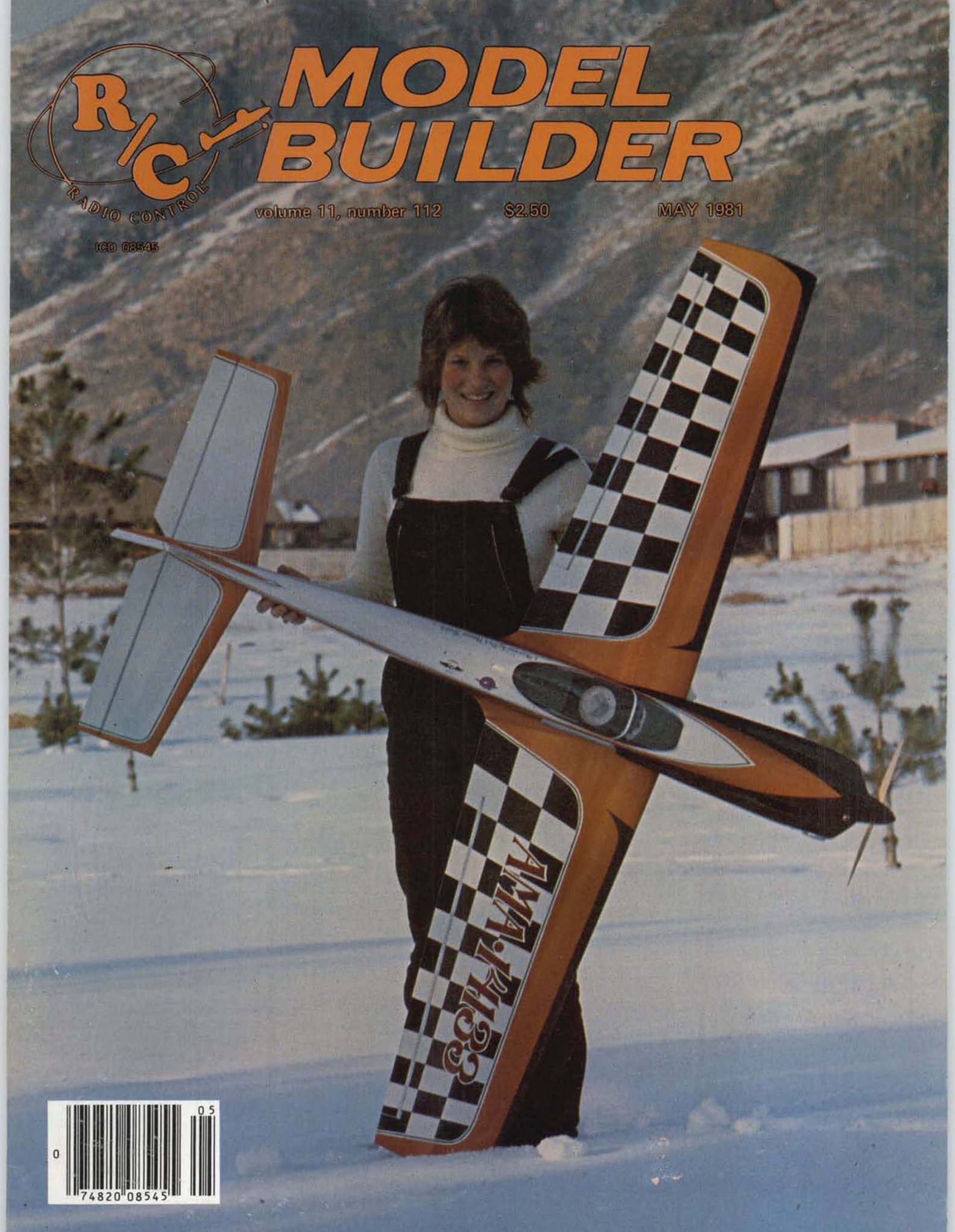
R/C MODEL BUILDER

RADIO CONTROL

volume 11, number 112 $2.50 MAY 1981

ICD 08545



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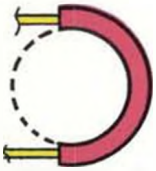
Why GOLD-N-PUSH RODS are like a World Championship Baseball Team

Watch a world championship baseball team in action and you are seeing nine superior performers, each doing what he does best. You're watching a team that has proved itself to be second to none.

Same's true with Sullivan's Gold-N-Push Rods. Nine superior performers, each best suited to do its own particular job. And when you use a Gold-N-Push Rod, with its patented splines on its yellow inner rod for no-bind, smoother operation, you feel like a World Series winner, yourself. Since the special material used in Gold-N-Push Rods is temperature compensated to minimize shrinkage and expansion, you're ready for the heat of the All Star Game or the chill of the Fall Classic.

Check out this world championship line-up...and what each one is designed to do best:

The GRF Brothers



These two brothers — GRF 36 and GRF 48 — are identical twins, except "48" is longer...48" instead of 36". The "F" in their name means "flexible" since each can turn a mighty tight corner. If you were to draw an imaginary circle using this corner, you'd find they turn on a 2½" radius. Great for ailerons, steerable nose gear, routing through fuselages, etc.

These brothers always wear a red outer sheathing and come complete with two sets of inners and outers, one 4" and two 1½" all thread 2/56 rods, and one rubber nut. Clevis not included.

Their Cousins - The GRSF Boys

You'll notice the family resemblance but these two brothers always wear blue. Again, GRSF 36 is 36" long while GRSF 48 is 48" long. The "SF" stands for "semi-flexible" since they turn on a 3½" radius. They're fine for the same applications as their red cousins so long as the turns are less severe. They're much better, though, for the straight applications. Contents of each package identical to GRF brothers.

Mr. Precise — GRC-3

A favorite of scale modelers, this 36" long cable type (.030" cable) Gold-N-Push Rod — the "C" stands for "cable" — can turn on a 1½" radius. That makes it ideal for throttle control, steerable nose gear (retracts), controls for smaller aircraft, and double cable scale installation.

Mr. Precise wears a yellow outer sheathing and includes one sheathing, one cable and one copper coupler.

The GRC Outfielders

These three Gold-N-Push Rods, like their GRC-3 relative, are all the cable type and wear a yellow outer sheathing. But they're heavier because they're for heavier installations. Two of them, GRC-6 and GRC-8, have an .058" cable and can turn on a 2" radius. The third, GRC-S, has a 1/16" diameter galvanized steel cable and turns on a 2¼" radius. GRC-8 would be the centerfielder since it's the tallest — 48" long; the others are 36" long.

Ideal for larger aircraft — as big as you can fly — they're also used for ailerons in gliders, elevators, rudders, etc. If the nose gear wiggles with the GRC-6 or GRC-8, then move up to the more rigid GRC-S. Each comes complete with one outer sheathing, one inner cable, and two brass couplers.

The "Iron Man" - SR

Tough guy of the team, "SR" means "steel rods." Underneath the red sheathing is a rigid 2/56 steel rod, threaded both ends. Use SR instead of arrow shafts or balsa wood for aileron hook-ups, elevators, rudder, etc. Each SR package includes two sets of sheathings and rods plus a rubber nut.

That's the Gold-N-Push Rod line-up. Nine great performers — just like a world championship baseball team. But a word of caution: always select the one specific Gold-N-Push Rod best suited for the particular job to be done. After all, who would ask Steve Carlton to play Pete Rose's position?

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Do Not Fly Near
Overhead Power Lines

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K & B 3.5cc (.21) R/C ENGINE Designed specifically as a marine engine. Powerful, rugged and dependable. Will provide countless hours of high-performance operation. Easy to start, no break-in required. Precision machined U-Joint Nuts fit most existing ball drives.

Features include: • Efficient Muffler — under 90 decibels • ABC Cylinder and Piston • Ball Bearings • Water-Cooled Head • Rear Exhaust — Butterfly Throttle • Rotatable Case (center block)—permits changing exhaust from forward to aft position.

K & B 3.5cc (.21) OUTBOARD ENGINE The first of its kind. Destined to set a trend others will follow! Equipped with ABC piston and liner, this water cooled competition engine is the ultimate in outboard engines.

Other features include: A new K & B carburetor & Pressure Tap • Ball Bearings • Flywheel designed for cup electric starter • Built-in water pick-up • Integral cavitation plate and skeg • Tough transom mounting plate to withstand stress of flat-out racing at top speeds.

K & B 7.5cc (.45) R/C INBOARD MARINE RACING ENGINE, the engine that replaced the popular K & B 6.5cc. Since its introduction it has broken most of the old records held by the 6.5cc.

Features include: ABC Piston & Liner • Con Rod machined from 7075-T6 aluminum solid bar stock, bushed both ends • New machined steel rotor disc • Rotatable Case (Center Block) permits changing of exhaust from forward to aft position • Beefed-up Crankshaft • K & B's Quintuple Porting.

K&B MARINE SPECIALTIES

HARDWARE

MOTOR MOUNT SET Die cast aluminum, complete with 5" Master Mount, Screws and Washers, and Insert Adapter for .40 or .60 engine. Inserts can be rail mounted in boats with confined engine placement areas.

DOUBLE RUDDER OUTDRIVE ASSEMBLY For .40 or .60 boats. Aluminum die cast. Complete with Master Bracket (designed with twin ribs for individual modification), 2 Rudder Pivot Brackets, 2 Retainer Plates and all necessary Mounting Screws and Washers. Also includes Adjustable Strut—with installed Olite Bushings, Pivot Pins — with Nylon Bushings, 3 Control Arms — with set screws and 2 Rudder Blades (2 ARB for .40, 3 ARB for .60). **The SINGLE RUDDER OUTDRIVE ASSEMBLY** is the same as the above, except it only includes 1 Rudder Blade, Rudder Pivot Bracket, Pivot Pin and Control Arm.

RUDDER ASSEMBLY Aluminum die cast. Available for both .40 and .60 boats. Easy to assemble. Comes complete with Mounting Plate and Screws, Pivot Bracket, Rudder Blade, Pivot Pin — with Nylon Bushings, and Water Pick-up — threaded and adjustable. The .40 and .60 Rudder are identical, except the .60 Rudder Blade is ½" longer.

Send for your K&B Catalog, "Matched Finish System" Handbook and Super Proxy Paint Chart Include 50c to cover postage and handling. Address to Dept SR

K&B MANUFACTURING
12152 WOODRUFF AVE., DOWNEY, CA. 90241

R/C MODEL BUILDER

MAY

1981

volume 11, number 112

Box 335, 621 West Nineteenth St., Costa Mesa, California 92627 Phone: (714) 645-8830

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Cover: Carrie Hanson, age 14, shows off her dad's latest pattern design. It's Dick "How to Fly Pattern" Hanson's "Formula 750", a taildragger with retracts, powered by a piped Super Tigre X60, painted with lacquer over an epoxy base by Steve Durtschi. Weight is seven pounds. You guess the wing area! The 35mm transparency was taken by Steve Durtschi along the foothills south of Salt Lake City, Utah.

R/C MODEL BUILDER (ISSN 0194 7079) is published monthly by RCMB INC., Box 335, 621 West Nineteenth Street, Costa Mesa, California 92627. Phone (714) 645-8830.

Subscriptions $25.00 per year, $47.00 for two years. Single copies $2.50. Add $3.50 per year for postage outside the U.S. (except APO and FPO).

Change of address notices must be received six weeks before date of issue that new address takes effect. Send old address with new; old label preferred. Post Office will not forward copies unless you pay extra postage. Duplicate issues cannot be sent.

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- EASY TO INSTALL
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- **BELT TYPE** . . . . *Because of the belt, its installation is quite flexible. It is carefully designed for safe operation, so as not to damage the gears and other parts by any strong shock from engine starting.*
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- **POWERFUL GEARED MOTOR** . . . . *High torque, compact in size, easily installed. Approximately 30 starts on one charge with standard power source.*
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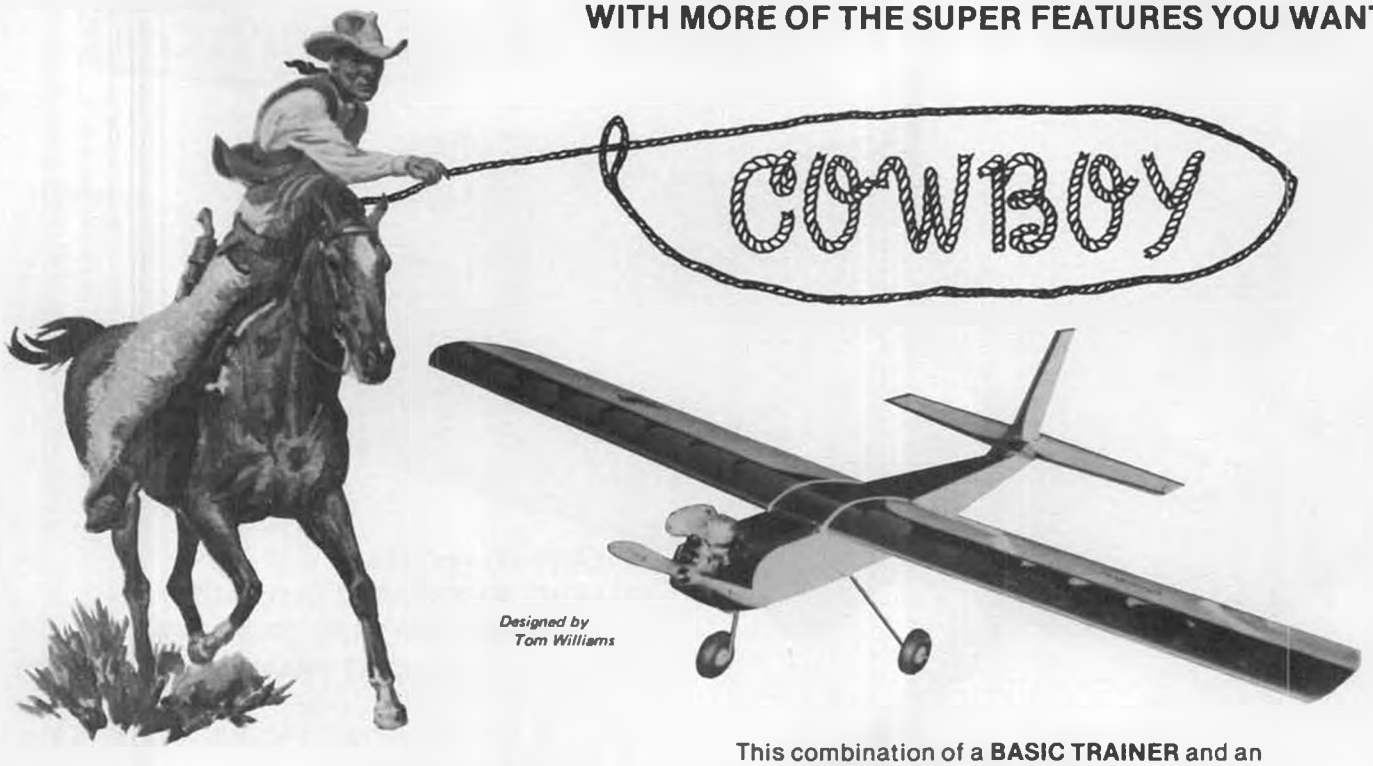
WITH MORE OF THE SUPER FEATURES YOU WANT



Designed by Tom Williams

- **COWBOY 1** — Flat bottom airfoil (easiest to fly.)
  — Flies rudder elevator, or full house.
- **COWBOY 2** — Semi-symmetrical airfoil (fully aerobatic.)
  — Uses same fuselage as **COWBOY 1.**

This combination of a **BASIC TRAINER** and an **ADVANCED TRAINER** all in one is a new and exciting concept from CRAFT-AIR. It's so simple and straightforward, one can't help but wonder why it's never been done before. **ONE AIRPLANE FOR TWO JOBS,** yet equal to the best at both tasks - and a heck of a lot less time and money needed.

- Easiest to build. Fuselage uses preshaped plywood sides and only 3 formers. Similar simplicity employed throughout.

- Frame wing in one evening, tail surfaces in one evening, and fuselage in one evening. Fitting out takes one evening and covering another. Truly a "buy it on Monday, fly it on Sunday project."

- Easiest to learn to fly. The flat bottom airfoil, combined with the exceptionally light wing loading and the excellent ruggedness, makes **COWBOY 1** the easiest to fly, 20 to 40 size, full house trainer ever developed. The light wing loading makes it fly slower, giving you more time to plan, to steer, to correct. It's a lot easier to learn anything slowly, especially flying.

- **COWBOY 2** is made from your **COWBOY 1** by simply changing the wing to a semi-symmetrical airfoil. Although **COWBOY 1** is capable of many maneuvers, **COWBOY 2** will do all the pattern maneuvers and prepare you for the full pattern contest type ship.

- Premimum quality kit. Precision machine sanded ribs (no die crushing.) Preformed plywood fuselage sides, frames, wing braces, etc. Hardwood engine rails with plywood breakaway mount. Preformed nose gear. All gear hardware, control horns, clevises, aileron controls, etc. Quality second to none.

Cat. 203	**COWBOY 1**	$49.95
Cat. 204	**COWBOY 2**	$49.95
Cat. 203W	**COWBOY 1** Wing Kit	$19.95
Cat. 204W	**COWBOY 2** Wing Kit	$19.95

Wing Span	57¼ in.
Wing Cord	10½ in.
Wing Area	600 in.²
Ailerons	1" x 22"
Airfoil-**COWBOY 1**	Flat Bottom
Airfoil-**COWBOY 2**	NACA 2412

Wing Loading	12 to 14 oz./ft.²
Engine	.19 to .40
Weight	3¼ lbs. to 3¾ lbs.
Fuselage	Plywood and Balsa
Landing Gear	Tricycle
Radio	4 channel

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SIG HAS KITS FOR SPORT FLYING

HUMMER

There's more fun per ounce in this miniature tiger than in most any other model. Using just 2 channels of control you can fly up an aerobatic storm. Large wing area and light weight produces a low wing loading and that's the way to get superior performance from small models. Take off from any smooth surface, even close cropped grass.

DOUBLER II

Don't let the fact that the Doubler II fits 1/4 midget racing specifications lead you to a conclusion that this is a hot handful suitable only for expert pilots. All it takes to turn this sharp looking bird into a docile sport flier is the installation of a reasonably priced, non-racing, .15 sized engine. In this configuration it is aerobatic and responsive.

KIWI

We're all sport fliers at heart and this is a great model for Sunday sessions. Does well on wheels, floats, or skis. Big control surfaces for full aerobatic performance. You name it and the Kiwi can probably do it. And check that price against comparable models of other companies. A bargain without any shortcuts.

$19.95

Engine: .049 - .051
Wing Span: 34"
2 Channel Radio

KIT RC-50

Designed by - BILL FLEMING

HUMMER

Engine: .15
Wing Span: 36"
4 Channel Radio

Designed by - BRAD SHEPPARD

DOUBLER II

KIT RC-40

$34.95

$52.50

Engine: .35 - .45
Wing Span: 54"
4 Channel Radio

KIWI

KIT RC-42

Designed by - HANK POHLMANN

GET INTO THE AIR FAST WITH A MOLDED FOAM WING DESIGN

The models below come with Sig's own high-density foam wing, formed in one piece, ready to fly. The wing is fuelproof and needs no covering, but can be painted if desired. Tails are sheet balsa and fuselages are built up on printed balsa sides in a quick and easy assembly technique. The result is a rugged little sportster that can take the hard knocks of Sunday flying. All include the following: Die-cut plywood parts, formed aluminum landing gear, aluminum motor mounts, nylon control horns, RC links, threaded control rods, molded hinges, hardware pack of screws, blind nuts, etc. and an illustrated building and flying instruction book. In addition, the Colt and Klipper have a nose gear, nylon nose gear bearing and nylon steering arm. A formed plastic cowl is supplied with the Klipper and Super Sport. Many RC clubs have used this series for special fun-fly events because of the convenient size and economical price.

Engine: .09 - .15
Wing Span: 45"
2 - 3 Channel Radio

KIT RC-36

$27.95

KLIPPER

Designed by - CLAUDE McCULLOUGH

Every designer has favorite outline shapes and some of the familiar lines of the Kadet and Komander are mixed together in this model. Steerable nose wheel.

Engine: .09 - .15
Wing Span: 45"
2 - 3 Channel Radio

KIT RC-43

$27.95

Designed by - JEFF FOLEY

COLT

This scale-like (sorta-Cessna) little gem is an ideal subject to paint in full size color schemes. Inspiration can be found at any airport or in aviation magazines.

Engine: .09 - .15
Wing Span: 45"
2 - 3 Channel Radio

KIT RC-37

$26.95

Designed by - MIKE GRETZ

SUPER SPORT

Clean and simple lines characterize this functional design. That approach makes it a snap to built and the wing loading can be kept to the lowest possible minimum.

KIT RC-45

$26.95

Engine: .09 - .15
Wing Span: 45"
2 - 3 Channel Radio

Designed by - MIKE GRETZ

SCAMP

Remember the lightplanes of Aviation's Golden Age - the Cub, Champ, Taylorcraft, etc. The Scamp is reminiscent of several of those classic lightplanes of the 1930's and 40's.

See your dealer first! To order direct, add $1 postage under $10, postage free over $10. No C.O.D.
Send $2.00 for latest catalog of kits, accessories and supplies by SIG and other major companies.

SIG MANUFACTURING CO., INC. ..... Montezuma, IA 50171

from Bill Northrop's workbench

CURSE YOU, FRANK ZAIC!!

The other day we receive a small package from Frank Zaic. Actually, it was in the pile of mail that had accumulated while we were visiting our Mom in Sarasota, Florida. The unfair part of it was that there was no warning about the contents. When we opened it, out popped a half-inch thick, 5 by 7 book with the telltale orange-red cover. Before we knew it, we were hopelessly entangled in a "new reprint" of model aeronautica that boggles the mind. The cover simply reads "1934 Junior Aeronautics Yearbook," but again, without warning, Frank Zaic has loaded the book with a bunch of nostalgic reprint ringers; 1935 catalog of special indoor supplies, 1938 JASCO catalog, JASCO Catalog and Handbook No. 7, the JASCO Story, a series of plans prepared in 1939 but never published (how about Pete Bower's "Rebel" and a 33-inch span Udet's Flamingo for the Brat engine!), reprints of the first two issues (June 1936 and August 1936) of *Model Aviation*, and a complete rundown of the 1936 Nats including a listing of *all* placings of *all* contestants.

If you should be careless enough to send Frank $5.50, at Box 135, Northridge, CA 91324, then be prepared to blow many pleasant hours of reading, studying plans, and reminiscing through a catalog showing a "Thermic 72" for $2.50, Mighty Atom for $12.50, 'D'-cell batteries for 10 cents, M & M gas model wheels in pairs from 90 cents to $2.75 (4-1/2 inch diameter).

This book contains more of the basics of model building, crowded into one lump, than any publication we have seen in many years. The original Handbook was the bible by which we learned model building. It still seems to say it better than anything we've seen before or since.

WARREN G. HITCHCOX

FLIGHT COMPLETE

It is with great personal sadness that we must announce the passing of Warren G. Hitchcox, 56, of Oakville, Ontario, Canada. President of Canada's "AMA," the Model Aircraft Association of Canada (MAAC) for the past nine years, he died of a heart attack early Sunday morning, February 15, 1981, in Oakville, where the Annual General Meeting Conference of MAAC was being held. All 12 of the delegates from across Canada had gathered here to discuss the 1981 agenda. Warren was planning to retire from the Presidency in 1981.

We first met Warren and Shirley, his wife, at one of the early Buffalo, New York R/C symposiums in the late '50s and early '60s, and have continued our friendship through repeated get-togethers at nearly every major model aircraft function ever since. As an avid and skilled pattern flier, he frequently represented Canada as a member of its aerobatic R/C team, and this writer, as a judge or chief judge at the world championships on five occasions, repeatedly met him on a "business" basis as judge and competitor. Warren was a serious and dedicated modeler who certainly paid his dues to the sport as its leader in Canada, yet he and Shirley were always right in the middle of things when it came to the social side of the hobby. Their presence at any gathering always brightened the proceedings.

On the flying field, Warren was an intense competitor who kept officials on their toes, yet not so intense that he could not have his "Coolie," Shirley, at his side as chief mechanic, caller, and plane wiper-offer. Theirs has been a close relationship that many others envied, and we wish Shirley all the best in adjusting to her new world.

THOSE LIBERTY SPORT COWLS

The first shipment of white gel-coated fiberglass cowls for the 3-1/4 inch scale Liberty Sport, featured in our February '81 issue, have just arrived from Zimbabwe (Rhodesia). To save trouble and expense to individual buyers, we have agreed to act as a go-between for Roger Stern, who designed the Liberty, and Dennis Hunt, both from Southern Cross Hobby House, in Salisbury, who produced the cowls. The price, including handling and Parcel Post shipment to anywhere in the U.S.A., has been set at $19.95. Notice has already gone out to those who expressed a desire to obtain a cowl, when purchasing plans, and unless a few of those have changed their minds, the first shipment is just about all been spoken for. However, a follow-up shipment is expected within a few weeks.

Incidentally, one of those interested in purchasing a cowl is Orval Lloyd, builder of the full-size prototype Liberty Sport. In case you don't know, Orval's brother, Liberty Ray, did most of the design work on the aircraft, so Orval named it after him.

The April 1970 issue of *Air Progress* and the May 1967 issue of *Air-Britain Digest* both carried interesting stories about this aircraft. Orval sent copies of both of these to us so we could forward them to Roger Stern. Of particular

Continued on page 102

OVER THE COUNTER

All material published in "Over the Counter" is quoted or paraphrased from press releases furnished by the manufacturers and/or their advertising agencies, unless otherwise specified. The review and/or description of any product by R/CMB does not constitute an endorsement of that product, nor any assurance as to its safety or performance by R/CMB.

• From Airborne Mfg., comes the Juno, Bill Werage's latest design that helped him qualify as a team member, representing the United States in the 1980 World U/C Championships. In deluxe form, featuring a 56-inch wingspan, flying weight of 52 ounces and requiring a .40 to .46 engine, each kit contains select, sawn and sanded premium balsa wood, pre-formed landing gear and canopy, wing building jig, step-by-step instructions, including photographs, along with Bill's tips on trimming and flying. Each kit is serialized and signed personally by Bill, two-times World Champion and four-times National Champion. Satisfaction is guaranteed. Order from Airborne Mfg., P.O. Box 113, Sagamore Hills, OH 44067. Price is $59.95, Ohioans add 4% sales tax.

★ ★ ★

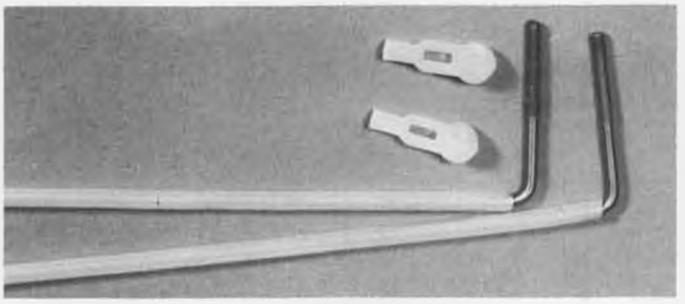
"Eaglet 50", R/C trainer and sport model for .09 to .20 engines, and 2 to 4-Channel radio, from Carl Goldberg Models, Inc.

Balsa U.S.A. is proud to announce the release of its new 1/3-scale Flybaby biplane. The kit is a Stand-off Scale model of the famous Peter Bowers-designed homebuilt. All outlines, rib spacing, etc., are to scale. A scale three-view is included along with full-size rolled plans, formed ABS cowl, formed wire parts, cable and cable ends, turnbuckles, rubber cockpit padding, decals, complete instructions and photos, and complete hardware, except for hinges. The kit is all AAA balsa and plywood, and has no foam parts. Wingspan is 88 inches and flying weight is listed at 19 pounds, making it ideal for such engines as the Quadra or Fox Twin. The kit is priced at $99.95, or $183.95 with Quadra engine, plus $1 for handling. Available direct from Balsa USA Co., Inc., P.O. Box 164, Marinette, WI 54143, or phone (906) 863-6421.

★ ★ ★

To be seen at Toledo is another biggie for bipe lovers, the Stearman PT-17, in 1/4-scale. Richard Barron, of Barron's

RS-21 (right) and RS-23 (left) servos, from Royal Electronics.

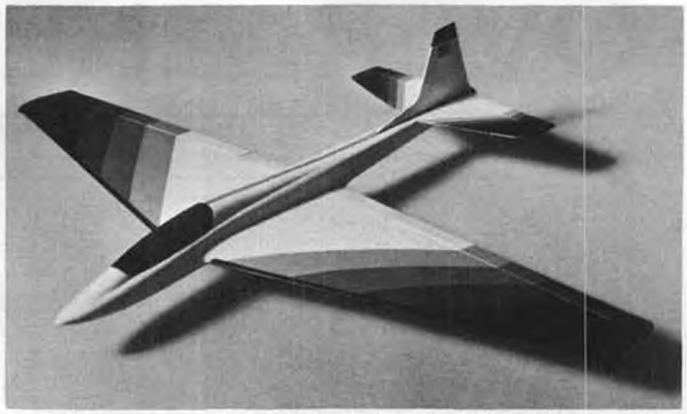


Ball/Clevis strip aileron set, by Bob Martin R/C Models.

The "Mantis", .40-powered R/C helicopter by American R/C Helicopters, Inc. Price is low $149.00.

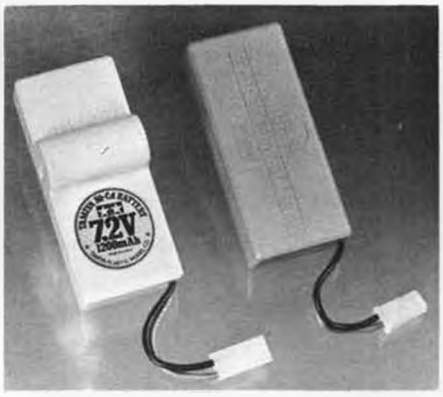
Ready-to-run No. 100-SX 1/12-scale electric car by Leisure Electronics.

The Young Star Glider, with .049 size power pod, for 2-channel radio, from MRC.

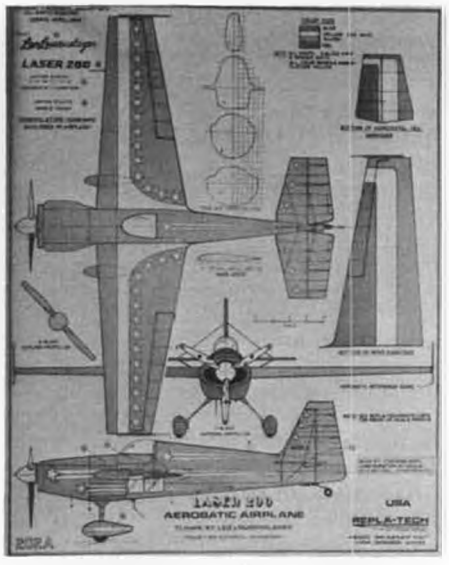


Aerobatic slope soaring SR-7, by Bob Martin R/C Models.

Adjustable 9 to 13 volts D.C. power supply from Leisure Electronics.



MRC-Tamiya 1200 mah nickel cadmium battery pack.



Laser 200 drawings from Repla-Tech.

Scale Classics, indicates that his plan set is designed for Sport Scale, but it is 100% scale outline, with scale airfoil, rib spacing and fuselage structure, utilizing wooden dowels to simulate the tubing structure of the real aircraft. Shock absorbing landing gear and sprung, steerable, and full-swiveling tail wheel are shown on the four full-size sheets, plus a step-by-step construction manual. The plan set is priced in the $25 to $30 range, plus postage. For complete information, send $1 to Barron's Scale Classics, 1213 Holly Spring Ln., Grand Blanc, MI 48439.

★ ★ ★

Received recently was Sig's newest catalog, #42, affectionately called the model builder's "Wish Book." Thousands of items are described and pictured. Kits, engines, R/C equipment, accessories, balsa, plywood, glue, dope, and covering materials, are among the many items listed that cover R/C, U/C, F/F, gas and rubber, Super Scale and Sport Scale, electric power, and sailplanes. Pick up a copy at your dealer, or send $2 to Sig Mfg. Co., Inc., 401 S. Front, Montezuma, IA 50171.

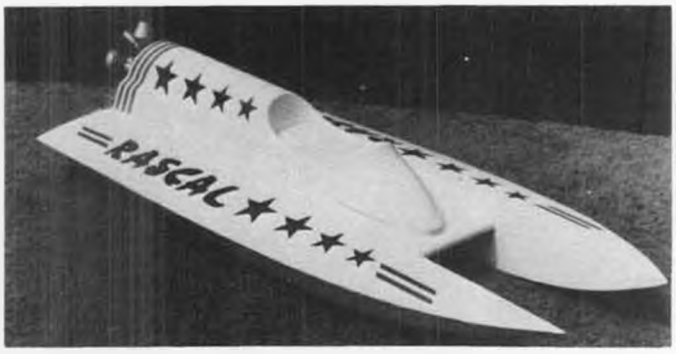
★ ★ ★

AJ's Division of TWINN-K Inc. has just released its 1981 decal line. The six-color sponsor sheet is available in HO, slot, and fuel-proof R/C scales, while the contemporary number sheet is available in HO, 1/32, 1/24, 1/12, and fuel-proof 1/8-scale sizes. Separate decal sheets, containing its trademarks; AJ's, TWINN-K, and Glo-Bee are available. In addition, they have a logo decal sheet illustrating a Glo-Bee driving a race car equipped with AJ's White Dot tires. When you need decals, for any scale, contact TWINN-K, P.O. Box 31228, Indianapolis, IN 46231.

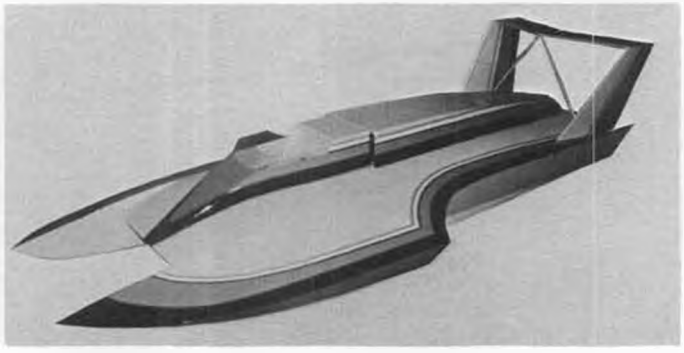
★ ★ ★

In response to numerous requests, Dynamic Model Products has updated its 43-inch harbor tug hull with a molded-in rub rail. Full size plans of a 1/2-inch scale replica of a typical harbor tub of the '30s and '40s are now included with each hull. This one-piece, hand laid hull, with a beam of 10 inches, is strong enough that no bulkheads are required. This allows the entire underdeck area to be available for installation of electric or steam propulsion systems.

Price of the 43-inch harbor tug hull, with plans, is $124.95 FOB. A 36-page catalog and manual listing 20 other fiberglass hulls, kits, and accessories is available for $2, sent first class mail, refundable on your first order. Write to



The "Rascal", tunnel hull boat for the 3.5cc outboard engine, by Glen Spickler Radiomodels.



Quarter-scale Unlimited, by J-5 Enterprises. Can use Quadra.

Seagoing Tug Thor 4, from Curcao Modelbouw.

Decals by TWINN-K.

Pete Bowers' Flybaby biplane in 1/3-scale, from Balsa USA.

Modeler's Mansion brings back the Jim Walker Fireball.

Dynamic Model Products, Inc., Drawer C, Port Jefferson Station, New York, NY 11776, or call (516) 928-8200.

★ ★ ★

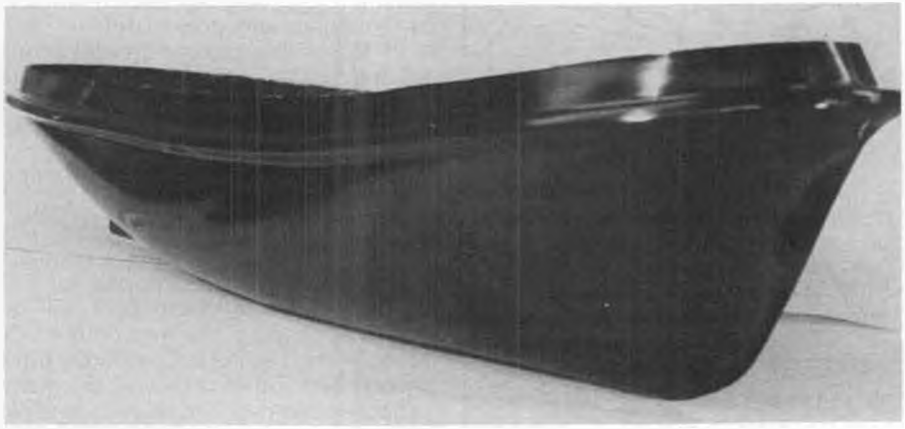
The RS-21 and RS-23 servos, by Royal Electronics, now in quantity production, are available with proper connectors and amplifiers to work with Royal, Kraft C, and Kraft Sport A series, EK Logitrol, Futaba, Cox/Sanwa, Ace (deans 3-pin) World 3-pin, and Hobby Shack Radios. They are also available without connector. Featuring the NE544 servo IC plus two external motor driver transistors, high quality 5-pole motor, heavy-duty gear train and external centering, both servos have a full range of servo mounting trays available. The RS-23, smaller of the two, is recommended for 1/12-scale cars, sailplanes, and small sport planes. The RS-23 is capable of controlling 60-sized models, but Tech R/C by Royal recommends the RS-21 if you only fly large models. The RS-21 with connector lists for $19.95, while the RS-23 with connector lists for $24.95. For more information, see your dealer or contact Royal Electronics, 3535 S. Irving St., Englewood, CO 80110, or call (303) 761-5960.

★ ★ ★

MRC announces the Young Star Glider, a new performance oriented 2-channel kit at a suggested retail price of $49.95. The 31-inch fuselage comes in one piece, and the wing goes together with just two precisely molded pieces, in this simple-to-assemble kit. All hardware, including a built-in tow hook, hinges, control horns, pushrods, tire, canopy, decals, and instructions, are included. Unlike most conventional glider kits, this one comes with a .049 size engine pod (engine not included). For additional information on the Young Star glider, we suggest you see your dealer or contact Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817.

★ ★ ★

For those who are on the lookout for additional scale info, Repla-Tech has added the Bjorn Karlstrom and the MAP (Model and Allied Publications, Ltd.) plans lists to its own high quality documentation. Repla-Tech's four-view drawings on two sheets, each 17 by 22 inches, are profuse with details and cross-sections; really do justice to Gene Soucy's Christen Eagle 1. "REPLA-SKETCH," a 48-page booklet, filled with detailed drawings, photos, and history of aerobatic aircraft, such as the Zlin Z-50-LS, the Laser 200, and the Stephen



Dynamic Model Products' updated 43-inch Harbor Tug hull with molded-in rub rail.

Continued on page 97

Pattern × Flying

By DICK HANSON . . . Part 13: The Avalanche and the Figure M with 1/4-Rolls.

• This is the 3rd article dealing with Masters Class maneuvers . . . the February issue did not include our column (due to our missing the publication deadline).

We attended the Las Vegas Tournament of Champions last fall. This event is probably the best thing that ever happened to advance the state of the art.

If watching the models designed for the "Vegas" doesn't convince you that smooth and slow flying works, then there's no hope. The models were the best ideas from 1/4-scale, pattern, and full scale, all blended to produce the most "flyable" R/C ships we've seen. They were not cheap, and for many fliers will remain only a wish. One thing was evident, Monokote sales must have doubled last year, judging from the acres used on the entries.

Our present 825 sq. inch model was an outgrowth of a plane we worked on for the previous tournament, and the results have been quite good. I expect to see more changes in design as a result of this last event.

Now on to the practice field. We're going to review the Avalanche and the Figure M with 1/4-rolls.

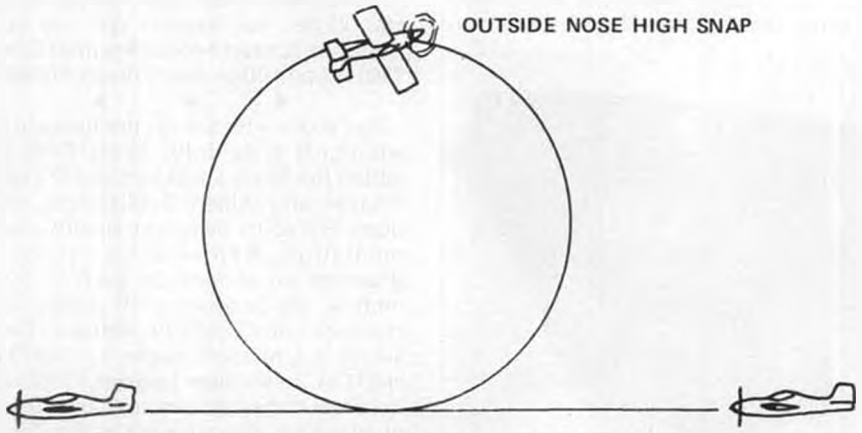
The Avalanche is simply an inside loop with a snap roll on top. The rule book is hazy on which snap to use (inside or outside), in as much as the snap starts from the inverted position, and a "nose high attitude" dictates an outside (down elevator) snap. We have been using an inside (up elevator snap) and getting scored, so. . . .

As you might suspect, the characteristics that allow good snaps can cause a model to be spooky . . . a hi-lo-rate control is a real asset here. Also, the airspeed at which the snap starts will greatly dictate how violent the snap will be.

If the control throws are not properly matched, the snap will cause a heading change. Typically, if the roll starts before the nose pitches, the snap will complete on a new heading. Sometimes simply increasing elevator throw will correct things. I have seen a popular .40-size sport design which will snap nicely without doing anything other than abruptly hitting full "up." The most predictable snaps are usually done at a fairly slow speed with lots of control surface throw. If possible, try to make the snap stop short and complete the roll using aileron. This only works with a slow snap and goes like this; hit full elevator and rudder simultaneously and instantly add aileron. Release elevator and rudder and then release aileron. This may not work on your particular plane but it does prevent overshooting the roll on some birds.

The position of the maneuver is the same as used for any loops . . . dead center and full frame if possible.

A typical sequence goes like this; enter the frame at about 50-foot altitude. Call the maneuver about one second before reaching center frame and pull up into almost a half-loop and hit the snap. You may find it desirable to momentarily chop the throttle as you execute the snap. This is occasionally helpful. As soon as the snap is completed, re-establish heading and complete the loop.



AVALANCHE, PER JUDGING RULES pg. 45 OF RULE BOOK.
NOTE DESCREPANCY WITH RULES ILLUSTRATION ON pg. 42!

And now the Figure M with 1/4-rolls. This maneuver is a kissin' cousin to the M with half-rolls described a few months ago. The changes are only in the 1/4-roll and the obvious need to stall turn in the same direction each time.

The rule book calls out the downgrades a little bit inconsistently but I'm certain our rules committee will clear up the details.

When you enter the frame for this maneuver, call the start early enough to allow for the two stall turns which are now aligned with the original direction of flight. The sequence requires roughly twice the frame space as used for the M with 1/2 roll.

Let's do one noting the typical errors...

Enter the frame at approximately 50-foot altitude and call start. One second later pull up and establish the vertical heading . . . roll 1/4 turn (90°), re-establish vertical heading if required. Cut throttle to high idle and execute 180° turn. Establish vertical dive then roll 90°. Re-establish vertical heading if required, push through 1/2 outside loop and repeat rolls and turns exactly as described. Like it or not, you have only 300 feet of altitude in which to complete the exercise.

If you are flying a design which changes in pitch after a vertical heading is established, you should attempt to minimize this problem by balance (usually the plane is noseheavy) or by adding downthrust, by raising the engine relative to the wing, or by adding drag below the wing (use some big wheels and leave the gear down).

As we've mentioned before, the model should trim to fly almost hands off in any attitude for at least a moment or two. If your pattern ship has all the drag above the wing and the thrust line is very low, you will almost certainly experience a definite climbing (up pitch tendency) as the engine speed increases.

It's impossible to come up with a truly neutral design which doesn't change trim requirements from upright to inverted or vertical, but I hope no one gives up trying.

The March '81 issue of *Model Builder* included an article by Editor Bill Northrop noting pattern rules proposals which had been selected for voting. I was sorry to see the proposal for FAI rules go down but perhaps it will be more appealing the next time it's brought up. The Rules Committee does an excellent job of reviewing the many proposed and required changes, and we offer our personal thanks for their efforts. •

• What's the hardest time? The tick-tock chimes and another hour bites the dust. The article won't finish itself and the model sits on the workbench in its not-quite-all-together state. Blank pages and a flat gray colored balsa form waiting to be transformed into a living, breathing entity.

Each person has his own Waterloo when it comes to completing a model. I never can wait to dive into an airframe. The pieces seem to flow together into a meaningful whole at a rapid rate, but when I reach that finishing stage, oh, how the time drags. It always seems that if something is going to go wrong, it is during the finishing stages.

What is your general attack plan on a model? It pays to give it some critical thought. Granted, if you are building a kit, the manufacturers more often than not will provide the order for you. Some manufacturers will provide a detailed manual for you to follow. If it is one of your earlier efforts you would be well advised to follow the lead given you. Very often certain steps are quite dependent on earlier ones and serious building problems can develop if the proper order is not followed.

The two varieties used for directions consist of the super plan sheets that detail critical steps or the supplemental book. In some cases you will find a combination of both. The use of photos can be most helpful, especially if there are difficult curves and joining panel lines to duplicate.

When it comes to a scratch-built task, the decision becomes yours. Consider it carefully. Special consideration can include many things, but for a start, plan ahead on the following:

If the elevator-rudder linkages are to be enclosed, either plan a method of getting to them later or have them completely hooked up prior to final sheeting. Be especially careful if some soldering is involved, since balsa chars rather easily.

Don't forget items such as blind nuts for the motor mounts, nose gear, etc., that may become boxed in and difficult to see if the nose section is completely finished off. The same might be true for fitting or even putting in a fuel tank. Don't forget to fuel-proof that area with epoxy or resin before it is buttoned up.

If you have retracts to worry about, remember to work out the linkage or air line passageways in the wing. As I am building, I use sections of plastic push-rod outer housing to work into the structure as guides for such items later, after the wing is closed up with sheeting. The air lines, for instance, can easily be pushed through later on. In a twin, you might find the same process helpful for routing flexible cables for throttle linkages.

One pre-planning aspect that drives some to a great state of stress is what to do with the hinge situation. In a well finished scale subject, the individual most often wishes to install the ailerons, etc., *after* the painting, etc. The difficulty becomes the pinning of the hinges or at least gluing them in without creating a mess. You'll find several methods casting about that enable you to do this job, however. I have, on several scale subjects, used Robarts hinges and had very little problem. Since the hinging point was recessed into the movable surface, I installed them in that surface before covering. Following this, when I was ready to install them to the stationary surface, I pushed epoxy into the hole with wire. Then a thin coat was placed on the hinge itself and the surface put in place. Since the movable portion of the joint was recessed in the surface already attached, I encountered no problem in gluing the hinge shut. *(Did anybody follow that? wcn)*

There are many problems to think ahead on in regard to building. We can be thankful that so many of the kit manufacturers have done such an effective job in researching and providing instruction in assembly. It still behooves you to break from the building every day or so to check where you are and where you are going next. Ungluing just ain't fun!

Letters and Stuff

I received a letter recently that I must share with you. It came from an old (?) friend, Charles O'Donnell, from Bloomington, Illinois. Many of you will remember Charles from the Nats, vintage early 1970's, as a judge, etc. Most recently you may have read his concerns about the rule added to scale requiring the addition of a "dummy" pilot to our models. Following some letters during the last rules cycle protesting that rule, Charles submitted a rules proposal to eliminate that rule during the current cycle.

I suspect that printing the letter is purely academic at this point, as his proposal SC-82-18 was defeated on the initial vote, but I want to include it because (A) it is interestingly written and (B) he has a very good point. Therefore, at the risk of his never talking to me again . . .

Dear Old Bob,

Sorry I didn't get this to you before the preliminary vote, but I was just overloaded with things to do. You just can't realize, until you try it, how much work is involved in organizing lynching parties in ten of the eleven districts. And have you tried collecting pikes lately? It's not that people are unwilling to lend them, particularly in such a worthy cause, but there are not that many suitable ones available.

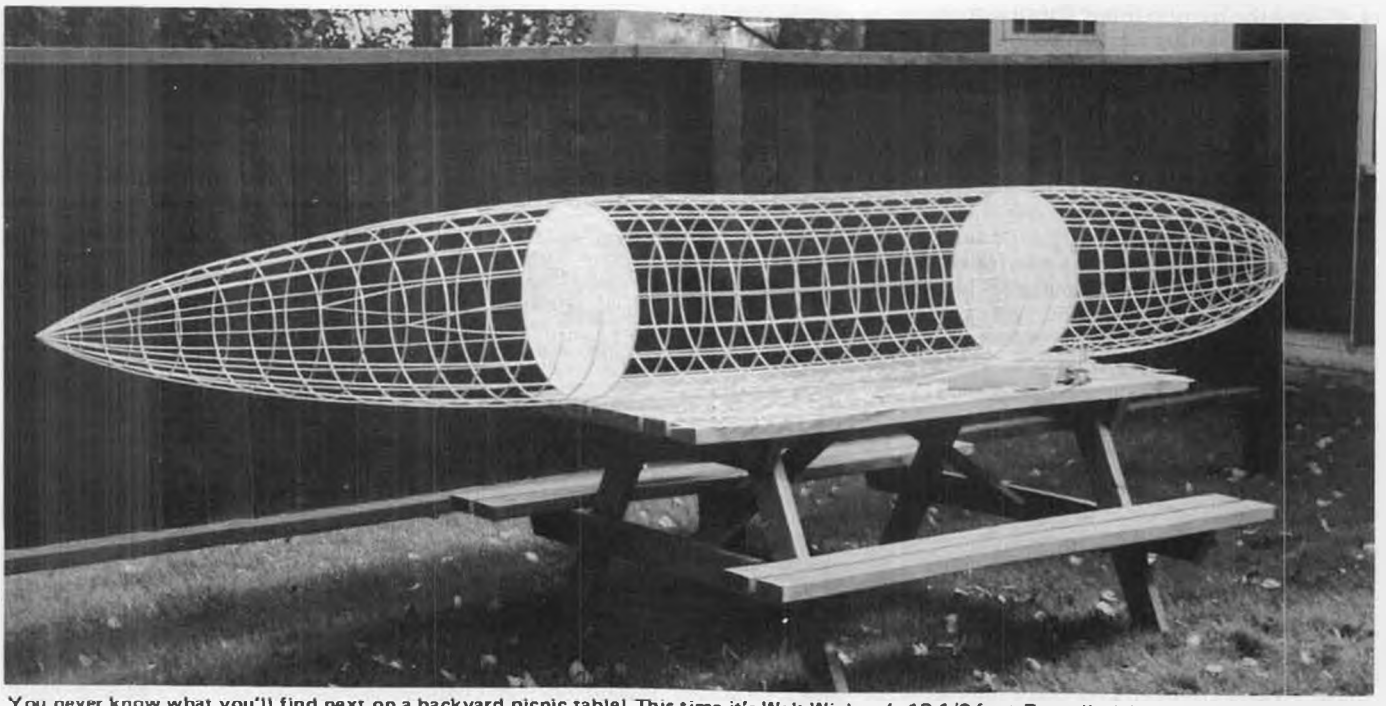
Let me first commend to your attention SC-82-28, a most interesting proposal by a sterling fellow, even if they did get his middle initial wrong in Model

Continued on page 72

Beautiful shot, by Monty Groves, of our "1 to 1" R/C Scale columnists Hiperbipe, taken at the Scale '80' Ottowa, 1980 World Championships.

1 TO 1 SCALE

By BOB UNDERWOOD



You never know what you'll find next on a backyard picnic table! This time it's Walt Winberg's 13-1/2-foot Zeppelin L11. What you're looking at in the photo weighs only 7 ounces. Finished model will weigh 18-1/2 to 19 ounces . . . less helium, of course.

R/C WORLD

by BILL NORTHROP

• Over the 10 years that **Model Builder** has been published, one of the most popular construction articles presented, if full-size plans sales are any indication, was the twin-rotor autogyro based on the Focke Achgelis FA-61, as designed by Skip Ruff, of Taft, California. This unusual R/C aircraft, which is quite easily built and uncomplicated to fly, has turned Skip into somewhat of an international figure. Modelers from all parts of the world have written to him to seek help in trimming the model and/or to relate their flying experiences. Some have also sent photos of their versions of the model, and we're presenting some of them this month. Skip also has some added notes:

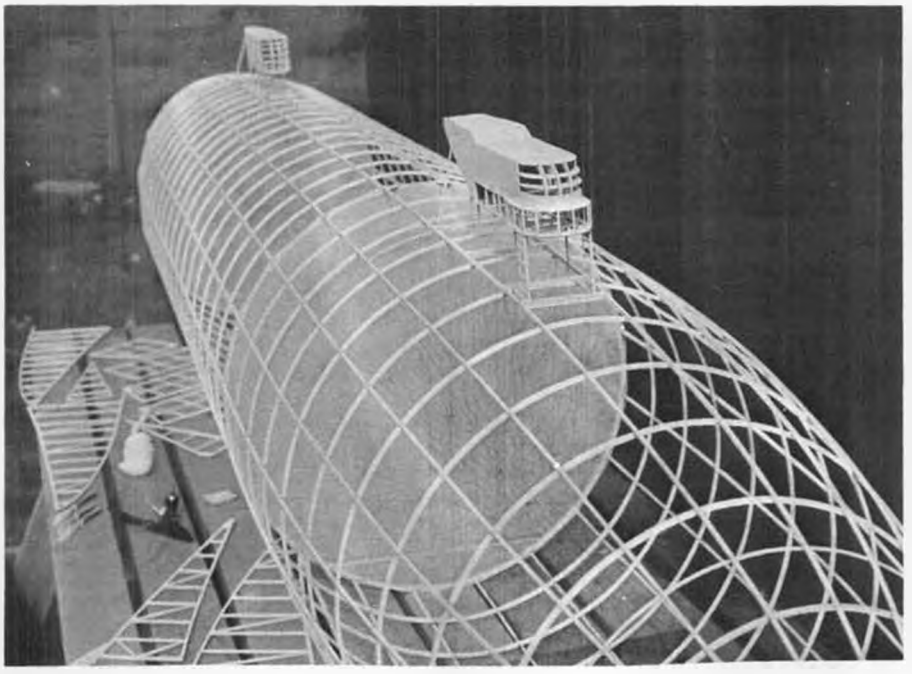
Dear Bill,

Enclosed are the pictures I mentioned to you during our discussion at the (IMS) show last month. These are all the pictures sent by builders who have written to me (usually with problems). I have included their names and addresses on the back of their respective photos. I don't know if any of the photos are printable, with the exception of the B&W from Sweden, which looks pretty good. In addition, I might add that I have received letters from England, Ecuador, France, Germany, Canada, and Romania, plus all over the U.S. The letter from Germany was from Hanna Reitsch, the famed German test pilot of WW-II, who flew the real FA-61. I sent her the issue with the construction article and she wrote to thank me and to say that she had sent the magazine on to Professor Focke, who was still alive at the time. I believe both are now dead.

Also enclosed is a short article on what seems to be the most common problems builders are having with their gyros, as described in their letters, with what I believe to be possible solutions. Also enclosed are photos of my latest gyro, which kind of go with the article.

Skip Ruff

P.S. All the photos were taken by Al Davis.



Over 300 feet of surgical silk provides radial bracing inside Walt Winberg's dirigible. Will use Dart diesel for power. Whatta project! See text.

THE FA-61 IN REVIEW

It has been just over six years since the article on the FA-61 autogyro was published, and I still occasionally receive letters from builders who have constructed the model and are having problems with it. From all the mail I've received, I would have to say that the models all appear to be pretty much individualistic and require slightly different adjustments to make them fly properly. It is difficult to diagnose problems without actually observing

Nicely built version of Skip Ruff's Focke-Achgelis FA-61 twin-rotor autogyro (MB plan No. 475I) by Sten Persson, of Sweden. Original aircraft actually a helicopter. Cut-down prop was only for cooling front-mounted engine which drove rotors by shaft and gear transmissions.

This is Skip's latest version of his original design, powered by a K & B 40 and with constant 2-inch chord rotors.

Going to a tail-dragger landing gear provides a higher angle of attack for the rotors, gets them twirling earlier in the takeoff run.

them, but I have listed what seem to be the most numerous, according to my mail, with my recommendations.

1. Model will not takeoff: That is a simple problem, with several possible causes, but it has been a common one in my correspondence and usually there has not been much else included to provide a clue as to why. My first guess would be a lack of thrust, but any .29-.40 engine should fly the model if it is not overweight. An extremely nose-heavy model will certainly not leave the ground, but I believe most of the problem would lie with incorrect rotor angles. These should be checked and rechecked to make sure they correspond with the specifications shown in the follow-up article in the November 1977 issue of **Model Builder** and included with all plans sold since then. *(Upon investigation, we find it is possible that not all FA-61 plans shipments included the November '77 addendum. Anyone desiring a reprint of this addendum may obtain a copy by sending us a stamped, self-addressed envelope. wcn)* If any of the angles are incorrect, this may prevent the rotors from achieving the proper rpm.

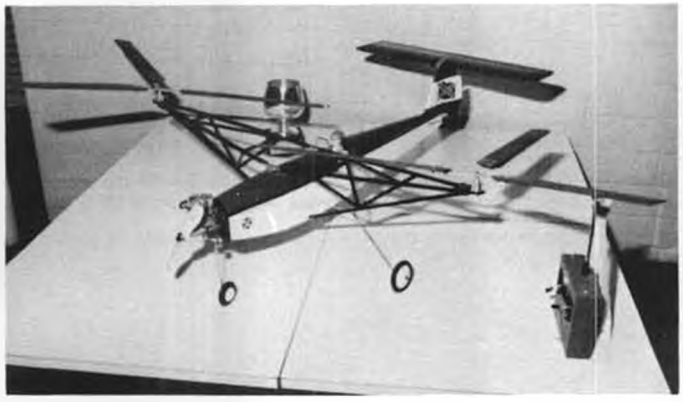
2. Model lifts off, appears to stall, and descends tail-first to the ground: Clearly, this is an indication of tail-heaviness. When a model is tail-heavy, the elevator is required to carry part of the load. The autogyro will fly so slowly and at such a high angle of attack that, if tail-heavy, the elevator can actually stall and allow the tail to drop rapidly. If low, the model may not recover before striking the ground. If in doubt about your model, add noseweight. I might add that my latest gyro exhibited these same symptoms and required a C/G move approximately 1/2-inch ahead of that shown on the plans. Like I said, individualistic!

3. Tipsy ground handling: If field limitations or other reasons prevent you

Bill Rauch, Crofton, Maryland FA-61. Many builders stayed with Skip's marking and trim scheme.

This one by Lennart Brune, Lafayette Hill, PA. These photos all from color prints, causing poor reproduction.

George Tibbett, Halifax, Nova Scotia built this one. See text for more hints from Skip on trimming, etc.



Fred Strauss, Washington Township, N.J., took 2nd place in Sport category at 1978 WRAM'S show with this orange and white FA-61.

from taking off *DIRECTLY* into the wind, even the slightest breeze, I recommend waiting until conditions are better. Any crosswind will cause one rotor to speed up much sooner than the other, ending in a possible rollover. A good modification is to remove the nose gear, add a tail wheel, and move the main gear about 7 inches forward. In other words, make a tail-dragger out of it. This lowers the model and makes it much less tipsy, while increasing the ground angle for a faster rotor spin-up. Since it is only semi-scale, I don't think it will hurt the appearance too much.

4. I've had several reports, and a first-hand experience with another builder's model, of the rotor blades striking the booms while in flight. This usually happens in turbulence when the blades flex up and down. After making sure that the rotor hubs are not made out of material that is too thin or too soft, simply bend more cone angle into the blades. The cone angle is not critical to stability and is there mainly for clearance.

As I mentioned in the follow-up article, after checking to make sure that the rotors are adjusted as per the plans, don't be afraid to use the good old free-flight methods of altering the thrust-line, C/G, and elevator incidence to achieve the proper flight trim.

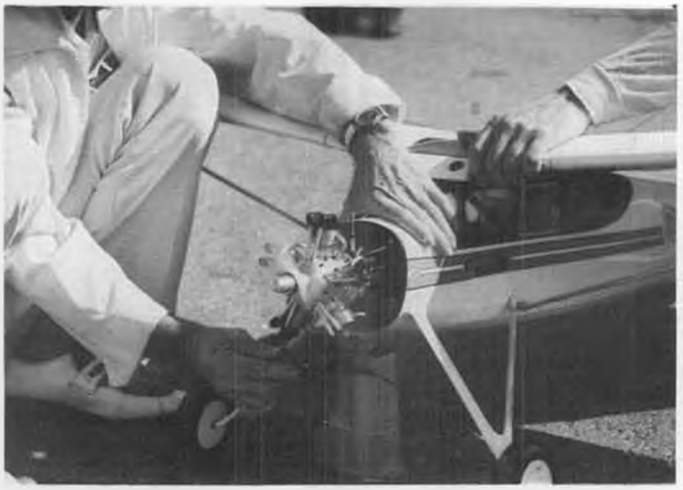
The model flies pretty much like a 3-channel trainer (although slower), with one exception. Climbs and descents are controlled much more with throttle than elevator. Elevator control doesn't do much more than change the angle of attack, making the model fly somewhat slower or faster. In this respect, it is more akin to a helicopter. Also try to limit rudder throw to 3/4 inch or less (total) to prevent over-control.

My latest gyro has a K&B 40, conventional gear, and constant 2-inch chord rotor blades. It required the previously mentioned C/G change and a bit more side-thrust to fly properly.

If you still have problems or questions, drop me a line, along with a stamped and self-addressed envelope. Send to:

Dick Tuck, Portsmouth, England, closely followed Skip's trim and marking scheme.

Yes, it do fly! Skip's new tail-dragger autogyro cruises overhead. Throttle sorta controls altitude; elevator changes attitude, slowing or speeding up forward motion.



Technopower's 5-cylinder radial on the nose of Don Adams' 9-foot span Dallaire Sportster. Purrs like a kitten!

Dallaire on fly-by. Can be pulled into loop from level flight. This is proper type of ship for the radial.

Skip Ruff, 128 Lexington St., Taft, CA 93268.

ONE FOUND, ONE TO GO

On page 12 of the October '78 issue of **Model Builder,** we published two photos of the 1951 Selingsgrove (Pennsylvania) radio control get-together. One photo showed some of the modelers apparently washing up pots and pans after a dinner. Those identified included Carl Schmaedig, Howard McEntee, Norm Tanberg, and Fran McElwee. Two others were listed as "unknown."

We have just received a letter from Joe Stadelman, of Canton, Ohio, who was one of the "unknowns." The photo was recently brought to his attention by another 1951 Selingsgrove attendee, Jim Schenck. Joe, of course, was hoping we could send him a copy of the October '78 issue, and we would have been glad to comply, however, that issue happens to be one of the few that is completely of of stock. We have only the office library copies which cannot be released. If someone out there has a copy of that issue which they can spare, please let us know (don't send us the magazine) and we will put you in touch with Joe.

R/C LTA

Possibly spurred on by reports of the indoor R/C competitions at the IMS Pasadena, California model trade shows of the past three years, there seems to be an increasing amount of interest in LTA (Lighter Than Air) models for radio control. With the exception of several

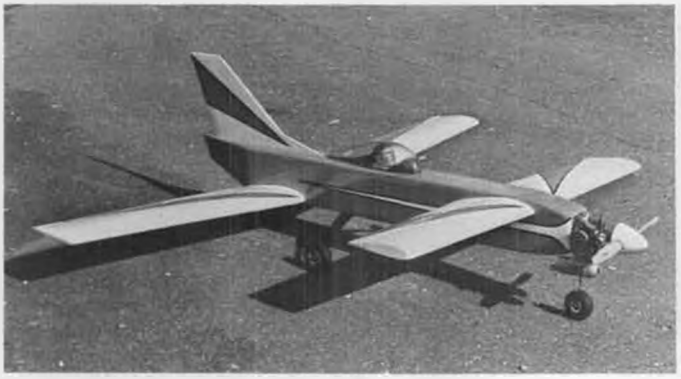
Roger Simpson fires up bottom plugs while Don braces model. Plugs can foul from long idles, need on-board battery to cut in at about half throttle , maybe just for bottom two.

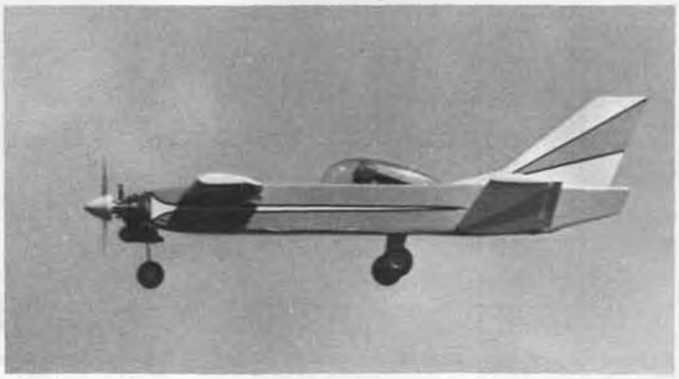
European models, however, most of the LTAs have been blimps, i.e., non-rigid bags full of lifting gas with gondolas suspended underneath. Dirigibles, on the other hand, are rigid structures, covered with non-airtight fabrics, inside of which are containers of lifting gas (of course, everyone knows the story of helium vs. hydrogen and the famous Hindenburg tragedy).

Walt Winberg, of Richmond, B.C., Canada, who occasionally contributes photos of his super-light compressed air powered models, has turned his weight-saving talents toward LTA. Photos this month show his model of the Zeppelin L11. Designed to what he felt was the minimum size to carry a Cannon Miro radio and a Dart Diesel, the model is 13-1/2 feet long and just under 20 inches in diameter.

Continued on page 100

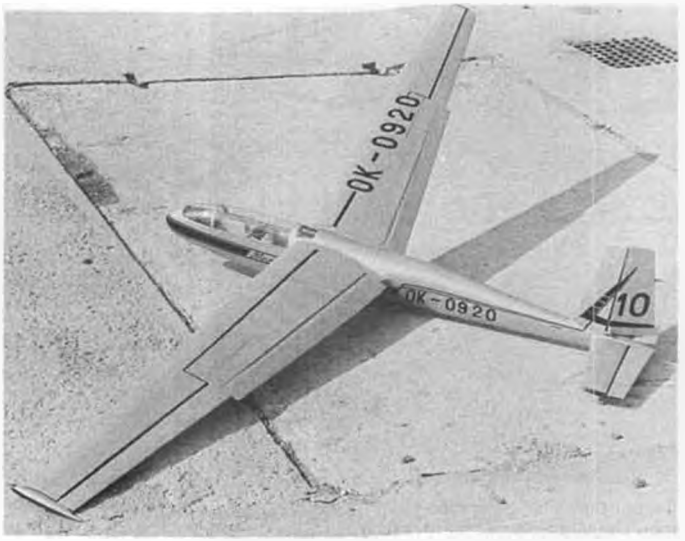
Ye Editor finally flies full house after about 8-year drought. Back to peak (?) after 5 minutes on FB-100 and JR FM 6-meters. Product reviews coming on both.





Interesting canard design by Skip Ruff (He sure enjoys staying out of the rut!) is based on Ace foam wings, is extremely stable and easy to fly. Construction article coming.

The L-13J version of the Blanik. In this powered configuration, the model could be entered in Sport or Precision Scale.



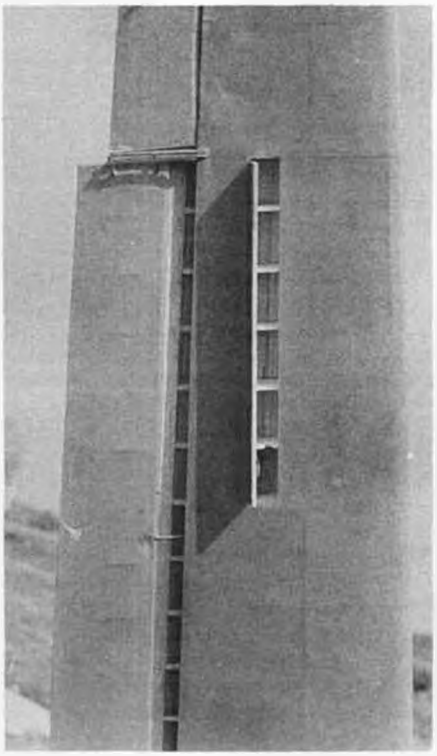
The L-13 with Fowler-like flaps extended. These are not detailed on plans, though enough info is given for scratch building.

BLANIK L-13

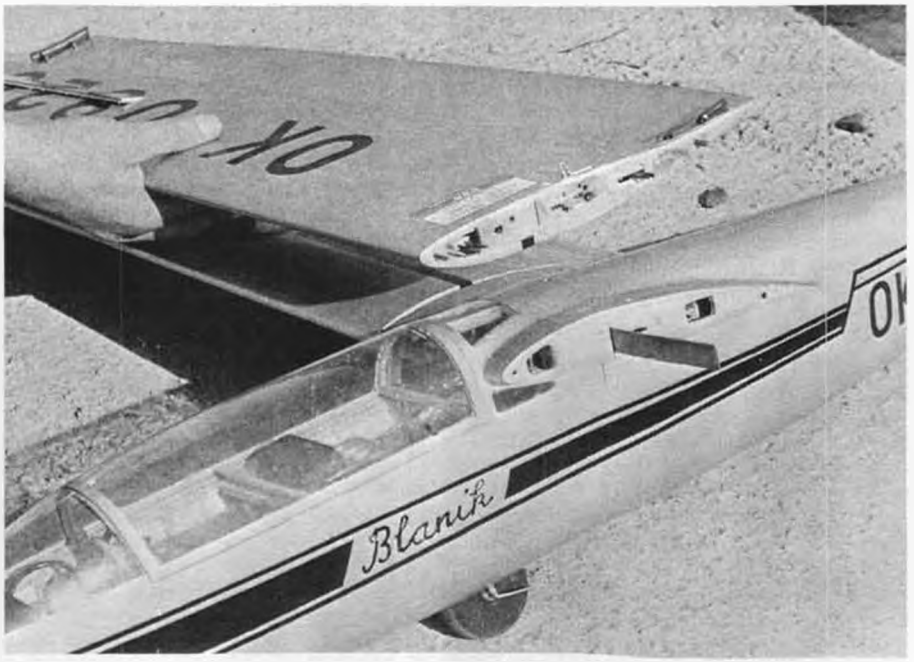
By L. HOUHA . . . We saw this model as published in the Czechoslovakian model magazine *MODELAR* and had to have it. The plans and original photos were furnished by *MODELAR's* editor, Vladimir Hadac, and the text was translated by Jiri Havel. We tried not to change the character of expression when proof reading.

• The Blanik glider is one of the most popular Czechoslovakian aircraft. Its creation started in 1953, and the first test flight of the prototype was performed in the spring of 1956. Since that time, it has been used on many airfields of the Czechoslovakian Svazavm aeroclub and in many other countries of the world, and serves for basic training as well as for contest flying. It has been used to achieve some outstanding performances in Czechoslovakia and even abroad, and is a holder of Czechoslovakian and world records. It holds an unofficial world record in total number of produced gliders, which is now over 2500, and another world record in the time of production. It is a really unique success which is a credit to its outstanding quality of construction.

Blanik is a double-seat, all-metal glider with classic tail surfaces, and a wing with negative arrow (swept forward) shape. Wingspan is 16.2 metres, length is 8.4 metres. The Czechoslovakian version, with additional engine, is equipped with a three-cylinder JAWA M 150 engine placed on a pylon above the fuselage. Detailed technical specifications, drawings in scale 1:50, and photographs of both versions of the Blanik glider can be found in *Modelar*



Bottom view of wing panel shows spoiler and flap extended. Flap runs out on track at each end. Spoilers top and bottom.



With one wing removed, the various control linkages are displayed. Note that primary support joiner is flat spring steel. Mold will have to be carved to form canopy unless a stock item can be found to suit.

magazines No. 12/1962, No. 10/1969, and No. 2/1979.

The Model Blanik is designed as a 1:5 scale model. Both halves of the wing and elevator surfaces are removable from the fuselage, as well as the pylon for the engine. The interior of the cockpit is not equipped in detail with scale instrumentation, the wheel is not retractable, and even the lift flaps are not functional because their efficiency on the model is not too remarkable. For those who wish to equip the model with flaps, there is a shape of flaps and their extended position shown on the drawings. The wheel is shown in its retracted position because the visible part of it is quite enough for landing.

Prototype of the model has been constructed and tested by Mr. L. Houha, and the latest version of the drawing has been issued on the basis of his experiences.

For control of the model, four-channel R/C equipment is required (the prototype used Varioprop). You will not find the placing of servos, receiver, and batteries on the drawing, because it depends on the type of radio which would be used. Having this in mind, it is necessary (before starting the construction) to decide about the placing of all R/C parts and to check the movement of servos in comparison with the length of control arms to assure required movement of control surfaces.

The Blanik is quite a complicated model, suitable just for experienced modelers. Its construction without previous experience with similar larger models is risky, and could waste your time and material. *(Put differently, but nevertheless right to the point. wcn)*

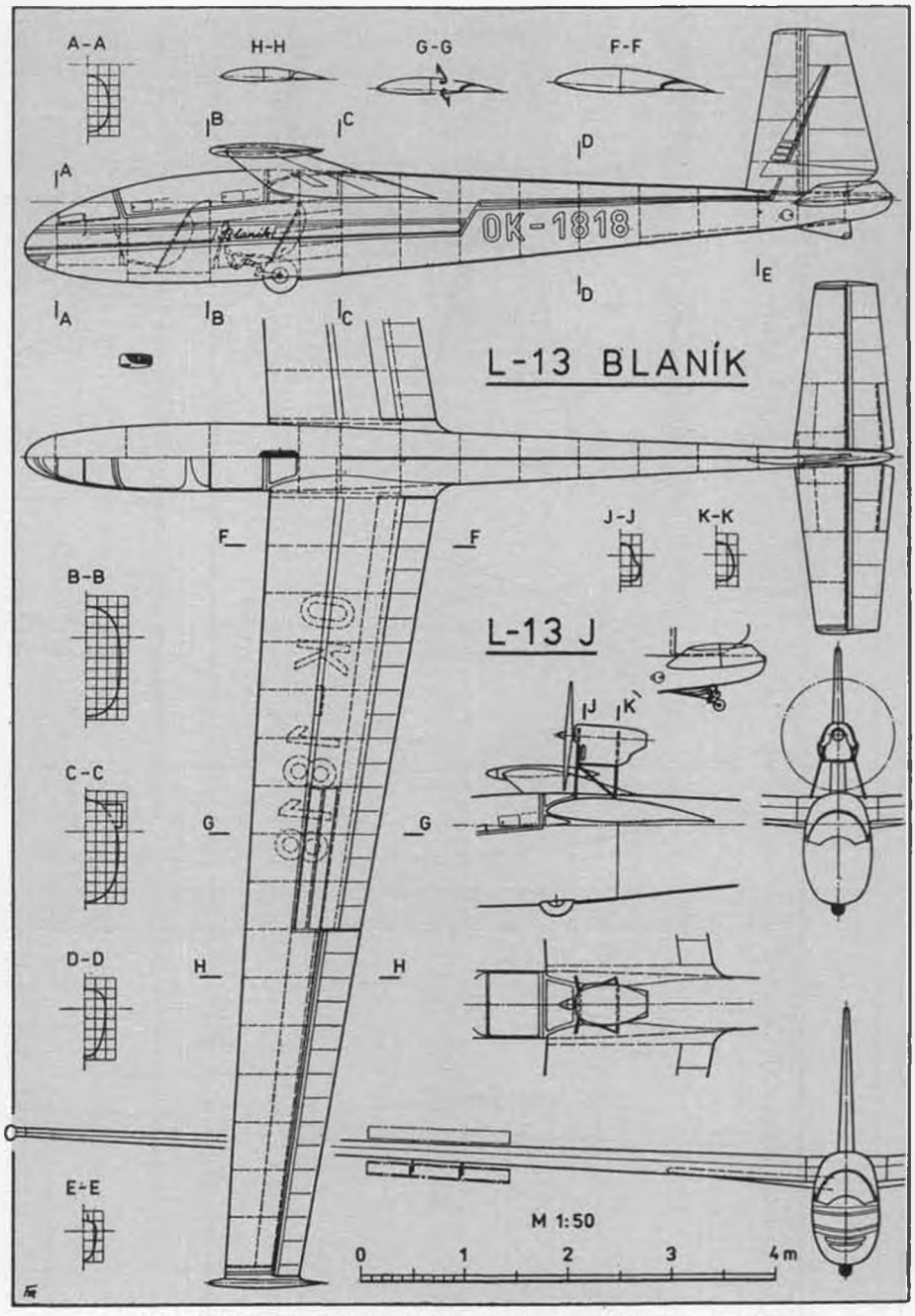
There are two versions of the model on the drawings and described in the construction guide. First one is the classic glider with marking L-13, second one is the glider with additional engine on the pylon, and bears marking L-13J.

CONSTRUCTION

Before starting construction of the model Blanik, it is recommended to study the drawings and construction guide carefully. Pay attention to construction itself, and as well, to all the construction materials, which have to be first class quality. If you should decide to build a precision scale model with all construction details, you would first of all need to collect the additional drawings and photographs for one particular full scale aircraft and fulfill all missing details into the construction drawings of the model. Some changes of the drawings could even be caused by the type of R/C equipment used.

WING

The wing is composed of two panels which are connected to the fuselage by means of metal couplers, inserted into pockets in the wing and fuselage. The position of both wing halves is assured by wooden locator tabs in the fore and aft parts of the root rib. It is necessary to pay attention to symmetrical alignment of both wing halves and the shape of the airfoil must be maintained, because only with the proper airfoil will the wing have the expected performance.



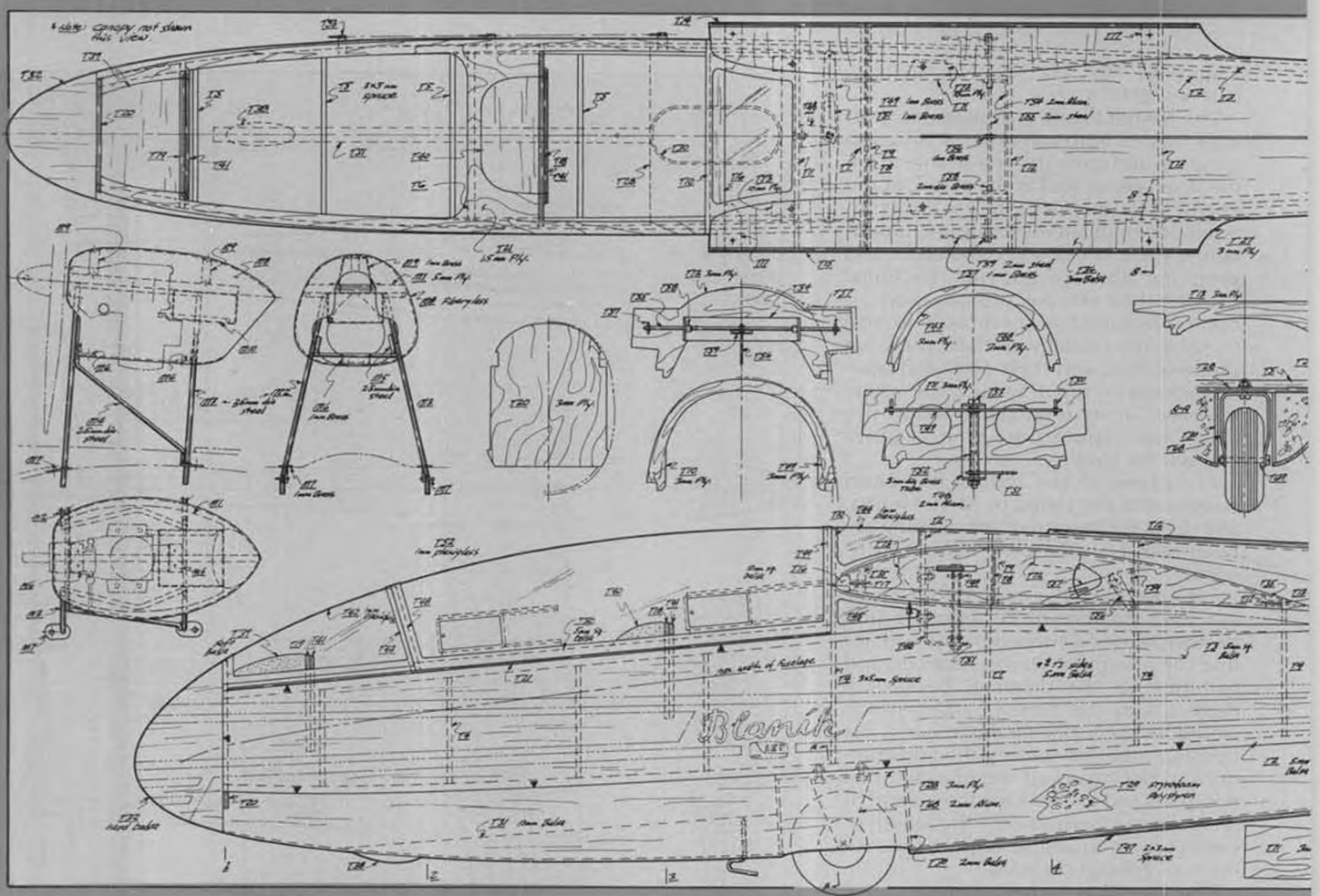
SCALE VIEWS FROM FEBRUARY 1979 *MODELAR* MAGAZINE

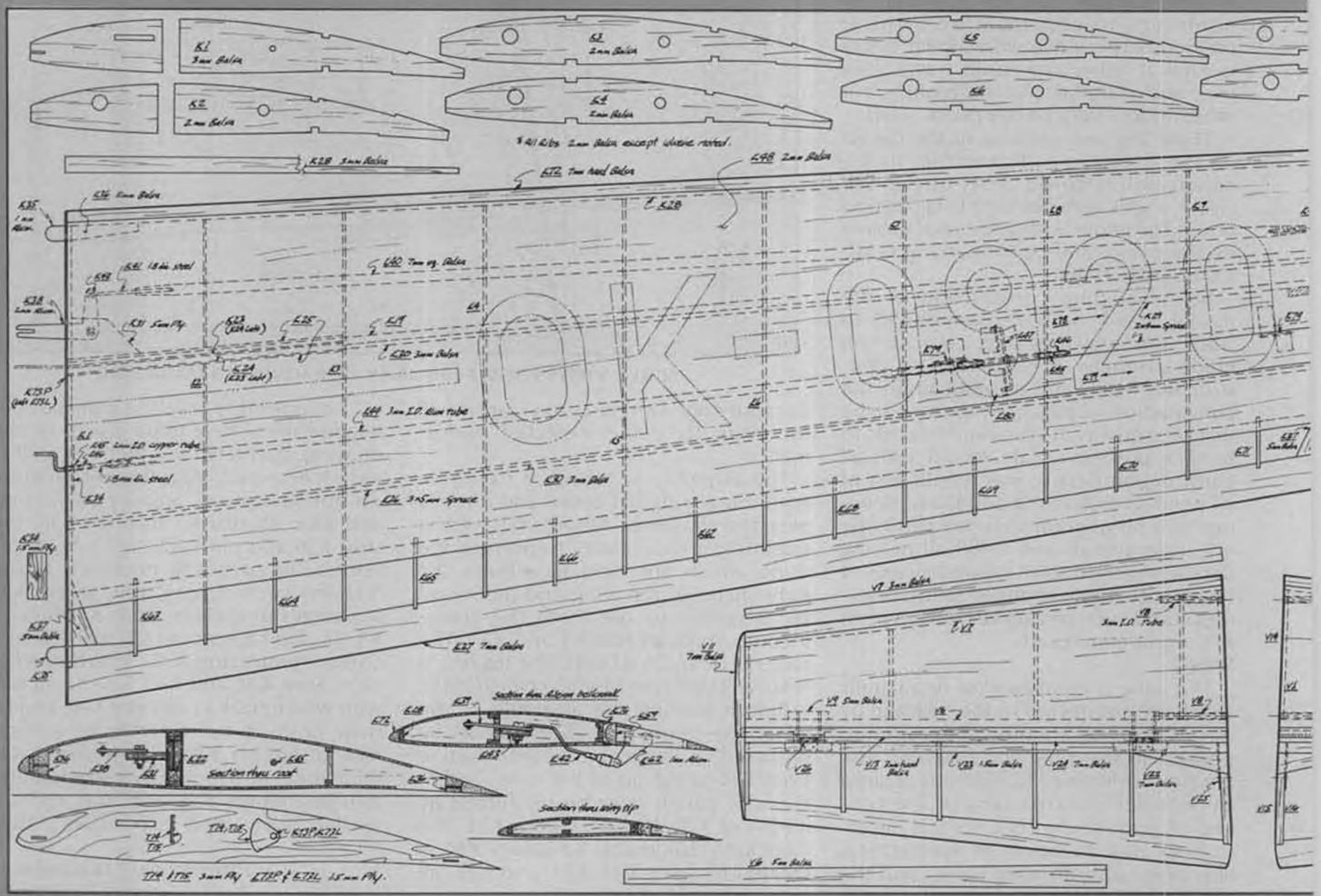
The assembly of the wing has to be done on a truly flat board and directly over the drawings. Before starting the assembly, it is necessary to prepare the shims which are used to achieve the right shape of the wing and their sizes are possible to see from the cross-sections through ribs K1 and K17. The root rib is NACA 63A612, the tip one is NACA 63A608 (see *Modelar* No. 9/1975).

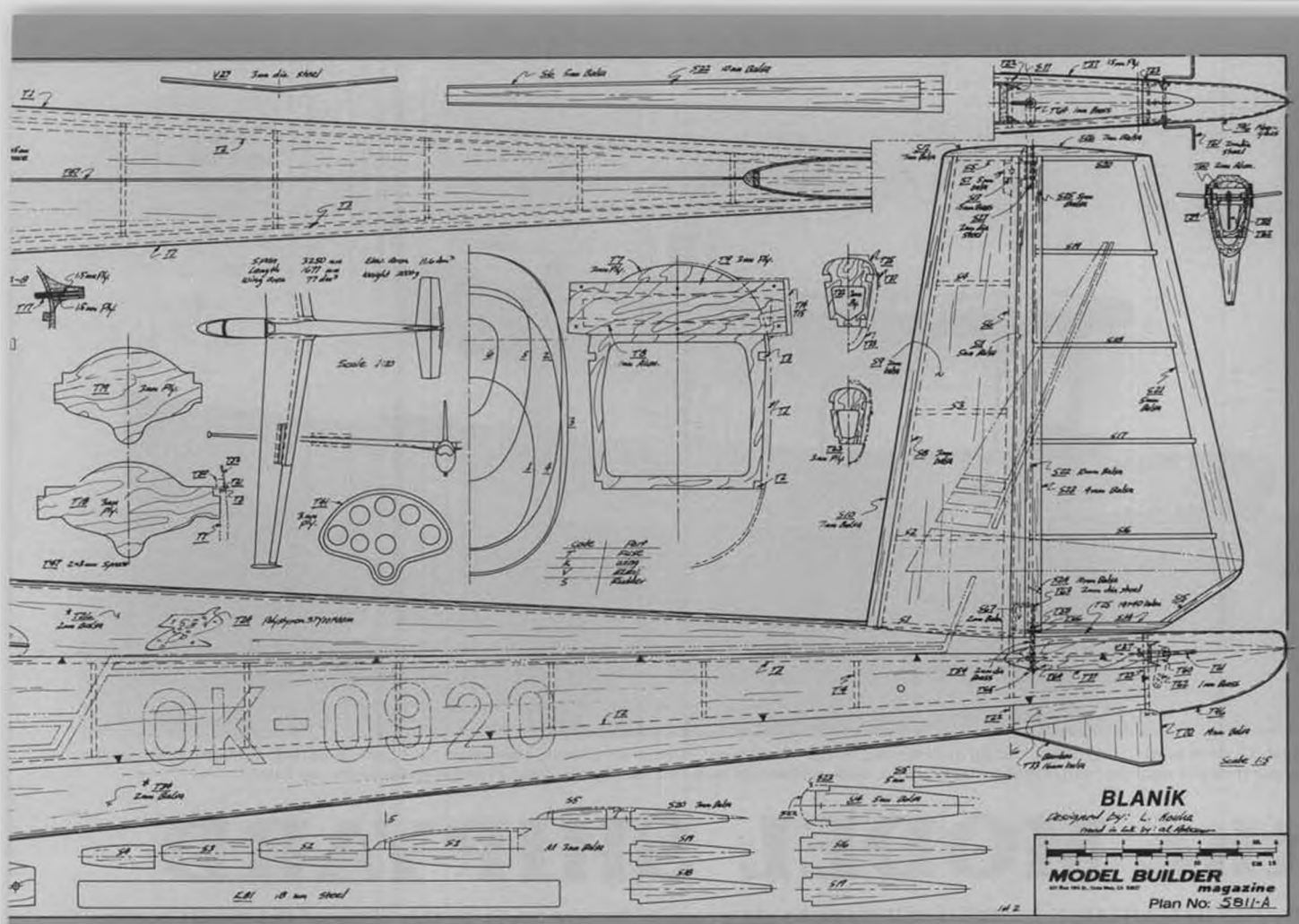
Before starting the assembly of the wing, the main spar (K19) has to be prepared. It has to be thinner starting from K10 to the tip of the wing, and in the root part it must be reinforced by means of K20, K21, and strips K22. The "pocket" for metal couplers K81 is created by parts K23, K24, and K25; all have to be glued by epoxy.

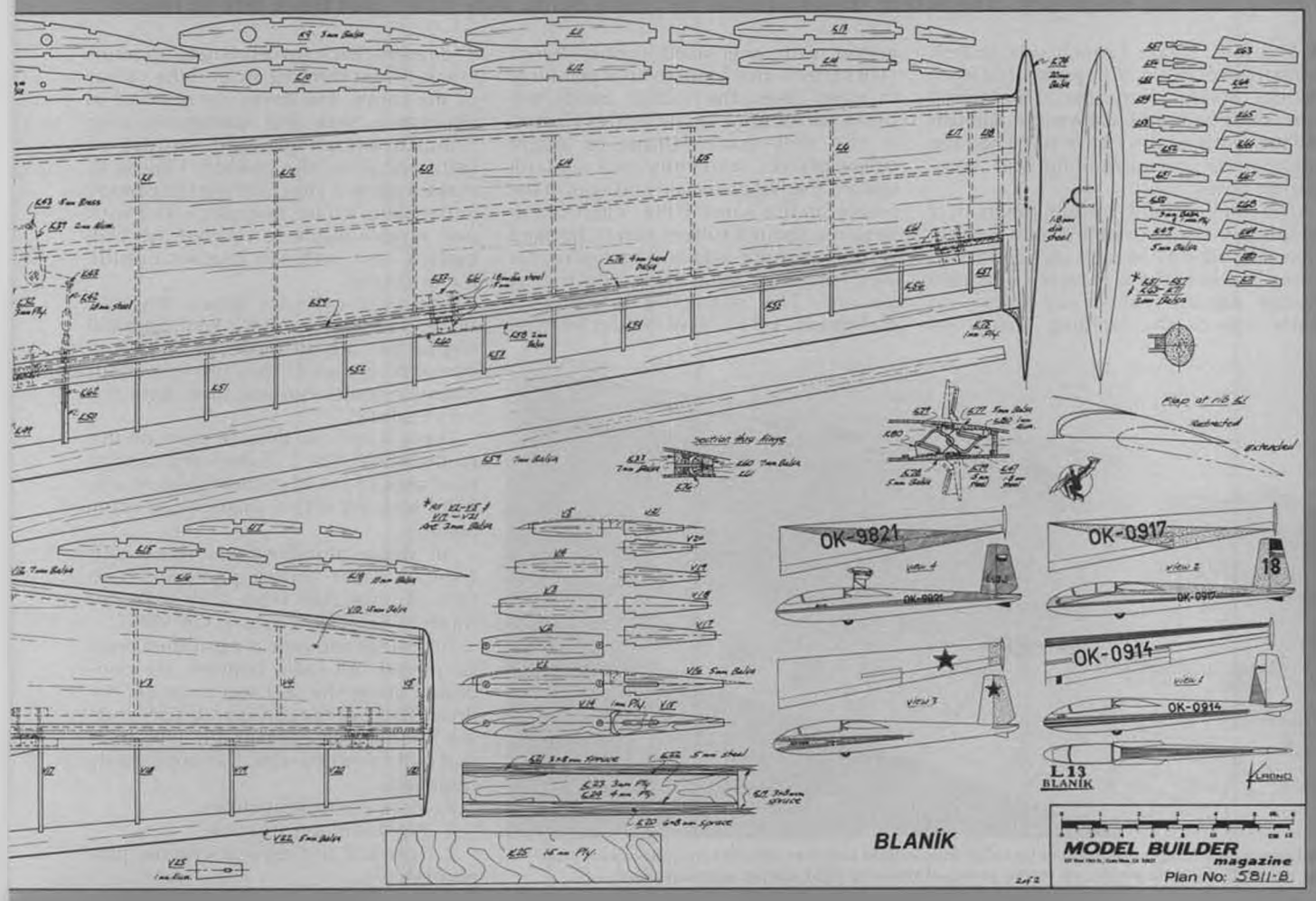
The assembly itself is normal. All needed shims have to be placed on the drawing, part K19 over them, as well as parts K26 and K27 (together with aileron, do not cut it now). Step-by-step, insert and glue all ribs K1 through K18, top strip K26 and parts K28 and K29. Apply reinforcing parts K30, holders (K31 and K32) for control arms, reinforcing K33 for hinges of ailerons, parts K34 for ribs K1, K4, and K8, tongues K35 with K36 and corner reinforcing K37. Attach mechanism arms K38 and K39, insert rod K40 with wire ends K41 and rod K42, and fix their position by soldering of washers K43. Insert bar K44 with bearings K45 (glue them into the rib by epoxy), solder the positioners K46 and arm K47 for spoilers (care about its position!). After

Plans on next two pages.
Text continues on page 80

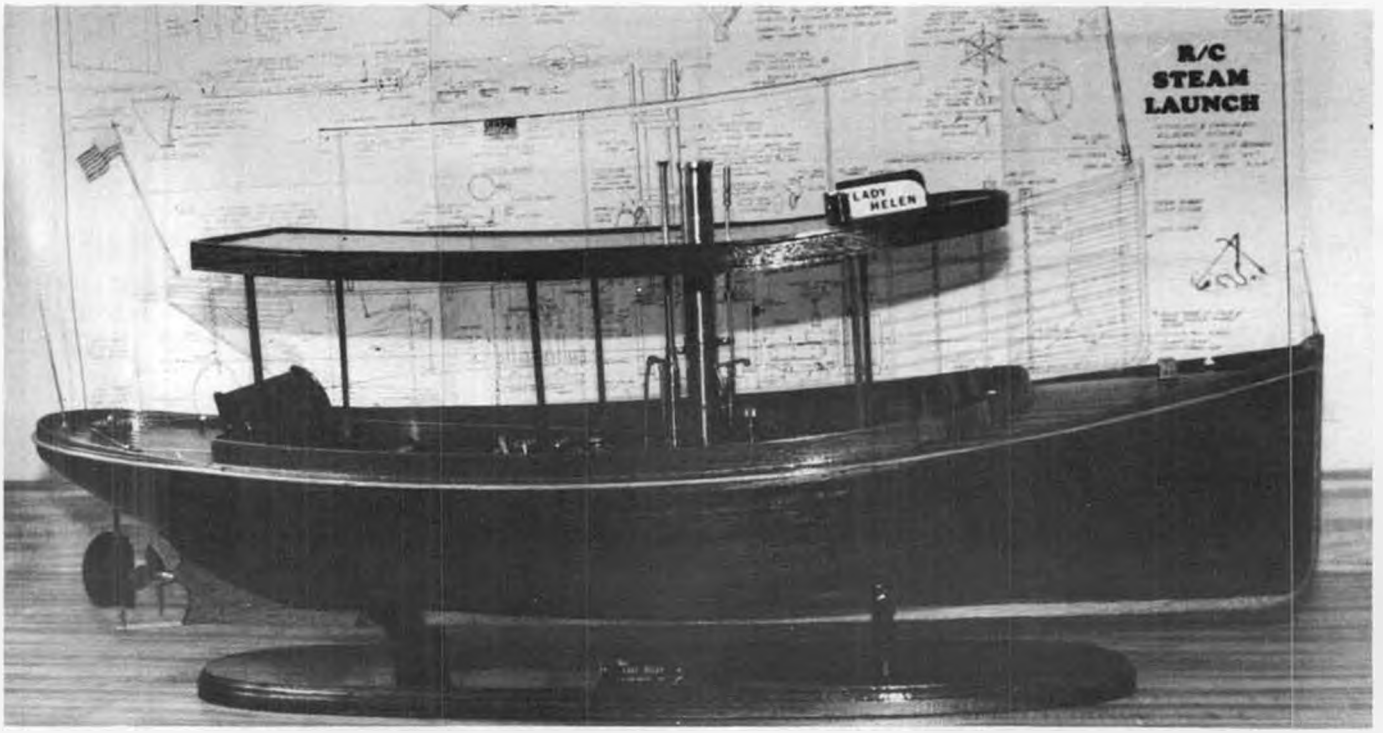

Blanik







FULL SIZE PLANS AVAILABLE – SEE PAGE 100



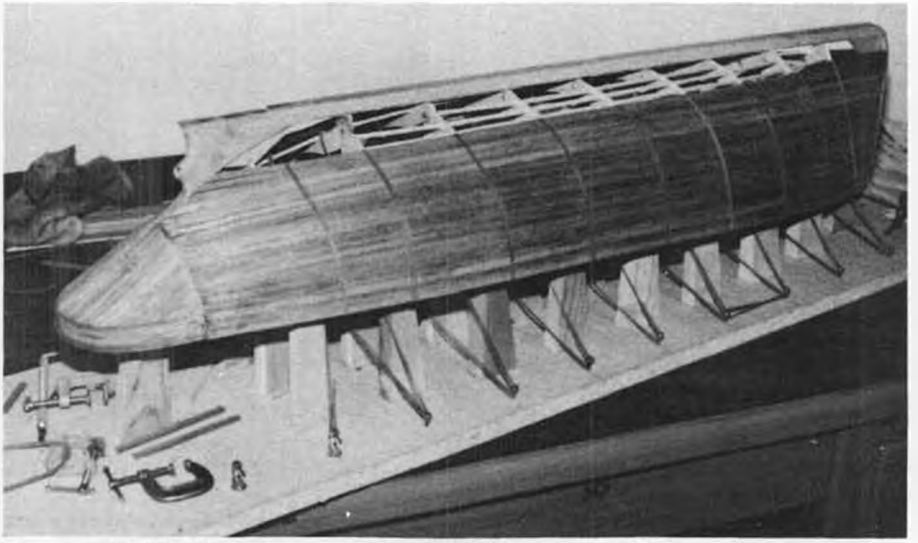
Hugh Garlock built "Lady Helen" using our Plan No. 9783. Though not mentioned in text, plans must have been modified, as boat is seven inches longer than the original. Hull is mahogany planked, deck is alternate teak and mahogany. Twin-cylinder steam power by Saito.

the MODEL SHIPYARD

By HUGH GARLOCK . . . We're still trying to get a regular feature going on this phase of the model boating hobby, without much luck. The author shows us what he's been doing. Any others out there care to report?

• The R/C Steam Launch was scratch built from plan No. 9783 purchased from *Model Builder* magazine. The launch was designed and drawn by Kilburn Adams, with whom I have since had the pleasure of corresponding and comparing notes.

The hull is built upside down in a building board. I used 3/4-inch particle board for rigidity, braced each form with three braces each for accuracy, and used twelve equally-spaced cup hooks on each side of the building board, together with over-sized rubber bands (1/8 sq. by 6-inch loop) to hold planking. In most cases, the rubber bands will prove far superior to any kind of clamps, in that they don't damage or indent other planks, and they pull a plank toward the last plank laid and against the frame at the same time. Each plank requires about 8 rubber bands, hooked to the opposite side of the board, for wet forming, measuring, drying or gluing. The planking is entirely mahogany, 1/8 x 1/4, with sides beveled 7 degrees each to eliminate exterior cracks when forming around the radius of the forms. The decks are planked in alternating teak and mahogany, over 1/8-inch aircraft plywood. Instead of using fringe on the canopy, I chose to make a pattern after forming the canopy and making a solid, one-piece skirt, with one groove inside to receive the 1/16 canopy roof, and two grooves outside for ornament.



Mahogany planking job was eased by using long rubber bands stretched across hooks on building board. They hold planks on forms, also pull them up tight against previous plank.

The twin-cylinder steam engine, boiler, alcohol burner, and optional smoke pot are all made by Saito and perform very well. They provide about twenty minutes running time. Sound is very realistic.

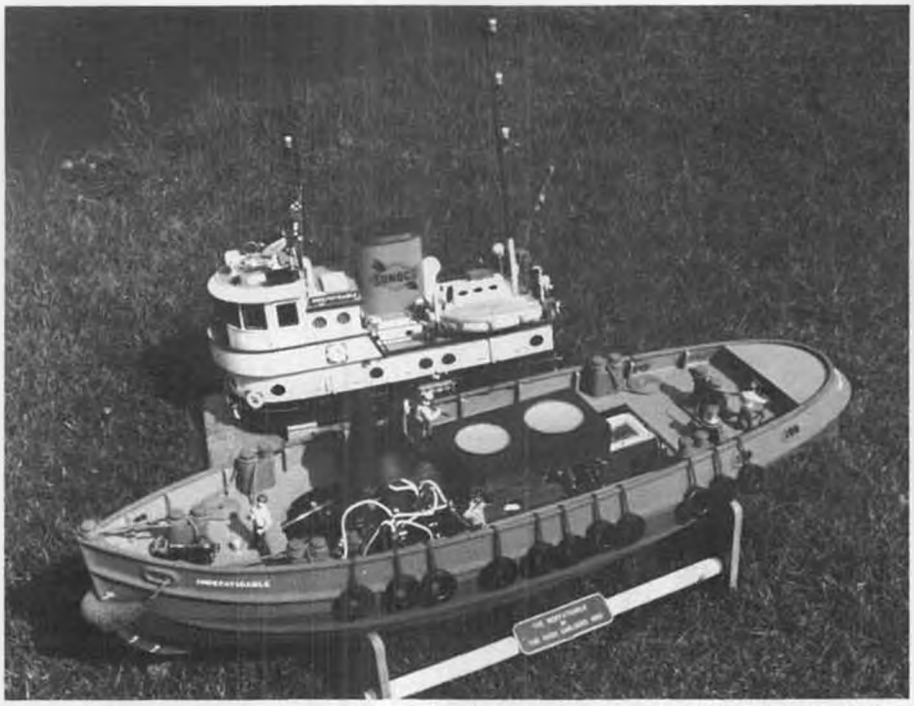
There is not one drop of paint on the entire model. The hull, deck and canopy have about 18 to 20 coats of clear epoxy, hand scraped with a single-edge razor blade.

All steam plumbing was done with 1/8-inch taper thread pipe and pipe fittings, available from Coles' Power Models, Box 788, Ventura, CA 93001.

All fittings and pipe are polished brass lacquered. All radio controls are concealed under the rear seat or under the floor. Three of the canopy support posts are hollow, and contain the light leads and radio antenna wire. Canopy is easily removed.

Remote control functions:

1. Right and left steering.
2. Forward and reverse engine, plus neutral.



Interior of Hugh's Harbor Tug is really loaded with operational goodies. Note ship's bell. Basic boat is a Hartman R/C Fiberglass unit. We're not sure if they're still available.

3. Proportional speed, both directions.
4. Steam whistle.
5. Canopy lights (under canopy).
6. Red and green running lights.
7. Searchlight.

The launch handles very well, enhanced by the proportional speed. Total building time in hours is unknown, but about one year of spare time went into the building. Needless to say, the one criteria is patience and planning ahead of each operation. I am very fortunate in having the use of a private lagoon on a weedless lawn about two city blocks long, with no weeds or algae. It is just outside of the city and traffic free, where my wife and I have enjoyed many hours of model boating.

★ ★ ★

This tug was taken from a Harbor Tug in the Los Angeles area named the "Douglas Greg." It is an R/C enthusiast's dream in the large number of remote functions that can be employed with practical realism in one model. Having been into radio control since the early days of home-built single-channel transmitters and receivers, this model holds more interest with the general public than any other I have built.

Basic fiberglass hull, deck, super structure blanks and lead crew figures castings, were purchased from Hartman R/C Fibreglass, 233 Melrose St., Argenta, IL 62501. The parts obtained from Hartman are well made and will machine to a good fit. Plan drawings are well detailed.

Remote Control Functions:

1. Full proportional forward and reverse speed plus neutral.
2. Full proportional steering.
3. Striking ship's bell.
4. Motorized Radar antenna and RDF radio loop.
5. Electronic siren, whooper or conventional.
6. Real twin air horns.
7. Fire monitor (or water cannon) shoots 1/8-inch stream of water about 20 feet.
8. Red and green running lights.
9. Five running lights on the mast, electronic flashing strobe light.
10. Cabin lights (4), gangway lights (4).
11. Search light and two work lights.

There are nine crewmen, including cabin boy with dog. The model took about four months of spare time, total hours unknown but very rewarding.

The tug is mostly 12-volt DC, with two Astra 12-volt Gel-Cell batteries in parallel to provide 10 amps. Motorized radar and radio loop operate in a 4-volt tap off

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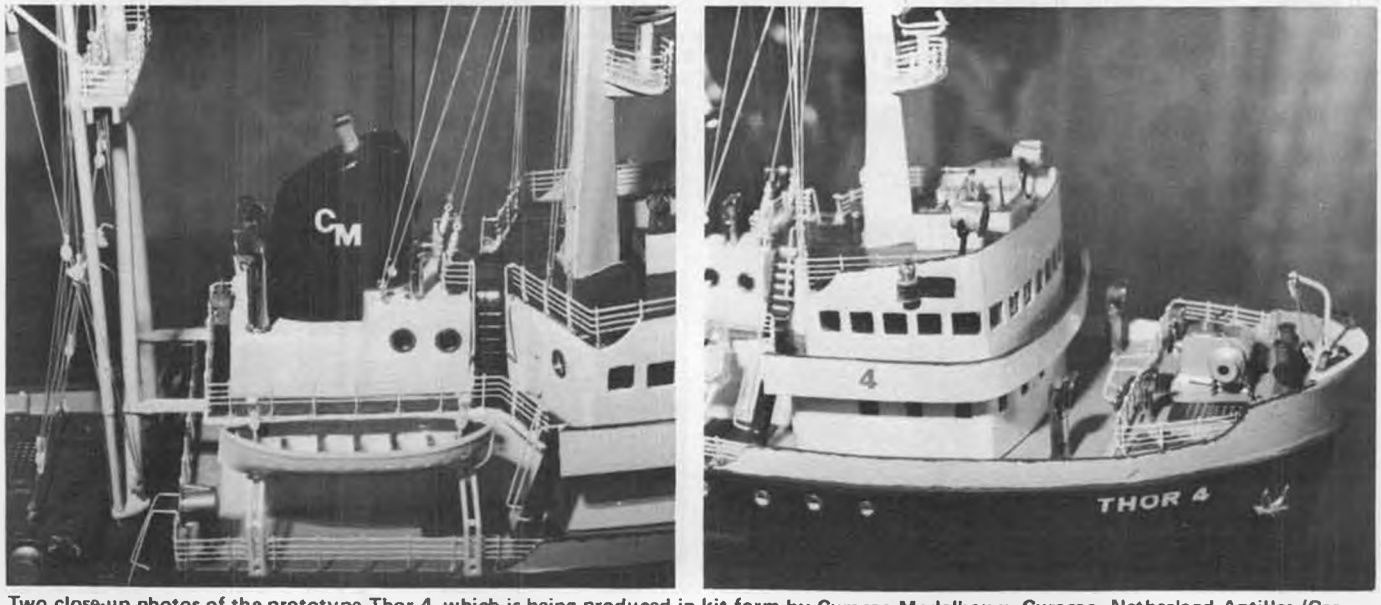


Two close-up photos of the prototype Thor 4, which is being produced in kit form by Curacao Modelbouw, Curacao, Netherland Antilles (Caribbean). A seagoing tugboat scale model, it's about 25 inches long, uses two-channel radio. Lots of nice detail.

Apply decals and stick-back mylar in similar manner. Decals slip off paper backing after soaking. Sticky mylar is slid into position on detergent/water mix.

Once in position, remove moisture from under decal or sticky mylar using absorbent material; stroke from center outward, forcing out air bubbles.

MARKINGS for MODELS

By GEORGE A. WILSON, Jr. . . . A phase of model building not often covered in detail, this is the first of two parts on the subject. Next month we'll present a summary of marking rules plus letter/number patterns.

INTRODUCTION

This article is specifically concerned with identification numbers and letters. However, the techniques discussed are equally useful in applying other decorative markings that you may choose for your model. The article describes methods of applying letters and numbers but will not attempt to cover color choices. A fine source of information on the latter subject is Bob Lopshire's book *Radio Control of Miniature Aircraft*. Although primarily for the sport flyer, the article will be of help to scale builders also. However, the marking problems of the scale builder are most often unique to the particular aircraft he is building and, therefore, most difficult to handle in a general article.

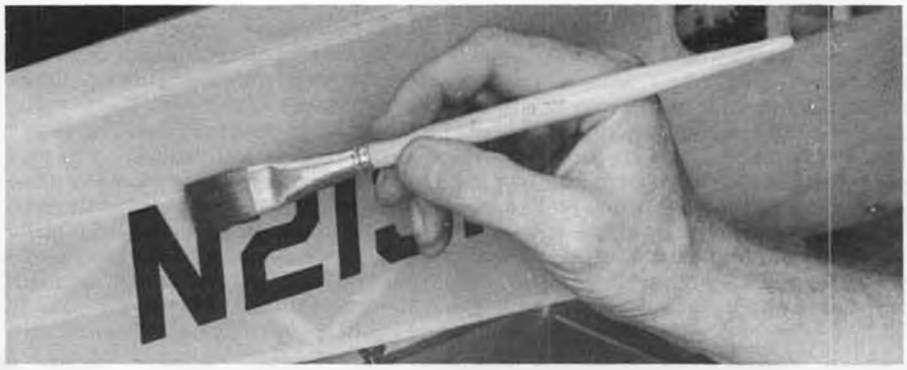
Like most things, with a little study and experience, the problems of applying numbers, letters, and other markings become relatively simple. From a realism standpoint and for just plain improved appearance, the addition of these details are well worth the effort.

This article is in two parts. The first is on the techniques of applying markings and the second covers the construction of the two basic letter/number sets that are most popular in aircraft markings.

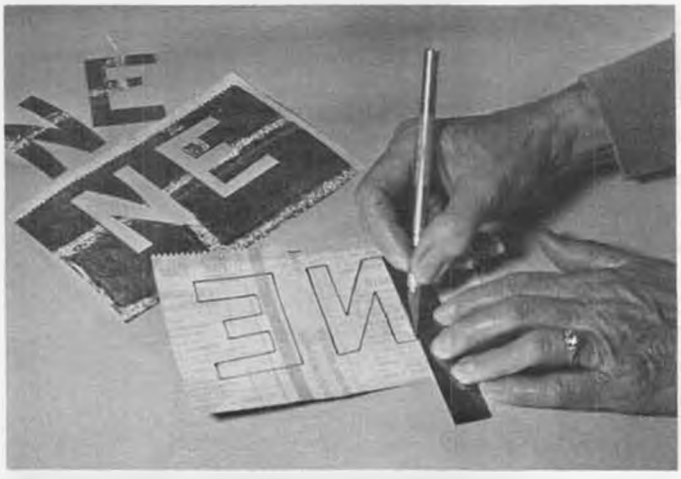
PART I

TECHNIQUES OF APPLYING MARKINGS

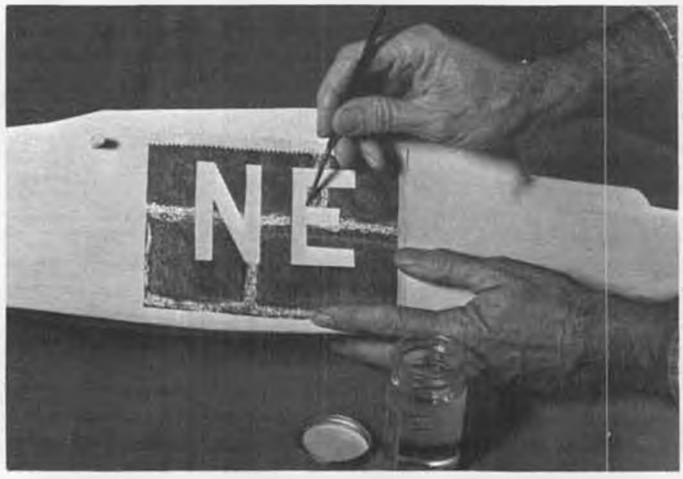
There are two basic techniques for applying markings: (1) the use of appli-



Protect decals and stick-ons from fuel with a clear coating. Polyurathene varnish is a good coating for most materials. Whatever is used, it must not dissolve marking, but also must stick to the marking material. Check before using.



Sticky shelf paper makes good stencil material. Trace pattern (backwards) on back and cut out. Patterns can be "Internal" or "External". Detergent/water can be used for positioning.



Seal stencil edges with clear sealer which is compatible with finish paint. Clear finish may bleed under stencil, but won't show. Color will then not be able to bleed, causing fuzzies.

Masking tape is a good guide for positioning stick-on markings. Won't work for decals because of overlapping clear material on decal. Same problem with removing guide lines.

Tissue letters can be multiple cut by folding tissue accordian style, then cutting through several thicknesses. Saves time if you're building three planes at once!

ques, and (2) painting. Appliques consist of cut-outs cemented on, pressure or heat sensitive materials, and decals. Painting may be done free hand using guidelines, but is much more easily done using either inside or outside stencils. These techniques are discussed in detail further on in this article. Decals may be purchased or homemade; there have been articles published in the model airplane literature on "do-it-yourself" decals.

FUELPROOFING

If hot fuel or any solvent type fuel (check gasoline if you use it; it's a good solvent for many materials) is to be used, make sure your markings are protected properly or are by themselves impervious to the fuel. "Fuelproof" decals and marking strip material are available. Sometimes pressure sensitive materials themselves are fuel proof, but their adhesives are not. Fuel will creep under these and cause them to peel off if the edges are not protected. Polyurethane varnish is a good fuelproof coating that adheres well to most materials. It can be used to coat materials that are not fuelproof.

Do a little testing if you are not sure of your materials. Don't risk the time and effort of a good marking job and have it turn into a sloppy mess when you fly the model.

The techniques described in the following material cover the basics. No attempt has been made to be all inclusive. In many cases the basic techniques can be extended to produce some very fancy markings. Typically, a smaller set of letters can be installed on top of a set already affixed to the aircraft. This can provide a uniform border effect if the second set is centered on the first. If the second set if angularly offset, a shadow effect can be created.

APPLIQUE TECHNIQUES

The basic techniques are cut-outs cemented on, cut-outs of pressure or heat-sensitive materials pressed or ironed in place and decals that are soaked (with water) from their backing and "slipped" into position on the model. Cut-outs cemented on are the lightest and least expensive marking. They are particularly appropriate for rubber powered models, but are useful on all sizes and types of models. Frequently, Japanese tissue is used; this material provides some flexibility to negotiate curved surfaces. In any case, it may be necessary to slit or "dice" the edges of cut-outs to make them cover compound curves without wrinkling.

After choosing a contrasting color and selecting your cut-out material, the first step is to make a pattern that can be traced. The letters and number with the second part of this article can be used as a starting point. For permanence, it is best to cement them onto card stock and then cut them out with scissors and/or a sharp razor knife, trace around the pattern with a soft, sharp pencil. Then cut the markings out, making sure you cut the pencil marks off as you go; erase (carefully) any pencil marks that remain. Alternately, you may cut around the pattern directly with a razor knife. This must be done carefully to assure that the pattern or tissue does not move. A real sharp blade helps. I have successfully simultaneously cut several

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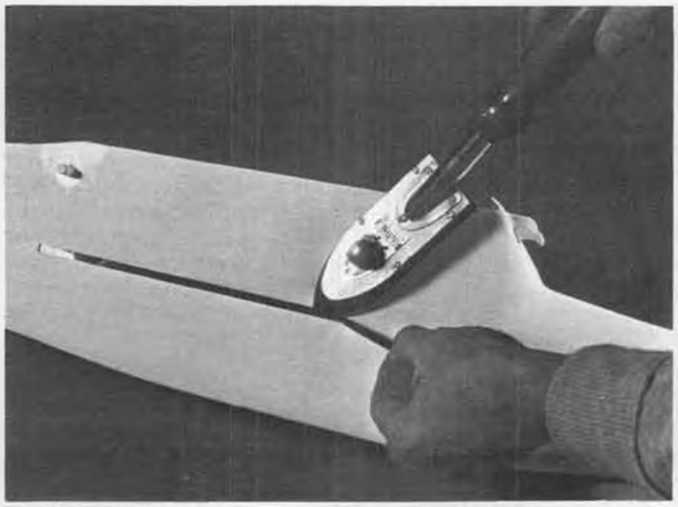
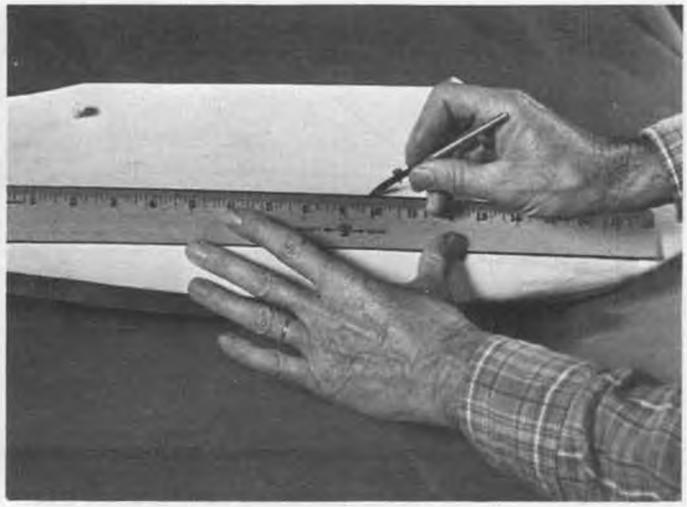


Iron-on material is great for markings. Use manufacturer's directions concerning amount of heat to use. Seal edges well to avoid fuel seepage under markings.



Drafting pen makes clean lines of varied widths. Ink can be used, but a diluted solution of the finish being applied works best. If material is fast drying, work fast!

THORNBURG AT LARGE

"HAPPY LANDINGS" are more than just luck. Our Glider Guru gives you some tips on how to make that model slide right up to your toes. That "window" that Le Gray mentioned years ago is still a good idea . . .

• Probably the toughest part of learning to fly an R/C sailplane is the landing. We all get a bit more nervous when we see our latest creation approaching Mother Earth . . . after all, it's not the air but the *ground* that destroys 90% of our models. (Of the remaining 10%, half fold their wings on tow, and the rest are slammed to death in screen doors and car trunks. National Safety Council statistics.)

I've seen a lot of pilots who flew like pros until their ship got down to about phone-pole high. Then the panic sets in. Their eyes cross, their brains turn to mush, their rudder control mysteriously reverse itself, and their elevator . . . appropriately enough . . . starts waving goodbye. Several wild gyrations and a loud WHUMP later, they're on the ground . . . too relieved to think back on what went wrong, or what they might do to avoid that panic next time.

So I've been watching some of these good folk surreptitiously . . . mostly from behind parked cars . . . and doing some of their thinking for them. And it turns out that the mistakes they keep making are both few in number and easily corrected. With just a little help, just a few suggestions, most of these wild "arrivals" can be turned into happy landings.

The first thing to think about is that elevator. How come it goes so wild down close to the ground? Is ground turbulence really responsible? Or is it simply pilot nervousness?

"Ground turbulence" really exists, of course. And it's much worse on some fields than others. It's caused partly by uneven heating of the earth, partly by obstructions (trees, fences, hedges, large sedentary modelers) directly upwind of your landing area.

For years I flew on a big alfalfa field that was part of the Sonoma (Calif.) State College campus. It was wide open for a mile or more upwind, a regular paradise for free flight and R/C. But whenever the sun shone, which wasn't often, the ground turbulence on that field made landings a joke, even for the experts. You simply could not practice for contests there; the little thermals constantly forming in the tall brown grass would toss your ship around like a volleyball anytime you got below fifteen feet. For landing practice, I moved to the campus soccer field, full of closely-cropped, heavily-watered green grass. It was a smaller field, and full of goalposts and such, but at least you could count on smooth, consistent air for every landing.

So your glider's nervousness when it nears the ground may not be all your fault. Some fields do have the built-in jitters. Especially if you fly alone, and have no other modelers on the field to compare notes with, you might want to try what the British, bless their old souls, call "a change of venue"; find yourself a different field, and shoot a few landings on it.

If your plane still does St. Vitus' dance in its landing pattern, then chances are the problem is mostly in the pilot. ("We have met the enemy," as Pogo put it, "and they is us.")

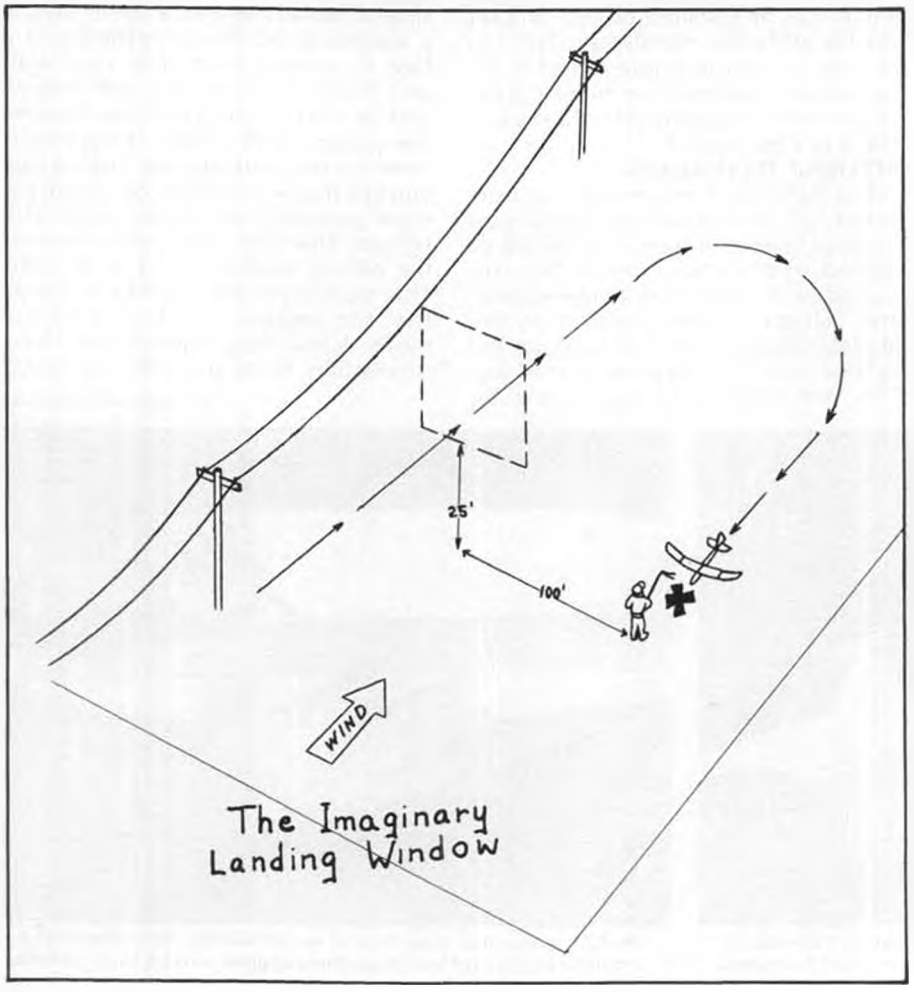
So how do you go about programming yourself to make better landings? Because that's essentially what you want to do . . . program your responses. Shooting a landing is just like riding a bicycle; once you learn how, once you get your body programmed for it, you can never quite forget the technique. You may get rusty if you don't practice for a while; you may never be as good at it as Charlie Puckerfactor down the street; but at least you'll always be able to do it.

You start the programming process not with yourself but with your sailplane. The first question to ask is: does it fly hands-off? What does it do when, at a safe altitude, you simply take your hands off the sticks and allow it to "freeflight"? Does it gradually go into a series of stalls? A dive? A spiral to left or right? Or does it continue flying normally on its own . . . with perhaps a wide turn pattern one direction or the other, but a safe and realistic airspeed, free of any stalling or diving tendencies.

The basic rule for learning to land an R/C sailplane is this: *If it won't fly itself, you'll probably never learn to land it.* A good "landing trainer" is a model that's rock-stable in its glide, a model that is really a kind of glorified freeflight, designed to fly itself most of the time, with only an occasional interruption from the guy downstairs with the transmitter.

Fortunately, almost every glider kit produced in America fits this description.

U.S. manufacturers have never been able to peddle the fast, heavy, scale-like kits that are the mainstay of the Euro-



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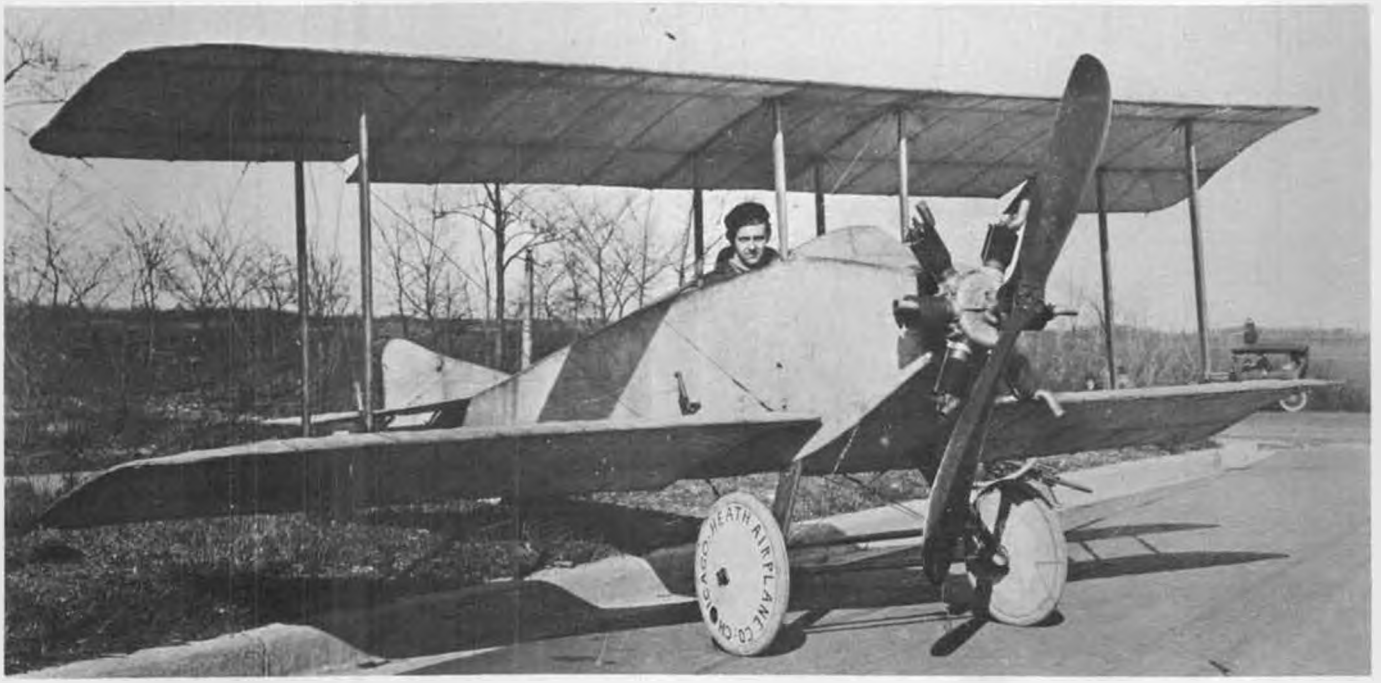


HEATH MODEL 2B

By WALT MOONEY . . . Guesting in our "Scale Views" department this month, our resident "Peanut Person" has come up with an extremely rare one. In fact, if it weren't for the photos, we'd be mighty suspicious!

• The name, Ed Heath, is a very familiar one to any real American aviation enthusiast. His designs, the Heath Parasol, and the Heath Baby Bullet, are well known and amply documented. They have been written about on many occasions and both full-size and model versions have been built by many people. There is at least one Heath airplane which is much more obscure and has received little or no publicity. This is the Heath Model 2B, a cute little wood and fabric biplane that was first rolled out in February 1918. *(This might be the first time this aircraft has ever appeared in any publication. wcn)*

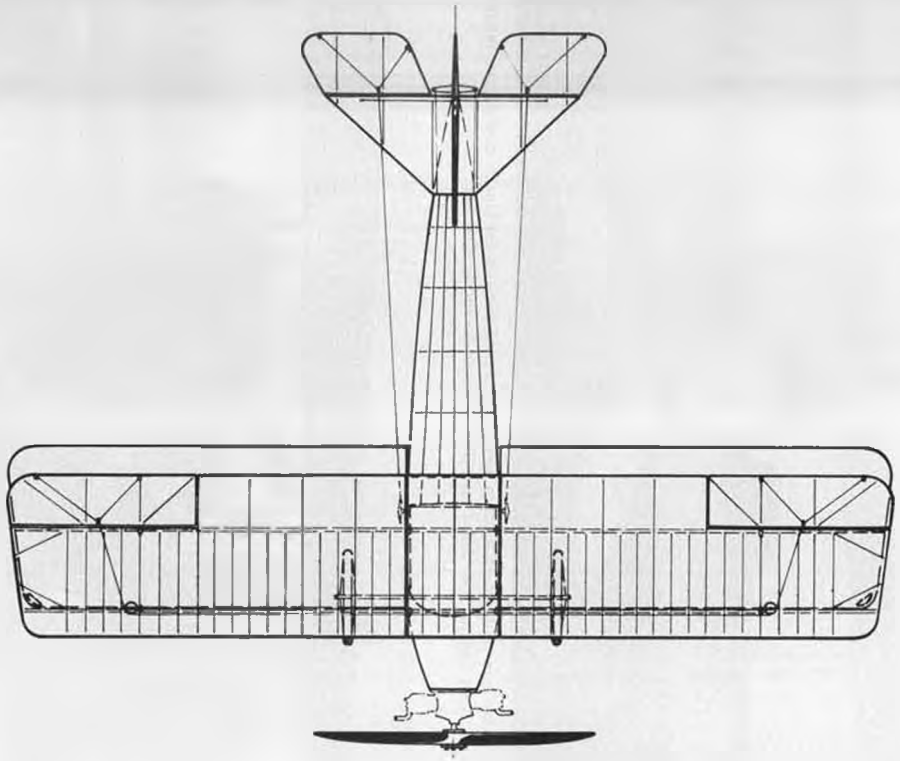
In that year, Fudo Takagi's father Kogoro Takagi (sometimes referred to as "Mitsu"), took part in the construction of the Model 2B at Heath's Chicago operation. It is believed that this was an aviation school setup, and that most of the work of building the 2B was performed by the students. Kogoro went on to work for Curtiss in Buffalo, N.Y.

Fudo found a collection of negatives in his father's effects and printed the copies which illustrate this article. Fudo definitely recalls a complete set of blueprints for the Model 2B, being in the Takagi garage just before World War II, but they disappeared sometime during the war while Fudo and his family were forced to live away from the Pacific Coast, as were a lot of other American citizens of Japanese descent.

There were enough photos to enable a very good three-view of the Model 2B to be drawn. As can be seen from the photos, almost perfect side, front, and

It's hard to believe that a well known aircraft designer such as Ed Heath could have created an almost unknown design. Yet these rare photos seem to verify that fact.

Some famous names in this photo. Far left is Otto Timm. Next is Ed Heath. W.W. Meyers in black hat behind the person kneeling. WW-1 ace Niemo Black at far right in front of wing.



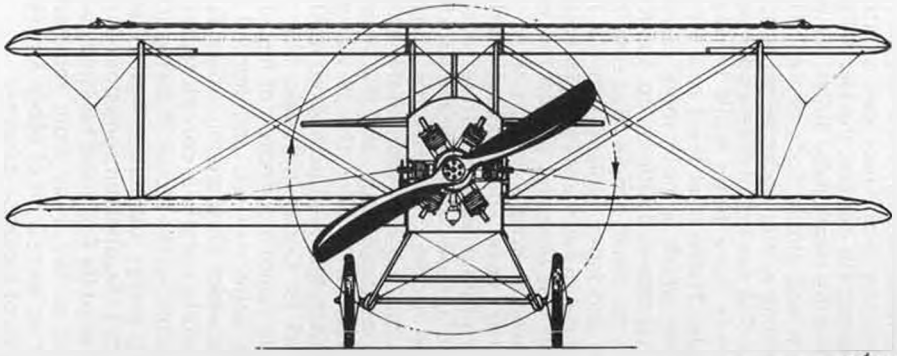
POWERPLANT - SIX CYLINDER ANZANI

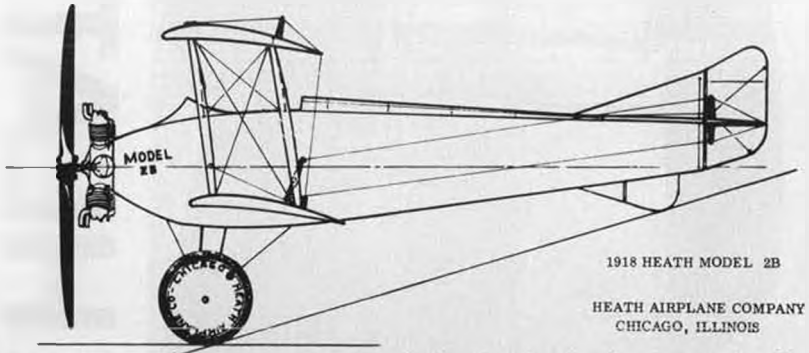
FRONT

REAR

ENGINE DETAIL

APPROX. TWICE SCALE





1918 HEATH MODEL 2B

HEATH AIRPLANE COMPANY
CHICAGO, ILLINOIS

DRAWN BY Walt Mooney 12-12-79

SCALE FT. 0 1 2 3 4 5 6 7 8 9 10

back views are available. In addition, three-quarter views from several angles depict all the various details. The Model 2B was obviously clear doped, leaving the flying surfaces translucent and allowing a good idea of what underlying structure was used.

Bill Hannan was asked to review the three-view and he came up with several suggestions which were incorporated. One suggestion, not taken, was that the leading edge of the top wing appears to have a very slight amount of dihedral. Checking the photos, this is almost imperceptable, and in some of them the trailing edge of the wing actually appears to droop just a little. This was attributed to initial rigging of the airplane, and we assume that Heath meant to have a perfectly flat wing as far as dihedral is concerned. The engine is obviously a six-cylinder Anzani.

In the photos only one person was identified, and that was K. Takagi. Obviously there should be others who could be identified by someone who was present or who knew of the airplane or knew Ed Heath himself. Alas, finding someone like that could prove difficult! Luckily, there is such a gentleman, and his name is J.J. Szakacs. Joe worked at Convair and its predecessors for 34-1/2 years before he retired to build trimarans. While working at Convair in the pre-design group, he mentioned that he made propellers for several of Ed Heath's airplanes in the early twenties.

Joe was contacted with the pictures in hand and after some study, said he could identify five people in the photos, although he had never seen or heard of the Model 2B. Joe went to Ed Heath's flying school where he learned to fly, soloing on March 3, 1923. He stated that he then stuck around for a year-and-a-half to learn about airplane design, and then went on his own.

Joe identified five people in the photos. Otto Timm, Ed Heath, an unknown first-name Meyers, W.W. Meyers, and Niemo Black. Joe identified Niemo Black as a World War I ace, and in later years both Timm and Meyers would go on to head their own aircraft firms. Joe is full of memories of that time, but said he did not meet Heath until about 1920 or 21. Some of Joe's comments follow:

Heath told me, if I wanted to live long, stay away from low-wingers, or they will kill you. Sure enough, he was killed in one of his low-wingers, when it spun in.

His Heath parasol was a best seller, so he opted for a mid-wing version addition to his life. It too sold well, so he developed a low wing version for the market.

Give Heath credit for scientifically promoting his designs: One cold morning he and his pilots took off and landed three Parasols on the field, which was covered with ten inches of snow; one with wheels, one with snow skis, and one with floats. It was quite a promotional stunt, never repeated by anyone since.

When I soloed, I asked how old he was and he said, same as Christ, when he died at 33.

He had a nine-year-old daughter at that time, who, when propped up with two seat pillows and rudder bar extensions, would start the engine, taxi out, take off, do the loop, spin, Immelman, and land all on her own, with her dad in the front cockpit (In a Standard J-1 of course).

Heath said his relatives all lived in Long Beach, Calif., but I never looked them up.

Heath had built the first thick-wing plane in this country, when NACA said thick wings were no-good. He carried 4 people in the "On to St. Louis race" and won top place in 1922, in an OX-5. Airfoil was a Glenn Martin 2-B.

In 1937, Heath visited Consolidated Aircraft, in pre-design, and told me, I

Continued on page 99

Photo like this really facilitates making of 3-view. Niemo Black in cockpit. Note clockwise (from front) prop rotation, 6-cylinder Anzani radial engine.

Otto Timm on prop. Must have been a cold February in 1918, note hats and overcoats. Also note sub-fin. Imagine climbing into cockpit, under wing and around wires!

As noted on print, Fudo Takagi's father Kogoro posed with others at the roll-out. Hmmm . . . maybe the 2B remained unknown because it didn't fly well. Does anyone know?

PYLON

"GO FAST AND Turn Left!"

By JIM GAGER

FAI PYLON RACING

A little over a year ago, in response to a request from Bob Brown, I asked you readers some basic questions about what it would take to revive interest in FAI pylon racing. A distillation of your responses indicated a willingness to participate in FAI racing but an unwillingness to build special aircraft for that event.

It appeared that the way to get us Americans involved would be for us to be able to take a normal Formula I aircraft and drop an alky engine in it and go fly, thus allowing an individual the easy choice of flying either/or both events with just a simple engine change.

Well, Bob Brown has just returned from an FAI Rules Meeting in France with the latest rules proposal, and it appears he did both his homework and his job very well. Here's Bob:

Jim,

Enclosed are the new 1981 FAI Pylon rules. *The U.S. Form I airframe is now legal!* The fuel is 80/20 and the scoring is different. Other than that, everyone in the U.S. should be very happy.

As stated in my phone call, the big problem is the promotion of the event in the U.S. At the present, John Worth has been asked if time can be alloted at the Nats. Warren Hitchcox (Canadian MAAC President) is attempting to do the same at the Canadian Nats. I have written Bill Hager for his help. Hal deBolt has already promised his approval. Hope you will do the same!

The negotiations in Paris were rather complex. We were almost stuck with the current rules had Britian got their way. We can thank deBolt's sub-committee and the Australians for what was finally resolved.

Most people had told me that the rest of the world did not want the U.S. to participate. This is definitely not true. The majority want the U.S., but do not want to be forced to play our game. Perhaps, with the world as it is, it is time for the U.S. to realize this. Please don't misunderstand the above statement . . . I will try to obtain everything the U.S. desires in FAI, but it will be a negotiated type of proposition.

Although our Form I is now legal, it *might* not be the ultimate race winner. The rules create a new area in design. Also, with any racing plane being able to be modeled, a whole new breed of designs is available. This might help remove the Polecat-Toni picture on the starting line.

If I can be of any help, write.

Sincerely,
Bob Brown
1255 High Street
Bradford, PA 16701

Thanks, Bob!

The complete set of rules is quite long and parallels our own Formula I rules very closely. Therefore, I'll list below only the pertinent *differences* in aircraft specifications and race operation procedures.

If you're interested in competing in Class F3D, I urge you to write Bob direct to secure a copy of the rules. Now we need clubs and C.D.'s to push the event. And perhaps it's not too soon to be thinking of hosting a World Champs meet in California in 1984 and trying to tie it in with the Olympics.

PROPOSED RULES FOR FAI PYLON RACING MODELS

5.2 Class F3D: Pylon Racing Models

5.2.1.

Definition of Radio Control Pylon Racing Models. Aeromodels in which the propulsion energy is provided by a piston type motor and in which the lift is obtained by aerodynamic forces acting on the supporting surfaces which, except for the control areas, must remain fixed in flight.

The model must be a recognizable replica of a particular aircraft used in full-scale closed course air racing. Unusual or unconventional features of the model must be substantiated by documentary proof of the full-sized aircraft, i.e. photographs or three-view drawings.

5.2.3.1. Silencer.

The motor(s) shall be fitted with a sliencer. Within its length there shall be an expansion chamber of not less than 30mm (1-3/16") diameter, 100mm (3-29/32") length, having a single orifice of maximum diameter 10mm (13/32").

5.2.4. Propeller.

Only fixed pitch two-blade design propellers, of either wood, or, composite resin/continuous fibre construction may be used. Injection moulded propellers are not acceptable.

5.2.6.1. Cross-Section.

The fuselage shall have a minimum height of 175mm (6-13/16") and a minimum width of 85mm (3-5/16"). Both minimum dimensions must occur at the same cross-section location. The fuselage at this point will have a minimum cross-sectional area of 100cm² (15.5in²) excluding fillets, and contestants will be required to provide templates to prove this. Fillets are not considered part of the fuselage or lifting surfaces.

5.2.6.2. Cowls.

The motor or motors must be enclosed, with the exception of the silencer, cylinder head, and controls which must be manipulated during operation of the motor. The cylinder head for this purpose is defined as the top (or outer) 1cm (2-5/64") of the motor, excluding ignition plug or compression screw.

5.2.6.3. Landing Gear.

The landing gear shall resemble that of the prototype machine as to location on the airframe and the number of wheels used. The minimum diameter of the main wheels shall be 57mm (2-1/4") and the minimum width shall be 12mm (31/64") for at least 1/3 of the diameter.

A tail skid may be used in lieu of tail wheel. A positive means of steering on the ground shall be provided, rudder control acceptable.

Retractable undercarriage may only be used if incorporated in the prototype.

5.2.6.4.

A cockpit, canopy, or cabin shall resemble that of the prototype machine and be capable of enclosing a pilot's head measuring 5cm (1-31/32") from the chin to the top of the head.

The cockpit need not be transparent. A pilot need not be fitted.

5.2.7. Lifting Surfaces.

5.2.7.1. Area of Surfaces.

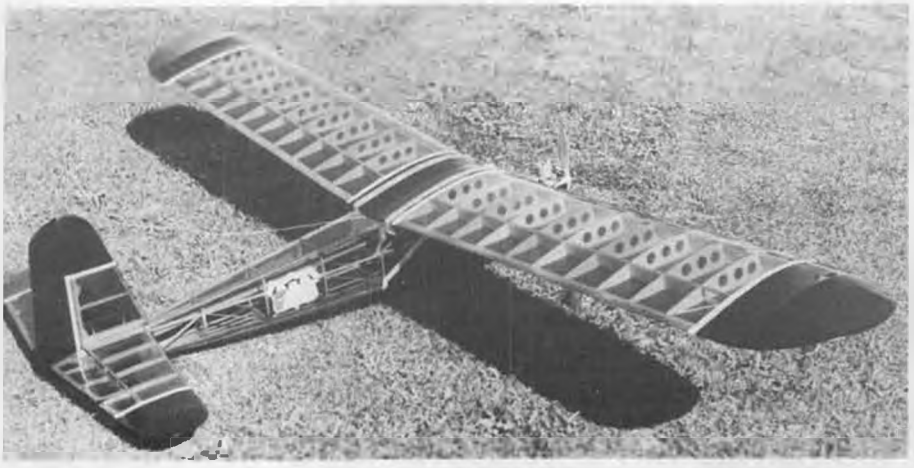
Total projected area of the lifting surfaces (wing and horizontal tail combined) shall be a minimum of 34 sq. decimeters (527 sq. in.).

With a biplane, the smaller of the two wings shall have at least 2/3 of the area of the larger wing. No delta or flying wing type aircraft are allowed.

5.2.7.2. Wing Span.

Minimum wing span shall be 1150 millimeters (44-7/8") for a monoplane, and 750 millimeters (29-1/4") for the largest wing of a biplane.

Continued on page 84



2. Looks like mice have been at the ribs in Nick Nicholau's Dallaire Sportster! Can't hide anything with transparent Super Monokote. Construction looks neat.

1. SAM 30 is gonna miss its spark plug and newsletter editor Hal Cullens when he moves. Nice looking George Reich Albatross.

PLUG SPARKS

By JOHN POND

• Well, we've put it off long enough. This columnist hasn't reported much of the California doings (and elsewhere for that matter) figuring that the winter months would see a dearth of material. He didn't count on reports from down under (New Zealand, Australia) where their weather is good.

Perhaps the reports will be a little on the "stale" side but in this columnist's mind, any news on old timers is always worth reporting. On top of that, a review of the last two O/T R/C contests in the California schedule may help you, the prospective contestant, to decide just what model and event you would care to compete in during 1981.

SAM 30 ANNUAL TEAM CONTEST

Here is a contest that is strictly slanted for fun! If you like head-to-head competition, then they have the regular events; i.e., limited engine run Classes A, B, C, and Texaco. However, if you like being in a group, then the Team Event is for you. Every SAM Chapter is invited to form a three-man team to compete against the other teams. Flying is generally done by time limits. In other words, your first flight must be in by 12-noon and your last flight before takeoff deadline of 2:30 p.m.

SAM 30 held this meet in Marysville, this year, to showcase its new field. Imagine getting a fully fenced area, leveled, with built-in shade structures and a barbecue . . . and get this, all this for $10 a month rent!! The only drawback this writer could see was the lack of grass to keep the dust down. Next year, grass has been promised, and cleared areas will be oiled and packed.

Photo No. 1 shows Hal Cullens, the indefatigable secretary of SAM 30 who has been responsible for the SAM 30 newsletter now called *The Fabulous Thirties*. The photo shows the much rebuilt George Reich "Albatross" that has taken Hal over two years to sort out. Hal feels it was worth the trouble as the Albatross does have a fabulous glide.

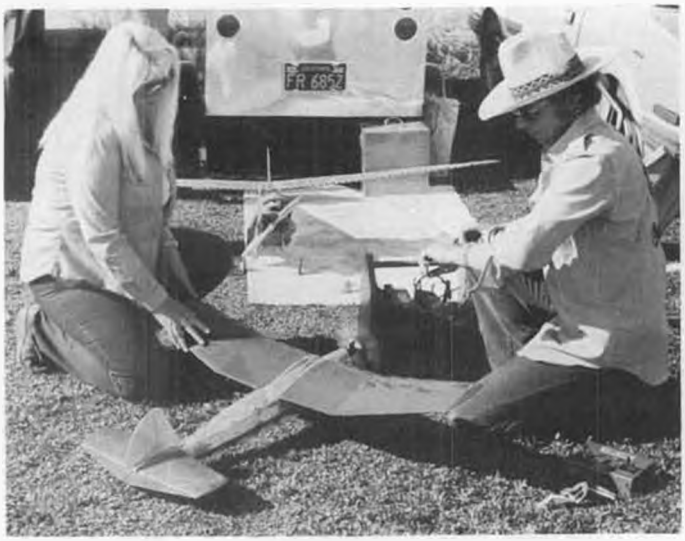
Unfortunately for SAM 30, Cullens has taken a job in Louisiana, as better pay and job beckons. Hal sez the first thing he is going to do is to organize a SAM Chapter down there. He is going to call it "Cajun SAM". How about that?

At the Team Contest, only three clubs (SAM 21, 27, & 30) were represented as the gas crunch (and prices!) are finally starting to take their toll. As a matter of fact, SAM 21 had to depend on one of the SAM 30 members (Jim Kyncy) to fill in their team as most of the SAM 21 members did not stay for the two day meet. Did that ever get to the SAM 30 boys, as Jim is one of their top boys. Bad enough having to beat SAM 21 without helping them!

Jim Kyncy flew a Dallaire Sportster powered with an HB 60, very similar to the model built by Nick Nicholau, of SAM 30, as seen in Photo No. 2. Nick, who lives at 2329 Hall Street, Marysville, CA 95901. has been practically constituting the new SAM 30 membership with models. As Nick puts it, "I like to build models in my retirement and I get the greatest enjoyment seeing my creations fly, whether it be by me or another member." Many a new member in SAM

3. Stingy C.D. Otto Bernhardt squeezes out a few drops of fuel for Nick Nicholau's PB-2 at Taft. O.S. 4-banger.

4. Tom Kulp's first try at Texaco, nice flying M-G. First place at SAM 49er Yearender.



5. Maxine Thomas watches hubby, Ross, time engine run in his 1/2 A Texaco entry, a scaled Scientific Varsity.

6. Another rare shot from the Bruce Lester archives. Frank Ehling at 1937 Detroit Nats, with an Elf-powered parasol design.

30 can thank Nick for getting them started properly.

Actually, as far as the contest went, the weather certainly did scare off a few, with rain on Friday and tule fog on Saturday. However, by 9:00 a.m., the sun came out and a great day was had by all. SAM 30 found out to their regret when they changed the motor run rules for Schneurle type engines, from 20 seconds to 15 seconds, that they forgot about the hot Super Cyclone Playboys belonging to Jack Alten and Ted Kafer, who were enjoying 40-second motor runs. No question about who was going to win. An object lesson!

I might mention the entry fee for each member of the team is $10.00, making a total of $30.00 per team. The more teams there are, the more money in the pot for the winning team. The spoils (dough to you) go to the winning club's treasury. What a neat way to build up the treasury. Seems like it is always low!

Before closing off the account, Karl Tulp had every reason to pop a few buttons, as his boy, Frankie, beat dear old dad and a flock of other hot shots to place fifth in a very hotly contested Texaco Event. Let's take a look at the winners and what they are using:

LIMITED ENGINE RUN
1) Ted Kafer (Playboy/Cyke) 20:31
2) Jack Alten (Playboy/Cyke) 18:42
3) Don Bekins (Playboy/OS ign.) 18:22
4) Ed Solenberger (Playboy/Cyke) 18:09
5) John Pond (Playboy/Torpedo) 13:19

ANTIQUE
1) Jim Kyncy (Dallaire/HB60) 40:10
2) Tom Vincent (Boehle/OS 60 4c) ... 36:45
3) Don Bekins (Gas Bird/Merco) 28:05
4) Speed Hughes (Lanzo/Hornet) 27:05
5) Hal Cullens (PB-2/OS60) 27:00

1/2A TEXACO (All .049 Cox)
1) Don Bekins (M-G) 30:00
2) Eut Tileston (Westerner) 28:01
3) Jim Kyncy (Playboy Jr.) 27:29
4) John Pond (Mike) 26:02
5) Ted Kafer (Challenger) 25:26

TEXACO
1) Tom Vincent (Boehle/OS 60 4c) ... 28:50
2) Don Bekins (Gas Bird/OS 60 4c) ... 26:03
3) Eut Tileston (Westerner/OS 60 4c) . 25:47
4) Speed Hughes (Yates 10 ft/ OS 60 4c) 24:52
5) Frank Tulp (Dallarie/OS 60 4c) 22:25

TEAM
1) SAM 21 (Bekins, Kyncy, Pond) 40:36
2) SAM 30 (Cullens, Schmidt, Hughes) 36:23
3) SAM 27 (Solenberger, Tulp, Tulp) .. 19:56

Actually, we should have more slow paced meets like the one by SAM 30. The bean feed was out of this world, with all sorts of hamburgers, hot dogs, salads . . . you name it. The wives did a great job here!

SAM 49 YEAR ENDER

The last meet on the West Coast, whether it be R/C or F/F, is the SAM 49 Year-ender annually run by Otto Bernhardt, the mainstay of SAM 49.

Photo No. 3 shows Otto getting ready to meter the fuel for Nick Nicholau's PB-2, OS-60 four-cylinder powered, of course! Bernhardt, who runs a specialty engine business primarily converting engines to ignition performance, operates under the name of 77 Products, located at 17119 South Harvard, Gardena, CA 90247.

This meet was another two-day meet, as it is generally felt by the various SAM Chapters, when you travel over 200 to 400 miles, you ought to get more flying in than one day. This contest was no exception, as two days seems to be the accepted practice now.

As is usual in Taft this time of year (December), the weather is quite mild, with a haze that can make a model disappear quicker than a modeler can blink his eyes. Texaco day on Sunday was a real eye strainer and at least one model disappeared (Norm Burnham's Dallaire) while others came dangerously close. Some controversy arose over how long one was to watch for a model to reappear. One thing for sure, the AMA 10-second rule was not applied in the interests of having fun.

Photo No. 4 shows Tom Kulp's first

8. Neat folding rack for transmitter impound. Good idea for clubs to follow.

7. It's 1940, and Joe Locasto built this Cleveland Viking, with cast iron Sky Chief engine. Note hole in side for Austin timer, also those lovely M & M's!

serious attempt at Texaco, an M-G, as designed by Michael Granieri, of New Jersey. This model literally flew off the drawing board, so to speak, and Tom thinks this model is the greatest! Being one of the first nine-footers built in Southern California, and immediately scoring a win, it will be interesting to see how many more sprout up.

In that same line, Photo No. 5 shows Ross Thomas and wife, Maxine, tuning up the Cox Black Widow engine in his Scientific Varsity, a little-seen design in competition. Actually, Ross should have done better with this clean design, but as the old saying goes, "The race is not always to the swift." Ross is going to have to get a bit more luck.

This contest was also marked for its ban on use of Schneurle ported engines in old timers. As it turned out, Alten and Kafer repeated their success at Taft ending up in a dead heat, forcing a flyoff. The 40-second engine run for hot ignition 60 motors, is more than enough to offset the high power enjoyed by Schneurle engines!

Full credit for experimenting with low wing designs should go to Ross Thomas, who built the Atwood Starliner for this meet. Not being exactly sure of how it would fly, Thomas tried the model in the early hours before the contest. The model turned out to be hairier than a Borneo gorilla! Seems like Ross took out the dihedral (to make it look like a racer) without realizing this is necessary for smooth turns. As Ross found out, the model skidded all over the sky, ending up in a spiral dive. Reports by Phil Bernhardt, newsletter editor of SAM 49, indicate Ross was still shook up at the pilot's meeting. Moral: Stop removing the dihedral in those old timers!

Ross, not undaunted, has started another low wing, this time the Bowden PLW-4 (Petrol Low Wing #4), one of the early successful low wing designs by C.E. Bowden. Ross reports some problems with line-up of the stringers on the bulkheads. Well, back to the drawing board!

This columnist only stayed for one day so had to rely heavily on reports from SAM 49 and 21 contestants. Noted in the results was a new name, Tom Christian, a long time R/C gilder man of great renown. Truly a shame, just about the time you get him interested in O/T activity, he moves to Florida. He is gonna miss those wide open spaces at Taft. Let's take a look at the results:

ANTIQUE
1) Tom Christian (Dallaire) 29:34
2) Jack Albrecht (Anderson Pylon) ... 27:53
3) Jack Alten (Champion) 24:39

C1 A-B LTD. ENGINE RUN
1) Ross Thomas (Playboy) 18:25
2) Jack Albrecht (Playboy) 18:02
3) John Pond (Playboy) 10:23

1/2A TEXACO
1) Ernie Payne (Lanzo) 17:10
2) Bob Angel (Playboy Jr.) 14:43
3) Tom Christian (Playboy) 13:44

C1 C LTD. ENGINE RUN
1) Ted Kafer (Playboy) 21:00
2) Jack Alten (Playboy) 21:00
3) Ross Thomas (Playboy) 19:45

TEXACO
1) Tom Kulp (M-G) 23:14
2) Ernie Payne (Dallaire) 18:25
3) Phil Bernhardt (Ehling) 18:22

In summarizing this contest, probably the most spectacular sight was the flyoff between Kafer and Alten, with identically powered Playboys. Turned out the only difference was the Alten waited too long on the ground (while motor was running) for Kafer to start, and ran his gas supply down to the point where the engine rpm fell off slightly.

ENGINE OF THE MONTH

In the February 1981 issue, we ran the Drone Diesel as the featured Engine of the Month. No question about it, Leon Shulman did much to popularize the use

Above: 9. Brad Levine's Aerbo sports an Arden 19. Makes it a peppy flier. Those Ardens really bark. Right: 10. SCAMPS Newsletter editor, Bud McNorgan, seen at VAMPS meet with Tom Laurie Twin Cyclone.

12. Mark Hinton winds his twin pusher at Sculthorpe AFB, England. He won the event.

11. Nice action shot of Alex Imrie's unmodified (!) GHQ powered King Burd taking off at Old Warden Aerodrome, England.

of diesel engines over the then prevalent ignition engines.

Shulman did so well with his Drone diesel in controline, winning the N.Y. Mirror meet and later on, the 1947 Nationals, that it wasn't long before similar type diesels would make their appearance. Among those were the Deezil, Mite, Vivell, Edco, Micro, and this month's engine, the Air-O.

Always with a sharp eye to the trend of model competition, Ray Acord (who has bought up the Bunch engine stock) decided to enter the diesel motor market. This was done with such little fanfare, the motor went almost unnoticed, until a picture showed up in the Air-O advertisement in April 1948, *Model Airplane News*. Up to that time, Gotham Models had been listing it in their available engines.

To quickly get into the market, Acord used the existing crankcase and shaft from his Mighty Midget G-P (glow plug) engine and put on a small bore cylinder, reducing the total displacement to .278 (Quite a drop from .45!) The motor features no by-pass on the outside, being a three-port engine. To save further money, the head was fitted with a screw (to operate the contra-piston) that would accept an Allen-type wrench. This was the adjustable head setup. Acord felt once you had the ideal compressions setup for the day's flying, no further changes would be required. Of course, there was always the claim of the advantage over a fixed compression head, a feature of the Drone engine.

Surprisingly, the manufacturer also claimed the use of diesel engines in model race cars yielded speeds of 50 mph plus in Thimbledrome cars. Small race cars were the new fad at that time, in Southern California, and Ray was looking at that angle also.

The new diesel was rated at 1/5 hp at 6500 rpm. The Air-O people also claimed the engine could be made to develop 1/4 hp at 16,500 rpm. The latter rating was made using direct drive in race cars.

Those interested in the technical aspects of the engine, will find the .278 cu. in. displacement yielded a bore of .687 and stroke of .750 inches. Weight was 7-1/4 ounces; not a bad weight for a Class B diesel type engine that includes a metal tank. The cylinder and cooling fins were machined from steel bar stock. The piston and contra-piston were made of heat treated alloy steel, centerless ground and lapped to the cylinder. The connecting rod was chrome molybedenum with no bushings. The crankcase was fitted with bronze bearings for the crankshaft.

The crankcase, taken from the Bunch Tiger Air-O, was produced from aluminum alloy die castings. Of interest is the crankcase casting for the diesel engine that still has the place for timer used on the Tiger. No question about where that crankcase came from!

Everyone has his own pet diesel fuel. The Air-O people recommended using a mixture of seven parts ether, six parts castor oil, and four parts kerosene. Compare this concoction with that recommended for the "Speed Demon Diesel"; 4 parts SAE 30 oil, 4 parts ether, and 2 parts distilled wood turpentine.

Probably the best running fuel this writer has run into is the fuel recommended by Jack Bayha, who experimented with diesel engines and fuels at quite some length: 20% SAE 20 motor oil, 20% ether (diethylene glycol monobutyl type), 20% ether (ethyl oxide, good old sleep inducer), and 40% diesel truck fuel. Add to this 2% amyl nitrate and you have a real hot diesel fuel.

The writer in his experimentations during the late forties, found that 20% castor oil, 40% light grade diesel fuel, and 40% ether (preferrably high grade) worked the best. Use of amyl nitrate (which works better than amyl nitrite, having one more oxygen molecule) is to be used quite cautiously. Any more than 2% and detonations will actually shear the crankpin on the shaft. In any respect, in running disel engines, you will always end up smelling like a hospital ward!

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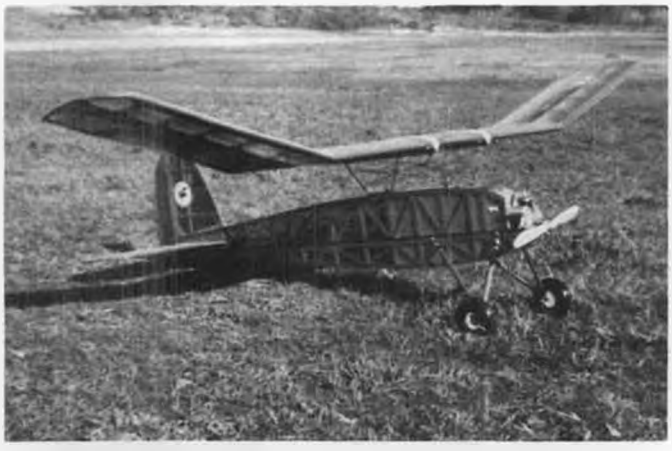
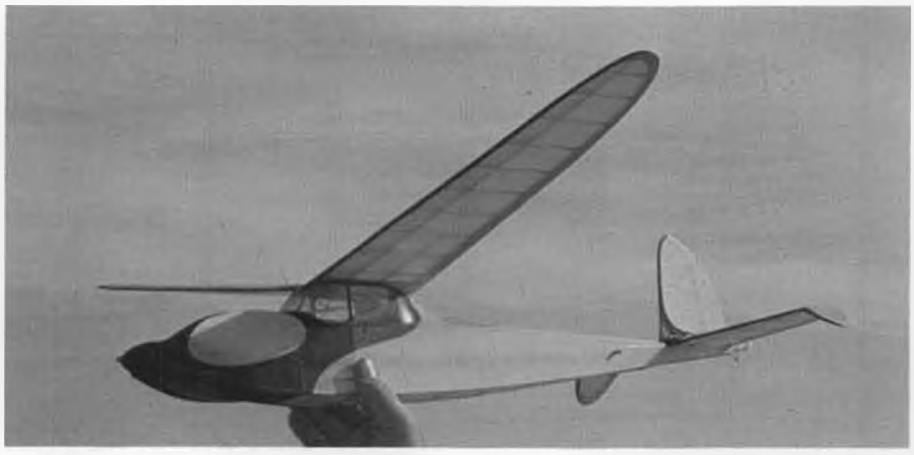


13. John Tidy, Australia, really "showcased" his Miss Philly VI in yellow "Unicover", similar to transparent Monokote.

14. Jean Pierre Ternaux, Toronto, Canada, at a Swedish OT contest. Lars Larsson shows him 1944 vintage Swedish glider. Linden photo.

'my SPARKY'



OLD TIMER Model of the Month

Designed by: Ed Lidgard
Redrawn by: Al Patterson
Text by: Ed Lidgard

Old Timer fans who are into rubber power will really enjoy this presentation, as will newcomers who want to learn some of the tricks of the trade. Several contest events are already planned around this model.

• Would you believe that the Sparky kit has been on your hobby shop's shelves since 1940? The box looks better now, but the contents are virtually the same as originally produced by Comet Model Hobbycraft Corporation, Chicago, IL 60609. It could be the longest continuously produced free flight kit.

Let me tell you how Sparky came into being. It took a bit of talking at Comet but with Carl Goldberg's help, management gave me the go ahead. Most kits suffer some constraints the manufacturer imposes and Sparky had them too. Most of them involved the use of a sawed balsa propeller. If anyone ever develops a way to make a good prop out of one of these devices, I'd like to hear about it. BUT, remember that was 41 years ago and that is all there was. Most modelers can not carve a propeller from a block . . . even today. So these props were the best available.

Not too long after Sparky went into production, I found myself in the Air Force going to mechanic's school with old friend, Clarence Mather. In Texas as an instructor, I had time to build models and fly on the weekends with a nice bunch of modelers in Wichita Falls. My CO had some ideas about tidy rooms. In pleasant defiance, I made two wood boxes that fit under my raincoat and overcoat. One held models and one held supplies.

Now, how do you put two or three models in a box 26 inches long, 17 inches wide and 5 inches deep? Simple! Everything comes apart.

A few changes have been made to the kit in these four decades. For the benefit of modelers who enter Sparky in Old Timer contests, these changes need to be clarified to prevent any disputes. First, the sub-rudder was removed at some unknown date. The model looks better with the sub-rudder, and the drawing of the sub-rudder is included in this article. It would be reasonable for contest directors to accept either, since both have been produced and then built in good faith.

Originally, a machine-cut balsa propeller was included in the kit. Today a 9-1/2 inch diameter, 9-1/2 inch pitch plastic propeller is supplied. This is the same propeller required for P-30 competition free flight models. They are really nice props. Some are not balanced, but it's easy to detect the wee lump on a blade and to scrape it off to make the blades balance.

Unfortunately current kits have this fine propeller that has a .050 hole in it and the propeller shaft is made from .062 wire. Also unfortunate is Comet's lack of concern to change to the proper size wire. So off to your hobby shop for .045 or .047 music wire and bend your own.

The partial paper spinner shown in the kit just won't work, so use a block of balsa. This fine magazine will have a detailed article by this author in a later issue that shows how to make a spinner.

Some wood supplied may be too soft for a sturdy nose block, so replace with your own, or add two layers of 3/32 balsa to the front of the one shown in the kit. See the sketch for details.

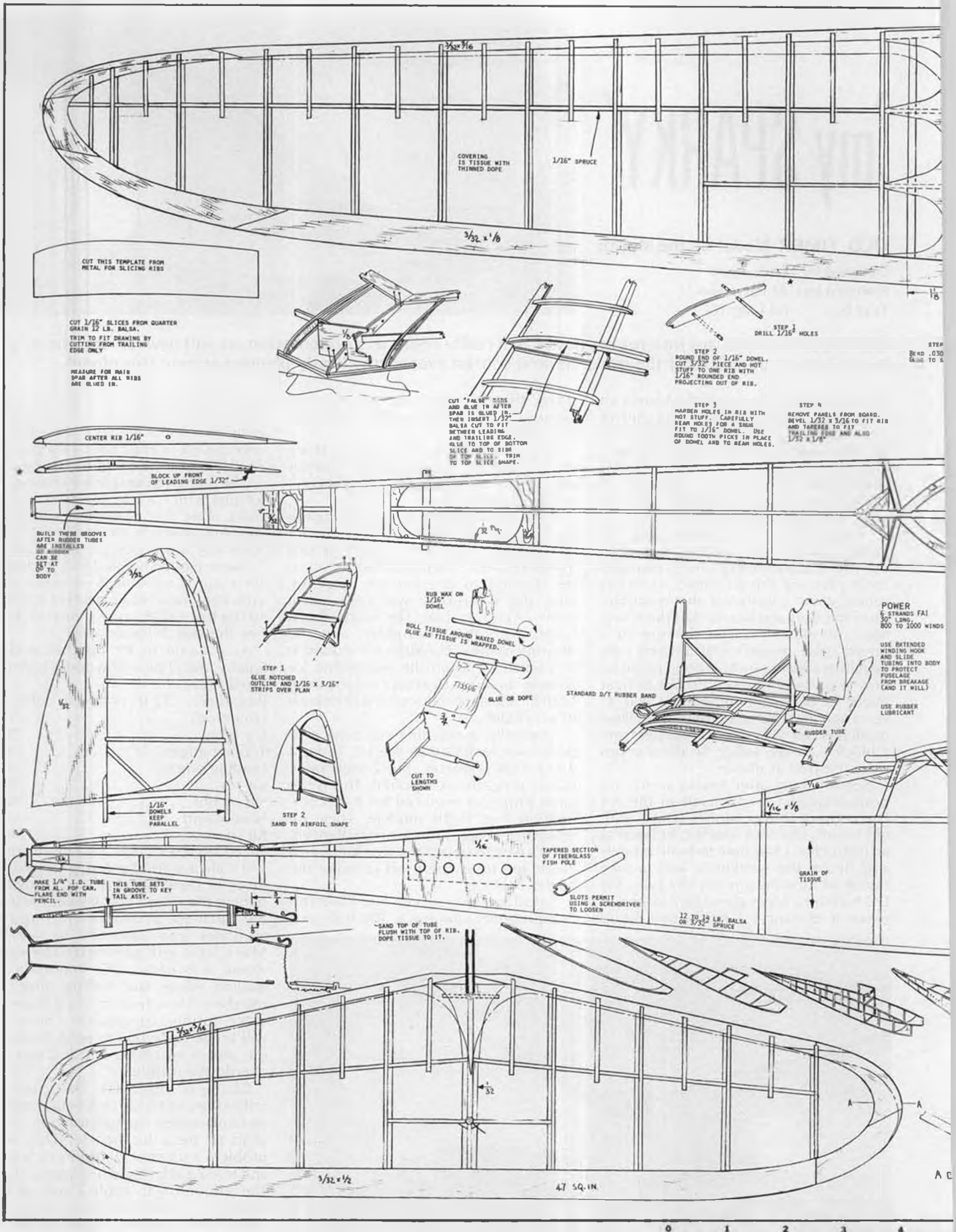
As a guide to kit builders and My Sparky, my choice of wood weights are listed here.

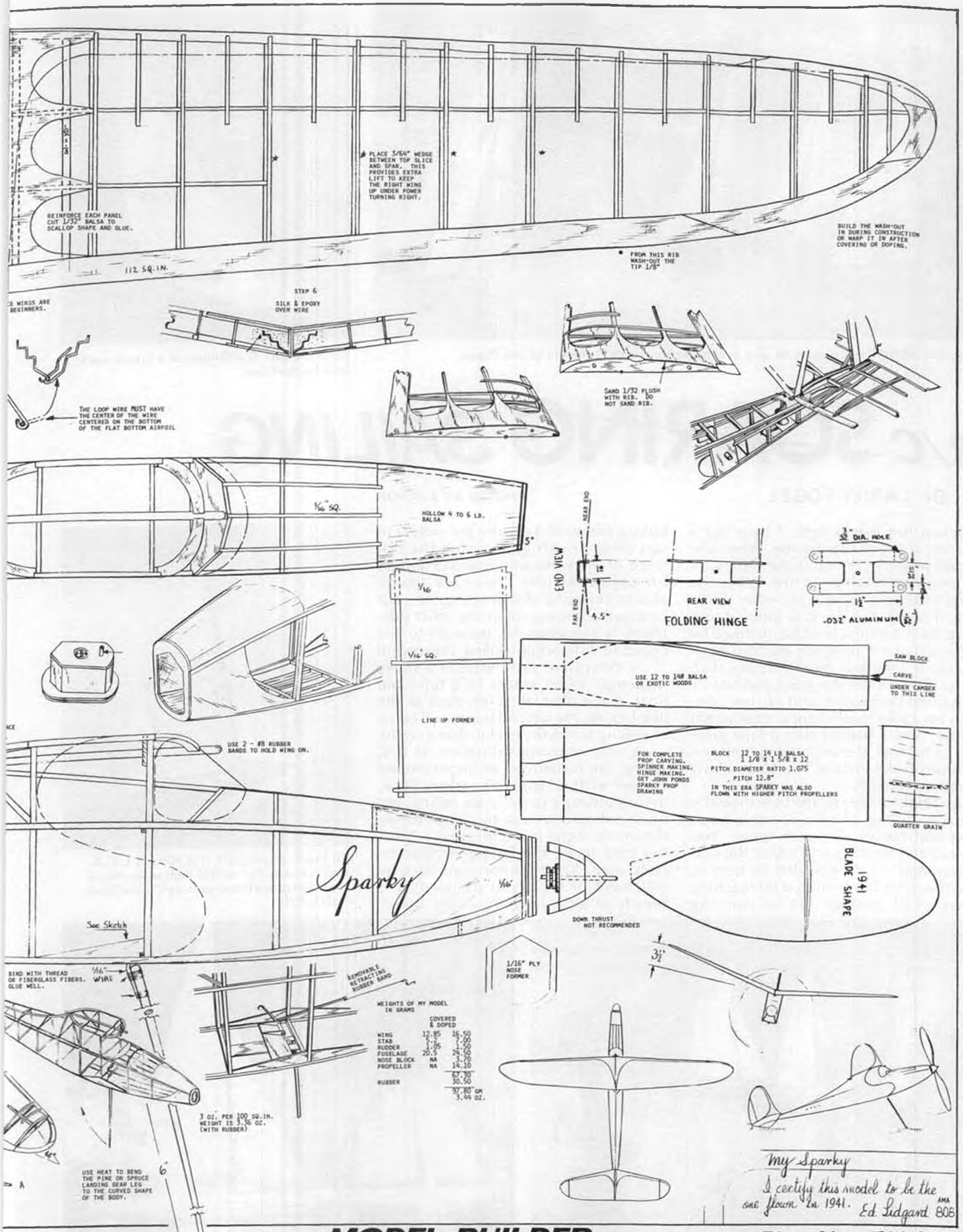
Propeller	12 to 14 lb. per cubic foot
Longerons	12 lb.
Uprights	10 lb.
Trailing edges	10 lb.
Leading edges	10 lb.
Kit ribs	10 lb.
Sliced ribs	12 lb.
Nose wood	6 lb.
Kit spars	10 lb.
Sliced rib spars	12 lb. or spruce

It's always good practice to look at a piece of sheet wood with a strong light behind the wood. You will be able to see the variations in density which roughly translates into variations in strength. More light will penetrate the softer wood. It is particularly important that leading edges and trailing edges are matched. Flex them in your fingers to make further comparisons. Sure, you will break some due to weaker areas of the pieces you have cut and you may overdo the testing.

Gluing is important. The space age adhesives such as Hot Stuff and Jet certainly speed up construction. Joints tend to be a bit brittle. This is no problem except at rib joints to leading and trailing edges and fuselage uprights. The solution is to apply a coat of Titebend as a second coat after assemblies are finished. Neither of these adhesives shrink when setting or drying. Model airplane cement does shrink. It's great for gluing rips in tissue covering to save a

Continued on page 88


3/32 x 3/16
COVERING IS TISSUE WITH THINNED DOPE
1/16" SPRUCE
3/32 x 1/8
CUT THIS TEMPLATE FROM METAL FOR SLICING RIBS
CUT 1/16" SLICES FROM QUARTER GRAIN 12 LB. BALSA.
TRIM TO FIT DRAWING BY CUTTING FROM TRAILING EDGE ONLY
MEASURE FOR MAIN SPAR AFTER ALL RIBS ARE GLUED IN.
STEP 1
DRILL 1/16" HOLES
STEP 2
ROUND END OF 1/16" DOWEL. CUT 3/32" PIECE AND HOT STUFF TO ONE RIB WITH 1/16" ROUNDED END PROJECTING OUT OF RIB.
STEP 3
HARDEN HOLES IN RIB WITH HOT STUFF. CAREFULLY REAM HOLES FOR A SNUG FIT TO 1/16" DOWEL. USE ROUND TOOTH PICKS IN PLACE OF DOWEL AND TO REAM HOLES.
STEP 4
REMOVE PANELS FROM BOARD. BEVEL 1/32 x 3/16 TO FIT RIB AND TAPERED TO FIT
CUT "FALSE" SIDE AND GLUE IN AFTER SPAR IS GLUED IN. THEN INSERT 1/32" BALSA CUT TO FIT BETWEEN LEADING AND TRAILING EDGE. GLUE TO TOP OF BOTTOM SLICE AND TO RIB OF TOP SLICE. TRIM TO TOP SLICE SHAPE.
CENTER RIB 1/16"
BLOCK UP FRONT OF LEADING EDGE 1/32"
BUILD THESE GROOVES AFTER RUDDER TUBES ARE INSTALLED
CAN BE SET AT 0° TO BODY
STEP 1
GLUE NOTCHED OUTLINE AND 1/16 x 3/16" STRIPS OVER PLAN
1/16" DOWELS KEEP PARALLEL
STEP 2
SAND TO AIRFOIL SHAPE
RUB WAX ON 1/16" DOWEL
ROLL TISSUE AROUND WAXED DOWEL GLUE AS TISSUE IS WRAPPED.
TISSUE
GLUE OR DOPE
CUT TO LENGTHS SHOWN
STANDARD D/T RUBBER BAND
RUDDER TUBE
POWER
6 STRANDS FAI
30" LONG.
800 TO 1000 WINDS
USE EXTENDED WINDING HOOK AND SLIDE TUBING INTO BODY TO PROTECT FUSELAGE FROM BREAKAGE (AND IT WILL)
USE RUBBER LUBRICANT
1/16 x 1/8
MAKE 1/8" I.D. TUBE FROM AL. POP CAN. FLARE END WITH PENCIL.
THIS TUBE SETS IN GROOVE TO KEY TAIL ASSY.
TAPERED SECTION OF FIBERGLASS FISH POLE
SLOTS PERMIT USING A SCREWDRIVER TO LOOSEN
GRAIN OF TISSUE
12 TO 14 LB. BALSA OR 3/32" SPRUCE
SAND TOP OF TUBE FLUSH WITH TOP OF RIB. DOPE TISSUE TO IT.
3/32 x 3/16
3/32 x 1/2
47 SQ. IN.
A
A
0 1 2 3 4
0 2 4 6 8 10



MODEL BUILDER magazine
621 West 19th St., Costa Mesa, CA 92627

Plan No: 581-O.T.

FULL SIZE PLANS AVAILABLE – SEE PAGE 100

Gaggle of 50/800's getting under way at Mission Bay model boat site in San Diego.

Santa Barbara One-Design on a broad reach. Sails by Rod Carr.

R/C SOARING SAILING

by Dr. LARRY FOGEL

PHOTOS BY AUTHOR

• When the wind's light, I head for a near-by thermal soaring site. When the wind's westerly, I'm off to the slope with an aerobatic machine in tow. When the wind's strong and from any other direction, I break out an R/C sailboat and head for the model boat basin. You'd be surprised at the pleasure that can be.

Usually sailing is more relaxing than flying. There's still the grace and beauty of natural propulsion and far less concern for radio interference, equipment failure, and a battery that simply gives out. In light air, the ships slide silently on the mirror-like surface. There's a majesty in tall, white sails.

In a brighter breeze, the bow slices the surface, cutting a wake. The ship heels over and comes alive with speed. You choose the heading and adjust the sails accordingly . . . close hauled for beating into the wind, more relaxed for reaching cross wind, and all out for running before the wind. You turn the rudder to sail wing-on-wing, catching the full force of the wind with mainsail and jib on opposite sides. You tack (come about) changing the direction of your boat so that the wind is on the other side. Jibing is swinging the mainsail to the opposite side while sailing downwind . . . a downwind tack. Here is a tricky maneuver when you're in a full-sized boat. If the mainsail is left slack as the jibe begins, the sail and boom will come sweeping across the cockpit like a scythe . . . a very dangerous situation. In R/C sailing, this maneuver can be performed almost with reckless abandon. Sure, there's pleasure in full-scale sailing, but once onboard, you're too close to see the entire scene in perspective. It takes too long to rig the boat and clear the dock area. The weather may become inclement or leave you stranded for a breath of air a long way from home.

Bill Head scratch built this 30-inch L.O.A. yawl "Dream On" to 3/4-inch scale. Has 6-volt electric auxiliary, sails by Chuck Black, Futaba R/C.

Four Santa Barbara's in a heat. Can't see if the little guy is holding a transmitter. The arms look right.

Two products of Vortex Engineering, A Soling 50/800 and Santa Barbara One-Design; latter originated by Tom Protheroe.

Scratch built from a photo, by Richard Rice, San Diego, this is the Malacos. Original schooner can be seen in the San Francisco Bay Museum.

The old gaff-rigged Malacos moves along nicely. There's something about scale . . .

Then, there's the cost . . . In contrast, R/C sailing allows you to create, construct *and* control your own craft . . . and you can't get seasick, no matter how bad the weather.

At the pond, you're likely to see ships in a wide variety of shapes, styles, and sizes. Sailboats fall everywhere on the line from full fidelity scale to machines solely intended for performance. Scale kits are available for those who enjoy the fine art of wood plank construction. For example, the Eastport Pinky, a two-masted schooner, is the newest kit offered by the Laughing Whale, P.O. Box 191, Wiscasset, Maine 04578. This historic boat is then recreated at 1/2 inch to the foot (33 inches overall with 7-1/4 inch beam).

Or, you may choose to scratch-build from blueprints, photos, three-view drawings, or whatever. Richard Rice, of San Diego, created the Malacos from an eight-inch photo and about 2000 man-hours of total dedication. The original schooner can be seen in the San Francisco Bay Museum. "How do you measure fidelity of the model without detailed plans?" I asked. He held up a thumb at arm's length to indicate his measuring instrument, then argued that that's the way the original boat was built . . . by eye. In fact, I understand that until rather recently, shipbuilding centered around a model of the ship which was then roughly scaled up in the shipyard to become the real thing. All I can say is that Richard's thumb has produced a "sight for sore eyes." What detail and realism as his boat catches the breeze! But, don't try to scratch-build such a detailed model unless you have at least a thousand man-hours for the task.

Non-scale boats range from one-designs to open classes that encourage the designer to seek full performance, regardless of appearance. The American Model Yachting Association has established specific classes in the interest of fair competition. The boats in each one-design class are almost identical. The "J"-Class is a 3/4-inch to the foot replica of a 1930's America Cup competitor. This is the largest of the recognized class boats (92 inches in length with an eight-foot mast and weighing in at about seventy pounds). It is suited to open water competition. The Soling class recreates a presently active full-scale ship. The overall length is fifty inches and all dimensions must conform to the original model designed by Tom Protheroe. Vortex Model Engineering of Santa Barbara, California, offers the kit for this boat. There is a separate class for the Jensen Soling 36, a thirty-six inch version of the full-scale ship. There's the Star-45, the East Coast Twelve Meter, the Newport Twelve Meter, the Magnum, and the Santa Barbara one-designs, roughly in decreasing order of scale appearance. Each one-design racing class is governed by strict rules to ensure that the races are won by the skipper and not the designer.

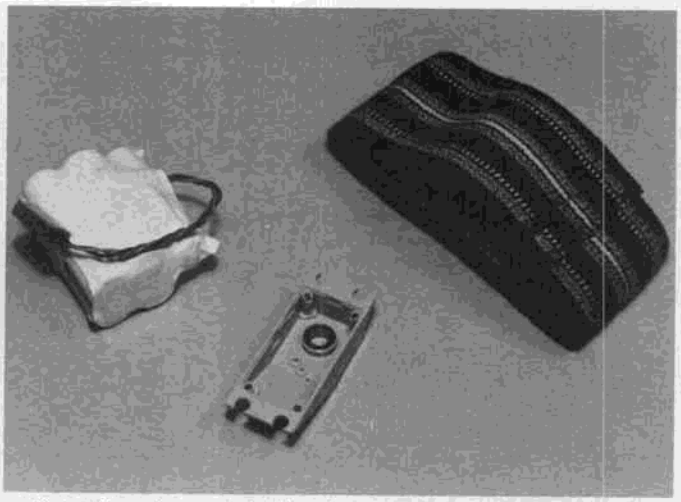
The open classes are based on a different philosophy. All ships are not created equal. Here, winning the race is a tribute to both the skipper *and* the designer. These classes are less restricted. For example, the 50/800 class requires only that the length must be 50 ± 1/4 inch, and that the maximum sail area be 800 square inches, thus the name. The Marblehead was the prototype for this very popular class. Then there's the 36/600, the International "A", and the Ten Rater open design classes. Each class offers a different kind of challenge.

R/C sailboats have individual per-

Continued on page 100

With main and jib sheets slacked, a bunch of 50/800's wait for the call to duty.

Newest charger from Leisure Electronics has digital readout, many additional features described in text.



Five-cell receiver pack, ball-bearing servo top, and transmitter strap; all from Joe Sullivan.

R/C AUTO NEWS

By DAN RUTHERFORD

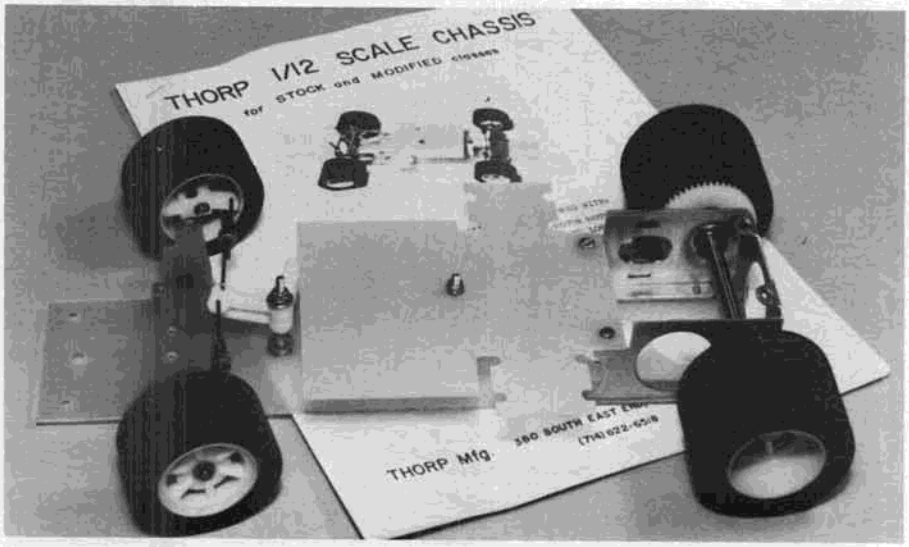
THE 'SEE-TEXT-FOR-MORE-INFO" PART OF THE COLUMN

One wonders why captions ever came into such popular use when often there isn't enough room to fit in more than a very brief couple of lines or so. But like it or not, captions are a part of the layout of magazines, and just as sure is the fact that this needed element gave birth to the oft-used five little words "see text for more info." And so we hereby give you more info. *(Thanx. That saves us the trouble of having to make something up! wcn)*

Second oddest picture is probably of the servo top, 5-cell battery pack, and loop of cloth. These pieces all came from Joe Sullivan, who operates Ja-lea Company, 803 Business Parkway, Richardson, TX 75081. Phone number is (214) 238-0929. The servo top is for the Futaba S7, undoubtedly the most popular servo in 1/8 racing. Joe takes standard tops, drills them for a ball bearing, installs said bearing and offers the completed assembly for sale for $9.00. Advantages claimed are elimination of wear, less drag on output shaft, and more positive control. Installation is simple, pop off the old top and bolt on the new one.

The 5-cell battery is another item commonly used in 1/8 cars. Joe says this 500 mah pack will give a .4 second transit time on the S7 servos and bumps torque up 25% to 52 oz./in. The pack comes assembled and shrink-wrapped plus a Futaba connector for plug-it-in installation. Price is $17.50.

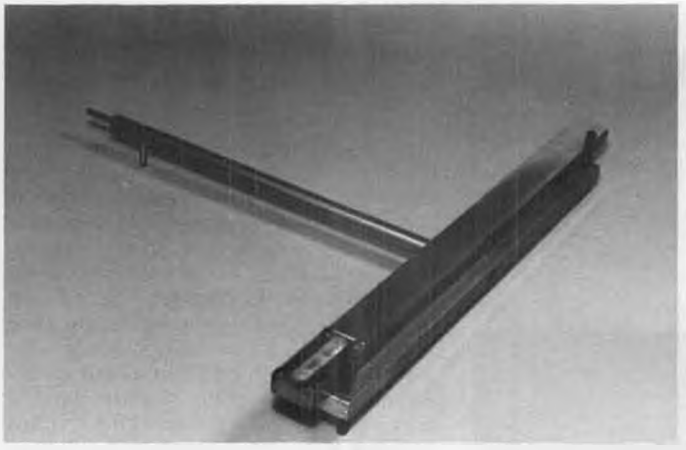
The strap pictured is used as a transmitter strap; slip it over the transmitter (wheel type, of course) and then you have a way of holding the transmitter comfortably without the extra weight of a handle. Personally, I gave up on those awkward and heavy handle-equipped transmitters a couple of years ago, switching to a strap fabricated out of bumper material (Kydex). Here is an easy way to get much the same result, the transmitter strap is available for only $1.75.

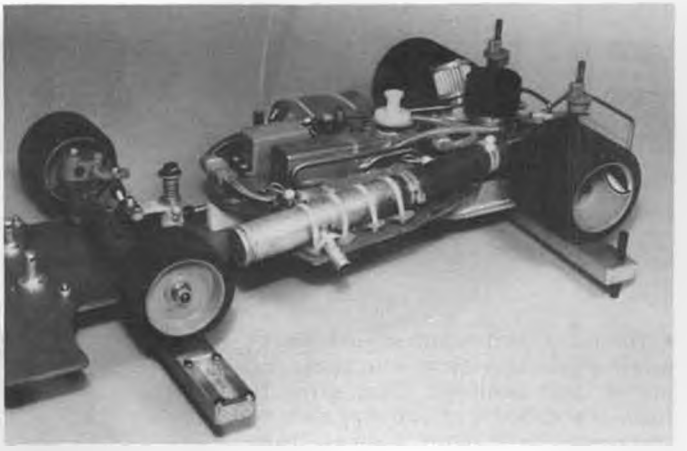


Latest 1/12 electric chassis from Thorp Mfg. STFMI (See Text For More Information).

Oddest picture of all has to be the T-shaped assembly, and it is Delta's latest version of its tweak board. In the picture of the board alone, the front cross-bar with built-in bubble is being used to set the back end of the board perfectly level with the world, the screws at each end of the bar make this an easy job. With the back end set, the front cross bar is slipped on the pin at the front end and then most any 1/8 car I am aware of can be placed on the assembly. The rear tires are held square, and the front cross bar, free to pivot at the center, will immediately show any slight amount of tweak in the chassis as can be seen by checking the bubble. How much tweak can you see? I regularly use this tweak board to set our race cars up to within a couple thousandths of an inch. Doubtful that this kind of precision helps anyplace, but in the head come race time, but the instrument will register this accurately. Cost is $75.00; all those precision machined surfaces accounting for what has to be regarded as an expensive piece of support equipment. But if you ever find yourself in the position of setting up a car with new tires, chassis pan, or whatever, right before an all-important main event and that sucker has to come off the line straight as well as turn well in both directions, all with no time for on-track adjustments before the flag goes up, you will regard the cost as well worth it.

John Thorp, pioneer in R/C car racing, from having the first commercial track to being years ahead of his time in offering differential-equipped 1/8 cars, as well as many other accomplishments, now has a twelfther available. And it isn't a bottom-of-the-line, introductory car. John evidently said phooey to the ROAR Production class, which only seems to be run at the yearly Nationals anyway. Instead, the chassis is for the Modified and Stock classes, which are quite popular, and so the car features ball





New tweak gauge from Delta for getting things squared up on 1/8-scale gas cars. Note bubble level. STFMI

bearings all the way around, an item that is illegal in Production racing. At the back end, an aluminum motor mount is used and it tends to act as a heat sink for the motor as well as keeping everything squared up at the rear. A genuine Thorp limited-slip differential, another item not allowed in Production racing, is included, and it is a well-built piece in itself, with the added advantage of not having to alter the setting on the diff just to change rear wheels. Servo saver included, naturally, and the radio tray is glass, as is the straight-cut chassis pan. At the front end, the steering blocks look very familiar (because they are from Associated's RC12E) but all else is different, with a heavy-duty glass cross bar supported by machined aluminum blocks. Looks pretty good and ought to be a very strong front end assembly. The wheels are Thorp's own, which have proven to be round (not all R/C wheels are, you know), light and strong. For front rubber, Thorp is offering a combination type with the outer ring being a harder rubber and the inner ring is pretty soft. I have had real good results with this type of front rubber using some left-over hard rings from Delta in conjunction with rubber that would normally be used for rear tires.

If you are one of those folks who have to see a car win a bunch of big races before considering whether to buy it or not, you may never own a Thorp 1/12 car, as John is not known for sponsoring large numbers of racers in a Team Gang-Bang approach to racing, which is evidently the only way to win a large number of important races. Still, you should know that at the most recent Regionals in So-Cal, with an entry well in excess of 200, John himself drove one of these cars to a spot in the A Main, "mature" reflexes and all.

The car works, is very straightforward in design and comes assembled. The price is $125.00, a few bucks more than other race cars, but still a very reasonable price. More information can be had from: Thorp Mfg., 380 South East End, Unit H, Pomona, CA 91766. Phone is (714) 622-6518.

The charger pictured is from Leisure Electronics and is the new model featuring digital readout. Really nice charger, looks good and is very well built, plus it has a couple of interesting tricks exclusive to itself. Usual stuff is there, slow charge when the timer shuts the fast-charge circuit down, timer for fast-charge cycle, and so on. The tricky bit is that the fast-charge current is adjustable; not just switchable from two preset values . . . adjustable. In operation, you hook everything up just like with any other charger available, turn the timer on and instantly the digital readout tells you what the combined pack and charger voltage is. To adjust charging current the little switch between the timer and the display is flipped to "A" and then by turning the "current adjust" knob left or right the amperage can be adjusted from nothing up to 6-½ amps. At the top, a 6-½ amp load is a pretty heavy hit for the batteries normally used in 1/12 cars. Keep it down to 4 amps or so for GE cells. However, more and more racers are switching to Sanyo cells which have a nasty tendency to be more easily damaged during charging. Here is where the Leisure charger offers a real advantage with the adjustable current feature, as during the first part of the charge, the cells can be charged at whatever level is safe. (If I had more experience with Sanyo cells I could tell you what it is. Sorry.) Anyway, as the charge progresses, the amps can be cut down some to avoid frying the pack, yet getting a full charge. Guess I didn't mention it, but when flipping the switch to "A," the display also switches, showing the amps flowing in hundredths of an amp and of course when in the "V" position, the display registers pack/charger voltage, again in hundredths.

Also going the other guys one better is the discharge circuit built-in to the

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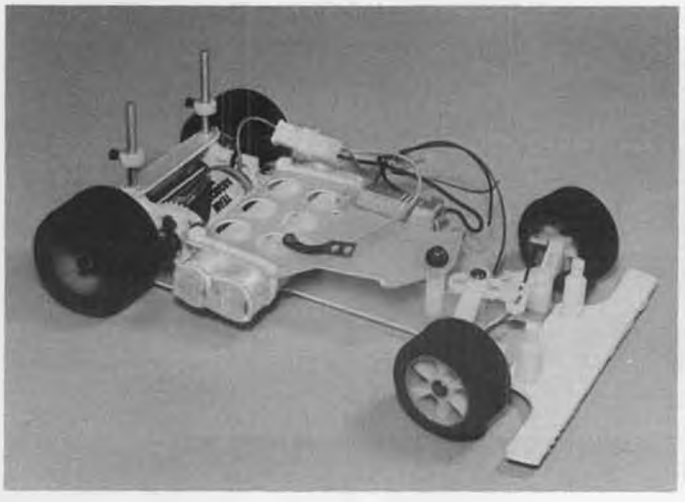


Associated Team Nats car; chassis shown in close-up and in "Group" shot with the total kit contents. Again, see text for more information (STFMI).

FUEL LINES

JOE KLAUSE
P.O. Box 2699
Laguna Hills, CA 92653

• This is the third month in our series on engine self-servicing. The subject is engine ball bearings. Okay guys, be forewarned. Some of you may view my comments "with alarm" such as, "Nonsense . . . unnecessary . . . manufacturers should use better bearings . . . etc."

Unfortunately, things are not that simple. In fact, the typical ball bearing is really quite a complex mechanism. It is a precision part that we all too often take for granted. If it fails, particularly a rear bearing, it frequently ruins an engine, and most modelers blame the engine manufacturers. In the overwhelming majority of cases, they are wrong. Let's consider how it should be treated.

First, why do we use them, or why are they better than plain bearings . . . even bronze oilite ones? Without going into a minor course in mechanics, they are simply more efficient in helping to convert reciprocal motion into rotary motion. There's less frictional loss, less heat and less chance of galling or failure . . . provided that they are properly maintained. Proper maintenance means nothing more than keeping them clean, and maintaining lubrication under design conditions. Let's delve into that last statement a bit more.

Keep them clean. That's a goal, but as with small children, almost an impossibility. Dirt, dust, water, and acids, any so-called foriegn matter, are ruinous. We all recognize the dirt and dust hazard, but not enough of us appreciate the water and acid bit. Certainly, none of us would use these as a fuel additive, but all too often we do not remember that they are present during normal engine operation. Fuel, particularly methanol, readily absorbs moisture from the air, and acids are a by-product of combustion. Consequently, if we do not use preventative measures, corrosion, even ever so slight, is sure to occur. That unquestionably will lead to bearing failure. You can prevent it by using a preservative after every flight or period of engine operation. Not hours or days later, but after each operation. As a guideline, if you don't expect to run the engine within the next half an hour or so, preserve it. A good squirt or two of WD-40, or other preservative/moisture-displacer, together with a few flips of the prop, is all it takes. That's no more than a fifteen second procedure that will certainly improve engine longevity. Make it a habit.

Keep them lubricated. What more can be said? This is obvious, isn't it? Yes, but don't we often forget to oil that front bearing in between flights, etc.? And, have you ever seen anyone clean a bearing, and then use compressed air to dry it? It's flat out fun to get that bearing spinning like crazy with the stream of air . . . winds up like a wild siren. Wheee . . . and you may as well add it to your fishing sinkers. It's only a matter of time before it fails. No lubrication . . . microscopic scoring . . . progressive damage and failure.

Photo No. 1 Removing front bearing.

How about design conditions? Well, they don't include engine detonation, pre-ignition, over-compression, and overheating. All of these cause rear bearing failure *regardless of the quality or class of the bearing.* In model aircraft, the most common cause of front bearing failure is sudden stoppage. That's a nice way of saying you stuffed it into the ground. As I said in the first paragraph, many of you will not agree, but in my opinion, if you even slightly bend a crankshaft, you've damaged a front bearing. With a rear bearing, if you have to use a bearing puller to remove it from the shaft, the chances are that you'll cause damage. Does this mean that you have to change bearings frequently? Not at all. If properly maintained, engine bearings can last for years. The exceptions to this are the bearings used in racing, speed, and other very high performance engines. This includes tuned-pipe pattern engines. My thumb rule with such engines is, if in doubt, install a new bearing. A new one usually costs less than ten dollars, and it can save you a lot of aggravation.

Continuing from the column of last month, let's assume you have disassembled your engine except for bearing removal. The question is, do you need to remove the bearings? Thoroughly lubricate the bearing and crankshaft/crankcase surfaces. Spin the crankshaft. It should rotate quite freely, and it should stop in a rocking motion with the crankpin at the twelve o'clock position. If it's not completely smooth, remove the crankshaft. Now insert the tip of your finger into the inner race, apply linear pressure and rotate the race of the bearing. If you feel even the slightest bump or catch, the bearing should be removed for cleaning or replacement. This is necessary because it is virutally impossible to thoroughly clean a bearing that is installed in a crankcase or front end of an engine.

To remove the rear bearing, use the propane torch to heat the area of the case holding the bearing. This is similar

Photo No. 2 Sometimes the rear bearing comes out with the shaft. No big deal.

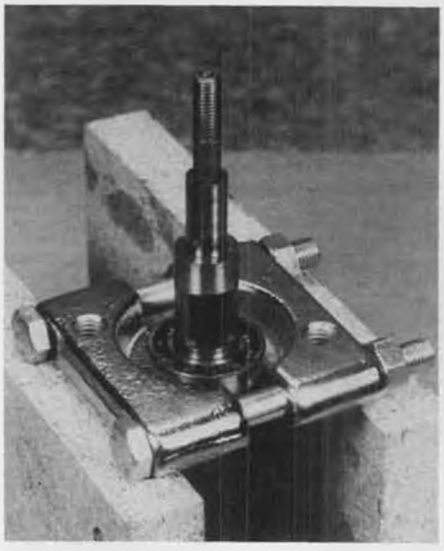


Photo No. 3 If necessary, the rear bearing can be easily removed.

to the technique described last month. Then, rap the case against a soft wooden block. If the bearing only slides partially out of it housing, use one of your "Z" hook tools to pull it free. For the front bearing, use a thick dowel to push it out after heating. Photo 1 depicts this procedure on the front end of a Webra .61 engine. All of the photographs this month are of a detachable front end. This is because it will be easier to visualize the techniques without the rest of the case in the photograph. However, the procedures are identical for a one-piece case.

Once the bearings are free of the case, clean them with warm water, a child's tooth brush, and plenty of half-strength liquid detergent, such as Purex or Wisk. When you think a bearing is clean, scrub it again, just to be sure, and then thoroughly flush it with warm water. If you have access to compressed air, use it to blow the bearing dry, but DO NOT SPIN THE BEARING WITHOUT LUBRICATION. Lacking air pressure, shake off the excess water, dry off more with a clean handkerchief, and then immediately douse it with WD-40. Remember, this preservative displaces moisture. Now, hold the center race vertically between thumb and forefinger and spin the outer race. If everything is free and easy, invert it, and spin it again. If you have not felt any hitch, bump or glitch, you have a good bearing. If you feel anything, and if you're sure you did a complete cleaning, then you need a new bearing.

At this point, let's backtrack and consider a possibility associated with removing a crankshaft. Sometimes a rear bearing fits the crankshaft tighter than the outer race fits the unheated case. Result, the bearing stays on the shaft when it is pushed or tapped from the case. Take a look at Photo 2. In this instance, it is not necessary to remove the bearing for cleaning. With a little extra effort, you can clean out the gunk throughout the bearing. After cleaning, dry, lubricate and spin-test it. If it's a good bearing, this will have eliminated the use of a bearing puller. If you must remove it, the set-up in Photo 3 shows how to do it. Simply drive the shaft out with a mallet. As you can imagine, if it's

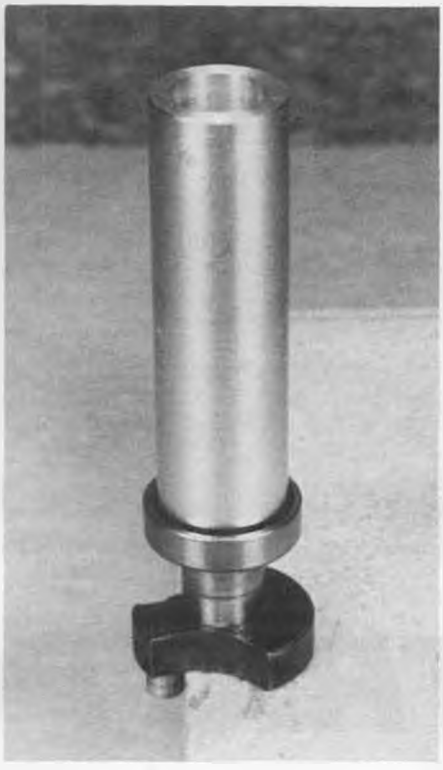


Photo No. 4 Installing rear bearing on crankshaft.

really tight, the raps of even a mallet are likely to cause damage, as force is transmitted from the outer race against the steel balls which in turn work against the inner race. Nicking of the races and balls is a good possibility.

To install bearings properly, you'll need what I call bearing seaters. Photos 4 and 5 show how they're used to press bearings in place. Are they absolutely necessary? No, but they sure do make bearing alignment easy. Further, if the bearings are a snug to tight fit on the shaft, as they should be, it's quite difficult to fully seat them without such a tool. Where do you get them? You make them. Mine are machined from aluminum. You can make them by drilling an appropriate size hole lengthwise through a hard wooden dowel. Thick-walled aluminum or brass tubing will also work well. Cut them to the length appropriate to your crankshaft, but be sure that the end is square, and that the end surface is flat and smooth.

Begin by sliding the rear bearing on the shaft, and then, with the seating tool, press it fully in place. See Photo 4. Use an arbor press or a mallet. Note that the bearing seater only presses against the inner race in this instance. Now, heat the case, and slide the crankshaft into it. This will prevent cocking the bearing in its housing. Some pressure may still be necessary. If so, use a wooden dowel and mallet. It should only take a few light taps . . . not enough to nick the balls or races.

With the rear bearing and shaft in place, the front of the shaft will be a guide for alignment of the front bearing. In Photo 5, another bearing seater is used to press the front bearing in place. The face of this tool makes simultaneous contact with both races. With the case heated, not much pressure is needed. Again, an arbor press or mallet will do nicely,

Now spin the crankshaft. It should be free and easy and rock to a stop. If it doesn't, one or both bearings may not be properly aligned. Selective tapping with a mallet and seating tool will correct this. Be patient. The satisfaction of the feel of a smooth spinning crankshaft will be well worth it.

Next month, we'll discuss sleeze and piston assemblies, connecting rods and wrist pins. In the meantime, keep those bearings clean and lubricated. •

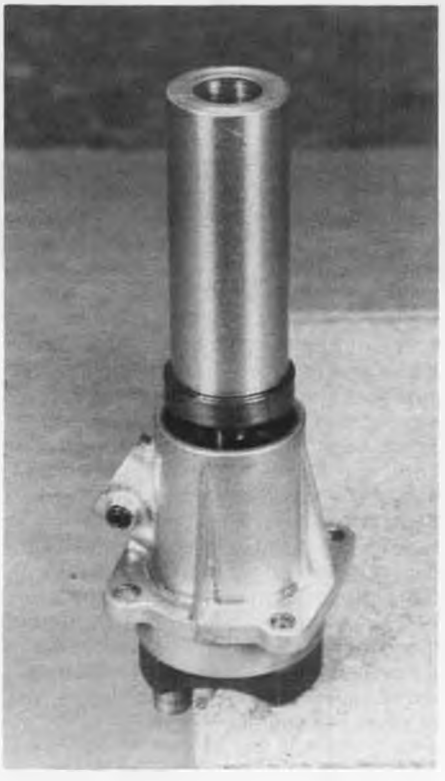


Photo No. 5 Pressing the front bearing in place.

NO, NO,
THAT'S NOT THE WAY TO START THE 'BIG ONES'!

The Peck-Polymers blimp cruises in the demonstration area at the IMS Pasadena model show. Vinyl bag now available, along with plans and instructions. Complete kits coming soon.

ELECTRIC POWER

By MITCH POLING

• The indoor electric scale contest at the IMS show in Pasadena was a real test of airplanes and pilots. I think it was the most difficult flying I have ever done. Then, after all that, I have to say that Tony and Addie Naccarato made it look easy! Their red quarter-scale Farman Moustique looked majestic as it hummed overhead, making beautiful flat turns in perfect figure eights. To top if off, they started building it only a week before! I started my Sopwith Tabloid three months earlier and couldn't begin to match the Moustique! What this really says is that Tony and Addie, the mother and son team from Burbank, are really good designers, builders, and fliers, among the very top in this country. Their other entry, the Sorrell Guppy, had been started a month before, and the experience paid off in a much shorter building time for the Moustique, though, as Addie said, "our pillows didn't get much use that last week . . . up all night building!"

The basic rules for the contest were a maximum weight of 24 ounces and maximum wing loading of 3 ounces per square foot. The plane had to be flown and qualified the Thursday before, in the IMS exhibit hall. The real challenge was the layout in the hall. There was a central area, about half the size of a basketball court, for launching or take off, and surrounding that were eight-foot high booths for displays. Above that was about twelve to fifteen feet of vertical space to fly in. You had to be able to clear the booths and still not go too high, plus you had to be able to spot land in the small central area. Like I said, the hardest flying I have ever done.

There were just the three planes, the Tabloid, the Guppy, and the Moustique. There had been many more entry forms sent in, but no one else followed through. Part of this was most likely due to the time and effort it takes to design and build a scale plane that can meet all the challenges I've described. Choosing a scale plane that will fly well under these conditions is half the battle. All the entries were chosen because the full scale prototypes flew well. The Sopwith Tabloid prototype first flew in November 1913 with a Gnome 80 hp rotary engine, and revolutionized the performance of biplanes. It won the Schneider Cup Race the next year, and was the direct ancestor of the Sopwith Pup. The Guppy was designed in the 60's by the Sorrell brothers, in Washington state, and flew well on an 18 hp Cushman engine. The Sorrells later went on to design the Hyperbipe, a high performance biplane. The Guppy has negative stagger and a huge side area on the fuselage. More about that later! The Moustique flew in the 20's, and was one of the ultralights

The author's scale Sopwith Tabloid entry takes on a supply of amps between flights. Plane was on cover of last month's issue.

Tony Avak's blimp may appear to need anti-wrinkle cream, but it flew maneuvers well enough to win first place.

Tony and Addie Mae's Farman Moustique made many smooth flights. Would have won with more scale detail.

popular at that time. It flew on about 20-30 hp, with excellent performance.

My Tabloid was ready for qualification on Thursday night, but with some initial problems. I had flown the Tabloid with the Astro 020 and the 3:1 speed reducer, with several prop combinations, in my college gym, but I found that though it could ROG, it would not climb. I had some prototype Astro 035's, and they should have done the job, as the 035 is equal to a Baby Bee in power (12,000 rpm on a 6x3 prop on six cells). Then, on a trip to California, Pan Am lost one of my bags that had the 035's in it (so far, the bag has not shown up) before I had a chance to try it. So, the day before qualification I made a trip to Astro Flight and Bob Boucher very kindly gave me one of his last two remaining 035 motors (many thanks, Bob). Qualification night I tried the 020 first in hopes that it would work after all, but I got only short hops. Then I put in the 035 with six cells and began tuning for the right prop. Bill Stroman, the CD, was very patient through all the experimenting, and gave me some extra time to qualify. I tried a 9x6, then a 10x4, and still only short hops. Finally I tried an 11x4, and the plane came to life! A good thing too, because it was getting late in the evening and the hall was closing up. I got an excellent ROG and circling flight, and Bill gave me permission to do an early flight on Saturday morning before the crowds came to confirm my qualification.

Meanwhile Tony and Addie had gone through a similar process by a different route. They also had to tune for the right prop on both their entries, but all their flying was from hand launch. The hand launch gave flying speed immediately and kept the climb-out requirement to a minimum. It did require a very good person for the launch and a very steady pilot, because you were committed to clearing the booths once you let go! The ROG approach was easier for "chicken pilots" like me because I could stop at any time, and once airborne, I could circle until I had enough altitude to clear the booths. It did require much more power to climb in circling flight, which was a major problem.

Tony and Addie used the stock Astro 020 with 3:1 reducer on both planes. Both planes were very clean compared to the Tabloid, and this lower drag allowed enough power for a mild climb from hand launch and steady level flight. Addie did the hand launching and Tony did the flying. They tried a 9x5 first on both planes, and only superb piloting by Tony kept the planes from hitting booths; he even flew between booths! The right prop turned out to be an 8x6, and both planes smoothed out into nice regular figure eights above the booths, beautiful to watch. Before it all settled down, the Guppy had a few hair raising flights, in fact, Tony found it could fly on its side! It was amazing to see the Guppy in a nearly vertical bank, barely moving, and still under control! All that side area paid off! Needless to say, Tony and Addie qualified! Addie, by the way, is the chief builder in their team, and the workmanship in these planes is just immaculate. I wish I could do such perfect covering jobs . . . maybe some day.

On Saturday morning I made an excellent ROG and circling flight *(the one shown on the cover. wcn)* in the central space, much like a U-control model, and finished my qualification. Tony followed with three flights on the Farman and two flights on the Guppy, and I did another flight in the afternoon with the Tabloid, including figure eights (not quite as good as Tony's!).

Sunday did not go well for me, I could not climb from ROG and had to make a hard landing, which damaged the landing gear. After this was repaired, Addie gave me a hand launch, but again no climb, and the plane was out of action with a damaged wing center section. Tony did well with one flight on the Guppy and five flights with the Farman. At the end of the day, Tony and Addie had clearly earned the first and second place, with me in third (oh well, at least I flew!). First place was the Guppy, earned on static points, as the Farman had more flying points. The Farman was second, the Tabloid third. Tony and Addie got a nice sum of $200 for first place (no awards for second or third). Well deserved!

Some of the structure details on these planes follow:

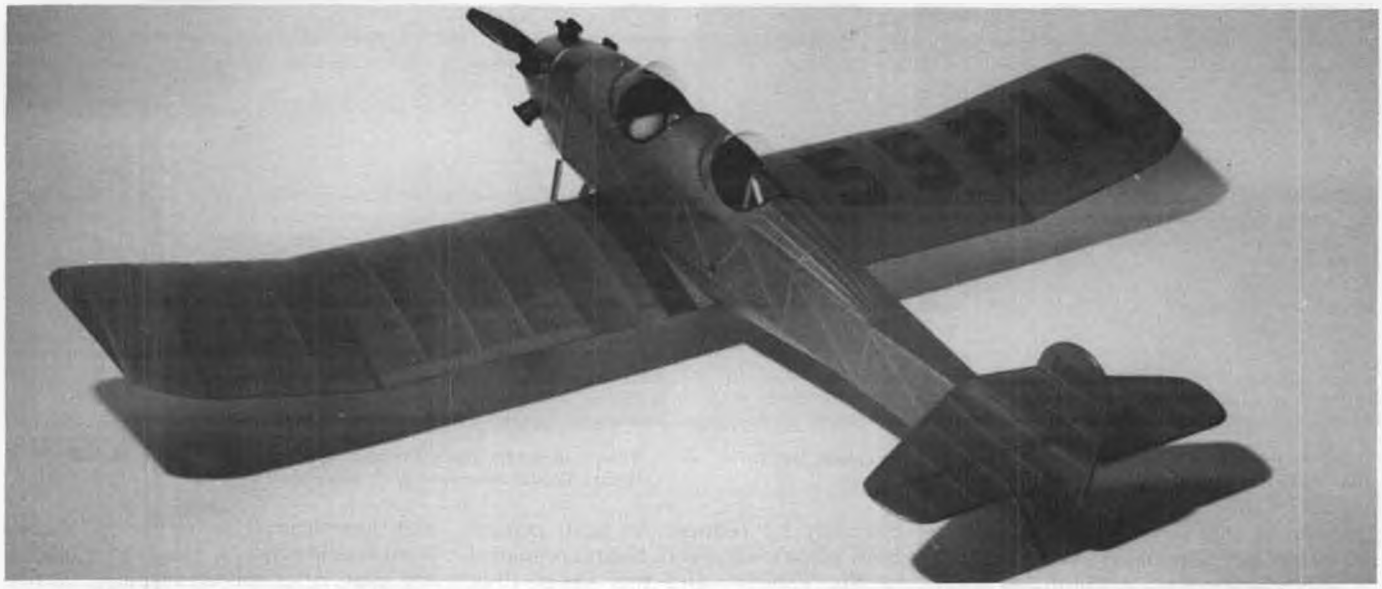
Farman: 23.5 oz., 8 sq. ft., frame 1/8 sq. balsa, three-channel, microswitch on-off, Japanese tissue covering, nitrate dope, controls by cable, Cannon Super Micro radio.

Guppy: 22 oz., 900 sq. in., 1/8 sq. balsa frame, Peck-Polymers' Japanese tissue, Cannon Super Micro radio, controls by thread cable, microswitch on-off.

Tabloid: 23.5 oz., 8 sq. ft., frame 1/8 balsa, Peck-Polymers' Japanese tissue, Sig Lite clear, three-channel, Cannon Super Micro radio, microswitch on-off, plus microswitch low (resistor) throttle, thread cable controls.

Well, enough for now, more next time on IMS, and on solar power! •

The Naccarato's first place Sorrell "Guppy". It is capable of knife-edge banked turns with all the fuselage side area.



This fine "Nicholas-Beazley NB-3" was built by Hurst Bowers, who seems to specialize in scale models of Golden Era Aircraft . . . bless his soul! This one is single-channel control on rudder-only.

Sport SCENE

By LARRY RENGER

• What the world needs, List #2. Some time ago I listed a bunch of things that I felt would be a boon to the sport and especially the 1/2A modeler. Well, one or two of the items have actually come into existence, so mightily encouraged, here goes again. If you put one or more of these suggestions into practice and make a fortune selling them, my "finder's fee" is a free sample.

1) A small power source for scale jet aircraft equivalent to the old Jetex motors, or better distribution of Jetex, if it is still made. Also, on the subject of Jetex, once upon a time extra fuse materials and gaskets were available. Only by replacing the gasket every flight was I able to get any kind of reliability.

2) A 1/2A or .10 size high performance, aerobatic biplane kit. Actually this might exist. Royal products has a 330 in.^{2} biplane kit I am looking into. More on this later.

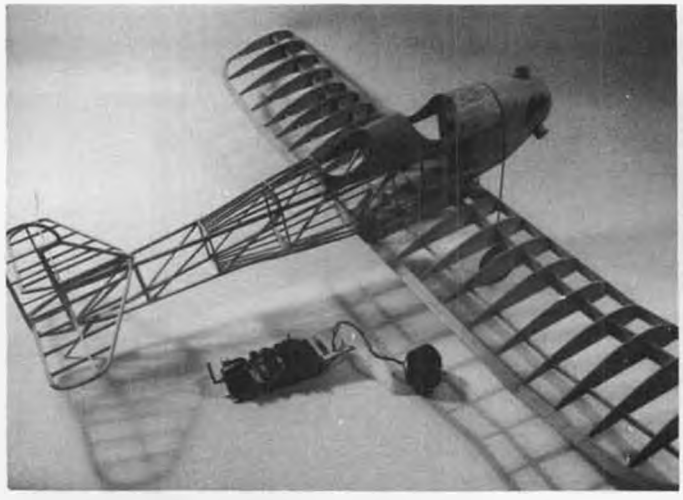
3) Extra light plastic film covering similar to Monokote but at a weight more appropriate to 1/2A models. Even a dopable clear material with separate adhesive would be OK if the handling qualities were reasonable.

4) Bead foam boards with fiber reinforcement as a cheap balsa substitute.

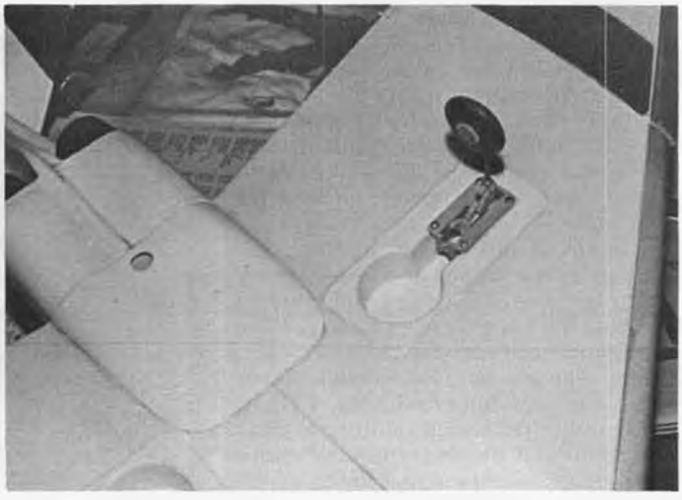
5) A sleek, light, .10-size aerobatic R/C model kit. Aim for a maximum weight of 28 ounces, 300in.^{2} wing area, tapered, swept planform, a scale-down of a current competition design would do nicely. Such a model would fly well with any of the current throttled .10's.

6) A source of those good old rustable, breakable razor blades in both single and double edge. I know they are available somewhere in the Orient, but an importer could make a small fortune (out of a large one?) with these things. Nothing I have seen cuts tissue like a broken double-edge blade.

Moving right along, I got a letter from David Unruh, who lives up in Kenai, Alaska. First, he reports that he succumbed to temptation and converted his "Little Sport" F/F to R/C in a fit of desperation when he ran out of other models. Second, he has some questions about the G-Mark five-cylinder radial



Framework shot of Hurst Bowers' NB-3 shown above. Receiver and actuator are on single board for easy removal.



Underside shot of Phantom by Model Merchant, showing retract installation. Wing is of "egg carton" polystyrene foam.

"F/F Scale" columnist Fernando Ramos feeds the Davies Dart engine in his pale blue finished Flyline Kinner Sportster. Has pendulum control on ailerons.

engine. I called up Bill Cannon, the importer and got the answers:

1) Is each cylinder on the radial the same as the cylinder of the .06? . . . Yes, but the con-rod is somewhat different due to the changed crankshaft.

2) What plug should be used, long or short? . . . The engine requires short reach plugs. Even though you can turn the engine over with the long reach plugs in place, the tolerance stackup reverses when the engine is running and there is a fair chance of damage. It is OK to use a long reach plug if you place an extra glow plug gasket between it and the head.

3) Can the piston/rod fit be tightened the same way as with Cox engines and with the same tool? . . . Yes, in fact that is the way Bill does it when he services the engines.

4) The engine is gear driven. Wouldn't it have been great if there had also been gear reduction? . . . You bet! This engine is destined, when used to go on scale models of vintage eras. (Sadly, few are ever flown, mostly they go on collectors shelves!) Big props would be a great advantage in achieving realism.

David mentioned at the end of his letter ". . . there are two Cox .010's here; one on the local hobby shop shelf, the other in a drug store. If someone out there wants one, I can either supply the addresses or I'll buy them and send them out COD. They are both marked $21.00."

Changing subjects once again, I have made a discovery in the never ending battle against heavy aircraft. I recently built one of those "almost an airplane, but it doesn't have an engine" things, and was experimenting with cutting my own foam cores. The cores came out rippled, but usable, so next I wondered what to cover them with. After sanding the cores, and adding leading and trailing edges, I inlaid a tapered balsa spar on top, and ran package strapping tape on the bottom. The wing was then covered with cheap, brown wrapping paper bonded with spray adhesive. I found that the stuff has some wondrous characteristics. It weighs half as much as 1/32 balsa sheet, is plenty strong for surfacing light models, it will both heat and water-shrink, and it is both cheap and readily available at any stationary store. Drafting mylar would have been a good alternative for a much larger model, but it weighs 3 times as much.

The glider weighs 10 ounces including two-channel radio. It has 330 in.^{2} wing and a foam fuselage. Also interesting, it was surfaced with a lady's stocking, laminated with white glue. If I added a Tee Dee .049 and a bladder tank, the weight would only climb to 13-1/2 ounces! Straight up with a couple of ounces of thrust to spare. The finish started with two base coats of Urethane filler and ended with sprayed Urethane for a flat camouflage finish.

The mix for the filler was two parts clear Urethane, one part thinner, and one part cornstarch (talc would work OK too). Be sure to let each coat dry AT LEAST 24 hours before sanding. If you sand too soon, the stuff is faintly tacky and you get a patchy build-up on the sandpaper. Oh yes, the brown paper has a rough side and a smooth side. Be sure to put the smooth side out for the best finish.

Photos for the month: First one is a bottom view of the Phantom by Model Merchant. Specifically, you can see the wheelwell and retract installation. That model is really clean in the air. The wings are of "egg carton" expanded sheet polystyrene foam. Fuselage is thermo-formed plastic shells. Construction is easy.

Second photo is from the L.A. Flight-masters' scale contest. Larry Olson, from Kent, Washington scratch-built this gorgeous Halberstadt D-2. He took 2nd in the gas power event. Power is by a Pee Wee .020 swinging a 6x3 Top Flite prop. The model is based on Bob Holman plans and uses markings cut out from SIG decal sheet material.

Third photo is my esteemed colleague Fernando Ramos with his Flyline "Kinner Sportster." The power for the all pale blue model is a Davies Dart engine. Weight was kept down to 6 oz. despite the fact that Fernando rigged pendulum control ailerons to help stabilize the model's flight trim. Tissue was used as a covering material.

The last two photos are from our perrennial contributor, Hurst Bowers. The model is a single-channel "Nicholas-Beazley NB-3." As you can see, Hurst has rigged the receiver and actuator on a single slab so it can be installed or removed like a "brick" system. Neat idea; I'll have to steal it! Judging by the position of the switch, you turn the radio on and off by reaching through one of the open cockpits. The "brick" looks as if it will go in through the wing opening.●

Larry Olson, Kent, Washington, took 2nd in Scale Gas at L.A. Flightmasters contest with this Halberstadt D-2. Power is Pee Wee .020 turning 6x3 Top Flite prop.

Model boating's "Grand Gentleman", Al Wood (right) visits with Joe Monohan at Legg Lake record trials. Al makes many models used in movies. Joe is one of So. Cal's best known R/C Unlimited racers.

NAMBA's fastest Junior Boater, Steve O'Donnell. His OPS .65 powered hydro has been clocked at over 85 mph.

Norm Teague holds his twin K & B Outboard tunnel. Clocked at 48 mph for 1/16 mile, Legg Lake, December 6 and 7, 1980.

R/C POWER BOATS

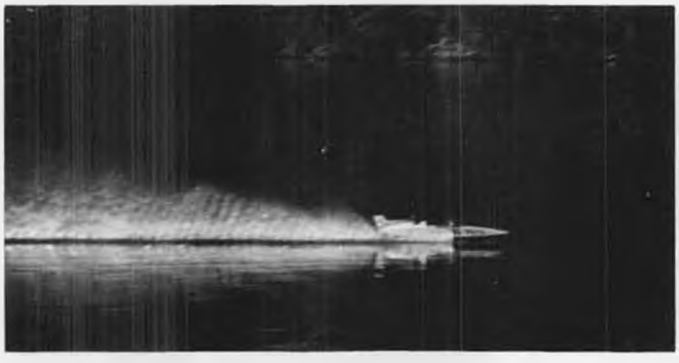
By JERRY DUNLAP PHOTOS BY AUTHOR

HAVE YA EVER SEEN A MODEL BOAT GO 85 MPH?

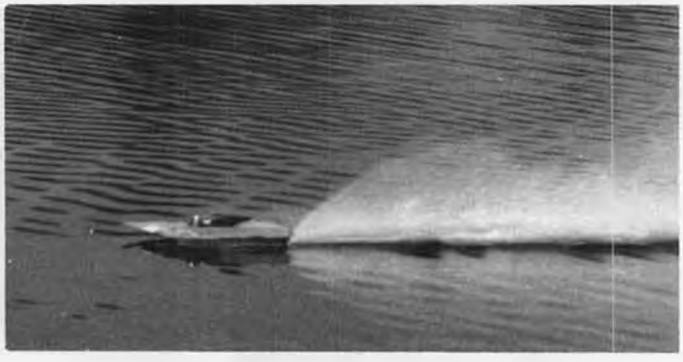
The opportunity to tie together a business trip with a quick stopover in the Los Angeles area was afforded your model boating columnist in early December of last year. My host during my stay in Los Angeles was N.A.M.B.A. District 19 Director, Jack Garcia. As luck would have it, I was able to observe a record trials being held at Legg Lake in South El Monte. The record trials was sponsored by Ron's Drain Lines Racing Team. That may seem like a rather unusual name for a model boating club. However, when you learn that Ron Coveney, the organizing force behind this club owns and operates a company that installs drain lines I suppose it begins to make more sense. Ron served as the event director for this two day event that took place on December 6 and 7. Jack Oxley served as his assistant and the Southern California boaters who participated helped with running the timing scanners.

For those of you who have never witnessed a record trials, it might best be described as an event having vast amounts of inactivity broken by occasional excitement. The basic idea of record trials is to run your boat through a measured 1/16 mile and find out how fast the boat will go. Consecutive two-way passes are required to establish a speed record in this event. Driving a model boat straight for a distance of 1/16 of a mile might not seem like all that difficult a task. However, it is surprising how difficult it can be to drive a model boat straight for that distance. In order to obtain top speed, the model must get a running start at the timing area. Since the idea is to go as fast as you can, the boats are trimmed to run loose and free. A model boat trimmed for all out speed is extremely sensitive to water conditions, wind, and rudder control. When all these factors are taken into consideration the challenge of driving straight begins to make its presence felt.

Having participated in record trials for a number of years, I can appreciate the skills required to properly set up a boat that will run both fast and straight. At the Legg Lake event, I was provided with a number of opportunities to indulge in appreciation. This site is the best known model boating lake in Southern Cali-

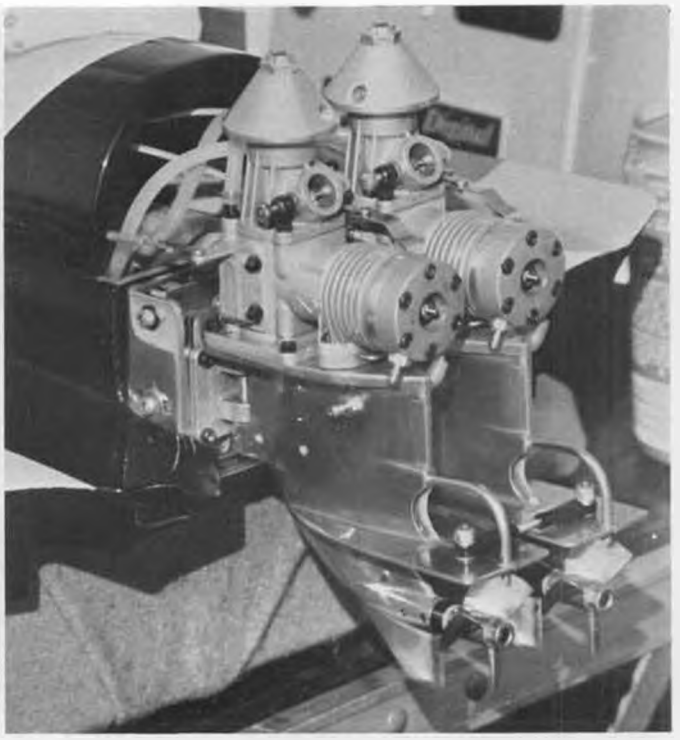


Joe Monohan's Sport 40 Van's PX uses front intake K&B .40 to reach 55 mph.



Wray Freitas' record holding X Class Hydro averaged 85.22 mph with K&B .68 prototype. Crapshooter 60 hull.

Craig Glasgow with Westcoast Marine Stingray Deep Vee which set NAMBA records in .21 Outboard Mono and .21 Outboard Deep Vee.



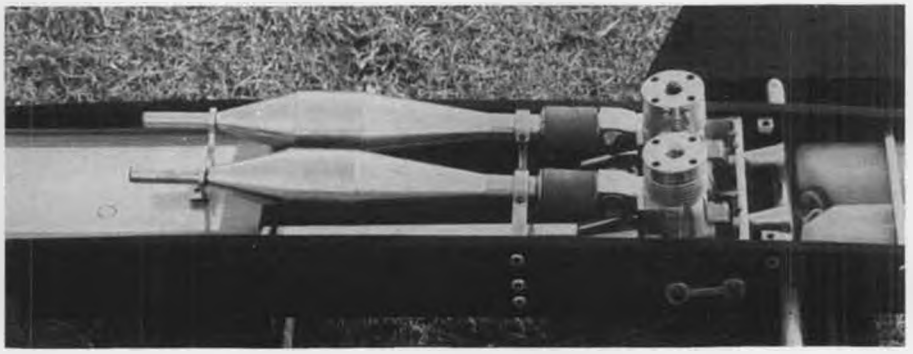
Business end of Norm Teague's twin tunnel. Note needle valves located in engine throat. Must use crankcase pressure.

fornia. A good record trials site will have adequate room on both ends of the timing area to allow the models to gain maximum speed prior to entering the timing area. Legg Lake offers this room. When the boats begin going past 60 mph, adequate entrance and exit lengths become very important.

Without doubt, the model boater who impressed me most during this two day speed event was Wray Fritas from Garden Grove. In N.A.M.B.A.'s 1/16 mile record trials, Wray now holds the hydroplane records in three out of the four possible classes. Wray holds the records in B(.45), C(.65), and X(up to 1.34) classes. He established new records in the B and X classes while I was attending this event. Until this event, the fastest I'd ever seen a model boat go was 78 mph. I must have witnessed over a dozen runs above the 80 mph mark at this meet. It was a real pleasure to observe Wray's record runs of 82.11 with a K&B .45 in a .21 size Crapshooter, and his 85.22 mph run with a K&B .68 in a .60 size Crapshooter. You didn't know K&B made a .68? Well, actually Wray was using a prototype engine that K&B is developing for future release as both an aircraft engine and a boat engine. In order to obtain research and development information on this engine, K&B has provided one to Wray to use in his record attempts. It's my opinion that they certainly gave it to the right man. Both of Wray's Crapshooter hulls were very well engineered. It was evident that he had spent considerable time preparing both the boats and himself for straight line running. I think any model boater interested in learning how to run the 1/16 mile record trials should watch when someone of Wray's ability is on the course. Like other excellent 1/16 mile competitors I've seen, he takes adequate time to properly line the boat up before entering the timing area. During the actual straight running, he tried not to steer the boat any more than absolutely necessary. If the boat is properly aligned prior to entering the timing area it should be possible to let it run the entire 1/16 mile without any rudder control. I should mention that this is much easier said than done. Many of those participating at this event drove their boats like they were in a heat race and attempting to miss stalled boats on the course. Every time a boat changes it's heading it slows down. Trimming a boat to run fast and then learning how to keep it heading in one direction is the challenge of the 1/16 mile record run. It seemed to me that many people at this event needed to spend more time on learning to drive their boats in a straight line.

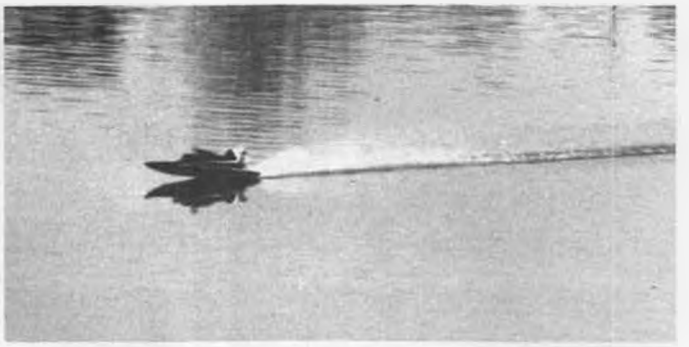
Another hydroplane that I felt was rather impressive was an original design run by Charlie Perdue. Charlie's hydro was a .21 class boat of his own design. It is an outrigger configuration and very sleek in appearance. The front sponsons feature slots running the length of the sponsons. This boat made a number of runs at just over 66 mph and was only 1 mph off the record. This same boat won the District 19 .21 Hydroplane Championship award. It is apparently an excellent boat for oval competition. Charlie informed me that he hopes to begin kitting this boat in fiberglass sometime in the future. He said I'd be

Wray Freitas set two new NAMBA records in .45 and I.3 hydro for 1/16 mile. Shown with Crapshooter .21 (K&B .45) and Crapshooter 60 (K&B .68). Legg Lake, December 1980.



Gene Adams' OPS powered twin hydroplane featured tuned pipes custom made by Gene. Boat features excellent engineering and craftsmanship.

Mike Wisniewski's K&B .68 hydroplane does some acrobatics at 85 mph.



Norm Teague's Prather Tunnel had fast time at Legg Lake for outboard tunnels at 37 mph plus. Boat kit now available.

given any information about the boat once he gets it ready for release.

Anything with an outboard on the transom would catch my eye and my eye got caught by the record runs being laid down by Craig Glasgow with his Westcoast Marine Stingray. Craig bettered both the A Outboard Monoplane and A Outboard Deep Vee records during this meet. Since I held both of the records for a short while last year, it was interesting watching these record runs. Craig is fairly new to this hobby/sport and this is the first time he's held my records. Driving an outboard vee straight for any distance is a trying experience and Craig did the job sufficiently well to take home two records. Craig's new record for A Outboard Monoplane is 39.06 mph and the A Outboard Deep Vee record was set at 38.32 mph. Since N.A.M.B.A. will be dropping Deep Vee records and initiate Offshore Class in 1981, Craig's Deep Vee record will not be up for grabs. It is doubtful that any outboard powered boats will get into the new N.A.M.B.A. records' listings in the Offshore Class since they would have to race against inboard powered hulls.

The other outboard, actually outboards, that caught my attention was the twin K&B Outboard powered tunnel belonging to Norm Teague. Norm is the chief machanic for Nordskog Marine, a supplier of full size racing equipment. The word beautiful just doesn't do justice to the appearance and craftsmanship of Norm's models. His twin tunnel is a George Campbell design that Prather Products has made in limited production. This boat had a one way pass at just over 49 mph. The sound of those twin K&Bs was unbelievably sweet. Norm had the tunnel trimmed perfectly and it just hung there with a little bit of the sponsons and the props in the water. Norm also ran one of the new Prather Tunnel hulls with a single outboard. Of the single outboard tunnels that ran, Norm had the best time of just over 37 mph.

I would be remiss not to give a special thanks to Jack Garcia and his wife Rosie for serving as my hosts during my stay. Jack took the time to drive me to Prather Products, Model Builder, and Westcoast Marine. He also gave me a tour of the K&B Manufacturing facility. I hope to use some photos and information I obtained during my visits to these places in future articles. It was enjoyable to drop by the RCMB office and have Bill Northrop give us the grand tour of the place. I was really surprised how big the office was. I greatly enjoyed my brief stay in Southern California. Having the opportunity to meet new people in the hobby and renew old acquaintances is always a pleasure.

DISTRICT 19 RACING RESULTS

During my visit, Jack Garcia took the time to provide the 1980 District 19 racing results. The first listing of results is for their Championship Series in hydroplane and monoplane classes.

A Hydro
1. Sid Ford
2. Ron Russell
3. Jack Oxley
4. Tom Topping
5. Bob Jacobs

A Mono
1. Joe Jusak
2. Ron Russell
3. Paul Michalcylk
4. Scott Caldwell
5. Barbara Bishop

B Hydro
1. Joe Monohan
2. Ron Russell
3. Tom Topping
4. Jack Oxley
5. Ralph Henry

B Mono
1. Terry Holland
2. Terry Prather
3. Al Prather
4. Diane Semler
5. Robert Holland

C Hydro
1. Jack Oxley
2. Richard Fish
3. Ralph Henry
4. Steve O'Donnel
5. Jim Lawson

C Mono
1. Richard Fish
2. Jack Bishop
3. Richard Taylor
4. Terry Holland
5. Doug Nystrom

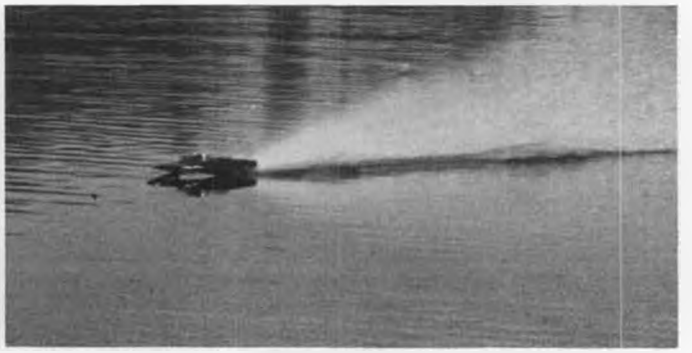
District 19 and *Powerboat* Magazine sponsored a special outboard series during 1980. Three classes of outboards were raced: Stock Tunnel, Modified Tunnel, and Modified Vee Bottom. The final results of the Powerboat Outboard Series are as follows:

Stock Tunnel
1. Tim Hess, Lil Lightning
2. Joe Monohan, Rascal
3. Frank Hu, Campbell Tunnel
4. Norm Teague, Prather Tunnel
5. Jack Garcia, Hamilton Tunnel

Modified Tunnel
1. Jack Garcia, Stewart SST
2. Rich Hazelwood, Lil Lightning
3. Norm Teague, Prather Tunnel
4. Jim Rudasill, Lil Lightning

Continued on page 75

Craig Glasgow's outboard on one of its record runs.

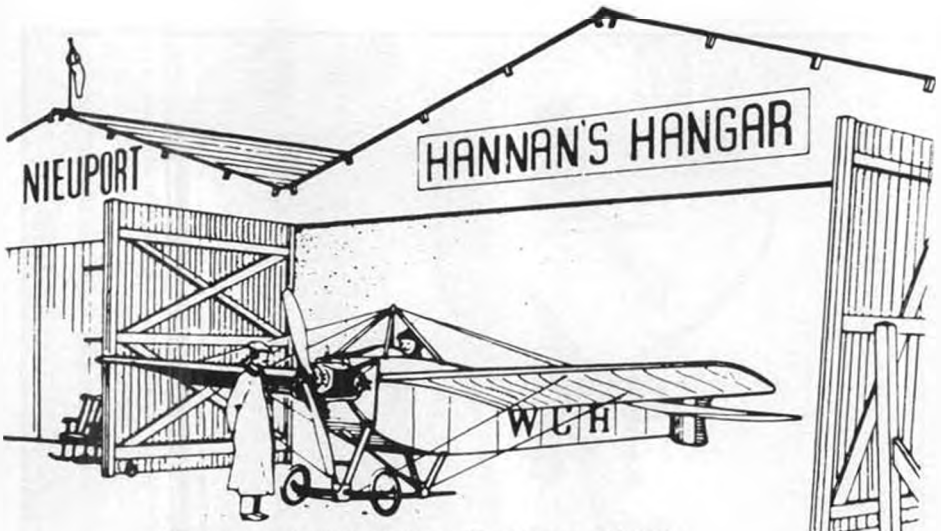


Gene Adams' twin going smoothly at about 75 mph.

HANNAN'S HANGAR 50
BOSTON FOUND 51
FREE FLIGHT 54
CONTROL LINE 58
FREE FLIGHT SCALE 60
CO_2 BANSHEE 61
ELECTRIC CHAMPIONSHIPS 64

The Travel Air "Mystery Ship" in perfect profile. It was flown at the 1929 National Air Races to 1st Place, at an average speed of 194.9 mph. Power was a 9-cylinder Wright Whirlwind J-6, R-975, 400 hp. Photo provided by Pete Wetsburg.

FREE FLIGHT AND CONTROL LINE



"Every noble work is at first impossible"

• Our desk calendar yielded the above quotation, calculated to reassure those of you contemplating a new model project!

THE JERSEY BOUNCE

Regular readers may recall our passing (and we thought innocent) remark about New Jersey, which brought forth a protest letter from Don Typond, who pointed out the importance of his state in aeronautical history. A pamphlet recently brought to the Hangar may help to set the record straight. From the Aviation Hall of Fame & Museum of New Jersey, it includes the following "firsts":

First landing of an aircraft in the Western Hemisphere (January 9, 1793, no details given).

First dirigible balloon in the Western Hemisphere (1863, Dr. Soloman Andrews).

Several early flying machines in 1909 (Hugh Willoughby and Frank Boland).

First transatlantic motor balloon flight attempt (1910, Walter Wellman and Melvin Vaniman).

1912 Hackensack air shows (Fred Kuhnert).

World's largest bomber of 1919 (the Barling, built at Teterboro).

Famous pilots of 1920's used engines built in Patterson, NJ (Wright Wirlwind [sic] engines powered the flights of Charles Lindbergh, Clarence Chamberlin, Richard E. Byrd, Amelia Earhart, Floyd Bennett, Roger Q. Williams, and Clyde Pangborn).

1920 Fokker aircraft from Teterboro were first to fly over North Pole, South Pole, non-stop across the Pacific and carried the first woman over the Atlantic.

Lakehurst was the largest airship center in the U.S.

Four major airlines had their beginnings in New Jersey during the 1920's.

In 1927-29, Teterboro was the headquarters of the Gates Flying Circus.

Teterboro had the largest air cargo terminal in the U.S. during 1940's.

Newark airport had the first paved runways at a commercial airport in the U.S. (1928).

Astronauts Wally Schirra and Buzz Aldren first flew in an airplane at Teterboro.

Our thanks to Byron Whartnaby on behalf of all New Jersey residents. P.S. Byron lives in California!

TO RUSSIA WITH LOVE?

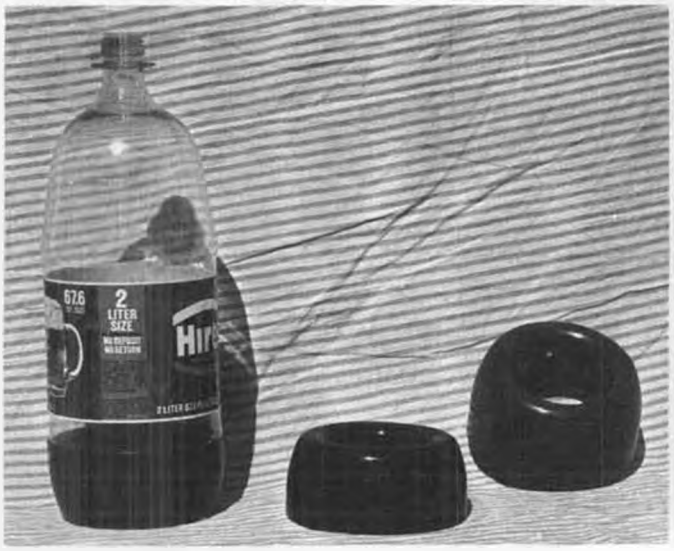
According to Bob and Dolly Wischer, who attended the FAI meeting in Paris, the Soviet Union has asked to host the 1982 Scale Model World Championships. (See R/C Scale column.)

SOLAR POWER!

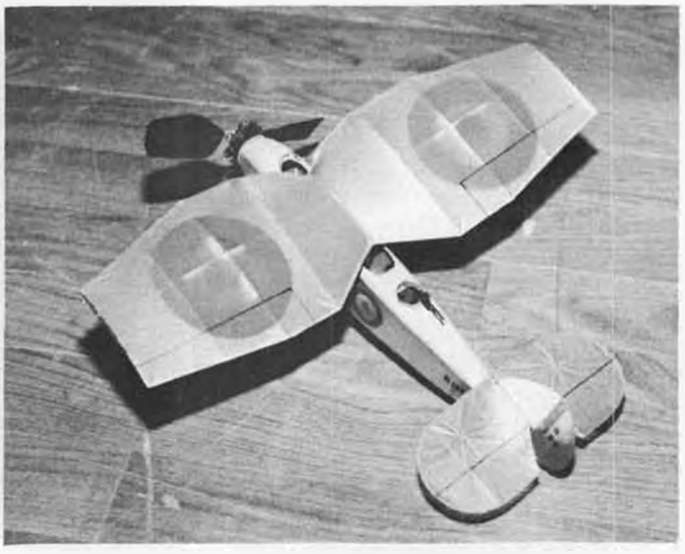
We've heard a lot lately about solar powered aircraft, but according to Rob Staehle writing in the American Institute of Aeronautics and Astronautics news-

Continued on page 76

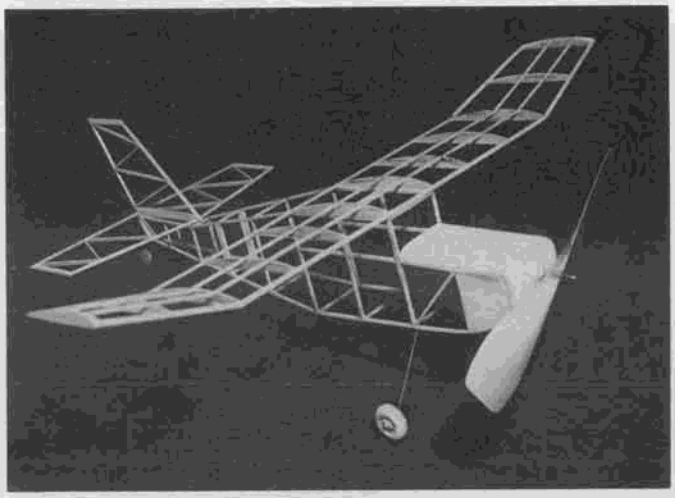
Tom Nallen Jr's Messerschmitt M-35B, scaled from John Underwood's book *Acrobats in the Sky*. Rubber powered model spans 21 inches.



Ced Galloway uses 2-liter plastic soda bottle bottoms for cowls. Pry off, cut out center, fill three holes in bottom.



Blackburn "Airedale" peanut by E. Fillon. Was entry in French Jacques Pouliquen Memorial contest. Photo by Roger Aime.



BOSTON FOUND

By WALT MOONEY . . . This month we deviate slightly from the regular Peanut feature in order to present a model designed for an interesting new class, one that should give the beginner a real incentive.

• There is nothing difficult in the building of this model, if you have built any stick-and-tissue flying models, or if you have read any of the many Peanut Scale model articles that have been published in *R/C Model Builder* magazine since its inception.

Therefore, this will not be a "put part A with part B" construction article, but will deal with the rules and philosophy associated with the "Bostonian Event" or more specifically, the Bostonian West Rules.

The "Bostonian Event" was originally thought up on the East coast for simple, easy-to-fly and construct indoor models that would be scale-like in appearance and thus attract a lot of builders and flyers. Ed Whitten of New York, promulgated the first Bostonian rules in the *Star Skippers* newsletter. Since the Easterners, I suspect, were primarily interested in an indoor event, and had quite a few builders of the fairly lightweight "Manhattan" at hand, the original rules called for a minimum weight of 7 grams, or a quarter-of-an-ounce.

Only in the matter of weight does the Bostonian West Event differ significantly from the original. I felt the 7-gram rule would result in models too light to be reliably flown outdoors, and too flimsy to be built easily by anyone, including juniors. Since I particularly wanted to encourage the junior contingent, I opted for a 14 gram minimum weight rule, without the rubber motor. This was a particularly fortunate guess, since models built to the rules, using plastic propellers and using 1/16 square balsa stick structure and Japanese tissue covering, tend to weigh in just about right.

So what are the complete rules?

1) Maximum wing span, 16 inches.

2) Maximum propeller diameter, 6 inches.

3) Maximum wing chord, 3 inches.

4) Maximum length from the thrust bearing to the opposite extremity, 14 inches.

5) Minimum windshield must have 1 square inch of projected forward visibility.

6) Model must have at least 1 square inch visibility to each side.

7) The airplane must be able to contain a theoretical box, 1-1/2 by 2-1/2 by 3 inches in any orientation.

8) There must be a suitable landing gear provided using at least two, 3/4-inch diameter wheels.

9) The model must weigh at least 14 grams without the rubber motor.

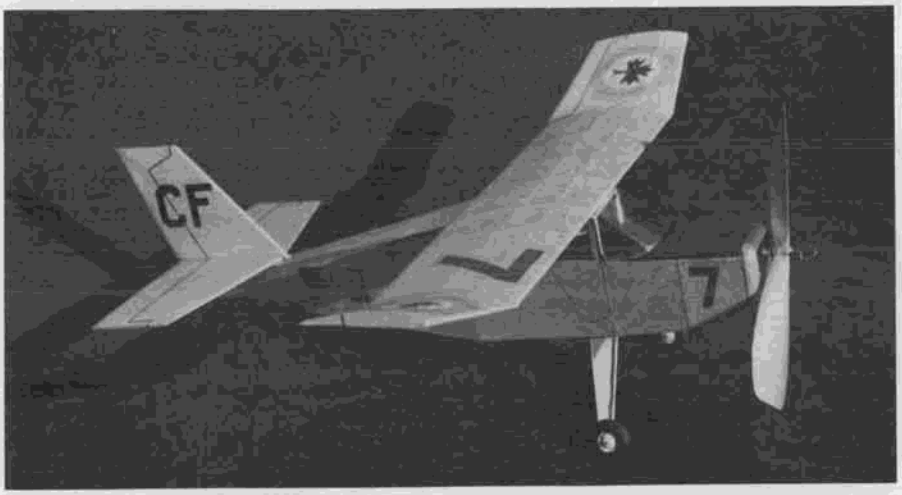
10) All flights must start with an unassisted ROG takeoff.

Are the rules successful? One can only judge by the kind of results that they have had. The first contest held was indoors and attracted 20 entrants. Top time exceeded one minute under a 25 foot ceiling. The second contest, held on the fourth of July, was outdoors and attracted 22 contestants. Top time was (for a single flight) 315 seconds, and there were lots of flights over 180 seconds.

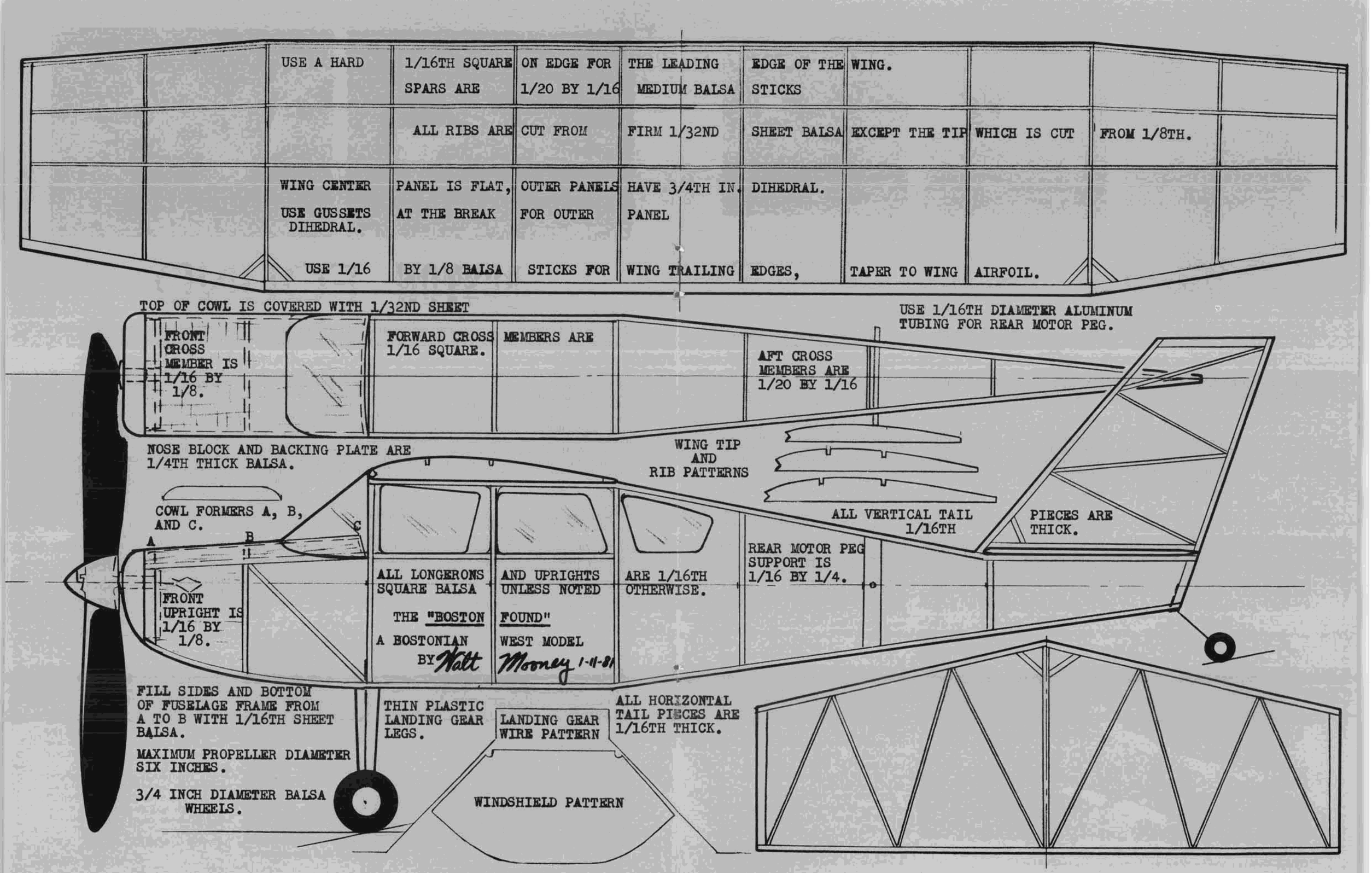
Incidentally, the long flight was disallowed because the July 4th contest had an additional rule thrown in, that all models were to carry as part of their markings, a United States flag in honor of the day. The high time was the first timed flight of the day, and the CD could discover no flag on the model when it landed.

The Found has Canadian insignia which is explained by the fact that it was built for a contest scheduled for Feb. 20, 1981 which had an added rule that all models would carry insignia. This rule started out as "All models will carry pre-WW-II American insignia," which

Continued on page 92



Square lines of the Found, and its scale tip dihedral, make it an excellent scale Bostonian. The "Bostonian West" is predicated on more outdoor flying.


USE A HARD 1/16TH SQUARE ON EDGE FOR THE LEADING EDGE OF THE WING.
SPARS ARE 1/20 BY 1/16 MEDIUM BALSA STICKS
ALL RIBS ARE CUT FROM FIRM 1/32ND SHEET BALSA EXCEPT THE TIP WHICH IS CUT FROM 1/8TH.
WING CENTER PANEL IS FLAT, OUTER PANELS HAVE 3/4TH IN. DIHEDRAL.
USE GUSSETS AT THE BREAK FOR OUTER PANEL
DIHEDRAL.
USE 1/16 BY 1/8 BALSA STICKS FOR WING TRAILING EDGES, TAPER TO WING AIRFOIL.
TOP OF COWL IS COVERED WITH 1/32ND SHEET
FRONT CROSS MEMBER IS 1/16 BY 1/8.
FORWARD CROSS MEMBERS ARE 1/16 SQUARE.
AFT CROSS MEMBERS ARE 1/20 BY 1/16
USE 1/16TH DIAMETER ALUMINUM TUBING FOR REAR MOTOR PEG.
NOSE BLOCK AND BACKING PLATE ARE 1/4TH THICK BALSA.
WING TIP AND RIB PATTERNS
COWL FORMERS A, B, AND C.
A
B
C
ALL VERTICAL TAIL PIECES ARE 1/16TH THICK.
FRONT UPRIGHT IS 1/16 BY 1/8.
ALL LONGERONS AND UPRIGHTS ARE 1/16TH SQUARE BALSA UNLESS NOTED OTHERWISE.
REAR MOTOR PEG SUPPORT IS 1/16 BY 1/4.
THE "BOSTON FOUND"
A BOSTONIAN WEST MODEL
BY Walt Mooney 1-11-81
FILL SIDES AND BOTTOM OF FUSELAGE FRAME FROM A TO B WITH 1/16TH SHEET BALSA.
THIN PLASTIC LANDING GEAR LEGS.
LANDING GEAR WIRE PATTERN
ALL HORIZONTAL TAIL PIECES ARE 1/16TH THICK.
MAXIMUM PROPELLER DIAMETER SIX INCHES.
3/4 INCH DIAMETER BALSA WHEELS.
WINDSHIELD PATTERN

Steve Helmick expresses frustration for John Zeisloft, who drove 1000 miles from Salt Lake City to A) crash his besk Wake, B) break 3 motors while winding, and C) there's only 27 seconds left in the first round!

Ex-MB F/F editor Bob Stalick launches A/2 for Kevin Collins at 1981 Misery Meet.

Norm Beattie points out patch of air for son Christopher to launch his P-30 into.

FREE FLIGHT

by TOM HUTCHINSON

PHOTOS BY AUTHOR

Tom Hutchinson's new address:
20518 S.W. Leeds Ct.
Aloha, OR 97005

SUPPORT YOUR LOCAL SCHOOL LIBRARIAN!

Last month, I mentioned that one way to introduce newcomers to our hobby would be to recommend some books on model aviation to your school librarian. Here is a list I've compiled (with the help of Bob Meuser and John Brown) of books that I'd feel safe in recommending. These are some general books on model avaiation, that would serve to introduce the various facets of the hobby, along with some "how to do it" skills, if possible. In future issues, I'll expand the list to include more specialized topics, but this list (in my admittedly personal order of preference) will insure your librarian of avoiding the worst examples on the market. (If one of your favorites doesn't appear, it's probably because I haven't seen a copy.)

My top place on the list goes to Vic Smeed's *The Encyclopedia of Model Aircraft* (1979, by Octopus Books, Ltd., London). This is a comprehensive, well-produced book which covers every aspect of model aviation, and should appeal to all tastes of current modelers as well as newcomers. It even includes a few plans of small models to build. Only drawback is that it might be hard to obtain, since it's not listed in this year's *Books in Print*. Price is about $15.

My next choice would be Guy R. Williams' *The World of Model Aircraft* (1973, for G.P. Putnam, New York). It's not as up to date as Smeed's, the pictures are mostly black and white, and the writing is a bit awkward at times, but if should still make an excellent book on the shelves. It's not listed in *Books in Print* either, but AMA HQ has it, listed for $12.

Another good choice might be *Building and Flying Model Aircraft*, by Robert Schleicher and James Barr, Jr. (1980, by Chilton). I had a chance to peruse this one while in the hospital, and while I didn't learn anything new, I think it could serve as an excellent introduction to the beginner, which is the purpose. This might be the most readily available of my top 3, selling for $6.95 (paperback) at some hobby shops.

Bill Hannan's *Peanut Power* (1980, Historical Aviation Albums, Publisher, available from Aviation distributors) is not strictly a general purpose book on modeling, but should appear to newcombers. And building small rubber scale models is a good way to learn basic modeling skills for other uses. Bill's book also has a needed glossary of basic terms and illustrates building and flying skills very nicely. The book is $7.95 in paperback.

My final recommendation is Martin Dilly's *This is Model Flying* (1975, Transatlantic Arts, published by Elm Tree Books, London). This is a smaller size format than the others, with a lot more text and a much smaller proportion of photos. As such, it is more likely to appeal to an older clientele. It's also not quite as slanted to the rank beginner as the others, so may prove not quite as attractive at the elementary or junior high level. The British terminology may be hard to decipher at times. Price is $9.95 (hardbound).

So, now that you're armed with my recommendations, talk to your local school librarian about the possibility of including one or more titles in the next book order. The school library will expose more kids to model aviation than a couple of years of special contests

Ross and Roberta Thompson prepare her FUBAR 36 (.020 powered) for flight at NW F/F Champs. Model qualifies for Novice and Nostalgia events. Lost, no fuse!

would. I know that my interest was stirred back in the 7th grade by reading *The Model Airplane Mystery* (anybody out there got a copy? I'm a sucker for old model aviation books).

DARNED GOOD AIRFOIL . . .
Gottingen 57

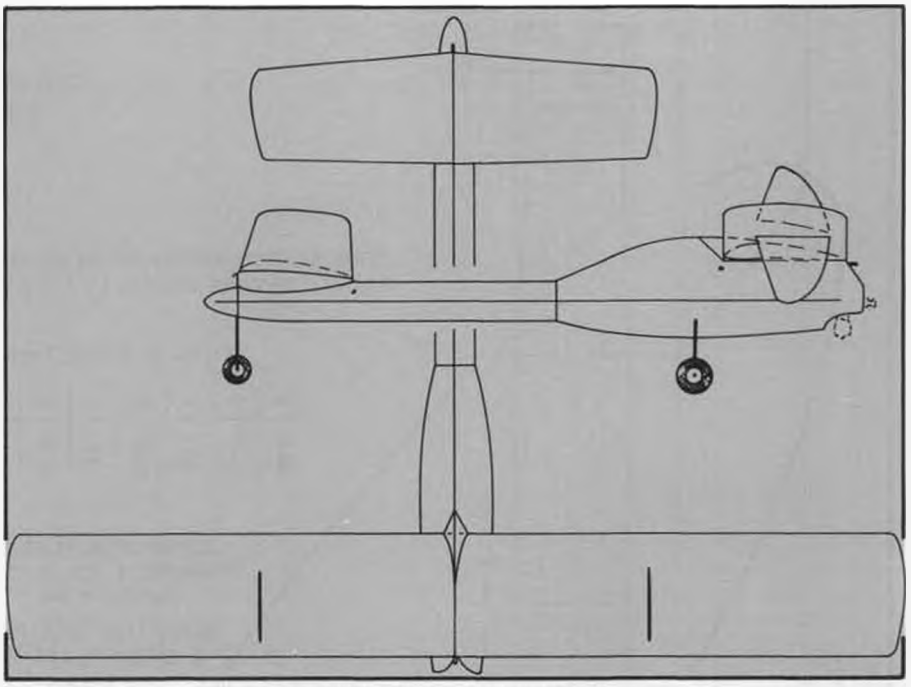
This is another of the sections tested at the small Gottingen University wind tunnel during World War I. After the war, NACA collected the results of these tests, and those of British, French and American wind tunnels, publishing them as Technical Reports Nos. 93 (1920), 124 (1921), 182 (1923), 244, 286 and 315 (1929). Last summer, I found these reports in the Oregon State University library, and selected a few airfoils for publication in RCMB.

This month's DGA is hitherto unpublished, but looks like it should be useful for Wakefield and Nordic. The 6.3% thickness fits in well with current trends, and the camber is slightly less than 6%, so it would correspond to the popular Benedek 6356 in airfoil parameters. In addition, the upper camber drop-off between the 40% and 80% stations is less than 5% (the trademark of the low-drag Eppler sections), so it would bear some experimenting.

The Gottingen series airfoils were numbered roughly in the order in which they were tested. The Gottingen 57 was tested early in the series, in 1917. The nominal Reynolds number for the test data in the report was 54000, the same as for Nordics on glide . . . though a free stream value would be closer to 75000, if allowances for the turbulence level in the small Gottingen tunnel are made. Still, this is a low enough Reynolds number to permit some observations about model performance. Performance is similar to the results quoted by Dr. Lipisch for the Gott. 123 and 342: max lift coefficient of 1.3, and a lower drag coefficient at max lift. (By the way, the lift and drag coefficients in the first 2 NACA reports must be multiplied by 2 to correspond to usual practice).

MODEL OF THE MONTH: Joe Foster's *Laid Back* Wakefield

We haven't run a Wakefield 3-view in a while, so let's start from the top . . . from the top of the Team Selections standings, that is. Joe Foster's previous spot on a Wakefield team happened in the days of no rubber weight restriction, back in 1953. He did right well, too, winning Wakefield in the first-ever flyoff for the Cup. So it's interesting to take a look at the type of Wake he's using 28 years later, as reported by Chris Matsuno in the *Turbulator* (3-view taken from the *Bat Sheet*):



MAY MYSTERY MODEL

"Foster had been experimenting with a 3-position auto-rudder on an earlier Wake and reported that it had a sizzling climb. However, it was apparently a bit unforgiving on launch, and splattered itself in a crash. So back to the drawing board.

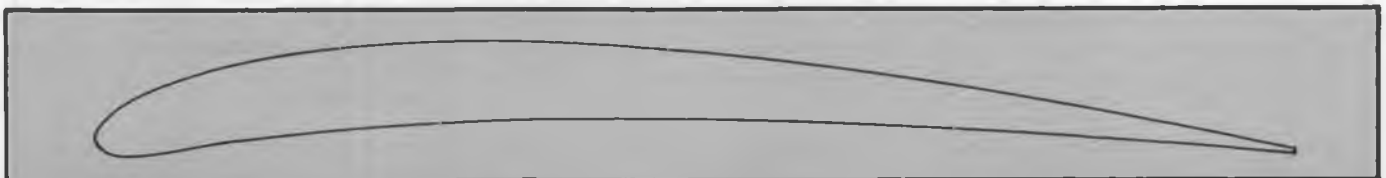
"All the next generation Wake did was vault him to first place at the finals! Its configuration is quite average, and uses sheeted wings, which he managed to build quite light (50 grams). He did fold a wing during a launch at the Finals, so his latest models will incorporate a spruce spar flush with the sheeting, with webbing.

"The most intriguing aspect of the model is its prop. It is a 24 inch diameter by 36 inch (nominal) slightly washed out at the tips and higher near the hub. That much pitch is normally associated with long motor run models and not with fast-climbing models. He uses anywhere from 28 to 32 strands of 1/8 FAI rubber. This gives a motor run range of around 40 seconds, down to the low 30's. A figure I seem to remember from talking to him is 350 turns on 30 strands and a 35-36 sec. motor run, figures which sound about right. The normal approach for faster climbing models is to go down a bit in diameter and pitch. Joe went the opposite way, and it really seems the better way. John Gard once told me that during the burst a Wake motor releases 2-3 ft.-lbs. of energy per prop revolution. This is enough to raise a Wakefield vertically 4-6 ft.! Since the model can't advance farther during one prop revolution than the prop's pitch, you can see that a 30 inch pitch prop is simply losing almost half of the energy released by the motor. So why not increase the pitch and try to get some of it back? It seems to have worked for Joe." (It certainly seems to me that the availability of good rubber in recent years has aided such an approach. In the days of weakest Filati, such an approach would have been most inappropriate.)

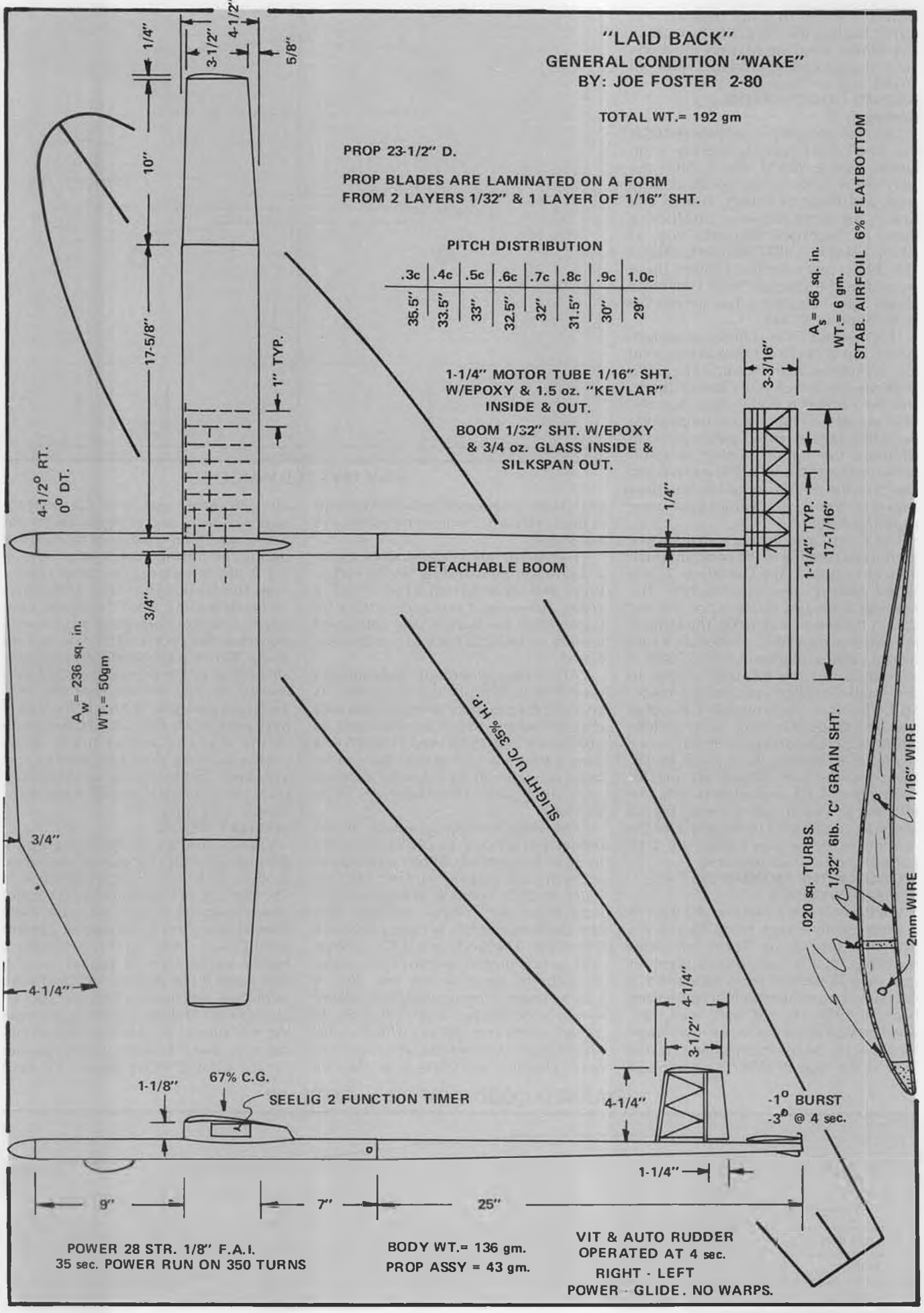
MYSTERY MODEL

Okay, you guys, start searching through your files for pusher canard gas models! That's what's shown this month. The fuselage profile should be the major identifying feature (but, of course, there haven't been too many pusher canards published). Then again, probably a higher percentage of pusher canards that made it out to the flying field were published, because editors are suckers for this kind of thing. *(Anything to break the monotony! wcn)* I remember thinking once that if I came up with a pusher canard Class D ROW design, I'd have

DARNED GOOD AIRFOIL – GOTT. 57



STATION	0	1.25	2.5	5	7.5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	1.2	2.7	3.71	5.14	6.17	7.09	8	8.57	9.02	8.86	8.29	7.29	6	4.29	2.4	1.4	0.17
LOWER	1.2	0.11	0	0.34	0.74	1.14	1.77	2.29	2.8	2.86	2.86	2.57	2.03	1.43	0.7	0.35	0


"LAID BACK"
GENERAL CONDITION "WAKE"
BY: JOE FOSTER 2-80
TOTAL WT.= 192 gm
PROP 23-1/2" D.
PROP BLADES ARE LAMINATED ON A FORM FROM 2 LAYERS 1/32" & 1 LAYER OF 1/16" SHT.
PITCH DISTRIBUTION
.3c 35.5" .4c 33.5" .5c 33" .6c 32.5" .7c 32" .8c 31.5" .9c 30" 1.0c 29"
1-1/4" MOTOR TUBE 1/16" SHT. W/EPOXY & 1.5 oz. "KEVLAR" INSIDE & OUT.
BOOM 1/32" SHT. W/EPOXY & 3/4 oz. GLASS INSIDE & SILKSPAN OUT.
A_s = 56 sq. in.
WT.= 6 gm.
STAB. AIRFOIL 6% FLATBOTTOM
A_w = 236 sq. in.
WT.= 50gm
DETACHABLE BOOM
SLIGHT U/C 35% H.P.
4-1/2° RT.
0° DT.
1/4"
10"
17-5/8"
3/4"
1" TYP.
3-1/2"
4-1/2"
5/8"
3-3/16"
1-1/4" TYP.
17-1/16"
3/4"
4-1/4"
.020 sq. TURBS.
1/32" 6lb. 'C' GRAIN SHT.
1/16" WIRE
2mm WIRE
1-1/8"
67% C.G.
SEELIG 2 FUNCTION TIMER
-1° BURST
-3° @ 4 sec.
9"
7"
25"
POWER 28 STR. 1/8" F.A.I.
35 sec. POWER RUN ON 350 TURNS
BODY WT.= 136 gm.
PROP ASSY = 43 gm.
VIT & AUTO RUDDER OPERATED AT 4 sec.
RIGHT - LEFT
POWER - GLIDE. NO WARPS.

Seen at 1980 Heart of Dixie meet, Steve Durr, Nashville F/F Society, with 1/2A. Tom Heppler photo.

Heart of Dixie '76', Huntsville, Alabama. Bunny Jenkins anchors for Jim Lewis, winding O.T. (Ed Lamb Climber).

magazine editors making me the same sort of ridiculous offers college basketball coaches make to 16-year old pituitary freaks. I always gave up the idea, though, when I realized I'd have to build the thing first.

Anyway if you think you've spotted the ½A canard shown here, send in your guess to the RCMB OFFICE (not to me, please), to see if you're the winner of a 1-year subscription.

HOW TO FLY THE ½A SPACER

As promised last month, here are the original flying directions for the ½A Spacer featured as a 3-view in the March issue. I suspect that the reason so many flyers had success with Sal Taibi's kit designs was the good set of flying instructions on the plans . . . quite a contrast from the usual "glide the model in tall grass, then let 'er rip" directions prevalent with most of the designs of the time. (The Ramrod was another easy-to-fly model for the same reason: an extensive, clearly outlined explanation of the trimming method.) Here are Sal's comments:

"Many test models were built and all of them flew with the same adjustments as were built in the kit; some models, however, may vary due to differences in balance or warps. Before taking the models out to fly, check for warps; if any are visible, they can be removed in the following manner: Place a pot on the stove with about a half-inch of water in it; when the water begins to steam, place the warped surface over the pot and twist wing to get out the warp. If this is done immediately after the model has been completed, the warp will come out easily.

"All the test models flew in a wide right climbing turn and glided in a tight left circle. Before making the first test hop, put about 1/16 to 3/32 left tab; do not fly without this left tab. It would also be advisable to place a piece of 1/16 balsa under the rear of the stabilizer for the first flight. Fly model with a short engine run.

"The model will probably dip slightly or stall on the glide. If the model glides straight the stall can be corrected by tilting the right side of the stab down; this will turn the model on the glide but will not affect the power pattern. Add tilt as needed until the correct turn is obtained. The important thing to remember when adding turn is that turn gives the model a diving tendency, therefore if the model glides well and the turn is added, then incidence must also be added; this can be done by shimming under the stabilizer trailing edge. If, however, the model is stalling on the glide and also gliding straight, the turn will eliminate the stall and therefore incidence will not be needed. Never test fly without a dethermalizer; many a good model has been lost on a short test hop. Good luck!"

Notice Sal's philosophy about flight testing; no warps and make small changes, one at a time. That's not a bad way to go, although I think some slight washin on the wing panel insides the power turn is almost essential as extra insurance. My Spacer hasn't flown yet because I haven't figured out how to cure the nose-heavy condition caused by using a Tatone Tankmount/TD combination. I'll probably end up using a shorter, lighter mount, and a pacifier fuel system.

A NEW SUPER GLUE?

While building my Spacer, I ran across a glue with some very useful properties. This sticky stuff *doesn't* dry instantly, so you can move parts around a bit before final bonding. In addition, it loses most of its weight while drying and is gap-filling. The dried glue forms a toughened skin that can be used for local reinforcement, as well as the adhesion of small

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"This nitrate sure smells good."

Rich Lopez holding John Jo's "Super Voodoo". Chuck Rudner, caught with fingers in field box, has moved to So. Cal.

Myles Lawrence tunes Class I Mouse, while Morrie Leventhal holds umbrella and Steve DeBord plays Arab.

Control line

By "DIRTY DAN" RUTHERFORD

PHOTOS BY CHARLIE JOHNSON

STOP ME IF YOU'VE HEARD THIS ONE

In last month's column, mention was made of the fact that I had built a (excuse me while I hang me head in shame) sport-type 1/2A R/C model. Not a "regular" one, a really light version of the Airtronics S-Tee. After the model was completed, with Japanese tissue and clear dope covering, of course, I was hitting up flying friend and Grumbacher factory rep, Bob Hatch, for a super zoot dope brush. One of those very expensive brushes that everybody knows they should have to use, love, and cherish forever but don't buy because it seems silly to spend something around $20.00 for a paint brush. Besides, it is so much a part of modeling to be always picking that stray camel hair or two out of the almost-dry paint, not to mention the thrill of finding a couple more after the paint is dry, naturally enough.

So you don't get it wrong, be advised that I had absolutely no intention of actually buying this magical brush . . . just calling in a couple of chips for favors from the past. Haven't got the brush yet, either. But during the conversation about such things, Bob mentioned that he had been to a F/F contest where somebody had a 1/2A model, tissue and dope, that was very light and only had three coats of clear. No real trick to that except for the fact that this other fellow's model supposedly had a finish equal to mine, which consisted of many, many coats of clear. The trick was that he had used one of those funny looking foam brushes that are often seen in hardware stores.

I had assumed they were OK for water-based paints and such, but that they would be dissolved by something as nasty as dope, which is a kind of lacquer.

Turns out that dope does affect the foamie brushes, makes them swell up some. The one I tried started out two inches wide and is now two and a quarter wide, but other than that they do work very well. The difference seems to be in two areas, one a lot more important than the other. First and least important, is that the foam brushes hold a huge amount of paint. Almost too much, if you can believe that. Dip the sucker in 8 ounces of paint and you'll have 6 ounces left in the can, 2 in the brush. The important trick is that the foam "brush" tends to lay the dope on top of the tissue instead of pushing it through the zillions of tiny holes you're trying to fill with the dope. No reason to paint the tissue on the inside, but that seems to be what we end up doing with the usual hair brushes. And if you are staying a step or so ahead of me, yes the "foamies" sound like the way to go on those beautiful silk and dope finishes that always take so many coats of clear just to fill the weave.

One Fox with another. Debbie Imhoff poses with Duke Fox after presenting him with a handmade plaster fox. Debbie's husband, Dick, made special red, white, and blue slow combat model for Duke, presented it the day before. Powered by Fox 36BB, of course!

So drop by the local hardware store and ask for foam brushes. The ones I have been using are labeled Poly-Brush. Ignore the warning that says "not for shellac or lacquer." Rejoice at the price, the one I bought were on sale for a measly 28 cents each.

JUSTICE FOR MOUTH BREATHERS

It is hardly adequate compensation for the effort put forth by Walt Perkins and J.E. Albritton, dominating as they did the past World Champs, literally blowin' 'em away in qualifying their Team Racer, only to suffer through a line tangle crash and then get held up by an

Myles Lawrence waits for the go signal in a Fast Combat round, John McCollum holding.

John Jo does the holding for Chuck Rudner. Chuck's old flying partners from Detroit should note he appears to have a field box!

indecisive F2C Jury. However, at the 1980 FAI meeting, the C/L Sub-committee had this to say about the resulting protest and just who was to be specifically singled out as *not* eligible for duty on future jury duty, The next bit is straight from the minutes of the technical meeting:

"The F2C Jury showed indecision throughout the afternoon at the final race. This indecision led to difficult problems for both the organizers and the FAI Jury. Both were of the opinion that the F2C Jury had made and announced a final result soon after the close of the final so this result was published and preparations carried forward for the closing ceremony. The F2C Jury, however, continued to deliberate after verbal protests by the U.K. and U.S.A. Team Managers, thus delaying submission of a formal protest by either team. This protracted delay finally led to the appearance of a conflict between the organizer's prerogatives and the FAI Jury responsibility.

"The Sub-committee re-emphasizes the FAI Jury responsibility to ensure the conduct of a fair and impartial competition, and it is the responsibility of the organizer to provide the facilities for this.

"The Committee had no option, in light of the facts, but to censure the F2C Jury in the strongest terms for its indecision, since it is the responsibility of such juries to make prompt and effective decisions during the competition.

"At this time the most practical solution to the problem would appear to be as follows:

"a) The Danish team should retain the individual championship title and awards.

"b) The U.K. and U.S.A. teams should be placed equal seconds and each awarded silver medals.

"c) Although there is no suggestion that the Danish team was in any way at fault during the final race of the F2C event at the World Championships, it is felt that it would be the correct decision in view of the fact that the remaining two teams were unable to satisfactorily finish the race, that the Danish team should be requested to relinquish its right as individuals under paragraph 2.3.5 of the Sporting Code.

"The Sub-committee feels strongly that F2C Jury composition is critical to proper conduct at team race competition. In an effort to improve this aspect of the sport, the Committee will publish a list of recommended jury members and monitor and report on jury performance and problems in the coming year. The Committee further recommends the Mr. Rudd of the U.K. and Mr. Meijer of the Netherlands, as a result of having been on two consecutive major juries receiving significant protest, not be considered for any major jury for a period of one year."

Would have been so much nicer for Walt and J.E. to simply come home with the gold medal they truly deserved, but such is luck, even at the World Champ level. For now, they do have a silver, recognition as currently being the fastest team in the world, and hopes to get the gold next time.

NEWS FOR YOUR BLADDER

This little tip may or may not be news to you but I just happened to recall that when Charlie Johnson and Greg Hill were up for a Bladder Grabber a couple years ago they were kind of surprised that locally one can go into most any hobby store and buy those Estes rocket body tubes so frequently used as bladder compartments in Combat models. Seems that they had been buying whole kits just for the tubes, tossing all the other parts paid for but not of any use. If you are in a similar situation, now you know that body tubes are available separately, your shop can get 'em for ya.

An aside is that both Charlie and Greg bought a handful of tubes only to find they had no way to pack them for the flight back to San Diego. So they had to leave them with me and I didn't even pay them for what I have by now used up in numerous Combat models. Some guys can't win; first they spend years buying whole rocket kits for the tubes and then when they do get their hands on a bunch, the tubes end up being used

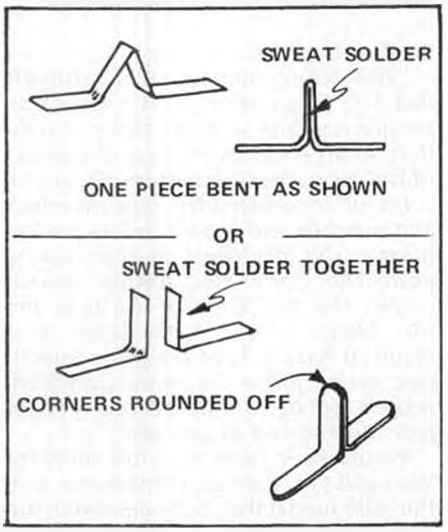
John McCollum launching for Myles Lawrence. Both Kusik and McCollum are doing a lot of combat during the off season for Team Race.

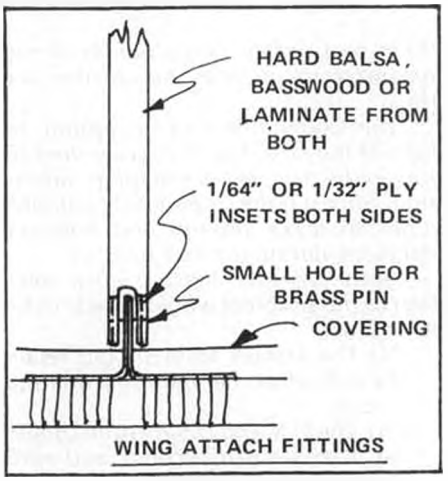
Continued on page 93

One of two latest Flyline kit releases, the "Spirit of St. Louis" is in 3/4-inch scale, spans 34 5/8 inches. Power is .020 for pulse radio. Kit includes Williams Bros. cylinders and full set of decals.

FREE FLIGHT SCALE

By FERNANDO RAMOS





• While refueling at the airport the other day, a freshly restored Stearman taxied up and parked next to me. One tends to forget how big these graceful old birds actually are. This one was a bit unusual because it was powered by a Jacobs engine, and had a constant speed prop. I gave the airplane a careful study, paying close attention to the way the struts were attached to the wings. The thought immediately struck me, that this same manner of attachment could be used on F/F scale models (see sketch). The size of the strut attach fittings will be dependent on the size of the model, as well as the thickness of the brass. Therefore, specific dimensions will not be stated. A strip of brass is bent like the drawing, and the part shown sweat soldered together. You may find it easier to bend two pieces at right angles, and solder them together. I prefer to use a soldering paste for sweat soldering, since I find this quite easy. I know this kind of solder can be found in many places, but I get mine at a hobby shop that handles model railroad supplies.

There should be one of these fittings for each strut end, and the corners should be rounded off. These fittings are easily mounted to the wing spars, using a combination of glue and thread. If the height of the spar is not adequate, the fitting would have to be made unusually tall (see sketch). This arrangement should be avoided, as the fitting would not provide sufficient structural support. The solution is a simple one. Just glue a spacer on top of the spar, spanning the distance between ribs, and mount fitting as previously described.

If the spar is not running in the middle of the rib (for more realism), but is tangent to the bottom of the ribs, a slight change will have to be made. On an upper wing, the fittings would be exposed, and would look awful after covering. So, the following change should be made (see sketch). Carve away just enough of the spar where the

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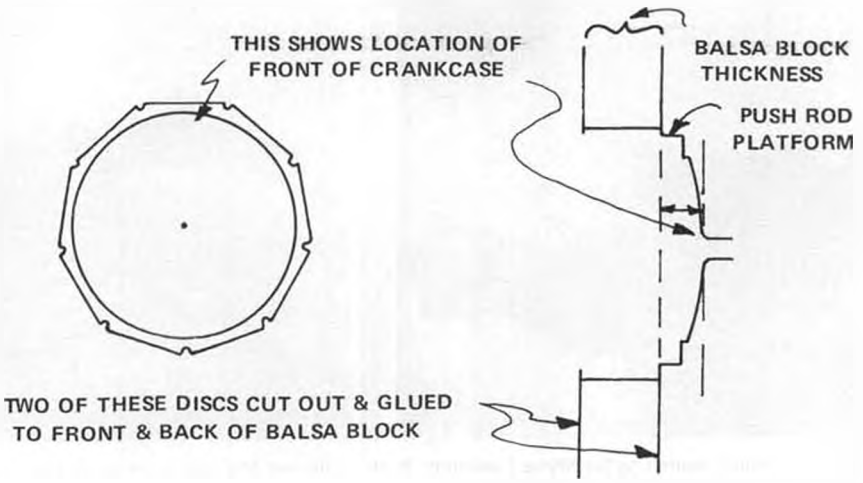
Second new Flyline kit is called "Megowcoup". Derived from Megow's 1935 rubber powered Monocoupe D-145, span was doubled to 46 inches for .049 and 2-channel radio.



CO_2 BANSHEE

By ED TONER

A new use for those little CO_2 motors . . . Miniature Classic Gassies!! Ed designs 'em and also happens to sell the motors, under the Buzzer Model Airplane Co. label. See the April '81 issue.

"Ed Toner holding Banshee". This 40% reduction of Leon Shulman's famous design is powered by a Telco Turbotank 3000 CO_2 engine.

• The Banshee is an Irish spook that is said to appear on the eve of the death of a member of an old Irish family. Bean Si, pronounced Ban She, is indeed an "Irish Woman Fairy." The apparition combs her hair, while emitting an eerie wail, and scares the bejaysus out of everyone. All then repair to the local pub and discuss the incident over a few pints as any civilized bunch would be expected to do. For centuries, the Irish were a very superstitious lot, but they are not now . . . they know it's bad luck to be superstitious. So much for Myth-information (harrumph).

McDonnel Aircraft named a fighter, the F2H-3, after the Banshee, probably for the sound emitted by a pair of J-34 engines. Back in 1955, I flew this fine ship for about 3 years, and loved it.

Leon Shulman, in 1941, named a radical new design of his after it, probably because of the scream emitted by a wide open Bantam .19. Just look at the lines of this design, and tell yourself it is 40 years old! It's one of Shulmans timeless designs, and deserves once again to grace the pages of a magazine. It last appeared in the Oct. '45 *Air Trails* as a 50-inch class A "gassie."

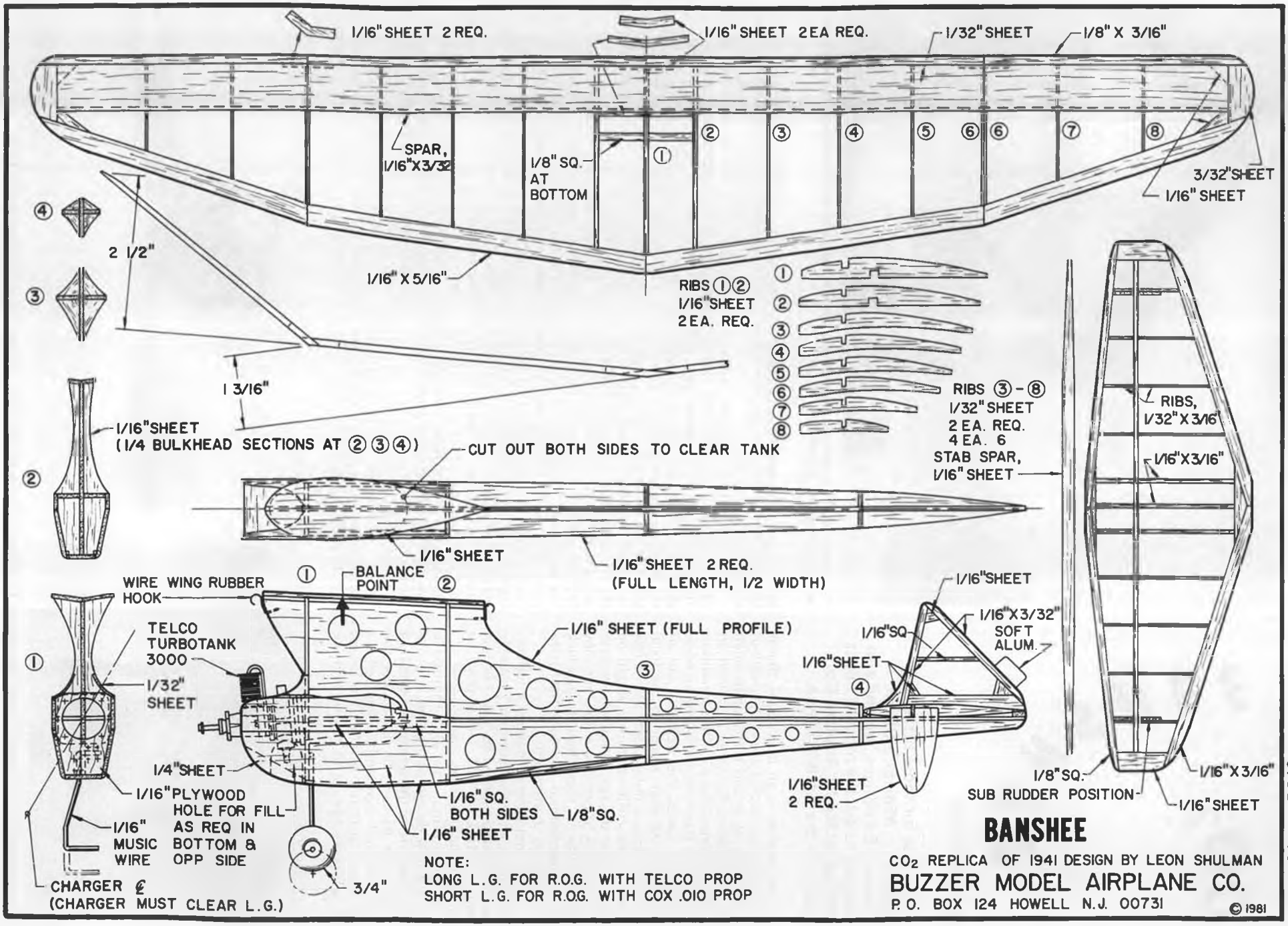
This model is basically a 40% reduction of the original, modified for the new Turbotank 3000 C02 engine now available. (See the "Buzzer" advertisement in the April issue). This engine is a very nice piece of work, and is ideally suited for short nose-moment arm designs such as this. It has many scale applications, such as the radial engined WW-I types. A nice feature is the throttle, which sits behind the prop and is adjusted by a spanner provided with the engine. Another nice feature is the integral tank with its rigid loader. The tank does not need an upward tilt, which occasionally can prove troublesome. I forsee a new breed of CO2 endurance ships using this engine in a rolled tube fuselage with low pylon and the basic Jetex 150 surfaces.

There were a few deviations from "scale", a necessity. The firewall had to be widened, a few ribs eliminated, etc., but it's still your basic Banshee. Before going any further, I would like to acknowledge the assistance rendered by my friend Ray Borden, who both drew the plan, and ironed out a few sticky wickets in the engineering of it all.

This model is dedicated to all you balsa slicers and glue daubers out there. It builds fast, and it's fun to build. After trying all those exotic concoctions to hold balsa-to-balsa, I'm back to that greasy kid stuff, Ambroid.

Let's get building. I suggest you start with the firewall. Clamp a piece of 3/32 plywood between two scraps of soft pine scrap lumber, and carefully bore an 11/16th hole in it using an old fashioned brace and bit, and boring very slowly with a sharp 11/16th bit. Then cut the firewall around the hole with a coping saw, and drill the holes as indicated. The engine mounting holes are just starters for the wood screws used to mount the engine, unless you have the necessary very small bolts for the job. It is a rather tight fit, since the mounting flange of the engine has the holes quite close to the necessary circular opening for the tank.

"Banshee holding Ed Toner". Ed flew the Banshee F2H-3 for 3 years in the mid '50's. Now he's an airline captain with TWA.



BANSHEE

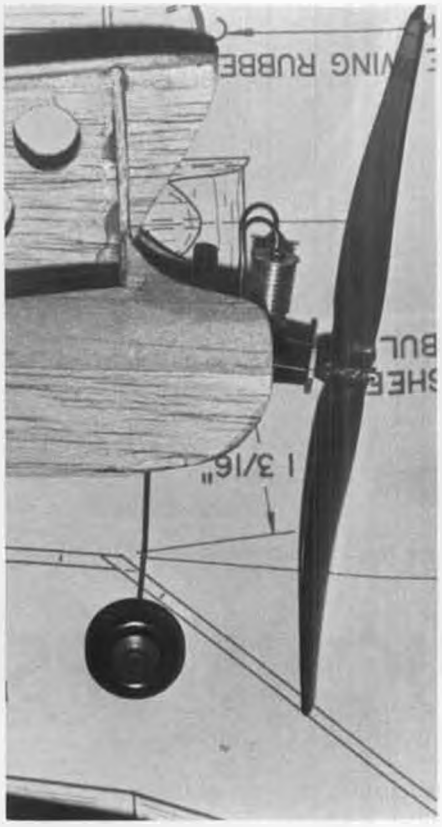
CO_2 REPLICA OF 1941 DESIGN BY LEON SHULMAN

BUZZER MODEL AIRPLANE CO.

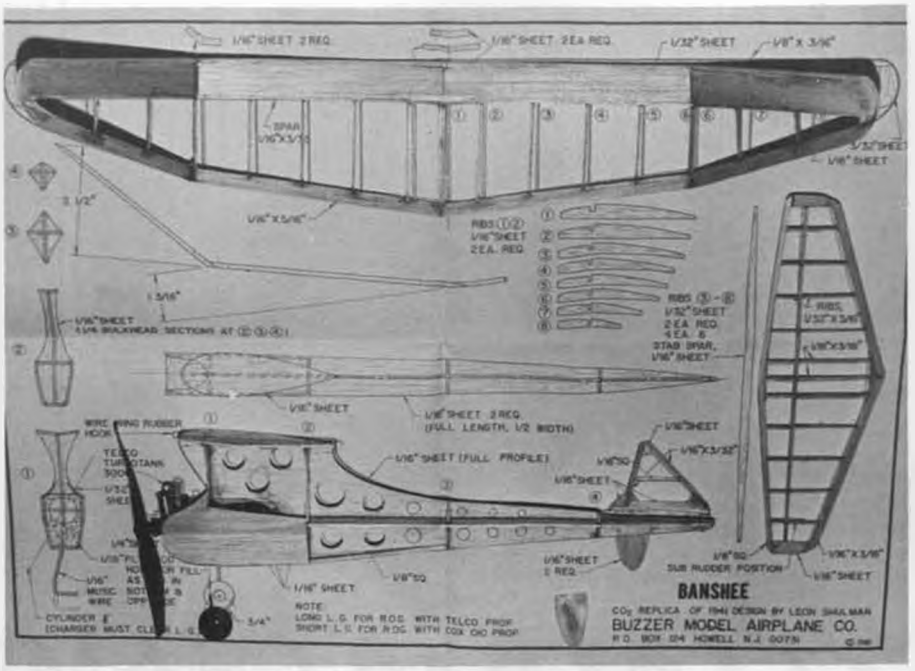
P. O. BOX 124 HOWELL N.J. 00731

MODEL BUILDER magazine

Plan No: 5812



Downthrust shows clearly in this photo. Anyone have an unused .010?



All structural parts on plan. Little Banshee goes together fast.

Note on the front view that the cylinder is upright, but the filler must be canted a bit so that the charger will miss the wheel. This is done simply by backing off a bit on the large slot head at the rear of the tank, twisting the cylinder the necessary amount, and retightening. Use washers to set in the proper amount of downthrust, and mount the motor. Using fine copper wire, sew the landing gear strut, bent as shown, into place and epoxy it. You have now completed the most difficult part of the whole model. A note on the powerplant. It is more powerful than existing engines of its size, but I'm sure a Brown MJ-70 or a shark would do the job, but would probably require less than the 5 degree downthrust shown. Hey, you there! Yeah, you with the flannel shirt and a can of beer . . . why are you laying that Cox .010 on the plan? You're not seriously thinking of . . .! EGAD, He is!

Anyway, Shulman popularized this "X" type of fuselage construction. It allows a thin cross section with a rigidity that could not be attained any other way. Slice out the side view, cut away the tank area as shown, and cut the lightening holes. Be sure to observe the indentation (dotted line) for the sheeting to be applied later. Now, using the top view, cut both sides as shown. Cement the formers in place, and then epoxy the firewall assembly in place. Before you complete the sheeting and cowl, observe the location of the lubricating hole for the engine, just forward of the CO2 filler. Access to this is necessary every so often. I use one of those hypodermic type oilers with a slightly bent end for the job. Of course, you could always drill a small hole for this purpose.

Wing construction is standard. The thin airfoil does not permit a deep spar, so choose your wood carefully. Build the spar directly over the plan. Empennage construction is self-explanatory. I cemented the tail feathers in place, but you may want to employ a pop-up type dethermalizer, especially that wise guy with the Cox .010 in mind.

I covered the original with colored light silkspan, using the colors of the Irish Tricolor, green, white and orange. A little patience is required to get a smooth job around the compound curve at the front of the pylon. I used well-thinned nitrate dope, and 3 coats were required. Allow 3 days for dope to cure, and watch out for warps.

For flight testing, choose the proverbial grassy field, and always bring along a few spare props, CO2 charger bulbs, some clay for ballast, and a small vial of holy water. Balance as shown, and use the rudder tab to get a slight right turn, and a mushy type glide. The engine can be loaded three ways: a gas charge by

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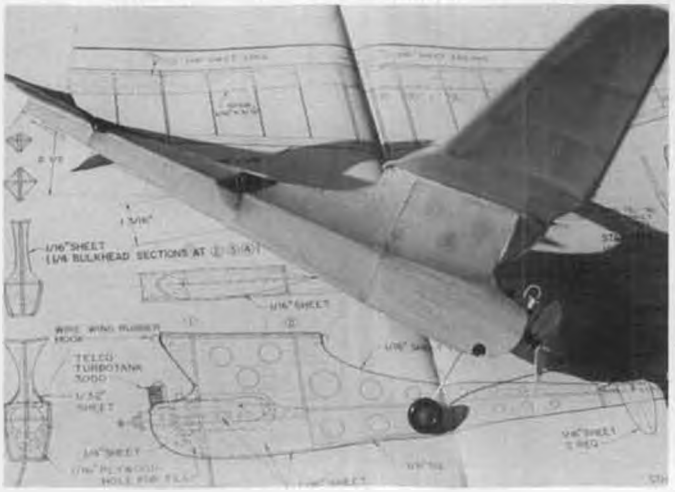
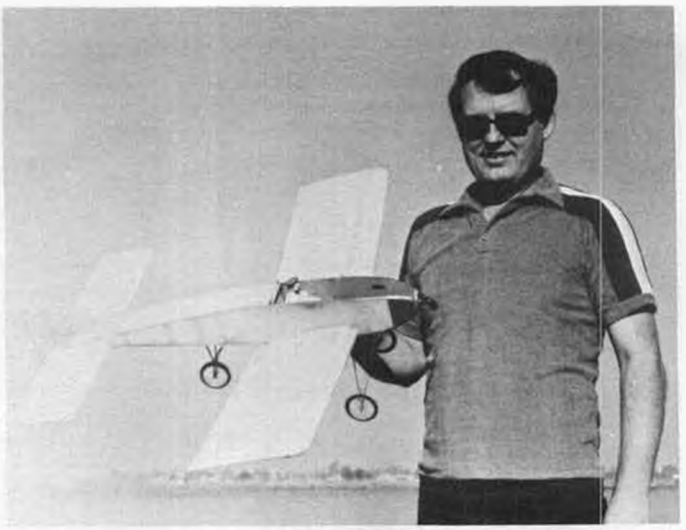


The finished and covered CO_2 Banshee on the plans. Original ship appeared in the October '45 Air Trails magazine as a 50-inch Class A gassie. Model of model has only minor mods.

Bill Warner's 1911 Paulhan-Tatin Aero-Torpille No. I. Peanut version by J.F. Frugoli was published in Jan. '81 RCMB.



Ferril Papic and his Bleriot No. 7 Monoplane placed 2nd in scale under the Paulhan-Tatin.

ELECTRIC CHAMPIONSHIPS

Free Flight events reported by BILL STROMAN

• Ever been to a model airplane meet where one can speak in normal tones and be heard by the person next to you? This can only be possible at a rubber powered, or, as on January 18, 1981, at an all electric powered contest. Unlike last year, when we were blown out (had to hold the meet in June), we had fine weather. Slight overcast, very little wind, and Hung, the God of thermals, favored us with some good lift. For you who don't know a good thermal from a bad one, a good one takes your model and carries it until a max is made, then lets go so it can be recovered within the flying site. A bad one hangs on and lets it go over a freeway, tall tree, or a yard with a large, rabid dog.

We started at 8 a.m., more or less. First, each flier told how well his plane was trimmed, and how long it was staying up. Then we all test flew, repaired the models, and paid our entry fee. Had a good turnout, 19 models were entered, and about 60 people to fly or cheer us on.

Gene Wallock was ready first (shades of Sal Taibi), and flew his Ranger in both the endurance and 02 Replica events. Gene is a real modeler and was entered in the radio control event at the other side of the triangle, as well as free flight.

Another person to watch is Jim McDermoth. He had two models entered in endurance: Hummer I, and Hummer II; and a Strato Streak in 02 Replica. Another Strato Streak flier, Art Whalstedt, had to enter his plane in the endurance event as he had a VL Hytork system, and only Astro Flight systems were allowed in the 02 Replica event.

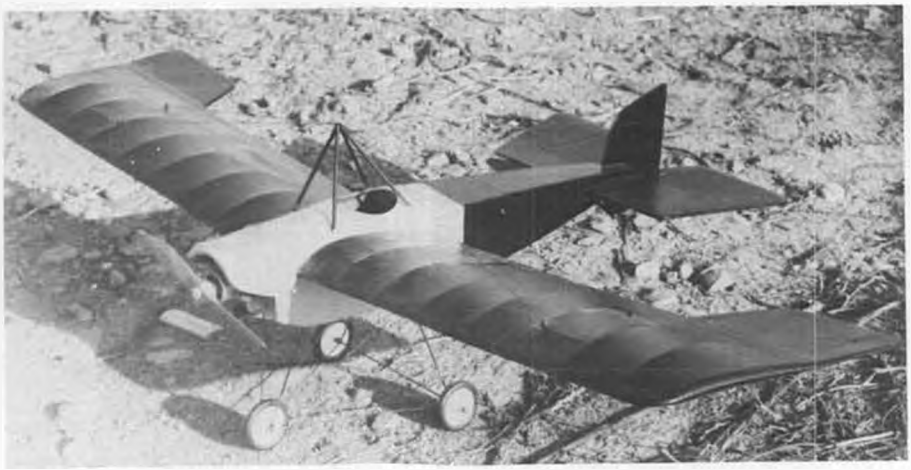
Mike Bernhardt, a member of the famous Bernhardt family, along with father Otto, master of all gas engines, and brother Phil, noted draftsman, modeler, and former assistant editor of this magazine, entered an Eaglet in endurance. May I say that he won by a good margin . . . some saying that he had to just because he's a Bernhardt, but my guess being that he's a good flier by his own right.

Bill Stroman (who?) entered a flying wing of his own design. The climb was great, but the glide wasn't good enough compared to the other models. Guess it's back to the drawing board again.

As I stated before, we had many kinds of 02 Replica models. This size model is just right for the Astro 02 system, and would be a good place to start electric power for many modelers. Just one thing, be sure to light that D.T. fuse . . . I lost my Valkyrie model after a 9-minute, out-of-sight flight last year, but had it returned later from about six miles away. Needless to say, be sure to put your name and address on your model!

Jim McDermoth's Strato Streak had the high time of the day, with a 7-minute, 18 second total for three flights.

Jim McDermoth laucing his Hummer I. It placed second in duration. VL powered.



Bob Boucher's Lincoln Beachy Monoplane, probably built from R/N Models kit.

Jim McDermoth explains the facts to Kim and Cynde Waddell, then let them enter the model in competition.

Cynde Waddell launching McDermoth's model. Power is by VL Products.

Jim McMahon's Buzzard Bombshell put in some great flights to get a second place; this model looked as great as it flew. That master modeler, Bill Warner, built a Playboy Sr. Must have been quite a change for him, as he is famous for his donut wing Lee-Richards, and other unusual models. Bill would have placed higher than he did, but some modeler liked the Playboy so much that Bill gave it to him before he completed his third flight. How's that for a great person!!! Art Herbon had a Buzzard Bombshell that really pleased the crowd with its smooth silent flights.

Your scribe entered his Valkyrie, then test flew it. Wanted to get a little less right turn in power mode, so gave it a tad more left rudder. This made the right climb better; really got up there. However, it began to stall a little when the glide started. Then the stall got worse, then worse, then it was diving about 50 feet each time. As luck would have it, it hit the asphalt right on the nose. It damaged the motor, and in the meantime, the battery, toward the aft end, thought the motor was in trouble, so it came through three bulkheads to smack it from the rear. Made the model lighter by taking out the bulkheads, but somehow it seemed rather flimsy after that.

I wasn't the only one to have troubles. Tom Comparet had really worked on a fantastic Farman Mostique for the scale event. While testing, the Farman decided to use a car for a hangar. This tore out the motor, designed the wing spar, and broke many ribs. Did Tom get in a snit and leave? Heck no, both he and his father stayed the rest of the day and helped time other modelers. That's the kind of modelers we like to see. Thanks to both of you!

If there is a free flight scale event around, you can be sure that Bill Warner will be in it. Bill had a 1911 Paulhan Tatin Aero-Torpille No. 1 (please see January 1981 **Model Builder,** page 51), that was up to his very fine standards. Made its first ever flight that morning, and, after some trimming, was flying better than most; in fact the only model that outflew it was Ferrel Papic's Bleriot #7 monoplane. Papic's plane is a legend for its long takeoff, and smooth flight. This time it outdid itself. As he was making his third flight, the wind caused the model to drift over the cars. It looked like a close thing, just clearing each car by about two feet. But at the end of the line was Jim McDermoth's new Ford van (well, pretty new), with a four-foot fiberglass pole on it to act as a mylar streamer mast. Well, the Bleriot hit the mast with its right wing, broke it from the truck, seemed to hesitate for a second, then flew on as though nothing happened. Don't know what you use for material in that wing Ferril, but it sure is strong stuff!

Art Herbon had entered a Fairchild 24 that was very detailed and was flying well, but seemed to get dirt in the close-fitting wheel pants, and had some bad luck taking off. This cost him half of the flying points, but the model was so well detailed that he got a third place overall.

The owner of Astro Flight, and person who pays for this contest, Bob Boucher, made a great looking Lincoln Beachy Monoplane. As he was running the radio control event, Bill Warner flew the model for him. I believe this is a kit, and it flew very well, so you kit builders take heart, there are many kits that can be converted from .020 gas to 02 electric. Might mention here that the best source of information I know of is Bob's book, *The Quiet Revolution,* found in most model shops.

Was worried about the junior event for most of the day; didn't seem to have anyone to enter in it. Got to talking to two girls, Cynde and Kim Waddell by name, and asked them if they would like to enter the event. They told me that they would, but didn't have a model. Jim

Jim McDermoth's training paid off! Kim and Cynde Waddell look kinda pleased with their first and second place trophies in Junior.

Continued on page 94

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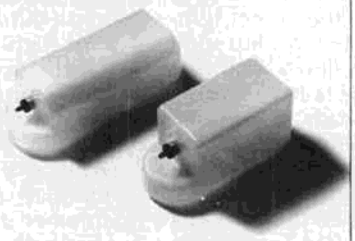

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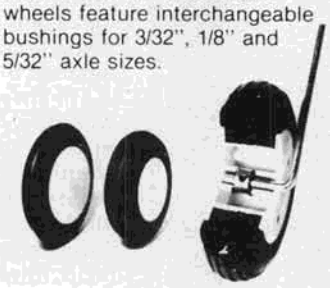

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Ideal for hobby workshop, home and general light mechanical use. Made of glass-filled nylon, these clamps are:

- **Strong**
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- **Rugged**
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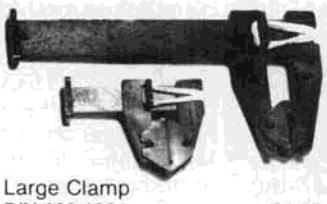
Rubber bands provide constant and easily adjustable tension (not possible with mechanical locking clamps). Movable jaws permit offset clamping, clamping non-parallel surfaces, and clamping in recessed areas. Jaws snap off easily for a maximum opening of 4" for large clamps and 1¼" for small clamps.



Large Clamp
P/N 200-106 **$1.49**
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P/N 200-104 (per pair) **$1.79**

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These extra thin solid nylon wheels are specially designed to fit in very slim wheel pants.

For 1/4 Midget Racers
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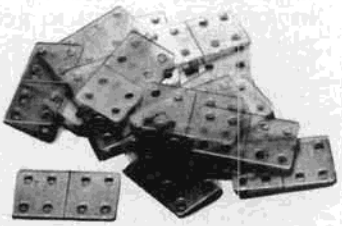
Polypropylene Hinges

These "live" polypropylene hinges are designed to dampen flutter, withstand high vibration, and to resist gumming from epoxy, glue or dirt. Perform well in large (¼ scale) aircraft. 20 per Pkg.



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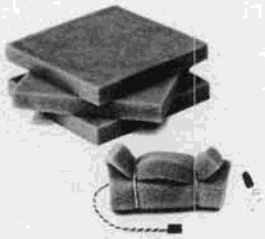
Used in our own personal airplanes as well as the test aircraft at the factory, this foam has excellent vibration dampening and shock absorbing qualities. Package of three 6" x 6" x 3/4" pieces.



P/N 200-203 **$1.19**

A Subsidiary of
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Modeler's Wrench

This is a high quality, attractively finished 4-way wrench in 5/16", 3/8", 7/16" and 1/2" socket sizes. The glow plug socket has a built-in retaining clip to hold the plug in the socket as you remove or install it in the engine. Four tapped holes around the center section store glow plugs.

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This highly efficient fuel filter is essential for maximum engine reliability. It prevents contaminates from clogging the carburetor needle valve assembly.

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Clevis

- Exclusive Snap-lock steel pin.
- Will not vibrate loose even on ¼ scale aircraft.
- Minimize the danger of wear and breakage at this connection critical point.

Clevis with 10" steel rod allows for ⅝" adjustment.

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Clevis only (package of 4).

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- **Mounting screws become self-locking in this material.**
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Aluminum Engine Mounts

- **Precision machined cast aluminum.**
- **Drill to your specific requirements.**
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Kraft .61 Aluminum Engine Mount

Rugged cast aluminum engine mount is drilled and tapped for Kraft .61 and Webra .61 engines.

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Handy assortment of 56 white nylon plastic modeling accessories is your best buy in convenience and utility.

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2 Regular Horns
4 Horn Plates
1 Flying Stab Bellcrank
2 Push Rod Exits
1 Antenna Flag Clip
1 Receiver Antenna Clip
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3 Push-on Collars (5/32)
3 Push-on Collars (1/8)
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2 Nuts (2-56)
2 Bellcrank Bushings
2 Wing Hold Down Nylon Bolts (¼-20)

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1 Flying Stabilizer Bellcrank

P/N 200-108 $ .98

2 Push Rod Exits, 1 Hatch Hold Down Bracket

P/N 200-107 $ .79

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P/N 200-111 $ .89

2 Standard Control Horns

P/N 200-112 $ .89

24 Assorted Push-on Collar Retainers

P/N 200-109 $ .89

4 (¼x20) Wing Hold Down Nylon Bolts

P/N 200-110 $ .98

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Aluminum control sticks with knurled tips. Fits Kraft KPT-7Z, KPT-7C, KPT-6C, KPT-5C, KPT-5X, KPT-3C and Sport Series KPT-6A, KPT-4A and KPT-2A transmitter.

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Write in for a data sheet or see your favorite hobby dealer.

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Vista, California 92083

R/C Cars . . . . *Continued from page 39*

Leisure charger. Hook up the pack, flip to discharge and in a very controllable manner the pack can be bled dry. Very handy when there is a need to fully discharge the pack, prior to fast-charge, and yet you can't run the car on the track (like at a race), and letting the motor in the car do the job takes too long. Besides, trying to position the car so that the rear wheels can spin free is almost impossible and everytime I see somebody do it, it looks like an accident just waiting to happen . . . and it usually does.

Offsetting all these advantages is the fact that the Leisure charger comes with instructions for use that are just about useless, written for its other chargers, in fact. By reading the above you just learned more about this charger than the instructions will tell, and I picked it all up by just playing with the thing for awhile. I could have fast-charged a Sanyo pack at 6-1/2 amps before discovering the variable current feature, for example, and fried packs I don't need any more of, thank you. And the price is right up there at $99.95, but by the time you read this the price will actually be right in line, considering the features offered and the fact that the other digital output charger available, from JoMac, is now due to go up in price.

What it comes down to is whether or not you would like to spend your money on a really effective charger, like this Model 109 from Leisure, or batteries. Lesser chargers will sooner or later burn a pack for you, along the way might even cost you a race or two, just because they weren't accurate enough to pump in a full charge safely. With packs selling for almost $40, investment in a high-quality charger starts to make sense.

Last up for pictures are the two shots of the Team Nats car from Associated. Gene Husting sent this up just a couple days ago and it turned out that the production kits weren't ready just yet, so what is pictured is actually pre-production, although very close to being exactly what the Team Nats cars will be like. Only real difference is that production cars will come with revised instructions, probably detailing how to build the car to duplicate Kent Clausen's '80 Nats-winning entry.

The car is available a couple of different ways. For $199.00 you get all the stuff pictured, plus the mentioned new instructions, but you also get to bolt it all together. For $219.00, only twenty bucks more, the car comes assembled, needing only installation of the radio. Oh, yes, and the body is painted. At first thought, the ready-to-run car sounds to be the way to go, and for many people may indeed be the hot tip, as slipping in a radio only takes an hour or so and you're ready to race. However, if you are going to detail the car from the pan up, maybe you ought to just get the kit, as you're going to end up taking it all apart anyway. For instance, I decided to clean up the pan's rough edges as well as dye the nylon parts and these two relatively simple operations meant stripping the car down to parts. Also, the assemblers no doubt use power drivers to assemble the cars and in taking this car apart I came across a few screws that had just barely started to strip threads in nylon parts. Not a big problem, just something you are unlikely to do yourself with a hand-held screwdriver.

And as a final argument for buying a kit, Associated is known for slipping in a few extras of those little pieces that often get lost, things like E-clips and such. Buy an R-T-R and you'll only get the number needed to build the car, buy a kit and you'll have spares.

You should know that this is just the start of a series of pictures you'll be seeing of this car, as the thought occurred to me that the Team Nats car could be used as the basis for a more or less ongoing part of this column. So in the next few months we'll go over the basic setup of the car, modifications made and whether they worked or not.

But first I suppose it only fair to mention why the Associated RC12E was picked for this. First, I have raced RC12E's from their introduction and back when I was the only one who had one, really smoked off the local racers. Not necessarily because I was a better

Continued on page 72

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- ★ **Schnurle Engine Not Required**
- ★ **No special tools required for assembly**

SPECIFICATIONS:

- **Rotor Diameter - 41½"**
- **Tail Rotor Diameter - 9"**
- **Length** (Nose to Tail) **- 43"**
- **Height - 13½"**
- **Weight - 6½ lbs.**
- **Radio - 4 Channel**
- **Engine Size - .40**

Radio System and Engine Not Included

$149.00*

* Does Not Include Collective Pitch

Send $2.00 for main plan & further information

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Beechcraft Bonanza V35B

NEW

SPECIFICATIONS:

Wing Span- 67"
Wing Area- 700 sq. in.
Lenght- 53"
Weight- 8-9 lbs.
Channels- 4-6
Power- .60

Suggested Retail Value $162.44

Factory Direct Price $129.95
(Include $8.00 for shipping & handling)
Sorry, no C.O.D.s

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Special scale effects also included:
•Louvered inspection panel •landing light •grill •scale nose gear strut & wheel doors •cowel flaps •engine exhaust & removable cowel.

Scale features include wingtip nav/strobe detailing.

Scale, vacuumed-formed details for stabs and all control surfaces included in kit.

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Kit highlights of Byron Originals' new V35B Bonanza include:

•Scale detailed fiberglass fuselage •injection molded foam wings, stabs and control surfaces •wheels •landing gear •Robart scale nose strut •spinner •scale, vacuum-formed detail for all control surfaces •decals •antenna & beacon •one-piece, vacuum-formed window insert •hinges •pushrods •cowel flaps •wingtip nav/strobe detail •plus all necessary hardware and die-cut materials to complete model.

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(plus $8.00 shipping)

In The Classic Byron Originals Tradition.

1/5 Scale
P-51D Mustang

Actual photo of model on final with operational flaps and scale retracts extending.

SPECIFICATIONS

WING SPAN . . . . . 85"
WING AREA . . 1300 sq. in.
LENGTH . . . . . 76"
Ready-to-fly weight . . 22½ lbs.
CHANNELS. 4
(6 for flaps & opt. retracts)

Retract System
Suggested Retail Value . . $169.94
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Complete Power Package Included in Kit!

Consists of:
- Complete drive unit & mounting
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Optional Pneumatic Retract System!
(Includes **all** necessary hardware)
- Sequencing gear & wheel doors
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- Single servo actuation

(Fully illustrated in plans)

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Complete Kit Concept!

This deluxe, super scale kit, complete with factory-installed Quadra engine and prop reduction system, is unquestionably the most sophisticated and realistic scale reproduction ever made of this famous WW II fighter. Kit includes: detailed fiberglass fuselage, injection molded wings and control surfaces and **all** necessary hardware to complete model as shown. Four deluxe decal schemes, three view and detailed plans and isometric drawings also included. **NOTE:** Pilot, paint, covering material and radio gear not included. In order for you to better appreciate this superb kit, we are offering a detailed information pack, complete with materials list, owners manual, parts price sheet and a miniaturized set of assembly plans and isometric drawings. Simply send us $2.00 along with your name and address and we'll forward your pack immediately. Once you review it, you'll understand why the P-51 from Byron Originals is being heralded as the greatest engineering achievement in modeling history.

Byro-Jet Fan Unit
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$62.44

Factory Direct Price
$49.95
(plus $2.00 shipping)

F-16 Kit
Suggested Retail Value
$270.26

Factory Direct Price
$216.21
(plus $10.50 shipping)

Byro-Jet Tuned Pipe System
Suggested Retail Value
$67.31

Factory Direct Price
$53.85
(plus $1.75 shipping)

driver, but because the car worked so well. It is a different story today, most everybody has a pretty good car, regardless of brand, and very few of the local racers are driving tanks anymore. Which is to say that I no longer dominate 1/12 racing around here . . . oh, for the good ol' days.

Having this much time on RC12E's, I have learned a lot about how to make them work the way I want, and can also quickly see what effect different bodies, wings, tires and so on have on the car.

Another interesting factor that is limited probably just to myself is that locally we have the factories for JoMac and MRP, in fact they are literally right next door to one another in the same building. Both of these companies build state-of-the-art 1/12 cars that are quite good, indeed compare favorably with the Associated car. Problem is that the head guys at each company, Don McKay at JoMac and Tony Bellizi at MRP, are ultra-competitive, and if I were to race one of the cars over the other, whoever built the car not chosen would probably be quite difficult to put up with for sometime. So a year or so ago I decided the best way out was to simply keep on racing an Associated car; having both of them only slightly miffed being a lot easier to deal with then either one highly irritated. Isn't life weird?

So in the next few issues the Team Nats car will be built from the pan on up and hopefully I'll be able to cover all the little detail things that go into preparing the car. Most, possibly all, of the information can be applied to any 1/12 race car, so will be of general interest.

OFF-ROAD STUFF

MB Publisher, Walt Schroder, dropped a note about what is evidently some heavy-duty off-road racing just a few doors away from the MB offices. Seems that Larry Van Caten's shop, Radio Control Hobbies, 653 West 19th St., Costa Mesa, CA 92627 (phone number is (714) 631-1555) puts on off-road racing events every fourth Sunday of each month and turnout is amazing. On one weekend mentioned by Walt, they had 42 entries racing in the dirt. Pretty good draw, right? Get this, though, the race referred to was held on Super Bowl Sunday, a day very few American males will leave the boob tube.

In addition to the super racing activity, there is enough interest and activity to justify putting on a series of three special designed Off-Road Seminars dealing with the preparation of Tamiya off-road vehicles.

Hey, somebody, probably Larry himself, has got his act together in promoting off-road racing. Is his operation a flash-in-the-pan thing or are all the rest of us missing out on something that sounds like terrific fun? I would suspect that what we are seeing here is the first ripple, to be followed by a tidal wave.●

R/C Scale . . . . *Continued from page 11*

Aviation. I just can't see why the damned doll-in-the-cockpit must be mandatory, *and nobody has even attempted to give me a reason. I ask, "why must we be thrown out of a contest for lack of a doll when we'd just lose points for lack of an actual aeroplane part like a cowl, a strut, a canopy?" And all I ever get for an answer is, "But aren't they cute? Why, you can put little beards on them! Ooooo, there's one with a little suit your wife can sew for him." But nobody tells me why the doll-in-the-cockpit takes precedence over parts of the airframe.*

Now don't tell anybody this, but I could stomach a rule that made the dummy optional. I could even live with a rule which urged the flight judges to deduct realism points for the lack of one because I think that any judge who was not a confirmed doll-fetishist rather than an aircraft fan would deduct damned few points because the dolls are not that noticeable in flight. If they "aren't that noticeable," why do I object to them? Because I'd know they were there; hideous little manikins with their lifeless eyes staring blankly from the cockpit. Lifeless, that's the thing! The aeroplane is alive, moving ever so slightly about the axes, even in level flight, whilst that thing in the cockpit is so obviously inert. And don't give me that garbage about cutting the head off and regluing it at an angle; then you just have the little horror staring blankly on the bias.

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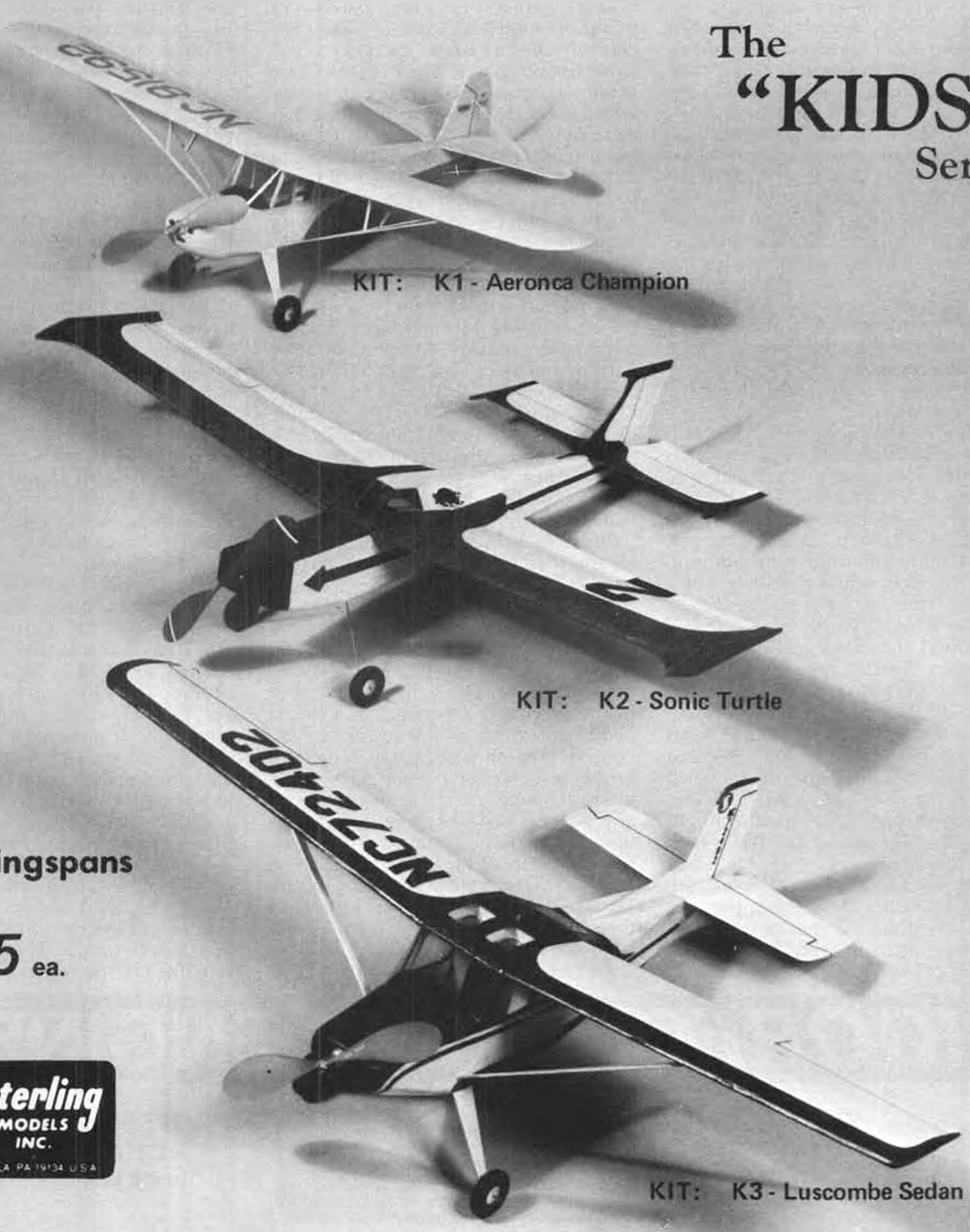

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That seems to be it for this round. By the way, I have seen the dolls that Claude had in his column in RCM, and I would say that they were up near the top of the cockpit doll state-of-the-art, i.e., they were merely dreadful rather than feloniously injurious to one's aesthetic sensibilities. But they were certainly not the sort of thing one would want in the cockpit of a decent scale model . . . better to leave to the pattern ships, pylon racers, and similar non-aeroplanes. Sincerely, Charles V. O'Donnell

P.S. O.K. Now I've got it! Saul of Tarsus was not struck down on the road to Damascus by a revelation as great as this. I know why you are so strong for that appalling rule: Your daughters have outgrown dolls and you have a tremendous surplus to get rid of. We can only be grateful that they didn't collect large stuffed toy animals.

(Ha! Charles, my girls *still* collect large stuffed animals. r.v.)

It is an interesting point, isn't it? Is it possible to legislate a single part which is in fact not even an actual scale item of the original aircraft while not requiring items which were indeed part of the original. I voted to reject Charles' proposal and I believe that the addition of the blankly staring doll is not a particularly bad idea. But he *does* have a point. For what it is worth, the NASA poll of members indicated agreement with the Contest Board's decision by voting 44 to 12 to reject the proposal. Any other feelings on the subject out there?

(The best reaction to a letter like this is to publish it for all to see, as Bob has done. The continued use of the word "doll" instead of "scale pilot" indicates the direction of Mr. O'Donnell's thought pattern, ". . . Three if by Air" awaits your comments. wcn)

While on the subject of rules, the initial vote is over. Aside from the vote from a very good number of the NASA members, unfortunately right at the ballot deadline, I have received only four pieces of mail concerning direction for my vote in District VI. Interestingly, they practically negated on another all the way down the line.

There were 53 out of the 74 proposals that concerned R/C. Some of these were two or more proposals speaking to the same basic concern. For instance, four proposals suggested changing the Figure 8 to the FAI 8. Of the 53 proposals, 21 were defeated on the initial vote, leaving us with 32 to act on further. Those defeated included graduated distance for judging, de-emphasizing hue and shade in color judging, dummy pilot, new classes in Sport Scale, 20% bonus for scratch, 60/40 split in maneuver judging, 1/3, 1/3, 1/3-split in judging options, scale takeoff same as Pattern, standardize landing height entry, spot landing optional in precision, 10% penalty for kit parts in precision, 6 points penalty for kit parts in Sport, eliminate two Sport Scale classes, Sport Scale 60/40 on flight/static, eliminate flap option, eliminate prefab part declaration, "no detail" Sport Scale, reduce Sport Scale static scores, remove Figure 8 and replace with option, and make Touch-and-Go one option.

Those rules that remain will continue on the road to acceptance or rejection for 1982. It was most pleasing to see a significant vote by NASA members on the proposals to serve as a guide to the Contest Board. It is difficult to find any specific trend in the letters and members' voting. Quite a significant number of the proposals wound up in a virtual dead heat as far as the voting is concerned. While it is not easily done (and probably won't be) it would be interesting to see whether the voting followed any regional patterns. Another publication has suggested that in scale there may be regional bias in judging which could affect both static and flying scores. That is a possibility and it may well affect the polling of a general membership such as exists in NASA.

One proposal which remains on the list of considerations was #71, which concerns a required taxi-out and back to hangar in Sport Scale. This proposal was considered in a letter I received from John Preston, the writer of the safety column in *Model Aviation*, and a scale official at the last several Nats and at the international competition in Ottawa last year. His concern from a safety viewpoint stemmed from the experiences with the judges and a taxi-back to the hangar. Giant Scale requires this maneuver as does Precision scale. On several occasions last year at the Nats, it seems the judges became somewhat nervous when the taxiing models were aimed in their direction. In addition, in events where two or more models are flying off of the same circle, there can be a pronounced holdup either becoming airborne or landing by the second model on the line. This, of course, does not take into account that some model types would not or can not taxi with any degree of directional control since the prototypes were unable to do so. At any rate, the type of input forwarded by John (and the others I have received) is important to feed to your Contest Board member. Do so today!

Have You Tried?

Sig's Koverall? I have used most of the heat shrinkable plastic and cloth covering materials. Of course, most have adhesives as an integral part of the material. Koverall by Sig does not.

It is a shrinkable cloth which can be attached by various means to your framework. It does have a grain, but it comes packaged with that grain running in the longest dimension (4 x 6 feet). I experimented with it recently and had fun attaching the various pieces I used with different adhesives. These included such things as dope, instant glues, adhesives sold by a rival company and sold by the pint, etc. I had no problem with any of them and the shrinkage formed a nice smooth surface. The material I used for filling the weave was K&B primer as a

base for the paint.

The Du-Bro Kwik-Lock Spinner is available in the stores and is worth your investigation. I have not run the spinner yet, but the attachment method appears most satisfactory and results in a great appearance without all the screws, holes, lines, etc. Another feature which may appeal to scalers is the shape. I believe you'll find it comes closer to matching the shape of many full scale aircraft than many other brands. It appears to be less blunt than many.

I have just received some of Top Flite's new Fabrikote and will give you some thoughts on it next month. It looks super with its fine weave, soft feel, and lack of grain to worry about.

'Nuff now . . . the outside is cold. Snow is falling. Planes to finish. Letters to write. One last concern . . . How are we gonna convince the Russians that they ought to hold Sport Scale in 1982? *(Guarantee no entries from Poland or Pakistan. wcn)* It's great that they want to include CL (which they probably figure they can win) and they can't get out of holding F4C RC Precision (which they probably cannot win) but they are steering clear of RC Stand Off because "not enough of Europe flies it." Hogwash! *They* don't! Everybody else does (almost). Since it's not an official event until 1983, the option is theirs. Any ideas how we can convince them that Stand Off is HOT? Or maybe someone else could bid for the event in 1982? •

R/C Boats . . . *Continued from page 48*

5. Tim Hess, Lil Lightning

Modified Vee Bottom
1. Norm Teague, Westcoast Stingray
2. Jack Garcia, Westcoast Stingray
3. Richard Fish, Muck Streaker
4. Craig Glasgow, Westcoast Stingray
5. Richard Hazelwood, Westcoast Stingray

Overall Top Finishers
1. Jack Garcia
2. Norm Teague
3. Richard Hazelwood
4. Tim Hess
5. Jim Rudasill

WESTCOAST MARINE OFFERING "ALL MOST READY TO FLOAT" OUTBOARD DEE VEE

For the person looking to get on the water without spending a great deal of time in putting a boat together, Westcoast Marine, P.O. Box 3712, Torrance, CA 90510, could have what you're looking for in a model boat. It is now offering its very successful Stingray Outboard Deep Vee with the radio box, K&B .21 Outboard, fuel tank, and linkages all ready installed. All that is missing is the radio system. The price for this setup is $269.95. It is also possible to purchase the Stingray as a basic kit for $69.95. For $139.95, they will set it up with everything less the engine and radio. This boat is one of the finest running outboard deep vees I have seen to date. At the time of this writing, it holds the N.A.M.B.A. record for .21 Outboard Mono in the 1/16 mile. I mentioned this in my coverage of the Legg Lake record trials. Contact Westcoast Marine for more information on this very fine running outboard deep vee.

PRATHER PRODUCTS TUNNEL BOAT NOW AVAILABLE

Those of you who enjoy racing the outboard tunnels probably already know that Prather Products, 1660 Ravenna Ave., Wilmington, CA 90744, has its 29-inch George Campbell tunnel hull available. I have been working on setting up its new tunnel for a future PRODUCT$ IN U$E article, and it is of the same excellent quality as their other model boats. The cost is $129.95. They have a radio box available for $19.95, and a boat holder for $19.95. Look for more information about this boat in a future issue. Prather Products has a very complete line of model boating accessories and a catalog is available by writing to them. Mention where you read about it when contacting them.

ANYONE ELSE EVER HAD THIS PROBLEM?

When I'm using my Dremel hand grinder I find it necessary to unplug my automatic garage door opener. Seems like the noise made by the grinder creates a pitch that opens my garage. The first time this happened it really

baffled me. Isn't it interesting some of the enlightning things one can find out by reading this column? •

F/F . . . . . *Continued from page 57*

wire parts. Final joint strength is stronger than the wood and the slight shrinking action makes it possible to repair small tissue tears. This stuff also has a pleasantly visible light orange color, so you can tell where you've glued.

All right, by now, you've guessed that I'm describing Ambroid, the oldest of all the model glues in use! If you are like me, you probably haven't changed your building style enough to take full advantage of the newest adhesives. These are great for certain applications, but I still haven't found myself using them for the majority of the construction of an airframe yet. My building is usually done in 15 to 30 minute stretches, usually separated by enough time that I can let conventional adhesives dry between handling. The cyanoacrylates are much better suited for those who are addicted to long, all-night building sessions . . . they permit continuous construction to go on. I find it hard to use them on parts with little gluing surface (like gluing a 1/32 stab rib to a 3/32 T.E.), since I usually end up with too much glue and a part that's heavier than one built with Ambroid. (My designs tend to use small cross-sections of harder balsa for a higher strength-to-weight ratio than large cross-sections of softer wood.)

The new thick cyanoacrylates (Super Jet, Super T Hot Stuff) may be the solution for all us old dogs out there who can't learn new tricks: they have all the handling qualities of Ambroid, with almost the same sticking speed as the thinner glues. Time and experience will only tell if they've managed to overcome cyanoacrylate's inherent susceptibility to shock loads. But then, I guess you *could* put a layer of Ambroid over the joints. And, if you didn't tell anyone what was underneath, you probably wouldn't have to give up your membership in the "too old to learn new tricks" group either!

(Carl Goldberg and the Hunters probably already have pen in hand on this one! We also used Ambroid for many years, but stopped for good when we discovered that it would become brittle, almost crystalized with age, and joints could be cleanly popped apart. We'd like to receive other qualified opinions on this matter. It is rumored that Sal Taibi still dissolves photo film in acetone! wcn)

ONE MAN'S WAY by Paul Lagan

"A famous man once said that no matter how enjoyable a particular activity may be to a given person, if that activity is taken to excess and done long enough and often enough, it can become torture. Now, it is hard to think how *some* of our more enjoyable activities could ever be torturous, but contest F/F can certainly become a bit of a bore if taken to excess. To prevent this, I try and fly a 'therapy' class or two along with the out-and-out competitive classes. One that I enjoy most of all is that involving little sports power models powered with an undercompressed rich diesel motor. There is something very relaxing in wandering under or after a slow-climbing Vic Smeed-design type of model on a calm morning or evening, then watching it attempt to glide once the kerosene runs out. After an hour of that I am set for at least another hard day straining seconds out of some temperamental contest prima donna model. Quote of the month, then, is:

IF YOU HOLD YOUR NOSE TO THE GRINDSTONE ROUGH, AND KEEP IT THERE FOR LONG ENOUGH; THEN ALL THAT EXISTS IN THE WORLD YOU'LL SUPPOSE, WILL BE YOU, THE STONE, AND YOUR BLOODY NOSE."

I couldn't have put it better, Paul. See you next month! •

Hannan . . . . . *Continued from page 50*

letter for Los Angeles, author Ray Bradbury is presently pushing the concept of "solar sailing" for space propulsion. Large aluminized plastic sails would capture momentum from sunlight, and therefore require no other propellant. Interestingly, part of the funding for the project is being provided by the Charles A. Lindbergh Fund of New York.

PEANUT PRIX PARTICULARS

Dr. John Martin, promoter of the Second Annual World Peanut Gran Prix, promises 24 continuous hours of competition! To be held in conjunction with a full week of indoor flying at the now-famous West Baden, Indiana Northwood Institute, the event should be most memorable, to say the least. The week's activities will include the 1981 U.S. Indoor Nationals, the 1982 FAI tryouts to select U.S. team members, and the N.I.M.S. Annual Record Trials.

In the Peanut Prix, five different categories are offered, and while personal attendance is warmly invited, proxy participation is also encouraged. Entry fees are a very reasonable $5 per class; $1 for each additional entry per class. Full instructions, rules and judging sheet will be sent upon receipt of entry. Deadline for entry forms is May 15, which may be sooner than you think! Checks may be made out to MIAMA, Dr. John Martin, and should be sent to: Mike Arak, 10900 SW 61 Ct., Miami, FL 33156 U.S.A. Six countries were represented last year, let's try for more!

AND SPEAKING OF PEANUTS

Roger Aime and Jean Frugoli report that the Second Jacques Pouliquen Memorial contest was a big success. Held in honor of the man who almost single-handedly introduced Peanuts to France, it attracted some 29 Peanuts plus numerous entries in the "Sainte Formule" (similar to Manhattan Cabin), F.A.I. "Beginner," and E.Z.B. As usual, the variety was outstanding, ranging

from models of man-powered planes (including the winning Gossamer Condor of E. Fillon and second placing Gossamer Mojave flown by C. Frugoli) through a couple of Farman Moustiques, a Fokker E 3, Blackburn, Heinkel 100V8, Lacey M 10, Santos-Dumont 14 Bis canard, Peyret-Taupin, and a Pou du Ciel (Flying Flea). Proxy entrant Bill Warner's Tatin Torpille placed 18th, significantly better than our Moustique, which, owing to a strike by the French Customs Bureau arrived three days too late! Oh well, it will be early for next year.

AIRMAIL FANS AND STAMP COLLECTORS

Now on sale at your local U.S. Post Office are more aviation oriented stamps. Aviatrix Blanche Stuart Scott and her pioneer pusher are featured on the 28-center, while Glenn Curtiss and one of his pusher biplanes are depicted on a 35-cent stamp. Added to the earlier Wright brothers (31 cents) and the Octave Chanute type, aeronautical history is quite well represented!

HOW'S THAT AGAIN?

Darned if we see any connection whatsoever to aviation, but model builder Ed Lockhart did send this "poetry" to the Hangar via a picture postcard with a biplane on it:

"Snail cannot creep, crawl or slide
very fastly;
when racing each other they all come
in lastly.
The only races snails can win,
are those nobody else is in."

AND FROM THE UNITED KINGDOM

Ming Tay, of London, says: "Regarding your question "What should indoor flyers yell?" (if in danger of being struck by a model) . . . here in England we yell "HEADS!" both indoors and outdoors."

HANDY HINT DEPARTMENT

Ever try to install scale cross-wire bracing in a model fuselage? It is a great aid to realism and increases strength. However it is usually a real trial to do neatly. One method involves literally building it in place as the fuselage is constructed. With this approach the "wire" (often thread in the case of small models) must be trapped between individual fuselage members and longerons, a tedious proposition at best. Some modelers simply wrap the thread around each intersection, but this is rather unsightly, especially on pioneer types such as Bleriots which have no fuselage covering.

Scale Staffel member Ernie Wrisley offers this idea, which he employed for his Demoiselle indoor model: For the "wiring," Ernie uses very fine (one pound test) monofilament fishing line. He constructs the fuselage in the usual manner, then installs the cross-brace monofilament by literally sewing it through the balsa upright members. The key to success, he says, is employing "beading needles," which are exceedingly fine and long. One brand is WALCO, which is sold complete with a threading device and six needles for less than one dollar. It's available at some sewing supply stores and craft shops.

WHILE ON THE SUBJECT OF MATERIALS AND TECHNIQUES

Roy Braybrook, marvelous humored writer for England's *Air International*, specializes in deflating overblown egos among aero manufacturers. In describing the graphite composite materials (carbon fibers) now receiving so much ballyhoo in both model and full-scale aviation circles, he refers to it simply as "advanced technology plywood"!

THINGS TO THINK ABOUT

From Dr. John Martin's newsletter (Florida) the somewhat sobering note that the late John Lennon's last lyrics contained this line: "Life is something that happens to you while you are planning something else."

AVIATION'S GREATEST BARGAIN

Phil Oestricher, an F-16 test pilot for General Dynamics, credits his career directly to a lifelong interest in model aircraft. From a recent letter to the Hangar we abstracted the following: "I built my first model, a Comet 10-cent Puss Moth, when I was seven years old (aided by two neighborhood experts, ages eight and nine). It not only flew but it would take off! I was hopelessly hooked on airplanes from that moment over 42 years ago. My model building has never stopped. I try *everything* but microfilm (too much of a klutz for that).

My modeling led to aeronautical engineering, Marine fighter flying, and finally, through a stroke of pure good fortune, to flying the F-16 and a T-38 for General Dynamics. So you see, I owe a lot to that Puss Moth and the man who made it available. I have never met Mr. Bill Bishop (founder of Comet, w.c.h.), but I think the world of him, his fine company, and the fantastic products it brought to the market. I carefully saved what was left of each plan after I built the Comet 10 and 25-cent models and had them in a bugproof box in our garage. Unfortunately, the box was not fireproof and I lost it all when the garage burned to the ground in 1948. A few years later I began searching for old Comet plans, especially from the 10 cent kits that my friends, my sister, and I had enjoyed. The last of the 10-cent kit plans was provided by a kit collector friend in my hometown of Orlando, Florida, 28 years later."

In 1978, Phil wrote the following "forward" for the plans collection:

"Return with us now to those thrilling days of yesteryear when out of the past comes not only the thundering hoofbeats of the great horse Silver but also the muted whirring of a four-inch machine-cut balsa propeller, driven by a loop of pale yellow rubber. A small scale model airplane is tenderly immersed in its element by the hopeful yet apprehensive builder. Will it fly? Will all of the care and effort that went into its construction and preparation for this maiden flight return the dividend of success? The child who built the model shares . . . and to no lesser extent . . . the emotions of vice presidents, chief engineers and test pilots as they put their "latest and greatest" into the air for the first time for, in his project, he is all three. This experience was once available at an incredibly low price, even when judged by the value standards of the late 1930s.

"Yes, believe it or not, one thin dime would purchase a flying scale model airplane kit complete with a tube of cement. Selecting, buying, building and flying these models provided many boys and some girls, too, with a sense of the value of money, manual dexterity, patience, a knowledge of aerodynamics and structures, the fascination of flight and the satisfaction of knowing that they could accomplish an involved task. All of this for just ten cents! Is it any wonder then that the "airplane nut" who put this booklet together regards the ten-cent scale model airplane kit of the late 30's and early 40's as aviation's greatest bargain? These kits may well have represented the most products for the least cost of any merchandise ever offered.

"These scale model kits were generally fairly accurate of line and were very well engineered. Most were good flyers if reasonably constructed and adjusted. Some were truly outstanding. All were worth whatever effort was required to transform the flat balsa sheet, strips and Japanese tissue provided in the brightly colored box into a real, three-dimensional airplane.

"Turn these pages slowly and let the memories come back. Be thankful that you were fortunate enough to have known first-hand the ten-cent scale model airplane. Enjoy once again aviation's greatest bargain."

We saved another line from Phil's letter for last: "I'm sure glad I bought that Puss Moth." •

Thornburg . . . *Continued from page 24*

pean market. Most of our popular designs are lightweight, polyhedral floaters . . . essentially freeflights. The Oly II, Wanderer, Windrifter, RO-8, Square Soar, 2x2 . . . almost every plane you see on the average flying field is basically a stable, hands-off design, and hence an excellent airplane for learning to land.

. . .IF it is properly trimmed and balanced.

The commonest problem I encounter among beginning glider fliers is tail-heaviness *(their gliders, that is. wcn)*. Nobody likes to add lead to their models, right? But let's face it; it isn't easy to build a glider that doesn't need noseweight. Especially from a kit. The wood in kits is almost never light enough to prevent tail-heaviness; if it were, the model would be much too fragile for the

average beginner.

So it's no disgrace to have to add lead to the nose of your model, in order to make it balance on the CG point shown in the plans. And this means ON the point shown, not merely within a half-inch or so. A rearward CG is strictly for experts; on some designs, even moving the balance point back a 1/4 inch can make the plane unstable and tricky to fly.

Sure, you've probably read that the hot competition pilots fly rearward CG's to increase their plane's penetration and sensitivity to lift. And this is true. But this slight increase in performance is offset by a large loss of natural stability; a rearward CG can make a model's elevator so sensitive that just breathing on the stick will cause a loop or a dive!

This kind of elevator sensitivity is *just the opposite* of what you need for learning to make consistent landings. So be certain your model is balanced and trimmed for stable, hands-off flight before you begin your landing training.

And now . . . finally . . . we're ready to go to the flying field.

I always find, when I'm just beginning to learn a new skill, that the presence of spectators is a hindrance. This is especially true in learning to land an R/C glider. After all, being able to slide your model right up to your feet carries a lot of prestige on the glider field. So you can't help getting pretty ego-involved in this landing business . . . why not avoid the distraction of onlookers by going out alone, or with one other flier at most? Later, when you have the system down to a science, you'll want an audience to show off for. But not now. Because right now you need some time to make a few mistakes . . . mistakes you can learn from, without damaging either your model or your self-esteem.

Before we go up for our first landing, let's think about what constitutes an ideal landing. Surprisingly, this boils down to only two requirements:

1) Wings level at touchdown
2) Little or no use of elevator

The first requirement is self-explanatory. If your wings aren't level at touchdown, one of the wing panels is likely to hit the ground before the fuselage does. When this happens, the plane ground-loops or cartwheels, often snapping a wingtip or stabilizer. This is not your ideal landing.

Requirement number two is a bit more subtle: why "no use of elevator"? Isn't the elevator what makes a plane go up and down? And isn't landing just a matter of coming down . . . safely?

Well, yes and no. Mostly no. As my full-scale flight instructor was quick to tell me: "Elevator doesn't control altitude. Throttle controls altitude. *Elevator controls airspeed.*"

Don't skip over this quote too quickly. Think about it a while and you'll see that he was right. When you push a little down elevator you lose some altitude, it's true, but more significantly, *you gain airspeed.* Pull back on the stick, instead, and you won't go up very much, but you will slow down. *Elevator controls airspeed.*

And the last thing you want in a good landing pattern is a change of airspeed.

In the ideal landing pattern, the kind of landing pattern you want to program your reflexes for, both airspeed and sink rate will remain almost constant throughout. Your model will come floating downwind through the imaginary "landing window" (see drawing) at its normal, hands-off airspeed, just about phone-pole high. You'll just

watch it go by, wait until it has lost about half of its altitude, then swing it gently around through a 180° turn until its nose faces you, and *let it land itself.*

Yup.

This is the big secret to setting a sailplane down without damage: it has to land itself. You cannot land it safely using the transmitter sticks . . . all you can do is position it for the landing, then let it glide in on its own.

Why? Because elevator controls airspeed. If you find yourself too high, and try to correct by applying down elevator, you'll only increase the airspeed. This will cause the plane to:

a) dive into the ground . . . the nose-shattering "dork" you see at contests; or

b) "zoom": that is, flatten out near the ground at high speed and slowly balloon back up into the air, finally slowing down and settling in for a landing at approximately the same place it had in mind before you start fiddling with the elevator. Neither of these is the ideal landing.

On the other hand, what happens if you find yourself too low? You pull a little up elevator to gain altitude, right? And it works; your plane rises a few feet. But you've traded precious airspeed for those few feet of altitude, and so, in theory at least, you're no better off than you were. In practice, one of three things will happen next:

1) Luck is with you, and a bubble of warm air, and/or a sudden drop in wind velocity occurs, letting you stretch your glide a few extra feet.

2) Luck is neutral, and you mush in at a dangerously low airspeed, touching down just about where you would have anyway.

3) Luck is against you, and you stall one wingtip, snaprolling into the ground with a dull thud.

If you've been thinking ahead a bit, you've probably figured out by now what makes or breaks a sailplane's landing: *it's all in where you make that 180° turn.* Make it too soon and you'll come back upwind too high; make it too late and you'll never get home.

So this is what you've got to practice: judging where to start your turn. I can't help you much here . . . it's something you've got to learn from experience, based on your wind conditions, your field, your airplane. And the quickest way to learn from experience is to make each experience as nearly identical as possible. That's the reason for the imaginary window in the sky. That's the reason for letting the model assume its natural, hands-off airspeed. That's the reason for staying off the elevator control as much as possible.

And that's the reason for going off by yourself to learn. So you can relax and step back and observe how the plane is flying: How high is it when it passes through the "window"? How fast is it dropping? Where did it land that time, and how should I adjust my turn to make it land closer to where I want?

In your practice, try to stick closely to the figures shown in the drawing. Keep you window at least phone-pole high; any lower can endanger other modelers on the field. And you'll need at least 100 feet between you and the window, for a couple of reasons.

First, you can't tell much about a model when it passes right above you . . . it has to be out towards the horizon if you want to judge its attitude and altitude accurately. Second, you want to get into the habit of making a broad, gentle turn . . . at least 100 feet in diameter . . . for your final approach. Tight turns do funny things to your airspeed. Wide turns let you observe the plane (and the air) more accurately during what full-scale pilots call "the crosswind leg." And wide turns make it easy to get the wings back to level position before touchdown.

So now you're on your own. Don't expect to become expert in just three or four attempts. But a good morning of consistent practice should improve your landing skills visibly. And remember: it's just like learning to swim or ride a bike. Once you have the technique down, you'll never really forget it. •

Blanik . . . . . *Continued from page 17*

sanding of all ribs, glue on the covering sheet (K48) which has to be first glued together from boards of given thickness and sanded on the upper side.

The aileron is assembled together during the assembly of the wing. Insert the ribs K49 through K57 and connect them together by K58. Next, cut the ribs K11 and K17 and glue in the nose part K59. Let it dry, and then cut the aileron from the wing and insert the parts K60, hinges K61, and an arm K62.

Now the wing can be taken from the workboard. The nuts in arms K38 and K39 have to be fixed by means of glue. Insert ribs K63 through K71 (the same number of them are in the real flap), check the movement of control surfaces, and glue on the lower covering sheet. Now place it again on the drawing with shims and let it dry. Next, glue K72 (leading edge) on as well as rib K73, match together the tip of the wing with ending part K74 and glue it on together with K75. Attach triangle parts K76 and

sand to shape.

Spoilers K77 and K78 have to be matched with openings in the cover and then glue in the hinges K79. Then glue in the bearings K80 for arms of K47. The closed position of spoilers has to be adjusted by bending of the arms K47.

The other wing panel has to be assembled by the same manner.

FUSELAGE

The fuselage also has to be assembled over the plans, on a flat surface. The base of the fuselage is created by two side parts T1, which are reinforced on their internal surface by means of T2 and T3 and uprights T4. The side parts attach to the drawing by pins and glue in parts T5, T6 and bulkhead T7. Attention, T7 is not perpendicular! Before assembly, put together parts T8 and T9 creating a "pocket" for K81 and glue it on bulkhead T7. Follow by parts T10 through T13, which hold ribs T14 and T15, creating a short center section. Between nose parts of those ribs insert the block T16 and exactly against slots insert T17 for tongues K35.

Glue in bulkheads T18 through T20 of the front part of the fuselage and reinforcing T21, and as well, insert bulkheads T22 and T23 into the tail part of the fuselage. On the top surface of the side parts and connecting bars T6, glue on the block of styrofoam (T24) which has to be sanded to shape. Finally glue on prepared part T25, upper sheeting T26, and part T27.

After detaching the fuselage from the working board, glue on plate T28 for landing gear and a styrofoam block T29 creating the lower rounded part of fuselage (the block has to be first shaped similarly to the upper block). The walls of the hole for the landing gear have to be reinforced by means of parts T30 and into the longitudinal gap glue in the reinforcing T31. The nose of fuselage (T32) is fitted and on the tail of the fuselage, prepare the block T33 (but glue it on after finishing the hinges of rudder). The lower rounded part of the fuselage is covered by sheet T34. Insert on T17 parts T35, fill the gaps between T14 and T15 and cover the root fairings T36.

The surface of the fuselage has to be shaped using pattern cross sections 1 through 6, glue on ribs T37 for connection of fuselage and stabilizer and on the forward bottom part put on support part T38. Finish the cross section between center section and the wing and finish overall surface of the fuselage by sanding.

Put on the covers for instruments T39 and T40 and insert instrument panels T41 on bulkheads T18 and T19. Next, glue on forward fixed part of canopy T42 with frame T43 and insert the windows T44 and T45 between bulkheads T10 and T11 (internal part of fuselage has to be painted before inserting windows). Prepare (not glue!) the ending part T46 (can be hollow block), glue on spines T47 and reinforce the lower part of the fuselage with fiberglass (ending behind the hole for landing gear and roughly 20mm above the lower contour of side parts).

Removable cover of pilot's area has to be assembled from parts T48 through T51, which are step-by-step glued into the glass covering T52 which is matching the shape of the fuselage. Whole cover is attached by three hinges (T53) on the right side and in its closed position is held by small snaps.

The control mechanism for ailerons and spoilers has to be attached by brackets T48 and T54 on the bulkheads T11 and T12 already during the construction of the fuselage. Part T60 for control arm of elevator is glued on wall T23 by epoxy and fabric. Axial movement of bar T55 and arms T61 is limited by T58 and the holder of arms T56, T57, and T62 is reinforced by part T59. The axis of rudder T63 with soldered arm T64 and tubing T64 has to be inserted into the bearing T54 in the fuselage and the control bar has to be fixed in it by a soldered washer. After inserting support bearing T66 and soldering of support part T58, the end of axis has to be bent and part T67 has to be glued in.

The landing gear is created by a semi-pneumatic wheel on the axis T69 in the fork T63, which has to be, after spraying of the model, attached on the T28 by means of two screws and washers with nuts. The tail skid is solid, which is unlike the full scale aircraft.

TAIL SURFACES

The elevator is built in two parts, both attached to the fuselage by means of two couplers V27 and arms of T61. Stabilizer is assembled from ribs V1 through V5.

beam V6, and false leading edge V7. Both tubes V8 have to be glued in exactly parallel and reinforcing V9 for hinges is covered by sheeting V10 which upper surface has to be first sanded for painting. Put on the tip blocks V11, leading edge part V12, triangle parts V13 and rib V14, and finish it by sanding.

The elevator has to be assembled same way from parts V15 through V25. It is attached to stabilizer by hinges V26, for which the slots in V24 must be created (large enough to assure full movement of elevator).

The rudder is very similar to the elevator from the construction point of view. The fin portion has to be assembled from the construction details S1 through S12, the covering sheets have to be matched with the fuselage and glued on by epoxy. In its top, glue in the hinge S13 and insert tube T54 into the part T25 so that both parts have a common axis. The rudder itself is created from parts S14 to S26. In its bottom part, it has to be inserted through hole and glued on the part T63, on the top it is attached by S27 through hinge S13.

CONTROL MECHANISM

All parts used to transfer motion of servos to control surfaces have to be made very carefully. Mutual free moving between parts of control mechanism *(control linkage slop to you! wcn)* must be minimized, especially by complicated gears with short arms, to avoid dead motion and bad neutrals of controls. On the other hand, too tight mechanism causes too high loading of servos, and fast discharging of batteries. The push-rods between arms within the wing and/or fuselage are recommended to be made from hard balsawood (plastic arrow shafts would be better from weight point of view), the other bars could be made from steel wires of 2mm diameter. For connection between control bars and control arms the plastic clevises (similar to Dubro) could be used. There is no more access into some areas covered by sheeting, and for such places the mechanism placed in it has to be finished very carefully.

The length of control bars and arms are designed for Varioprop servos. The procedure for build in of mechanism has been already described in the paragraphs for wing and fuselage.

CONTROL EQUIPMENT

As we noted before, equipment is not on the drawing. Basically we can even use it to adjust center of gravity of the model; it means usually the batteries are in very front part of fuselage, receiver behind it, and finally servos. All parts of control equipment have to be protected by plastic foam (rubber) material and styrofoam against vibration and against movement, for example by landing.

SHEETING AND PROTECTION OF THE SURFACE

The final wooden surface has to be sanded carefully, painted and/or sprayed by filler, again painted by clear dope and again sanded. All parts of the model have to be covered by paper of different thickness: wing, front part of the fuselage, ailerons, elevator, and rudder by medium weight paper; the rest of the surfaces by lightweight paper. Before final painting (or spraying) the surfaces must be well painted by clear dope and carefully sanded.

COLORS

Blanik gliders delivered to aeroclubs or exported abroad have standard coloring as on the drawing. Whole aircraft has the color of natural duraluminum; only the stripes on the fuselage, wing and tail surfaces, including the name Blanik and the mark of the producers are painted in red, blue, green, or black color. The Czechoslovakian registration is always in black letters. The messages for personnel (like "Do not push here") are red. The interior of cabin, like sidewalls, floor, and so on, are gray; shields of instrument panels are beige. Some Blaniks in aeroclubs of Svazarm have non-standard color design, mostly quite attractive.

VIEW NO. 1 shows Blanik from Aeroclub Kladno. It is on all surfaces ivory white; on the side walls there are three color stripes starting from above blue, black and red. On the top of the fuselage there is a blue stripe widened to blue keil on the rudder stab. Name "L13 Blanik" on the left side of nose and on the right side of rudder as well as name Kladno on right side of nose and left side of rudder, are black. The wing from above view has a blue stripe on the nose of wing, after it there is a black stripe, and approximately in the center of wing there is red stripe interrupted for the registration letters. Bottom surface of the wing is the same excluding the black stripe. The wing tips are red. Elevator does not have any trimming stripes.

VIEW NO. 2 shows Blanik from Aeroclub Kunovice. Basic color is again natural duraluminum. The fuselage is orange from above, same color as the vertical stab and rudder, stripes on the wing and wing tips. On the side walls, there is white keil stripe. Rudder above the national flag is black. Colored surfaces are divided by black line interrupted for registration letters. The width of this dividing line is 4mm for wing, 6mm for fuselage, and 2mm for side stripe (sizes valid for model!). On the left side of the nose there is a black diablo (devil) with black-gray bat wings and red flame painted on the green circle. This glider is placed now in the museum at Kbely, Prague.

VIEW NO. 3 shows Blanik delivered to USSR for their aeroclub called Dosaaf. Wing tips, rudder, and three stripes are orange (according to customer wishes even other color), the names DOSAAF and Blanik written by Cyrilic alphabet on

both side walls are blue and symbol LET is white-blue. The red asterixes have white-red contours. All other messages and description is red. Soviet registration letters on usual places are black.

Blaniks delivered to USSR from beginning they had standard coloring (like for Czechoslovakian aeroclubs). In interrupted middle stripe on the nose it was named DOSAAF (cyrilic) in the same color as the stripe itself. On both halves of the wing from top and from bottom, they were red asterixes contoured by red and white lines.

BLANIK L13J WITH AN ENGINE

(Hmmm . . . an interesting subject for Sport or Precision Scale competition! wcn)

Engines from 2 to 2.5cm³ (0.12-0.15) can be installed (similar to actual aircraft) on the pylon. The construction of wing and tail surfaces is not changed. The fuselage has to be equipped by parts needed for attachment of the pylon. Between walls T7 and T12, the ribs T71 have to be glued in and on them as well as on T7, the parts T72 and T73. After covering of center section, the holes for pylon supports M2 and M3 have to be drilled. The holes for screws have to be drilled in accordance with M7.

PYLON AND ENGINE HOLDER

The supports M2 and M3 (for both sides, the front one and back one are bent from one piece of wire) solder together with supports M4 and M5 . . . the best way is to use a special jig for it corresponding to the shape of the center section and in the same time, solder the nuts M7. Whole construction has to be attached to engine holder M1 by means of thin wire and epoxy glue. The shape of M1 must conform to bay M8, which consists of two parts connected with screws into the M6, soldered on supports M4 and M5, and on consoles M9, attached to motor holder. Fuel tank M10 has to be arranged according to engine used. Its volume has to be designed on the base of specific fuel consumption of an engine and desired running time, but it can be even limited by timer or by an additional R/C channel.

In case a glow engine is used, the engine pod and the surface of fuselage (at least) has to be protected against methanol fuel by means of fuel-proof colorless enamel.

Coloring shows in View No. 4. On the prototype, the fuselage from top as well as engine bay have been white, other color trimming has been dark red (stripe on the wing contoured by white line). The name L13J has been white, Czechoslovakian flag has been contoured by white lines. The upper stripe on the engine bay has been interrupted by symbol LET, lower one by name of engine JAWA. Black registration if going through trimming is contoured by white line. All other surfaces natural duraluminum.

FLYING

Before the first takeoff, check again very carefully the trim of the wing and its position in relationship to the fuselage and elevator. Also check the position of the center of gravity and the symmetry of the model. If necessary, use additional ballast to bring the position of center of gravity on its right place in accordance with the drawing . . . see arrow and the letter T. For the first test flight, the CG could be a little bit shifted in the direction of the nose of the model, because it would increase the stability. On the other hand, shifting of CG in opposite direction, behind the location pointed as T, would decrease the stability of the model. *(It's the same everywhere! wcn.)* Check function of R/C equipment in all positions of the model and be sure batteries are freshly charged.

If model has been assembled carefully, in accordance with the drawing, it should fly without any trouble and it would need just to know its behavior (which is usually not same for all models and can be typical) and to obtain the pilot experiences with it. Blanik as a model is stabile enough from all points of view, it is fast enough (do not want to fly with it like with A/2 glider!) and it can be good controlled in all flight positions. Blanik is gliding very well, especially near the earth surface, and it is recommended to have it in mind to land the model without landing flaps.

For first flight with powered model (motor without throttle control) fill the

tank just enough to check the behavior of the model and after it, you can possibly give more fuel. If you would use powerful engine, try first flights with lower rpms, for safety. •

Pylon . . . . . *Continued from page 28*

5.2.8. Weight.

Weight less fuel, but including all equipment necessary for flight shall be at least 2200 grams (4.85 lbs.) and not more than 3000 grams (6.60 lbs.) if ballast is used, it must be permanently and safely affixed.

5.2.9. Fuel.

Fuel to a standard formula for glow plug and spark ignition motors will be supplied by the organizers. Its composition shall be 80% Methanol, 20% Lubricant.

5.2.10. Racing Course Specification.

The triangular course will be laid out as follows: The course of 10 laps with individual length of 400 meters (1312.4 feet). Total distance travelled is 4 kilometers (2.49 miles). The race starts at the start-finish line. All take-offs will be ROG, no mechanical device will be used to assist the aircraft, but hand pushing is permitted. The race course specification may be modified in the interest of safety or to suit existing field condition if safety is not compromised. The pylons should have a minimum height of 4 meters (13.12 ft.) and should not exceed 5 meters (16.40 ft.) height.

ORGANIZATION FOR RADIO CONTROLLED PYLON RACING CONTESTS:

5.2.12.4.

A sideline judge will be posted in front of the pit area on the spectator side of the racing course. The sideline judge will record as an infringement, any overflight of the pit or spectator areas. The judges at the No. 2 and No. 3 pylons will record a cut pylon (infringement). At the end of each race the sideline and pylon judges will inform the race starter of any infringements by any contestant.

5.2.12.6.

The race starter is in charge of each heat; the starter will first ensure that all contestants and race officials are ready to commence. Each signaller will have a flag or light of a distinctive color, the starter will arrange for each model to be identified by one signaller before the start of any heat.

A radio operation check from each contestant will be made prior to starting motor(s).

A maximum of 1 minute will be allowed for starting and adjusting the motor(s), at which point the race will commence. A competitor will be allowed an additional 1 minute to become airborne before being disqualified from that heat.

5.2.12.10.

Starting positions in all races will be determined by draw, with the No. 1 position being closest to the No. 2 Pylon.

Models will be flagged off the starting line at 1-second intervals with timing commencing at the drop of the flag for that particular model.

5.2.12.12.

Each competitor may have only one helper in each race and the helper may release the model at the start and give the pilot verbal information regarding the flying course of his model and official signals.

The designation "competitor" may refer to an individual or team entry of no more than two persons. Any award will be made jointly to team members.

5.2.12.13.

In the event of a collision or contact between two airborne models, both models must be landed immediately, even though they are able to continue flying. The contest director is required to give such competitors a second opportunity to record a score in that round, provided that in his opinion the aircraft is still airworthy or the competitor has an airworthy reserve model.

In the event of a malfunction of the timing, lap counting, signalling, or other such equipment which is the responsibility of the organizers, the competitor(s) affected by such malfunction shall be given the opportunity to record a score for that round.

5.2.13. Scoring.

5.2.13.1.

The flight of each model shall be timed with a stopwatch. Timing shall be commenced when the starting signal is given to each individual competitor. The lap scorers stop their watches after ten laps have been completed. They are not concerned with how many infringements their flyer has made. The pylon and sideline judges, after the heat has finished, notify the race starter which models have made infringements.

If one infringement is made, one tenth of the flyer's time (for ten laps) is added, to give his corrected time. If two infringements are made, the pilot's flight is cancelled.

5.2.13.2.

Points shall be awarded after each race as follows: The contestant's corrected time in seconds is deducted from 200.

No points will be awarded if a model

fails to complete the 10 laps, or if the flight is cancelled.

5.2.13.3.

The winner of the event is the contestant who has accumulated the most points after the conclusion of all heats when three or less rounds are flown. If four or more rounds are flown, each competitor's worst score shall be discarded.

5.2.13.4.

If time permits, and there is no frequency conflict, ties shall be broken by a fly-off race. Otherwise, the best single race score shall be considered in resolving a tie.

Now, from the Northeastern part of the U.S., a short review of the year's racing activity provided by Ernest Nikodem.

Dear Jim,

The United Pylon Racing Circuit had 7 clubs, 5 American and 2 Canadian, each of which held a race during the race season. Each club held a sport pylon and Formula 1 race on a Sunday and in addition, 3 of the clubs held a 1/4-midget race on the previous Saturday for their club. The racing points were accumulated for the season and we had a season champion; for Sport pylon Jim Nikodem, 1/4-midget Gary Gau, and for Formula 1 Dave Keats. They each received a perpetual trophy for their event and will receive a 1980 trophy to keep when they return the perpetual trophy in 1981. In addition, Gary Gau received a 1/4-midget kit and Dave Keats received a Formula 1 kit, provided by the UPRC circuit director Ed Smith. A season overall UPRC champion is picked by adding points of 2 events and that person is awarded the UPRC Season Champion perpetual trophy, and this year's champion was our youngest UPRC flyer Jim Nikodem, a teenager. •

Plug Sparks . . *Continued from page 32*

40 YEARS AGO, I WAS. . .

Photo No. 6 says it all as young Frank Ehling cranks on a balky Elf engine. This photo, taken at the 1937 Detroit Nationals by Bruce Lester, shows Frank with one of his numerous models, many of them unpublished. In talking to Frank, he dearly loves to tell the anecdote about himself and Maxwell Bassett in the early days. It's a good yarn and bears repeating.

Frank sez he was intrigued by stories of Bassett's prowess in winning most of the big contests in the early days. He inspected Maxwell's model quite minutely, concluding that Bassett was not the greatest craftsman in the world; hence, it had to be his flying technique and/or motor running ability that was responsible for the long string of wins.

Ehling stationed himself in a position where he could observe Bassett closely. After looking the area over, and some of the models flying, Bassett strapped his model together and commenced hand glides to check balance of the model. After several glide attempts, which Ehling reckoned was about right, to Frank's surprise, Bassett continued to test glide, each time steepening the glide angle. After awhile Frank concluded this guy may know how to get the most out of Brown Jr. motors, but he sure doesn't know how to adjust a model.

The contest got rolling and Frank entered his model, along with the rest of the fellows. Most models climbed quite high, gaining about 1000 to 2000 feet, catching lift (as it was a nice day) and generally drifting out of sight between 12 and 15 minutes. As a matter of fact, Ehling's model made a remarkable flight of 4-1/2 hours (unoffocial of course). This model was featured in the 1935 Jasco Year Book by Frank Zaic.

Having nothing else to fly, Ehling's attention was again focussed on Bassett, as Maxwell had decided it was time to fly. Maxwell's attention to the engine was meticulous, and the engine responded with a lengthy motor run that pulled the model up to a very high altitude. Well, thought Frank, that's a nice flight but he'll drift out even faster with that altitude.

Watching the glide, Frank noted the model was descending in rather steep circles but was staying in sight! The model finally landed on the field with a time of 22 minutes, bettering Frank's 18 minute O.O.S. flight! Frank said that was a real lesson in strategy flying and never lost his respect for Bassett thereafter.

Eventually Bassett succumbed to the new rules which emphasized the hot motor and short motor runs. Besides, Bassett had other fish to fry, as he was completing his engineering degree at the University of Pennsylvania. Bassett never did come back to model flying after the radical rule changes of 1938. *(Anyone know where he is now? wcn)*

BUNCH MOTORS AGAIN!

At the recent International Modelers Show (IMS), held at Pasadena on January 10 and 11, this columnist was quite surprised to see Howard Broughton. At least 43 years had passed since the last time we met. Howard is now living at 522 Pleasant Ave., Ojai, CA 93023.

During the discussion with Howard about the early days, some interesting facts came to light.

In 1935/36, Bunch decided to purchase some Brown Jr. motors in conjunction with four other fellows. At that time, the Junior Motor Corporation required a minimum order of five for a nice discount price in the $15.00 range. Bunch had ideas of setting up a distributorship for selling Brown Jr. motors. However, the Reginald Denny people had the same idea, and, of course, with more capital, were able to offer Brown larger purchase orders.

What to do? Would you believe this led to Bunch getting into the engine manufacturing game? Actually, it was due more to economic necessity, as three or four unemployed machinists were receptive to the idea of making engines.

Still haven't been able to track down who designed the engine, but the Gwin Aero name was definitely taken from his wife's name. Anyway, the rest is history. The machinists, working for $12.50/week, started producing engines with startling results and sales.

One of the interesting tidbits that came up during our conversations was the Warrior motor. The radial mount was originally intended for racing models (cars, boats, etc.). The radial mount (used in airplanes), would reduce the frontal area considerably over beam mounted engines.

When it came to putting a name on this new engine, someone suggested the name of "Warrior" as they were using Buick automotive paint called "Warrior Red." How many were ever painted red is questionable, but Howard remembers more than a few Warriors were made. They simply have to be discovered.

Photo No. 7 shows a Cleveland Viking, circa 1940, powered with a Sky Chief engine, as built by Joe Locasto, who now resides at 447 State St., San Mateo, CA 94401. Joe not only builds gorgeous scale models now, but has a 2/3 size Curtiss P6-E under construction. This columnist viewed the metal framework and it will truly be a beauty with a converted Buick engine.

Photo No. 8 is a shot of the neat portable rack for stowing R/C transmitters as cooked up by SAM 30. This pic was taken at the West Coast Champs, and as you can see, they left nothing to the imagination on what events were going to be run. Also note that gorgeous dichondra field everyone is raving about. Really is something!

SAM CHAPTER REPORT

SAM 3 (SCIF): The latest newsletter, as edited and written by Ken Sykora, provoked some real guffaws with his articles on OOPS, Official Observer Person. If we get a chance in the future, we're gonna run this in the column (with Ken's permission, of course).

The SCIF's are particularly proud of their younger members as attested to by Photo No. 9, showing Brad Levine with a neatly built Findra Aerobo. This model, powered with an Arden 19, is practically unbeatable. Carl Hatrak proved that at the First O/T Events at the Nationals in 1966! Good models never lose their touch!

SAM 13 (SCAMPS): Latest newsletter called *"Gas Lines"* ably edited by Bud McNorgan, of the SCAMPS, proposes another rubber event to the already burgeoning list. Bud claims there are three distinct stages of Wakefield models in the old timer category, to wit:

1. The first type with no weight rules ala Gordon Light's 1932 Atlantic City winner.

2. This was followed by the 4-oz., 200 sq. in. wing area models such as Judge's or Fillon's model.

3. Then the 8-oz., 200 sq. in. models like the Korda and a host of other late 1940-41 Wakefield models.

McNorgan also sez many of the Moffets were designed so that the required weight of 6 oz. could be easily converted to the No. 3 category Wakefield. As far as rules go, Bud is going to enforce the takeoff rule very strictly. Remember when you help it by a wingtip and propeller? Tricky launch! We will be waiting on reports when this meet is held.

We would be remiss if we didn't publish a picture of this dynamic personality, so Photo No. 10 is a shot taken of J.G. "Bud" McNorgan, 11421 Salinez Drive, Garden Grove, CA 92643, at one of the VAMPS meets at Henderson Dry Lake. Model is a Tom Laurie, "Twin

Cyclone" that moves right along with an O&R 29.

FORIEGN EXCHANGE

ENGLAND: Latest information from Ben Buckle, newsletter editor for SAM 35, is their latest Issues #6 and #7. These issues were accompanied by a free plan put out by Ben Buckle; a small version of the Buccaneer, suitable for .020/.049 engines. What a great idea! Looks like the British stole a march on the parent SAM organization.

The latest reorganization shows that the President (honorary) is Dave Baker, with Peter Michel as Treasurer. The chairman of this organization is Ray Alban, assisted by Area Scale Representatives Colin Watts, North; Tony Penhall, Eastern; and Denis Lloyd, Western. Looks like they really organized!

Biggest item on their contest agenda is the definite possibility of an O/T Champs at the ASME Nationals. Date and place not firmed up as of this date. Several prominent SAM Members, such as Danny Sheelds and Joe Beshar, have indicated they may try to attend this competition. If things work out, this columnist may appear!

Naturally, when talking about England, we simply must run a photo of Alex Imrie's latest, as shown in Photo No. 11. This picture shows his Burd "King Burd" flying at Old Warden, where they have an annual old timer day. Surprisingly, the GHQ appears to run better all the time, having put in over 100 flights. As Alex says, "Will wonders never cease as this is the real crude GHQ kit that has the stamped piston and bronze con-rod, all complete with file marks."

Another photo from England is of Mark Hinton, a real diehard young old timer. Mark did very well at the Sculthorpe AFB affair last year, winning with the twin pusher shown in Photo No. 12. Mark is quite versatile, as he also flies F/F gas and helps dad fly his R/C M-G in O/T R/C. Quite a boy!

AUSTRALIA: Photo No. 13 is a shot of John Tidey's Bassett Miss Philly VI. This model won the first Texaco meet held in Australia, quite handily. Note those open farm fields. Australia has some great flying spots.

SWEDEN: We are again indebted to Sven-Olav Linden for Photo No. 14, showing Lars Larsson with a 1944 Swedish glider design. This shot was taken in June 1980, when Jean Pierre Ternaux of Toronto, Canada, was visiting Sweden. Fortunately, there was contest activity during his visit, and Jean was able to see and appreciate what the boys in Sweden are doing to old timer flying.

FLORIDA FLASHES

Terry Rimert reports that the District V Free Flight Championships weren't that great (all depends on your viewpoint), but those modelers who did come, got in a lot of flying in great weather, for a good all-around time.

It is always interesting when an active modeler is able to pry another modeler out of the woodwork. In this case, Ron "Foo-2-U" Sharpton was successful in getting Gil Cochran back out on the flying field, after an absence of four years. Although it is claimed it took Gil five years to finish his Comet Clipper, it flies albeit, with some trim needed.

So, to pep things up all the more, Ron has issued a challenge for an O/T type P-30 Event. Now you're talking! There are more old Scientific designs floating around that fit the rules of the P-30 Event perfectly. Hope this goes over big!

NORTHWEST RAMBLINGS

If getting on the contest calendar is a problem, other areas, especially California, should take note of the fact the Willamette Model Club staged their Northwest Old Timer F/F Championships in conjunction with the 'Silents Please' meet also featuring Old Timer Events.

Bob Stalick reports for the second year, the meets have proven compatible. The O/T meet featured eleven events over September 27-28, making for a real busy day, when you consider twelve events in the Silents Please contest. Some of the more interesting fun events in O/T, were the Two Minute Time Target, plus a new one devoted strictly to Brown Jr. (Time Target) motors. 'Nostalgia' event, which is slowly catching on, was also another of the new fun events. Looking over the Silents Please events, one could not help notice the addition of an electric power event, a P-30 Rocket event, and several hand launched glider events. Has your club been missing some of thses fun events?

AUSTRALIAN ECHOS

Photo No. 10 appearing in the Plug Sparks column in the November, 1980 issue of *Model Builder*, brought a letter from a good friend, Alan Wall, of RMB 205 Limbre Road, Kootingal, N.S.W., 2352, Australia.

Alan was quick to point out the engine appearing in this photo was a Frog 100. Alan fondly recalls this was his first motor, and still has it in good running shape. However, having the motor is a stroke of luck, as Al lost it in a local contest near Brisbane in Queensland. Getting the motor (and model) back

after the flyaway, was instrumental in meeting the girl he later married. He says he doesn't hold a grudge against the motor. Haw!

Incidentally, for a few of you Johnny-come-latelys, Alan sez the instructions for the English motor call for paraffin. Don't be decoyed, as they are simply talking about kerosene! (paraffin based fuel). Sure could get into a heap of trouble!

In closing off, Wall says the only other diesel engine available at that time, was the ED 2cc with a slotted head. You needed a penny or screwdriver to adjust the compression. Every so often this stuff went into the prop!

OBIT NOTICE

Tom Cope, SAM 8, writes to inform one and all that he has lost his best buddy, Don Dodd, who lost his battle to cancer after two years (much longer than the prognosis of six months).

Don was one of those modelers who started with Orwicks and Sailplanes, early days of radio, modern flight, and finally, total dedication to old timers. The last really big O/T meet in the Northwest in 1974 was the product of Dodd's enthusiasm. This Seattle contest drew contestants from Canada and all northern U.S. States. Lotsa trophies and merchandise!

Probably the biggest thing the boys are going to miss is the sense of humor Don Dodd enjoyed. Nothing like trading abusive remarks, wisecracks, etc. Don once said to Tom, "Those Oregon boys must really love me. They started throwing insults before I could even get out of my car." That said with the biggest grin you ever saw.

A perpetual trophy is being made up to honor Don, in recognition of all his contributions to this hobby we love so well. Don is one of those fellows who only come along once in a lifetime.

THE WRAP-UP

There have been a considerable number of letters inquiring if this columnist is going to again stage the Old Timer Events at the Nationals. Yes, sir! The schedule is as follows: R/C Assist O/T, Wednesday, August 5; O/T Controline, Thursday, August 6; and the big day, Friday, for Free Flight, August 7, followed by the Awards Banquet that night.

The columnist has been holding back on this not to detract from the National SAM Champs being held at Taft on June 30, July 1, and 2. Next issue we will cover everything in a little more detail! •

Sparky . . . . . *Continued from page 33*

patch . . . other than that, it's just not as good as the other adhesives. Epoxy is great for reinforcing critical areas and five minute field repairs, but slower than Jet or Hot Stuff and the joints generally weigh more. *(The newer thick cyano's may be the answer. wcn)*

Each adhesive has its virtues, so learn them and use them selectively for best results.

Sparky is covered with good tissue. The grain runs spanwise on wing and tail but in the girth direction on the fuselage. Careful sanding with 220-grit on a block of wood before covering will improve appearance of the finished covering. Use straight nitrate dope to attach the tissue. Coat the structure first. If you attach the tissue with dope, add another coat as you go from rib to rib, etc. Some prefer to pre-coat the structure and attach the tissue by brushing thinner on the tissue. The thinner penetrates the tissue and attaches it to the structure. Both sytems work. I use both. Some point out that the thinner procedure is neater and you do not end up with dope all over your fingers from rubbing the doped tissue. Treat each section with care to have the tissue taut. Often you will cut the larger pieces of tissue off and start by overlapping on a rib or upright to avoid wrinkles. Covering with damp tissue is a big help on the wing tips and a must for the aft cabin areas. Spray with water to tighten. Replace wrinkled areas. The dope will not tighten wrinkles. Overlap the tissue around the leading and trailing edges at least 1/16. In grasshopper areas this is a must. Grasshoppers love balsa wood and they can mess up a nice model in a hurry.

Let's build My Sparky.

Everyone has habits about what is built first, second, etc. So do I. However, for this model, some sequences make others easier. The wing, if completed before the fuselage, makes it easier to check out

the wing fit on the cabin. Making the propeller with hinge permits checking the folded propeller on the fuselage nose. If it's too snug, it's easier to correct before covering the fuselage. A completed rudder is desirable when completing the center section of the stabilizer so that the tubes can be inserted and the fit checked out before covering. The dethermalizing fittings and tube key are best checked out thoroughly before covering the fuselage.

Construction details given here will follow the sequence just discussed.

WING

The complete outline is glued together over a Saran plastic covered plan. Block up the trailing edge with a piece of 1/32 balsa set under the front 1/32 of the trailing edge. The trailing edge is cut to its triangular shape before gluing down. I hope you have matched the strength of these pieces.

At this point it is wise to build the wash out into the tips. Washout is decreased incidence that permits the tips to avoid stalling until after the main area of the wing. This makes the model more stable. From the indicated point, raise the trailing edge and part of the tip 1/8-inch. It will be necessary to crack the main piece of trailing edge to do this and to adjust the fit of the joints of the wing tip sections. You may want to cut a piece of 1/8 balsa and shape it in a triangular way to give a nice flat surface for the glue joints between pieces. Reinforce the cracked trailing edge with Hot Stuff or Jet. (It penetrates cracks.)

Now cut an airfoil template. Rubber cement or contact cement the plan template to a piece of thin metal. When dry, cut and file to shape accurately. Check against the airfoil on the plan.

Cut the 1/16 square bottom sliced ribs first. Keep the cuts parallel. Use a light to be sure you do not cut any SOFT ribs (light areas). Be sure they are ALL the same DEPTH. Cut these ribs to length by trimming from the trailing edge only. Cut them all to fit. Leave them in place, then go along and apply just a wee bit of Hot Stuff. Be sure each rib is touching the plan at the leading edge and the 1/32 shim under the front of the trailing edge.

Cut the top rib slices and trim them to fit in the same way the bottom slices were trimmed. When gluing them in (observe the sketches), set the top slices to the side of the bottom slices at the trailing edge, and parallel to them.

At this point, measure the space between the ribs and cut a set of MATCHING 1/16 balsa or 1/16 spruce spars. Now you will find the error of your ways if the ribs aren't 1/16 deep and all equal in thickness! Slide the spar in and check it for fit. Before gluing the rib slices, shim up the four top slices on the right panel 3/64 inch. These are marked on the plan. This is a way of providing more lift on the right wing for purposes of keeping the Sparky from banking too steeply while climbing under power. Most models are warped to provide more angle of incidence on the right side. This is OK and you may prefer to do it. Both work. My method is easier to check out for consistent maintenance. Remember, My Sparky is a HIGH POWERED model.

Now cut 18 sliced upper ribs only 1-7/16 inch long, using only the leading edge of the template. Glue them onto the spar and leading edge. When dry, place each wing half onto the plan of the other side and trim the portion in back of the spar to the length shown on the plan. Now round the rib slice on the top surface at the place you just cut it.

Sand the panels carefully with 150-grit sandpaper and a block to remove all projections that will show under the covering. Taper the trailing edge at the tip and round the leading edge. Look at each wing panel from the tip and you will see each rib and be able to detect any that do not match the curve of adjacent ribs. Replace any that are too low. You can't add on by sanding! Recoat each glue joint with Titebond. You may try diluting the glue with 1/3 water and brushing it on. *(You may also get an argument from Carl, Bill, Bob, and Hugh about the necessity! wcn)*

Do both panels look OK? Now you are ready to join the wing panels. You may prefer to have a one-piece wing. We will discuss that construction first. It works as well as a two-piece wing and is a lot easier to build.

To assemble the panels, place one flat on your work board with protective plastic under the center and hold it down. My favorite method is to use push pins with the point pushed through a 1/2-inch square of soft balsa. Pin down a block or a sheet of balsa to hold the tip of the other panel 7 inches above the work surface. Make it secure and level with the work surface. Trim the spars, leading and trailing edges to a no-gap fit with the panel resting on its support. Cut doublers 1-1/2 inches long from hard 1/16 balsa or 1/32 plywood. Trim them to fit the spars and glue into place. You may choose to use clamps to hold the surfaces together. Try spring clothespins if you don't have fancy ones. Add 1/8 inch triangular shaped doublers to the leading and trailing edges. Cut a center rib from hard 1/16 balsa and cut notches in it for the spars and doublers just glued in, and glue it in place. When dry, remove the hold-down pins and sand the doublers.

TWO PIECE WING (not for beginners)

Starting again with the two completed panels, block up both wings so the tips are 3-1/2 inches above the work surface. Cut two 1/32 hard "C" grain balsa center ribs without spar notches. See the plan. No undercamber on these ribs. Trim the spars, leading and trailing edges so they fit with no gap, with the two ribs in place.

Make a rib-holding device as shown on the plan to hold the ribs firmly together and vertical. Use pins in addition, if necessary. Be sure you have the ribs drilled and the 1/16 short dowel already glued in to align the two ribs permanently. Now glue them in place, being careful that they don't glue to each other! Use plastic film if necessary.

When dry, remove and bend the wires that take the tension loads that hold the panels together. Two points are critical: 1) The point of contact between the wire with the hook and the wire with the "U"-bend must be precisely on the line of the bottom surface of the rib; 2) Silk and glue the wires carefully and well.

Add the scalloped 1/32 sheet on the upper camber (use lightweight "A" grain and the two 1/32 strips to the bottom surface as shown on the plan). Check the hooking and dowel fit, sand and cover.

PROPELLER

The propeller block is shown. It is 12 inches in diameter and that is the largest ever used. Higher pitch props were tried, and you may prefer to, but I liked the rocket climb and over 30 second motor run this prop gave me.

There is so much information to be presented on the prop, spinner and alignment that you'll have to wait for the article to appear in a future issue of this magazine.

The rudder construction is well illustrated. You won't have any trouble here if you keep the dowels parallel. If you do not make the rudder removable just extend the leading edge and trailing edge to the bottom of the stabilizer rib, add some balsa braces, a sliced rib on either side of the rudder, and cover.

The stabilizer is made like the wing, except that the tips are cut off, trimmed to a flush joint and glued on at a 45° angle downward. Add the dethermalizer wire before covering and glue it well (epoxy).

FUSELAGE

Use tough, straight-grained balsa or 3/32 spruce squares. Remember spruce is heavier. Those of you familiar with the kit will see I've added an extra 3/32 sq. or 1/16x1/8 between the rear wing peg and the top nose rear former. It's ugly but it overcomes a stress riser behind the former. The upright 3/32 sq. also has a heavy thread going around the wing attachment dowel, down the balsa, and the front of the former. The multiple rear peg holes are for C.G. adjustment without adding weight. Stabilizer attachment and dethermalizer fittings are combined. You may want to simplify and use a dowel through the fuselage, hooks on top of the stab and standard keys. It's all OK. Do what you know works. But do light the fuse!

GROUND CHECK FOR FLIGHT

1. Check the wing for flatness and equal washout at the tips. Use dry heat, carefully, over your stove, and appropriate twist to correct. Let it set and recheck before flying.

2. Be sure the rudder flat side (left side) lines up with the center line of the fuselage. It and the stab should be flat . . . no warps.

3. Use two No. 8 rubber bands to hold the wing on. If you use my D/T system, use one heavy D/T band.

4. Be sure the wing fits the cabin snug; the stab is snug and has the zero incidence shown.

5. Install a motor, adjust the rubber tensioner to hold up the slack rubber and check the balance point against plan location. Move rubber or add weight to properly locate the balance point.

6. Add about 3° RIGHT thrust (prop tilts to the right); NO DOWN THRUST.

FLIGHT TEST

1. Glide model. Do it enough to do it smoothly. No stall or dive should occur. If it does, move the rear motor peg to move the balance a wee bit. You should get about a 50-foot glide.

2. Adjust the glide direction to a broad left turn. The cambered rudder should do this. If other than a minor rudder trim is needed, recheck the rudder location and the wing for warps.

3. Wind in 100 turns and launch at a 10° upward angle. The model should make the beginning of a broad right turn. Since the model uses a long motor

and the tensioner stops the prop suddenly, you will get a dip and possibly a slight stall as the model transitions from power to the slower glide speed. Be more concerned with the power pattern at first, until you get up high enough to work on the glide.

4. Continue increasing turns. Make slight adjustments in thrust to get a right spiral climb. With increased altitude, you may find the hand glide trim gave you false readings.

5. If My Sparky does not want to climb, check the angle between wing and stabilizer. It should be 3°. Rough check this by removing the wing and stab. Looking from the rear, you should see the stabilizer platform and wing platform as straight lines when a ruler is 18 inches from the rear of the fuselage and your nose. Adjust with shims if needed.

If the wing is warped, stop, go home *(or look for the nearest auto exhaust! wcn)* and correct. If you don't, you'll be sorry.

6. Most Sparkies and My Sparky do not require down thrust; just right thrust and only enough to get a right climbing turn.

7. As turns are added, the model will climb steeper and steeper. The main thing to observe is the amount of right bank. If it is too steep, you will not climb well, and with added power may spin in to the right. A bit of incidence (wash-in) in the right panel will correct this. This addition may require a bit of added right thrust.

When the power looks good and the model glides left in smooth circles and you experience a stall under power, then and ONLY then do you put a small shim in to add down thrust. Without a right turning power pattern, the model, with lots of turns, will loop even with the incidence and balance correct.

You are advised to use a protective tube inside the fuselage when winding over 400 turns, so that if the rubber breaks, it will not destroy the fuselage. You will need a heavy wire or rod at the end of your winder to remove this tube after winding, and a hook on the end of the motor to hold with a rod while you hook up the propeller.

Test a motor outside the model to see how many turns you can put in, so you will know where it will break.

8. How well does it fly?

Motor run: 30 to 45 seconds (six strands of 1/4-inch rubber, 30 inches long, 800 winds).

Altitude: 400 to 500 feet.

Duration: Up to 3 minutes, 45 seconds in neutral air.

9. Remember:

a) Check for warps every time BEFORE you go flying.

b) Test your motors and apply rubber lubricant.

c) Check your keys and wing location before EVERY launch.

d) Light the fuse!

e) Write and tell me about *your* Mr. Sparky. Ed Lidgard, 24722 Marbella Ave., Carson, CA 90745. •

Markings . . . . *Continued from page 23*

of the same letters by stacking several layers of tissue. Straight edged markings are quite easy to cut this way.

Unlike pressure sensitive materials applied with a wetting agent and decals (these will be discussed later), care must be taken to eye-ball cemented markings into their proper locations. Guidelines cannot be used because they will be covered by the cement and will not be erasible. Japanese tissue goes on well with thinned dope. Apply the dope to the top of the marking after it is properly positioned. Tissue has a bad habit of fading (even black!). An obvious but practical solution to this problem is to install a second layer of markings over the first ones when the fading becomes objectionable.

The art of covering super-light models . . . typically Peanut Scale models . . . is an art by itself. However, if you do cover with pre-shrunk material and use a "wash" coat of very thin dope, tissue markings can be applied as described above.

The most useful pressure sensitive material is mylar backed with a pressure sensitive adhesive. There is a "sticky back" type of Monokote that is a good example of this material. It is best applied by first putting a strong solution of wetting agent over the location where the markings are to be applied. A 20% solution of dishwashing liquid in water works well. Remove the backing and plop the marking on the wet surface. Slide it into position and rub the liquid out from under it using a facial tissue. In this case, guidelines can be drawn into the model using a very soft pencil or drafting tape can be used to assist in properly locating the marking. It is best to coat markings of this type if they are in danger of being fuel soaked.

Decals are handled essentially the same as pressure sensitive material. Plain water is used to soak them off their backing and provides the lubricant needed to position them. Guidelines are more difficult to use with decals because the outer layer of a decal is a transparent material that overlaps the design itself. This material will cover the

guideline and make it indelible. For the same reason, drafting tape, if used, must be displaced a bit to allow room for the clear overcoating that projects out from the edge of the marking itself.

Iron-on materials are very useful for marking purposes. However, the basic technique of covering with this sort of material must first be mastered. In any case, use the minimum possible heat to apply markings. This will avoid uneven edges resulting from local variations in shrinkage. Some brands and certain types within brands require less heat and these are recommended for use as markings. Seal the edges first. Then iron down the center material.

PAINTING TECHNIQUES

First of all, in this article, the word "paint" is used to mean the broad spectrum of dopes, lacquers, enamels, epoxies, etc., etc. Some of us are lucky enough to have steady, artistic hands. If you have this talent, you can take brush-in-hand and freehand paint the markings. Most of us require at least something to guide us; a stencil to mark around or paint inside of. The letter outlines with the second part of this article can be used to create stencils in many sizes. Sticky-back shelf covering materials or wide drafting tape can be used to create stencils that can be stuck onto the model, painted inside of, and removed, leaving highly professional looking results. Alternately, patterns may be cut out of card stock or similar material (thin metal is ideal if you plan many reuses). These can be positioned on the model, traced around and the outline filled in with paint.

The paints used must be compatible with the base finish and, if appropriate, be fuel proof. It is the author's practice to use a final overcoat of clear to cover everything. This coating provides fuel protection, increases the sheen and makes the whole finish look more professional.

A good trick to know about when using stencils (or striping tape) is to first coat the joints between the stencil edges and base coat near the stencil edges with clear finish. This technique seals the edge of the stencil (tape) and prevents the colored paint from running under the stencil. The result is sharp edges for your markings rather than furry edges with occasional little outcroppings.

Many Peanut Scale and similar models are marked using a "felt tip" pen. These come in many styles and tip materials. The common "ball point" pen is another useful device. Tissue should be lightly doped before using pens of this type to prevent running of the ink. Some practice and the aid of a ruler will produce ultra light markings that look very well.

The ultimate marking for highly finished models is, of course, applied with a drafting pen. After doing the edges, large areas are filled in using a paint brush. If drafting ink is used, it should be protected with polyurethane varnish or another clear coating. The surface should be very smooth for best results with a drafting pen. Clean the surface with a good grease solvent (typically, isopropyl alcohol), and take the top sheen off the area to be marked before you start. Pumice or ultra-fine sandpaper will do this trick. The top coat of clear will reestablish the shine.

The second part of this article will cover the making of patterns for the two most popular alphabets used in aircraft markings. Additionally, it contains a summary of the marking rules established by FAA, AMA and FAI. •

Found ..... *Continued from page 51*

got converted by the Scale Staffel newsletter's editor to "Allied Insignia," and then after Bill Noonan showed up with a Bostonian West "Bostaube" with black crosses, got changed by concensus of the club to any insignia.

Open cockpit airplanes are allowed, just as long as they conform to the rules.

Multiplane models are also allowed, as long as their total wing area does not exceed 48 square inches.

Our approach to the landing gear rule is that, if it is at all questionable, the model will be required to make its unassisted takeoff from the position it will come to rest in, when gliding from a five-foot altitude to an unassisted landing.

The Bostonian Event has proven to be very popular, and a lot of fun. The Eastern contingent has a charisma award for additional points and is considering a double-covering-of-surfaces rule. The Western contingent has just added one-contest-only rule to insure that all entrants have a certain charisma in spite of themselves. On July 4th, last year, the CD supplied stick-on American flags (U.S.A. type) for all entrants who didn't already have them.

The Boston Found model in the photos, which were taken by Fudo Takagi, weighs 15 grams empty. It flew perfectly outdoors without a single adjustment, with a loop of 1/8 rubber. Indoors in a basketball court-sized gym, it required a 3/32 left thrust shim in the nose block and a 1/4 by 1-inch left drag flap on the outer panel, to turn safely, clear of the walls. With an eighteen inch loop of 3/32nd rubber, its best official flight time was 44 seconds.

It appears to be a very nice flying model that should provide lots of excellent flying for even a novice builder. Bostonians are fun to fly . . . try this Boston Found. •

C/L..... *Continued from page 59*

in my stuff.

NORTHWEST REGIONAL CONTROL LINE CHAMPIONSHIPS

Talk about excellent timing, I had just been sitting here trying to make up something further to write about when the mailman dropped off a letter from John Thompson, Contest Director for the above meet, referred to by Northwest fliers as simply "The Regionals."

John asked for some publicity on the contest and for one as well run and well attended as this, of course we can slip in a plug.

It is a AAA contest and covers two days, May 23 and 24. No lightweight contest this; on Saturday alone the following events will be held: AMA Rat, Slow Combat (Junior-only class, single elimination as well as Senior/Open, double elimination), Profile Carrier, Class I and II Carrier, N.W. Sport Race (Junior/Senior combined, Open class separate), FAI Combat, AMA Slow Rat, N.W. Super Sport Race, Goodyear, Mouse Race I and Mouse Race II. Now that is one full day of competition, but in a quick peek at the schedule, everything is scheduled so that conflicts will be minimal. For instance, the AMA events are split with the highly popular unofficial N.W. racing events like Sport and Super Sport race. You guys who race only AMA events won't be running in back-to-back events, might even have time to relax a bit with some Sport racing.

For Sunday events, planned are: 1/2A Speed, A Speed, B Speed, D/Jet Speed combined, Formula 21 Speed (Junior only by AMA rules), Formula 40 Speed for Senior and Open fliers, FAI Speed, 1/2A Combat, Precision Aerobatics (Beginner/Intermediate and Advanced/Expert), Profile Carrier, Class I and II Carrier, AMA Combat (double elimination) and Scale. That last event, Scale, was in limbo until just recently, but after announcing in *Flying Lines* that if enough advance entries were made, the event would be held, entries came in and it is firmly in the schedule.

This really is a very good contest; great people, super place to fly, lots of room for the events held, the site is even right next to the Eugene airport so that those flying in needn't worry about transportation . . . just walk on over and get signed up for your events. For more information, as well as a complete schedule of events, write to John Thompson, 1411 Bryant Ave., Cottage Grove, OR 97424, or call John at (503) 942-7324.

GRAPHITE AND STUFF

Back a couple or three years ago I was editor of a magazine called *Race Car World*, and it dealt exclusively with radio control car racing. But from the title of the mag, that wasn't any too obvious,

and those folk who make their living scattering press releases to the winds just naturally assumed the magazine dealt with, uh, race cars . . . the big, snorty kind. So I still get, even though RCW bit the dust a year or so ago, tons of press releases from Lancia, Fiat, Porsche and so on, right down to the suppliers of race car bits and pieces as well as those sponsoring cars and drivers.

Latest thing to hit here is the announcement that Hercules has produced its one-millionth pound of Magnamite® graphite fiber. Two pages of hipe later they say that by '84 the company will be able to produce 2.5 million pounds of the stuff per year.

And it is likely that some of those millions of pounds of graphite will be showing up as engine parts sometime in the future. For the past couple of years several manufacturers in the modeling field have been playing with graphite engine parts; some work, some don't. In the automotive field, there are currently engines being tested to destruction that use graphite construction almost exclusively. The latest version I heard about uses steel camshafts, steel crank and metal bearings, but about everything else is graphite, from the block to pistons, rods, valves and so on. Although I don't know how far the idea went, there were a couple of NASCAR-style engines for stock-car racing around recently that used graphite rods. Whether or not these engines actually saw any NASCAR racing I'm not sure, but just the thought that plastic rods would actually work in an engine that sees use in such a heavily stressed application does give one something to think about.

In motorcycle racing, there is also a lot of work being done with plastic engines, although there doesn't seem to be any of these pieces actually out in competition, even on "works" bikes. XX 'Course there isn't anybody that has direct access to the internals of these works engines but if one of the companies had mastered the use of graphite, surely they would be bragging about it, even if not breaking an engine down to show how it is done.

Still, the application of current and future plastics technology to our engines used in modeling sounds intriguing. How about a Fox Combat Special built with a plastic case, piston, rod, back cover, head, wrist pin, cylinder liner and thrust washers; the crank, prop nut and screws could be steel. One thing for sure, we would all have models needing modifications, they would be very tail-heavy, quite likely so much so that they couldn't be flown with any kind of control. Graphite is so light that it is almost unbelievable, especially when the strength figures are quoted.

It will be awhile before plastic engine parts start to be available to modelers. Most likely the big-bucks motorcycle manufacturers will first have to sort out the ways to make plastics work in competition two-cycle engines and then the technology will filter down to the model engine manufacturers. But it is coming, and just the idea of, again for instance, a Fox Combat engine that weighs, say, 4-1/2 ounces, 5 ounces tops, is reason enough to hope that the technology gets pushed through as soon as possible.

And the price of such a motor? If you don't ask, I won't tell you, fair enough? Might want to start saving now, however. . . •

Elect. Champs *Continued from page 66*

McDermoth overheard this, and loaned them one of his fine electric designs. Now Jim is this kind of person; in fact, he has just finished an all-sheet .020 gas design for a local high school model club, and gave it to them free of charge. How's that for helping the junior movement!!! After Jim gave each girl some instruction on launching, the two had a duel with the same model. Haven't seen two young people have so much fun in a long time.

The only thing we didn't have this year was the electric control line event. It seems a shame, as last year it drew the most mail from all over the country. I went over to the radio control area to see Tony and Addie Naccarato, as they are the prime movers in this event. Should have known, both of them were so busy helping other modelers that they didn't have time to fly their planes; guess that's the best reason I know of.

Well gang, that's about it. If you weren't there, or didn't fly, get started now for next year. Remember, they start with a switch, no flipping props, are quiet, and don't leave your prize model all covered with fuel when you're done.

RESULTS

ENDURANCE
1. Mike Bernhardt, Eaglet
2. Jim McDermoth, Hummer I
3. Gene Wallock, Ranger

SCALE
1. Bill Warner, 1911 Paulhan-Tatin No. 1

2. Ferril Papic, Bleriot #7
3. Art Herbon, Fairchild 24

020 REPLICA
1. Jim McDermoth, Strato Streak
2. Jim McMahon, Buzzard Bombshell
3. Gene Wallock, Ranger

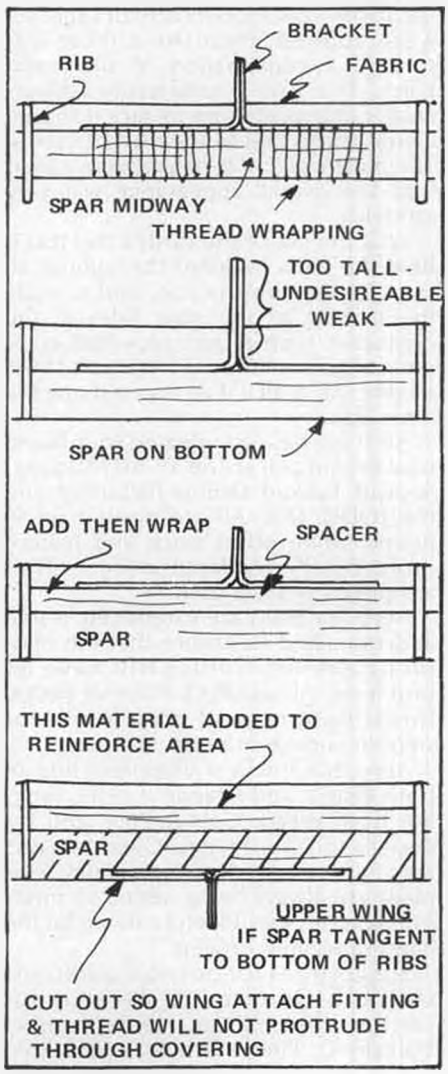
JUNIOR
1. Cynde Weddell, McDermoth endurance model
2. Kim Weddell, McDermoth endurance model

GRAND CHAMPION, Jim McDermoth

F/F Scale . . . . *Continued from page 61*

fitting is attached so that it and the thread wrapping will be recessed. Then add a doubler of balsa on top of the spar at that point.

Once you have established the true length of the interplane struts, using Bob Berreyesa's method explained a couple of months ago, you can proceed. The struts can be constructed a couple of ways (see sketch). My suggestion would be to start with some firm balsa. With an Uber Skiver, make a small groove or slit at either end of the spar. This is where the wing attach fitting will be inserted. On either side of each end of the strut, a small piece of 1/64 ply should be inset and glued. A soaking in cyanoacrylate would be recommended.

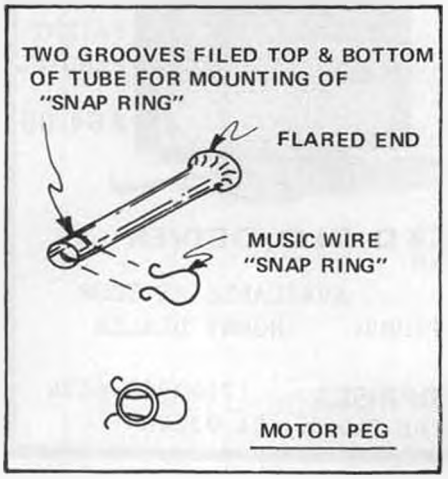


Each strut is inserted into its respective attach fitting and a small hole drilled through both. Eventually, a pin of brass wire the same diameter as the previously drilled hole will hold the strut in place, and act as a shear pin. The brass pin will actually give way without tearing everything up in a crash. To me, biplanes are the greatest, but offer the most challenges in building. Struts are one of the necessary pains, so I hope this provides you with another solution.

Many years ago, I had spent considerable time drawing up and building a 48-inch Jumbo model of the radial engined Porterfield. I had loaded the fuselage with a wad of 1/4-inch rubber, in preparation for the first flight. Tom Laurie and I had gone out to a grassy field for the big moment. Tom held as I prepared to wind. We were well into winding when I heard that awful sound of crunching balsa. My first thought was that the motor broke, as I looked at the knotted rubber in my hand. After a second glance, I realized that the motor peg had let loose, and had gutted the inside of the model as it traveled forward.

What had happened, was that the peg was able to move in the hole under tension of the rubber until it was no longer anchored to the fuselage. The message was abundantly clear that something had to be done.

In checking around to see what other modelers were doing, I found that most were simply stretching a rubber band under the fuselage, anchoring it to either end of the motor peg. This seems to work, but it looks terrible on a scale model.



At this point some may be asking the question, why not provide a tight, snug fit for the peg? It sounds reasonable and is certainly easy to do, but, applying pressure to insert the peg is certain destruction for that part of the fuselage.

Some time back, I saw a neat and simple solution on a model belonging to "Mik" Mikelson. The drawing is self-explanatory, but a few remarks are warranted. I have a flaring tool which makes this task easy and neat. However, it can be done without one with relative ease. Just press a blunt tool inside of the tubing, and twist carefully until the end has been flared. Two small grooves are

filed on either side of the unflared end of the tube. These grooves accommodate the "snap ring," which is made from fine piano wire and bent as shown.

The whole thing takes only a few minutes, but the hours saved on the repair of fuselages is well worth the slight effort it takes to make this type of motor pegs.

Last month I mentioned aluminized paper. The other day I was opening a stick of Orbit gum. This gum comes wrapped in rather thin aluminized paper. This is not like most other chewing gum wrappers I've seen. It smooths out real well, and can be used for cowlings on small models . . . or used in segments for larger ones. This stuff is really neat. Anyone out there know where some of this material can be purchased in reasonable quantities?

I'm always looking for an easy way to make my scale modeling a bit easier. While having to construct a LeRhone engine for my AVRO 504, I approached the task a bit differently than the last two times I had to have one. At 1"=1' scale, the William Bros. do not have a complete kit of the LeRhone, only the cylinders. With each individual cylinder, comes a set of directions on card stock. Included on the directions are full-size drawings of the crankcase. My first step was to carefully cut the front view drawing from two cards. These in turn were glued onto the front and back of a balsa block the correct thickness, aligning back-to-back perfectly.

I have a small belt sander, so all I had to do was to sand to the flat edges of the crankcase, dictated by the cardstock. When finished, I had a nine-sided block with each side equal in size. At this point, you may be asking why I put cardstock on the back of the block as well. You'll see in a moment. I then Jetted each flat on the crankcase block to prevent the balsa from chipping or cracking during the next step. The crankcase was dipped in clear dope several times, letting it dry thoroughly between dippings. I took a brass tube which had been sharpened on one end. (This can be accomplished by putting the tube in a drill press or equivalent, and with the use of a small file, sharpen the inside edge.) The tube, of course, is the same diameter as the base of the LeRhone cylinder. This sharpened tube will be used as a punch for each of the nine surfaces. The punch is centered on each flat then gently pushed while turning until it reaches about the middle of the crankcase. Usually, the balsa plugs will not come out at this time, but will be removed a bit later.

Next, the center of the crankcase is drilled out, in my case, large enough to accommodate the crankshaft of the D.C. Dart engine. At this point, the balsa plugs should now be easy to remove. If not, try the punch again. The discs that make up the front portion of the crankcase were cut and glued in place according to the directions. Photographs will certainly be helpful, and many are available on rotary engines.

After each cylinder was assembled, they were Jetted onto the crankcase. Care must be taken so that not only are the cylinders vertical on each of the crankcase sides, but that they are in alignment with each other when viewed from the side. (The back of the engine's crankcase had to be reamed out in order for it to slip over the diesel engine. This was done by trial and error, until it fitted exactly right.) A series of plastic hex nuts (available from model railroad supplies) were applied, then the engine was sprayed a combination of silver and black. This gave a satisfactory appearance, but it would sure be nice if Floquil would add nickel to their list of colors. The pushrods and exhausts were added last. The overall appearance was very satisfying.

Why the use of the card? I feel that it held the balsa together throughout all steps of the construction, and it made the making of the nine sides of the crankcase simple, and provided complete alignment for the front part of the engine. All in all, I'd do my next one the same day.

Aero Era has just released four brand new Peanut plans: The XP-51J Mustang; Sopwith Tabloid; Druine Turbulent; and the JODEL D-9. All are printed on 60 pound white offset stock and feature professionally rendered artwork. They are priced at $1.25 each.

Aero Era plans are extensively tested and evaluated to ensure that the neophyte Peanut builder will have no problems. All use Peck-Polymer props, thrust buttons, and prop hooks for smooth consistent performance.

Aero Era stocks a complete line of both Peanut and Grapenut plans, ranging from WW-I, Golden Age, and Era designs to WW-II types. Over the years they have proven their capabilities. New plans are always being added so interested parties should send a stamp for the latest illustrated catalog.

Suggestions for possible additions should be directed to Aero Era for further information. Please contact William C. Pine, Aero Era, 5955 S.W.

Glenbrook Rd., Beaverton, OR 97007.

Here's the latest from Flyline, Inc. Herb Clukey is now sole owner of this outstanding business, and of course, he is the one who does all of the beautiful plans. Hurst Bowers, the other original half of Flyline, had to drop out due to other business pressures.

In the usual style of Flyline, it is introducing two new kits. The first is called the *Megowcoup*. 'GIANT SCHOOLYARD,' a new design concept from Flyline, was derived from Megow's 1935 rubber powered Monocoupe D-145, size doubled. Boasting a wingspan of 46 inches with 350 square inches of area, this model is a most enjoyable flyer. Power is .049, with a ready-to-fly weight of 14-1/2 ounces with two channel radio. Big, slow, and beautiful.

The other is the venerable Spirit of St. Louis. It is an accurate replica of the famous "New York to Paris" flier. Kit includes a full set of decals, William's cylinders and top quality materials. Span 34-5/8 inches at 3/4-inch scale. Power is .020 for pulse radio, or build as the most beautiful static model of this subject available. I'm anxious to see these new kits!

In closing this month, I have an apology to Bob Berreyesa, of Sacramento, who gave us his neat way of determining the true length of struts, for mispelling his name. I hope we have it right this time, Bob! •

Banshee . . . . . *Continued from page 64*

holding the charger upright, a liquid charge by holding it inverted, and a super charge, as per the instructions supplied with the engine. The downthrust is for a powerful burst of power, wide open, that lasts about 20 seconds. Turn pattern is right, right. I recommend the powerburst for the most "realistic" pattern, and I find that the Hannan-designed prop made by Williams Bros. is better than the one supplied with the engine.

I would appreciate hearing from anyone who builds this ship, and cares to pass on any comments. I will try to answer all correspondence. I'm at 52 Newbury Rd., Howell, NJ 07731. •

Counter . . . . *Continued from page 9*

Akro, CAP-20 LS200, Weeks Special, Melton Pitts, Stolp Acroduster, and others, should be in every scale modeler's library. Send $2 to Repla-Tech International, 48500 McKenzie Hwy., Vida, OR 97488.

★ ★ ★

Modeler's Mansion, 1033 Gardena Blvd., Gardena, CA 90247, (213) 532-5599, announces that it plans to have its remake of the Jim Walker Fireball available in April. Some construction changes have been made to simplify building and to keep costs down. A booklet is to be included, explaining how Mr. Walker did some of his famous tricks with this oldie but goodie.

★ ★ ★

Coming soon downstream (near future) is another new kit from Curacao Modelbouw, of the Thor 4, a seagoing tugboat. About 24 inches long and 8 inches across the beam, the Thor 4 is designed for 2-channel operation and comes complete with motor, accessory set, winches, air vents and all necessary hardware. Price (R/C system and batteries not included) to be about $195. Get a catalog and price list sent airmail for $4, refundable against your first order. Write to Curacao Modelbouw, P.O. Box 470, Curacao, Netherlands, Antilles.

★ ★ ★

If you happen to be a newcomer to R/C flying, or are a sport flyer looking for a realistic 2, 3, or 4-channel aircraft, then this new release from Carl Goldberg models, one of the oldest, most well established kit manufacturers today, may well be what you have been looking for! The "Eaglet 50," with a 50-inch wingspan and suitable for .09 to .20 engines, with a suggested retail price of $34.95, should prove as popular in time as the venerable Falcon 56! Carl Goldberg Models, Inc., 4734 W. Chicago Ave., Chicago, IL 60651.

★ ★ ★

Glen Spickler sends word of his latest product, the Rascal, a tunnel hull boat designed for the 3.5cc outboard engine. Unique techniques are employed to yield the best combination of light weight, high strength, and unsinkable construction. Top grade aircraft plywood is pre-cut for covering, and machined balsa and ply parts, along with molded foam sponsons are integrated for a strong, light hull. Included in the kit are molded canopy, screws, skeg, full-size plans and instructions. The Rascal, with its heritage from the famous Quickie 500, should rank high as a quality kit. Suggested retail is $59.95 at your dealers now, or contact Glen Spickler Radiomodels, 1709 Benton St., Bakersfield, CA 93304; (805) 831-6639.

★ ★ ★

Quarter-scale Unlimiteds? Why not!! J-5 Enterprises introduces its new giant R/C pickle-fork hydro unlimited boat. This kit should be a real box full of lumber! With an overall length of 6 feet, 5 inches, and a beam of 3 feet, this boat is definitely not for the swimming pool! Featuring all wood construction, the frames and transom are 1/4-inch mahogany ply, the hull sheeting is 1/8 mahogany ply, and the motor mount is 1/2-inch ply. The vertical fins, horizontal stabilizer, air entrapment, and rear tunnel side rail are also fabricated from 1/8 mahogany ply. All wood parts are machine-cut and unsanded. Present speeds with an air-cooled Quadra fitted with a Quadra Charger tuned pipe @ 9000 rpm, is 35 to 40 mph. Two-channel radio is required, with a heavy-duty servo needed for the rudder! The J-5 drive train with centrifugal clutch is also available. This size of boat requires a

clutch for ease of starting and running, as hand launching would be rather difficult!

A new racing boat class is being organized for 34cc (2.1 cu. in.), with a minimum of four races scheduled for 1981. For further details, contact J-5 Enterprises, P.O. Box 82, Belmont, Ontario, Canada N0L 1B0; (519) 644-0375.

★ ★ ★

MRC announces the availability of the MRC-Tamiya 1200 mah nickel cadmium battery pack for its line of cars including the popular off-road Baja Buggies. They can also be used with many other R/C cars as well. The specially engineered, sintered plate construction provides less internal resistance and more efficient output, meaning more power is fed to the car motor and less is lost within the battery. Capable of withstanding high speed operation with no long-range deterioration, the MRC-Tamiya batteries provide extended running time between charges. Other features include heavy gauge wire and heavy-duty connectors to reduce power loss under peak demands. A high impact case, specially vented and designed to absorb and dissipate heat, provides protection against severe road conditions. These new packs can be charged overnight for 12 hours, or fast charged in 20 minutes. Available two ways, the RC-13 consists of a 5-cell, 6-volt, 1200 mah pack with overnight (12-hour) charger, while the RC-14 consists of a 6-cell, 7.2-volt, 1200 mah pack, with overnight charger. Battery packs are available separately, and a fast charger will be available soon for $19.95. At your hobby shop or pit stop, or contact Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817; (201) 985-7800.

★ ★ ★

American R/C Helicopters, Inc., has announced the release of its new helicopter kit, the Mantis. A result of over 15 years of design and flight experience, the Mantis was produced as a means of introducing remote controlled helicopter flight to the "newcomer" at an affordable price. This revolutionary new kit comes complete with full-size main plans, and an extremely comprehensive instruction manual with over 70 photographs that guide the builder step-by-step through all stages of construction and pre-flight. The average modeler should be able to complete this kit in a few evenings time.

At an approximate 6-1/2 pound flying weight, this .40 powered, 42-inch rotor diameter R/C helicopter offers great stability, even in very windy conditions. The Mantis offers exciting flight for beginners and experts alike! Suggested retail of $149 at your local, friendly dealer, or contact American R/C Helicopters, 635-11 N. Twin Oaks Valley Rd., San Marcos, CA 92069; (714) 744-7533.

★ ★ ★

Looking more like a cross between an FAI pylon racer and a super-clean pattern ship, the new production version of Bob Martin R/C Models' SR-7 aerobatic slope ship has to be an extremely fast aircraft due to its clean lines and thin airfoil. Although not designed for the novice flyer, the SR-7 will fly remarkably slow, and in 8 to 10 mph breezes, it will do just about anything you can think of, including axial rolls that are crisp and smooth. The kit features the guaranteed unbreakable Dura-lene fuselage, 1/64 ply wing skins, canopy, precision machined balsa parts, quality hardware package, full size plans, and photo-illustrated instruction book. Wingspan is 56 inches, with 581 sq. in. of wing area supporting a 10.4 oz. wing loading.

Bob Martin R/C Models is also introducing an accessory line starting with 1-inch nylon wing bolts in 8-32 and 10-32 sizes, two to the package at 49¢ per package. New, too, is the ball/clevis strip aileron set, with full length nylon tube bushing, and pre-threaded and formed horn for the strong Celcon threaded ball clevis. Bob Martin R/C Models, P.O. Box 1916, Altadena, CA 91001.

★ ★ ★

Scheduled for release come May or June is a highly refined version of the successful Fox "Eagle II" .60. The new Eagle II will be in good supply as a larger production run is being planned. This will be a side exhaust version and Duke indicates it should be one of the most powerful, side exhaust .60-sized engines available. Changes include weight of the piston, con-rod length, refinements to porting and combustion chamber shape, and a bigger rear main bearing. Suggested retail will be $125, with $20 additional for the muffler. For more information, write to Fox Mfg. Co., 5305 Towson Ave., Fort Smith, AR 72901; (501) 646-1656.

★ ★ ★

A couple of new items from Leisure Electronics this month. First, a new DC power supply, #110, designed to be used as a companion item for the digital charger described in "Over The Counter" January '81. Design construction is solid-state yielding a filtered and regulated power source with circuit protection. With an adjustable voltage range from 9 to 13 volts, it can be used to break in new motors, run a dyno, and naturally, charge batteries. A fine addition to Leisure's growing line.

The #100-SX 1/12-scale car, improved

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R/C Modeler, M.A.N., Model Builder Flying Models — from 1950's to present — free or make offer?? J. Recesso, 77 S. Farms Dr., Manchester, CT 06040.

WANTED Old model airplane engines, gas model race cars, related items 1935-55 Arthur Suhr, W218 N5866, Maclynn Court, Menomonee Falls, WI 53051

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HOBBY SWAP NEWS — The model enthusiasts "used equipment guide." Buy — Sell — Trade. Hundreds of bargains: Planes, Helicopters, Engines, Radios, Boats, etc First ad free when submitted with subscription order, $10/year (10 issues) 3rd class mail. Add $3 for 1st class. Last month's issue $2 PPD Write: HSN free ad offer, P.O. Box 834, Santa Maria, CA 93456

FOR SALE. Two Dooling .61's plus extra parts — one Dooling .29 Everything like new — $500.00 firm Ron Quigley, 526 Sunset Way, Palm Springs, CA 92262, (714) 327-8117

for 1981, features the team select stock 05 motor, ball bearings front and rear, differential, Sanyo batteries, complete wiring, and also included is a Kimbrough servo saver. This could be the hot set up for this year. Ready to run, less body, for $150, suggested list. Write to Leisure Electronics, 11 Deerspring, Irvine, CA 92714; or give a call to (714) 552-4540 for more information. •

Shipyard . . . *Continued from page 21*

the batteries. R/C is the realiable Futaba 6-channel, Futaba servos, and Futaba motor control. Dumas motor and reduction gear-box drives a 3/16-inch shaft and a 3-bladed 3x10 prop. Air horns, water pump, and ship's bell and lights are all twelve-volt.

An interesting sidelight is the fact that this tug was caught by a sudden gust of wind on her second time out, capsized immediately and went to the bottom of a lagoon in twelve feet of water. She was brought up carefully two hours later, with all lights on and very little damage, by a local scuba diving concern. After that experience, I considerably lowered her center of gravity by relocating the two speakers, which were high in the super-structure (for no good reason) and she has performed with excellence since. Overnight charging of both boat and R/C batteries will provide about 6 hours of reliable running. •

Heath 2B . . . . *Continued from page 27*

was with a good company, and to stick with it (So I stuck with it for 34-1/2 years).

Later, he did the first outside loop in a glider. But he did an outside loop, before, in his motorcycle engine-powered biplane, called "Feather," and in my full view, at Dayton, Ohio. He headed for take-off in an ultra-light-plane race, in 1924. It was gusty windy, so when he was about 25 feet high, he nosed over in the air, *and landed upside-down. I ran up to him; but then he pushed the plane up from the cockpit, and righted his little biplane, and walked it to the hangars, with the tail skid held over his shoulder . . . no damages, only disappointment.*

At that air show I saw the "Barling Bomber" land wrong and bend an axle. Later, Mr. Barling became a Convair pre-design engineer. So much for now, but much more in memory storage, as needed.

Joseph J. Szakacz, February 12, 1980.

The Heath Model 2B is a very interesting, little-known facet of Ed Heath's design efforts, and probably worthy of some more in-depth research. It doesn't look too dissimilar to some of the modern biplane homebuilts, and with that Anzani engine turning that big propeller, it should have had very good takeoff and climb performance. Getting into the cockpit was probably an interesting exercise, with cross wires on both sides and the front of the cabane struts. If

anyone knows any more about this airplane, or can identify any of the other people in the photos, the author would appreciate hearing from you. Note, this is not Ed Heath's later biplane, known as the Feather, which Joe Szakacs mentions and remembers very well. •

R/C World . . . *Continued from page 15*

The laminated bulkheads are braced radially with over 300 feet of surgical silk. The hull is divided into 3 cells, and contrary to full scale, the outer covering will form the actual helium gas cells. The Dart diesel has a two-position throttle and will turn a 7-inch basswood propeller.

The basic hull weighs 7 ounces, all-up weight will be 18-1/2 to 19 ounces. Maximum lift with helium will be 21 ounces. Since the photos shown here were taken, the hull has been covered, using nearly 25 sheets of Esaki tissue. We hope Walt will send us photos of the finished project.

LADY BOATERS REGATTA

Kinda short notice, but K&B is again sponsoring the Lady Boaters Regatta, this time hosted by the ALII M.B.C., at Riverland Resort, Kingsburg, California. CD's are Frank Hu and Jack Garcia. As the regatta is on May 2 and 3, it would be best to call Jack at (213) 923-5493 days, or (213) 862-6926 evenings about entering. Races will consist of Enduro on Saturday and heat racing on Sunday. NAMBA Class "A" engines only (3.5cc and under), any type boat except hydros, NAMBA legal tunnel hulls with modified engines allowed. Call Jack for more details. •

R/C Sailing . . . *Continued from page 37*

sonalities, not only in their appearance, but also in their handling quality. The Santa Barbara is less responsive to rudder commands than the 50/800, but the greater inertia carries you around the mark even if the wind fails. Smaller boats are usually more "squirrely" than larger craft and, as always, you trade stability against maneuverability. The more maneuverable boat has an advantage at the start and in turning the mark, but requires more careful attention to maintain the heading on each tack. Before you choose a boat, consider your own personality and thus the kind of craft you would find most pleasurable. You also ought to consider cost, transportability storage requirement, and the number of boats in each class active in your area. It's so nice to sail along with similar ships.

Now, I'm not keen for competition. In fact, I enjoy sailing for sailing's sake. But, according to Bob DeBow, Past President of AMYA and a national champion, "Whenever there's two boats in the same pond, there's a race." Maybe he's right. Competition brings out the best (and sometimes the worst) in the competitors. To win, you must become deeply attentive to every detail. You sail carefully and watch all the boats in the race (where they are and where they are likely to be). You have to know the racing rules and take every legitimate advantage of the developing situation. Of course, it doesn't matter if you win or lose . . . unless you lose! Actually, I've seen some tight races, but I've never witnessed intentional foul play. The AMYA is dedicated to keeping it that way. If you plan to sail R/C, why not join this organization? Write to Barbara Maire, 2716 Briarwood Drive, Arlington Heights, Illinois 60005, for all the details.

Today's competitive racing hulls are of fiberglass or carbon fiber in epoxy resin. They're light and strong. The sails are of dacron. Cutting the sails is an art as well as a science. They say that no two sets of sails are exactly alike. If you have good sails, hang on to them. Many of the winning sails come from Black Sails, 4761 Niagara Avenue, San Diego, CA 92107. The adjustable rig is of stainless steel. The mast can be of wood, aluminum, or carbon fiber (for extra strength at low cost in terms of weight). The hull can be painted or left colored by the gel-coat in the resin. If you want every ounce of performance, use 600 wet or dry sandpaper to give the surface the right texture . . . just smooth enough to maintain laminar flow. (They tell me that too smooth a surface causes burbling and thus drag.)

Usually two channels are sufficient (rudder and sail position). But Don Prough of Escondido, California, owns a Santa Barbara having five channels (rudder, sail, adjustable backstay, gib traveler, and mainsail traveler). Don's company, Probar Design, P.O. Box 639, Escondido, CA 92025, offers excellent sail control units and other related equipment.

I've met a few skippers who are deeply concerned with design. Terry Allen came up with the 50/800 Toad. Bob

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SEE PAGE 100 FOR ORDERING INSTRUCTIONS. COMPLETE PLANS LIST SENT WITH EACH ORDER.

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R/C Sport Scale, balsa and ply const., a trophy winner, big, 8' span. Art Johnson.

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No. 12711 CURTISS-WRIGHT JR. $4.50
Two inch scale model of famous pusher light plane. R/C By Ralph Fidance

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A 3/4" scale model from 1934 Ideal kit. Excellent plans for F/F rubber, R/C, etc.

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A proven, trophy winning R/C sailplane with 7 and 10 ft span By Rick Walters

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Continually popular genuine R/C trainer for .19-.35 eng., 72" span. Bill Northrop.

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First gas model kit by Megow, 1937. Span 7 ft. Redrawn by Phil Bernhardt.

No. 9783 R/C STEAM LAUNCH $6.00
Natural finish mahogany planked 40" OA "African Queen" type Kilburn Adams.

No. 2761 DRAGONFLY $4.50
R/C funship, looks like giant rubber stick model Superb trainer. By Tex Newman

No. 8741 WOODY PUSHER $4.00
Easy to build & fly semi-scale R/C home-built, like C.W. Jr, .09-.15. Chris Moes.

No. 9781 GREAT LAKES TRAINER $4.00
Sport scale biplane for 3-4 channels and .19 engines, 40" span By Bill Northrop.

No. 4801 BRUSHFIRE $6.00
Contemporary design being used by several top pattern fliers. By Ken Bonnema.

No. 2801 TIPORARE $6.50
Top pattern ship in 1979. Flown by Dave Brown at World Champs. Dick Hanson.

No. 4751 R/C AUTOGYRO $4.00
Semi-scale twin rotor R/C autogyro for .35 engines. Very stable. By Skip Ruff

No. 9792 CRICKET $3.00
Balsa profile fuse, Ace foam wing 1/2A quickie for 1 or 2-ch. radio. J. Headley.

No. 1174-O.T. LANZO STICK $3.50
Rubber stick winner, '40 Nats. Span 4½'. Still good in Unlim. By Phil Bernhardt.

No. 574-O.T. The T-D COUPE $5.00
Classic high wing 1936 'C' cabin gas job. Span 64". Redrawn by Phil Bernhardt.

No. 773-OT LANZO 8' GAS MODEL $6.00
Chet Lanzo's famous "Record Breaker" Two large plan sheets By Phil Bernhardt.

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This 30" span stick job from 1938 MAN is OT, FF trainer, Unlim. Bruno Marchi.

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R/C tunnel-hull outboard constructed of plywood, for K&B .21. By Jerry Dunlap.

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Complete plans (3 sheets) for R/C tug. All wood, 37" LOA. By Francis Smith.

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Light-weight 1/4-scale for belt reduction electric power, 90" span. Bob Boucher.

No. 4733 PEA POD $4.50
A 36" long R/C sailboat easily made of 1/8" Luan mahogany Clever sail control Full size patterns By Tom Protheroe

No. 5761 ALBATROS $5.50
R/C sport scale post-war German lightplane Span 74", .36 eng. By Jeff Breece.

No. 176 O.T. KORDA WAKEFIELD $2.50
The classic of all rubber powered competition free flights By Phil Bernhardt.

DeBow designed the Force 5. Ray Osman created the Magic Dragon, and there are others. Each hull demonstrates great useful response under certain conditions. But, every design is a compromise. The trick is to have the right ship for today's air . . . to know that boat so well that you consistently leave the others in your wake.

A few years ago, Karl Kirkman, a naval architect, of Laurel, Maryland, joined with a few friends to form the Bone Syndicate. Their hull design is based on the principles of hydrodynamics and the results of tow testing in a calibrated tank. Last week, I watched Bone walk away in a race that included four national champion skippers.

If you want to consider wild ideas, how about designing a windmill sailboat? Here rotating blades extract energy from the wind, coupling this to a propeller in the water. You orient the fan to the wind and sail in any direction you like. How about using an ϕ or Δ Darrieus wind machine, a gyromill, a Savonius, or other shaped vertical turbine so that the fan operates independent of wind direction? Perhaps we are about to see a whole new generation of sailboats! Why not join the fun. •

Workbench . . *Continued from page 6*

interest to us was the long list of scavanged items that went into the construction of this aircraft. The horizontal stabilizers, seats, cockpit controls, floorboards, and wheel pants were Aeronca Champion. The nose bowl, upper cowl, and prop spinner are Piper Tri-Pacer . . . wing tank, Piper PA-18 . . . landing gear legs and mounts, Cessna 140 . . . wheels, Cessna Bird Dog . . . rudder, Tri-Pacer . . . and headrest, Waco UPF-7. A real chef salad!

CORRECTION

In the March '81 "Workbench" column, we published a complete list of Peanut Scale plans that have been presented in **Model Builder** over the years. Until an order was received for a plan from an out-of-stock issue (July '72) we were not aware that a non-Peanut had sneaked into the list. Actually, the all-sheet balsa Avro G biplane by Bill Hannan, and featured in that issue, spanned around 15 inches.

Incidentally, we deviated from the norm again this month by presenting a Bostonian design by our most prolific Peanut presenter, Walt Mooney. It's a really simple design, but still maintains some scale appearance.

INDUSTRY NOTES

Modelers who have been in R/C for the last 12 years have known the name and reputation of Pro Line. For many

years following its origination in late 1968, Pro Line was truly that . . . the radio used by most of the top pattern fliers in the U.S.A., and even in some overseas countries. Unfortunately, it was realized after too many years, that a radio control system manufacturer cannot subsist on a single, relatively high-priced, top line radio alone, and by the time a medium-priced line had been developed, Pro Line had fallen from its high rated position.

In subsequent years, Pro Line went through a series of ownership and management changes that only resulted in a continuing decline of notoriety. Throughout all of these changes, however, the fine quality of the radio never changed . . . there simply weren't as many of the sets in use, except by those who knew what they had and refused to give them up (our 1972, open-stick, 6-channel system is still going strong).

Now comes the great news that Tom and Donna Runge, owners of Ace R/C Inc. have acquired the assets of Pro Line Electronics. Ace will continue the fine Pro Line tradition by making a select line of radio systems under the Pro Line label, using essentially the same mechanical and electronic features as before, with certain upgrades. Ace will continue to manufacture its existing line of Digital Commander and Silver Series flight packs and radio systems.

Although there will be no warranty repairs done on any radios manufactured by any previous owners of Pro Line, Ace R/C will coordinate and provide parts for a network of approved service centers throughout the world. For further information, write to Pro Line Division, Ace R/C Inc., 203 W. 19th St., Box 735, Higginsville, MO 64037, (816) 584-7121.

★ ★ ★

Dieter Schlueter, father of the modern R/C helicopter, has announced the founding of a new company "Schlueter USA," a Division of Miniature Aircraft Supply, Inc., 2594 N. Orange Blossom Trail, Orlando, FL 32804, (305) 647-1335. As of January 1981, all Schlueter products, from its home base of Muhlheim/Main, West Germany, will be imported exclusively through this firm, which is headed by Walt Schoonard. SC Modeler, 1999 Larkin Ave., Elgin, IL 60120, will continue to supply the Schlueter line as supplied by "Schlueter USA."

★ ★ ★

Bob Boucher, of Astro Flight, Inc., announces that his company has completed its move to a new number, 13311, on the same street, Beach Avenue, in Venice, CA 90291, (213) 821-6242. In stock are the Astro Sport, Super Monterey, P-68 Victor, Californian, ASW-17, and Super Malibu. By the time you read this, the Porterfield and ASW-15 should be available.

Newest items from Astro Flight are the ball bearing versions of the popular 05 and 075 electric motors. Unfortunately, the bad news is that all items have been increased in price by 10 to 20 percent for 1981, as of February 15.

Of special interest; Astro Flight has equipped the Solar Challenger, another Paul McReady creation, with the 2.75 hp electric propulsion unit and the three kilowatt solar cell array for its attempted Paris-to-London channel crossing scheduled for May 1981.

THINGS TO DO

Always a favorite, the Mint Julep Scale Meet will have its 9th Annual contest on April 25 and 26, at scenic Rough River Resort Park, Falls of Rough, Kentucky. A regional qualifying meet for the U.S. Scale Masters Championships, it is sponsored by the Southern Indiana R/C Modelers, Dale Arvin, C.D. and John Guenther, Co-C.D. For further information, their phone numbers are, respectively (812) 283-5719 and (812) 967-2814.

★ ★ ★

The Dallas R/C Boat Club is hosting the Sixth Annual Muscular Dystrophy Race, under IMPBA sanction, on April 25 and 26, 1981, at Lake Nitro-Dallas. There will be all classes, heat racing, including Outboard/Scale Hydro, also Deep Vee Enduro. Trophies first through third in each class plus merchandise to first place finishers and High Point. Merchandise awards from K&B, Shamrock, Hustler Mark II Hydros, Steve Muck, Hughey, West Coast Marine, Prather, Futaba, Circus Hobbies, World Engines, Sherline, Precision Model Boats, Hobbypoxy, and others. Contact Steve Muck, (214) 931-6597, or Kent Myhre, (214) 620-2391.

★ ★ ★

On May 24, 1981, the Suffolk Falcons are sponsoring their 3rd annual Sport Scale and Biplane Pattern Contest at Suffolk County Airport, New York. For further information, contact Mike Lucas, 194 Middle Rd., Calverton, NY 11933, (516) 727-7473. All prizes are cash, and it will go on rain or shine!

★ ★ ★

The Q.S.A.A. announces that the 5th annual Las Vegas fly-in will take place on October 8 through 11, 1981. Headquarters will again be the Showboat Hotel, however, the flying site will be shifted to the Silverbowl Stadium. Admission by pre-entry only, with a deadline of September 10, 1981. For further information, write to Pat Bunker, QSAA Sec., 6532 Bourbon Way, Las Vegas, NV 89107. •

5TH ANNUAL

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