtually eliminates the probability of a crankshaft failure or a bearing wearing out.

Fox 45 with suction type needle valve assem14500
with pattern type carburetor24500



FOX TAPS

Model airplane motors are assembled by means of screws in threaded holes and the nature of our hobby is such that from time to time the threaded hole gets burred over, jammed, cross threaded or otherwise damaged. A tap is the tool used to thread or re-thread a hole. Taps fall in two general categories — hardware grade, where the threads are cut; and precision, where the threads are ground. Hardware grades are unacceptable for model airplane use. A precision ground tap usually will cost several times as much as a hardware grade but you get a good thread from it. Through a special arrangement with Greenfield, one of the world's largest producers of precision ground taps, we are offering a selection of sizes and types used in model airplane motors. A lubricant should be used when tapping a hole — and it just happens that model airplane fuel is as good a tap lubricant as you can get.

Tap Size	Where Used	Order No.
#2-64	Fox 15-19-25 needle	71264
#2-56	Fox 40-45-60-78 Low speed needle Carb Plug Screws Idle Stud Screws	71256
#3-48	Stunt 35 needle	71348
#4-48	Head and rear cover screws for 15-19-25 Old 36X Needle valve High Speed Needle Fox 29-36 RC Carb	71448
#4-40	Fox 15-19-25 RC low speed needle Fox 29-35-36-40-45 head and rear cover screws Muffler Core Screws	71440
#6-40	H. S. Needles for all RC motors 29 and larger L. S. needle 29 and 36 RC	71640
#6-32	Fox Eagle 60, Hawk 60 78 RC Head and rear cover screws	71632
#8-32	Needle Body Nut For all suction N. V. bodies	71832
#10-32	Fox 15-19 Prop Shaft	71332
#¼-32	Glow Plug THDS. carb barrel nuts	71432
#¼-28	Prop Shaft Fox 25-29 35-36-40-45	71428
#5/16-24	Eagle-Hawk and 78 prop shaft	71524

Tap Holder	Use	Order No.
Starrett #162 C	#2-64 #2-56 #3-48 #4-48 #4-40 #6-40 #6-32	72101
Starrett #162 D	#8-32 #10-32	72103
Greenfield #333	#¼-32 #¼-28 #5/16-24	72105



FOX PROP REAMERS

Quite often the propeller that you want to use will have a hole smaller than the shaft size on the motor you want to use it with. The Fox Reamers are designed to provide an easy, and accurate method of enlarging the hole to the next standard size shaft size without danger of splitting the propeller or getting the hole out of center. We offer two reamers - a standard reamer which would be used for 95% of applications and a KB Special, which makes a step from ¼ inch to ⅜ in the peculiar manner that that particular engine requires. All Fox Reamers are of standard four-flute design and are fitted with a T-bar. They can be carried right in your tool box and used on the field. These are a must for the tool box of every serious modeler. The standard model has progressive steps of from 3/16 to ¼ to 5/16 and finally ⅜. The KB model has a quarter inch pilot and cuts to ⅜.

Fox 4 Step Reamer 70201
Fox KB Reamer 70202



FOX PRESSURE REGULATOR

The general advantage of a fuel pressure regulator is that you can adjust your high-speed jet for maximum power for takeoff without the problem of the engine going over lean later in the flight or in a prolonged climbing-type maneuver. This results in more available power and better fuel mileage.

Diaphragm pressure regulators have been around many years and have been used for a variety of purposes. The Fox Fuel Pressure Regulator is an adaptation of these well known principles to model size.

The pressure regulator should be mounted as close to the carburetor as possible. A recommended installation on a standard RC Ship would be along the side of the engine and no further back than one inch from the carburetor center. For the pressure regulator to work, a special tank producing from ½ PSI to 2 PSI is required. Crankcase pressure will not do this reliably and neither will muffler pressure. We recommend some sort of a balloon or bladder-type tank which has rubber bands or springs around it. Later we plan to offer special tanks for this purpose. The Fox Regulator is assembled with screws and can be disassembled for cleaning or inspection or replacing the diaphragm. Also it has an external pressure tickle so that you can push a button for a second or two and prime your motor. We predict that once you discover how completely reliable your engine performs on regulated pressure you will never go back to the old way.

Fox Fuel Pressure Regulator 90505



FOX PRESSURE FITTING

The Fox Pressure fitting is machined from 3/16ths inch hex brass bar. It is probably the smallest and most compact pressure fitting on the market. We offer it with either 4-40 threads or 6-32 threads. Pressure fittings are normally used to pressurize the fuel tank. For pattern type RC models pressure is usually taken from the muffler housing. For Rat Race type models pressure is usually taken from the crankcase.

4-40 Thread Pressure Fitting 90501
6-32 Thread Pressure Fitting 90502



FOX CARBURETOR ADAPTERS

We believe that Fox Carburetors are as good as you can buy. They are more linear, simpler and more trouble-free than most. Nevertheless there are a host of other good carburetors on the market which you may prefer because of their color, shape, throttle response or because you just happen to have one. The Fox Carburetor adapters is a simple casting made with a flange that will mount on a Fox Motor and has a vertical hole and two set screws to take the round-type carburetor. Due to the wide variety of carburetors available and the varying number of sizes of stems, we have elected to offer an adapter which can be drilled or reamed out to whatever size you desire. Our A-base pattern fits our Fox 15. Our B-base pattern fits the Fox 19 and 25. The D-base pattern fits our Fox 40, 45, Eagle and Hawk 60's and 78's. Each adapter is supplied with two set screws threaded 6-40.

Fox Flanged Carburetor Adapter A size 90601
B size 90602
D size 90604



FOX FUEL FILTERS

We believe the Fox Fuel Filter is the finest that you can buy for several reasons:

1. Our filter element is an ultrafine stainless steel screen. The fact that the element is stainless steel makes it immune to the corrosive attacks of fuel itself. Many fuel filters use a brass screen or bronze powdered metal filter element that soon corrodes and restrains the flow of the fuel.

2. Our housing is a threaded two-piece assembly with a nylon gasket that can be taken apart for cleaning repeatedly. Many fuel filters cannot be disassembled at all and some filters that are assembled by pressing two halves together will become loose and leak after awhile.

3. Fox Fuel Filters have large diameter nipple fittings that are designed to hold tightly onto the relatively large diameter surgical tubing or silicone tubing that is popularly used today. Since no carburetor will function satisfactorily with fuel dust, dirt, or grass particles or solidified oil, we recommend using a filter on the line from your tank to your carburetor, and another filter in your filler line. The price is so modest everyone can readily afford the best.

Fox Fuel Filter - small 90701
Fox Fuel Filter - large 90702

FOX MOTOR MOUNTS MACHINED FROM BAR



The Fox Motor Mounts are lighter, stronger, and more rigid than cast mounts or ones made from fiberglass filled plastic. Since vibration is directly related to the rigidity of the motor mount, a Fox Mount is more desirable.

In the event that you make a crash landing, if a motor is supported by a good sturdy Fox Mount the crankcase is often saved; whereas a weaker mount that will give away first on one mount and then the other, twists the crankcase. An advantage of the Fox Mount over wood mounts is the ease in which thrust changes can be made. If the mount is attached to a fire wall with blind nuts in back all you have to do is to loosen the four screws from the front and insert a shim under the top or sides. In this way very precise thrust adjustments can be made.

MEDIUM SERIES			LARGE SERIES		
Width	Fits	Part No.	Width	Fits	Part No.
1.217	Fox .29 new	50401	1.475	Fox	50601
	Fox .36 new			Eagle 60	
	Fox .35 all			OS 60	
1.281	OS .30	50402	1.525	St 51	50602
	Fox .36X all			St 56	
	Fox .36 BB all			St 60	
1.320	St .35 stunt	50403	1.640	Enya 60	50603
	K&B 35			Merco 60	
	K&B 40			Fox	
1.385	OS 35	50404	1.640	Hawk 60	50603
	OS 40			Veco 60	
	McCoy 40			Webra 61	
	Fox 40			H. P. 61	
	S T 35 rc			Fox 74	
S T 40 rc	Webra 40				

SMALL SERIES		
Width	Fits	Part No.
1.000	Fox .15 OS .15	50201
1.135	Fox .25	50203
	ST .19	
	ST .23	
1.217	OS .19	50204
	Special for Fox 35 Stunt	

FOX SPINNERS — THE WORLD'S FINEST



Most modelers agree Fox Spinners are the world's finest. They are machined from solid aluminum bar with the wall thickness varying from the back plate to the nose piece according to the strength requirements. Since they are machined from bar they run true and have no balance problems. They were designed primarily with the thought in mind that more and more people are using electric starters, and most low cost spinners will not stand up to the beating they get from a starter.

For 1975 we have added a new contour which is similar to our conventional contour except that it is more conical shaped and it fits into wider fuselages better. All Fox Spinners, after they have been machined, are sanded and buffed to a high lustre. The conventional contour and slim-jim contour will both accept the same back plate but the conical contour requires its own back plate. The Fox method of retaining the spinner completely eliminates the possibility of spinning the assembly off with a starter, as the spinner is held on by a small diameter nose screw which ties into the special prop nut supplied.

We regularly stock a few spinners without cutouts so that if you have some special three or four blade propeller application or unusual application you could get a spinner without slots and put in your own.

DIA	CONVENTIONAL CONTOUR NO.	SLIM JIM CONTOUR	CONICAL CONTOUR	STANDARD SHAFT SIZE
1½	60106	60206	60306	10-32
1¾	60107	60207	60307	10-32
2	60108	60208	60308	¼-28
2¼	60109	60209	60309	¼-28
2½	60110	60210	60310	¼-28

ADAPTER NUTS AND MATING WASHERS	
10-32 Short	60401
10-32 Medium	60402
¼-28 Short	60403
¼-28 Medium	60404
¼-28 Long	60405
5/16-24 Medium	60406
5/16-24 Long	60407

PROP SHAFT EXTENSIONS



Fox has made a specialty of prop shaft extensions. We have evolved a light weight, compact spool design and a special nut and washer design that will fit right on your prop shaft and move the propeller either one half inch or three quarter inch forward. Also with Fox Extensions you can fit a Fox Spinner on your motor. In effect, this gives you three different possible front end lengths — stock, ½ inch overstock and ¾ inch overstock. Think how many times you have juggled a motor block cutout or had badly fitting front ends when a little extra length on a propeller shaft would have made things come out smooth.

Prop Shaft	Extensions
½ Long	10-32THD No. 90410
¾ Long	10-32THD No. 90411
½ Long	¼-28THD No. 90412
¾ Long	¼-28THD No. 90413
½ Long	5/16-24THD No. 90414
¾ Long	5/16-24THD No. 90415

FOX 40-40



As its name indicates, Fox 40-40 is 40% nitro methane and 40% alcohol. The remaining 20% is a mixture of natural castor oil with a small percentage of Ucon type synthetic to keep the carbon deposits down to moderate level. Most people use 40-40 as an additive to a mild, low cost fuel mix when they need a little extra glow plug heat or a little extra oomph. However, straight 40-40 is an excellent competition fuel in itself where performance is the primary consideration and price is only secondary. We recommend that all serious modelers carry a can of 40-40 with them so they can give their regular fuel mix a little extra help on those off days. Of course if you are flying serious combat, it's wonderful to pull 40-40 out of the bag when you find yourself matched with a red-hot opponent.

QUARTS No. 30403
DRUMS On special order

FOX MISSILE MIST



Fox Missile Mist is our finest general purpose fuel. It contains 25% nitro and 22% oil. However, it far out-performs the normal 25% home brew. One reason is that the nitro is a mixture of nitroethane and nitro-methane, in a proportion that runs as well on a hot day as on a cool day. Furthermore, nitroethane is one of the most powerful solvents known and a motor run on Missile Mist will have very little carboning or gumming problems, even with an average type muffler. Another remarkable feature of Missile Mist is that your engine can be set quite rich and the r.p.m. will drop off a smaller amount than other fuels of comparable nitro content. A simple switch from a lesser fuel to Missile Mist has solved more engine running problems than you would ever imagine.

PINTS 30302
QUARTS 30303
GALLONS 30305
DRUMS On Special Order

DUKE'S FUEL



10% Nitro 22% Oil Duke's Fuel is a popular middle of the road formula preferred by many for use for radio control flying as well as control line flying. The excellence of Duke's Fuel is not due to any secret formula but rather is due to the quality of the oils used and the fact that Fox fuels are consistently true to their formula. The oil used in Duke's Fuel is a blend of choice natural castor oil and what is probably the most expensive synthetic oil used in model fuel today. Duke's Fuel is backed with 36 years of flying and experimenting with model airplane fuels.

PINT 30202
QUART 30203
GALLON 30205
DRUM Special Order

FOX SUPERFUEL



Fox Superfuel formula is basically 5% nitro and 28% oil, which makes it the most oily fuel on the market today. This formula was first introduced in 1952 and has remained unchanged over the years. Fox Superfuel is unexcelled in its applications.

BREAK IN - Fox Superfuel, gives any new motor extra protection against galling and wear during those important first few runs.

MOTORS WITH WORN CYLINDER AND PISTON FITS - The extra viscosity of Fox Superfuel will often hold compression and extend the practical life of a motor long after it will not run satisfactorily on lesser fuels.

EVERYDAY FLYING - A great many motors just run better on Fox Superfuel.

PINTS 30102
QUARTS 30103
GALLONS 30105
DRUMS On Special Order

FOX MANUFACTURING CO.

5305 TOWSON • FORT SMITH, ARK. 72901
Phone 501-646-1656

FOX SILENCERS



We are currently offering Fox Silencers in the open or closed front configuration in the A and B size and the closed front only in the C size. We have decided to not offer the flow through in the C size because the larger size motors really require the more effective muffler in order to keep the neighbors somewhat pacified. You will observe from the picture that our new series mufflers have studs so that the muffler can now be mounted from the by-pass side of the engine by means of two long screws, or from the exhaust side by means of two short screws in the studs above and below the stack. In this way you have two different options of how your muffler is mounted.

SIZE	WT.	FITS	STYLE	PART NO.			
A	1-1/8 oz.	Fox 15.	Open Front	90211			
			Closed Front	90212			
B	1-3/8 oz.	Fox 19 Fox 25, Fox 29 Fox 35 Stunt Fox 36	Open Front	90221			
			Closed Front	90222			
			C	1-5/8 oz.	Fox Eagle 60 Fox Hawk 60	Closed Front	90232

FOX WHEEL COLLARS



Fox Wheel Collars are run in our own shop specifically for model airplanes. One feature of our 1975 Fox Wheel Collars is the set screw, which is a #6-40 thread. This is a finer thread than generally used and holds better. The cup on the set screw indents the piano wire and gives a firmer bite. Another feature of the Fox Wheel Collars is that the outer collar is closed and rounded off in an acorn nut type manner. This covers up the jagged wire end you so frequently see on an otherwise beautiful model. For those modelers who like to have wheel pants, Fox has a flanged wheel collar design, so rigged that a plastic wheel pant can be held onto the collar by means of a couple of small self-tapping screws supplied with the set. Wheel collars, of course, do have other uses also, such as positioning the height of nose wheels, retracting gear mechanisms, bomb-bay doors and the like.

TYPE	WIRE SIZE	PART NO.
2-wheel regular	3/32	90331
3-wheel regular	3/32	90332
2-wheel regular	1/8	90341
3-wheel regular	1/8	90342
2-wheel regular	5/32	90351
3-wheel regular	5/32	90352
2-wheel regular	3/16	90361
3-wheel regular	3/16	90362

FLANGED WHEEL COLLARS		
TYPE	WIRE SIZE	PART NO.
2-wheel	1/8	90343
3-wheel	1/8	90344
2-wheel	5/32	90353
3-wheel	5/32	90354

FOX GARNET

Fox Garnet is a natural product and is a material we have found to be most successful for hand lapping mechanism pistons to steel cylinders. It should be mixed with oil into a paste form and rubbed over the piston and then the piston can be lapped into the cylinder.

WARNING: It should not be put into the intake of a running motor or else in a few seconds time your motor will be completely ruined.

Fox Garnet 90812

FOX LUSTROX

Lustrox actually is a super-fine polishing compound with flakes so small that they can float in between normal running bearing surfaces and not touch either side. It has a polishing effect when a high spot on a crankshaft, for instance, hits a high spot on the bearing. We regularly use a small quantity of Lustrox on all of our new motors with bushing mains and lapped pistons, as we have found that a motor which has been run in on Lustrox will last much longer. To use it, mix it with oil into a thin paste and dab a little bit into the intake of your motor while running. After a minute or two the residue coming out the exhaust should change from black to white. At this point Lustrox has done its work.

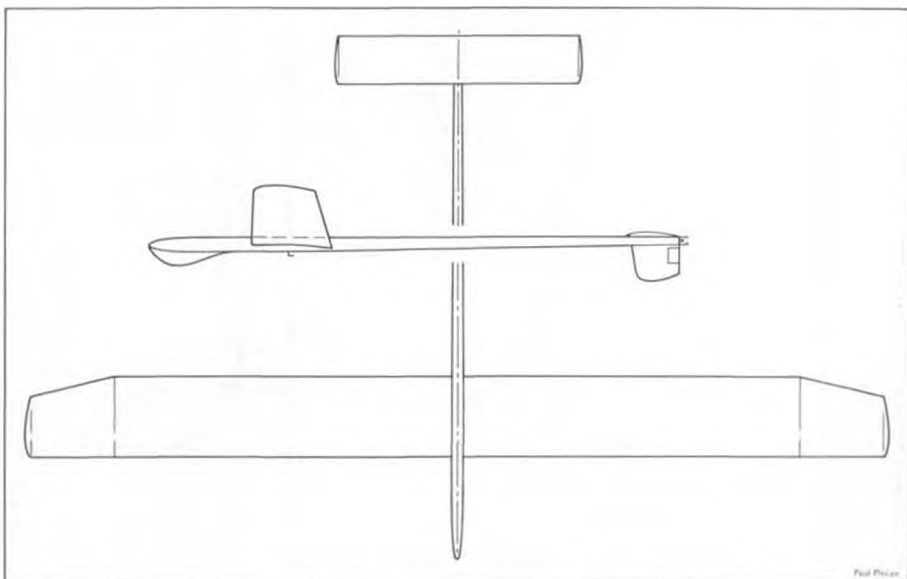
Fox Lustrox 90811



Ron Davis won Wakefield at the N.W. Semi-Finals, Labor Day Weekend, with this model.

as such, swiveling on a pin. To get the spring tension needed, the front part of the casting is of smaller diameter. A saw cut is made on the side to free it, and the thing is sprung away from the spinner back plate by a cam. The stopping action is very smooth. One thing to watch out for is the prop-loosening effect of any brake. Since fiberglass and epoxy props are notorious for this, after a run or two the prop should be re-tightened, as the resin does give a bit.

Additionally, the brake arm has been found to be a bit too close to the prop, and unless it is closely restrained, it can go into the prop and be sheared off, when the timer releases it. A new arm can be made of aluminum or magnesium to replace the original. The new arm should have a bent-in "dog leg" toward the rear of the brake so that when totally released, it cannot move into the prop arc. After a few runs, the brake shoe should be cleaned with a solvent, to



NOVEMBER'S MYSTERY MODEL

remove oil that may have deposited on it.

2. Nordic Timer Start: The Seelig timer is a wonderful device . . . accurate, positive, and very dependable . . . except the thing is difficult to rig a Nordic timer to start upon towline release. Craig Cusick suggests using monofilament line slipped through a hole in the bottom of the fuselage, with an aluminum guide tube epoxied in place. Pushing the monofilament line through the tube so that it interrupts the butterfly vane, which also stops the timer, does the trick. Enough line should be provided so that it doesn't accidentally slip out under tow. Another variation of this system that I have seen is to continue the hole through the top of the fuselage, so that the monofilament continues past the vane through the hole in the top. This guarantees that the timer is stopped . . . simply by visual checking to see whether or not the line is out the top.

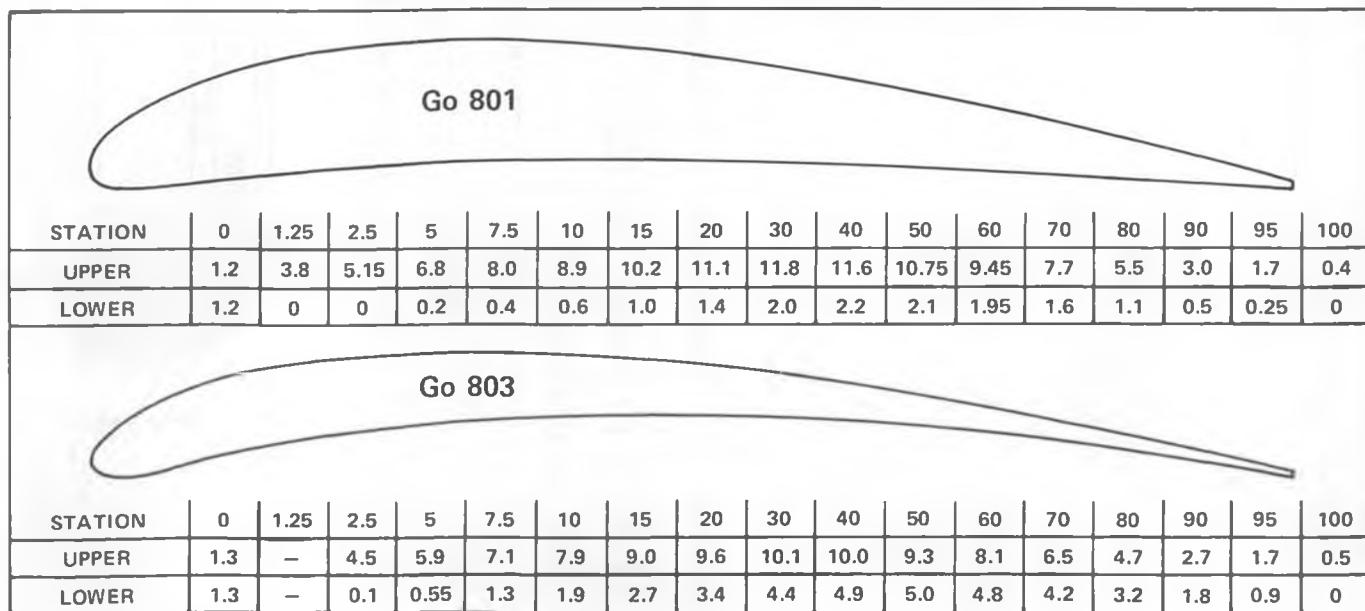
3. Wing and Stab Jigs: From Ed Turner comes the following suggestions. When water-doping tissue or silk, lay down 2 layers of newspaper on your jig or workboard. Weight the wing panels or stab with lead weights. This will keep the panel flat (or with planned warps). After the tissue dries, you can lift it right off the paper.

Store stabs on 1 inch or thicker styrofoam with thin corrugated cardboard over the stab with rubber bands holding it down.

HINT, KINK OR TIP

I never know how to title this one, but here's a good one for you for this month. Those of us who fly in wetter conditions and who persist in covering our models with tissue or silk, know the effects of dampness on the tissue surface. The appearance is like that of a colored prune. This effect can be cared for by many coats of dope, putting on a top coat of clear epoxy paint, or by

DARNED GOOD AIRFOILS – Go 801 and Go 803



NORDIC TIMER START

CRAIG CUSICK

Figure 2

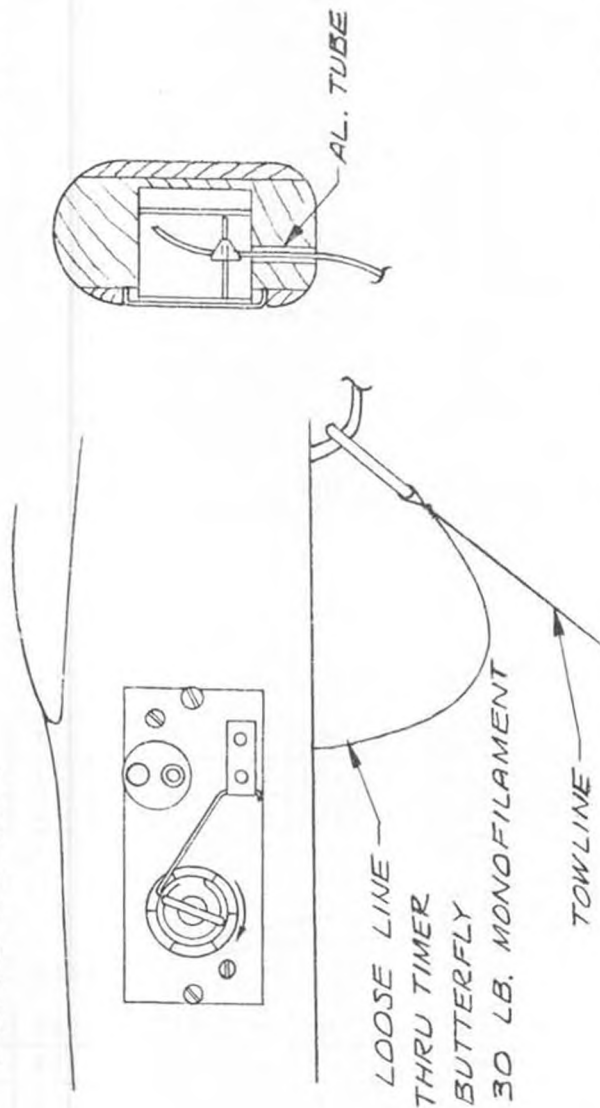


Figure 3

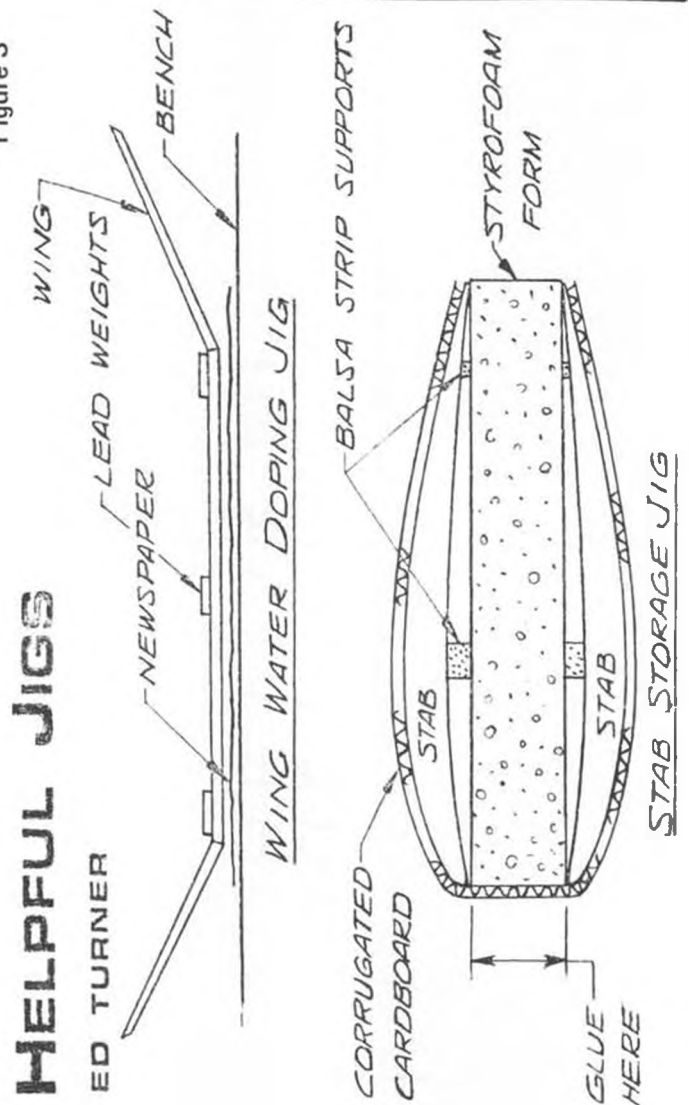
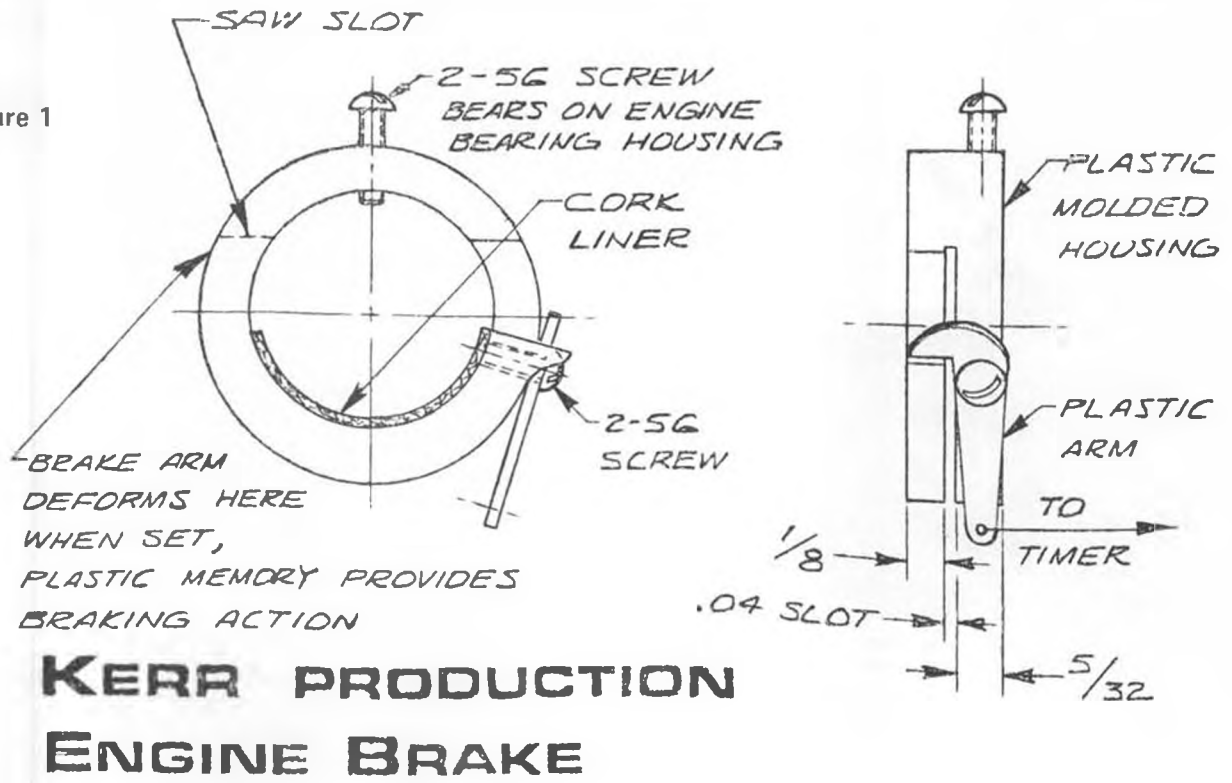


Figure 1



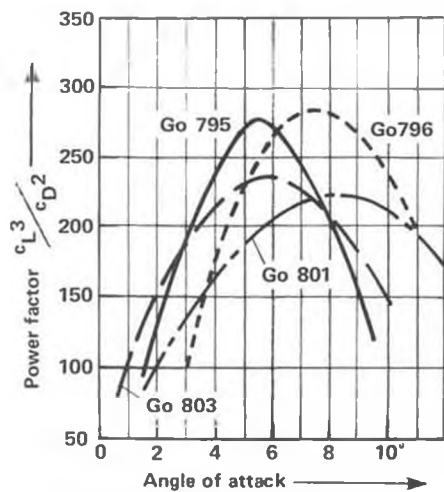


Fig. 1 - Power factors of four airfoils compared.

spraying the whole thing with Scotch-Gard. This latter method was demonstrated to me by Gene Jensen at the recent Tacoma Semi-Finals. The result is very effective. The only thing to remember is to do the spraying before the tissue gets damp and to allow several hours for the Scotch-Gard to dry. It works.

AIRFOILS FEATURE, PART II

Last month, I began this treatise on airfoils, excerpting from several studies conducted by various individuals. This month, the second of three parts is presented, along with 2 selected airfoils used in the tests.

The Power Factor. When sinking speed is considered, the lower the rate of sink, the higher will be the duration of the flight. It is the ratio of altitude lost during flight to the latter's duration. From the aerodynamic point of view, sinking speed is mainly governed by two factors . . . wing loading and power factor.

Power factor is defined as the ratio of the square of the drag coefficient and the cube of the lift coefficient. This is a very small fractional value, and is expressed as CL^3/CD^2 . The larger this reciprocal power factor, the lower will be the sinking speed of the model, and

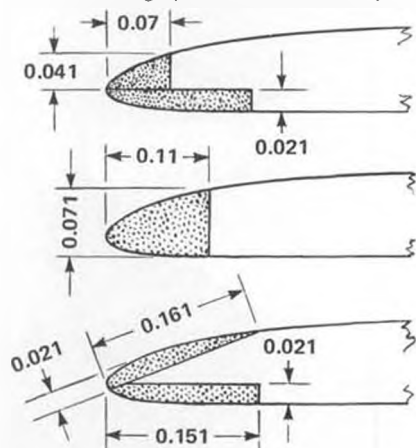


Fig. 2 - Suggested leading edge construction methods -

the longer it will fly.

On evaluation of profile charts, one soon discovers that the optimum power factor occurs at higher angles of attack, i.e.: at higher lift values (see Fig. 1). This is the reason that one prefers airfoils with relatively high values of CL_{max} for use in gliders. When one now checks the power factors of the airfoil sections under discussion, the results come as a surprise. For sure enough, the best one is not the thin Go 795, but the thicker Go 796, with its CL_{max} of approximately 1.12 (both these sections were featured in the October issue of MB). Its optimum value is only slightly better than the one for the Go 795. Models equipped with these airfoil sections should fly longer . . . at least in theory.

BOUNDARY LAYER

There are two principal airflow conditions which occur in the boundary layer, and both have their distinct advantages and disadvantages. The turbulent boundary layer, with its slight vortices is, for example, advantageous because of its ability to transport energy

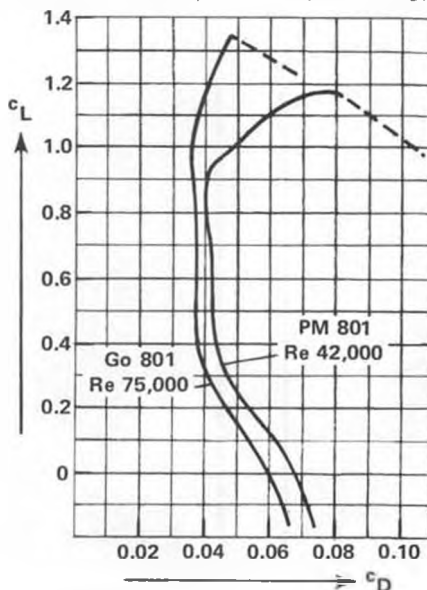


Fig. 3: Go 801 Wind tunnel test data.

from the adjacent flow to the upper surface of an airfoil. It is thus capable of preventing separation of the airflow by a pressure rise, which takes place near the trailing edge of an airfoil. In other words, airfoils with turbulent boundary layer over the upper surface of the section attain higher lift coefficients than those where the boundary layer is laminar. Hence one tries to create a turbulent boundary layer over that part of the upper surface, where a pressure rise is bound to occur. If, at very low Reynolds numbers, turbulence of the boundary layer cannot be induced by the shape of the airfoil itself, then turbulators are used for this purpose (wires, surface spars in front of the airfoil high point, strings glued to the covering, etc.)

On the bottom rear surface of the airfoil, things are quite different. Here

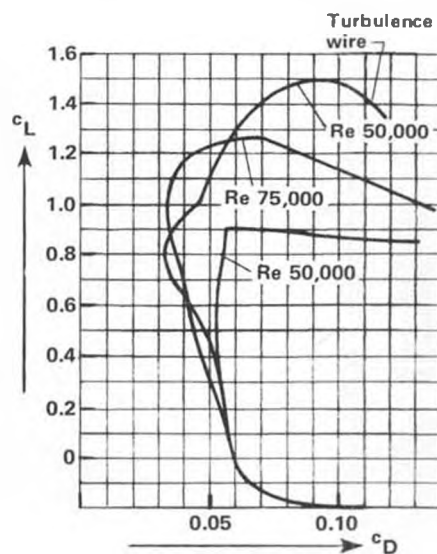
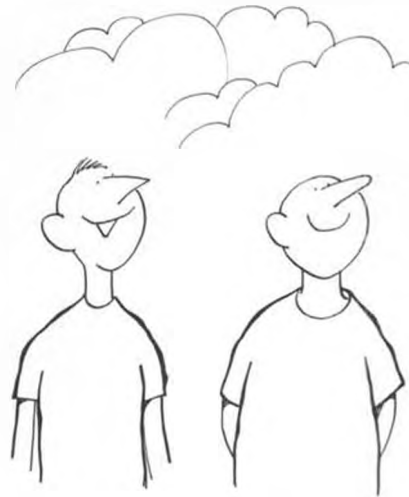


Fig. 4: Go 803 Wind tunnel test data.

there is not a pressure rise to cope with at high angles, in fact, the opposite is true, and the boundary layer is generally in the laminar state. The skin friction of the laminar boundary layer is approximately one-half that of the turbulent boundary layer, and is thus very low for the lower contour of the airfoil, unless it is induced to become turbulent through badly finished wing surfaces, corners, ridges (spars, leading and trailing edges, etc.).

On airfoils with highly concave bottom contours the laminar range is restricted to relatively high angles of attack, say from plus or minus 4 degrees upwards, and only then is its effect on the overall drag of the airfoil noticeable. At low angles of attack, separation of the boundary layer must be expected on the bottom of these sections aft of the leading edge, creating a strong tendency to dive. It should be clear that the drag of flat-bottomed airfoils, which at angles of attack as low as 0 degrees still show an extended laminar boundary at the bottom surface, is smaller. Consequently this part of the airfoil should

Continued on page 71



"The flight is the reward."



Tense moment . . . the author lights fuse for the first test flight. Weeds in background will cushion landing . . . if it misses car!



Classic profile. Stab tilt for left glide helps Starduster turn in lift. Easily built, easily trimmed, perfect competition ship for novice.

PRODUCTS\$ IN U\$E

Competition Models' Half-A "STARDUSTER" meets Satellite City's "HOT STUFF." . . . By JEAN ANDREWS.

● My most recent high-performance 1/2A free-flight had just done a magnificent job of re-kitting itself on the flying field at Elsinore, California, when I started nosing around for something to replace it.

Many suggestions were made to me, including some that I, due to my singular ineptitude at adjusting, should build a few more Delta Darts before I again attempt something more advanced.

These suggestions were dismissed as sour grapes, even though I have not placed in a power free flight event since 1954, and my quest was continued. I noticed that all the new and fancy designs were compared to the Starduster . . . "It climbs like a Starduster," . . . "It's as easy to trim as a Starduster," . . . "This one centers itself in lift just like the Starduster," and so forth.

I sat down and had a talk with myself after hearing all this, and said to myself, "Self, why not build a Starduster?"

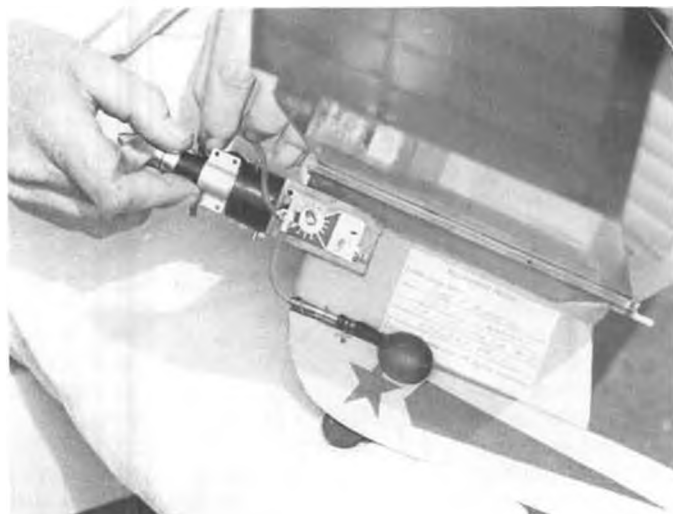
A quick trip to the local hobby emporium disclosed a quantity of Stardusters for Half-A engines; Starduster 350, Starduster X, and the standard

Continued on page 81

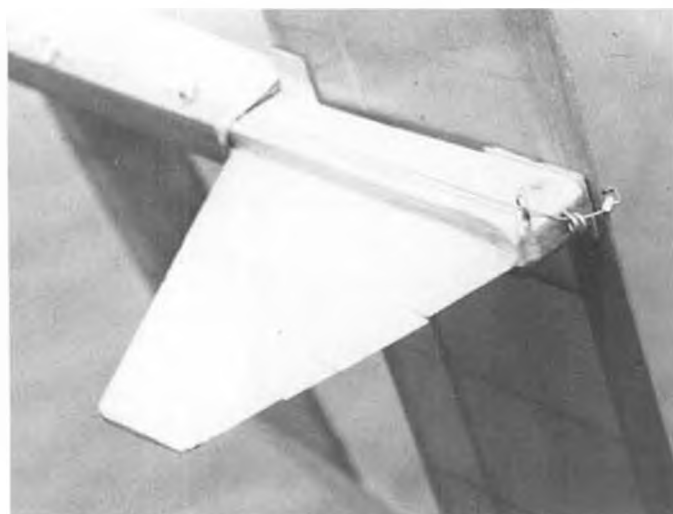


Eddy Flock, converted R/Cer, lights fuse on his Starduster. It flew "right off the board." Stock Tee Dee .049 on Cox Tankmount.

PHOTOS BY AUTHOR AND EDDY FLOCK



Pen bladder tank held by "T" pins. Address label cut from plans. All surfaces straight . . . no warps needed.



Two small trim tabs needed for climb trim. Fully adjusted in two flights. Note DT hardware.

'LUNAR-TIC'

By HARRY MURPHY



PHOTOS BY AUTHOR

This is the current status of a four-year design evolution for a highly competitive model that retains simplicity of construction. The author also explains his effective, but radical flight testing procedure.

The "Lunar-tic," as presented here, is the current status of a four-year design evolution to perfect a high-performance 1/2A-A free flight model with a dash of "class." The initial inspiration was to develop a model pleasing in appearance, as well as highly competitive, that would be interesting to the experienced free flight contest modeler, yet retaining sufficient simplicity to prevent ruling out those with less talent, plus comparing favorably with normal construction time of a conventional 1/2A model.

The "Lunar-tic" is therefore a pleasant divergence from the general run-of-the-mill 1/2A designs with their solid slab pylons, power pods, profile fuselages, and squared constant chord wing and stab planforms. Yet, it strives to marry conventional 1/2A model construction with just enough streamlining and complexity to make it an eye-catcher on the flying field... even before it's ultimate power pattern attracts even further comment.

Prototype models have progressed

through numerous actual experiments with varying dihedral and polyhedral angles, decalage and C.G. locations, fuselage lengths and moments, stab and rudder areas, and various lightweight wing and stab constructions, including geodetic types. It has been this modeler's experience that down-to-earth, seat-of-the-pants, trial-and-error, wins more contests than beer-parlor-paper-theories, and consequently, this design has seen the route of the contest battlefield.

Trailing Hulan Mathies to a second place finish in 1/2A at the 1974 Lake Charles, Louisiana Nationals, stands as mute testimony of its contest potential. (Any time I can place second behind this California "super flyer"... I feel I have won anyway).

After thirty years of active competition, I would suppose I should be permitted a few basic observations as to what it takes to win. The 1/2A "free-for-all" at any large meet is typical proof that the "professional edge" is more difficult to attain and maintain in the

small engine classes than in the larger bore categories. For the moment, let us consider as constant the major influences that affect any single flight of any free flight model. These might be, "Outhouse Luck," Mother Nature, The Thermal Gods, and the like... we may then analyze the other variables on which any given modeler may exercise "positive personal control," if he really so desires.

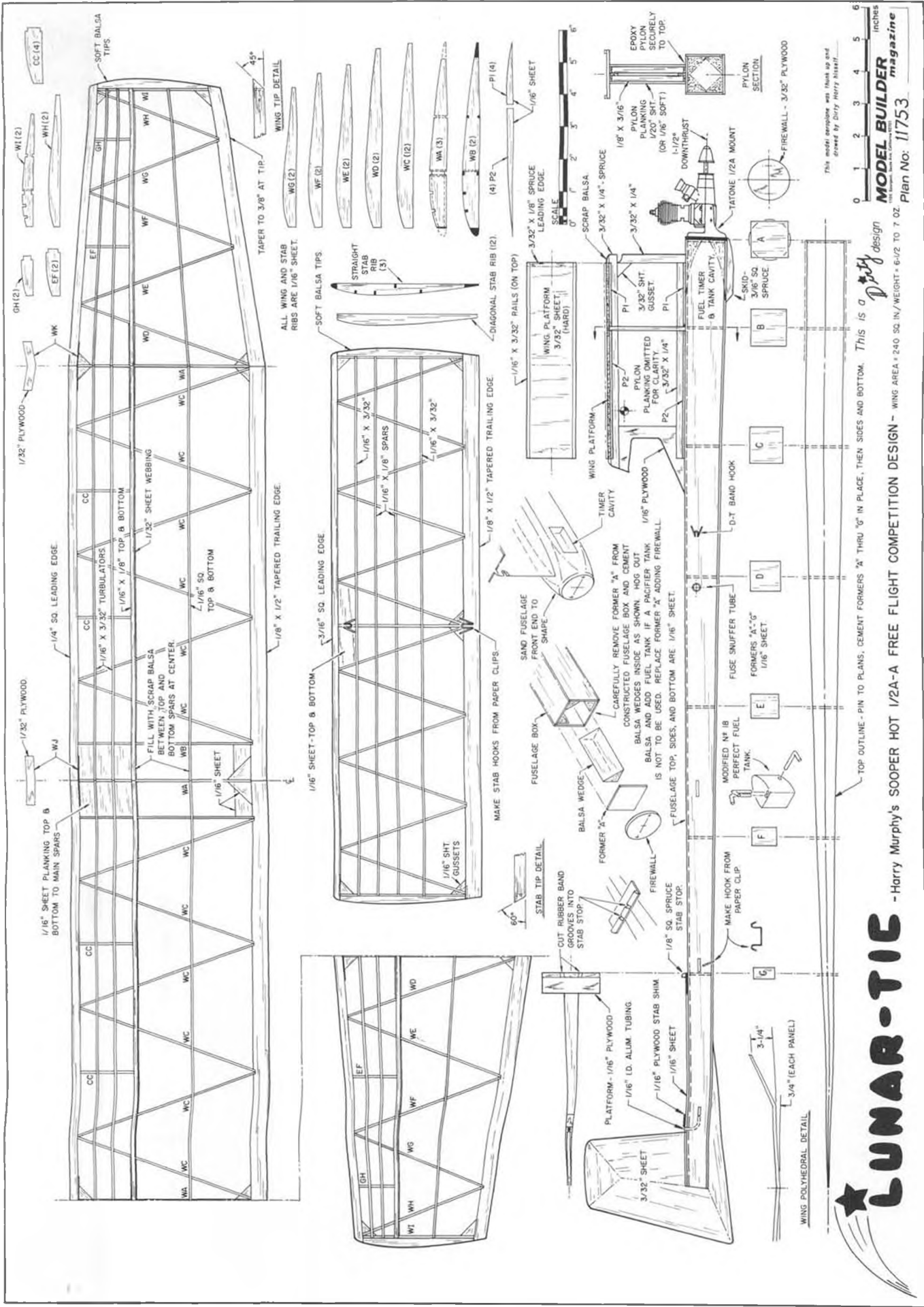
To continue with our game plan, let us also consider the Cox .049, fuel, and props as constants, then what remains are "two basic controllable factors." These may be categorized as, (1) individual model design and trim, and (2) attention to detail. I feel very strongly



The author/designer, Harry Murphy, readies a "Lunar-tic" for its test flight. Note the footprints in solid-state Hoosier humidity.



First flight launching technique, takes model immediately away from ground hazards.



This model airplane was built up and flown by Dirty Harry Hawk!

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inches
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magazine
Plan No: 11753

This is a *Dirty* design

- Harry Murphy's SOOPER HOT 1/2A-A FREE FLIGHT COMPETITION DESIGN - WING AREA + 240 SQ. IN. / WEIGHT + 6.72 TO 7.02

LUNAR-TIC



Detail of the stab hold-down, which goes through 1/16 I.D. aluminum tubing into the fuselage. Yep, that is "de tail!"



Fuel tank filler and vent tubes come out through the leading edge of the pylon. Fuel outlet located conveniently for Tatone timer.

that these two areas separate the men from the boys . . . the winners from the losers.

Model design and/or trim theories get banged around at every club meeting or "hangar flying" session. Numerous books and magazines hold a wealth of detailed experience and technical knowledge on this and associated subjects. I do not profess to offer any new, world-beating theories here, except to note that most of the reference info appears to be presented in "general" terms rather than "specific" terms, and that it is my belief that proper power trim varies greatly with each specific model design. This stated, simply means that using your favorite power trim set-up on all of your models, regardless of design, just because you have done it that way for years, does not necessarily mean you are milking all the potential possible from your particular model design.

Power patterns, whatever theory they represent, perform one single function, and that is of getting the model as high as possible on the allotted engine run. Aligning the proper power theory with a given design is the real task.

The "Lunar-tic" design is no different, in that a definite power trim has been developed which would appear to sap the most from this design. It follows at the close of this article.

Hand-in-hand with "model trim" goes our second basic controllable variable and that was "attention to detail." Wing and stab warps, side thrust, down thrust, rudder tab, proper wing and stab keying and alignment, C.G. location, correct decalage, dependable fuel system, fail-safe D-T arrangement, overall model workmanship, etc., if given close attention in the workshop before first flight testing, will suppress those "test hop jitters" and insure a minimum of required field revisions to attain the maximum power pattern desired. I once field trimmed a new "Lunar-tic" in two test flights on the morning of a contest and won first place with five straight maxes.

I prefer to think that this was more closely related to 'Attention to detail' rather than 'luck.'

One may then conclude that the reason one of two identical model designs flies well and the other bombs out, may simply lie with the initial model preparation, plus the whereabouts of the modeler's momentary frame of mind when placed on the gradient between "patience" and "panic."

I offer this analogy to suggest that the modeler himself may well be his own worst enemy, and the measure of any particular design's success on the trophy trail may be more with him rather than his equipment. A self-psychoanalysis of your personal competition procedures might produce some rather interesting results for you.

So, start over with a newly built "Lunar-tic," coupled with proper model preparation and a disciplined flying procedure. You may well be amazed how fast your trophy shelf starts to fill.

As previously stated, the "Lunar-tic" project initially aspired to attract the attention of the modeler with competition experience. Therefore, a step by

step description as to where the pins go would be a bit hypocritical. I will hereby attempt to refrain from being overly elementary in explaining this model's assembly so as not to insult anyone's intelligence.

I should like to note in the beginning that should you desire a very light model, you may easily substitute 1/20 sheet for 1/16 sheet for the pylon planking, stab, and/or some or all of the wing ribs, and all gussets. Slanted tip ribs may also replace the soft balsa blocks. I show 1/16 sheet here, as 1/20 sheet is not available to all, and I personally prefer a medium weight model of 6-1/2 to 7 ounces, and they appear to better penetrate midwest surface winds. Modelers in locales fortunate enough to have an abundance of dead air competition may have a desire for a lighter craft.

WINGS

I prefer to completely finish both the wing and stab before even starting the fuselage; this is habit, but does permit continual checking of alignment and the C.G. location during the fuselage construction.

Continued on next page.



The "posse" returns with two "runaway" Lunar-tics; the author's son, Dan Murphy handles the reins, while neighbor Tim Stottlemyer, carries the errant models.

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spar filler and 1/16 sheet for rear spar filler. I have found that similar reinforcement at the polyhedral breaks is not necessary, as the front and rear 1/32 sheet webbing suffices. Complete the wing construction by cementing the 1/32 sheet webbing between each rib in the locations shown, plus adding center section 1/16 sheet planking. Sand the entire wing to prepare for covering. In the beginning, you may have had a somewhat squeamish feeling about building a wing from so many "toothpicks," but note that the resultant full depth "I-Beam" center spar forms a very rigid structure.

Pre-dope your new wing with two coats of fuel-proof dope, cover with Japanese tissue to your favorite color scheme, and brush on a sufficient amount of dope to seal the covering. Use relatively thin coats of dope, and more coats, to prevent warping and to speed aging.

STAB

Again, start by cutting out the ribs from medium weight sheet stock and notching only the straight ribs, as per the wing. Pin to the plans the 3/16 sq. L.E. and 1/2 inch wide tapered T.E. stock, plus the 1/16 x 1/8 bottom main spar. Utilizing the same procedure as was used in constructing the wing, notch the T.E. appropriately, and cement all stab ribs in place. Cement soft 1/4 x 3/8 strips on the ends for the tip blocks. Notch the diagonals using the straight edge method, and add the two top strips of 1/16 x 3/32 and single 1/16 x 1/8 spar. After this assembly is completely dry, carefully remove from the plans and gussets and planking as shown. Carve the tips in the same manner as was done on the wing tips and sand the entire stab to prepare for covering. Covering instructions are the same as for the wing.

PYLON

Construct the pylon frame over the plans by pinning down the 3/32 x 1/4 spruce wing-retaining rail and remaining 3/32 x 1/4 balsa strips. The 1/16 plywood rear profile part is shimmed up 1/64 from the plans, which of course, is to position it on the centerline of the pylon frame in the top view. With this portion of the pylon frame still pinned to the plans, cement in place the right hand 3/16 x 1/8 upright and the two pairs of contour parts "P1" and "P2." After cement has dried, carefully remove the assembly from the plans and add the left side parts. Do not plank the pylon as yet. Construct the wing platform of 3/32 sheet and add the 1/16 x 1/8 spruce wing rails as shown. Cement the platform securely to the pylon frame. Set this complete assembly aside until the fuselage box is completed.

FUSELAGE

The fuselage box is initially of typical upside down construction. Cut the top outline from relatively hard 1/16 sheet and pin it directly to the plans as indi-

diagonal ribs for the top spars before cementing in place by simply "eyeballing" a match with your tailored bottom spar notches. Again, omit notching the diagonal and short ribs for the turbulators for now. Of course, delete the centerline and polyhedral break ribs "WA" for the moment. The 45° angles on the soft balsa tips are a snap. Simply cement soft 3/8 sq. stock in place. After the wing tip panel is removed from the plans, carve and sand a flat plane to the diagonal across the corners of the 3/8 sq. section. Then carve and sand the top to conform to the top of the airfoil, you will then end up with a perfectly curved tip. Construct all four panels at once and when cement has set, carefully remove only the tip panels from the plans.

Now fit and cement the tip panels to the inner panels, incorporating the 3-1/4 inch polyhedral angle and add the 1/32 plywood dihedral brace "WK" and rib "WA" at this time. Follow by now adding the top spars to the wing tips only. The 1/16 x 3/32 turbulators may be added more easily after complete assembly of the wing and after it has been removed from the plans. This is accurately accomplished by laying a straight edge between the notched end ribs of each panel, aligning it with the proper notches, marking the notch location and cutting angle on each rib in between with a sharp razor blade, then carefully cutting each notch.

Remove both newly constructed wing halves from the plans and join them together at the centerline, incorporating the 3/4 inch dihedral for each panel. Cement the 1/32 plywood center brace "WJ" in place with the remaining "WA" rib. Add the top spars of 1/16 x 1/8 and 1/16 sq. to the inner panels and when cement has thoroughly dried, remove the entire wing from the plan. Add the 1/16 x 3/32 turbulators, by the method described, and the 1/16 sheet gussets in the locations indicated.

Fill the space between the top and bottom spars either side of the centerline rib "WA" with scrap balsa, out to "WB" rib. Use 1/8 sheet scrap for main

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Continued from previous page.

First, cut out all wing ribs from medium weight sheet stock. Cut all notches as shown into the straight ribs WA, WB, and WI, but do not notch any of diagonal or short ribs at this time. Pin the 1/4 sq. L.E., 1/2 inch wide tapered T.E. stock, and two lower spars of 1/16 x 1/8 and 1/16 sq. to the plans. The wing tip T.E. taper is accomplished by simply cutting off the thick edge of standard 1/2 inch wide T.E. stock to be 3/8 inch wide at the tip. Notch the T.E. as indicated. Follow by notching and fitting the diagonal ribs to match the bottom spars as you proceed. Also notch the

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cated. Cement the 1/16 sheet formers "A" through "G" in their correct positions, and when dry, cement the 1/16 sheet sides in place. When cement is dry, carefully remove this three-sided box from the plan and finish trim the formers of the open bottom to receive the 1/16 sheet bottom plate. Cement the plate in place. Now carefully remove the front square former "A" and cement the triangular balsa wedges inside as shown on the plans. Be sure you have trimmed the wedges to proper length, as the former "A" is to be replaced later.

Now cut the opening for your fuel shut-off, into which ever side you prefer, and fit it in place accordingly. If an internal fuel tank is to be used (personally I am not yet totally sold on the pacifier fuel systems for 1/2A's, as so far, the increased engine performance has not been worth the oily mess), hog out the balsa required to receive your metal tank and epoxy securely, replacing former "A" as you do. I use a Perfect No. 18 wedge tank, modified as indicated. Next, mount the Tatone 1/2A mount to the 3/32 plywood firewall and secure it in place with epoxy on the front of the fuselage box with the mount assembled. Remove the mounting screws and "Tatone" mount before the epoxy gets too solid so as to insure against the screws freezing in place,

thereby preventing screw breakage when the screws are eventually removed. Carve and sand the front end to blend from the square box cross section to the round firewall, as noted on the plans.

Fabricate the rear fin from medium soft 3/32 sheet and cement it in place on the rear of the fuselage box. Add the 1/16 plywood stab platform, 1/8 sq. spruce stab stop, and the triangular 1/16 sheet top reinforcement strip as shown. None, or very little stab tilt is required, so keep the platform parallel to the wing platform. Form the skid from 3/16 sq. spruce and epoxy it securely to the front underside of the fuselage as shown. Finish sand the fuselage box and fin assembly and tentatively assemble the fuel timer, engine mount, and engine, including propeller.

Rubber band the stab to the fuselage and temporarily pin the pylon, per the plans location, to the top of the fuselage box. Now rubber band the wing in place in place on the wing platform. Carefully locate the longitudinal balance point of this complete assembly by balancing it on a single or double edged razor blade which has been stuck into a balsa block. The horizontal blade serves as the fulcrum for our homemade teeter-totter.

Next, pull out the pylon pins and carefully relocate the pylon frame assembly, with the wing still assembled,

over this fulcrum point so that the eventual rear edge of the wing will locate 1-1/2 inches rearward of this point. In this finalized position, securely epoxy the pylon frame assembly in careful alignment to the top of the fuselage box. Complete construction by adding the 1/16 planking on the pylon sides, running the wood grain vertically, and complete final sanding.

Prime the completed fuselage with one coat of thinned dope, then a thinned coat of dope and K&B Micro-Balloons mixture. Sand lightly and add another coat of thinned dope. Cover the entire fuselage with tissue to match your color scheme.

Cement the 1/16 plywood trailing edge stab shim to rear of the fuselage just forward of the rudder. This will probably be a minimum requirement and you need as much as 3/32, which may be somewhat determined by initial hand test glides of the completed model.

Add the 1/16 aluminum tubing for the D-T line guide just aft of the stab, and short strips along the side as needed. Add snuffer tube and paper clip wire hooks to the fuselage side and to the stab as the plans indicate. Finish doping the entire model. Assemble engine, fuel timer, and associated hardware to the fuselage, then assemble the completed model and add wing and stab keys.

FLYING

This may come as a surprise to you, but you are not quite ready for the flying field, as most design articles will state at this point. Remember our analogy on controllable factors of model design and trim? Up to now, we just have a model design. The next step is model trim, and I suggest you head for the "kitchen" and not the "flying field" to instigate this next phase. Build a fire under the good wife's tea-kettle and wait for the steam to roll.

I have always been amazed by those who say desired warps should be built directly into wing panels. Those fellows must not reside in high humidity areas of the midwest, or they hold some secrets I know nothing about. If I build

a stab flat, it warps. If I build a warp into a wing, after covering and doping, it comes out flat or warped more than that which I built in. Therefore, since I end up with a "tea-kettle session" anyway, I just build all panels flat and worry about warping or de-warping surfaces after everything else has been completed. This is where it counts anyway. No matter how you personally obtain the end result, the stab has to be perfectly flat. Make yourself a flat warp board at this time and retain the stab to it at all times when not in use. A slight right rudder warp is desired, which may need compensating later by a tick of left thrust. The wing is to have about 3/32 washout in each tip; the right hand inner panel is to have 1/16 washin and the left hand inner panel 1/16 washout. This may sound a bit troublesome, but we said that "attention-to-detail" will pay off. Now we may head for the flying field.

Here again, we will probably do a couple of things which differ from your normal, personal first-flight test procedures. A right-right power/glide pattern is desired for the "Lunar-tic." First, we eyeball a check on our tea-kettle session to insure all surfaces meet the aforementioned settings. If not, go back home and stay there until they do. Second, we do not put the prop on backwards as most suggest, and third, hand glide your model a few times to appraise the amount of shim required at the rear of the stab. Naturally, a slight stall would be better at first than too much negative. Fourth, we do not throttle back on the engine, but run it wide open. Be sure to set your timer to get about a 2 to 3 second engine run, and launch only in the following manner: Stand with your back to the wind, hold your "Lunar-tic" in a perfectly vertical position, up and out away from you, looking at its bottom. Tilt the nose slightly to the left (right of the wind) and simply let go, flipping the timer, of course.

You should get a very fast vertical climb with the slight wing warps and right rudder twisting the model in a slight right turn and left roll as it goes skyward (yes, slight *right* turn, and *left* roll). If you have seriously completed your homework, your "Lunar-tic's" power trim should be pretty close. Slight revisions for power trim and stab tilt for glide should complete your trim procedure.

Before you order me a padded wagon and an accompanying armless sweat shirt, consider this analysis comparison to the more popular first-flight testing procedure of the backward prop, subdued and short engine run, using mild fuels, and relatively horizontal launch. Fellas, with conventional methods, you are testing a high-performance model in a mode in which you never expect it to competitively perform. The slow speed horizontal launch will get you only a

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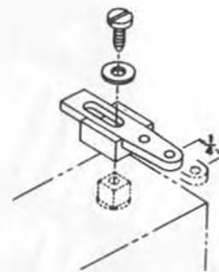
maximum of fifty feet up in 4 to 5 seconds. It also gives you only 50 feet or less down, and it will seem much less if your model is a bit erratic on its maiden flight. The engine will lean out anyway before it quits, and may just be enough burst to drive your model into the ground.

Initial engine and trim settings mean nothing, as you must continue to change them as they will affect your model differently as you get braver and increase engine RPM and model speed, turn the prop around, go to hotter fuels, etc. Sure, you can eventually get there in 8-10 test flights, but your model may have a few battle scars by then, and this may be the third or fourth trip to your test site.

In comparison, the "Lunar-tic" VTO full-power-procedure takes your model higher, directly away from the ground sooner, which means it is further away coming down should your workshop trim be too far off. It is a simple matter of geometry. Also, in 2 to 3 seconds under maximum RPM, "power-to-glide" transition is more realistic, eliminating any possible damage from a low speed stall into the ground. Final trim should come in just a few test hops on your first test field outing. Don't knock it until you have tried it.

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time. Coupled with a well disciplined competition flying procedure, your "Lunar-tic" should fast become one of your favorite models as it has fast become one of mine.

GOOD LUCK AND SIC 'EM!!!! ●

TWIRP *Continued from page 37*
they should not be denied access to them for this reason, so public libraries, school libraries, and a School Committeeman were contacted to see if they would add MB to the school and public library magazine racks. Some have added the book, and others will at their next budget year.

People in general have been very cooperative with our program. Perhaps this is simply a characteristic of our area of the country, possibly nostalgia has something to do with it, but I'm convinced that the excellent reputation and the organizational ability of the 4-H in our county was, and continues to be, an influencing characteristic in the cooperation we have found. As a result, we make every effort to insure that everyone in our group adheres to all the rules anyone may establish.

In searching for an outdoor flying site, I had been told by many people that the local private airport was definitely out. I wrote to the owner asking if we might use the site. In a delightful letter of reply, he said, "The airport is

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open to the flying public. Size of aircraft is not specified"... so we have an outdoor site!

But on to the "TWIRP." The word refers to something silly, according to Webster's, but things which may be or look twirpy can often fool this first judgement. Our "TWIRP" flies, generates the blush on the mind, and is apparently forgiving of all the different "building techniques" youngsters can generate. Covered in everything from condenser paper, to art tissue, to Christmas tissue wrapping paper, and even Japanese tissue, the plane flies. It flies very well indeed. While outdoor flying has too many variables for accurate recording pur-

poses, the indoor record is 70 seconds under a 22 foot ceiling. This version of the plane was built with light weight (but not indoor) wood and was covered with regular tissue.

There are one or two places in this plan where decisions have to be made. The aft cabin roof and the wing trailing edge pieces at the tip, are curved. This was done to introduce forming of balsa by soaking it, wrapping it around a curved surface, and heating it dry... a prelude to a later exercise in forming prop blades. All these pieces can be made straight. Wing ribs are shown flat bottomed or undercambered. The flat bottomed version is recommended.

Trickiest area is at the wing tips. The bottom of the wing sweeps up to the tip piece, which attaches first to the wing spar. The wing is built flat, and then cracked for dihedral.

The directions on the plan say "shim stab in place." This may be confusing and difficult for novices, so an alternative method was devised. Make a loop of elastic thread (available where sewing supplies are sold), put it over the fuselage, under the bottom of the stab, and around the end of the fuselage. Tiny shims (scraps of balsa) can then be placed between the leading edge of the stab and the underside of the longerons until proper incidence is found.

The area needing the most practice was in making ribs, but once the youngsters learned the technique, things went smoothly.

The project, I feel, is working well. Similar programs could be run in your area for the 4-H, Scouts, Cubs, Boys Club, YMCA, and so on, or for any group of kids. You'll find the kids are interested and interesting, and the learning process for members and the adult leader is pretty much an equal swap. You would be building your hobby and making a contribution to a bunch of kids... and yourself. Everybody gains something.

FUSELAGE

1. Use thumb tacks or pins to attach the plan to the building board.

2. Cover the plan with plastic food wrap so that wood will not stick to the plan.

3. Cut the top and bottom pieces of the fuselage (these are called the "longerons"). Soak in HOT water for 20 minutes. Pin these to the plan. DO NOT push pins through the wood. Angle the pins so they hold the wood down.

4. Pour a small amount of white glue into a little dish or plastic cup, and thin ever so slightly with a few drops of water.

5. Cut the "uprights." These are the pieces that attach to the 2 "longerons." Cut these pieces a little LONGER than they should be. Use an emery board or a sanding block to sand these pieces to the proper length. If any piece comes out too short, replace it.

6. Use a small watercolor paint brush to apply a tiny amount of glue to both ends of the "upright" and to the "longerons" at the spot where the "upright" is going to be placed. LET THE GLUE DRY. When it is dried, once more brush a small amount of glue on the ends of the "upright" and pin the "upright" in place. By using this method, you will get a strong fuselage that is light in weight.

7. Make the hole for the motor peg before gluing this "upright" in place.

8. Build the rest of the fuselage side. LET IT DRY ON THE BOARD OVER NIGHT. The reason for this is to prevent warps.

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9. Next day, remove the pins, but **DO NOT MOVE** the fuselage side. Leave it where it is on the plan.

10. Place a piece of plastic food wrap over the fuselage side you have already finished. Make sure the plastic has no wrinkles.

11. Build the second side **ON TOP OF** of the first side, and let it dry over night.

12. Next day, remove the pins, and *gently* remove both sides from the board. Reglue any pieces which may have come loose.

13. Stand each side up on the plan and pin it to the top view of the plane, starting at the rear. Pin *only* where the bottom of the fuselage is flat. Now cut, sand, and fit one bottom "cross piece." When it is the proper size, cut a second piece the same size. Glue one piece at the bottom and the other piece above it at the top. **DO NOT** glue in the "cross piece" to which the landing gear is attached.

NOTE:

Sometimes the cross pieces which connect the tops of the fuselage sides are difficult to glue in place. One trick to solve this is to glue and hold the piece in place for a few minutes, and then put blocks, books, glasses of water, or whatever, on **BOTH** sides of the fuselage to hold the piece in place.

Make sure when you do this that you do not bend the fuselage to the side.

14. Glue the two sides together where

they meet at the rear of the plane. **LET DRY OVER NIGHT.**

15. Next day, gently remove the fuselage from the plan. Cut and sand the remaining cross pieces and glue in place. Keep lining the fuselage up with the plan so it will be straight. Pin the fuselage to the plan **JUST** at the point where the bottom cross piece is located.

16. Cut "Former A," cut out center section, and glue to nose of plane.

17. Bend landing gear wire as shown. Wrap to 1/16 x 1/8 cross piece with thread, and rub some glue into the threads. When glue is dry, rub in some more glue. Now glue this piece into the fuselage.

18. Cut the wheels from a foam meat tray. Make center holes and glue in aluminum tubes as shown. When dry, place on landing gear and bend ends of wire up to hold wheels in place.

19. **GENTLY** sand fuselage to remove excess glue. Sand the edges of the longerons **JUST A LITTLE BIT** to make them rounded.

20. Cover the fuselage with tissue. The "grain" of the tissue must run along the length of the plane. To find out which way the grain runs, hold a sheet of tissue in front of you. Make a one inch tear from the top of the sheet. Now make a one inch tear from the side of the sheet. Look at each tear carefully. One tear will be a crooked line, and the other will be a straight line. The

STRAIGHT LINE shows you the direction in which the "grain" runs. Cut the tissue so the grain runs from the front of the plane to the back.

21. Cut each piece of tissue *larger* than the side of the plane being covered.

22. Mix half white glue and half water in a small container. With the brush, paint this mixture **ONLY** on the *edges* of the side being covered. In other words, paint only the longerons, not the uprights or the cross pieces. **DO** paint the uprights that hold the motor peg.

23. Lay the tissue on so that it has no wrinkles. Do not try to pull the tissue too tight.

24. When the glue is dry, cut away the excess tissue with a new, sharp *double edge* razor blade. (Break blade in half lengthwise with pliers so there will be two pieces, each having one cutting edge.)

25. When all four sides are covered, the tissue can be shrunk. Do this by *spraying* water on the plane. **DO NOT SOAK!** Hold plane far away from the sprayer, and give *one* spray to each side. Let dry. Do not spray again unless tissue is still very baggy. Too much water may cause warps.

26. Paint *one coat only* of the following mixture on the fuselage:

1 ounce NITRATE dope.

1 ounce Nitrate dope thinner.

20 drops Castor oil.

27. Cut cellophane for windows and windshield. Glue in place, using Tester's model plane glue.

STAB AND RUDDER

1. Follow the same building technique you used on the fuselage.

2. **BE SURE** you leave these parts pinned to the board over night.

3. Sand (Gently!) each part down slightly to remove excess glue and some weight. Round leading edges.

4. Cover, but **DO NOT SHRINK** tissue. The tissue grain should run the length of the stab and from top to bottom of the rudder.

5. Paint one coat of dope mixture on one side of stab and rudder, and pin these parts to board until dry. When dry, paint other side and pin parts back to board.

WING

Wing ribs can be flat bottomed or can have a curved bottom (called under-camber). Novice builders should use the flat bottom ribs.

1. Cut ribs. To do this, place a piece of cardboard, thin plywood, or any other fairly hard material underneath the outline drawing of the rib. Make a series of pin holes through the outline and into the cardboard. Work around the rib.

2. Connect the pin holes in the cardboard, and cut out the rib. **CUT** the rib larger and then sand down to the outline.

3. Make a second cardboard rib by pushing the pin through the holes you made in making the first rib. Cut out



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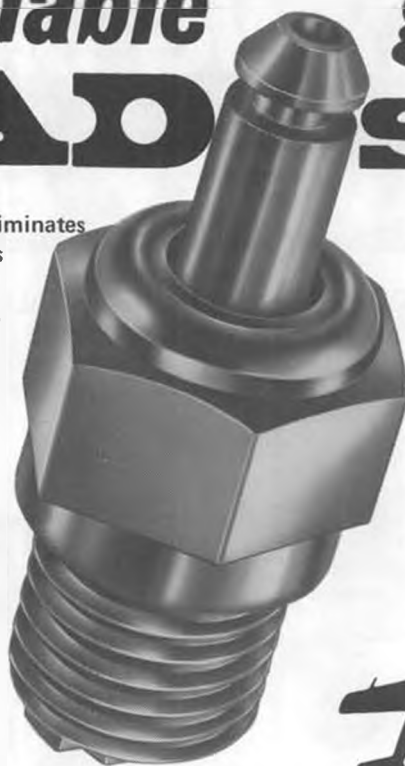
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and sand to shape.

4. Place one rib on top of the other rib so they are *exactly* lined up. Push a pin through both ribs near the front, at the middle, and half way to the back of the ribs. Remove all three pins.

5. Cut 12 pieces (10 plus 2 extras) of 1/32 balsa wood which are *slightly* larger than the cardboard ribs. Make a "sandwich" with the pieces of balsa wood between the two cardboard ribs. Push pins through the pin holes you made in the cardboard ribs in order to hold the "sandwich" together.

6. With a sanding block, *gently* sand the balsa wood until it is the same size as the hard cardboard ribs.

7. Before taking out the pins, cut or sand in the "notch" on top of the ribs. Fit a piece of 1/16 x 1/16 stringer into the notch to make sure the notch is the right size.

8. Pin the leading edge and trailing edge of the wing to the plan.

9. Glue the ribs in place, making *certain* that they are not tilted to one side or the other. Let glue dry over night.

10. Cut the "spar" which will fit into the rib notches to the proper length, and glue to each rib.

11. Cut the wing tip piece and glue it to the spar. NOTE: To make absolutely sure that the wing tip pieces are glued in straight, place pieces of paper or scrap wood under the tip pieces so they rest flat. Put a small piece of plastic wrap

between the tip piece and the paper or wood used to hold it in place so the glue won't stick everything together. LET DRY OVERNIGHT.

12. Next day, fit in place the two pieces that go from the leading and trailing edges to the tip. When they fit well, glue in place.

13. When glue is dry, remove pins. Crack (just barely!) the leading and trailing edges where shown. Put glue in the cracks, and pin the center section of the wing to the board.

14. Prop up the wing tips so they are exactly one inch off the board. Let glue dry.

15. Cover bottom of wing and then top of wing. Grain of paper must run from one wing tip to the other. If using flat bottom ribs, do not put white glue mixture on the tops or bottoms of ribs, except for the two ribs that make up the center section. Cover bottom of wing with one piece of tissue. Cover top of wing with 3 pieces (one for center section, and one for each outer section of wing).

16. Shrink *one* wing at a time. Make sure *no* water gets on center section or other wing. Use *one* spray on bottom of one wing and then the top. Pin *that* wing to plan and let dry. Then do other wing the same way. Pin to board and let dry. Then do center section the same way. Pin to board.

17. Paint *one* coat of nitrate dope,

thinner, and castor oil on one wing. Pin to board until dry. Then do other wing and then the center section in the same way.

PROPELLER

Carving of a propeller from a block of balsa requires more skill than is needed to build the TWIRP, so we have chosen to go with the ready-made plastic type. This permits the beginning modeler to get in the air successfully without having to jump this hurdle. We highly recommend the Peck-Polymers plastic prop. It is lighter and has a more efficient blade shape than the popular "Sleek Streek" prop.

If you wish to try carving your own, a prop blank is shown on the drawing. The how-to of prop carving, if done properly, would take an article by itself, we don't have room for it here. Seek the help of a modeler experienced in prop carving. It's not so difficult once you get on to it.

NOSE PLUG

1. Cut nose plug pieces larger than shown. The "grain" of each piece should run in the opposite direction from the piece in front of it and behind it.

2. Cut the pieces for the part that fits into the square hole in "Former A." Cut these pieces slightly *larger* than the square hole. Glue them together with the grain of each piece crosswise to the one next to it. Let the glue dry thoroughly. When dry, sand each side edge a

little at a time until the part just fits snugly in the square hole.

3. Place this part PART WAY into the square hole. Put a heavy coat of glue on the forward surface of the part and glue the nose block to it. BE CAREFUL NOT TO PUSH THE PART ALL THE WAY INTO THE SQUARE HOLE!!

4. When the glue is dry, remove from square hole and make certain no wet glue is on edges.

5. Now put part all the way into the square hole, and sand nose block square with fuselage.

6. Make hole through nose block for the aluminum tubing. Hole should be pointing slightly down and *just a hair* to the right as viewed from back of plane.

7. Widen hole on the back side (the part that goes into the fuselage).

8. Fit aluminum tubing into the nose block. Glue at back where you widened hole, by putting glue into widened area.

9. Bend music wire prop hook. From the back of the nose block, run the music wire through the aluminum tubing, through the washers, and through the propeller. Make bend in wire to hold everything together.

FINAL ASSEMBLY

1. Glue rudder in place. Make sure it is straight up and down and is glued on the fuselage straight from front to back.

2. Put the stab in the slot provided. Wedge the stab leading edge in place by putting small pieces of balsa over and under the leading edge where it passes through the fuselage. Later on, glue the stab in place once you have found the proper location by test flying and adjusting.

3. Place (DO NOT GLUE) the motor peg in the fuselage.

4. Place (DO NOT GLUE) the nose block and prop in the fuselage.

5. The wing is held in place with a light elastic band, or make a loop of elastic thread.

FLYING

1. Cut a short loop of 3/32 or 1/8 rubber. Wash it, tie the knot, run it in to the fuselage through the square hole so the knot is at the back, and slide the motor peg through the loop. Wind in a few turns and test fly.

2. If plane stalls, slide wing back on fuselage. If it continues to stall, raise the leading edge of the stab slightly by changing the balsa pieces that hold it in place.

If plane continues to stall, add small pieces of card stock between nose block and body of plane, on *one side*, so that plane flies in tighter circle.

Further corrections for stall can be made by adding "down thrust." Place pieces of card stock between nose plug and top of fuselage so that propeller points down more.

If all else fails, add clay to the nose.

3. If plane dives, move wing forward. If it continues to dive, lower the leading



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edge of the stab. If this does not do it, sand away some of the nose block or add a tiny bit of "up thrust" by placing a piece of card stock between the nose block and the bottom of the fuselage.

4. If plane spirals in to the left, add more "right thrust" (card stock between nose block and *left* side of fuselage).

Further corrections can be made by steaming the left wing over a kettle of boiling water and *gently* bending the left wing's trailing edge down *slightly*. Remove from steam and hold in your hands until set.

5. If plane spirals in to the right, try adjustments opposite to those above.

6. When plane is climbing in circles

and flying well, replace motor with 14 to 18 inch loop. Clean, knot, and lubricate. Then stretch-wind using a mechanical winder.

Take as much care in adjusting as you did in building, and your plane will fly well. Build lightly and adjust carefully. HAVE PATIENCE AND GO SLOWLY. ●

C/L Continued from page 35

Then the CD said, 'Son, It's a real disgrace to fly a Combat plane in a Slow Rat Race.'

Thanks for the song, Jeff. Hope you sell a million and don't forget your

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friends when you get to be a star!

Correction: Gary Frost is still President of MACA, and will continue to operate in that capacity until the end of 1975, contrary to my comment in the September issue.

As a member of the CLCB, I get in, first hand, on all of the little controversies that go around the country concerning rules, interpretations of rules, etc. Most of it is pretty hard to take very seriously. One guy will get all upset about something, write a bunch of letters, drag others into the controversy, and here we go again.

One of the items that has taken up a

lot of people's time is the rule in Precision Aerobatics (the Stunt guys prefer P A over just plain Stunt) requiring a safety thong. I still can't understand how the rule was voted into existence in the first place, as Precision Aerobatics would seem, to me, to be the last event to consider when making safety thongs mandatory. At any rate, the rules now require a safety thong, and a lot of Stunt Freaks (Precision Aerobatics Freaks?) don't like the rule and want it removed. There is just such a proposal now before the CLCB and it will be voted on soon.

But there is also a group of people who want the safety thong rule left in the rule book. How do you satisfy both

sides? Bob Bruch, of the Polish Pit Crew and now a member of the CLCB, has the answer. Bob suggests that we make a new rule giving appearance points for safety thongs, just as the rules now give appearance points for the plane. Everybody knows how much work the Stunt guys put in on their planes getting that perfect finish for the all-important appearance points. Can you imagine what would happen if there were appearance points for safety thongs? They would be making them out of macrame, putting jewels on them, having them bronzed, etc., with each of them trying to have the best safety thong money can buy.

Scene at some future contest: "Hey, Don Shultz, haven't seen you out flying for quite awhile. Whatcha been up to and what are you flying today?"

"Well, hi there, Dirty Dan you ol' sack. Hey, I'm flying the same ol' plane but wait until you see my new safety thong! Boy, am I going to put it on 'em today. I been working on this beauty for a month now and it is really sano. Had to import the silk, couldn't find anything locally that was good enough. Had to have the engraving done over three times before the guy finally got it perfect. Took a lot of work and a ton of money but I finally got a nationally-ranked safety thong. Hey, want to see it? It's right here in the car. Even made a special 'safety thong' carrying case for it. Just hang on a minute while I get the combination for the lock."

"Uh, Don I think I heard them call my name at the Combat circle. Gotta run, Bye!"

Super idea, Bob. Maybe progressive thinking like this will cut down on the number of controversies the CLCB always seem to get involved in.

As long as we are talking about Precision Aerobatics, I've got a letter here from Wynn Paul that might be of interest to you. I wrote to Wynn asking for help on a project I have in mind. As you'll see, Wynn's reply was anything but overtly helpful, but it is interesting. Incidentally, Wynn is the editor of the super newsletter put out by Precision Aerobatics Model Pilots Association (PAMPA).

"Dear Dan:

Since you have been getting the Stunt News as a service to our beloved CLCB, you sometimes take time out from cutting streamers or wrapping wire around pen bladders to look at the pictures or drawings. Maybe your local Stunt Freaks could help you with the big words like airplane, precision, or landing gear. Our ads are nice because sometimes they have diagrams or pictures. You can use the newsletter for wing covering if you dope it, or some of our Stunt guys say they take it into the bathroom when the Sears catalog runs out . . . anything that can be helpful to our hobby, er, cause, er, mania, er, obsession . . .

"Anything you want to pull out of the newsletter and use in your column feel free to do so. This can be justified because it goes out to only about 350 people, while the magazine has a much larger reading audience.

"Am planning an article about Monokote from one of the Stunt guys in Alaska who uses it on his car, his tent and sometimes for a raincoat. Anyway, one of the TV series, Animal Kingdom, sponsored by Omaha Life, had one of his Monokoted jobs on a couple of weeks ago... it was a white covering on a polar bear that had been burned and you couldn't even tell the difference. Only us Stunters knew because you could see the tiny raised portions where the trim was put on to show his eyes, mouth, and nose. There was a really great Nobler covered with Monokote at the NATS and the guy is going to do something for Stunt News, provided I can send him some Sterno cans for his iron... he ran out doing the polar bear.

"For a project plane, would you consider doing one of the Sig kits... P-51, Akrobat, or Super Chipmunk? They are obviously available and can be competitive. Otherwise, why not try Don Shultz for his Avenger Stunter. It's a good ship, so it seems, and his illustrations can make even the worst article good... or airplane for that matter. Have you ever heard about the time he did some illustrations for the Titanic? He was just starting on the Hindenburg... try him he will be a really big help.

"Incidentally, that California whiz kid of Stunt and cheerfulness, Bart Klapinski, told me at the Nationals (he did a great job as assistant CD) that he was doing a full article for MODEL BUILDER on the Nats (and he did. wcn)... and he was taking more pictures than Playboy magazine at one of those California nude beaches.

So long, keep in contact.
Wynn Paul."

What a strange letter. And for years I have been under the assumption that all Stunt folk were, well, just plain folk.

* * *
For the past year I have been making a semi-serious effort at Stunt flying. Not having time to build a Stunt plane, I have been using planes that others have built. My buddy, Ron Scoones, gave me a Midwest P-63 King Cobra that only needed covering. Somebody else gave the plane to Ron and nobody knows who originally built it. Whoever it was sure builds heavy (lots of 5-minute epoxy), so I never have been too happy with that plane. Then Lee Pipkin gave me a Nobler that was complete except for a cowl and the installation of a tank and motor. It was even covered. I put an old Fox 36X needle bearing motor in the plane and flew it. Engine runs weren't too good, so I put an extra head gasket in the Fox and now it is OK... Not good, just OK. The Nobler went in

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the ground one day when something in the control system let go. I had to have another Stunter and happened to run across a Sig Chipmunk hanging in a hobby shop. It looked good and was for sale for ten bucks. There was over ten dollars worth of Monokote on it, so I laid my money on the counter.

Found out why the plane was sold so cheap when I got it home. Some turkey (I know who it is and I'll get even with him some day) had built the plane, crashed it, and then fixed it just enough to make things look good from the outside. Took me over 4 evenings to get the plane ready to fly and I can do a lot of fixing in one evening (my Combat background makes me an experienced

fixer-upper).

Finally got everything fixed, dropped in an old Fox Stunt 35 and went flying. Hey, this is neat. Plane really feels good. Did some outside loops. Wow, super line tension. Did some inside loops. Line tension went away completely. Damn thing is warped and now I know why the line tension was so good in outsides. Tried to get the warp out and got most of it, but the plane is still very light on the lines on inside maneuvers. And evidently a 3-1/2 oz. tank was installed, as I can't get a full pattern in before I'm out of fuel.

After having 3 Stunt planes, all of which have seen quite a bit of flying, I am ready to build one of my own, but

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I still don't have the time to put together your average, built-up Stunter. As I write this, we have several Combat meets coming up and I have been using more Combat planes than usual this year, so I have a number of them to get together pretty soon.

Enter the new Sig P-51 Stunter. It is obviously the fastest building Stunter around, what with its foam wing and assorted plastic parts. So I bought one and got started on it. Did the wings first. Nothing to it. Lay up a wingskin from the balsa sheet in the kit, brush on some contact cement (I used Southern R/C's Sorghum and it works great) and lay on the sheeting. Trim the sheeting, glue on the LE and the TE, slip in the bellcrank, glue on the tips and you have the wing done. The fuse is almost as easy. The fuse sides are printed, showing you where all the little parts go. Glue these on, join the fuse sides, glue in all the formers and you're half way there with only one or two night's work. Next step is to put the wing in the fuse, which is where I am right now so we won't go any further into the construction right now.

Good impressions: Wood is pretty fair for a kit, considering that wood is so hard to get right now. Plane is quick 'n easy to build. Lots of good hardware included. Price is right at \$20.95. Foam wing is cut accurately and smoothly. Plans are easy to read and very clear (with one exception, more on that later). Plastic parts fit and look good.

Not so good impressions: The plans and the instruction booklet tell you how neat it is to have a removable tank and that the P-51 is designed with this feature. Great, but the plans don't show you how to do it! Obviously, the tank has to be modified to be removable, but I have yet to figure out how to do it. I put extended vents in my tank and glued it in. The nylon bellcrank supplied didn't feel very free so I put in a Clary (used to be Veco) metal bellcrank and

bushed the leadouts with 1/16 brass tubing to keep them from wearing through on the metal crank.

I should have the plane done and flying before the next column and I'll let you know how things turned out then.

* * *

Just got a line on some Combat stuff that Bill "Moose" Allen is putting out. Here it is straight from Bill's ad in the August MACA newsletter.

BR-22 Ceramic Plug Sealant . . . \$3.50. A must for high nitro, high compression Combat engines. Enough for 25-40 plugs.

Pen Bladders — No. 24 size . . . 13 cents each. Should be used in doubles for the most consistent engine runs.

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Sniper Mk 7 plans . . . \$3.00. A whole new concept . . . an adjustable design that "tunes" in on the reflex action of individual fliers. Parts may be transferred to other planes as a result of the unique construction techniques employed.

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Grand Prix Super Tigre Reworks . . . tell him what you want and he'll quote.

Inquiries concerning any of the above items should be directed to: Wm. J. Allen, 418 Fairmont Dr., DeKalb, Illinois, 60115.

Do notice that I have simply listed the items that Bill sells and am not telling you that everything is very trick, just what you need, or whatever? It will

not be my policy to recommend any products without having a chance to personally use, and try to destroy said products.

I have, however, used the BR-22 seal (I bought it from Bill) and it is just the thing for Fireball plugs. Most everybody is aware of the fact that Fireballs like to blow seals quite frequently. Too bad, as the element used in Fireball plugs is about the best around. Use Bill's ceramic seal on your Fireballs and they won't let you down in the middle of a match.

I do have a set of Bill's plans for the Sniper Mk 7 but haven't had a chance to build one yet.

* * *

Just got a note from Rich "von" Lopez that contained some good news. Rich has found a sponsor for the 1975 MACA Top Twenty t-shirts. Midwest Products Co., of Hobart, Indiana has agreed to foot the bill for the t-shirts. Super. Thanks a bunch to all of the people at Midwest.

Hmmmm, wonder if the preceding has anything to do with the following?

While thumbing through a recent issue of Model Retailer, a trade publication, I noticed a blurb about a new kit from Midwest (that's right, of Hobart, Indiana) that is soon to be released. The kit is the "Li'l Snip," designed by none other than, ta-dah, Rich "von" Lopez. The Li'l Snip is designed around the Cox TD .049 and looks like it is easy to build and pretty tough, too. This is the first .049 Combat kit that is made for the TD and hopefully the availability of good .049 Combat kit will spark some interest in this the cheapest form of Combat flying.

Though not mentioned in the ad, the Li'l Snip was published in the Feb. '74 issue of MB. Check your back issues for a sneak preview of the new Midwest kit. (Plans are still available. wcn)

* * *

I had an idea the other day that may

or may not work out. Nothing ventured is worth two birds in the bush, or whatever, so I am going to try my idea and see what happens. Here is what I am planning. Every once in awhile I will pick out an event and build what we'll call a "Project Plane" for that event. I'll get all the good stuff together, try it all out and we'll see what works and what doesn't. When I get done with the plane, practice some with it, and enter a few contests, we should know a little bit more about that particular event and what it takes to win.

Potentially, the Project Plane series will be a good thing. With a monthly column available to me I will be able to give you a running account of the problems or successes I am having. New products that become available can be tested on the planes and the plane itself can be used as a constant with which to compare the products. Photos can be used to show problem areas of construction or new building techniques. All of this (and more, actually) can't, or at least rarely is, found in the construction articles featured every month in all of the magazines. By the time a guy is ready to publish his own design, he has already found the good combination and doesn't tell you how he came across the hot set-up or the problems he had. With the Project Plane series, we will be able to really work with a design or engine on a continuing basis.

First Project Plane will be a Good-year for the AMA Scale Racing event. I am already in touch with a few of the big names in Goodyear and am presently trying to get some hot tips on equipment out of them.

Specialty manufacturers take note: If you have any items, like props, landing gear, wheels, tanks, etc. that are designed for the Goodyear event, send them in so I can use them on the Project Goodyear plane. If your stuff works, expect a good plug for it in this column.

Freebies and outright bribes should be sent to: Dan Rutherford, 920 240th St. S.E. #1, Bothell, WA 98011 or can be sent to Dirty Dan c/o MODEL BUILDER.

Adios. ●

Ms Only *Continued from page 8* lutely no griping during application of smelly, nauseating, eye-burning gook." Still another says, "Good for one week-end contest with the boys. No questions asked!" This is inexpensive, but don't get carried away. Only print coupons you intend to honor. No renegeing!

Most people want to give generous gifts. I seem to give according to my guilt. Let me explain. This year I had all my school children over in the fall so they could see our home and think of me as a person. They came with me, by fours, on Friday nights, with my promise to see lots of airplanes after supper. The

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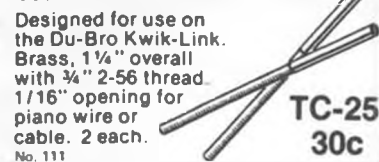
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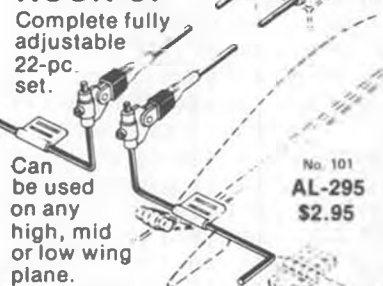
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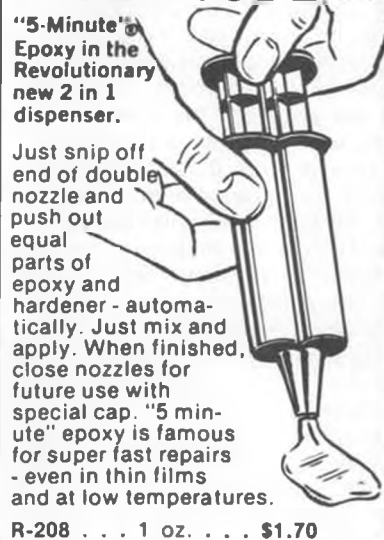


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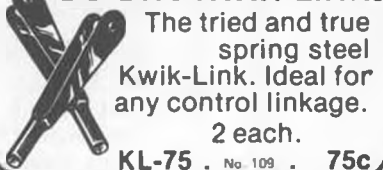


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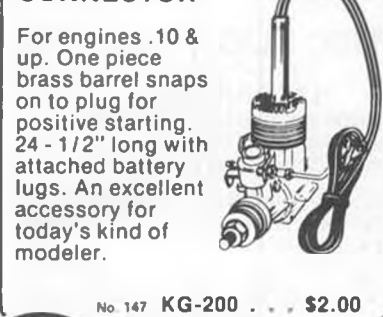


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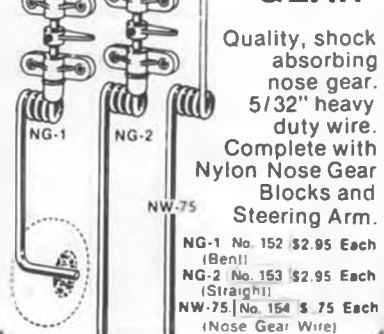
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first Friday was a breeze. These four were girls. They showed mild interest and stayed apart a safe distance. They said, "thank you," and went back to playing with the dog. The next Friday was reserved for all boys. When Bill started the engine of his Aeronca C-3, the kids set up a wild screaming and Indian-type dancing that I've only seen topped by the grease fire in the school kitchen. Bill seemed to realize this meant, "I love it!" The din progressed quickly to maniacal proportions. Bill proudly walked the plane at his heels. Around the yard they went like collie and master at the dog show . . . all the little boys trailed and screamed wildly. The inevitable happened! It was just a tiny rib or two broken in the end of the wing. Bill's enthusiasm for third graders cooled slightly. Variations of this happened on the next two Friday nights. On the following two Friday nights, Bill understandably begged off and stayed at work. I feel I owe him an extra big present for the inconvenience.

I had another experience this year that filled me with guilt. All of you teachers and Cub Scout pack leaders out there will love this idea. I would recommend you buy your own supplies and not use the supplies of the modeler, especially while he is out of town. Bill bought some bags of assorted washers

at the Toledo show. When I saw them I was struck with the idea of painting them a turquoise color so my students could string them between pieces of macaroni to make Indian necklaces. We sprayed all the macaroni silver . . . plus a few desks and shoes . . . and strung the "turquoise" between the pieces of "silver," having the biggest washer in the middle and graduating smaller up the sides. My kids are giving these to their mothers this Christmas. I must admit Bill was disappointed with the few blue washers I left him. I owe him another big gift for that. He's been a good sport all year. A good sport, you know, is one who will always let you have your own way.

Now about the presents we want, girls. I use this approach. Wait until he is at a semi-crucial point in building. He'll be receptive and not hostile. Then mention the item you want. Describe it in some detail. Bill always says, "Why don't you pick it up tomorrow? Then you'll have just the one you want." He doesn't know it, but I can have the gift under the tree in three minutes! The procedure works so well I'm able to buy what I want in October . . . on sale. So just work out any little routine you think he'll fall for. And remember, it doesn't hurt a bit to be wearing the sweater with the airplane on the front!

Choppers . . . Continued from page 25
heim, just out of Frankfort, and a fine, long visit with Dieter Schluter, and a tour of his manufacturing plant. I talked with Dieter about the change in the tail-rotor drive belt on the Heli-Baby (*Sold in this country by MRC, and reviewed by John in the August '75 issue. wcn*) and he explained the situation as follows: The original round plastic drive belt used in the initial helicopter proved to be an excellent choice for the job it was to perform. Unfortunately, the first 200 production belts were not "up to specs" and had to be rejected. Dieter immediately designed the new flat belt for inclusion in all subsequent kits and provided owners of the first 200 kits with new belts free of charge. The flat belts are nylon reinforced so as to avoid stretching, and a new set of pulleys was also provided to match the belt.

Incidentally, Dieter explained that the new pulleys are equal in size, whereas the round-belt pulleys were not. This accounts for the increased tail rotor speed and the required 10 mm trimming of the blades for better control.

One of the highlights of the factory visit was the production control and the jigs and fixtures used for component testing. Matching the main rotor blades for weight was interesting, as well as the alignment jigs used to precision-drill the holes for mounting. Dieter also demonstrated his own test unit which gives readouts on various types of blades, speeds, torque, etc. and at the same time indicates the reliability of the product. Rest assured, the Schluter plant leaves no stone unturned to produce the best possible kit for his customers! As luck would have it, Dieter's Heli-Baby test pilot was also on vacation and wasn't able to demonstrate, but I was assured he consecutively loops the "Baby" in the plant's parking lot! He also confirmed that control response could be speeded up tremendously by drilling holes in the paddle blades (per instructions) to reduce the gyroscopic forces which stabilize the model.

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THANKS TO TREMENDOUS
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ACCEPTANCE

and shipping departments revealed a plentiful supply of all parts and pieces for his impressive array of helicopter kits, including the Enstrom DS-22, Heli-Baby, and the beautiful Gazelle with collective pitch. (One of these days I'm going to build that kit and see if it's really as good as they say!) As we left the factory, Dieter directed us to a fabulous German restaurant a few blocks away, and we had a meal that was unbelievable! Thanks, Dieter, for your unparalleled hospitality and a fine day.

Next, on to Nurnberg (home of the world's largest annual toy fair) and the Kavan factory... or should I say factories? Actually, the Kavan complex consists of several different plants, each designed to have a separate function in the overall scheme. The main headquarters includes general offices, a model repair and experimental shop, stock rooms, complete production machine shop, and other specialty shops, such as glow-plug manufacture, silk-screen painting dept., wire forming depts., etc. Basic stocking of kits and parts, as well as packaging and shipping, is handled in a separate plant located not too far from the main office.

Another factory is essentially used for the production of small machined parts, and is resplendent with many different automatic lathes and specialized screw-cutting machines. It was quite a thrill to see the machinist move from one machine to another, loading each with a new supply of steel or brass rods, making adjustments, and checking the automatic operation, before proceeding to the next one!

I almost forgot to mention that Franz Kavan made sure I was provided with a pretty fraulein interpreter, since I don't do too well with the German language... Marianne drove me out to the model aerodrome north of town, where we watched flight demos of two Jet Rangers which had been modified with experimental devices, and also observed the new Kavan Alouette being put through its paces by their test pilots!

Look for many new ideas in the near

future from Kavan... I saw many ideas I'd like to write about, but promised I'd hold off until flight testing proved the ideas are really worthwhile! Before "leaving" Nurnberg, I want to thank the entire Kavan crew for their hospitality... it was really great! They even drove me around town and located a complete set of "helicopter size" metric taps and dies! (No, I won't loan them out, Ha!).

A short 3 hour drive through the German farmlands, brought us to a town with the unlikely name of Knittlingen, where we visited the Krick Modelbau. Krick is noted for its excellent R/C airplane and scale boat kits. They probably have one of the largest selections of old ships and cannon in the world. Karl-Heinz Denzin was kind enough to take time to show us their production line and parts stocks. Karl designs most of the R/C kits, and incidentally, is an ex-fighter pilot, shot down and captured during WW II. He really has a story to tell. I wish I had the time to repeat some of the highlights.

Right next door to Krick, is Wik-Modelle, home of the Bolkow BO-105 R/C helicopter kit (reviewed in an earlier issue of MB). Wilfried Klinger was not available on our visiting day; he was out flying cross-country for his pilot's license. His daughter, Wellgard, and test pilot Kurt Schuhmann were on hand

though, and both spent lots of time showing their collection of kits, finished models, etc.

Of particular interest was the Helix Autogyro kit which has recently been released. The prototype model didn't have the radio installed that day, but were shown excellent movies of its flying characteristics and examined the kit and finished model to the last detail. Earlier in the year, I had seen pictures of the Helix showing cut-away views, and I had it all figured out except the large disk on the bottom of the fuselage... and that really threw me for a curve! During a lull in the conversation, I casually asked Kurt to show me the purpose of the disc... He gave me a knowing grin and said, "It's really very simple, John. The disk is attached to the main rotor shaft (coming out the bottom of the fuselage) and all you do is wind a long string around the disk, then bring the string back through a wire loop in the tail strut, and stand on the end of the string. When you apply power, the autogyro moves forward and the string causes the rotor blades to spin-up as it unwinds! It also keeps it moving in a straight line during take-off!" Wow! How simple can it be? Watching the movies later proved it was a great idea. Before I left the factory, I placed an order to have one shipped back to me for a future report... I'm looking forward to build-

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ing the Helix, since it's a little bit different.

The last stop was Paris... what a beautiful city! During a city tour by bus, I noticed a Graupner 212 chopper hanging in a store window, along with a huge biplane. Naturally, after the tour, I drove back to find the shop, which wasn't too difficult, but finding the entrance door was something else! After about 20 minutes, I gained entrance to "Baby-Train," a very large model shop specializing in trains (what else?), huge R/C airplanes, and helicopters. There were loads of radios, kits, engines, woods, and almost every heli kitted from around the world. No English was spoken here, but a customer, Daniel Haccard, interpreted for me to salesman Gilbert Lamou. Most French helicopter activity is in back yards, however, monthly local competition meets have good turnouts.

One discovery, worth mentioning, is a French modification to the Graupner Bell 212 main rotor control system. In its original form, the 212 is basically a Hilleromatic control, where the stabilizer paddles are controlled by the swash-plate in cyclic, which in turn feeds input directly into the main rotor blades. In the modification, additional mixing levers are attached to the main blade control arms, which now provides a "Bell System" input from the cyclic (much like the latest Kavan control on the Jet Ranger). According to the reports, the system really makes that machine per-

GRAUPNER 212 MODIFICATIONS

Figure 1

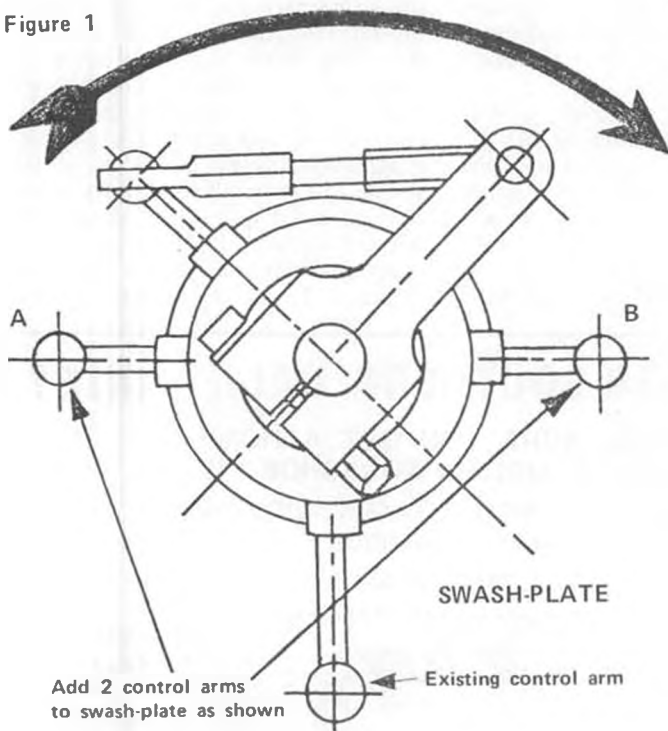
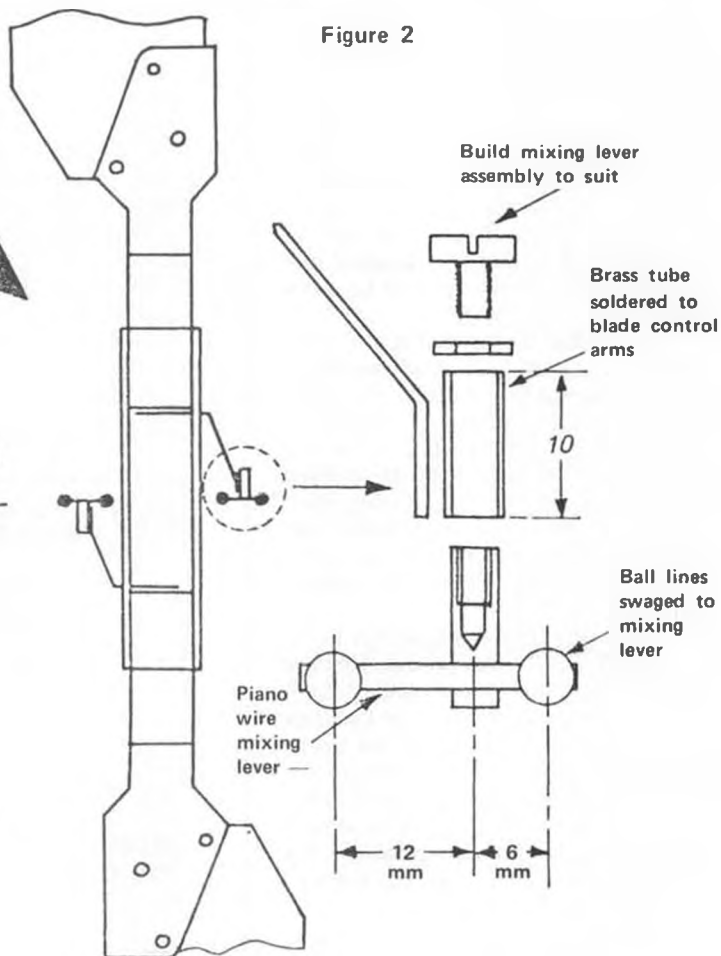
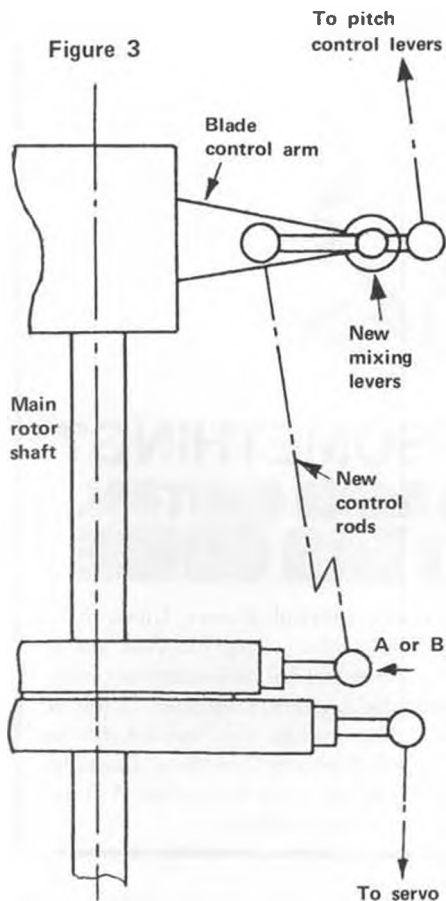


Figure 2



form like it should. See drawings for basic data.



FINAL APPROACH

While we are on the subject of modifications, I have a few words I'd like to say. It has always been my "bag" for the 25 years of R/C modeling to continually look for ways to improve the performance of my models in respect to the way I want them to look and to respond to MY touch. I also believe that just about anything can be improved upon with a little effort. And then again, there is that desire to add your own personal thing. It all comes back to the same basic premise, that is, a great percentage of the dyed-in-the-wool modelers have a desire to keep abreast of new ideas and changes, and it is with that thought in mind that I write these articles on R/C helicopters. Those individuals who feel I am "knocking" a certain product by introducing modifications and changes are wrong. The designers of these kits have invested many hours and many dollars in producing a good package to the customer for a reasonable price, and I feel that every one of them should be commended for doing such a fantastic job... I certainly couldn't do it! Without them, we wouldn't have models to experiment with, and only the scratch-builders would have the pleasure of working out different details on their own brain-child. Perhaps there are modelers who have no desire other than to

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build it exactly according to the plans, and be perfectly satisfied with the way it performs, but that's not my bag... I love to experiment and modify and that's what this writer's article is all about. 'Nuff said.

F/F Continued from page 49 be given its full share of attention (see Fig. 2).

Dr. Lippisch once wrote: "... it is very important to know that the bottom part of the model... and even a full-size glider... wing is the sacred side. In order to achieve optimum values of lift to drag ratio and sinking speed, the bottom part of the wing must be kept as clean and smooth as possible... smooth enough to make a fly break its legs on it." That should be clear enough.

This feature will conclude in the December issue of MODEL BUILDER Free Flight.

DARNED GOOD AIRFOILS . . .
 Go 801 and Go 803

Both of these airfoils were used in wind tunnel and practical testing carried out as part of the research behind the above article. In wind tunnel tests, the results show that both of these sections are very nearly identical over the whole range of practical angles of attack.

After wind tunnel testing, models were constructed to test the theories in

practice. The results were that the models actually flew better than wind tunnel testing had predicted. The measured mean sinking speed was .85 feet per second, which amounts to a glide time of 192 seconds from a tow launched start and 164 feet of tow line (in still air conditions). These tests were conducted using gliders with aspect ratios of 19, equipped with turbulator wire (outrigger types), flown by Max Hacklinger, and measured by X.F. Wortman. See graphs 3 and 4 for wind tunnel data.

Both of these airfoils give impressive statistics and should be considered for current A/2 glider uses. That they are not currently in vogue is interesting, but from my point of view, the Go 803 is not too dissimilar from the popular Benedek sections. For the experimenter, it would be a worthwhile effort to give some attention to either of these airfoils.

DEFT DEFINITIONS

Modeling is fun... so I've been told. Some free flihters are fun-loving and some just fly funny airplanes. Some, also, fly airplanes funny. I have been alternately praised and criticized for including in this column some "humorous" portions. Since there have been several issues that have passed since the last "humor" section, it is obviously time for another.

Airfoils: Swords used for duelling in

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flight.

Airstrip: In-flight performance by an exotic stewardess.

Bank: Owns most of your airplane.

Cessna 310: More than the sum of two Cessna 150's.

Clear the Prop: Procedure necessary when taking the propeller from the U.S. to Mexico.

Cockpit: Area where chicken pilots are kept.

De-Icer: De man dat puts de ice on de wing.

Dive: Pilots Lounge.

Downwind Leg: When girl is standing sideways to the wind, skirt will be lower on this leg.

Gross Weight: 350 pound pilot.

Knots: What stalls do to stomach.

Loop: Prominent landmark associated with interstate highways.

Propeller: Fan that keeps pilot cool.

RPM: Initials of large corporation that builds tachometers.

Runway: Place where exotic stewardess starts her airstrip.

Skyjack: Device for changing tires in flight.

Stall: Place where airplane is kept.

Taildragger: Pilot who lost bout with bottle the night before.

CONCLUSION

Well, that just about ties up November. I hope you'll stay tuned in December. In the meantime... keep all of those cards and letters coming. I'll try

my best to answer them personally, or in this column.

Thermals. ●

Hannan..... Continued from page 42

Another change, but this one brought about by moving, is the address of Gordon Coddling, formerly of California, but now a resident of Arizona. Gordon offers a complete list of plans and drawings for 25¢ to cover postage and handling: Send to: 3724 John L. Ave., Kingman, Arizona 96401.

RUMOR MILL

One of our East Coast spies reports that a major kit company is preparing a new line of Peanut Scale kits. The more the merrier!

A COVER LETTER

Bob Whittier, publisher of the Phineas Pinkham Scrapbook wrote in to ask for the real scoop on tissue. He says he has been away from modeling for a number of years, and is confused by all the different types, brands, claims and techniques that now seem to abound. Well, Bob, you're not alone, and we'll take a shot at discussing the subject.

Although there are probably relatively few manufacturers of tissue, most offer several types. Additionally, many distributors apply their own names to such products, adding to the apparent number of choices. However, we feel that there are four main categories of tissue: 1. Silkspan (Modelspan); 2. Domestic tissue;

3. Japanese tissue; 4. Condenser paper. Taking them one by one, we find that Silkspan is frequently featured in kits, and is available in several grades; sometimes called light, medium, and heavy. Although formerly offered in colors, most today seems to be white. The material has good wet-strength, and thus may be applied damp with relative ease. It is somewhat porous, and generally requires several coats of dope to be properly sealed. Strength is good, and shrinkage quite uniform. Suitable for large rubber-powered models and "gas" jobs, but even the lightest grade is a bit heavy for tiny free flight models.

Domestic tissues: Here we open a real "can of worms," since this is a catch-all category, covering everything from some pretty fine products clear through stuff suitable only for lining shoeboxes! Most domestic tissue has very little grain, and will tear with equal ease in any direction. It varies greatly in thickness, weight, sheen, and porosity, and a great deal of care is required to properly evaluate it. Usually when one tries to determine the properties and origin from sellers, evasiveness sets in, which is in itself a warning toward caution. Fortunately, most tissue is inexpensive, especially when compared to the various plastic film covering materials, and one can afford to buy a few sheets for experimental purposes. As with most things in life, a certain amount

WANT TO WIN?

Pearls Take U.S.F.F. Team Championship!

Pearl Team #2 won the prestigious team honors at the U.S. Freeflight Championships at Taft, California, over the Memorial Day Weekend. In addition, Guy Kirkwood set a new Class A record of 43:31, using his FAI Midi-Pearl to make four flyoff flights after he damaged his own "A" ship.

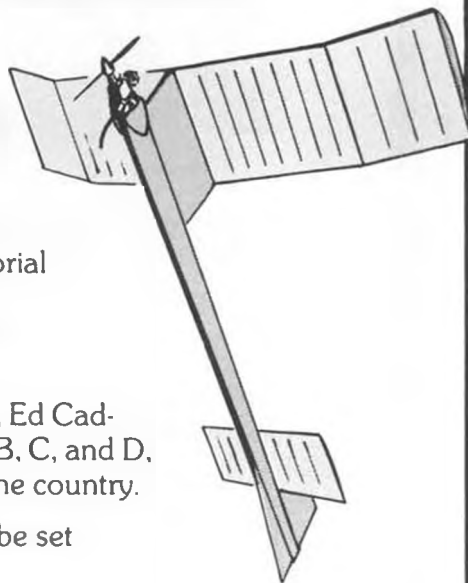


Pearl team members were Gene Simpson, Ed Cadwell, and Bill Moore. Flying Pearls in 1/2 A, A, B, C, and D, they outscored the toughest competition in the country.

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of personal preferences enter in (one's poison, etc.), so we suggest that each builder should reach his own conclusions by first-hand test.

Rather than risking actual model parts, we suggest test-covering simple balsa "picture frames," in order to evaluate the shrinking qualities of each product. Then too, examination with a magnifying glass or a jeweler's loupe can help to resolve the question of porosity. There is little point in using extra light tissue, if an excess amount of dope is required to render it air-proof.

Colors: Some domestic tissues feature water-soluble colors. Thus, when you try to shrink it, you may be dismayed to find the color streaking horribly. On the other hand, we've seen this done deliberately for effect, on such aircraft as the Fokker D-VIII, some of which really did have streaked finishes. It is also possible to "beat the system" by applying a very fine mist of water by airbrush. Why bother? Well, some very nice colors are offered in this type of tissue.

Domestic tissue seems to be somewhat less puncture resistant than Japanese, but offers the advantage of ready availability, a wide variety of colors, both water-soluble and colorfast, and very low cost. In addition to mail-order model supply houses, this type of material can be found in some art and craft stores.

Japanese Tissue: This is the "good old days" stuff that most of the old-timers remember so fondly. Again, the name has been applied (and misapplied) to a wide spectrum of products. We have interviewed many veteran builders on this subject and also have run more than a few tests ourselves over the years, and yet we still feel unqualified to make too many firm pronouncements on the subject! Our understanding is that the best of the pre-war Japanese tissue was made by hand in small family-operated businesses, which no longer exist. Also, the best of this material contained actual silk fibers, which were also the product of very small business enterprises (larger than the worms who did the actual work, of course!) Evidently, the majority of these activities have long since ceased, as the result of "progress" in Japan. Then too, the Japanese have their ecology proplems, and some of the tissue firms were found guilty of polluting rivers with their dyes, and restrained from further production.

However, Japanese tissue is apparently still being manufactured, and is available in colors, though not so many as formerly. At least three firms advertising in MODEL BUILDER can supply this material, though the supply situation varies from time to time, as with any other man-made product. As to quality, there are some who feel the new tissue falls short of the pre-war levels, and yet

it certainly compares more favorably than the present rubber does with that of a few years ago! But that is another subject in itself.

Condenser Paper: The last commonly known, non-plastic covering material is condenser paper, originally produced as an insulating material, used between the foil layers of electronic capacitors. It is manufactured in various thicknesses, but is non-porous, even in its thinnest form. Generally a pale translucent brownish color, it may be dyed or painted. It is basically quite fragile, and is used mostly for indoor models. It may be water-shrunk, but has a powerful warping action on delicate structures, and is thus frequently employed in a rather "baggy" condition. No doping is required for air-proofing purposes.

All tissues may be applied with thick clear dope, a mixture of model cement and clear dope, or thinned-out white glue. Each system has its adherants (!) and we suggest you experiment to find the one which suits you personally, then stick with it! Booo. Hiss.

Many of the questions we receive here at the Hangar imply that the "experts" MUST have all the right answers to model building. We prefer to think that there is usually more than one "right answer," and that whatever solution works best FOR YOU is YOUR right answer!

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WINDUP

Remember, when out at the model flying field, be alert. The hobby needs more lerts! ●

Peanut *Continued from page 43*
low Japanese tissue, with numbers and letters cut from a blank decal sheet. Williams Bros. 3/4 inch wheels and 1/2 inch scale cylinders were used to "dress it up." Note that the landing gear strut from the wing to the wheel on each side is a piece of elastic (rubber band). This allows the gear to flex without damaging the wing. The addition of "Les Pilotes" gives the model some character as opposed to the "Empty Cockpit" look.

A small amount of tail weight was required to balance the model. Flying was satisfactory with an 8 inch loop of 1/8 flat rubber. ●

Plug Sparks . . . *Continued from page 29*
anecdotes about how the mouse-trap type retract gear frightened inquisitive people.

(Main course of the dinner featured a half of a squab, very well prepared, and quite tastey . . . But a bit on the small side. At one point in the festivities, Jack Bolton stood up and commended John Pond for making such an appropriate selection for the banquet . . . "020 Replica Chicken!" wcn)

The trophy awards for which the banquet serves as a vehicle, were as popular as ever. In spite of the number of Texan wins, the awards showed a surprising wide variety of winners from all over the country.

A special treat was served up in the form of 16mm color films of the original Old Timer contest held by the Stockton Gas Model Association in 1960. Only one film was shown as the meeting ran out of time. Just think, we'll have something left for 1976!

Now if the writer can "con" the Editor into printing the results, you will know who did all the winning. Incidentally, Northrop is to be commended for always showing at the Old Timer Banquet. It is this kind of support that promotes the hobby.

**RESULTS OF THE OLD TIMER
EVENTS AT THE 1975 NATS**

Friday, August 8

ANTIQUE 30 SEC.

- 1. Sal Taibi 8:21
- 2. Bruce Norman 7:40
- 3. David Sweeney 4:38

020 REPLICA

- 1. Guy Johnson 9:04
- 2. Ron Sharpton 8:35
- 3. Luis Rodriguez Jr. 8:33

CLASS A

- 1. Bob Hunter 8:21
- 2. Harry Murphy 8:12

3. G. L. Cochran 7:58

CLASS B

- 1. Sal Taibi 11:51
- 2. Wayne Cain 8:26
- 3. Ron Sharpton 7:51

CLASS C

- 1. Bruce Norman 11:43
- 2. Harry Murphy 8:47
- 3. Duke Horn 8:15

RUBBER STICK

- 1. Charlie Sotich 8:23
- 2. Geo. Perryman 7:57
- 3. Jim Quinn 6:53

RUBBER CABIN

- 1. Geo. Perryman 8:30
- 2. Luis Rodriguez 7:18
- 3. Rudy Schuh 7:08

JR/STC RUBBER

- 1. Stephanie Perryman 3:26

Wednesday, August 6

CLASS A-B R/C

- 1. Jack Bolton 23:29
- 2. Art Peterse 12:27
- 3. Bruce Norman 7:40

CLASS C R/C

- 1. Jack Bolton 21:21
- 2. Al Schwankert Jr 7:08
- 3. Al Schwankert 4:40

TEXACO R/C

- 1. John Pond 18:45
- 2. Bruce Norman 6:15

SPECIAL AWARDS:

Antique Trophy (Ehling Cup) Sal Taibi
Compressed Air Plaque Tim Banaszak
ENGINE OF THE MONTH

The time was 1936, and the Brown Jr. motor was setting the pace at \$21.50, with most all competition being in the same price bracket. With this representing a week's salary at that time, the Bunch Model Airplane Co., of Los Angeles, caused a sensation by announcing in the September issue of Model Airplane News a kit form of their Gwin Aero engine called the Mighty Midget, priced at \$9.85.

This was an exceptional breakthrough in price, following a trend started by the Curtiss-Wright Institute people then marketing the Baby Cyclone. To sweeten an already good deal, the Bunch Scorpion Major airplane kit was offered in combination with the Mighty Midget for \$12.00. Many a Southern Californian flying field was dotted with this combination.

Later on, the "muff" head design of the Gwin Aero was changed to a finned head, and a kit of this was produced as a Gwin Aero kit at \$11.35. However, the Mighty Midget engine was the one that sold. Most surprising, even to this columnist at the time, was the ease with which his brother was able to assemble the engine, and to top things off, it ran well! This was the author's first experience with a ringed piston type engine, and the compression of the rings was looked down on. The starting procedure



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was a shade different, with the engine requiring more choking to place enough gas and oil in the chamber to build up compression.

The Mighty Midget was a new size engine, approximately a .45 cu in displacement, that opened up a whole new field of model plane designs of smaller size. With everyone highly prizing a fitted piston type engine, Danner Bunch should receive full credit for popularizing ringed piston engines. Bunch proved the validity of his design by producing such complete engines as the Gwin Aero, Tiger, Cobra, Warrior, and later on, the Contestor. Truly a shame that Danner Bunch cut short such a promising engine design career.

IDENTIFIED!

We ran a picture of Al Hellman a couple of months ago asking for some identification of those in line. Bill Seidler, formerly a very active modeler in the New York area, now living in Florida, stated that besides the Findras being identified, the blond haired fellow in back of Hellman was Bill Kopnic, owner of the Hobby Store at 71st St. and First Ave. in Manhattan. The models on the ground are Bill Seidler's gull wing design called the 'Spytindvill,' powered by Ohlsson 23 engines. If we wait long enough, we'll get all the guys in that line named.

OHLSSON MOUNTS

Just received the latest engine mounts from Jim Crockett Replicas that were designed to accommodate Ohlsson 23 beam mount engines. They are also suitable for Forster and K&B Torpedo engines. A real machinist's bargain at \$6.95 for a good looking radial type mount.

CONTESTS

Thanks to transplanted San Franciscan, Bob Shafer, and Clarence Haught, the Idaho area is bubbling with old timer activity. The Coeur d'Alene Aeromod-

eling Society announced their first "Old Timer Bash" to be held at Bathdrum Prairie, Cour d'Alene, on October 26. Five events were presented; Ignition Pylon, Ignition Cabin, Antique, .020 Replica, and Combined rubber. Hope to have results on this next month.

BOLTON STRIKES AGAIN!

That live wire, Cdr. Jack Bolton, announces his newly formed Pensacola Vintage MAC staged their first old timers contest on October 25 and 26. A unique feature was the return to the old rule division of Classes I and II as used by the Stockton Gas Model Association in the original O/T contests. Featured at this meet were R/C assist, free flight gas, and rubber power. The meet was held at Spencer Field, and was directed by Jack, who also invites all to visit the Naval Aviation Museum and the incomparable "Trader Jones." For info, write Jack Bolton, Route 4, Box 113B, Pensacola, Fla. 35204, phone 477-2055.

SAM SPEAKS

Latest information from Tim Bana-szak, Secty-Treas. of SAM, indicates that Bob Elman, present editor of "SAM Speaks," will have to give up his duties because of health problems. In his place, the irrepressible Jack Bolton (what again?) has volunteered to take on the thankless job of producing the SAM Bi-Monthly. So, if you have anything of interest, be sure to forward it to Jack. He's gonna need all the help he can get! Address in previous paragraph.

YOU CAN'T WINNUM ALL!

Best story to come out of Southern California in a long time is the case of Bruce Norman, Bruce and his wife, Leslie, had been making the trip from Ft. Worth to the coast so often, the Southern California boys thought it better to join 'em rather than fight 'em (based on the hardware hauls being made by Bruce). At the SCAMPS meeting where

Bruce was officially made a SCAMPS member, Bruce acknowledged the honor by saying, "I always wanted to belong to the Southern California Ignition Fliers" (SCIFS). Between the hisses and catcalls, SCIF President Al Hellman, who was present, sat there grinning like a Cheshire Cat. Me too, Al!

Sailing *Continued from page 33* was sailing, as these multi-class regattas are our only way of comparing boats from differing classes under racing conditions.

"The first annual Indy Regatta was held on August 16 and 17 at the Ramada Camp Inn, east of Indianapolis, Indiana. The Indy Model Yacht Club was sanctioned in early August with this being our first regatta. It was an open event divided into two classes, over 50 inches and 50 inches and under. It was a weekend of exciting racing, with 33 races/11 heats being run in light winds and sunny skies. John Kelley, of Adrian, Mich., was a master of finding the puffs with 7 wins in the 11 heats of "big boats."

"John also mastered the 'small boat' class winning 8 of 11 races. Jack Young of Wellington, Ohio, won 7 of his 11 races, while Bill Gitchel of Columbus, Ohio, paddled his way to two victories with his Petrel. The most exciting race of the weekend was a match race between John Kelley and Jack Young, each sailing LJ Boomers, that ended with Jack winning by a boat length.

"Final standings were as follows: 'BIG BOATS'; John Kelley - 16-1/4, Ray Hickok - 20-1/4, Dan Hubbard - 31-3/4, Eugene Stagner - 39. 'SMALL BOATS'; John Kelley - 12, Jack Young - 23-1/4, Ted Brindle - 29-1/2, Bob Huddleston - 34, Bill Gitchel - 35-1/2, Ray Hickok - 37-3/4, Wally Gitchel - 57, Bill Hubbard - 60.

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forced the plane to fly much farther, he turned in a very respectable 2:17. Steve Work flew in lift that stayed on the course, and posted a 2:01, never getting more than a hundred feet downwind of the pylon poles.

Only six of the 133 fliers flew in the scale competition. Ken Wagner flew his Libelle 301 into good lift on two successive flights and got the 3-1/2 minute maximum time, as well as the bonus spot landing points. Ken's Libelle used balsa sheathed foam wings with a scale aspect ratio. It was nice to see a model of one of the current fiberglass superbirds with the long, narrow wings accurately reproduced. Ken's outstanding flight performance, together with good, but not highest, static points, netted him the first place trophy.

Don Edberg's Duster flew well, but suffered in the static judging from a lack of cockpit detail, still netting a 2nd place trophy. Col. Thacker's Bowlus Baby Albatross (MB Plan, September 1975) which won the scale event at the 1975 S.O.A.R. Nationals, didn't fare so well in the L.S.F. Tournament. The 8-1/2 pound model of the famous home-built glider won the static judging by a clear margin, but the thermal Gods were not with the Colonel, and two very short flights knocked the Bowlus to third place. Terry Koplán made an excellent attempt on a very challenging subject... the Glasflugel 604. The full size, Open Class super-soarer has a 32:1 aspect ratio, which Terry faithfully duplicated in the model. This creates a wing with a seven inch root chord and a 2-1/2 inch tip, all of this spread over a twelve foot span. Better flight times would have put Terry much higher in the standings.

The point spread between the Unlimited and Standard class winners was somewhat unusual. The spotty lift conditions gave the larger planes somewhat of an edge in the longer flights. In fact, Col. Thacker, who won Standard class, didn't get the ten minute max on his final flight, posting a time a little over seven minutes. But, his performance on the other precision and speed tasks more than made up for the points lost for the short time.

Several new designs showed up in the Unlimited class. Bob King, of Phoenix, Arizona, had his new "Jaws" de-

sign, complete with shark's head and teeth. The head was molded from fiberglass and attached to the wings permanently. The two halves, joined over the radio compartment, attached to the pod and boom fuselage. A large aluminum skid projected from the bottom of the fuselage behind the center of gravity, to insure a nose down attitude on landings.

This would seem to be a good way to prevent zooming back up off the ground on hot landings. The wing can't come back up if it's being held at a negative angle of attack by the skid.

Dave Shadel, the man behind R.T.C. Models, of Escondido, Calif., flew his brand new original. This twelve foot 'Grand Daddy Windfree' used large flaps to control airspeed, with positive (down) flap to slow the plane up in thermals, and negative (up) flap to increase speed penetration. Although Dave had only been flying the plane for one week, he still managed a second place trophy in Unlimited class.

The most attention getting design at the Tournament was the Split Tee, by Joe McClaran, of Visalia, California. This pod and boom T-tail uses a most unique double rudder which can be spread open to act as a dive brake/spoiler (*Not new, but not common. wcn*). Joe used a mechanical mixer, similar to ones used for V-tail installations, to actuate the rudders. At less than full separation, there is still directional control. The Split Tee is another brand new design, and Joe was still working the bugs out at the Tournament. Let us know how it works out... OK, Joe?

Co-contest directors Bob Hahn and John Donelson saw to it that the over 800 launches went off smoothly. A Fountain Valley Cub Scout pack was enlisted to retrieve winch lines on bicycles. This was necessary, as no motor vehicles are allowed on the runways at Mile Square. Local club members saw to the frequent changing of winch lines which eliminated much of the broken-line problem that has become traditional from flying over Mile Square's "exponential sandpaper" asphalt. As a result of this preparation, and a hard working winch crew, each round was completed within two hours. That figures out to better than one launch-per-minute, over

following were elected to two year terms as AMYA Directors: Ron Menet (Ca.), Dennis Eason (Canada), Les Conner (Mass.), and Dick Hein (Ill.). These are the fellows you should talk to with regard to your feelings about rule changes, procedural problems, and so on. They are serving without any compensation, and their jobs get bigger every year as AMYA rapidly approaches its 2000th member. In other races, John Ball was reelected to the post of 50/800 Class Secretary, and John Maloney took the reins of the S/B Class.

Remember to send in your dues to the AMERICAN MODEL YACHTING ASSOCIATION, 3917 Sunnyside Ave., Brookfield, Ill. 60513. They will be the best five dollars you ever spent. And register any sailing vessel for a one time fee of one dollar while you are about it.

I'd be glad to hear from anybody either directly at 7608 Gresham St., Springfield, Va. 22151 or through MODEL BUILDER. Please let me hear what your concerns are, as well as your questions. They will help make this column more relevant to the needs of the skippers.

Soaring Continued from page 23 up so far down wind at the end of the course that he had to stuff the plane into the ground just to be sure that it was down. Even though this approach

a six hour spread on each of two days. Congratulations, John and Bob, on a job well done!

Next month I'll start (as promised) on a series of articles on new techniques, and materials for sailplanes. We'll take a look at conventional wing structure, and present some thoughts on how to improve that type of wing, and then move on to some techniques for working with styrofoam wings. At that time I will also have some information on the results of some new NASA research on low speed aerodynamics and a new airfoil that looks very promising for use on a thermal soaring plane. See ya next month... in the meantime whydonchagoflyina-thermal?

1975 L.S.F. TOURNAMENT RESULTS

Unlimited Class

Pilot	Plane	Score
1. Bill Nibley	Pierce 970	5767
2. Dave Shadel	Original	5583
3. Rick Walters	Rainbow Wings	5557
4. Rick Pearson	Leo	5096
5. Terry Koplán	Windrifter*	5011
6. Dave Thornburg	Windrifter*	4999
7. Neil Nolte	Cumulus	4851
8. Peter Parszik	Javelin II	4826
9. Jim Tomblin	ASW 17	4787
10. Fred Weaver	Aquila*	4726

*Standard Class planes entered in Unlimited

Standard Class

1. Col. Bob Thacker	Mod. Hobie Hawk	5345
2. Rod Smith	Windfree	5330
3. Lorin Blewett	Windrifter	5312
4. Mark Smith	Windfree	5134
5. Steve Work	Windrifter	4961
6. Bob Slater	Windrifter	4842
7. Jim Wiseman	Hobie Hawk	4791
8. Jim White	Aquila	4619
9. Howard Sears	Pokey 808	4593
10. Kelly Pike	Hobie Hawk	4577

Scale

1. Ken Wagner	Libelle 301	766
2. Don Edberg	Duster	754
3. Bob Thacker	Bowlus Baby Albatross	701
4. Bob Elliott	Glasflugel 604	650
5. Terry Koplán	Glasflugel 604	587

F/F Scale . . . Continued from page 40

a nifty free-wheeling device, which also permitted easy interchanging of propellers. Vince has promised to get this novel idea on paper so that I can pass it on to you.

Second place winner, George James, was flying a Wedell Williams. George's model had all the numerals, etc., done with silk screening, along with an unusual method of finishing. This too will be a subject covered in a future column.

All in all, the Thompson was the most fun I've had at a contest for quite a spell, and taking 3rd with my Goon kind of helped. We are all looking forward to the next time this event will be

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Another idea I'd like to pass along this month is Tom Laurie's stabilizer trim adjustment mechanism. Boy, that's certainly a mouth full for an easy-to-make unit. See Fig. 3. Tom used this in his "Jeep," and it really proved out during the test flying stages. This mechanism, coupled with an adjustable thrust bearing, really allows versatility in getting a model trimmed out rather quickly. The idea of going to a full stab/elevator trim is that it will hold an adjustment better, and these adjustments can be made in very small increments. Often, with the more conventional method of using copper wire to attach the elevators to the stab, the elevators may move in any hard landing. If they are not constantly checked, a destructive crash could result.

* * *

Vintage Aero has once again come up with what I consider a very important item. They now have basswood in various sizes in 26-1/2 inch lengths. Most basswood that can be obtained in model railroad shops is a scant 18 inches long. The number of goodies that Vintage Aero has in its catalog is growing more all the time. It is available for only a buck. Vintage Aero, 1 The Glen, Tenafly, N.J. 07670.

In closing this month, I want to remind you that the Flightmasters Peanut/Jumbo rubber contest is scheduled at

Mile Square Park in Fountain Valley, Ca. on December 7th. The new rules are that monoplanes must have a wingspan of at least 36 inches and biplanes must span at least 30 inches. Each model must have a pilot, and the models must also R.O.G. The models receive one point per second up to the number of scale points the model receives from static judging. Hope to see many of you there.

R/C Auto . . . Continued from page 31
der 21 seconds on lap times, with the rest of the Associated team not too far back. Anyway, I unpacked and put my transmitters and batteries on charge.

Open practice on Wednesday allowed each competitor to get about five practice sessions of 10 minutes in both the oval and the road. Earl Campbell's oval car looked good and he was cooling it, slowing and passing where it was very safe. Jim Cade looked good, too. Mike Morrissey, who arrived that morning, John Thorp, and others (me too) were struggling to get the right combination. I had trouble getting used to the front straight, because I seemed to want to make it parallel to the back straight. Since the far turn was smaller than the near turn, I had a tendency to drive into the outside wall. Most cars didn't have enough steering because of the traction, but I had too much. In the amateur class, Chuck Phelps looked rapid and con-



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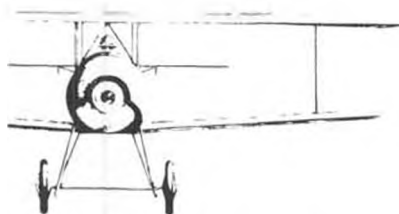
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sistent.

The road cars in general looked a little better. Most of the Associated team looked good because they had been practicing several days. Bob Welch's MRP looked impressive with super go, stop and steering (that Alfa front end!). After some radio problems, Rich Lee jetted at about 21 seconds. Morrissey, myself and more, were struggling with tires, engines, etc. Ed Pennewill's Delta car wasn't super-fast but had a good line and was consistent.

The local racers were allowed on the track after 6 pm. Gary Swiman was out quickly and showed a new line around the track. Gary's line was right on the inside boards, on the turn after the back straight, and the next long left hander, too.

At the end of the day, both of my cars looked like destruction derby specials. The permanent boards were murder on So-Cal specials. The low front bumpers caught under the boards and the lightened bumpers bent. There were bends in both chassis and the bodies cracked. I bent a rear axle on each car, which hasn't happened since going to hardened axles in 1972. I had lots of work to do that night.

By Thursday most everyone was getting the knack of driving the track. Morrissey had both of his Taurus cars going good. His oval car looked a tad twitchy,

but controllable, and he was blasting through the big banked turn near the drivers stand, turning times around 8 seconds flat. John Thorp was getting around the track consistently and Carbonell was going smooth and rapid. My oval car was going good, with narrower front tires, except in the last practice session, when it got squirrely. Later I found both rear wheels loose.

In the road course Welch again looked good and Bill Steele was going great with his Taurus, getting times in the low 21's. Earl Campbell ran his oval car after controlled practice and was getting times just over 8 seconds. I didn't feel too bad since my oval car had laps in the 7.9's.

After two days of practice, I learned that you couldn't really run oversize tires because they had bad hop problems on the faster tight corners and down the straights. Chassis bend, longitudinal, probably also entered in the bouncing on the straights, so a really lightweight chassis wasn't good. After hitting the boards many times I concluded the boards would always win. So I got to work on my oval car and made a front bumper which went further along the top of the chassis and installed longitudinal rails under the front axle mounts to strengthen the chassis. Rear tires were worn to about 3.2 inch diameter and getting better all the time. I just switched tires left to right.

Friday morning saw some rain come, so racing didn't get started until about noon. I think there was a quick 5 minute round before the oval qualifying. In the amateur heats, Chuck Phelps, of Phoenix, had his Scorpion car going good and Bob Sneeringer, of the D.C. area, had his Associated set up to do just about what he wanted. In the expert qualifying, numerous drivers looked good, including Earl Campbell, Arturo Carbonell, Jim Cade, Tom Wisvader, Dave Chin and Roger Curtis. In my first heat, I had just taken the lead when I hit the inside wall at the end of the back straight. The car went completely across the track and hit the outside wall, kil-

ling the engine. After the race I looked at the inside wall and saw that it came back out closer to the inside line at that point... a good place to stay away from during racing. I richened up the engine for the second heat, because after restarting in the first heat the engine was lean. The engine 4-cycled through the second heat but driving was much easier and the time was good enough for fifth qualifier. Mike Morrissey was running fast, but had trouble in both heats and didn't make the cut for the mains.

I believe Bob Sneeringer won the first amateur oval main and had a good time. In the second amateur main Glenn Larue won, with Chuck Phelps second, and winning time good enough to push Sneeringer back to second place overall.

In the first expert oval main there was quite a bit of dicing going on, with several leaders. After about 25 laps Earl Campbell took over first with Bill Jianas and Roger Curtis following. Earl was pulling away, but after a few laps he hit the protruding inside wall on the back straight and broke a rear axle. Jianas then took over the lead and eventually won the first main with his Magnum car, having no problems. Roger Curtis finished second and Earl Campbell came back for third, both with Associated cars.

Just before the start of the second expert main, my pit crew got the needle valve adjusted perfectly. At the start, I got my usual slow start, but pulled into the lead at about 10 laps. My HRE car was handling my way... a tad of high speed understeer... back off the throttle for a fraction of a second entering the corners, then on again. I was able to catch most cars on the straights, hesitate, then take them on the inside of either corner.

On my pit stop at 40 laps, the engine flamed out. By the time I got back on track, Don McKay had gone into the lead with his MRP car. After a few laps, I was back in first place as McKay flamed out in the pits. I was able to stretch my lead to about 2 laps with 5

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to go. Cooling it a little, I started taking a safer line in the far corner... more to the middle of the track... since I had really been cutting it close on the inside. Then with half a lap to go I smacked the outside wall! However, I got the checkered flag at 75 laps, and McKay was second, about a lap back. John Thorp ran a consistent race with his Thorp car to finish third. The second expert oval main times were good enough to push Bill Jianas back to third place overall.

Then on into the amateur road qualifying. Bob Sneeringer again had his Associated motating, but a wheel came off. Jay Costa was flying with his Marker, turning laps around 20.6 to 20.8 seconds in the clear. Any expert would have taken his time, even then.

Saturday morning came quickly, since I didn't finish my oval car-to-road car conversion until 5 am. By the time I got to the track, the amateur road practice was just ending. Expert road practice rounds of 5 minutes started. Morrissey's car was going super. Steele, who had looked good earlier, had done something wrong cause his car looked like a handfull. Pennewill seemed to be going a little faster and smoother, and Swiman looked impressive. Campbell, Husting, Curtis, Azzara, Lee, Carone, Kroells and Albu all looked good too, although most of them hadn't run their road cars since Wednesday. Welch seemed to be having trouble turning to the right. Later he found his servo had gone kaput. My car was good, but the engine was way lean and the brakes poor. I found my brake band liner had come loose. So I richened up the engine idle a little and set to work on a new band liner.

In the first round of expert road qualifying, Ed Pennewill's consistent running paid off, as his Delta car got best time in his heat. Eric Hahn jumped to the lead in his heat, running no wing on his car, and had a very clean heat to get a good time. Roger Curtis and Rich Lee, with Associated cars, were in separate heats, and both ran well to get identical times. Dell Fisher (Marker) and I (HRE), tangled a couple of times in

our heat, and I got headed into the boards several times, so we didn't fare too well. In the last heat, Mike Morrissey showed the way with his Taurus car. Even with two pit stops in 25 laps, he ended up with quick time of the day. Matt Azzara and Earl Campbell lost gears or wheels and Gene Husting blew an engine. Lots of work had to be done that night.

But... the drag races were rescheduled for that night. I had to make changes to the car and get ready for the big day and went to the motel, so the comments made here are second-hand. Several racers did not run in the drag races, even though they had cars, because of required work on their road cars. The drag site was good, but the surface did not have enough time on it to "come in." Consequently times and speeds suffered. Cars which turn the 165 ft. in the low 3 seconds at home tracks were lucky to get close to 3-1/2 seconds.

Carl Petri had his scratch-built rail running good, but lost to Mike Carone's hybrid Associated in the finals. Mike is back to two servos with a good brake because of reliable operation. In funny cars, Chubby Caruso was going good for his first try at the drags. Reba Steele got third place when she could not advance after red lighting, and her competition crossed over into her lane (he didn't advance either). So Bob Welch went to the final with his MRP against Carone. Welch won the funny car class when Carone blew a glow plug right out of his engine. Seems that Bill Steele is the caller for his wife, Reba. Bill watches the lights and taps her shoulder when its time to GO. Just wait 'till they get their timing down.

Again on Sunday, I didn't get to the track until the end of the second round of amateur road qualifying. Many of the times looked better. Eric Robarge must have jetted with his Delta, because he beat Jay Costa's time. Bob Sneeringer obviously didn't have problems, 'cause he now had third fastest time.

Then into the expert heats a half hour ahead of schedule. But soon after the first heat the rain started. Four hours

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later, Kent Stroh, the race director, called the race. The decision was a hard one, but rain was forecast for the next day (and it did rain).

The concours event was staged under the car parking covers of Rattey's restaurant. Gil Anderson's immaculate Ferrari won. Details were fantastic. The interior, suspension and engine looked like the real thing. A Veco engine was buried under the scale V-12 engine and differential. The radio equipment wasn't noticeable either. High/low beam lights and tail lights were functional. Tires for the car even had identifying chalk marks for L/R #5 etc., as in real cars. The second place McLaren of Bill Miller would have won concours just about anywhere.

I was very sorry and shocked to hear that Gil Anderson died three weeks earlier of a heart attack. One of his last wishes was to have the car shown at the '75 Nats after spending the last year constructing it. Ray Dixon and Ed Heck, of Florida, did a terrific job of final preparation and showing the car.

The awards banquet was about the best I've ever attended. The food was very good and the awards (trophies and merchandise) were terrific.

A ROAR meeting was held after the banquet. Many topics were discussed, including concours, international competition (Ted Longshaw of England ex-

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pressed the feeling of many European racers), nationals events and engine horsepower. Two important matters were resolved. The President, Roy Moody, is to appoint a Nationals Committee, probably to be headed by Bob Stevens, to propose regulations and events for future ROAR Nationals. Also there was approval for a committee to propose regulations for a restricted engine horsepower class of racing to be headed by myself. I've been proposing a class like this for two years, so they got even with me! The vote was heavily in favor of the restricted horsepower class, and I wish to thank all of our readers who wrote in. The response shows that lots of racers who didn't make it to the Nats are also in favor of a new class.

The atmosphere of the 1/8 scale '75 ROAR Nationals was enhanced by Bob Stevens, "The voice of R/C car racing," who was on hand to announce all the qualifying and main events. Bob knows a lot about racing and the drivers, and

can really keep everybody interested and aware of what's going on. I didn't even have to yell at my pit men about position and lap information.

I would like to thank all the fellows who gave me assistance at the race, particularly Bob Sneeringer, Ed Pennewill and Eric Robarge. I'm sure everyone gives their thanks to Kent Stroh, members of the EMARC and NASCAR clubs, and all race personnel for putting on a super race at a super track. And special thanks to Bill Rattcy, for his great job in getting and keeping the track in top condition for the '75 ROAR Nats.

PERSONAL COMMENTS

One topic discussed at the ROAR meeting was that of making the May Indy race into the Oval ROAR Nationals. There was considerable adverse reaction, because lots of people could not get to that event plus the ROAR Nats. After considering the idea for a while, I think it's a good idea for two reasons. First . . . making the Indy race the official for-

mula car oval nats will give that race the status it deserves. Second . . . two classes of cars can still be run at the ROAR Nats and will allow running the stock cars as the second class (stockers haven't run at the nats yet). The stockers could run the oval or the road course (backwards?).

Since drag racing always seems to cut into the schedule of the other two classes, I think one complete day should be scheduled for drag racing only. That way, a reasonable amount of practice can be had and the track allowed to "break in." Also, a detailed set of drag race rules should be established, including double faults and proper staging (after staging, a car should not be allowed to move back to get a hole shot).

That's it . . . finally. I had a great time at the '75 Nats, even with the rain-out. But maybe that's because I did well in the oval race. If you have any opinions on Nats events/conduct of the restricted horsepower class, drop me a line c/o MODEL BUILDER or c/o HRE Inc., P.O. Box 4658, Irvine, CA 92664. See you next month.

1975 ROAR NATIONALS RESULTS

Amateur Oval (Main Event)

Pos.	Name	Avg. Lap Time
1.	Glenn LaRue	10.29
2.	Bob Sneeringer	10.69
3.	Chuck Phelps (T.Q.)	10.76
4.	Bob Williams	13.90
5.	Neal Prantner	14.93
6.	Bob Hellman	14.94
7.	Bill Miller	15.23
8.	Bob Kaczmarek	15.90
9.	Bill Hobson	16.90
10.	Ralph Gombach	17.65

Expert Oval (Main Event)

1.	Chuck Hallum	8.99
2.	Don McKay	9.33
3.	Bill Jianas	9.35
4.	John Thorp	9.47
5.	Roger Curtis	9.88
6.	Earl Campbell	10.42
7.	Bob Welch	10.43
8.	Tom Wisvader (T.Q.)	11.37
9.	Gary Swiman	12.16
10.	Jim Cade	12.18

Amateur Road (Best of 2 Qual Heats)

1.	Eric Robarge	22.15
2.	Jay Costa	22.69
3.	Bob Sneeringer	23.20
4.	Chuck Phelps	24.47
5.	Bill Coalson	24.50
6.	Neal Prantner	24.56
7.	Ray Fortier	25.02
8.	Ted Longshaw	25.22
9.	Bob Rexrode	26.18
10.	Mark Heck	26.22

Expert Road (One Qual Heat)

1.	Mike Morrissey	22.44
2.	Eric Hahn	22.59
3.	Ed Pennewill	22.92
4.	Roger Curtis	22.93

5.	Rich Lee	22.93
6.	Jim Cade	23.08
7.	Dennis Towry	23.18
8.	Gary Swiman	23.36
9.	Mike Carone	23.53
10.	Dell Fisher	23.58

Drag, Rail

1. Mike Carone
2. Carl Petri (Top Time 3.55)
3. Bill Campbell
4. Kim Myers

Drag, Funny Car

1. Bob Welch
2. Mike Carone (Top Time 3.69)
3. Reba Steele
4. Chubby Caruso

Concours

1. Gil Anderson 95 pts.
2. Bill Miller 81.75 pts.
3. Bob Welch 72.50 pts.

Starduster . . . Continued from page 50
basic Starduster. I decided on the latter, purchased it, and took it home.

I have been using Hot Stuff sparingly for field repairs and some construction, but had not yet attempted a complete construction job with it, so thought this would be as good an opportunity as any to try it also. Some of the things I learned may be an aid to modelers who haven't yet tried this newest addition to the modelers necessities.

A little background is in order, before the sticks start flying. Sal Taibi designed the original Starduster in 1958, and to my rather narrow mind it is one of the two truly original designs ever laid out in the free flight field. (The other? Valkyrie, by Carl Goldberg, which was the epitome of the pylon designs that dominated the forties and fifties).

First kitted in 1961, over thirty thousand Starduster kits have been sold, which has to make this one of the most popular designs in the free flight field. Between 1962 and 1967, the Starduster series, (the X, 600, and 900), won 80% of the first, second, and third place trophies in *Nationals competition*, a truly remarkable feat, and the airplane is still highly competitive today, seventeen years after it was first conceived.

The kit for the Starduster retails for \$7.95, and is one of the finest on the market for the money. The spar stock is still chosen for lightness, strength, and grain quality (my kit had two fairly hard pieces of tapered trailing edge stock for the wings, and one light-weight quarter-grain piece of tapered stock for the stab), and the die-cut sheets are so cleanly cut the parts outlines cannot be seen.

The plans, when unrolled, contain three sheets of genuine Japanese tissue, one orange and two white. This alone should be enough of an incentive to finish the airplane, just so this extremely

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"Hot Stuff" is a generic term for one of a whole family of 'Instant Miracle Glues' just coming into use in the modeling fraternity. It is a clear fluid which, when deprived of oxygen, polymerizes into a hard crystal form. Its 'kick' time can be regulated precisely by the chemical formula used in its manufacture, from two seconds to twenty-four hours, without affecting its final strength. Hot Stuff will kick, or harden, in about ten seconds in normal use.

Building the Starduster with Hot Stuff made the job almost obscenely fast. To frame a wing, for instance, the grooves are cut in the trailing edge stock with a flat razor file in order to leave a 'fuzz' in the slot. This fuzz acts as a binder for the Hot Stuff. All ribs are inserted in the trailing edge slots and a tiny drop of Hot Stuff is put on each joint. Immediately the leading edge stock can be positioned against the ribs, and the spar inserted, and again a tiny drop of Hot Stuff put on each joint. A sanding

block comes into play next. Using No. 220 sandpaper, I lightly sanded the bottom of the panel without blowing the balsa dust away from the frame, then went back and reglued all the joints. The balsa dust acts as a binder on the joints this way, and the structure is complete and ready for covering almost faster than I can write this.

The one spot I deviated from the normal construction procedure (*Aha! wcn*) was on the laying of the second fuselage side on the body framework. The Starduster fuselage is built by laying 1/8 x 3/8 strips on the one printed fuselage side, and gluing them in place. The pylon is supported by 3/32 square on each side of the fuselage, which is then covered by a second, unprinted, balsa sheet. I was concerned that I wouldn't know where to put the Hot Stuff on the outside of the fuselage in order to be certain of good glue joints on the inside, so used the printed fuselage side as a pattern to mark the second unprinted side

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with a series of pin holes. After the framing and pylon was mounted on the printed fuselage side, I laid the second side on the assembly and put a small drop of Hot Stuff on each pin-hole. Voila . . . as they say wherever it is they say that . . . a strong, light, virtually warp-proof fuselage in less than an hour's work!

I was concerned with using Hot Stuff around the firewall, and seriously considered using an epoxy, but finally talked myself into simply sanding the face of the motor mount flat with a sanding block and then sprinkling a small amount of balsa dust on the balsa before I fitted the plywood engine mount in place. The back of the plywood was also sanded lightly, to remove any traces of resin which may have oozed out of the wood since it was glued together. Then I just held the plywood firewall against the prepared balsa blocks and liberally dosed the joint with Hot Stuff. At first I thought I had used too much, which makes the 'kicking' time much longer, but within five seconds the plywood felt warm to the touch and vapors and smoke began to issue from the joint. In less than thirty seconds I had one of the firmest firewall joints I have ever seen on a model this size.

I was determined to build the airplane absolutely stock. Therefore the addi-

tional top wing spars, which some modelers add, were not put in, the fuselage was not 'feefed up, (and made heavier,) and the regular tips were used on the wings and tail rather than my fancy "Hoerner" type tips. As a result of this strict adherence to the plans I managed to come up with an excellent flying machine.

The one note I couldn't find on the plans concerned the warps to be put into the wing. A quick call to Sal Taibi, the designer, assured me that the wing should be flat, with no warps at all! He also told me the original weighed in at 6-1/4 ounces with a Holland Hornet (remember that one?) and a Holland Timer Tank.

After finishing my version with nitrate dope, three coats, and one coat of Hobbyoxy clear for fuel proofing, it weighed in at 6-1/2 ounces, with a Cox Tee-Dee .049, the Competition Models Tank-mount, a Tatone Half-A timer, and a Tatone Bladder tank.

The only deviation I made from the plans (*Aha again! wcn*) was to move the dethermalizer snuffer tube from the rear of the fuselage to a point half-way up the fuselage on the left side, to make it easier to check that the fuse was lit before launching. A short piece of Perfect 1/2A lead-out cable was strung through two small wire loops to limit the

upward movement of the stab to 60° when dethermalized.

In fact, I was so fanatical about building it stock that I cut the word "Starduster" out of the plans in black tissue and doped it to the top of the wing where it is shown on the plans, and cut out the name-and-address label from the plans and used it where shown on the plan, on the left side of the pylon.

A final check before flying showed all wing and stab panels flat and the fuselage straight, except for about 1/16 inch wash-in on the left inboard panel of the wing.

My adjusting procedure, as mentioned earlier, has sent women weeping into their homes, and strong men have blanched with fear and dived for cover at the first "Pop" of my engines. I followed my usual procedure in this test.

The first flight of my brand-new shiny orange Starduster was with a five-second engine run and the prop mounted correctly. I meant to turn it around to reduce the thrust, but forgot it.

The wash-in in the left panel created enough drag to pull the airplane around into a tight left turn at about twenty feet off the ground, and it bored around in fifty-foot circles until the engine finally quit. It then stabilized into a smooth glide, and we came out from under the car to try it again.

I cut a small trim tab into the vertical fin, about one inch long by 1/4 inch deep, and bent it 1/32 inch to the right. This straightened out the power pattern a little, and on the second flight the machine made three turns to the left under a ten-second engine run.

Another tab was cut in the fin, about half the size of the first one, and displaced the same amount, and the airplane was VTO'd with a full fifteen-second engine run. This time the power pattern was perfect . . . two wide circles to the left under power with a smooth transition into a nice "Starduster" skidding left glide circle.

So in three flights the machine was fully trimmed, even with my devil-may-care technique, well enough to be a competitive ship. No glide trim changes were necessary, and with the balance point at the location on the plans, the machine glided perfectly without any incidence changes being required.

Coincidentally with my testing of the airplane, one of my acquaintances, Eddy Flock, accepted a challenge to build a free flight, and chose a Starduster also. His was completed and tested at the same time, and his ship, due probably to better building techniques, was trimmed in two flights, requiring only the addition of a 1/32 plywood shim under the trailing edge of the stabilizer to fly perfectly. The punch-line? . . . He has built only radio-controlled beasts before this, and he really enjoys not having to worry about crashing his airplane after it's in the air!



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In summation, then, we have found the Starduster to be one of the most stable, forgiving free-flight designs on the market today. The tilted stab coupled with its higher C.G. location seems to let it stall into lift more easily than a conventional design.

Using Hot Stuff lets the airframe be completed in less than three hours, ready for covering. More than this you can't ask. It's so easy even an R/C fan can build one! (Now, was that nice, Jean? wcn)

Counter Continued from page 7
 thick white creamy glue (which looks like ordinary white glue, but don't be fooled) dries clear, forming a strong, flexible bond which is very resistant to shock and vibration. This product should put an end to loose canpoies forever. R/C 56 Adhesive can be used on ABS plastic, butyrate, and styrene foam. R/C 56 is packaged in 4 ounce plastic squeeze bottles with applicator spouts. Available from your hobby dealer. For further information contact Wilhold Glues, Inc., 8707 Millergrove Drive, Santa Fe Springs, Calif. 90670.

Balldrivers, from BWT Systems, 4523 Keeler Drive, Columbus, Ohio 43227, are ball-headed Allen wrenches which allow tightening and loosening of socket screws from an angle. These handy tools, which are available with either a screwdriver or "L" handle, are very handy for those hard-to-get-at engine mount screws, set screws, or anywhere that socket head screws are used. BWT offers the Balldrivers in 17 sizes from .028 to .500, as well as metric sizes. The BWT Balldrivers are made of high quality alloy steel and are carefully heat-treated to withstand maximum torque.

Maximum noise reduction with minimum RPM loss is what every R/C car racer looks for in a muffler. With Tatone's new expansion type tailpipe muffler, that is exactly what you get. The cast aluminum muffler is specially designed for use on the McCoy and Veco

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.19 engines that are so popular with 1/8 scale car drivers. The muffler, complete with mounting straps is available from most hobby dealers or direct from Tatone Products, 1209 Geneva Ave., San Francisco, California 94112. Retail price is \$7.95.

With the introduction of the TRA Quick Change T.D. Mount, 1/12 Scale car racing buffs can now race in two classes with one car. This is a machined aluminum block motor mount which allows quick interchange between Class A Reed valve engines and Class B Tee-Dee engines in just minutes. No modification is necessary to the standard Jerobee chassis. The mount attaches using the standard chassis holes and the rear body post extender. This motor mount will allow racing in two classes with only minimal cost increase. The Quick Change T.D. mount is available from Thunder Road Automotive, 199 West First Street, Los Altos, California 94022. Price has not yet been announced.

The Albatross, from MH Manufacturing, 2623 Honolulu Ave., Montrose, California 91020, is an all-out competition sailplane for Standard class. Designed by Mark Levoc, it is the eleventh in a series of clean, high aspect ratio sailplanes. The Albatross uses a vacuum

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formed A.S.A. plastic pod, bonded to a fiberglass tailboom to produce a nearly indestructible fuselage. The 625 square inch wing spans 99-3/4 inches, yielding a 15.7:1 aspect ratio. The 9% thick, modified Eppler 385 airfoil is built with standard D Tube construction, using spruce spars, sheeting leading edge, and vertical grain shear webs. The fuselage comes sanded and sprayed with an epoxy primer that is compatible with most any paint. The A.S.A. plastic can be glued with nitro cellulose glues such as Ambroid.

All wood components are machine cut and sanded. The kit comes with all hardware, including Golden Rods, and a blue tinted, vacuum formed canopy. The Albatross is a very deluxe kit, designed for the discriminating competition soaring enthusiast. Available direct from MH Manufacturing for \$69.95.

Cal Aero-Model, 7142 Bluesails Ave., Huntington Beach, CA 92647, well known for its line of .020 Replica kits of old timers, is now introducing the first kit of a new series.

Designed for sport flying and economical operation, the "Series 50" line will consist of scaled down (to 50 inch span) Old Timers for .09 to .15 engines and 3 channel R/C equipment. The first kit, now ready for delivery, is Sal Taibi's

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famous 1938 Powerhouse. The kit features pre-cut parts, formed landing gear, nylon hinges and L.G. straps, full size plans, and printed instructions. List price is \$31.50.

MB's editor had a hand in testing the prototype of this series, and can verify that it's a real joy to fly. We've indicated many times in recent years that there's no better trainer for the beginner in radio control than an inherently stable old timer free flight design. And by reducing the original size down to the .09 to .15 range, you gain economy and convenience of transportation.

Cal Aero has discontinued production of the 020 Replica series, but will continue to sell them as long as the present stock lasts.

* * *

Semco Model Engineering, 14 Water St., Waltham, Mass. 02154, manufacturers of an extensive line of glow engine mufflers, is adding some useful modeler's tool to its products.

Seven sizes of drill bits, either 6 or 12 inches long, are being offered by Semco. Available in 1/32 inch increments from 1/16 to 1/4 diameter, the prices are \$2.98 and \$4.50 each for the 6 and 12 inch lengths, respectively.

A 1/4-32 tap and drill set is offered for \$2.98. This is the thread size used for standard glow plugs, and in addition

to drilling and tapping engines for glow plugs, one can also use the tap for cleaning up the existing threads in an engine head.

To complete the picture, Semco also offers a 1/4-32 adjustable die for \$4.98, which fits a standard 5/8 inch die stock, also available from Semco for \$2.49. This die is just the right size for cleaning and deburring glow plug threads before use in your cleaned up engine head!

* * *

The newest item from Astro Flight Inc., 13377 Beach Ave., Venice, Ca. 90291, is an R/C system analyzer and rapid charger, called the "R/C System Analyzer - Rapid Charger!" This unit, which retails for \$38.00, is claimed to eliminate the need for battery discharge units, expanded scale voltmeters, and quick chargers.

With this unit you can:

Charge your receiver batteries in 15 minutes.

Charge your transmitter batteries in 15 minutes.

Test for a high resistance cell in two minutes.

Test for a shorted cell.
 Indicate the capacity remaining after a day's flying in 10 minutes.

Measure the capacity of a fully charged battery in 10 minutes.

It will *not* tell you what you're going

to have for dinner tonight, but at least you don't have to wait until you get home to find out how . . . and what your batteries are doing.

Another new Astro Flight product is the Astro 10 marine electric motor. It is designed for use in boats that would require a .10 to .15 glow engine. The motor is housed in a molded plastic mount with flanges for bolt-down installation in the boat. A four-bladed fan is mounted on the output shaft to provide cooling normally supplied by an aircraft propeller. The Dumas hardware kit H-7 contains all the parts needed for the boat drive train, and a Dumas M40-3 steel universal mates the drive adapter to the Astro motor shaft. A Dumas DV-20 boat has been used successfully with the power system.

A 12-volt rechargeable battery pack is included with the Astro 10 Marine motor. Total Price is \$50.

* * *

Sonic-Tronics, who has long been manufacturers of electric starters and other R/C accessories, is now manufacturing a line of glow plugs under the trade name of Glo-Devil, Long and short reach versions are now being delivered in either the standard or idle-bar equipped, R/C style, The idle bar plugs, retail for \$1.29 while the standard plugs are \$.98 each. Special 2 volt plugs will be available in the near future, as well as special Glo-Devil Racing plugs. These will feature a special alloy space-age metal element which has never before been used in glow plugs. It is claimed that the patented seal will withstand the highest nitro content fuels and the highest R.P.M.'s. Yet, despite the special features, these racing plugs will be only \$1.29 each. For more information see your dealer or contact Sonic-Tronics Inc., 2 South Sylvania Ave., Philadelphia, Penna., 19111.

Another new product from Sonic-Tronics is their Cheeter-Stik. This is a vinyl plastic "engine flipper" that can be fed to voracious proprs in lieu of fingers. The Cheeter-Stik is available in two sizes . . . a small one for the junior modeler and small engines, and a large one for adult hands and large engines. The tube which comes in contact with the prop is made of a resilient vinyl material which will not damage propellers. Available in a choice of red, yellow, or white handles, the large size sells for \$.99 and the small sells for \$.79. Available from your hobby dealer or direct from Sonic-Tronics.

Pit Pak Continued from page 21

The Pit Pak is a most professional solution to a messy problem. It allows the modeler to walk onto the field with his assembled plane in one hand and the Pit Pak in the other, knowing that he has everything he needs for an afternoon's flying (Transmitter? Yeah, well that too, if you're an R/Cer!). We have found

that the Pit Pak can be slightly modified to be even more convenient. A machine screw and wing nut can be attached to the lid of the tool compartment to allow carrying spare props on the outside of the lid.

Also, a small block of styrofoam can be attached to the inside of the tool compartment lid. Holes cut into the foam can be used to store extra glow plugs.

The only complaint about the Pit Pak is common to all available fuel pumps. We would like to see the slide toggle switch on the pump replaced with a spring loaded "dead man" type switch. The pumps fill a tank so quickly that it is no major inconvenience to stand by the pump while fueling the plane . . . and it's much less expensive than forgetting the pump is running and pumping fuel all over the ground.

We offer our congratulations to R/G's R/C for a well designed, well built accessory that should find acceptance with R/Cer's everywhere. The Pit Pak is available from hobby dealers or direct \$39.95. It is manufactured by R/G's R/C, P.O. Box 406, St. Joseph, Michigan, 49085.

P.S. Girls, the Pit Pak could be a nice Christmas gift for the man in your life!

R/C Champs . . . Continued from page 19 same "chopped rudder" design. It couldn't roll axially, and dropped its nose coming out of any rolling maneuver.

Ivan Kristensen (7), Canada, did an 8 average flight that brought much deserved applause, followed by Ben Castaneda (43), Mexico, who short-changed us one point in the 8-point roll, and finished his flight with 2 seconds on the watch!

Giuseppe Bertolozzi (13), Italy, was followed by Yves Van Gompel (50), Belgium; then Isao Matsui (12), president of I.M. Products of Japan; Slavko Polincar (48), Yugoslavia; and Bruce Turner (42), New Zealand, who was very likely distracted by a helicopter which landed directly across from us during his inside loops.

Our third team member, Dave Brown (3) was next, and we chuckled to ourselves about his takeoff! During our critique session in Heidelberg, we had suggested that Dave, and the others, turn out of the takeoff as soon as possible to avoid unnecessary downgrading from possible deviations during a long climb-out (FAI rulebook says maneuver is completed when model turns 90 degrees out of flight path and says nothing about how high this must be). On this first official takeoff when Dave was about 5 feet off the deck, you'd have thought that Harold Goldklank had yelled "TOIN" all the way from Brooklyn, because Dave stood his Phoenix on a wing tip and "toined!" The takeoff

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might have been short, but the plane sure as hell didn't "change heading in the climb" . . . for as long as it was in it! The rest of the flight was very good, though all rolling maneuvers were started too late, resulting in their being off center. We believe he scored 4505 on this flight.

The business of scores brings up another complaint about the "overcomputerized" scoring system. When final results were tabulated, only the three scores that counted (best 3 out of 4) were listed. Unless you took the opportunity (if available) of writing down unofficial scores as they were posted, you could not tell from the final tabulation which score was for which round. A very unfortunate and thoughtless omission . . . streamlining sometimes weakens the structure . . .

Gianfranco Terenzi (74), San Marino, followed Dave, and again, the babbling of the caller certainly must have been distracting, as Terenzi had us running for cover . . . between writing zeros!

Ruggero Pasqualini (26), Italy, flew well but too close in, far exceeding the height and width angles.

Paul Lagan (44), well known and versatile New Zealand modeler, put in a 4 to 5 average flight, though the height and closeness probably cost him one or two points per maneuver.

Last flier for the day, and the first round at our site, was Andre Laffitte (31), of France, who averaged 6 to 7 on our sheet.

On Thursday morning, the fluorescent orange vinyl rain suit that we bought in and for Lake Charles came in handy . . . two days of rainy, cold, windey weather began with a light drizzle, as the second half of the contestants flew Round 2 at our site.

Norbert Bertemes (55), Luxembourg, was the first one off, and it must have been disconcerting to have the engine almost die every time the plane got 3/4 of the way through any outside looping maneuver.

Next was Norbert Matt (8), Liechten-



VINTAGE R/C PLANS



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stein, Wolfgang's brother, who obviously learned something from hanging around with the new World Champion.

Paul Behm (57), Luxembourg, averaged 4 to 5.

Ferdinand Schaden (23), Austria, was off the form that earned him 8th place in Doy!estown. He also, at least in this flight, seemed to have obvious radio problems during takeoff and landing . . . only. Very odd. Incidentally, his caller announced what sounded like "Cylinder Hote" for one maneuver. It followed Three Rolls . . . in case you need help.

Bengt Lundstroem (23), Sweden, showed us the best takeoff so far, but dropped to a 6-7 average for the rest.

Bob Hurst (61), Australia, gave us 4 spins!

Ivan Olivier (49), South Africa, had the misfortune of flying in a teaming downpour. He should have been allowed to stop. We judged by extrapolation from under the Pepsi umbrella!

Konrad Weixelbaumer (29), Austria, averaged about 7 in diminishing rain, and stopped his landing roll at *exactly* 10 minutes on Willy Boni's stopwatch (He was the time keeper on our line . . . from Urdorf, Switzerland).

John Lysaght (46), Australia, was followed by Wieland Meier (30), Liechtenstein; then Terry Cooper (33), England; Gunter Hoppe (10), perennial team

member from West Germany; Ole Harder (64), Denmark; John Beasley (65), Ireland; Hub Dekkers (51), Holland; and Rene Schumacher (22), Switzerland, who, being a "home-town boy" somehow arranged to have the rain stopped! Again the language lesson. The "Vrille" was the last maneuver before going into the Rectangular Approach!

Four fliers: Howard Menary (73), Ireland; Milan Merse (68), Yugoslavia; Denis O'Hara (58), Ireland; and Branko Policar (54), Yugoslavia, managed to fly in the calm of Schumacher's magic with the weather. But then, the clouds opened up a downpour for Guy Hardy (21), of France, who did extremely well considering the drenching *and* the full scale helicopter activity directly across the runway. Finally, during the approach, his transmitter refused to work under water, and he crashed. We need *something* in the rules to help the contest directors decide when enough's enough . . . Perhaps they should be made to stand in the rain without protection while they're making the decision.

Jan Van Beek (47), Holland, flew in the heavy rain, and thunder, but finally the contest was stopped, and he was given a reflight a little while later, following another reflight by Guy Hardy, and scheduled flights by Graham Smithson (53), New Zealand; Mike Bone (39), England, flying Mike Birch's Capricorn

design (also known as the "Las Vegas Hole Digger!"); Harald Neckar (14), West Germany, who had intermittent radio problems; Kenneth Holm (26), Sweden; Jan Van Vliet (36), Holland; and Ernst Totland (40), Norway.

By now, the rain had stopped completely, and the wind had become calm, but the overcast was making it prematurely dark.

Hanno Prettner, who was next up, took full advantage of the relaxed weather, and put up an excellent flight. Because of the tabulation system, we don't know what his score was. It was all 8's and 9's on our score sheet. Charley Marincowitz (35), South Africa, followed with his profile-canoped Kaos.

Wolfgang Matt was up next, but interference on the monitor (27.045 MHz) forced him to switch turns with Benny Kjellgren (11), Sweden, who put his Mach I up for a nice flight, though a little too high on some maneuvers. Matt (1) fol-

Continued at bottom of next page

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Continued from previous page
lowed, and again, we don't know which score it was, but it did not seem quite as good as Prettnner's moments before.

In the fast-descending dark, Keith Maundrell (32), England chose to wait

until the next morning, but Chris Sweatman (33), South Africa went up, and we had to kneel down in order to see the model against the sky as it all but disappeared when below the horizon. Chris' model was copied in profile from

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the Midget Mustang, but used trike gear. An interesting design. He took advantage of the option to re-fly in the morning. Neither pilot nor judge could properly see an airplane that was only a silhouette in the sky.

On Friday morning, we had 6 flyers to finish up from Round 2, including Sweatman's re-fly. First up was Keith Maundrell, followed by Sweatman, then Denis Chabert (37), France; Naphtali Harowitz (70), Israel, who gave us 4 outside loops; Erik Toft (52), Denmark; and Kurt Matke (15), West Germany.

Beginning with Round 3, we would start our second look at each of the contestants, this time in cold, windy weather, with rain threatening... Hutchinson, Kansas, was beginning to look better all the time!

Without mentioning every flier for the second time, we'll pick out some interesting points from our notes on each flight (We jotted these down on the flight schedules, between maneuvers).

Ben Castaneda continued our language lessons with "Ocho Corrido" (Running Eight to you gringos!).

Bertolani almost clobbered a circling (in a thermal) hawk in the Figure M and then just missed a full size chopper which landed across the way, during the Running Eight.

Garry Reusch did a perfect tail slide when his ship refused to kick over into a stall turn during the Figure M. He landed after the loops with apparent radio problems.

By 11:00 AM it had gotten real windy, with the sun coming in and out. Isao Matsui good-naturedly bowed to

the judges and said "Good Morning, Sirs," then flew well in spite of the gusty wind and an engine that was missing badly throughout the flight.

Dave Brown's Phoenix showed its ability to penetrate, as he put up a string of 8 point maneuvers (on our card) during a very windy spell.

Terenzi, of San Marino, was all over the sky, repeating his many zeros of the day, but in the wind, even more spectacular. In trying to land, he did a "bounce-and-go," went around, and managed to get his ship down in one piece, amidst a huge round of applause... from judges as well as spectators... we were all glad to see him down!

After lunch, the wind continued, and so did the flying. The velocity exceeded Hutchinson at times. Mark Radcliff put up an excellent flight. We gave him a 9 on the Slow Roll, but his Running Eight blew downwind, losing symmetry.

The rains came again and it poured on and off the rest of the day.

Saturday morning we were on the line and the first flier took off at 0710! We were going to get four rounds come hell or high water (plenty of the latter!).

If ever there was a case of questionable judging, it had to be on Rhett Miller's flight, which was the second of the morning. He and two others had to finish up Round 3 before we got into Round 4. At approximately 0720, when he flew, the sky was clear and the air was dead still. There was no way we could fault his takeoff and gave him a 10. The rest of his maneuvers were as close to perfect as any I had yet seen, including those of Matt and Prettner.

We gave him all 8's and 9's, and in many cases, we have to admit to holding back a little for fear of having our score dropped (We've already expressed our feelings about *this* procedure, but the Swiss came up with one better... or worse... Anyway, the high and low scores of *each* maneuver were dropped, *not* the high and low totals. More on that another time). We were absolutely dumfounded later to find out that his average score was some 240 points lower than what we had recorded!

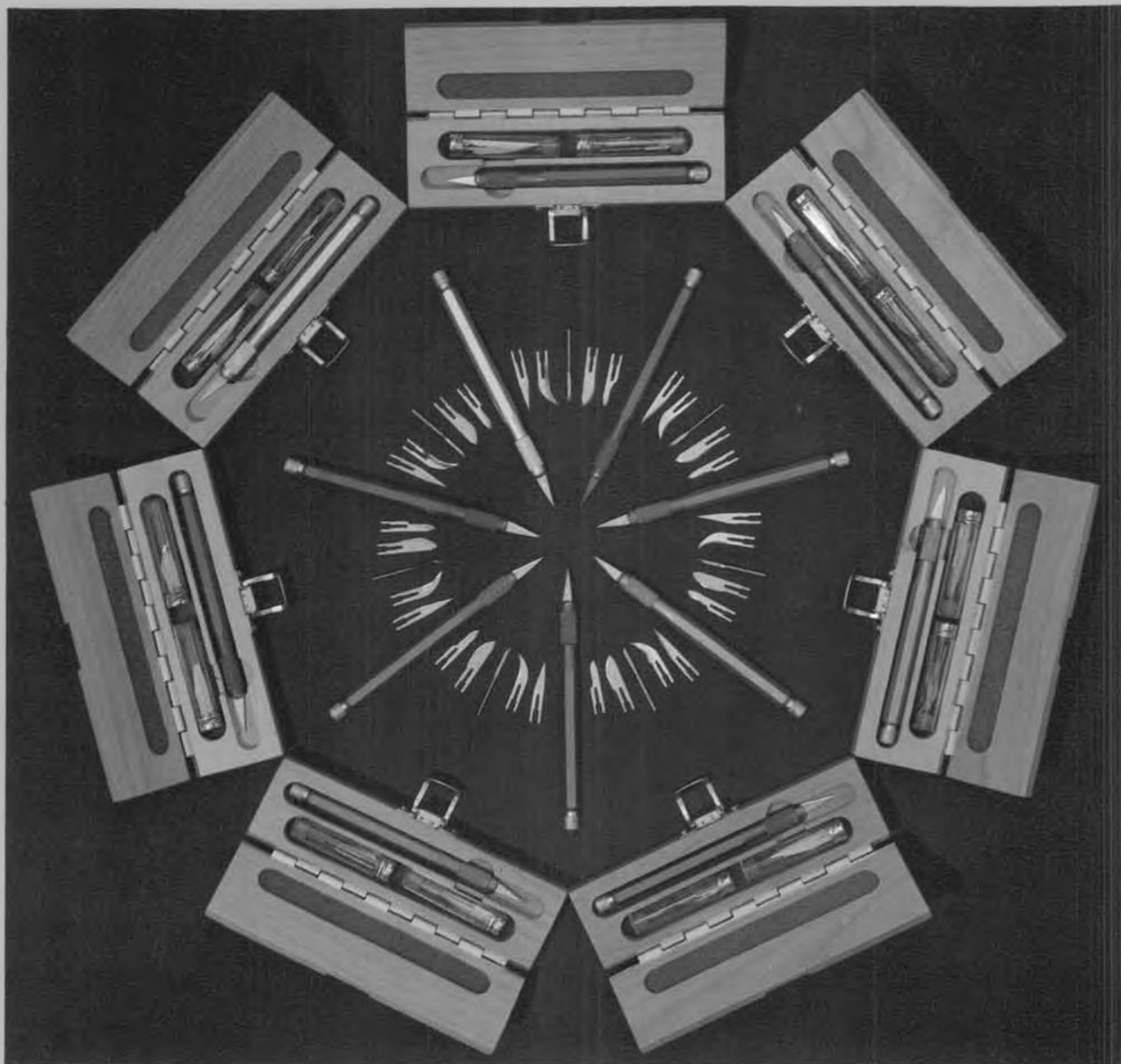
After lunch, we again saw Prettner and Matt, who were flying only two apart (What a spot for poor Charley Marincowitz, of South Africa, to have to fly... between the two top fliers in the world!). Prettner's flight seemed unimpeded. He lost heading several times and drew several 7's (on our card). Matt's Three Rolls were perfect, and he added 8's and 9's for the rest of his flight.

In summary, the top ten fliers were; Matt (Wolfgang), Prettner, Brown, Yoshioka, Okumura, Radcliff, Kristensen, Mat (Norbert), Miller, and Hoppe. The top five teams were; USA, Liechtenstein, Japan, W. Germany, and Austria.

Because of space limitations, we will have to continue this report next month. We would like to comment on particular maneuvers that were most consistently goofed. In some cases this was because of their level of difficulty, but in others it was simply a matter of attending to details. We'll also comment on rules and judging procedures. Hopefully, some of it will benefit pattern fliers who take the sport seriously.

See you in "Remotely Speaking..."

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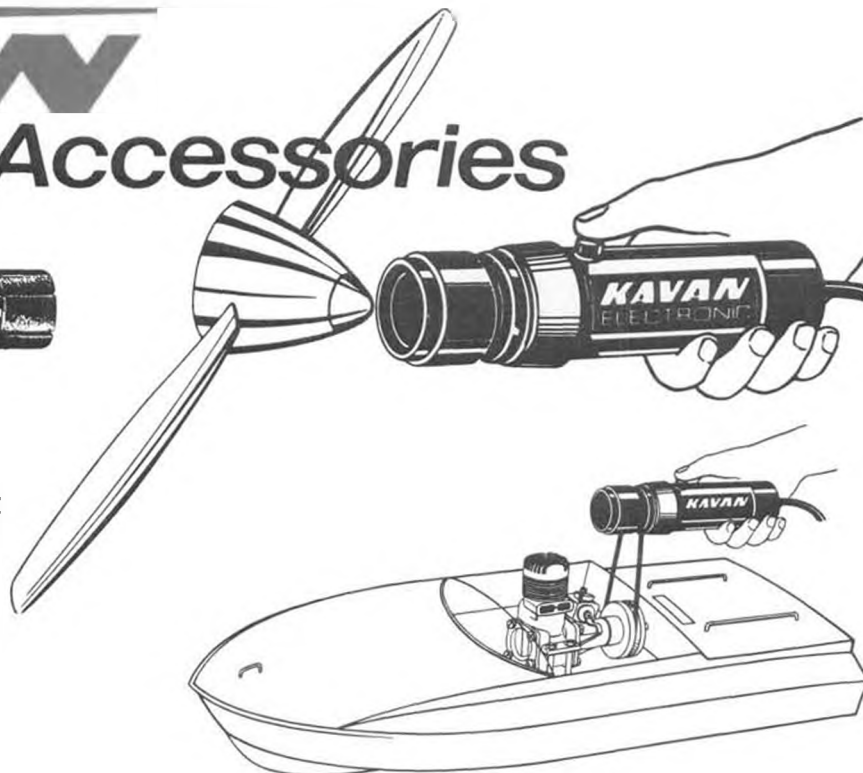
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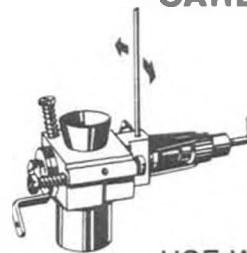
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KADET KOMMENTS

Our little boxy buddy continues to make its mark in the modeling world. The Prop Snappers R/C of Portland, Maine honored it June 22nd with an All-Kadet contest, directed by Art Everett, club president. The photo at top left shows a lineup of 20 Kadets in the pit area. Events were held for fast-slow fly by, bomb drop, touch and go and spot landing. Bill Holt is shown at left making a last minute correction as he heads for the spot. The hand-rubbed paint job displayed by Bob Smith (below, left) won the Best Finish award at the meet. Note how these fliers have added variety to the appearance of their models with different shaped cabin windows, tied into the color markings.

Since the Kadet has become the standard RC trainer for novices, it gets mentioned frequently in club newsletters. Here are a few samples:

ISTHMIAN MODELAIRE (Panama Canal Zone)

"Don Wangberg, the ex-Ukie flier, finally made it out to the field with his Sig Kadet. This plane is something else. You'd never guess it was such a big plane but it is and with rudder only flies like it's a full house. Don had a little problem at first but fourth or fifth time got the hang of it and will be one of the clubs experts very soon."

DC/RC NEWSLETTER (Washington, D.C.)

"George Pickrell has been working so hard building planes for Maynard Hill (and JHU) that he's down to one old beat-up Sig Kadet. George claims that plane is more fun than any high-powered pattern ship with retracts. He may be right because on one windy day he was flying while everyone else was afraid of the crosswind."

George has a good point there. We find a lot of people who are expert pilots fly the Kadet for the simple reason that its a lot of fun.

Robert Vedell of Middletown, N.Y. has had interesting experiences with his .35 powered Kadet. On his very first flight he throttled back 1/4 throttle or lower and cruised sedately around for 55 minutes on the standard 6 ounce tank. How's that for fuel economy? Bob says, "In the area of stability, this plane rates an A+. Many other members of the club have flown my Kadet and all they can say is - Beautiful, A pussy cat!"

Although we originally intended the Kadet for smaller engines, so many builders have been installing .35's that we have decided the customer is always right. Kadets now in production are up-rated to a .35 engine size recommendation. They feature beefed up wing spars, a larger firewall doubler and heavy-duty aluminum engine mounts.

Be a square, join the unspeedy. Build a Kadet for learning or just living it up. (P.S. Let's have some pictures of your version. Send to Klaude at Sig.)



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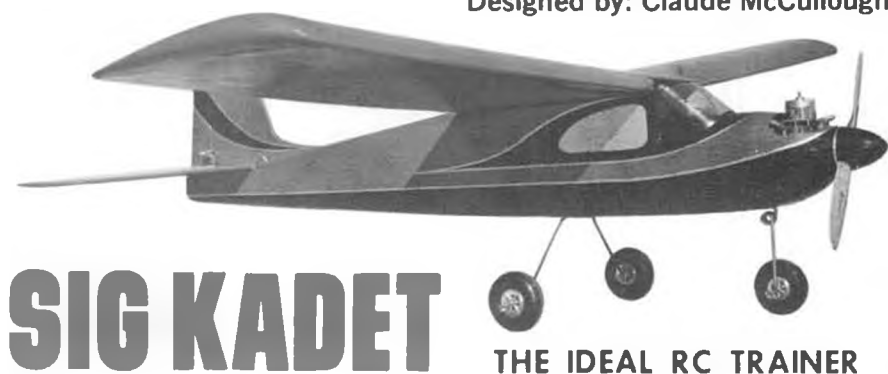
LENGTH: 42"
WING SPAN: 57"
WEIGHT: 4 Lbs.
ENGINES: .19-.35

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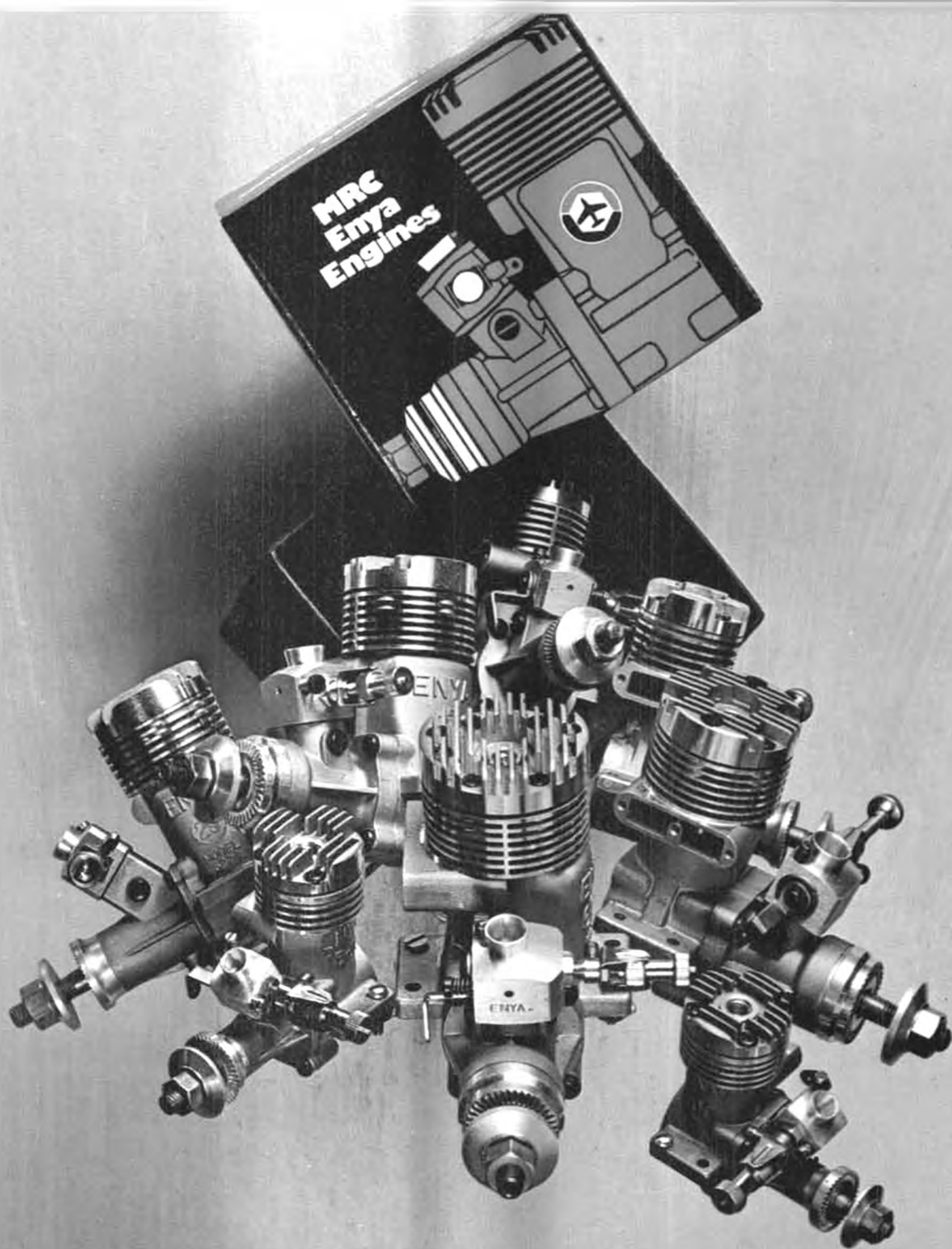
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