MODEL BUILDER

FEBRUARY 1976

volume 6, number 50

$1.50

QUALITY PLUS PERFORMANCE

KITS AND ACCESSORY ITEMS FOR THE DISCERNING MODELER

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These kits include the same high quality precision machined parts as in our other kits. Very simple to build and easy to fly. Requires some minor cutting and pushrod hardware.

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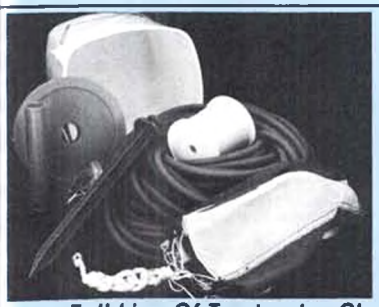

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HIGH STARTS

Complete with 100 foot length of surgical tubing, monofilament line and all hardware.

Standard	$34.95
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Full Line Of Towhooks, Chutes, Canopies, etc.

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99" Span
790 Sq. In.
40-44 oz.

$49.95

Both Kits Include Optional Spoilers

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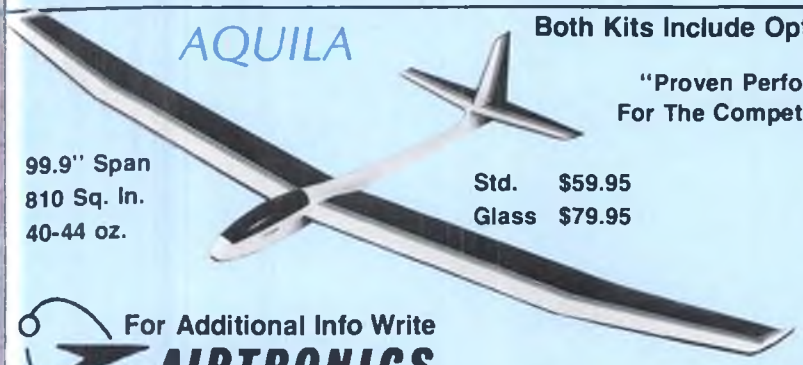

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Std.	$59.95
Glass	$79.95

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134" Span
1100 Sq. In.
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The Incredible Flight from the Atlantic Ocean to the Pacific by the Sr. Falcon

"LIBERTY BELL"

It was the toughest test ever devised for man, woman and R/C model airplane. Bob and Doris Rich wanted to fly a model from the Atlantic Ocean to the Pacific, a distance of 3,000 miles. Three THOUSAND miles. They would never know where the ship might have to land, or where it would have to take off.

In only 2 months, they sought and obtained support from many members of the model industry, and the cooperation of the Academy of Model Aeronautics, completed their detailed plans for the project, built 4 Sr. Falcons, flight-tested 2 of them, and had everything in readiness well ahead of the take-off they had scheduled for October 1, 1975. Promptly at 10:02 AM that day, the beautiful "Liberty Bell" lifted 32 oz. of fuel off the memorable earth of Kitty Hawk, North Carolina, on the shores of the Atlantic, and headed towards Raleigh, capital of the state. Many adventures and 120 landings later, on October 29, she circled and soared and dipped over the sunny afternoon waters of the Pacific at Oceanside, Calif. The great project was now an historic and successful fact.

The next day, Liberty Bell made her last flight, a ceremonial demonstration outside the Museum of Science and Industry in Los Angeles, where she was to be displayed for several weeks. Many dignitaries were there to offer greetings and congratulations to the Riches and their hard-working crew — Ed Sweeney of Reno, and Bob Sutalski of Chicago. Included among the dignitaries was one of America's authentic heroes, General Jimmy Doolittle. With the completion of this first transcontinental flight, R/C Modeling has gained added stature.

To Bob and Doris, the people of Carl Goldberg Models offer our heartfelt congratulations, too. You've proved again that with hard work and magnificent planning, a big dream can come true.

Carl Goldberg

Bob and Doris Rich, Johnny Clemens, Pres. of AMA in the middle, at Dallas with the LIBERTY BELL.

CARL GOLDBERG MODELS INC.

4734 WEST CHICAGO AVENUE • CHICAGO, ILLINOIS 60651

WE ARE LAYING IT ON THE LINE

We believe our new .61 R/C engine to be the world's best. There are many factors behind this statement. Greater useable power is one. Power where it counts, pulling power, brute torque, and constant speed produce effortless smooth flight performance. Another reason is excellent non-critical fuel draw. The mixture setting remains constant from flight beginning to end without resorting to complicated pumps or pressure systems.

Cost per flight is important to many and the Kraft .61 is a long life engine performing willingly hour after hour. Also important and so often overlooked are fast service and ready parts availability. These factors are assured by our long term reputation in the R/C field.

The outstanding performance of the new Kraft .61 has been amply demonstrated in recent contests. It was used by 5 out of the top 10 finalists in Class D Expert at the U.S. Nationals. In the highly competitive Las Vegas Tournament of Champions, it was selected by 11 out of 23 contestants (over twice as many as any other engine). At the large Tucson Winter Nationals, it took first and second place, and 5 out of the top 10.

You can count on our engine because we take pride in it and in ensuring your satisfaction with our products.

KRAFT SYSTEMS, INC.

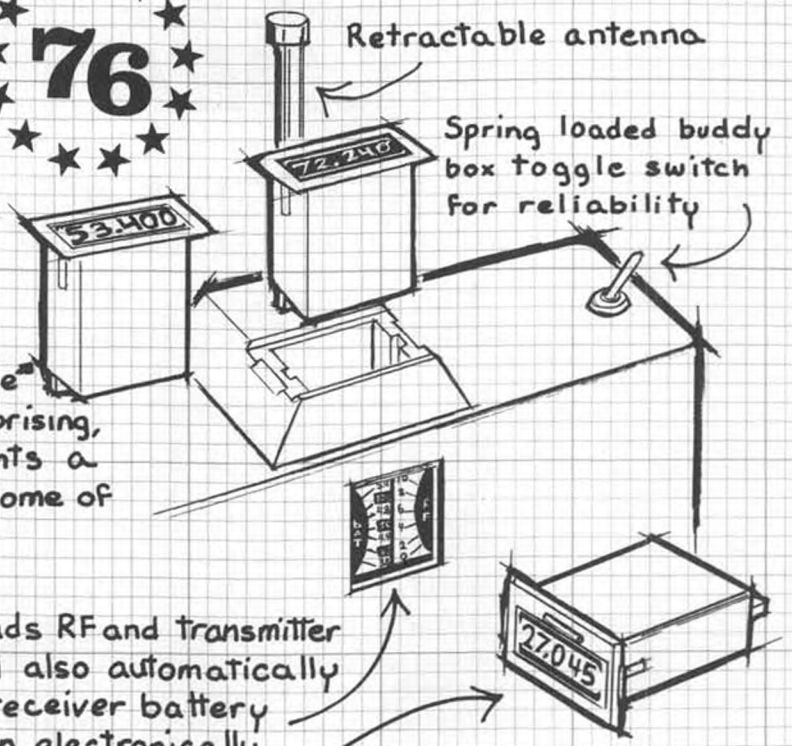
WRITE FOR FREE CATALOG

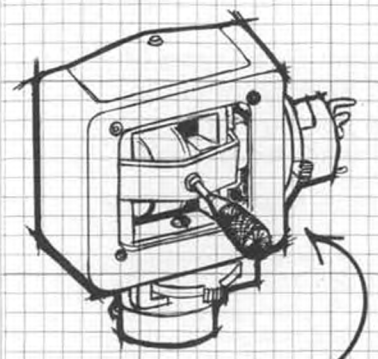
Worlds Largest Manufacturer of Proportional R/C Equipment

450 WEST CALIFORNIA AVENUE, P.O. BOX 1268, VISTA, CALIFORNIA 92083

CONCEPT 76

Kraft Systems' engineering group pioneered the concept of digital proportional control and subsequently created the innovations responsible for the level of RC performance accepted as standard today. It is not surprising, therefore, that the new Kraft line represents a major advance in the state of the art. Some of the new features are shown here.

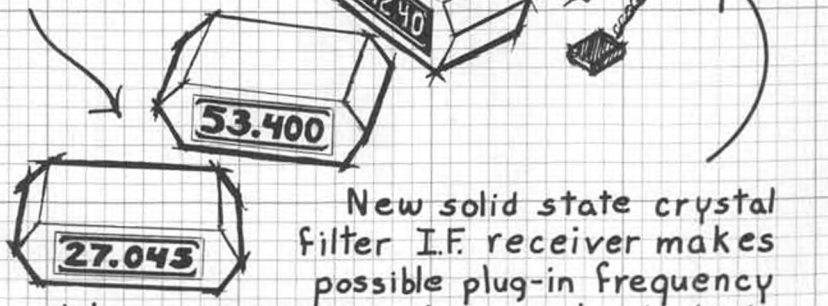




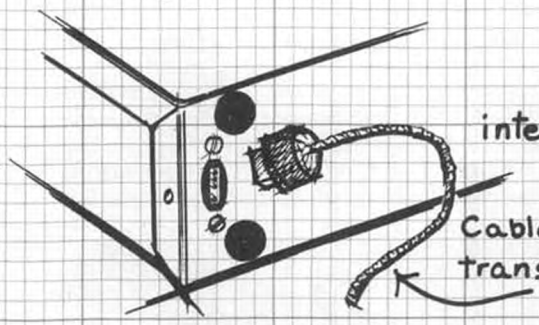
Triple use meter reads RF and transmitter battery voltage and also automatically converts to read receiver battery voltage. It has an electronically expanded scale for accuracy.

Totally new two-axis open gimbal stick assemblies are of the highest quality yet produced. This design eliminates any possibility of centering error and has excellent feel to satisfy the most demanding flyer. A new open gimbal single stick version is available at no extra charge.

Plug-in transmitter and receiver modules provide instant change between the 17 standard RC frequencies.



New solid state crystal filter I.F. receiver makes possible plug-in frequency modules and provides improved selectivity for better rejection of strong adjacent channel interference. An advanced design dual conversion plug-in receiver is available at extra cost.



Cable interconnects battery test circuitry in transmitter to receiver charge jack.

Entirely new five channel and three channel sets are available now.

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World's Largest Manufacturer of Proportional R/C Equipment

MODEL BUILDER AND PANA-VISE®

presents the

MASTER MODEL BUILDER of the month CONTEST

Send all entries to:

MODEL BUILDER/PANA-VISE CONTEST
1105 Spurgeon St., Box 4336,
Santa Ana, California 92702

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

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

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

Requirements for entries:

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

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

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

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

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

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

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

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

This month's winner is WALT WINBERG, from Richmond, B.C., Canada. His entry is a 75 inch span, original design biplane, powered by compressed air.

The 5-cylinder rotary engine turns a 20 inch propeller, and each cylinder has a 1/2 inch bore and 1/2 inch stroke. The engine is believed to be a Knepper design, built in Portland, Oregon, around 1930. Believe it or not, total weight of the model is only 16-1/2 ounces! By comparison, a modern R/C biplane of the same span, usually weighs about 10 pounds.

MODEL BUILDER

FEBRUARY

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volume 6, number 50

1105 SPURGEON, BOX 4336, SANTA ANA, CALIFORNIA 92702 (714) 547-3963

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FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: Very appropriate for observation of our Bicentennial year, the plane on the cover is called the American Eagle "Eaglet." Produced from 1928 to 1931, the little "Eaglet" could be purchased for $250 down and the remainder financed over 24 months. This 48 inch span model of the "Eaglet," scaled and built by Tom Laurie, is free flight with electric power. Further details, and a construction article, begin on page 38. Ektachrome transparency by Taylor Collins.

"Yes, Mother, I really went to Switzerland!" Picture was taken and sent to us by a friend from Japan whose name we can't remember. He's a photographer for the Japanese magazine "R/C Technique." (l to r): Judges Tony Aarts (Holland), WCN (USA), Camille Gerard (Luxembourg), Egon Gstohl (Liechtenstein), Pierre Pignot (France), and CIAM President Sandy Pimenoff, Finland.

from Bill Northrop's workbench . . .

• You might as well get used to seeing and hearing the word "ALLSA". It's apt to be the main subject of conversation among modelers for some time to come, and not without justification.

To get right into it without further small talk, ALLSA is the name of a proposed, space-age substitute for balsa. If you think we're "leg pulling" at this point, forget it.

Dave Jones, Vice President of Envoy Corporation, Phoenix, Arizona (no, they don't make under-water lockers) is a modeler, who may be remembered by some as having campaigned rather heavily just a few years ago for a "pilot in every scale model cockpit."

Late last year, Dave sent us a form letter, introducing "ALLSA", and asking us what we thought about it. The letter merely explained the concept . . . a substitute for balsa that would have all of balsa's attributes, would be readily available, and would cost appreciably less.

Our response to Dave was somewhat short of encouraging, in that we agreed that it would be nice to have a cheap and available substitute for balsa . . . just like it would be nice to have that oft-mentioned 60 miles-to-the-gallon carburetor, the anti-gravity personal flying belt, and perpetual motion. Sure it's a great *idea*, but so what?

Then, just a few days ago, about the the first of the year, we received Dave's reply (Yes, he was still polite!). This time, in addition to a personal note assuring us that this whole situation is a very solid and serious effort, Dave included more definitive information about ALLSA. We summarize it as follows, and leave it up to you whether or not to get excited.

It will be available in late 1976.

Its strength/weight ratio will exceed balsa in all instances.

All normal block, sheet, and strip stock will be available, but in metric dimensions. The first material produced will be sheets one meter long (30-3/8 inches), 15 centimeters wide (almost 6 inches) and in thicknesses of 1, 1.5, 2.5, and 3 millimeters.

First quantities will be 6 to 8 pounds per cubic foot. Others (3, 12 and 16 will be color coded in a light tint for identification!

Eventually, there will be a choice of grain characteristics, but first production will be equivalent to *uniform* quarter-grain balsa. A special patent-applied-for process creates the strength patterns that are normally associated with balsa.

All of the usual finishing materials and adhesives will work in the normal way.

It will cut and sand like balsa, except that chipping and splitting characteristics will be much improved.

There you have the basic information about ALLSA. One problem about its introduction is the fact that there is no way to make a test run of the product. Its first production will be *full* production, and at that time we, and the developers, will know for the first

Continued on page 93

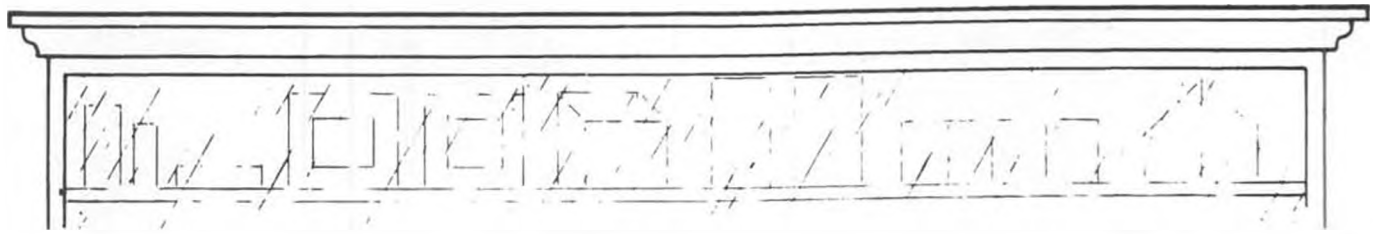
WIN A FREE SUBSCRIPTION TO MODEL BUILDER / MAGAZINE

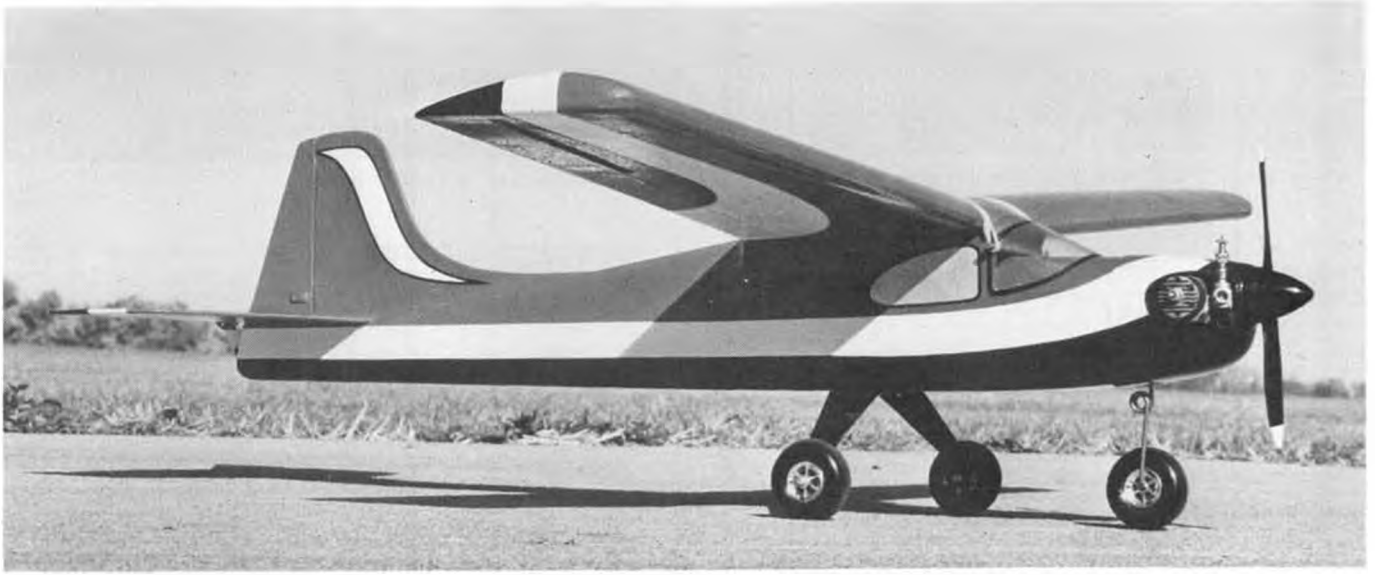
Out of the goodness of our hearts (heh, heh), we offer our readers the following opportunity to win a FREE ONE-YEAR SUBSCRIPTION (or subscription extension) to MODEL BUILDER Magazine:

Send us the name and address of any hobby shop in your area that does not carry MODEL BUILDER. We will then give them our sales pitch, and if they become an MB dealer, and if yours is the earliest postmarked letter about that dealer, you win the free subscription . . . for yourself or the person you name. If you already subscribe, you may choose to substitute an Uber Skiver precision knife set.

Send references to: MODEL BUILDER, Dept. D, Box 4336, Santa Ana, Ca. 92702, or phone (714) 547-3963.

OVER THE COUNTER





Sig "Klipper" for .09 to .15 R/C, with foam wing and molded cowl, $18.95.

• Sig Mfg. has introduced two new R/C sport planes for .15 power. The Klipper and Super Sport combine a flat bottomed molded foam wing with a built-up balsa fuselage to make an easy-to-build, strong, sport plane for the Sunday flier. The Super Sport is a tail-dragger, shoulder wing, with lines that are reminiscent of Doug Spreng's Stormer. The Klipper is a high wing cabin plane, which uses tricycle landing gear. The sprung nose gear, nose gear mount, and steering arm are included with the Klipper. The Super Sport comes complete with the tail wheel. The fuselage sides are printed with the former locations, so that all internal structure can be built directly on the wood. Both kits are provided with all necessary hardware except wheels. The Klipper and Super Sport are available from better hobby dealers, or directly from Sig Manufacturing, Montezuma, Iowa, 50171.

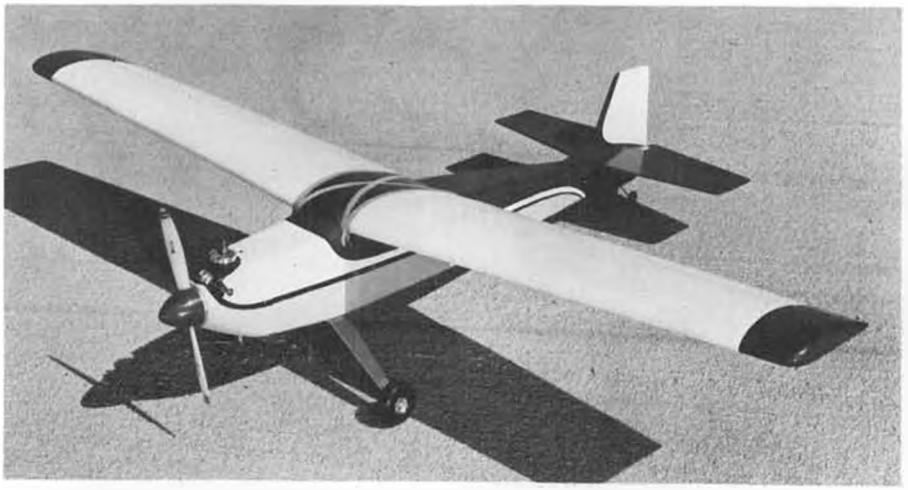
* * *

Sterling Models is introducing a brand new line of kits . . . Peanut Scale. The new kits will be sold in pairs . . . two planes in each box, for $3.95. In addition to the usual printwood, strip wood, tissue, props, etc., the new Sterling kits will feature vacuum-formed plastic pieces, such as cowls and wheel pants. In addition, the kits will include the highest quality contest rubber. Sterling's Ed Manulkin says, "The rubber is the finest quality that I have seen since my indoor building days of the mid '30's, and I truly believe that this rubber even surpasses that." The kit combinations to be offered will include the Fokker D-8/S.E.-5; Monocoupe/Citabria; and the Waco SRE/Interstate Cadet.

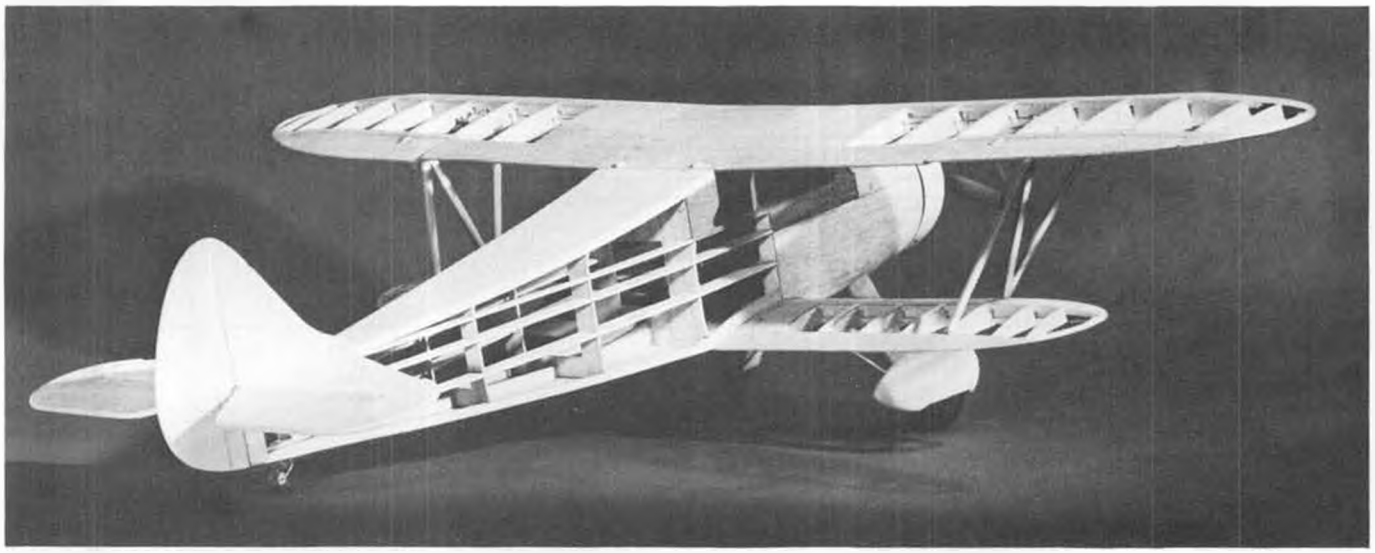
Another addition to Sterling's ever-expanding line of scale R/C kits is their new Waco SRE. The kit will feature die-cut balsa parts, as well as molded plastic cowl, wheel pants, and engine cylinders. Price is to be announced.

* * *

For the modeler who would like an Old Timer, but drives a VW, Micro Models has added the Miss America, in a scaled down 48 inch span, to its line. The Miss America, which is a companion model to the Mercury introduced in late 1975, features all machine-cut parts. The finished plane, with a Futaba 3 Channel radio and O.S. Max .10, weighs 30 ounces. This combination thermals well with the Miss



Sig "Super Sport" for .09 to .15 R/C, with 45" foam wing and molded cowl, $17.95.



Sterling Models' 1-5/8" scale Waco SRE, for .40 to .60 engines and R/C or C/L. Span 56-1/2", price $64.95.

America's 308 square inch wing. The plane was scaled accurately from the original Miss America plans, and as a result, meets the S.A.M. rules for Antique, R/C assisted competition. The Miss America is available through hobby shops, or direct from Micro Models, Box 1273, Covina, California, 91722.

* . * *

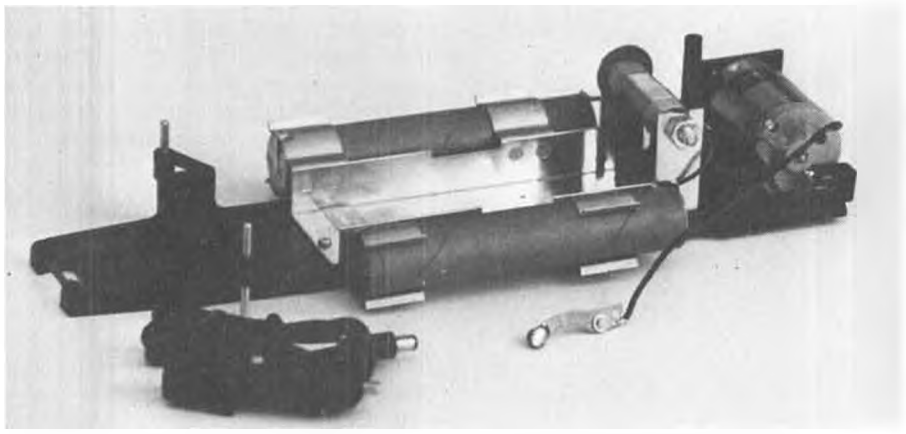
Leisure Electronics, producers of the ready-to-run, electric powered Jerobee 1/12 scale R/C race cars, has two new products. For gas powered Jerobee owners, Leisure Electronics has a complete electric conversion chassis, including power train. The unit comes with nickel cadmium batteries, throttle rheostat, wiper output arm for the throttle servo, and electric motor with spur gear. Everything is wired up and ready to go. The purchaser need only transfer wheels, radio and body from one chassis to the other. Unit can be charged from your automobile cigarette lighter socket with the adapter cord which is included. Price, complete, is $57.95.

A separate charge/discharge/timer instrument is also available, for $29.95. This unit permits timer-operated discharging and charging of the power batteries for all of the Leisure Electronics cars. Designed to operate from your automobile's cigarette lighter socket, the power cord can be converted to clip ends if a separate 12 volt car or motorcycle battery is used.

* * *

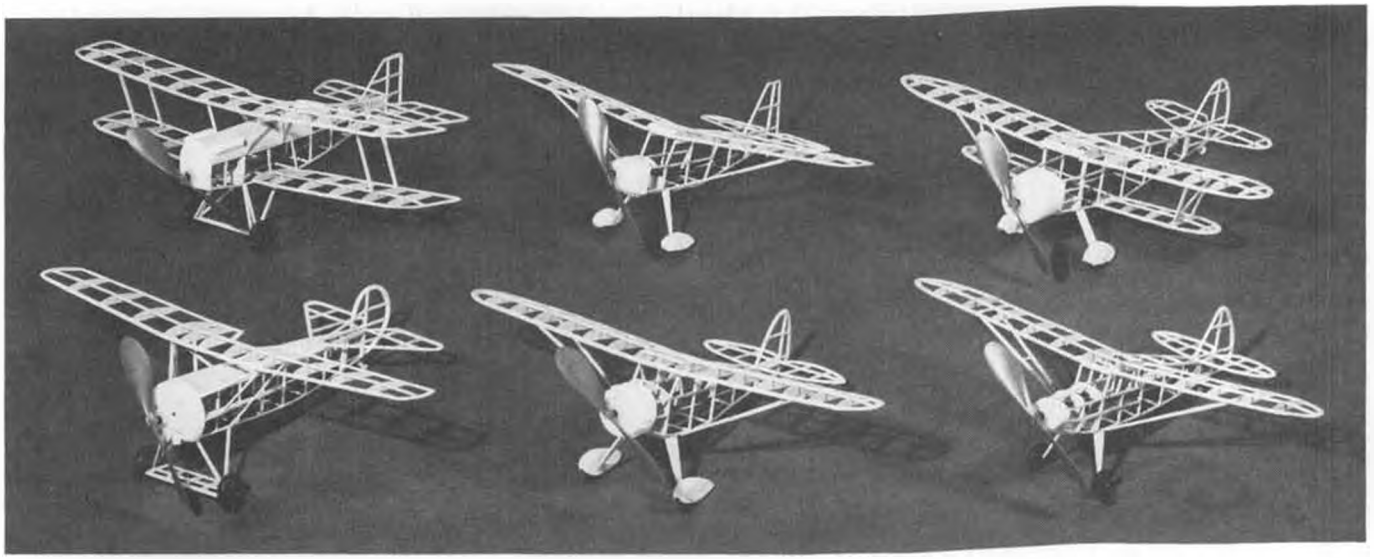
Sandpaper, that long-time friend (or enemy?) of modelers, is made a little easier to handle with the introduction of Ruff Stuff, by Applied Design Corporation. Ruff Stuff is a self-adhesive sandpaper that adheres to metal, plastic, glass, rubber, wood, and other materials. It can be wrapped around a dowel or piece of tubing, or can be formed around a channel or other special shape for unusual sanding applications. Ruff Stuff is available from your dealer in medium, fine, and superfine grits. The 9x11 sheets are $.39 or in packs of six for $2.50. If your dealer doesn't have it, you can order direct, in singles at 39 cents, or in a pack of six for $2.50, postage paid.

Miss America, 1935 Old Timer, reduced in scale to 48" span by Micro Models. Kit price, $27.95.



Electric conversion chassis and power train for Jerobee 1/12 scale race car, by Leisure Electronics. Price $57.95.

Timer-controlled charge and discharge unit by Leisure Electronics.



New series of two-to-a-box Peanut Scale kits by Sterling Models. Each pair sells for $3.95.

An ideal block for the Ruff Stuff is the Tee-Bar, also from ADC. These 2 inch wide aluminum extrusion "T's" are available in 11 and 22 inch lengths. The longer bar would seem to be ideal for sanding leading edges, trailing edges, and similar applications. The long length will prevent sanding ripples into the surface. It's great for evening out wing ribs to produce a smooth covering job. Ruff Stuff can be cut to fit the Tee-Bar blocks, and is easily peeled off when the sandpaper has worn out. The 11 inch Tee-Bar sells for $2.00, while the 22 inch version retails for $3.00. Both Ruff Stuff and the Tee-Bars are available from Applied Design Corporation, 5531 Shore View Drive, Palos Verdes Peninsula, California, 90274.

* * *

The famous Torrey Pines Gulls Club of La Jolla, California, decided that their club needed a manual of "basics" for R/C. What started out as a very simple, mimeographed affair, at the planning stage, turned into a very professional 40 page, printed, bound booklet. The RC/SOARING San Diego Area Handbook is a complete guide to R/C soaring. Although a small portion of the book relates only to the Torrey Pines Gulls (flying sites, club rules, etc.) the great majority of the book contains information that is applicable anywhere. Chapters in the book include "Getting Started," "Answers to the Most Commonly Asked Questions," "Learning to Fly." "Soaring in Thermals," "Pitfalls," "Radio Installation." and "Contests". The book gives a beginner step-by-step education in the basics of R/C soaring. Hobby dealers in the San Diego area, when confronted with a new customer interested in getting started, are selling the book with the recommendation that the customer read it before buying anything else. RC/Soaring San Diego Area Handbook is available for $1.50 from the Torrey Pines Gulls, Box 1564, La Jolla, California, 92038.

"Bunny", 73 inch span sailplane by Superior Flying Models.

* * *

The newly introduced Bunny, from Superior Flying Models, promises to be a cut above other "beginner" gliders now on the market. The 73 inch span, all wood kit, features spruce spars to construct a D-tube type wing with dowel reinforced leading edges. The fuselage is built up from machine cut sheet stock sides. All hardware, including an E.K. Products adjustable towhook, is

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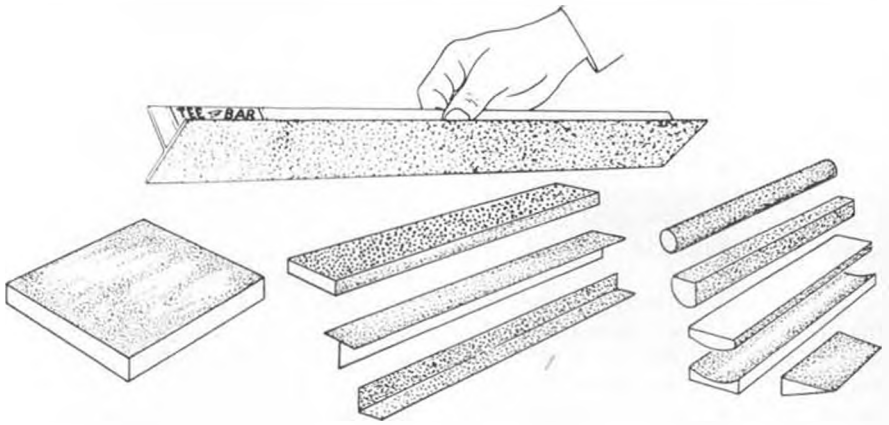
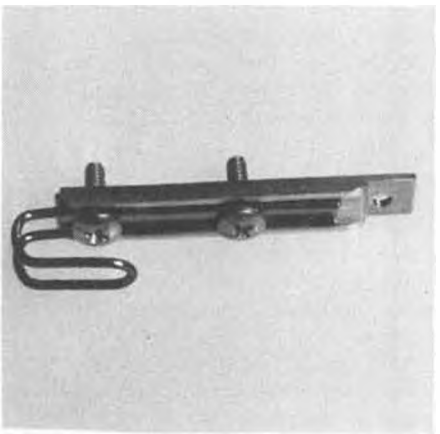


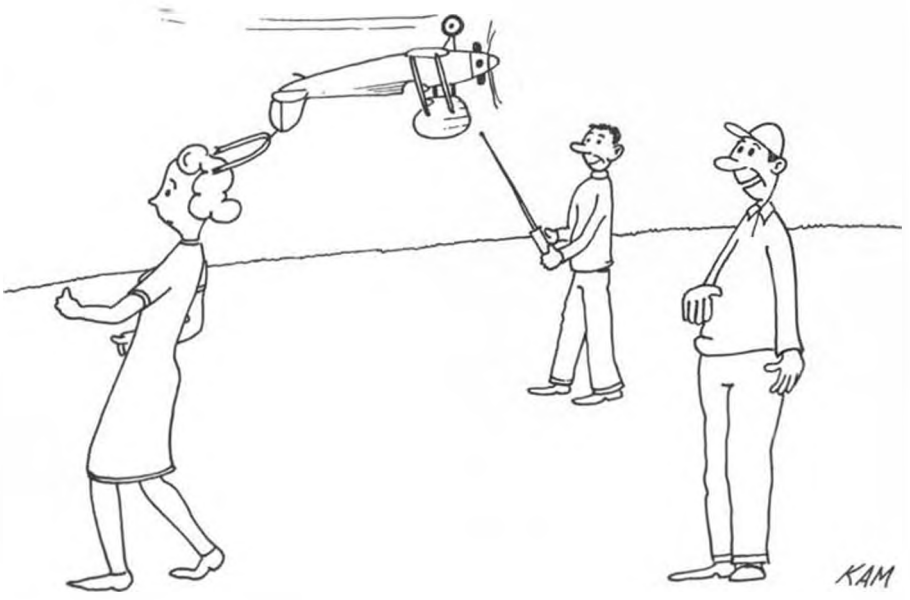
Pressure-sensitive adhesive on back of "Ruff Stuff" sandpaper, by Applied Design Corp., permits application to various backing shapes. "Tee Bars" also available.



"Number One" adjustable towhook, by J.L. Wittman Co.

FOR Ms ONLY

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



YOU'R GETTING PRETTY GOOD AT THE RIBBON PICK UP JOE!

● I've been under the dining room table since Thursday looking for a diode. I'm going across the carpet, shag by shag, because I want that diode worse than Bill does. He needs it to finish a receiver but I need it for his Valentine. I can't think of a nicer way to say I love you, than to tape that diode to a red paper heart.

To me, Valentine's Day is the high point of the winter. It always comes in the middle of Bill's three-month "Constructathon." He takes a break to give me a gift and take me out to dinner. During the evening our conversation somehow turns to airplanes and we discuss stimulating subjects . . . in great detail . . . such as sandbagging or the open winch. We talk vacations, too, and that means flying contests.

I'll have to admit that in the midst of a Michigan winter, those beautiful flying days of summer have an alluring, dreamlike quality. I begin to think that being married to a modeler is the rarest experience of my life. But you'd be surprised how many people don't understand the charm of the hobby. Trying to explain this charm has caused me some concern and embarrassment.

By now the rough edges of last summer's bad moments are rubbed smooth by time. I can laugh a little now. I'm thinking in particular about one local meet that boasted a doughnut drop.

"Tell me again where we're going," said my well groomed, single girl friend, Irene. She was visiting from Holland, Michigan, as she has from time to time since our early days out of college. "What exactly is a doughnut drop?"

No matter how I phrased the answer it didn't seem sane. "All the guys put a doughnut on their power planes and then tip the planes in flight and try to drop the doughnut on a target."

"Why?" she asked.

"You've got me there," I said.

We went to the contest anyway. After finding a good spot to watch the action, I started again to tell Irene about the advantages of being married to a husband who builds and flies models.

"At the last doughnut drop," I said, "the doughnuts were too fresh and the speed of the planes would force the little holding wire to cut right through the doughnut. Nobody even got into the air with a doughnut. Finally, they called off the drop and Bill bought the rest of the doughnuts for me!"

"Why would you want all those doughnuts?" asked Irene. "They only make you fat. Why didn't you use your own recipe and then the little wire wouldn't cut through?"

"You've got me there," I answered.

The next time Irene was down was the weekend of the big glider contest.

"Didn't you run the food stand once?" asked Irene.

"Yes, Bill was president that year."

"Did you make any money?"

"Not really."

"Why aren't you running the stand this year?" asked Irene.

"You've got me there," I sighed.

Then there was the time Irene and I met for Sunday dinner. We picked a spot half-way between her home and my home. Bill was at a two day contest and I felt I had to stay behind to get a few jobs finished.

Saturday I did errands, bought groceries, did laundry, cleaned the oven with one of those miracle sprays that only takes two hours (and two layers of skin off the finger tips), called 10 mothers to help with a neighborhood youth project, and answered the doorbell eight times for children having a scavenger hunt. What other house would have a signed picture of Amelia Earhart, a paper-back book of World War I planes, a snap shot of The Spirit of St. Louis, and a 78 RPM record of "Come Josephine In My Flying Machine?"

Sunday I was up early to weed the WIN garden . . . which turned out to be a LOSE garden. Then I cut the lawn with only minor interruptions, like running out of gas, and stalling out time and again because of the length of the grass. I did manage a bath and clean clothes before meeting Irene.

"You look tired, Char," she said . . . and just because I nodded off before dessert! "What have you been doing to get so pooped?"

"You've got me there," I answered. "It's just been a normal week."

After dinner we went shopping at a group of interesting boutiques in Saugatuck. This is where I found the navy scarf with the little yellow and green airplanes on it.

"I've got to have this, Irene. Do you think eight dollars is too much?" I asked.

"You always wear brown. What will you use it with?" she countered.

"You've got me there," I said. But I was thinking, 'with everything.'" I knew Bill would love it. I bought it and tied it around my neck.

Driving home that afternoon I had no premonition of danger. I had an accident that reshaped my little car. I telephoned Bill and caught him as he arrived home. He hurried to the spot where I waited with one ruined car, one bored policeman, and one group of young thrill-seekers.

"Look at my car!" I wailed.

"Hey, that's really cute!" said Bill warmly.

"The car?" I gasped.

"No, the scarf," he said. "That's a pretty accurate Folker Tri-plane. Did they have any with a DH-10?"

"You've got me there," I said. "Aren't you mad about the car?"

"Not if the scarf is OK," he said, putting his arm around me.

Next time I see Irene I'll try to put this all into words. I'm sure she'll understand now why the framework of the Maestro wing couldn't be moved from the dining room table when she was down last week. Weights on it here and

Continued on page 89

Brian Newman, Brian McCleave, and Jeff Lee (l to r) about to release their squadron of "Dragonflies". Wonder if they let 'em go all at one time, or one after the other!

THE DRAGONFLY

By TEX NEWMAN . . . Want to get your young son or reluctant wife at the controls without developing an ulcer? Here's a try-it-you'll-like-it R/C model for "doubting Thomases" and raw beginners. *Anyone* can fly it!

● It seems we had just finished one of those fine dinners Mary Ann Lee cooks up, and continued to stuff ourselves with apple pie and ice cream, when Bob picked up a little stick fuselage rubber model and gave it a toss. It obediently floated across the family room and landed on the shelf where it lives between flying sessions.

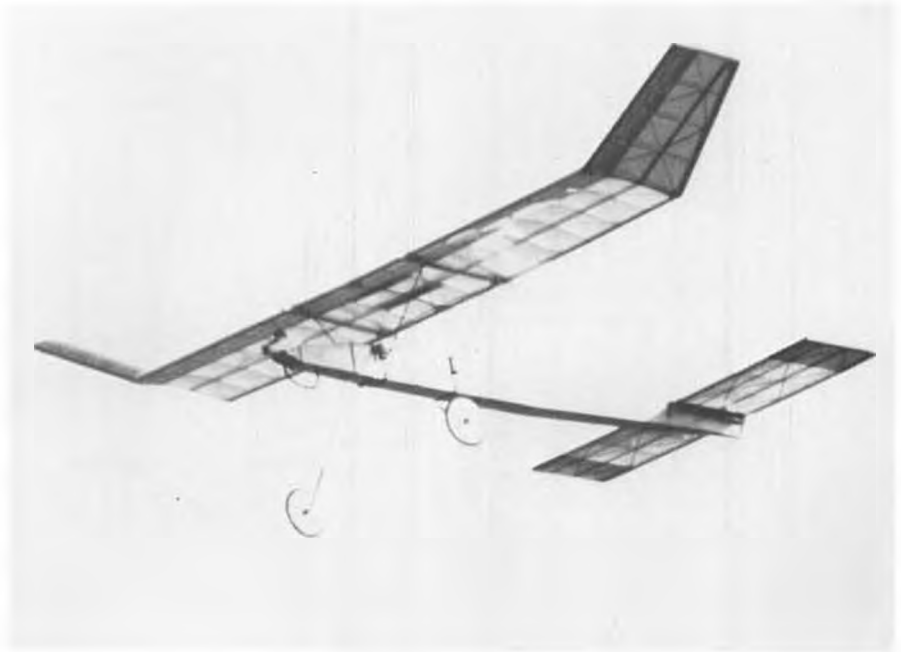
"What we need is an R/C that flies like that!"

I can't remember who said it first, but at any rate, a couple of weeks later we were out test flying our new "Dragonflys." Since then there have been a dozen built and flown with a wide variety of engines and radios. The original pair were powered with .047 diesel engines and flown single channel. They have been powered with .074 OK Cubs and McCoy .098.

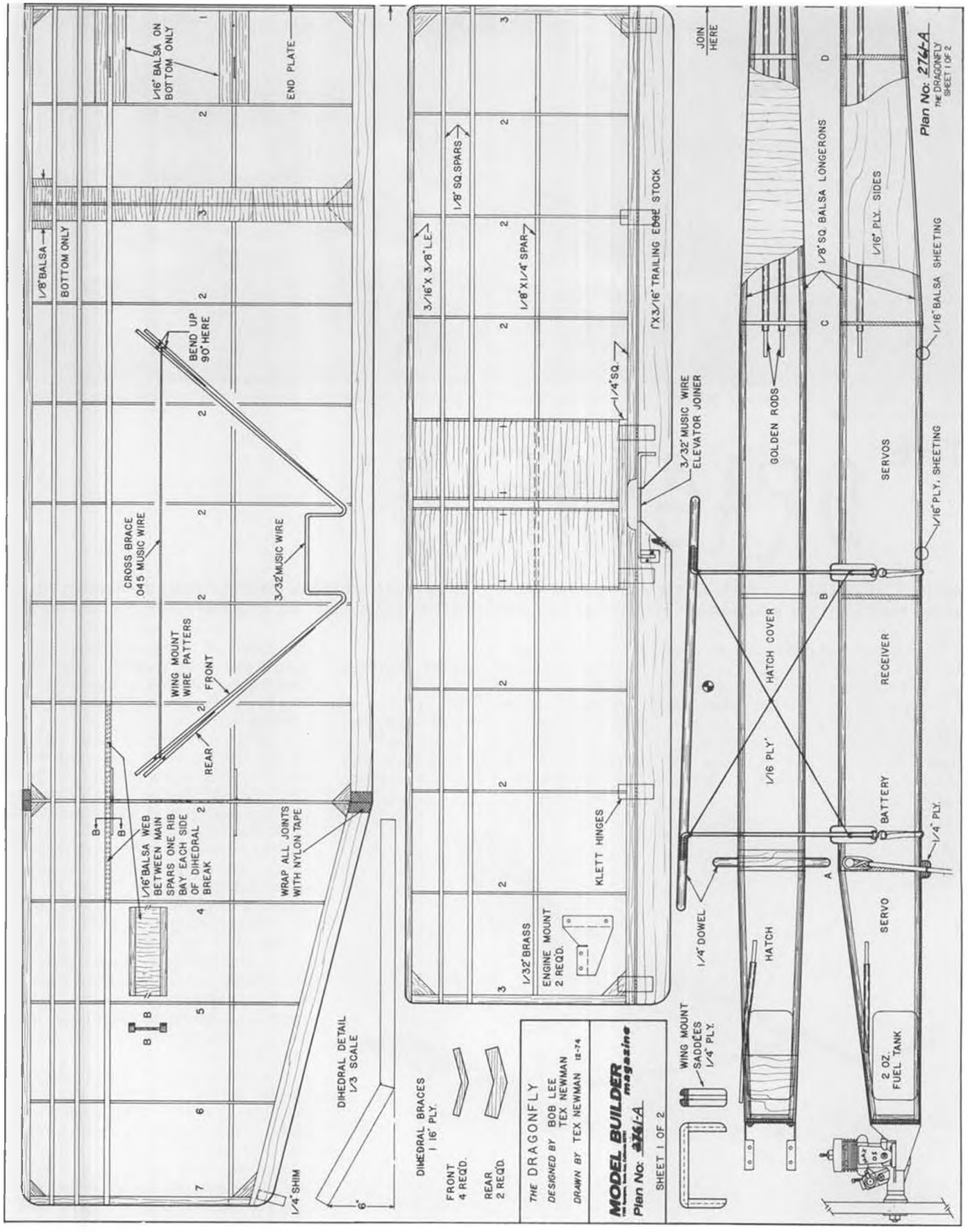
When the decision was made to go to OS Max 10s, a whole new thing happened! They really didn't fly any faster, but just climbed like an elevator . . . in second gear. Consequently, we could make low, level, slow speed (5 mph) passes and climb back up out of sight. The eventual addition of elevators added funny loops to the list of aerobatics which already included wing-overs, hammer-head turns, and spins.

Dragonflys have flown with Ace pulse system, rudder-only quite successfully. Mine, one of the original two, is still flying with a seven channel Kraft system . . . operating just rudder and throttle. The left stick on my transmitter is for rent!

As a beginner airplane, the Dragonfly just can't be beat. The novice can learn which way is left . . . both coming and going. Also, where he is over the ground as well as how to use just a little pressure on the stick, all in a short time. This approach to R/C flying provides the beginner with a large amount of success in a short period of time with minimum repairs. One of our novices, Brian McCleave, had fewer than ten flights on his Dragonfly when he soloed



Dragonfly on a "glide-by" shows off its rock-stable design. A perfect raw beginner's model . . . if they'd only believe it! Funny thing is, the "Aces" love to fly it too! You better build one.


1/8" BALSA
BOTTOM ONLY
1/16" BALSA ON BOTTOM ONLY
END PLATE
BEND UP 90° HERE
CROSS BRACE .045 MUSIC WIRE
WING MOUNT WIRE PATTERS
FRONT
REAR
3/32" MUSIC WIRE
1/16" BALSA WEB BETWEEN MAIN SPARS ONE RIB BAY EACH SIDE OF DIHEDRAL BREAK
WRAP ALL JOINTS WITH NYLON TAPE
1/4" SHIM
DIHEDRAL DETAIL 1/3 SCALE
6"
DIHEDRAL BRACES 1 16" PLY.
FRONT 4 REQ'D.
REAR 2 REQ'D.
THE DRAGONFLY
DESIGNED BY BOB LEE
TEX NEWMAN
DRAWN BY TEX NEWMAN 12-74
MODEL BUILDER magazine
Plan No: 276-A
SHEET 1 OF 2
3/16" X 3/8" LE
1/8" SQ. SPARS
1/8" X 1/4" SPAR
1/4" SQ.
1"X3/16" TRAILING EDGE STOCK
3/32" MUSIC WIRE ELEVATOR JOINER
1/32" BRASS
ENGINE MOUNT 2 REQ'D.
KLETT HINGES
1/4" DOWEL
WING MOUNT SADDLES 1/4" PLY.
JOIN HERE
GOLDEN RODS
1/8" SQ. BALSA LONGERONS
1/16" PLY. SIDES
1/16" BALSA SHEETING
1/16" PLY. SHEETING
SERVOS
HATCH COVER
1/16 PLY
RECEIVER
BATTERY
1/4" PLY.
HATCH
SERVO
2 OZ. FUEL TANK
Plan No: 276-A
THE DRAGONFLY
SHEET 1 OF 2

Brian McCleave adjusts the throttle linkage on his OS .10 powered Dragonfly. Kraft-Hayes mount. Imagine the fuel economy!

Kraft 3-channel-with-brick installation in Brian McCleave's ship. Dig the "open top" fuselage! Easy to fiddle with radio, if necessary.

. . . full flight . . . take off through landing.

Up until a year ago there was a large open field just two houses up the street from my house. The neighborhood kids would all turn out for a flying session. We'd take off and circle the field to gain altitude, then walk back to the front yard and lay in the grass while each one took a turn to fly for a while.

On one such summer evening, I was sitting in a chair on my drive way, flying, when a police cruiser passed ominously down the street. The driver looked first at me, than out his window at the sky, then back at me again. He turned around at the corner and came back and parked in the driveway.

"What are you doing?"

"Flying an airplane." I said.

"That's what I thought. Where is it?"

"Up there, over head . . . ah . . . would you like to fly it?"

"Oh no, I'd probably crash it!"

"Not this one! It's real easy, my wife even flies it. Come on."

And so he did, for five minutes or more, asking lots of questions. Finally he said, "I hate to do it, but I've got to get back to work. Have a nice evening."

"Phew!"

Enough of this, I could tell stories all night, but you'll enjoy flying your own Dragonfly and having your own fun more than reading. So let's get to work.

First of all, call up your old flying buddy and build a pair. They are ten times more fun in pairs. Besides, a 12 x 48 inch sheet of 1/16 plywood makes four fuselage sides and all the other little plywood pieces needed for two.

FUSELAGE

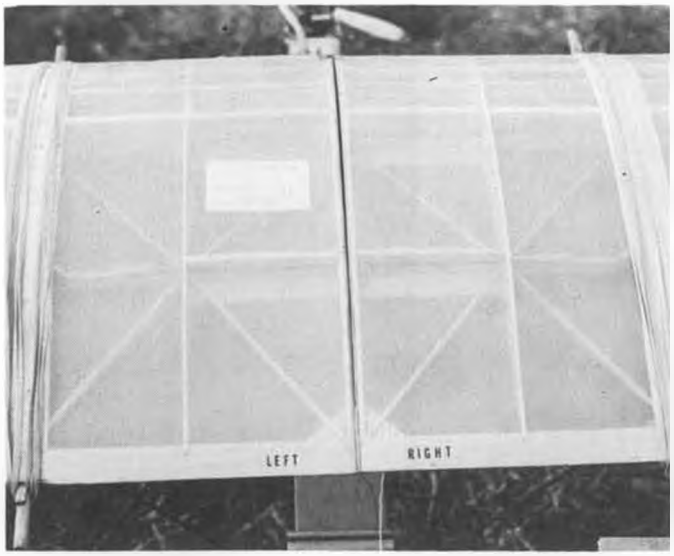
Cut out two fuselage sides. Glue on the 1/8 square longerons, making one left and one right side. Add bulkheads A, B and C and pin in place over the top view. Note where the 1/16 plywood sheeting goes on the bottom to reinforce the wing and landing gear mounts. Draw the nose together with the firewall and add nose plywood sheeting. Bulkheads D and E are put in after the filler block at the tail. Install the tail skid between pieces of 1/16 plywood and cross-sheet the remainder of the fuselage bottom with 1/16 balsa. The top may be sheeted after the push rods have been installed.

FLYING SURFACES

The wing and stab are very conventional in construction. The wing is built in two sections and joined with two 6 inch pieces of 3/32 music wire. These slide into 1/8 inch O.D. brass tubes sandwiched between the main spars. The panels are held together with hooks and rubber bands on the bottom surface. This allows the plane to be transported in a Volkswagen, and provides flexing on landings when the wheels first hit something other than the ground. The one thing to remember is the 1/4 inch shim under each wing tip trailing edge during construction. This provides tip wash-out and helps make stalls enjoyable. Wing rib No. 3 has 1/16 balsa sheeting on top to support the wing hold down bands.

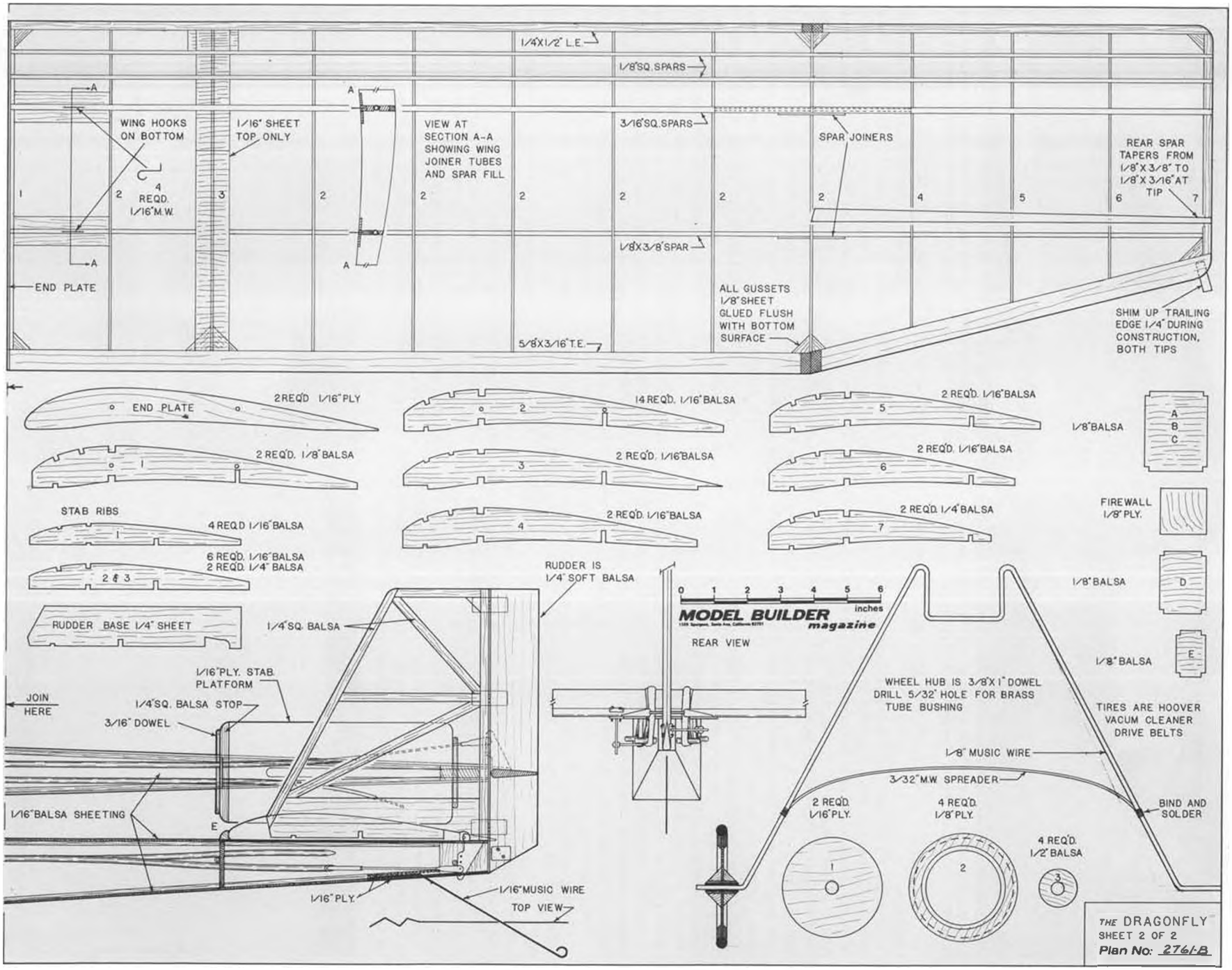
Build the rudder from 1/4 inch square balsa and cover it before mounting in the slot provided in the top of the stabilizer.

When building the stab, pin the leading edge, bottom spars and two pieces of 1/4 inch square trailing edge down over the plan. Next, glue in the 1/16 bottom sheeting. Add the 1/4 inch square trailing edge joiner, followed by



For transportation convenience, wing is joined in center, sailplane style, with tubes and rods. Built it in one chunk if you care to.

Even old timers would be jealous of that prop ground clearance! With those large, skinny wheels, you can take off from most any surface.


1/4X1/2" L.E.
1/8"SQ. SPARS
3/16"SQ. SPARS
1/8X3/8" SPAR
5/8X3/16" T.E.
WING HOOKS ON BOTTOM
4 REQD. 1/16" M.W.
1/16" SHEET TOP ONLY
VIEW AT SECTION A-A SHOWING WING JOINER TUBES AND SPAR FILL
SPAR JOINERS
REAR SPAR TAPERS FROM 1/8"X3/8" TO 1/8"X3/16" AT TIP
END PLATE
ALL GUSSETS 1/8" SHEET GLUED FLUSH WITH BOTTOM SURFACE
SHIM UP TRAILING EDGE 1/4" DURING CONSTRUCTION, BOTH TIPS
2 REQ'D 1/16" PLY
END PLATE
14 REQ'D. 1/16" BALSA
2 REQ'D. 1/16" BALSA
2 REQ'D. 1/8" BALSA
2 REQ'D. 1/16" BALSA
2 REQ'D. 1/16" BALSA
STAB RIBS
4 REQ'D 1/16" BALSA
2 REQ'D. 1/16" BALSA
2 REQ'D. 1/4" BALSA
6 REQ'D. 1/16" BALSA
2 REQ'D. 1/4" BALSA
RUDDER BASE 1/4" SHEET
RUDDER IS 1/4" SOFT BALSA
1/4"SQ. BALSA
1/8" BALSA
FIREWALL 1/8" PLY.
1/8" BALSA
1/8" BALSA
JOIN HERE
1/16" PLY. STAB. PLATFORM
1/4"SQ. BALSA STOP
3/16" DOWEL
1/16" BALSA SHEETING
1/16" PLY.
1/16" MUSIC WIRE
TOP VIEW
REAR VIEW
MODEL BUILDER magazine
WHEEL HUB IS 3/8"X1" DOWEL DRILL 5/32" HOLE FOR BRASS TUBE BUSHING
TIRES ARE HOOVER VACUM CLEANER DRIVE BELTS
1/8" MUSIC WIRE
3/32" M.W. SPREADER
BIND AND SOLDER
2 REQ'D. 1/16" PLY.
4 REQ'D. 1/8" PLY.
4 REQ'D. 1/2" BALSA
THE DRAGONFLY
SHEET 2 OF 2
Plan No: 2761-B

Brian Newman with his Dragonfly, and Jamie Newman with his Horsefly. The little rubber ship was the inspiration for the big 'un. Tex will send the plans sometime soon.

The author hand-launches Brian McCleave's Dragonfly, just to show it can be done.

all four No. 1 ribs, all glued on top of the sheeting. When the top sheeting is put on, it will sand down to a smooth airfoil.

WHEELS

The wheels may look tricky, but they are really very easy. The vacuum cleaner belts can be found at most hardware stores, or any small appliance dealer. Tell them you are going to put them on a six foot model airplane and watch their faces. Be sure to get the size shown on the plan.

Cut all the pieces from the material specified. The hub is a one inch long piece of 3/8 inch dowel drilled for a 1/8 axle. Slide the disc No. 1 onto the dowel, adjust it until it runs straight when spun on the axle, and Hot Stuff it in place. Bevel the edges of plywood rings No. 2 so they form a "V" for the tire to fit in. Glue the rings on one at a time to be sure they are properly centered on the disc. Sand the balsa parts No. 3 to a cone shape and glue over the dowels to complete the hubs. The tires are contact-cemented on after the wheels are painted.

WING MOUNTS

Bend up the wing mounts over the plan. Note the front mount wire is taller to provide wing incidence. Lay Saran Wrap over the fuselage and epoxy the wing mount saddles together and onto the mount wires. Hold these assemblies in place with rubber bands under the fuselage in the location shown. Next, bend two triangles from .045 music wire. Make them 12 inches on each side. Place the middle section of one triangle around the upper end of the front mount wire and bind it in place with fine copper wire. Bend the rear ends around the lower sides of the rear mount wire. Cut off any excess. Do the same with the other triangle, starting at the top of the rear mount wire. Bind the brace wires on each side where they cross. Check the alignment carefully and solder all the joints. The 1/4 inch dowels are bound to the wire mounts with fishing line or string, and epoxied.

Tex Newman releases Dragonfly for Jeff Lee, son of co-designer Bob Lee. Terrain not so good for hot pattern toads, but fine for gliders and DF's!

ASSEMBLY

The brass motor mount shown is pretty, however, a ready-made mount is more durable. Bolt the engine on and hook up the servos. Spend a little extra time here to be sure every thing moves the right direction and works freely.

Our Dragonflys are covered with transparent Monokote for good visibility. The fuselages and wheels are finished with two coats of K & B resin.

Glide test your Dragonfly. Give it a good shove. It should float a hundred feet, land on its wheels and slowly settle on the tail skid. If it stalls or dives, adjust by sliding the wing mount backwards or forwards on the fuselage.

FLYING

The Dragonfly will take off from a smooth runway with an .049. Bob makes the most beautiful takeoffs with his, but he never touches the stick until the plane is twenty feet in the air . . . while I am on the controls immediately, and somehow still manage to hit things before getting off.

The Dragonfly is great for thermal or slope soaring, crop dusting, parachute dropping, but mostly for having fun. We are sure it will make you a happy MODEL BUILDER!

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

This month's column includes a first-hand report, with photos, of the 1975 Tucson Winter Nationals, by Taylor Collins.

Panorama view of Marana Air Park, outside of Tucson, Arizona, scene of the 1975 ⟶

THE NEW AMA PATTERNS

• As of January 1, 1976, the new AMA patterns and skill classifications came into effect. As a result, many of the paragraphs in the 1974-75 rule book, Section 35, will reflect the changes.

Every mention of Classes A, B, C, and D, now has to be substituted with Novice, Advanced, Expert, and Master. In addition, all but a few of the novice maneuvers are now based on the FAI pattern schedule, so Section E of the AMA RC Pattern Judges Guide is all but eliminated.

It should be understood that unless specified as a 100% FAI Pattern contest, all sanctioned AMA R/C Pattern events will be run under AMA rules, but with FAI maneuvers. Confusing? You bet! And to add insult to injury, some classes have simplified (?) FAI maneuvers, and Novice has retained a few of the original AMA maneuvers (such as the old Straight Flight Out, Procedure Turn, and Straight Flight Back) which, are not part of any FAI maneuver!

It's beginning to look more and more like we better wipe off the slate and start all over! If most pattern fliers agree that we should align our sights with the FAI, then let's do it all the way and stop "Messin' with Mr. In Between." On the other hand, all pattern maneuvers (not counting some of the Sport Biplane snap stuff) are combinations of rolling and looping maneuvers, and are therefore familiar and judgeable even when seen for the first time.

Getting away from the maneuvers themselves, we find more confusion. AMA allows lead sleds up to 15 pounds, while FAI rules stop at 11 pounds. AMA allows "boughten" aircraft while FAI still insists (but can't enforce) the B.O.M. rule. If we're going (more or less) to adopt FAI maneuvers in all of our skill classes on the pretext of preparing our fliers for FAI team capa-

Col. Bob Thacker, the ever-present necktie, and his 1st place Sport Scale trophy.

Charlie Smith and his beautiful P6-E. See Classifieds about plans for 2" scale model.

Jack Aycock, Colo. Springs hobby shop owner, 1st in Class B. Trophy Girl Denise Stauffer.

Wolfgan Matt, Class D winner, collects addit ional award from Denise. Beats a trophy !

D Novice winner, Rusty Van Baron holds Denise, Denise holds his Dirty Birdy. Hmmm.

Tucson Winter Nationals, with largest prize value ever offered for an unrestricted entry R/C contest ($10, 986.00).

Dave Brown called for Bob Reuther during the Quarter Midget races. Bob placed third.

Bob Reuther called for Dave Brown in D Expert Pattern event. Sorry we don't have judges' names.

bility, hadn't we better make them use FAI-acceptable equipment?

Well, it's probably OK to go along with the AMA "boughten" airplane rule in pattern. By the time a flier becomes proficient enough to be a potential FAI team member, he has probably learned how to "build his own model" to the satisfaction of the FAI. And besides, even the FAI can't hold out forever. As much as we favor "rolling your own," it really is ridiculous to require it in the top echelons of aerobatics. The name of the game here is flying skill . . . period!

As for the 15 pound gross limit, ready for takeoff, we agree . . . it sure is *gross*! How or when that paragraph (4.2) got in there, we don't recall, but no pattern flier, even with half a brain, would try to perform maneuvers with a 15 pound model powered by a .61 engine. In fact, for safety reasons, we intend to ask that this limit be lowered to the FAI limit of 5 kg (11.023 lbs.).

FAI R/C NEWS

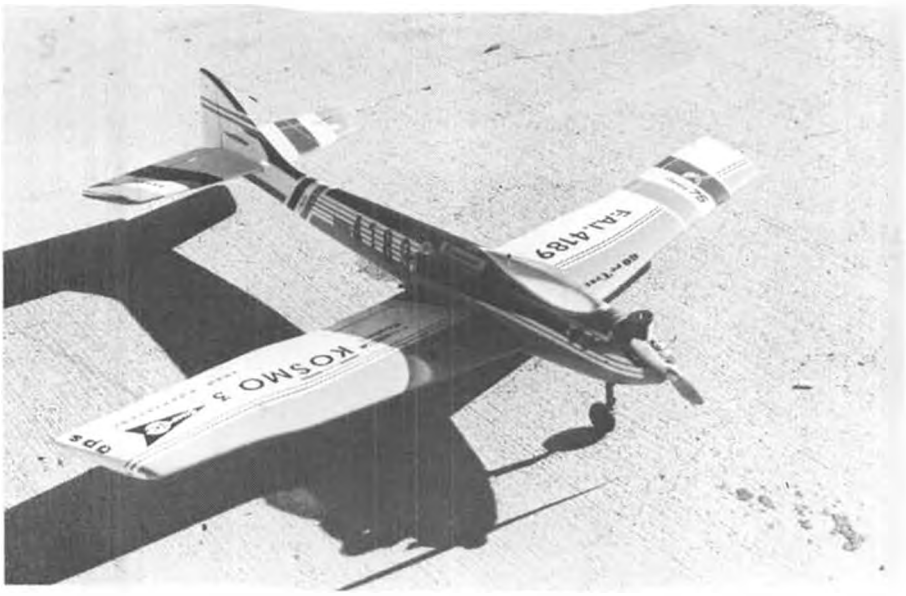
The December 1975 FAI meeting developed some interesting news and future competition schedules.

The 1977 R/C Aerobatics World Champs have been scheduled in Hanno Prettner's back yard . . . Klagenfurt, Austria.

The R/C Soaring World Championships (no motorgliders) has been scheduled for South Africa, in April 1977.

Bob Heitkamp, Pikes Peak R/C Club, 2nd in QM. Modified Deja-Vu, bronze and orange.

No, Wolfgang is not calling Takeoff for his scale P-51. That's a real one, and it landed and taxied by while he was in the middle of a pattern flight! How's that for concentration.



Beautiful pattern bird "Kosmo" by Benito Bertolani, of Italy, who, along with Wolfgang Matt, stayed over from the previous week's Las Vegas Internats to compete in Tucson. He placed 4th.

Citabria Pro, by Dave Linne, Phoenix, Arizona. Kraft power, Pro-Line radio, K&B Super-Poxy finish. Another Pro, built by Bob Godfrey, placed 3rd in Sport Scale.

Partial line up of the scale entries at Tucson. Kent Walters' Corsair (2nd) and Dick Schofield's P-63 King Cobra (5th) can be seen here.

Scale World Championships, including R/C and C/L, plus a special R/C helicopter competition, is scheduled for Bolange, Sweden, on June 18 to 25, 1976.

A tentative offer has been made by Mexico to host the 1979 R/C Aerobatic World Championships.

R/C Aerobatic rules, including latest changes, are to be frozen for 3 years.

R/C Pylon model specifications (1975 rules) are frozen 3 years. (Paris was *cold* in December 1975!)

R/C Electric rules were accepted as provisional.

R/C Helicopter rules were agreed to except for definition of model, size, and weight.

Sport Scale rules were adopted as provisional.

Next month we'll go into the latest aerobatic rules that made it into the 3-year deep freeze.

DUSTERS DON'T DIE

Bill Robinson, Rapid City, South Dakota, sent us some photos of his Duster, a design of ours that was published in a 1964 issue of Model Airplane News.

"Just thought you might like to know . . . Old Dusters never die. Someone just adds a little here and cuts off a little there and . . . all of a sudden you have a military trainer type model (a trainer with just one cockpit?).

"A while back, MAN was selling out some old plans. The Duster was among them. I'm sure it was your design, however, the name on the plan is spelled Northrup. *(That's a battle we'll never win. wcn)* Last year I decided to make it my winter project. Since it was designed during the reed period, I thought maybe a few modifications would be in order. I shortened up the wing area to about 1000 squares, with just a little dihedral on the lower wing and the top wing flat. I left the fuselage moments the same, but did knock off a little stab area. For the cabane struts, I used

Other end of the scale line-up. Jack Aycock's 4th place B-25 is one of the two shown.

eighth inch welding rod, which bends easy and seems to work OK. One of Halco's heavier gear was used, along with 3-inch wheels, to cope with a rather rough flying site. Solarfilm was used on the wings, with a painted fuselage and tail. The insignia is regular Monocote. Up front is one of the earlier HP 61's which hauls it around in good shape.

"On about the 5th flight, a bad cell in the flight pack caused an attempted subterranean flight. At first I thought it was a total, but a couple of our club members talked me into a repair job. At this writing I've put on about 15 additional flights. It flys well, however, rolls remain sluggish, even with all the aileron I could muster on that lower wing. Slow flight is fine, but it will not spin. Who cares?? I can live without spins. (*It should spin quite well. Chances are your balance point is just a little too far forward . . . fine for rock-stable flying, but it cuts down on aerobatic ability. wcn*) Inverted flight is a cinch, and requires very little down to keep the nose up. Takeoffs and landings are easy . . . I think maybe that wide Halco gear helps a lot. An interesting thing about this "old" design is that it very much resembles a hot "new" bipe. I won't mention the name, but it rhymes with (*Censored. Any resemblance to a current popular design is purely complimentary. wcn*)."

Sport Scale winners (l to r): Bob Godfrey (3rd), Col. Bob Thacker (1st), Kent Walters (2nd), Jack Aycock (4th), and Dick Schofield (5th).

Another Duster tid-bit . . . some years ago, a military modeler, whose name escapes us now, sent us a Japanese kit of the Duster. It had a different name . . . something like "Sky Queen" or "Cloud King." but the plan was an exact copy of the M.A.N. drawing . . . even to the point of cutting the rudder off of the fin to fit the undersized plan sheet! Still have the

Continued on page 90

ST powered Quarter Midget, out of control, flew through crowd, chest high, and buried engine in VW bus, where it stuck. Brrr!

Mike Abernathy, official score runner for the Tucson Winter Nats, and his trusty steed. We know his help was appreciated.

Warren Newbury, Bakersfield, California, built this K&B powered Bi-Prentice from MB plans and added ailerons. Sez it flies nice, slow.

Bill Robinson, Rapid City, S. Dakota, built this Duster, a 1964 design by MB.s editor, with modifications explained in the text.

Here's our resident whirly "Bird," with the Helix fuselage sitting atop the huge kit box in which it arrived from Germany.

And the "after" shot, the completed Helix autogyro, before trim paint was added. Disc underneath starts rotor at takeoff.

CHOPPER CHATTER

By JOHN TUCKER

Note blade droop in at rest position. Blades "flap" upward during rotation and lift.

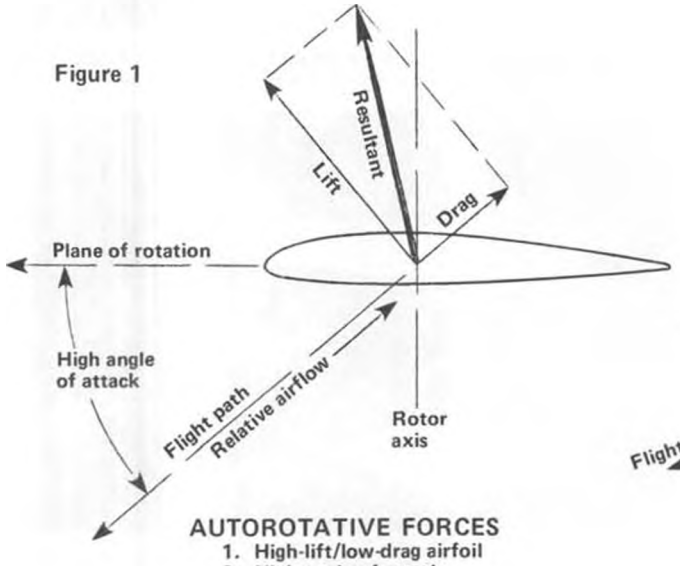
• Now that the Christmas season is over, 'tis the time to be constructive . . . and that's exactly what I've been these past few days. Santa was very good to me this year, in that he delivered my "Helix" autogyro kit from Wik-Modelle, Germany, and provided me with a four-day weekend in which to put it together.

In the November '75 MB, I briefly mentioned that I had seen the prototype "Helix" in Knittlingen, Germany, and watched in-flight movies to the point of being intrigued by its novel flight characteristics. I just had to have one! While our flying sites are shrinking in both size and availability, I have long felt that rotary-winged aircraft are the ultimate answer to the space problem and are novel enough to keep ones interest at a peak. For this writer, R/C helicopters have really filled the gap, but I have noticed a lack of enthusiasm amongst the modellers . . . perhaps the kits are too expensive, or the learning process is too frustrating.

Well, the answer to that one is to try autogyros. They are very inexpensive to construct, for the most part they are extremely stable, and they present unlimited opportunity for experimentation. Although autogyro activity is very high in England, France, and Germany, U.S.A. participation is almost nil . . . in spite of the huge number of full size Bensen Gyrocopters built and flown by sportsman pilots.

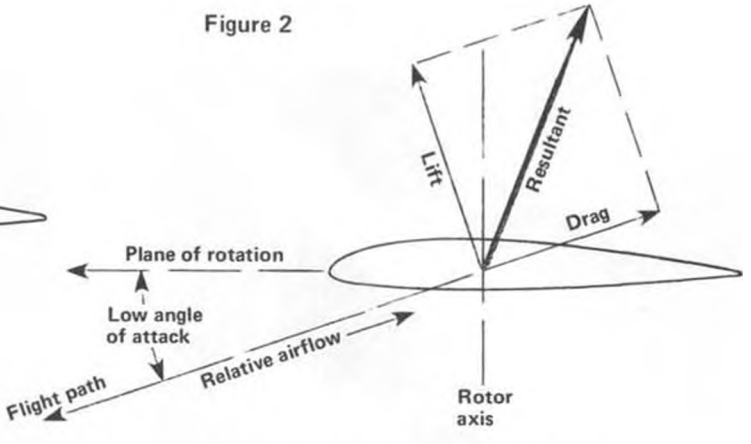
Autogyros certainly will not take the

Figure 1

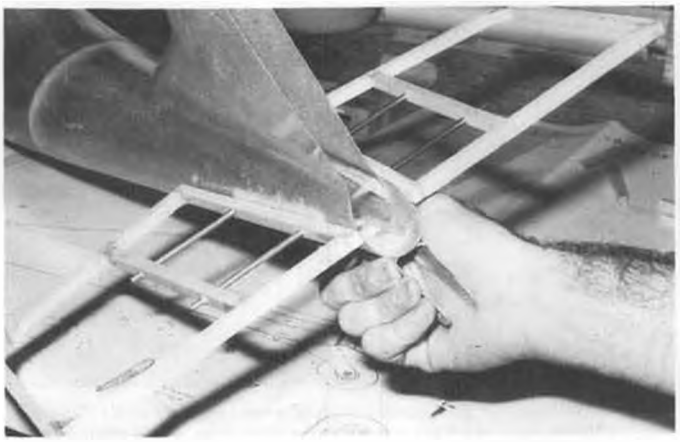


AUTOROTATIVE FORCES
1. High-lift/low-drag airfoil
2. High angle of attack

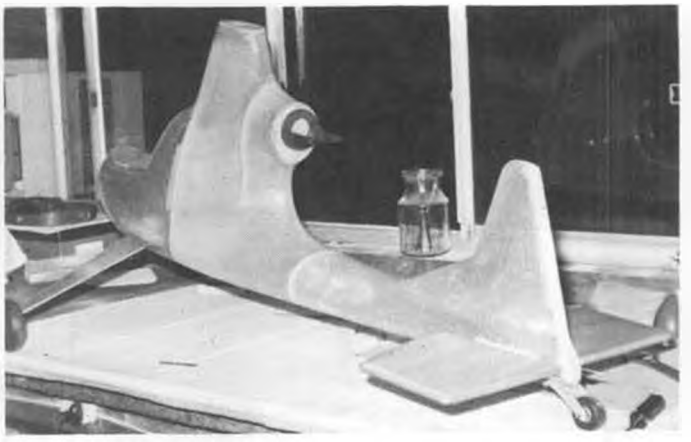
Figure 2



NON-AUTOROTATIVE FORCES
1. Low-lift/high-drag airfoil
2. Low angle of attack



Stab is mounted plug-in style, similar to sailplane wing attachment. Tailwheel bracket bolts directly to fuselage.



Stab installed. Note interior plywood formers and rudder spar. Kraft-Hayes engine mount bolted to fuselage firewall.

place of helicopters, but they do offer a tremendous potential for fun flying with a limited capitol outlay (see April '75 MB for construction details of an extremely stable twin rotor R/C autogyro, by Skip Ruff).

Helicopters and autogyros look alike in physical appearance, but the similarity stops there. The helicopter main rotor blades are driven directly by the engine, and gulp huge quantities of air "downward" through the blades in creating lift. Conversely, the autogyro is pushed or pulled through the air by the engine and conventional propeller, thus thrusting air "upwards" through the rotor blades, causing them to rotate much like a windmill. This rotation, under certain conditions of blade angle, speed of rotation, and relative wind, will create a situation called "autorotation", which tends to keep the blades rotating without power.

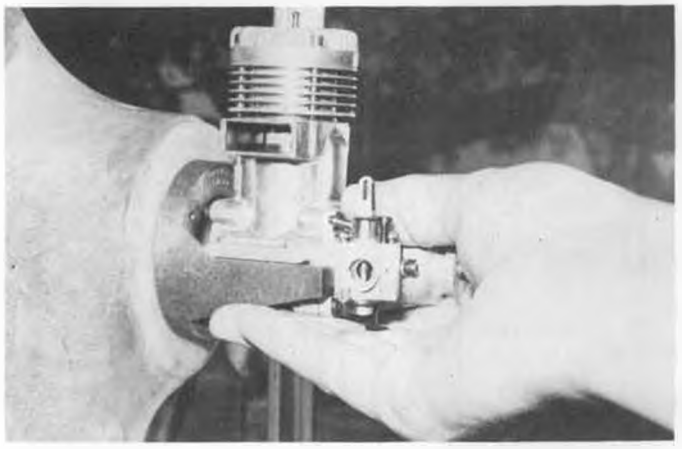
Much has been written on autorotation and many varied opinions have been expressed as to "positive" or "negative" angle of incidence on the main blades. Perhaps a brief description of the forces involved is in order at this point.

In Figure 1, I have exaggerated the forces deliberately to emphasize the gyplanation. As the blades rotate around the rotor axis, lift and drag is produced in relation to the relative airflow (angle of attack), *irrespective* of blade incidence. Lift is perpendicular to relative airflow and drag is parallel to relative airflow. At very high angles of attack, as illustrated above, the "resultant" of lift and drag indicates an upward and foreward force . . . the upward force provides "lift" and the foreward force pulls the blade ahead in "autorotation". If you care to experiment with the drawing yourself, you can quickly realize that autorotation is dependant upon many things. For example, shallowing-out the path of flight (and thus the relative airflow), can place the resultant "behind" the rotor axis (Fig. 2), with the net result being that the drag component stops the rotor completely. A low-lift/high-drag airflow will also have the same effect of stopping rotation.

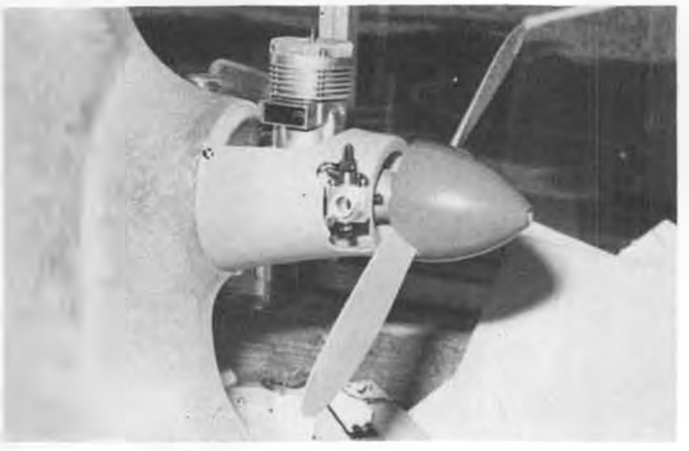
For the above reasons, the blade

Engine and fuel tank bulkheads above, oval ring bulkhead to tail boom below.

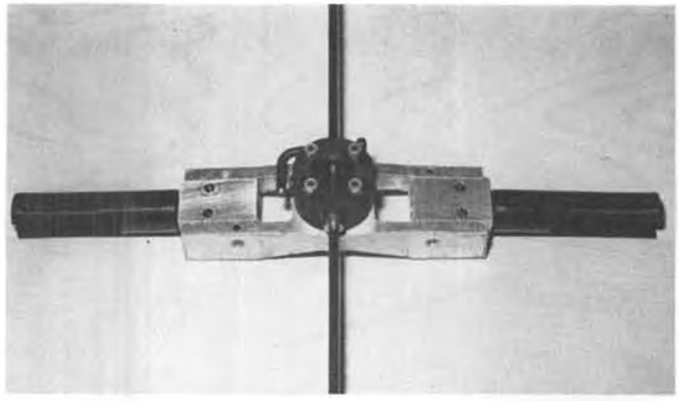
Removable servo mount in place on main bulkhead. Buckets of room!



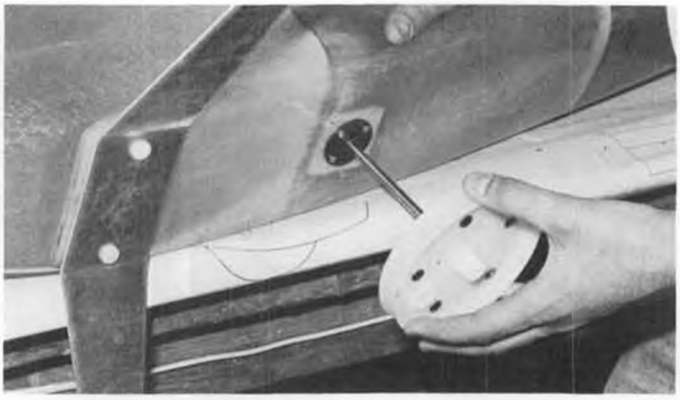
By rotating carburetor of HP .61 engine 90° in direction of normal operation (counterclockwise), engine will run in opposite direction.



Plastic engine cowling installed. By reversing running direction of engine, normal right hand propellers may be used.



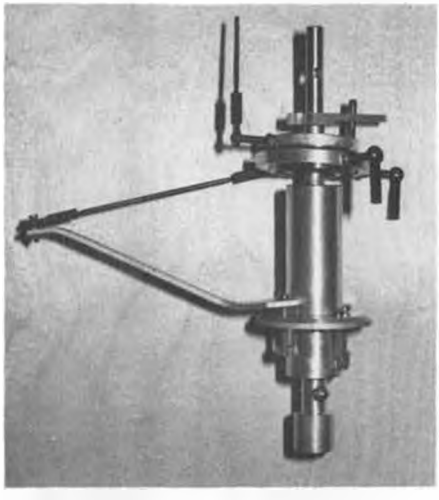
Main rotor assembly is same as Wik-Bolkow BO-105 helicopter head. Schluter "cardon" head with flapping blade mounts.



Installation of start-pulley on free-wheeling drive shaft. One-way clutch permits wheel to turn rotor, then free-wheel during flight.

angles and correct airfoils are chosen to produce the maximum autorotative forces in any given configuration. The angle of incidence varies from about -3° to +3°, and the main rotor axis is usually tilted back around 10° so that the relative airflow insures a "good bite".

It might be interesting to note that during autorotation, the outer one-third of the rotor disc is "driven" and is called the propeller region. The aerodynamic "resultant" inclines slightly behind the axis of rotation and creates a small drag, or anti-rotative force, which tends to decelerate the tip portion of the blade. The inner one-third of the rotor disc is known as the stall region, which creates little lift, but considerable drag. The stall area *also* tends to decelerate the blade. Only the center one-third of the disc exhibits the foreward inclination of the "resultant" which accelerates the blade foreward in autorotation! Small wonder we have difficulty in obtaining good autorotations in our helicopters!



Main rotor shaft assembly. Free-wheeling unit is at bottom of shaft, grips shaft from pulley.

The word autogyro was coined by the Spanish engineer, Juan de la Cierva, who built the first flyable gyrocopter in 1922. By the mid-thirties, the helicopter was gaining in popularity and the autogyro almost disappeared. Igor Bensen, the gyrocopter enthusiast, revived the interest and now, gyrocopters are in great demand.

Well, enough history and theory . . . back to the "Helix". The entire kit, including fiberglass fuselage, is packaged in a giant size, well constructed box. It had to be good to stand all that "round-the-world" crunching during the Christmas season! Internal packaging was generally good, except that the landing gear was stuffed into the fuselage without too much protection and subsequently punched a couple of holes in the otherwise beautiful epoxy body shell.

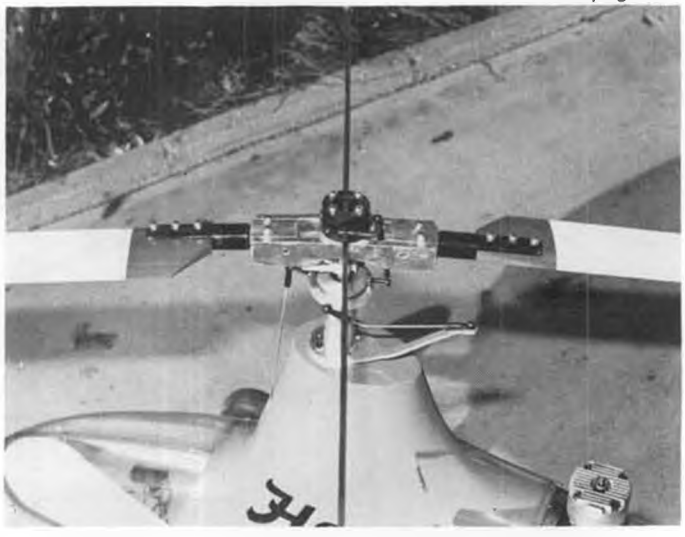
Earlier versions of the "Helix" unsuccessfully duplicated the mechanics of the Cierva autogyro . . . it wasn't until 1973 that the present rotor control proved an unqualified success. This rotor head, incidentally, is identical to that used in the Wik-Bolkow 105 R/C helicopter reviewed in an earlier MB issue. Main rotor diameter is a very large 7'-8", and rides on top of a 4'-4" fuselage. Flying weight is between 7 and 8 lbs., and requires a hefty .61 engine.

Since the Helix is a pusher type rotorcraft, I had the choice of carving left-hand props, or reversing engine rotation. Being lazy, I chose the latter and rotated the HP 61 front case cover 90° in the normal direction of rotation. By putting the prop on backwards, I had just what I wanted, a pusher engine!

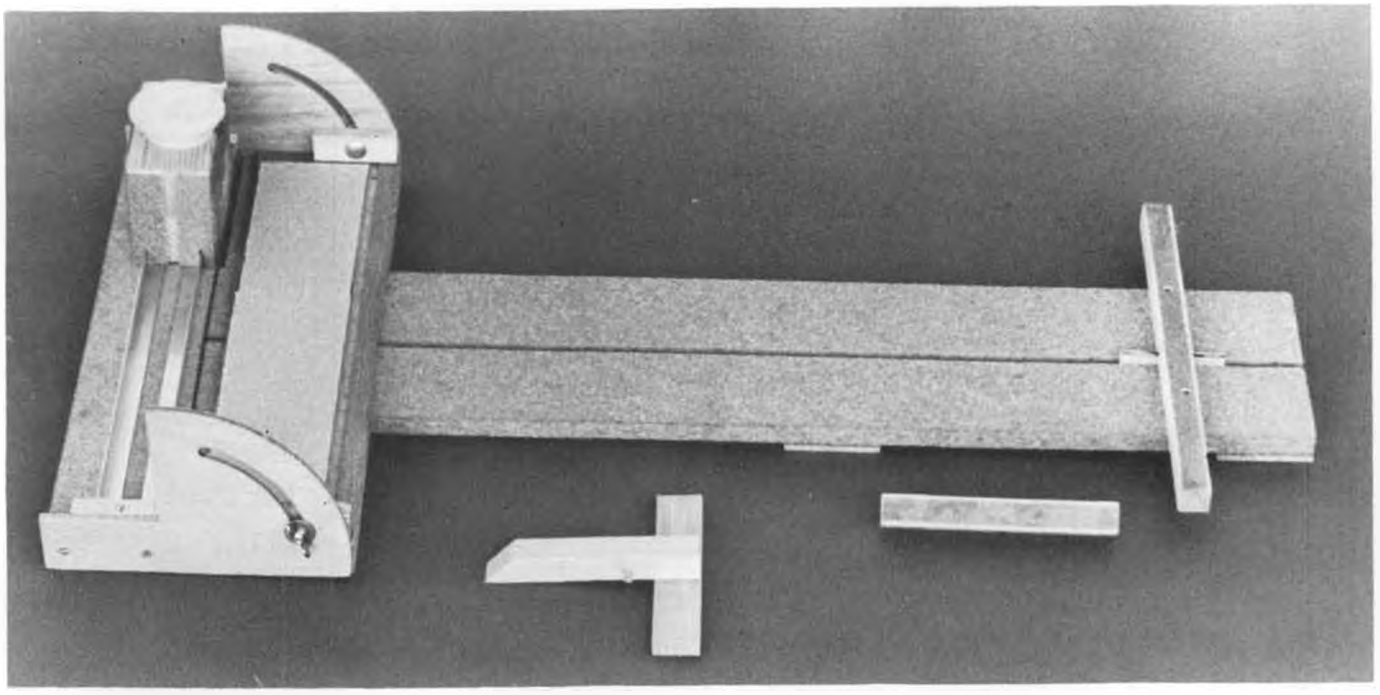
Before takeoff, the main rotor must be brought into rotation. This is accomplished by winding a 30 foot cord around a pully attached to the bottom end of the main rotor shaft, running the cord through the tail wheel fork, then standing on the end of the line. When engine power is applied, the foreward motion unwinds the cord, spins up the main rotor, and keeps the model

Continued on page 80

Control links to main rotor swash plate. Front rod is for up/down pitch control, side rod for L/R banking.



Anti-rotating rod and mounting bracket, prevents swash plate from turning with blades. All photos by author or son Kim.



The Deluxe Miter Sander, assembled and ready to use. The long, grooved tongue is used when sanding dihedral bevel in root of large wings. Smaller work is held on tilt table, with proper angle set. "T" fitting keeps work lined up properly.

PRODUCT$ IN U$E

Custom Craft Products' DELUXE MITER SANDER, by Bill Northrop.

• Everyone is familiar with that famous quote, "A joint that fits together, stays together . . . and a little glue helps." Custom Craft Products, 19 Florgate Road, Farmingdale, New York 11735, concerns itself with the first part of the quote. The company produces a kit from which a precision miter sander may be built. There is a Standard and a Deluxe model, and this report concerns itself with the Deluxe version.

The primary purpose of the Custom Craft Miter Sander is to provide accurately fitted beveled joints for construction of model airplanes, however, like any precision tool, the number of uses is up to the imagination of its owner. In addition, the Deluxe version provides for beveling the dihedral joints of large foam and/or balsa wings.

The Miter Sander is designed to bevel, angle, or square up a cut on most all of the normal model building materials. The Deluxe version will handle work up to 14-1/2 inches long and 3 inches deep.

Assembly of the kit requires only a minimum of tools and materials: hammer, small and medium screwdriver, white glue, and contact cement. A flat, sturdy work surface is also handy, as several of the basic parts are glued and nailed together.

Instructions for assembly are quite clear, and the whole process can take less than an hour. Only a few joints are held by glue alone, and these, of course, must be given time to dry completely before operating the unit.

To accurately bevel the root end of a wing for the dihedral joint, the dihedral tongue is plugged in with the grooved side up, and the tilt table is

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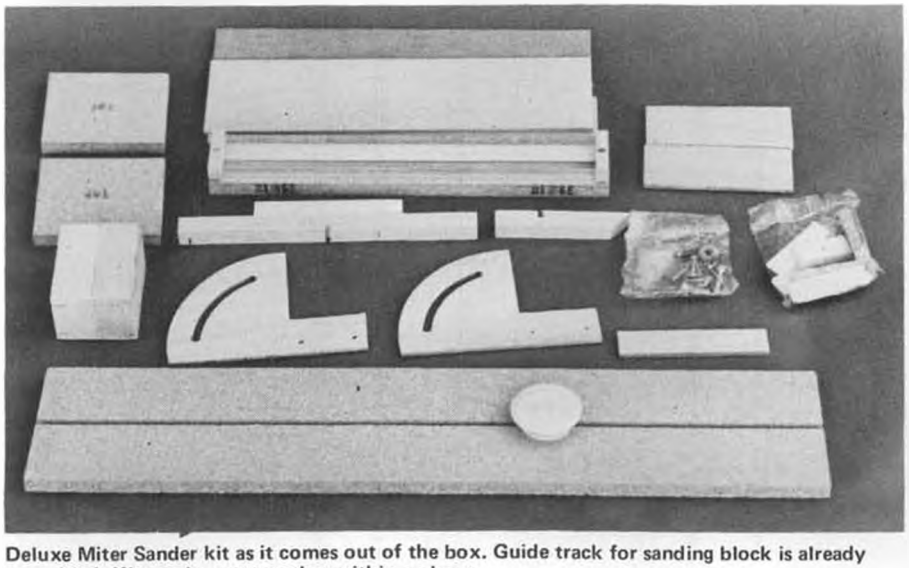
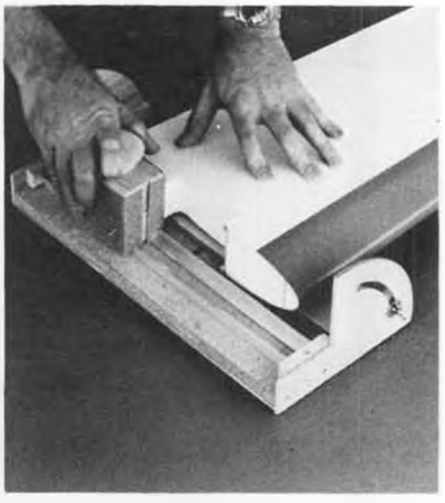
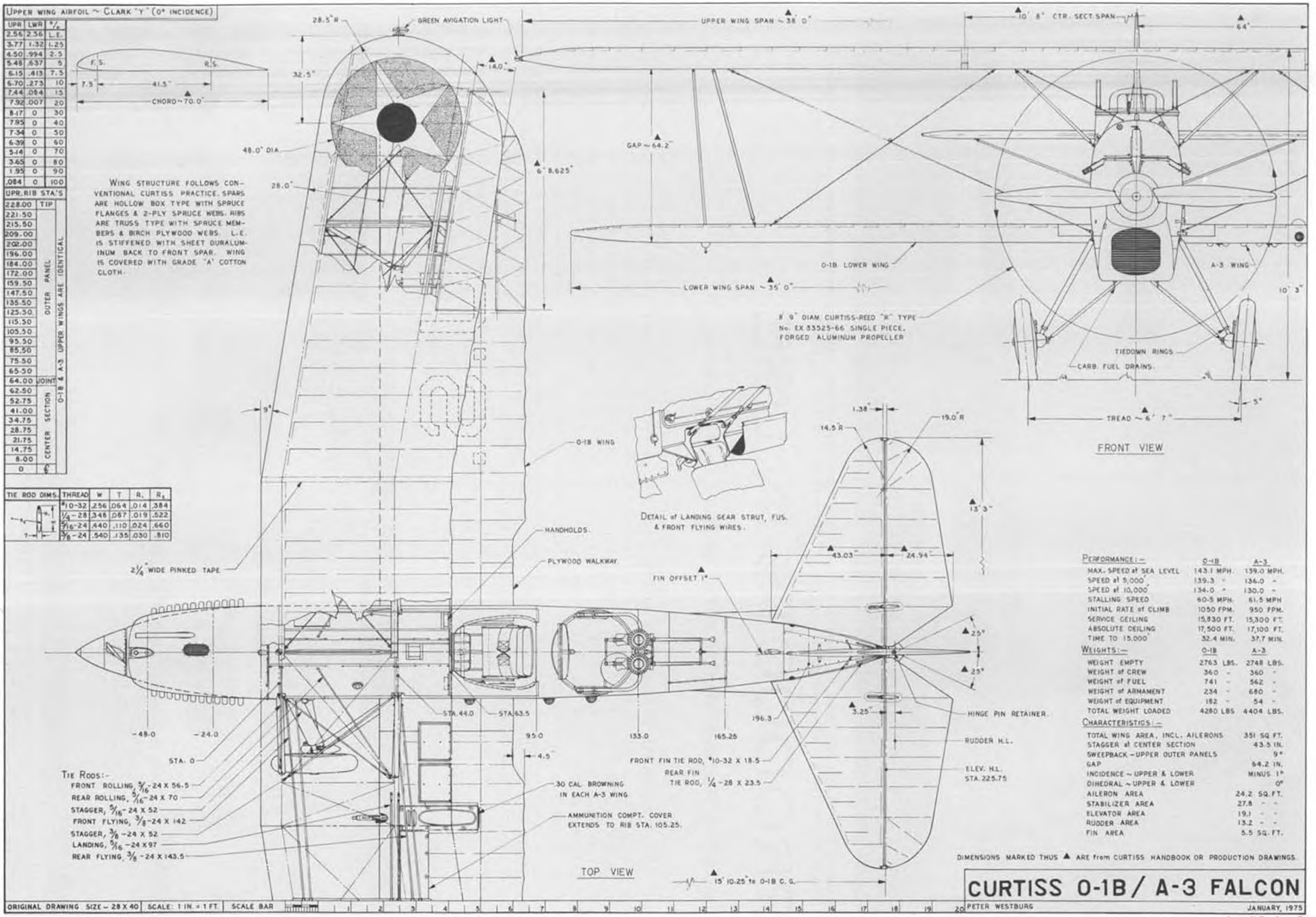


Deluxe Miter Sander kit as it comes out of the box. Guide track for sanding block is already assembled. Kit can be put together within an hour.



Miter Sander in use with a sheet plastic covered foam R/C wing. Tight, strong joint results.



The O-1G was a greatly improved Falcon, with a tailwheel, better faired fuselage, wing cut-out, and many changes in engine cowling, landing gear, and rear cockpit. This late O-1G is also equipped with radio.

CURTISS A-3 FALCON

PART TWO (Conclusion)

By PETER WESTBURG

PHOTOS FROM USAF MUSEUM

• In the Air Corps, the Falcon was powered by either the Curtiss D-12 or the 420 hp Liberty 12. The Liberty powered Falcon was known as the O-11. The Air Corps also used the Falcon as an attack plane, the A-3 series, to replace its aging DH-4's. In this guise, it had two guns up front in the fuselage and one in each lower wing firing outside the propeller arc . . . and up to two hundred pounds of fragmentation bombs could be carried.

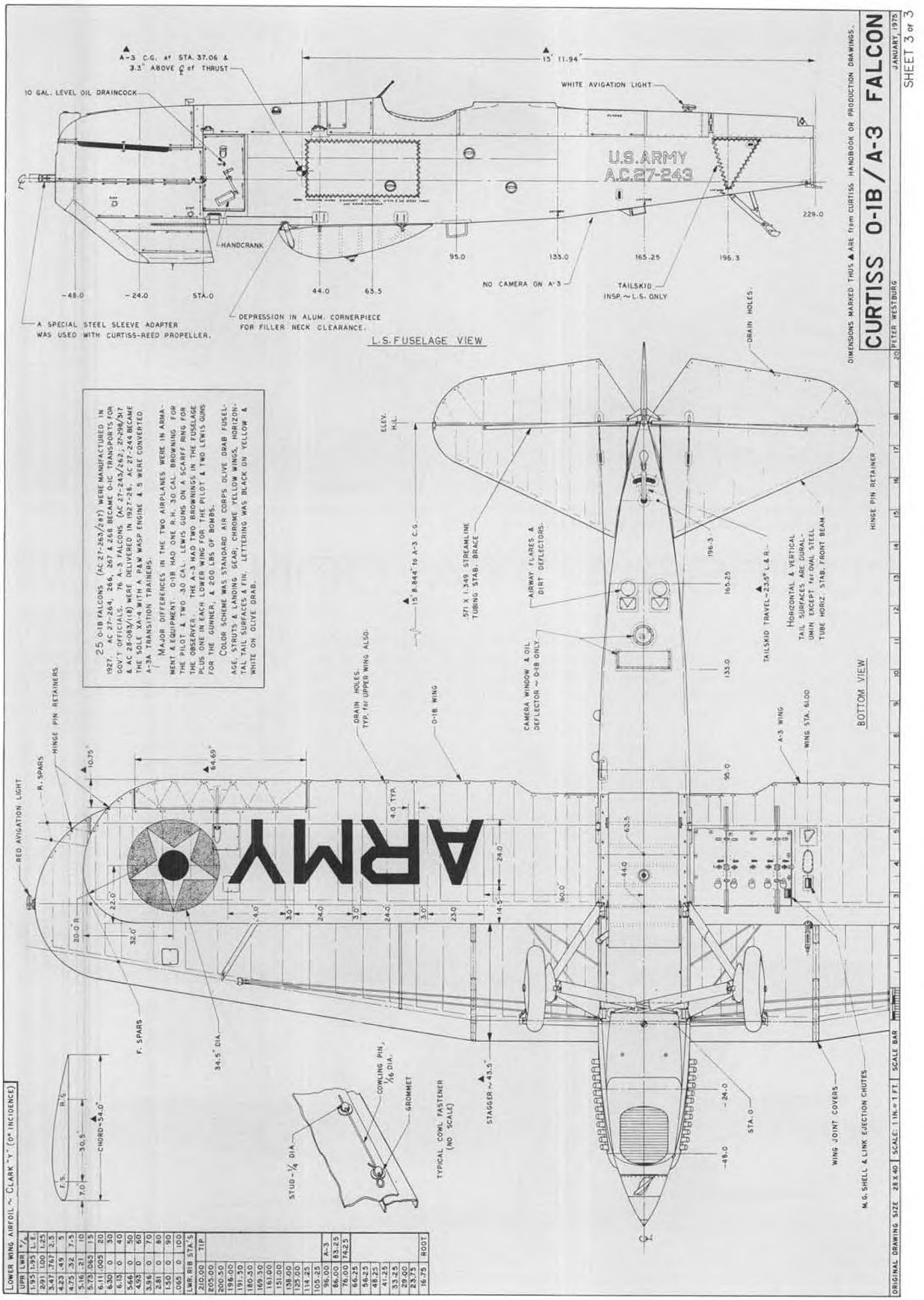
The Air Corps experimented with other engines, notably the Curtiss Conqueror, a 12 cylinder radial hex engine named the Chieftain, and the P & W Wasp radial of 410 hp. The Wasp engined Falcon was not adopted by the Air Corps, but the Navy bought it, and as the OC-1 and OC-2, it became the predecessor of the famous Helldivers.

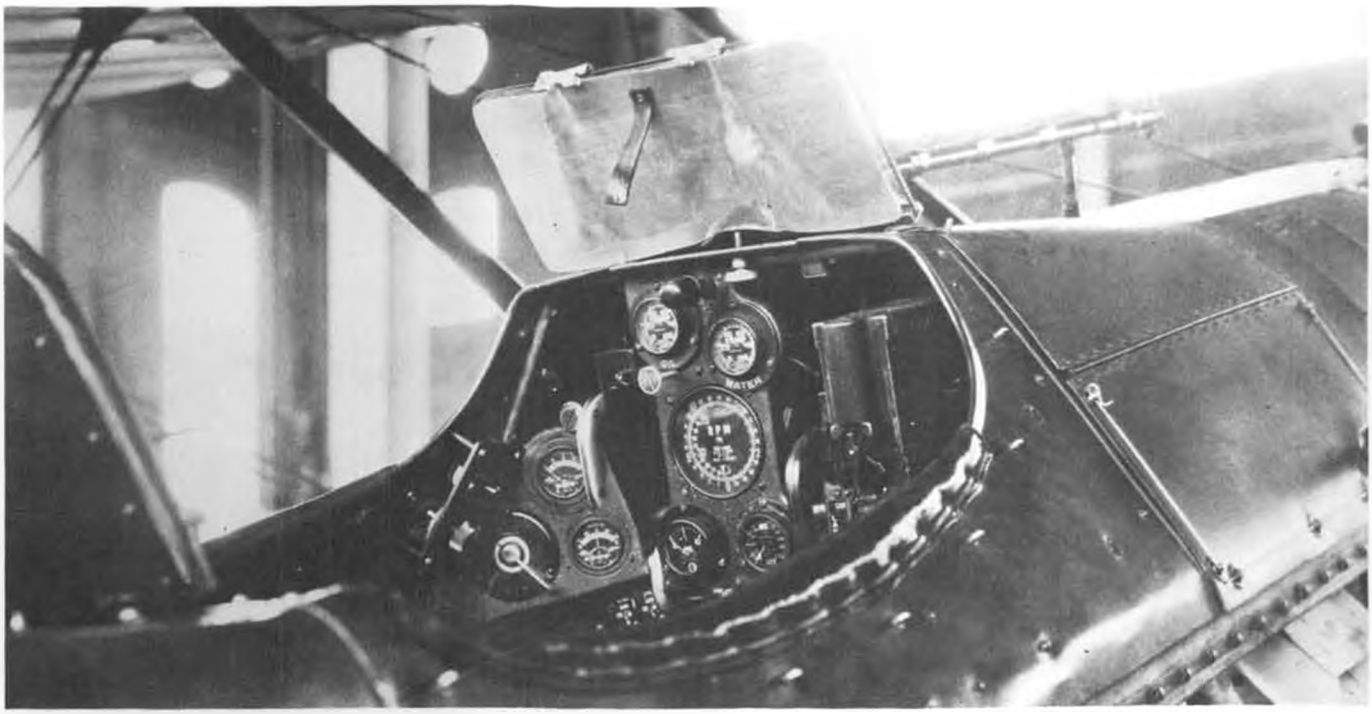
In civilian service, the Falcon was used as a mailplane, one being flown by Charles Lindbergh. Another was powered with a Wright Cyclone and used as a mailplane, before being sold to Cuba. The Falcon was exported to many countries in this hemisphere; one as a seaplane on a single pontoon and wingtip floats was sold to Columbia.

The Falcon design persisted through the 0-39, which had a Conqueror engine front end almost identical to that on the Hawk P-6E, and large streamlined fairings over the wheels. Only ten were manufactured and four were lost in accidents while flying the mail in the 1934 crisis.

The last Falcon was the Type II, powered by a 745 hp Wright Cyclone enclosed in an anti-drag ring. It looked much like the Douglas O-38F, with a

Airplane No. 63 of the 13th Attack Squadron, Fort Crockett, Texas. This A-3B had a white flash on the cowling when flown by the 13th. Rear gun is a single Browning on a Scarff ring.





Front cockpit of an A-3B shows instruments grouped around left-hand .30 caliber Browning and right-hand .50 caliber gun. This airplane was equipped for blind flying instruction, with cover over windshield and hood fasteners.

canopy and a fat fuselage. It nearly took the life of test pilot Lloyd Childs when the wings came off due to vibration in a shallow dive. Childs bailed out at 2500 feet.

Structurally, the Falcon was advanced for its day, in the wide use of aluminum tubing for the fuselage frame and tubing and sheet in the tail surfaces. The art of welding aluminum had not yet been perfected, so all parts were riveted and bolted together.

The wing structure was conventional hollow box spars with spruce flanges and two-ply spruce webs, truss type ribs with spruce caps and birch plywood webs.

The basic color scheme was the usual Air Corps olive drab on the fuselage, struts and landing gear; chrome yellow on the wings, fin and horizontal tail. Insignia was standard stars and bars; lettering on yellow was black, and white on olive drab. ●

Plenty of detail visible in this A-3 photo. Browning .30 wing guns could be rigged down four degrees. Pilot had two .30's in fuselage.

Front view of characteristic tunnel radiator. Prop forged and twisted from aluminum slab.

Classic Falcon tail, remembered by anyone who ever saw the airplane. Tail surfaces were dural sheet and tubing, riveted together and covered with Grade A cotton fabric.

Qu'Appelle Valley, Saskatchewan, Canada, scene of the 2nd Annual Friendship Slope Soaring meet. What a site!

R/C SOARING

By TAYLOR COLLINS

• As this is being written, Christmas is approaching all too rapidly . . . but in spite of my holiday problems (like what to buy for my soaring-nut wife), I am attempting to make this column sound like it should when it will be read in February.

The year 1975 was one of griping . . . griping about the A.M.A. and what it is and isn't doing for a soaring, griping, about the N.S.S., about contests, rules, sailplanes, and people. Everyone had a pet personal opinion about what was wrong with soaring, and every opinion was expressed with an urgency that outshone even the most vocal backwoods preacher on Sunday morning.

Hopefully, most of this noise is behind us. Soaring is reaching a moderate level of maturity in the U.S. We are flying in-contests that are being recognized as significant. The level of flying proficiency is becoming more uniformly excellent throughout the country. And the wheels are slowly starting to turn toward the U.S. competing internationally. In short, though some of the growing pains are threatening to kill the patient, the gentle art of remotely actuated glider guiding is becoming a significant part of the hobby. It is my feeling that it is going to take action, not more griping, to continue this growth.

Line-up of "Cutie Pie" sailplanes for one-design competition. Fiberglass fuselage and kit produced by G.B. Glass Products.

Many fliers are becoming more vocal about contest rules which they feel are unfairly favoring landing proficiency over flight performance. These people may have a point to argue . . . if they have a viable alternative. The point is that any changes in our present rules will have to be made through the A.M.A. In order for a rules change to become effective by January 1, 1978 (which is the earliest that any change can take effect), the proposal for the change must be in by June 1, 1976. *(And to carry weight, it should have the backing of the N.S.S. wcn)*

I personally have no axe to grind on any rules change. I fly the plane that I feel gives me the best edge in the competition, and do the best I can from that point. As long as everyone in the contest flies to the same rules, I'm happy. But, as food for thought, I would like to air some suggestions and ideas that I have received.

One major bone of contention in 1975 was classification of airplanes. Many fliers feel that a class, limited to two control functions, encourages newcomers into competition. Certainly, we need to encourage more people into competing, if the hobby/sport is to grow beyond its present level. One alternative to classifying the aircraft, is classifying the fliers.

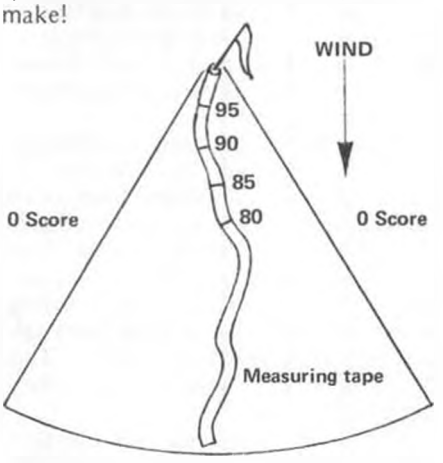
Dave Harvey, of the Seattle RAMS Club, writes that they have been holding two-class contests, with the pilots divided into "Proficiency" and "Competitor" categories. A point system was

Start of Open Class pylon race at Friendship Slope Soaring meet. Contest was sponsored by G.B. (Gary and Brent Reusch) Glass Products.

devised, based on performance in contests. For each first place win a flier recieves 3 points, for second place 2 points, and for third place 1 point. When a flier has acquired a total of 4 points, he is 'graduated' out of the "Proficiency" category into "Competitor", Dave tells us that in their first contest, the groups were almost exactly equal in number. *(One more factor should be considered. A 1st place against 100 contestants is much more significant than a 1st place against 10 contestants. Refer to the AMA pattern classification system. A flier is unfairly promoted if he wins a few minor contests. wcn)*

The Torrey Pines Gulls club carried this idea a step further. They held a "Pro-Am" contest. In their contest, the "Pros" (better, more experienced fliers) had the option of doubling their scores by doubling the flight times for the tasks. If they failed to make the doubled time, they received a "0" for the round. Sporting chaps aren't they?

On the other side of the coin, there is growing support in the Southern California area for a modification of the usual landing circle or runway. The idea is to use only a wedge, rather than a full landing circle. The 'wedge' is to be aligned into the wind. Landings are measured with the conventional tape, but a score is received only for landing within the wedge. The idea is that this will eliminate the "luck" landings. Golly fellas . . . those are the only kinds I make!



Many people are in favor of following the example set by the full size soarers . . . with events designed toward speed over long distances. This type contest (if the models in any way perform similarly to the full size) will put a lot more emphasis on the aircraft design. But as with all speed or distance tasks, it requires much more in the way of manpower to handle turn flagging, etc.

The San Fernando Valley Silent Fliers recently had a 20 mile cross-country race. A start point and finish point were selected on the desert, east of the Valley, and the fliers and their helpers were given a one-hour period to get into the air. From that point, any number of relaunches were allowed, as long as the model was being towed some direction other than toward the finish. Each team had to furnish one person to serve as timer for another flier. Unfortunately, I don't have any more details on this most interesting contest. (Come on fellas . . . if you don't send me information, I can't let the rest of the world know about it!)

Dave Jones and his original design for Formula 72 contests. Weighs 21 oz. with Cannon Mini.

Exotic original design "Mariah", by Jack Chambers. More information in text.

Another direction to go with competition is a one-design, or one-class contest. Milt Swan (M&S Ltd.), with the sponsorship or several other manufacturers of six foot sailplanes (and MODEL BUILDER), put on the fourth annual Formula 72 contest in the Los Angeles area. This contest was limited to planes of no more than 72 inches wing span, with a minimum wing loading of 7 ounces. Milt used a small diameter rubber, short high start for all launches. With the much-shorter-than-usual launch, the three and four minute duration rounds were very challenging. Incidentally, Dave Thornburg drove all the way to Los Angeles from Albuquerque to win the contest with Top Cat.

These are but a few of the many ideas that are bouncing around. But

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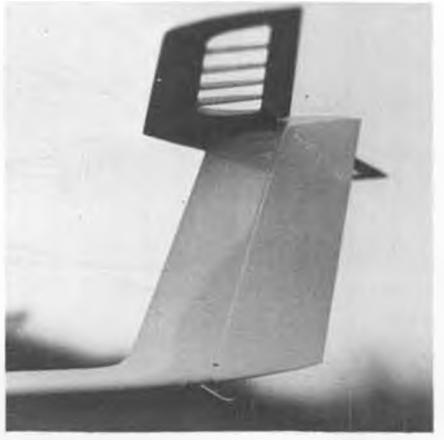


Fully enclosed rudder hinge line on "Mariah." Covered stab hinge, streamlined skid wire.

"IS SOARING FOR THE BIRDS???" PART I

By JIM GRAY . . . This article is too good to pass up, and too long to run in one issue. Therefore, even though we dislike cutting it into parts, we are starting it in this issue, and will continue it for the next few months. It's scientific, but not heavy; informative, but not dull . . . in fact . . . it's fascinating.

• Fellow sailplaners, I'd like to ask you a few questions. How many times have you been "working" a thermal with your R/C model sailplane, only to have a hawk or other soaring bird join you for a few lazy circles? Did he stay and provide you with a good lesson in thermalling ability and soaring efficiency, or did he "sniff" your lift and after only a brief turn or two disdainfully leave for "greener" air?

Have you ever tried joining a hawk's thermal? Did he object, or did you both spiral upward in harmony until you were a mere speck in the blue? Have you ever been attacked by a soaring bird . . . and have you ever chased one, only to have him suddenly "peel off" and depart the scene at a high rate of speed? Have you ever had several hawks gang up on you to drive you from their "territory", while shrilly scolding you all the while? Did one ever stay around and fight?

These things, and more, have happened to me or my fellow sailplaners here in the Elmira, New York area . . . and often enough that we believe soaring birds soar for fun and enjoy it as much as we do!

Being a newcomer to R/C soaring, I'm always "turned on" by the excitement and surprise of events such as those described above, and I always enjoy trying to out-soar my feathered friends, as long as things remain on a friendly basis. Once, I had a hawk deliberately (I'm sure) lead me into some heavy sink downwind, only to flap away in triumph, probably cackling to himself, while I tried to make it back to the field. Dumb animals? Stupid birds? Far, far from it, as you will see if you haven't already seen from your own experiences.

Rarely am I able to out-soar that kind of competition. These soaring birds find and use lift I don't even suspect as being there . . . or, if I do, they climb in it faster and let it carry them farther away than I dare to go. More often than not, hawks seem to be indifferent to my presence in the same thermal; provided, however, that I don't try to approach them too closely. They appear to mind their own soaring business, apparently taking my sailplane as some kind of not-too-bright flying creature to be pitied for its lack of knowledge of the finer points of technique and superior know-how.

Only when I transgress the invisible boundaries of a hawk's "territory" do I invite censure . . . in the form of an unmistakable warning, even attack! The warning is a sudden "flip up" into a vertical bank, accompanied by a quick flap of the wings and a sudden lowering of his undercarriage (landing gear) talons extended, ready to strike. This clearly says "Keep your distance, stranger, this is *my* turf."

Strangely, since I painted the stab and fin of my small sailplane red (actually it's covered with red Monokote), I've been joined, both on the ridge and in thermals, far more frequently than ever before . . . by red-tailed hawks! Birds are *not* color blind, and I'm convinced that they recognize my red tail, thinking at first it may be one of their own kind. They're right, of course, but in terms of spirit . . . not ability! As to attack, it happened only once, and I'll have to take you back a few years to tell you about it.

Shortly after WW II, I owned a small Taylorcraft BC-12D and flew it from a small grass-covered strip at Painted Post, New York. One day I took off in a crosswind that drifted me toward an old, dead tree as I climbed out in the pattern. As I went past the tree, and perhaps fifty to one hundred feet above it, I noticed a large nest in the top of the tree. My first indication of attack came incredibly fast, without any warning whatsoever. In a blur of speed, far too fast for me to react, a red-tailed hawk flashed diagonally downward, passing between my windshield and propeller. Apparently the hawk started his dive from behind and above. Since in climb, I was indicating about seventy miles an hour, so the hawk had to be doing at least that; my guess is that it was probably closer to one hundred! I suspect he had been hunting at a higher altitude and saw the T-craft head for his nest. Instant reaction . . . a natural defense of home and family. Following the attack, I looked down and behind

For others I'm still searching for information and answers. So far, these answers seem to indicate that R/C soaring and bird soaring may have much more in common than any of us has ever suspected. I hope you will be encouraged by what I have to say in the following pages to tell me of your experiences, and share your knowledge with me. You will find that I am wrong in many cases: or at best, only partly right. Tell me, I want to learn! Together we can be greater than the sum of our knowledge, for we can synthesize, invent, explore new ideas and . . . hopefully . . . have a lot of fun in the process. Churchill was reported to have said: "Oh how I love to learn, and how I hate to be taught!" Let's make it a point to make the learning process pleasureable and instructive for all of us, for the results may just possible advance the art of R/C soaring a few more steps along the way from the shire of speculation to the city of certainty.

Continued from page 61

I KEEP GETTING THIS STRANGE URGE TO TURN LEFT!

STRICTLY SAIL

By ROD CARR

• In the following account of this start, there were 6 boats: No. 374-BOOMERANG, No. 757-BINGO, No. 75-SOLING, No. 413-WARRIOR, No. 392-WARRIOR, and No. 498-MOONRAKER. I have sailed with almost all of the skippers and wish to point out that they had one minute to decide what to do, and had to make their decision based on their best estimate of the upcoming conditions. Nothing I say here should be construed as derogatory, as I have pulled each of the tricks at least 50 times myself. But as you read through the scenario, ask yourself along the way, "What would I have done if I was the skipper of boat No. so-and-so?" YOU will find this most useful.

In the photographs, the starting line has been indicated as a white dashed line between the two buoys. The direction to the weather mark is to the left. The average wind direction was directly parallel to the starting line, calling for a start to be made on a starboard reach, somewhat above a beam reach. Under the circumstances of geography and wind, this was the best the race committee was able to set. In the diagrams, each boat is followed by a series of dots. They are a measure of relative boat speed (the more dots the faster the boat is traveling), and a measure of recent path (a curved series of dots indicate a turn). Each picture and diagram is identified by the number of seconds away from the starting gun. Pictures before the gun are indicated by minus seconds, and after the gun by plus seconds.

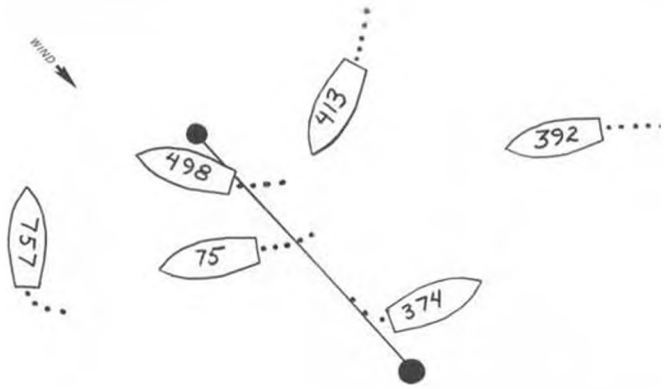
This month's column is for the racing skipper. It concerns itself with one start of one heat of the Pumpkin Regatta, held by the Richmond MYC last fall. The lake was not clear of surrounding obstacles, nor was there an overabundance of wind. Yet, this one heat will illustrate many of the do's and don'ts of model yacht starting. I am indebted to Doug Barry, of the Tri-State MYC, for the photographic coverage and for the time and effort that he expended to make this contribution. I certainly wish there were more skippers like him to help in the job of explaining the sport to novices and experts alike.

It is generally agreed that the boat that gets the best start is the one that is in control of the situation half way down the weather leg. It is not necessarily the first boat over the starting line, nor the weather boat, nor the fastest boat. In Eric Twiname's book, START TO WIN, he lists the three things to aim for in starting, in order of importance:

1. Clear wind, and no boat nearer than a boat's length to leeward.
2. Full speed as the gun goes off.
3. The bow to hit the line no more than a second or two after the gun goes off.

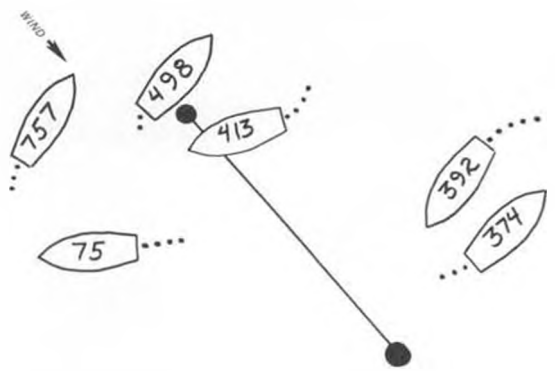
He feels that being late is less a sin than being slow at the start, and neither being late nor slow, is as bad as being blanketed, or covered, or luffed by other boats so that you can't sail your own race.

Minus 60 Seconds



MINUS 60 SECONDS: At one minute to go, 5 of the starters appear to be "shooting the line" in order to check the course to the weather mark. All are moving at similiar speeds. No. 374 is down to leeward of the pack and is risking being caught behind a "snow fence", so called because a light breeze will actually lift off the water to get over a bunch of boats and leave a hole downwind of the bunch, filled with dead air. Quite obviously, the start will be on starboard tack, so it becomes a question of starting near the weather pin (buoy), with full way on, and with no one below you who would luff you up and make you miss the starting line.

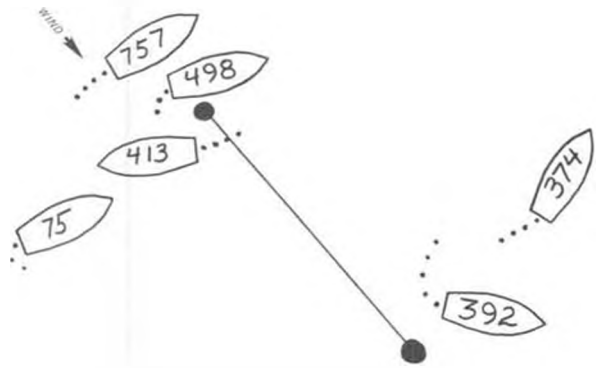
Minus 50 Seconds



MINUS 50 SECONDS: No. 75 is starting to turn to starboard in order to follow 757 up to windward of all the rest of the boats. No. 498 is continuing to turn sharply and is seeing his speed and momentum decrease as a result of it. No. 413 is shooting the line with the intent of rounding up to starboard, tacking and then gybing into position for the start. Mean-

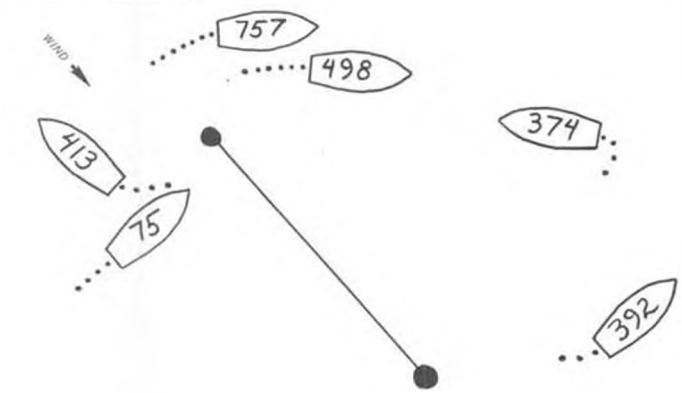
while, No. 392 is circling to weather of 374 and the latter is still sailing away from the line, a risky choice in such light airs. At this point, No. 392 should have hardened up and driven directly at the weather pin, circled it and been in good position for a start with good way on.

Minus 40 Seconds



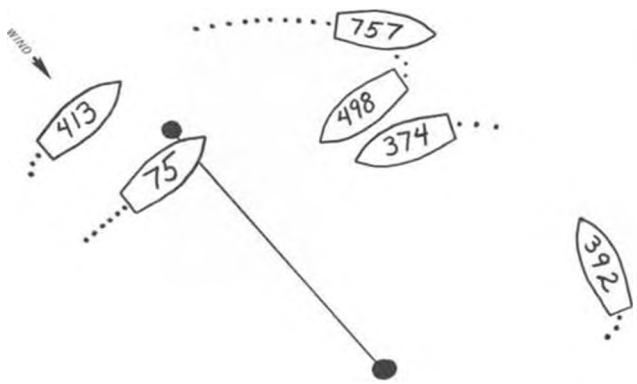
MINUS 40 SECONDS: No. 392 chooses to bear off and head away from the line, downwind from the pack. No. 374 begins to tack to port, with which she hopes to be ready on starboard tack to drive for the line and luff anyone above her . . . a good tactic if she can find a puff with which to get moving. No. 75 has tacked and chooses to re-cross the line by driving directly for the pin, since she is not able to do otherwise with the arrival of 413 on starboard tack (who has the right of way). No. 757 has placed herself directly to weather of 498, both of these boats being on port tack.

Minus 30 Seconds



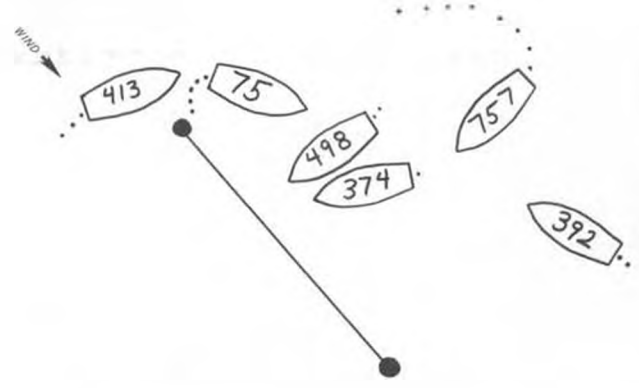
MINUS 30 SECONDS: Now the plot thickens. Both 757 and 498 suddenly pick up speed. This may have been due to a small puff local to them, or to the passage of a puff a ways up off the water, which only their tall rigs felt. In either case, it must have had an extremely limited extent, for the four other boats apparantly have not felt it. They are both on port tack and will have to gybe (turn their sterns through the wind) to head back toward the line. In such light airs as this, gybing is preferred to tacking. The former will help maintain momentum and keep the boat moving, while the latter will require the boat to coast, head to wind, and kill headway and maneuverability. No. 413 is tacking and will lose speed as a result, as is 392. At this time, 374 is in the catbird seat, she is sailing on starboard tack, is aimed right at the pin, and controls everybody to weather of her.

Minus 20 Seconds



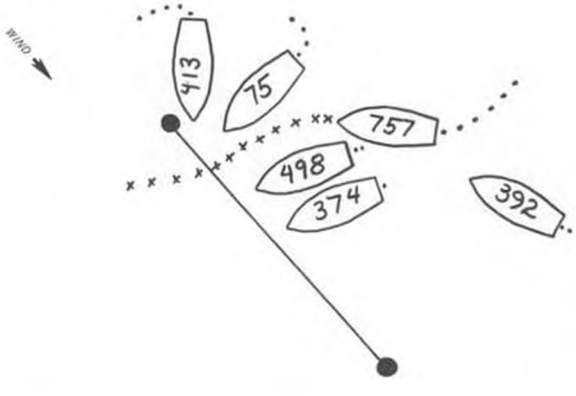
MINUS 20 SECONDS: No. 413 has filled away on its new tack and has only to gybe around the pin on time to have a good start. No. 75 has felt the puff previously used by 757 and 498, and re-crosses the line, also ready to gybe onto starboard tack and a good start on the line. No. 498 has gotten herself into trouble. She has gybed around and at some point come down upon 374. If she made contact while gybing then 374 should protest since she was on a tack and privileged while 498 was not on a tack, ie. gybing. If 498 had completed her gybe, and then made contact, then 374 should protest since she is the leeward boat and 498 must keep clear. In these drifting conditions, I would say that 374 suffered a significant change in course and speed as a result of 498, who is entitled to 2 foul points for her error in either case. No. 757 has wisely stayed clear of 374, and is beginning a wide sweeping turn designed to conserve her momentum as much as possible. It looks as if 392 is still trying to tack and just does not seem to have the headway necessary to get the bow through the wind. And to make things worse, the "snow fence" is beginning to form to weather of 392, as many boats start to congregate at the weather end of the line.

Minus 10 Seconds



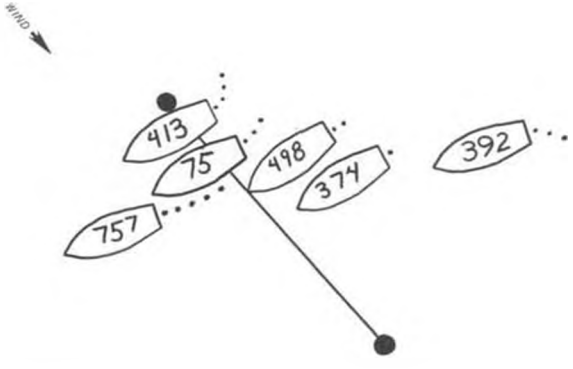
MINUS 10 SECONDS: With only 10 seconds to go, No. 75 is gybing for the line and looks like the one that will grab the start. No. 413 is in a good position as she will wind up to weather of 75 after the start, and even if behind, will control 75's moves. The 374/498 raft-up is almost dead in the water, and I'm sure the skipper of the former is not the least bit consoled by the 2 foul points his opponent should have been awarded. No. 757 seems to have a good turn of speed and now has the problem of getting to the line without being blanketed by the raft-up, or alternatively going to windward of them and starting third behind 413. Down in the south 40, No. 392 has completed her tack and should begin moving, as she is in clear air behind the mess at the line.

The Start!



START! When the gun goes off, No. 413 is coming along nicely, finally having found the air that had been helping 75. No. 75 completes her gybe, but in doing so, has turned rather sharply and lost a good deal of her momentum. No. 392 is underway and looks like she will go high for the pin to avoid being backwinded by the fleet. There is no reason in such a position to blindly follow the pack. No. 392 should split off and see if she can get a shift, or by sailing in clean air, make up on the leaders who are fighting among themselves. No. 392 has the benefit of having only to concentrate on boat speed, and need spend no effort on tactics, as do the boats out in front. No. 757 is faced with trying to find a clear path to the line, and has elected to go above 498, who had no way on and couldn't luff up, but below 75 who would have to keep clear of a leeward boat eventually. The projected path is marked on the diagram with a series of x's.

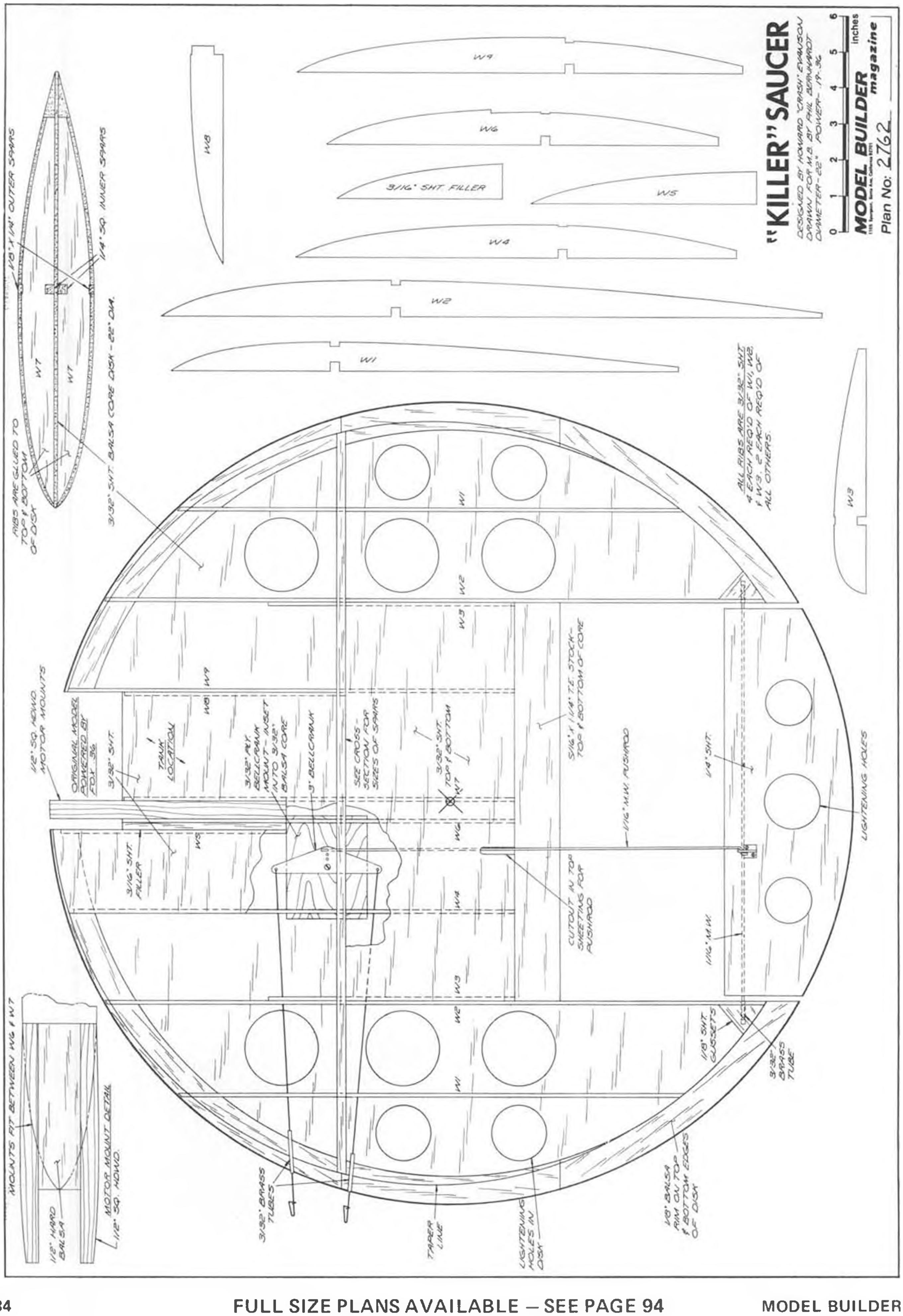
Plus 15 Seconds

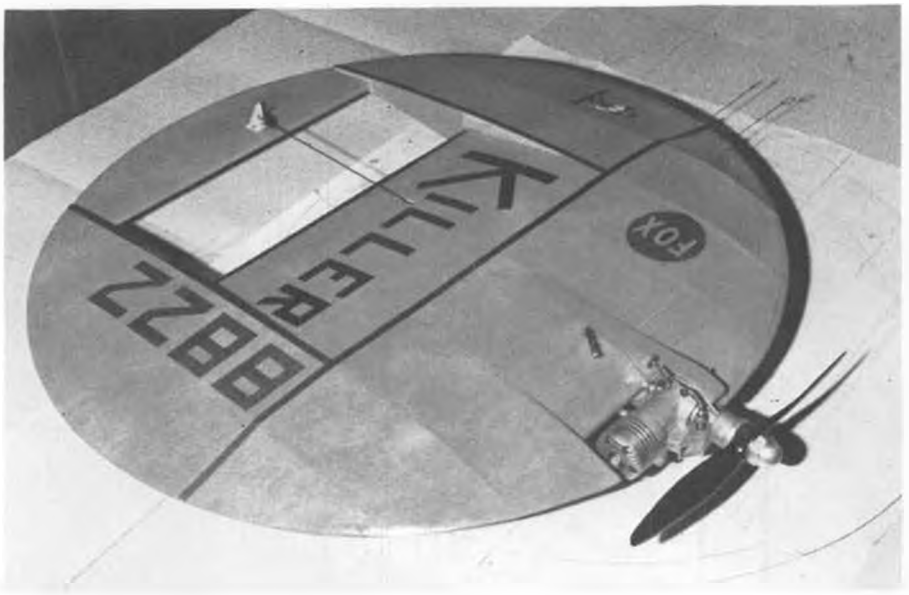


PLUS 15 SECONDS: Fifteen seconds after the gun, everyone has started properly except 392. But she is gathering way, and instead of bearing off, should be staying high, passing just to leeward of the pin and hardening up afterward. No. 757 has administered the coup de grace to the fleet and is now a boat length ahead of the opposition. This was primarily accomplished by the careful saving of her momentum in wide sweeping turns. The barrier formed by 413 and 75 is felt all the way back in the fleet. No. 75 is partially luffing 413 and preventing her from clearing her air. (Remember No. 1, in our list at the beginning? No. 413 was on time and moving as fast as the conditions would allow, but the boat to leeward of her proved her undoing.) The raft-up seems to be coming apart, but unable to get moving as a result of the blanketing of the 413/75 duo.

Continued from page 81

Plus 25 Seconds


"KILLER" SAUCER
DESIGNED BY HOWARD "CRASH" EVANSON
DRAWN FOR M.B. BY PHIL BERNHARDT
DIAMETER - 22" POWER - 19-.36
MODEL BUILDER magazine
inches
Plan No: 2762
W1
W2
W3
W4
W5
W6
W7
W8
W9
3/16" SHT. FILLER
ALL RIBS ARE 3/32" SHT.
4 EACH REQ'D OF W1, W2, & W3. 2 EACH REQ'D OF ALL OTHERS.
RIBS ARE GLUED TO TOP & BOTTOM OF DISK
3/32" SHT. BALSA CORE DISK - 22" DIA.
1/8" X 1/4" OUTER SPARS
1/4" SQ. INNER SPARS
1/2" SQ. HDWD. MOTOR MOUNTS
ORIGINAL MODEL POWERED BY FOX 36
3/32" SHT.
TANK LOCATION
3/32" PLY. BELLCRANK MOUNT - INSET INTO 3/32" BALSA CORE
3" BELLCRANK
SEE CROSS-SECTION FOR SIZES OF SPARS
3/32" SHT. TOP & BOTTOM
5/16" X 1 1/4" T.E. STOCK - TOP & BOTTOM OF CORE
1/4" SHT.
LIGHTENING HOLES
1/16" M.W. PUSHROD
3/16" SHT. FILLER
CUTOUT IN TOP SHEETING FOR PUSHROD
1/16" M.W.
1/8" SHT. GUSSETS
3/32" BRASS TUBE
1/8" BALSA RIM ON TOP & BOTTOM EDGES OF DISK
LIGHTENING HOLES IN DISK
TAPER LINE
3/32" BRASS TUBES
MOUNTS FIT BETWEEN W6 & W7
MOTOR MOUNT DETAIL
1/2" SQ. HDWD.
1/2" HARD BALSA



At last! A flying "Round TUIT!" The "Killer" Saucer is an exact 22 inch diameter disc. With combat streamer, it looks just like a tadpole, but a little more deadly.

The designer, Howard "Crash" Evanson, with "Killer." An attention getter.

'KILLER' SAUCER

By HOWARD "CRASH" EVANSON . . . The saucer will make your combat competition do a double-take, and while they're doing it, you can *CHOP 'EM!* Also a great, attention-getting sport model.

• The flying saucer, "Killer," was originally designed to be a new approach to fast combat. After many enjoyable flights with "Killer", I found that, although it is as fast as any other combat bird, it won't turn quite as tightly as the more conventional wing/boom layout. However, the saucer never fails to attract a lot of interest among both spectators and other modelers, so I feel this makes up for its "in the groove" flight characteristics.

Please don't interpret what I've said to mean that "Killer" is anything but a capable combat machine. It is really fun to fly, and would also make a fine, attention-getting sport flier with a .19 or .29 engine.

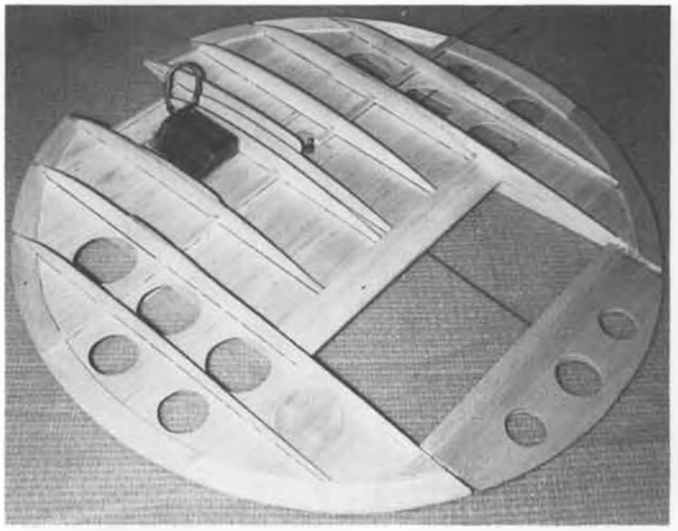
Construction of the saucer is as different as its final shape. You'll need a dozen 3/32 x 3 sheets of balsa. Using the full size plan as a guide, pre-cut as many sheets as required to roughly form a 22 inch diameter disc. Butt-glue the sheets together, and when dry, establish a center and draw an 11 inch radius circle, using a large compass. If a large compass isn't available, use a piece of dacron line, a tack, and a pencil. While you're at it, you can draw a pattern for the 3/4 inch wide edge molding.

After cutting the 22 inch disc to shape, use a soft pencil or ball-point pen to draw all of the rib and spar locations directly on the disc, both sides. Note that ribs are perpendicular to the grain direction.

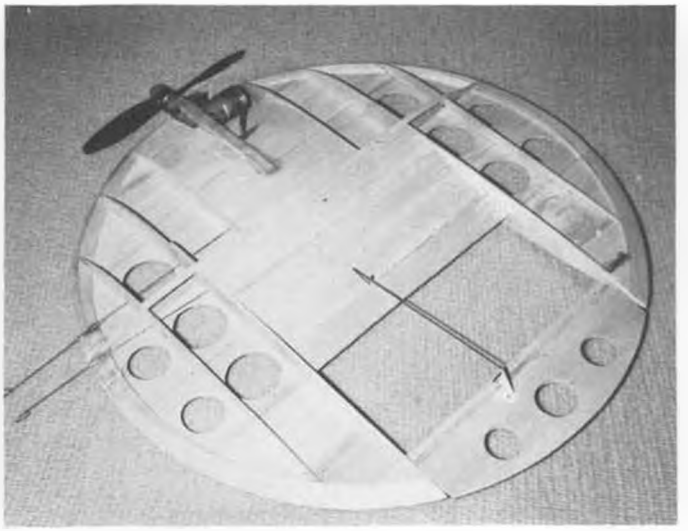
Next, pin disc to flat surface and install all ribs, spars, and edge molding pieces on the exposed side. Make sure that edge molding joints don't coincide with the disc sheet joints.

Now turn structure over and install spars, ribs, and molding to opposite side. After this, add the control system, tank, and engine mounts. The elevator on the original was built up, but shown as 1/4 inch solid sheet on the plans. To install the 1/16 hinge wire, cut the ele-

Continued on page 76



The saucer is built up . . . and down, from a center disc of 3/32 balsa sheet. Add ribs and spars to both sides and you're almost there.



Structure complete, and ready for covering. Tough Coverite was used on the original. "Crash" refers to it as "bullet-proof."

Two big reasons for hanging out at the combat circles during the '75 Nats. Linda Wheeler helped work the pits and caused lots of single-plane crashes. Eat your heart out, Dewey! Photo by Tom Southern. THANKS, Tom!

Rich "von" Lopez and his Firefly, co-designed by "Fast" Ed Bridant. New Midwest kit is now available. Design published in May 1975 Aeromodeller.

Control line

By "DIRTY DAN" RUTHERFORD
PHOTOS BY THE AUTHOR

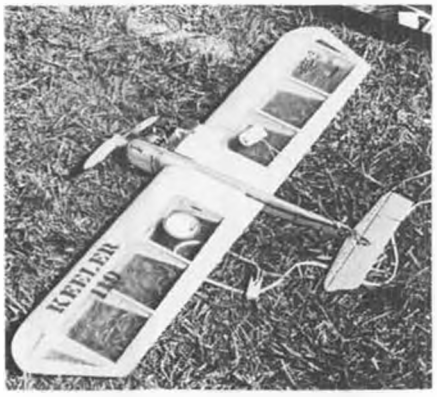
• In the October '75 issue of MB I outlined briefly what had happened to a Senior contestant at the '74 Nats. And I asked that readers of this column write to me if they wanted to know more or were upset about what happened. The response was pretty good, although a little surprising in that I heard from not only C/L people but F/F and R/C types as well. All of the letters, except one, voiced the opinion that something was wrong with the way the problem was worked. So let's get into this thing a little deeper.

Here is basically what happened. Carlos Aloise Jr. and Carlos Aloise Sr. entered Profile Carrier. They compete as a team and entered identical planes . . . Yes, identical. Right down to having the same AMA numbers! Mistake No. 1. The senior Carlos had his AMA number on both his plane and on his boy's. This was noticed by somebody, but the model was allowed as being legal (the Aloises said that when the planes were built, Carlos Jr.'s license wasn't in effect so they put the father's numbers on both planes so they would be covered by AMA insurance when test-flying). So Carlos Jr. flew his plane and won Senior Profile Carrier with it. The model was not legal and should not have been allowed in the contest. But it was. Mistake No. 2.

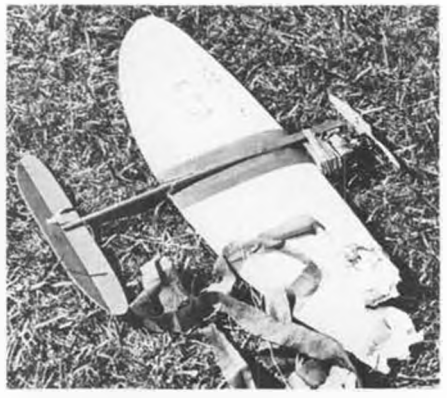
The Aloise family cleaned up in Profile Carrier and went home, no doubt to make plans for the '75 Nats. Hopefully, some of their plans included getting the right AMA numbers on their planes!

Several months after the '74 Nats were over, someone contacted Jean Pailet, then chairman of the CLCB, asking why an obviously illegal plane (Carlos Jr's) was allowed to compete in Profile Carrier. Good question. Jean decided that he better do some checking and one of the people he wrote to was Carlos Aloise Jr. No answer. Mistake No. 3.

Jean brought John Worth into the problem who wrote to the Aloises ask-



Ira Keeler's "Bee-Ware", another fast combat ship posing as a slow. Photo by Lopez.



A "Slow Bosta" by Chuck Stevenson, slightly damaged. A Slow disguised as a Fast. Lopez.

Sherwood Buckstaff, winner of Open Fast combat at '75 Nats, changing engines before final match against Col. Howard Rush. Southern.

Phil Granderson does his one-man-show routine while Lorna Samuel waits for match with Fred French. Mike Strieter can't believe it!

ing that they respond to the first letter. And Carlos did. He sent copies of both Pailet's letter and Worth's letter plus a reply of his own, not only to Jean Pailet and John Worth, but also to all members of the CLCB and the Executive Council. Carlos' letter didn't answer any of the questions posed by Jean Pailet but did point out that a protest had not been filed as specified in the rule book and that he thought Pailet and Worth were trying to take his trophy away and doing it by their own rules. And he (Carlos) had a good point. Indeed, what was Big Brother up to now?

Didn't take long to find out and John Worth was the one to provide the answer. Below is Worth's letter to Carlos. I'm tempted to only quote parts of the letter but will include all of it so there is no misunderstanding on anyone's part.

"Dear Carlos,

"The purpose of my March 27 letter and the earlier one of Jan. 29 from CLCB Chairman, is simply to determine the facts concerning your entry in the Carrier event at the '74 Nats. It's a matter more basic than any protest . . . we're seeking your side of the story concerning why your model was entered with the wrong AMA number on it.

"Unfortunately your letter of April 4 doesn't help because it doesn't answer the basic question concerning the AMA number on your entry. That's the only question we're asking of you . . . any other questions are related to other details of the event.

"We're sure you wouldn't want to keep the Nats trophy if you didn't win it properly, in accordance with the rules. So, if you can give a satisfactory explanation there should be no cause for concern. We are only trying to find out what happened, from you rather than what other people have said.

"Please reply to the question as soon as possible, so that this matter can be settled soon and, hopefully, without affecting your 1975 competition status.

Sincerely,
John Worth"

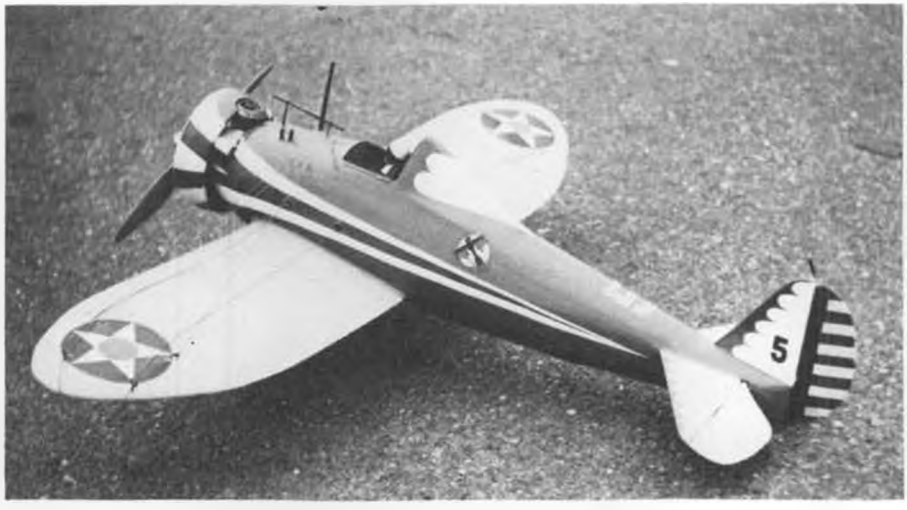
Now that made things pretty clear. Check the third paragraph of that letter. Worth not only suggests that Carlos wouldn't want to keep the trophy, he says there is no cause for concern if a satisfactory explanation can be given. What if Carlos' answer was unsatisfactory? And who was to decide if his answer was satisfactory or not? Remember, there was no protest, so normal channels for protest processing were not being followed.

Then, in the last paragraph of the letter, Worth threatens Carlos with his 1975 competition status! Play our way or else, kid, is what Carlos is being told! Should our AMA be run this way? I don't think so.

The whole matter was aired at the next Executive Council meeting and, as I understand it, John Worth was instructed to write a letter of apology to Carlos. I certainly hope this was done, but do not know if it was or not. However, as mentioned in the October column, AMA Monthly Mailing No. 102 said, "Previous Contest Board and HQ actions were upheld," when referring to the incident with Carlos. Hah! The Executive Council tells Worth he did

Continued on page 82

Jim Parsons, Seattle stunt freak, and his Sterling Spitfire, lightened somewhat. "Dirty" pic.



C/L Editor found this Boeing P-26 "Peashooter" hanging in a hobby shop. Built over 17 years ago by Gill Greedy, Lacey, Washington. Good as new. Ohlsson 23 on glow. Photo by DD.

AMERICAN EAGLE "EAGLET"

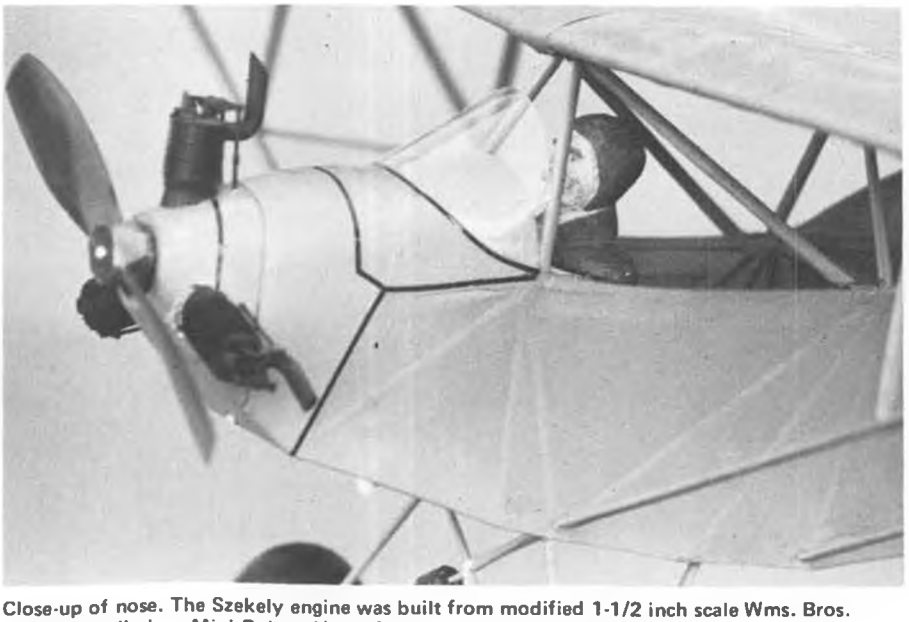
By TOM LAURIE . . . Our Plane-on-the-Cover was originally designed for the old, 48" minimum span Jumbo Scale rules. Now it is a fine airframe for the VL electric motor. Build it to fit your fancy.

• The American Eagle "Eaglet" was designed and manufactured by the American Eagle Aircraft Company, located at Fairfax Airport in Kansas City, Missouri, in the 1930 period. The "Eaglet" came about largely due to the depression of that period, when American Eagle Aircraft was finding it very difficult to sell its more expensive biplanes (Yea, WCN, that was the reason).

Ed Porterfield, the president of American Eagle Aircraft, asked his engineering staff to come up with an airplane design that could be sold for about one thousand dollars. The configuration selected by Porterfield was the "Eaglet", which was the "brainchild" of Noel Hockaday, who had joined American Eagle when they acquired the Wallace Aircraft Company. The "Eaglet" was an ultra-light, four hundred and sixty seven pound, open cockpit, parasol monoplane. It was originally powered by a Cleone twenty six horespower engine, and later by Szekley engines of thirty to forty five horsepower. Approximately sixty seven of the "Eaglets" were built through July of 1931. The "Eaglet" could be purchased for $250 down and the remainder financed over twenty four months. This version of the "Eaglet" was the Model 230. The next version, powered by the Szekley 45 horsepower engine, was designated the B-31, and is the subject modeled in this article.

The three-view drawing which I used contains all significant specifications, performance and many construction details of the "Eaglet". The three-view is of exceptional quality, and it includes a color scheme and license number of a particular "Eaglet" which I chose for my model. The scale locations of the wing ribs and empennage structure members are shown, and were followed on the model. Also, considerable detail on the cowling sections and attachments around the engine are shown. The source of the three-view was Don Pratt's fine article on the American Eagle Airplanes in an early issue of Sport Flying Magazine. A good copy of

The author/designer "winds" voltage into the Eaglet's electric power supply before flight.



Close-up of nose. The Szekely engine was built from modified 1-1/2 inch scale Wms. Bros. LeRhone cylinders. Mini Robart Hinge Points used for strut attachments.

VL electric motor whirring softly, the American Eagle "Eaglet" takes off for another realistic flight. Model is a little large for the VL Hytork motor, but the moderate climb makes the flight more life-like.

the American Eagle insigna is shown on the three-view and fits the model perfectly.

I originally selected the "Eaglet" as a subject for the Flightmasters Jumbo Scale Event. It has beautiful proportions for a flying scale model . . . good aspect ratio wing, long fuselage, nice sized tail surfaces (I enlarged the horizontal tail approximately 10%), a landing gear which lends itself to good shock absorbing qualities, and good propeller clearance if you are building a rubber version.

I used an opaque projector to enlarge the three-view drawing to the 48 inch wing span. The opaque projector reduces the plan enlargement from a lengthy, tedious job down to approximately a one hour job. The three-view was enlarged by a factor of 6.86 to obtain the forty eight inch wing span, so this would have required the use of a calculator for each measurement and the expenditure of an awful lot of time. I have found the projector very useful in selecting a subject for modeling. Just slip a three-view in the projector and you can see in an instant what your subject looks like full size. *(We'll publish an article on building this projector . . . if our readers ask for it. Hint! wcn)*

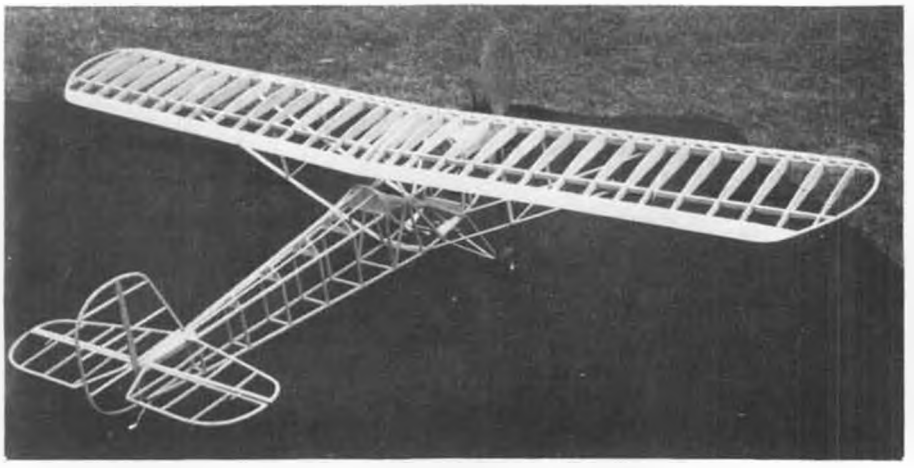
The "Eaglet" was initially powered by rubber because of the Flightmasters' Jumbo Scale Rules, which require rubber power. I later converted to electric power. Both versions are shown on the plans, however, the electric powered version is the primary version shown on the plans.

I used the VL Products, VO-101 Electric Flight System, which features the Hytork 48 Motor with a planetary gearbox driving the propeller at a reduced RPM. The system includes a three-cell "fast charge" battery, a switch incorporating a charge plug, and a field charger. The field charger uses a twelve volt wet-cell battery, a five-minute timer, a rheostat to control charge rate, and a meter to indicate the charge rate. The VL Motor is somewhat marginal for a model the size of the "Eaglet", however, it results in very realistic, scale-like flights (The scale speed of a forty-eight inch span model of the "Eaglet" is approximately ten MPH).

The "Eaglet" took second place in a Free Flight Scale Contest for electric power, sponsored by the Flightmasters, this past summer at Mile Square Park. It was judged first in scale points. As previously stated, the flights are most realistic, and the takeoffs a beautiful sight to see.

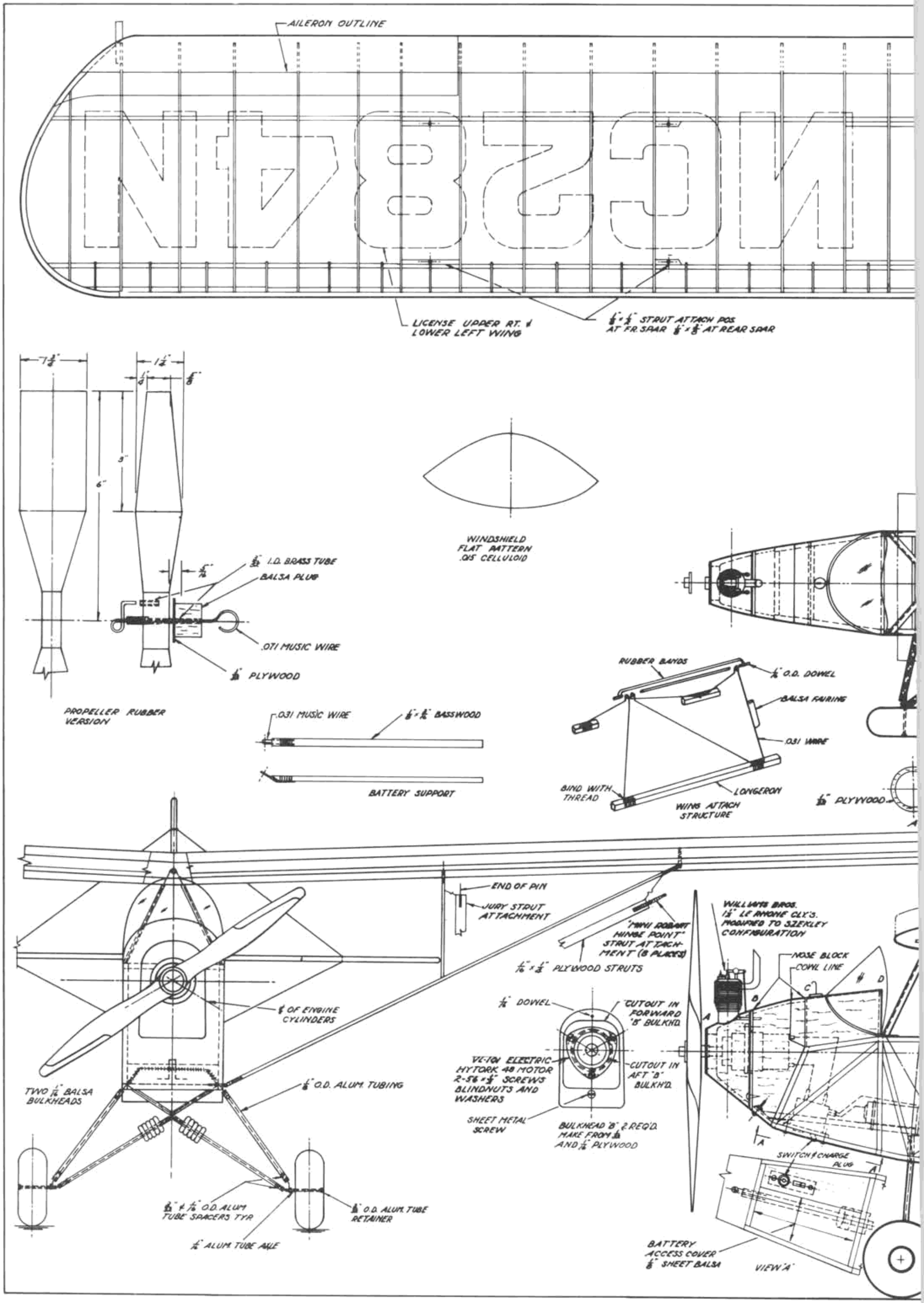
CONSTRUCTION

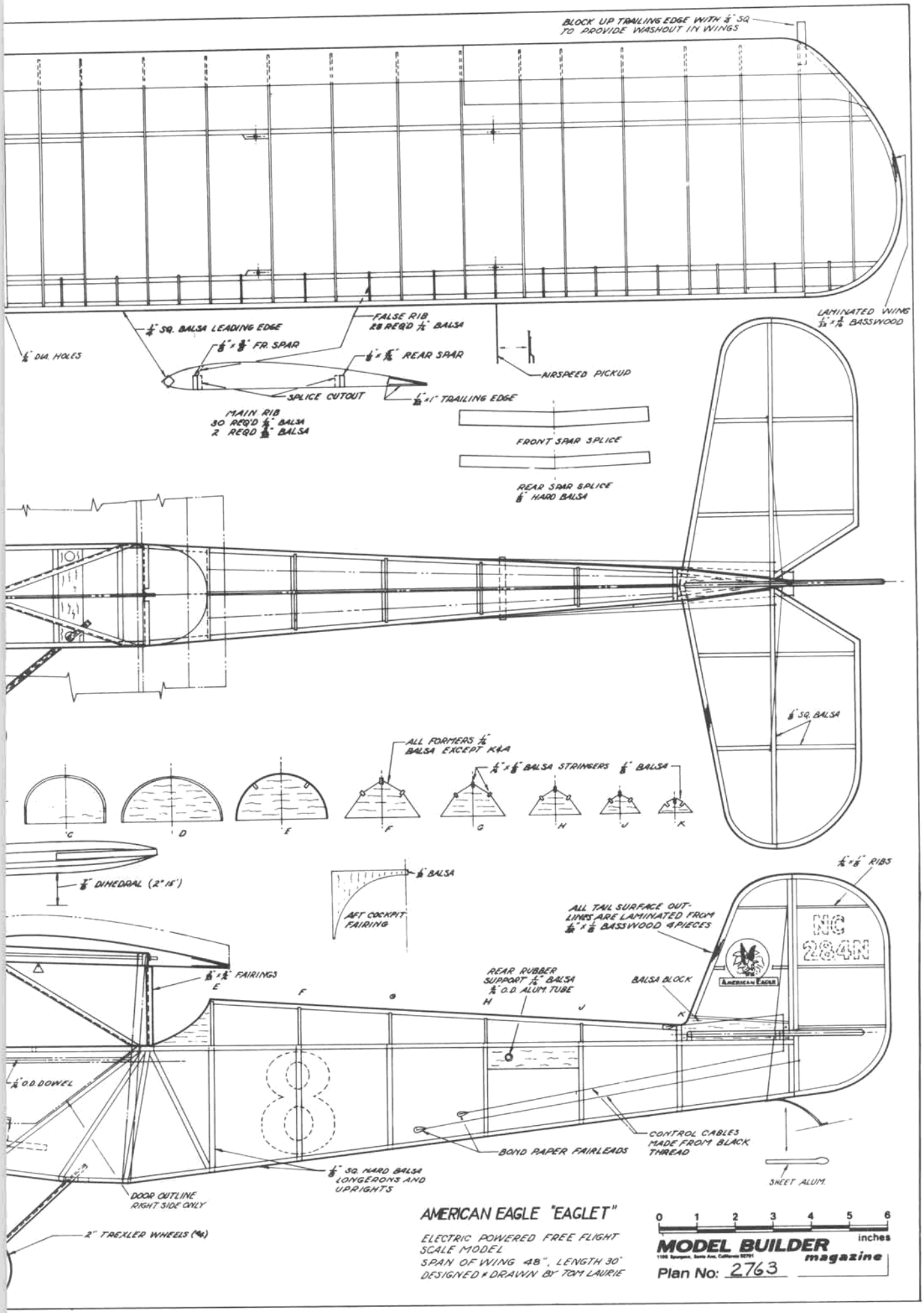
The model construction is of conventional scale model building. The wing attachment is a little unique in that it uses "Mini Robart Hinge Points" to attach the wing struts to the fuselage and wing. These hinges are normally used to hinge surfaces on RC models. They permit easy wing removal when you want it and they come apart rather easy in a crash situation, thereby saving the



The Eaglet was first built for rubber power. The prop barely shows in this framework photo. Both rubber and electric power systems are detailed on the drawing.

Plan view photo shows the fine aerodynamic layout for free flight afforded by the parasol design. Only changes from scale include a smidge of dihedral and slightly enlarged stab.


AILERON OUTLINE
LICENSE UPPER RT. & LOWER LEFT WING
STRUT ATTACH POS. AT FR. SPAR AT REAR SPAR
WINDSHIELD FLAT PATTERN .015 CELLULOID
I.D. BRASS TUBE
BALSA PLUG
.071 MUSIC WIRE
PLYWOOD
PROPELLER RUBBER VERSION
.031 MUSIC WIRE
BASSWOOD
BATTERY SUPPORT
RUBBER BANDS
O.D. DOWEL
BALSA FAIRING
.031 WIRE
BIND WITH THREAD
LONGERON
WING ATTACH STRUCTURE
PLYWOOD
END OF PIN
JURY STRUT ATTACHMENT
"MINI ROBART HINGE POINT" STRUT ATTACHMENT (8 PLACES)
PLYWOOD STRUTS
WILLIAMS BROS. 1½" LE RHONE CLY'S. MODIFIED TO SZEKLEY CONFIGURATION
NOSE BLOCK
COWL LINE
¢ OF ENGINE CYLINDERS
DOWEL
CUTOUT IN FORWARD 'B' BULKHD.
VE-101 ELECTRIC HYTORK 48 MOTOR 2-56 SCREWS BLINDNUTS AND WASHERS
CUTOUT IN AFT 'B' BULKHD.
SHEET METAL SCREW
BULKHEAD 'B' 2 REQ'D. MAKE FROM AND PLYWOOD
TWO BALSA BULKHEADS
O.D. ALUM. TUBING
O.D. ALUM TUBE SPACERS TYP.
O.D. ALUM. TUBE RETAINER
ALUM TUBE AXLE
SWITCH & CHARGE PLUG
BATTERY ACCESS COVER SHEET BALSA
VIEW 'A'



AMERICAN EAGLE "EAGLET"

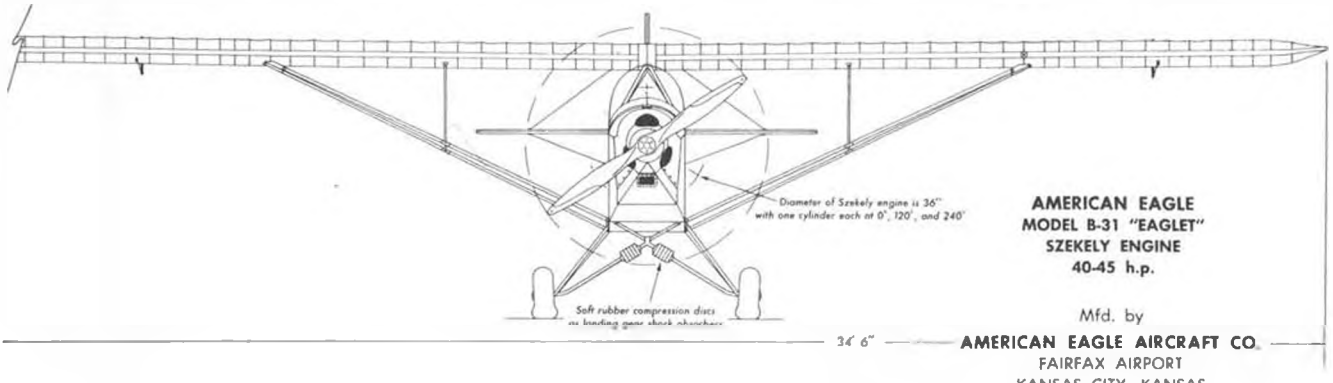
ELECTRIC POWERED FREE FLIGHT SCALE MODEL
SPAN OF WING 48", LENGTH 30"
DESIGNED & DRAWN BY TOM LAURIE

0 1 2 3 4 5 6 inches

MODEL BUILDER magazine
1106 Spurgeon, Santa Ana, California 92701

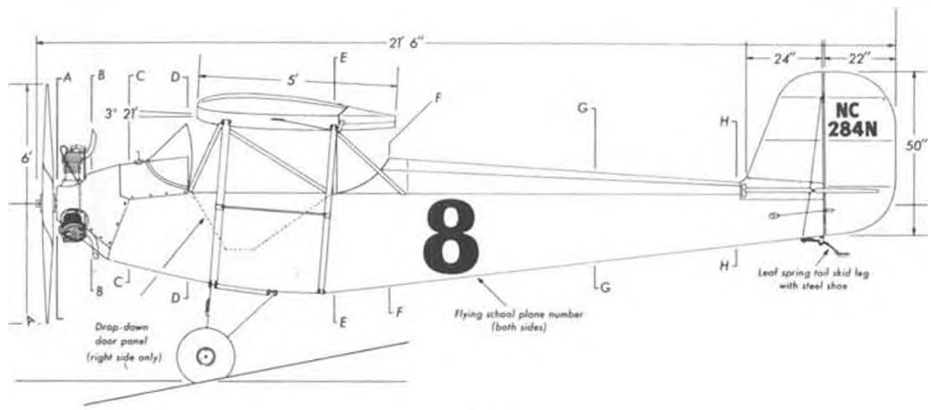
Plan No: 2763

FULL SIZE PLANS AVAILABLE — SEE PAGE 94



AMERICAN EAGLE
MODEL B-31 "EAGLET"
SZEKELY ENGINE
40-45 h.p.

Mfd. by
AMERICAN EAGLE AIRCRAFT CO.
FAIRFAX AIRPORT
KANSAS CITY, KANSAS



Specifications: 34'6"

SPAN	21'6"
LENGTH	467 lbs.
EMPTY WEIGHT	867 lbs.
GROSS WEIGHT	ONE
CREW	ONE
PASSENGERS	One

Performance:

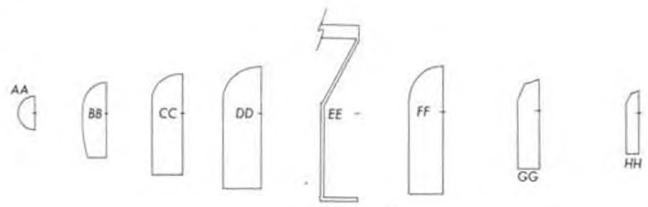
HIGH SPEED	80 mph
CRUISE	70 mph
STALLING SPEED	34 mph
RATE OF CLIMB	600 fpm
SERVICE CEILING	10,000 feet
RANGE	225 miles
FUEL LOAD	8.5 gal

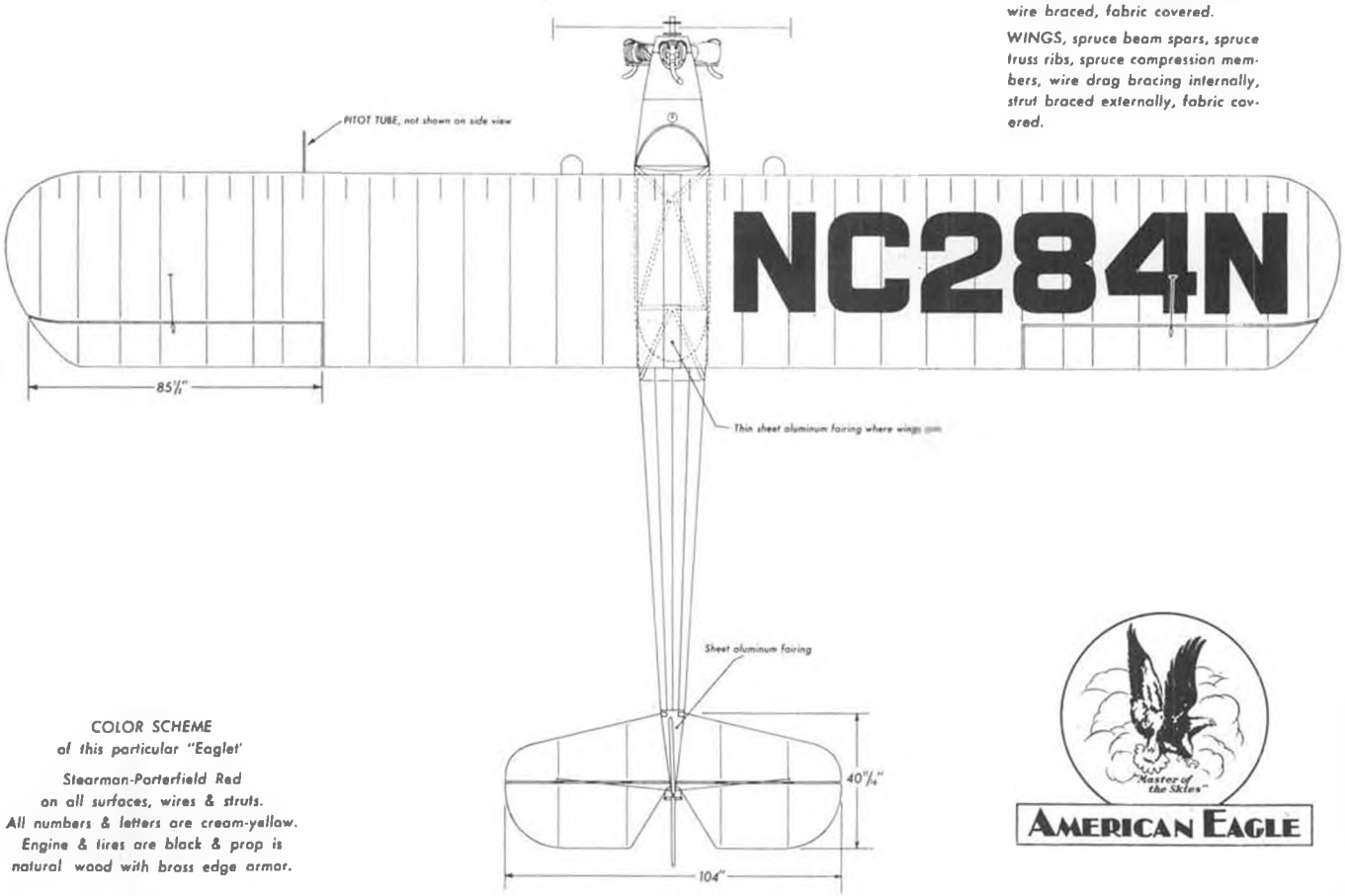
Construction:

FUSELAGE, welded steel tube space frame, fabric covered. Open cockpit parasol design, with tandem seating for two, dual controls. One set of instruments installed which includes altimeter, tachometer, oil pressure & temperature. The gasoline guage is a float & indicator attached to the gas tank cap.

TAIL GROUP, welded steel tube, wire braced, fabric covered.

WINGS, spruce beam spars, spruce truss ribs, spruce compression members, wire drag bracing internally, strut braced externally, fabric covered.





COLOR SCHEME
of this particular "Eaglet"

Stearman-Porterfield Red
on all surfaces, wires & struts.
All numbers & letters are cream-yellow.
Engine & tires are black & prop is
natural wood with brass edge armor.

"Master of the Skies"
AMERICAN EAGLE

Scale views courtesy of SPORT FLYING magazine.

model from severe damage.

The wing attachment to the fuselage uses a small dowel which passes through holes in each spar, and through loops in the music wire struts. A rubber band holds the wing in place.

The tail surfaces were hinged with soft wire at the outset, but were soon glued in solid, as I was forever loosing tail surface adjustment. The thrust line of the electric motor is easily adjusted, and shifting the battery provides all the adjustments necessary for balancing.

Let's start construction of the model with the wing. The rib spacing is scale. The uneven spacing is from the three-view and not the result of "weak eyes" on the part of a tired old draftsman. Select good, straight-grained balsa for the spars, leading edge, and trailing edge sheets, as the wing depends on these members for its stiffness.

I used a hinged plywood board, blocked up at each end to the correct dihedral angle, for assembly of the wings. This method allows complete assembly of the wing in one piece before removing it from the jig. Approximately two degrees of washout should be built into each panel. The location of the blocks for this purpose is shown on the plan.

The wing tips are laminated from 1/32 x 3/16 inch basswood, bent around a plywood form. Soak the wood pieces (four required for each tip) and "stretch around" the form. Hold in place with pins until dry. Remove from the form and coat with thinned-out white glue and return to form for drying.

The wing assembly is completed with addition of the dihedral braces and the balsa blocks at the wing strut locations. Drill 1/16 diameter holes through the spars at the wing center-line for the wing attachment, and at each of strut locations. Sand the wing smooth and take the time to coat all joints with glue again before setting it aside.

The stabilizer and elevator is constructed in one piece and the fin and rudder in one piece. The outlines are

Underside of nose reveals VL switch and charging socket. Trexler wheels.

laminated by the method used on the wing tips. They are made from four pieces of 1/32 x 1/8 inch basswood. Spars and ribs are as noted on the drawing. Finish the surfaces by sanding smooth and again taking the time to reglue all joints.

The fuselage longerons and uprights are cut from very hard 1/8 square balsa. Assemble the two sides in the usual manner, one on top of the other. Using

Wing is joined at cabane struts. Cover plate hides joint. VL prop painted brown grained.

the plan view, assemble the two sides with the upper longerons down, since they are straight. The fuselage is a constant width in the area beneath the wing, so start by gluing the cross pieces in this area. After this part is partially dry, cut the longerons (outside only) and align over the plans. Add the remaining cross pieces and the fuselage is now ready for the upper fairings, nose blocks, landing gear, and the wing support struts.

Glue the formers "C" through "J" to the top side of the fuselage. Cover the area between formers "C" and "D" with 1/16 sheet balsa. Add the stringers between "E" and "J" to the top side of the fuselage. The stringers have a slight curve between formers "E" and "F". Add the aft cockpit fairing which is made from 1/32 sheet balsa.

The wing support structure should be added on. Bend the supports from .031 music wire to the configuration on the drawing. The loops that hold the wing-attach dowels can be formed by putting a piece of .045 music wire in a vise and wrapping the .031 wire around it. It should fit the dowel rather snuggly due to spring-back. Care must be taken in forming these parts, as they determine the wing angle of incidence. The struts are faired to a streamlined shape using 3/32 x 3/16 hard balsa, notched slightly to receive the strut wire. Attach to the fuselage by glueing and wrapping with thread.

The nose structure is added next. Cut former "A" and the two "B" formers from plywood. Lightly glue the two nose blocks and the "B" formers to the fuselage and cut to shape, using the formers to control the contour. Remove these parts from the fuselage and hollow the nose blocks to the outlines shown on the plans. Glue the rear former "B" to the rear block and glue this assembly to the fuselage. Drill holes for the 1/16 dowel and the sheet metal retaining screw in the two "B" bulkheads. Now assemble the nose block and the two formers.

Continued on page 66

Three-quarter rear view accents long tail moment which provides excellent stability. Tail surface outlines are made from four laminations of 1/32 by 1/8 basswood strips. Photo taken at Orange County Airport, home of TallMantz Air Museum.

A rare Boeing Model 202 (XP-15) to 3/4 inch scale, by Bob Gable.

FREE FLIGHT SCALE

By FERNANDO RAMOS

• Jumbo Rubber Scale started out about seven years ago as an event for models with a minimum wingspan of 48 inches. There was one more requirement . . . each model must have some kind of pilot. A three minute max was set, so it was easy to see that any model that could fly for three minutes wasn't going to be to scale! Most modelers used some kind of old timer plan which was readily available from John Pond. The two first contests were considered extremely successful, because of the number of entries involved. Much nostalgia was generated as these huge birds took to the air . . . ah, shades of the 1930's! However, as time went along, the number of entries dropped. So, in order to stimulate more interest, a peanut event was suggested to go along with the Jumbo. Spectators could then see the two extremes in rubber scale. It was a good thought. The only problem was that more modelers took to building and flying Peanuts than the Jumbo size.

The rules were changed in order to get more appeal. With a three minute max, the minimum detailed models were always winning. The more serious scale modeler didn't go for this, therefore there was a rules change so that flight points could not exceed the scale points. The models still had to have a pilot and a minimum wingspan of 48 inches. This change helped matters along for at least one more contest. The interest in Jumbo was still waning. My personal reason for believing that there was a problem was that is was just too costly to build and fly the big models. Most modelers weren't willing to use their life-time supply of Pirelli in one big motor.

Something had to be done in order for Jumbo Rubber Scale to survive. It was suggested that the minimum span be dropped to 36 inches for monoplanes and 30 inches for biplanes. Well, folks, I think that the solution has been hit upon! This past Jumbo event was the best ever in the history of the contest. There were more entries, a more diversified cross-section of models, and the number of spectators was outstanding.

The date of the Flightmasters end-of-year Peanut/Jumbo Contest was December 7th. I sure hate to boast about the letter-perfect weather we usually get for contests, but it is true! Here it is December, and there are many areas that are cold, snowy or raining, but fortunately, here in Orange County, we have short-sleeved weather. There were twelve Jumbo models entered, even though there were at least six others that didn't qualify for one reason or another. Two of the qualifiers were biplanes. One of these bipes belonged to Andy Faykun. It was a Tiger Moth, and he was able to place third overall against

Jim Dean's fleet of rubber scale ships. Peanut Corben Ace, Jumbo Corben and Curtiss SOC-3. New Jumbo rules call for 36" minimum span monoplanes, and 30" min. biplanes.

Ray Berens' Skyfarer in flight. It's a double-size from old Stahl MAN plans. MB's is 30".

Andy Faykun's Tiger Moth placed a respectable 3rd place in the recent Flightmasters' Jumbo scale meet.

Walt Mooney's spry little (but big enough for Jumbo scale) Aero 101. Ship will be a construction article feature very soon.

some rather tough competition. His best time was 60 seconds, which isn't too bad for a 30 inch biplane. Walt Mooney had the other biplane, that of an unusual Aero 101. *(An up-coming MB construction feature. wcn)*

One of the most impressive models was that of John Oldenkamp, a model of the Farman Moustique. The all blue model was extremely light and flew in very large circles, never exceeding about 10 feet in height. Its best time was 50 seconds. I think if John had really wanted to, he could have added more power and set it aloft for more height and duration. Jim McMahan, who was the eventual winner, had a terrific model of the Pilatus Porter. It had the best pilot of all the entries, and it flew like a Wakefield model. Its best time was 80 seconds, and its scale score was 78. I'd say that is a pretty good balance between scale and flying.

Walt Mooney also entered a monoplane, a rarely modeled Cessna EG 2. His best time with this black and red model was 46 seconds. Second place went to Mike Mulligan, flying an Aermacchi AL 60. This model put up some expectional flights, with its best being 74 seconds. These times are excellent, considering that these are good size scale models. Next year we are looking forward to another great Jumbo Scale Rubber Contest with even more entries, and also with the possibility of having a separate event for the biplanes. More on this later.

This month I have quite a bit of miscellaneous information that I hope you can use. Scotch Brand Tapes (3M Co.) has a metalized tape that can easily be useful for simulating metal panels on anything from peanuts to gas jobs. It has a very shiny surface which can be rubbed with very fine steel wool to dull it down. I prefer to spray it with Liqua-Plate after rubbing it down with the fine steel wool. This is done, of course, in order to get good paint adhesion.

This metalized tape can't be used over compound curves. However, it is super where straight curves or flat metalized panels are needed. Also, by placing the tape over a piece of soft pine (sticky side up) and using a small blunt-tipped tool, like a ball point pen, you can make rivet detail. Just press the point down carefully, with just enough pressure to make the right impression. Too much pressure will poke through the tape. This system isn't restricted to the metalized tape, but works well with cardstock also. This tape weighs only .1 grams per square inch and is .0025 in thickness. The size that I have is 2 inches wide and I don't know whether it is available in other widths or not. The stock number that is inscribed in my roll is No. 850 PAU 0548X.

While still on the subject of simulating riveting, another way to do this is by using an electric typewriter. Place some very thin cardstock into the typewriter and push on the period key. You will get rivets like you wouldn't believe! Naturally, you have to adjust the cardstock to fit the rivet detail you want. The advantage of using an electric typewriter over the conventional kind, is that you can regulate the key pressure for rivet uniformity. (Incidently, one super material which can be used for this purpose, and several others, is Strathmore board. This material comes in a variety of thicknesses, and even the very thinnest is made up of several laminations. It isn't cheap, but it can be found in art supply stores.)

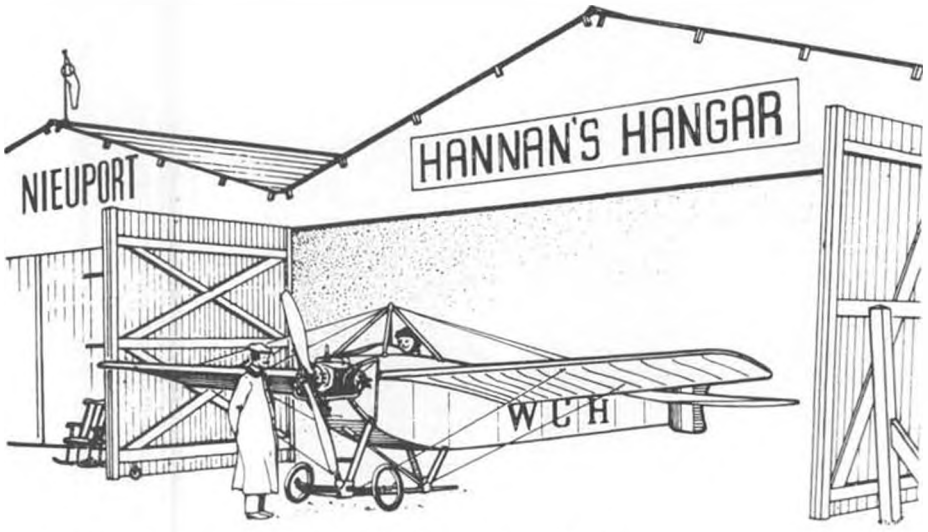
One point to remember is that on a lot of aircraft, particularly WW II, the rivets are flush rivets. That is, the heads do not stick above the surface. Too often modelers disregard this. If a

Continued on page 82

George James and his Pilatus Porter. Another Pilatus by Jim McMahan was 1st in Jumbo.

Putt, putt, putt . . . Marlin Alpert's Longster bears down on our F/F Scale Editor. Jumbo meet at Mile Square, Fountain Valley, California, brought out a lot of great rubber scale ships.

Don Eggensperger's Fairchild 22 met old 48" span rules. Flew very realistically.



"Behind every schedule, someone is running."

• We start our column off on a sad note this month; Harold Swanson, proprietor of Modernistic Models, has passed away. This active member of the Flightmasters was a model builder for most of his life, having taken interest as a youngster, when ill health prevented him from pursuing more vigorous forms of activity. Hal liked ALL forms of models, from plastic display types through complex build-up types. His zeal for building was such that he would frequently work on four or five projects at a time, switching back and forth as required to ensure simultaneous progress. We shall all miss him.

Hal's model plan business was developed over a period of years, and his mother would like to see it continued. Any interested readers may contact her for more details:

Mrs. Ruth Swanson
5253 Corteen Place No. 10
North Hollywood, California 91607

Cox powered free flight contrarotating rotor autogiro, by Bob Brown, England.

STAR SKIPPERS

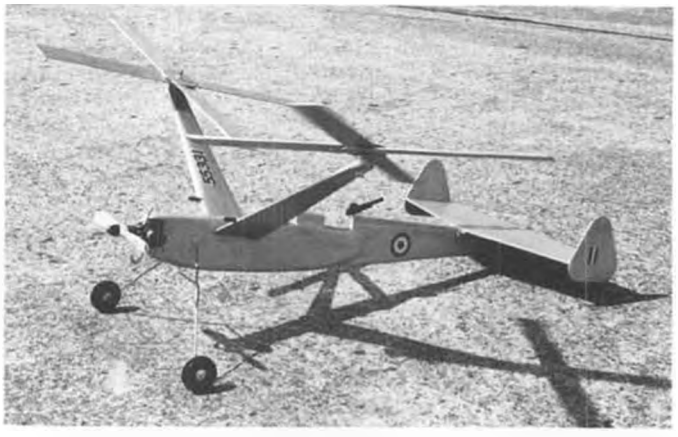
This is the name of a unique newsletter published by Richard and Ed Whitten, P.O. Box 176, Wall Street Station, New York, N.Y. 10005. After a lapse of time, the publication is back again, featuring model plans and tips for the junior-age model builders. Also featured are postal contests aimed especially at flyers through the age of 15 years. Complimentary copies of the STAR SKIPPER are sent to all event participants, and subscriptions are available (eight issues) for $2.00.

THE PART MODELS PLAY

Why models? Apart from educa-

Continued on page 69

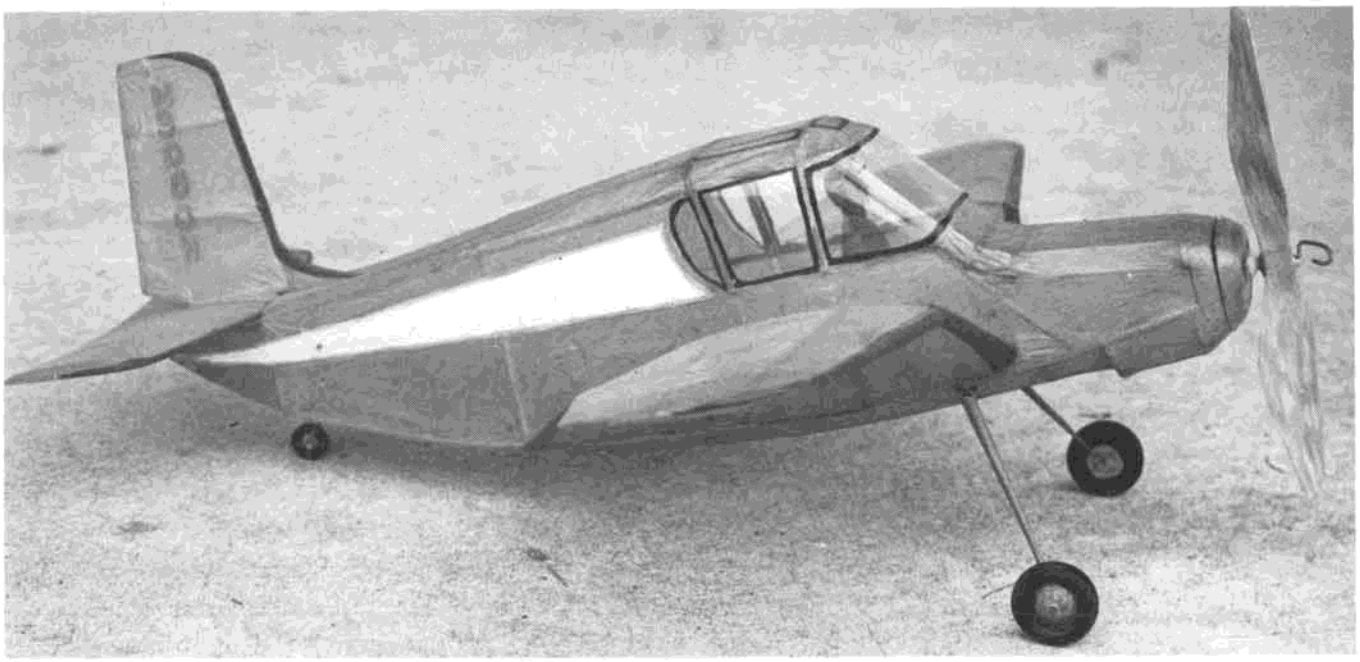
Hank Fasola, owner of Vista Labs, with a VL (natch!) powered "Electro-Kite" free flight model. Photo by Joel Rieman.



Another twin-rotor autogiro by Bob Brown. This free flight model looks much like Skip Ruff's R/C model (plans in April '75 MB).

Farman Moustique Jumbo rubber scale in foreground, and Farman "David" bipe, also rubber powered. Excellent aircraft . . . and photo, by John Oldenkamp, San Diego, California.

Don't worry about wrinkles and warps in your scale ships! Tiger Moth in R.A.F. Museum.



Peanut LANIER PARAPLANE

By DON BROWN . . . This has to be one of the largest and most unusual Peanut Scale models we have seen. It was all we could do to cram it into the regularly alloted space, so please excuse the overlaps!

• What would the perfect Peanut be like? . . . Unusual design? Plenty of wing area? Large tail surfaces? Long fuselage, long landing gear, stable enough to be flown (exact scale), indoors or out!

Enter the LANIER PARAPLANE, a design concept that started around 1907 and finalized in the early 60's. This version was flown as slow as 18-19 mph under complete control. Paraplanes were to be flown from postage stamp airports only 800 ft. from fence to fence. What happened to the Paraplanes? Who knows? But it makes a great Peanut Scale model!

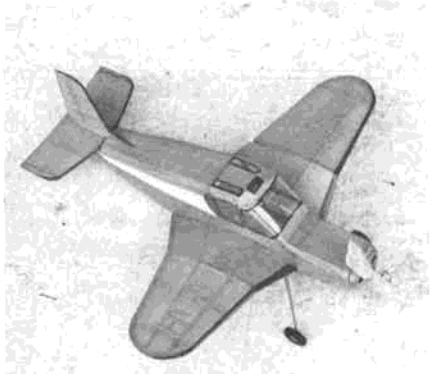
CONSTRUCTION: All 1/16th sq. and 1/16th sheet is used, except the noseblock. The fuselage on the original was slab-sided, so the design lends itself very well to the old method of building 2 side frames and joining them with top and bottom formers. The stab and rudder are built flat on the plan, and 1/16th cap strips are added on the top of the stab and sanded to airfoil shape. The rudder can be capstripped on both sides.

The wing builds up a little differently due to the extreme gull dihedral. Build basic structure (leading and trailedge, lower front and rear spar and all ribs), being careful to use wing rib angle templates for ribs W1 and W2. Crack at the dihedral break lines, and block up at rib W2 and W4 to match wing front view on plan, then add top spars and crack lower spars at W4 to meet the wing tip at the proper angle.

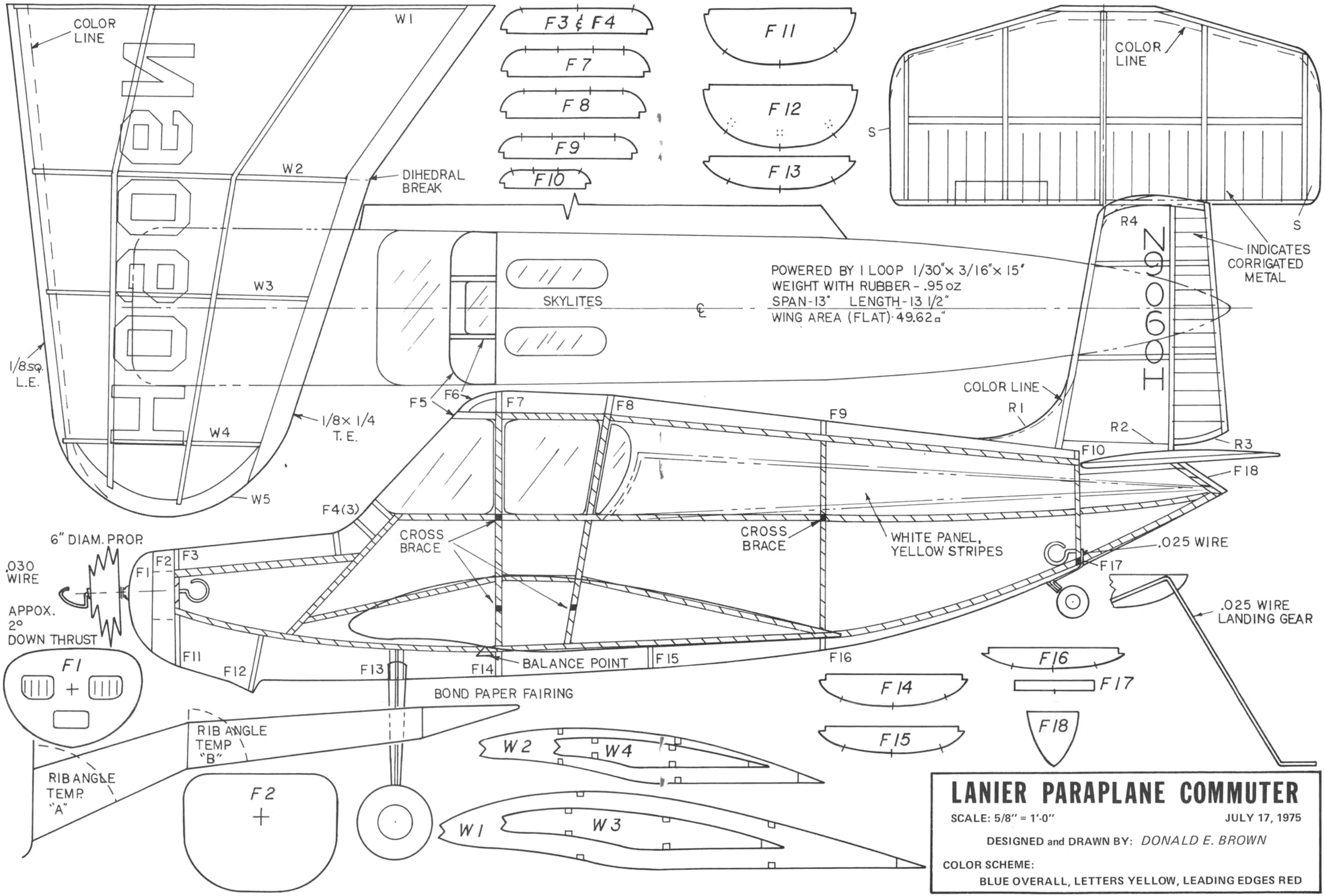
The rest of the structure is standard

Continued on page 76

Unusual wing configuration of the Lanier Paraplane shows well in this photo. If you think that shape is wierd, take a look at the airfoil! Model is large for a peanut.



Plan view photo discloses the generous area within the 13" span. A fine flier.



LANIER PARAPLANE COMMUTER

SCALE: 5/8" = 1'-0" JULY 17, 1975

DESIGNED and DRAWN BY: *DONALD E. BROWN*

COLOR SCHEME:
BLUE OVERALL, LETTERS YELLOW, LEADING EDGES RED

Zounds! "Dirty Dan" Rutherford caught in the act of putting "wires" on a free flight! It's a Taibi Orbiteer. Photo by Steve Helmick.

Is Bob Stalick practicing the "evil eye" he's going to put on "DD" in their combat match, or just breathing trim into an HLG?

FREE FLIGHT

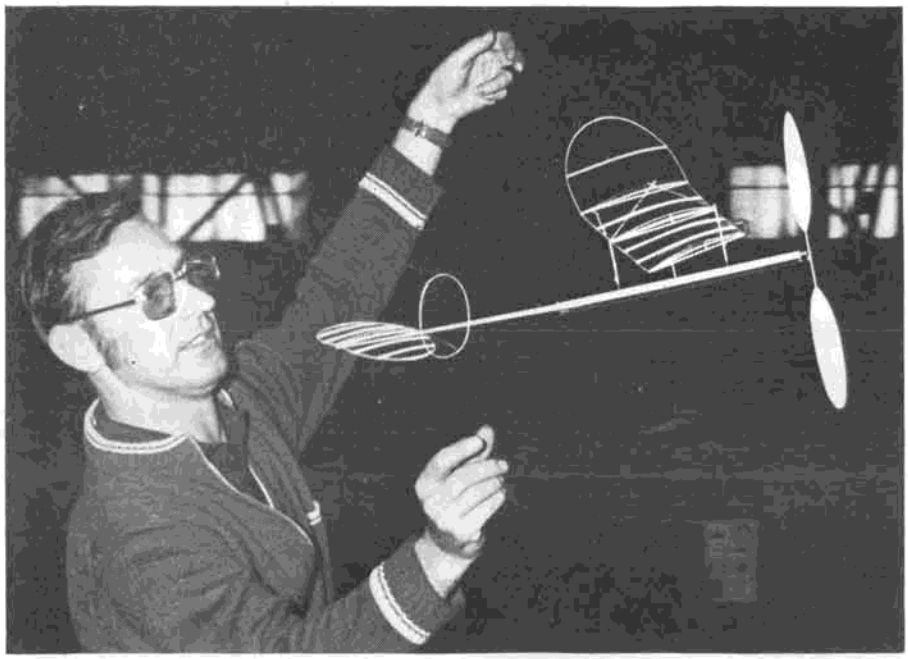
By BOB STALICK

• I don't like to begin a column with an apology, but after being admonished recently by Homer Smith, AMA Dist. XI V.P., about my allegations pertaining to his inability to fly ukie (in a recent MODEL BUILDER F/F column), he has taken me to task. At a recent get-together, Homer and Dirty Dan had at it with the 1/2A Combat ships. According to witnesses, the match was short-lived. Dirty Dan, of course, was victorious, but Homer at least demonstrated that the average run-of-the-mill free flighter can keep one of those round and round beasties in the air long enough to get beaten in a combat match. For myself, I will let Homer take on such challenges, preferring to take the chicken way out.

Dan, on the other hand, has no such compunctions about leaving us devil-may-care free flighters alone, as he frequently shows up at area contests with well-built and flown ships. A movement is afoot to ban Dan Rutherford from F.F. meets. Anyone who is interested in joining should write to me in care of this magazine. Keep 'em in their place, I say.

MYSTERY MODEL FOR FEBRUARY

This ship should prove of little difficulty for the FAI buff who has been in action for 15 years or so. In fact, this ship was the design I used in my first attempt to build and fly power. Featuring sheet wings and a very thin undercambered airfoil, it was a biggie in its day. If you know the name of the ship, drop Bill Northrop a line. He will reward you very nicely if you've got the right answer, and your postmark is the earliest.



One cure for the disappearing flying fields . . . the disappearing indoor sites! This is Dave Yates, launching mike stick job in England. Photo by John O'Donnell.

DARNED GOOD AIRFOILS: B-6456 F

A very high performance airfoil, thin, and with a forward high point, this one is an excellent choice for light weight ships such as A/1 gliders and Coupe, and would be useful for A/2 and Wakefield, especially for all-out glide performance. It would be non-critical over a fair amount of angles of incidence and should be used with a thin, flat bottomed stab. Stab area, on a typical A/2 or Wakefield fuselage could be in the 15 to 20% range.

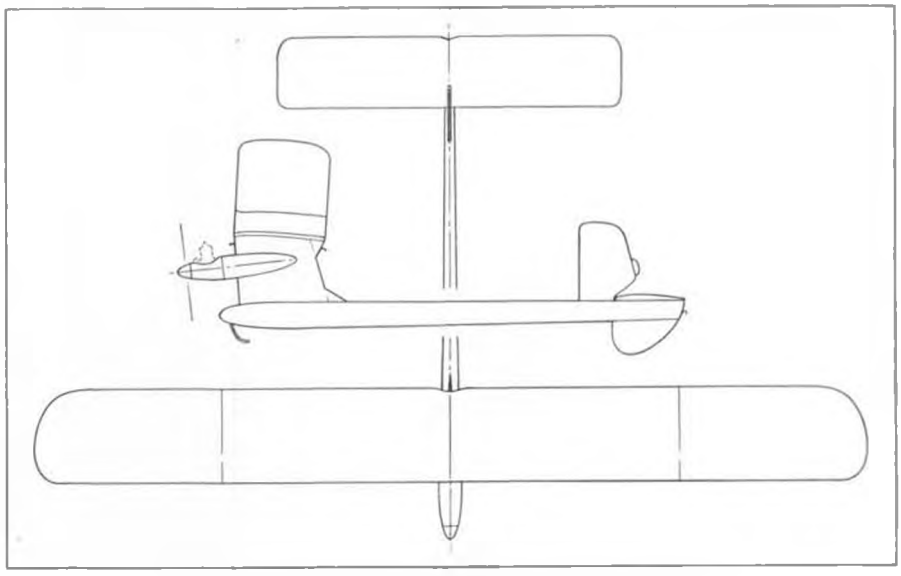
There could be structural difficulties with this section, due to the very thin trailing edge. It wouldn't be adviseable to thicken the rear end very much, instead, some attention should be given to sheeting the top surface of the wing, or building a fairly wide and laminated trailing edge with geodetic ribs to keep the wing from warping.

THREE-VIEW OF THE MONTH:
"Fluf-Duf" Indoor Hand Launch Glider

The Fluf-Duf represents the current state of the art in indoor hand launch glider for low ceiling (35 feet) indoor flying. This model is consistently successful in the hands of beginners and experts alike, and if built as shown in the plans, can be a winner for you. Light weight is very important, and for anyone who does much indoor hand launch glider flying, knowledge of the site is probably as important as good design. Ideally, a design should be matched to the site it's going to be flown in.

Looking at the parameters of good glider design, the following appear to be

"Mystery Modeler" is an ex-well known FAI F/F Champs competitor. Can you name him?



FEBRUARY'S MYSTERY MODEL

useful, and provide a rule of thumb for use:

1. A glider should only be heavy enough to be thrown to the ceiling when you give it full effort.
2. A glider should be able to be trimmed to glide in as large a circle as the flying site will allow. Tight turning decreases flight time . . . the wider the circle, the longer the ship will stay in the air.
3. Good recovery is important. Usually this is accomplished by a fairly forward center of gravity or a spiral climb. In small gyms with low ceilings (35 feet or less), the climb and glide are usually in the same direction, as in this month's 3-view. As ceiling heights increase, the trim can change to a more conventional right climb, left glide pattern. This ceiling height break-off point is somewhere between 35 and 50 feet, depending upon the site. In a very high site, 60 feet or more, the times will usually increase with a right-left pattern, just as in outdoor hand launch glider.

Flying the Fluf-Duf should be such that the launch actually is a high overhead throw which is banked to the right so that the model is arched into its glide pattern. A full-bore, baseball-type throw will not do the trick, unless breaking something is what you intend. Save this method for the more sturdily-built ships and the larger sites.

While on the subject of indoor building and flying, there is a fascinating world of free flight available to you by just giving it a try. Sites are usually more available for indoor than for outdoor free flight. Any gymnasium will do. The best ones to look for, if you have a choice, are those which have the highest, unobstructed ceiling, and a wide floor area. Of these recommendations, the unobstructed ceiling is probably the most important.

When you're not busy looking around for the site, drop a line and a check for $3.50 to the National Indoor Model Airplane Society (NIMAS), for a subscription to Indoor News and Views, Box 545, Richardson, TX. 75080. This newsletter is the best and most comprehensive source of information about the indoor scene. Featuring plans, 3-views, hints and tips, and contests . . . upcoming and past, NIMAS also has available some excellent how-to-do it slide presentations on how to make and attach microfilm. Other slides on similar and informative indoor topics are available. Drop them a letter . . . and a check.

While you're plotting that indoor ship and waiting for INAV to arrive, drop a letter to Micro-X Indoor Model Supplies, 5200 Seven Pines Dr., Lorain, Ohio 44053. Proprietor Gerald Skrjanc has all kinds of interesting goodies listed in the Micro-X catalogue, from 1/100 thick balsa sheet to complete indoor kits. Pirelli rubber is available, sliced in nearly any thickness you can imagine . . . 25 cents will get you the catalog.

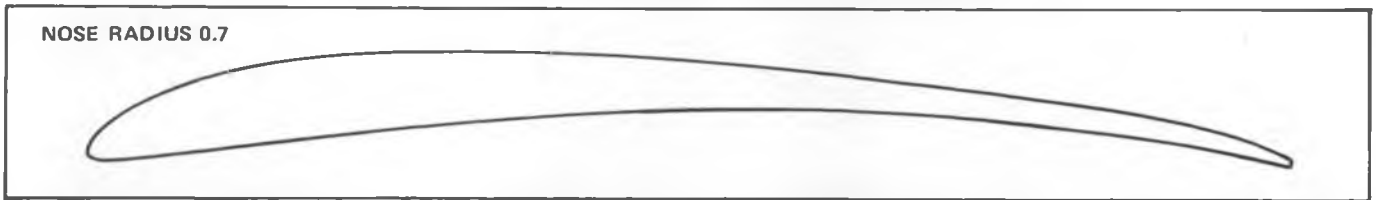
BEGINNING HAND LAUNCH GLIDER

I would like to take a moment out of this column to editorialize just a bit about the advice given to beginners to build and fly hand launch gliders.

There is some kind of logic which seems to equate simplicity with beginners. The hand launch glider is essentially a simple device for flying. It is, however, not a simple device to fly. I have seen many youngsters and beginners throwing hand launch gliders all over the place . . . usually into the ground, because someone has recommended such a starting point.

Hand launch gliders are notoriously tricky to launch. The usual beginner's pattern is a strong vertical launch, followed by a 180 degree transition and a fast vertical dive. This is not only damaging to the model, but doesn't do wonders for the ego of the builder-flyer. Some of the old M&P kits . . . now being made and sold by American Balsa

DARNED GOOD AIRFOIL – BENEDEK B-6456-f

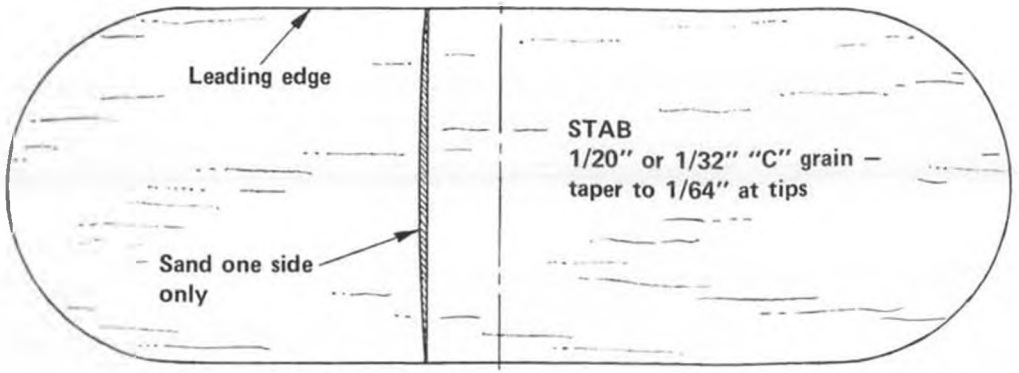


STATION	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100
UPPER	0.75	2.5	3.6	4.95	6	6.9	8	8.7	8.95	9	8.9	8.3	7.5	6.4	5.05	3.7	2.6	0.5
LOWER	0.75	0	0.2	0.5	0.8	1.1	1.6	2.2	2.8	3.25	4	4.5	4.5	4.05	3.3	2	1.1	0

"FLUF–DUF"

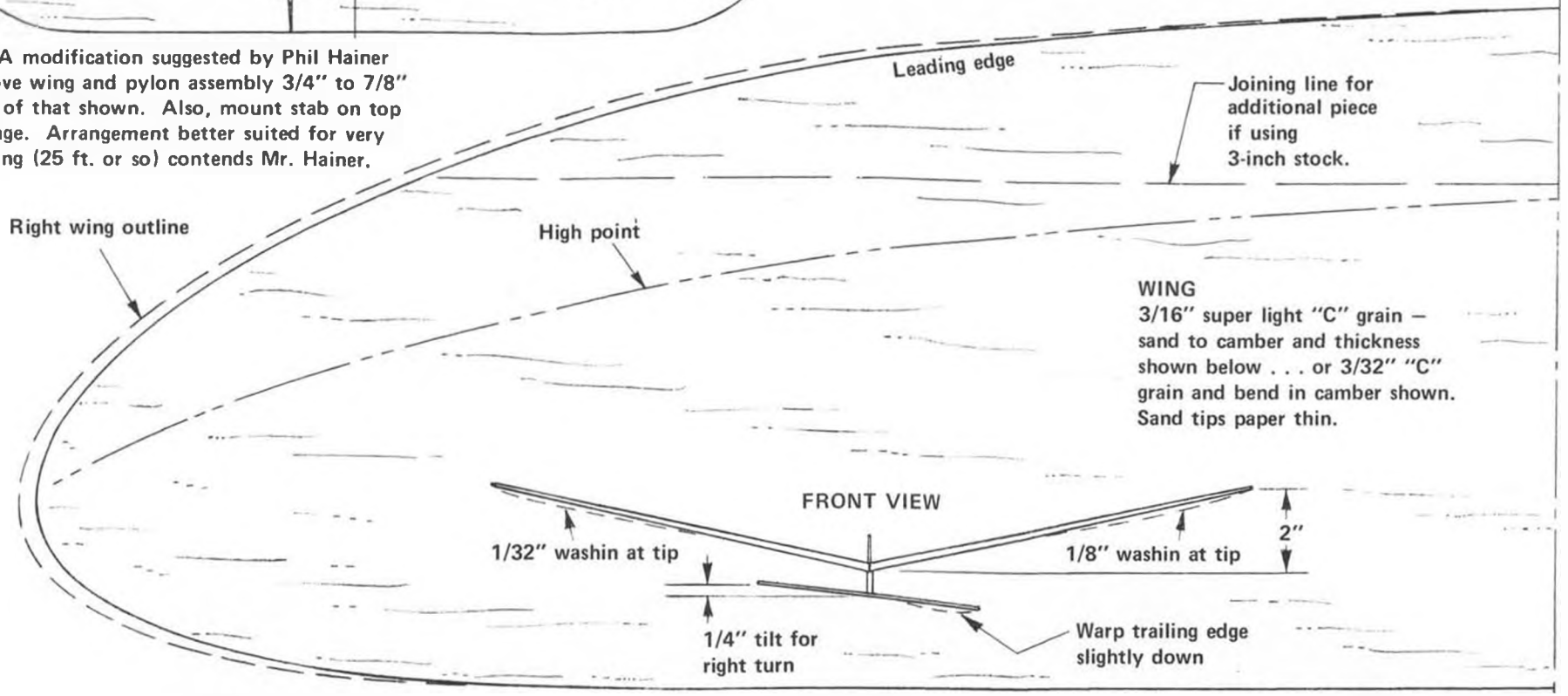
BY DAN BELIEF

Category I record holder
2-flight total – 1:19.1
(35' ceiling)

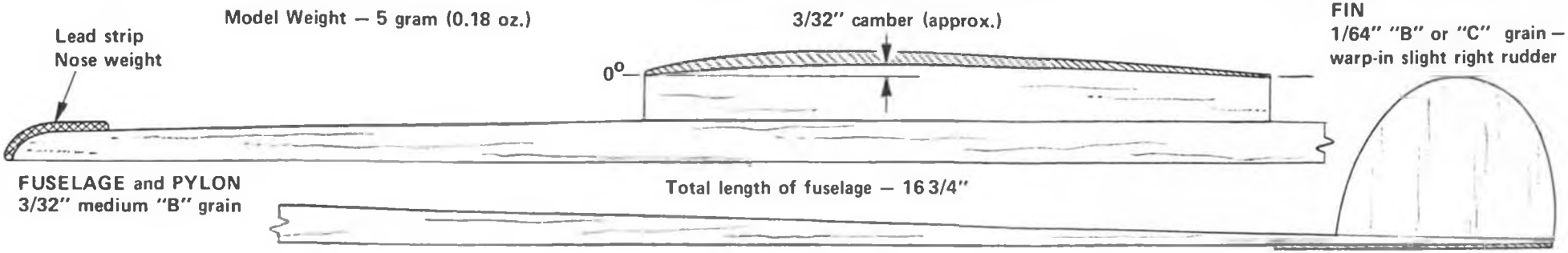


TRIM – Right/Right for right handers. For left handers, left wing panel and left side of stab should be the longer as noted above. Stab tilt, wing, and rudder warp opposite of that shown. Adjust for left/left pattern.

NOTE: A modification suggested by Phil Hainer is to move wing and pylon assembly 3/4" to 7/8" forward of that shown. Also, mount stab on top of fuselage. Arrangement better suited for very low ceiling (25 ft. or so) contends Mr. Hainer.



Model Weight – 5 gram (0.18 oz.)



Corp . . . have the right instructions for the beginner and are safe bets. Especially recommended are the "U.S. Kid" and "Flash".

So, a word to the beginner. If you are just getting started in free flight, stay away from outdoor hand launch gliders, unless you've got someone who can help you, or unless you are willing to have a few ego-deflating experiences.

You can forestall this ego-deflation, or maybe bypass it, altogether, if you follow this advice:

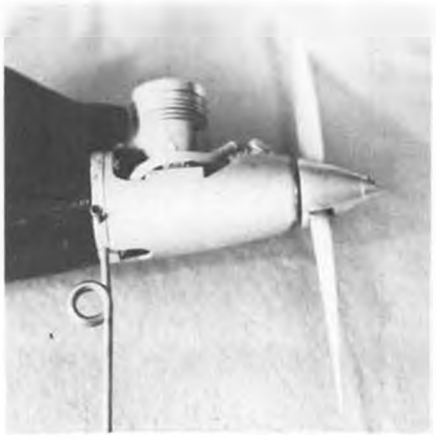
1. Build the model from a good kit. I strongly recommend the "U.S! Kid". Build it exactly, and I mean *exactly*, as shown and described on the plans.
2. When it is built and finished, make sure it balances exactly as shown.
3. Warp in a bit of left rudder turn (1/32 to 1/16 is usually sufficient).
4. Warp in a bit of wash-in in the right main panel of the wing . . . trailing edge down about 1/32 at the polyhedral break.

Now, you're ready to launch it. *Do not* throw the model straight up. It should be banked to the right and made to spiral up in a right hand circle. If it doesn't, practice the throw until you get it to spiral to the right. Throw it with all of your strength, just as you would pitch a baseball.

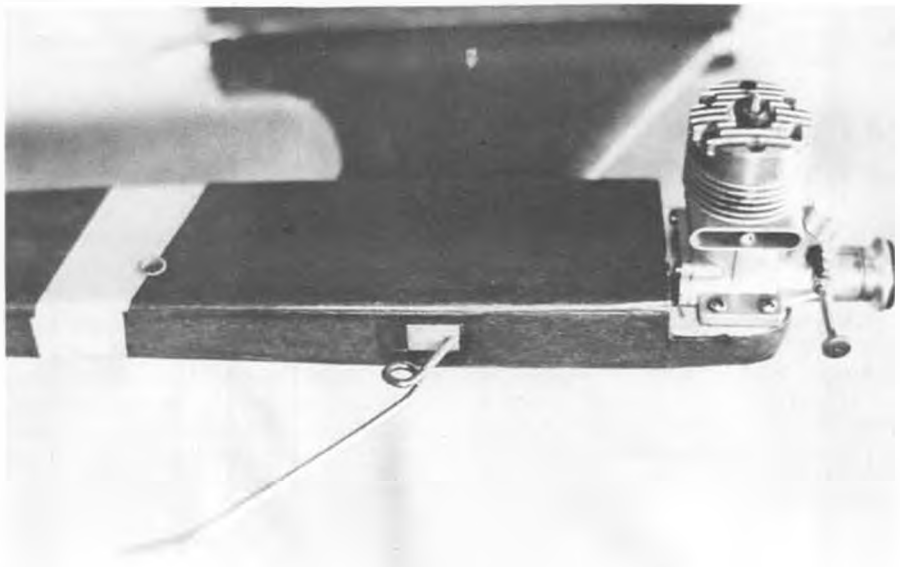
When you can get the spiral climb correct, the next thing to work on is the transition to glide. This should be a figure "S" turn from right climb to left glide. No loss in altitude should be noticed. The glide should be flat and in wide circles, with no indication of spining-in.

Adjust stab incidence by breathing on the trailing edge and bending it in the correct direction. This will flatten out the glide. Spinning-in can be corrected by reducing the amount of rudder offset. Glide turn can be induced by stab tilt. Transitions can be improved by moving the c.g. forward or by varying the launch angle or speed.

Landing gear sandwiched between 3 pieces of 1/16 sheet metal. Wire bent to match cut-out in center piece. All epoxied and bolted tight.



Landing skid mounted behind engine pan (ST type). Ring held in place by mounting bolts for pan. Note set screw.



Landing skid built into the fuselage. Skid is firmly anchored in fuselage, and small plate of metal is fastened to bottom where wire exits, to prevent fuselage damage when skid bends.

ON THE SUBJECT OF LANDING SKIDS

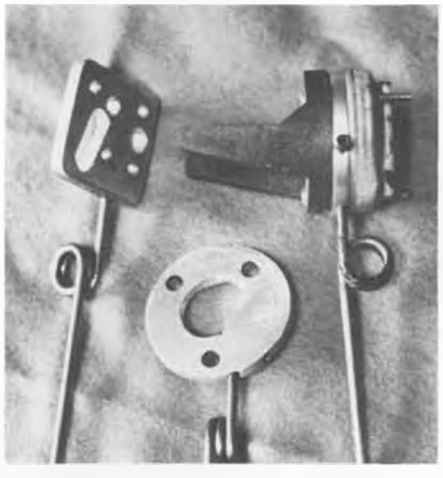
It's been my experience over the past 17 years of contest-going that what some of us take for granted as standard operating procedure is, in fact, a revelation for others.

Such an item would be the subject of landing skids on power models. I began by sandwiching these skids between the plys of a firewall. Didn't work . . . the skid would eventually pry the plys apart and the firewall would fall off. Although the light-weight 1/2A model wasn't a problem, any ship which had more weight could be a pain. Tried all different kinds of skid mountings, until the locals came up with the set-screw method. The accompanying pictures pretty well tell the story.

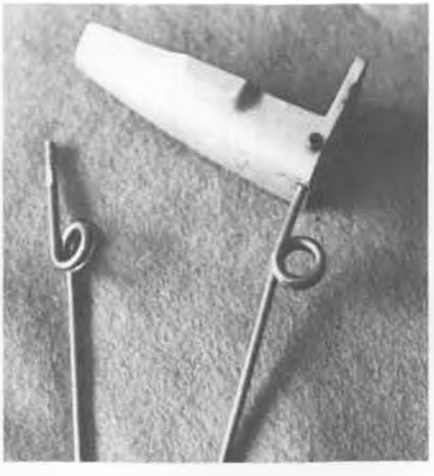
The secret is simply to fashion a piece of sheet metal so that it matches the engine mount. The metal should be thick enough to be drilled to accept the skid wire. I use 3/16 sheet metal for all 3/32 and 1/8 diameter skids. The metal can be drilled out and lightened nearly as much as you want. All that needs to remain is enough metal to hold the skid and the set screw, plus the outline.. Made from aluminum or magnesium, these weigh in the neighborhood of 3 to 5 grams. On the larger models, this weight is negligible when compared to the absence of the landing gear problem.

I make mine with no special tools other than an electric drill, hacksaw and

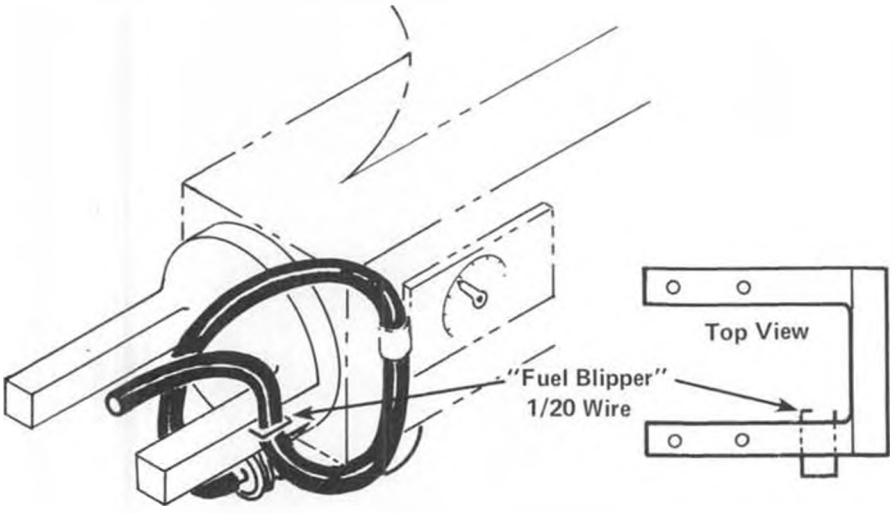
Continued on page 82



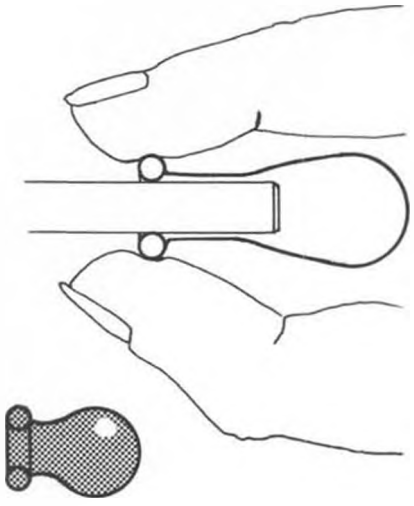
Three skids shown in different mounting rings. Note set screw in ring behind Kraft mount.



Landing skid and pan. Most pans have space at back to drill and tap for skid attachment.



The "Fuel Blipper" is a piece of 1/20 wire bent as shown, and inserted in holes drilled in the motor mount. It captivates the fuel line for easy "pinch control" during starting procedure.



Roll the pacifier on a piece of 1/4 inch tube to reduce its size for Half-A engines.

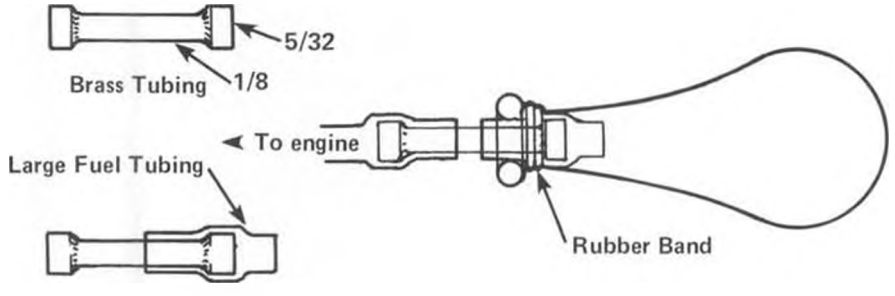
"PACIFIER" F/F FUEL SYSTEM

By BILL HUNTER . . . This article is being published as a favor to the author, who is continually being asked about the care and feeding of "Pacifier" fuel systems. Straight info from our best known Satellite!

There are many advantages in the use of a pacifier pressure system. Easy installation, light weight, no engine cut-out at launch, and a general increase in RPM.

The most common complaint heard from modellers concerning the use of a pacifier system has to do with hard starting due to easy flooding. This is a valid complaint, but like anything new, it takes a little getting used to. I am not going to attempt to convince anyone that they should switch fuel systems, but I will say that in my opinion, pacifier pressure is the only way to go, and it is well worth the effort to get used to.

PROCEDURE: Starting the first time.



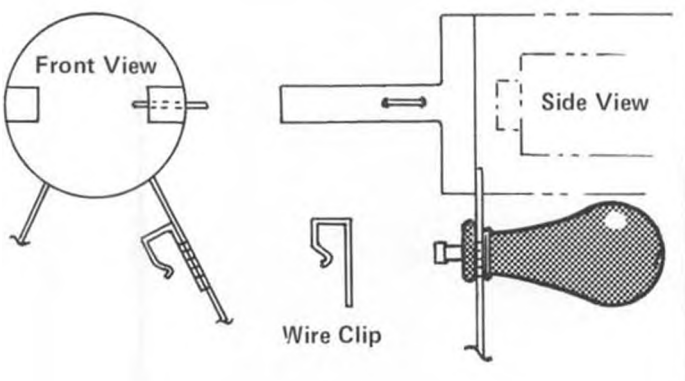
Pacifier is mounted on a nozzle, made up of 1/8 and 5/32 O.D. brass tubing. Fuel tubing is added to the pacifier end of nozzle, then neck is bound over nozzle and tubing with a rubber band.

After filling pacifier, pinch fuel line firmly and close timer. Connect line to engine. (A "pinch-off" timer is recommended as opposed to a "flood-off" for this first attempt). Close needle valve and then open 2-1/2 turns. Hold fuselage in starting position with one finger pinching fuel line, and open timer. A quick check of needle valve setting can be made (in the case of a Cox .049 - .051) by putting piston at top dead center, look into venturi and release finger pressure on fuel line. Venturi should fill to the top in about two seconds. If not, open or close needle valve accordingly and try again.

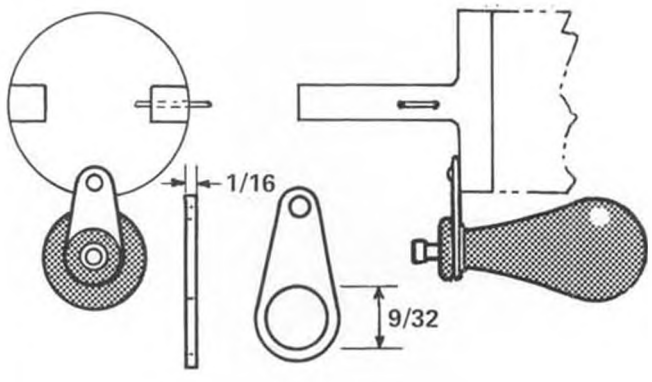
With a .40 size engine, follow the same procedure, adjusting the needle valve for a flow of about 4 drops per second.

Close timer and dump excess fuel. Now you are ready to start. With battery leads connected, hold fuselage in starting position, with fuel line pinched

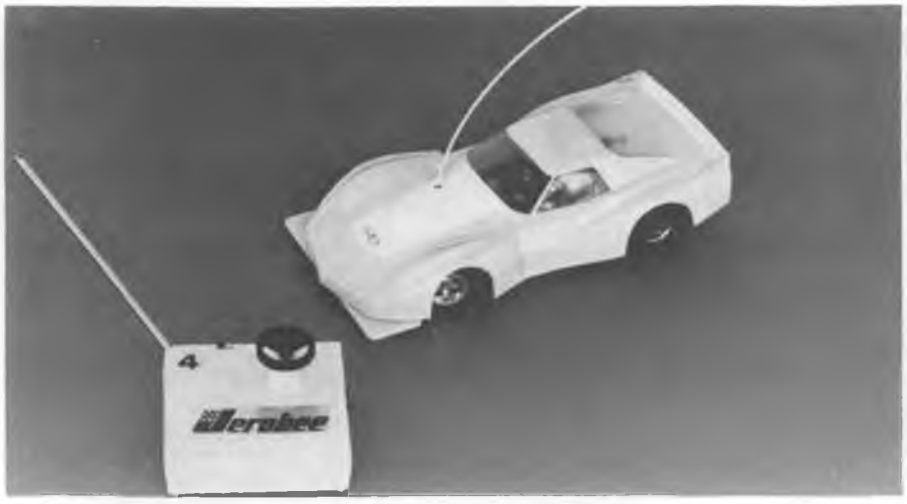
Continued on page 67



Pacifier can be mounted in small wire clip which is bound and soldered to landing gear leg. Outside rigging is handiest.



Another mounting method uses a piece of 1/16 aluminum sheet, cut as shown, and fastened to the rear plate of engine mount.



The ready-to-run Jerobee Comando 1/12 scale car with "Vette" body, and the two-channel radio transmitter (steering and throttle/brake).

Transmitter with back removed. Note dry cell power and plug-in changeable frequency xtal.

PRODUCT$ IN U$E

JoMac Products' 1/12 Scale JEROBEE RACE CAR, by Taylor Collins.

The Jerobee Comando 1/12 scale race car is the high performance, racing version of the popular Jerobee Challenger R/C car. The Comando, which comes fully assembled, ready to race, uses a two channel digital proportional radio system to operate steering and coupled throttle and brakes.

The radio system operates on a No. 276 dry cell battery in the transmitter, and uses four AA alkaline pen cells to run the receiver/servo brick. The transmitter has a spring-centered steering wheel with trim control, as well as a 'deadman' type, spring loaded throttle. The telescoping transmitter antenna is angled up and to the left, making operation of the controls easy for a right handed person . . . but a southpaw may have some difficulties if he wants to operate the steering with his left hand.

The car is powered by a modified Cox Babe Bee .049 engine. The stock tank has been drilled out in Swiss cheese fashion to save weight, and a two ounce Pylon clunk tank is used to provide longer running time than would the stock Babe Bee tank. The Babe Bee single port cylinder is replaced with a two port Tee-Dee type unit.

The recoil, lawn mower type starter

Vrooom! You better be sharp on steering befor you jam on full throttle! It mogates!

proved to be reliable and easy to use. A squirt of fuel in the exhaust port and a few gentle tugs on the starter gets the engine running consistently. The exhaust restriction throttle provides a very smooth idle, which is well below the engaging speed for the centrifugal clutch.

The independent front suspension makes the Comando handle its speed quite well. The steering servo is protected from shock damage by a 'Z' bend in the wire pushrod. Centering adjustments to the steering can be made by extending or compressing this bend. A band-type brake grabs the clutch housing at low throttle settings, bringing the car to a smooth, but sudden halt.

The colored, vacuum formed body, attaches to the nylon mounting posts with two spring steel clips. The body is easy to install after the engine is runing.

Continued on page 89

All the works are exposed with body removed. Radio batteries sit on top of receiver/servo case. Side-mounted fuel bottle feeds engine thru filter. Pull-starter just above flywheel.

You'll need fuel and starting battery to get under way. Can be run without body.

Paul Plecan's "Gas Flea," built by Alvin Hagen, Belton, Missouri. He built one in 1939, and "just had to do it again." Arden engine.

Buccaneer "C" Special, by George Dickenson, Somerville , N.J. Uses O&R .60 with bonded ignition for Kraft 3-channel.

PLUG SPARKS

By JOHN POND

• This column has dealt primarily with old timer activities and developments in the USA, and has had only passing references to activities abroad. It was indeed with pleasure that a letter was received from Sven-Olen Linder of Orebro, Sweden, with a most interesting history of modelling in that country. To the writer's best knowledge, this is something that has not been printed in American magazines and is well worth preserving in this column.

Modeling started very slowly in Sweden, with the earliest reports having model aviation starting in 1913 with a few scattered modelers. It was not until 1921 that model flying gained national prominence with a model contest sponsored by the Swedish magazine, "Flygning". The contest was attended by the Swedish Princes, Bertil and Carl-Johan, who were pleased to see the winning flights of 8, 12, and 8 seconds. In those days, distance contests were also held, in this case the winning distances were 58, 88, and 59 meters.

Model aviation still lagged and progress was slow until Sven Wentzel and several other active modelers formed the Vingarna (Wings) Club in 1935. Wentzel later set up a model shop and also went into model kit manufacturing. So successful was Wentzel that the firm has survived and his sons still run the largest modeling agency in Sweden.

Sune Stark, Wakefield world champion in 1951, was another of the originators of the Wings Club. Stark has maintained his interest in modeling, being the chairman of the K.S.A.K. (Royal Swedish Aero Club), the model committee that represents all modeling for Sweden.

With the formation of this very active club, the Swedes began to actively participate in the Wakefield Trophy Event as early as 1937, placing sixth and eighth. Some contestants felt Wentzel won that year but had one of his flights disqualified for "pushing" the model on takeoff.

In 1938, the first Nordic Glider Competition was held, with the Swedish team taking top honors. While on this winning streak, the Swedes took in the Wakefield Finals in France, with Gunnar Magnusson placing third. The following year in Belgium, Magnusson won the Coupe de Belgique. Not to be outdone by a fellow club member, Sune Stark won the first Swedish championships in 1938.

Modeling really got a shot in the arm

The 1937 Swedish Wakefield team (l to r): Sven Wentzel, Bjorn Andersson, Sune Stark, Olle Lindhoch, and Ake Roggentin.

N. O. Gustavsson won Swedish O.T. Champs with this Korda Wakefield.

Note the cold weather gear worn by prolific Washington builder, Nick Rankin. Playboy .020 Replica at CAMS 1st Annual, Idaho.

Some guys never learn (See last month's col.). Erle Morehead paid another $10.00 to Al Grell. That's a Lanzo Record Breaker, Erle.

when the Swedish government decided to sponsor model aviation during the war years. From the beginnings of the Vingarna Club, modeling expanded to 40,000 members in two years! Of course, after the war, the money dried up, but the action had been set in motion. A Swedish merchant, Osvald Arnulf-Olsson, of Gothenburg, put up the Swedish Glider Cup, an equivalent type trophy to Wakefield, for A/2 gliders.

Sweden has had its share of successes. Wakefield saw Sune Stark, Arne Blomgren, and Lennart Pettersson win firsts, along with two team victories. In gas, Rolf Hagel, a prominent flyer of long standing, was a joint champ in 1959, a champion in 1971, and this year, 1975, Lars Olofsson won the FAI Power Class.

The Swedish counterpart of America's Academy of Model Aeronautics (AMA) is the Swedish Model Flying Association (Svenska Modell Flyg Forbundet). Of interest is the fact that it receives some economic support from the Board of Education for youths of 7 to 24 years of age. The official modeling organ is "Modellflygntt," issued by SMFF six times a year. As with AMA, they derive their other incomes from membership fees, contest fees, lotteries (!), and donations. At present, the SMFF membership is 5,000, with the primary interest being R/C and F/F. At present, a small group interested in indoor flying is trying to develop enough interest to hold an elimination for a possible indoor team to represent Sweden at the Indoor World Championships.

Old Timer activity is quite heavy in Sweden, with most of the flying being rubber and glider types, as ignition motors are quite scarce. The largest club (over 40 members), "Oldtimer-Sallskapet", that flies old time models, also puts out a 32 page Newsletter called "Old Timer". Edited by Sven-olov Linden, exchanges can be made by writing to Sven at Hovstavagen 15, 70763 Orebro, Sweden. This newsletter is almost magazine size, with drawings, articles, cartoons. Even if you can't read Swedish, you'll enjoy it!

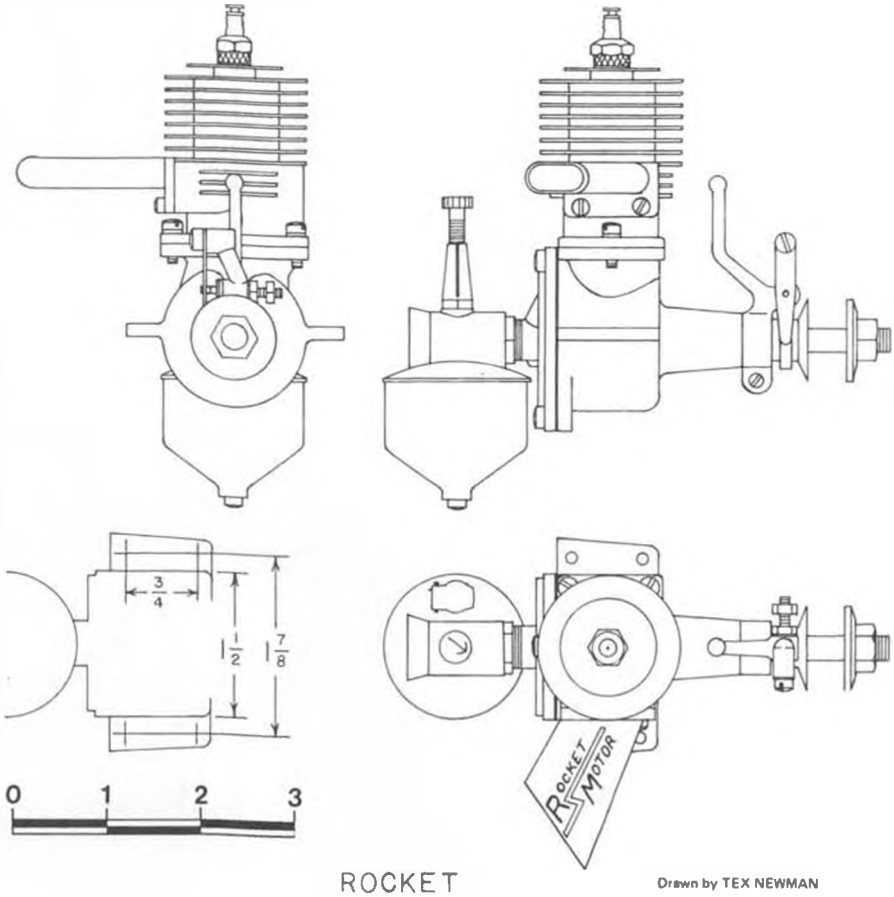
ENGINE OF THE MONTH

This month's engine is the postwar version of the May Co. Silver Rocket, which was first advertised in the July 1945 issue of Model Airplane News. Called the Rocket Victor Motor, the engine was listed at $22.50 in a rather modest initial advertisement.

Corr's Hobby Shop, in Washington, D.C., carried a steady ad for this motor in its hobby parts advertising page. As sales increased, the Corporate Products Inc., jumped to full page advertisements. As Bunch had proven it before the war, there was a definite demand for a .46 cu. in. motor.

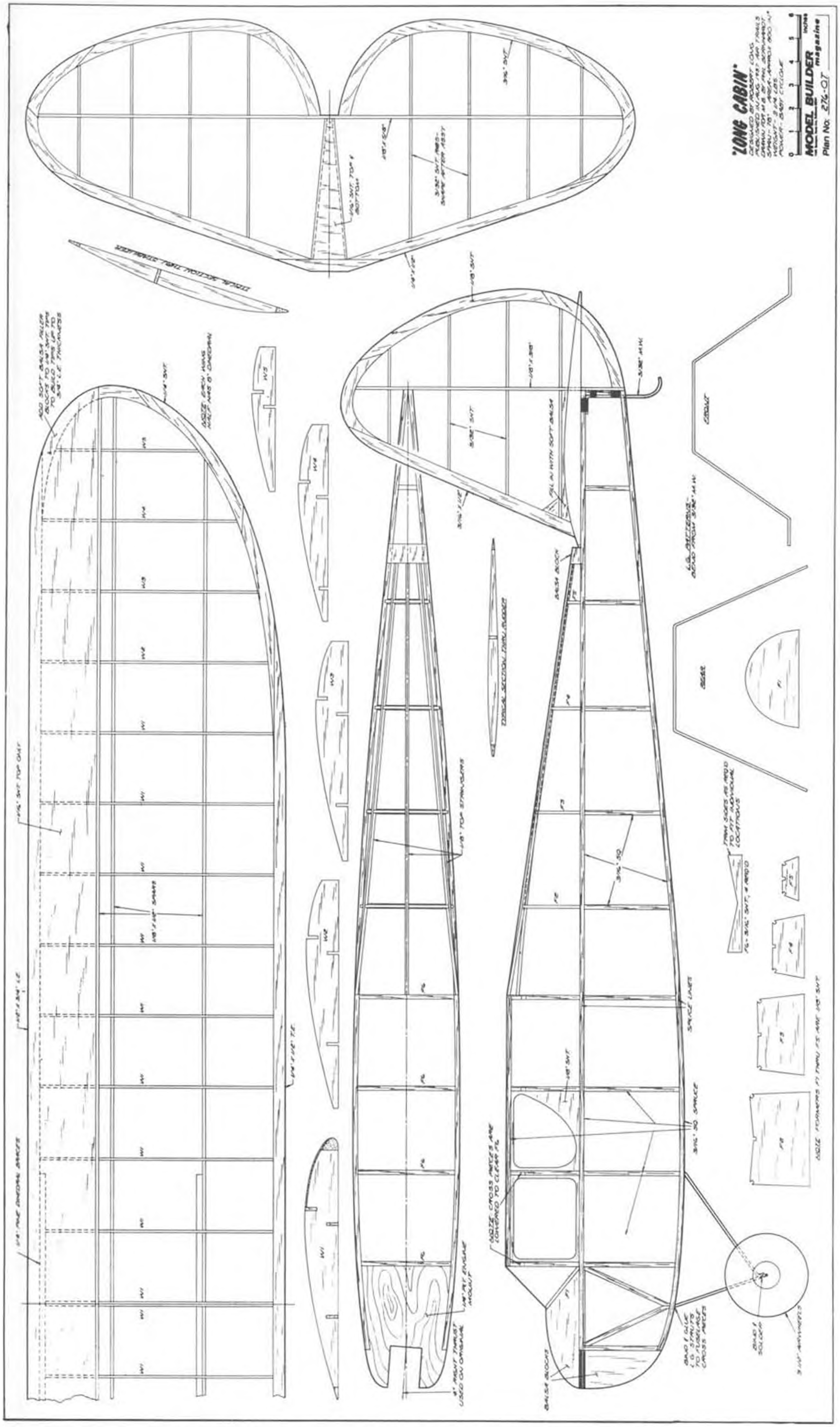
In those lush years right after World War II, when everyone had saved their money for four years, any manufacturer who had a half-way decent running motor, enjoyed a successful series of sales years. As 1948 approached, things started to tighten up, and it was then that the Ohlsson & Rice firm decided to drastically drop the price of its 60 motor from $18.50 to $9.95.

With the tremendous number of automatic screw machines, lathers, etc., accumulated during the war, it was simply a case of the big production com-



ROCKET

Drawn by TEX NEWMAN



FULL SIZE PLANS AVAILABLE – SEE PAGE 94

Wanna buy a duck? No, it's Guy Kirkwood, not Joe Penner! Guy was trying to unload this ancient Thor at SAM Champs. No takers?

MB's intrepid F/F Editor, Bob Stalick, releases his erratic Wedgy. Terrific glide compensates. CAMS Annual, Cour d'Alene, Idaho.

panies squeezing out the smaller competitor. Along with the Pierce, Everson, et al, the Rocket suffered the same fate as the myriad of engines on the market, i.e., falling off of sales. Eventually, the Rocket motor production was discontinued.

Rocket motors are surprisingly good running engines. Most modelers make the mistake of putting a .46 size motor, such as the Rocket, in a model designed for a .60. When properly combined, the Rocket motor can more than hold its own in competition.

For those interested in specifications, the Rocket Motor featured a 13/16 inch bore, 7/8 inch stroke; displacement, .46 cu. in.; and a weight of 8 ounces. For flying nowadays, the Rocket engine unfortunately requires a 1/4 inch V-2 spark plug, which is in rather short supply.

NAILED TO THE CROSS

Bob Cowles (old time friend) writes to state that the Tex Newman drawing of the Mighty Midget was in error, being a composite type engine.

The Mighty Midget with the widely spaced fins and nearly round head profile did not come with a plastic tank. Further, it has the molded crankcase (No. 2 style) as compared to the die cast No. 3 style, with the webs as shown on the sides.

Bob further goes on to say that if the drawing had shown the cylinder fins finely spaced and a straight taper together with a finned flatter head profile, this would have been a good reference drawing.

Might mention at this time that Tex has been drawing engines strictly from the stock he has, and if some of his en-

Newest 48 inch span, scaled-down old timer by Micro Models, the famous Miss America, designed by Frank Zaic. Reduced version is for light-weight 3-channel radio systems. A great trainer.

The 'LONG CABIN'

OLD TIMER Model of the Month

Designed by: Robert Long

Redrawn by: Phil Bernhardt

Text by: Bill Northrop

• Typical of that period, the August 1937 issue of Air Trails featured a construction article which was merely entitled "Cabin Gas Model." Also, typical of Air Trails at that time, the designer of the model, Robert Long, shared the by-line with Model Editor Gordon S. Light.

In spite of its unheralded introduction, the "Long Cabin" continues to be remembered by old time modelers . . . not so much for its contest record, as for its clean, simple, functional, and scale-like appearance. Best of all, it flew as well as it looked.

For modern old timer competition, the Long Cabin should make an excellent model for Antique, and in accordance with the new displacement rule, it can take up to .35 glow engine for R/C Texaco. As we've mentioned before, Old Timer cabin ships with radio make the perfect R/C trainer, and the Long Cabin, with its scale-like appearance, would be just right as a sport model for all members of the family to fly.

Conversion to R/C is very easy. By merely doubling the fin and stab spars, leaving a gap for hinges, you've got the control surfaces. If you intend to use it for sport flying only, drop the dihedral to about 4 or 5 inches per panel to improve maneuverability. For Texaco competition, keep the ship as light as possible and go to a smaller engine, for fuel economy. •

Bill Henn, Jr. at the Old Time Eagle Annual, Lakehurst NAS, N.J. flew this Golywock. Air dock can be seen in the background.

"BuffaloRoy" Edwards at Hill Country with his good flying .020 Comet Clipper with Ace pulse radio. Buffalo exploit in last issue.

gines are not truly as represented, then Tex has been the victim of some sharp motor trades. We appreciate any and all constructive criticism . . . , keep'em coming!

1975 FLYING WRAPUP

If this column seems to be a bit repetitious in reporting contest after contest, it is because most of the good meets are held in the latter part of the year. So bear with us, we'll get you and your club name in print yet!

C.A.M.S. 1ST O/T ANNUAL

Here's a brand new club, the Cour d' Alene Aermodelling Society (CAMS) out of Idaho, which staged its first O/T Annual is some of that real cool Northwest weather. Ya gotta be a real diehard to let a free flight go in that "good" weather this contest featured.

As reported by Bob Petro, the flying site more than made up for the bum weather, as you could fly for miles in any direction. The Oregon and Washington boys, who drove over 500 miles to attend, had to admit this field was really something!

These grass areas are the result of the farmers burning off the areas after harvesting (this actually promotes growth!).

When the rains come, a sufficent amount of grass grows, giving the nicest green carpet effect you would ever want for a rise-off-ground site. Incidentally, the way to keep a field is to assure the farmer that no vehicles (cars or motorbikes) will be allowed to tear up the grass. After keeping things in proper order, C.D. Clarence Haught left a twenty dollar bill as a token of thanks. Needless to say, the CAMS are welcome anytime!

Flying was great despite the cold wind, with only one model being sacrificed to the great thermal god in the sky. Worth noting was the junior newcomer, Mikael Mihalik, 14, entering his first meet with his first F/F gas model. Won .020 replica and Junior Rubber. How about that? Dad was sure busting his buttons over the results of his encouragement.

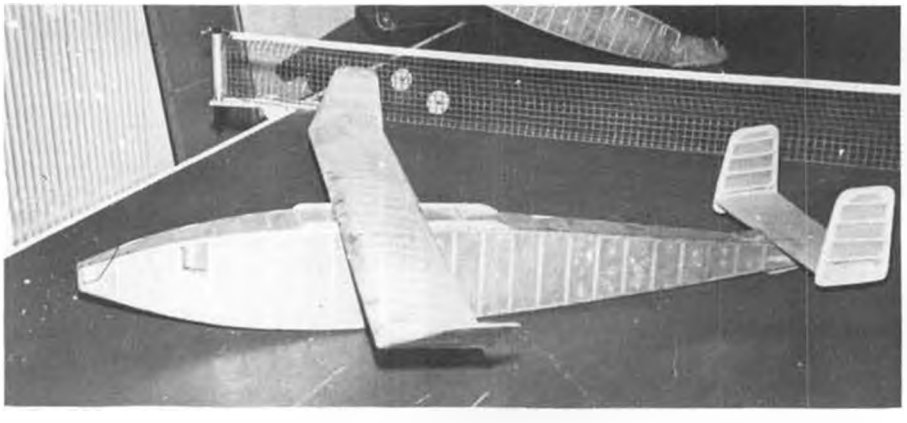
Ove Pettersson, Vastra Frolundra, Sweden, competes with this Ohlsson .23 powered Swedish design, "Humlan." Ignition engines are hard to come by over there.

The meet was topped off with the awarding of very unique and clever trophies made by Clarence Haught and his talented son, Dave. Despite being wet, cold, windburned, and tired, a happier bunch of fellows you never saw. Bob promises an even better meet next year!

SAM 21 ACTION

Hard on the heels of the SCIF Texaco meet and their decision to run separate events for free flight and radio control (see last month's column), the

Continued on page 62



The still surviving 8th place winner in the 1937 Wakefield Champs, by Sune Stark. In back is damaged fuselage of his 1951 first place winner!

Birds? . . . . . *Continued from page 30*

me and saw that little hawk flapping furiously to regain altitude. Of course I was faster, and long gone by the time he had reached another altitude advantage. Had he hit my prop, it would have meant a dead stick landing under somewhat less than favorable circumstances!

Many years later, another red-tailed hawk redeemed his breed in my view, by saving me from a premature landing during a long cross-country soaring flight. I was about 60 miles out on course and getting very low. The six-thousand foot altitude I had started with had dwindled to less than two thousand, and I was in heavy sink. Within a very few minutes, unless I found lift, I would have to pick a field and set up a good, safe approach; thereby cutting my goal flight short by more than 125 miles! Quite obviously, that was a discouraging prospect for me to think about. Instead, I decided to "think thermals" and look about for some sign of lift close enough to do some good.

It was at that instant that I spotted a small red-tailed bundle of feathers in a tight turn about 200 yards off to my left front, and somewhat higher in altitude than I was. He very obviously had a good thermal, so over I went to join him. It was gratifying to feel the solid thump of lift and hear the protest of the wings as they "oil-canned", taking the sudden upward surge of air. In a few short turns I had that thermal centered, and my trusty Schweizer 1-23D and that little red-tailed hawk climbed together for over five thousand feet . . . wingtip to wingtip! At sixty-two fifty I decided I'd had enough and it was time to shove off again downwind. By then my little friend had disappeared, so I split. Again, quite obviously, the hawk was out for fun and enjoying thermal flying in my company; I'll add that the feeling was mutual. Birds of a feather, you might say!

These and other, similar experiences have made me more than ordinarily aware of soaring birds, their habits and their environment. So much so in fact, that I've decided to see what could be done about applying some of the lessons I've learned . . . and hope to learn . . . to the sport of R/C soaring, and the problems of sailplane design. So far, the approach has been rather theoretical, but I'm gaining on the practical. Will you help?

For example, have you ever wondered why a bird soars at all? Why do some species use thermal lift while others seem to ignore it? How many soaring birds of what kinds use slope lift, and when? Is it because it's there and the bird stumbles into it inadvertently, or does the bird seek lift as we do? Are soaring birds hunting, playing, or just victims of circumstance; and why do they sometimes fly straight or in gliding flight instead of thermalling? How does a hawk know where to find lift and use it to best advantage. How steep is the bank angle? Are the turns uniform and circular, or do they vary? Why?

All of these questions led to others and still others. For some, I think I have the answer, or at least one possible explanation.

* * *

Only recently I was astonished to learn that a soaring bird must be taught to soar, even as you or I. Experiments with turkey buzzards raised in captivity show that soaring is not instinctive. Even when carried aloft in an airplane and dropped in a thermal, the vulture flaps right through it, oblivious to the gift of lift. Soon, the bird must land, being incapable of sustaining the great effort required to keep it aloft. A bird of prey must soar to survive because the great energy required for flapping flight could not be provided for by its intake of food. A large bird such, as an eagle or condor, would have to hunt, catch and eat its own weight each day in food to provide enough energy for flapping flight. Fortunately, nature meets this metabolic phenomenon by providing

Continued on page 77

Plug Sparks . . *Continued from page 60*
SAM 21 club staged a quickie Texaco meet in San Jose at Santa Teresa Park, to see what sort of turnout could be expected for an R/C Texaco contest.

With less than a month's notice, the Limited Engine Run Event (class A-BC) enjoyed twelve entries, while the ever popular Texaco event pulled ten entries.

Based on this success, and a follow-up Fuel Allotment Contest held three weeks later, SAM 21 will stage a Texaco R/C event early in the spring of 1976.

Winners of the Texaco and Limited Engine Events were John Pond and Ernie Berlo, respectively. The 1/8 ounce of fuel per pound of model weight (called the Fuel Allotment Event) was won by Loren Schmidt, using his field at Elk Grove. He not only supplied the field and the barbecue goodies, but also won the contest. How about that for a perfect day!

At present, SAM 21 has launched a series of monthly contests designed to be held at various locations, to find the best field for O/T R/C operations. Other sites besides Taft and San Jose include the San Luis Dam Reservoir, the Elk Grove Schmidt farm, the Tracy Airport, Manteca Amusement Park, and Hill Country in Morgan Hill area.

With a membership of 38, SAM 21 hopes to emphasize old timer free flight radio assist contests, as the SCIFS, SCAMPS, and AMPS clubs are now putting on better than one contest per month strictly for free flight. If interested, write this columnist.

PENSACOLA PICKINGS

More stuff from the effevescent SAM Editor, Jack Bolton (former Navy Helo Commander). Jack reports the first O/T F/F radio assist consist staged by his group came off in fine style. Of course, Bolton is good with that Playboy of his . . . he had no trouble winning the R/C events. However, the free flight events were something else again, with Tom McLauglan's Veco 19 powered Zipper winning Class I. Ron Sharpton, with a F00-2U-2 (what else!) powered by a Forster 29 cleaned house on the boys in Class II. Not to be outdone, "ole sleeper" Sharpton won the rubber event with his Korda, thus setting up a win for the Sweepstakes Trophy. Before we forget it, Doug Singer won .020 Replica with a Dodger.

Interestingly enough, in the regular free flight events, Charlie Alba was in the "super fly off" with his .020 Ranger. It was unreal to see Charlie competing against "Buckets" Johnson with his huge ST56 Class C job. Too bad Charlie blew it with a 5 second motor run!

SAN VALEERS-SCIFS WINTERNATS

This meet, originated by the San Valeers, has enjoyed even more success when it incorporated a full suit of old timer events. The SCIFS club, with Otto Bernhardt as C.D., ran what could be called a big Fun-Fly.

According to reports received from R.G. Brickner, Editor of the SCIFS "Flightplug" newsletter, competition was low key, with plenty of hangar flying. Both north and south were well represented in the fine free flight weather.

Of particular interest to this columnist was the inclusion of cabin events, as proposed by Sal Taibi. These events are well worth reviving, as the writer has always been very partial to the more realistic flying characteristics of cabin models. In this contest there were plenty of Class C entries, but the Class A and B just died from lack of interest. Simply a matter of pushing harder, men!

As previously noted, the trend has now become a fact, with nothing but Comet Sailplanes being entered in Class C.

Three Orwick powered, one Spitfire and one converted Veco 61 were the winners! Class A and B are still both dominated by Rangers powered with .19 to .201 combinations, which gives you two chances to win a trophy. Zippers appear to be a trifle overmatched on a power per wing area basis.

Before signing off the meet, numerous goofs were seen, with Brickner letting his Aerbo go twice without the

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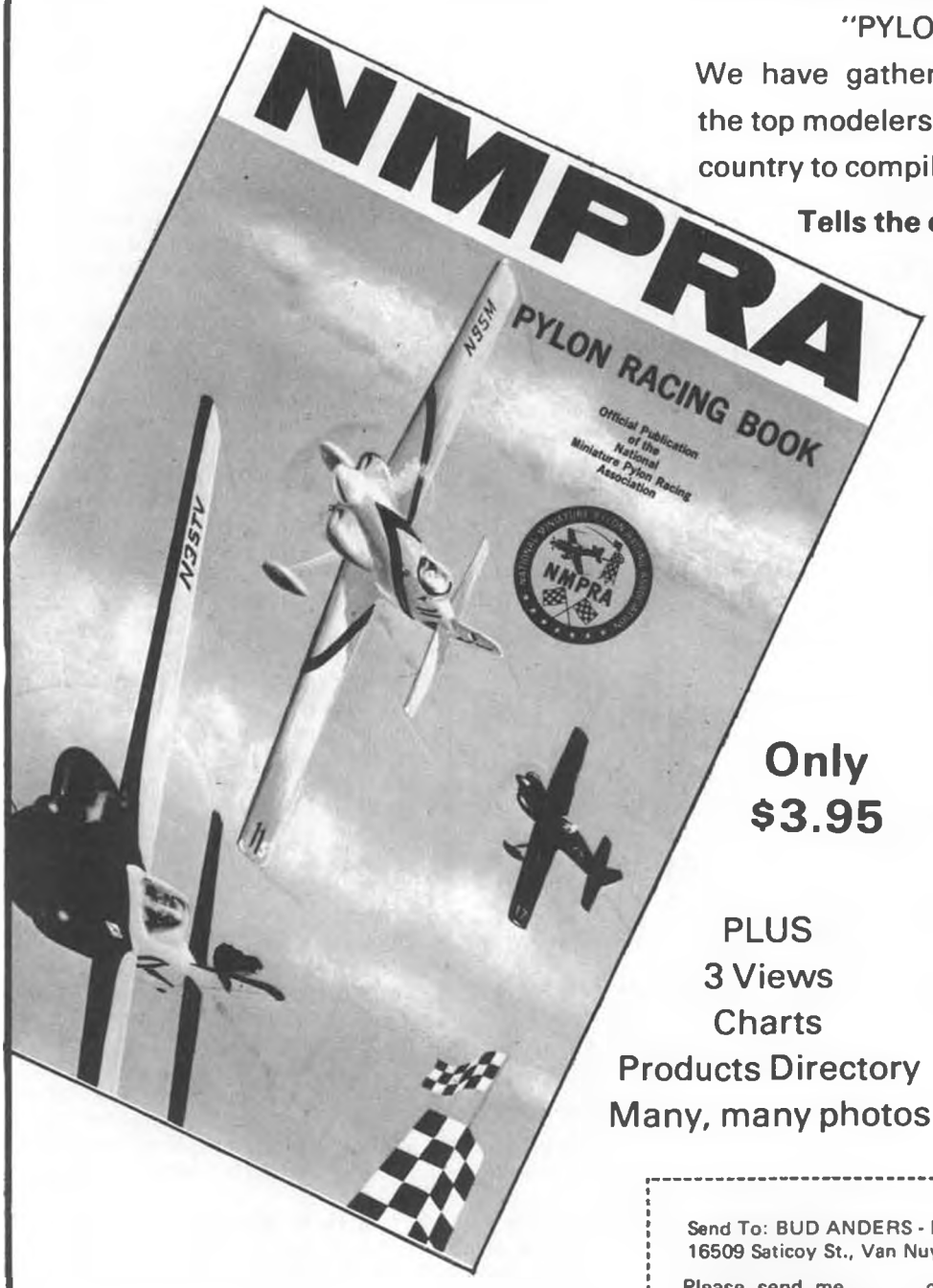

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shutoff timer operating, also Doc Meara, however, both fortunately got their models back. "Lucky" Jerry Vernon (who left a Zipper at Denver) probably has a sailplane in Mexico by now, as one could still hear the motor running after it passed out of sight overhead. Rough!

It was a great contest all around, with everyone thoroughly enjoying themselves. Next year's Winternats should be a good one!

ENGINES

One of the biggest complaints this columnist receives is to the effect that no one seems to be manufacturing ignition motors in any great quantities, and worse yet, those who do never seem to let anyone know about it.

As reported a few issues back, we said we would advise you when Mark Fechner resumes his excellent "Klondyke" conversion of green bead K&B Torpedo engines. According to the latest issue of the US Aeromodellers "Dope Bucket" newsletter, the 1976 Klondyke engine production will start in May.

If you are interested in converting your engine to ignition, Mark sez to send only plain bearing engines. He will not convert schneurle port or modern loop scavenging engines. Do not send money with your engine, he will bill you when he gets around to the work. Those interested should write Mark Fechner at 112 Clinton Avenue, Salt Lake City, Utah 84103. Really gorgeous work, I know, I have a couple of Klondykes!

EASTERN HOT FLASHES

As captioned by Randy Carman, of the SPOTS Club, quite a bit of O/T F/F radio assist activity has been going on in New Jersey and near by states. Matter of fact, SAM Prexy Joe Beshar reports that no less than 14 contests have been held on the Eastern coast, so a quick run-down is in order.

The Old Timer Eagles staged its annual R/C and F/F bash at Lakehurst NAS. Weatherwise it rained early Saturday and blew on Sunday. The real redeeming feature was the well-run contest. Howard Carman and Cliff Schaible, of the SPOTS, won first in Antique and Texaco, respectively.

Meanwhile, the Somerset Signal Senders contest came off in great style, two weeks later, at Bridgewater Field. Same story . . . weather not cooperating. Don Hartman and Jim Clark ran a good meet. However, in November, the SAM 16 boys in Massachussetts had the most fabulous weather you could ever want. They also have a terrific field, which helps bring out the contestants.

Sears McCorrison reports that one fellow had a Veco 19 in a Red Zephyr (mis-reading the rules for power restrictions) that flew poorly in the limited engine run events. But, the Texaco Event was another ballgame, as the motor ran for seven or eight minutes, enough for the Red Zephyr to win! Might also mention that everyone thought this the best contest of the year.

THE "DIRTY" REPORT

Just received several sheets from "Dirty Harry" Murphy on old timer activities in Indiana. Having not heard from anyone in Indiana (outside of Tim Banaszak), the columnist was beginning to wonder what has happened to all those hot shots such as Larsh, Burgess, Murphy, et al.

The CIA (!), Control Indiana Aeromodeller's 3rd annual contest featured old timer events that wouldn't quit! With a one half mile diameter concrete slab for takeoffs, participants had a ball.

As Harry Murphy pointed out, Saturday was a beautiful day, and Monday was gorgeous, but Sunday was another kind. Seems like Mother Nature was punishing those who had skipped Sunday school! With a bad wind, the contestants immediately broke up into two groups, the "Hawks" and the "Chickens". The "Chickens" included such well known goof-offs as Bonaszak, Bartelt, Cain, Burgess, Larsh, Pech, and Murphy. That's just about all the hot shots there are in that area!

Those "Hawks" who did fly were Dick Schuyler, with a first in Class C, followed by Bill Schaffer, Bill Hale, and Buck Zehr. In .020 Replica, the heroes were Elmer Jordan (So-Long), beating both John Peck and Jim Robinson flying Brooklyn Dodgers.

Curiously enough, Bill Hale after smashing his O.O.S. on its third flight, turned "Chicken". He had on the matching yellow jumpsuit that earned him the nickname of "Ole Yaller." One of the favorite comments around the field was, "I'm gonna enter and then find a place to watch the football game." Great idea in the wind!

Next year, Murphy announces they will have four to five events. As he sez, "Y'all come!"

ATTENTION CALIFORNIA ENGINE COLLECTORS!

In line with our policy of presenting everything with an old timer twist to it, this column is proud to announce that Dick Dwyer is staging the Second Annual MECA Collectogether for Region 2 (formerly Region 1 North) on March 27, 1976. Based on the tremendous success of the 1975 Collectogether, the March session will be held at the Glenman Elementary School, 4620 Mattos Drive, Fremont, Ca. Action starts at 9 a.m. and quits when the "last dog is dead."

Admittance is $1.00, but this is only to offset the free coffee and doughnuts being served. There will also be numerous door prizes, a raffle, and the ever-popular auction. If you need more information, write to Dick Dwyer, 1837 Flood Avenue, San Jose, 95124. Don't miss this one!

CO2 NEW RULER

After we ran the picture of the CO2 powered New Ruler by that Czech master, Milan Kacha, it was no great surprise to find this was constructed from an American partial kit.

Due credit must be given to Ed Toner, who has a very nice line of .020 and CO2 powered Old Timers. The partial kits come with a reduced blueline copy of the original design plus printed parts. Takes a lot of pain out of build-

ing the models.

Buzzer Model Airplane Co. (Ed Toner's business name) is located at 52 Newbury Road, Howell, N.J., 07731, if you are interested in peanut scales (the firm's specialty). No less than 17 plans of peanut flying scales are offered, plus a series of scratchbuilder plans, ranging from 13 inch peanuts to the World Championship FAI Sailplane from Sweden, called the Rapier 13.

NAME OF THE GAME

Among the many letters received by this columnist, none tickle him more than the type as written by Bill Henn, Clifton, New Jersey. He sez, "I have just returned to modelling after a 35 year layoff, and attended the Old Timer Eagle Annual, held at Lakehurst NAS in October. First time I was ever to a contest and I won first place in the rubber event using a Lanzo stick from your plans. My son flew a Gollywock, but old dad beat him at this time.

"I joined the Old Time Eagles Club. What a terrific bunch of guys! Enjoyed myself so much at the first meeting I attended. I couldn't drive home (bombed!). With excitement and camaraderie like that, who could keep from getting high from adrenalin?"

That's the name of the game, men!

Eaglet . . . . . . *Continued from page 43*

I used a piece of sharpened brass tubing to cut the holes for the engine cylinders. The cylinders were modified from Williams Bros. LeRhone one-and-one-half-inch scale parts. Details of the conversion is shown on the plan.

The landing gear is bent from .031 music wire with 1/8 O.D. aluminum tubing slipped over the wire to represent the tubing used on the full size "Eaglet". I used 1/4 inch lengths of 1/16 and 3/32 O.D. aluminum tubing to center the tubing on the wire. Use epoxy to hold the tubing in place. The two members of each side were bent from one piece of wire extending through the fuselage at the front members where it is sewed to the fuselage bulkhead. Don't forget to install the tubing as you form the gear, as you will have a helluva time putting it on later! A second piece of wire is used for the upper "Vee" in the front view of the gear. This part is also sewed to the same bulkhead. A third piece of wire forms the remainder of the gear and the wheel axles. Pieces of 1/16 O.D. aluminum tubing are used to enlarge the axles. Two inch Trexler Wheels complete the landing gear. Note that the extension of the rear legs of the gear extend through the bottom of the fuselage to provide shock absorbing ability in the rear and upward direction. A small piece of rubber band is used to tie the upper and lower landing gear Vee's together. Balsa disks are used to simulate the rubber compression discs used on the full size "Eaglet". The tail skid is formed from thin sheet aluminum.

A balsa block is used at the aft end of the fuselage from former "K" to the tail post. Notch it out to receive the stabilizer spar and leading edge. Glue the stabilizer to the block and glue to the fuselage. Now add the vertical tail.

The VL Motor installation uses 2-56 by one-half inch machine screws and blind nuts on the aft side of bulkhead "B". The switch and charge plug is mounted on the bottom of the fuselage, using small sheet metal screws. (See view "A") The remainder of this section provides access to the battery and adjustment of the battery for pitch or CG adjustment. Two small rubber bands are used to attach the battery to the hard wood stick bolted to the forware nose block. A 2-56 bolt and nut is used to attach this stick to the nose block.

The wing is attached to the fuselage by pushing the 1/16 inch dowel all the way forward, then back through the rear struts, then forward through the forward struts and is retained by two small rubber bands. The wing struts are made from 1/16 inch plywood. I used aircraft grade mahogany plywood, as it is lighter and stays straighter then birch plywood. Slot the ends with an X-acto saw to receive the Robart "Mini" Hinge Points. Use epoxy to fasten the hinges in place. The strut assembly is completed with the addition of the jury struts and pin attachement. A 1/16 inch dowel joins the front and rear struts, at the jury strut attachment.

Cover the model, using your Japanese tissue, and thinned-out Wilhold White Glue for attaching the tissue. After water-shrinking the paper, apply three coats of thinned-out nitrate dope. I used Floquill Model Railroad Colors mixed with nitrate dope for the colors noted on the three view. Use ink to represent the cowl split lines, door outline and control surfaces. Use split bamboo for control horns and thread for the control cables.

Balance the model at the point

shown on the drawing by moving the battery fore or aft as required. Initial flights should be made over deep grass or weeds until necessary adjustments are made. Thrust line changes are easily made by the simple addition of small washers under the motor attach screws. My model required a single 1/32 inch washer under the upper left hand motor attach screw, which provided a small amount of down and right thrust.

Follow the instructions in the VL-101 Electric Flight System instruction book when charging the battery. I used about thirty seconds of charge at two amps for initial flights. After initial adjustments are complete, give the battery a full charge and set her on a smooth surface for a most realistic takeoff and flight. You can almost hear the old Szekley purring away, and you don't have to worry about cylinders flying off like they used to do on the real engines, over 40 years ago!

Good luck if you build the Eaglet, and write to me in care of the MODEL BUILDER, if you have any questions.

The author wishes to acknowledge the following sources of material used in preparing this article:

U.S. Civil Aircraft, Vol. 4 & 5
Sport Flying Magazine, Vol. I, Issue 1.

Pacifier . . . . . . *Continued from page 54*

by finger pressure, open timer, and begin usual starting procedure. As engine fires on its prime and reaches near peak RPM, release finger pressure on fuel line. (Fuselage should be held in such a way so as not to depend on the fuel line control finger for a firm grip.) If engine begins to flood out, pinch the line and hold 'till prop stops, and turn needle valve in about a half turn.

You will find that in a rich condition, the engine can be kept running by applying and releasing pressure to the fuel line. This can be useful, as it gives you time to adjust the needle valve without a re-start. One thing that helps to master this technique is to have the fuel line held in place so that when it is released, it won't jump away, out of reach of the control finger. See "Fuel Blipper" in sketch.

Once you have located the proper needle setting for your engine, it will start consistently at that setting with only minor changes to peak. When fine-tuning your engine, a pacifier system acts much the same as a crankcase pressure arrangement . . . that is if the setting is too rich, the engine will burble and die slowly with an abundance of fuel spitting out of the venturi. If too lean, the engine will run erratic . . . that is, high RPM first, then engine will *seem* to flood out and then catch again, alternating low to high RPM's. Care must be taken while adjusting for a lean run, as there is a vast difference between high and low RPM, but very little needle valve difference. The model will pull strongly, then go rich and relax, making it likely to catch your finger in the prop!

The useful life of a pacifier is determined; 1) by the *brand*, 2) whether or not you are testing or flying in competition on a particular day, and 3) how the pacifier is mounted. The thick wall variety is best. They offer more pressure and last longer. "Binki" is an excellent brand, and can be found in the hobby shop. If not, you can find pacifiers in the baby section of the local drug or department store. If purchased this way, they are complete with all the usual baby apparatus and must be disassembled. Best method of purchase is *not* to explain what you're buying them for!

How long a pacifier should be used is up to you and the type of flying you are doing. Generally, one pacifier is good for a full day of sport or test flying. Remember, however, the longer you use it the less pressure it will supply, causing a gradual decrease in RPM. So if you are contest flying or final trimming, discard a pacifier that becomes limp and mis-shapen (when empty).

How the pacifier is mounted has a definite bearing on it's life . . . not only from the standpoint of how long it will last, but whether it will burst at some unfortunate time, such as, just after takeoff. Some modelers prefer to build a compartment inside the fuselage, and this is fine, *if* the compartment is coated with fiberglass or epoxy resin and is very smooth. The drawbacks to a compartment are; the extra time involved, the extra weight of the coating, and the difficulty in arriving at a smooth unblemished finish. Invariable, there will be a sharp bump here and there, causing repeated bursting of full pacifiers. The bumps I am referring to are hardly visible and can hardly be felt. They are caused by sawdust in the air that lands on the uncured epoxy, causing the resin to build to a peak around the particle. If this happens, and you are plagued with bursting pacifiers, put a balloon over it and band it. The easiest way to

do this is to put a 1/8 diameter hole at the end of the balloon and squirt some fuel inside before slipping if over the pacifier. The hole will allow air to escape from between balloon and pacifier making it easier to install in fuselage. The fuel will lubricate the pacifier.

The alternative to an inside installation, and what I have switched to, is an *external* pacifier mount.

"HOT TIPS AND SNEAKY TRICKS"

Cox engines using pacifier pressure systems are much easier to adjust, and hold a setting far better, if a "Kirn" needle valve, body and venturi are used.

On 1/2A ships, a rolled pacifier will give maximum pressure with a minimum of fuel, resulting in a neat installation and less weight.

Timers that are strong enough and are consistant, are hard to find these days. For the best timer we have found, see MODEL BUILDER MAGAZINE, March '75, for the Satellite City "YOU CAN MAKE IT" article on camera timers.

We use Hi Johnson Model Products fuel bulbs to fill pacifiers, as they are strong and will not come apart under the squeeze necessary to fill pacifiers.

THERMALS. •

Soaring . . . . . *Continued from page 29*

they will keep bouncing if someone doesn't make the effort to put them into action. Send in any rules proposal that you feel is worthwhile. If you don't do it, it won't get done . . . and then I'll have to listen to another couple of years of griping!

* * *

New products that are on the horizon would seem to mark a trend toward more serious, competition-oriented sailplane that may or may not become available during 1976 is the "Mariah." This is a fiberglass and foam hybrid that will be the essence of aerodynamic purity. Jack Chambers, of Mission Viejo, California, is the designer/craftsman who has conceived and executed this work of art.

And work of art is no exaggeration

in describing the Mariah. No detail has been overlooked to assure the ultimate in aerodynamic "cleanliness." Jack is using his own very thin, undercambered airfoil on an 80 inch, high aspect ratio wing. The trailing edge comes down to a razor edge. All control horns are enclosed within the slender fiberglass (epoxy resin) fuselage. The rudder is recessed into the fin to provide an absolutely gapless joint. The all-flying stab, which mounts atop the T-tail, has a molded fairing which seals the joint between the fin and stab. The wing fillets are faired back progressively all the way to the tail to eliminate any turbulence that may be created at the wing/fuselage junction. Attention to minute details extends all the way to the wire tail skid which is filed to an airfoil cross section! The present prototype of the Mariah uses a built-up wing, although production versions will have a foam wing. The Hoerner anti-vortex tips are formed from fiberglass. Projected price for the highly prefabricated kits is to be in the $250.00 range.

A very well engineered, well built soaring accessory is in the works now from Scott Research. Greg Scott will be manufacturing an all metal, die-cast, releasable tow hook. The design will be most unique, in that it can be operated as either a conventional open hook or as a "captive" hook, which keeps the plane securely on tow until released by radio command. The all die-cast unit will include a built-in return spring and will come completely assembled. Selection of the mode of operation can be made immediately prior to hooking up the tow line to the model. Since the hook will be cast from aircraft alloy aluminum, it should be nearly indestructible.

Other new developments to look for in the near future will include: A new kit from Pierce Arrow Co. . . . the Pierce Paragon. This ten footer is a real lightweight, with amazing handling characteristics. Paul Parszik's J.P. Models will be releasing its Javelin II. This 134 version of the standard class Javelin has undergone extensive revisions since the prototype, and should be a real competitor. Ten foot wings for the Hobie Hawk will probably be available soon, and a set of short, high aspect ratio racing wings shouldn't be too far behind. The rumor mill says that Craft-Air is working on a new giant sailplane that is aimed at FAI competition . . . and it supposedly is to be even larger than the Leo that Craft-Air now kits! Cecil Haga is well on the way to producing a 100 inch version of the very popular (and competitive) Legion-Air. Two small "fun" planes have appeared recently. The Rubber Duck, from Performance Flight Systems, a foam and plastic hybrid for thermal or slope, and the Bunny, a cute, all wood six footer from Superior Flying Models. Both look like solid additions to the range of planes available for the sport flier. Obviously, the hardware is keeping up with the state of the art . . . now all we have to do is use if effectively.

Jim Gray sent us a most interesting article on soaring birds, and their relationship to R/C soaring. Since I'm so long winded, we won't be able to print it in one chunk, but we will spread it over the next two or three issues. And I don't want anyone telling me that this column is for the birds! Jim, the floor is yours . . .

I'd like to refer you to the interesting several-part article by Jim Gray, beginning in this issue. Entitled "Is Soaring for the Birds?", Jim writes about soaring birds and their relationship to full-size and R/C sailplane soaring. If only our feathered friends could talk! ●

Hannan . . . . . *Continued from page 46*

tional and entertainment value to their builders, they serve museums all over the world, having certain advantages over the full-size counterparts: First, museums are almost universally short of space, and thus simply cannot accommodate as many large aircraft as might otherwise be desireable. Then too, one cannot get far enough away from a real airplane, cooped up in a room, to see it in one sweep of the eye. Thus, a model may give a much clearer understanding of overall configuration. Also, models enable easy and graphic size comparisons, if constructed to a common scale. Finally, many full-sized aeroplanes owe an immense debt of gratitude to models which have served to test theories without risking pilots. Perhaps the majority of the world's production aircraft first flew in "effigy" for wind-tunnel tests.

ALEXANDER GRAHAM BELL

Best known for his work in the communications field, Bell was also an avid aeronautical experimenter and kite enthusiast. He and his associates worked for more than a decade in an effort to establish aerodynamic principles to improve flight efficiency and safety.

In 1907 he wrote: "I have had the feeling that a properly constructed flying machine should be capable of being flown as a kite; and conversely, that a properly constructed kite should be capable of use as a flying machine." Bell assembled huge kites of complex design, fitted together like honeycombs, combining the qualities of light weight, strength and stability. In December of 1907, one of these tetrahedral kites lifted Army Lt. Thomas Selfridge some 168 feet above Cape Breton's Baddeck Bay.

As it turned out, Bell's chief contributions to advancement of aviation were more indirect. Among the young and talented researchers who continued on their own after Bell's efforts were discontinued, was one fellow destined to become a leading light in aircraft design. His name? Glen Curtiss.

GOODBY TO VTO

While the controversy over the new A.M.A. free flight competition rules regarding hand-launch rages on, Dave Linstrum, long-time editor of Model Airplane News' V.T.O. column of news, has decided it is time for a change, and has announced a contest to select a new title. Prizes will include merchandise and M.A.N. subscriptions. All entries must be postmarked by March 1st, with the actual winning title to commence with the June, 1976 issue, which represents Dave's ninth year with the magazine. All entries should be sent to Dave, c/o Model Airplane News, White Plains Plaza, One North Broadway, White Plains, N.Y. 10601.

STICKY ISSUE

Among the items declared illegal to carry in passengers' luggage, according to a recent FAA directive, is model airplane glue! *(If it's hidden in your luggage, how do you suppose they'll sniff it out? wcn).*

INVERTED FORTUNE

Remember the "upside down" U.S. Airmail stamp of 1918? Well, according to a UPI release, a single example of this type was recently sold for a staggering $45,000! The anonymous purchaser wanted it as a Christmas present for his wife. There must be a message here somewhere.

ANOTHER BALLOON PUNCTURED

Old 1975 was a tough year for credulity. As it turned out, there seemed almost nothing that could be counted upon as reliable, especially among world governments. Considering that they are all made up of politicians, perhaps this should not constitute too much of a surprise. And yet, we all seem to have an inner need to have faith in SOMETHING. Latest hoax, revealed by the Navy, was the World War II shark repellent, issued to all military pilots. Turns out that the stuff is totally worthless, and was intended only as a psychological crutch. In recent tests, some sharks actually ate it. Next thing we know, they'll be telling us that there really is no Easter bunny either!

AEROMODELLER ANNUAL

The 1975-76 edition, edited by R.G. Moulton, and illustrated by A. A. P. Lloyd features none other than "Plug Sparks" editor, John Pond, both on the cover, and inside, in the form of an article on his favorite "Old Timers" subject. Other contents include 3-view drawings of Wakefields, A/1 and A/2 gliders, F.A.I. free flight power models, as well as U/C and R/C sport models. Feature articles cover a wide array of subjects including rubber speed (by Charlie Sotich); unusual model engines; Pennyplanes (by Dave Linstrum); U/C combat (by P.S. Richardson), and a host of others, including a selection of handy hints from California Flightmasters. If not available in your area, these books may be ordered directly from the publishers. In fact, we suggest that you send for the complete Argus book list, which covers virtually all aspects of model building. The easiest way to do this is to obtain a couple of International Reply Coupons, available at low cost from your local post office. Send to: Model & Allied Publications, Argus Books Limited, Station Road, King Langley, Herts, England.

MOONEYS CELEBRITIES

Walt and Carole Mooney attended a school reunion in Ripon, Wisconsin, and managed to find time to attend a model aircraft meet. The proceedings were covered by TWO newspapers, and occupied nearly full pages. We would like to quote a few passages from one of them, the SQUIRE:

"What a day it was for Ozaukee County 4-H Aeronautics Project members and other area model plane hobbyists! On Sunday, Oct. 19, the Parkview School gym was the scene of a never-to-be-forgotten model plane flying session which saw local youngsters (and oldsters) learn the secrets of making model planes fly from one of this country's leading aeronautical engineers and model plane experts.

"Walt Mooney, of San Diego, is an aeronautical engineer who has designed planes for Helio, Convair, and other manufacturers of commercial and military aircraft. He is also a designer and builder of private aircraft. His "Honey Bee" is on exhibit at the Experimental Aircraft Association Museum in Hales Corners . . . A graduate of Ripon and M.I.T., Mooney is also a pilot, one of the few who competes in aerobatic stunt flying with unpowered gliders. He is also the most prominent expert in the field of small free flight model planes which are exact replicas of real planes. His articles and plans for these planes appear in model plane magazines

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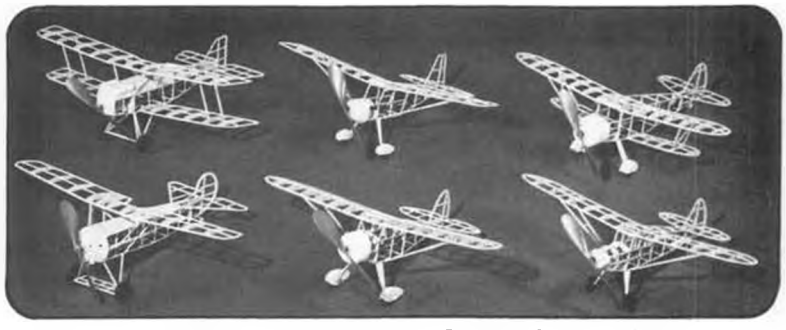

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throughout the world, and his works appear in "Model Builder" *(Hooray!)* magazine in the United States . . . Dave Gibson of Cedarburg suggested the model flying session. Walt arrived at 10 a.m. and worked with local modelers. A number brought their "unflyable" models with them with the purpose in mind of seeing what Walt Mooney could do with them. True to his reputation, every single plane was adjusted by him to fly for long flights.

"All those present will remember forever the warmth and genuine interest of both Mr. and Mrs. Mooney. Walt kept the session going with endless anecdotes regarding flying sessions with the world's top model experts, and with a continuous stream of suggestions, advice, and aeronautical engineering principles that apply to model planes . . . Yes, it was quite a day for model plane hobbyists, that Sunday in Cedarburg when the top man visited, rolled up his sleeves, and helped modeler after modeler make his planes fly. Walt Mooney is a man and a half, and no one there will ever forget the experience."

REFLECTION TIME

This column is being written shortly before the end of 1975, traditionally a time for reviewing the events of the year, and looking toward the future.

Along with best wishes for the new year, we would like to thank you contributors who have kept us supplied with photographs, fresh ideas, news items and encouragement. At times the column seems almost self-composing! And to you loyal readers who continue to favor us with your attention, our appreciation.

From a personal standpoint, the highlight of 1975 was a chance to venture overseas for a first-hand look at aviation, and the opportunity to visit with enthusiasts in other lands. While we only have room for a capsule summary here, we hope to expand upon some of our findings in the future.

Such an adventure involves careful planning and the assistance of many people, and to all of them my gratitude is extended. Such people as J. D. Gillies, Ted Hannan, Pearl Reynolds, Fay Corswirth, The Williams Brothers, Bob and Sandy Peck, Fulton Hungerford, Dave Linstrum, Mr. and Mrs. C. G. Scott, Bill Warner, Walt Schroder, Bill Winter, and the staff of the San Diego Aerospace Museum contributed to the success.

The voyage was conducted with the precision of a space mission, complete with vital timing, rendezvous points, and even a Lunar Excursion Module, in the form of my good friend Doug Gillie's Mini auto. Doug's voyage started from Glasgow, Scotland, while mine began from San Diego, California. Our link-up destination was Paris, where we were met by enthusiastic model builder Georges Chaulet, who served as our guide and translator, in addition to keeping up our spirits with his unique sense of humor. (He writes children's books for a living).

We toured the Musee de l'Air, Conservatoire National Des Arts Et Metiers (where the ORIGINAL cross-channel Bleriot is located) and even tried our luck in the French Metro underground railway. Next we visited Maurice Bayet, Editor of M.R.A., the oldest of all French aviation magazines. Maurice knew most of the pioneer aviators first-hand, and is a fountainhead of knowledge on such subjects. We then visited "Baby Train", a large Paris hobby shop, and went to the home of Mr. and Mrs. Jean Marc Geiser, who displayed a powered Rogallo (full-size) plus many fascinating helicopter models. Both Geiser and Chaulet have done a great deal of original pioneering in the field of motor rotorcraft, including R/C.

Regretfully taking leave of our French friends, we Minied to the coast and took the auto ferry to Southern England. Mr. Jack Porter had kindly reserved rooms for us in Haywards Heath, a delightful village within handy train distance of London. From here we sallied forth to visit Aeromodeller writer Eric Coates and his charming wife. Eric specializes in all forms of scale models and we were fortunate in being shown his workshop. Next, to the home of Mr. and Mrs. P. T. Capon, autogiro specialist, historian, and long-time modeller for an all-too-short visit.

Next on our agenda was a trip to the Imperial War Museum, followed by a tour of the London Science Museum. Outstanding aviation and model exhibits in both places. Then, lunch with Philip Jarrett, Assistant Editor of AEROPLANE MONTHLY as guest of P. T. Capon. Then, to Foyles book store, reputedly the world's largest, followed by a tour of Beaumont's, pro-

bably the largest exclusively aviation-oriented book store extant.

A quick trip to Norman Jones' Tiger Club, and Cierva Rotorcraft Ltd., both located at Red Hill Aerodrome, then off to see artist/aeromodellers Ken McDonnough and David Deadman, and their outstanding productions.

The following day, onward to the R.A.F. Museum of Hendon, followed by the Mosquito Museum, and winding up at the home of author/historian A.J. Jackson, famous for his Putnam series aviation books. Then a tour of the Southend aero Museum, and a day later, the fabulous Duxford air display, followed by two days at Old Warden, home of the Shuttleworth collection of antique (Magnificent Men) type aircraft.

Ray Malmstrom, the Walt Mooney of England, was our next delightful host in company with his charming family, then back to Old Warden, where we flew models with John Blagg, and met Mr. and Mrs. Etheridge, David Ogilvy and Wing Commander Guttery.

Ron Moulton, P. S. Richardson, and the rest of the staff at Model & Allied Publications rolled out the carpet for us in Hemel Hempstead, home of Aeromodeller, Scale Models, and other fine magazines. A fine crew all! Ron took us for a guided tour of local aerodromes and a visit with Don Baxter, genial owner of the MODEL EXCHANGE, who gave us a rundown on the hobby shop business in England.

An unexpected bonus next, in the form of a visit with Mr. Gerald Wingrove, one of the world's outstanding professional scale modelers. To actually sit at the workbench of this master modeler was a rare and humbling experience. Mrs. Wingrove treated us to tea while we examined the dazzling display of miniatures.

Aeromodeller John O'Donnell and family were our next hosts. John is probably the single most competitive-minded modeler it has been our pleasure to meet, and for years wrote the free flight competition column in Aeromodeller magazine.

Another stop, this time in Liverpool, at the home of Doug McHard. Here, Doug and Roly entertained us well into the wee hours, showing the extensive collection of scale models, library and engine displays. The following morning was devoted to Doug's guided tour of the famous MECCANO toy factory.

Then, onwards to the highlands of Scotland, breathtaking in beauty, and abounding in the friendliness of the Scottish people. The perfect place to "run down", relax a bit and review our experiences. In between visiting museums and airports, that is! Also, a time out for an excellent meal and aircraft slide show in the home of Tom and Joan Black. Tom is a former Lancaster crewman, and both are terrific photographers.

An all-too-brief visit to the home of 3-view draughtsman and aeromodeller Frank French and family, followed by an awe-inspiring aerial voyage in a French-built Cessna 172, flown by Charles McLean and Norrie Provan (where else can one get imitations of Dean Martin aloft?)

Finally a chance to delve into the extensive archives of Doug Gillie's, savor the good Scottish meals *(would you believe fish and chips prepared by ITALIANS in a take-out shop?)* and prepare for the flight back to California, and reality. All told, this pilgrimage covered some 15,000 air miles plus another 2,000 on the ground. All as a result of an interest in aircraft. My belief in the strong ties generated by mutual interest was greatly reinforced. Everywhere we went, the reception by fellow modelers and enthusiasts was overwhelming. In a world rendered unstable by selfish and incompetent politicians, friendships take on a vital importance. Perhaps unity created by such person-to-person communication offers the best ray of hope of a better world. ●

Peanut . . . . . *Continued from page 47*

practice (don't forget to put stringers on the fuselage in pairs to keep everything squared up as you go), and should present no difficulty. If you will be flying your Paraplane only indoors, and want a lighter model (this one weighs almost an ounce), you may cut lightening holes in the wing ribs, use balsa wheels (from OLDTIMER Models, Box 18001, Milwaukee, Wisc. 53218), and make formers F4, F8, F9, F10, F14 and F15 from 1/32nd sheet instead of 1/16th.

FLYING: I usually make up my rubber motors about half again as long as the distance from hook to hook, as this gives me a little extra rubber but still doesn't affect the balance to any great degree. The model should balance as shown on the plan (my Paraplane balanced OK without any added weight). The angles of the flying surfaces and thrust-line shown on the plan are as my model trimmed out . . . You might need more downthrust and maybe a little right thrust.

I flew this model with a 6 inch Testors prop, from one of the "ready-to-flys", but any good 6 inch plastic will be fine. The model will R.O.G., but prop clearance is about zilch, so get it trimmed and flying well before you try it! We haven't located an indoor flying site in my area yet, so my Paraplane has only been flown outdoors. If you fly indoors, you might need to use a prop with wider blades or a lighter rubber motor, as this model, powered per the plans, climbs like crazy!!! ●

Saucer . . . . . *Continued from page 35*

vator apart along the hinge line, cut a shallow "V" notch out of each half, just big enough for the wire, and then glue parts back together. Tank and engine mounting are not detailed, as this will vary with each builder.

The original "Killer" was covered with "bullet-proof" yellow Coverite and clear doped about four times.

Now then . . . load the tank, fire up the engine, and get a good "out of the circle" launch. Happy flying! ●

F/F Scale . . . . *Continued from page 45*

flush rivet appearance is desired, select either a brass or aluminum tube, the diameter you want the rivet head. Sharpen the end of the tube so that it is razor sharp. Wherever you want flush rivet detail, just push the tube into the surface very carefully. If you push too hard you're liable to pull out a plug of material. This flush riveting detail should be done only after you have completely painted and finished your model. Usually, this type of detail looks best only around the cowl areas.

One useful tool I have around that I'm sure not many modelers have looked into is the insect pins. These pins are used for mounting and displaying insects. The advantage of using these pins in modeling is that they are long and very thin. The size I use has a diameter of .017. This small diameter is ideal for holding down very thin balsa stock without splitting it. Often, when building peanut models, the use of regular pins is almost like using nails. These insect pins also make it possible to use fewer pins, since pinning through the wood is possible. The only source of supply of these pins that I know of is from biological supply houses. You'd have to check the yellow pages of your telephone book, or check with a high-school biology teacher for a possible source. These pins are truly useful and should be on hand for those delicate jobs.

I received a nice letter from Frank V. Hansen regarding airfoils. He comments that the excellent qualities of the RAF 34 airfoil are due to its being a reflexed airfoil. That is, that the trailing edge turns up a little. Excellent qualities are a trademark of reflexed sections, since the moment coefficient (C Mac) is positive and the center of pressure travel vs. the angle of attack is favorable. Frank suggests looking into the M-6 and the 2R212 airfoils both of which have similarities to the RAF 34. He also recommends getting a hold of the following two publications: "Handbook of Airfoil Sections for Light Aircraft," Rice, M.S. (1971), Aviation Publications, P.O. Box 123, Milwaukee, Wisconsin, 53201, and "Theory of Wing Sections," Abbott, I.H. and A.E. von Doenhoff, Dover Publications, Inc. 180 Varick Street, New York, N.Y.

The first Flightmasters scale contest for 1976 is scheduled for March 28, at Mile Square Park, in Fountain Valley. This will be for rubber scale (no separate peanut event), gas scale, including CO2. No electric power to be included since there is a separate contest for electric, April 25th, at Mile Square. There will also be a special Thompson Trophy event for rubber-powered models of the Thompson racers. This is the event in which six models are launched at the same time. Rules for this latter event will be forthcoming. ●

Birds? . . . . . *Continued from page 61*

the means to drastically reduce the bird's energy requirement . . . soaring! During soaring flight, a bird can literally "rest on the wind", and I've read that albatrosses even sleep while soaring. I'm not sure of this, and I don't know how the reporter of such a "fact" could tell whether the albatross was asleep or not; but that's the story for what it may be worth. *(Jim maybe the reporter was saying that albatrosses* "snore when they sleep" *instead of* "sleep while they soar." *wcn)*

I expect that all birds of prey are capable of soaring, but I'm not sure of this. In any event, soaring extends the hunting "territory" of a soaring bird of prey. It seems reasonable to suppose that other birds, including scavengers and fishing birds, can also soar . . . but may or not, or need not, depending upon their environment and food availability . . . and their inclination to "play".

The wings of land soaring birds are remarkably different from those of sea soaring birds; the former having relatively short, broad wings of low aspect ratio and the latter having long, thin, high aspect ratio wings. Why? I believe the answer involves several hundred

thousand years of natural selection and adaptation to different environments. Hawks, eagles and other land soarers have available to them a plentiful supply of lift in the form of thermals generated by differential heating of the terrain over which they fly. In contradistinction, sea soaring birds spend a large amount of time soaring over water, far from land. These birds fly in lift provided by an entirely different mechanism . . . horizontal velocity gradients of the wind. They are capable of "dynamic" soaring. Close to land, they slope soar over cliffs and rocky outcroppings and, of course, sand dunes but seldom, if ever in thermals.

(The author recently inserted the following correction to his own comment that seagulls do not thermal-wcn)

("It is an error on my part, stemming from lack of observation or lack of *sufficient* observation; having to do with my statement that gulls seldom, if ever, thermal soar. Wrong, wrong, wrong! I stand humbly and abjectly corrected, for the gulls themselves showed me to be in error!

"While flying on three separate occasions this summer in the area of Horseheads, New York (perhaps 20 miles downwind of Lake Seneca and Watkins Glen), I saw flocks of gulls ranging in number from five or so birds to more than fifteen birds . . . *thermal* soaring. On each occasion, the birds were several thousand feet above terrain and all birds were wheeling in a majestic spiral within what appeared to be a large thermal. Also, in each instance, the wind was generally out of the north at perhaps ten to fifteen knots; yet the day was sunny and thermals abundant.

"After observing these birds drifting downwind within the thermals, I reasoned that they had been slope soaring or food hunting along the southern shores of Seneca Lake in the vicinity of Watkins Glen, and had either inadvertently been caught in a thermal, or what seems more reasonable, had actively sought the thermal and had soared in it to several thousand feet while drifting toward my point of observation. Perhaps they had "worked" several thermals. In any case, they did not appear to be attempting to work back upwind toward the lake, but continued downwind . . . still in the thermal . . . until out of sight.

"I know that our sailplanes never got anywhere close to the gulls, even at the greatest altitude we reached; so I would guess that their altitude may have been more like five thousand feet.

"This interesting phenomenon, repeated on three different occasions several weeks apart, raises many questions in my mind: Did the birds continue downwind, hopping from thermal to thermal in their version of a migrating flight? Did they ever return, perhaps in the evening? Why did they allow themselves to go as far if not migrating? Were they pleasure soaring? Do gulls often fly overland or between bodies of water in this fastion? Are gulls inherently lazy, using any kind of lift that is available to suit the need?")

Thermals are scarce over large bodies of water and far out at sea. Water is an almost infinite absorber of thermal energy during the daytime, giving it up again only after sundown. As a consequence, sink is the rule over water during the day, and to some extent, mild lift, or at least "zero sink" in the early evening. Interestingly, because of land heating during the day, on-shore breezes prevail and strike the seaside cliffs, offering plenty of slope lift; while at night, because of the temperature reversal and change in heat flow, breezes tend to be off-shore. This condition happens to coincide fairly well with the sea birds' habits, probably because they adapted to these conditions in order to survive, finding on-shore breezes useful for morning take-offs from cliffside nests.

("I have since heard that thermals, contrary to my belief, do occasionally form over bodies of water. For example, a French pilot recently flew to the island of Corsica in the Mediterranian Sea from the mainland of France . . . using thermal lift under well-developed cumulus clouds all the way. The pilot reported that the clouds extended out as far as the eye could see over the ocean, and he was tempted to fly to another (Italian) island, but did not do so for lack of international clearance, and not for lack of lift. Thus I've learned that two well-meaning errors and beliefs have been exploded by fact . . . Live and learn . . . ")

Land birds nest in woods and forests and find their food nearby in open fields and scrub or brush copses bordering them. In this sort of environment, the long and heavy wings of sea soaring birds are at a very great disadvantage. Land soarers must be able to fly in and out among closely spaced branches and

thick foliage. Hence, natural selection processes have given them shorter wings suited to this environment. Happily, short, broad wings of low aspect ratio are superior for thermal-only soaring, more so than the long, thin high aspect ratio wings of the sea soarers. Wings of low aspect ratio provide great area at little cost in weight, because the "spar" strength need not be so great and weight so heavy, as in sea birds. Short, light-weight wings are excellent for short turning radius, because of low inertial moments, enabling their owners to circle tightly and quickly in even the smallest thermals. (See Appendix for notes on sailplane designs employing short vs. long wings of different aspect ratios.)

Absent the woods and branches which limit the spans of land soarers, the wings of sea birds can afford to be long and thin. Such wings have inherently lower induced drag, hence better gliding performance, than low aspect ratio wings. The long, high aspect ratio wings require deep, strong "spars" and consequently have much greater weight. Thus, kites, herring gulls, skuas, cormorants, gannets and other sea birds have superb equipment for their environment. Nesting on cliffs, they can almost always find slope lift in the prevailing breezes, scarcely needing to flap in order to take-off. When grounded on land, albatrosses (Gooney Birds) are able to rise only with the greatest difficulty, and sometimes not at all. They lurch and stagger, amid great flapping and scramblings . . . assisted by whatever amount of breeze they can find . . . until airborne. There, they become the epitome of soaring grace, beauty, and efficiency.

Next month, Jim gets into the geometry and structure of soaring bird's wings. wcn •

Sander . . . . . *Continued from page 23*

locked to the flat, or zero position. Next, the dihedral jig is slipped into the tongue groove and the wing is set in place. By sliding the jig toward or away from the root, the proper dihedral is set, and the wing is rubber banded to the jig. Now the root of the wing is aligned with the sanding block by lightly operating the block while easing the wing toward the block. Once things are lined up, the wing is gently forced against the block with one hand, while the other moves the block back and forth, sanding in the required bevel. Use the course grit first, then the finer.

The opposite wing panel is done in the same manner, but watch those nearly symmetrical wings! The leading edge of the second panel must be at the opposite end of the Miter Sander from the first panel, or you'll have dihedral in one, and *anhedral* in the other.

For beveling sheet, block, and strip stock, the adjustable tilt table may be used without the long dihedral tongue. In this case, the "T" alignment jig is located in the groove on the tilt table, thus keeping the material perpendicular to the sanding block. Bevels up to about 50 degrees are possible.

Users of cyanoacrylate glues, such as "Hot Stuff", will really appreciate the precise bevels made on the Miter Sander, as this type of glue requires a perfect mechanical joint. And on anything but the smallest of strip-wood joints, you can't beat the precision work of this tool.

The Deluxe Miter Sander kit sells for $24.95, and the Standard model, which handles materials up to 10-1/2 inches wide by 1-1/2 inches high, sells for $14.95. The latter does not include the dihedral tongue unit. •

Choppers . . . . *Continued from page 22*

straight as it makes its take-off roll! During flight, the rotor is kept in constant autorotation by the oncoming airstream. As mentioned above, a hefty engine is required to overcome the resistance of the fuselage, the accessories, and the rotordisc, which in some cases can be of quite noticable value.

Constructionwise, the Helix is very straightforeward and can be completed in 4 days, including paint and trim. I began by cutting out the fuselage formers and cementing them in place. Three basic formers, gusset plates for the engine, landing gear, and rotor-shaft complete the basic structure. The main gear is held in place with two nylon shear bolts, and the tailwheel fork is bolted into a small plywood gusset at the rear of the fuselage. Five-minute epoxy was used throughout except for the engine and landing gear plates, where Stabilit Express is recommended.

The horizontal stabilizers are built up from 3/8 inch balsa strips and covered with 1/16 sheet balsa. They are held in place in the same manner

as most sailplane wings, with 1/8 inch music wire spars and brass tube guides. The Helix has no elevator, since attitude is controlled by a conventional swash-plate driving the stabilizer paddles and rotor blades. Direction control is maintained with a more-than-adequate rudder carved from a solid balsa sheet.

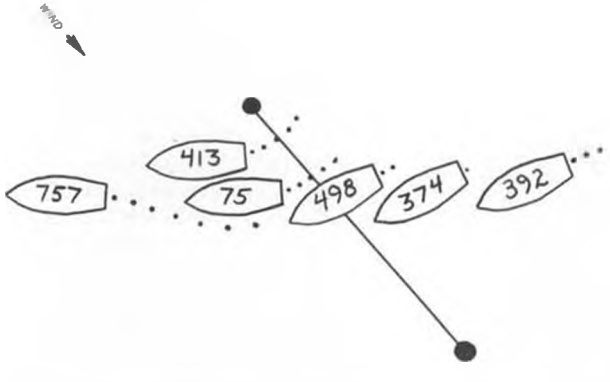
The HP 61 engine was mounted on a Kraft motormount without downthrust or side thrust. The plastic engine cowl was then cut to fit and throttle push rod installed to complete the power pack. Kim, who is the engine expert in my family, insisted upon using a 12 oz. fuel tank because of the high fuel consumption.

A Schluter swashplate is furnished, assembled, as well as the Cardon head, which needs only a 10 minute assembly to the rotor hub. The upper bearing mount is then installed on the pylon and the main shaft inserted through the fuselage. The biggest surprise of the entire kit was the free-wheeling clutch, which connects the starting pulley shaft with the main rotor shaft. This little jewel looks exactly like a typical "stabilizer paddle-bar" roller bearing . . . it *is* a roller bearing when the rotor is autorotating, but grips the main shaft firmly when the pulley drives the rotor.

To make a long story shorter, 4 channel radio was installed and the proper adjustments made in accordance with the instructions. Final paint scheme was K & B Super-Poxy Orange.

All that remains is to fly the beast. And that is where my 4 days ran out! I'm not too sure I would have flown it if I did have the time, 'cause I wanted to study up on my gyrocopter theory before launching it. I did, however, come up with different method of try-

Sailing . . . . . *Continued from page 22*



PLUS 25 SECONDS: As the parade to the weather mark begins, we see the benefits that clear air can bring. No. 757 has already stretched out a boat length and has come up to weather a little high of the course in order that any boat that tries to overtake her will have to sail below her and through her bad air. A good tactical manuever on 757's part and one that will consolidate her lead. The rest of the heat is left just about where it was, with little chance for escape, the only boat with half a chance being No. 392, who ought to be able to sneak by to weather of all of them. The others, from 75 on back, will probably have to fall off to clear their air, as tacking on a leg that is a straight shot to the next mark is suicide in all but the most extreme cases.

Before turning away from the lake, the photographer took a shot that was 45 seconds into the race. The 757 boat had drawn out to 5 boat lengths, 413 and 75 were still gunwale to gunwale, 392 had passed 374 to leeward and was drawing up on 498. The eventual finish I do not know, but I am certainly a believer in the words of one skipper, who claims that a good start is 40% of everything required to win a race.

In retrospect, the fellow who won the start, did so by observing the rules for light-air sailing. He kept his boat moving, made broad sweeping turns, avoided the influences of other boats, and took no chances in interacting too closely with other boats. As I pointed out, handing your opponent 2 foul points in no way enhances your own score. A collision may leave you dead in the water . . . dead right at the protest meeting, but dead in the water as if you'd been wrong.

In future columns pointed at the racing skipper, we'll touch on mark rounding, tactics on the weather legs, and a little bit of the racing rules which apply in such situations. The AMYA racing rules are now being studied by a committee headed by Rich Matt and members Rich Whan and Sandy Littlejohn. Contact any of those fellows with your questions or suggestions for revisions. I'll field questions directly at 7608 Gresham St., Springfield, VA. 22151, or in care of MODEL BUILDER. ●

ing it on for size! I talked my boys into mounting it on the top of our pick-up truck and drove down the road to see how much lift was developed. Boy, was I surprised when the rotor streamlined into the wind and refused to rotate!

After much experimentation with different speeds and angles of attack (with no luck), I got the idea to spin the rotor by hand to get it started. Sure 'nuff, given a good hand-spin while driving about 20 mph, it suddenly started into autorotation with the typical swish-swish sound, and really wound up! The lift was fantastic, and it was all we could do to hold her down. Now I know why the starter pulley is there; that rotor just won't self-start at any speed!

This next week-end, I'll give it a go at the local flyin' field . . . (if I can get up my nerve). 'Till later then, with a full report, BCNU. •

F/F . . . . . *Continued from page 53*

several metal files. A tap will be needed to provide the threads for the 4-40 set screw. Takes a bit of time . . . usually one evening will do it, but the results are really worth it. Using a set screw, you can replace the skid with a different one should the original become bent completely out of shape. You will need to file a flat on the wire, where it will come in contact with the set screw . . . so that the screw has a contact surface.

The skid assembly is held in place by the same bolts which hold the engine mount to the firewall.

If you have trouble locating sheet metal of the necessary size, try the scrap bin of a local heating and sheet-metal shop. Quite often, such metal is available from an auto junk yard, too. Give them a try.

If you don't care to remove the skid from the model, you can build it in as part of the structure, but be careful. You must fasten it very securely in the fuselage, using thread or wire, and epoxy. Ideally, it will be surrounded by metal, or held in place by J bolts. Where the wire exits the fuselage, it should have a metal shield (see pix). I used such a set-up on my Dixielander . . . the upper leg of the gear was bent and inserted into the spruce leading edge of the pylon, and the gear exited on the bottom of the fuselage. The entire structure was bound with thread and epoxied together, then a piece of 1/16 sheet magnesium was placed over the gear at the exit point. This did the trick for 4 years.

Last October, the gear finally broke loose inside the fuselage.

In parting, the gear will last a long time if all joints are metal to metal. Anything less will not be satisfactory.

As mentioned last month in this column, you can get landing skids all bent to shape and in several diameters, directly from NFFS Supplies and Service.

Until next month, may all of your rafters be soft and your rubber unbreakable. May your skies be blue and your flights be maxes. May you be where the soft winds blow and the thermals are friendly. This, as heavenly as it sounds, is likely to happen the day after you've returned to work.

Thermals. •

C/L . . . . . *Continued from page 37*

something wrong, yet the official AMA literature says the handling of the matter was upheld. From this, I guess we can assume that sometime in the future, one of us can be hassled about most anything without any regard at all to what the rule book says. If it was OK once, I guess it is OK to do it again. Oh yes, you can get three guesses as to who wrote the above quote in the AMA Monthly Mailing. And the first two guesses don't count, the question is so easy!

To recap a little, I want you to notice that the whole thing started because Carlos didn't have the right numbers on his plane. So Carlos started the whole thing when it comes right down to it. And he didn't help any by simply ignoring Jean Pailet's initial letter. This letter should have been answered, even if all he did was to quote the rule book to Jean. The contest was over, no protest was filed, so Carlos didn't need to defend himself in any way. But he could have at least acknowledged Jean's letter in some way, which would probably have kept the matter from going to John Worth, who really botched things up.

Even though Carlos started things off with an illegal plane, lax CD'ing helped things along, and then Carlos ignored the letter from Pailet. The real problems came when Pailet and Worth tried to make up their own rules, ignoring established AMA procedures. I have to go "by the book" and so do you. Why

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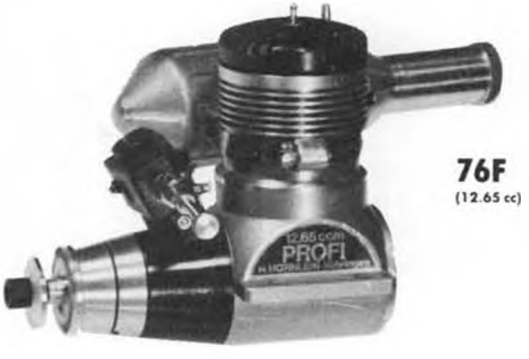

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should AMA HQ think the rule book doesn't apply to them?

Some may feel that HQ was somewhat justified in hassling Carlos, as his entry was not legal, due to the wrong numbers being on the plane. I feel otherwise. As far as I am concerned, Carlos could have used a 40 on his Profile Carrier. Carlos entered a plane, was allowed to use this plane, won with it, and nobody filed a protest. Without an official protest in hand, there could be no justification for approaching Carlos with questions, let alone threatening his 1975 competition status.

Now you know what happened. But what came of the whole thing? Not much. The word was put out that processing at future Nats would have to be a lot tighter so something like this wouldn't happen again. OK, that's good, but what else got settled? Nothing. Evidently John Worth and Jean Pailet still feel they did good, as they have not said otherwise.

If you would like to voice your opinion about the Aloise incident, I would suggest that you write to the V.P. of your District and let him know how you feel. He'll listen and take action if he hears from you. It's your turn, how are you going to handle it?

That's enough of the serious stuff, let's move on.

From the Odds and Ends Department of the Eugene Prop Spinners newsletter, edited by Mike "Nitroholic" Hazel.

"An interesting engine reported on in Aeromodeller magazine is the Piorun 50 made in Poland. It features an exhaust port which faces forward, toward the prop, and severely retarded timing. (?) Really!

"Recently I bought a Sig kit. Packed in the box was one of those AMA F/F identification slips which read, 'This is an experimental model which may be lost in flight.' I certainly hope this is not an indication of things to come, as this was a C/L kit!

"Exercise caution when working with a torch, lest you make an ash of yourself."

Thanks for the n/l Mike, but how come you didn't show at our Turkey Combat Meat (sic)? Combat too exciting for you???!!!

Sig P-51 Stunter one more time. As you may recall, I recently built a Sig P-51 for practicing the AMA Stunt pattern. I built my plane pretty much according to the plans and I like it just fine, but Arlie Preszler, writing in the Headwind newsletter, goes over a few (?) mods he made to his Sig P-51.

"I usually enjoy throwing a kit or two together after the contest season is over . . . sort of a no-brainer building orgy before settling into a time-consuming scratch-built design. When I saw that new Sig P-51, 480 sq. in., 41 oz. (12.3 oz./sq. ft.), I saw the opportunity for a Veco 19 powered 'A' ship for next year's WAM contests that would build rather quickly . . . and with just a little bit of weight reduction, would be real competitive. Now that I am into it, however, I wonder if it would really build at 41 oz. straight from the kit.

"I could not force myself to build as the kit provided. The first thing I did was throw out the 1/16 wing sheeting and substitute contest grade 1/32 for a weight saving of 2 oz. Lanny's crash at the Nats showed that a couple of pieces of strapping tape and 1/32 sheet makes a wing that is tougher than the rest of the airplane. I also violated what the instructions said and used 'Sig Foam Bond' instead of 'Sig Core Bond' for sheeting the wing . . . it works fine for me and saves another 1/2 oz. I cored the wings, leaving two foam spars, Bob Hunt fashion, and the cores I took out weighed a whole ounce. Sig cuts the highest grade balsa that there is, but I cannot understand rock hard material for the wing leading edge . . . this is a Stunt plane, not a hand launch glider that's going to fly into chain link fences . . . I saved another full ounce by substituting my own Sig Contest balsa. The wood for the flaps was better, but I still knocked off 3/4 oz. by using wood

from my own supply. This all adds up to a supposed saving of 5 oz. on the wing assembly. I also added a little dihedral to the wing, since the distance from the centerline of the wing to the engine thrust line is 1-1/8 inches and a Nobler's is only 1" (a larger airplane) – It should help the flying characteristics, having the leadout location closer to the center of gravity. I also added adjustable leadouts, a suspended bellcrank mount, and accessible tip weight box.

"I was originally going to tolerate the slight weight penalty of the ABS plastic parts to 1/4 inch plywood bases and used them as molds. Soaking some 1/16 balsa and pulling it over the forms with stretch bandage and allowing to dry, resulted in light-weight molded balsa parts saving another ounce. The fuselage sides are somewhat hard balsa, but the weight saving would be very slight in substituting balsa . . . besides the neat printed sheets are what I have been advocating for years. The tail assembly wood is of excellent quality and low density, but 1/4 inch stock is a little thin for competition use . . . I'm substituting very light 3/8 material.

"Well, so much for the quickie no-brainer building from a kit. I'm not sure where things will end up, but if the 41 oz. on the box is correct, I should end up with a 35 oz. airplane. After substracting the savings made above . . . that would be real nice . . . I'll let you know what happens. Please, do not take all this as an indictment against Sig, for it is not. Many of the things I and other compulsive scratch-builders do are not practical as kit features, and besides, if Sig put all of their best wood into kits, I wouldn't be able to pick and select the best whenever a new shipment of contest grade material comes into the hobby shop. I appreciate a company trying something new in a Stunt kit, and if I can come up with some constructive criticism when it's all done and trimmed out, I'll pass it along to the manufacturer. Meanwhile, this kit is to be praised for its complete hardware package . . . it even has a tailwheel . . . and the excellent Sig nylon bellcrank."

That ought to give you some ideas to try out if you are a Stunt Freak. Incidentally, the strapping tape Arlie mentions goes from wing tip to wing tip on both the top and the bottom of the wing and the sheeting goes on over the strapping tape. Adding the strapping tape is a good trick, it's been used in R/C for quite awhile, and will do a lot towards preventing a folded-up wing, when the wing is subjected to high-G manuevers. Looks as if Midwest is definitely serious about the C/L market. It is cranking out new C/L kits like crazy! As I write this, the Lil Snip, for .049 Combat, is available. To be released by the time you read this is the Firefly, designed by "Fast" Ed Brident and Rich "von" Lopez, for both FAI Combat and a 15 for power, and WAM 'A' Combat with a 19 for power.

Soon to be released is the Matador, another design from Rich "von" Lopez, and for AMA (Fast) Combat. A C/L Stunt ship is also in the works, but I have no info on when it will be released. Soon I hope, for the Stunter will be the Genesis, designed by Bob Hunt. This will be the first .45 powered Stunter to be kitted by any manufacturer. The Genesis is a well-proven design and Midwest puts out good kits, so I'm really looking forward to this one.

I have a Lil Snip built and ready to fly, but the weather has been rotten lately, so I haven't tried the plane out yet. Next month I'll report on the kit from start to finish, but right now I can tell you that the Lil Snip is sure easy to build. Nothin' to it!

If you read the F/F column in MB, you noticed that Bob Stalick mentioned me in his column in the November '75 issue. A couple of things Bob mentioned need to be set straight! First, I don't fly a "beat-up 1/2A Gassie" in F/F! I am currently using a plenty sanitary Orbiteer in 1/2A and also fly B

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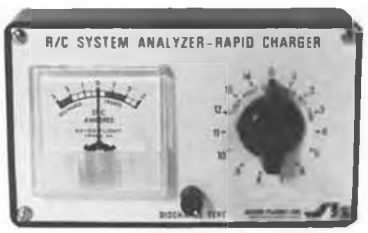

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Gas, Nordic A/2, HLG, Peanut Scale and assorted rubber-powered Sport F/F planes. Last time I saw Bob was at the Hawks Power Bash, at Hart's Lake Prairie, in Tacoma, Washington. He was having every kind of problem imaginable, right down to not even being able to get his foo-foo motorcycle to run! I tried to help him a couple times but not even Dirty Dan could help much. Most of his planes had so many things wrong with them, I couldn't figure out what to fix first!!! And he says that I fly a beat-up 1/2A Gassie!

Also, Bob misunderstood my challenge to him, so I guess I'll reissue the challenge right here in the C/L column.

I, Dirty Dan, being of filthy mind and hirsute body, do hereby challenge Bob Stalick to a get-down, get-dirty HLG/049 Combat contest. HLG to be flown in rounds with both fliers launching at the same time. Last one down wins that round, each flight counts, and the winner of 4 out of 7 flights wins. The 049 Combat is to be flown pretty much by AMA rules as far as scoring is concerned, first to win 4 out of 7 matches wins. Prizes are to be small brown bottles containing liquid refreshment and will be furnished by the loser. As I am doing the challenging, I guess I say let's do it at the '76 N.W. Regionals (a C/L contest) to be held Memorial Day weekend in Eugene, Oregon. All flying to be done Saturday evening.

Well, Bob, how about it? I already sent you plans of the GollyGeeWhiz, Gene Pape says he thinks he can make a Combat flier out of you, and you always seem to show up at the Regionals anyway.

Now I have challenged Bob. Only question left is whether or not I really can beat him. Can Dirty Dan beat Bob Stalick? Hey! Is a bullfrog waterproof?

I like to kid Bob, but he does write an excellent column for MB, much better than the C/L column! Check out what he has to say, you'll be glad you did.

Speaking of F/F, which we are in a way, did you read about the past F/F World Champs? I did, and was very pleased to see that the ceremonies preceding the actual competition featured Combat matches and Stunt flying! Most important F/F meet in the world and a stadium full of people going nuts over Combat and Stunt! But can you imagine how disappointed those people must have been when they went to the contest site expecting to see more Combat and Stunt and, instead, saw a field full of contestants throwing missiles skyward only to watch them float back to earth?! Yuk, yuk!

So much has already been written about the next item that I hesitate to even bring it up. However, C/L fliers are, as a rule, a pretty skeptical bunch and need more convincing than most to try something new.

Have you tried any of the new, super glues yet? You know, Hot Stuff and Zap. If you haven't, you are really missing out on a new building (and repairing) experience. They really work as advertised.

Building with Hot Stuff or Zap is a little more expensive than using Titebond, Willhold or 5 minute epoxy, I'll agree to that. But if you have more money than time, you've just gotta at least try building one plane with Hot Stuff and then deciding if the glue is as expensive as you once thought.

I just finished building a pair of Nemesis II's and I used Hot Stuff almost exclusively in the construction. Devcon 5-minute epoxy was used to glue up the motor mounts, install the bellcrank platform, attach the leadout guides, and to put on the center section sheeting and LE sheeting. Titebond was used to glue the TE pieces together but Hot Stuff was used to glue the ribs to the TE pieces. Titebond was also used to glue on the capstrips, but only after they had been tacked in place with a teeny, tiny drop of Hot Stuff at the front and rear of each capstrip.

Think about that. Everything but the above-mentioned exceptions was put together with Hot Stuff. Yes, I even glued the booms on with it! The planes both came out light, are durable, and of course, went together very quickly. Each plane now has a dozen flights and none of the glue joints have failed. As the planes were flown fast and hard (lots of square loops, square 8's and 180^{o} pullouts from wingovers) something would have let go if the glue joints were weak. In fact, one of the planes was twice bellied-in at about 90 mph when the motor went too lean (I'd rather break a prop and maybe break a plane than listen to an engine do bad things to its piston and cylinder). The plane was not hurt in either of it's short, high-speed landings. So a plane put together with Hot Stuff is plenty strong, I have proved that to my satisfaction.

But repairing bent planes is where Hot Stuff and Zap are really handy. Bent planes always have to be put back together with everything kind of hanging in the air, as they generally can't be pinned back to that nice, flat building board. Also, many of the broken pieces are hard to pin into place. With a super glue, you just hold whatever piece you are gluing in place, put on a drop of glue, hold for a few seconds and reach for the next piece to be glued.

I keep a bottle of Hot Stuff in my Show-Biz toolbox for fixing Combat planes at contests . . . right in the middle of matches! Say you stuff in your Slow Combat plane. The fuse breaks at the TE of the wing, the motor gets dirt in its throat and your prop is now in three pieces. Two years ago you were out of luck when this happened, but

not now. By the time your buddy can change props, flush the dirt out of the venturi (or shove it in further) and put a fresh load of fuel in the tank, you can have the fuse glued back together and be back at the handle waiting for the plane to be launched. This can be quite shocking to your opponent, if he hasn't heard about Hot Stuff! Be careful, though. If you get a drop of Hot Stuff on your hand while fixing the plane, you may find yourself glued to the handle at the end of the match!

If you are serious about contest flying (or sport flying, as a matter of fact) you should always have either Hot Stuff or Zap close at hand for emergency repairs. I wouldn't think of going flying without having some super glue around for putting things back together.

My apologies to the best (and only!) C/L flier in Dekalb, Illinois, the one and only Bill "Moose" Allen. I asked Bill to send me any information he had concerning the contest he put on last Labor Day. Bill sent a ton of stuff, but due to me losing track of it for awhile and a slight mix-up in the deadline date for last month's column (it was cranked-out in only a couple hours and on very short notice), I was unable to report on Bill's super contest. Please check out the Round 'n Round column in the January '76 issue of MAN for Harry Higley's report on Bill's contest, Aero Challenge for Muscular Dystrophy. The

Moose put in an unbelievable amount of work to hold this contest, and Bill's efforts are a great example of what can be done by one person, let alone a whole club.

Project Goodyear is coming along slowly. John Kilsdonk convinced me to try his Falcon Special and sent along a set of plans, so that is the plane we will be using. A custom-built Rossi has been ordered from George Aldrich (may take awhile to get it) and I guess the G/Y cheek cowl controversy has been settled finally.

Ideally, the series of Project planes will be supplemented by photos, but my camera just had a seizure of some kind and I can't afford to replace it now, so we may have to wing it as far as construction photos are concerned. However, Badyear Freak John Penhallow has come up with an exploded-view drawing of basic Badyear (OK, Goodyear, Scale Racing, whatever . . .) construction that we can use and that will help some.

The Clary Corporation has filed for bankruptcy. So what, you say? So listen up, turkey. Remember the Veco line of accessories? K & B sold this line to A & L Mfg. about two years ago. A & L ran out of room for manufacturing the tanks, control horns, spinners, etc. and sold the line to the Clary Corporation almost a year ago. Now Clary has problems and the old Veco line of accessories, so important to many C/L fliers, are going to be in short supply almost immediately.

You better truck on down to the hobby shop and load up on bellcranks, Slow Combat tanks (T-28A's), Stunt tanks (T-21E's), wheels, landing gear clips, flap horns, Kirn-Kraft needle valves, and whatever else you normally use that is a part of the Clary Line. Hopefully, somebody will pick up this line of accessories and market them under yet another name. However, for awhile, you are just going to have to do without certain items.

Not being able to get Clary tanks is going to make it rough, but there is a truemor going around that Pylon is going to market a line of new tanks similar to those already used in R/C, but sized and shaped to more suitable for use in C/L planes. I sure hope so. I am getting tired of soldering tanks up, checking for leaks, worrying about leaks forming, etc. and, in fact, I have already switched to using Pylon SS-4 clunk tanks on my Slow Combat planes.

Lots more stuff to write about, but I must have just about used up my portion of this months MB. *(Between you and Pond, we could fill one issue! wcn)* See ya next month. •

on top of the shade. She'll surely understand why I don't fuss about the skeleton wings of the DH-10 pinned to the grass-cloth wall paper in the family room. After all, that plane has only been in research for three years. I took a peek at the paper behind the sections, and the whole wall has faded. So even when Bill assembles his plane . . . let's hope it's his Bicentennial project . . . I'll always have the outline of the wings and that cunning little rudder and elevator.

When I think about it, Bill would probably have a tough time explaining my interest to his buddies. I know what he would probably say if you asked him why I keep a collection of seeds on the coffee table in the living room. He would probably say, "You've got me there!"

What he doesn't know is that these seeds are all winged seeds and move from place to place by flying. That's just my quiet little way of having a squadron of things that fly. I'm not going to tell this to Bill because I'm afraid I'll wake up one morning to find them all covered in green Monokote, marked with his AMA number, and entered into competition somewhere in Ohio. •

Jerobee . . . . . *Continued from page 55*

The only modification that we found necessary was to secure the clunk tank to the chassis with a rubber band. The nylon strap that is supplied by the manufacturer allows the tank to flop around more than we would have liked.

As the instructions and box label indicates, the Comando is not for beginners. Its speed and handling response are challenging, even for an experienced R/Cer. If a mishap should occur, replacement parts are available from better hobby shops or from one of the Jerobee Service centers. The front wheel spindles seem to be the most vulnerable part, but replacement is an easy snap-in installation.

Ms Only . . . . . *Continued from page 10*

there, you know. Now she'll realize why I don't insist we use the reading lamp with the SE5 U-Control displayed

Competitive racing is facilitated by the interchangeable crystal feature of the radio. The transmitter can be changed to any of the six 27 mhz (including 27.255-blue) frequencies by unplugging the crystal from the face of the transmitter and replacing it with one for another frequency. The receiver crystal interchanges in the same manner.

The Jerobee Comando has proven to be a reliable, rugged, and fast 1/12 scale racer. It would be a good starting point for anyone interested in R/C car *racing*. For some good racing tips and modifications, see the August 1974 issue of MODEL BUILDER. The Jerobee Comando, with the Greenwood Corvette Stingray body and complete radio system lists for $159.95. •

Counter . . . . . *Continued from page 9*

included. The 580 square inch wing uses an original airfoil to give a broad speed range, making the Bunny versatile enough for slope or thermal flying. Flying weight can be as low as 24 ounces, or the Bunny can be ballasted up to 48 ounces for increased speed and penetration. The Bunny should be ideal for getting started in R/C soaring, combining light weight, strength, and good looks, into an easy-to-fly package. The Bunny retails directly from Superior Flying Models, 4027 South 275th Place, Auburn, Washington, 98002, for $25.00 post paid.

* * *

Ron (Easy Rider) Wittman is introducing several new items that should be of interest to all types of modelers. His Number One towhook is designed primarily for R/C sailplanes. This adjustable hook is machined from aluminum channel stock and uses a hardened music wire hook. The hook position is adjustable over 1-1/2 inch range. The base of the mount assembly is drilled, and a flat aluminum backplate assembly is threaded to accept the 4-40 mounting bolts that are included. The mounting hardware is truly hardware . . . not just a couple of sheet metal screws. The Number One hook will sell for $1.95.

Ron's Vara-Gold Trim sheets are similar to others on the market . . . they are self-adhesive, fuel proof, and are made of a very thin polyester material that is very resistant to damage by sunlight. The big difference is in the coloring. Each sheet is different, with mottled abstract patterns on simulated gold leaf. The variegated gold pattern is similar to the material used on vans and custom cars in the Southern California area. The trim sheets are ideal for making custom designs, lettering, and numbers on pattern planes, racers, sailplanes, whatever . . . your imagination is the only limit.

Ron is also introducing two new types of striping trim tape. Super Stripe is similar to products already on the market. It is ultra-thin, fuel proof and cures onto the surface in sunlight . . . making it almost like a painted stripe. Super Stripe is available in six standard colors; in 1/16, 3/32, 1/8, and 1/4 inch widths. Price is approximately 1/3 less than the competition.

Glider Stripe is a non-fuel proof striping tape. It is available in the same colors and widths as Super Stripe, but at significantly less cost. A roll of 1/8 wide by 36 feet long will sell for $1.49. All of the Ron's Products line will be available from hobby dealers, distributors, or direct from the J.L. Wittman Co., P.O. Box 2857, Laguna Hills, California, 92653. •

Remotely . . . . *Continued from page 19*

kit. It's filed under "Gonna build it one of these days . . . "

SNIFF THAT SILICONE!

Richard A. Frost, Arlington Heights, Illinois, MRC's midwest rapid repair station, warns us about the use of silicone rubber. We found his comments in the Milwaukee Flying Electrons Inc. newsletter "Flypaper," edited by Lee Sharafinski.

Frost warns that the ordinary, over-the counter silicone rubber that modelers may use, and is possibly used by some radio manufacturers, is the toxic acetic acid smell of vinegar, and it has been known to corrode the wires and terminals in battery packs. The effect is similar to using acid instead of rosin core solder, which is also a super no-no in the world of electronics.

Frost is not recommending that silicone rubber be avoided. Instead, he urges that modelers and manufacturers use the "non-toxic" type, marketed by the same makers of the toxic material. Both Dow-Corning and General Electric make the non-toxic type, but it is usually only available through industrial outlets rather than ordinary retail stores. It is clearly labeled "non-toxic", and also comes in colors.

THOSE BAR-FLI DIE-CUTS

We mentioned them in "Workbench" column of our November '75 issue, and they've been going like hotcakes. In case you didn't see it, these are complete sets of excellent balsa die-but parts for Phil Kraft's Bar-Fli, a design that was published in the August '68 issue of M.A.N. We're selling them,

along with a set of plans for $6.00 postpaid, and have about 50 to 60 sets left as of January 10.

Interesting side-light. Phil Kraft ordered a set! In fact, we just learned that the model is completed, with a tail-dragger configuration and some other minor mods, and is acting as a test-bed for the Kraft .40 R/C engine. Old Bar-Flies never die, they just buzz on forever! •

The 1975 TUCSON WINTER NATIONALS, by Taylor Collins.

Friday, November 28, 3:30 A.M.: I arrive at Tucson International Airport. The rental car agency people (the ones who try harder) tell me that the roof over their car parking area has blown away! I smiled, with not too much enthusiasm, and turned to struggle through the gale force winds to find the car.

Friday, November 28, 10:00 A.M.: After a far-too-short nap at the motel, I drive the forty miles west to Marana Air Park. On the way I see a full size Bonanza on final at a small private airport . . . bouncing around the sky like a cork in a washing machine! Obviously this is going to be a great day for a contest. The guard at Marana Air Park tells me that all flying is cancelled for the day. The contest will start at 8:00 A.M. on Saturday . . . Back to the motel to ponder on the problem of 'what does one do on the day after Thanksgiving in Tucson, Arizona?'

Saturday, November 29, 8:00 A.M.: The wind has subsided . . . from 40 knot gusts down to a more reasonable 15 knots. Flying indeed has started . . . despite near freezing temperatures.

Don't conclude that the 1975 Winter Nationals went downhill all the way. The weather got better, the pilots cooperated tremendously and got most of their flights in, and this large, annual pattern, scale, and racing contest went into the history books without a hitch.

The fact that the contest was held at all is a tribute to the determination of the Tucson Radio Control Club. Traditionally, the Winter Nats had been sponsored by RC Modeller. When that magazine withdrew its support nearly everyone assumed that the Winter Nationals were dead. But, through the efforts of Craig Gottschang, the TRCC president, and a lot of help from the club members, the Winter Nationals for 1975 became a very successful reality. With great support from the R/C industry (including MODEL BUILDER), the Tucson R/C Club raised nearly $11,000 in cash, trophies, and merchandise prizes.

The winner of each category received a large silver bowl and check for $300. Cash prizes and bowls were awarded through fifth place in each of the six categories, for a total of $3,750 in cash and over $2,000 in trophies.

Several fliers had stayed in the area for a week after the Tournament of Champions meet in Las Vegas and flew in the Winter Nats. Wolfgang Matt, the current World Champion pattern flier sent his plane and radio home to Lichtenstein, and then decided to fly at Tucson. With a Dirty Birdy, Kraft Signature Series radio, and a specially made transmitter "tray", all borrowed from Phil Kraft, Wolfgang flew in the D Expert competition . . . and WON!

Clearly, the World Champion title is well deserved by Wolfgang. Even with a borrowed plane, a borrowed radio, and miserable weather, he managed to beat an assortment of excellent fliers from the United States, Mexico, and Italy. And even a distraction like having a full size P-51 land right in front of the judges didn't seem to bother him!

Benito Bertolani, accompanied by his lovely wife, also stayed over from Las Vegas to fly in the Winter Nats. Benito is the Italian pattern champ. We must admit that Benito's plane is one of our favorites . . . conventional sheeted wings and fuselage, but covered with colored tissue and clear doped. He uses a sinister looking extractor pipe-type muffler on an O.P.S. 60 in his original Kosmo design.

After the Quarter-Midget races on Sunday, a fly-off was held between the

top five finishers in the regular D Expert pattern competition to determine the recipient of the Perpetual trophy. This fly-off was only for the large, traveling trophy, and had no bearing on the regular contest results. The fly-offs gave all of the contestants and spectators a chance to see really top level pattern flying, one flight at a time, without any distractions. The weather cooperated beautifully, with temperatures in the 60's and NO wind. Wolfgang Matt once again proved that he *is* the champ!

Sport scale competition saw 22 entries . . . larger than any previous scale event at the Winter Nationals. Charlie Smith, from Snowmass, Colorado (the same Charlie Smith who did the Curtiss Shrike and Curtiss Sparrowhawk for MODEL BUILDER) came down from the land of snow and skiers with a new P-6E. In the scale judging (which was done indoors during the wind on Saturday) Charlie's P-6E was awarded 328 points . . . out of a possible 330. Unfortunately, engine problems caused two aborted flights, which put him out of the prize money. Col. Bob Thacker brought out his war weary F-82 (he promises to hang it up permanently after this one) and took home first place. Fierce competitor that he is, he flew his final flight Sunday morning with a balky aileron servo, and got away with it. Kent Walter's Corsair, with operating flaps, took second place honors. Robert Godfrey flew a model of the unique Citabria Pro. This is the all-out aerobatic parasol winged bird from Champion.

The Quarter-Midget races included well over a dozen crashes, as well as some fine racing. National Q/M champ Bob Reuther competed, but failure to pass an idle check imposed before the first heat forced him to settle for 3rd place. Keith Collins, of Tucson, edged out Bob Heitkamp, from Colorado Springs, for the top prize money in Quarter Midget competitions.

The most interesting sight in the races was that of 10 year old Billy Hemple steering his Bearcat around the course at very competitive speeds. Billy's dad, Bill Sr., does the calling, and "flies" young Bill control-line style. Billy also flew in B Pattern.

Miraculously, the QM speedster that had a radio failure and whistled through the middle of the crowd at waist level missed everyone and everything . . . except a VW Micro-Bus parked at the edge of the field. Everyone on the field heard the "thump" when it hit.

For the trophy presentation, lovely Denise Stauffer presented each of the winners with a trophy, check, and kiss. (Wolfgang went back for seconds . . . and thirds . . . supposedly for the photographers benefit!). Denise endured two days of cold and wind in hotpants as Queen of the Winter Nats, yet managed a smile through it all.

So the contest that everyone thought was dead . . . lived on in grand style in spite of the weather. Contest director Chuck Taylor (who did a magnificent job of condensing a three day contest into two) tells us that preparations are already being made for the 1976 Winter Nationals.

RESULTS-1975 WINTER NATIONALS

D EXPERT PATTERN
1st Wolfgang Matt
2nd Joe Bridi
3rd Jim Oddino
4th Benito Bertolani
5th Mark Radcliffe

D NOVICE PATTERN
1st Rusy van Baron
2nd Eric Podzielinski
3rd Ron Gillman
4th Charles Shaw
5th Charles Larkey

B PATTERN
1st Jack Aycock
2nd Duane Sides
3rd Rick Mattie
4th Craig Millett
5th Merle Hyde

A PATTERN
1st Kurt Oberg
2nd Larry Binesky
3rd Hank Holben
4th Ken Meyer
5th Leonard Mikus

QUARTER MIDGET
1st Keith Collins
2nd Robert Heitkamp
3rd Robert Reuther
4th Dale Timberlake
5th William Cranston

SPORT SCALE
1st Col. Bob Thacker
2nd Kent Walters
3rd Robert Godfrey
4th Jack Aycock
5th Dick Schofield •

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All ads are payable in advance and may be for any consecutive insertion period specified. Name and address free. Send ad and payment to: The MODEL BUILDER, Classified Ads, 1105 Spurgeon, Box 4336, Santa Ana, California 92702

PROFILES by Plecan. Two big 24" x 36" charts of famous Free Flight designs of the 1934/1963 era. 77 authentic profiles, plus data (span, length, engine size, etc.) . . now only $3.00 for FOLDED charts. Calif. residents add 6% tax. Paul Plecan, Box 1556, Dept. MB, Garden Grove, Calif. 92642. SPECIAL CLUB OFFER . . On 3 or more set sent to one address, 25% discount.

WANTED — Will buy multi-cylinder model airplane engines. In particular, the older spark ignition and certain glow ignition. All letters answered. Russel Sprague, 8800 Green Lane, Randallstown, Md. 21133.

EXTENSIVE COLLECTION, magazines and vintage plans. Lists $1.00. Guerrieri, 107 Alameda, Redwood City, Calif. 94062.

WANTED . . KenHi Buzzer'd kit and/or plans of early 1950's R/C model. State price first letter. Bill Brenchley, 115 Pine Street, Ben Lomond, Calif. 95005.

FLASH! . . 8 x 10 black and white photo of Jimmy Allen dressed in flying suit and standing in front of biplane. $3.75 each. George S. Talas, 3835 Covington Road, South Euclid, Ohio 44121.

"SAILPLANE DESIGNERS HANDBOOK." Easy, complete instructions. $5.96. Eric Lister, 953 Klockner, Trenton, N.J. 08619.

FOR SALE: MODERNISTIC MODELS
The late Hal Swanson's plan service: 5000 plans, $750 worth of new blue-line prints, 300 steady customers, two large storage cabinets, etc. Bids start at $1000. Phone (213) 766-5868.

FOR SALE . . LOTS OF NOSTALGIA!! Old model airplane kits, catalogs, magazines, books, plans, motors, etc., from 1912 to 1970. Send 50¢ and S.A.S.E. for large list. Stephen Maciag, 530 Allentown Road, Parsippany, N.J. 07054.

MODEL BUILDER Mag. collection for sale: Volume 1, Number 1, thru Volume 5, Number 43 (Aug. '75) complete. Best offer over $150.00. Also Champion VG-2 pure platinum element glow plugs in original boxes, standard 1/4-32 threads, $2.50 each, minimum order, $5.00. Fitzpatrick, 4 East 28 St. Suite 1033, New York City, N.Y. 10016.

SCALE PLANS . . 2" P6E, three sheets 30 x 72, blackline, $13.50. 1-1/4" control line Vought SBU-1, 2 sheets, $8.50. Smith Plans, Box 8, Snowmass, Colo. 81654.

OLD TIMER MODELS: Beautifully built and covered with transparent Monokote. Each model is custom built by Dale Myers. Will sell or trade for ignition engines. Box 66, Stewartstown, PA. 17363.

EXHIBITION MODEL PLANS: Northrop T-38A Jet Trainer used by Airforce Thunderbirds. Called "Little Tiger" in Vietnam. A real knockout. $4.00. 26" long, 15" wingspan. R. L. Stearns, 514 Holden St., Raleigh, North Carolina 27604.

PEANUTS! PEANUTS! PEANUTS! New Peanut plans and other rubber powered scale and sport plans. S.A.S.E. to AERO ERA, 11333 N. Lakeshore Dr., Mequon, Wi 53092

Workbench . . . . *Continued from page 6*

time if the material will be all that their best calculations predict that it will be.

Dave . . . all we can think of is this . . . if it turns out to be better than balsa, forget the ship-building companies and their ocean-going tankers . . . they didn't think about us when they took the major portion of the world's balsa!

GO GET UM!

No matter how long we're in this business (and after 4-1/2 years, it looks as though we're stuck with it), we'll never get over being put down a little when we discover another hobby shop owner who has never heard of MODEL BUILDER. The put-down is even more potent when the "uninformed" shop turns out to be right smack in the middle of an area that is densely populated with active modelers!

Of course, we are the only nationally and internationally circulated, privately owned model publication in the U.S. which handles its own distribution. And from the very beginning, when, without any financial backing, we could not afford the luxury, we have never had the services of news agency distribution. Instead, we have built our own dealer and subscription list, and in a large part, we owe our expansion to the many modelers who have picked up the banner in our behalf and obtained dealer orders for us.

However, there are many stones (hobby shops?) still unturned . . . so, in an effort to avoid any further shocks to our tender feelings, we're going to entice your assistance in locating all of the poor, unfortunate hobby shops that don't carry MB! Such a deal you should not pass up!

As soon as you have read this . . . pry yourself away, if you can . . . save the rest until later . . . put on your private-eye ensemble, and find a hobby shop in your area that doesn't carry MODEL BUILDER. Get the complete name and address, and, if possible, the name of the owner. Send us the information as soon as possible. Upon receipt of your information, we will contact the hobby dealer and give him our sales pitch.

Now . . . IF the dealer places a standing order with us, and IF your information was mailed with the earliest date,

INDEX TO ADVERTISERS

you will win a free, one-year subscription to MB. If you already have a subscription, you have the choice of extending the expiration date by one year, or taking an Uber Skiver precision model knife set (valued at $12.95) in your favorite handle color.

Are you impressed? Do you want us to be higher on RCM's private poll as to which magazine is modeling's sweetheart? Then, get on the stick . . . we'll hold your place. Let's hear from you!

BULLETIN BOARD

Oregon R/C modelers will be interested in knowing that the Benton Radio Control Club is inviting all Oregon R/C Clubs to participate in the first Oregon Radio Control Exhibition, to be held April 10 and 11, 1976, at the Benton County Fairgrounds, Corvallis.

First through third prizes or trophies will be awarded in 17 static display competition categories, including scale, pattern, pylon, sport, biplane, helicopter, sailplane, seaplane, boat, car, and novelty. An entry fee of $1.50 includes the contestant's admission. Public admission 50 cents, pre-school children free. Contact John W. Lindsay, P.O. Box 91, Corvallis, OR 97330 for further details. Phone (503)745-5359 after 5:30 PM.

* * *

The Hamilton (Ontario, Canada) Flying Tigers are sponsoring the 6th Canada's Largest Radio Control Model Aircraft Exhibition and Flying Show, on May 8th and 9th, at the Nelson Recreation Complex, 4235 New Street, Burlington, Ontario, Canada.

As a special feature of the show this year, the well-known Colonel Betkey's Flying Circus, of Toledo, Ohio, will be coming up to put on its show, on Saturday only, at 1:00 and 4:00 PM.

In addition, there will be the regular awards of prizes, to third place, for static displays of scale, sport, biplane, sailplane, helicopter, boats, and miscellaneous categories.

For further information, contact Exhibition Director, Carl Small, at 2 Wendakee Drive, Winona, Ontario, LOR 2LO, phone (416) 643-1445.

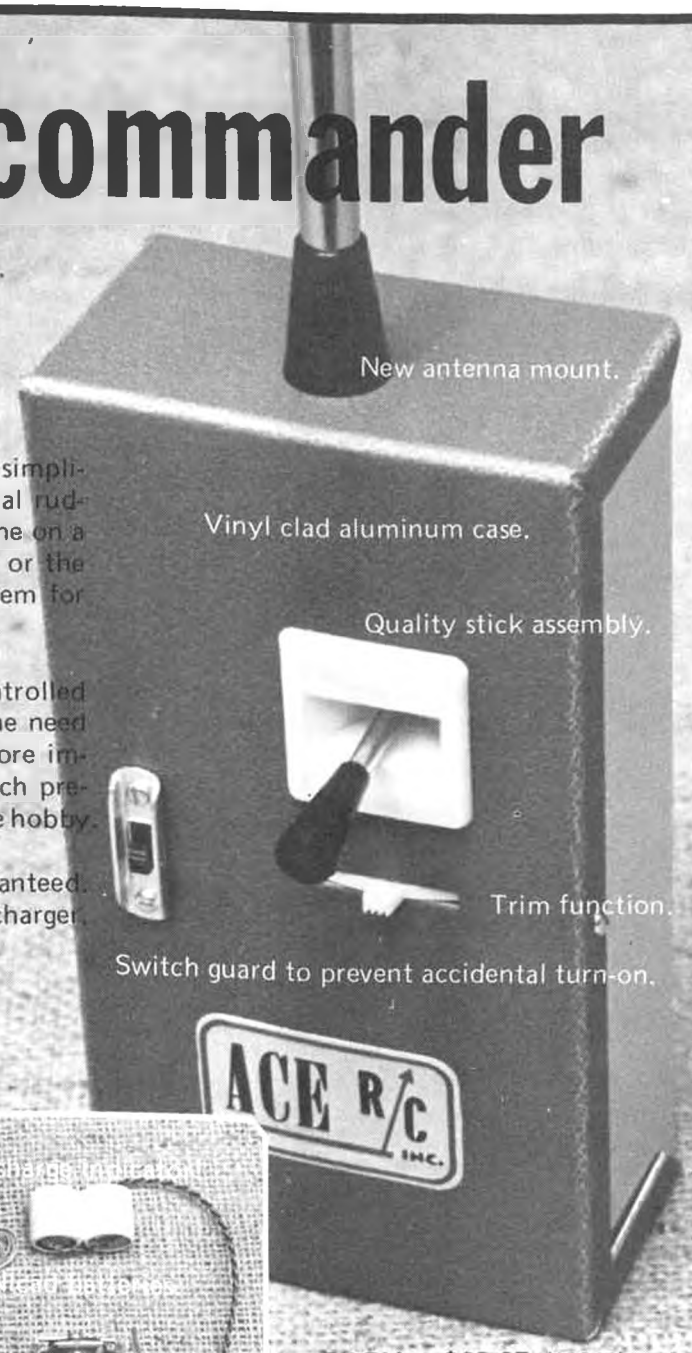
PEN PAL

Ota Fencl, Pod Hurkow 550/111, 33901 Klatovy, Czechoslovakia, would like to hear from some U.S. modelers. He reads and writes enough English to correspond without difficulty, and is primarilly interested in free flight and control line.

O & R 2-SPEED

Ben Buckle, 8 Sheards Lane, Stanford In The Vale, Faringdon, Oxfordshire, England (love those English addresses!), is looking for contact breaker sets . . . especially the rocker arm . . . spark plugs, fuel tank, and needle valve for his O & R .60 two-speed ignition engine. He'll buy or exchange, and has collectable engines, pre-WWII plans for rubber and glider, and copies of "Practical Mechanics" from 1935 to 1945, which contain articles and photos of model aeroplanes. He offers a list of items for anyone interested in making trades. •

pulse commander



Due to its small size, light weight, simplicity, and low cost, pulse proportional rudder-only flying is an ideal way for one on a budget who wants to get into R/C or the sport flyer who needs a second system for fun flying.

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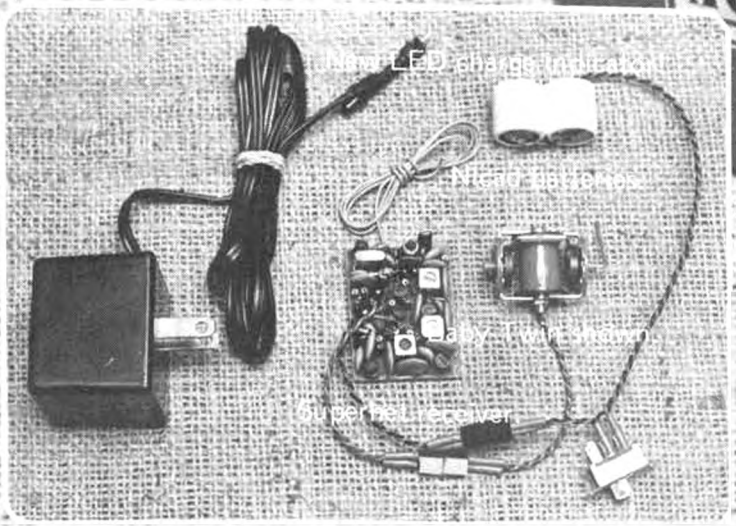

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- Recommended for .010 and Pee Wee .020 planes not greater than 36" span.

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- For Babe Bee and slow flying Tee Dee .049 ships up to 42" span.

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ENGINES: .45 - .60

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Sig's model version of Steen's Skybolt was specially tailored by Claude McCullough for the new RC Biplane Stunt pattern event. A full symmetrical wing section delivers outside and inverted maneuvers. Control reactions are quick and responsive. Difficult free-style gyrations and the full slate of FAI and AMA pattern stunts are routine for this model. Unlike many full aerobatic designs, the Skybolt is not touchy or tricky to fly. The landing gear position gives top notch ground handling.

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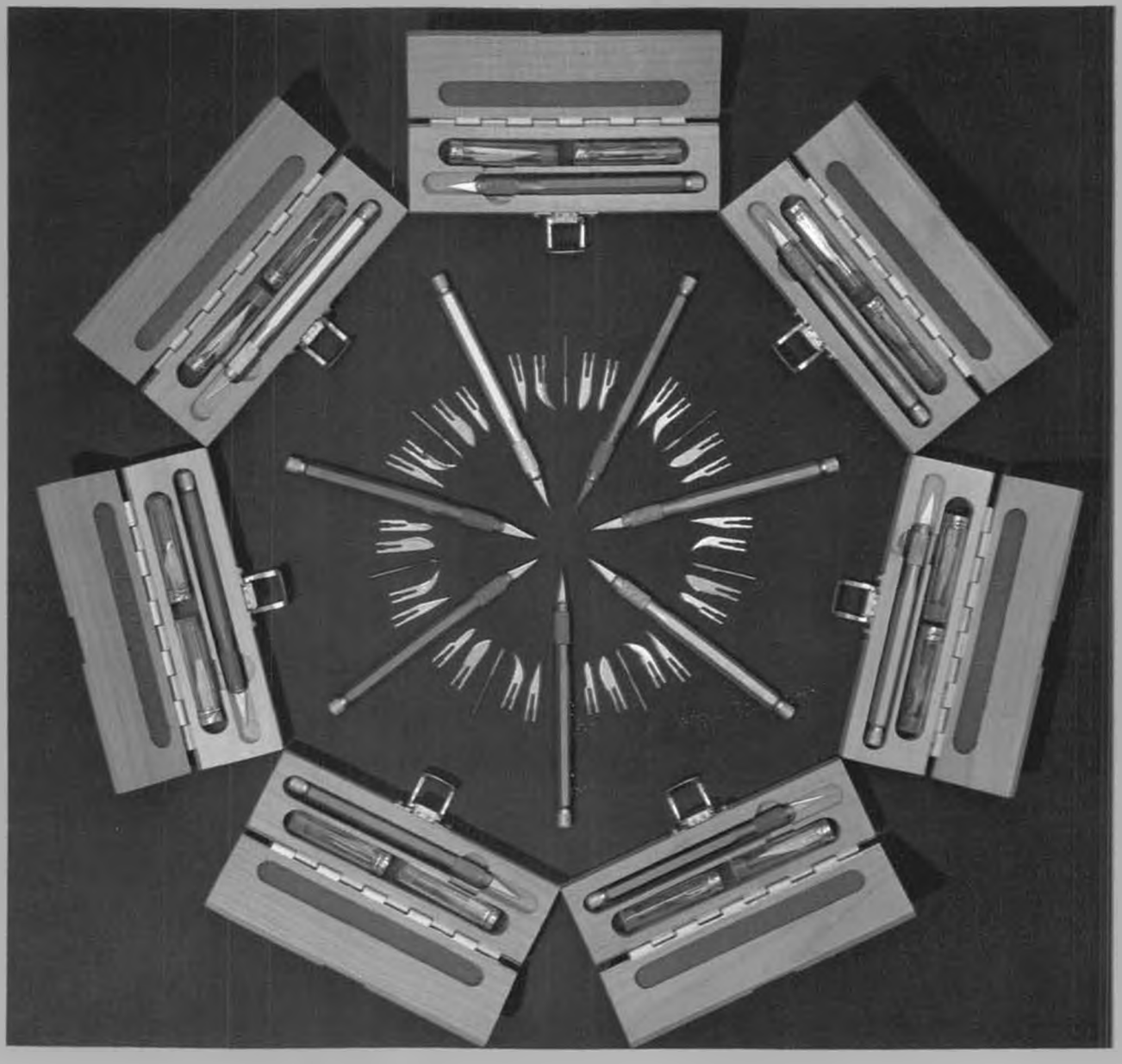

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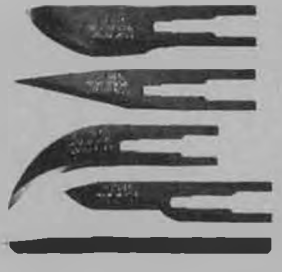

Available in seven anodized handle colors: silver, blue, red, green, gold, copper, violet.

Complete set in fitted hardwood case; includes uber Skiver, together with two vials containing six No. 11, six No. 15, one No. 12, and one No. 20 . . . A total of 14 blades $12.95
Individual handles (specify color) $5.10
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COMPLETE WITH RADIO

MRC's Cessna 177 is complete in just about every important respect including an MRC Mark V five channel radio. Any beginner or confirmed sport flyer, can now own a fine scale model of this popular Cessna in completely finished, ready-to-fly-form. Make no mistake, this is not a formed sheet plastic ARF, but rather a fiberglass airplane that combines many familiar modeling materials for a look that was previously only achieved after many hours in your workshop.

RUGGED AND READY

Fuselage is rugged fiberglass, wing and stabilizer are fully sheeted, all control surfaces (ailerons, rudder and elevators) are hinged, all push rods are finished and installed, an Enya 35 is mounted, as is its tank; wheels are installed and the servo tray is in place. A strong tricycle landing gear features steerable nose wheel and Cessna style main gear. The entire aircraft is beautifully finished and striped in a three tone, fuel proof paint.

IN THE AIR IN 1 HOUR

Your entire work can be done in one hour and involves mounting the servos, connecting the finished pushrod to servos and placing the receiver and battery pack in place. That's about it, and you're ready for the best scale flying you've ever experienced.

MRC's Cessna is ideal for the beginner who wants a trainer that looks great and can stand the gaff of his first flights. At the same time it's perfect for the flyer who wants a real looking airplane for stable flight and good maneuvers at those Sunday flying sessions. This airplane keeps you out of the shop and gets you onto the flying field . . . and isn't that what it's all about?

Specifications: Wing span: 55"; Area: 500 sq. in.; Overall Length: 41"; Flying Weight: 5 lbs.; Power: Enya 35, with muffler; Radio: MRC Mark V with 4 servos.