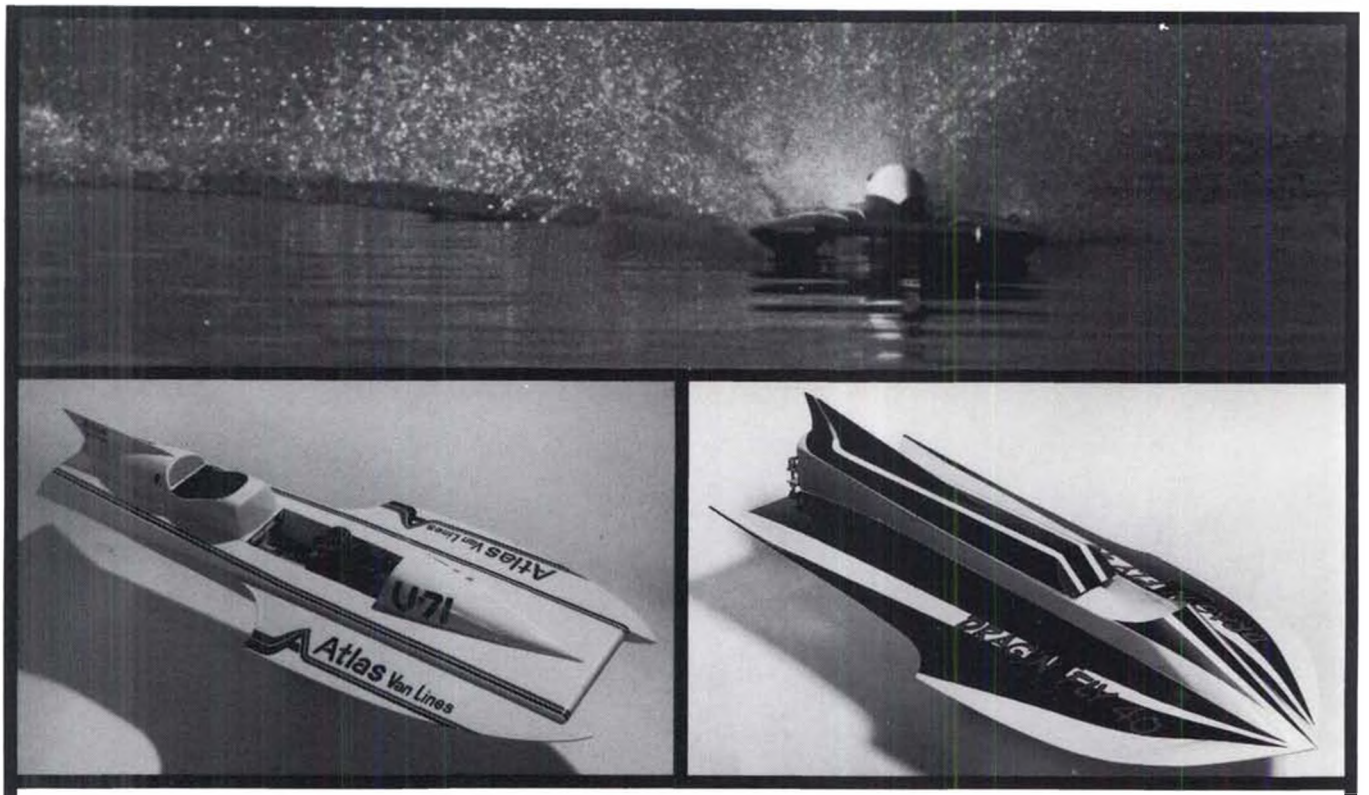
MODEL BUILDER

MAY 1974

volume 4, number 30

ONE DOLLAR

DUMAS HYDROS LEAD THE PACK!



Atlas Van Lines — 40 — A real 1/10" — 1" scale model of the winningest unlimited hydro in the Gold Cup circuit. She incorporates many of the newest design features such as pickle-forked bow to eliminate excessive lift. Here's a model that's been burning up the course in RC hydro boat competition. 36" long, rugged birch and mahogany plywood construction for .40 engine.
Kit AVL-40

Drag'n Fly — 40 — The latest in our meet-winning series of Drag'n Fly hydros. The Mark II starts with the basic Drag'n Fly hull and incorporates the latest innovations in bottom design for even greater speed and maneuverability. Includes plans (only) for realistic new topside hatch to help keep your engine running as she powers past the roostertail of the competition. 36" for .40 engine. All pre-cut birch plywood construction.
Kit HY-2A. Kit HY-3 28" Drag'n Fly -20 for .29 engine
Kit HY-1 44" Drag'n Fly -60 for .60 engine

OR JUST PLAIN FUN TO BUILD AND RUN...

MISS UNLIMITED 36" KIT MU-1

MISS THRIFTWAY 18" KIT MT-1

THRIFTWAY, TOO 24" KIT TT-1

ATLAS VAN LINES 18" KIT AVL-1

Whether you're just starting out in this exciting hobby or have become a competitive RC buff, your first kit will convince you why experienced modelers say, "Dumas Kits are for show and go."

Rugged construction, top quality materials and easy-to-follow plans all add up to eye-catching beauty and trophy-winning performance. Many models can be purchased complete with engine and running gear and precision running hardware is available for all.

See your hobby dealer or send 50¢ for our new catalog illustrating the complete Dumas line of boats and planes.

dumas boats

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

TIME

It's on our side.

WRITE FOR FREE CATALOG

KRAFT SYSTEMS, INC.

Worlds Largest Manufacturer of Proportional R/C Equipment

450 WEST CALIFORNIA AVENUE, VISTA, CALIFORNIA 92083

KAVAN JetRanger

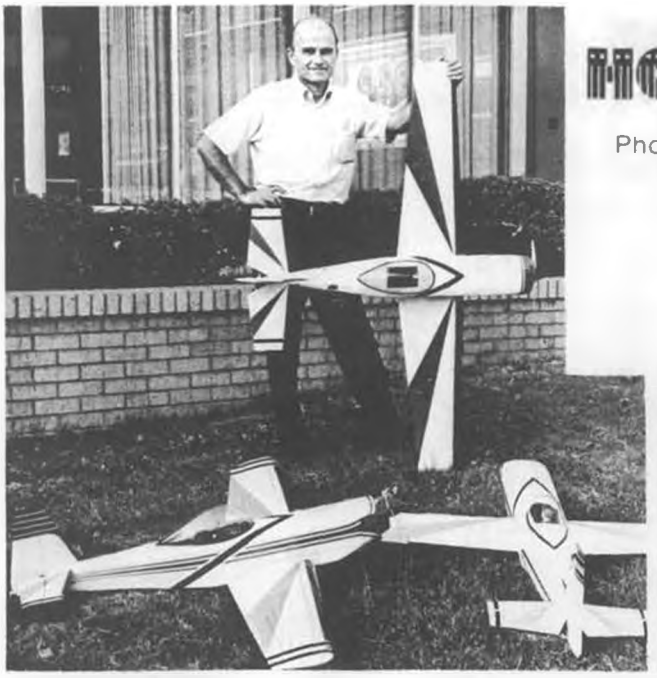
1st Class!

$420.00

Service and spare parts available thru-out U.S.A.

PLEASE CONTACT YOUR DEALER!
DEALER, PLEASE CONTACT YOUR DISTRIBUTOR
DISTRIBUTOR INQUIRIES INVITED!

KAVAN MODEL AIRCRAFT INC.,
1424 E. Borchard Ave., Santa Ana, California 92705 (714) 835 7788



Carl Miller, longtime modeler and manager of Hobby Capitol, U.S.A., displays his three custom built Spinx Akromaster planes.

If you're looking for a particular type of airplane ready to fly, contact Carl. He's got what you need. Average 100 in stock always.

Send 50¢ for Big Brochure

903 Church Street, Nashville, Tennessee 37203

HOBBY CAPITOL U.S.A.

Phone (615) 259-4612 (Est. 1951) Home (615) 352-4380

World's Largest Supplier of Deluxe

Est. 1951 **Est. 1951**

Built-Up RC Aircraft

For fast delivery, call us with those C.O.D. orders. We stock all major brands. No order too small or too large.

PT-17-C BIPE. Pictured above is one of the finest scale airplanes we have ever offered for sale. It is a 70-inch span, perfect scale aircraft with superb detail, including bucket seat, pedals, exact tubular structural construction in cockpit. The plane has an immaculate finish with rivets, etc. A painstakingly constructed radial engine is nestled inside that beautiful cowl for static juding points. Truly a labor of love, this outstanding miniature aircraft has over 500 hours of professional work in it. The price is $800.00.

Part of Our Used Gear

OLD IGNITION TRADE-IN

We buy and sell old time ignition engines. Box up what you have and send to us for an honest appraisal. It could be worth a new proportional set to you. We have many engines with which you can also start a collection.

We welcome your built-up airplanes, used proportionals and old time ignition engines. Come trade with us. Top dollar paid.

Save With a Used Radio

We receive many of our used radio sets from hobbyists who simply want to trade for a newer model, a different stick or servo configuration, or, like many people who buy a new car every year, just want something different. Often you will find that by choosing a good used radio from us, you can outfit yourself completely with radio, plane, motor, etc., for less than the cost of a new radio by itself.

USED PROPORTIONAL SETS

1. Digital USA 4-ch on 72, with 3 servos. $135.
2. Min-X 6-ch, 2-stk, on 72.160. $125.
3. C-aire 4-ch, 2-stk, dual ext. chgr. 3 servos. $130.
4. Servos for Bonner 4-RS system. Each $15.
5. Receiver only for Orbit 6-ch, with plugs. $25.

SINGLE CHANNEL - USED

1. Testors Simpulse complete $30.
2. Airtrol GL-100. Tx, Rec & 3 servos. $45.

Save!

Save!

3. Min-X Pulsemite 800 Tx only. $20.
4. Single channel servos. $5.
5. O.S. SS-2 escapement. New $4.
6. C'aire GG set. Complete. Tx, Rec and actuator. $40.

MULTI-CHANNEL REED SETS

1. Kraft Custom 10-ch Tx & Rec. New. $70.
2. C'ship 10-ch Tx & 2 Rec. Relayless. On 27.145. $30.
3. C'ship 10-ch TMS Tx, Rec RL, 3 servos.
4. C'aire 10-ch. 27.195. Tx, Rec. 5 servos, Pak. $75.

We carry all kits, motors, R/C units & accessories, the same name brand mdse. any distributor may have. Order from any catalog or magazine for our very fast service. C.O.D. is the way to go. Send in your old ignition motors and used proportional sets for top dollar appraisal.

Authorized distributor for Futaba proportional equipment, the best radio on the market for performance and price. Dealer inquiries invited.

MACS 74

MODEL AND CRAFT SHOW

TWO BIG *"Action"* DAYS

MAY 11th & 12th

OVER 200 EXHIBITORS

Indoor and Outdoor Demonstrations
Radio Controlled Planes, Cars, Boats,
Helicopters Gliders, Rockets and Plastics

CONTEST OPEN TO THE PUBLIC

Over 57 Categories with trophies, awards and prizes in each. NO FEE. Check local dealer for details.

HOURS: SAT 10 AM - 8 PM SUN 11 AM - 6 PM

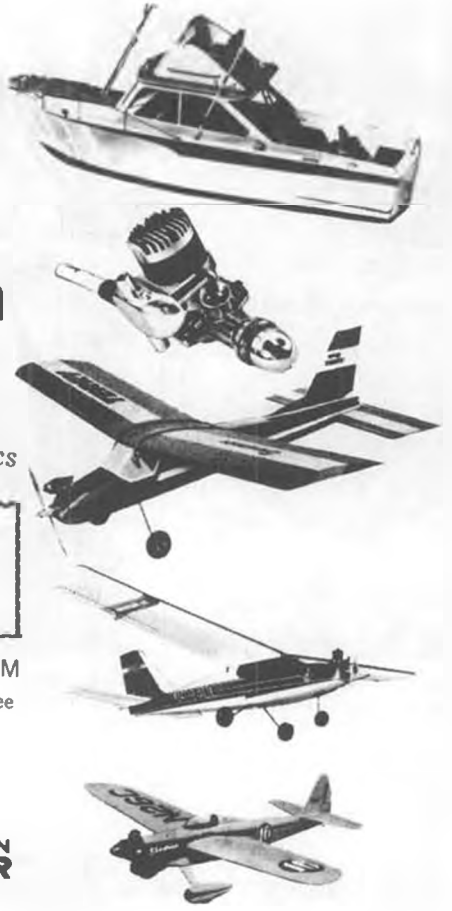
Admission: 2.50 Adults 1.50 Jr. (under 18) Under 6 Free

SAVE 50¢ WITH FREE DISCOUNT TICKETS
AVAILABLE AT ANY LOCAL HOBBY SHOP

ANAHEIM CONVENTION CENTER

800 West Katella Ave., Anaheim, California

NEXT TO DISNEYLAND



The Versatile SIG DOUBLER

WINGSPAN 38"

RC-14

SIMPLE CONSTRUCTION
FAST BUILDING
EASY TO CONTROL!

For 3 or 4 Channel Equipment

Designed by BRAD SHEPHERD

Flown by Austin Leftwich

SPORT, AEROBATIC AND RACING MODEL

3 TIMES 1/4 MIDGET RACING WORLD CHAMPION

In 1969, 1970, 1973 - Plus Many Other Racing Victories!

SIG®

Value Packed
Bargain At
$14.95

Austin has this to say about his converted Doubler "Little Gem": "Because of my successes with the design, and also because it is so easy to build (and fly), there are eight other active competitors here in Atlanta who compete with them. Five of them are novices who wanted very much to compete in the event, but were unsuccessful in trying to master the race course with some of the strictly Quarter Midget design kits on the market. Every one of them has managed to compete successfully with his version of the "Little Gem". Featured in the March, 1974, issue of MODEL BUILDER, a full-size plan of Leftwich's Doubler/Little Gem conversion is available from the magazine for $2.50. See their plan listing in this issue.

Sig Manufacturing Co., Inc. . . Montezuma, Iowa 50171

MODEL BUILDER

MAY

1974

volume 4, number 30

Subscriptions $10.00 per year, $17.00 for two years. Single copies $1.00. Add $2.00 for postage per year outside of U.S. (Except APO). Add 75 cents for Canada and Mexico.

Published monthly by MODEL BUILDER magazine, 1105 Spurgeon St., Santa Ana, California 92701. Phone (714) 547-3963

Second Class postage paid at Santa Ana, Ca.

CONTENTS

FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: We must apologize for appearing to make the magazine look like a family photo album, but the best laid plans of modelers and men don't always work out. So, in lieu of several cover projects that didn't quite make it, we offer you the modeler's ideal domestic scene, recorded for history by the camera of Tom Mahon at Taft, California, just after the third ever flight of the Powerhouse netted 54 minutes, 22 seconds, and a nice 1st place trophy. Details in March and April issues.

MODEL BUILDER's new East Coast Advertising Representative, Walt Moucha, with his Acro Star, built from an Airtronics kit. RS radio, Ross .61, K & B Super Poxy finish, weighs 6-3/4.

from Bill Northrop's workbench . . .

ARCHA-HAC!

● If you just said "God bless you," thanks just the same, but that wasn't a sneeze. ARCHA stands for American Radio Control Helicopter Association, and HAC stands for Helicopter Advisory Committee.

ARCH, as it is more commonly known, is the national organization of R/C helicopter enthusiasts which is being put together under the primary efforts of Dario Brisighella (Say "Brizz-ih-gella), 1032 E. Manitowoc Ave., Oak Creek, Wisconsin 53154. This association is in no way sponsored by any part of the model industry.

Noting the rapid growth in popularity of this phase of the R/C hobby both in the United States and in other active modeling countries around the world, the Academy of Model Aeronautics has taken the first step in establishing national competition rules and safety regulations for helicopters. At this time, letters have been sent to certain members of ARCH . . . those who are already the "who's who" in R/C helicopters, and as such, are directors of the organization. These members have been asked to become the AMA Helicopter Advisory Committee, and their primary task is to assist the Contest Board in establishing satisfactory regulations that will put R/C helicopter competition and safety on a nationally recognized basis.

In as much as the H.A.C. is to be made up primarily of A.R.C.H. members, this Association will become the R/C helicopter's representative to AMA in the same fashion that NMPRA represents R/C Pylon racing and the NFFS represents competition free flight. As soon as the H.A.C. appointments are confirmed, and a chairman is established, the list will be printed in AMA publications so that interested members will know who they are. . . and vice versa.

Fred Standa, of the Model Mariners, San Lorenzo, California, won the "B" Mono Champs for 1973 in NAMB District 9 with his Dumas SK Daddle 40 ski boat. Modified ST 40 ABC.

Sandy Cramer (Miss Nebraska, 1973) will be Queen of the 1974 National Multiwing R/C Championships. See last issue for details.

The West Jersey Radio Flyers are sponsoring their Third Annual WW II Scramble. This big contest for WW II scale models, will take place at Lakehurst Naval Air Station on August 17 and 18, 1974. Events include AMA Scale (Fussy), Sport Scale (Fuzzy), Maneuvers, Mission, and Combat. Also, there will be prizes for the most unusual or different subject and the most realistic "Kamikaze" (Dear me!).

For further info, contact Lee Jezorek, C.D., 1701 Oakwood Terrace, Scotch Plains, N.J., or Dave Meier, Asst. C.D., 61A North Pl., Flemington, N.J.

* * *

Oh yes, don't forget the Nats. This has got to be the biggest 3-ring circus of modeling that AMA has ever put on.

WELCOME ABOARD

Walt Moucha (Say "Moka") is a well known name, face, and body in R/C

Continued on page 71

OVER THE COUNTER

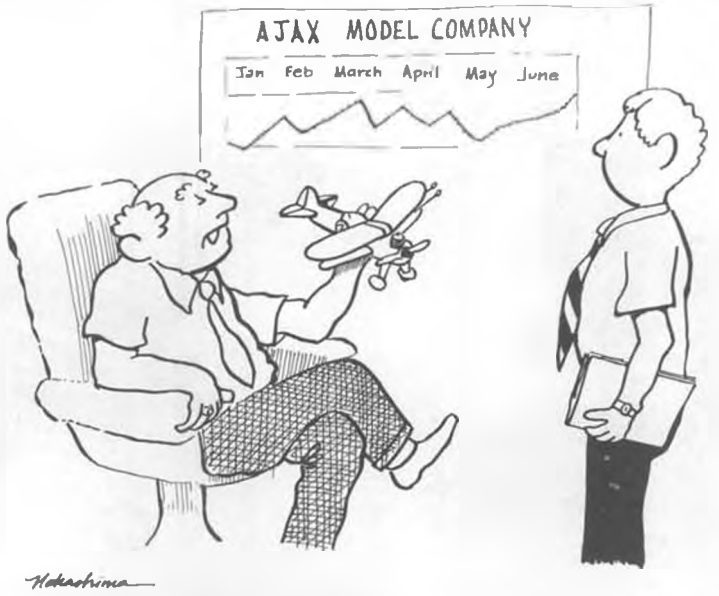
● A newsletter from Kraft Systems brings us up to date on various items being produced. The primary product, of course, is radios, and delivery on the majority of the line involves no more than a 3 to 4 week back order.

The Kraft engine situation is in suspended animation at this time. Original plan was to produce R/C engines, first .61's, then .40's, then .15's, all designed and developed by Roger Theobald, who should need no introduction to those who dig performance engines. The first .61 was shown at Toledo, and though it really had it as far as idle and smoothness characteristics, the top end didn't meet the standards that could be expected. And so, the temporary suspension, though a new Schneurle ported engine is already on the test bed and shows unsurpassed performance specs. Target production is now late, late fall . . . Meanwhile, forget any rumors about an ignition engine. True, it was under serious investigation, but like Duke Fox and his ignition Eagle .60 seen at Toledo . . . it was a flight of fancy that didn't materialize. The old time Browns, Cyclones, Dennymites, et al, still rule supreme . . . in their circle of activity.

Meanwhile . . . Kraft did show an item at Toledo that aroused a lot of interest. Called the Glow Plug Analyzer, this gadget, made to fit either round or square 1-1/2 volt dry starter batteries, provides instant information on the condition of the glow plug and/or the battery, both of which are involved in the successful starting of your engine. The unit, which slips on the top of your 1-1/2 volt dry cell, contains an on-off switch and a rugged meter, which measures current flow through the glow plug and will determine an open or shorted glow plug, battery condition, or engine flooding (if everything checks out, what

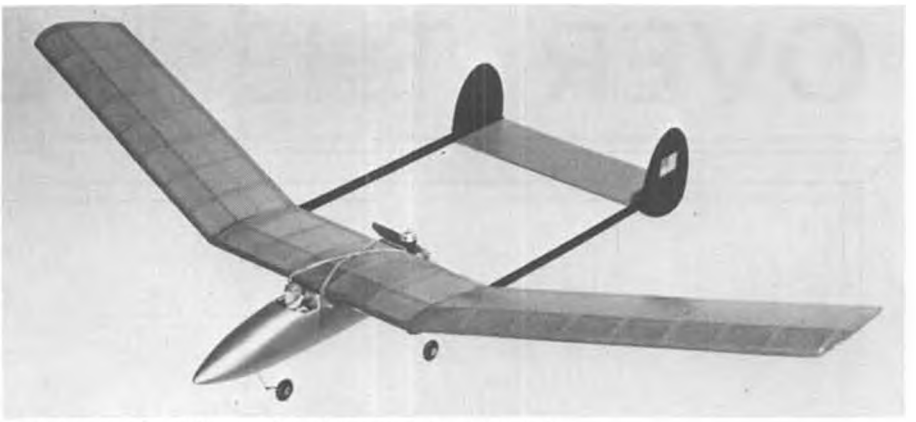
Dieter Schluter (left) and Irwin Polk with Dieter's new "Gazelle" helicopter at the Toledo show. Deliveries from Aristo-Craft will start sometime in May.

Kraft Systems' new battery and glo-plug tester slips on top of dry cell.

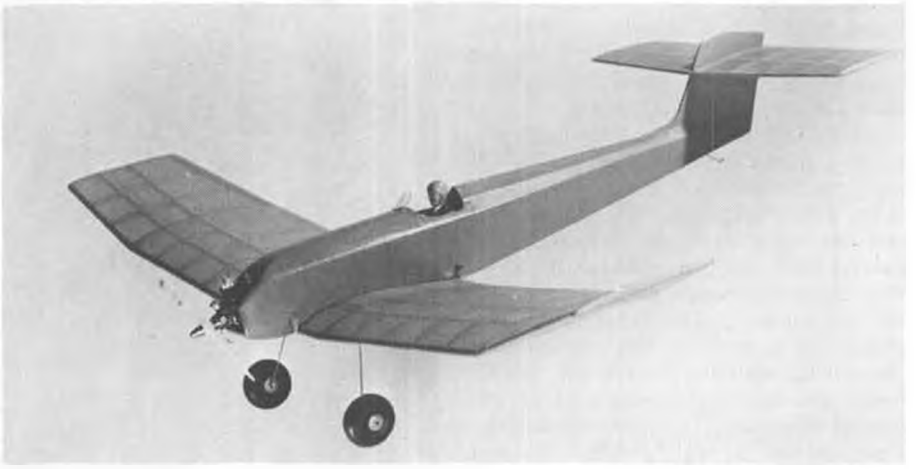


"Harrison, the question is not, 'Does it fly?' The question is, 'Does it sell?' "

New book has over 100 pages on the subject.



Baby Boomer for .020 sport free flight by Peterson Products.



The Pup, sport .020 free flight by Peterson Products.

else?). Price of the unit is $7.98.

* * *

Rosie's R/C, Carb-Adapter Dept., P.O. Box 10306, Lubbock, Texas 79408, is offering a bolt-on adapter which allows you to put your favorite carburetor on a Fox Eagle 60, 70, or 78. In case your "favorite carburetor" happens to be a Perry, you can get the whole ball-o-wax from the same source. Adapter alone is $5.95; with Perry carb, it's $17.95. Duke Fox should call for exclusive discounts!

* * *

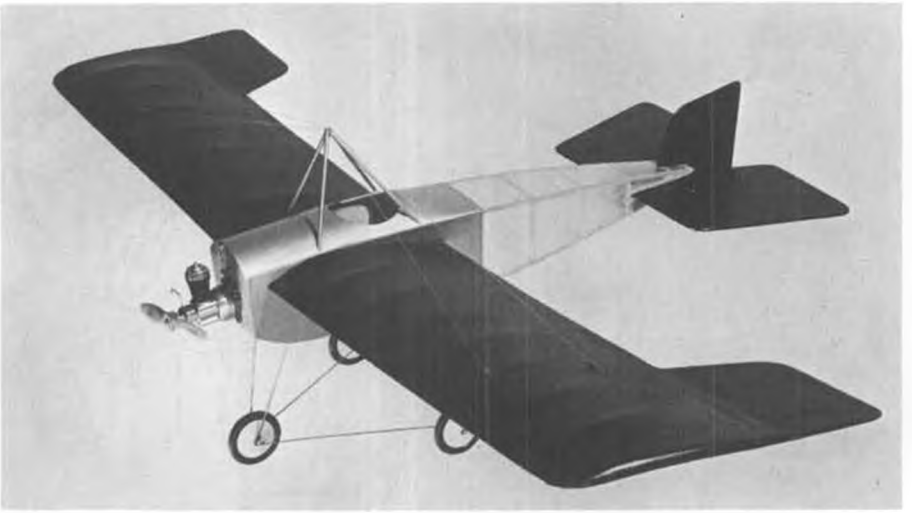
J.P. Models, which specializes in R/C glider kits featuring rolled 1/32 plywood fuselages, has added a relatively small (98 inch span) glider kit to its line. The Javelin, like the Dart I and Dart II, also employs the rolled plywood construction, along with a molded fiberglass nose, all of which is assembled at the factory and finished with a gleaming white epoxy paint finish. The Javelin fuselage weighs 6.5 ounces. In most cases, no dead weight ballast is needed to acquire the proper C.G.

The Javelin is designed for compact transportation. Both the wings and the all-flying stab are removable and can be stored and transported in the kit karton . . . carton. If nothing else, the easy transportability should eliminate "hangar lash." The ship operates well under wing loadings from 7-1/2 oz/sq. ft. (without added ballast) up to 10 oz/sq. ft. Price of the kit is $49.50.

* * *

"The Modeler's Companion" is the name of a small booklet put out by The Modeler's Press, P.O. Box 170, Kensington, Maryland 20795. Frankly, just take our word for it and order one for a buck ($1.00). If it seems late to be getting a 1974 edition, keep in mind that as a 1974 purchaser, you're entitled to a '75 edition for 50 cents. The little 56 page book contains just about any handy reference a modeler could want. Since bringing one home from Toledo, we've used it to answer at least a dozen calls from modelers wanting to know anything from the name of our district contest coordinator to the address of MECA, the Model Engine Collectors Assoc. . . . it's all in

Carb-Adapter by Rosie's R/C Products, fits Perry carb to Fox Eagle engines.



Peterson Products' Lincoln Beachey will be available in two size kits; one for .020, and one for .049. Prototype .020 is a construction feature in this issue.

there . . . plus AMA District map, area codes, time zones, AMA Directory of Officers, decimal and metric equivalents, shop facts (screw sizes, tap drill sizes, grit sizes) standard wood sizes, conversion factors, frequency colors, wing loading chart, metric and cubic inch engine displacement chart, 12 month appointment calendar, 1974 and 1975 year calendars, visibility table, prop size chart, and more. Git one!

* * *

Two new books on R/C have been published. One goes by the lengthy title of "Everything You Should Know About Radio Control Flying, or How To Get 1000 Flights Out of Your RC Airplane," and is published by JR Sales Company, Drawer 552, Rt. 4, Bowie, Texas 76230. It contains over 100 pages of easy-to-understand *must* knowledge, according to information sent by the publisher. Price is $4.95.

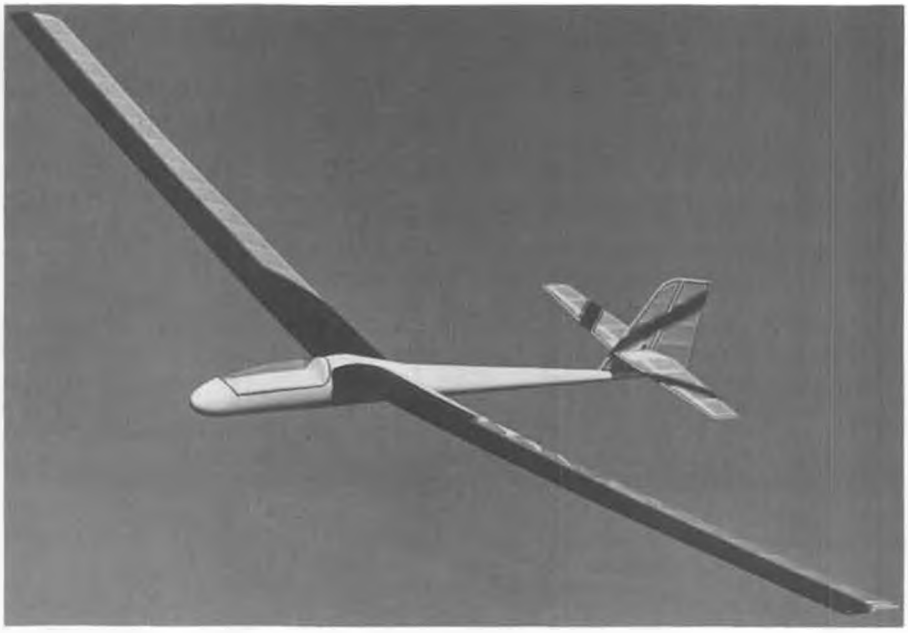
We have also received a sample copy of a book entitled, "RADIO CONTROL MINIATURE AIRCRAFT," published by MacMillan Publishing Co., Inc., 866 Third Ave., New York, N.Y. 10022, and released as of April 4, 1974. This book, cloth bound for $8.95 or paper bound for $4.95, has been compiled by Bob Lopshire, long time modeler, and currently AMA's Public Relations coordinator. The book, which contains 180 pages, with 135 illustrations, is the most thorough single source of information on radio control that we have yet seen. Perhaps the best way to describe it is to list the contents by chapters:
The Beginning of a Great Hobby, Some Points of Interest, Getting Started, Choosing a Powerplant, Setting Up Shop, Adhesives, Solvents and Cleaners, Kits, Construction, Covering, Color Trim, Installation of Equipment, Engine Maintenance, Preflight Check-Out, Building a Field Box, Going Flying, Radio Care, Some Common Sense, Glossary, Appendix, Closing Note, and Index.

We'd call this book the bible of R/C, and highly recommend it.

* * *

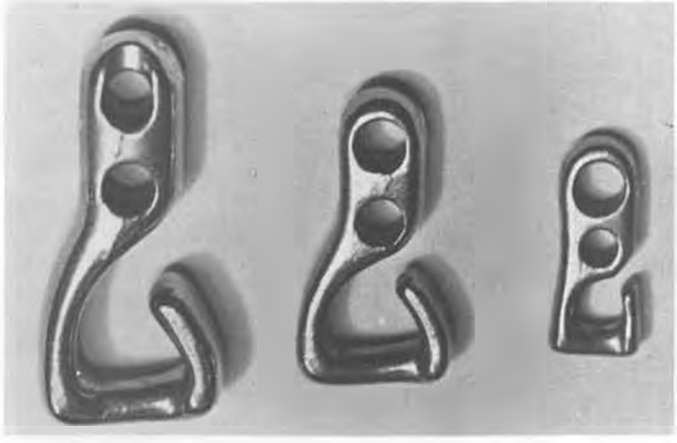
Just imagine that as a genuine free flight model builder type, you have been told that a John Kaufmann, who has written books entitled "Birds In Flight," "Chimney Swift," "Fish Hawk," "Insect Travelers," "Winds and Weather," and "Wings, Sun, and Stars," all published by William Morrow and Company, has now written a hard cover, 96 page book called "Flying Hand-Launched Gliders." If your reaction is anything but amazed enthusiasm, you're on the

Continued on page 68

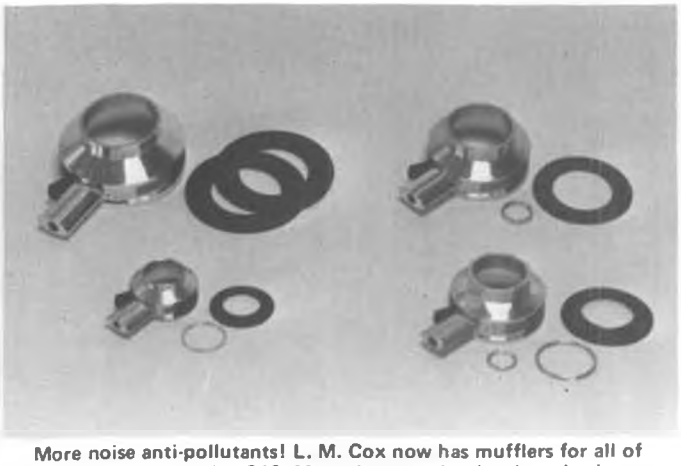


J P Models Javelin, with 98 inch span, features the same rolled plywood tube type fuselage construction as used in the larger Dart and Dart II.

Len Sabato's latest design helicopter features easy, built up fuselage and bolt-together mechanics. Will sell for less than $300.



Some of the great new winding hooks for rubber models by Jim Crocket Replicas.



More noise anti-pollutants! L. M. Cox now has mufflers for all of its engines except the .010. Mosquitoes are louder than that!

Bob Karlsson's CW Junior putts by for the camera. Ship is a slow, realistic flier. Landings, surprisingly, are best made with a little power on.

CURTISS·WRIGHT JUNIOR, CW·1

By RALPH FIDANCE . . . Originally published in the December 1971 issue of MODEL BUILDER, when our circulation was only 2,500, we felt this very popular scale model deserved more exposure. Coincidentally, it also becomes one of the first to be available with our new "Stick 'em Patterns."

Close up shot reveals a extra strut added on by Ralph to beef up the landing gear for rough field operation. Ain't she a cute little cupcake?

OK, who sneezed? With or without the help of a sneeze, the CW dismantles nicely for transporting to and from the field.

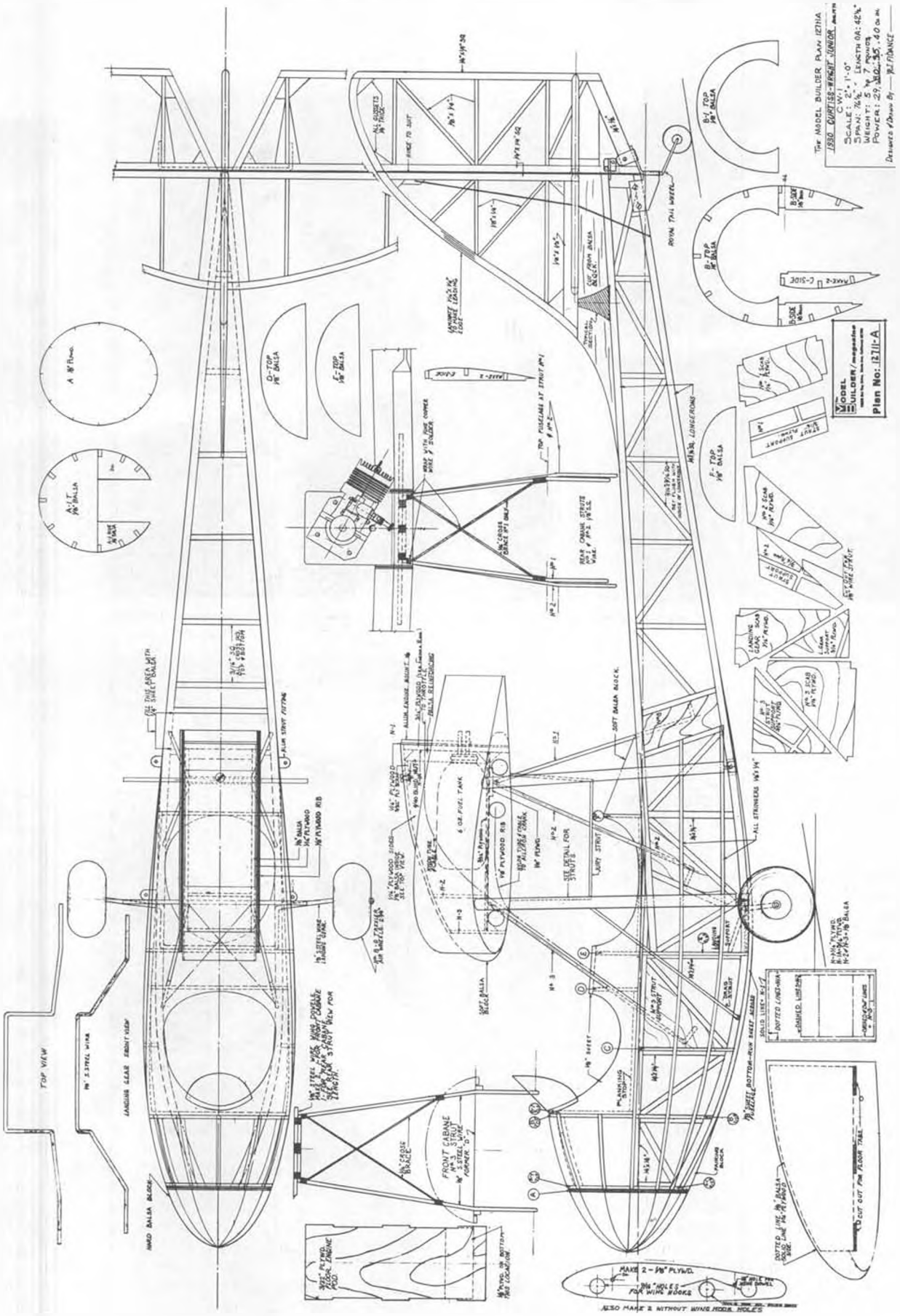
● The Curtiss-Wright Junior is one of those "cute" airplanes that looks as though the designer had modelers in mind when creating it. With a 7-1/2 to 1 aspect ratio wing spanning 39 feet, and a 3 cylinder, 40 H.P. Le Blond or 45 H.P. Szekley engine, the CW-1 falls (or floats) into the powered glider category, along with the early Aeronca C-3 and Longster.

The "rocking horse" fuselage has a turned-up nose that gives the pilot a front porch view. This made the Junior a popular plane for aerial photography and hunting.

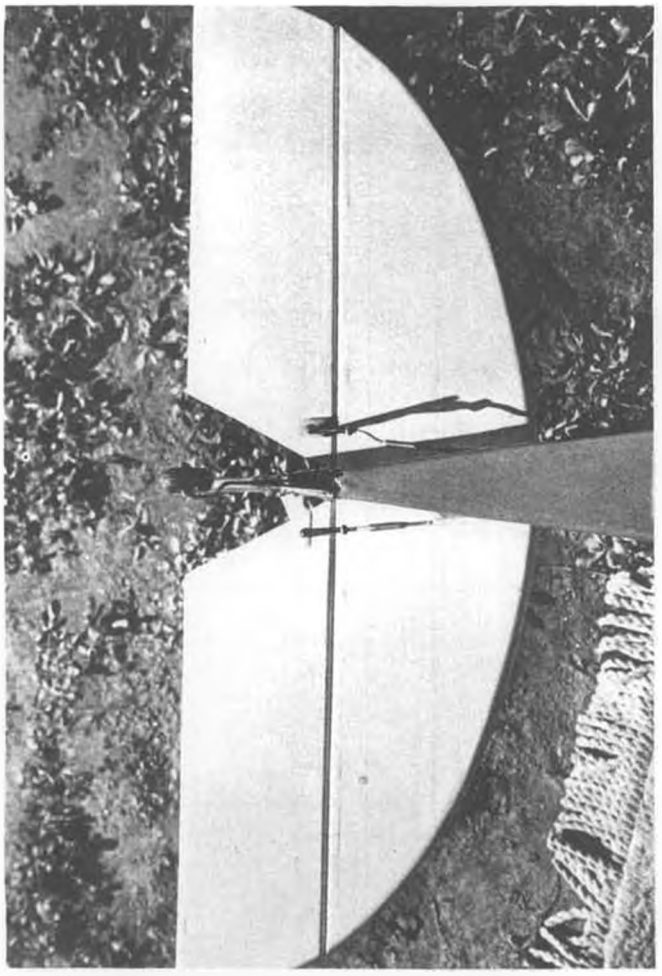
During the years 1930 and 1931, 270 CW-1 "Juniors" were built, and the selling price was only $1500. They cruised at 70 mph, maxed at 80, and landed at 32 mph. The gas consumption at cruising speed was 2-3/4 gallons per hour, or about 25 miles to the gallon.

As a modeling project, the Junior is out-of-the-rut in construction, appearance, and performance. The high thrust line pusher engine and parasol wing combination calls for some fancy wire bending and the use of functional struts. Its appearance at the flying field should be a welcome change from the usual run of nameless toads. As for flight characteristics, there should be no doubt about its ability to putt around realistically. Just one thing to watch. It can use a little power on landings. If you come in

Ralph Fidance, Graham Lomax, and U.S. Scale team member Bob Karlsson have all built and flown CW's from Ralph's plans. This is Ralph with the original model.

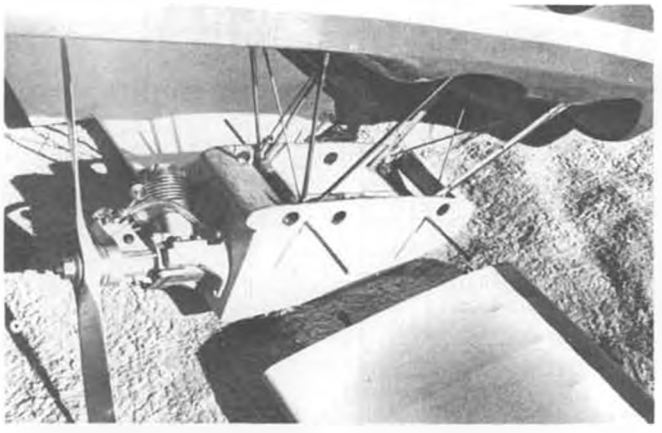


FULL SIZE PLANS AND STICK 'EM PATTERNS AVAILABLE–SEE PAGE 72



Tail surface control linkages from Nyrod tubes are conventional. The curved outlines are easily formed by laminating strips of balsa.

Micro-Avionics servos in the cockpit. Outboard servos operate cables leading to throttle and aileron controls in engine nacelle.



View of underside of centersection, with wing panels ready for hook-up. Note left-hand prop which was hand carved. Not really difficult.

Right wing is shown attached, and aileron clevis is hooked to crank. Wing is held on by rubber bands to cup hooks. Power is an Enya 35.

deadstick, keep up flying speed with a steep approach until you're ready for the touch-down flare.

CONSTRUCTION

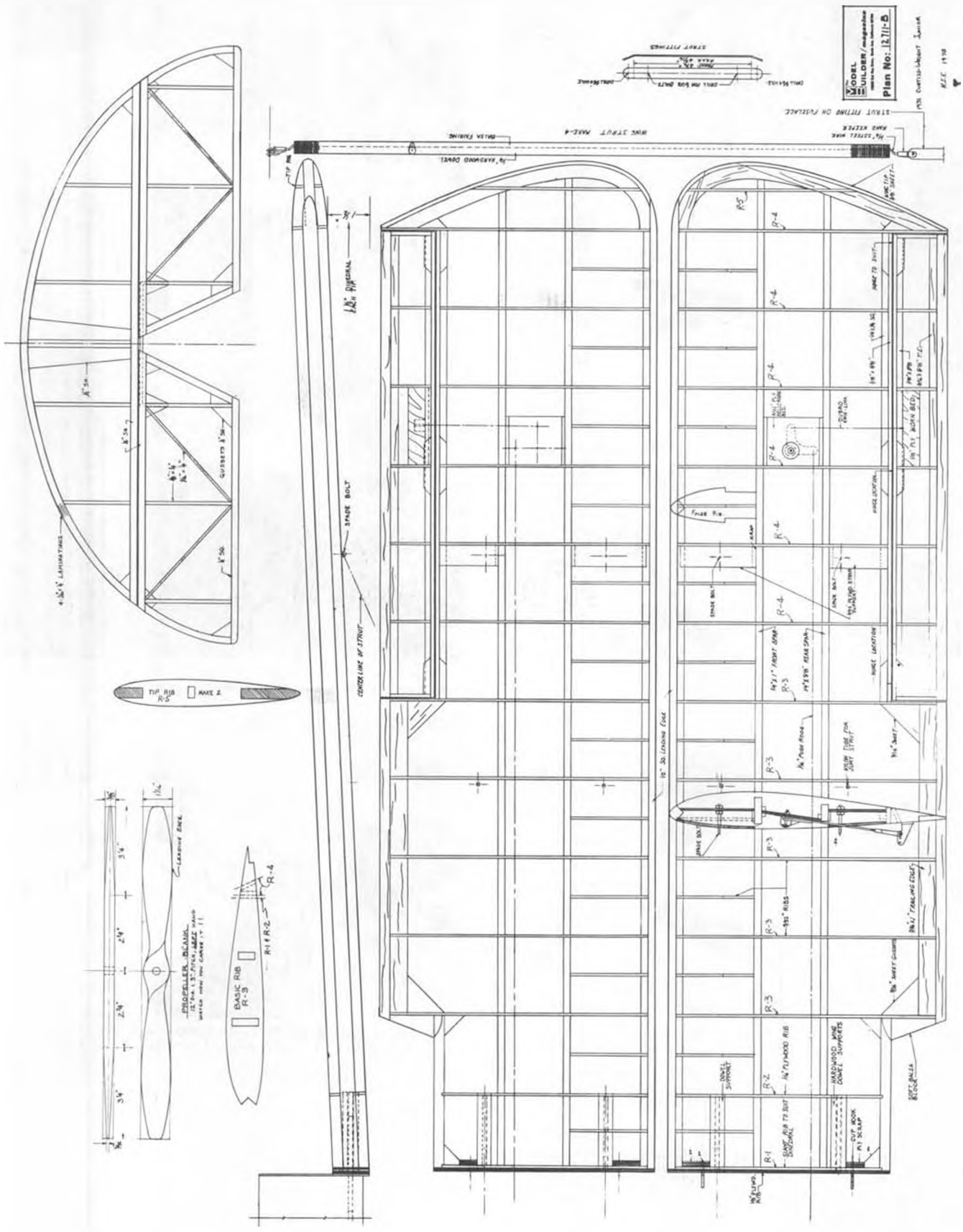
Everyone has their favorite method of building a model. Some start with the fuselage, which is usually considered the most difficult, and then keep building and adding parts until the plane is complete. Others prefer to get the tedious part out of the way first; the wings, then the fuselage, and finally, the tail (which seems logical since it usually comes last).

Our own preference is to start with the fin, rudder, stab, and elevator. This sort of eases you into the project, as material and tool requirements are rather uncomplicated, the structure usually doesn't take too long to get together, and when you finish them, you sort of have the feeling that you're well along with the project. Nowadays they call this psyching yourself for the job.

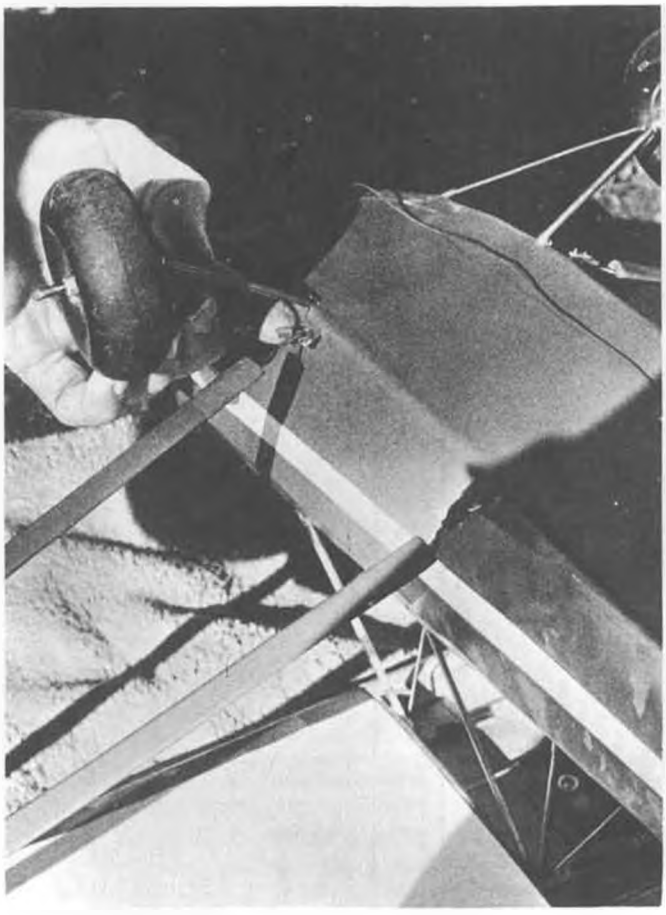
The tail surfaces of the C.W. Junior are basically a 1/4 inch thick framework. The curved portions of the surface outlines are made up by laminating four 1/16 x 1/4 inch strips. After making the four-layer sandwiches of balsa and glue, curve them to the outline and pin in place. Allow these to dry and take a set before trimming off the excess and completing the framework.

Fuselage construction is of the traditional framework type, with 1/4 inch square longerons trussed with 1/4 square and 3/16 square verticals, diagonals, and cross pieces. Note that all of the 3/16 inch square truss members aft of the side stringers are installed flush to the *inside* of the longerons. This provides a raised frame, which will ensure a smooth, bump-free covering job.

Forward of station E, the framework



FULL SIZE PLANS AND STICK 'EM PATTERNS AVAILABLE–SEE PAGE 72



Functional wing struts are hooked on using Rand keepers. "Z" bend in 1/16 wire provides adjustments for length. Note receiver antenna.

Here's a good view of left-hand prop. You can get left-hand cranks for some engines, but carving a prop isn't bad, and it'll last forever.

curves inward rather severely and may require some special treatment. We would suggest a series of vertical saw cuts part way through all members, on the inside, about a half inch apart, starting at E and working forward to station A. Just before pulling the sides together with crosspieces inserted, force Titebond or epoxy glue into all of the saw cuts to recover the strength.

The tail surfaces are mounted on a carved fairing block. Best bet is to band or jig-saw the block to the profile, draw a centerline along the top, hold the fin in place and trace around it. Now glue the block in place and start carving. For final shaping, the fairing should be convexed somewhat, as shown on the drawing.

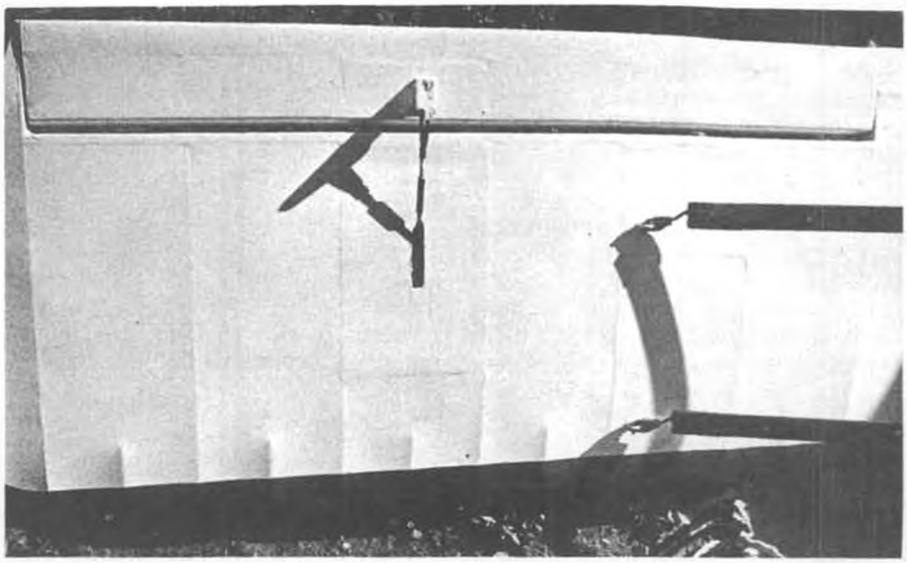
The center section and cabane struts are sort of the keystone to the whole airplane, and though they look complicated, they can be assembled without too much trouble. We won't go into the whole science of accurate wire bending, but since the wire cabane struts determine the final alignment of surfaces, some suggestions will be made.

First of all, and let's take strut No. 3 for an example, don't start at one end and work your way around. Rather, determine the total length of wire required for the strut, divide the figure in half, add an inch for good measure (looks like about 11-1/2 inches), and start by making the two bends that will give you the two main legs and the part across the top. Now measure 8-1/4 inches down each leg, make the right-angle bends and cut off the excess. At this point, and no sooner, you can cut out the plywood strut supports, altering the slot positions in accordance with how your bends came out.

Incidentally, if you don't have the use of a table saw for routing the grooves in 3/16 inch ply, build up the strut supports from 1/16 and 1/8 ply, using epoxy for the assembly.

The center section/engine nacelle is made up of plywood and balsa. The bottom, under the 3/32 inch ply floor, is open. This area houses the aileron bellcrank which links the individual wing-mounted pushrods to the nylon tube and cable pushrod from the fuse-

Continued on page 64



Shot of wing strut linkage. Spade bolts bedded in ply mounts. Conventional aileron hook-up.

One of many beautiful scale models an display at the Toledo R/C Conference was this DHC-6 Twin Otter, by Dave Allen, Sarnia, Ontario, Canada. Dave took home an "Honerable Mention" in standoff scale for this model. It flies very well.

RADIO CONTROL REPORT

FRANK SCHWARTZ

● If ever I felt like a kid in a candy store, it was a few weekends back at the big Toledo R/C Show. So much is already written about this event that it would be repeating everyone else to describe it. Nevertheless, for a really gung-ho R/C'er like myself, it was fantastic.

There is always the chance to see old friends, often those you only get to bump into once a year . . . then I hear that old so-and-so is also there, but in two days I never run into him . . . such as Franz Kavan . . . I knew he was there . . . everybody told me so, and I often went to his booth and never caught him . . . and also old friend Fred Smith, better known as Smitty, who is always at the Coverite booth . . . never was able to catch him either.

And the booths . . . my gosh, the booths. There were quite a few more than last year, and although I tried to look at each and every item at each booth three or four times, I still missed things.

Next year, we were told, the Show will be held in a downtown Toledo auditorium with a super amount of space. This should be something to look forward to with pleasure. The county recreation center has not expanded to take care of all the exhibitors, and the crowds, while slightly less than last year (probably due to the gasoline shortage), are always packed in like sardines.

It is impossible to mention all the things I saw, or even to pick out one or more of what I might think was the "best" of the show. The Kraft booth was manned by Marty Barry and Cliff Wierick, among others, and of course, *the* man himself, Phil Kraft. As busy as he was with interested R/C'ers, he was able to chat with me a few moments. He showed me the prototypes of his new .60 engine which was most impressive.

"Ed Manulkin, president of Sterling Models, Inc? No, but what is it you want me to tell him when I get back to Philadelphia?"

Hank Hankinsen, president of Sonic-Tronics. Morris Toltsis seated. ST is building up an impressive "goodie" line.

Dan Santich, foreground, is Top Flite's new designer. The latest P-47 is his. Sid Axelrod and Mike Schlesinger at work in background.

Phil indicated that the production models will, of course, be improved and probably not at all resemble those from the "first batch" which were brought along to show there. Production is slated for fall, and later in the year specifications on the engine will be released. Also shown were all the Kraft Radios and the full line of accessories . . . plus a few new ones . . . such as a top for 1-1/2 volt dry cells . . . either the doorbell type or the No. 4F square ones. In the top, which is plastic, is a meter, switch, and a lead for your glow plug . . . with this you can tell if your glow plug is any good the moment you hook it on, and also, the condition of your battery. Wonder how many times I blamed an engine when my glow plug battery was almost dead or the plug was burned out? Anyhow, this new accessory should be another winner in the Kraft stable of well-thought-out R/C accessories. To go into details about the Kraft radio would be like gilding the lily . . . most everyone knows about the Gold

Continued on page 61

"Y'see, if I did spell it 'Chaos,' nobody would know how to ask for it in the hobby shop!"

"Now don't spread this around, but Kraft has this new system for the airlines, where the pilot stands on the ground with this great big gold transmitter in his hand and . . . .

"Say one bad word about my airplane and I'll get Joe Hancock here to Spitfire in your eye!"

A portion of the huge 2-day crowd that worked its way through the exhibits at the WRAMS show in White Plains, New York.

Ed Lorenz acknowledges award from WRAMS and Elinor McEntee for pioneering in R/C.

Winners in the first pylon race of the 1974 season, at Whittier Narrows: Jerry Silverman (left) in the Standard Class (He is our new R/C Pylon editor), and Kent Nogy (right) in Expert. Larry Leonard (center) must have the magic voice . . . he called for both winners!

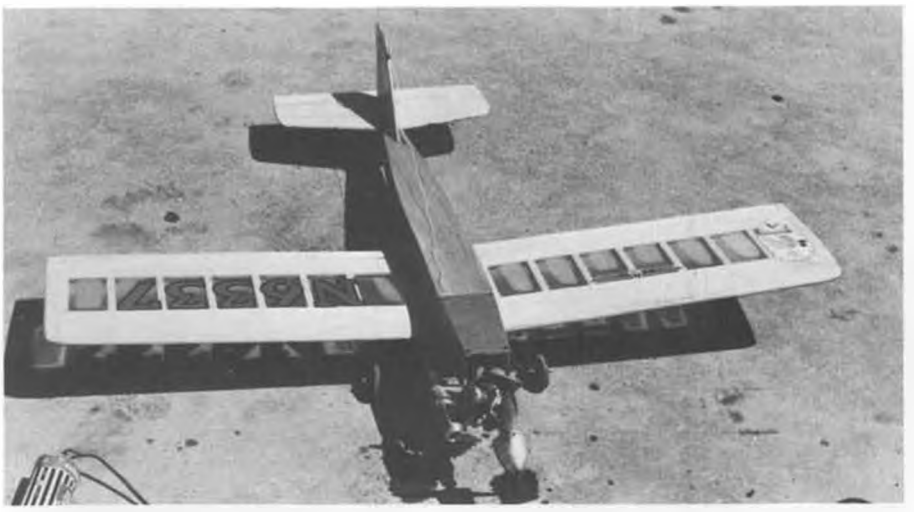
pylon

By JERRY SILVERMAN . . . This month we have a new "by-line" for R/C Pylon. Taking over for a job very well done by Tom Christopher, Jerry will be right on top of it all as he is Dist. X V. P. for N.M.P.R.A.

● Although the current Formula I season hasn't yet started here in Southern California (at time of this writing), those of us with high percentages of nitro in our blood haven't been lying around dormant. Any time two or more racers get together, with any flyable planes at all, there's bound to be a race . . . naturally. We'll try anything, even Ugly Sticks if pressed. But two events are gaining a lot of acceptance in So. Cal.; Quarter Midgets and Quickie 500's. Taken in reverse order, these races offer a logical progression up to Formula I, but more importantly, each offers lots of fun in it's own right. For the uninitiated, perhaps a little background would be in order.

Quickie 500 racing takes it's name from an airplane of the same name designed by Glen Spickler. A few years ago, Glen noticed that interest in racing was lagging in his club, the BARKS of Bakersfield, and to perk up the troops, he designed the ideal disposable racer and a set of simple race rules to match. Starting with the concept that the racing should be kept simple, low pressure, and above all, fun, the rules were written as a model of simplicity: 500 square inch minimum wing area, stock front rotor .40 K&B engines, any prop, and the club provided the fuel, which is 10 percent nitro. Originally intended as a one-design racing class, the rules have been bent slightly by other clubs to allow more planes to compete. Even so, the original Quickie 500 design still dominates, which perhaps proves the soundness of Glen's idea. The plane handles extremely well throughout the course, and landing one of these is indeed no chore at all.

(Another variation is the TOAD. Similar to the Quickie 500, but probably not as fast, it was developed in



The Quicky 500, designed by Glen Spickler, along with MB's Toad, are popular for low pressure racing that provides a nice introduction for beginners to Pylon Racing. This Quicky slightly bent.

Northern California, and was published in the Dec. 1972 issue of MODEL BUILDER. wcn)

To give you an idea of what Quickie racing is like, here is a race report from the San Gabriel Valley Radio Control

League, which sponsored a race in Whittier, California on St. Patrick's Day.

"Now that's what I call fun racing. Thirty flyers showed up, we flew seven rounds for a total of 56 heats, with only 6 workers. No proof of scale, no hassles, no protests, just a full day of close racing. Of course, close racing has it's drawbacks, as there were no less than 9 crashed planes, four of them midairs. (Which is why the planes should be considered disposable.)

"Compared to other forms of racing, this event is, quite honestly, relaxing. Pre-race processing involves no more than setting up the heats and collecting the entry fees. We got off to a leisurely start, with the first heat in the air at 9:00 AM, (most of the flyers and some of the workers were awake at that time), and with no trouble at all, got the seven rounds flown by 3:30 PM. We are hard pressed to get five rounds flown in that time span in a Formula 1 race. The loose pace of Quickie 500 racing sometimes has a soothing effect on the flyers, too, I guess, as one guy went out to the line only to find that he left his transmitter in the pits.

"After all the rounds were over and the scores totaled up here's how it looked.

1st Bill Warner, 2nd Ed Keefe, 3rd Steve Wilkins, 4th Harry Gould, 5th Lee Frey, 6th Jerry Baranowski.

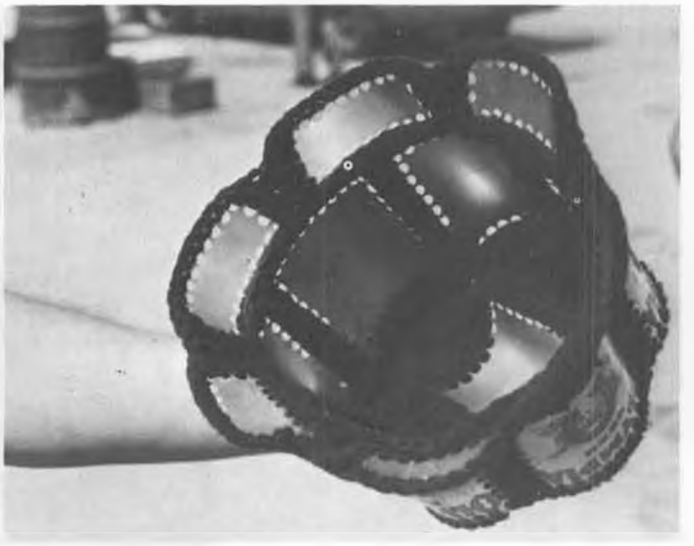
"As in the Quarter Midget race, winners were awarded custom beer steins and coffee mugs, with the club emblem, race date and placings on them, instead of the usual trophies. Fill 'em up!"

If a flyer gets his first taste of competition with Quickies, and wishes to progress up the ladder to fame and fortune, Quarter Midget is the logical step up. Since QM has received lots of publicity lately, I don't think it is necessary to go into a lot of detail here. I will mention however, that this event is picking up in popularity, and the competition is getting tougher all the time. Racing is still very close, and the idle rule seems to be working to keep the engines stock, which is very important. Not as easy on your nerves as Quickie racing, QM is still calmer than Formula I. Another typical race report is called for here:

"Thirty five flyers entered the contest, including many flyers from out of town. We had originally planned to fly seven rounds, but due to getting off to a slow start, and because of the high winds that came up in the late afternoon, we called it a day after five blistering rounds. With nine heats per round, and four flyers per heat, there was plenty of close racing, of which many winners were decided by the last lap. The event was co-sponsored by the QMRC, and together with their help the race was a tremendous success for all. QM racing, like Quickie racing, is very low key, and most of the importance is placed on the flyer and his ability to be consistent, rather than on the all out speed of the airplane. To demonstrate the low pressure in this type of racing, this writer noted that one flyer had two planes and actually loaned his number one plane to another flyer in the contest who didn't

Continued on page 57

Latest in chapeaus for the racing clan is modeled by John Brodbeck. Sections of aluminum beer cans, holes made by a paper punch.



Inside view of John's hat, which was cut, punched, and knitted by his pretty wife, Charlene. Write to John for the pattern.

Mike Bosch, son of well known German R/C flier, is the R/C helicopter champion of Germany. Here he demonstrates the Kavan Bell Jet Ranger at the Toledo R/C Conference. This model was equipped with the latest head and the stabilizing gyro.

CHOPPER CHATTER

By JOHN TUCKER

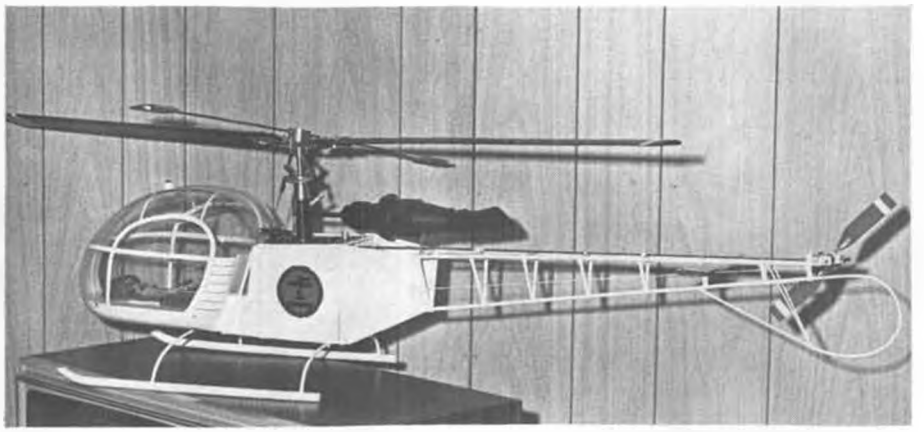
● In the R/C model helicopter marketplace, no news is bad news . . . but fortunately, we don't have that problem around this editors desk; only the wondering about which item is the most important, or what drawing Paul Plecan will crank off in his whirlwind style!

Before I turn our guest editor, Nate Rambo, loose with his fine account of the Toledo Trade Show, let's cover some miscellaneous data which has been accumulating on the workbench!

Ken Turner, a professional helicopter pilot from Tulsa, Oklahoma, mailed a few pictures of his O&R compact engine conversion of the Hegi-Cobra. He sez the belt-start situation was not to his liking, so he installed the O&R to take advantage of the built-in pull cord starter! The installation was quite simple, as the pictures show, however, the O&R did not develop as high RPM as the original Veco engine and the bird would not lift off the ground. Adding an additional 2 degrees of pitch to the rotor blades (for a total of 6 degrees) did the trick and it now lifts off with less than half throttle on "no nitro" fuel. Total gross weight with the new engine is 14 pounds.

Have you tried the Kavan Gyroscope yet? If not, you'd better investigate its potential for holding your nose steady, even on a gusty day. (I mean your helicopter's nose, dodo!) Herr Kavan was kind enough to provide me

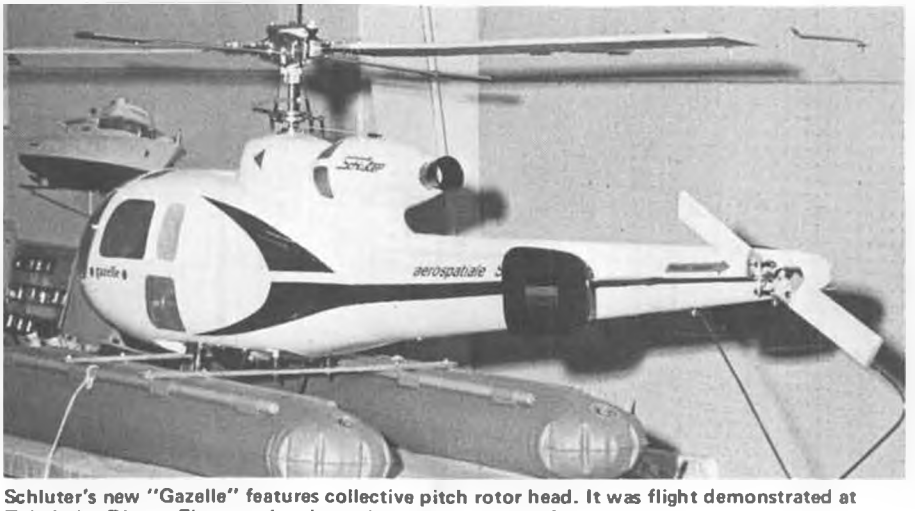
Semco Model Engineering Co., 113 Graniteville Rd., Chelmsford, Mass 01824, produces a very complete line of mufflers and adaptors, including models for helicopter use.



The new Kavan "Alouette" should become very popular, especially with its price tag in the $165.00 range and its small size . . . for .19 engines. This is the prototype .

John Simone, who runs Kavan's U.S. operation in Santa Ana, Calif., flying a Jet Ranger. Mark "J. L. Seagull" Smith, left. Note strong wind.

John Werne's beautifully finished Graupner Bell 212 was one of 17 choppers on display at the Toledo Conference. John used Hobbypoxy for this job.



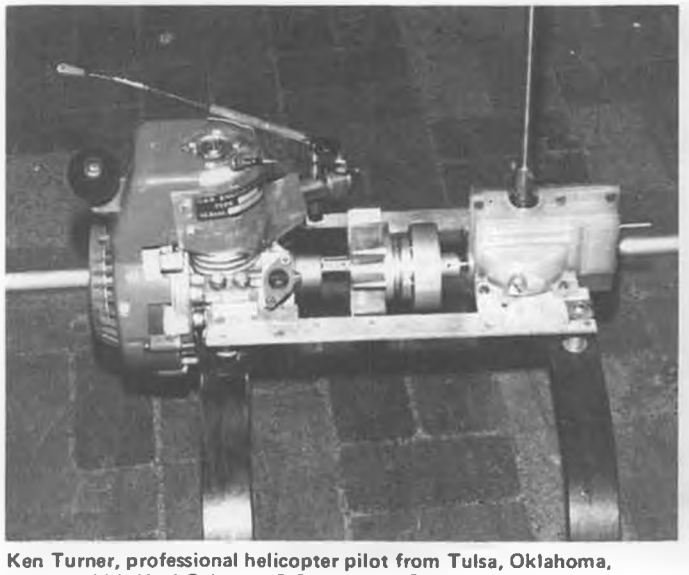
Schluter's new "Gazelle" features collective pitch rotor head. It was flight demonstrated at Toledo by Dieter. Floats make nice trainer rig on solid surface.

with one of his little gems and I promptly installed it on my brand new Jet Ranger. After reading the data sheet carefully and consulting with those great guys at Orbit, the actual installation was simple and direct, with no modifications required. The first test hop (for both helicopter and Gyro) was completely uneventful except for minor trim adjustments, and increasing the Gyro's sensitivity pot for more precise control. Actually this chopper flies so well and is so exceptionally stable, I really couldn't tell if the Gyro was working or not. That is, until I turned it off and tried hovering in a gusty 20 knot crosswind! Well, I'll tell you it was working and doing a beautiful job of flying . . . for my money, it's a great training aid for the beginner and will make a *good* pilot an *expert!*

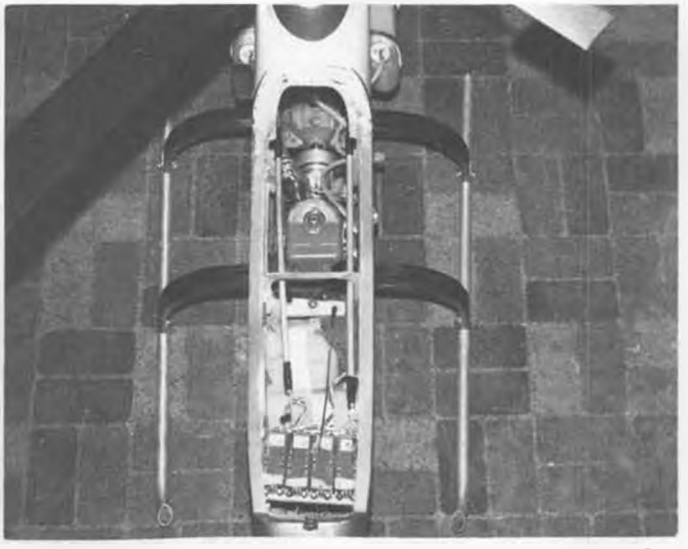
Speaking of Kavan, the prototype "Alouette" is being shown around the circuit, but I'll let Nate tell about that in his report. And that naturally leads us to our guest editor and helicopter pilot "extraordinaire." Nate Rambo has been building and flying R/C choppers for several years now, and is responsible for some outstanding scratch-builts in the Southern California area. He recently flew his helicopter in a straight line for 2,509.87 meters, which is expected to be a world's record for R/C choppers, when substantiated. Nuff' said. Nate . . . fire up your pen!

Although there are many model hobby trade shows in this country, Toledo's is no doubt the biggest and best. For

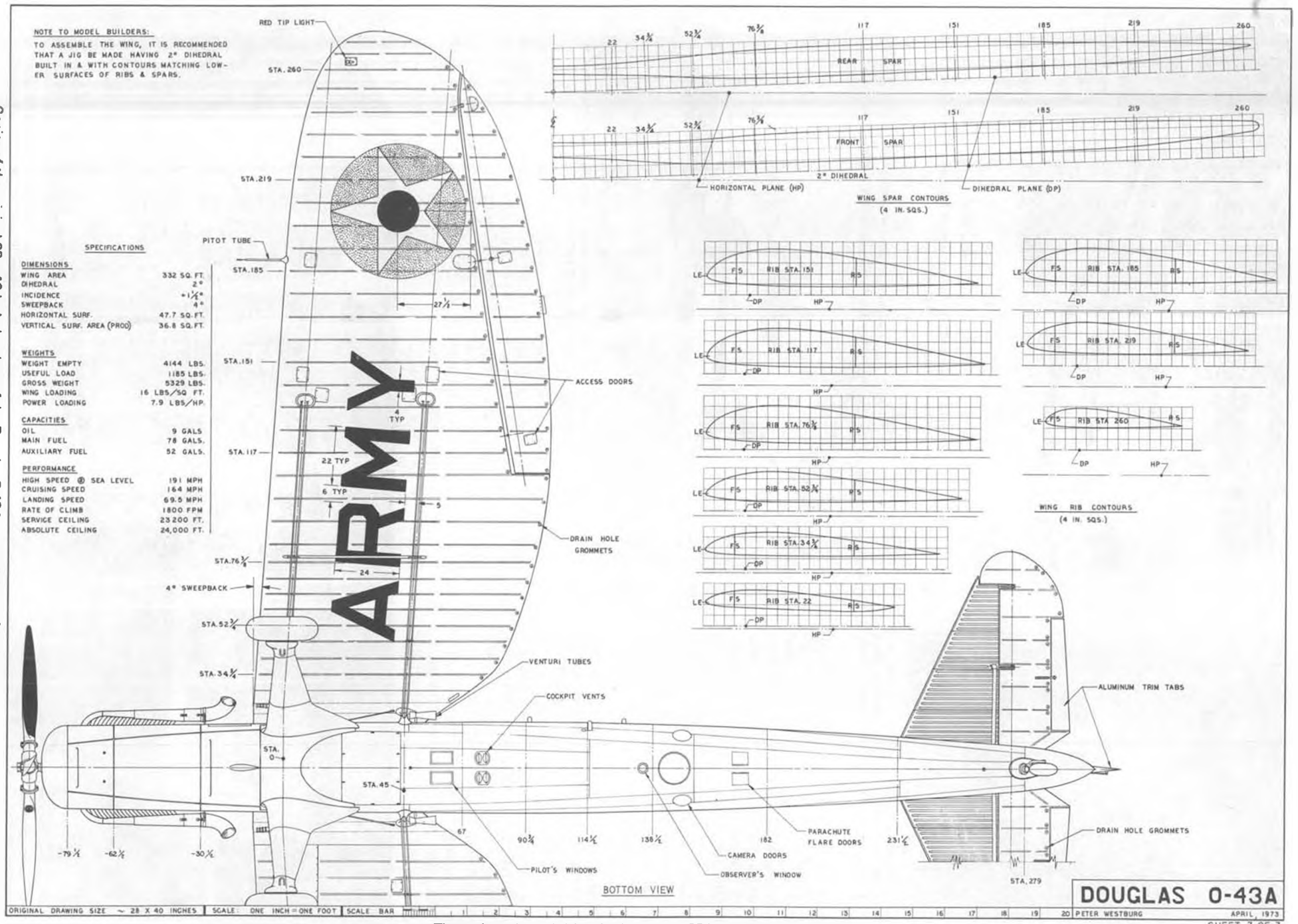
Continued on page 59



Ken Turner, professional helicopter pilot from Tulsa, Oklahoma, converted his Hegi Cobra to O & R power. Total weight is 14 lbs.



Here's the O & R all snugged in. Pitch of blades was increased to 6 degrees and now the chopper lifts off at less than half throttle.



These plans also published in the April, 1974 issue of WINGS magazine.

The ancient Morane parasol wire bracing was still a feature of the O-43A. Small vertical tail was soon changed to larger size.

DOUGLAS O-43A

(PART 2) By PETER WESTBURG

A later Wright Field O-43A with landing lights for night flying. A loop antenna and wing flaps have also been added.

Blue and yellow O-43A of the 22nd Observation Squadron, a pursuit squadron in WW I which switched to observation in the 1920's.

No. 3 of the 111th Observation Squadron which flew O-43A's from 1935 well into 1942.

Prototype of the O-43A was one of the Y1O-43's. Note the short nose, reworked cockpit, and belly blister.

The O-43A at Wright Field with new increased vertical tail area and inset rudder.

This is a package deal evaluation, including the Kaos, Veco .61, Goldberg retracts, and World Engines' "Blue Max" radio. Top Flite prop.

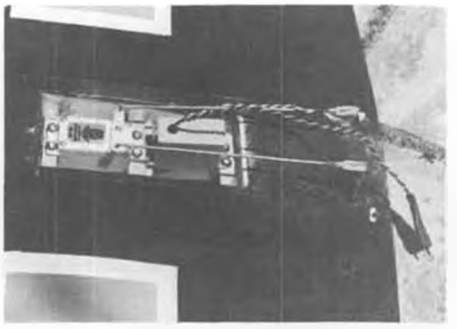
PRODUCT$ IN U$E

"SUPER KAOS" 60, "BLUE MAX" MARK II, K & B VECO .61, GOLDBERG RETRACTS.

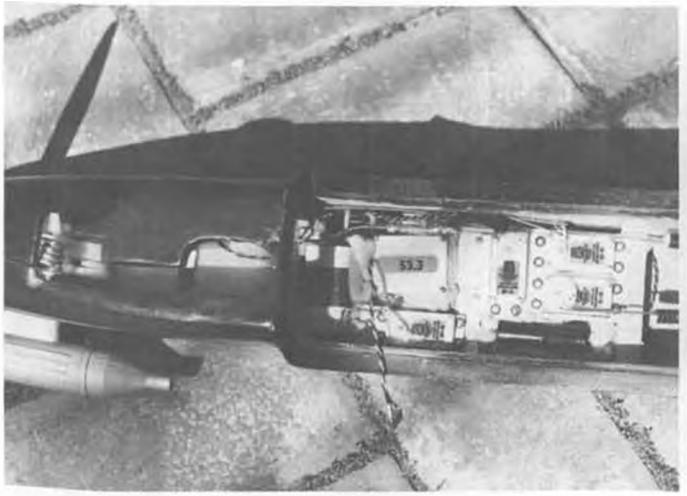
By Bob Upton

● The following article is a "total package" evaluation starting with the "BLUE MAX" MARK II six channel radio manufactured by World Engines, Inc. The radio sent for evaluation was happily the Mode II version on a six meter frequency (53.3), the frequency I normally use. Since I'm a firm believer in FCC regulations relative to being properly licensed, my Ham call number is WA6LKH.

The radio is modern in every respect, including a retract switch in the upper left hand corner of the transmitter. Since my electronic background is rusty to say the least, I had two separate individuals (who will remain nameless), both highly competent technicians for competing radio manufacturers, evaluate the radio on an oscilliscope, and except for a little servo chatter (quite harmless as pointed out on page 9 under "servo notes" in the World Engine radio instruction manual), the radio checked out quite well as to RF output, range, servo resolution, etc. It is beautifully packaged and the instructions are thorough enough to

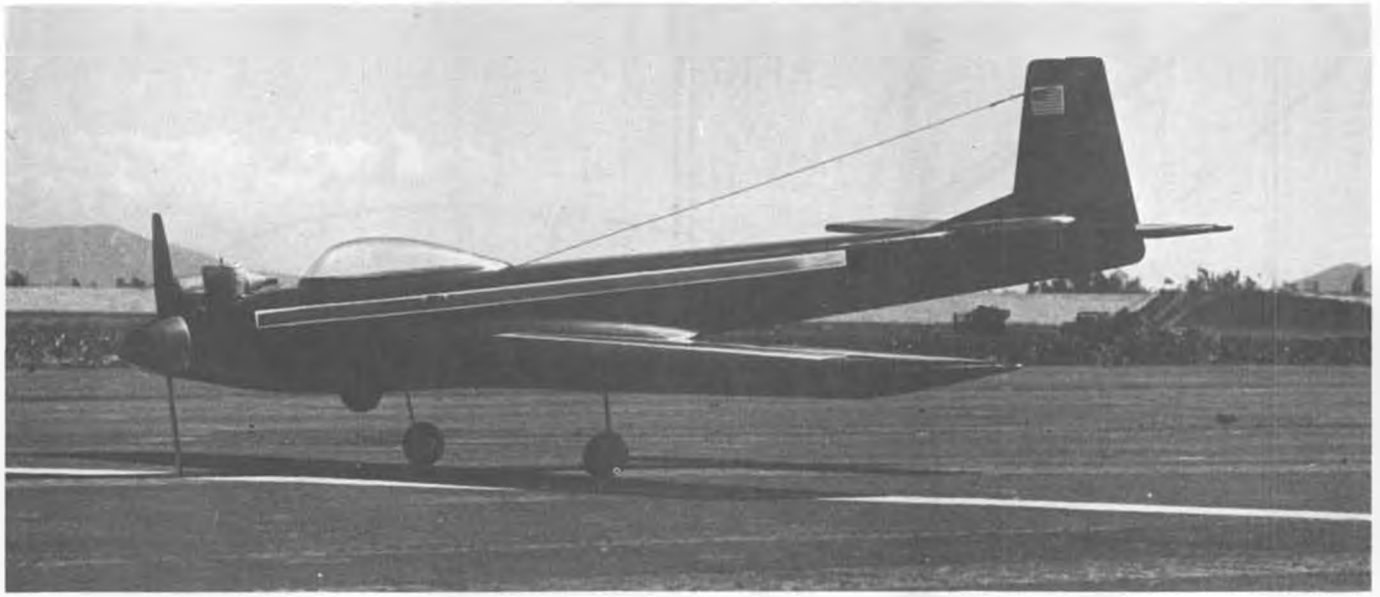


Aileron and retract servos located in the top center section of the wing. Plenty of room.



Heard the expression "full house?" Well, here it is! Switching device retracts just above receiver. Separate dry pack is below and to right.

Goldberg retract nose gear in sucked up position. Note pressure tap line from Veco muffler. Fuselage and spinner blend nicely.



How to land if the linkage comes off the nose gear! This is not a posed shot. All photos on this page by Frank Capan.

keep even the rankest of amateurs out of trouble.

I like the carrying handle on the transmitter. I do advise, however, that the transmitter, being quite narrow in depth, be either laid on its back or supported in some manner, because I had it blown over a couple of times. The closely spaced rubber pads on the bottom of the transmitter make it a little unsteady in the breeze when standing upright. (I fly when it's windy, as the wind keeps the weak of heart on the ground, hence the sky is unencumbered by semi-controlled model airplanes!)

I had one problem that I feel should be remedied by World Engines. The servo arms should be beefed up. I cracked two of them just by installing the screws! Caution should be exercised when tightening the servo arm screws in the servos when installing push rods, etc. The arms cracked vertically through the base that surrounds the output post of the servo.

I installed the radio in Joe Bridi's "Super Kaos" (60 version), manufactured by Bridi Hobby Industries. The well known, and I might add, well liked Joe Bridi produces an outstanding kit. I have visited Joe's manufacturing facilities, and the equipment and talent exhibited therein staggers the mind. No "die crushing" for Joe. He cuts, saws and sands every part to very close tolerances. The balsa supplied in each kit is of very high quality. I have built many of Joe's kits, starting with his early "Sun Fli" series, and have yet to find much to complain about. I can say without reservation that Joe Bridi has very few competitors who can equal the quality of the products put out by his company.

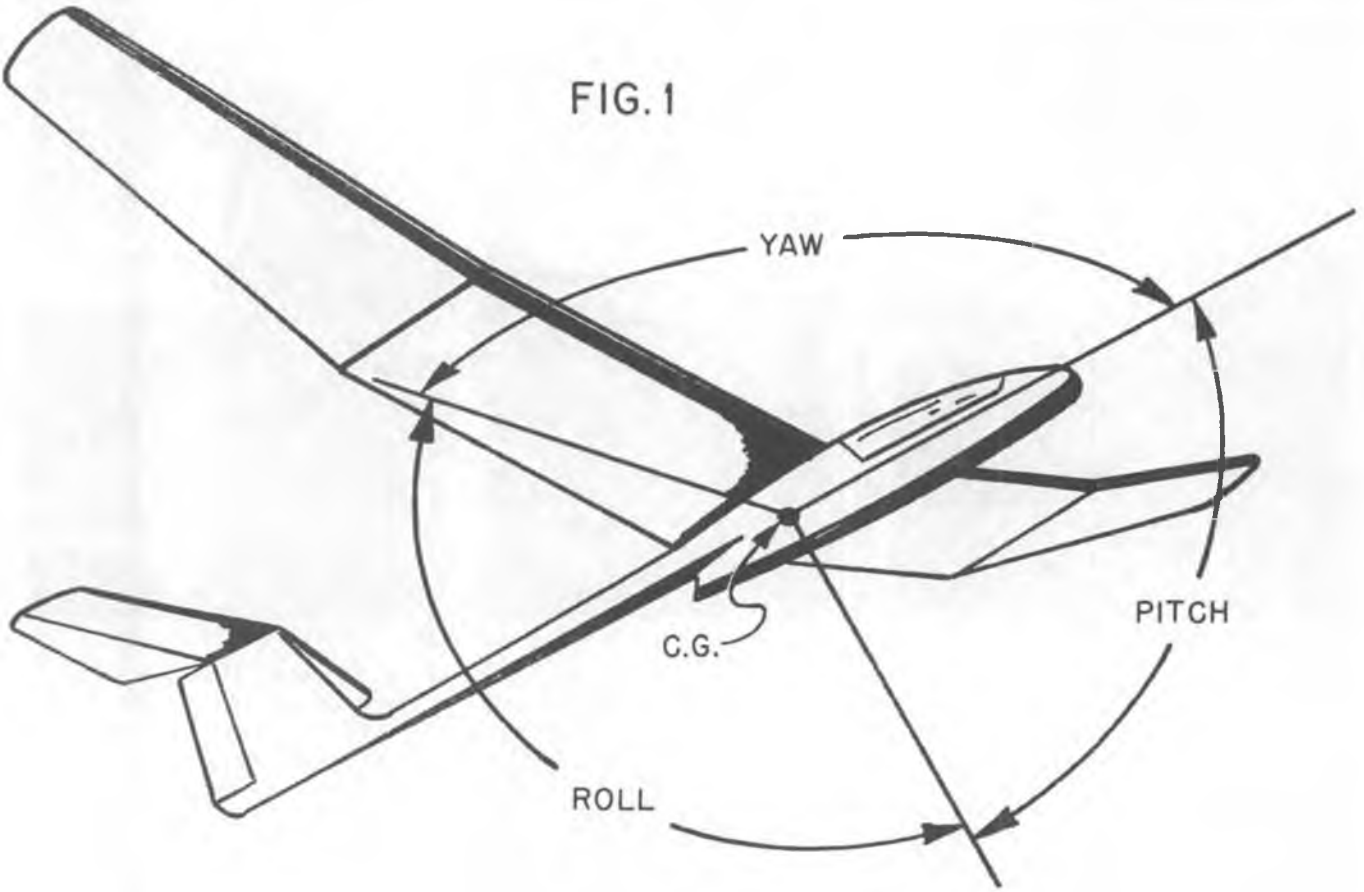
I installed Carl Goldberg's retract system that is so highly acclaimed by many top competitors. I also used Carl's new dry-cell actuated retract servo with the micro-switch servo actuating mechanism. Carl suggests activating the servo by using high and low throttle trim. I, however, used the Goldberg servo to pull up the main gear, and a "BLUE MAX" servo to retract the nose wheel. The micro-switches are operated by the push rod connected between the nose

Continued on page 60

Chief Pattern Judge for the 1974 Nats, Bob Upton, tunes the Veco for a test flight while son, Steve, provides the anchor.

With gear retracted, the Kaos becomes an even cleaner aircraft as it makes a fast low pass for Frank Capan's Leica.

FIG. 1



R/C SOARING

By LE GRAY

. . . has nothing to do with color schemes, pin stripes, and such . . . has to do with making silk and dope purses from the ears of pigs . . .

● The art and science of adjusting an R/C sailplane for proper flight can be likened to tuning a piano. The whole instrument must be tuned . . . or trimmed . . . for optimum performance. Anything less can only compromise potential.

Now just what is considered to be proper flight adjustment by one person might be completely unacceptable to another. The flight trim of a sailplane is very subjective; it will vary with the skill and preference of each pilot. It can also limit overall performance, no matter how expert the pilot. Or make Ole Dummy look like a champ.

Most good sailplane designs are tolerant of a rather wide margin of trim adjustments. Others, however, can become quite a challenge to control if they are not balanced aerodynamically within relatively close limits. This shortcoming . . . or more kindly, lack of flexibility . . . usually results from inherent design features which can be improved only by major rework of the structure.

Whatever individual preferences for flight trim may be, one fact is basic: a high performance sailplane must be a stable machine. That is, some amount of automatic, positive stability is essential to thermal soaring. Look at it this way: no other type of model aircraft is operated deliberately at distances even approaching those considered normal R/C sailplanes. When these distances are beyond the range of the pilot's visual acuity, the sailplane cannot be controlled with adequate finesse for efficient . . . or sometimes safe . . . soaring performance. This is true enough in directional control . . . "Which way is it turning, George? Is it comin' at us or goin' away?" . . . but even more critical with pitch attitude.

The rotary motions of any airborne craft in free flight are defined with reference to an axis system formed by three mutually perpendicular planes intersecting at the center of gravity (Figure 1). These motions are pitch, yaw, and roll; which refer to longitudinal, directional, and lateral displacement or movement. For each mode of displacement, an aircraft has a corresponding stability characteristic: it is either stable, neutrally stable, or unstable. Now this can get involved rather quickly, so hang on and we'll dig our way out together. It's kinda important because stability and "trim" are very much interrelated.

There are two kinds of stability; static and dynamic. Static stability can be thought of as the inclination for automatic correction. Dynamic stability has to do with the quality of such correction and can exist only in association with a condition of static stability. That is, a sailplane cannot display dynamic stability unless it is a statically stable configuration.

Static stability implies that a body . . . such as an R/C sailplane . . . tends to remain in a state of equilibrium, or tends to return to a state of equilibrium after having been disturbed by some outside force such as a gust of wind or control surface movement. For our purposes, equilibrium is steady, unaccelerated flight. Thus, a sailplane is statically stable if it has a tendency to follow a given glide path at a constant speed and fixed attitude. It is also statically stable

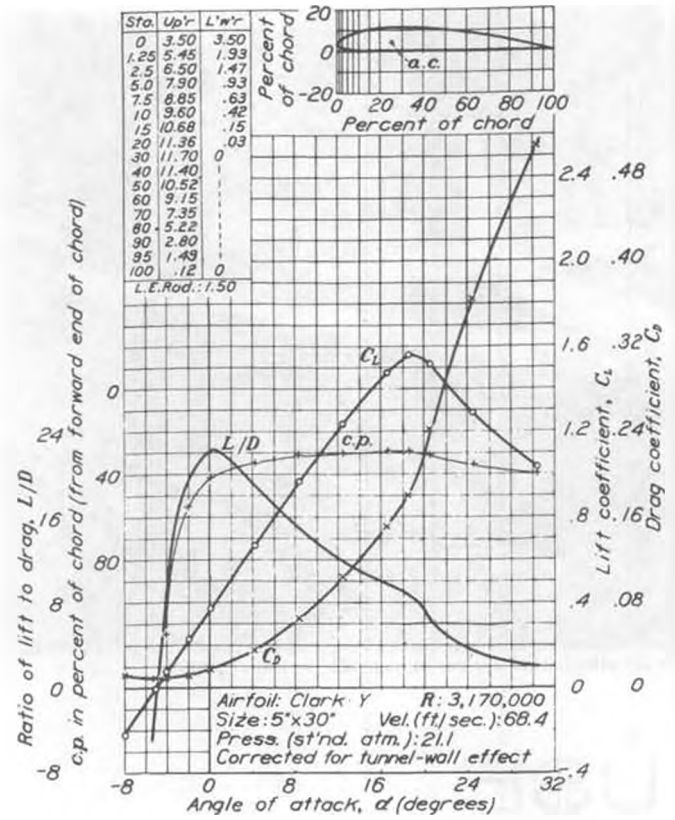


FIG. 2

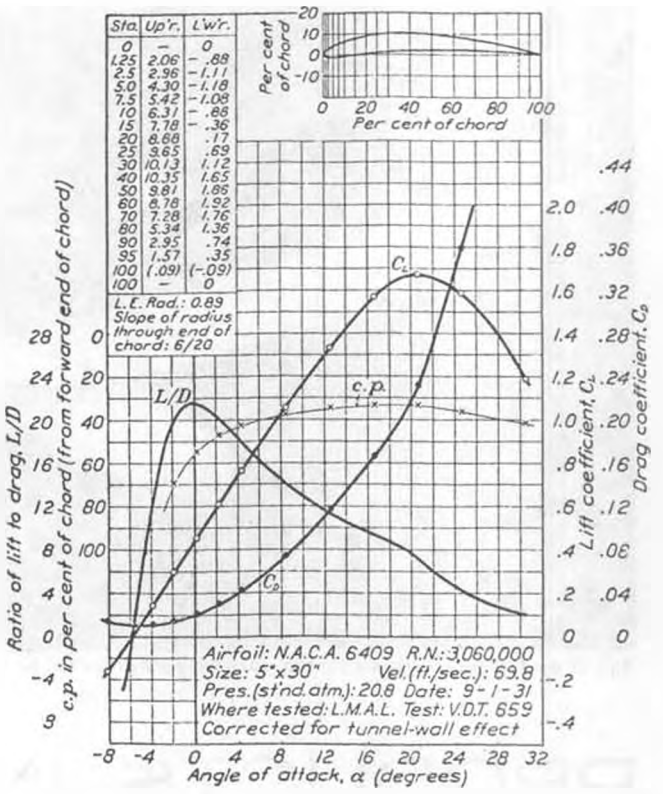


FIG. 3

if, upon being disturbed, it tends to return to its original state of steady, unaccelerated flight once the disturbance has passed.

Conversely, a statically unstable sailplane does not have automatic recovery characteristics. It will deviate from a given flight condition without outside influence.

A sailplane that is neutrally stable sorta just doesn't give a damn. It'll go along until something upsets it, but once that occurs, it has no tendency either to return to steady flight or deviate further from the new, upset condition. (This is ideal for aerobatic aircraft.)

Dynamic stability is demonstrated by the way in which a statically stable body returns to its state of equilibrium. Assume that a gust has caused a sailplane to pitch nose upward into a stalled condition. Static stability exists if, following the upset, the nose automatically lowers and recovery is initiated. The sailplane will probably overcorrect (oscillate) a few times (cycles) in its search for the original glide path. That is, when the nose drops flying speed will increase beyond normal glide velocity. This generates excess lift which, in turn, causes the nose to rise above the normal glide angle. This upward rotation continues until excess velocity is dissipated, but usually too much air speed is lost and, again, the nose drops below the glide angle.

Continued on page 65

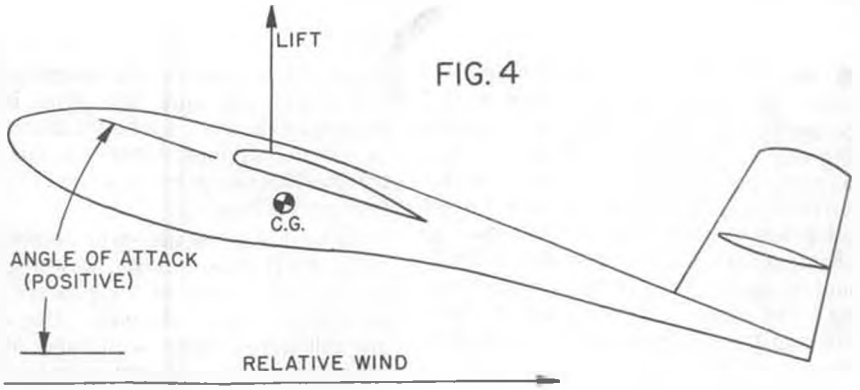


FIG. 4

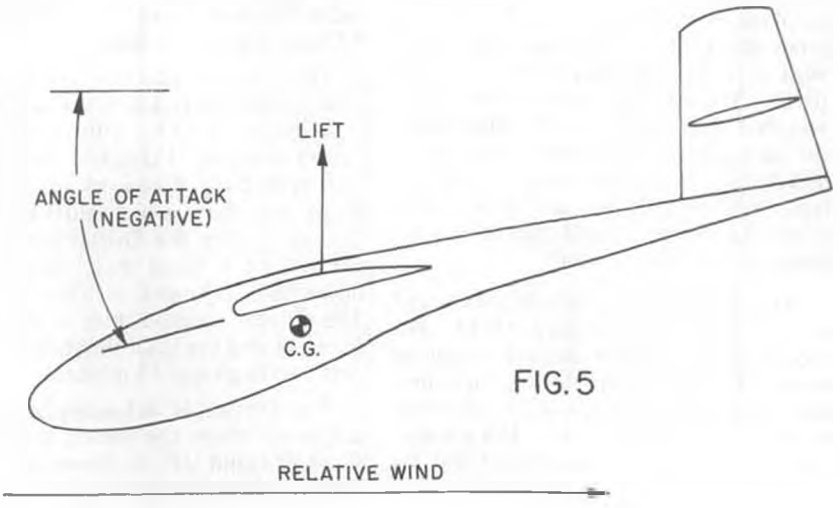
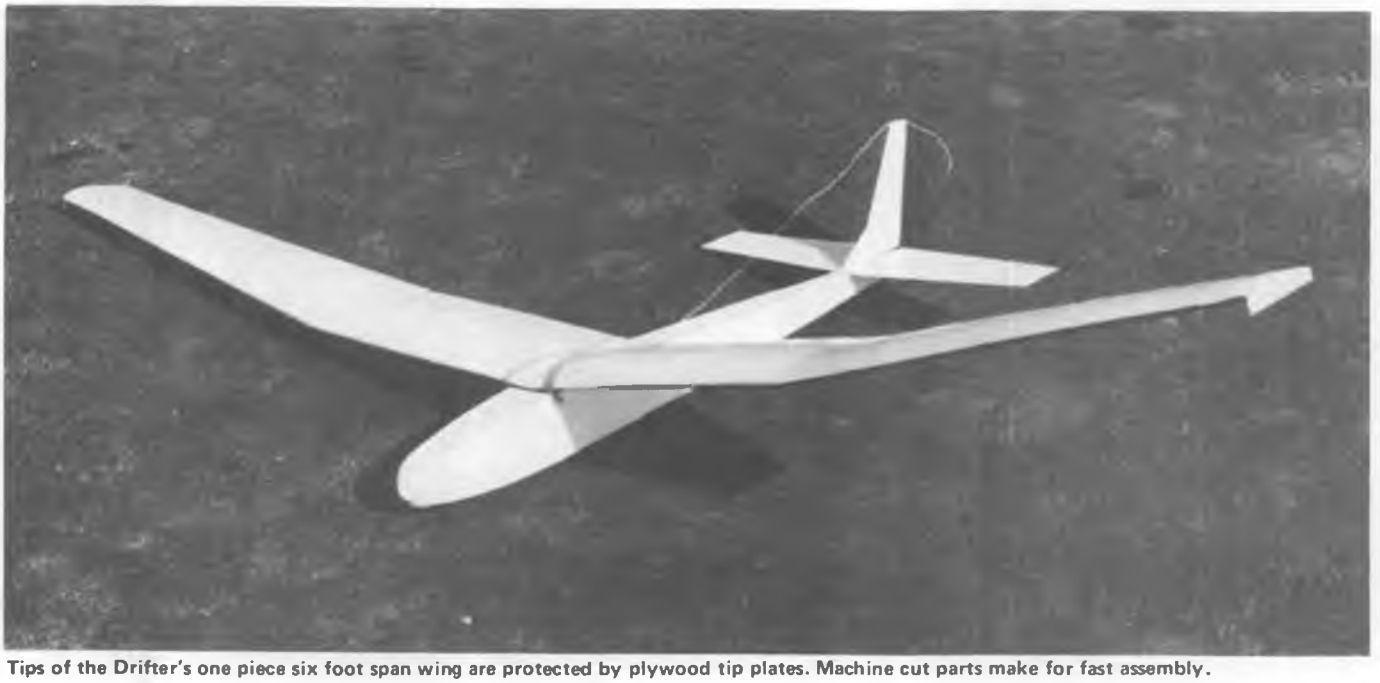


FIG. 5



Tips of the Drifter's one piece six foot span wing are protected by plywood tip plates. Machine cut parts make for fast assembly.

PRODUCT$ IN U$E

CRAFT-AIR "DRIFTER", by Fernando Ramos

● Next to F/F scale and old timers, I enjoy the peace and tranquility of R/C Soaring (LSF 123). This is truly a relaxing way to fly models. I previously had a high performance sailplane which suffered a rather abrupt demise. I needed a new sailplane; one which would go together fast, without complicated frills and gadgets. This Drifter project was just the ticket. All parts are machine cut and the design is simplicity personified!

Wings are definitely not my favorite part of an airplane to build, and sailplanes with their long spans sometimes become tedious. So, I decided to build the wings first. Six feet of span on a sailplane isn't too bad, and before I knew it, I had completed the wings, with only the sanding and covering still to do. My only criticism of the wings was that the notches for the upper spars on each tip section didn't line up. It didn't take much to remedy the problem, but is just an additional step. *(Craft-Air has corrected this in its production run of kits. wcn)*

The fuselage was tackled next, and it, too, went together very quickly. No modifications were made, and the plans were followed to the letter, including the constructional sequence as detailed in the instruction booklet. The control cables recommended were used and installed before the top sheeting was applied. The stab and the rudder are all sheet, and the only task here is the hinging of the two. I would caution you to use the thinnest hinges available, or try the Monokote hinge as described in the instructions.

It took one weekend to completely build the Drifter, and that wasn't spending the whole day in the process. It is definitely easy to assemble. The wings and tail were covered with Super Monokote, and the fuselage was given a couple of coats of K&B epoxy primer (This is sure one great product!). This was sanded thoroughly between coats, then sprayed with white nitrate dope. The tail was attached to the fuselage and the radio installed. I used my reliable Kraft 3 Channel series 71 radio.

The wing was attached to the fuselage with rubberbands and the CG checked. It seemed to be O.K., with no additional ballast required. I checked the controls and everything was working. The test flying was from a high bluff in Orange County. I gave the Drifter a heave and off it went. I found that I needed some down trim to keep it at a level altitude. The Drifter seeked out a couple of thermals and the total flight time for the first two hops was 45 minutes.

The Drifter is definitely a light air sailplane. When the strong breeze subsided, it could still be flown against the ridge, gliding back and forth with little effort. However, with too strong a head wind, the penetration, at its original weight, isn't very good. It would probably improve by adding ballast.

For anyone wanting an inexpensive, super-easy sailplane (even for a beginner) to build and fly, the Drifter is definitely one to consider! I have flown mine regularly for the past 3 months with great enjoyment. ●

The author built his Drifter in one weekend, without working full time. Finished in white.

If you get into FAI Team Racing, you'll probably get yourself one of these engines, and if you're like Jed Kusik, you'll modify them with Cox carburetors. From left to right: Italian Kosmic, Czechoslovakian MVVS, British Eta Elite, and Italian Super Tigre . . . all .15 diesels.

control line

"FROM THE HANDLE"
By JED KUSIK

● My article last month was dictated to all readers from atop the local soap box, and was probably sermon-like in quality. That means that half of the readers were asleep, one-fourth disagreed with what I said, and one-fourth weren't at all interested anyway. The fact is, I have to write something each month, and for lack of suitable material from the readers I will always resort to my own personal opinions and interests. *(A guaranteed method of getting material! wcn)* The only way that I can be kept from doing that, will be if the readers (those whom I still have after last month) write in and tell me what they would like to see in print. Please don't tell me where to git off, that has already been taken care of.

Hey, wow! The Civil War was never fought so well as the California North-South Series. I attended one of each since my last typewriter session. I only regret that I wasn't able to stay for the entire contest both times. The San Jose club has an excellent battle field . . . which is sometimes used as a high school. The asphalt parking lot has enough room to set up four flying circles. The grass athletic field is at one end of the parking lot and is nice and soft for the combat crashes . . . er . . . matches. Sorry. The great and glorious South, (Bet you can't guess where I live) stages its half of the series at the famous Sepulveda Basin. The Basin has changed a lot in the past few years. A new road, Burbank Blvd., goes over the dam and through the old Radio Control site. (The relocated R/C site is better.) The new circles are really beautiful. The Valley Circle Burners now have three of the best paved racing and stunt circles in the country.

The racing at both contests began with what has become the socially acceptable upper class of racing in California, namely FAI TEAM RACE. FAI racing is growing in California so strongly that there are now more teams in the state than showed up at the last Nationals or at the last two Team Trials. I feel that the reason FAI is becoming so respected is that the rules have been so well written that they make the event fair to anyone who would like to compete. The rules are specific and define exactly what is allowed and what is not acceptable. When an event director adheres strictly to the rules, including call-

Denny Schauer restarts Slow Rat fitted with ST 35 converted to diesel. Note Allen key in mouth and finger guard, standard equipment.

Dan Barker restarts his FAI Team Racer. Note pressurized refueling system strapped to his arm. Valley Circle Burners meet, March 17.

Before the race. Confident Les Farah with Larry Jolly's "Lady Catherine" FAI racer.

After the race. Les is still smiling in spite of 4 stitches in his hand, because his pilot neglected to slow down for landing. Ahem . . . the pilot was Jed Kusik. Gerry Manser with stop watch & pipe.

All those in favor of transparent covering material say "Aye!" Trouble with it is that your helper may take a long time getting the engine started!

Jim Fults prepares for a winning Combat match. Sepulveda Basin, March 17.

ing of fouls and disqualifications, the result is a truly enjoyable racing session where all contestants know exactly what to expect. It is also not a requirement to follow each heat or event with an argument en masse about who did what and who is more right or more wrong. Those arguments have become painfully all too common at Goodyear and Rat contests.

Perhaps another reason for the popularity of FAI is that there are so many different variations and approaches from which a team can attack the event that the challenge becomes a very great one.

Sigh! I could talk about FAI for ages . . . and I probably will . . . so everyone had better start liking the event!

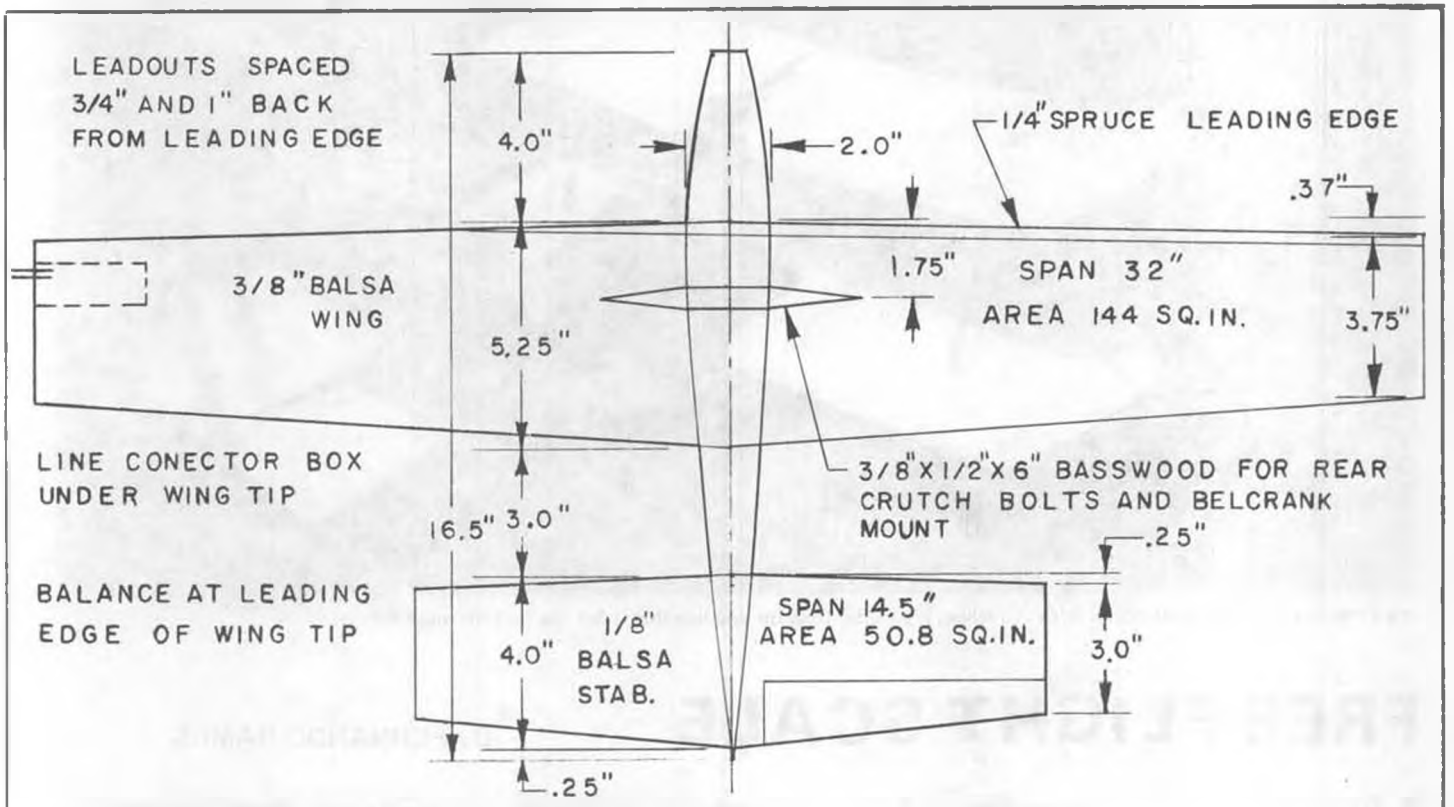
After everyone had their fill of the good racing stuff, it was time to force one's self into a bad, grumpy mood to be on the proper level for Rat and Goodyear. Luckily, my partner broke his Rat in the pits, and I was granted reprieve from having to fly that event. With a short bit of freedom at hand, I decided to do something about the Saturday night head I was carrying around, so found a cool, safe place to wait out the Rat races. It's still semi-winter here and the temperature was only 80, so I actually got under my car and went to sleep in the grass for an hour or so.

The Goodyear racing turned out to be the now typical, who-can-restart-their-$100.00-plus Aldrich/Nightingale/Sheldon-tuned Rossi. Goodyear could be run so much faster if all the pit men would line up their models and on appropriate signals, start, burn down, and try to restart their engines.

Slow Rat was run long after I left each contest, but I did witness a new approach to this limited fuel capacity event. Denny Schauer has a Supertiger 35 converted to diesel-ignition. The en-

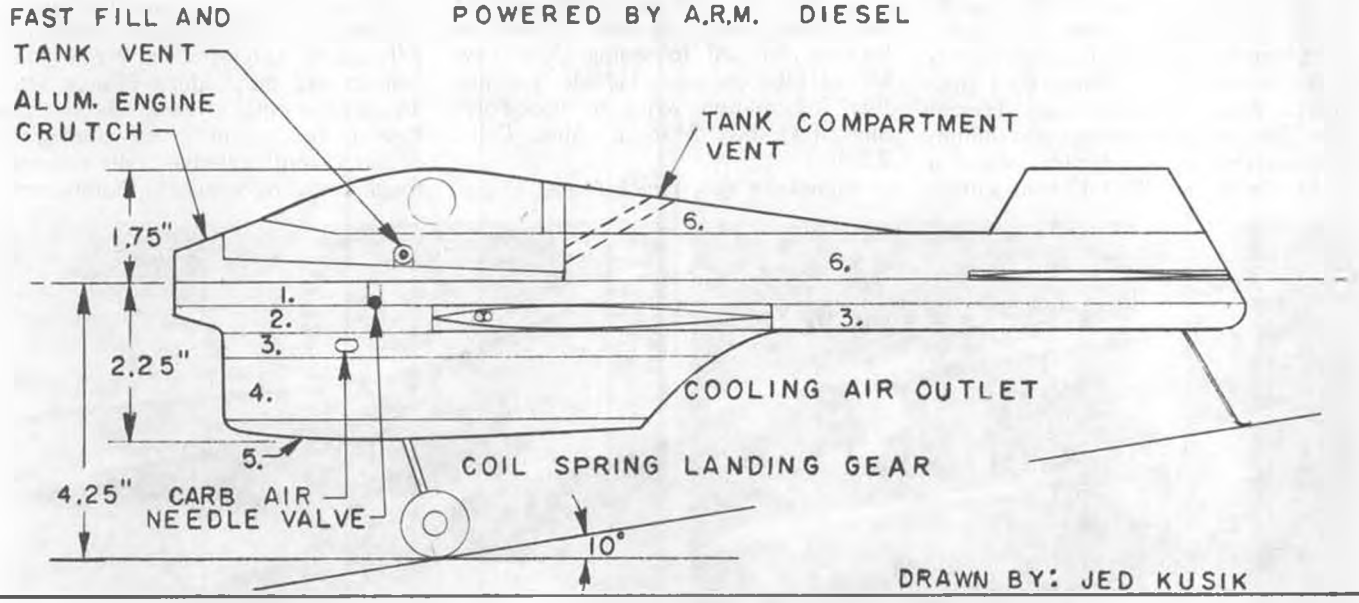
Continued on page 52

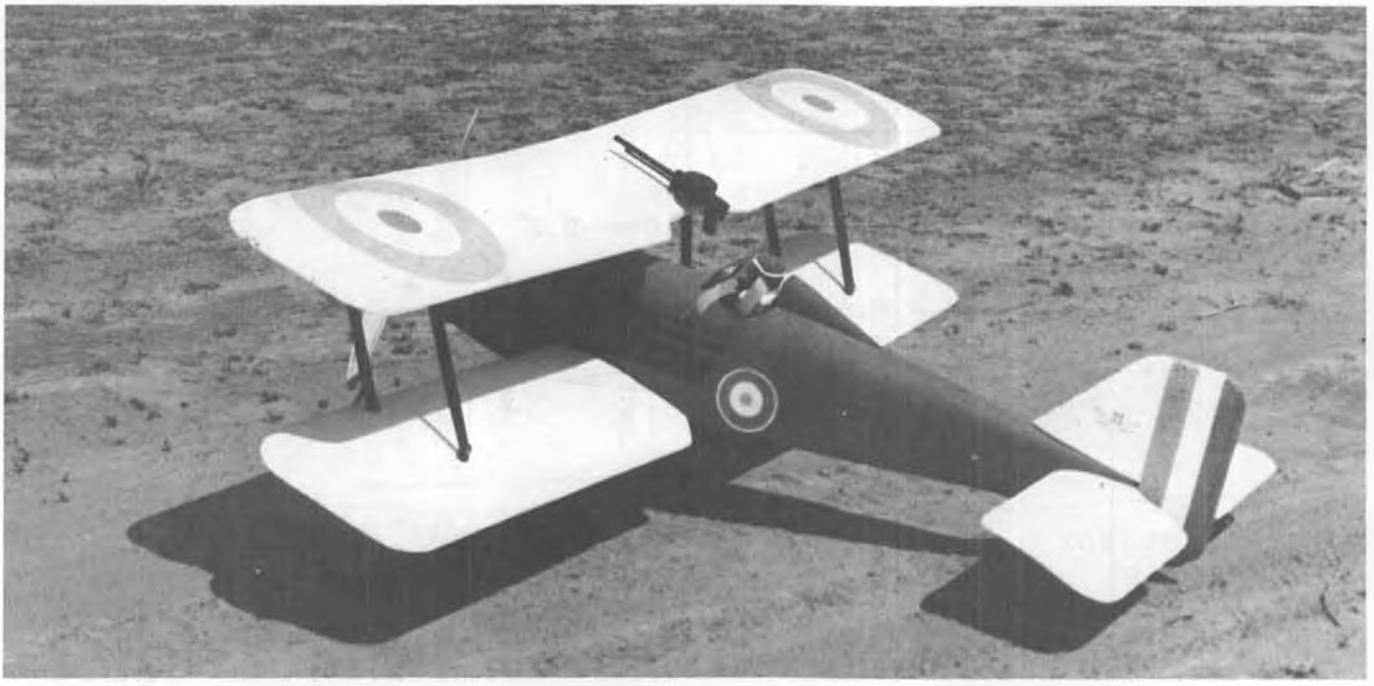
"What's the matter . . . ain't you never seen an 'original' before?"



1. FULL LENGTH 3/8" BASSWOOD CRUTCH
2. 3/8" BASSWOOD
3. 3/8" BALSAWOOD
4. 7/8" BALSAWOOD
5. 1/4" BALSAWOOD
6. 3/4" BALSAWOOD

F.A.I. TEAM RACER
BY
JOHN Mc COLLUM AND AL HODGKINS
FOURTH PLACE '72 WORLD CHAMPS
FIRST PLACE '74 U.S.A. TEAM TRIALS





It's a free flight! It's a Ukie! It's an R/C! . . . Nope, it's a kite! How do you like that?! See the text for more details.

FREE FLIGHT SCALE

By FERNANDO RAMOS

● This month's column will cover the numerous new scale products that are now available. First of all, the popularity of Peanut Scale is ever-increasing throughout the nation. This is evidenced by the availability of more new kits, plans, and accessories. Many died-in-the-wool R/C'ers are turning to this inexpensive, pleasurable modeling form.

In the center of this activity, is Peck-Polymers. Bob Peck doesn't need any introduction, because his kits are really popular. Peck-Polymers is fast becoming the Peanut capital of the country, as its new 6 page brochure will attest. The company handles . . . in addition to its own products . . . Hungerford spoke wheels, Walt Mooney and Bill Hannan plans, William Bros. wheels and dummy engine cylinders, and contest rubber in 16 foot lengths in the following widths: 1/32, 1/16, 3/32 and 1/8. In addition, they have Marlow rubber winders in either 16:1 or 9:1 ratios. The latest is a designer kit for large rubber models. Each kit contains (2) 7" props, (2) 9-1/2" props, (4) No. 3 prop shafts (2-1/2" long x 3/64" diameter.), and one dozen brass thrust washers. This is a $2.25 value for $1.75. On top of all this, Peck is coming out with four new Peanut kits . . . the Andreason biplane, Nesmith Cougar, P-51 Mustang, and the Japanese Zero. Each is a little beauty and above all flies extremely well. I have seen each prototype fly, and am looking forward to seeing these new kits as they become available. For further information write to Peck-Polymers, P.O. Box 2498, La Mesa, Calif. 92041.

Sometime ago, Janick Model Engineering, 32 Farley Road, Scarsdale, N.Y. 10583, came out with four Peanut plans for the Jodel "D" 150, Wittman Tailwind, Fairchild PT-19, and the Reed Clipped-Wing Piper Cub. Since then, Janick has come out with four new plans . . . Rearwin Speedster, Corben Baby Ace, F-6 Fleet biplane (this one is particularly nice . . . it has to be, it has two wings!), and the Bellanca "Cruisair." Each plan is very well done. I built the Tailwind, and it went together easily and flies beautifully.

Before going on, about a month ago the San Diego Orbiteers, one of the local F/F clubs, sponsored a Penny Plane contest and they added Peanut Scale. There were quite a few modelers flying Peanut. The reason for mentioning this is that Peanut Scale has really become a tough event to compete in. For example,

Another view of the remarkable all-foam SE5 kite, showing hand carved propeller that comes with the "kit."

Tern Aero's neat little Starduster for .020, can be flown free flight or R/C, using one of the small Ace pulse units. See text for details.

Harold Bennett launching his beautiful DH Tiger Moth with which he has won many contests.

Bill Warner was flying a Lacy homebuilt (no dihedral) and it was turning in 86 second flights! Not far behind was Walt Mooney and his magnificent Miles Sparrow Hawk (featured in this issue), and Jed Kusik *(Our Ukie editor! wcn)* with a Peck-Polymers Piper Cub. These are what I consider true Peanuts; they are scale, but do they fly! All I can say is that I've gone back to the drawing board. At the rate I'm going I might as well stay there. Those good old 35-40 second flights are gone forever.

While on the subject of plans, Modernistic Models has a new 3/4 inch scale plan of the Mr. Mulligan. This model is suitable for either rubber or gas power. Hal Swanson has gone through a lot of work in developing this particular plan. The cost is $1.50 + 50 cents postage. For further listing of numerous scale plans, send a self-addressed envelope to Modernistic Models, Box 6932, Burbank, Calif. 91510.

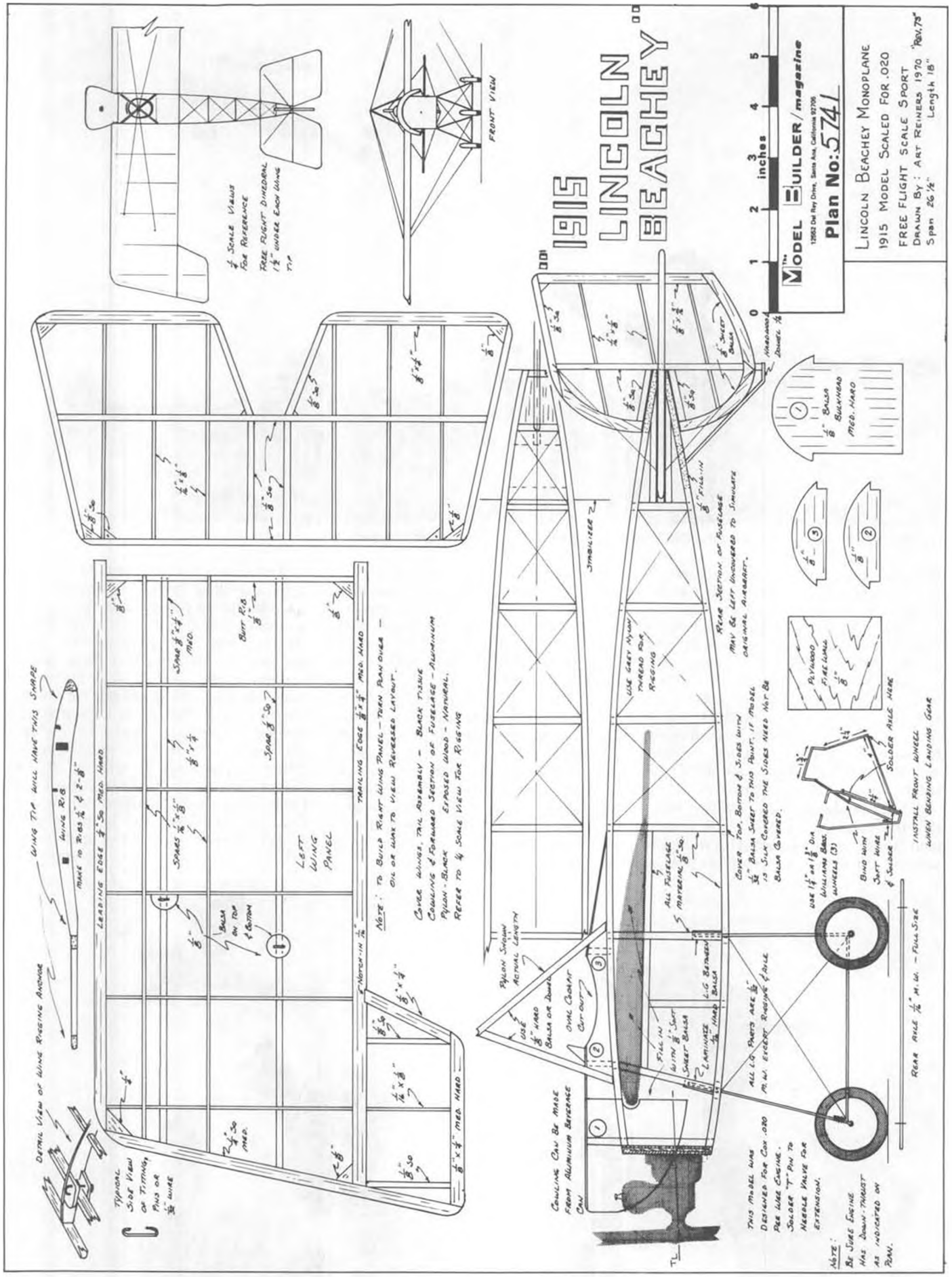
Tern Aero (love that name) will be coming out with new scale rubber models. One new kit, which is not scale, is called the Aerobug. This is Tern's contribution to the growing need for inexpensive and practical kits for the beginner. It is truly a nifty 16 inch span model that any junior can build and fly with minimum effort. This new kit is No. 110 and is priced at $1.75.

Tern's only gas model, the Starduster, is quite a kit. I finally finished mine so I would like to pass on a few comments regarding this fine model. First, there are nine sheets of printwood! I have not seen anything like that since I was a youngster, oh, so long ago! There are four full pages of drawings, each with constructional photos. As with any kit, reading the directions and studying the drawings is a must. The model goes together very quickly in spite of all the cutting one has to do. I prefer to cut as I need rather than to cut everything out first. The Starduster can be made into an R/C if one chooses. I've made mine F/F.

Continued on page 58

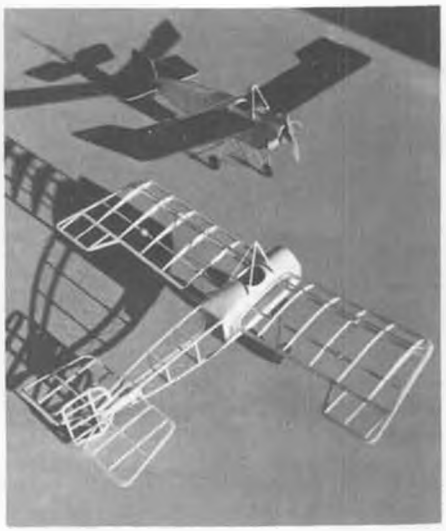
Ace photographer Bob Clemens on the other side of the lens for a change, launching his Peanut Nesmith "Cougar."

Jack Russ, Detroit Cloudbusters, lets fly with his Peanut Folkerts "Toots," built from raceplane plans book.



FULL SIZE PLANS AVAILABLE – SEE PAGE 72

The ideal sport F/F gas model should look like a real airplane, as does this little job.



"If I'd known you were coming, I would have put something on!"

1915 LINCOLN BEACHEY MONOPLANE

By ART REINERS . . . Here's an .020 powered sport free flight that is also semi-scale . . . and different enough to be a real attention-getter at the local flying field. Construction is super-simple.

● For all the .020 engine fans, here is a "Jumbo Peanut" of an Old Timer you can build just for fun.

Pre-WWI aeroplanes have always been my bag, so to speak, and my interest increased by leaps and bounds when I began building some of the Hannan and Mooney Peanuts. This inspired me to go a step farther and double the scale to accomodate the .020 and .010 engines that I had around.

To date I have built 4 of the Lincoln Beachey models with great success. It is very stable and flies with amazing realism. The first L.B. was assembled about 4 years ago and has survived all of the usual testing until recently, when it collided head on with a telephone pole. The damage was not total, but bad enough to warrant a new, revised model. Since the first model was slightly heavy, some changes were made to the wing, tail, and covering to provide a lighter, stronger model. Changes were also made to bring the model closer to scale.

The Beachey Monoplane was a mid-wing aircraft designed and built for Lincoln Beachey, the famous aerobatic pilot of the early 1900's. Begun in 1914 and completed in 1915, the aircraft was built to be used for air show work. The original A/C was equipped with a 7 cylinder Gnome Rotary engine of 84 HP which gave it a top speed of about 105 mph.

Since I like to build fuselages and hate to build wings, I assemble the wings first to get them out of the way.

WINGS

Cut all wing parts and assemble over plan to make the left panel first. When the glue has set, insert the wing spars into the ribs before taking up the panel. Turn the plan over and repeat the process for the right wing panel. I used Titebond glue for all framework and followed it up with one coat of clear dope before covering. When the panels have been sanded, insert the wing wire retainers and glue solidly in place. Be sure to leave at least 1/4 inch of leading edge and rear spar to set into fuselage sides.

TAIL ASSEMBLY

Rudder and elevator are made next and can be built at the same time as the wing panels. Sand the tail parts to streamlined shape and apply one coat of clear dope.

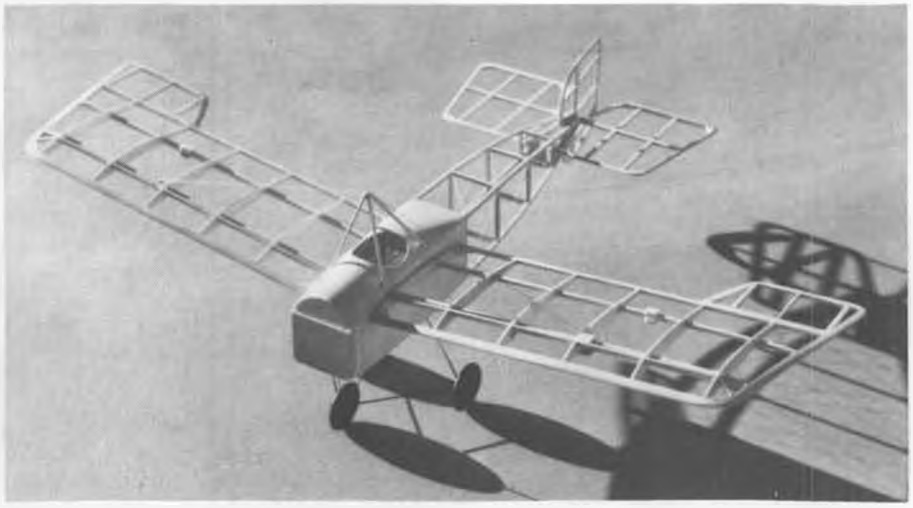
LANDING GEAR

Assemble landing gear from 1/32 inch music wire, using the dimensions shown on the plans. Be sure to wrap the wire joints with 3 or 4 turns of soft iron wire and solder securely. The front wheel is installed when the front gear is bent. Use Williams Bros. 1-1/2 inch Antique wheels. Set assembly aside to install in the fuselage.

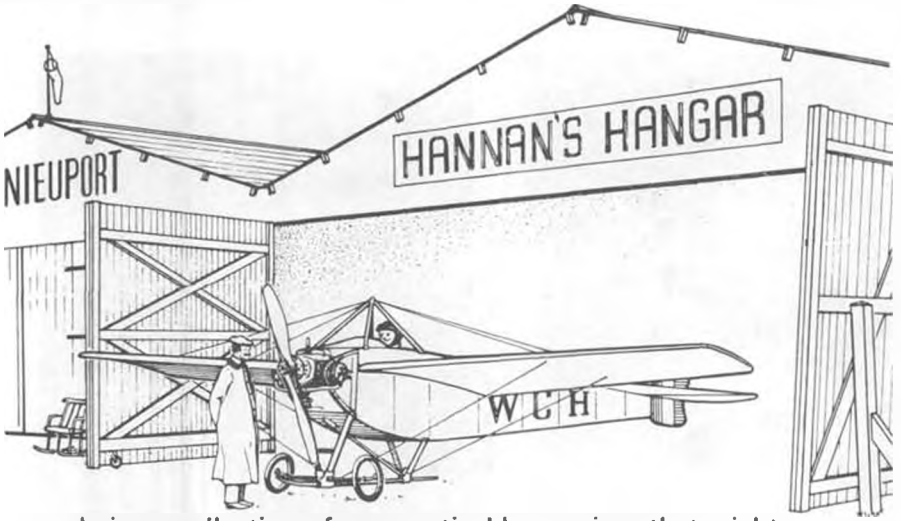
FUSELAGE

The fuselage is easily built from 1/8 sq. hard balsa or 3/32 sq. spruce strips. Make the 2 fuselage sides directly over the plan and join together, starting with bulkhead 1 and working aft. Fill in the areas indicated with 1/8 inch soft balsa and add fuselage formers No. 2 and 3. Cover top and sides with 1/32 inch medium balsa and cut cockpit opening. Install landing gear and cover bottom of fuselage with 1/32 inch medium balsa sheet. Sand the fuselage completely and

Continued on page 61



Framework shot reveals the simple construction of the Lincoln Beachey. Plane will fly well with or without cowl, but looks a little better with it in place. Make the effort.



. . . being a collection of aeronautical happenings that might otherwise go unnoticed . . .

AT LAST! PEANUT SIZE WOOD!

Good news for all Peanut Scale fans: There is a new source of materials sized especially with you in mind. This first-quality balsa will enable you to build lighter, and therefore better performing models, with no additional effort. As you know, the smallest size strips heretofore available commercially, have been 1/16 inch square. Also, these so-called 1/16 inch square strips are typically somewhat oversize, resulting in Peanut models that are stronger (and heavier) than they really need to be. The truly dedicated types have been stripping their own, but this can get to be a real drag, and wastes time which might otherwise be applied to actual building.

A few of the "ghost ship" builders have employed 1/32 inch square strips in their Peanuts, but these are very fragile, and bow inward unrealistically when their covering is shrunk. The answer to this dilemma? . . . 1/20th square strips! And, matching thickness sheet and rectangular strips to boot. For more info on this balsa, drop a stamped addressed envelope to: Premier Company, P.O. Box 8264, Long Beach Calif. 90808.

AND SPEAKING OF MATERIALS

Model materials are to be found in places not usually considered by the average builder. Everyone knows that magnesium is one of the lightest metals, but seems not to be readily available in small quantities. However, if you will simply locate a store which stock PERFECT brand chemicals, you will find that magnesium ribbon is available in 12 inch long by 1/4 inch wide strips for a very reasonable price (locally 35 cents). This material is easily cut and bent, and can be useful for a variety of small items, especially on scale models. Additionally, it is sold in handy size glass bottles, which are useful for thinner storage, etc.

CRAFTY PAINT HINT

Here at the hangar we often use plastic model paint for detailing small flying models. It isn't fuel proof, but works fine for rubber or CO_2 powered rigs, and offers the advantage that it is available in a large variety of colors in small quantities. We find that the flat colors are more realistic in appearance than the shiny colors, which tend to have a sticky look, even when dry.

Rare old wind-driven radiator cap (bicycle?) ornament was copy of Lindy's "Spirit" nose. Found by Ginger Warner at swap-meet.

Additionally, the flat colors seem to dry more rapidly, although perhaps not as fast as the more familiar pigmented dope.

Some of the best colors are not found in the plastic model section of the stores, but rather over in the craft section. This sort of paint is intended for use on styrofoam, artificial flowers and such, which might be the reason you avid aeronauts have not noticed it. However, some really choice flat finishes are available in spray-can form, including rich shades of tan and brown, which are perfect for wing struts, props and other items found on vintage aircraft.

MODEL LONGEVITY

When we were kids, we simply took it for granted that a model was only supposed to last for two or three flights, right? If someone told you they had a model that was, say, a year old, you knew they had to be referring to a "shelf model," or that they were just "chicken" about flying it. Now, however, long-term flying models are becoming more and more common, with three and four year-old examples being frequently seen, even in competition.

Continued on page 60

Doug Fronius in his "Really Big Model" hang glider, designed by Waldo Waterman . . . Yes!

Vic Larsen built this Halberstadt D II from a Lee's Hobbies Peanut Scale kit. It does 30 seconds indoors. Photo from Texas by Caldwell.

Who said low wing scale models don't fly well? This one has flown 53 seconds indoors. . . . Maybe it's because Mooney did it . . .

PEANUT SCALE Miles Sparrowhawk

By WALT MOONEY . . . Our perennially prolific Peanut perpetrator produces positively perfect projects . . . period! As proof (whoops!), here's a sleek low-winger that continually pushes (oh dear!) a minute indoors.

● The Sparrowhawk was a special racing machine designed by the Miles aircraft firm in England. There were several of them built and they were fairly successful. In shape, they are classic for their period in aviation history. I found the model to be particularly pleasing, both for its looks and for its flying ability. It flew "right off the board," and the best flight to date was 53 seconds in a contest at the Santa Ana Blimp Hangars.

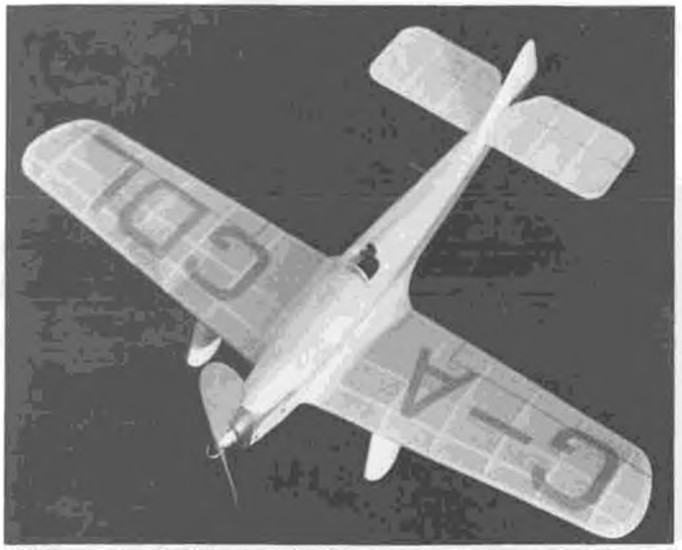
Before going into the construction of the model, a more detailed description of the flying configuration is in order.

The model was built with care to make it light, and it weighs one half an ounce without the rubber motor. It could be lighter if superfine tissue were used for covering, but because the real "G-AGDL" was red and cream, we used Marlow Engineering tissue, which has a pale yellow as one of its available colors. The top decking was 1/64 thick balsa from former 2 to 8. If that is unavailable to you, use bond paper . . . or sand down some 1/32 sheet! With the exception of the fuselage which had two coats, the model has a single coat of thin, clear dope.

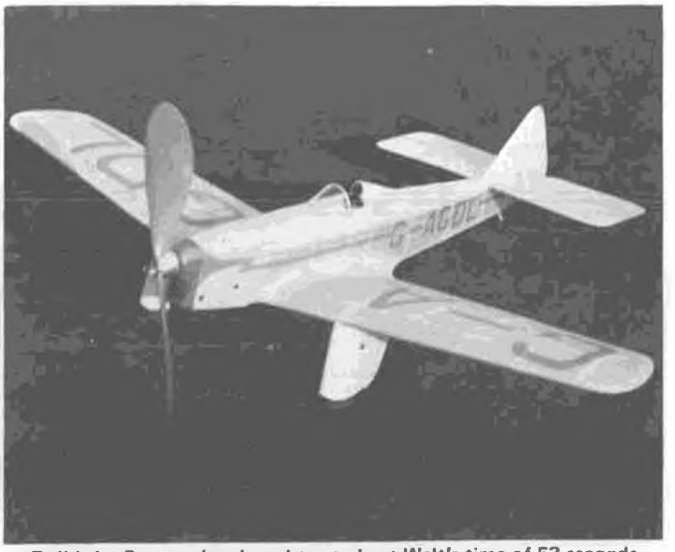
The wings were built flat over the plans (using the flat bottomed ribs) and after covering and doping, they self-warped to give one eighth of an inch of washout at the trailing edge of the tip rib. That is, the tip rib is twisted nose down relative to the center section ribs. For good flying, this twist is essential, so if your wings don't warp automatically, make sure you do it to them.

The best motor found so far, con-

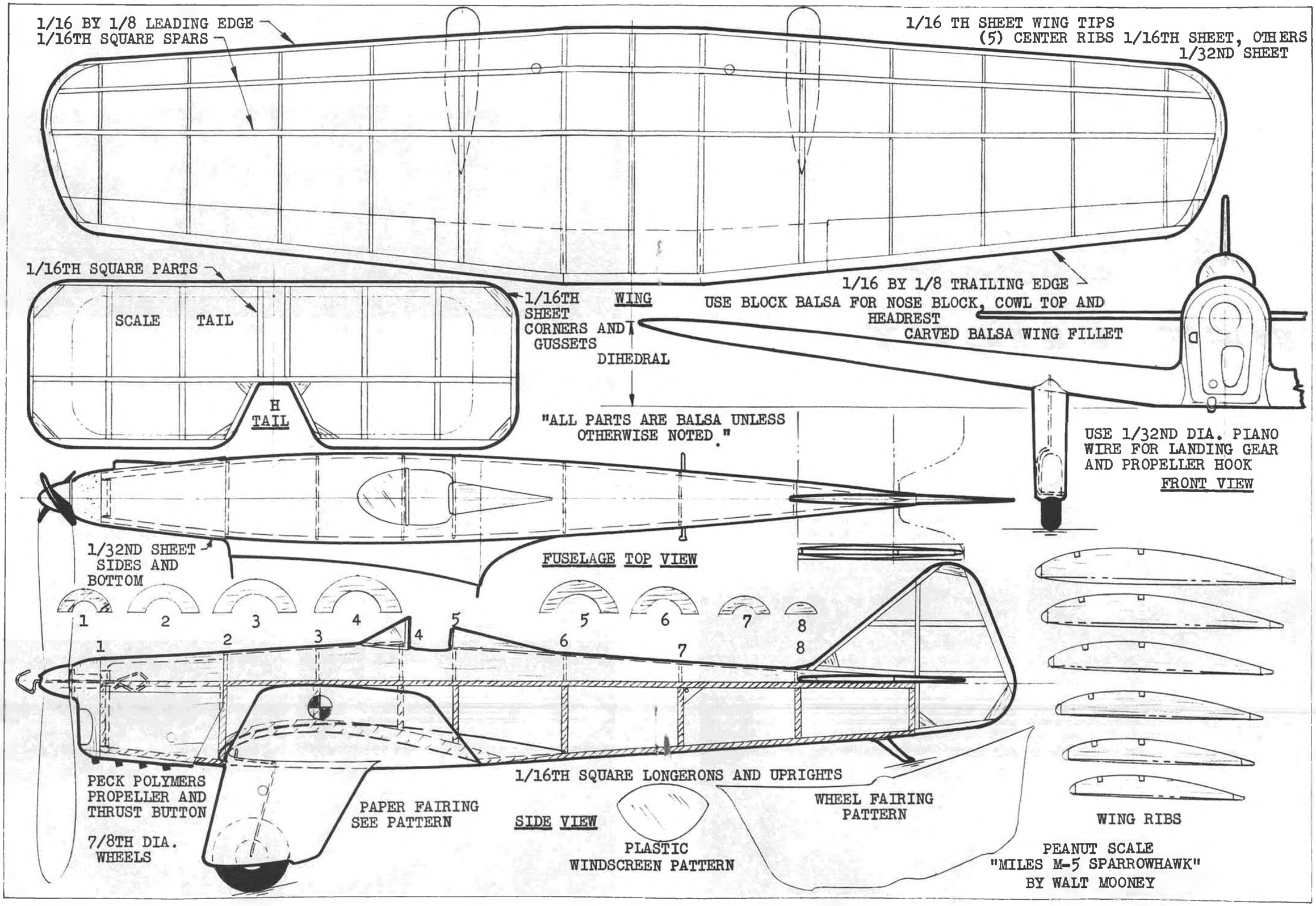
Continued on page 56



Come to think of it, maybe it isn't just Mooney! This little ship has nice free flight proportions. Let's have a "Beat Mooney" contest.



Build the Sparrowhawk and try to beat Walt's time of 53 seconds. First one to do it at a contest will get a free subscription.


1/16 BY 1/8 LEADING EDGE
1/16TH SQUARE SPARS
1/16 TH SHEET WING TIPS
(5) CENTER RIBS 1/16TH SHEET, OTHERS 1/32ND SHEET
1/16TH SQUARE PARTS
SCALE TAIL
H TAIL
1/16TH SHEET CORNERS AND GUSSETS
WING DIHEDRAL
1/16 BY 1/8 TRAILING EDGE
USE BLOCK BALSA FOR NOSE BLOCK, COWL TOP AND HEADREST
CARVED BALSA WING FILLET
"ALL PARTS ARE BALSA UNLESS OTHERWISE NOTED."
USE 1/32ND DIA. PIANO WIRE FOR LANDING GEAR AND PROPELLER HOOK
FRONT VIEW
1/32ND SHEET SIDES AND BOTTOM
FUSELAGE TOP VIEW
1 2 3 4 5 6 7 8
PECK POLYMERS PROPELLER AND THRUST BUTTON
7/8TH DIA. WHEELS
PAPER FAIRING SEE PATTERN
1/16TH SQUARE LONGERONS AND UPRIGHTS
SIDE VIEW
WHEEL FAIRING PATTERN
PLASTIC WINDSCREEN PATTERN
WING RIBS
PEANUT SCALE
"MILES M-5 SPARROWHAWK"
BY WALT MOONEY

FREE FLIGHT

By BOB STALICK

● Since taking over this column for MB, I have tried to present some pertinent F/F information in a semi-light-hearted (some say, light-headed) fashion. One of the risks in doing so is that someone out there is going to take me seriously in the wrong place. For example: I received a letter with a check for $15.00 to cover the cost of the book, *How I Trained for the Indian Wrestling Championship of Snyder Swamp,* or, *200 Sneaky Ways to Beat Fast Richard.* This order is a result of the "humor" feature of the February issue. So, I thought to myself, how can I tell this poor deceived fellow that such a book doesn't exist. Then I read the letter more carefully. It was signed by Hornbeet J. Murphman of Dallas, Texas, with the check emanating from the Frauders and Defaulters National Bank in Dallas. Whose leg is being pulled? Hornbeet, wherever you are and whomever you are, thou pullest my leg - - and I appreciate it.

MODEL OF THE MONTH

This model is a sneaky one. With an 84 inch wingspan for a 1/2A engine, it should cause a little head-scratching. Good luck. With the new handicap system installed on this feature, aimed at making it more competitive for non-Californians, everyone in the country should have an even shot at winning that free subscription.

DARNED GOOD AIRFOILS

THE MOUNTIE

The Mountie airfoil is an excellent all-weather and all-around A/2 section. Although not an out-and-out still air foil, it is probably one of the best, if not *the* best, for usual contest condi-

Small unlimited rubber model designed by John Clear around the Estes BT 55 rocket tube. Uses 8 strands of 1/4 Filati. Really goes.

Tom Stalick, F/F editor's son is a picture of concentration as he prepares his Wasp powered Fu-Bar for a flight. He's 9 years old.

Fuse lighter attached to tailgate of station wagon. Seen at contest in northwest.

tions. This is the foil which was used by Elton Drew on his Lively Lady, winner of the 1971 FAI World Champs. It is also the foil used on this month's feature plan, The Chickadee. Try it.

THE CHICKADEE STORY, CONT.

Last month, I began to relate the story of the development of the Chickadee, as related by Bill van Dieren, in Hot Head. The conclusion to this story follows:

"I provided the detailed drawing of the model, now named "The Chickadee," and Joe Bilson made a very versatile set-up for mass producing the wing ribs, riblets and gussets . . . as well as a good jig for building the wings.

"Three models have been completed and three more are on the board.

Weights (in grams) are as follows:

	Model No. 1	No. 2	No. 3
Port Wing	95	89.5	89.75
Starboard	95.5.	89	89.5
Stab	8.5	8.5	8.5
Fuselage	135	155	161
Ballast	79	70	61.75
Totals	411	412	410.5

All models fly right turn. The port wing tip was washed out 3/16 inch and starboard tip 1/8 inch.

"My first model was built with the wing angle at 4 degrees, since 6 degrees appeared too much in comparison with other models. However, all other details are as shown on the drawing, except that the pod was made up from solid pine. The airfoil is the Mountie. Flying the model was quite successful, as it compared very well with my favorite model. However, the strength of the new model was superior. The wires have bent up a couple of degrees several times when too much pressure was put on the model, without damage to the wings.

"One problem I could not overcome was a bad stall at every release when there was the slightest amount of pressure on the model. It was finally solved with a gadget which locks in the towring, and at a set pressure, throws the rudder to glide turn. This lock allowed the model to turn prior to full release. This problem intrigued me . . . an answer was required . . . and found in 'Circular Airflow' by Frank Zaic, where the plotting of pitching moment curves are explained.

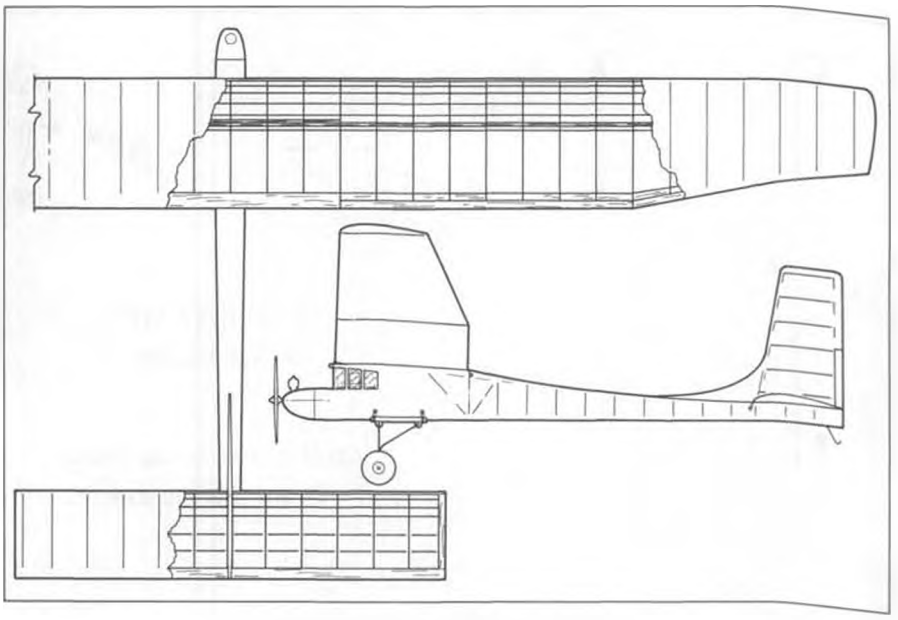
"The resultant investigation indicated that a 4 degree wing angle showed too much positive pitch, and the wing at 6 degrees shows only a small amount of positive pitch. So, the second model was built with a wing angle of 6 degrees, hoping that the curves would be reasonably close. The flying of the model confirmed that there was still a little positive pitch left, but with no ill effect to the model."

This is an excellent model for building for the contest scene for this year. Full-sized plans are available from Don Murray, No. 1, 2205 West 6th Ave., Vancouver, B.C. V6K 1V7.

A note in closing, Bill uses the Russian style towhook on his Chicka-

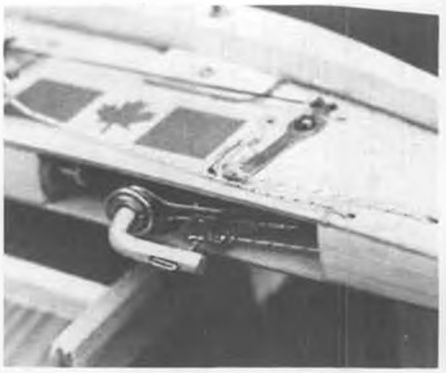
Continued on page 69

CHICKADEE A/2 PLANS NEXT PAGE



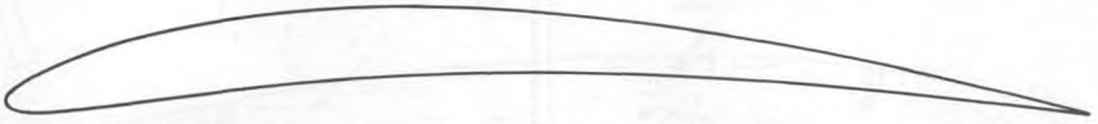
MAY'S MYSTERY MODEL

"Because that's what it is!"

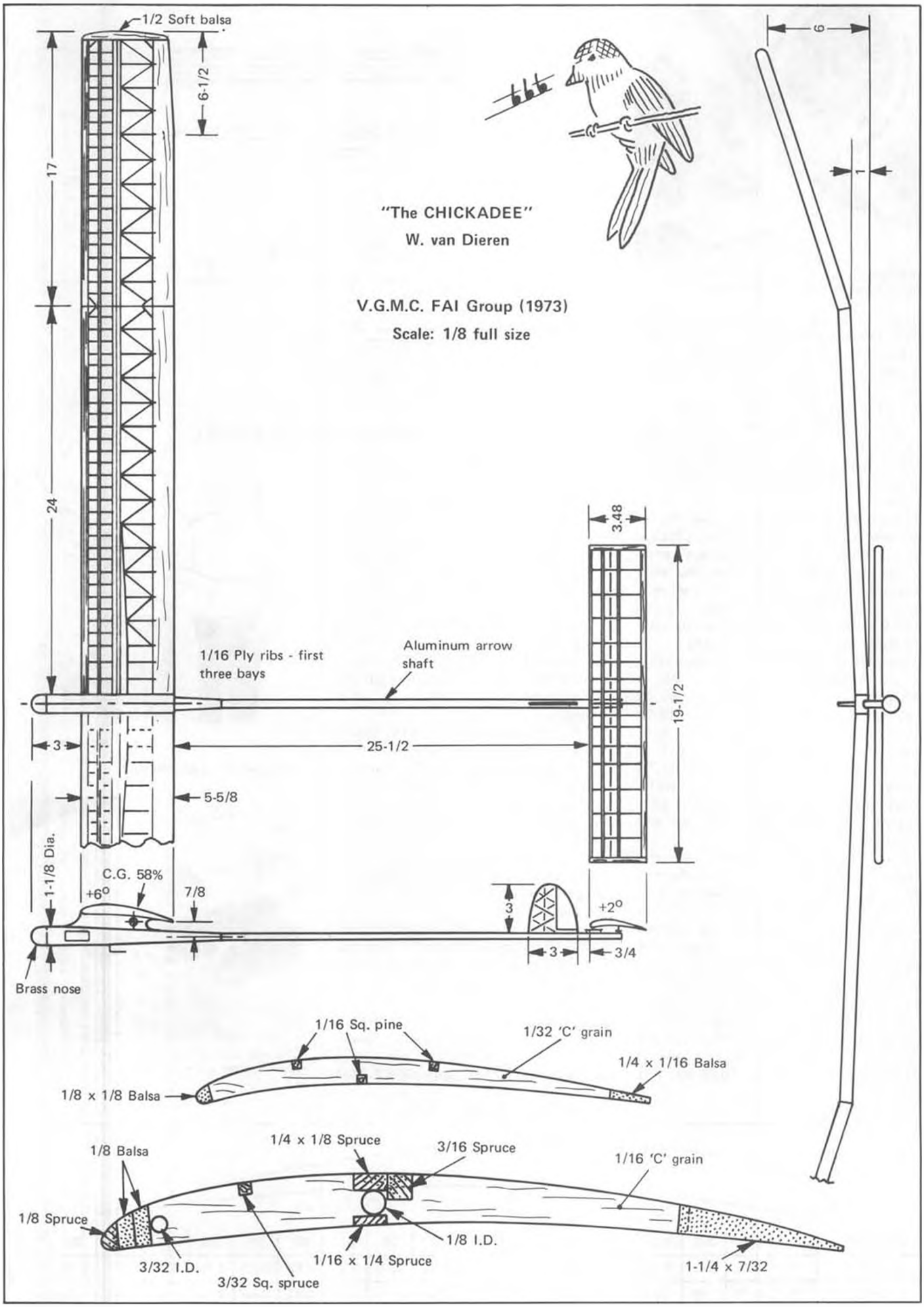


Close-up shot of Bill van Dieren's Russian towhook system in his Chickadee A/2.

Darned Good Airfoil - MOUNTIE A/2



STATION	0	1.25	2.5	5.0	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100
UPPER	0	0.75	2.34	3.16	4.58	5.50	6.25	7.50	8.42	9.58	9.91	9.58	8.58	7.00	5.34	3.25	2.08	0.67
LOWER	0	0.75	.08	.08	.42	.75	1.00	1.58	2.25	3.08	3.58	3.92	3.75	3.33	2.66	1.42	.75	0


1/2 Soft balsa
6-1/2
17
24
"The CHICKADEE"
W. van Dieren
V.G.M.C. FAI Group (1973)
Scale: 1/8 full size
6
1
3.48
19-1/2
1/16 Ply ribs - first three bays
Aluminum arrow shaft
3
25-1/2
5-5/8
1-1/8 Dia.
C.G. 58%
+6°
7/8
+2°
3
3/4
Brass nose
1/16 Sq. pine
1/32 'C' grain
1/4 x 1/16 Balsa
1/8 x 1/8 Balsa
1/8 Balsa
1/4 x 1/8 Spruce
3/16 Spruce
1/16 'C' grain
1/8 Spruce
1/8 I.D.
3/32 I.D.
1/16 x 1/4 Spruce
1-1/4 x 7/32
3/32 Sq. spruce

NATIONAL FREE FLIGHT SOCIETY NEWS

SUPER MEMBERSHIP DEAL

Last year at the Nationals, those of you who were there may remember my saying that increasing the NFFS Membership was not a one man job but would require the cooperation of all members. I suggested at the time that if each member were to go out and get one new member we would obviously double our membership very rapidly. Some of you did just that and you deserve a great deal of thanks.

I now have a plan that should not only make it easier for you but save *you* some money at the same time.

The plan is this: Each current Open or Senior member who sends in his renewal check accompanied by an application and check for a *new* member will receive a 50 cents reduction in the cost of his dues *plus* a 50 cents reduction in the cost of the dues for the new member. If you send in your renewal with two new memberships you will receive a $1.00 reduction in your dues. Each new member will still receive a 50 cents reduction on their dues. The limit of the reduction is $1.00 to current members and new members must be in the Open or Senior ranks and must be AMA members.

Now if you want to renew your membership for 1 year for only $5.00 instead of $6.00 just go out and talk two new members into joining!

DICK BLACK MEMORIAL INTERNATIONAL POSTAL CONTEST

Clubs: Put this on your contest Calendars!! Date: Any time during September or October *One-Day Rule:* All flights in any event must be completed between 00:01 AM and 11:59 PM of the same day. Entry Blanks: Make your own, but include your name, address, event, and time for *all* flights . . . not just total.

Send results to: Steve Geraghty, 2858 Pinecrest Court, San Jose, Calif. 95121.

Deadline: Results must be received by November 15, 1974.

Events: FAI Power, FAI Rubber (Wake), FAI A/2 Towline Glider, FAI Coupe d'Hiver, Unlimited Gas-Power, AMA Hand-Launch Glider, and AMA Unlimited Rubber.

Rules: In general, the 1973 AMA Rulebook applies, except: FAI events are not flown in rounds, and for FAI events there are five official flights and flyoffs. Unlimited Gas Power is for any kind of gas model, and is to be flown according to AMA Category II Rules, namely: 11 sec. ROG/VTO/ROW, 9 sec. hand launch, 3 official flights, 3-min. max. Flyoffs: hand launch, first flyoff 7 sec., additional flyoffs 5 sec., 3-min max.

ALPHA-CYANOACRYLATE ADHESIVE O.K.

Remember that pre-Xmas office party? The one where Ellis was telling Polish jokes while Pauletich was telling Italian jokes while Morpurgo was telling Jewish jokes while Abie Glicksman was telling Christian jokes . . . and they were the same jokes? And some card put a drop of something on your finger and conned you into touching your finger to the secretary's nose? And they didn't get you unglued until New Year's? *That's* what an alpha-cyanoacrylate adhesive is.

The Consumer Product Safety Commission halted distribution of such adhesives for consumer use pending public hearings. As of March 1, the guy in the local CPSC said the ban was still in force, but that the hearings had been held. Then my wife told me that Paul Harvey said the ban had been lifted. So you can now all go out and stick your fingers to your secretary's noses, and it will be legal. If that doesn't appeal to you, you can use it to glue Rib A to Spar B.

Included in the list of adhesives in this general category are Krazy Glue, Permabond 102, Super Three Cement, Zip Grip, Rapid Set, Superbonder, Zip Bond, Eastman 910, One Drop Oneida Instant Weld, and we have a sneaking suspicion, Satellite City Hot Stuff.

If you haven't tried it for things like sticking a piece of aluminum tubing to a piece of music wire, where soldering just won't do, you've missed something. Of course, it is great for repairing busted models, and for assembly of balsa parts too, according to a usually reliable source . . . namely me. ●

"Nice goin', you got **this** many minutes!"

NFFS MEMBERSHIP AND RENEWAL APPLICATION

(Make checks payable to; National Free Flight Society)

Mail to;
B.J. Kelch, R.R.4, Box 475,
W. Terre Haute, Ind., 47885

			FEES 1 yr	2 yrs
RESIDENTS OF FOREIGN COUNTRIES			$6.00	$11.00
U.S. RESIDENTS	Age 19 and up	AMA Members	6.00	11.00
		Non-AMA Members	7.00	13.00
	Age 15, 16, 17, and 18 (Senior)		3.50	6.00
	Age 14 and under (Junior)		1.50	2.50
	Family membership*		1.00	2.00

All members receive NFFS Digest. Family membership fee includes all additional family members, but no additional copies of the Digest. Ages are as of July 1 of current year. Please circle applicable fees.

New Member ☐
Renewal ☐
Address Change ☐

Current expiration date:
Month Year

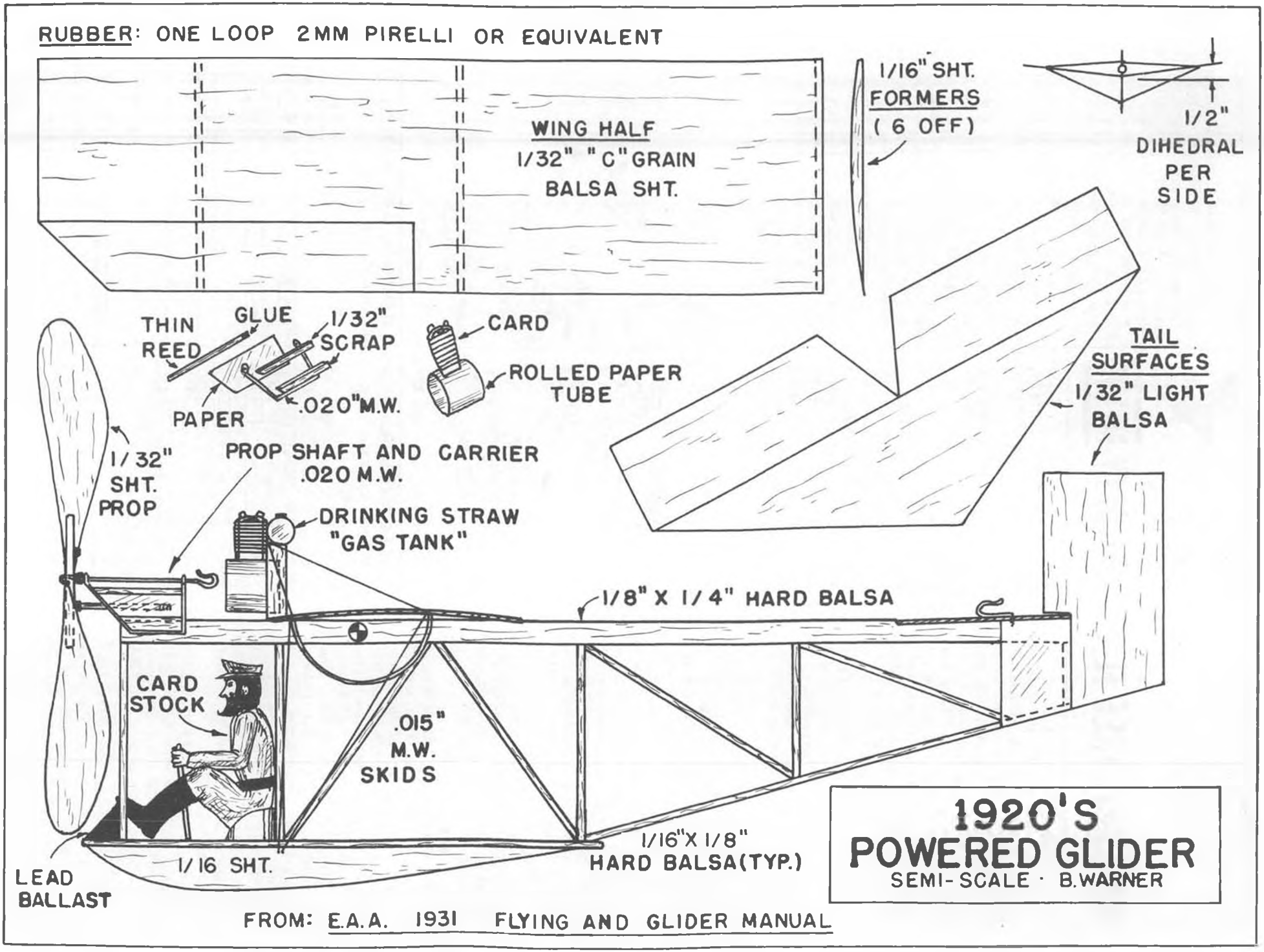
Name AMA No.

Address

City, State Zip

*Please list family members
Name

AMA No.


RUBBER: ONE LOOP 2MM PIRELLI OR EQUIVALENT
WING HALF
1/32" "C" GRAIN
BALSA SHT.
1/16" SHT.
FORMERS
(6 OFF)
1/2"
DIHEDRAL
PER
SIDE
THIN
REED
GLUE
1/32"
SCRAP
.020"M.W.
PAPER
CARD
ROLLED PAPER
TUBE
TAIL
SURFACES
1/32" LIGHT
BALSA
1/32"
SHT.
PROP
PROP SHAFT AND CARRIER
.020 M.W.
DRINKING STRAW
"GAS TANK"
1/8" X 1/4" HARD BALSA
CARD
STOCK
.015"
M.W.
SKIDS
1/16"X 1/8"
HARD BALSA(TYP.)
1/16 SHT.
LEAD
BALLAST
1920'S
POWERED GLIDER
SEMI-SCALE · B.WARNER
FROM: E.A.A. 1931 FLYING AND GLIDER MANUAL

Can you name all of these 1936 Detroit Nationals winners? Such famous names as Goldberg, Korda, and Lanzo are pictured. Bruce and Alvie are there too. See text for more details.

PLUG SPARKS

By JOHN POND

● Whatcha bin doing this winter? If you haven't built at least two models for the Old Timer Championships to be held at Lakehurst NAS, then you are going to miss the doggondest best old timer contest ever. For that matter, any contest!

Received another beautiful letter from Cdr. Jack Bolton, one of the big NAVY supporters responsible for the actual realization of the SAM Championships on the east coast. Jack is real proud to be part of the Old Time Eagles, a most dedicated group of modelers.

The Old Time Eagles have not lightly gained their reputation for pushing and fostering the old timer movement on the east coast. Limited to 25 members, the club features such hard workers as Woody Woodman, Joe Beshar, Art Thoms; champs like Leon Shulman, Vince Bonema; and dedicated free flighters like Don Garafalow, Ed Franklin, and Pete Andrews. The prime requisite, as outlined by President Dave Jagge, is that to be a member, you gotta be a "worker." If you ain't, you are soon on the outside looking in.

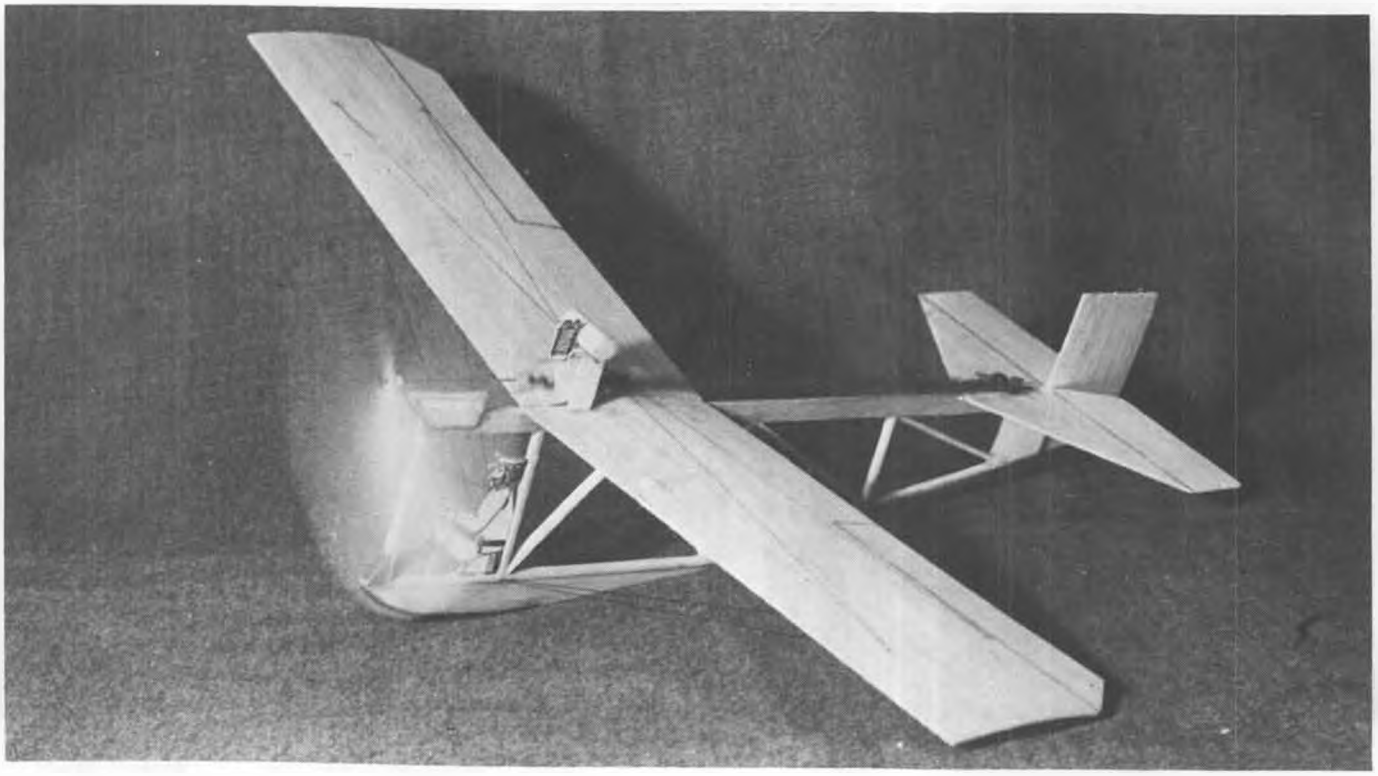
With a group like this, the club is quite responsive to all comments, both good and bad. In some respects, the columnist is rather apprehensive over the various views he has been publicizing about the power problem. Hate to sound like a certain controversial person, but let me make one thing perfectly clear; the columnist states categorically he had no intention of causing any hard feelings or creating a situation where no solution is apparent.

The writer is therefore greatly pleased to read Jack Bolton's follow up letter wherein he states the Old Time Eagles are also concerned over the power scramble and have had numerous discussions at their monthly meetings. They hope to place a rule change at the up-

Tex Newman at Taft Winter Nats with his Vivell 35 powered Bay Ridge Thermal Magnet.

Norm Carroll, Toronto, and father John, with Ohlsson 60 powered Buzzard Bombshell.

Hugo Lung used yardstick for fuselage of his "Old Ruler" design. It flew!



1920'S POWERED GLIDER

By BILL WARNER

● Basically a Northrop primary glider, the ship modeled was converted by Orville Hickman of Modern Mechanics Magazine about 1929 to take advantage of the 3 h.p. Smith Motor Wheel engine. This engine, developing its fantastic power from only 38 lbs. at 2,600 R.P.M. would not take the machine off the ground, but merely served to extend the glide of the old tried and trusty primary design. Many modern designers have produced sailplanes or "avions-planeurs" which use this idea to keep planes up in the absence of thermal, ridge, or wave lift. Some even use the engine to get off the ground.

You can have a ton of fun for peanuts with this simple, rugged model with only a few cents and an evening's building time invested!

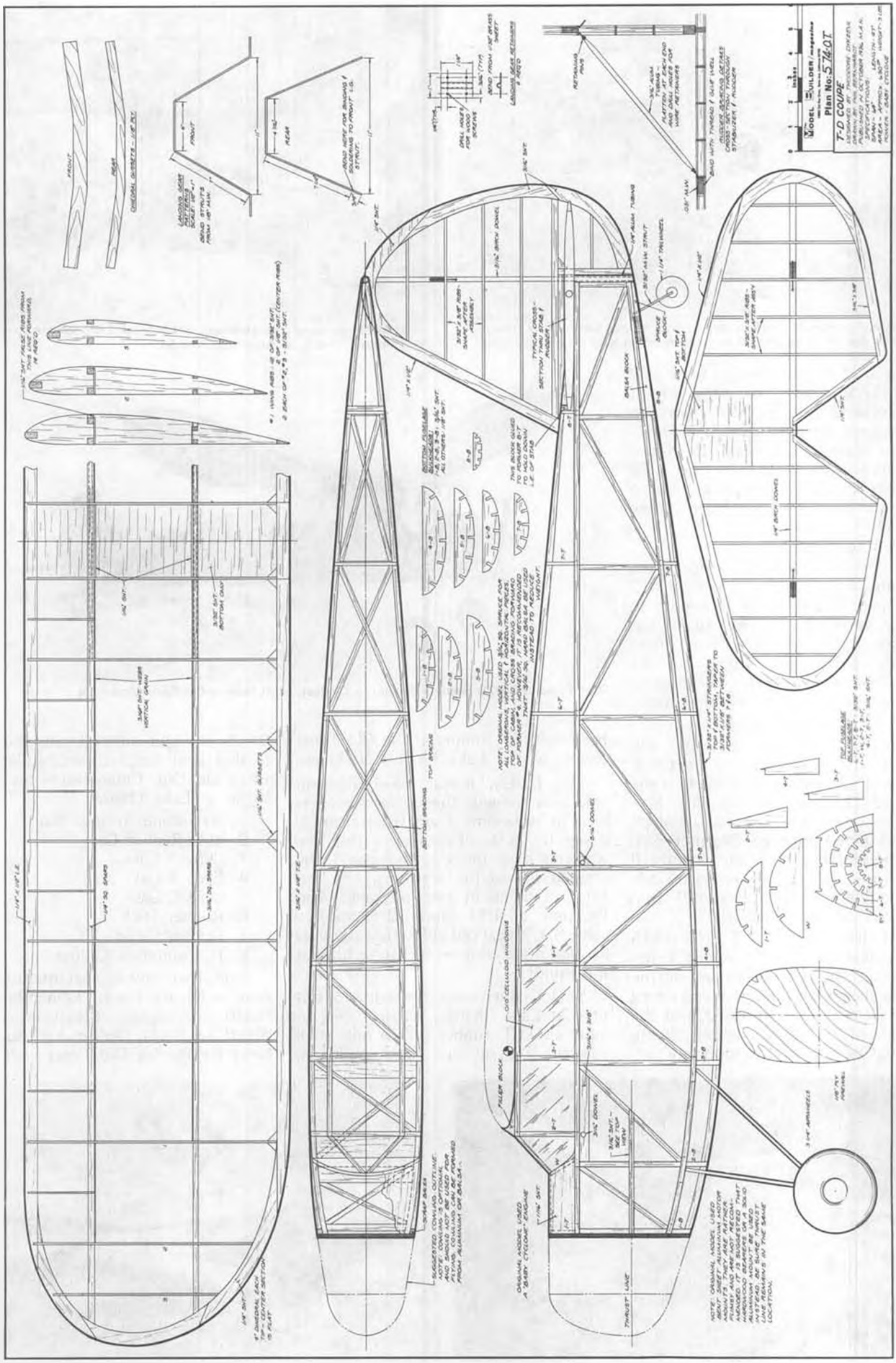
First build the fuselage pinned to a flat board. While that is drying, cut out the wings and formers. If you wet the top of the wing a little with your tongue, it will make it easier to glue the curved formers underneath. Sand the slight angle at the wing root to get a little dihedral, and glue the wings together. Cut out the stab and rudder and glue them to the finished fuselage, making sure the front of the stab is a little lower than the rear. (notch fuselage to fit) Then glue the wing on and add some weight to the nose and you have a finished glider! But why stop now?

Bend the prop shaft, rear hook, and carrier out of .020" music wire. If you have trouble making the carrier from one length of wire, a strip of thin aluminum drilled for the prop shaft will do. The prop is simply two balsa blades glued at about a 45° pitch angle to a 1/16" hardwood dowel or round toothpick center section. The model flies very well with a "left hand" prop made by accident.

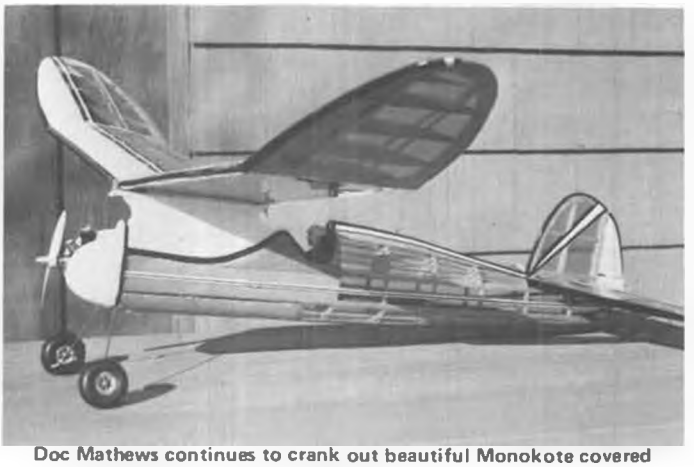
Typing paper was used to cover the rear portion of the fuselage under the stab and to roll a dummy engine and fuel tank. Two bits of scrap balsa hold the engine up so that the 2mm. rubber motor (12" long) can pass right through it. The model was rigged with "fly-tying" silk thread.

A motor-noise device can be added by sanding a strip of reed very thin and gluing it to a typing paper "drumhead" covering the prop carrier. Glue a tiny striker on the back of the prop. Note: the reed works best on the side away from the direction of prop rotation.

Trim for flight by adding clay until model balances at point shown on plan. Use rudder for turn, elevator to correct stall or dive. The original model flew a consistent 18 seconds under a 15 foot ceiling, and usually flew into treetops when flown outdoors in the street. ●


MODEL BUILDER magazine
Plan No: 574-01
T-D COUPE

Chris Christensen won Antique event at Taft with Dennymite powered Lackey Zenith. You should see the colors in his "Coat of Joseph!"



Doc Mathews continues to crank out beautiful Monokote covered old timers. This is an American Ace 54.

coming SAM Annual meeting to be held at the SAM champs over the 4th of July weekend. Haven't had this much interest since the writer was SAM Director four years ago, and a flock of new regulations were drafted at the 1970 Taft meeting. Better show up if you have something to contribute. Come anyway!!

R/C TEXACO EVENT

Joe Beshar writes to inform the columnist there will be a Texaco R/C event held if the writer is willing to sponsor same. Done! Jim Adams has been contacted and asked to get three trophies. These will arrive with the writer. Now, let's not have any squawks about not having a good duration event!

REPEAT ANNOUNCEMENT

Seems like a little confusion still exists on the 20 second free flight R/C Old Timer event being proposed for the Memorial Day weekend at Taft, May 26 to be exact. This contest will allow any old timer prior to December 31, 1942 to compete. Only 20 seconds of motor run will be allowed with ten minute flights as "maximum." Best three out of six wins it!!

O/T JUNIOR EVENT AT THE NATS

"Gorgeous Gawge" Perryman writes to indicate the lifeblood of any organization is the amount of upcoming young talent. Gawge is so enthused over the activities of his granddaughter, Stephanie, that he is willing to sponsor a rubber event for Juniors at the Old Timer Events at the Lake Charles Nationals.

Don Typond's .020 Replica Brooklyn Dodger, built from a Cal-Aero Model kit.

"Big Daddy" is real proud of Stephanie after she won the Coffee Airfoilers meet in Tullahoma, Tenn. Using a simple design (by B.D., of course!) with a free wheeling prop (plastic, what else?), she cleaned up on the Websters, Lee and Brian. Talk about eyes popping when the time of 4:51 came in! Hodja like some 4-1/2 year old kid knock you over in Unlimited Rubber?? Kinda boggles the mind!

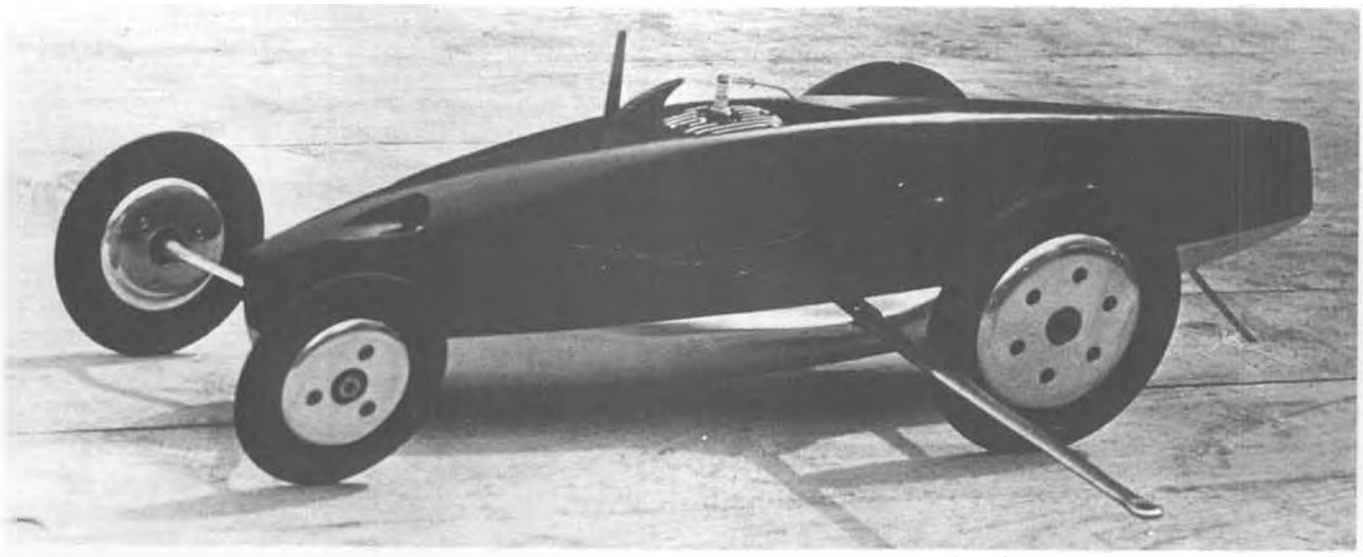
So get your young one out there this time at Lake Charles. We are going to have an O/T rubber (cabin and stick combined) event just for the juniors. Don't say you didn't know about it! In that same line, let's recapitulate just what the Old Timer events are going to be at Lake Charles:

1. 30 Second Antique Gas
2. .020 Replica Gas
3. Class A Gas
4. Class B Gas
5. Class C Gas
6. Rubber Stick
7. Rubber Cabin
8. Jr. Combined Rubber

And if we have enough interest, we'll have a Beauty Event. Remember, the model must register at least one official flight! So, if you can't make it to Lakehurst for the big Old Timer bash, then

Don Heckman's Buccaneer C Special is powered by K & B 40, R/C by Heathkit. Don, from New Jersey, built it from an original kit.

Easterners beware! John Pond's hot flying "Raider" with Torp 40 and Kraft "Brick." "Daddy Warbucks" is heading for Lakehurst!



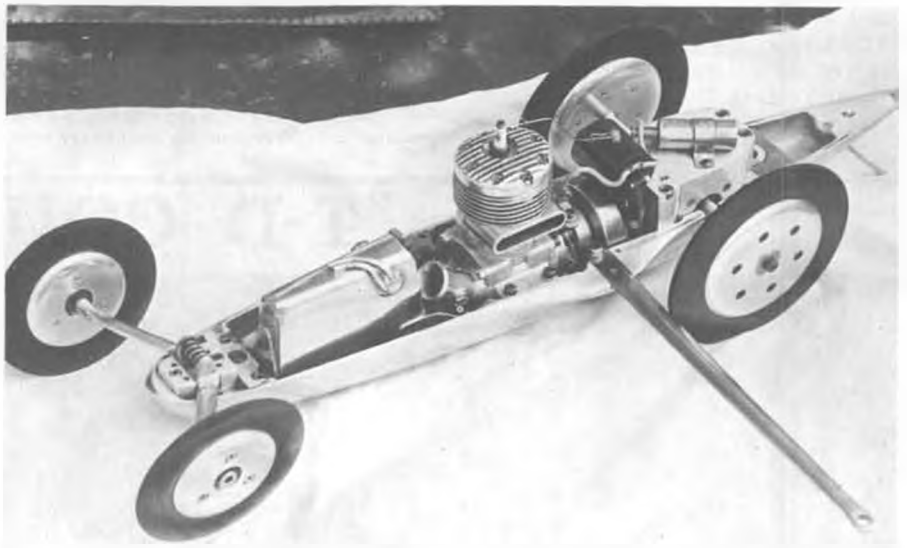
Beautiful RQ64 custom car by Olle Karlsson of Sweden.. Note big hubs and tires. Olle and car will be here for Internationals.

TETHERED RACERS!

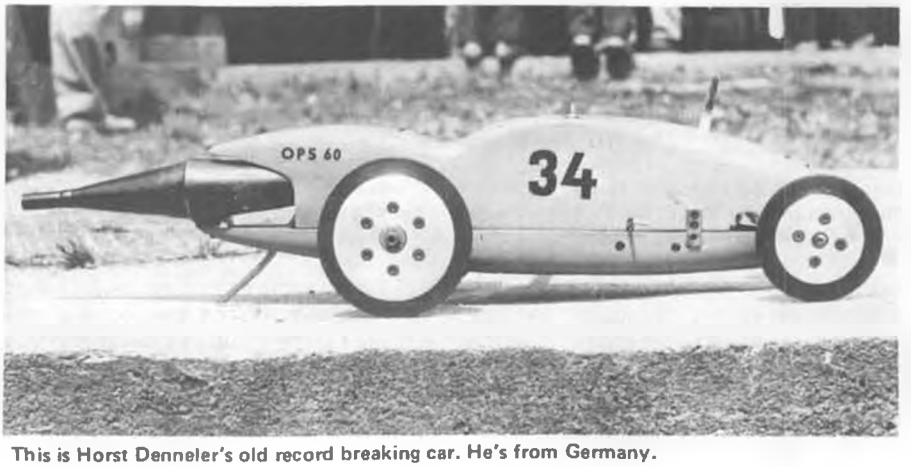
By TED MACIAG . . . Our occasional "car-on-a-string" editor pays another visit and tells more about a hobby that is going stronger than ever. Chuck Hallum will be back next month with more on R/C car science.

● First of all a comment . . . Good grief, what happened to the Old Timer events? A little while back there were stories of the graceful old time models being hauled slowly aloft by a Brown or an Ohlsson, chugging away on gasoline. The event provided the enjoyment of low pressure fun flying and an appreciation of the problems that the pioneer modelers faced. The .020 events allowed an inexpensive and novel free flight event for those who wanted to build models of the models. But now the models are becoming the same overstressed machines of the current free flight classes. How does a Rossi "60" powered Comet Sailplane bring back the nostalgia of a bygone era? No doubt it was a well built airplane and it took considerable skill to trim, but it hardly evokes memories of the past . . . unless you look at the last FAI trials as the past. I fully expect to see a Rossi 15 powered Playboy Jr. soon. Finally, if you must radio control an old time plane why not a Guff or one of Chet Lanzo's radio planes? And just to make it authentic, put a dummy tube type radio inside and hide the modern gear in a corner where it won't be seen. Letters from people telling me to mind my own business and stick to cars will be filed accordingly. *(Speaking for R/C in OT . . . Which do* you *think would be more relaxing; turning your Old Timer pride and joy loose on the elements, to land in or on whatever it chooses, or flying it with a radio and landing it at your feet? wcn)*

Speaking of cars, the Americans are falling behind the Europeans in the



Another shot of Olle Karlsson's car. Quite a neat package.



This is Horst Denneler's old record breaking car. He's from Germany. Top speed was 253 km/hr.

Nick Sanford, Santa Rosa, with his reliable Anderson Spitfire powered Scram. Has won a lotta contests.

The much maligned "Fox" by Joe Beshar, snapped by Leon Shulman at Lakehurst Naval Air Station.

try this one day of old timer flying at the Nationals. It is a real ball!

CONTESTS

Things are a little dead (except for California) as far as Old Timer Contests go. Have been receiving many photos (thanks!) that make up for the lack of contest news. However, we do have on hand a report of the SCIF-SCAMP ST. PATRICKS DAY BRANNIGAN at Lake Elsinore on March 17.

Contest Director Gene Wallock (still has the bum back) reports that in spite of the cool overcast weather, the contest enjoyed 28 entrants. In the rather light lift, two identical models, Sailplanes, powered with Orwick 64 engines, ran

Continued on page 67

F/F Scale columnist Fernando Ramos' Flying Quaker weighs 3 pounds with Kraft 3 channel gear and Enya 45 engine. No need to say how well it flies.

The "T-D COUPE"

Dick Twohy's Bunch Mighty Midget (built from kit) powered T-D Coupe. Dick flew the ship at Rosecrans and Western, in Los Angeles. Beautiful lines of this 1936 design are evident in this pic.

OLD TIMER Model of the Month

Designed by: Theodore Dykzeul
Redrawn by: Phil Bernhardt

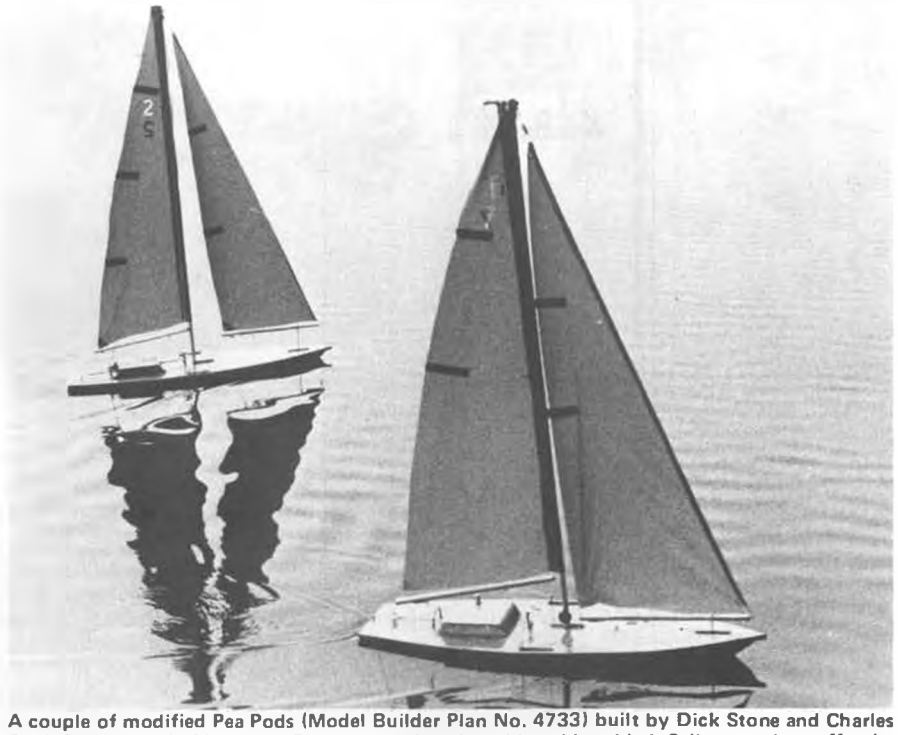
In addition to its attractive exterior, the T-D Coupe was well designed structurally, with some features that are considered quite "contemporary," such as sheet balsa webs connecting the top and bottom wing spars. As such, it should be a natural for R/C, with almost no modifications . . . except for splitting the tail surfaces for rudder and elevator control.

The original model was flown with a Baby Cyclone engine. ●

● Not all Old Timer model airplanes became famous because of a fantastic competition record, or because the designer was a well known modeler. A perfect example of this was the T-D Coupe, designed by Theodore Dykzeul (Anyone know where he is today?), and published in the October 1936 issue of M.A.N. Stop and think, folks, that's almost 38 years ago!!

In a day when most gas models were big 8, 9, and 10 foot span boxy clunkers, the Coupe stood out because it was small, clean, and very scale-like in appearance. As a consequence, among old timers, it remains as well known as the Miss America, KG, Zipper, Bombshell, et al.

Dick and his Coupe, with cowl removed and before fuselage stripe was added.



A couple of modified Pea Pods (Model Builder Plan No. 4733) built by Dick Stone and Charles Graf, Severna Park, Maryland. Beam was reduced, cuddy cabin added. Sails are nylon taffeta!

STRICTLY SAIL

By ROD CARR

A hearty "welcome back" to our "Strictly Sail" editor, Rod Carr, who will dig into the details of building, finishing, rigging, and sailing by R/C.

● Most skippers are very concerned about a smooth and shiny hull. Most skippers spend hours getting a sheen and sparkle to their decks. Most skippers sand and polish their masts and spars to glistening highlights. But when all is said and done, these efforts make a contribution to the speed of the vessel which is minor compared to what could have been gained if half the man hours, and one hundredth of the sweat, had been invested in learning and adjusting their powerplant . . . their SAILS.

Simple minded calculations show that a typical sail plan of the size of an East Coast 12 or Santa Barbara produces power at about the same rate as a hot .020 glo-plug engine in normal winds. With so little thrust to push a 26 pound vessel in the displacement mode, doesn't it make sense to maximize the drive that your sail plan produces? As wind velocity goes up, do you make the necessary adjustments to your sails to allow increased drive to push the boat, rather than merely absorb increased heel and drag? When you are faced with a race course which turns out to be predominately reaching legs, do you make the changes which will assure your boat speed on the rest of the fleet? Do you make sure that the boat is balanced with the amount of weather helm you prefer, and can you change that balance at will, even between consecutive heats, without pulling your boat out of the water?

Up until now, the only routes to gaining this kind of background required that you either be a big boat sailor, or work your way through the considerable literature written for the prototype sizes and cull from it those things which would be of significance to the model yachtsman. Well, our sport has grown in the past couple of years, and we have reached a point where this kind of information is easily available.

Who has it? Your friendly sailmaker.

At the present time, model yachtsmen are lucky to have three working lofts directly concerned with model yacht sails for all classes. For answers to your specific questions may we suggest that you contact these lofts, and further, that you keep a sharp eye out to see if you can't identify one fellow in your local fleet who has good looking

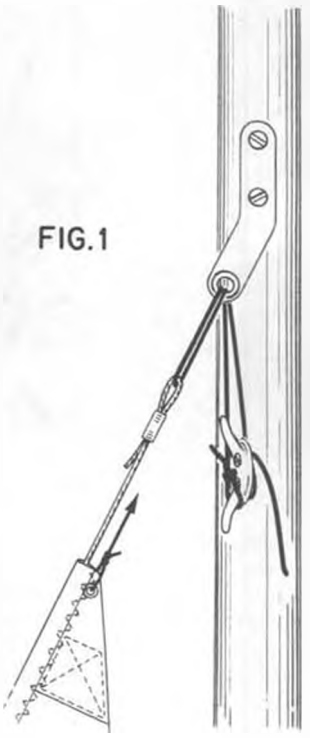


FIG. 1

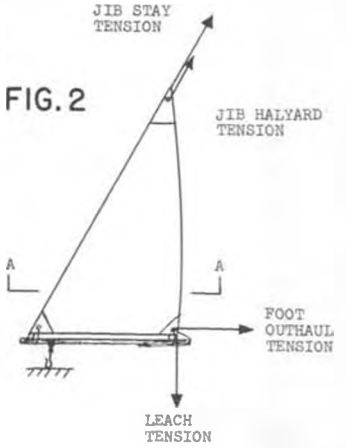
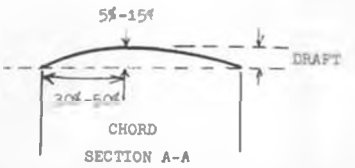


FIG. 2



sails and is willing to share his techniques with you. It is our contention that each fleet needs a sailmaker; maybe not in the business per se, but a skipper who understands sail set and trim, who is familiar with local conditions, and who can make small adjustments to commercially produced sails to make them perform well in the conditions under which you sail.

These lofts are: BLACK'S BOAT ACCESSORIES, 4761 Niagra Ave., San Diego, Calif. 92107. BUILDERS LOFT 304 E. 23rd. St., Chester, Pa. 19013. CARR SAILS, 7607 Gresham St., Springfield, Va. 22151.

In the following columns, we hope to provide you with basic information about your sails. We'll be guided a great

F. Bund, Hannover, Germany.
All German photos courtesy of Phil McDonald.

Harald Arlutzki, Germany, with OPS powered and enclosed wheel streamliner.

Phil McDonald is happy with his winning Arrow car.

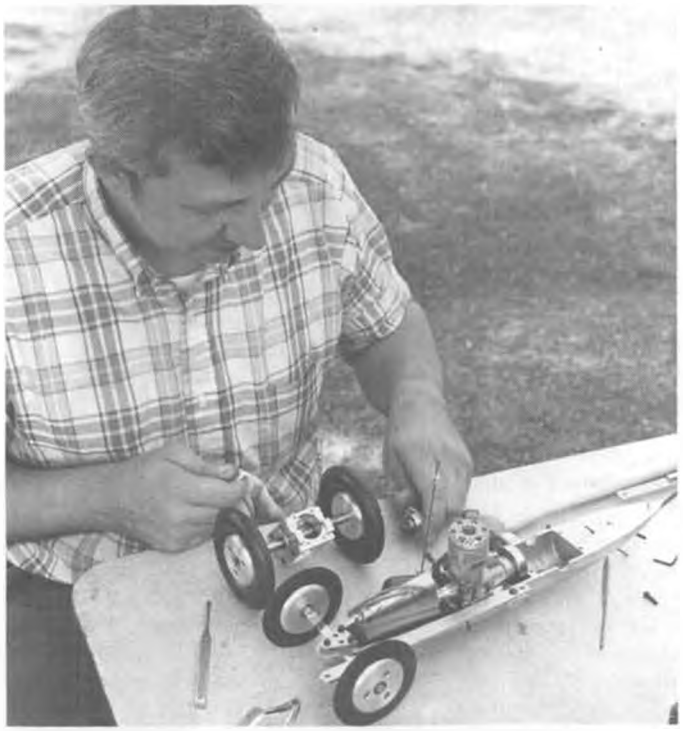
development of new engines and cars. At the present time, all of the tethered car records, except for the American Manufactured classes, are held by European designed and built cars and engines. For years, they have held the records in the smaller classes because of a total lack of interest in the US, but now they are beating us at our own game in the 10cc or "60" class. They do have the advantage of a slightly smaller track which gives less cable drag (because there is less cable), but to my way of thinking, that isn't sufficient excuse. The Italian made OPS is finding its way more often into the winners circle at American races. Surely the Americans can come up with better racing engines in spite of the high cost of doing business over here.

The European cars in the 10cc class look much like ours, but have some subtle differences which show that some real engineering goes into their designs. A lot of them use a front suspension to smooth out the rough tracks that they have. A stiffly sprung front axle should be a help on all but the best of tracks. Rather than mounting the magneto on the engine, they mount it on the gear box. This is better, because the less strain put on the front plate and crankshaft, the more freely it can run. Small refinements like these can add up when you are going for a record. The large rear wheels and solid tires may or may not be better, but they do hold up better than the currently made American tires. The overall car is lighter, but with the front suspension they still track well and have enough traction to get the horsepower to the ground.

The latest record holding cars are powered by the OPS and are showing even more novel design. They have a very narrow tread, with the wheels actually inside the pan and covered by the body. While I don't believe that better streamlining helps much, the greater rigidity of the short axle coupled with the lesser side loads makes for a more efficient drive train. A long axle gives more moment arm for the forces that disturb the free running of the axle bearings. Since friction is the greatest enemy of speed, anything to reduce it is a help. Another advantage is that with a live axle there is a slipping of the outside tire because it has further to go on a circular track. Pontiac's theory of a wide track doesn't apply when the car doesn't have to take a corner on it's own.

All of the above factors are small but when taken together could explain why we are falling behind. Of course, nothing beats more horsepower, and the Italian OPS engines have more horsepower than

Continued on page 63



Bill Dyer works on his ST 29 powered car at last years Nationals.

Ira Hassad visited the Nats and carried around one of his famous engines. Made everyone drool, but it wasn't for sale!

jib shape is the leach tension. This is brought about by a downward force exerted by the jib club on the clew arising from the tension in the jibstay. The jib swivel is the secret to proper leach tension. The closer the jib swivel is to the forward end of the jib club, the lighter the tension on the leach. With larger jibs appearing on formula class boats such as Littlejohn's BOOMERANG, it is imperative that leach tension be under fine, positive control. This requires that you make some sort of arrangement for moving the jib swivel fore and aft on the club. The simplest arrangement is to make a brass strap that wraps around the club, and clamps down (on a circular cross section club). Loosening the strap at its termination on the swivel fitting allows infinite adjustment. What you wish to attain is a parallelism between jib leach and main leach. This conformation is sought to allow air to freely pass between the jib and main without "choking" or "backwinding" the main . . . or without stalling or luffing the jib.

The final control of jib shape is the foot outhaul. Naturally the more foot tension, the flatter the foot. Shape and flow is important in the jib foot, since one obtains lots of drive from this part of the sail, and very little damaging heel. Jibs with flat feet should be avoided. There is a definite interplay between foot and luff tension. They interact, and one should make some sort of record of positions of the outhaul and halyard in order to obtain a reproducible set for any wind condition.

All the foregoing talk is of little avail if you don't go out and sail tuning trials against another boat, changing one thing at a time until your boat is faster whether you sail it, or the other skipper sails it. Then let him make changes on his boat using you as the benchmark. You'll learn more in a concentrated afternoon (if you keep records), than a whole season of panic adjustments made in the middle of regattas.

Send your questions to: Rod Carr, 7607 Gresham St., Springfield, Virginia 22151, or care of Model Builder. Remember to send your $5.00 annual dues to the AMERICAN MODEL YACHTING ASSOCIATION, 4761 Niagra Ave., San Diego, Calif. 92107. ●

C/L . . . . . . *Continued from page 28*

gine seems to start easily and run smoothly, with good speed, and most importantly, enough laps to one-stop the usual two or three-stop race. This looks very interesting and I will have to find out more about this development.

The small amount of combat that I had time to watch failed to show any new techniques in evidence. There were some new wing tip shapes and fancy names but no new designs. We're wise to your tricks, fellas. Far too many matches were won on time, and not cuts or kills. Most often, this was due to unpracticed pit work and not a lack of piloting skills. Go watch some of the better racers for awhile and then form combat teams of three or four people, and practice equal time for pitting and flying, you'll win more!

The only thing lacking was stunt. I chewed you guys out last time. Get out and be seen! We need you fellas on the field . . . I think!

I recently attended the Cancer Society benefit model airplane show held at the old Mile Square flying site in Orange County, Calif. We have to refer to the "old" Square because the model flyers were banned from there last year due to the efforts of one very effective real estate developer who felt the model flying was hampering the sales potential of the area. The Marines have a policy of not becoming involved in civilian disputes on Marine property, they just order everyone off and lock the gates. This made the developer happy. However, because the Cancer Society has more pull than real estaters, the modelers were allowed back for one weekend and put on a really big show for hundreds of spectators from the surrounding communities.

While at the show I learned of another group that had lost its flying field. The Norwalk Skyburners had similar problems six months ago and had to

deal if we can address our remarks to specific problems you might have, and therefore solicit your questions.

Let's start at the beginning. Approaching the boat, bow on, the first sail we encounter is the jib. Now, remembering that there are as many ways to set a sail as there are ways to skin the proverbial cat, the jib sits on a jibstay. The jibstay connects the forward end of the jib club and a point on the mast.

It's recommended that the jibstay terminate in a loop below the mast attachment point, then a double nylon squidding line arrangement be used in conjunction with a tang and cleat to allow changing the length of the jib stay as required for mast rake considerations. (Fig. 1)

A convenient mast attachment method is a tang with a sail corner grommet installed in the lower hole to prevent cutting of the squidding line. The squidding line is held in a cleat under the tang mounted to the mast, passes up through the tang, through the loop in the jibstay, back through the tang and down to the cleat. Leave the cleat loose so that the first turn around it with the squidding line jams well. You can't really depend on half hitches as you can with big boat lines, and we're finally fed up with round bowsers as a means of adjusting such rigging. You now have a system which will allow the rake of the mast to be adjusted for fine tuning, yet allow a taut jibstay. We oppose use of headstays since they remove load from the jibstay, letting it sag.

The shape the jib takes is partially cut into it by your sailmaker when he adds "luff round" to the sail at the luff. Unless you can provide him with a table of offsets showing how much your jibstay sags while sailing, he must trust you to carry as much tension in the jibstay as you can (with proper care given to its effect on mast shape) so that the stay will be as straight as possible. Then the sailmaker can cut a fairly standard luff round to help correct for the typical jibstay sag observed. We generally use something on the order of 0.1 inch per foot of jibstay length. (For your own benefit, take a roll of black and white pictures of your boat under sail and when you get the prints, hold a straightedge up to the jibstay. If you can take a picture from dead on the beam, using the length of the jibstay as a scale, you can indeed find out how much your jibstay is sagging.) Everybody we talk to gets a double dose of "Keep your jibstay tight!!!" A square foot of jib will generally give you the power that it takes two square feet of main to provide, so everything you do to insure a strong pulling jib will pay off doubly.

Running parallel to the jib stay is the jib halyard. This line is attached to the head of the jib, and serves to tension the sailcloth along the luff. We generally immobilize the tack of the jib with a loop of rigging wire around the bow end of the jib club, and make all luff tension adjustments with the jib halyard. The tension from the halyard distorts the sailcloth, and will pull the draft (extra cloth in the center of the sail) forward as tension is increased. Pull too hard and you'll find a crease just behind the jibstay.

Lay your boat on its side with the sheets pulling the jib club to the close hauled position. Hold a straightedge across the sail as in section A-A in Figure 2. Gravity will pull the sail down and you'll be able to see the draft. The point of maximum draft should be between 30 and 50 percent of the chord aft of the luff and is controlled by luff tension. The amount of draft will vary between 5 and 15 percent of the chord, and is controlled by sail cut, and to a degree, foot tension and leach tension. Keep a notebook, write down the information, keep track of the wind velocities you sail in. Soon you'll have a good idea of just what kind of tensions to put into your sail after having a reading of the wind and looking in your log. Sails that are set by guess and by golly will never consistently win anything.

The next most important control on

vacate the Norwalk Park. The Skyburners were more fortunate than most because they were able to work out an agreement with the ABC School District for the unrestricted use of the Gahr High School on Sundays. They have their agreement in writing with the school district. Sanitation facilities are provided, and the local police have agreed to patrol regularly on Sunday to assure that the flyers are not disturbed. It sure would be super if all the clubs in the country were as fortunate.

The Skyburners field is really BIG, with enough room for as many as ten circles. Wow! Their club is really big also, with forty plus people showing up to fly on Sunday mornings. Anyone living in or near the Long Beach, Norwalk, or Orange County area had better move their body on over to the intersection of the 91 and 605 Freeways and get in on the fun with the Skyburners.

EASIER STARTING ENGINES?

How many times have you gone out to fly and ended up saying bad things, because your engine was hard to start or ran erratically? If it worked fine last week and you just wiped it off and hung it up, it might not run so good this week. The problem is the fuel residue and the grass and grit from the flying site. If you perform a simple 15 minute cleaning operation *EVERY TIME* you fly your models, the result will be the best running, longest lasting engine you ever had . . . regardless of brand.

Here is the procedure to follow: First remove the engine and tank from the model. Fill a large jar with lacquer thinner (the cheap stuff from Standard Brands paint stores). Wash off the tank and flush the inside with your squeeze bulb (it will now last longer also). Dry the tank off and reinstall it. You did remember to clean the filter didn't you?

Now for the engine. Remove the prop, glow plug, needle valve . . . yes, that's right, the needle valve. There is nothing sacred about a setting, especially if there is old gummy fuel inside.

SAILFISH

One of the prettiest Sailboats you ever saw either Free Sailing, or R/C. Construction is simplicity itself. Die Cut Frame, features Plywood for strength and long life. Printed-planked Deck is Die Cut and ready to slip into rub rail, molded into Sleek Plastic Hull. Kit is unusually complete with Die Cut Mahogany Cabin, Brass Chain, Many Cast Metal Fittings, CLOTH SAILS, Rigging cordage, Mast & Boom Material stamped Rudder and Keel with INTEGRAL LEAD BALLAST, Step by Step Plans show simple assembly. Base shown not included.

HEIGHT 32½"
LENGTH 24"
BEAM 5"

Sterling MODELS INC.
PHILA., PA. 19144, USA

Kit B23

$12.95

STERLING MODELS • BELFIELD AVE. and WISTER ST. • PHILA., PA. 19144
If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., $1.25 minimum outside U.S.)

- ☐ Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories, etc. 25c enclosed.
- ☐ "Secrets of Model Airplane Building" Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.
- ☐ "Secrets of Control Line and Carrier Flying" Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed

No checks. Only U.S. money orders or currency accepted.

Name _____

Address _____ City _____ State _____ Zip _____

record almost unattainably high, that was set by a real specialist on one of those rare perfect condition days . . . same place.

IN A RUT?

We all are in a rut one way or another, and I'm trying to point out some of these gray zones in an attempt to improve our sport for *everybody*, not just the organizers. Be patient, I will eventually chop your own favorite event. Maybe even F.A.I.!

AND NOW FOR YOUR FIRST LESSON IN F.A.I. TEAM RACE.

One unfortunate factor of F.A.I. is the limited amount of equipment available. Nearly every race flyer must hand make most of his own equipment. Furthermore, most of the equipment that is manufactured is difficult to obtain. Most hobby shops do not stock these items due to the low sales volume. It is therefore necessary to mail order the equipment you desire. This is time consuming, but usually worth the effort.

The Team Race diesel engine is the first item of equipment that must be obtained (and the most important). There are at least nine engines made that are suitable for racing. Not all of them are available to the general public, unfortunately. Four of the nine are fairly easy to acquire and not terribly expensive. All four are easily capable of turning times in the five minute bracket, and with careful tuning, will run in the high fours. (But that takes work!)

ETA ELITE is produced in England by Ken Bedford and can be obtained only from the factory. This engine, in various refinements, has been produced for many years, and has powered several World Champs winning models and is still a competitive choice. The latest version incorporates piston ports to improve fuel flow. Price is about $40.00. ETA Instruments, Ltd., 289 High St., Watford, Herts, England.

KOSMIC K/15D is produced in Milano, Italy. This engine is, externally, nearly identical to the Supertiger rear valve and will fit into a model built for the Tiger. The motor is extremely well made, with machining of the finest quality. It is a Schnuerle port design with rear exhaust and rear disc valve induction. For those who like to experiment, a diesel conversion can be set up on a glow case by switching appropriate parts. The glow is different internally from the diesel.

Stanton Hobby sells the Kosmic for about $30.00. 4734 North Milwaukee Ave., Chicago, Ill. 60630.

SUPERTIGER G15RV. These engines have been favorites for years and are good competitive choices. They are loop scavanged, with rear disc induction. World Engines imports them, and they are available at many regular hobby shops. The price is about $30.00.

MVVS 2.5CC D7 is produced in Czechoslovakia. This is a good engine, placing 5, 6, 7 behind the American A.R.M. and the Russian hand-built engines at the '72 World Champs. As it comes, a considerable amount of cleaning and fitting is necessary before it can be run competitively. It is loop scavenged with rear exhaust and has front shaft valve induction. MVVS is working on a Schnuerle design, but when it will be available is not known. Stanton Hobby imports these engines and they sell for about $30.00.

There you are. Go get a diesel. Next month you will find out about diesel fuel and its many variations. See you then . . . ●

Mooney . . . . *Continued from page 35*

sists of a single loop of one eighth brown Sig contest rubber seventeen inches long. It was lubed with Sig rubber lube, rather sparingly, to keep from slopping up the inside of the fuselage. A new Peck-Polymers 4-3/4 inch plastic propeller was used, and the spinner was made of five-minute Sig epoxy. In this configuration, the model balanced at the CG indicated and flew without any adjustments. The motor would take 1800 winder-wound turns.

The 53 second flight was the third ever, and was hand launched. Various other minor adjustments were tried after that, but none of them improved the flight time. The model would consistently exceed 45 seconds from an R.O.G. (We claimed that all flights should R.O.G. at the contest, but Peanut rules say H.L. is okay, and the owners of several long-propellered birds, who wanted H.L., prevailed). No thrust line adjustments were required, and the model shown automatically flew in right hand circles. Since small surface warps can affect the flight, I couldn't guarantee that all models will fly to the right, but I can say that *this* model flys fine in that direction.

The construction of the Sparrowhawk follows the standard, time proven format. The fuselage is a stick balsa basic box, with semi-circular formers added to the top, which are then covered with thin sheet balsa. Because of the high thrust line, there are cutouts in the formers and no permanent cross sticks between the upper longerons. You may find a few temporary cross sticks an aid during assembly. The top part of the engine cowl between Stations 1 and 2 is carved from block balsa and hollowed to provide motor clearance. The nose block is carved from a balsa block also. A piece of one eighth thick sheet balsa, cut to fit snugly in the front of the fuselage, is cemented to the back face of the nose block so that the front end can be removed. This allows easy installation of the motor, and also stretching of the motor for winding. The wing saddle

Also remove the back plate. Before you go any further, that thinner must be filtered. We do not want to put dirt into the engine. Use a clean paper towel as a filter, it works just fine.

Submerge the engine in the thinner and start spinning the shaft. Be careful not to let the rod slip out on the end of the shaft and bind up. About one minute of this flushing and the parts should spin freely . . . very freely. If you want to be very thorough, filter the thinner once more and give a final rinse.

Dry the engine completely. Lacquer thinner evaporates very quickly. Your engine should still spin FREELY. If it doesn't there is still some grit inside, so REPEAT the filtering and rinsing. Before closing up the engine it must be thoroughly oiled . . . don't use 3 in one oil, that's 20 weight motor oil and not suitable for two stroke engines. WD-40 or LPS are good preservatives and easy to use in the spray cans. Close up the engine and reinstall it in your model. You will now be blessed with easy starting and smooth running. This ritual should be performed after each flying session for trouble free operation.

PLAN OF THE MONTH

The McCollum - Hodgkins FAI racer detailed this month is an excellent model designed for maximum performance. Construction is very simple, using sheet wood . . . and any team racing engine can be fitted without any problems whatsoever.

SPEED FLYERS – GET ORGANIZED!

Invite the outside world into your domain and promote your very interesting side of the hobby. Advertise and start some regular meets of your own instead of shirt tailing the other clubs.

How about an old timer contest? You know, where every one fly's the same event to see who is the fastest on that particular day. Kind of like the race flyers do it. I know speed flyers who do not like percent-of-record contests because their favorite class has a

you don't have to idle . . . just imagine how hard it would be if there were an idle requirement! Secondly, all the manufacturers have designed the engines so that they will not idle, and any attempt would be absurd. Third, Formula I is certainly not an event that everyone should enter. For those who want to go slower, there is Quickie 500 racing, Toad racing, Quarter Midget and certainly many other events that are run on a slower pace for the flyer who desires this style. I definitely feel that Formula I should be left alone; that no changes or restrictions as far as speed should be imposed.

From the safety point of view, I submit that if a race is run using the course designed by the AMA, and in particular the distances from the race course to the spectator area, that Formula I is much safer for everyone as compared to any pattern contest where no limitations are imposed and in many instances the planes actually fly over the spectators area and the flyers in the ready box.

I am sure that if more time were spent trying to make things safer and less time was spent on how to change a very exciting and highly competitive event, that we will be much better off. In Southern California for example, the interest has actually climbed by a startling 21% over the past year, and here is where safety is highly stressed. From the records that I have kept, in 1973 there were less airplanes lost than in 1972 by a whopping 27%. I am sure this is attributable to the safety inspection of all planes that are entered in a contest. There were 8 contests, 64 rounds, 384 heats, and 1534 plane heats flown all in Southern California, and not one time was there anyone injured, or even a close call. By these figures you can surely see that this event is not nearly as dangerous as some people try to make it seem.

That's enough rambling on for this issue. Let's all mix up some 5 minute epoxy real quick, finish that highly prized 5 lb. beauty, and go racing!

FLASH

For those real hearty racers, I have good news. Las Vegas is going to put on another Formula I race this season. September 21, 22, those are the hot days. Not everything is finalized yet, but you can expect a real good contest for certain. I hope you fellas back east can get out there and join in the fun. Just think, race all day, gamble and party all night. Fun for all. Bring your wives or girl friends, or even both (for the daring). Hope to see all of you there.

"I said turn LEFT, dummy!" ●

F/F Scale . . . . *Continued from page 31*

There are several different ways to make the landing gear, so I chose the one I liked best. It is amazing how all of the parts for the fuselage, in particular, were fitted into one large interlocking unit. Every part did fit. Construction time took about one week of part-time building. The finishing was done in yellow and blue Japanese tissue, followed by several coats of nitrate dope. The sheeted portion of the fuselage was given a couple of coats of K&B epoxy primer. The entire model was given a light coat of K&B Satin Clear epoxy. This seems to be the best way to fuelproof a model. I used No. 4 Trexler wheels. The motor mount is made removable for quick service to the engine, if required.

I have no criticism of the kit whatsoever . . . the materials are first quality through and through. One change or addition I would make is to reinforce the area where the rubber bands come in contact with the wing. This is where the wing comes in contact with the fuselage cabanes.

With the model completely assembled, I checked the C.G. and it seemed to be O.K. I gave the model a gentle toss and it flew like a sailplane! I could hardly wait to test fly it. The testing was made at Lake Elsinore where there is plenty of open space for a model like this.

I use a 10cc syringe to measure the fuel for my .020 engines. What I don't need is a 5 minute engine run! With 3cc of fuel, I fired up the little Cox engine. The model was given a light toss into the wind. The Starduster climbed steadily in a left hand circle. When the engine quit, it settled into a gentle right hand pattern. From then on it was one great flight after another. I use a 6/3 prop so that the climb and flight is more scale-like. Otherwise, the model would have to have a D.T. or it would fly away for sure.

I would recommend Tern's Starduster for a sport F/F model. It would also make an excellent R/C model using one of Ace's R/C units. I'm looking forward to the day that Tern comes out with its first F/F gas scale kit. When they do, it will be a beaut.

How about an 1/8 scale SE-5 Kite? No, this isn't a profile model, or a conventional kite with an SE-5 painted on it. This is an honest to goodness molded foam model of an SE-5. When I first opened the box, I couldn't believe what I saw. It was huge, and the parts were already made and painted! All I had to do was to quickly read the directions and put it together. The entire job took about 15 minutes. This kite is complete with painted and "scarfed" pilot, Lewis machine guns, and twin exhaust. Even the landing gear is scale-like in operation. The scimitar prop is hand-carved, and free-wheels in flight. Beside the airplane, there are two handles with 250 feet of monofilament line, and swivels. One handle looks like a regular Nordic type reel. All these are hand-made and painted. I couldn't believe it.

After reading the instruction booklet on how to fly the model, a test had to be made. The only criteria, in contrast to flying any F/F scale model; there has to be at least a 15 mph wind. There is an eyelet on the bottom of each lower wing where a line from each handle is attached. The idea is to form an inverted 'V' with the airplane, or kite, at the apex. The handle without the reel can either be held by someone or buried in the ground. The handle with the reel is held by the "pilot."

part of the lower longerons is cut from 1/16 sheet to match the shape of the top of the center section ribs.

The wing structure is conventional; using a leading edge, a trailing edge, ribs, and two upper surface spars. Wing tips are cut from sheet balsa. The ribs over the landing gear should be cut from rather firm balsa sheet, because the landing gear wire is simply poked into the front end and cemented to the bottom of the rib after the wing is covered. The wing ribs can have the scale type sections shown or the flat bottomed sections indicated by the phantom lines.

The tails can be simply flat structures, or if you desire, they can be streamlined as indicated.

The wing fillets are probably the toughest thing to make on the model. Usually I use bond paper fillets, but several attempts left me unsatisfied, so I finally carved them from soft balsa blocks. Cut the blocks carefully to the shape shown in the side and top view and then carve in the concave upper surface of the fillet. Patience is the most important ingredient, with sandpaper coming next. The final fitting of the fillets is done after the model is covered and the wings are in place on the fuselage . . . Undoubtedly the model would fly fine without them.

The landing gear fairings are of a type not seen on too many airplanes. They have been called "spats" and "trousers" at different times, for obvious reasons. In the interest of lightness and simplicity on the model, they are made of bond paper. The bond paper was covered with tissue before cutting the pattern, in order to have them the right color when they are completed.

Note that the fairings do not fit on the wing lower surface at 90 degrees, but are vertical. This means that there is a right and a left fairing. The pattern will work for both, but must be turned over between cutting the first and second fairing out of the tissue covered bond paper. Fold the fairing by wrapping the middle around a small dowel or tube so as to get a smooth leading edge without creases. Use the thinnest line of cement to bond the trailing edges together. When attaching them to the wing, only the very front and very aft on the trailing edge need be cemented to the wing. Then, in case of damage, they can be easily replaced.

The little circles shown several places on the plan appear to have been inspection holes on the real airplane and show up as black dots on photographs.

The side inlet and exhaust pipes were made from short lengths of dowel. The tailskid is balsa. The air inlets are painted on the noseblock with flat black paint.

The spinner was added to the propeller by epoxying a thin sheet disk to the aft face of the prop after cutting off the hub extension on the back of the propeller. Then the spinner was built up of several applications of five minute epoxy, holding the propeller in a position while it hardened into the proper shape. ●

Pylon . . . . . *Continued from page 17*

get his done in time. Another noted incident was the contestant, who, during the race, actually took an engine out of his tool box and loaned it to one of his competitors whom he didn't even know! All in all, this was a very exciting race and it's future is certain, I am sure.

"While the final tally was being figured, the club held a raffle of donated merchandise, so a whole bunch of people went away happy. The club wishes to thank all the people who made this race possible."

So you can see that the racing scene, even in the off season, isn't without it's rewards. Some of the guys like to stay with just one class of racing, and others want to try all classes at least once. But only a Philistine doesn't want to race at all . . .

On the Formula I scene; from the scouting around I have done it will certainly prove to be a very interesting year. There are several new planes coming out this season, an LR-IA from A & L Distributors and a Super Trick Minnow from Prather Products. I have personally seen both planes and no doubt both will be very competitive for the serious Formula I flyer. Several new tachometers will become readily available this year, and with Super Tigre importing one thousand of their new X-40 engines in time for this season, it will prove to be very interesting indeed.

I am sure that safety this year will be stressed even more than it has been in the past, and I agree it certainly should be. In Southern California, No. I pylon will be in a complete cage to prevent planes coming from behind.

Reports from the North West seem to indicate there may be a decline in Formula I interest allegedly because of the speeds that they are attaining. However I find this very hard to believe, as in checking with the NMPRA secretary, I find that the opposite actually exists, at least from the membership requests.

Also I understand that there is some sort of drive on to make the Formula I planes idle, which is intended to make them safer, along with the thought that it may also attract more interest. To this reporter that seems ridiculous. First of all it is difficult enough just to have to worry how to set the needle when

collective heads, need them or not.

One of the sexiest little machines seen at Toledo was not at the exhibit hall. What I'm talking about was Kavan's prototype "Alouette," shown solely in that gentleman's hotel room. *(And also at an exclusive press dinner on Friday evening. wcn)* This little machine is quite small, light, and simple. The rotor head is a non-collective type one and the copter is powered by a .19 size engine. I believe the kits are expected to be available late this summer, and the price should be less than $200. This is a smart looking little ship and I look forward to seeing one fly.

I could continue further on about Toledo, but the high spots have probably been covered. So enough! And before old *(Hey, watch it!)* Bill Northrop cuts off my scribbles, I close voluntarilly.

Thanks much, Nate, for the nice coverage . . . we'll look forward to other contributions in the future.

Just before "touching down" for this issue, I want to thank those of you who took the time to fill out and mail in the data card. Your efforts will be appreciated by many beginners in the hobby. We'll reprint the form from time to time so you can still get your name "in the pot."

And don't fail to watch for that new Dieter Schluter "Gazelle" helicopter kit with a very simple collective pitch (Expert) control. I've seen the pictures and it really makes me drool, it's so clean looking and functional. Leave it to the old "master" to come up with a beauty like that!! And there's no doubt about the flyability and reliability of any Schluter chopper! ●

Hannan . . . . . *Continued from page 34*

Clarence Mather continues to win meets with his Russian Stormovik that must certainly be over seven years old (it has been re-covered), offering proof that with care and proper maintenance, a model should be good for several seasons of flying. And, there is nothing more confidence-inspiring than a proven, dependable performer when the chips are down in a contest. Think about this before abandoning your next slightly-damaged aircraft.

AND SPEAKING OF AGE

We recently examined a copy of the AERONAUTICS magazine for June, 1912. Although devoted primarily to full-size aircraft, this periodical featured a regular column devoted to "model aeroplanes," written by one of the more accomplished builders of the time, E.W. Twining.

We'd like to quote a few brief passages: "The history of the model aeroplane may be said to be the history of the most practical attempts to solve the problem of flight by machines heavier than air, for the early experimenters who attained any degree of success obtained their successes by means of models, and up to a certain time, all the knowledge of the dynamical laws governing the principles of flight was obtained from the making and flying of miniature machines, or parts of them.

"Up to the time when the Brothers Wright flew in America, and Santos Dumont in France in 1906, no machines had travelled through the air under their own power, but a few models at scattered intervals spread over the last six decades of the nineteenth century."

Twining goes on to point out: "Between the years 1890 and 1895 that worthy man Laurence Hargrave, of New South Wales, spent much time in experimenting with kites and aeroplanes. It was he who produced the box kite, and with model aeroplanes did at that still early date what few of us present-day modellers can boast of having done, that is, he built models in which he employed three different kinds of motors and three different sources of power, not, of course, all on the same machine. Not only did he do that but he applied his power in two different ways to obtain propulsion. His motors were skeins of twisted rubber, compressed air, and steam, and he applied these motive powers to drive screw-propellers in some machines and flapping wings in others. Some of his models were fairly large and the workmanship was excellent. In his steam models he always used flash boilers, made of coils of copper tubing, the engines being of the single cylinder reciprocating type, with ordinary slide valves. The average length of the flights was between two hundred and three hundred feet."

PARTING SHOT

We just couldn't resist swiping this from the National Free Flight Society Digest (Bob Meuser, Editor):

F/F'er: Do you know your wing is on backwards?

R/C'er: Never heard of it, but if you'll hum a few bars, maybe I can pick it up. ●

KAOS . . . . . . *Continued from page 23*

wheel and the retract servo. Thus, the nose wheel is retracted or extended first before the mains come up or down. The system has worked well so far. However, it requires a bit of "fiddling" to position the Goldberg threaded micro switch actuating discs properly so that the nose wheel locks both up and down while simultaneously triggering the micro-switch. The new Goldberg servo has plenty of power and it was installed as recommended in the instructions. Incidentally, the gear has been cycled many times, both on the ground and in the air and is still operating on the same pair of inexpensive pen cell batteries originally installed.

The "Super Kaos" was finished with Francis Resin and sprayed with Hobby-

The wind must come directly at the kite. With someone holding the kite aloft, the pilot can either run or reel in some line until the kite is airborne. During flight the pilot can walk forward or back keeping the kite tracking straight into the wind. This is really a fun model. It is also a sneaky way of getting your kids interested in airplanes!

For further information on this most unusual scale kite write to: J.C. Butler, P.O. Box 123, Weatherford, Texas 76086.

Next month we'll have a review on the Flyline Bellanca Skyrocket. ●

Choppers . . . . . *Continued from page 19*

over 20 years, RC enthusiasts have attended that trade show to see the new products being introduced and demonstrated. The event has grown to its present size from what in the early days was a small get-together to exchange valuable information about the new hobby.

Model helicopters have put some of the old magic back into Toledo, because our branch of the hobby is still relatively new. At the 1974 show, many modellers were looking for new technical ideas. Some were looking for a new simple helicopter at a price breakthrough. Others sought fancy kits with new and different fiberglass fuselages.

As I squeezed into the crowded aisles at Toledo, the first helicopters to come into sight were seventeen being exhibited by modellers in the static judging area. A few were scratch-built, but most were from kits. Two outstanding models were Bill Ellis's magnificently detailed Jet Ranger and John Werne's Bell 212. Several of the copters, such as Fay Peoples' Jet Ranger, had blinking navigation lights which operated from morning to night without dimming. John Keats' scratch-built also stood out. This super simple model was built from extruded aluminum square tubing which was pop riveted together! A K & B .19 engine drove the Schluter type rotor through a timing belt and nylon gear. John later demonstrated the fine flying qualities of the four (I repeat 4, F-O-U-R) pound machine. It is an ideal basic trainer and John is already building a small number of kits for direct sale at $250.

As I fought my way through the crowds into the commercial display area, I was joined by Horace Hagan. As in the past, Horace helped bridge my German-English language gap. We stopped to meet Dieter Schluter and his lovely wife Heidi at the Micro-Craft display. Dieter was showing his eye-appealing Aerospaciale SA-341 Gazelle. This helicopter and six other kits shown at Toledo, used Dieter's drive train. Only the Gazelle, however, had his new Hiller-variation collective pitch head. The Gazelle was later demonstrated in flight and flew well.

Pushing and shoving a little further, we found the Kavan exhibit. Two of Kavan's U.S. field representatives, Dario Brisighella and John Simone, were mystifying patrons with explanations about the Jet Ranger's features, the low fuel warning light system, and all the rest. But what I wanted to know was how well did the latest Kavan rotor head modification really work. It's always been my contention that the rotor head, not the drive train, is the heart of any model helicopter. And Kavan has for some time been trying to improve the rotor head used on his Jet Rangers. His latest modification is a cross between a Bell and a Hiller system.

My question about the new Kavan head were soon answered. I followed Ernie Huber and Mike Bosch out the back door to watch a flying demonstration of the two Jet Rangers complete with latest modifications. Ernie incidentally, is our U.S. National champ and Mike is the German National champ. At any rate, these two gentlemen demonstrated that the latest Jet Ranger rotor head is one of the best, if not the best, available today. And the mod can be easily incorporated into the existing head.

The flying demonstrations, this year dominated by helicopters, were kept very short. Cold temperatures and blustery winds sent spectators, scurrying back into the exhibit hall. It got so cold during one flying session that my Pentax camera shutter refused to work. During camera-warming in the station wagon, Bosch decided to land on the roof! Egads, claustrophobia!

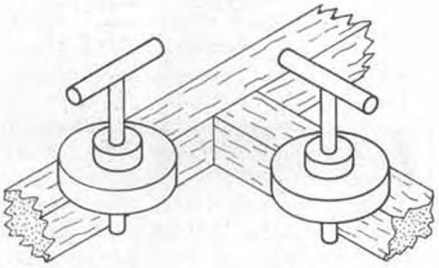
No thanks to the miserable weather, I was unable to see Bosch loop or demonstrate autorotation with the Jet Rangers. I was able, however, to watch some of Dewey Broberg's boys fly their new DuBro Sharks. The Shark looks like an easy ship to build and service. Everything is out where you can get at it. This is quite important, and many times I've spent an hour or more on scale type or closed fuselage models, pulling the main drive train out and reinstalling it just to do 30 seconds of work on some inaccessible component.

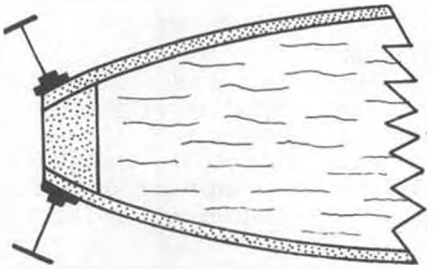
Once back in the warmth of the display hall, the other exhibits were toured. MRC was displaying a large Kalt Bell 212. This machine was larger than the Graupner 212 and had a rotor span of 67 inches. The mechanism was Schluter's, with a special collective pitch head added. It was apparent at Toledo that manufacturers were moving towards catering to people who wanted collective pitch. I suspect many beginners want the hard-to-repair and complex

your local hobby shop . . . you'll most likely buy one or more. The Pin Clamp . . . (see drawings) is the neatest little item I've run into in a long time. Basically it is a nylon washer with a neck which is a press fit on a straight pin. When pinning down balsa parts, the sleeve gives you extra surface holding area and the sketch tells it much better than I can. Especially good for holding sheeting in place while the glue sets. This item was developed and produced by Chris Chambers, Chuck's son, who is now getting into the Rocket City action.

A new adhesive for attaching sheeting to foam wings is "Red Tak," marketed by Westcoast R/C Products, 12084 Woodside Ave., Lakeside, Calif. 92040. With that red color you sure can tell if you got the stuff all over the foam and the balsa wood as well, when you want to get a good job done on a wing. They had some samples on the display table and sure enough you couldn't get the balsa to come away from the foam core . . . I even tried picking it away with my fingernails and it held firm. You can write them and get prices and additional poop. Tell 'em we sent ya.

Some interesting items from a new name in modeling, the Peerless Corporation, include some very good looking glider and sailplane kits, and a couple of super-strength electric starters that





will easily handle engines from .80 and larger, down to .09's. A note to them at 3919 "M" Street, Philadelphia, Pa. 19124, will get you a full color brochure fully describing the Cirrus 3000 glider kit and others, along with boats, and the starter I mentioned.

Quarter Midget fans will like the new Sig Minnow soon to be released by Sig Mfg. Co. Featured are formed plastic fuselage halves . . . an internal fuselage profile of solid balsa similar in design to their new Chipmunk and P-51, and foam wing cores with plastic covering. Price was not announced at Toledo.

Ace Radio, Higginsville, Mo., one of the pioneers of R/C supplies, showed its expanded line of pulse single channel equipment, as well as the new four, six, and eight channel transmitters to match the 2 to 8 channel digital receiver and servo. All these in kit form, and if you like to "roll your own," a letter to them at Box 301 in Higginsville, Mo. should get you a flyer on these items. Ask about the big catalog, too.

One of the most interesting plane kits for the sport flyer was shown by J.E.M. Enterprises. It's called "Quick One," and features a most unique design. J.E.M. says it is very easy to build and maintain, and although it is a tail dragger, they say it takes off great . . . even when the pilot is semi-skilled!! I wish I had a picture of it, as it looks very racy and the rudder is on the *bottom side* of the fuselage, which narrows down to almost a boom just aft of the radio compartment. The plane handles engines from .19 to .40 and spans 51 inches. Has cut foam core wings and the rest is standard balsa construction. If you want a nifty looking sport plane, you should drop them a line for a poop sheet on this one. Kit is only $34.95, and they even offer your money back on a guarantee if you are not satisfied with the performance claimed in their specs. That's confidence! Write 'em at 521 Bies St., Michigan City, Ind. 46360 and mention that you read it here, please.

Long Island Hobbycrafts Inc. showed four of the famous Nick Ziroli designs; all stand-off scale and designed for sport flying. Included in the group are the P-47 Thunderbolt, the Focke Wulf 190, the F8-F Bearcat and a dandy looking Stearman PT-17. I really dug the P-47!

Incidentally, when Nick Ziroli was producing kits under the Major Model label, he made an Eindecker, a Morane Saulnier, and a fine sport plane that flew with anything from a .15 to a .40 . . . called the Mirage. The Mirage was built in one piece and I started one a few years ago. Never quite finished it and (dumb me) sold it at the club auction. Ed Phillips, of our local club, ended up with it, installed a K&B .40, and has had hundreds of flights on it. Admittedly the .40 is a bit much, but it is a fantastic flying plane. Nick, when you read this, how about getting Long Island Hobbycrafts to put the kit out again? You can write to these folks at 722 Cross Bay Blvd., Broad Channel, N.Y. 11693, and they will send you spec sheets and pictures of the stand-off scale Ziroli planes. If you dig scale and want a very flyable plane, this is your chance.

Smiling Joe Bridi showed his new .40 size Super Kaos, along with a new Bipe and an RCM Trainer Jr. Joe also has a

poxy paint. Since I have been up to my ears in law school, and thus, very short on free time, good friend and outstanding modeler, Earl Harding, of the Valley Flyers, painted the "bird" for me and I will forever be in his debt. The finish was given a fast "rub out" using a mild rubbing compound, with good results. Hobbypoxy is easy to work with and the resulting finish is always good when the paint is properly applied.

I installed a new muffler-equipped, K&B 61 engine in the "Super Kaos" and it has lived up to my expectations. After a few runs in the air with the engine alternately breaking into and out of a rich four-cycle, it is beginning to come into its own with plenty of power and an idle that is a joy to behold.

Having not flown a true pattern machine of the caliber of the "Super Kaos" for a few years, my attempts at some of the more exotic maneuvers had me in tears of laughter. Boy, when you don't practice, things go to hell in a hurry.

To sum it all up, the radio has worked without a "glitch" and is, in my opinion, as good a radio for the price as you can buy. Joe Bridi's Super Kaos .60 is a fine pattern machine, as Joe himself has proven at many contests, and the K&B 61 will haul it straight up without a qualm. Carl Goldberg's tried and proven retract system is reliable and his new retract servo and attending micro switch activating mechanism seems to be living up to Carl's reputation for putting out a moderately priced and well engineered product.

Incidentally, that photo by Frank Capan of the ship sitting on the main gear and the prop *was not faked!* During one particular flight, the engine stopped on compression, and quite coincidentally, the linkage to the nose gear came apart (Keepers *do* help!). It restored faith in my flying ability when I was able to bring the ship down real slowly, nose high, and keep the nose up during the short roll-out. The "old Pro" held the prop clear until the plane had practically stopped, and only dragged it a few inches. Hardly took the finish off, and I'm still using the same prop. Try *that* on your Formula I job! ●

Beachey . . . . . *Continued from page 33*

install the plywood firewall. The cowling is optional and can be made from sheet balsa or the bottom of an aluminum soft drink can. The model will perform equally well with or without the cowl. Complete the rear of the fuselage and give it 2 coats of clear dope. Since the real aeroplane was left uncovered in the rear sections of the fuselage, you may want to leave your model uncovered to show the rigging. At least one of the aeroplanes did have the fuselage completely covered and I have found that the performance was improved.

COVERING

Cover wings and tail assembly with black tissue in the usual manner; spray lightly with water and pin frames down to prevent warping. The original fuselage was silk covered and has held up much better than tissue. The choice is yours. When the fuselage is covered, install the rigging pylon over the cockpit and give the fuselage at least 3 coats of clear dope. The wing and tail assembly will get 2 coats of thinned clear dope. The fuselage was aluminum from station No. 4 forward, in case you want to apply colored dope to your model.

Install wing panels, rudder, and elevator. Block up the wing panels to give 1-1/2 inch dihedral under each wing tip. When the glue has completely dried, install the rigging on the wing and tail. Complete the model by installing the engine, tail skid, and cowling. Note that the engine has down thrust added. This can be accomplished by the addition of a 1/16 inch washer under the top mounting lugs.

The model should balance 1-3/4 inches back from the leading edge of the wing, or almost directly under the peak of the pylon. Be sure that all rigging is secured before any test gliding or flying. The Lincoln Beachey responds well to all normal adjustments and recovers rapidly from unusual attitudes. The glide is shallow and fast, but very stable. If you experience looping under power flight conditions, increase the down thrust slightly. Pay particular attention to the ailerons at the trailing edge of the wing, any warp here can be a real thrill during a full power flight. ●

R/C Report . . . *Continued from page 15*

Boxes and their impressive record.

It is impossible to even mention all of the items shown, so I'll just have to hit a few that should interest you. For example, Du-Bro showed their new Shark helicopter. Priced the same as the earlier Hughes 300, the Shark is an evolution of this earlier model. The fuselage, I guess you call the passenger pod the fuselage on 'copter, is sleeker and the rotor blades are slightly shorter. Du-Bro claims this to be the quickest and easiest construction of any 'copter kit . . . price is $350, which includes the O&R motor and all fittings . . . but less radio, of course.

Rocket City Specialties, 103 Wholesale Ave., N.E., Huntsville, Ala. 35811, showed its complete line of accessories. Two new items included a new switch mount that should be on your dealer's shelves by now, and an item called a "PIN Clamp." The switch mount includes a fitting for the "Off-On" push wire to dress up your installation. Look at this item the next time you're in

production engine would have a chance in international competition. There are some super-hot 15's around . . . if we could just get Rossi to make one with the exhaust turned around for car use . . .

NATIONALS

The Nationals last year was the first big race to be held on the newly adopted .059 cable. This caused the Dooling powered cars to be slowed down from four to ten miles per hour. The OPS cars weren't affected quite as much, so for the first time in many years the Dooling had to take second place to another engine. In fact, this is the first national race that was not won by a Dooling since they were introduced in the 1940's! The king is dead, but other engines are taking its place.

Phil McDonald's OPS car took first place in the custom class with a speed of 159 MPH, to show the way of the future. Most of the talk was about the upcoming world meet to be held at Anderson, Indiana the first week of September, 1974. Several people are planning cars for the smaller classes, and talking about the OPS and how to tune it for top performance.

The people who weren't talking about the world meet were complaining about the new cable size that was like putting on the brakes for most cars. The light cars had traction problems trying to drag the heavy cable around. The heavy cars had less trouble, but were still slowed down several MPH. At the annual national meeting it was proposed to reduce the cable size to .055, which is between the old .051 and the new .059. This was voted down by the membership because of the greater safety margin of the large cable. It is my feeling that the weight limit should be lowered from 9 lbs. to 7 lbs., and the .055 cable used. Less weight would provide the necessary safety margin.

In a 4 cycle engine, the strokes are referred to as Intake, Compression Power, and Exhaust . . . or as my old Uncle Clem would say, "Suck, Squeeze, Pop, and Phooey!" ●

C. W. Jnr. . . . *Continued from page 13*

lage-mounted servo. This area under the floor also provides access for attaching the wing hold-on rubber bands to the root rib cup-hooks. Note that the 1/16 inch ply sides of the nacelle must be slipped over the wire wing dowels *before* assembly of the nacelle.

Depending on the engine used, a left-hand prop may be necessary. For some engines, you can obtain a left-hand crank. If not, it isn't all that bad to carve your own prop, and chances are you'll never need more than one. If you still have your September 1969 M.A.N. around, you'll find an excellent article on prop carving by Chuck Gill. Grish makes 8 x 6, 9 x 6, and 10 x 6 pusher props, but a low pitch, larger diameter prop seems better for this model.

The wings are standard construction, with two inner main spars, false ribs, and a sturdy leading edge set diagonally. The dowel supports are hardwood pieces drilled to take 1/8 inch inside diameter brass tubing. The plug-in design may seem inadequate at first glance, but remember, the wings aren't cantilevered in the same fashion as most gliders, but are supported by very functional struts.

The best way to position the dowel support blocks is to install them loosely, block the wings up on a flat surface with the proper dihedral, and insert temporary 1/8 inch music wire dowels. When everything is in alignment, sock the epoxy to it.

Radio-electronic supply houses usually carry spade bolts, if you can't find them in the hobby shops. These are installed in well-epoxied plywood beds to hold the strut ends.

When building the struts, first rig up the wings and block them into proper alignment and dihedral. Now, with the plane in front of you as a guide to proper strut length, you can make up the four required. Unless you're an absolute perfectionist, none of the four struts will come out the same length. When they're all in place and adjusted to length (small changes can be made by bending the 1/16 inch wire ends), remove them one at a time and scribe identification marks on one end of each dowel. We use FR, FL, RR, and RL. The balsa streamline fairing is a final touch that is not necessary, but certainly improves the appearance.

The landing gear is scale in size and position. When flown from grass fields the plane will sometimes ride up on its nose, mostly due to the high thrust line. If you feel this will be a problem, the gear could be moved forward; however, generous portions of up-elevator when first applying power will usually overcome the problem.

The plane as shown is very close to scale. Karlstrom 3-views were published

line of accessories, such as landing gear blocks, bent wire landing gear, and so on, along with a very good wing jig at only $12.95. This jig will fit all the Bridi kits . . . as well as other wings, and will give you a very true wing panel with minimum effort. These new Bridi items are due out and probably will be in your hobby shop by the time this hits the newsstands. Ask your hobby dealer.

Airborne Associates, 4106 Breesewood Lane, Annandale, Va. 22003, (notice how clever I get the address in there so you can write to them?) had more fine fiberglass fuselage/foam wing planes in their line. Newest, along with Kirkland's "Nutcracker" and Chidgey's "Tiger Tail," is Don Lowe's very new Phoenix 6. This particular kit features what I think is the finest of workmanship in a fiberglass fuselage, with bulkheads and engine mounts installed. The fuselage is already joined, and a razor-sharp fin, along with the rudder, is an integral part of the molding. I just received one of these kits for evaluation and hope to start on it soon. It is a kit of superior quality and design, and if you lean toward this type of construction, you should write them for their brochure.

This could go on forever, and I could probably fill the entire magazine with a paragraph about each item shown. Those I mentioned are but a few of so many outstanding offerings, it is not possible to cover them all.

Change of subject: Wonder if you have noticed at your flying field that there are more youngsters getting into R/C? It seems so at my field. Of course, younger than I am covers many years, but I'm speaking of the kids. Fortunately this hobby is expanding, and these kids are managing to scrape together enough to get a radio and get into the action. Perhaps the old man realized what a wholesome and rewarding activity building and flying R/C planes can be and bankrolled the kid . . . next to college it might be the best investment the old man makes.

Watch for the kids and lend them a helping hand. It's so gratifying to see them learn to fly and enjoy the fun and fellowship. They are full of questions and often are too shy or embarrassed to ask, and need encouragement.

Hope I'm not biting off more than I can chew, but youngsters; if you are starting out in R/C and need help or advice, drop us a line and maybe we can steer you right. Until next month it's back to the old building board and those two planes I started at the same time. (How could I do that?? let's see now . . . start one . . . finish same one . . . then start another, finish it . . . oh, well, it's just as much fun the other way.)

Frank Schwartz, R/C Editor, 2400 West End Ave., Nashville, Tenn. 37203.

T-Cars . . . *Continued from page 49*

any "60" on the market at this time.

The 5cc, or .29 cars, are truly phenomenal. The 5cc record is now 160.60 miles per hour, held by Peter Ziegler of Germany with a car and engine that were made in Russia. Peter had the car for two years and is just now getting it to run properly. This record is even more outstanding when you consider that there are only half a dozen 10cc cars in the world that have run over this speed. In the European rules there is a weight limit for the various classes. This limit is 4.9 pounds in the 5cc class, and the cars run on a .041 diameter cable. The small cable is a great help, but that Russian engine must be putting out a fantastic amount of horsepower to reach such a speed!

The 2.5cc record is 145.25 MPH, held by Marta Mondani of Italy, and the 1.5cc record is held by Imre Iharosi of Hungary, with a speed of 122.90 MPH. Most of the cars and engines in the smaller classes are custom built because of the lack of engines adaptable to cars in the small displacements. Another interesting point to note is that 1.5cc works out to about .091 cubic inches, while most of the "09" engines made today are of .099 displacement. However, with the lack of hot engines of this size, there is little chance that a

individual. It goes kinda like this. Any sailplane will fly with an infinite number of trim conditions. A forward CG position . . . say at the 30 per cent average chord point . . . will provide a greater degree of dynamic longitudinal stability than an aft . . . say 40 per cent . . . CG position. Also, the more forward CG will result in slower flight speeds. And the more forward, the more stable and more slower . . . so to speak. Well, within limits.

Here's why. A sailplane that balances forward of its wing's CP position, for any given angle of attack, is nose heavy. Brilliant! This acts to rotate the nose downward, and without corrective action results in a spectacular descent. To offset this situation, a downward force at the tail can be created either by stabilizer negative angle of attack or "up" elevator. This causes an opposite and cancelling rotary motion, forcing the wing to a higher angle of attack. The higher angle of attack causes CP to move forward, and thus bring CP and CG back into a balanced relationship. Within limits. Also, the higher angle of attack generates more lift, but at a significant increase in drag. Result: slower flight.

The greater difference between wing and stabilizer angles of incidence . . . resulting from the negative stabilizer setting to offset the forward CG . . . gives the stabilizer more power to maintain the wing at the desired attitude (angle of attack). Result: greater stability.

If all this gets a bit confusing . . . well, let's try some examples. They should help. Assume Sailplane A has a 30 percent CG position. To offset this nose heavy condition, assume the stabilizer is set at 6 degrees negative to the wing. Next, assume Sailplane B with a 35 percent CG. For desired glide trim, assume it's stabilizer is at 4 degrees negative to the wing. Other than balance . . . CG position . . . and stabilizer setting, the sailplanes are identical, including wings which utilize an airfoil section that stalls at a 10 degree angle of attack at a given air speed.

Now, assume that both Sailplanes A and B are upset by vertical gusts. The Sailplane B wing angle of attack can be increased 6 degrees before stall occurs and the nose drops for recovery. The Sailplane A wing, which flys closer to the stall under normal conditions, need be upset only 4 degrees before stall and subsequent nose down recovery is initiated. For simplicity, consider a single point in time during the nose down corrective oscillation when the wing is at 0 degrees angle of attack. At that instant, Sailplane A stabilizer will have a corrective . . . tail down . . . force equivalent to minus 6 degrees angle of attack. Sailplane B will have stabilizer power equivalent to only minus 4 degrees angle of attack. In these examples, it is assumed that the stabilizer airfoil is a symmetrical section with no lift at 0 degrees angle of attack, and similar positive and negative force at positive and negative angles of attack.

Under the above conditions, Sailplane A will be more solid in the air than B. Sailplane B will be more easily upset, make corrective oscillations of greater amplitude for more cycles, and generally be less dynamically stable than Sailplane A . . . because of less stabilizer power to hold or return the wing to its proper flight angle.

Let's go one step further. Assume a Sailplane C to be the same as A and B except for the CG at 40 percent and stabilizer at 2 degrees negative to the wing. This configuration will be the fastest of the three because its wing is not required to operate at an angle of attack as great as either A or B. A better ratio of lift to drag (L/D) is realized. But automatic longitudinal dynamic stability will suffer.

The Sailplane C configuration requires an 8 degree upset before stall occurs. As the stall attitude is reached, its stabilizer force of plus 8 degrees (10 degree stall minus 2 degree stabilizer setting) will provide a relatively powerful tail up/nose down action. However, as the nose falls in stall recovery, very little stabilizer force will be available to stop the downward plunge . . . only minus 2 degrees as the wing passes through the 0 degree angle of attack position. This allows a long, swooping dive which develops extremely high air speeds, followed by great, corrective zooms upward and subsequent secondary stalls. Sailplane C approaches the neutral dynamic stability definition.

In each of the three example sailplanes, the stabilizer is set at an angle negative to the wing. This arrangement works to correct high angles of attack and effect stall recovery. Though the stabilizer's negative relative angle provides an "up" elevator force in normal gliding flight, it also provides a force tending to raise the tail . . . and lower the nose . . . as the wing stalls and loses its lift. Assuming that the stabilizer airfoil section stalls at the same angle of attack as the wing . . . which is highly improbable . . . the Sailplane A wing would stall 6 degrees sooner than its stabilizer; Sailplane B, 4 degrees earlier; and Sailplane C, 2 degrees.

It might seem that Sailplane C would have less tendency to reach high angles of attack since it flys with the least negative stabilizer setting . . . less "up" elevator force. This is true for upsets caused by wind gusts. The more common problem, however, is the extreme angle of attack, which results in a stall

in the July 1957 M.A.N., and U.S. Civil Aircraft Vol. IV by J.P. Juptner has the full particulars. Whether you build it for scale competition or not, putt-putting around with the C.W. Junior is different, relaxing, and just plain fun . . . and one prop can last forever. ●

R/C Soaring . . *Continued from page 25*

If a sailplane is dynamically stable, each oscillation will diminish in amplitude until steady, unaccelerated flight is reestablished. If the oscillations increase in amplitude . . . the nose up/nose down corrections getting progressively more exaggerated . . . dynamic instability is in evidence. A sailplane with neutral dynamic stability goes off into the sunset happily oscillating all the way with no change . . . for better or worse . . . in its erratic mode of flight.

This stability/instability stuff is true for roll, yaw, and pitch, but of the three, longitudinal motion is of greatest concern to the R/C soaring pilot. Sailplanes pitch stability affects stall characteristics, control sensitivity and response, maneuverability, and thermal sensing capabilities. Might say that pitch stability has much to do with general soaring performance. Marginal roll and yaw stability can reduce performance potential by degrading flight efficiency, but pitch stability is essential.

Chances are that few soaring enthusiasts have ever seen a sailplane that was statically unstable. They'd have to look quick. Its flight performance would be almost unbelievable. A sailplane that was unstable in pitch, for example, would not necessarily lower its nose after stalling. Rather, it might maintain its nose up attitude or even flip inverted. It might literally tumble or possibly tail-slide right to the ground. Should the nose be lowered, a statically unstable beast might continue to tuck under as if entering an outside loop instead of the nose raising as a result of the increased speed. The descent of a free-flight model from which the tail surfaces have broken away is a pretty fair demonstration of pitch instability. Such a configuration definitely would be a handful at the transmitter.

Neutral static stability can be likened to the flight of an arrow. Wherever it's pointed, it goes.

A statically stable sailplane is one in which the several forces and moments are so arranged and are of such values that the vehicle tends to return to a normal flight attitude no matter how or to what extent it may have been upset. It all has to do with laws of physics and such . . . which every sailplane understands and follows whether or not the pilot knows what's happening.

Everyone can agree that positive static stability in all axis is good stuff. Sailplanes just should not be designed to self-destruct. With concurrence on this point, the pros and cons of static stability can be dismissed and full attention directed to dynamic stability.

Dynamic stability, as with most things, comes in varying degrees . . . from not much, or even negative values, to great gobs. Again, as with most things, moderation is probably the best policy, because even with dynamic stability, either too little or too much can be undesirable. Since dynamic instability (wherein the amplitude of the so-called corrective oscillations increase with each cycle) results in a pretty wild bird, let's forget it. Same with neutral dynamic stability. It we don't need. What is worthwhile . . . make that "necessary" . . . for successful R/C soaring is positive dynamic longitudinal stability.

There are two readily adjustable, interrelated elements that affect dynamic longitudinal stability: mass balance (longitudinal CG location) and stabilizer power. These factors must be compatible with the wing's center of lift if an acceptable level of dynamic stability is to exist.

Every airfoil section has certain aerodynamic characteristics. Each has a coefficient of lift, for example, and a coefficient of drag. Accordingly, each section has a unique lift/drag ratio (L/D). The values of these are depicted as curves on airfoil characteristic plots published by various technical agencies. A typical graph prepared by NACA (now NASA) for the Clark Y section is shown in Figure 2. Similar data for the NACA 6409 are in Figure 3. A characteristic which is of particular importance to longitudinal stability is also shown on most airfoil plots: center of pressure (CP) position as a function of angle of attack.

Consider an airfoil section's center of pressure to be its center of lifting pressure or, simply, center of lift. The center of pressure (lift) of a curved surface, such as an airfoil, moves toward the section's leading edge with increased angle of attack. It moves aft at reduced angles. Figures 4 and 5 illustrate this travel in relation to a given CG position which remains fixed . . . naturally. In Figure 4, the center of pressure (CP) is forward of the CG, opposing corrective action. In Figure 5, CP is aft of CG, again opposing corrective action. Unfortunately, airfoils typically used on R/C sailplanes are statically unstable in just this way. Their natural characteristic is to aggravate an upset rather than to help improve it. This can be demonstrated with any one-piece wing assembly. An attempt to glide the unit usually results in a backward rotary motion.

Note that the CP travel for a given angle of attack range is less for the Clark Y (Figure 2) than for the NACA 6409 (Figure 3). Between 0 and 10 degrees angle of attack, the Clark Y CP moves from the 42 per cent chord point to the 32 per cent point for a total movement equivalent to 10 per cent of the airfoil length. The CP on the NACA 6409 moves from 56 per cent at 0 degrees to 37 per cent chord point at 10 degrees angle of attack. Total travel almost twice that of the Clark Y CP. This shows that the flat bottomed Clark Y section is the more stable of the two. It will require less stabilizer power than the undercambered NACA 6409 for a given level of automatic longitudinal stability.

Now, how to make all this wealth of knowledge work in the trim adjustment of a sailplane? It's got to be a trade-off . . . a compromise . . . to satisfy the

CLASS A/B COMBINED

1. Jerry Otis
(Zipper/O&R .29) 8:38
2. Hugo Lung
(Playboy Jr./Arden .19) 8:36
3. Larry Boyer
(Ranger/Arden .19) 8:01

CLASS C

1. Hugo Lung
(Sailplane/Orwick .64) 13:00
2. Bob Longstreet
(Sailplane/Orwick .64) 8:18
3. Larry Boyer
(Ranger/O&R .23) 8:05

"OLD RULER"

1. Bob Longstreet
(Sailplane/Orwick .64) 12:25
2. Jack Transue
(Playboy Sr./Ohlsson .60) 11:23
3. Larry Boyer
(Ranger/Arden .19) 8:27

NAME THE 1936 NATIONALS WINNER CONTEST

Wanna win an O & R 23 engine?? All ya gotta do is to correctly identify all the 1936 Detroit Nationals winners in a photo taken by General Motors. Each winner was given a copy of this pic. This photo came from Frank Ehling, who in turn got it from Gordon Light, then model editor of Air Trails.

We did run this picture in the Model Engine Collectors Journal five years ago as a novelty. Response was extremely disappointing. Perhaps this time, with a magazine of national distribution, we might get a bunch of eager beavers to compete. (Side note to Jim Adams: If you correctly identify them this time, it'll be better than an Ohlsson 23!)

All entries should be addressed to the 1936 Nats Winners Contest, Model Builder Magazine, 1105 Spurgeon, Santa Ana, Calif. 92701. Incidentally, just to get you off on the right track, the man with the Wakefield Trophy in the center, front row, is A.A. Judge from England. Now the rest is simple!

CONTEST SCHEDULE

Outside of the California contest schedule, the writer hasn't received a heckuva lot of information on old timer contests around the country. Received a real humorous letter (and didn't recognize it as such at first) from Warren Shipp of Brooklyn, N.Y., who sent in a calendar listing of contests consisting of a blank space. In some respects that's sad! Whassa matter with the SCAMA group? I know they put on a meet or two. The idea of an Old Timer Contest Calendar can be helpful for both the contestant and the contest sponsors. All we need is a little cooperation, men!

Having received some info from the Utah State Aeromodellers (USA) of Salt Lake City, we'll try again next month. Send in those dates!

ENGINE DRAWINGS

The writer was rather surprised at the reaction to Bob Von Konsky's suggestion to have this particular column feature a three-view of old ignition engines to acquaint prospective old time modelers with the sizes and looks of the old engines. If Editor Bill okays it, we'll start next issue. In addition, we'll see if we can con Tim Dannels into releasing a couple of his good drawings so that we can put up a rare one every so often.

CARTOONS

Just ran across a flock of cartoons done by Joe Bickinella, who lampooned "Daddy Warbucks" about five years ago. If you guys are interested in laughing at (or with) Pond when he was called the "Air Arm" of the Navy Radiation Lab, then be sure to drop this column a line. Some of the stuff is pretty humorous. Note how we try to cater to you, the reader?? Well, this is a democratic column!!

Next issue we're gonna describe the Texaco Contest put on annually by the SCAMPS. With Sal Taibi running things, and Nan providing the coffee and doughnuts for the sleepyheads, this meet, run between 6 and 10 AM, should be a real "dawn patrol." Ach himmel! Vot a vay to go! ●

Counter . . . . . *Continued from page 7*

wrong track. This profusely illustrated book has obviously been written by a modeler whose throwing arm has heaved many an all-balsa glider into the lower atmosphere. Furthermore, the manuscript for the book was proofed by Bob Hatschek and Jack Minassian.

With his sketches illustrating every step of the way, Kaufmann takes you through selection of materials and tools; construction of each portion of the model (including a flip-up stab dethermalizer); trimming, test flying and adjusting; launching method, picking thermals (including wind sticks and thermal streamers) and contest flying.

Finally, a good basic 14 inch span design is used throughout the book, and a dimension chart for building it in 16 and 18 span sizes are also shown.

This is a great book for the modeler who wants his offspring to get properly into the hobby and needs some help in recalling all the things he wants to pass on. (The old man may learn a few things too).

* * *

Whenever we read about another club wising up and adopting a muffler rule, it always seems that the little engines, usually below .19 displacement, are excused from the rule. This is sorta ridiculous if you stop and realize that the little buggers usually turn up fantastic rpm's and can always be heard above everything else.

Logically enough, L.M. Cox, which produces most of the little noise makers have, at last, been the ones to come up with a series of super-effective silencers for these midget screamers. The new Cox mufflers, made to fit the .020, .049, .051, .09, and .15 engines cut sound levels from 115 decibels down to 75, at 50 feet. The unique "tuned pipe" feature of the new muffler eliminates need for a special cylinder or glow head, and top end power is not affected.

Clubs should now say "All engines must be equipped with effective mufflers. Users of .010's are expected to play loud music on portable radios while flying their planes."

* * *

We're glad to see Len Sabato back in the R/C helicopter business again. The new LENCO 100 helicopter should be one of the most easily built and maintained choppers on the market to-

or even a loop, caused by excess lift generated by excess air speed. Since air speed develops from the nose down corrective action following a nose-upward upset . . . which may have been caused by a gust . . . Sailplane C is more susceptible to this problem. It has less pullout power since its stabilizer is only 2 degrees negative to the wing. Once Sailplane C's nose is pointed earthward . . . even at only a shallow angle . . . a great amount of speed will build up before adequate force is generated by the stabilizer to overcome the problem. As the nose is rotated upward out of the dive, the high air speed produces excess lift, as evidenced by a steep climb, which often ends in a full stall or a rather dramatic loop . . . either of which may be followed by another screaming pass at the grass.

Sailplane A, on the other hand, is less likely to develop a severe stall or looping problem because its more powerful stabilizer setting . . . 6 degrees less than the wing . . . works to limit and nose down attitude and prevent speed buildup.

Now all this could get to be a bit discouraging, but, remember, we've been talking about automatic, hands-off stability. Any of the three example sailplane configurations could be flown with appropriate R/C piloting technique. The solid-as-a-rock stability of Sailplane A might be appealing, but its flight characteristics would be sorta like an airborne truck . . . unresponsive and unexciting . . . poor penetration and mushy glide. Sailplane B approximates a lot of configurations currently flying . . . better'n a truck, but short of potential performance. Sailplane C is the least stable version, and approaches what is called a "pilot's sailplane." It is relatively fast and offers good penetration. Its lack of stability can be interpreted as "bouyancy" . . . as its glide path is upset by the slightest gust or other disturbance, such as a thermal. Sailplane C gives its pilot a definite signal when lift is encountered. Whereas A and even B have a tendency to drive right through, C bounces and bobs in turbulent air. "The lift's over here, Dummy."

With Sailplane A or B, the pilot can relax during most flights, confident that his bird won't get into trouble if he's inattentive for a few moments. Not so the pilot of C. His is a highly sensitive thoroughbred . . . tuned for competition . . . and, as with any such machine, animal or being, it demands proficiency in handling and constant attention.

A conservatively stable sailplane will be easy to fly, but at a performance penalty. The more lively vehicle will be a piloting challenge, but offer compensating soaring rewards. That is, it will if flown with the degree of finesse necessary to exploit its potential. If it's all over the sky, soaring efficiency can hardly be expected. Each pilot must make his own choice, considering his skills and limitations. This requires exposure . . . repeated, methodical testing over the full spectrum of stability adjustments. It'll take numerous flying sessions to do it properly.

The safe way to approach the problem is to make small, incremental variations from an established, proven trim. First, work toward greater stability by adding quarter-ounce weights in the nose. Early flights with each change in ballast can be controlled with elevator trim. When the appropriate, new setting for stabilizer incidence is determined, the stabilizer should be so adjusted and the elevator trim returned to neutral. Once a satisfactory hands-off glide slope is established with a given ballast, another increment of weight can be added, and the process repeated. When things get spooky, quit. Go slowly and pay attention to what's happening with each revision. A nose heavy sailplane, flying at the edge of a stall, can snap and spin faster than a successful streaker at a gay liberation convention.

Similarily, small weight increments can be removed from the nose . . . or added to the tail, if necessary . . . to move the CG aft. With each step, exercise reasonable caution, as with any experiment. There's no reason to bust up a sailplane.

Test flights with each ballast and trim change should include the full range of normal maneuvers; steep and shallow turns, best L/D speed, slow flight for minimum sink, and hands-off recovery from both straight flight and turns. A few "best performance," competition type flights will also be worthwhile. Keep notes to record balance and trim, as well as impressions, problems, pleasures and performance for each flight. Otherwise, you'll never remember.

It's all a matter of trial and error, but one thing's for sure; nothing ventured gathers no moss. Or something like that. You may even be surprised . . . pleasantly. There has been occasion recorded when a real dog of a glider became a high-performance sailplane . . . instantaneously . . . merely by shifting the CG and retrimming the stabilizer incidence. Absolutely amazing. Sometimes the damn things come alive with only small changes. Might be that your current pride and joy is right on the mark . . . but, then, maybe not. How ya gonna know if what you've got's good, if ya don't monkey around a little? . . . So to speak. ●

Plug Sparks . . . *Continued from page 47*

one-two for high time. Hugo Lung and Bob Longstreet, respectively, in high time place, also won their particular event. This time, hot shot Larry Boyer won three silver drinking mugs for three third places. Too bad ya gave up beer drinking, old buddy. Ha!

"Make me famous" Jerry Otis (his favorite photographic hunting cry) made the boys sit up and take notice that even though a novice, he can still be a threat. Last contest he won with an Atwood powered Buzzard Bombshell, and to show the win was no fluke, he won this time with an Ohlsson powered Zipper!

The writer has received numerous requests to list the winners, with the type of plane and motor combinations used. This should help out those fellows who are doubtful as to what power combination to employ.

fliers. In fact, gas is my favorite event, but I didn't realize that the concentration recently has been on other than gas events. So, how's this for a thought: We haven't flown gasoline powered models, except in O.T., for years, but glow engines use funny smelling chemical concoctions. Most contestants use commercial blends, such as Cox Red Can or Fox 40-40, but how about mixing your own. Here are some suggestions from El Torbellino, San Diego Orbiteers Newsletter:

Kirn's No. 1	Kirn's No. 2
50% Nitro	60% Nitro
15% Klotz	14% Klotz
5% Castor	6% Castor
30% Alcohol	20% Propylene Oxide.

Note: No. 2 fuel is faster than No. 1, but may use a plug each run, according to Dale Kirn. I've found in F.F., the plugs may last several flights. At a buck a plug that's good news - - or is it? The above fuels are recommended for Cox engines.

Kirn's No. 3
60% Nitro
15% Klotz
5% Castor
20% Propylene Oxide

Frantic Fred's Fabulously Fast Formula For Free Flight Fuel. (F^9).

60% Nitro	2% Lubricin
23% Klotz	15% Alcohol

Kirn No. 3 works well between 77 and 100 degrees F., and at less than 40% humidity. F9 has produced good success with K&B 40RR engines . . . with pacifiers, of course. Cox engines seem to really stand up well with it, and just go wild on RPM. Try a 5 x 3 Top Flight nylon propellor. Don't balance it. (That's right . . . don't balance it.) Put the heavy blade on the counter balance side of the crank. Unless your prop is really off, the motor will RPM better and smoother this way. By the way, using these ideas, be ready to re-trim your 1/2A ships. It seems that the small, light ships just go bananas.

MODELING HUMOR DEPARTMENT

This month, I am labeling the humor section especially for Hornbeet J. Murphman. Please note that the following is a glossary of terms defined for the neophyte in Free Flight. These are terms which are used day in and day out and should be common knowledge to any free flighter. But on the off-chance that this is not the case, the following names should be studied carefully so that you don't appear stupid when discussing free flight with your friends. For some of you old free flight hands (that's an interesting event idea . . . free flight hand), you will probably wish to read these definitions to fill out voids in your vocabulary.

Aloomy-um: Soft metal of light weight. Used for construction of Mupplers, Ganding Leer, etc.

Cab-nee: Posts on top of bi-plane fuss-ladge to keep top wing from falling on the pilot and obscuring his vision. *(You gotta be kiddin'! wcn)*

Ch-ord: Straight line used between leading and trailing edge of wing. Used so that curved lines on top and bottom will have some place to go.

Clod-kicker: One who has a module, but is ashamed to let other people see it. Usually shows up with camera, wide tie, Gatsby shoes or some other device to draw attention away from lack of flying.

Conway: Small yappy dawg.

Contest: Prohibited.

Deb-ris: All that's left after zonk.

Dee-boner: As in "he is swave and dee-boner, ain't he?"

Deco-lahge: The front of a woman's dress. Also a shiny board for displaying burnt paper.

De-hydral: The upward bend in a wing, caused by streching rubber bands too tight or by performing consecutive loops.

Dekkle: Glassine substance soaked from paper and mixed with clear dope to a crinkle finish.

En-gine: Used to keep por-po-leller from falling off front of fuss-ladge.

Empy-nadge: Rear of fuss-ladge. Usually seen protruding from a pile of broken balsa and tissue.

Fin: Vertical stave-il-izor, or when combine with "hatty," is a Scandinavian fish dish.

Frool: Smelly liquid pumped from a container, through a series of tubes and onto the ground. Often blown into eyes by pro-po-ller and mistaken for tears.

Fuss-ladge: Main part of airplane. Used to hold all of the other parts together.

Ganding-Leer: Device on bottom of fuss-ladge which is used to snag gopher holes.

Gard: An owie caused by friction with asphalt.

Humi-diddy: Moisture content of the air.

Jass: Opposite of Knoe.

Module: Small replica of a biggy.

Muppler: Noise suppressor or a scarf.

Murf: The sound a pro-po-ller makes in tall grass.

Nackell: Type of cowling on modules, tapered on rear to keep air from snapping shut and breaking the wing.

Plascutt: Substance used in the manufacture of pro-po-llers.

Pro-po-ller: Device on front of fuss-ladge. Usually broken on one side or if made from plascutt, is used to draw blood from finger. This small ceremony usually accompanied by muttering of cryptic lan-gwidge.

Stave-il-izor: Device on rear of fuss-

day. Expected to sell for under $300., the non-scale model features a built up fuselage of prefabricated wood and foam parts. All major mechanical components are completely assembled and ready to bolt in place. For further information, write to LENCO Products, 219 First St., Buchanan, N.Y. 10511.

* * *

The sexy new Dieter Schluter designed "Gazelle," scale model of a French helicopter, will be available some time in May from Aristo-Craft, 314 Fifth Ave., New York 10001 (contact Gil Rose). Displayed and flown by Dieter at Toledo, the new chopper was a tremendous hit. It incorporates a new, simple collective pitch system, and will list at $389.95. With the addition of the Gazelle, Aristo-Craft has increased its R/C helicopter kit line to 5, and plans in the near future to announce an accessory pack collective pitch head that will allow conversion of any of the previous kits to this system.

* * *

Jim Crocket Replicas, 1442 N. Fruit Ave., Fresno, Calif. 93718, is introducing several new items for the serious free flighter.

Most interesting, is a selection of cast aluminum winding hooks for scale, competition, coupe, sport, and even Peanut rubber models. The hooks, with special hard polish shot finish, are based on the designs used by expert Wakefield fliers Bob White and Jim Quinn. Other items include stabilizer tie down hooks, dethermalizer kit, folding prop hub kit, circle tow casting kit, and a Peanut Scale pilot!

* * *

Based on the chance meeting of its two partners at a gas station (!), a new model company has been formed. The company is Peterson Products, and the partners are Ralph Peterson and Sam Products . . . naw, Art Reiners. Located at 44935 N. 10th St. W., Lancaster, Calif. 93534, the company plans to produce a line of sport free flight and R/C kits.

In case the name doesn't ring a bell, Art Reiners designed the Beachey model featured in this issue and the Baby Boomer which was in our Sept. '72 issue. These, and the Pup, a low wing sport model, will be the first kits introduced. Actually, it will be four in all as the Beachey will be available in two sizes, for .020 and .049 power.

Future antique models include the 1930 Longster III and the 1909 Bleriot XI, also R/C versions of the Boomer and the Beachey.

* * *

In our Classifieds this month, you'll notice an ad by Ralph Beck for 2 inch scale drawings of the Curtiss Jenny. There are 3 sheets of drawings, each 33-1/2 by 72 inches, and in our opinion, they are the most complete set of highly detailed scale information we have seen to date. By all means, send for a free set of 8-1/2 x 11 reduction prints so you can see what he has done. Even if you never intend to build the Jenny, you should own a set of these drawings just for a conversation piece, if nothing else. The detailed OX-5 engine alone is worth the price of admission.

* * *

JP Models announces that it has added the 98 inch span JAVELIN to its line of R/C sailplanes. The fuselage uses the same rugged 1/32 inch rolled plywood fuselage with a durable, fiberglass nose featured on the Dart and Dart II sailplanes, and is supplied in a white epoxy finish. The fuselage is both strong and light weight (6.5 oz.), and is designed so that no ballast is required in the finished model to obtain the correct C.G. location.

The completed JAVELIN has several convenience features. Both the wings and the all flying stabilizer are removable and can be easily stored and transported in the carton in which the kit is supplied.

The wing assembly is fastened to the fuselage with a proven system using internal rubber bands and steel pins. This allows the wing to pop off during hard landings without any danger of separation during violent maneuvers such as loops and high acceleration launches.

Weight of the typical finished JAVELIN, with a 2 servo radio is approximately 32 oz. This gives a wing loading of 7.5 oz./sq. ft. Tests have shown that for high wind slope flying, 8 oz. of weight can be added to the C.G. to bring the wing loading up to 10 oz./sq. ft.

The link between the servo and the control surfaces is a flexible steel wire inside a nylon tube bearing. This gives a low friction linkage, eliminating the annoying trim problems associated with the plastic push rods.

The JAVELIN is priced at $49.50. If not available at your local dealer, order direct from J.P. Models, 26557 Mazur Dr., Rancho Palos Verdes, Ca. 90274. ●

F/F . . . . . *Continued from page 39*

dee. Some of you out there may not be up to making one of these fancy gadgets, but they are available, if you have $13.00, from E.B. Turner, 3544 Granada Dr., Ft. Worth, Texas 76118.

PAPER TUBES SHOULD BE USED FOR TOILET PAPER ROLLS AND NOTHING ELSE

From Max-Fax comes some interesting info passed on by Bill Wilson, who has built several Wakefields using Estes rocket tubes as employed on the Maxine. Bill has unfortunately found a recurring problem with these paper tube fuselages. After awhile the paper tubes weaken. Bill's latest paper motor tube problem is flexing at the base of the wing pylon. This flexing, needless to say, changes all the angular relationships of everything. Under static conditions this flexing ability is not readily apparent. If you are using paper tubes in Wakefield and getting erratic power patterns, check for tube flexing. Bill suggests covering the tube with a layer of 1/32 inch balsa, fiberglass over silk, or similar techniques to prevent this flexing. Bill, however, has changed to aluminum tubes.

THE "WHY ARE WE IGNORING GAS POWERED MODELS" DEPARTMENT

Gee Whiz, gang. Sure didn't mean to leave out all of the gas powered

sheet balsa parts to any given model building project for which we sell plans. When we say complete, this means that if a plane has 24 wing ribs all exactly alike, you'll receive 24 wing rib patterns . . . not just one.

Let's take a f'r'instance . . . the Curtiss Wright Junior in this issue. There will be 12 pattern sheets, some for 3/32 balsa, some for 1/8 balsa, and some for various thicknesses of plywood. Using scissors, rough-cut the rib patterns out, leaving about an 1/8 inch of extra. Lay the patterns on a sheet of 3/32 balsa and juggle them around for the most economic use of the wood. Now, one by one, remove a pattern, peel off the backing, and press it into place on the wood. When you've finished this operation, you'll have a complete sheet of printwood! Not only that, *you* will have selected the quality of wood you want for your own model! Each pattern piece will show the piece number and the proper grain direction. Further, you will find that the pressure sensitive paper holds the surface grain together somewhat, and can help prevent splitting.

"Stick 'em Patterns" will: assure accurate duplication of prototypes, allow drawings to remain intact for further use, free the model builder from many tedious hours of pattern transferring, allow personal selection of materials and economic use of scrap pieces, and provide the convenience of kitted models to the scratch builder.

MODEL BUILDER, in cooperation with Windancer, will be offering "Stick 'em Patterns" for all major model building plans projects, as published in MB. You can order the plans *and* the patterns at the same time, from the same source. As time goes on, we will prepare pattern sets for previous construction projects for which full size plans are available. Think of the convenience in building Old Timers, such as Sadler's Pacemaker or the Zipper, with all of those different size ribs.

As the decision to provide "Stick 'em Patterns" was just made at press time, we have only had time to process the Curtiss Wright Junior and T-D Coupe. The C. W. Jr. Stick 'em Patterns, consisting of 12 printed 8-1/2 x 11 pressure sensitive pattern sheets, costs $3.95 a set. (Lucky Californians must add 24 cents sales tax!) The T-D Coupe set comes to $2.95. The identification number for patterns will be the same as for the plan, plus the letters "SP." Order your plans and patterns at the same time and they'll be mailed together. Watch future Plans Service ads for additional Stick 'em Patterns as they become available. ●

ladge, used to hang the whole works from nails or pegs on the hobby room wall.

Swave: See Dee-boner.

Tale-dragger: A witness to another persons simulaneous loss of airspeed, altitude and ideas.

Twitty: see "Conway"

Under-Chamber: Bottom curve on wing or a Thundermug.

Vello-City: Combined with "Terminal" to describe speed of a module in a power dive.

Weasel: One who flys module and zonks without witness.

Zonk: What happens when module, pilot, and other parts fail to agree with the ground.

The above glossary of terms was lifted and abridged from DJ's Electric Airplane Club Newsletter. Together with them, I sincerely hope that this has proven educational and informative to those of you who stuck it out to the end. And speaking of the end - - this is it for this month. More to come in June . . . I hope you'll tune us in.

(For any further explanation of above glossary, DON'T contact this magazine! Write directly to Whatzizname, 1120 Shady Lane, Albany, Oregon 97321. wcn).

STOP PRESS!

With or without the time handicap, Dave Linstrum (strange . . . that name seems vaguely familiar . . .), Jacksonville, Florida, was first to come up with the correct answer to April's Mystery Model; Claude McCullough's "Twinster" published in the June 1947 issue of Air Trails. (Remember that great magazine?)

Several Californians thought it was Frank Cummings' twin fuselaged Wakefield which he was flying in the '50s. In fact, Fudo Takagi quite accidentally came across a picture of Frank and his twin which we'll publish as soon as the space is available. ●

Workbench . . . *Continued from page 4*

modeling, particularly scale. He is a prolific and neat builder and a competent flyer. He is also a very active one, and as such, is very seldom missing when an eastern R/C contest takes place. For this reason he will make an excellent representative for MODEL BUILDER in the business of promotion and advertising. You will see his name on the masthead as Eastern Advertising Representative, where he joins with Western Rep. Bob Upton. We're happy to have him aboard. Next time you see Walt, say "Hello there, MODEL BUILDER's Eastern Advertising Representative!" Also say hello to that very cute brunette with him. Her name is Rose, and her last name will be Moucha (Say "Moka") as of July 20, 1974!

CARTOONS

We hope you have noticed the series of one-shot cartoons that we have been featuring from time to time Most of them are produced by Dr. Will Nakashima, and in the true tradition of the political artist/lampooner, he takes neat little pot shots at some of the idiosyncrasies of our modeling buddies. If you have got some pet "they'll do it every time" thoughts that you'd like to see illustrated in pen and ink, drop us a note and we'll pass it on to Will.

THINGS TO DO

The 3rd Annual Frank Dallaire Oldtimer's Contest, sponsored by the Indian City R/C Club, Riverview, Michigan, will take place on October 6, 1974. A little ahead of time to announce, but we were particularly interested (and John "Daddy Warbucks" Pond ought to be too) in the specs for entries. Any Class C Pre-War (WW II, that is) free flight airplane is accepted. Engine size to be .40 cu. in. only, glow plug or ignition, and 11 x 6 props are to be used on all engines. That takes care of the (unfortunate) power race that's been going on in O.T.'s . . . in one fell swoop!

Contest specs also require 3 controls; engine, rudder, and elevator. Call Bill Darin (313) 676-1477 for more information.

* * *

STICK 'EM PATTERNS

Unless a better name comes along, this may be the title of a new service that MODEL BUILDER will be offering to the model builder. (See how we came up with that clever title for the mag?)

"Stick 'em Patterns" is a sneaky way of offering partial kits for plans published in the magazine. By sneaky, we mean that the handling and mailingcosts involved in shipping sheet balsa has been cleverly (surreptitiously?) avoided. Instead, we will be offering a complete set of pressure sensitive patterns for all

Index to Advertisers

Handcrafted quality, plus 8 channels for the price of 6

Buy and build a Heathkit "405" 8-Channel System and you get the same handcrafted quality that goes into your models — plus you save money two ways. First, there's the traditionally low Heathkit price, second, we knock another $34.70 off the individual component prices when you order a complete system. You end up with an 8-channel system for what you would normally expect to pay for a quality 6-channel rig!

Heathkit "405" Systems put 8 channels—in either single or dual-stick format — in a package no bigger than conventional full-house transmitters. An exclusive IC encoder makes it possible. And there's a Heath-designed IC decoder in the matching receivers to trim size and weight there too!

The thin-profile lightweight aluminum cases are covered in blue vinyl with no exposed fastenings to get in the way. Both transmitters have a two-position switch for landing gear, finger adjust tabs for auxiliary channels; trainer link jacks and "buddy button"; external charging jack for simultaneous charging of receiver transmitter and receiver batteries; eight range controls for adjusting servo travel. Our GDA-405-2 eight-channel receiver weighs just 2.5 oz. yet includes a new built-in connector block.

Choose either single or dual-stick control in 27, 53 and 72 MHz — with adjacent channels at no extra cost. To qualify for systems discount select either Single Stick (GDA-405-S) or Dual Stick (GDA-405-D) Transmitter with your Heathkit 8-Channel System. Includes GDA-405-2 Receiver, GDA-405-3 Battery Pack, and any four servos (either GDA-405-44 Miniature or GDA-505-44 Sub-Mini). Heathkit 8-Channel Systems include all batteries.

Complete Single Stick System **$269.95***
Dual Stick System **$249.95***

Send for your FREE '74 Heathkit Catalog — world's largest selection of electronic kits

HEATHKIT ELECTRONIC CENTERS
Units of Schlumberger Products Corporation
Retail prices slightly higher.

ARIZ.: Phoenix; CALIF.: Anaheim, El Cerrito, Los Angeles, Pomona, Redwood City, San Diego (La Mesa), Woodland Hills; COLO.: Denver; CONN.: Hartford (Avon); FLA.: Miami (Hialeah), Tampa; GA.: Atlanta; ILL.: Chicago, Downers Grove; IND.: Indianapolis; KANSAS: Kansas City (Mission); KY.: Louisville; LA.: New Orleans (Kenner); MD.: Baltimore, Rockville; MASS.: Boston (Wellesley); MICH.: Detroit; MINN.: Minneapolis (Hopkins); MO.: St. Louis; NEB.: Omaha; N.J.: Fair Lawn; N.Y.: Buffalo (Amherst), New York City, Jericho, L.I., Rochester, White Plains; OHIO: Cincinnati (Woodlawn), Cleveland, Columbus; PA.: Philadelphia, Pittsburgh; R.I.: Providence (Warwick); TEXAS: Dallas, Houston; WASH.: Seattle; WIS.: Milwaukee.

HEATH
Schlumberger

HEATH COMPANY, Dept. 238-5
Benton Harbor, Michigan 49022

☐ Please send FREE Heathkit Catalog.

☐ Please send model(s)_____

Enclosed is $_____ plus shipping.

Name_____

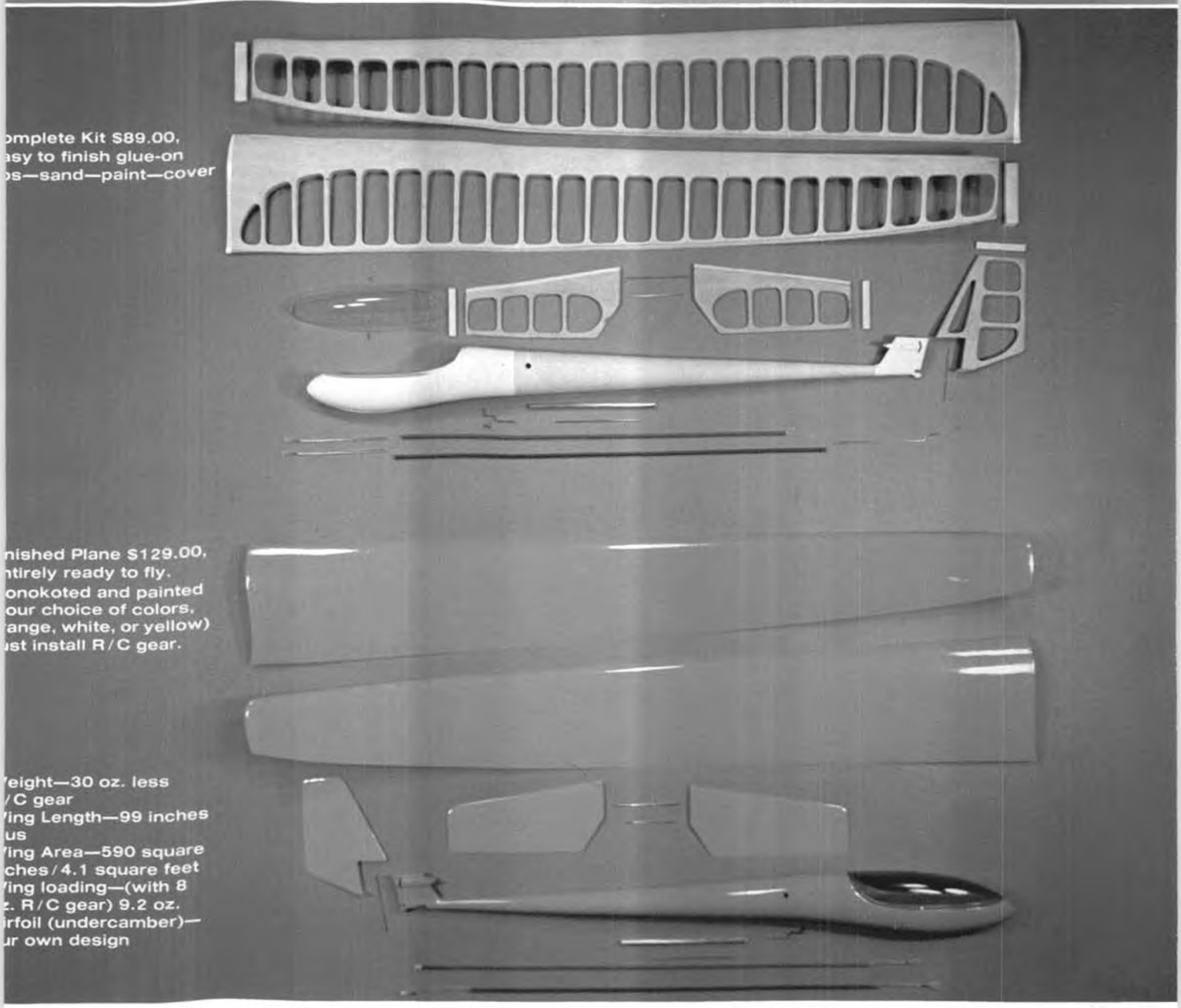
Address_____

City_____ State_____ Zip_____

*Mail order prices; F.O.B. factory. RC-106

Hobie Hawk

Designed by Hobie Alter—Designer and Manufacturer of Hobie Surfboards and Hobie Cats



omplete Kit $89.00,
asy to finish glue-on
os—sand—paint—cover

nished Plane $129.00,
ntirely ready to fly.
onokoted and painted
our choice of colors,
ange, white, or yellow)
ust install R/C gear.

eight—30 oz. less
/C gear
ing Length—99 inches
us
ing Area—590 square
ches/4.1 square feet
ing loading—(with 8
z. R/C gear) 9.2 oz.
irfoil (undercamber)—
ur own design

Above, you see my shot at R/C sailplanes I have put a tremendous amount of time, thought and tooling into the Hobie Hawk, trying to use the right materials in the right places to give the highest strength-to-weight ratio possible. It's not indestructible, though surprisingly strong. I think you'll find the design and construction unique. Even more interesting are the Hobie Hawk's flight characteristics. Elliptical dihedral gives you the best of both worlds of dihedral and polyhedral. The thin undercamber air foil gives high lift and penetration, making for excellent thermal and ridge soaring.

Hobie Alter

Construction:

Wing
Top Skin—1/32" plywood
Inner Core—High-density foam
Bottom Skin—1/64" plywood
Root Rib—Injection-molded A.B.S.
Leading Edge and Wing Tips—Pine

Stabilizer and Rudder
Same as wings except both top and bottom skins 1/64" plywood

Fuselage
Nose Cone—Rotationally molded of cross-linked polyethylene (a tough resilient material)

Tail Cone
6 layers pre-impregnated epoxy fiberglass formed under 150 P.S.I. at 300 degrees

Tail Piece
Injection-molded A.B.S

Hobie Model Company
Department 100
33081 Calle Perfecto
San Juan Capistrano, California 92675
A Division of Coast Catamaran Corp.

See your dealer first. If not available, write us direct.
Dealer inquiries invited

This pump is really "Prime"

MRC/MK Fuel Pump

At your dealers . . . $10.95

If everyone made a fuel pump that could meet the needs of modelers for a reliable, long-life delivery system there would be no need for MRC-MK's new self priming fueling device. But there is a need and this pump meets your demands.

Features include a geared 4 to 1 pump drive to provide power to lift fuel from a gallon can's bottom, integral 6 volt power supply—nickle cadmiums or standard pencells may be used. A safety lock on the switch prevents accidental turn-on. The switch provides reverse feature for filling or emptying tanks at an excellent speed. Heavy duty motor, high efficiency pump unit, rugged plastic case with mounting lips for attachment to typical gallon can are all included. Simple modular construction for ease of servicing. Of course, replacement parts are available.

Make no mistake, this rugged, reliable and long lasting fuel pump will meet your needs where others fail, and will do so for season-on-season of active flying. MRC-MK's fuel pump is really "prime"!

Model Rectifier Corporation • 2500 Woodbridge Avenue • Edison, New Jersey 08817

MERCO MARK IV

A STEP UP FOR '74...

. . . a step up in power and a step up in quality. Step up to the new Merco Mark IV.

Externally, it may not look much different, but its precision innerworkings are now capable of delivering more power than ever before. Major changes in porting, timing, fuel intake and the compression ratio make it possible. According to Peter Chinn (December 1973 issue of Model Airplane News), the power curve for this new .61 indicates ". . . a good peak output of 1.2 BHP at 14,000 RPM." He goes on to say that ". . . just over 1.0 BHP was still available when the engine was loaded down to as low as 10,000 RPM." In short, this new series Merco has power to spare and yet, it still maintains the utmost in reliability and economy. Its carburetor provides a smooth idle and offers extremely positive midrange response. Its new heavy duty crankshaft enhances durability, but not at the expense of unnecessary weight for the Mark IV weighs in at only 13.7 ounces.

The 1974 Merco .61 Mark IV; one step ahead in power and perhaps one step ahead of its time. See it now at your local dealer!

MERCO ENGINES FOR 1974

.61 R/C MK IV	$72.95
.61 STUNT MK IV	59.95
.61 R/C MARINE MK IV	79.95
.49 R/C BLACK STREAK	66.95
.49 STUNT BLACK STREAK	54.95
.49 R/C MARINE BLACK STREAK	74.95
.35 R/C BLACK STREAK	39.95
.35 STUNT BLACK STREAK	29.95
.35 R/C MARINE BLACK STREAK	49.95
.29 R/C BLACK STREAK	39.95
.29 STUNT BLACK STREAK	29.95
.29 R/C MARINE BLACK STREAK	49.95

ROYAL PRODUCTS CORPORATION

790 WEST TENNESSEE AVENUE, DENVER, COLORADO 80223