



MODEL BUILDER

ISSN 0194 7079

volume 10, number 104

\$2.00

SEPTEMBER 1980

- POOLBOY
Ken Willard's R/C biplane flying boat
- HOLLYWOOD SQUARE
Quick-built R/C sailplane
- DOLPHIN
O.T. Texaco streamliner
- BULLDOG
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Pylon racers, left to right: Dave Shadel, 1979 NMPRA National Point Champion; Gary McPike, Best Aircraft Award 1979 NMPRA Championship Race; Ron Gilman, Second place and Fast Time Award 1979 NMPRA Championship Race; Rusty Van Baren, Twelfth place, 1979 NMPRA Championship Race and Second place AMA Nationals 1977; Ron Schorr 1978, AMA National Champion; Gary Hover, Third place 1977, 1978, 1979 NMPRA Championship Race.

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MODEL BUILDER

SEPTEMBER

1980

volume 10, number 104

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Cover: Ken Willard's answer to the flying field shortage, "The POOLBOY". This little gem will operate from your "back yard beach", or if you're not that fortunate, from most any 50-foot puddle! Another in Ken's long line of biplane and seaplane designs, rolled into one, small bundle. From a 35mm transparency by Ken Willard.

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Walter L. Schroder

EDITOR

Wm. C. Northrop, Jr.

GENERAL MANAGER

Walter L. Schroder

ASSISTANT EDITOR

Phil Bernhardt

ASSISTANT GENERAL MANAGER

Anita Northrop

ART DEPARTMENT

Al Patterson

OFFICE STAFF

Mary Ann Bell

Edie Downs

Debbie Holobaugh

Pat Patton

A. Valcarsel

CONTRIBUTING EDITORS

Dave Brown	Mitch Poling
Otto Bernhardt	John Pond
Jerry Dunlap	Fernando Ramos
Larry Fogel	Larry Renger
Chuck Hallum	Dan Rutherford
Bill Hannan	Tom Hutchinson
Joe Klause	Dave Thornburg
Walt Mooney	John Tucker
Bob Underwood	

ADVERTISING MANAGER

Walter L. Schroder



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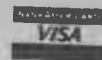
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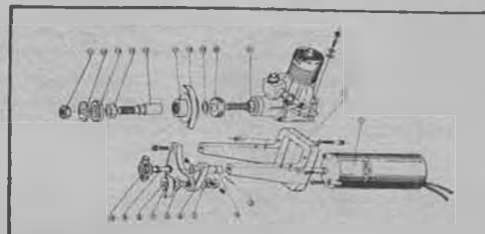
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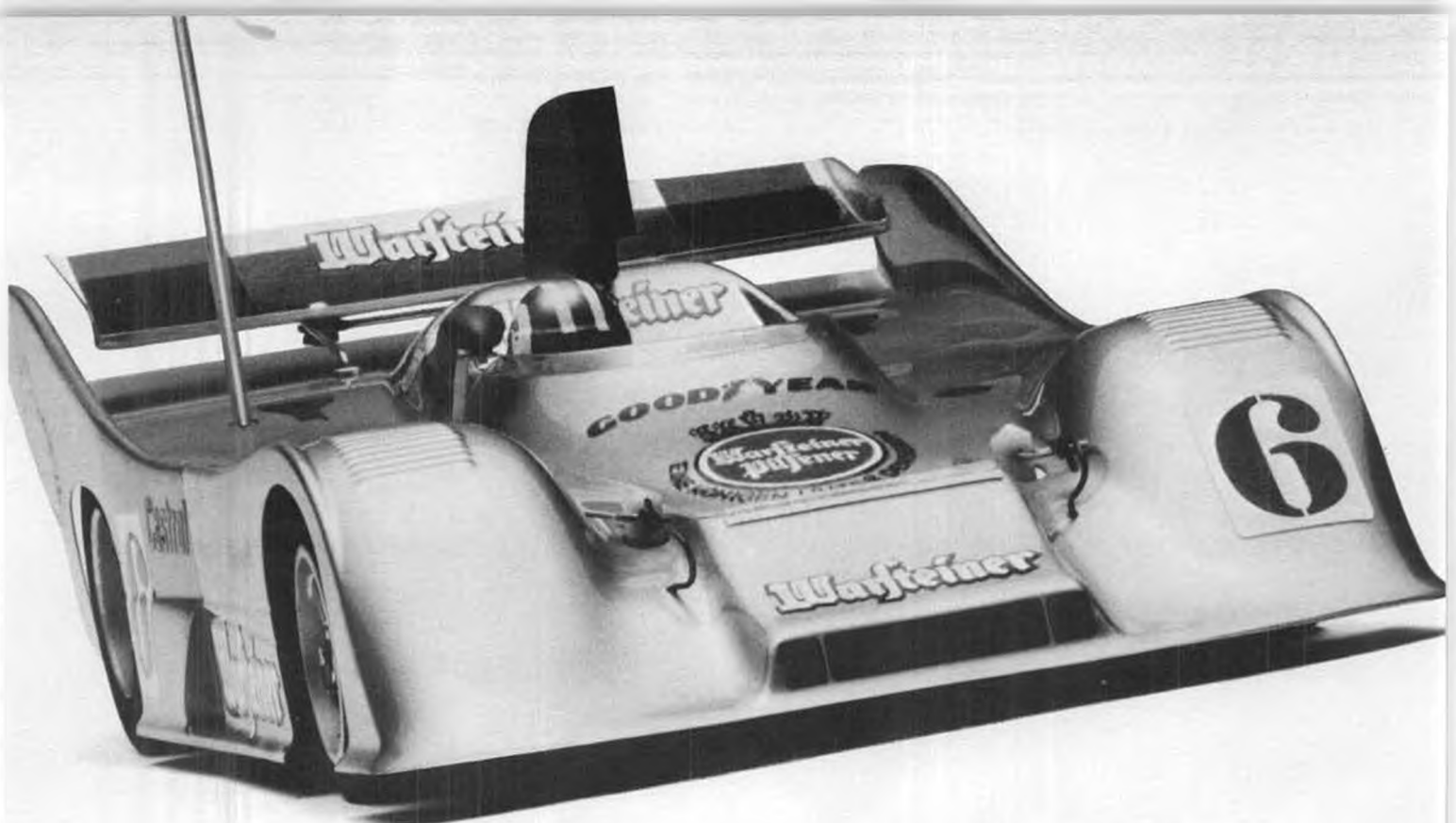


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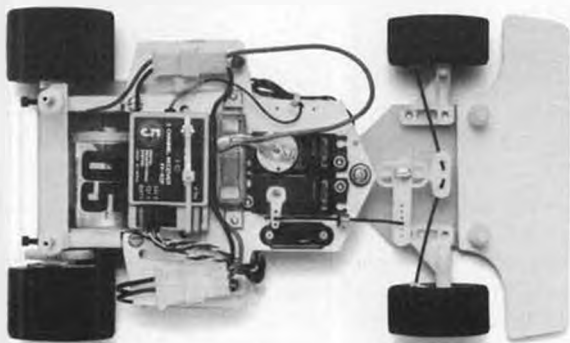
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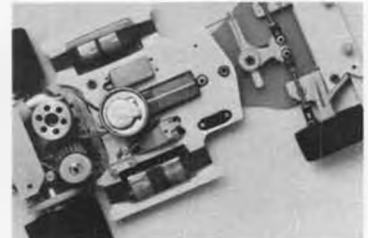
The Nats-winning RC12E features die-cut fiberglass chassis, lightweight racing wheels and tires, tough glass-filled nylon pillow blocks and complete, detailed instructions including racing tips from Gene Husting and Roger Curtis. Approved for ROAR competition.

THE RC12E'S TRACK RECORD AT THE NATS

ROAR Nationals Expert Class 1:12 Scale Electrics				
		Production	Stock	Modified
1978	4cell	No event	MRP	RC12E
	6cell	No event	RC12E	RC12E
1979	4cell	No event	RC12E	No event
	6cell	RC12E	RC12E	RC12E

*4 cell cars run indoors, 6 cell cars outdoors. Chart shows all expert class main events under official ROAR sanction since the RC12E was introduced.

The Team builds that experience into every RC300 and RC12E competition car kit. And now the phenomenal RC12E is even available assembled, tuned and ready-to-win. So whether you're ready for the high-powered gas class or looking for the easy maintenance and tight dicing of 1:12 electrics, we've got you covered.



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LEARN TO FLY RC THE SIG WAY

STEP 1 - BASIC : START WITH A STABLE HIGH-WING MODEL

Modelers often want to start in RC with a good-looking pattern or scale model that is complicated to build, has a high wing loading and flies fast. This is a mistake and never works out. First attempts with radio control should be with an inherently stable design having a flat-bottomed airfoil that gives the student pilot time to think and develop automatic reactions. The Kadet, which will fly hands off, is ideal for this purpose. Many club instructors and hobby dealers have told us that two or three check-out flights on a Kadet are sufficient to allow a student to practice fly and learn without constant attention from an instructor. And we know of modelers in isolated areas, with no one to help them, who have taught themselves to fly with the Kadet.

We recommend that the novice begin his training program by using rudder control for first flights and later on switch to aileron control. Ailerons are supplied in the kit for 4 channel use but the model can also be flown on 2 or 3 channels and rudder control if the builder does not have 4 channel radio equipment. A special booklet is included in the kit to help the student pilot make his first radio flights.

Before you can accomplish your dream of darting around the sky with a sleek P-51, you must have some RC flying time on your log book. The word on the modeling grapevine is that our boxy buddy, the dependable Kadet, is the best choice. It's THE standard trainer—nationwide!



BALSA RIB WING

KADET

Designed by CLAUDE McCULLOUGH

LENGTH: 42 In.
WING SPAN: 57 In.
WEIGHT: 4 Lbs.
ENGINES: .19 - .40 Cu. In.
FOR 3 CHANNEL RC EQUIPMENT

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KIT NOW INCLUDES MATERIALS AND INSTRUCTIONS FOR AILERONS

STEP 2 - INTERMEDIATE: PROGRESS TO FASTER SHOULDER WING DESIGNS

BALSA RIB CONSTRUCTION WING FEATURING BUILT-IN WASHOUT



WING SPAN: 55-1/2"
ENGINES: .29-.40

KAVALIER

\$54.95

Designed by CLAUDE McCULLOUGH

When the student pilot feels secure flying the Kadet and can handle it capably, he is ready to take the next step. The Kavalier has a special wing design, calculated to make this transition easier. The precise amount of incidence change required to help eliminate tip stall is automatically incorporated as the wing is built in the usual way on a flat surface. In addition to this aid to stability, differential movement aileron horns are furnished in the kit, providing less down and more up travel on the ailerons. Adverse yaw in turns is reduced by this simple method and controllability of the model is greatly improved. Find out what smooth flying really is with the Kavalier.

LARGER SIZED MODEL - FOAM CORE WING WITH BUILT-IN WASHOUT



WING SPAN: 62 In.
LENGTH: 44 In.
WEIGHT: 5-1/2 Lbs.
ENGINES: .40 - .50 Cu. In.

WING SPAN: 62 In.
LENGTH: 44 In.
WEIGHT: 5-1/2 Lbs.
ENGINES: .40 - .50 Cu. In.

KOMANDER

\$54.95

Designed by CLAUDE McCULLOUGH

Specially designed for novice RCers who want to move up from simpler models or prefer to start with an aileron controlled airplane. The built-in stability, coupled with good maneuvering and aerobatic ability, allows rank amateurs and low-time fliers to do a creditable job. Piloting boners that would clobber other airplanes are readily forgiven by the Komander. It will fly right down to the full stalling point without snap rolling or falling off on a wing. This enables slowed down, nose-high landings to be made. Coupled with the shock absorbing qualities of the wing mounted gear, the superior ground handling characteristics make this a fine performer from rough or grass fields.

STEP 3 - ADVANCED: MOVE UP TO LOW WING AEROBATICS

FOAM CORE WING WITH WASHOUT



ENGINES: 40 to .50
WING SPAN: 51 In.
WING AREA: 550 Sq. In.
LENGTH: 45-1/2 In.

\$57.95

KOUGAR

Designed by CLAUDE McCULLOUGH

After some flying time on the Kadet, Kavalier and Komander, the student will be ready for this sleek stunter. The Kougar is a carefully tailored design that will do every stunt in the book—even the lomcevak - and yet is not difficult for low-time pilots to handle. The wash-out incorporated into the foam wing allows the model to be slowed down to a walk for the landing approach and flared onto the runway in a main-gear first touchdown without undue stalling or snap rolling tendencies. The large amount of wing area for the 51" span keeps the wing loading low and aids handling characteristics. The Kougar is highly recommended as an introduction to low-wing flying and AMA pattern competition.

STEP 4 - EXPERT: GRADUATE TO COMPETITION FLYING

FOAM CORE WING



Balsa Skin Plywood Skin
WING SPAN: 67 In.

\$63.50 \$69.95

KOMET

Designed by MAXEY HESTER

In the Komet, Maxey Hester has created a pattern ship that meets the requirements of the most demanding competition flying, yet is equally at home at a Sunday afternoon sport flying session. As in the Kougar, construction is speeded and appearance improved by a formed plastic top made from ABS plastic that is easy to glue and easy to paint. It carries no load and serves only as a streamlined fairing on top of the rugged balsa box fuselage. Featuring a foam core wing, this big kit takes only a short time longer to build than one of the so-called ARF (almost ready-to-fly) types and results in a durable aircraft with lower wing loading and higher flight performance, at a lower cost.

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from Bill Northrop's workbench

• • •

• About this time, 9 years ago, **Model Builder** (we still call it that, though its full name is now **R/C Model Builder**) was in the process of creating its first issue, Volume 1, Number 1, which was subsequently introduced at the R/C Aerobatic World Championships in Doylestown, Pennsylvania, September 1971.

Don't worry, we're not going to start reminiscing about our magazine publishing adventures over the past 9 years. Much of it has been fun, much of it has been painful, and much of it has been exciting, but that's all in the past and we can't get things done by sitting back and daydreaming.

Actually, our only reason for thinking back into the past came about as a result of reading Bill Winter's unfortunately bitter "last say" as editor, in the August 1980 issue of *Model Aviation*. Our own period of time as a spokesman to the modeling public (9 years of **Model Builder** plus 5 years as R/C editor for *M.A.N.*), is a drop in the bucket compared to his, but if continued experience in this endeavor brings us to the level of disappointment, distrust, and disenchantment with modeling's leaders as expressed by Mr. Winter, then we would seriously consider going back to square one . . . simply building and flying models for our own amazement and relaxation, as it should be.

All we can say is that we wish he had stayed with his original premise, that when he wrote his last editorial, he ". . . would tell stories of wonderful events and remarkable people, both in models and full-scale. Light and humorous — one should go like a gentleman. . ." Unfortunately, the man we



What could be a more fitting climax to a delightful, relaxing weekend with the Sig family and the 6th Annual Sig IMAC Championships, than a ride in Hazel's blue-and-white Clipped Wing Cub? When it came our turn to fly, our knees and the instrument panel just couldn't get along, so Hazel coordinated the rudder with our aileron movements!

NEWS FLASH!

Westbaden, Indiana, June 26, 1980: First place in both individual and team has been won by the United States at the World Indoor Free Flight Championships. Erv Rodemsky, who took "individual," also made the high time of the meet. Second place team was Switzerland, and the United Kingdom was third. Rodemsky is a California resident and an American Airlines pilot; the other two U.S. team members were Ray Harlan and Pete Andrews.

A complete report of the Championships, along with information on the Indoor Record Trials and Peanut meet, held during the same period, will be presented in a near-future article by our indoor correspondent, Jose Tellez.

have always looked up to and admired as **THE** editor of modeling, for the 50 years or so that we have followed him . . . did not.

ENERGY AND 1600

By the time this reaches you, you may have tried to call our office after 4 p.m. (Pacific Time) in recent weeks without getting an answer. The reason is, that in order to conserve energy, both electrical and human, we are now officially closing the office at 4 p.m. (1600 to you international types). Easterners particularly will note, however, that someone is usually here by 0730, Monday through Friday.

After-hours and weekends, you will often find that those of us unfortunates who physically put the magazine together are at our desks, but we ignore the telephones unless we are expecting a particular caller.

GAGER IS BACK

After a too-long hiatus, Jim Gager, our "Go Fast and Turn Left" editor, "Pylon" to you more relaxed types, has returned, on an "as the traffic warrants" basis. Translated, this means that Jim's column

will appear every other month, or as often as he feels he can generate his own material. Should pylon enthusiasts overwhelm him with tons of material, he will produce more than 6 columns a year. So it's up to you, readers. If you can keep him busy, we'll do our part.

CREDIT DUE

When we receive a model design for possible publication, we can't always instantly recall in our minds if a similar or exact copy had been published earlier, particularly if it appeared in another publication, and several years prior.

Case in point, the little "Whirlaway," published in our July 1980 issue. We recently received the following letter from Bill Hannan, Escondido, California.

"Dear Bill,

"Our neighbor and fellow model builder, Jim Lueken, was the first in our group to see the July '80 **RCMB**, and he immediately rushed over to show us the 'Whirlaway' article. We thought your readers might be interested in learning a bit more about the design's origin:

"The 'Tail-First Tenderfoot' was my son Ken's first published design, and it appeared in the November 1969 *American Aircraft Modeler* as a full-size plan. He had been inspired by seeing the canards of 'Professor' Walt Mooney being flown during a San Diego indoor meet.

"Ken's model was so simple to build and fun to fly that several were built locally, including one by Jim Lueken.

"Needless to say, seeing his own design in print was a heady experience for Ken, who was only nine years old at the time, and payment for the article bought him his first bicycle! Cordially, Bill."

Congratulations to Ken Hannan once more for his original design . . . eleven years ago! By now, he has probably

Continued on page 96

"...THREE if by AIR"

(Letters to the Editor)

Dear Bill:

Recently I attended a small local Industrial Expo. I was surprised to find a helium filled blimp flying about the inside of an aircraft hangar. It was a model blimp powered by two electric motors, controlled by an EK R/C set. The blimp was part of a display by a local balloonist advertising hot air balloons.

The blimp was the only link to R/C activity. The people involved with it were not aware of the West Coast activity that has been going for the past couple of years. I told the group that I would write to you to see if I could obtain some rules and info regarding the lighter than air and electric powered flying being done at West Coast Expos.

If you can provide some rules and info it might be possible to work up some type of activity involving the help of the area R/C club for the next Expo. Certainly would appreciate any help you can provide.

Thank you

Fred Hacke
Bethalto, Illinois

Though your description is kinda vague, the blimp you mention might be one of the units manufactured and sold by Peck-Polymers, one of our advertisers.

The only West Coast Expo to feature indoor R/C flying, to the best of our knowledge, is the IMS (International Modeler Show) in Pasadena, which we put on in January. As the indoor R/C blimp and airplane model idea is only less than two years old, the rules remain fairly simple. Aircraft cannot exceed 24 ounces in total weight and must not exceed a maximum of 3 ounces per square foot wing loading. The idea of endurance competition has worn out its welcome because of flights reaching an hour and a half. We're going for scale in 1981.

Suggest you consult our April '79 issue for a description of last year's event, April '80 for this year's event, and the July '80 issue for the 1981 rules.

Dear WCN

A few more Bat Shits have been passed since our last Bat Movement, so I'm sending you a little care package. Also enclosing a few photos, of the Boeing B-1 not the Bomber-type B-1, but the 1920's vintage B-1 hanging in the Seattle Museum of History and Industry.

The airplane is hanging from the ceiling, and is not easy to photograph, with the stupid globe lights hanging in front of it, but it is very cute, and in excellent condition. The powerplant is a Liberty V-12, from what I recall about it. I'm not much of a Scale Freak, but this thing is really cute. Also on display are the Slo-Mo Unlimited Hydro (III or IV, not sure which), many old horse-drawn fire engines, buggies, coaches, etc. Largely Seattle Memorabilia, so Boeing pretty much dominates the aviation section, which is pretty small. Boeing is supposed to begin restoration of "The Big Red Barn," which was the first Boeing factory, and it will become a museum, presumably the B&W would be housed there, though it is a replica, of course. Should be of interest.

I don't mind being called a "Frantic Fanatic," though I really think "Frank Fanatic" is better description. Oh, we have an R/C guy in our shop at Boeing (we both run lathes there), and he calls me a "Freak Flyer." He has the strange idea that model aircraft should look like real ones. Isn't that a weird point of view since real aircraft are designed to do a particular task, just like our model aircraft are? And yes, he says he buys all his model supplies from Tower Hobbies via mail. And no, he won't read RCMB. "Trash," he says, "polluted with all that other trash." Wanna start another controversy? The conceit of R/C.

The local hero of SAM 8 asks jokingly "how come you guys waste your time with FAI and that other odd stuff?" Could be we like the challenge, trying to improve a design instead of being restricted by having to build something designed in the 1940's... but flies like it was designed in the 1920's... sure, OT's are fun... but compete with them? Nah. And trophies don't mean anything to most of us... we'd rather max out and be 16th, or beat our buddy by 1 second, or win the Finals and win a trip to the World Champs, even if it is at Tall! Getting to know the foreigners was quite an interesting experience, and we were lucky enough to have a couple home as guests. Well... Bye.

Steve "O'Bal" Helmick
Renton, Washington

Agree with you that free flight endurance models are designed to do a particular job and don't necessarily have to look like a full-size aircraft. Now what do we do about Burt

Rutan? Your lathe operating buddy could be right too... if you're talking about scale model aircraft. Was Chet Lanzo's Puss Moth the nearest thing to bridging the gap?

Dear Bill & etc.

I enjoyed Mike Keville's letter in your July issue. I too enjoy Free Flight Scale (rubber power) and also take offense to AMA dues being as high as they are. Last year as a member of Cessna Modelcrafters, I got my first exposure to contests. I really enjoyed them, however to participate in contests (outside of club contests) the cost was exceedingly high (i.e. approximately the same as I spend on model supplies for a year). If you do decide to come up with a replacement or substitute for the AMA, please let us know I would like to try my hand at contests again.

Dave Cadorette
New London, Connecticut

Dear Bill,

I feel a heck of a lot like Mike Keville feels and I am an R/C flyer. This year I decided that I didn't want the AMA magazine so I sent a check for \$17.50. A few weeks went by and I received a letter from AMA saying I couldn't get my card without taking the mag.

This makes me mad. I think I should have a choice of what mag or rag I want to buy. So really steaming under the collar I sent the remainder of the money I needed. After a month of waiting I received my card and when I turned it over there on the back side was the FAI stamp that I did not order and was not charged for. Do you think they might have done this to ease the pain?

Your idea sounds better, the US Model Builder Society, but there it is again, a mag that I want the choice of buying! I have been a hobby dealer for the past 20 years, and nobody tells me how to run my business. How about yours? (Dictatorship?)

W A Knost
Tulsa, Oklahoma

P.S. I started building when I was seven. I have flown F.F., U.C., R/C. I am now 55 years old and I am mad!

Hey Bill, did we judge together at the first R/C Masters Tournament for FAI team selection, Oklahoma City, 1966?

At the last Executive Council meeting, the voting went by a majority of one in favor of reverting the AMA magazine to an optional status. However, we understand the matter will come up again at the Executive Council meeting during the Nats. In the meantime, there seems to be a lot of heavy political lobbying to try to get some Council members to change their vote.

Of course, you're right about the U.S.

Continued on page 104



OVER THE COUNTER

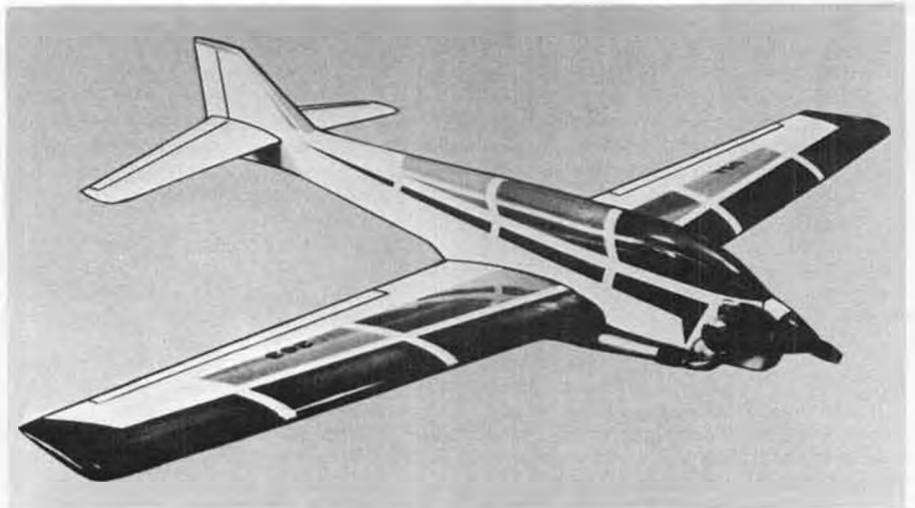


• Dick Hanson's Tiporare, a featured construction article in the February '80 **RCMB** and unquestionably one of the most able Pattern ships making the rounds these days, is now being offered in fuselage-and-foam-core form by W-K Hobbies. The fuselage is an epoxyglass molding that is joined and double-taped while still in the mold, guaranteeing straight alignment. Precision-cut foam cores for the wing and stab are also supplied, as are the plywood firewall and wing mounts, full-size template sheet, and detailed instruction book. Wingspan is 65 inches, area is 720 sq. inches, and the flying weight should be no more than 8-1/2 lbs. for best performance.

The Tiporare is available as a standard kit (described above) for \$84.95, and as a deluxe kit for \$134.95. Just what the deluxe kit consists of was not stated, but for the extra fifty bucks we'd assume it contains all of the necessary wood for the wing and tail surfaces. Don't hold us to this, though.

For more info, write to W-K Hobbies, 19 N. Main St., Centerville, OH 45449. (P.S. I'll probably get canned if I don't mention that the Tiporare plans presented in **RCMB** sell for \$6.50 and are Plan No. 2801.)

JoMac Products, maker of the 1/12-scale R/C cars that have been so popular for the last ten years or so, is now in production of an expert class 1/12-scale electric race car called the "Lightning 2000." This is a completely new design and is set up to provide maximum adjustability of the frame, including



The Tiporare, top competition Pattern ship being kitted by W-K Hobbies.

variable C.G. height, castor, camber, wheel base, wing tube height, rear body post, servo saver tension, front independent suspension, Ackerman steering, gear ratios, and gear mesh (whew!). Construction features include a router-cut epoxy board chassis and shaker plate, two-piece rigid power pod, one-piece molded front end, and molded rear wheels with glued and trued sponge rubber tires. Available options include differentials, ball bearings, and different gear ratios. The car can be built to the minimum legal weight with no lightening of any of the parts.

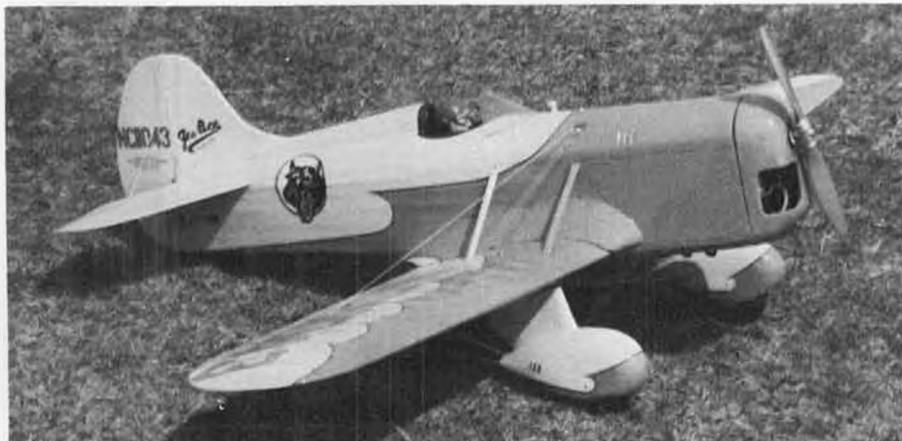
The Lightning 2000 is presently available in two versions. No. 2300, the basic car kit is complete except for the body, speed control, motor, batteries, charge

cord, and radio. This one is for racers who want to adapt their present cars to a Lightning chassis. Retail price is \$55.

No. 2340 is the same as No. 2300 but also comes with motor, six ni-cd cells, and clear Lexan body. The choice of radio, speed control device (electronic or resistor), and charging method is left up to the builder. Price on this one is an even \$100.

A completely assembled version and a ready-to-run car are also in the mill and should be ready soon.

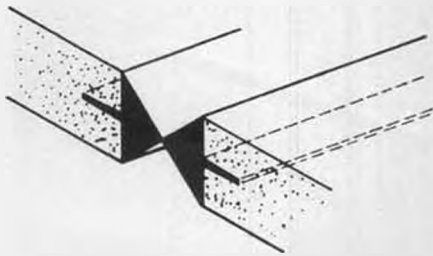
From JoMac Products, 12702 N.E.



Coverite's new Gee Bee Model D Sportster.



Harry Higley's just-released model engine handbook.



Line drawing of the Cooney Gapless Hinge sold by Fourmost Racing Products.



Big 1/4-scale Stampe biplane, kitted by Svenson.



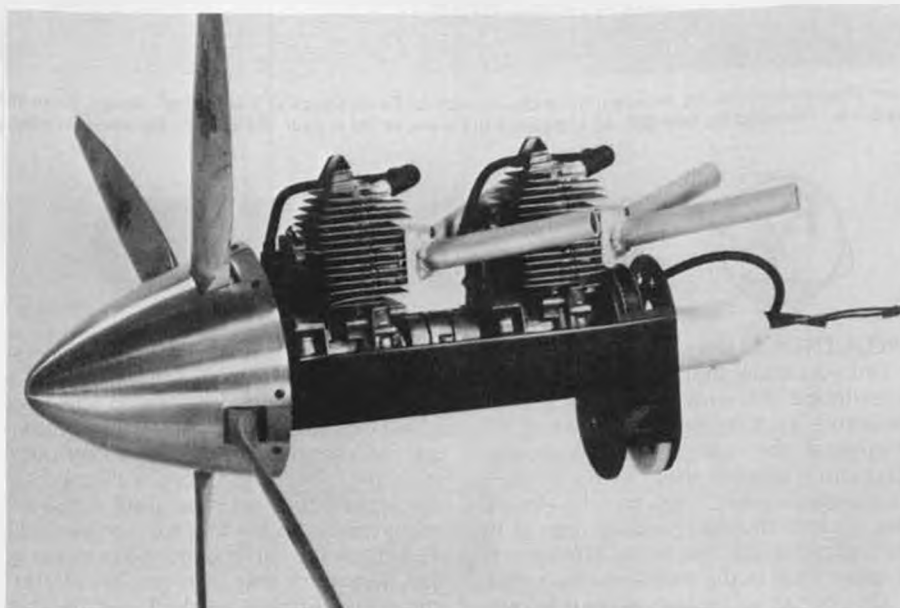
The C&D "Start-Pac" turns your present electric starter into a cordless one.

124th St., Kirkland, WA 98033.

* * *

Coverite is getting into the kit business! First offering is an old classic, the 1930 Gee Bee Model D Sportster. The Coverite model was designed by Henry Haffke, an excellent modeler who is well-known for his good-flying Gee Bee models. Most fellows tend to regard the entire Gee Bee line as a group of squirrely, unpredictable ships, but Haffke's success with them would seem to prove differently. (To emphasize the point further, Bill Turner, a local home-builder who has built and flown full-size replicas of both a Gee Bee Z and "Miss Los Angeles" Brown Racer, claims the Z to be more stable than the Brown, despite the latter's more "sensible" proportions.)

The Coverite Gee Bee spans 56 inches, and although the engine size wasn't



The "Ultimate Z" twin Quadra power system produced by Aeromarine.

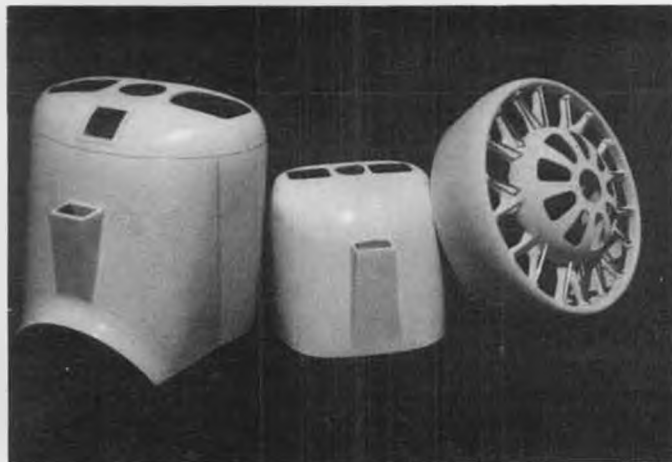
specified, we'd guess a .40 would be the best choice. Kit features include two rolls of Super Coverite (you were expecting Monokote, maybe?), silver-colored flying wires, aluminum wing struts, plastic cowl and wheel pants, full-color decals, rolled plans, and illustrated instruction booklet.

Going price is \$99.95, at your favorite hobby shop or direct from Coverite, 420 Babylon Rd., Horsham, PA 19044.

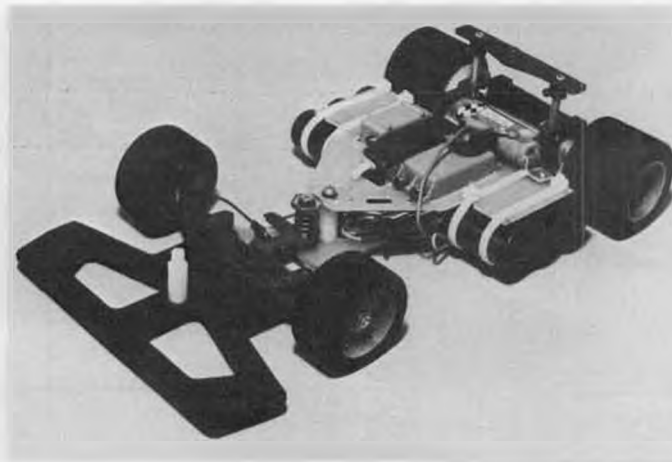
* * *

That Tiger Moth looking biplane in one of the photos is actually a 1/4-scale Stampe SV4, built from a Svenson kit. For those not familiar with the name, Svenson kits are manufactured in Belgium and are just now being imported into the U.S. The kit line includes the Stampe shown, a smaller version of the same airplane (1/5-scale, I think), a 1/6-scale

Continued on page 98



Some of the fiberglass cowls available from T&D Fiberglass Specialties.



The "Lightning 2000," JoMac's all-out electric race car.



Kurt Olsson, Stockholm, Sweden, built this version of Pavel Bozak's "Cleopatra" design, from the article published in our August '77 issue, plans available. Powered by two OS .45 engines, Kurt plans to fly it over the Baltics, between Sweden and Atland, about 40 miles, following by boat.



WORLD

by BILL NORTHROP

FREQUENCY CLIPS

Did you know that, to the best of our knowledge, this writer, in one of his first columns as R/C editor for *M.A.N.*, proposed the spring-type clothespin frequency control idea, in early 1965? Our Delaware R/C Club had developed the system, though possibly one of us had picked up the basic idea from another club in the mid-east coast area.

Of course, as most everyone knows, the idea was that each group or club would make up a set of clothespins, painted in the various coded colors representing the standard R/C frequencies used on the 27, 72, and 6-meter bands. These pins would be attached to a frequency board, stand, pole, or what-have-you, and be erected at the group's or club's flying field permanently or at

least whenever normal flying activity would warrant its use.

In use, a flier would go to the frequency control board, select the clothespin representing his or her radio operating frequency, and keep it clipped to the transmitter antenna until finished using the radio for that turn or period. As long as the clip is gone, no one using that frequency may turn on. The matter of taking turns is worked out by the individuals on that frequency. Over the years, the system has been adapted by most major clubs and national organizations, and is even standard equipment at the AMA Nationals as well as many international competitions all over the world. For lack of something better, the clothespin frequency control system has proven to be the most reliable means

of preventing frequency conflict-caused control failures. There is no guarantee against human error, but this system comes the closest.

Perhaps the weakest link in this system is a human error that doesn't, at least directly, cause radio interference, though it makes the system difficult to maintain. We're referring to the "disappearing frequency clips." This is usually caused by the last flier to use a certain clip on any given day. With no one looking for the clip to get a turn at flying (or driving, or boating), the last user may simply leave the clip on his antenna and take it home. Or it may be a visiting modeler who is a non-club flier, not used to returning the clip. The pins get lost in the grass, little kids think they're neat to play with, dogs bury



A possible future construction article may appear on this fine Waco YKS-6, designed and built by Jack Burns, El Cajon, California. The ship is extremely stable, and is powered by the O.S. Wankel engine. Construction is traditional balsa and plywood.



Pat Craill's beautiful Concept Fleet, Quadra powered, takes off at Mile Square Park, during Giant Scale fly-in.



Mel Santmeyer's quarter-scale Piper "Tomahawk" is an exceptionally smooth-flying model. Grooves like a pattern ship.



Bob Seigelkoff's 2-holer Pitts is powered by a Kawasaki engine. Muffler added for flying at Mile Square caused some problems.



Also at Mile Square Giant fly-in, this all-yellow Bridi Rearwin Speedster. Performed excellent aerobatics.

them, and so on.

We believe the original system is still the best for large operations, and particularly contests, but what you might call the "Reverse Clothespin Frequency Control System" is one we'd highly recommend for small clubs and flying groups for regular daily and weekend flying sessions. With this system, you bring your own frequency clothespin with you. No dummy, of course you don't walk onto the flight line with your frequency clip attached to your transmitter and turn on! We said it was "reverse." In this case, you take your clip

to the control board and attach it in the appropriate spot (the "board" can actually be just a 1/4 to 1/2-inch by 4-foot steel rod driven into the ground) when you are ready to operate. If there's already a clip on your frequency colors attached to the control, you wait until it's removed . . . or go look for the guy who's flying on your frequency so he'll know he's going to have to share time.

With this reverse system in effect, a club does not have to maintain a complete set of frequency clips at its flying site, many clips of which may hardly ever get used, while others are constantly

having to be replaced. Each flier will have to make up his own frequency clip, more than one if he uses more than one frequency, and probably should put his name on each one. With this arrangement, a recent arrival at the flying site can check the frequency pole to see if his frequency is in use, and if so, by whom.

We think it's a good idea. What do you think?

SYSTEM ANALYZER

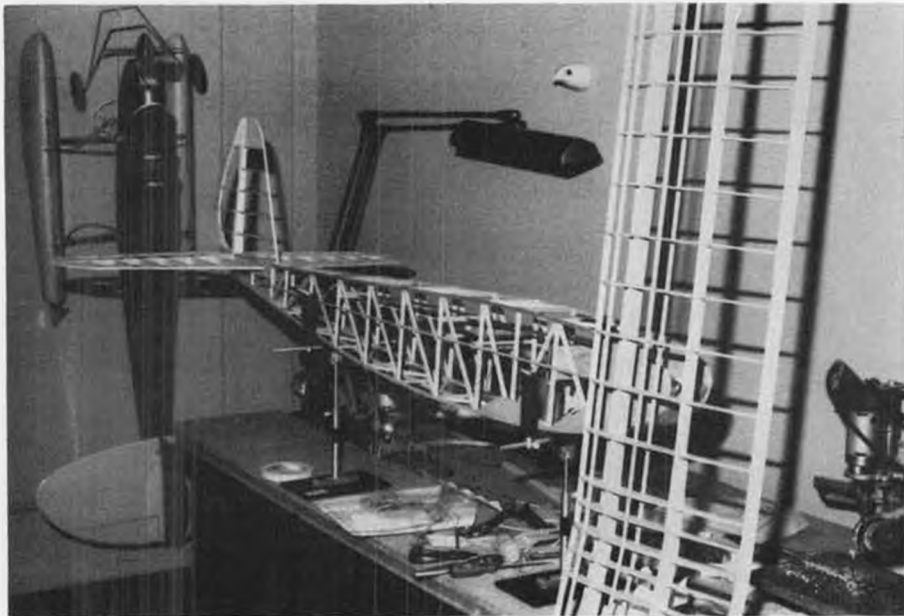
Our electronic expert, Chip Conklin, has taken a look at the Milliamp Analyzer being produced by I.R.C.S. (Intern-



Superb model craftsman, Frank Comyns, tunes the inverted Evra in his 1/4-scale Great Lakes. Ship is equipped with smoke unit.



Connie Vaughn, Orange Coast R/C and Scale Squadron member, helps Seigelkoff after premature engine cut caused emergency landing.



Our PB-2 oldtimer is still slowly taking shape. Fuselage is cradled in DaCa holders, really handy while working on model. Bird hit exterior concrete wall during heavy fog!

tional Radio Control Service), and makes the following report.

International Radio Control Service has announced its I.R.C.S. Milliamp Analyzer, which should prove to be a very useful tool for determining the condition of radio control receivers, servos and battery chargers. When connected to your system in accordance to the detailed instructions provided, the unit is capable of measuring the current drain of your entire airborne system or any individual component as desired. In addition, it can be used to check and constantly monitor the current of your airborne system charger.

Since component failures and other problems, such as binding pushrods and damaged gear trains, often result in increased current drain before complete failure, the Milliamp Analyzer provides the capability of finding many problems before they crash airplanes.

Among the conditions which may be detected are jittery or worn servo pots, failing servo motors, worn or damaged gear trains, binding pushrods, stiff carburetor barrels, bad chargers, and bad batteries.

The unit is supplied with a choice of Kraft, Futaba, Deans, or Cirrus connectors, or may be purchased without connectors.

The I.R.C.S. Milliamp Analyzer is manufactured by International Radio Control Service, P.O. Box 1643, San Juan Capistrano, CA 92693. It will be available soon at your local hobby shop.

4th ANNUAL Q.S.A.A. "FLY-IN"

As big as the models that appear to perform, and getting bigger each year, the Q.S.A.A. (Quarter-Scale Association of America) annual fly-in at Las Vegas is again scheduled for October 9-12, 1980. If you wish to join in, or just want to



IRCS Milliamp Analyzer is described in text by Chip Conklin.

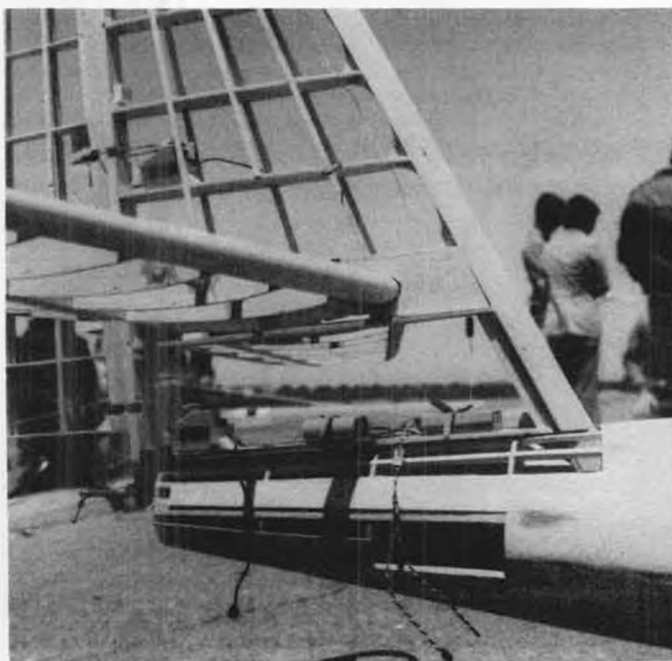
come along to watch the fun as many others do, it's time to make plans. The following information comes from Eddie Morgan, founder of Q.S.A.A., and organizer of the fly-in.

We would like to invite you to our 4th Annual Q.S.A.A. "Fly-In," which will be held in Las Vegas, October 9-12, 1980. We would also like to thank you for your support in the past years, which has made Q.S.A.A. the fastest growing organization in the world.

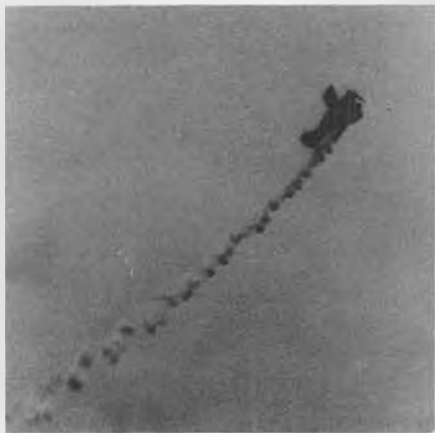
Last year we drew 122 flyers and 166 planes. This year it is going to be a much larger turnout, with people coming from Germany, France, South Africa, England and Mexico.

Our headquarters will be at the Showboat Hotel, located on the Boulder Highway. The Showboat, along with two other new hotels all in the same vicinity, are providing Q.S.A.A. with 400 rooms. The Banquet Room, with 600 seating, and the display area for 200 planes and 36 additional tables for manufacturers displays, will be at the Showboat. These facilities are twice as large as last year's, and to top it off, there is a 106-lane bowling alley, so don't forget your

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Look closely at left and you'll see Kraft receiver, battery pack, and two servos in the tail of giant Howard Hughes "Spruce Goose" being built by Ray Baker, of Norwalk, California. That's 3.2 cu. in. worth of K&B 40's up front. Ray's planning to switch to 60's. Whatta project!



SIG IMAC CHAMPS

By BILL NORTHROP . . . Originally planned to be a contest report combined with "R/C MODEL BUILDER Visits Sig Mfg. Co.," we're going to split it into two episodes . . . this time the IMAC Championships.

- Having been raised in what was then a small mid-east coast farm town, it was kinda nostalgic to spend a recent 3-day weekend in the mid-states farm town of Montezuma, Iowa. Of course, anyone who has hacked balsa for more than a season or two knows this to be the home town of Sig Manufacturing Co., Inc., founded better than 20 years ago by Glen and Hazel Sigafoose.

Montezuma is about 60 miles east of Des Moines, and just 8 miles south of the

interstate highway connecting Des Moines and Iowa City, Iowa. Sig Manufacturing is located near the south side of town . . . which is about 5 blocks from the north side. Going east and west on the main street at 20 mph should get you through town in about one minute!

Incidentally, 19 miles to the south of Montezuma (most anywhere you go from Montezuma is "about 19 mile") is the town of Oskaloosa, home of William Penn University, a well-known Quaker

college.

A typical characteristic of small towns is that everyone knows what everyone else is doing . . . unless you go out of town to do it! And, if you are a bit outstanding in your activities, you become a well-known resident. Both Glen and Hazel fit into this category. Besides owning and operating one of the town's only two or three major industries, they also own and operate the "Sig Air Force," which includes a Cessna 206,



Flight line ready boxes by frequency, as described in text. Very practical and worth copying. A relaxing way to compete.



Sig kit models dominated the ranks of competitors, with 28 Sig Skybolts leading the pack!



Panorama of Sig Field, on the top of grassy farm land, just 1-1/2 miles from the town of Montezuma. T-hangars house the Sig Mini-Air Force. Many contestants camped here for the weekend.



Burdett Hall's Mallory Models Laser flew in Giant Scale. Weighed 13 pounds, powered by a 90. Hudson, Iowa.



Burnis Fields' Concept Fleet reaches for the turf. Quadra power with Eastcraft on-board starter. Jacksonville, Florida.



Denny Baker, Manito, Illinois, placed third in Sportsman Biplane with his Sig Skybolt. O.S. 60 Blackhead, 7-1/2 pounds.



Chuck Jones, Spencer, Iowa, did a masterful job of flying his under-powered Nosen P-51. Hustler engine, retracts, 26 pounds.



One of three Byron Pitts entered in Giant Scale. Iowa is Byron home state.

Glen's "Standard-Tail" Bonanza, Hazel's Clipped-Wing Cub, and their "His and Hers" aerobatic Pitts Specials. The Air Force also includes Maxey Hester's Citabria "Decathlon," and Hank Pohlman's Cessna 172. Maxey and Hank, along with Claude McCullough, Mike Gretz, and Bill Fleming, are the design, research, and development team for Sig Mfg.

Because of their business and their private interest in aviation, both model and full scale, it's not too difficult to see

why the Sigs were interested in sponsoring an annual championships for IMAC, the International Miniature Aerobatic Club, and the reason for our weekend visit was to attend, observe, and report on the 6th annual running of this event.

The addition of monoplane categories expanded the scope of the championships, and this year, for the first time, an overall Giant Scale category was added. With the inclusion of the "Unlimited" class of flying skill competition, a total of seven categories were contested. Re-



Bob Keenan, Ankeny, Iowa, president of the Des Modelaires, cranking the Quadra in his Balsa USA Sopwith Pup. Note handy fire extinguisher.



Watch that crosswind! Pup flew realistically and with authority. Unfortunate control cable hang-up caused exciting but minor crash.



Glen and Hazel Sig (short for Sigafoose) taxi back to hangar after completing aerobatic show during tabulating intermission on Sunday afternoon. Both are qualified for aerobatics down to 500 feet. FAA observer was on hand. Teenage boy commented to Hazel, "Lady, you're somethin' else!"



Dave Litt, Omaha, Nebraska, tunes K&B engine in his Midwest Pitts. He and his wife Caren are owners of DaCa Model Products.



AMA Scale Contest Board Chairman and Sig designer, Claude McCullough, chats with Gwen and K.K. McClure, right foreground.



Hazel and Glen were pleased with wire sculpture presented to them as a thank-you from the Des Modelaires. A biplane, natch, it was made by Larry Andrew.

sponsibility for operation of the contest was assumed by the Des Moines Des Modelaires Club, with Roger Schlenker taking on the contest management chores.

The contest was held at Sig Field, which is about 1-1/2 miles south of town, on a high piece of beautiful grassy farm land. It is definitely a family affair, with many of the 94 contestants camping for the weekend in their motorhomes, trailers, tents, and campers. Many set up camp right at the field, while others converged on a campsite on the edge of a man-made lake about a mile west of

town. Others stayed at Montezuma's one small motel, or "19 Mile" down the road near Oskaloosa at a larger motel.

The tenters had it a bit rough both Friday and Saturday night, as typical midwest thunderstorms worked their way across the state, bringing strong winds and, at times, heavy rains. Miraculously, all of this unpleasantness occurred during the night, leaving the flying days clear. On Sunday, a front went through, switching the winds to across the runway, and bringing a sudden afternoon drop in temperature that

Continued on page 84



Merchandise and trophies for 33 winners, plus a gallon of fuel and a bottle of glue for the remaining 61 contestants who officially entered. Everybody was a winner!



The Cox Sportavia has been around for a couple of years now, is just as popular as ever, especially with beginners. Available with gas or electric power. All-foam construction with a few hard plastic parts and hardwood wing spars for extra strength.

The 1/2-A SCENE

By LARRY RENGER

• This month's column may be a bit sketchy. The reason is that I got married just three weeks ago, and not all my stuff is moved into my new abode yet. The lucky (?) lady's name is Jeannette, and among other wedding presents, she got a "Gentle Lady" glider kit. Believe it or not, she asked for it without prompting!

For those of you who are, or would like to be, into 1/2A pylon racing, there is a good newsletter. The engine info it presents is useful to all of us. The letter is CL-RPM and may be received by sending \$6 per year, but the subscription starts Jan. 1. If you subscribe later in the year they send you all the back issues! They have a classified ad section with all those hard-to-find speed goodies, and they occasionally have a comprehensive listing of obscure sources of peculiar modeling things. Address is: Box 316, Yardley, PA 19067. Sherry and Greg Holland are the editors, and don't be put off by the fact that they go by the nicknames "Toodles" and "Chop." I wonder who is who...

You may recall that a few months ago I ran a photo of my ill-fated "Cheap Shot" single-channel .020 model. It had swept down and out wingtips which I suspected of causing it to have absolutely no rudder response. I got a letter on the subject from John O'Donnell, who lives in Cheshire, England! John says:

Some years ago I built a TD .15 F/F duration model, with the same style of tip you described. This model was reluctant to roll under power, and hence was prone to do wingovers. It

took an immense amount of wing warp to induce roll on climb... and naturally enough, this warp had adverse effects on glide. As I lost this model fairly quickly, I never really solved its problems. As you will see from the photo, the model had conventional enough proportions (The airplane looks pretty good, too... LHR), even with some constructional innovations (such as carbon fiber longerons and mylar covered wingtip panels).

More recently I produced a Coupe d'Hiver with much the same style of wingtip. Power pattern and general

circling behavior left something to be desired. Eventually the model blew over on a stony runway and damaged the extreme tips. This gave the opportunity for an inspired "mod" rather than merely repair. The tips were replaced by laminations of semi-circular shape. The effect on the way the model flew was amazing... a much-improved spiral climb, and an easier circle on glide!

As another follow-up I received a reprint of an Aermodeller article by Ron Moulton. It was sent to me by Terry Bradley of Buckinghamshire, also in England. I always have been an Anglophile; glad to see they like me, too! Terry owned and used a K&B twin some years ago, and found its power output similar to a Mercury 15 (1.5 cc or .091 cu. in.) diesel. The noise level, however, was much greater and higher pitched due to



Lots of interesting innovations on Englishman John O'Donnell's "Scintillater" F/F model, cradled here in the loving hands of Diane Bartosz. John had some unique experiences with the wingtip design on this ship; story in text.



Two neat kits from Model Merchant are the Ryan S-T (left) for .10 size engines, and the F-4 Phantom for .049's. Both kits feature foam wings and heat-formed plastic fuselages.

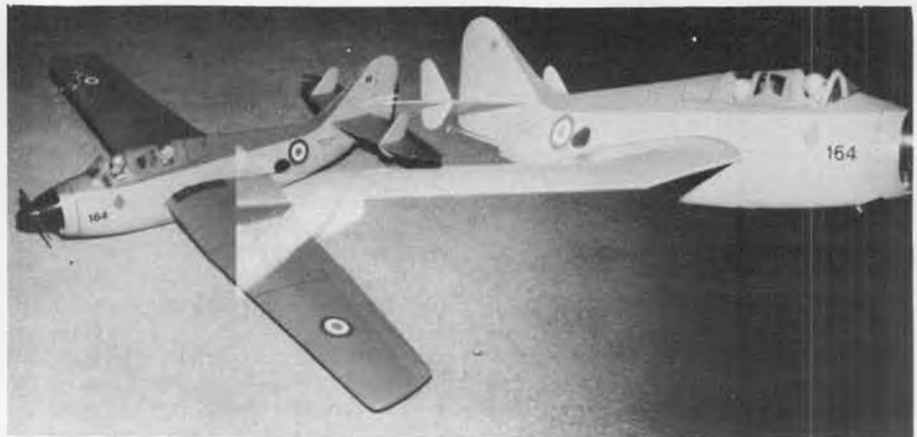
the glow fuel and alternate firing. The Moulton article featured a variety of techniques for making twin-cylinder engines and the relative merits of each. Twins in model use seem to find the most use where lots of torque at low rpm are required. The piston area of a twin is 25% greater than that of a single "lung" of the same total capacity. If inline, alternate firing is used, the power transfer to the prop is even more effective. If opposed simultaneous firing is used, the engines can run with extremely low vibration levels. The article on twins was in the 1959 *Aeromodeller Annual*.

Moving back to the U.S. of A., Barry Killick of Novi, Michigan sent a couple of photos of his 1/2A models. His pride, but not quite joy is the Fairey Gannet. He scaled it up himself from a 1/72 size display model and has flown it extensively. Once in the air it is lots of fun, but has shown an unfortunate difficulty in getting started. Barry has developed an underhanded and inverted launch for the P-47, but only a heave straight up works for the Gannet. "In spite of anti-stall strips, differential ailerons, etc., it continued to snap on launch until one day it sort of self-destructed to the point that repairing was the same as building," Barry tells us. If he were doing another one, a thicker wing section and wash-out are what he guesses would turn the tide in his favor.

Barry's P-47 is from a House of Balsa kit, and has been flown until it is worn out. Barry delights in making near-disastrous vertical dives. He loves to hear the engine wind up, though he has run into elevator flutter and had a difficult time recovering. Both models are covered with a lightweight, heat shrink, textbook covering material obtained through a university bookstore and spray painted with Perfect Paint. Both are Tee Dee .049 powered.

One last shot from Tyrone Parker. The photo is an overview of several of his models. Did you ever see so many models in perfect condition at once owned by one person?

I have several photos of commercially available products to show, but little technical detail, so I'll let the captions do all the work on these and sign off for the month. ●



Inadvertent double exposure yields an interesting 2-view of Barry Killick's Fairey "Gannet" 1/2A job. Flew great, but a real devil to launch. Alas, it exists no more.



Somewhat more successful than the Gannet is Barry's P-47, from a House of Balsa kit. High-speed vertical dives to the point of elevator flutter turn him on.



Tyrone Parker builds these flawless 1/2A ukies, then somehow manages to keep them that way. Our 1/2A columnist sez he never had that many clean models in a year, let alone at one time!



Ken Willard's ●POOLBOY●

Swimming pool flying at its best! Ken's sort-of-scale flying boat is a great flier and goes together in no time at all. Removable tip floats and strap-on landing gear make it a fun little landplane, too. For Cox Tee Dee .010's or Pee Wee .020's, and the tiniest radios.

● Bill Northrop has a thing about bi-planes. So do I. But I also like small planes, and particularly, small flying boats. The Poolboy fills all of those requirements.

Last January I took the prototype down to the International Modelers Show in Pasadena, California, complete and ready to fly. Bill looked at it, puddled up, and said, "I gotta have that for R/C Model Builder!"

Since I hate to see a grown man cry, I said, "OK. But first I've got to prove that it does what it is supposed to: take off and land in a swimming pool."

The Poolboy design was based on a 1929 flying boat, the Eastman E-2-A, which was produced by the Detroit Aircraft Corporation, one of the companies which Robert Gross, founder of the present-day Lockheed Aircraft Corporation, was associated with. A photo of the Eastman amphibian appeared in the June 1957 issue of the Lockheed publication *Of Men and Stars*, but was incorrectly identified as a Viking flying boat. It took the old "Obscure Aircraft" specialist, Bill Hannan, to set the record

straight.

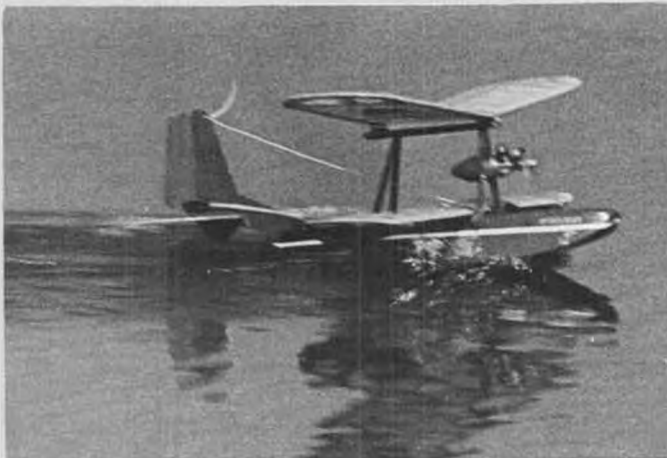
Anyway, for all this time, I've had that photo and thought what a great model it would make, even in stand-off scale, or nearly so. Every so often I'd look at it, but the opportunity kept evading me. However, I kept the photo, just in case.

As radio control units kept getting

smaller, the idea of a small flying boat became more intriguing. Then, when Bill Cannon came up with his Super-Micro unit, the idea came to me. Why not make a "stand-way-off" scale model of the Eastman E-2-A, in miniature, and see if it could be flown off a swimming pool.



Ken's source of inspiration for the Poolboy was this old photo of the 1929 Eastman E-2-A amphibian. Differences are obvious, yet the general layout has been retained.



Just after release, accelerating along and in just a couple of seconds it's



..... up on the step and scootin'. Ken says the Poolboy can get off the water in fifteen feet in a dead calm.



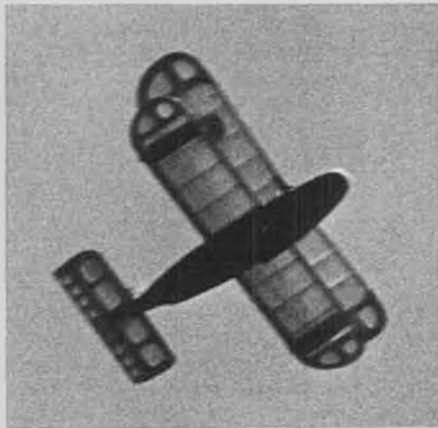
One way to bring 'em back alive is to cast a small weight over the model and snag it with fishing line. Takes some skill.



Two-bit nose weight gets the balance point forward, makes flight stability better and takeoffs longer.

So that's where the Poolboy originated. Over the years I've designed the Puddlejumper, the Pondhopper, and the Wavemaster; why not design an ultra-small flying boat for swimming pool flying? So I did.

The Poolboy will take off from the water in fifteen feet . . . less if there is a



As all models of similar size, the Poolboy is quite touchy on the sticks. Feel it out at altitude before trying any low-level wild stuff.



Thumbs up after a flight where everything went just as planned.

slight breeze . . . and can be turned in a tight circle as soon as it is airborne. Yes, it does take some skill to land it back in the pool, but if you can find a puddle of water twenty to twenty-five feet long and an inch deep, you've got all the room you need . . . that is, as long as it isn't closely enclosed by a five-foot fence! The model is so easy to build (and repair, if you have to) that you can experiment with your flying skill without facing a big repair job if you do run into a fence.

The prototype is powered with a Cox .010. These engines are no longer in production, but thousands of them still exist, and also, if you don't have one, the plans show how you can substitute a Pee Wee .020. Just don't try a Tee Dee .020; it'll make the model much too wild to control.

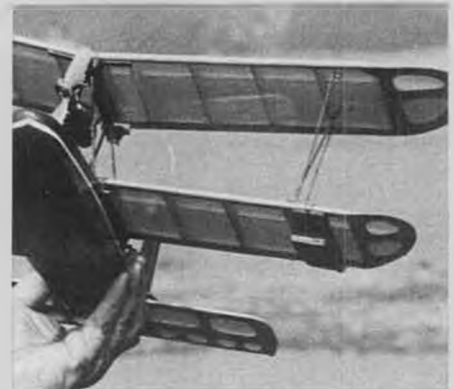
As usual, the design follows the basic philosophy of K.I.S.S. (Keep It Simple, Stupid). By using Hot Stuff or a similar glue as the principal adhesive, you can put the Poolboy together in just a few hours. You'll be glad you did, too. It is one of the best crowd pleasers you'll ever fly.

For those of you who might prefer flying from a runway, a strapped-on landing gear is also shown. Works fine.

The design is so simple that if you are an average modeler, you can build it right from the plans. Wood sizes and materials are called out for each part of the structure. There are just a couple of details that need clarifying, and they are easy to explain. The model is so small that you can almost build it out of scraps from your balsa box. Just be sure to use a medium grade of balsa to keep the weight down.

HULL

This is a simple slabsider, with the sides slanted so that the cabane structure, made from coffee stir sticks, will attach right to the sides of the hull and taper up to meet at the apex of the triangle where the upper wing saddle stir sticks are Hot Stuffed in place. Then the dihedral braces are attached. The 1/8 balsa fairing on the top of the aft end of the hull goes along the centerline, and serves to raise the empennage up high enough so that it does not drag in



What *not* to do if you want to make good R.O.W. takeoffs. Mr Dum-Dum was in such a rush to fly he accidentally put the left tip float on backwards, caused wild waterlooping. If you build your Poolboy strictly as a seaplane, consider gluing the tip floats in place.

the water on takeoff.

The top of the hull between the cabane struts is left open for access. Triangular braces are Hot Stuffed to the sides, thus providing a base on which to attach some 1/16-inch thick wing seating tape. Then, when the wing is put on, it closes the opening and makes it reasonably watertight.

Note that the wing mounting dowels also serve to hold the canopy in place. In addition, if you want to attach the landing gear, the same dowels can be used.

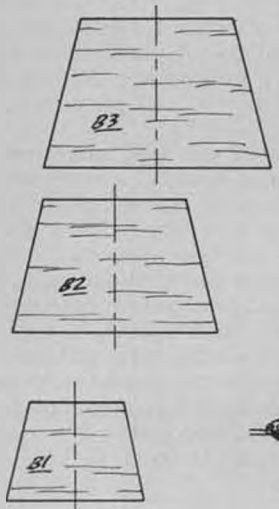
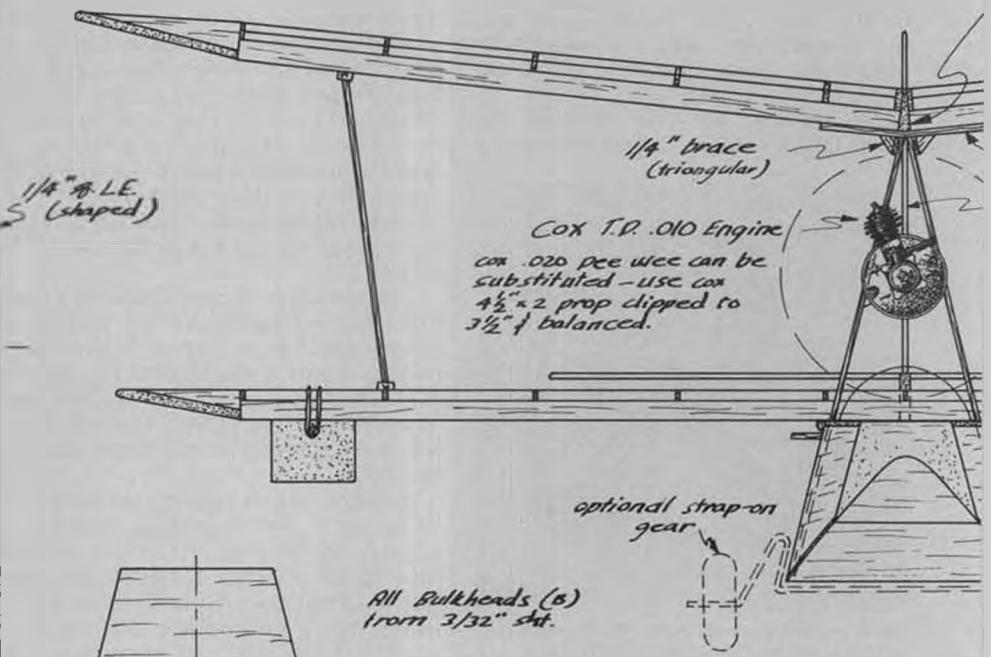
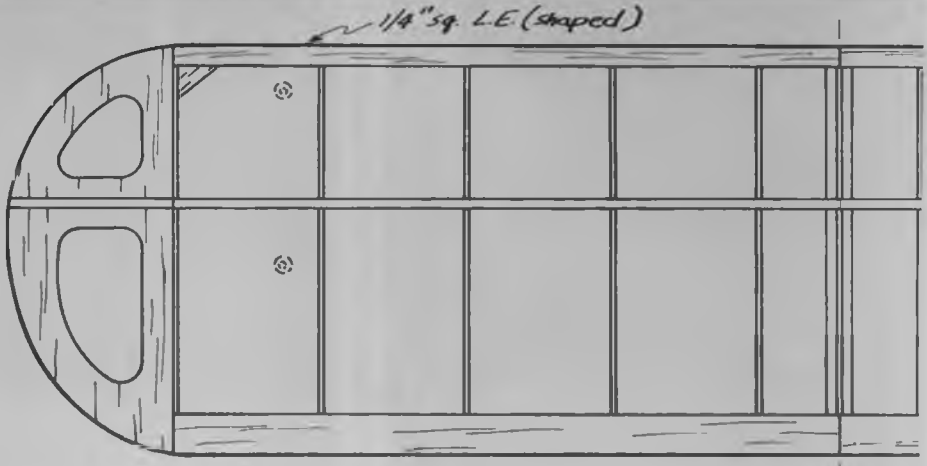
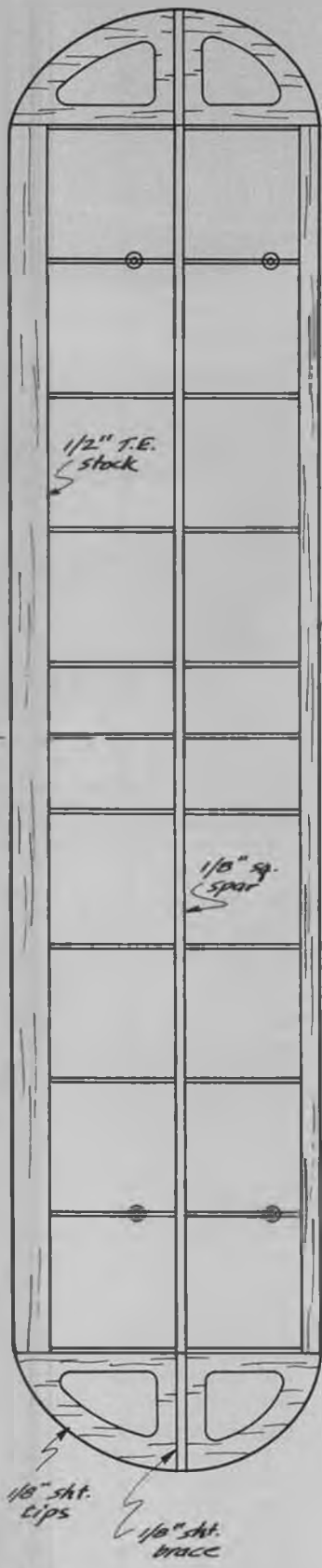
You may feel that the switch location is inconvenient. It is, but with the canopy held in place by a rubber band, all you need to do is take it off, turn on the switch, and put the canopy back on. The reasoning here is that the canopy will serve to protect the switch from both water spray and fuel.

ENGINE MOUNT

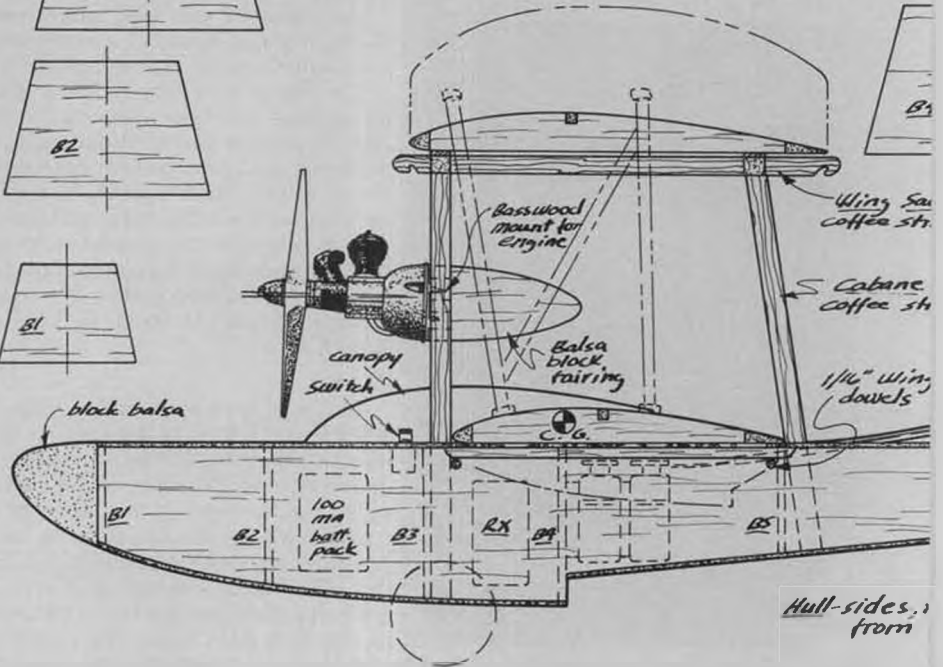
You may wonder why the engine is mounted at an angle as seen from the front. The reason is that by doing so, the mounting holes for the .010 tank will be inside the cabane strut opening, and by inserting a piece of 1/4-inch basswood and Hot Stuffing it there, the engine can be mounted with two small wood screws.

The other angle on the engine mount, as seen on the side view, which creates

Continued on page 77

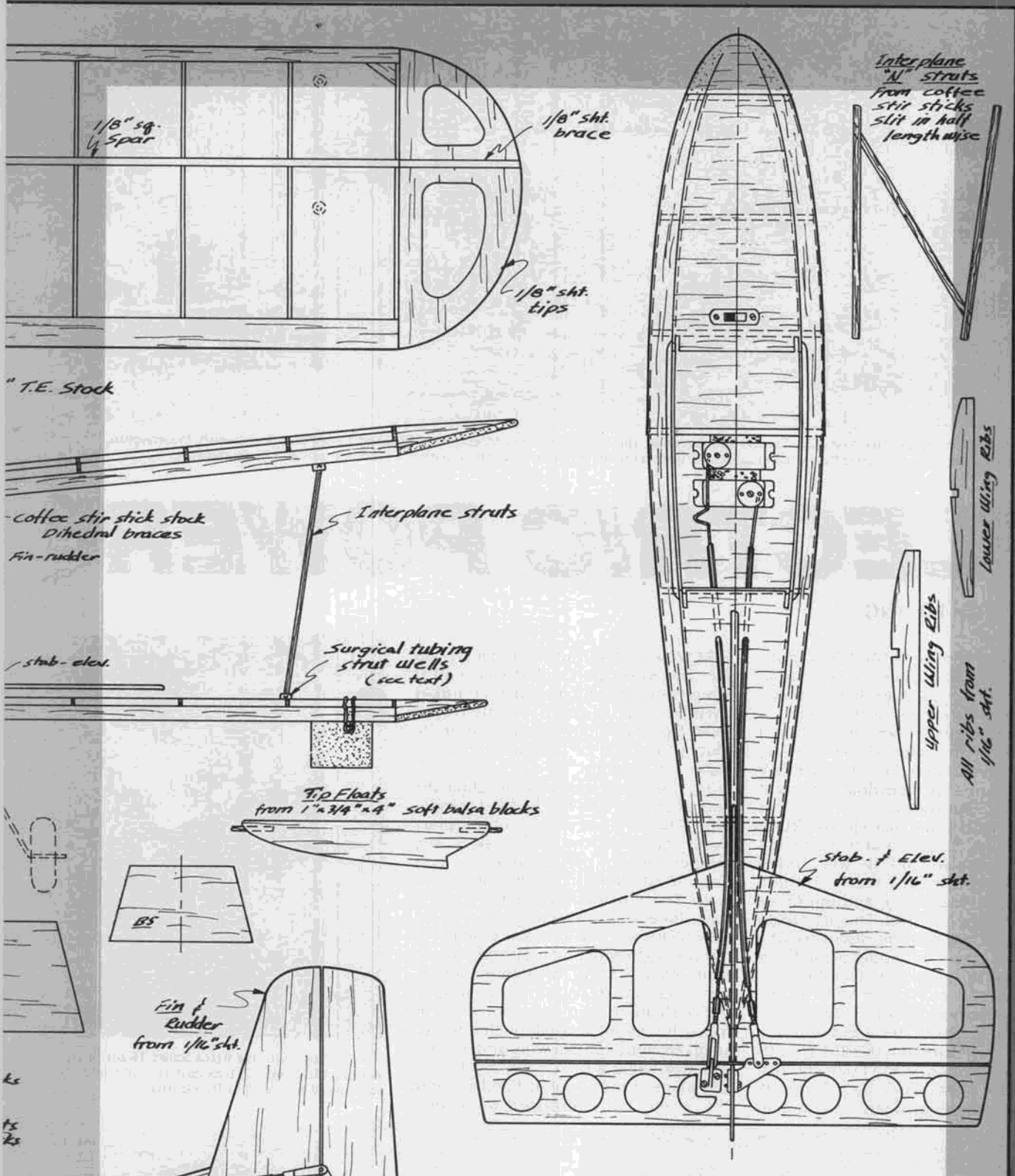


All Bulkheads (B) from 3/32" sht.



*Note: All parts balsa unless otherwise noted.

Hull-sides, 1 from



'Poolboy'

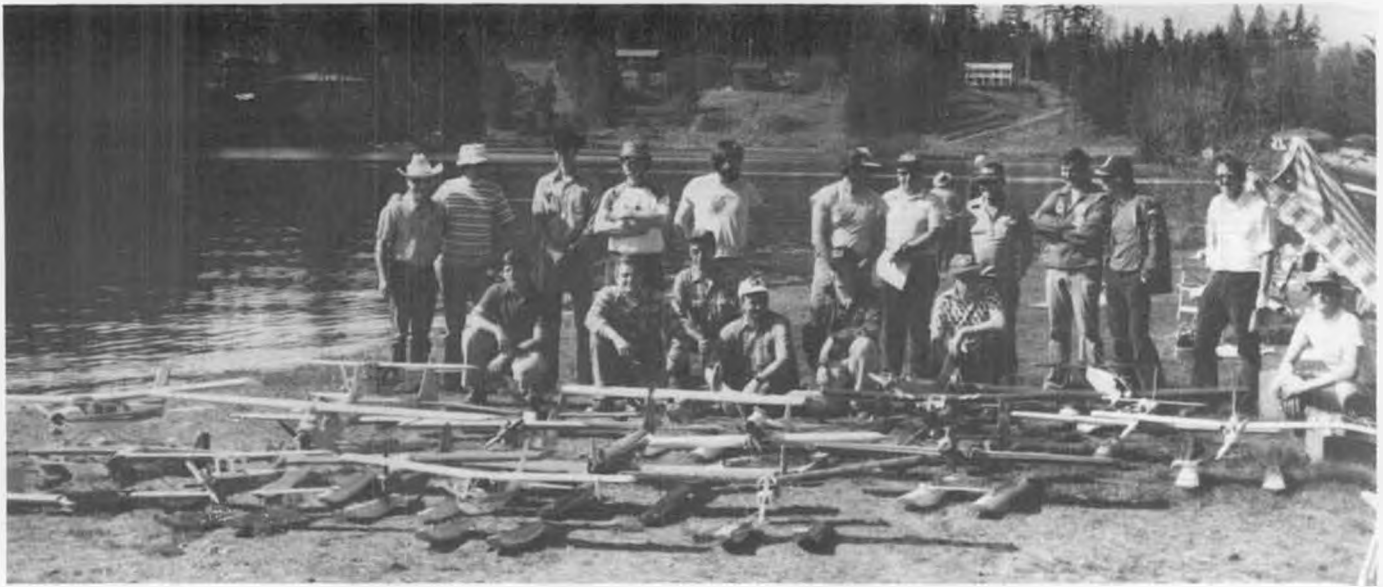
Designed & Drawn by: Ken Willard
 Traced in Ink by: Al Patterson



MODEL BUILDER magazine
 621 West 19th St., Costa Mesa, CA 92627
 Plan No: 980/

Specs

span:	20"
length:	18 1/2"
power:	.010
	CON. T.D.



Some of the 30 entrants in the floatplane fun-fly sponsored by the Evergreen Aero Modelers at Flowing Lake Park, Snohomish, Washington, in April of this year. Our Electric Power correspondent (second from the right) was there with his electrics, put in a good showing.

ELECTRIC POWER

By MITCH POLING

• The Evergreen Aero Modelers sponsor a floatplane fun-fly every year in April at Snohomish, Washington. This is a very well-run meet with prizes for everyone and guaranteed fun. Last year I entered my Astro Sport 15, powered by an Astro 15, and demonstrated an ROW using the Sure Flite foam floats. I also got the Worst Crash Award for six duckings in a row. I did show that electric ROW was possible, though, and that electrics could get wet and still fly well. In the year that followed, I learned much more about float flying and improved the ROW's a great deal. The big breakthrough for me was the discovery of a really fine article on model plane floats by George Wilson, in the October 1974 issue of *American Aircraft Modeler* (no longer published). There I discovered that the angle from the step bottom to the transom bottom should be 10° relative to the top of the float, and that flat-bottom floats work best. I tried it, using my own design floats, and sudden-

ly ROW was easy, routine, and just plain fun. The Astro Sport will now take off at 3/4 power, and will do touch-and-goes with ease. With the previous floats, ROW took full power and was quite touchy, and out of the question if the water was smooth.

So, this year I was ready to enter the annual contest as a full-fledged competitor. The weather was beautiful, practically no wind, with blue skies and temperatures in the seventies . . . very unusual for April in the Pacific Northwest. Thirty planes were entered, with mine (needless to say) the only electric. The events were slalom taxi; timed two-minute flight with one loop and one roll from ROW; ROW with three touch-and-goes; and ROW with three loops. I did well in the timed event and the loops, but on my second touch-and-go I snagged a buoy with a wing and lost two minutes while a boat went out to free the plane. I then took off and finished the event, but it dropped my overall



Here's Mitch with his Astro Sport 15 on floats at Lake Washington. Box contains all the equipment he needs to fly electric.



Takeoff sequence, photo No.1. At rest, motor off, and lined up into the wind.



No.2. Start of takeoff run, front of floats up, good angle of attack, spray well away from prop.

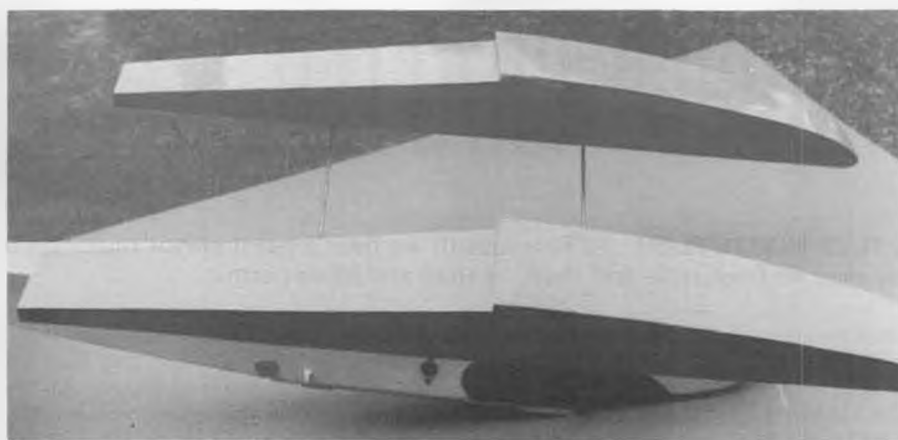


Float mounting on the Astro Sport 15 is super simple. No water rudders used.

score considerably. However, I did place 18th in the field of thirty, so it showed that electric float flying is practical even in competition. Now if I can practice some more and avoid buoys, next year . . . !

Much of the day was so calm that the water at times was glass smooth, and some of the .40-powered planes could not take off. They made impressive hydroplanes as they roared around the lake at 50 mph. This gave me a charge (pun intended), as I was doing consistent ROW's in glass-smooth water in 50 to 75-foot runs. This all goes to show that the right floats make all the difference. The secret to float flying is the float design, not horsepower.

The next project for me is an Astro 05 floatplane, and I'm flying the design I think will do it right now. This is Bob Boucher's Astro Sport 05. I saw this design and flew it last Christmas when I visited Bob at Astro Flight, and I just had to have one. Bob was kind enough to



Mitch says the secret to good water takeoffs is in the float design, not in how much horsepower you have up front. The floats shown are ultra-simple yet work well even on glass-smooth water. Takeoff run is typically 50 to 75 feet.

send me the plans and a set of ribs. I built it, and it is fantastic. It has easily double the climb rate of any Astro 05 plane I have ever seen, a roll and spin rate that has to be seen to be believed, and good thermalling ability even as a sport plane design. Mine weighs 29 ounces with a Cannon receiver, two Bantam Midget servos, and a 250 mah receiver pack. The span is 37 inches, wing area 296 sq. in., with a 9% airfoil, the same used on the Astro Flight sailplanes. Bob plans to kit it

soon, and I highly recommend it. It is a real tiger with a 6x4 prop, and I think with a 6x3 prop it would be docile enough for the beginner, considering its excellent handling characteristics. I have now installed floats, and as soon as some decent weather comes along, it's off to the lake! It weighs only 32 ounces with the floats, so it should do well.

The smallest planes I fly use the Astro 020, where weight really counts. The

Continued on page 78



The Bantam Midget and Cannon Super-Mini servos mounted in Mitch's twin 020 Widgeon flying boat. Mini servos makes the Midget look huge!



No. 3. Liftoff! Takeoff run was about 50 feet on this flight.



No. 4. Astro Sport 15 has brisk rate of climb even with bulky floats. Uses Astro 15 system, weighs 3-3/4 lbs.

CHOPPER CHATTER



By RAY HOSTETLER . . . This month we have a guest editor replacing our regular columnist, John Tucker. Ray may be back now and then, as time and ideas permit.

• Bill Northrop, **RCMB's** editor, has kindly given us permission to submit material for these "open months" when John Tucker is too busy to get a column in, and this is the first issue which we will be filling for him.

Getting right to the subject matter for this month, how many helicopters have you seen without a pilot in the cockpit? That's right, nearly all choppers lack pilots, and a *realistic* (Please, no blonde Barbie dolls!) pilot does add a great deal to the overall appearance of the machine. Heli-Babies with GI Joes and a cyclic stick were always much better looking than those without, and since the GI Joe was necessary for ballast, nothing at all was taken from flight performance by having a pilot on board.

Here is our solution to the model helicopter pilot, after asking ourselves several questions as objectives:

1) Is he the right size? Nothing looks worse than too large or too small a pilot for your machine.

2) Is he realistic looking? (See above.)

3) Can he be made and installed with a minimal weight gain?

First of all, we ran off to the nearest well-stocked toy store and acted like fools, examining every doll for its suitability. It was just after Christmas, so selection was down, but then again, so were the prices. (The best time to look is just before Christmas, when the shelves are loaded with dolls.) What we ended up with was a Gabriel "Lone Ranger" and Kenner's "Luke Skywalker."

The Lone Ranger was a bit small-bodied for the Jet Ranger, especially the head, but the construction was a hard, light plastic, while still retaining movable arm and leg joints. On the other hand, Luke Skywalker was just the right size, with excellent realism in the face, which was exactly what we were after. But he was solid, with a flesh soft skin surface, and came to 9-1/2 ounces; heavy! Our Lone Ranger weighed in at 4-1/2 ounces by comparison.

Naturally, we took Luke's head and transplanted it onto the Lone Ranger, after taking away as much material from the latter's body as we could. We cut off the feet and extended the boots to give greater height, then glued the legs and waist together in a sitting position, leaving the upper body free to move. Time to modify was two hours from start to finish.

What we did finish up with is what you see in the photos. He weighs 3.4 ounces and has as much realism as we believe is possible by using "off the shelf" dolls. Best of all is how he looks in action;

extremely realistic and well worth the effort involved. So go out and find a suitable pilot for your helicopter, you'll be sure to enjoy the added realism. If for nothing else, you'll always be able to blame him for all of your pilot errors!

VIBRATION

Some of you may have read the articles in RCM last June and July, entitled "Eliminating Vibration in the R/C Helicopter," and it's been pet subject ever since. In fact, every time we learn something new we find out how little we really know about setting up a machine to fly perfectly smooth the first time out. Each bird seems to have its own particular setting which we have only been able to find by trial and error, as stated in those earlier articles. We have learned a few things since then, and we've realized that other things which were left out of the original series might be of help to some of you out there now.

The degree of rigidity present in the rotor head has a direct influence on vibration. The tighter the rotor head that you're flying, the more your vibration will be magnified. That's why you never really have serious vibration problems with smaller machines. Their small size helps, but more important is their free

seesaw design which allows the rotor disc to "flap" and offset any problem with incorrect coning angles, bent seesaws and axles. A rigid head machine will definitely *not* tolerate these errors in head set-up! In a helicopter such as the Jet Ranger, where you can vary the degree of head rigidity by using a different damper or locking the head with epoxy, it is very easy to see how different heads show more vibration with increasingly rigid set-ups.

Rotor rpm also comes into play here. From common sense, the faster you turn the disc, the closer your rotor head must be to perfection. Flying at one rpm the vibration may be acceptable, but increasing the blade speed a few hundred rpm may increase vibration to the point that the machine will try to tear itself apart. All of this depends a great deal upon your bird's weight. If you have a heavier Jet Ranger, say 14 to 15 lbs., you will find it necessary to run a faster rotor speed than a lighter one to get equal performance. With the heavier bird in hover you have to run slightly over the peak power curve (faster rotor rpm) of your particular engine, so as you climb out the added load to the engine slows it down to the top of its power curve,



Why does the chopper above look more realistic than the one below? Because there's a man in the driver's seat, that's why. Text has details.





The pilot in our guest columnist's Jet Ranger is actually a combination of Luke Skywalker and Lone Ranger dolls, hollowed out as shown for lightness. Finished weight is a scant 3-1/2 ozs.



The Lone Skywalker all suited up and ready to be installed. Movable arm and leg joints are a big plus, let him be positioned as necessary.

and performance is maintained.

The lighter helicopter can be run right on top of the power curve (slower rotor rpm) at hover, yet still be fine in a climbout when the engine drops slightly below the peak power curve. In other words, the light helicopter will tolerate running off of the peak power curve, while the heavier helicopter will not. This is one reason why Heli-Boys are nice to work with. They weigh approx. 9 to 9-1/2 lbs. instead of 12 to 13 lbs., and they can run at a myriad of blade speed settings and still fly beautifully, simply because the engine does not have the load on it that the heavier helicopter demands.

Weight of the rotor blades is another factor. Small machines like the Heli-Baby run very light blades, and there is essentially less mass out there to upset the balance. The greater tip weight that you run, the more critical your rotor system balance, coning angle, and blade lead-lag become.

When you're in the process of working out the bugs in a new helicopter, fly only on perfectly calm mornings or evenings, when the slightest change to the rotor system can be noticed. Flying in windy weather is ill-advised for this purpose because you will have to concentrate harder to keep the machine in an attitude to best detect blade tracking and vibration. For instance, varying wind speed will increase or decrease your blade speed by slight amounts, causing your vibration to get better, then worse again in a matter seconds. Now, was it your adjustment or more wind that made a difference?

Also, start with a rigid head (not flybarless, just rigid) if you have a machine that can accept variable levels of rigidity in the head. Don't try this with a Hiller-only control system, i.e. Heli-

Baby. You must have the Bell system too, i.e., Jet Rangers and Heli-Boys. This assures you that you will get the smoothest running possible. Again, the rigid head simply magnifies vibration that normally would not be noticeable with a "softer" head. A rigid head also gives quicker control response, so your first lift-offs should be with reduced throws on cyclic.

You should always look for areas where vibration is more evident, or intentionally set up loose parts to more closely observe. First you look at the boom or skids to check vibration, but after those are motionless, pay special attention to wiring inside the cabin, unsupported fuel or pressure lines, and

the smoothness of fuel inside the tank. If ripples are visible in the tank, you have vibration that can be worked out.

What we mean by loose components is flying with a loose horizontal stabilizer or vertical fin. This is an excellent way to magnify vibration to get it to levels where it is easily observable. By now your helicopter is running quite smoothly, but there is more.

Another less obvious way to check very minor changes in vibration when observable vibration is minimal is to listen to the sound of the machine in hover. That's right; two visibly smooth helicopters can look the same to the eye, yet one may just sound better, an

Continued on page 86



Now doesn't this look better than a cockpit full of servos and wires? Only thing our pilot needs is a headset, shouldn't be too hard to make.

SCALE BAR 1/25 IN. = 1.0 IN. - 1.5 IN. = 1.0 FT.

SCALE ~ 1/8 SIZE

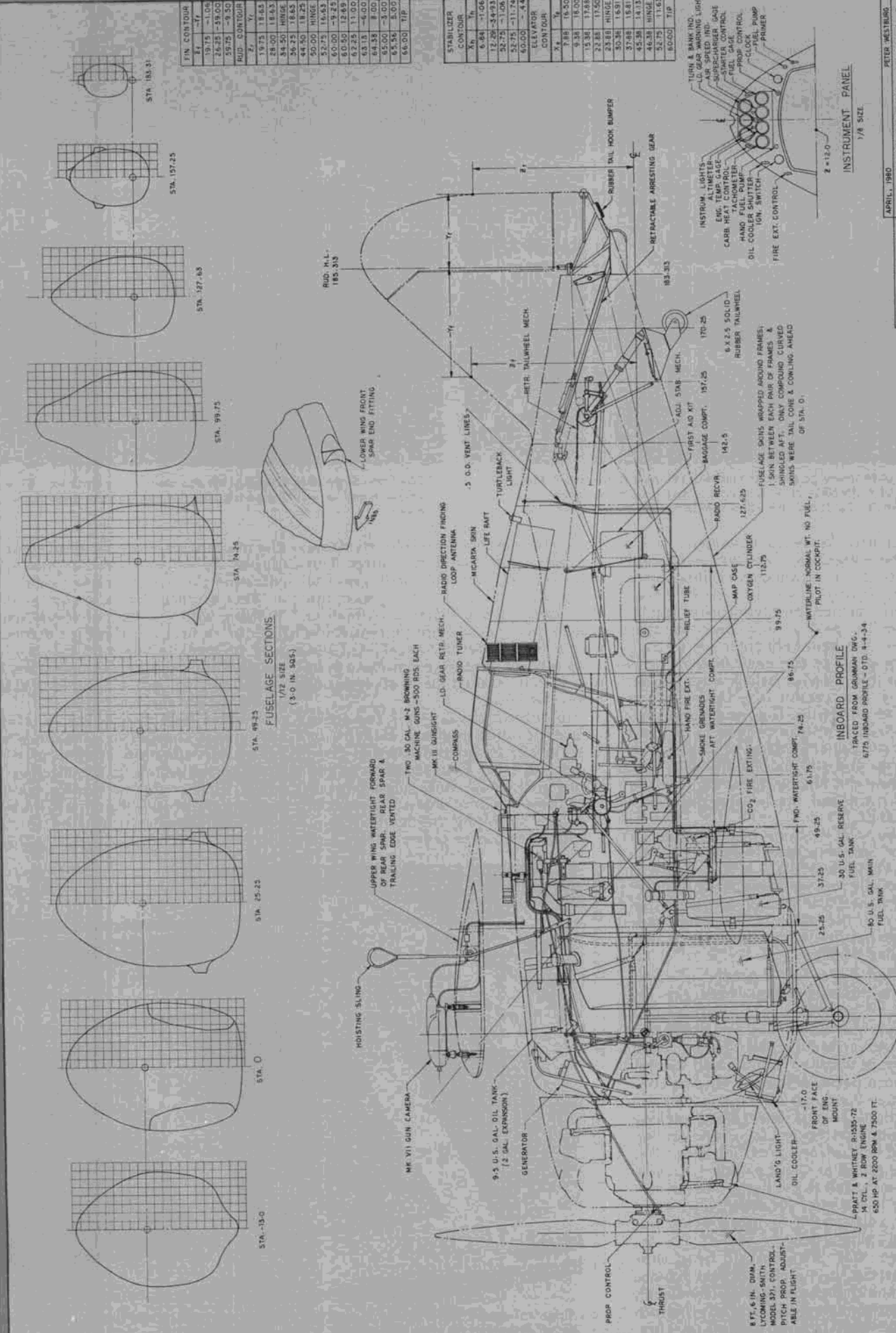
APRIL, 1960

PETER WESTRING

INSTRUMENT PANEL 1/8 SIZE.

CRUMMAN F2F-1

SHEET 3 of 3



FIN CONTOUR

E1	15.0
E2	15.0
E3	16.25
E4	19.00
E5	24.00
E6	29.00
E7	34.00
E8	39.00
E9	44.00
E10	49.00
E11	54.00
E12	59.00
E13	64.00
E14	69.00
E15	74.00
E16	79.00
E17	84.00
E18	89.00
E19	94.00
E20	99.00
E21	104.00
E22	109.00
E23	114.00
E24	119.00
E25	124.00
E26	129.00
E27	134.00
E28	139.00
E29	144.00
E30	149.00
E31	154.00
E32	159.00
E33	164.00
E34	169.00
E35	174.00
E36	179.00
E37	184.00
E38	189.00
E39	194.00
E40	199.00
E41	204.00
E42	209.00
E43	214.00
E44	219.00
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E46	229.00
E47	234.00
E48	239.00
E49	244.00
E50	249.00
E51	254.00
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E139	694.00
E140	699.00
E141	704.00
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E144	719.00
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E192	959.00
E193	964.00
E194	969.00
E195	974.00
E196	979.00
E197	984.00
E198	989.00
E199	994.00
E200	999.00

STABILIZER CONTOUR

X1	16.50
X2	16.00
X3	15.50
X4	15.00
X5	14.50
X6	14.00
X7	13.50
X8	13.00
X9	12.50
X10	12.00
X11	11.50
X12	11.00
X13	10.50
X14	10.00
X15	9.50
X16	9.00
X17	8.50
X18	8.00
X19	7.50
X20	7.00
X21	6.50
X22	6.00
X23	5.50
X24	5.00
X25	4.50
X26	4.00
X27	3.50
X28	3.00
X29	2.50
X30	2.00
X31	1.50
X32	1.00
X33	0.50
X34	0.00

FUSELAGE SECTIONS

1/2 SIZE (3.0 IN. = .505)

STA. 0
STA. 13.0
STA. 25.25
STA. 37.5
STA. 49.75
STA. 62.0
STA. 74.25
STA. 86.5
STA. 98.75
STA. 111.0
STA. 123.25
STA. 135.5

INBOARD PROFILE
1/8" SCALE FROM CRUMMAN FIG. 6775
6775 INBOARD PROFILE - STD. 8-4-3-4

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1/8" SCALE FROM CRUMMAN FIG. 6775
6775 INBOARD PROFILE - STD. 8-4-3-4

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1/8" SCALE FROM CRUMMAN FIG. 6775
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1/8" SCALE FROM CRUMMAN FIG. 6775
6775 INBOARD PROFILE - STD. 8-4-3-4

INBOARD PROFILE
1/8" SCALE FROM CRUMMAN FIG. 6775
6775 INBOARD PROFILE - STD. 8-4-3-4

UPPER WING WATERLOOST FORWARD 45 DEG. TO THE HORIZONTAL SPAR & TRAILING EDGE VENTED

MOISTING SLING

ME. VII GUN CAMERA

9.5 U.S. GAL. OIL TANK (7.5 GAL. EXPANSION)

GENERATOR

LAND'S LIGHT

OIL COOLER

FRONT FACE OF ENG. MOUNT

APRATT & WHITNEY R-1335-72 54 CYL. 2 ROW ENGINE 650 HP AT 2200 RPM & 7500 FT.

8 FT. 6 IN. DIAM. LYCOMING-SMITH MODEL 331 CONTROL PITCH PROP. ADJUSTABLE IN FLIGHT

80 U.S. GAL. MAIN FUEL TANK

30 U.S. GAL. RESERVE FUEL TANK

170 FRONT FACE OF ENG. MOUNT

6.175 FWD. WATERIGHT COMPT.

99.75 MATURILINE. NORMAL WT. NO FUEL. PILOT IN COCKPIT.

112.75 OXYGEN CYLINDER

127.625 RADIO RECVR.

142.5 BAUNAGE COMPT.

157.25 FIRST AID KIT

182.5 5 X 2.5 SOLID RUBBER TAILWHEEL

FUSELAGE SKIN WRAPPED AROUND FINNES, 1 SKIN BETWEEN EACH PAIR OF FRAMES & SHROUDED AFT. ONLY COMPOUND CURVED SKIN WERE TAIL CONE & CONING AHEAD OF STA. 0.

RET. TALWHEEL MECH.

401.533 RUBBER TAIL HOOK BUMPER

RETRACTABLE ARRESTING GEAR

3 O.D. VENT LINES

TURTLEBACK LIGHT

LIFE BATT.

MICARTA. SKIN

RADIO DIRECTION FINDING LOOP ANTENNA

RADIO TUNER

LD. GEAR RETR. MECH.

ENGINE LIGHTS

LD. GEAR WARNING LIGHT

AIR SPEED IND.

ALTIMETER

SUPERCAPACITOR GAGE

FUEL GAGE

FUEL GAGE

HAND FUEL PUMP

CLOSE DRAIN PUMP

ION. SWITCH

FIRE EXT. CONTROL

OIL COOLER SHUTTER

CARB. HEAT CONTROL

EWG. TEMP. GAGE

INSTRUMENT LIGHTS

TURB. & BANK IND.

LD. GEAR WARNING LIGHT



Stubby little bugger, wasn't it? This is the XF2F-1, the first single-seat fighter designed by Grumman and prototype of the F2F-1 in the drawings. First flown on October 18, 1933, the XF2F-1 had a top speed of 231 mph at 7500 feet. Photo courtesy of Ron Clendennen.

GRUMMAN F2F-1



PART TWO



By PETER WESTBURG

Only two Navy squadrons flew the F2F-1, though side numbers of four appear on photos. VF-3B flew them from the carrier *USS Ranger*, changed to VF-7B on the *Yorktown* and to VF-5B on the *USS Wasp*. Only VF-2B retained its squadron identity, flying continuously from the *Lexington* from mid-1935 to 1940.

VF-2B deserves a special page in the history of naval aviation. Navy squadrons consisted of 18 aircraft divided into six flights, each flight having its peculiar identifying color, and each airplane in the flight having its personal markings. The six flight leaders of VF-2B were commissioned officers, but the remaining twelve pilots, plus three in reserve, were enlisted men hand-picked for their ability and spirit. To be an enlisted pilot in VF-2B was a goal that every CPO in Navy flying dreamed of. The *Lexington*, fastest carrier in the fleet, demanded and got this squadron. Many of the pilots went on to fight in WW-II, and no one needs to be reminded of the deeds of Navy pilots in that war.

Aircraft 2-F-4, the subject of the drawings, was flown by the leader of the second flight, Lt. David Young. The color scheme of the second flight was white; the flight leader had a white band around the fuselage, an all-white engine cowl, and a white chevron on the wing. No. 2-F-5 had a white wing chevron and the top half of the cowl was white; 2-F-6 had a white wing chevron and the bottom half of the cowl was white. The basic color of the F2F-1 was a light gray with a slight tint of tan or ivory. The tail color of all airplanes flying from the *Lexington* was lemon yellow, not to be confused with the chrome yellow color of the top surface of the upper wing. ●



Cockpit of the F2F-1 was roomy with a well-designed instrument panel. Knob on telescope gunsight was pulled down to rotate dust cap off forward lens. Clendennen photo.



Second production F2F-1 went to squadron leader of VF-2B on *USS Lexington*. Joints of wrapped fuselage skins are evident. Photo courtesy Fred Dickey, Jr.



An excellent example of a realistically weathered finish is that on Bill Mikesell's F6F-5 Hellcat, 2nd place winner in Precision Scale at Toledo. Bill built the ship from Bob Holman plans, at 1-1/2 inch scale (64-1/4 inch span).

1 TO 1 SCALE

By **BOB UNDERWOOD** PHOTOS BY AUTHOR

• A couple of contests have come and gone and the new rules have been given a shakedown cruise. The only one which seems to require a little extra concern is 4.6 in the rules for Sport Scale. The statement "In awarding craftsmanship points, the judges will take into account the amount of workmanship performed on a model by the builder as well as the quality of the workmanship" was added along with the part declaration. It is necessary for the judges to determine some point differential to award in this case. No guidelines are given.

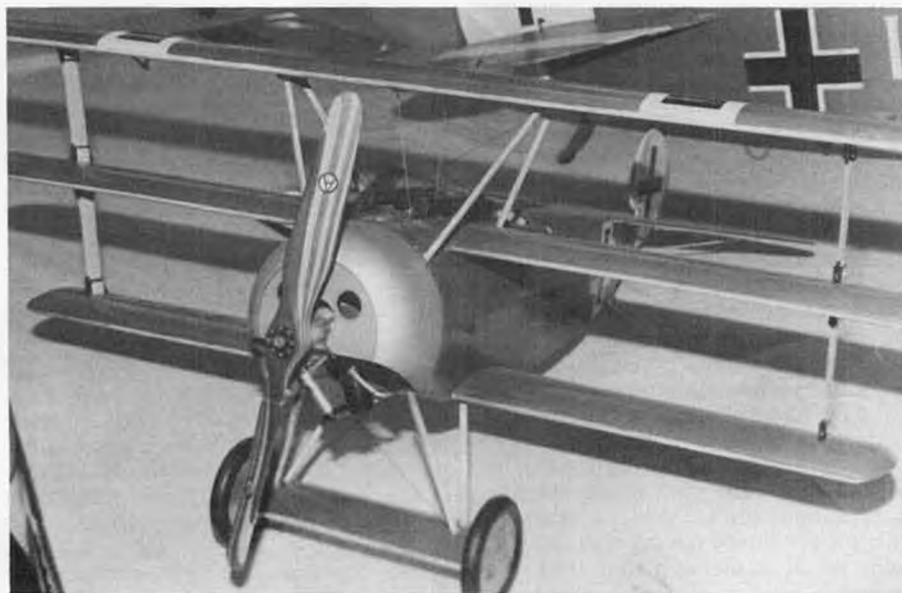
One contest considered a maximum of a three-point differential between the average kit type model as compared with a scratch-built model. At the other, no formal statement was made which would indicate the specific guidelines used. It was interesting to note that at both contests, the static scores were quite close, making the competition even closer overall.

The new distance of 15 feet would appear to be more of a leveler as well. It's amazing how quickly details began to pale when the distance jumped five feet. It will be interesting to see whether some people will opt to go more prominent with things such as panel

lines and rivets or retain a more subtle approach. Actually, indications seem to be that super detail is still not a significant consideration with the judges. Models of basically equal accuracy and workmanship have resulted in little

advantage for the more detailed ones.

Two significant things that could be noted were that the model quality was quite good, with virtually no "dogs" in the lot. In addition, fewer non-maneuver options seemed to be used. These are both very good signs. Already it would seem that a far greater variety of aircraft types are appearing on the contest scene, and consequently, more kits are becoming available for the "Sunday Sport Scaler." It seems safe to predict that we may see the less spectacular types (the J-3 Cubs, Cessna 150 types, etc.) more competitive than they have been for some years. This too is a very good sign. The event will take on the



Attractive Fokker DR-1 triplane won 5th place in Sport Scale at Toledo. Robert Vail is the craftsman responsible for this one.

ultimate meaning when it is completely flying scale.

A last observation. One maneuver which seems to be making a regular appearance is the FAI figure-eight which is often being used in place of our AMA "into-the-next-county-eight." A rules proposal seems to be in order to change this in our rulebook during this cycle. There appears to be a number of good reasons for this change. The maneuver as it is presently described places the axis of the eight at right angles to the flight path. This resulted, with the larger, faster models, in an eight that had to extend hundreds and hundreds of feet in distance from the flight line. In addition, the relative size, crossover point, and altitude are very difficult to judge.

In the FAI eight, the axis is parallel with the flight line, with the crossover directly in front of the judges (hopefully!) and both altitude and relative sizes are somewhat easier to determine. It also seems to be a little easier to adjust for the wind. Anyone for a rules proposal? Or should the eight be dropped altogether and another option inserted?

WINGING IT!

A vast number of kits available today contain foam core wings as part of the normal construction. Those of you who are relatively new to the game or perhaps have drifted back from many years ago may find the foam core somewhat confusing. In addition, if you are working at your first scratch-building efforts, you may find yourself faced with the decision of which way to go: foam or built-up. At the risk of passing on some personal bias, let's pursue some thoughts on the relative merits or shortcomings of the two.

I must confess that I tend more toward the old-fashioned form of built-up. There are two basic reasons for this. First, I have never been able to build a foam core wing as lightly as the built-up. (I have not, however, used the newer generation of attaching methods which include greatly improved adhesives and double-faced tapes that make lighter wings possible.) The second reason is that more often than not, the models I choose employ wing configurations that require expert core cutting or have equipment such as retracts that removes too much of the core skin to make this type of construction practical.

Wings which have a very high degree of taper from the root to the tip require much more skill in cutting. As the hot wire moves over the distance required at the root chord, the relative amount of travel at the tip is greatly reduced. This can result in the heated wire undercutting or melting away too much foam at the tip, or dragging at the root. The resulting wing then acquires a strange, sway-back appearance.

Another consideration with the highly tapered wing is that your plans (printed or mental) may call for a few degrees of wash-out in the wingtip. Wash-out, as you recall, is the practice of raising the

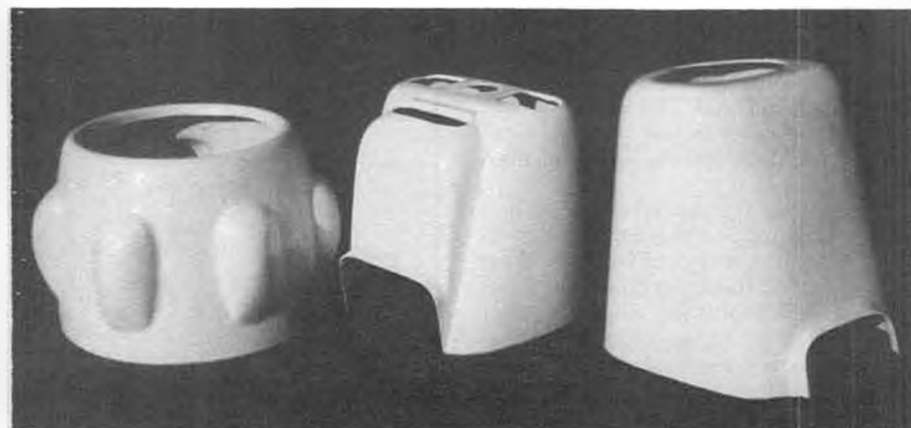
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Mind-boggling metal-covered F-104 won Best Achievement award and 3rd place in Precision Scale for Jim Funduk. Weighs 11 lbs., has interesting wing area. Not flown before the show.



Bob Godfrey's Grumman F3F-1 was a favorite among the spectators, has almost all the colors of the rainbow. Landing gear was scratch built, retracts as per the original. Note the radio switch mounted in the wheel well. Placed 5th in Precision Scale.



Some of the fiberglass cowls produced by T&D Fiberglass Specialties. The ones above are for the large scale models built from plans sold by Wendell Hostetler.

Pattern Flying

By DICK HANSON . . . Part 6: Double Stall Turn and Cuban Eight.

• Starting this month, we will analyze the Advanced class maneuvers except those which were described in the first five parts (Novice Pattern).

If you have followed the series to this point, you may have noticed that the deliberate, accurate approach to Pattern flying is our preferred style. Granted, you have to develop different building techniques to keep weight down and you must alter some old habits on engine and prop combinations, but the smoother flying results are worth it to us.

One thing we have failed to discuss in previous descriptions is how to practice flying. This is the key to rapid learning.

Lesson No. 1: Never practice until the plane is trimmed.

Lesson No. 2: Warm up with a few basic maneuvers (loops, rolls) to make sure your timing is up to par.

Lesson No. 3: Dissect the difficult parts from your maneuvers and practice these repetitively *unless* you feel things are going junk. If they are, stop practicing and do a mental review, or better yet, get an objective second opinion of your problems. Do not practice if you're not in a good mental frame. You will only teach yourself unhappy relationships with practicing, and that's the worst thing you can do.

Lesson No. 4: Accept the fact that precision activities such as Pattern flying, tennis, violin playing, etc. all share a common point. You either improve or lose skill levels. There is no such thing as staying at one point. You must, from time to time, review all you have learned. Learning to fly is sometimes easier for accomplished musicians because they have learned that skill advances in plateaus, so don't get overanxious at not seeing immediate results.

Now that we are mentally prepared, let's see what the Advanced Pattern maneuvers offer as a challenge over the Novice Pattern.

THE DOUBLE STALL TURN

Read the rules in the rulebook, examine the sketches shown here, then read on.

Note that in a crosswind situation, one turn is upwind and the other is downwind. You should choose the placement depending on the wind direction. What this means is that if the wind is in your face, start way out, approx. 400 feet. If the wind is at your back, stay in close, approx. 200 feet to start. Modify these recommendations according to wind velocity.

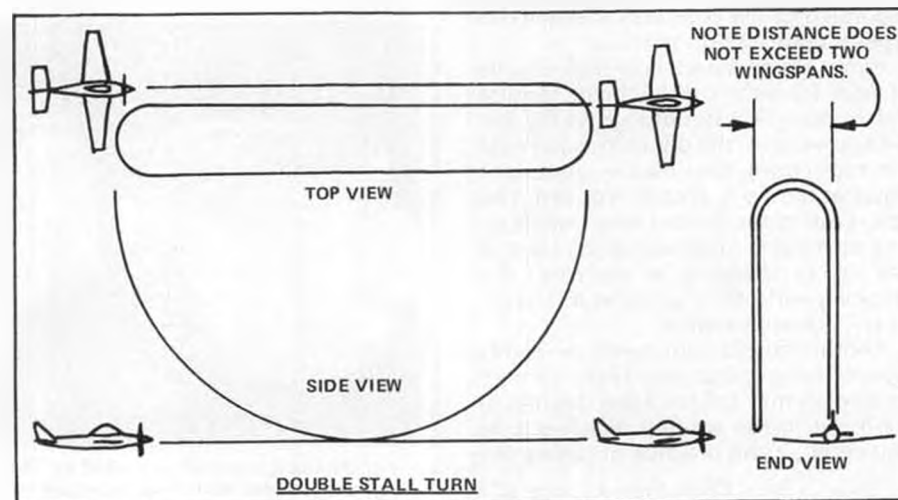
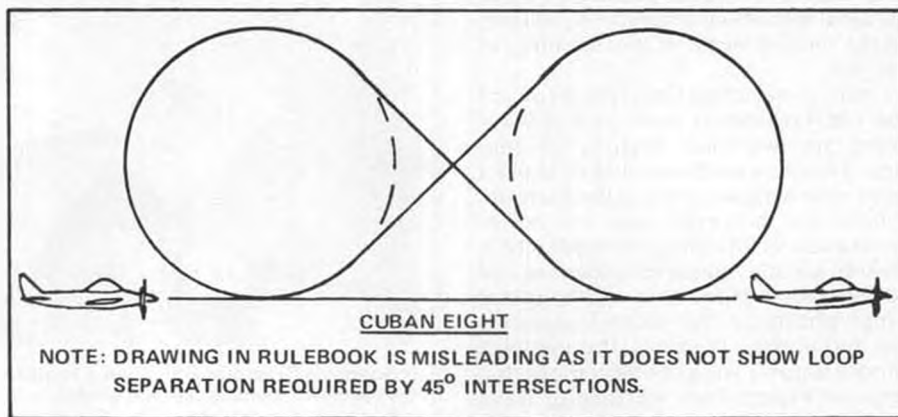
Note that the book doesn't allow right

or left turns during the pullups. You *must*, however, yaw slightly to maintain position in a crosswind. The tricky part now becomes yawing into the wind to hold position and then turning downwind for the one stall turn.

Let's run through a maneuver in ideal conditions, which means *NO* wind in this case. Select a moderate altitude (50 feet) and distance (300 feet) and call the maneuver so that it starts on center and pull up deliberately into a large quarter-loop. Cut the throttle back to a very fast idle at about the 10 o'clock position and continue to add elevator to reach vertical position. If you juggled your speed correctly, the model will be ready to fall at this point. Gradually release up elevator and add hard rudder (this gives you a chance to reposition away or toward you by selecting left or right). As the plane starts to fall, go for low idle and gradually release the rudder. This should produce a hard tight yaw to vertical. (We describe this in detail in the Novice Pattern.) Immediately correct wings to

horizontal if necessary and return to center point, adding full power as you go. Pull up into the second stall turn and repeat the past procedures exactly, *including the rudder direction previously used*.

Now let's pretend the wind is blowing hard in our face and try the sequence again. Start the maneuver about 400 feet out and slightly decrease the overall size of the maneuver to reduce drift problems. Hold in a little rudder to maintain position, reduce throttle and be ready to add full rudder as soon as the vertical position is reached. If you turned into the wind this time, hold a little *opposite* rudder on the way down and back up into the next stall turn. Now, as you reach vertical, swing the rudder full opposite again and chop the throttle. It is tricky to get the rudder to shift from holding the plane into the wind to executing a downwind stall turn. It requires a fair blast of propwash to increase rudder effectiveness, plus you must immediately chop all thrust to tuck



FUEL LINES



JOE KLAUSE

P.O. Box 2699
Laguna Hills, CA 92653

OTTO BERNHARDT

17119 S. Harvard
Gardena, CA 90247

Send in your questions, relative to glow or ignition engines, and these experts will give you the correct answers.

KLAUSE

THE FACTORY STRIKES BACK!

If that sounds like shades of the current sequel to *Star Wars*, it's because I couldn't resist the temptation to add a little flair to some information that will delight some modelers and give heartburn to others. As 1/2A Pylon racers well know, current AMA regulations require that "Engines must be production units . . . and must be of stock configuration." One thing this obviously means is that it's a NO-NO to modify the bypasses of Cox .049 and .051 cylinders.

In the past it has been relatively easy to verify this. When a cylinder is manufactured, the next to last procedure is to black oxide the metal. The final step consists of honing the bore. Thus, the bore should be the only part of the cylinder where the steel color shows, and if the bypasses are remachined it will be quite apparent. That's now no longer true. During two recent factory production runs of .049 and .051 Tee Dee cylinders, the bypasses were remachined *after* the black oxide process. The first run occurred about a year ago, when the outer grooves of both bypasses were remachined. The second one happened a month ago, when the right-hand groove (as you look into the bottom of the cylinder) of each bypass was remachined.

The net result is that it's no longer possible to say flatly that someone is using a modified cylinder. It could well have been done during factory production. Obviously, this is a low blow to

stock engine advocates. Their good but naive intentions have again been thwarted. Am I opposed to the "stock engine" concept? Not at all. I just wish someone would define it and explain how the rule can be enforced. If a rule cannot be enforced easily, it is useless. Here's just one irrefutable example: Lapping a cylinder and piston is a modification to the factory stock configuration, but I defy anyone at a contest to prove that it's been done.

SOMETHING DIFFERENT

Bored with R/C, control line, free flight, or whatever your current event is? Want to try something different? How about micro-mini tractor pulling? It originated about six years ago, so it's not exactly new, but it certainly is a real challenge.

My association with this sport has been through the engines used in the various events, and to put it mildly, they're rough on engines. Most of the engines are Cox Tee Dees or reed valves with a displacement limitation of .051 cu. in. However, one event allows engines with displacements up to .29 cu. in. Appropriately enough, it's called the Hot Rod class. Here's a brief outline of the sport, which is actually a small-scale version of full-size tractor pulling contests that have been sweeping the country.

The tractors must be 1/16-scale models of full-size machines such as those manufactured by International Harvester or John Deere. The models are

about ten inches in length. A contest consists of pulling a weight transfer sled, with the winner being the one pulling the most weight the farthest distance. Sounds simple enough, huh? Well, if you can imagine about 200 pounds of weight on a sled, you'll appreciate the formidable amount of work to be accomplished by a T.D. .051 powered tractor. Naturally, reduction gearing is essential; ratios of 300:1 are common, and some approach 400. To complicate things, the weight transfer sleds are designed to change rolling weight to skidding weight. Thus, friction increases with distance. It's quite a sound and action experience. As hinted earlier, engine life can be a problem.

The Stock classes are limited to three, four and five-pound tractors with reed valve engines. Super Stock class rules permit rotary valve engines such as the Cox T.D. and special tires up to five inches in diameter and three inches in width. The Hot Rod class has been mentioned, and a four-wheel-drive, 4 x 4 truck completes the six classes of competition. When these guys get together to hassle each other, it's called a "pull," rather than a "contest." But regardless of the term, there's plenty of competition.

If you're intrigued by engine power, this sport may be just what you need. There are national ratings and "pulls" as well as individual state championships . . . all under the auspices of the National Micro-Mini Tractor Pullers Association. Membership also entitles you to a million dollars' worth of liability insurance and a subscription to their monthly newsletter, the *Pullers Post*. For complete information, write to either James Coontz, 2603 S. Glenwood, Springfield, IL 62704, or James Crabb, RR1, Colo, IA 50056. Be sure to include a large stamped, self-addressed envelope.

If you'd like to read more about tractor engine techniques and pulling, let me know. Maybe I can convince Bill Northrop that a feature article is appropriate. Until next month, do your thing . . . with safety. ●

in tight per the rules. With lots of practice you will keep the entire sequence within the specified two wing-span distance variance.

CUBAN EIGHT

This is a real crowd pleaser. There's always a spectator who asks, "How much gas does it hold" and "Will it do a Cuban Eight?" Well, if you're going to hold your audience, you better be able to give them the Cuban Eight.

We find that this maneuver is easier to do if it's done fairly low in order to get some reference points off the horizon. Also, we feel that dual rates on the ailerons helps here by providing a snappy roll. We suggest you take a look at the rulebook and the sketch before you continue here.

Now that you know what's supposed

to happen, let's go through a typical maneuver in calm air.

Set your flight path about 300 feet out and about 30 high. Make sure to call the start just before the plane passes in front of the judges so that approx. one second elapses before you start the first loop.

You will want to make the loops large enough so that you can predictably aim for a 45° dive, then roll directly in front of the judges. At this point you should have used exactly half the altitude you gained in the loop. Therefore, you must continue to dive until you reach the starting altitude, then start the next loop, continuing as in the first loop, and try to hit the same point in space for the second roll as your selected for the first roll. The exit must be at the same altitude as the entrance, and the announcement

of "maneuver complete" should come approx. one second after you have established a level exit heading.

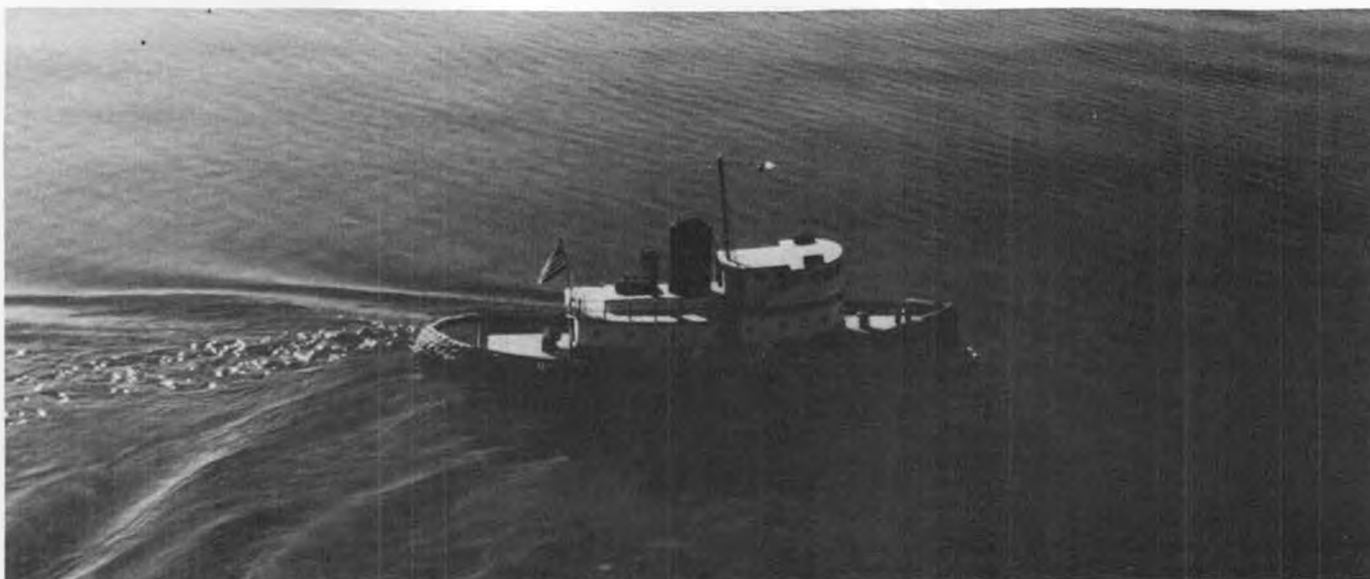
The most common errors seen are as follows:

1) The flier makes the first loop and roll O.K. but pulls out too early, which throws the maneuver at a tilt.

2) The flier makes the first dive too shallow, which causes the second loop to be placed higher.

These two examples are usually due to the flier being unable to orient the plane against any kind of background. As we mentioned previously, flying a little lower and making a conscious effort to line up on some background point really helps on this maneuver.

Next month: Double Immelman and Four-Point Roll. ●



A real nice piece of work is this steam-powered tugboat by Mike Deleeuw, built from plans in the December '74 and January and February '75 issues of Model Builder (Plan No. 12741, \$8.00).

R/C POWER BOATS

By JERRY DUNLAP

• This has really been an interesting year when it comes to having to cancel a model boat race. Back in February my local club had to call off a fun type event because the pond froze solid the night before the event. We've called off races because of too much wind, and I think we even cancelled one race because it was raining so hard you couldn't see the race course. But on May 18, Mount St. Helens, as you all have seen in the pictures, did more than just blow its top. It gave us a most unusual reason to cancel a model boat race. We can now add "Cancelled due to volcanic ash on the highways" to our list of cancellation causes. Yes, the Columbia Basin Model Boaters had to cancel their first boat race, scheduled for the Memorial Day weekend. The ash from Mount St. Helens had highways leading to eastern Washington closed. The race has been rescheduled for the weekend of July 19 and 20. By the time you read this the race should be in the books. It *should* be, unless the volcano decides to let us know that "It isn't nice to fool Mother Nature."

FAN MAIL

Mike Deleeuw, of West Suffield, Connecticut, sent along the following letter and a few pictures of his steam powered tugboat. The photos were color prints and I just hope we can use one in this column because his boat is a real beauty.

Dear Jerry,

I would first like to congratulate you on your excellent handling of the "R/C Power Boats" section. I enjoy your information on outboards immensely, since I run a Futuraglass hull. I am very pleased that K&B has come out with a carb for the outboard. In my opinion,



Winners of the 3rd Annual Hobbytown Regatta, from left (seated): Mark Anderson and Shawn Hoagland; kneeling, Mike Wight and Leo Dreith; standing, Stan Hoagland, Bill Brazzle, Doug Smith, and Tom Dudley. Race took place at Lake Waughop, Washington.



Interior shot of Mike Deleeuw's tugboat shows the Saito B2F boiler and 4-cylinder V4PR steam engine. Boat measures 37 inches overall, took Mike about 3 years to build.

the engine now seems to be perfect. There seems to be little chance of something better being introduced.

Enclosed are a few pictures of my latest project, a steam powered tugboat. The plans and construction information appeared in the December 1974 issue of *MB*. The plans laid dormant until 1976, when something told me it was time to start it. I've been working on it constantly since then and it was just finished this spring. Power is a Saito B2F boiler which supplies steam to a V4PR engine. The prop is belt driven using O-rings and brass pulleys. A Futuba 2-channel provides the guidance. I am very pleased with the performance and construction. The magazine should be complimented on the quality of the plans. I would also like to wish you luck with your column.

Thanks, Mike, for the kind words and photos. How about some of the rest of you readers sending in some information on what you are doing?

LOU FOSCHI REPORTS AGAIN

Lou Foschi, La Verne, California, contributed some material and photos for last month's column. He's sent in more information about activities in Southern California. Here's Lou's report for this month.

Just a few lines about the MACS Show in Long Beach. Being in your position with *R/C Model Builder*, it may be old information, but here goes anyway.

Gerald E. Nelson is now president of Circus Hobbies, P.O. Box 5215, Reno, Nevada 89513. This new hobby firm is a subsidiary of Circus Circus Hotels. A .60 size scale model of the new Miss Circus Circus unlimited hydroplane was on display in his booth. This is a reverse three-point hydroplane or canard design. Pictures of the boat were on display at the Prather Products booth as a future kit. Prather also stated that an outboard tunnel model designed and raced by George Campbell will be another future kit. There was also a twin outboard powered tunnel on display at the Prather booth. This boat is another Campbell design and owned and raced by Norm Teague. I have seen both these tunnels run. If I did not know better I would have thought they were on rails below the surface. The twin is reported to be future Prather release. Steve Muck had a new 21-inch fiberglass deep-vee called

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This beautiful Coast Guard rescue boat belongs to Don Dees, of Oregon. Don enlarged the 33-inch Dumas boat to get this 42-inch version. Don is Commodore of the Milwaukie Mavericks, NAMBA District 8's newest model boat club.



Two Excaliber II's belonging to Stan and Shawn Hoagland placed 2nd and 4th respectively at the Hobbytown Regatta on May 18. Built from RCMB plans (No. 12792, \$5.00).



Doug Smith's Klampon Kai outboard was 2nd at the Longview District 8 race on May 3-4. Doug is Secretary for the Seattle Model Yacht Club.



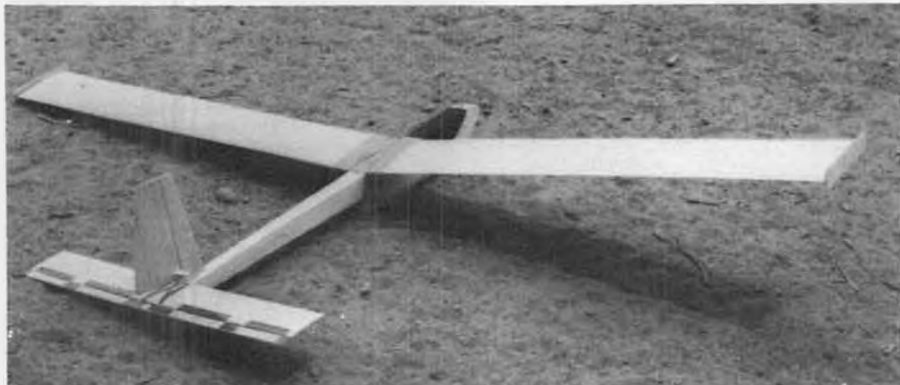
Bill Brazzle's Hughey Tunnel on its way to winning the .21 OPC Tunnel class at the Longview race.



Racing was pretty close at the Longview race. Here Doug Smith leads Bill Brazzle and Bill Read around the far turn.

HOLLYWOOD SQUARE

By DAVE THORNBURG . . . Here's a six-foot, all-balsa R/C glider you can build in just one day . . . no full-size plans required. For thermal or slope soaring, or hang an .049 on the nose and make it a motorglider.



A true Hollywood Square; look Ma, no Monokote! Not a good idea to leave it raw if you live in an area of high humidity, as she tends to pick up weight (and warps).

• The Hollywood Square is meant to destroy some of the mystique of glider design. It won't win any big contests, beauty or otherwise, but it *will* get you into the air quickly. Six to ten hours of building time is about the most you can squander on the Square, unless you plan to Monokote her. That takes another three to four hours, and doubles the plane's cost. But it will also more than double her lifespan, and up her performance a few notches as well. The choice is yours.

WING

Like all sailplanes, the Square's magic is in her wing. You build the wing from four sheets of balsa and two pieces of Sig Light Celastic . . . nothing more. By using Sig tapered-cut balsa for the trailing edges, most of the carving is done for you; all that's left is the rounding of the

leading edge with a block plane or razor plane.

In fact, carving the airfoil is the only tricky step to building the Square, the only step that a rank beginner could possibly botch up. And even then, the plane would probably still fly!

If you're not really expert at selecting balsa, you might want to do as I do: use a set of scales to help you choose, especially for the wing wood. An ideal sheet of 1/4 x 4 x 36 Sig Tapered Balsa weighs about 1.5 ounces. Don't buy it if it's much over two ounces. (They can weigh up to *four!*) The 3/8 x 3 leading edge sheets should weigh about three ounces each. This will give you a total wing weight (after carving and sanding and adding the Celastic) of between seven to ten ounces, without the optional Monokote.

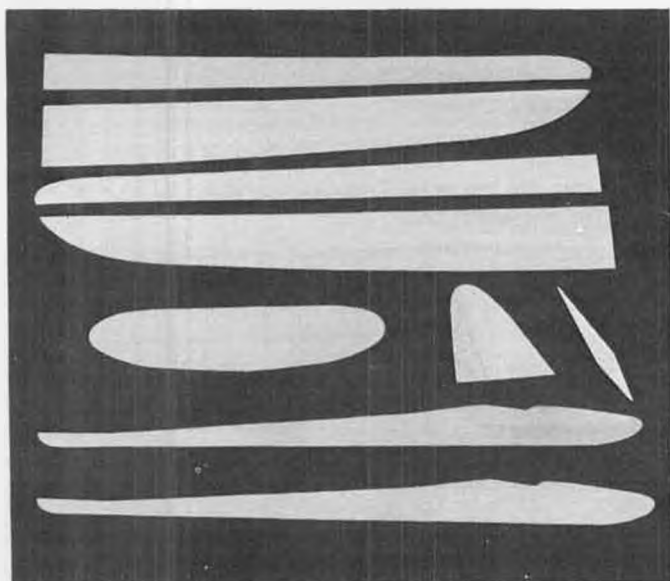
Balancing the left and right panels is important. Try to select your wood so that neither panel outweighs the other by more than 3/4 ounce. You can always correct a bad imbalance on a completed wing by running a nail into the endgrain of the light panel, but no modeler likes to add dead weight to his plane, especially at the wingtip!

Last month's **R/C Model Builder** described the wing construction in detail. You can use white glue or slow-dry cyanoacrylate to join leading edge to trailing edge (hinge them with masking tape on the bottom for a neat joint). But when it comes to dihedral and polyhedral joints, use epoxy. These joints take a real beating, and nothing but epoxy will do. No need to use glass or Celastic on the polyhedral breaks, but don't try to skip it on the center break.

Is the fiberglass strapping tape necessary? I only use it on wings that will be launched by electric winch, and even then, I stop it about two inches outside the poly breaks. I add it, in a single piece, after all the epoxy joints are dry and just before applying the Celastic to the center joint.

Awright, suppose you live out in Speed, Kansas, and your local shop doesn't stock Sig Tapered Balsa? You have three choices. You can make your own, using regular 1/4 x 4 balsa and a razor plane. (This isn't so tough; I've done it dozens of times. Before I owned a good German block plane, I used to carve these wings with a No. 64 X-Acto blade!) Your second choice is to write

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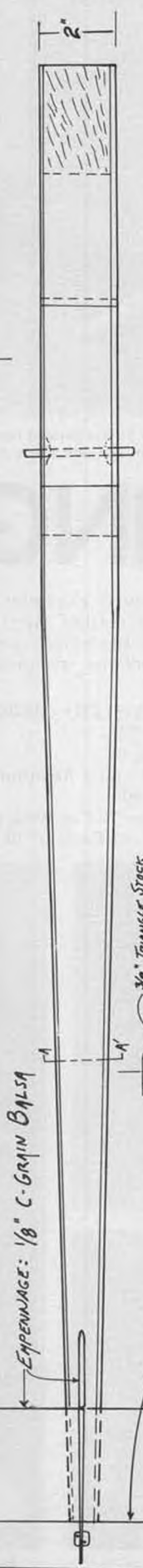
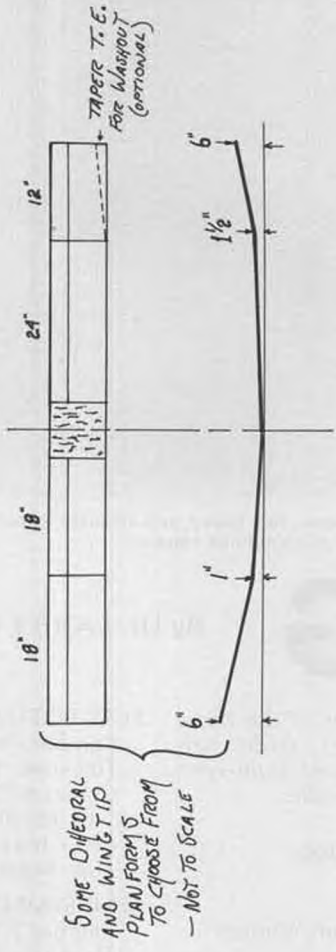
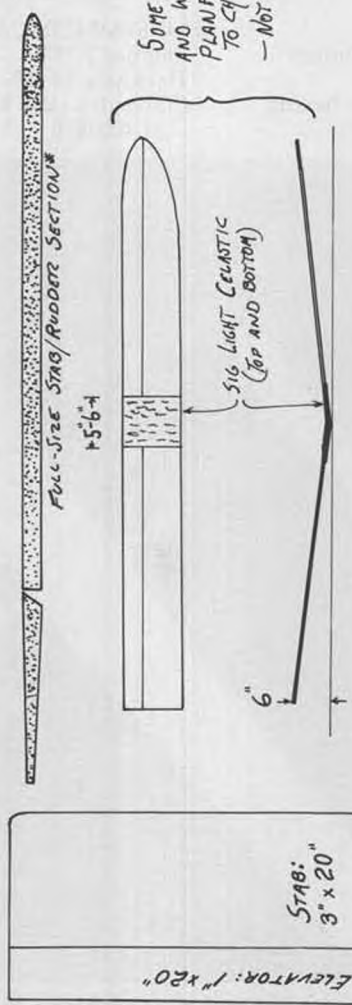
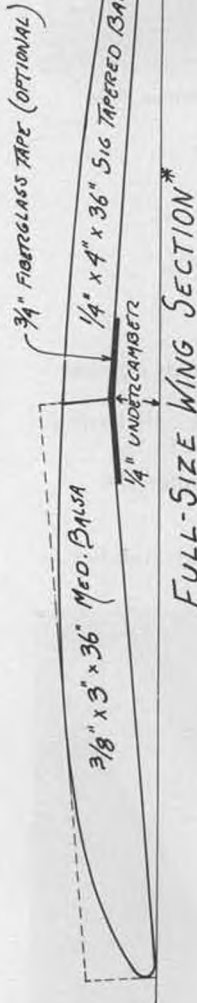


An early (1967) ancestor of the Hollywood Square, called the Zephyr and published in *American Modeler*. Note the tapered wings and rounded tips. Too much work, sez Dave.

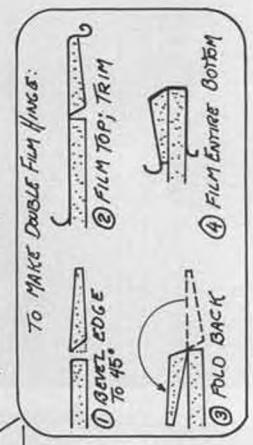


Readers of old RCM's may recall this Square. It came apart for carrying on motorcycles, and was used to soar the Colorado Rockies two summers running.

"HOLLYWOOD SQUARE"
 SPAN 72" AREA 500^{sq} Wt. 24-30 oz.
 A TWO-CHANNEL SAILPLANE
 YOU CAN BUILD AND FLY
 IN A WEEKEND!

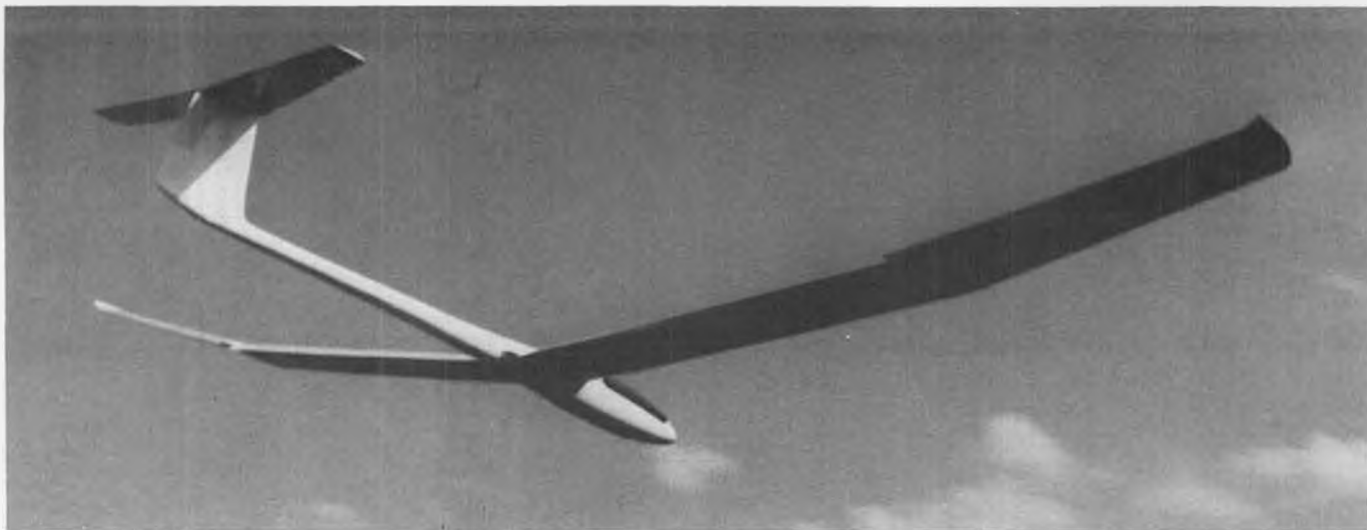


*NOTE: CARVE AND SAND AIRFOIL SECTIONS TO EXACT SHAPES SHOWN FOR BOTH WING AND EMPENNAGE
 - AIRFOILS ARE IMPORTANT ON GLIDERS!



TOP & BOTTOM: HARD 1/8" Balsa
 36" FUSE SIDES: HARD 1/8" Balsa (OR MED-SOFT 3/16")
 RECEIVER
 2 SERVOS
 CENTERES
 NOSEBLOCK: HARD Balsa, SOFT FINE
 TOWHOOK: 1/16" Wire OR 3/16" Dowel

D.T.



For cross-country racing, Stan Watson's original design Pegasus 166 is hard to beat. Big, heavy, and efficient, it holds several unlimited AMA records for thermal duration and distance. Has rudder, elevator, spoilers, flaps, and towhook release.

R/C SOARING

By Dr. LARRY FOGEL

• Ian Turner of the South Bay Soaring Society recently acquired his very own computer ... his first real chance to evaluate various thermal sailplane designs. He assumed a reasonably high aspect ratio of nine or more and sensible tail areas and moments. Under these conditions, he assures us that the key design parameters boil down to wing section and wing loading. Simple really ... but, is it? Here's what he has to say.

To understand the possibilities, I

selected typical examples of the three main wing section types: undercambered, flat-bottomed, and semi-symmetrical sections, specifically:

UNDERCAMBERED: SI64009

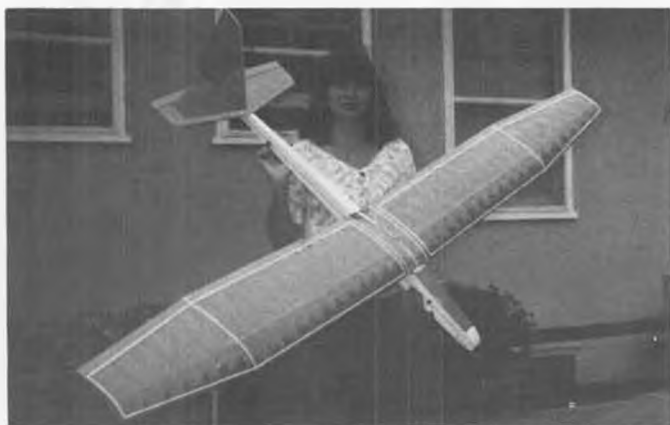
Camber 7%
 Thickness 9%
 Cl max 1.1 (at a Reynolds number of 100,000)
 Cl/Cd max 20 (for wing only having an Aspect Ratio of 10 to 1)

FLAT-BOTTOM: Clark Y

Camber 4%
 Thickness 11.6%
 Cl max 0.75 (at a Reynolds number of 100,000)
 Cl/Cd max 15 (for wing only having an Aspect Ratio of 10 to 1)

SEMI-SYMMETRICAL: Eppler 374

Camber 2.25%
 Thickness 10.85%
 Cl max 0.5 (at a Reynolds number of 100,000)



Bob Bartolotto sent these photos of his Cox/Airtronics Olympic II (top) and Nomad, kitted by Balsa U.S.A.



Stan Watson's Pegasus 100 is an all-out F3B competition machine, available as a semi-kit (see text). Looks mean!

Cl/Cd max 10 (for wing only having an Aspect Ratio of 10 to 1)

These sections represent typical examples of each type and, while different (although similar) sections will vary a little in their characteristics, they serve to illustrate basic behavior.

To examine the performance of each section at different wing loadings, I chose three wing loadings which represent light, medium, and heavy models: four, eight, and twelve ounces per square foot. Now I can calculate and compare nine values for each design parameter for each wing section and wing loading. The easiest way to do this is to construct three-by-three matrices. I've marked the highest and lowest values with a shaded corner. The results are shown in Figures one through six.

This summary matrix allows drawing some extremely interesting conclusions:

1) Flat-bottom sections are an excellent compromise and can be loaded for speed and distance. (You knew that anyway!)

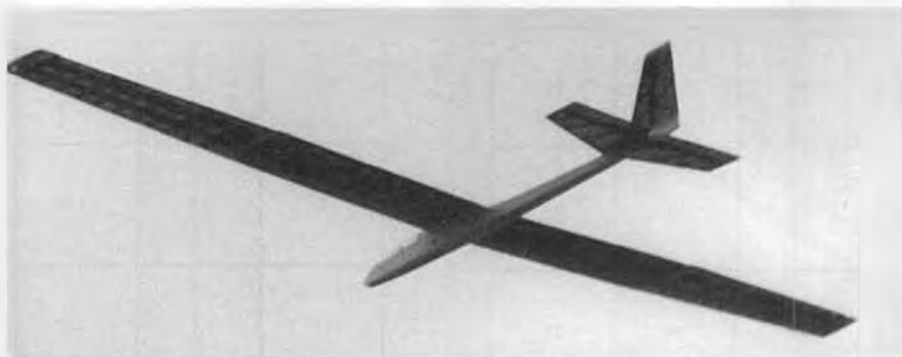
2) An undercambered section has best sink when lightly loaded and best distance when heavily loaded. Also, when heavily loaded, it makes for a better thermal ship than a moderately loaded flat-bottom section ship. (This is a very surprising conclusion!)

3) Semi-symmetrical sections are a moderate compromise when lightly loaded and are best for speed when loaded. (For example, this is the philosophy adopted in designing the Mirage.)

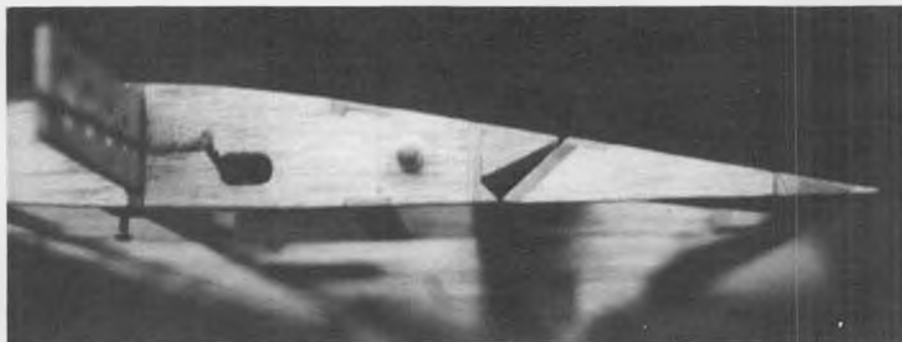
Ian is right. The conclusions are interesting. Note that the new RTF (ready-to-fly) Sea Breeze, currently being offered by Bob Smith R/C Aircraft of Simi Valley, California, has a highly undercambered wing. I wonder how it would perform at, say, 12 ounces per square foot. Ian reports other worthwhile items in various issues of the "Silent Flyer," the very interesting newsletter of the South Bay Soaring Society. I'll keep you posted.

Bill Metzger of Escondido, California, wanted something different and decided to explore the handling quality of a rudder/elevator/aileron sailplane without the usual rudder/aileron coupling. He started with the Mirage kit, removed the polyhedral, added servos and ailerons to the outboard panels, extended the span to 11 feet, 5-1/2 inches (15 to 1 aspect ratio), and added diagonal braces to stiffen the longer wing that now covers 1135 square inches. The dihedral now measures two inches at each wingtip. The ailerons cover 11 percent of the wing area.

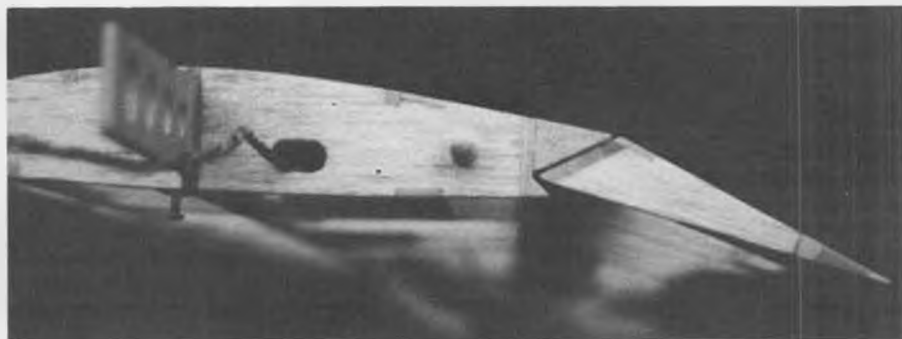
According to Bill, "The up-movement of the Frieze ailerons is nearly twice the down level. When it moves up, the aileron's lower leading edge protrudes into the slipstream on the wings' underside, causing increased drag. This drag on the inside of a turn cancels the adverse yaw tendency so common to large aspect ratio wings using conventional ailerons."



Bill Metzger's "Super Mirage" features a flattened, stretched, and aileron-equipped wing on a standard Mirage fuselage. Makes for completely different handling characteristics.



Bill's Super Mirage is equipped with Frieze ailerons. This and the two photos below show how they work. Photo above shows neutral position; note minimal gap on top and bottom.



Down aileron creates a step in the bottom airfoil surface, but doesn't hinder performance noticeably.



Up aileron is where the Frieze type aileron is unique. Note that the lower leading edge of the aileron protrudes down into the slipstream, causing drag on that one side only and offsetting the adverse yaw (tendency for the airplane to yaw opposite to the intended direction of the turn) present when using conventional ailerons.

Bill's "Super Mirage" also has a full-flying stab. The fuselage is glassed from the nose to the rear of the wing, then covered with three coats of Ohio Super Star primer, two coats of K&B white epoxy paint, and one coat of Coverite Glaskote ... an exquisite finish. The flying surfaces are covered with red and blue Super Monokote.

The all-up weight is three pounds, three ounces. This plane rides up the hi-start without a quiver, although it's very

sensitive to the control stick in every regard. I watched Bill fly this bird for awhile, then had my turn at the stick. It's s-m-o-o-t-h. You can turn on rudder or ailerons, each generating a different kind of turn. Coordinating the sticks gets you a very tight circle without loss of altitude. The air was calm, and it seemed to float endlessly.

"Bill, why bother with all this coordination of two sticks when it would be so easy to add a mixer?" I asked

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	10	12	15
<u>8 oz.</u> sq. ft.	14	17	20
<u>12 oz.</u> sq. ft.	17	20	25

FIG. 1 FOR PENETRATION INTO WIND, MINIMUM FLYING SPEED IN MILES PER HOUR.

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	0.8	1.2	2
<u>8 oz.</u> sq. ft.	1	1.6	2.8
<u>12 oz.</u> sq. ft.	1.2	2	3.5

FIG. 2 MINIMUM SINK SPEED IN FEET/SECOND

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	0 ft.	200 ft.	320 ft.
<u>8 oz.</u> sq. ft.	540 ft.	590 ft.	514 ft.
<u>12 oz.</u> sq. ft.	784 ft.	720 ft.	611 ft.

FIG. 3 DISTANCE COVERED PER 100 FOOT LOSS IN ALTITUDE INTO 10 mph WIND.

"Hey, watch this cross-controlled sideslip . . ."

That answered my question!

For some time now, Stan Watson has been improving his original design sailplanes. His Pegasus 166 (indicating the span in inches) has placed well in unlimited competition and is a real contender in cross-country races. The 12.5% thick airfoil is similar to the Eppler 205. According to Stan, "I really love flying it, even if it is a handful to launch in high winds and tends to break tow-lines with ease. It weighs ten pounds and at that weight will fly the FAI speed course in 15 seconds. Sounds slow? Well, it's not bad for an unballasted 'floater.' Of course, it's really best suited for long, high flights."

The Pegasus 100 is Stan's special design for FAI competition. It's clean and has the required strength for high-speed towing and pylon turns even with heavy ballast. The two-piece wing, fully sheeted for both strength and accuracy, is held together with steel blades that fit into aluminum boxes. There's room for more than five pounds of lead in the four 3/4-inch ballast tubes in the wing panels. The dry weight is four pounds. The T-tail keeps the full-flying stab out of the wing wash. The wing has an Eppler 205 section and full-span flaperons coupled to the rudder. Carbon spars are optional, but recommended. Semi-kits are now available from Stan's Models, 3402 Hickory Lane, Hazel Crest, IL 60429. Cost is \$100 for the 166, and \$35 for the 100. Here's a challenge for the qualified builder who wants a front runner in two very different kinds of sailplane performance. By the way, you can reach Stan at (312) 335-3327.

If you have any interest in scale, you ought to pick up a copy of *Jane's World Sailplanes and Motor Gliders* by Andrew Coates, published by Ziff-Davis Publishing Company, 1978 (\$12.95). Here is an up-to-date catalog of what is available, together with a summary of the world records. It makes interesting reading and, who knows, you might be inspired to start a new scale project. While on the subject of books, you'll

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	IMPOSSIBLE	113 sec.	56 sec.
<u>8 oz.</u> sq. ft.	63 sec.	43 sec.	32 sec.
<u>12 oz.</u> sq. ft.	43 sec.	32 sec.	25 sec.

FIG. 4 TIME TO FLY 200 FOOT SQUARE COURSE IN A 10 mph WIND.

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	0	3.25	4.25
<u>8 oz.</u> sq. ft.	8	7	5.5
<u>12 oz.</u> sq. ft.	9.5	8	6

FIG. 5 NUMBER OF 200 FOOT SQUARE LAPS IN 10 mph WIND FROM 500 FOOT LAUNCH (UPWIND START)

	UN-CAMB	FLAT	SEMI
<u>4 oz.</u> sq. ft.	WORST PENETRATION <u>BEST SINK</u> WORST DISTANCE WORST SPEED	POOR PENETRATION GOOD SINK POOR DISTANCE POOR SPEED	MEDIUM PENETRATION MEDIUM SINK POOR DISTANCE POOR SPEED
<u>8 oz.</u> sq. ft.	POOR PENETRATION GOOD SINK MEDIUM DISTANCE POOR SPEED	MEDIUM PENETRATION MEDIUM SINK MEDIUM DISTANCE GOOD SPEED	GOOD PENETRATION POOR SINK MEDIUM DISTANCE GOOD SPEED
<u>12 oz.</u> sq. ft.	MEDIUM PENETRATION GOOD SINK <u>BEST DISTANCE</u> GOOD SPEED	GOOD PENETRATION MEDIUM SINK GOOD DISTANCE GOOD SPEED	<u>BEST PENETRATION</u> WORST SINK GOOD DISTANCE <u>BEST SPEED</u>

FIG. 6 GENERAL

Continued on page 79

• Would you believe 44 entries in the Texaco event alone? To say the Second Annual West Coast Old Timer R/C Championships was a smashing success would be a typical British understatement! Contestants came from all over, the most notable being the Texan contingent headed up by Bruce Norman, and of course, that irrepressible Oklahoman, the near Lt. Governor, Roy "Willie" Turner.

Before mentioning any winners, full credit for a well-run contest should go to Hal Cullens, who donated all his time, and Loren Schmidt, both of SAM 30, the sponsoring club. The registration and flight desks were personed by those tireless women, Neva Nicholau and Miriam Schmidt. Picture No. 1 shows the girls had things down cold. As a matter of fact, they were so efficient in running the flight cards and frequency control, this columnist actually saw Neva slapping the hands of hubby, Nick, for picking up a frequency pin without checking for authorization!

The meet was held on that modelers' paradise known as the Merwin Ranch, near Sacramento. Imagine flying off a field of almost 200 acres of nothing but dichondra! The area was so smooth that 1/2A Texaco models, normally hand launched to date, were required to R.O.G., and no excuses, either! The columnist even got his single-wheel Triangle off, the grass was so smooth.

If that wasn't enough, the weather, which got a little threatening late Saturday afternoon (first day of flying), improved to the point that by Monday, over a one-hour flight was needed to place in Texaco! You had to hand it to Hal Cullens and his Farmers Almanac for weather predictions. Amazingly, he has yet to be wrong.

We mentioned Roy "Willie" Turner before but Picture No. 2 shows what a



Photo No. 1. In the middle are the two ladies who handled all the paperwork at the West Coast R/C O.T. Champs, Miriam Schmidt and Neva Nicholau. C.D. Hal Cullens at far left.



PLUG SPARKS

PHOTOS BY AUTHOR

By JOHN POND

good craftsman Roy really is. His sailplane doesn't need to take a back seat to anyone else's. Roy almost made modeling history when he ran for Lt. Governor in the Oklahoma primary. Unfortunately, he didn't accumulate enough votes. One of Roy's platform promises was that there would be plenty of flying sites for the modelers. Imagine some power in the throne! It almost happened.

Frequency interference was also a problem during the contest. How would you like your model to do an outside loop and fly upside down? Ron Keil had this weird experience with his 1/2A

Texaco version of the Roll Berryloid Winner. Picture No. 3 indicates what we are talking about as Pond's Triangle got the "down" treatment from 1000 feet after ten minutes. The brown/white and red/white frequencies were most affected, and Don Bekins gave a spectacular performance of barrel rolls clear across the field on the blue/white flag. Just as it seemed all was lost, he recovered it 20 feet off the ground. It didn't take the boys long to spot where the problem areas were, and fellows like Jim Kyncy were able to advise others where not to fly. We're still trying to



Photo No. 3. Discussing the remains of John Pond's Triangle, a victim of interference, are Speed Hughes, Bob Allen, and Pond himself.

Photo No. 2. Roy Turner of Oklahoma City displays his well-built Comet Sailplane. Climb not too hot with S.T. .35 R/C.



Photo No. 4. "By the dawn's early light..." Texaco weigh-in time at the R/C O.T. Champs. Site is the incredibly smooth dichondra farm at Merwin Ranch, near Sacramento.

figure out where it was all coming from, as many more reported "hits." Sunspots, maybe?

Weather was another problem. Thermals were so strong that the contestants were reporting cases of wind shear; no less than three wings were taken apart at very high altitudes. That's the thing that scares the heck out of full-size airplane pilots . . . C.A.T. (Clear Air Turbulence).

Despite the drawbacks, entries were

something terrific with 44 alone in the Texaco event. Monday's flying had to start early at 8 a.m. to accommodate the boys. Picture No. 4 shows Hal Cullens weighing Dave Marshall's Powerhouse. Loren Schmidt is holding a Mel Yates Cabin Model. The others will be left to identify by the readers as an object lesson to know your best Texaco types.

Picture No. 4 shows Bruce Norman, the high point winner, tuning an engine.



Photo No. 5. Tuning up before a flight in C Pylon is Bruce Norman, the man to beat in both F/F and R/C Old Timers.

Note that this is done before taking an official flight. Bruce is one of those careful modelers who leave nothing to chance.

Bruce has "discovered" O.T. R/C, and what he did in free flight (grabbing all the trophies), he is now doing in R/C. Most of the free flight boys are pleased as punch that he is now tormenting the O.T. R/C boys, but in talks with wife, Leslie Norman, she indicates she would rather fly free flight. Good thing, honey, we have enough trouble with Bruce.

As stated previously, Monday started off bright and early with the Electric event. Rather than run a series of endurance flights, the latest and most popular idea is the man-on-man competition. Picture No. 6 shows the gang just before the mass launching.

Credit for the promotion of the Electric event should be given to Bob Boucher of Astro Flight, who has generously donated trophies and prizes to every major electric event. (The SAM Champs at Wright-Patterson AFB are no exception.) Original rules as promulgated by Bob are a two-minute motor run with ten-minute flights. However, in the man-on-man type of competition, the last man down wins.

The shot of the competing fliers is one that proves the old adage, "The best of the species will survive," as nothing but Cleveland Playboys were employed in this event. The columnist is tempted to start a handicap system based on the number of wins by any particular design. One thing for sure, we would see something besides Playboys and Dal-laires!

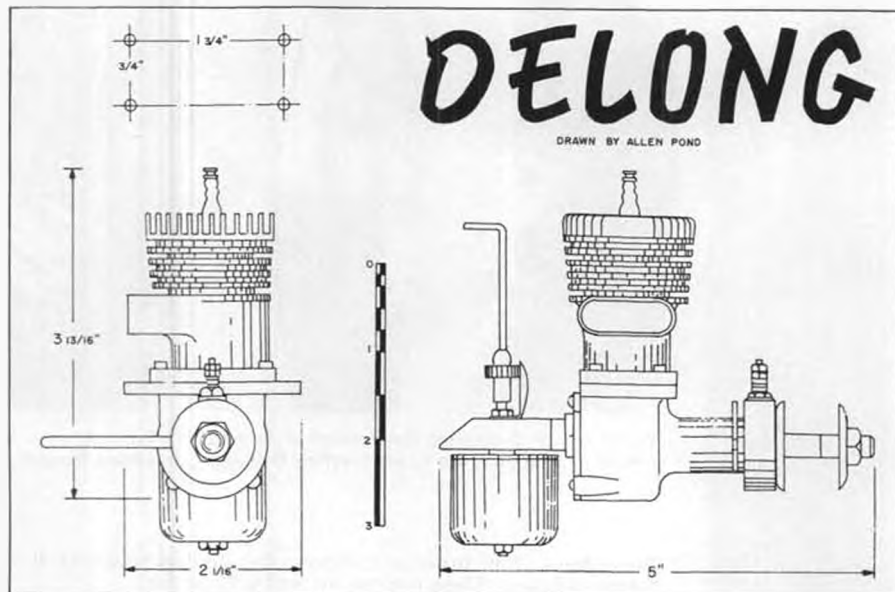
We could probably keep talking about this sensational meet, but we have other phases of the Old Timers to talk about, so let's take a look at the results.

SATURDAY, MAY 24

CLASS A-B PYLON (15 entries)	
1) J.H. Percy (Playboy)	21:40
2) Bruce Norman (Playboy)	20:15
3) Phil Bernhardt (Ehling)	20:07
4) Don Bekins (Playboy)	19:20
5) J.R. Buice (Playboy)	15:35
CLASS C CABIN (21 entries)	
1) Bruce Norman (Playboy Cabin)	29:20
2) Karl Tulp (Dallaire)	22:00



Photo No. 6. Electric O.T. Fliers just before the man-on-man flyoff. Two fellows kneeling in front are Don Bekins (left) and Karl Tulp. Standing (l to r) are John Pond, J.R. Buice, Bruce Norman, Monti Farrell (timer), Hal Cullens (C.D.), and Ross Thomas.



- 3) J.R. Buice (Trenton Terror) 21:26
- 4) Ed Solenberger (Challenger) 19:17
- 5) Don Bekins (Playboy Cabin) 18:53
- 1/2A TEXACO (21 entries)
- 1) Don Bekins (M-G) 44:40
- 2) Ernie Payne (Lanzo) 36:21
- 3) John Drobshoff (Challenger) 32:18
- 4) Jack Albrecht (Playboy) 26:00
- 5) Ron Keil (Lanzo) 18:08

SUNDAY, MAY 25
CLASS A-B CABIN

- 1) Rich Kultti (Bombshell) 20:00
- 2) John Pond (Cloudster) 19:59
- 3) Ross Thomas (Cloudster) 19:23
- 4) Ed Solenberger (Challenger) 19:15
- 5) Bruce Norman (Challenger) 19:02

CLASS C PYLON (19 entries)

- 1) J.R. Buice (Playboy) 22:00
- 2) Ross Thomas (Sunduster) 21:40
- 3) Ed Solenberger (Playboy) 21:21
- 4) Bruce Norman (Playboy) 20:51
- 5) Don Bekins (Playboy) 18:38

ANTIQUÉ (37 entries)

- 1) Phil Bernhardt (Ehling) 39:47
- 2) Bruce Norman (Cumulus) 39:03
- 3) Jim Kyncy (Dallaire) 30:40
- 4) Karl Tulp (Dallaire) 30:40
- 5) Nick Sanford (Riser Rider) 30:00

MONDAY, MAY 26

ELECTRIC (6 entries)

- 1) Bruce Norman (Playboy)
- 2) Don Bekins (Playboy)
- 3) Ross Thomas (Playboy)
- 4) J.R. Buice (Playboy)
- 5) Karl Tulp (Playboy)



Photo No. 7. The gang that built models at Bert Hall's Long Beach hobby shop in 1936-38. Bert Hall is second from the left, standing, and Phil Stanson (who sent in this photo) is second from the right, kneeling. Recognize those ships?

TEXACO (44 entries)

- 1) Don Bekins (Gas Bird) 1:30:47
- 2) Bruce Norman (Dallaire) 1:24:37
- 3) Eut Tileston (Westerner) 45:44
- 4) Charles Critch (Clipper) 44:06
- 5) Jim Kyncy (Gas Bird) 30:20

What competition! There were flyoffs in the Antique and Class C Cabin events. In some cases only one or two seconds decided the winner! Of course, Bruce

Norman won the huge perpetual Sweepstakes Trophy. Now he'll have to lug it out to California next year!

OLD TIMERS AT U.S. F/F CHAMPS

No question about it, the U.S. Free Flight Champs will be reported elsewhere, but this columnist has to acknowledge all the flying that was done over the two days at Taft, California.

Reports of flying are rather sketchy, but all agree the weather was typical Taft . . . terrific! Happily, the West Coast O.T. R/C Champs didn't hurt the F/F events a bit, as most all of the members of the Southern California SAM Chapters took in the U.S. F/F Champs.

Jim Adams reports that Ed Kelly (Saturday) and Frank Swaney (Sunday) did a terrific job of running the events. It appears to this columnist that this is about the umpteenth time Ed has done the honors. Wotta good man! Ed, by the way, is the head man of the 4K's Co. which puts out the Buzzard Bombshell and Korda Wakefield kits.

Of special interest was the number of entrants in the Rubber event: 35!! Now that good rubber is again available, the boys who love to trim and fly rubber models are coming out like crazy. Great stuff!!

I know I said we weren't going to do any more results but the U.S. Free Flight Champs are worthy of recognition, so here are the O.T. results:

- CLASS A CABIN**
- 1) Ken Sykora 11:18
 - 2) Bob Oslan 10:16
 - 3) Tom Rice 9:15
 - 4) Bill Cohen 9:13
 - 5) Cliff Silva 8:51

- CLASS B PYLON**
- 1) Leon Nadolski 14:58
 - 2) Bob Oslan 14:50
 - 3) Al Richardson 11:32
 - 4) Walt Parker 11:24
 - 5) T.C. O'Meara 9:06

- CLASS C CABIN**
- 1) Tom Rice 15:00
 - 2) Jim Ogg 14:03



Photo No. 8. Bruce Lester took this photo at the 1938 Detroit Nationals. That's Winnie Davis in the straw hat, with his "Big Gull".



Photo No. 9. John Tidey cleaned up at the Australian Nats with this Playboy Sr. (without the floats, of course!). Powered by Enya .29.



Photo No. 10. It looks like a "Blue Max" but it's actually the "Silver Max" award given out annually to members of the Central Indiana Aeromodelers (CIA). Bob Larsh pic.

- | | |
|---------------------|-------|
| 3) Bill Cohen | 10:00 |
| 4) Phil McCary | 9:37 |
| 5) T.C. O'Meara | 8:05 |
| .020 REPLICA | |
| 1) Sal Taibi | 19:48 |
| 2) Abe Gallas | 16:58 |
| 3) Dick Bloomquist | 13:08 |

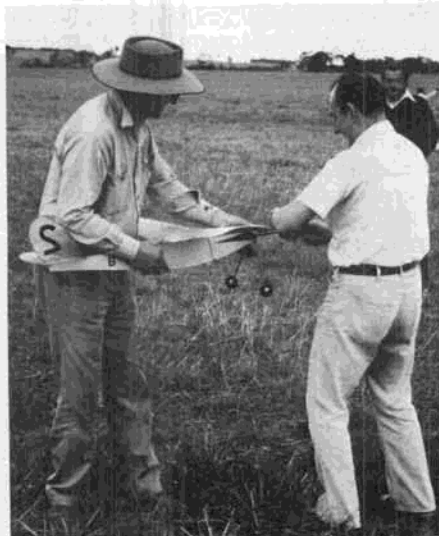
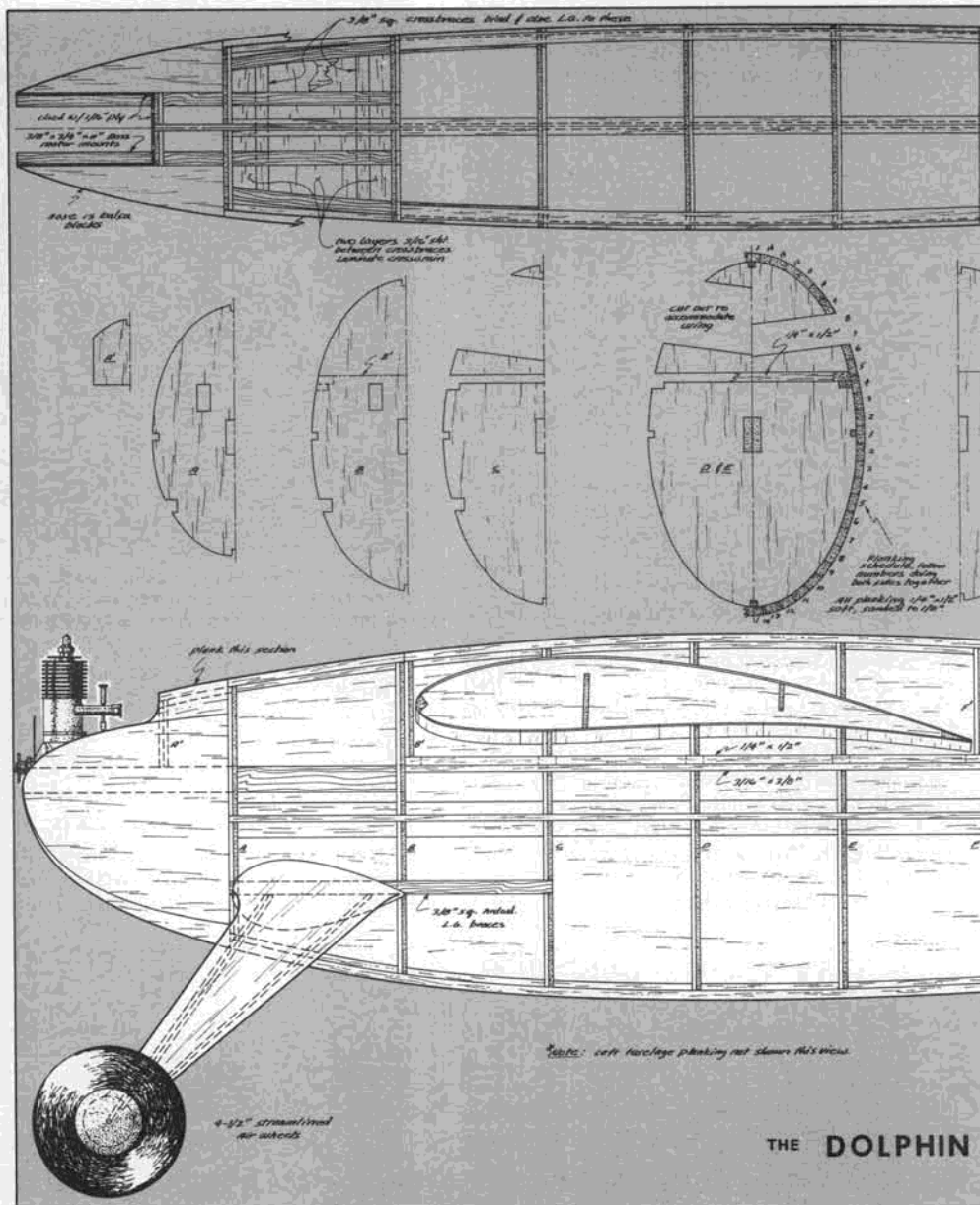


Photo No. 11. Max Starick rebuilt this old Sky Rover rubber job. Peter Twiss holds.



- | | |
|--------------------------|-------|
| 4) Bob Sundberg | 11:25 |
| 5) Bill Burt | 8:43 |
| CLASS A PYLON | |
| 1) Bruce Chandler | 10:26 |
| 2) Cliff Silva | 8:30 |
| 3) Sal Taibi | 6:54 |
| 4) Jack Jella | 6:19 |
| 5) Jay Jackson | 6:00 |
| CLASS B CABIN | |
| 1) Bill Cohen | 6:57 |
| 2) Jay Jackson | 6:21 |
| 3) Bob Dittmer | 6:04 |
| 4) Sandy Chapin | 5:12 |
| 5) John Morrill | 5:09 |
| RUBBER | |
| 1) G. Schneider | 15:00 |
| 2) Charles Werle | 14:46 |
| 3) Tony Beron | 14:15 |
| 4) Ken Whitney | 13:06 |
| 5) Phil McCary | 12:31 |
| 30 SECOND ANTIQUE | |
| 1) Jim Ogg | 11:43 |
| 2) T.C. O'Meara | 8:22 |
| 3) Damon Adcock | 6:06 |
| 4) Bill Cohen | — |
| 5) Frank Swaney | — |

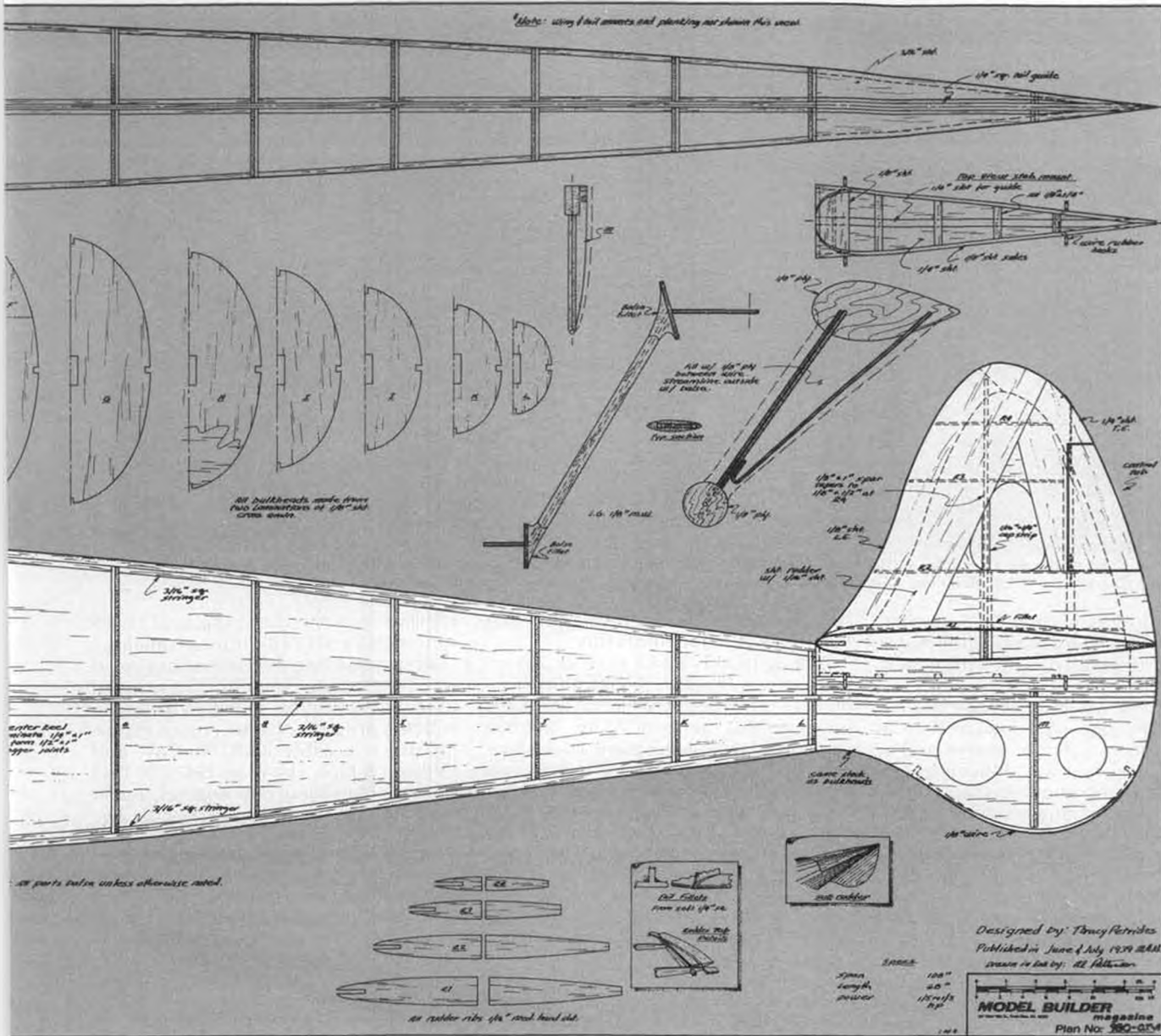
- | | |
|----------------------|------|
| CLASS C PYLON | |
| 1) Toby Blizzard | 8:19 |
| 2) Bob McCormick | 8:16 |
| 3) Walt Parker | 7:14 |
| 4) Leon Nadolski | 7:06 |
| 5) Sal Taibi | 6:50 |

As you can see by the results, the meet had them coming from all over . . . Salt Lake City, Phoenix, Reno. In short, just a great contest to go to!!

MOTOR OF THE MONTH

Of all the engines that came out right after World War II, the Delong .30 (as manufactured by Super Motors, 2093 E. 19th St., Cleveland, OH) appeared to be the answer to the prayers of the Class B contestants. At the beginning, Delongs were credited with winning all the C/L speed events, then into free flight, where they started scoring well.

With all this publicity, everyone, including this columnist, had to have one. Sales of Delong engines skyrocketed until it seemed this was THE Class B engine. It was then that the columnist discovered, like a lot of other fellows, that the Delong engine they had



FULL SIZE PLANS AVAILABLE - SEE PAGE 100

purchased did not perform like those championship figures they had been reading about. When the facts came to light, it was found that only a specific few had the "hot" ones to go out and set records.

One of the big problems with the Delong motor was that you could never break it in (somewhat like the Veco .45). This reporter can remember Joe Bilgri trying for hour after hour with no results. It wasn't long before the bubble broke and the Delong engine was discarded in favor of Torpedo and McCoy engines.

Delong engines started very auspiciously in small advertisements appearing in *Air Trails* and *Model Airplane News*, February 1946, with four speed contest results running from 92 mph to 100 mph. That really knocked the boys for a loop! (Incidentally, the Delong .45 and .60 were also mentioned, but no real production was ever undertaken.)

By December 1946 the highwater of sales was arrived at with full-page ads extolling the virtues of the engine and

the victories scored at the '46 Nationals. To keep things rolling, the original price of \$24.50 was cut to \$19.50. However, it was only a matter of time, as the K&B Torpedo was making itself felt more and more at the contests.

Large scale advertising in all major model magazines abruptly ceased in May 1947. Ironically, that was the issue that *Air Trails* featured the Delong in its Engine Review. After that the only mention of Delong motors was in one-



Photo No. 12. Found among his effects, an original design built by the late Clyde Austin back in the early days. Gordon Codding is in the process of restoring it, also took this photo.



Photo No. 13. Start of the big Czech Team Challenge. From left, Czech Team Captain, Carl Hatrak; Larry Clark, unknown, Wade Wiley, Bill Krecek, Bruce Chandler, and Lee Freeman. Text tells what the fun is all about. There should be more of this sort of thing!

line ads such as carried by Four Star Model Builders Supply of Schnectady, New York. It was all downhill from then on.

The DeLong was a well-made engine of the rotary disc type intake. With a mehanite (iron) cylinder sleeve and a steel alloy piston, it was difficult to get the engine in top running shape. One needed a good honing machine, and of

course most of the modelers in those days did not enjoy this luxury.

DeLong motors had a bore of .750 in. and a stroke of .680 in., giving a displacement of .299. Weight of engine was eight ounces with a rating of 1/5 hp. An 8,000 rpm claim was made using an 11x9 or 8x10 propeller. The strobatac tests run by the *Air Trails* test section revealed 7,500 rpm with a 10x8 propeller, 9,200

rpm with 9x8 Mercury prop. and 11,000 rpm with an 8x10 Hi-Thrust propeller.

In summarizing the DeLong engine, it was a well-made motor but like many of its contemporaries, failed to keep up with the progress of other engine manufacturers, notably K&B, McCoy, and Ohlsson & Rice. The years 1947 and 1948 brought out a lot of new engines, and at

Continued on page 90



the DOLPHIN

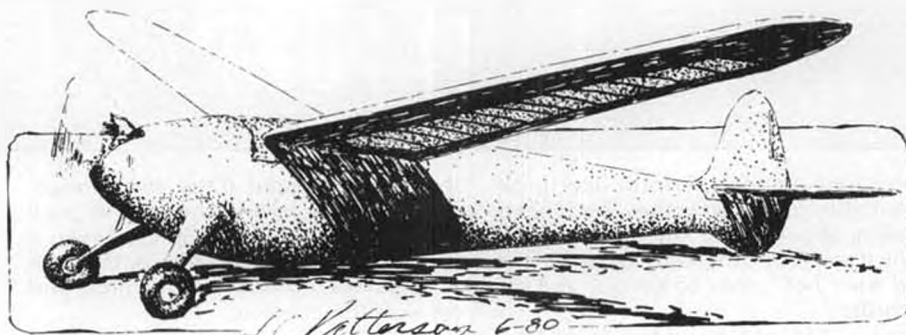
OLD TIMER Model of the Month

Designed by: Thracy Petrides

Drawn by: Al Patterson

Text by: Phil Bernhardt

• One distinct group of Old Timer designs that stand apart from all others are those that were collectively referred to in their day as "streamliners" . . . big, complex airplanes, usually nine-foot span or more, with shoulder-mounted wings and smooth, aerodynamic fuselages. They included the likes of Ben Shereshaw's Cavalier and Nimbus, Frank Tlush's 1936 Texaco Winner, and of course, this month's featured model, Thracy Petrides' "Dolphin." Streamliners were considered to be the last word in efficiency and were truly the "king" of model airplanes during the



middle to late '30s.

Model Airplane News featured the Dolphin in its June and July 1939 issues. The first of those installments tells the interesting story of the model's maiden flight and even contains a dig at farmers, who apparently were not too cooperative when it came to returning lost models:

Scene: Wayne County Airport, Detroit. Time: July 9, 1937, about 10 a.m.

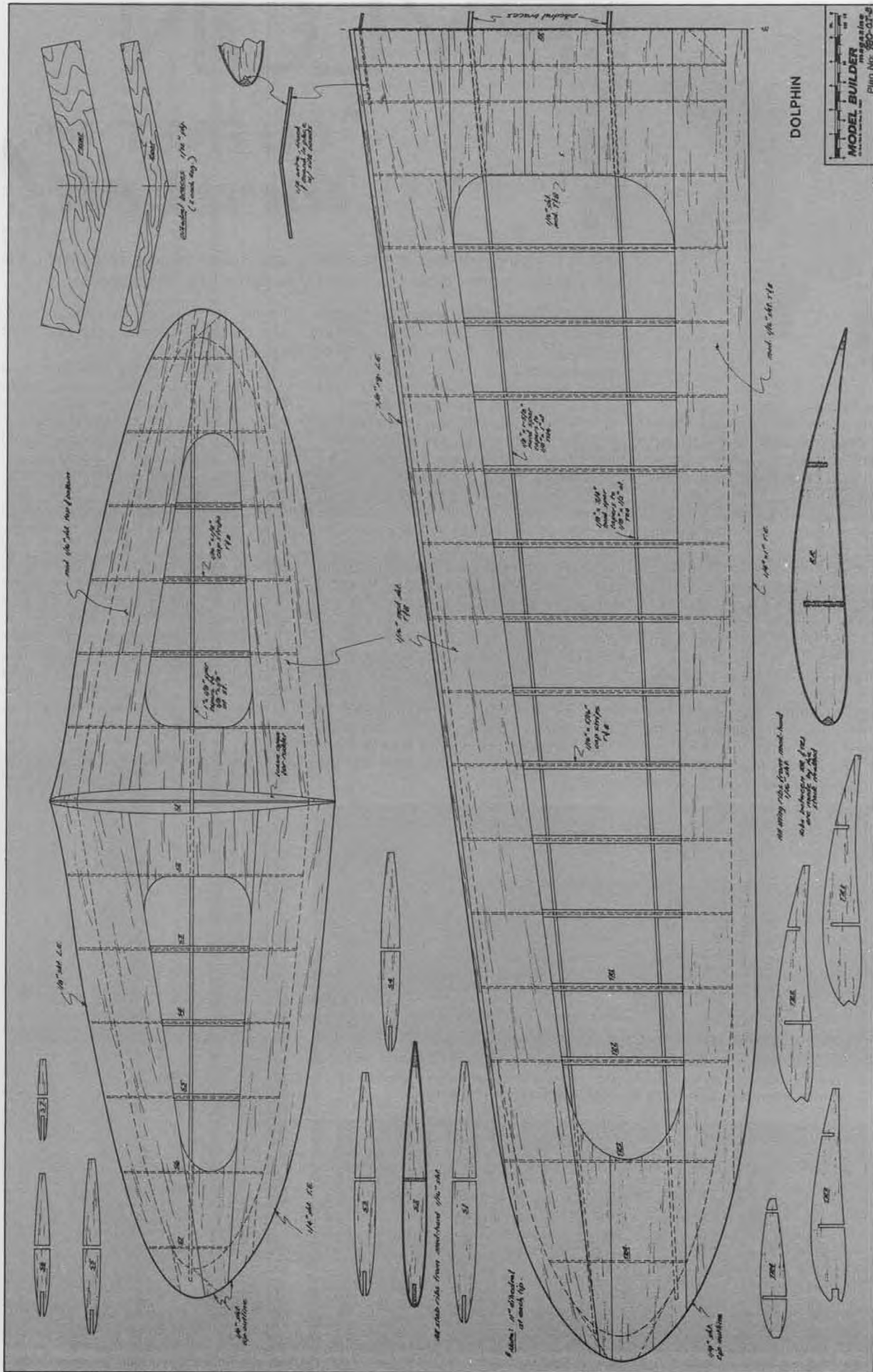
Suddenly a huge blue and orange winged teardrop roars off the snowy white runway into the azure, glistening in the sun and nosing upward on its maiden flight. Up, up, up it goes till after nine minutes it is only a speck in the sky.

This is what took place on the morning of the Texaco Event. The model had been adjusted the night before by its

builder, Petrides, and when given its first trial flight, it disappeared into the blue. This spoke well for the design and the construction of the ship, but it was disappointing to know that the plane could not be entered in the event because of an abrupt leave of absence.

Three days after the contest, when the model had been given up for lost, an airplane pilot phoned the hotel in accordance with a notice in the paper, and stated that he had sighted the model from his airplane. The Dolphin had landed in a soft wheat field, and was exactly 24 miles from the point of launching, however, two automobile trips had to be made before the model was located. The car followed under the plane to the approximate spot, while the

Continued on page 94



DOLPHIN

MODEL BUILDER
 Publications
 Plan No. 80-054



PYLON

**"GO FAST AND
Turn Left!"**

By JIM GAGER

Our R/C Pylon editor returns after a brief intermission, this time on an every-other-month basis . . . unless you force him to do more!

PYLON'S BACK!

Yes, insistent reader demand mandates our coming out of retirement, and thanks to Bill Northrop's interest in all things modeling, Pylon Racing will again grace these pages.

And, yes, I'm glad to be back. In case you're a new reader to this mag within the last year, this may seem like a new column/writer, but not so. A Pylon column has appeared as a feature almost from RCMB's inception. Occasionally its appearance was sporadic, and this writer handled the job for almost three years, up until mid-1979.

The demands of earning a living, raising three active boys, and home maintenance (ofttimes postponed to allow time for racing), all combined with the pressures of coming up with an informative and interesting MONTHLY column in time for rigid publishing

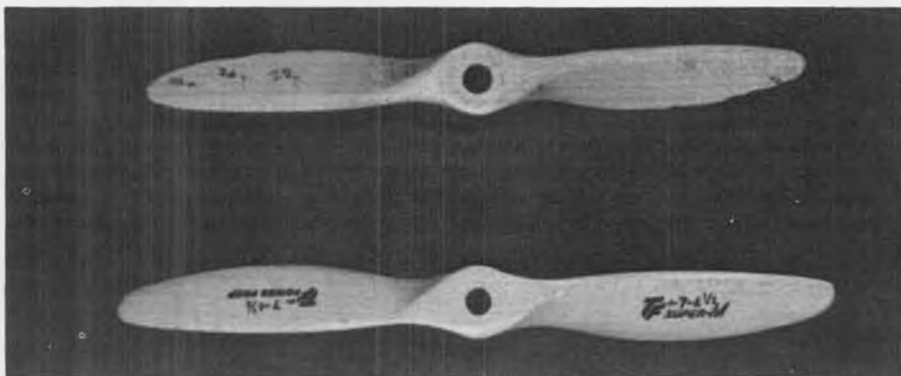
deadlines, suggested a temporary layoff of writing activities. Not all the aforementioned items have been satisfactorily brought to conclusion, but the house won't be condemned, the kids won't either, and I've changed jobs.

Lastly, in discussing the format of the resumption of the feature column with Bill Northrop, it's been decided to let the amount of active interest (read that as questions, letters, photos, etc.) you readers supply to determine the frequency of this column's appearance. Therefore, if your participation in bringing forth material or ideas that can be developed into part of the column warrants it appearing monthly, Bill will provide the space. To give you a chance to begin sending said material, we're currently planning to appear bi-monthly, with all material provided by your writer. We need your help in this matter, so even if it's just a small tidbit of information or an idea, jot it down on an empty prop box and send it to me. My address appears at the end of the column.

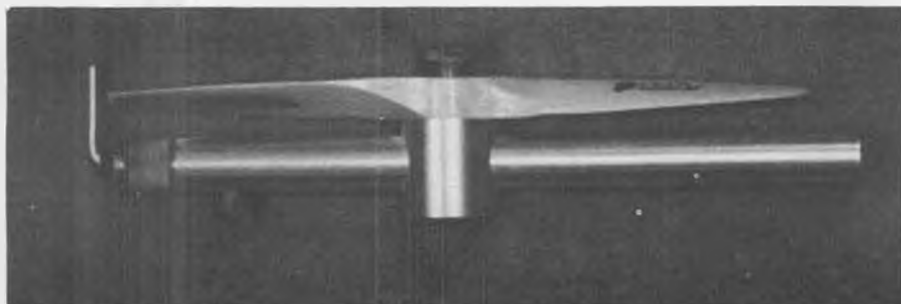
Now, for those of you who are new to this column, let me provide a little background bio:

Currently, I'm in my mid-thirties and youthful (don't let the graying hair fool you, it's dyed that way to make me look more mature for business reasons), married to my proofreader (be thankful for her), and have three boys, age 2, 10, and 14, all of whom are interested in airplanes. Imagine that!

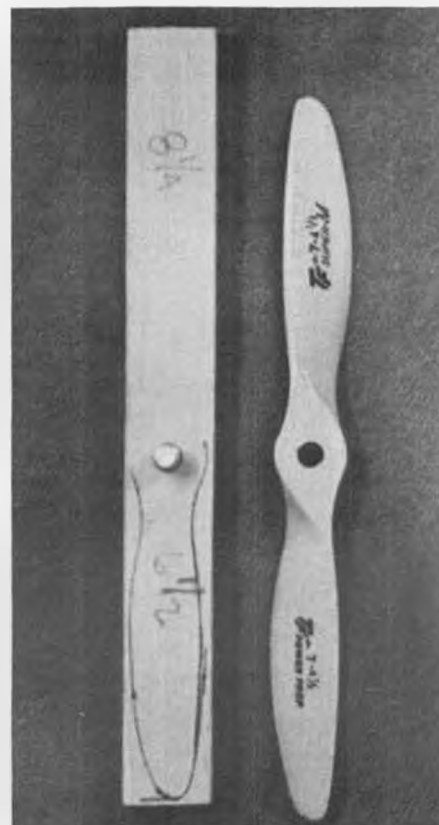
My earliest association with models dates back to free flight in the Chicago area during the early '50s. Then came control line, which lasted until my late teens, when other pleasant things were discovered which occupied all of my spare time and money. A few years later, I chanced upon my younger brother trying to get a C/L ship up in the air. Naturally I stepped in to help him, as I always would, and the balsa dust started to flow in my veins again. The ukie fever hit hot and heavy for a few years, mostly



This month Jim reveals how to go about reworking a Top Flite prop for higher performance. Note chips in reworked prop (top), one of the drawbacks of going to thin blades.



Adjustable jig formerly marketed by George Zink, useful for checking blades for equal length and equal pitch. How 'bout making them available again, George?



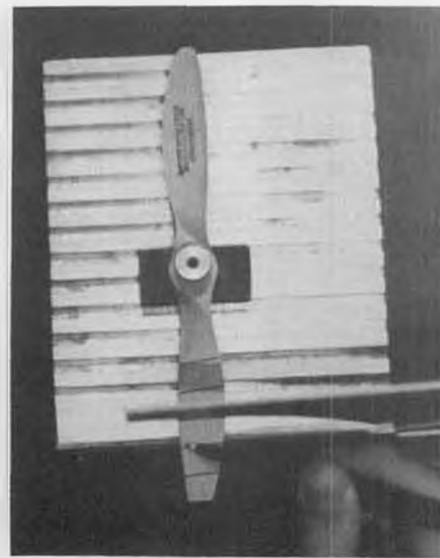
Simple block used to cut blades to equal length. One end for Q-M, the other for F-1.



Hardwood jig being used to trim prop blades to desired length prior to rework.



A straight, stiff razor blade is used to remove manufacturer's finish.



Prather pitch gauge being used to mark off pitch stations on top and bottom of both blades.

in Combat and Stunt (well, we called it Stunt then. Now it's Precision Aerobatics) until, with most of its members dropping out to fly R/C, the Chicago U-Liners folded.

I joined the rest of the converts and for awhile just couldn't find the right niche. Pattern seemed too boring and time demanding to be competitive. Scale was too slow-paced and most guys seemed to crash too regularly to warrant investing all that time and money. Gliders also were too slow-paced and seemingly without excitement. It wasn't until I saw my first pylon race that I really became enthused and wanted to excel in a specific area of R/C. Since that first race in 1973, almost all of my energies and talents have been directed toward becoming a competitive racer.

My chief claim to racing fame is a short-lived (24 hrs.) national Q-M record fast time posted at the 1979 Rough River Championships. I turned a time of 1:26.7 on Saturday, three full seconds faster

than the previous national record, only to see it fall on the next day to Bobby Blouch, the current record holder, with a 1:26.6!!!

I also compete in Form. 1, but have a ways to go yet before any of the current hot-shots have to worry about me lapping them.

As a sideline, I'm into custom-building pylon racers (and to a lesser extent, Sport Scale and Pattern models) and also do some design and construction work for one of the major hobby manufacturers.

Q-M PROPS

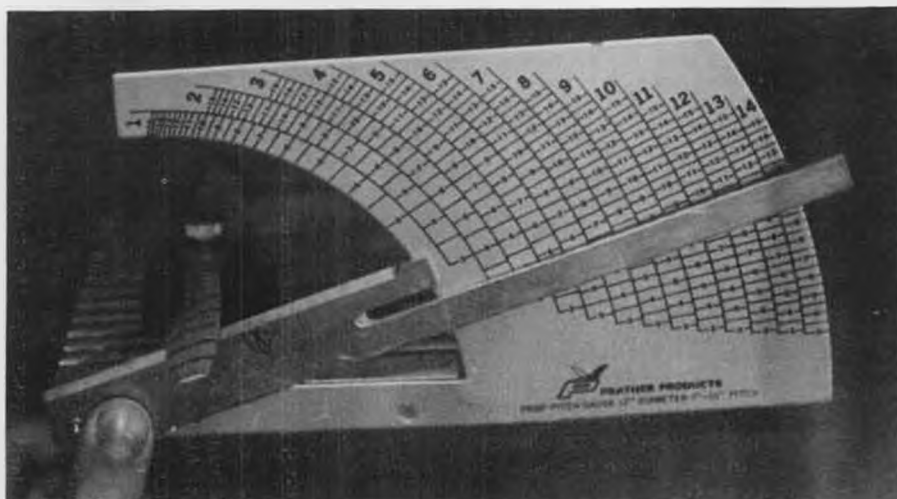
Having read every article on propeller workings I've been able to find and talking with anyone who had a theory of what makes props go, I must admit that I still don't know all the answers. Not to let that stop me though, I'm going to outline my procedure for reworking a prop to the exact dimensions used in setting my Former Record Fast Time, or F.R.F.T. As I said, I can't tell you why it works, only that it does.

Before getting into the actual reworking, we must describe the engine/aircraft combination, for it has a direct

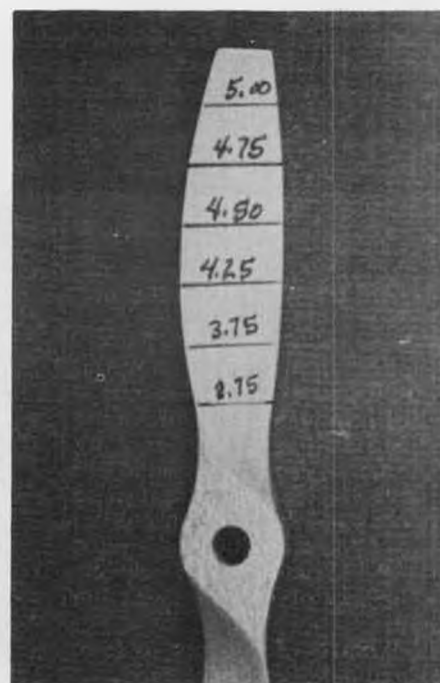
though not definitive bearing on prop shape, pitch, length, and thickness. The plane (a Q-M) is a low-winged aircraft weighing 2 lb. 9 oz., powered by Rossi. This combination, along with the following prop, and running the engine at between 22,000 and 22,500 rpm (depending on weather conditions) results in a winning (F.R.F.T.) combination.

But first, I have to state a disclaimer of responsibility in this era of "sue anybody for anything." I'm not recommending you modify your props in any way, as any modifications to the manufacturer's stock prop will possibly weaken it and make it more prone to breakage. You're on your own if you choose to rework it.

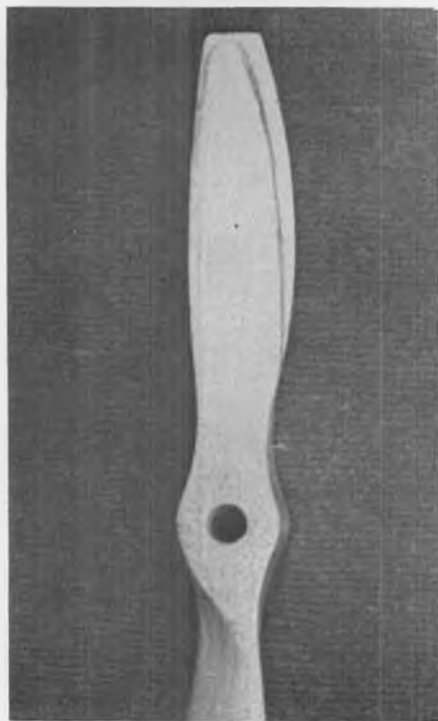
The modifications outlined require careful selection of the initial prop to be reworked. The wood must be straight-grained, blades should be of equal



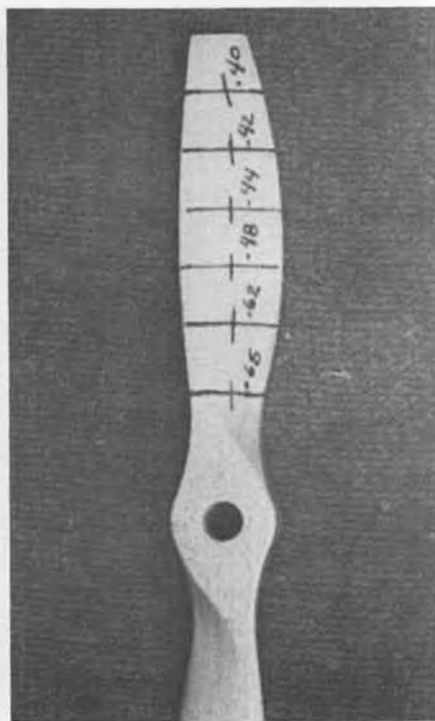
Prather pitch gauge is used to check actual pitch and equality of pitch on both blades.



A marked prop showing the pitch stations and actual pitch measurements desired.



Prop blades are marked according to drawing at right.



Front side of prop showing pitch stations and desired thickness at each one.

stiffness, and the material should be hard maple or similar wood. My personal experiments have led to my using Top Flite 7x5 Super-M Power Props as the starting point for reworking. Our steps in the order of reworking are as follows:

1) The prop should be checked for having equal pitch in both blades prior to reworking. Any pitch deviations can be minimized by sanding the back of the prop hub on a flat surface until equal pitch in both sides is achieved. A Prather type pitch gauge is recommended for checking purposes.

2) A simple jig can be fabricated from hardwood for cutting the prop blades to length. Merely thread a bolt or dowel the same diameter as your prop shaft into the hardwood block, then cut the block to 1/16 of an inch longer than your finished prop blade length. The end should be cut square to the center line of the bolt/block so that when the prop is placed on the jig, the prop tip can be sanded flush with the block, resulting in a square-tipped prop. Rotating the prop 180° and sanding the remaining tip ensures a prop with equal length blades.

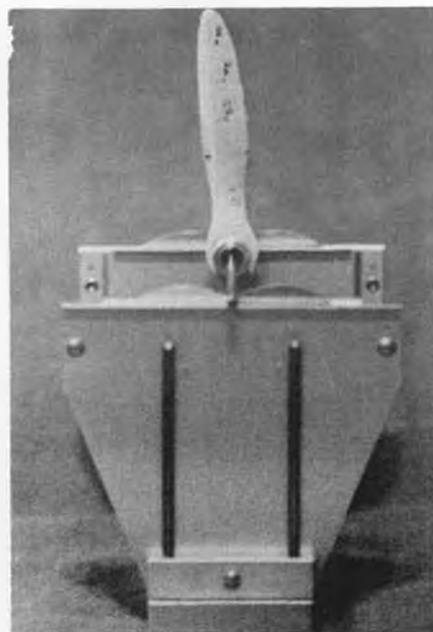
3) At this point I like to clean all the manufacturer's applied finish off the blades. This serves two purposes: it smooths out the back of the blade and makes marking the pitch stations and the thickness and pitch dimensions easier.

4) Pitch stations are marked off on the top and bottom of both blades.

5) The pitch is now checked and modified to the specifications in the accompanying drawing. Both blades are equalized in dimensions.

6) The prop is then shaped to the full-size accompanying drawing.

7) Next, the thickness of the blades is



Accurate balancing is essential. Jim recommends the overlapping disc type balancer by High-Point Products as one of the best on the market.

modified to the specifications in the drawings.

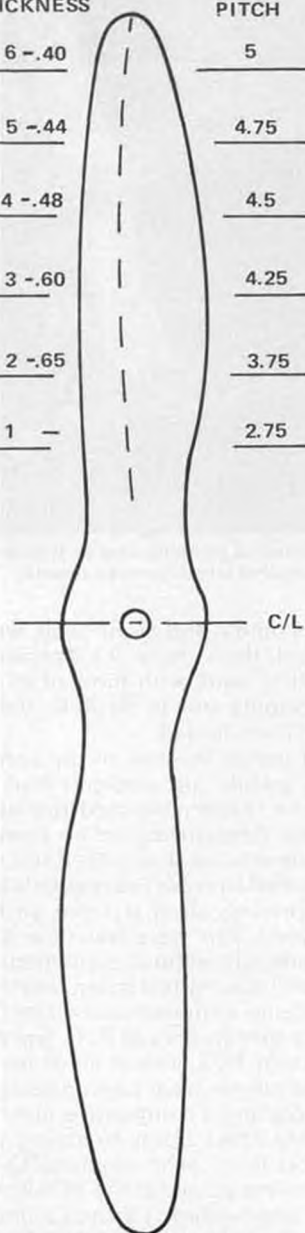
8) The prop is then coated with a cyanoacrylate glue such as Hot Stuff, Zap, etc. by placing several drops of glue along the trailing edge and rapidly spreading it out with your finger. This helps stiffen the very thin trailing edge.

9) After balancing, the prop is ready for use.

10) Test running the prop is necessary to determine if you are achieving the correct rpm range. If I exceed 22,500 rpm I rework another prop but leave it slightly longer in length. If this one is

DOTTED LINE DENOTES HIGH POINT OF AIRFOIL. THICKNESS IS MEASURED AT HALFWAY MARK OF BLADE WIDTH AT EACH PITCH STATION.

THICKNESS	PITCH
STATION 6 -.40	5
STATION 5 -.44	4.75
STATION 4 -.48	4.5
STATION 3 -.60	4.25
STATION 2 -.65	3.75
STATION 1 -	2.75



ACTUAL SHAPE & SIZE, REWORKED PROP.

TYPICAL CROSS SECTION THROUGH PITCH STATION. NOT TO SCALE

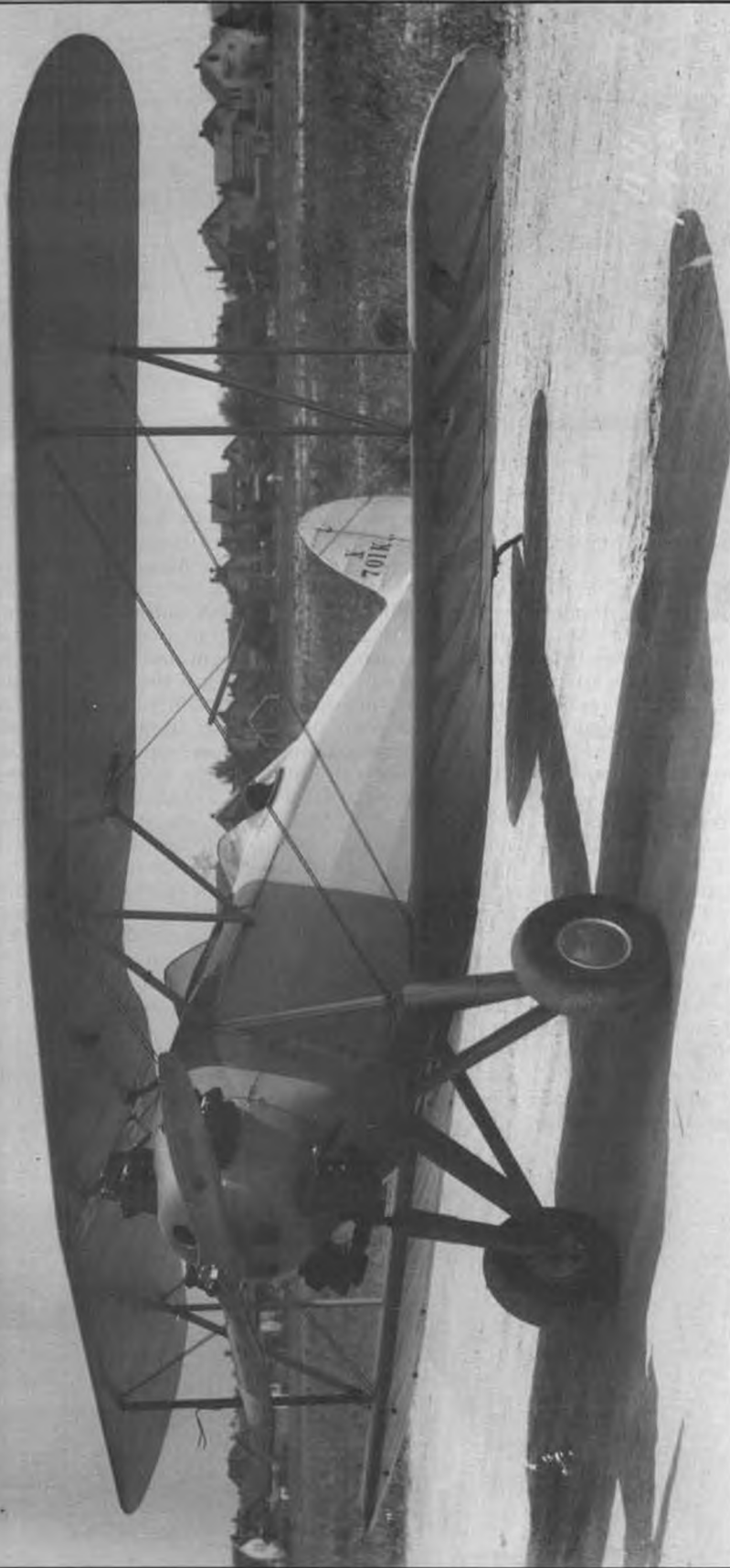
under rpm, I then remove material equally from the tips (always keeping to the ideal shape) until it performs in the rpm range desired. When removing material from the tips, in no case do I go less than 6-3/8 inches in total prop length. If this still hasn't achieved the rpm desired I begin reducing the pitch from station five out to the tip by lightly sanding the back of the blades with fine sandpaper.

Try it. What have you got to lose, except some props and a few races. . .

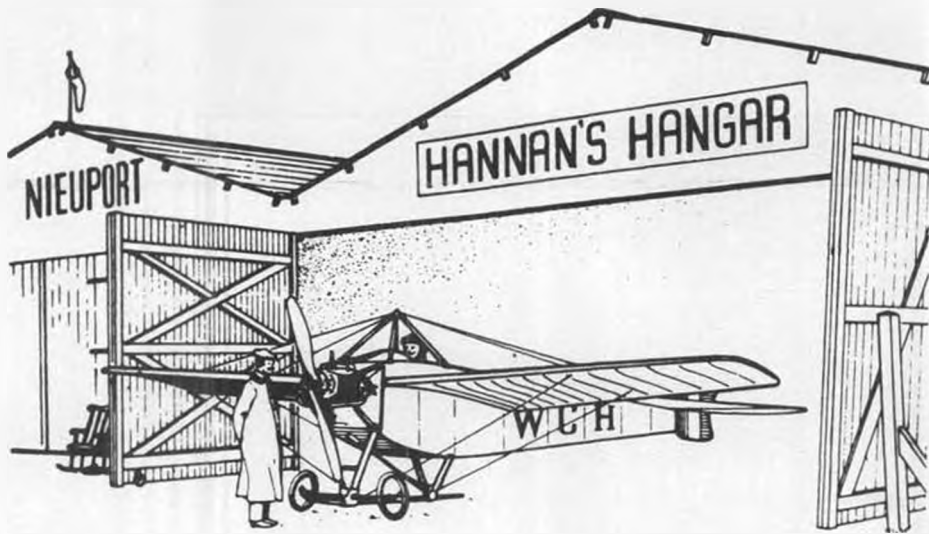
Jim Gager, 3727 Shepherd Lane, Ft. Wayne, IN 46815. ●

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CONTROL LINE	62

FREE FLIGHT AND CONTROL LINE



Here's a photo that should stir the imagination of any red-blooded modeler or aeronautic enthusiast! This is a company photograph, dated September 7, 1930, and of course, it's a Great Lakes Trainer, but with a Kinner 5 cylinder radial engine! Note the license, X701K. No wonder there was more interest by youngsters to get into model building back in those days. What a beautiful chunk of airplane! We don't know how this one performed, compared to the standard Cirrus powered aircraft, but it certainly had a "just right" look about it.



"I have not the smallest molecule of faith in aerial navigation other than ballooning."

• Our quotation this month, via Richard Miller, was penned in 1896 by Lord Kelvin, and leads us nicely into our first topic:

SPHERES AT MILE SQUARE

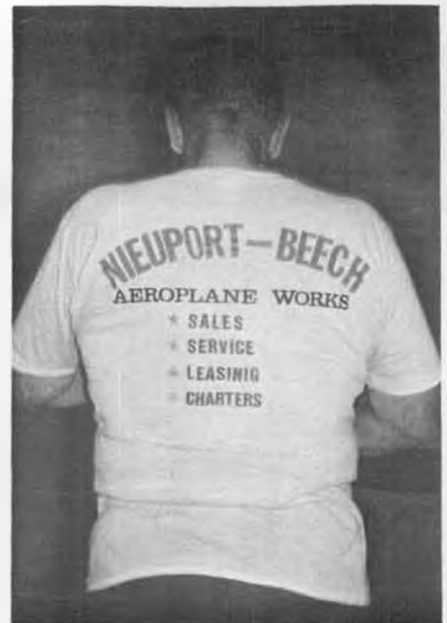
One of the most important model flying sites in Southern California is Mile Square Park, in Fountain Valley. Its spacious grounds offer adequate room for radio control, free flight, and model rocketry, as well as many other types of recreational activities.

On April 26, a very different sort of flying machine was in evidence over Mile Square on the occasion of the 1980 Gordon Bennett Balloon Race, an event having its origins back in 1906, in Paris, France. Gathered together were helium balloons representing England, France, Germany, Switzerland, Yugoslavia, and various parts of the United States. Also on hand were many colorful hot-air balloons, some of which have appeared in television commercials.

The grounds were filled with exhibits and souvenir stands in a festive atmosphere reminiscent of an old-fashioned country fair. The effect was heightened

by the presence of antique automobiles and numerous vintage costumes. Even the crowd control police were horseback-mounted, completing the illusion of being transported to an earlier era.

Warren Shipp and yours truly, suffering from "second degree ignorance," felt somewhat out of our element among the balloonists, but soon found them friendly and cheerful. One of the first we talked to turned out to be a former model builder, and he was most helpful in answering our undoubtedly naive questions. Fortified with at least a smattering of information, I was encouraged to make an ascent in one of the captive hot-air balloons. This proved to be a most refreshing and delightful experience for several reasons: 1) The tethers limiting our altitude to about 100 feet were reassuring; 2) The vertical acceleration is very smooth, not unlike an office building elevator; 3) The noise of the butane burner contrasts remarkably with the silence when it is throttled back; 4) The visibility from the balloon basket is fantastic; and 5) The confidence exuded by the charming balloon



Paul Steele, model-building resident of Newport Beach, California, interprets his town name aeronautically.

commander, Linda Price, was contagious! But back to earth.

The helium balloons employed in the actual race are quite different from the hot-air variety, being of varying configurations and materials. The "classic" style is made of rubberized fabric contained within rope netting. Next are the more modern material type net balloons, and finally the newest transparent (mylar?) film types. And, just as in modeling, there are various possible objectives to attract competitors: The Gordon Bennett Trophy, sculpted by ace political cartoonist Paul Conrad, is presented to the balloon which covers the greatest point-to-point distance from the launch site. The Classic Balloon Trophy honors the old-style balloon which travels the greatest distance, while the Queen Mary Trophy is awarded to the balloonists who manage to stay aloft the longest time in a classical type.

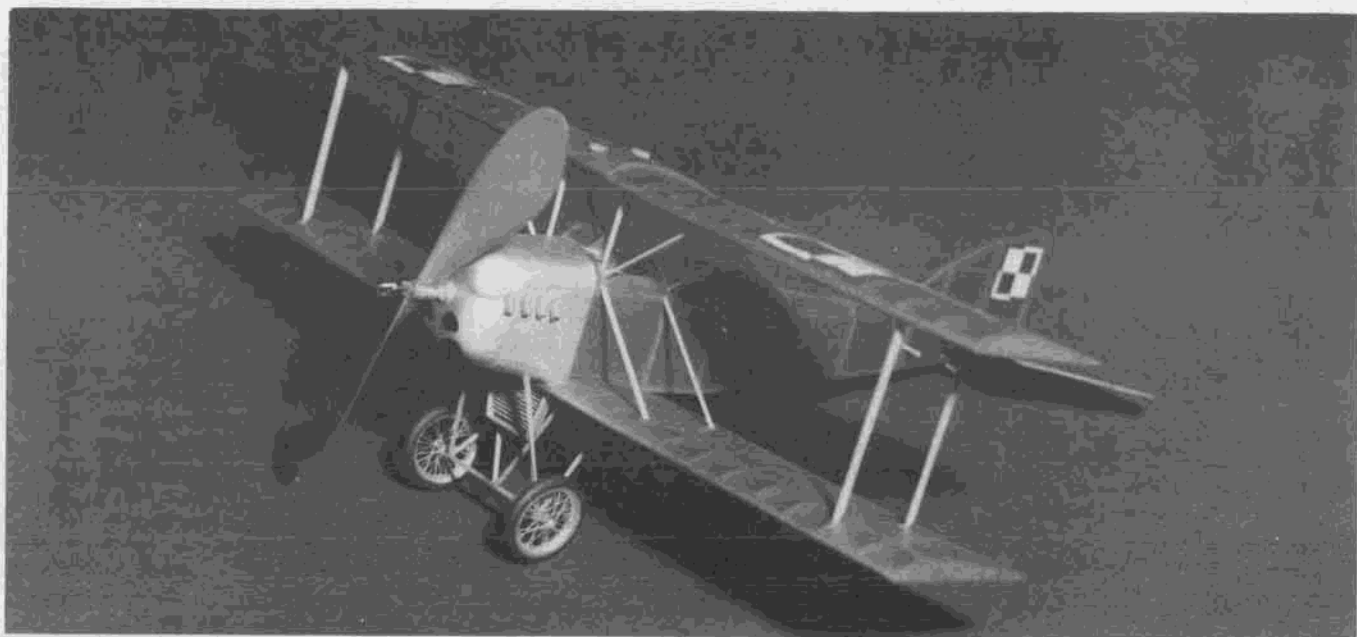
Continued on page 75



Unfamiliar aircraft over Mile Square Park (see text).



Novel pitot tube cover seen at Flabob Airport, Riverside, California. (Must be a scale model!)



HANRIOT H-19

By WALT MOONEY . . . Latest 13-incher from the Prolific Professor of Peanut Planes is this Polish biplane from the 1920's. Straight lines, no stagger, no dihedral . . . couldn't ask for anything much simpler.

• Well! Another way to inspire the designing and building of a Peanut Scale model has been discovered. A few months ago, a Danish modeler named Eduard Carson enclosed in a letter to me, several sets of Polish and Russian decal insignias. A short time later I received a copy of *Polska Skyrdsla*, a Polish aviation magazine, from another friend, the editor, Marian Krzyzan. In the magazine was a three-view of the Hanriot H-19 as built by the Samolot (airplane) company. Scaling the three-view up to 13-inch wingspan, I was delighted to find that my two friendly correspondents had given me a first class inspirational set-up. The decals were exactly the right size for a Peanut Hanriot H-19.

I will at this point apologize to all the modelers who build this model and will have to make their own insignia. Sorry fellas, but look on the bright side.

Cutting tissue trim is a character-building endeavor, and besides, Polish insignia roundels are made up of straight lines and right angles. Mathematics says that a circle is just an infinite number of straight lines in a plane, connected together at a constant distance from a point. Reducing the number of straight lines by half has almost no effect. So why not simplify your circle down to four straight lines?

The model as built from the plans flew quite well without any adjustments, except for a little nose ballast to get the center of gravity as indicated in the side view. Propeller slipstream effects result in a wide left turn. The wings were built directly over the plan with no dihedral. However, after doping, both wings obtained about 1/16 of an inch dihedral in the leading edge and about 3/16 of an inch dihedral in the trailing edge. This also results in about 1/8 of an inch of

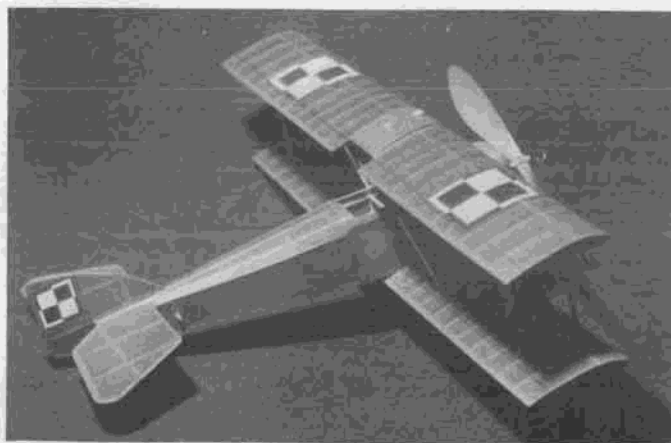
washout at each tip, measured trailing edge relative to leading edge. This is a good adjustment, so I left it in.

The construction used on this model is absolutely conventional. No new or untried techniques were used, so unless you are an absolute beginner, there should be no surprises as you build the model. Therefore, the following discussion will be about details rather than the basic structural assembly.

The wing tips are simply straight ribs on this model. To keep them from pulling in when the covering tissue is shrunk, they should be cut out of fairly firm balsa and the corner gussets should not be omitted.

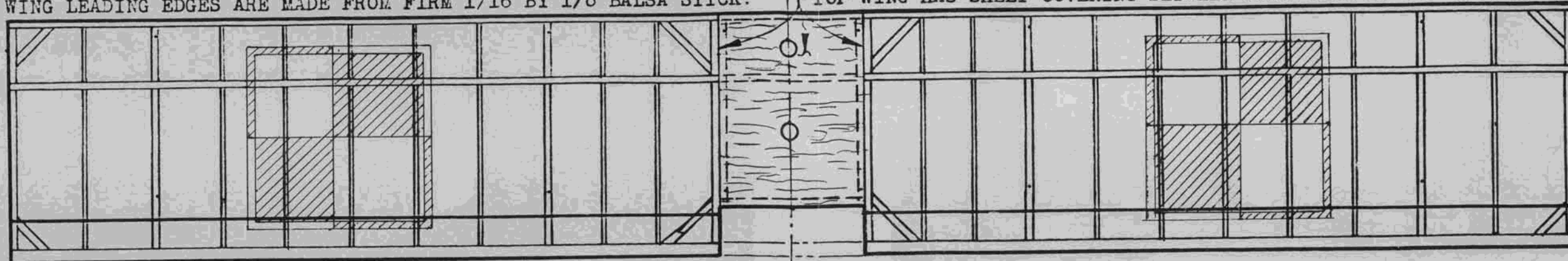
The radiator is an important detail. Mine was made up with an outline of 1/16x1/8 balsa, and had cross-pieces of 1/32x1/16 balsa at 1/32-inch intervals. It looks quite good on the model and

Continued on page 95

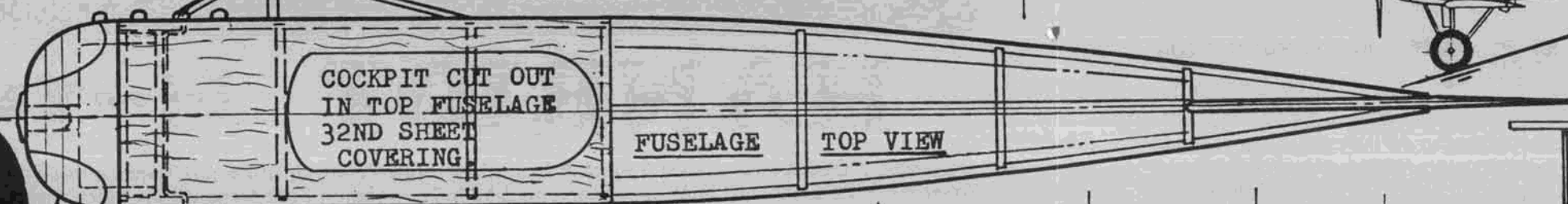
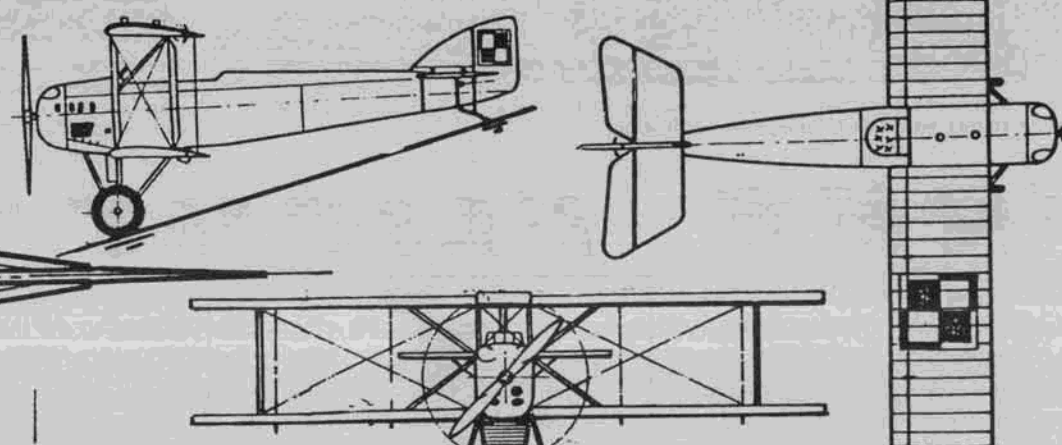


Only Walt's DH-6 Peanut can boast more straight lines than the Hanriot. Color scheme is an eye-catching green overall, with those Polish insignias being the only trim other than the control surface outlines. Flies fine with zero dihedral.

WING LEADING EDGES ARE MADE FROM FIRM 1/16 BY 1/8 Balsa STICK. TOP WING HAS SHEET COVERING BETWEEN ROOT RIBS ON TOP OF CENTER



WING TRAILING EDGES ARE MADE FROM SOFT 1/16 BY 1/8 Balsa STICK. BOTTOM WING HAS NO CENTER SECTION RIBS AND HAS NO SPAR ACROSS THE CENTER, IT'S TRAILING EDGE CARRIES ACROSS THE CENTER FOR STRUCTURAL CONTINUITY ON THE MODEL. NOT SO ON FULL SIZE AIRCRAFT.



COCKPIT CUT OUT IN TOP FUSELAGE 32ND SHEET COVERING

FUSELAGE TOP VIEW

LAMINATED BLOCK Balsa NOSE BLOCK.

SIX INCH DIA. COM'L PLASTIC PROPELLER. PLASTIC THRUST BEARING.

1/16SQ. WING SPAR

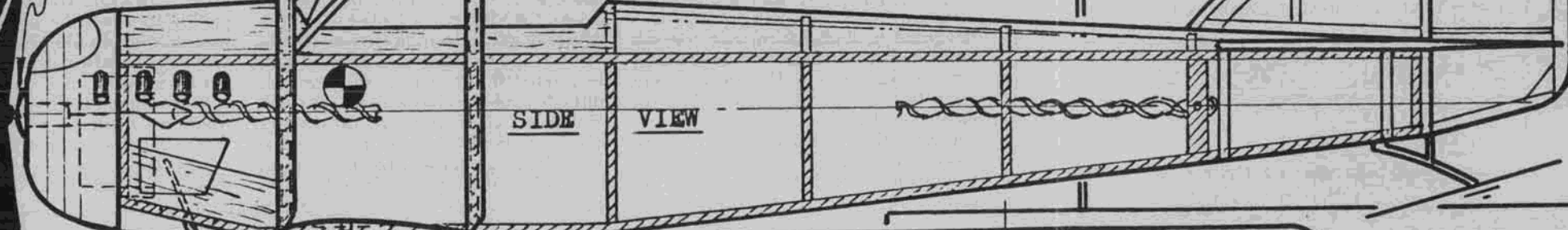
FORMERS ARE ALL 1/16TH SHEET

THE TOP WING IS

BUILT WITHOUT ANY DIHEDRAL ALL STRUTS ARE MADE FROM MODEL RAILROAD BASSWOOD. THEY ARE ALL IN LINE IN THE SIDE VIEW EXCEPT FOR THE SLANTED STRUTS IN THE "N" CABANES.

VERTICAL TAIL IS BUILT FLAT OVER PLAN.

FRONT AND AFT STRUT PATTERNS ARE THE SAME IN FRONT VIEW.



SIDE VIEW

PLASTIC TUBE OR Balsa DOWEL EXHAUSTS.

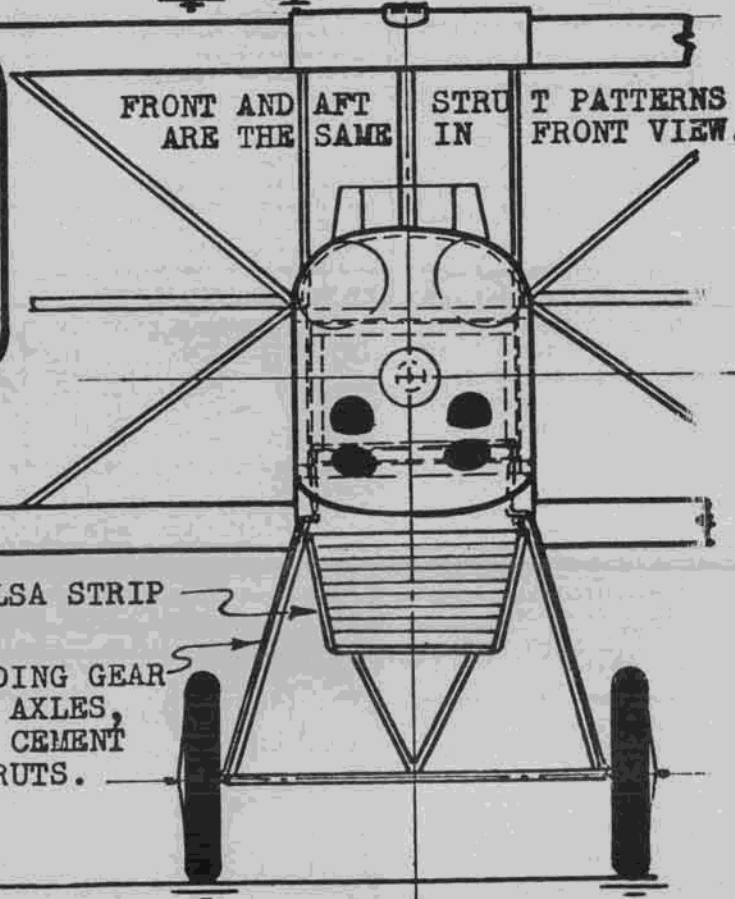
USE RIB SHAPE SHOWN FOR ALL RIBS, 1/16 THICK FOR TIPS, ROOT, AND STRUT LOCATIONS; ALL OTHER RIBS 1/32 THICK.

SCALE TAIL OUTLINE.

BUILD HORIZONTAL TAIL FLAT OVER PLAN.

BUILT UP Balsa STRIP RADIATOR

WIRE LANDING GEAR LEG AND AXLES, DO NOT CEMENT TO STRUTS.



HANRIOT H-19 A POLISH PEANUT BY

Walt Mooney

06-06-80



Walt Prey must spend more time decorating than he does building. Text contains some of Walt's tips on making tissue covering jobs less fragile.



Tom Koster is an advocate of the "more air to fall through" theory of F1C, but his flappers also fall more slowly through the air. Photo from 1973 World Champs.

FREE FLIGHT

by TOM HUTCHINSON

PHOTOS BY AUTHOR

• Let's start out this month with a bit of free flight philosophy, as reported by Chris Matsuno in the *Turbulator*:

Jim Thomerson has a very simple, yet elegant, theory on success in outdoor F/F. Loosely quoted, Thomerson's Law says, "The idea is to have your airplane fall through more air than anyone else's airplane." Think about that for a while.

A corollary to Thomerson's Law goes as follows: "The higher your airplane gets, the more air it will have to fall through." Of course, given variations in airplane design/efficiency, there is this qualification: "Some airplanes fall through the air more slowly than others."

Thus, there is the inevitable trade-off between an airplane that starts out with more air to fall through than most other airplanes, but which falls through the air faster than other airplanes, and an airplane that starts out with less air to fall through, but which falls more slowly than most other airplanes.

The ideal would be an airplane that starts out with more air through which to fall than most other airplanes, yet falls through the air more slowly than most airplanes. In practice, this is difficult to attain, but the Koster/Gieskieng flappers and the Stoy folders may show us the way.

At any rate, Thomerson's Law can be subverted by ensuring that your model has a continuous supply of air to fall through. This is commonly known as a thermal.

Paradoxically, this still confirms Thomerson's Law, for an airplane in a thermal will in fact end up falling through more air than an identical model which is not in a thermal.

By now you are probably wishing I would stop, so I will.



1980 MODEL OF THE YEAR AWARD WINNERS

F1A / Robin	Mike Fantham (Great Britain)
F1B / Floater	Itzhak Ben-Itzhak (Israel)
F1C / Summerwind	Doug Galbreath
1/2A Free Flight / Toothpicks	Gil Morris
Large Power / Shocair	Mark Woodrey
Outdoor Rubber / Lanzo Stick	Chet Lanzo
H.L. Glider / Zingara	Paul Lagan (New Zealand)
A/1 Nordic / Tadpole	George Xenakis
Indoor Rubber / Starwalker	Jim Richmond
Indoor Glider / Folder	Stan Stoy
Special Award / Pop-Up Stab	Carl Goldberg
Special Award / Hot Stuff	Bob & Bill Hunter
Special Award / Clockwork Timers	John Tatone

Nominations will be open for the 1981 awards until December 31, 1980. Steve Geraghty, 194 Vista Del Monte, Los Gatos, CA 95030.

Most FAI Power models are designed according to the corollary to Thomerson's Law. Wings have gotten thinner, in order to achieve maximum altitude in the allotted seven seconds of engine run. This in turn has led to fully sheeted flying surfaces, often covered with exotic space-age materials in order to make such thin wings strong enough. Aspect ratios have been increased in order to salvage some sort of glide, but still, even a world-class F1C model has double (or more) the sinking speed of a Nordic or Wakefield.

Bob Stalick, upon mulling over the last World Champs and the altitude measurements published in the July column, now puts forth the case for an FAI ship that will fall more slowly through the air than others:



Front end of Bob Stalick's latest FAI model shows off the flood off/engine brake combination on Cox Conquest .15.



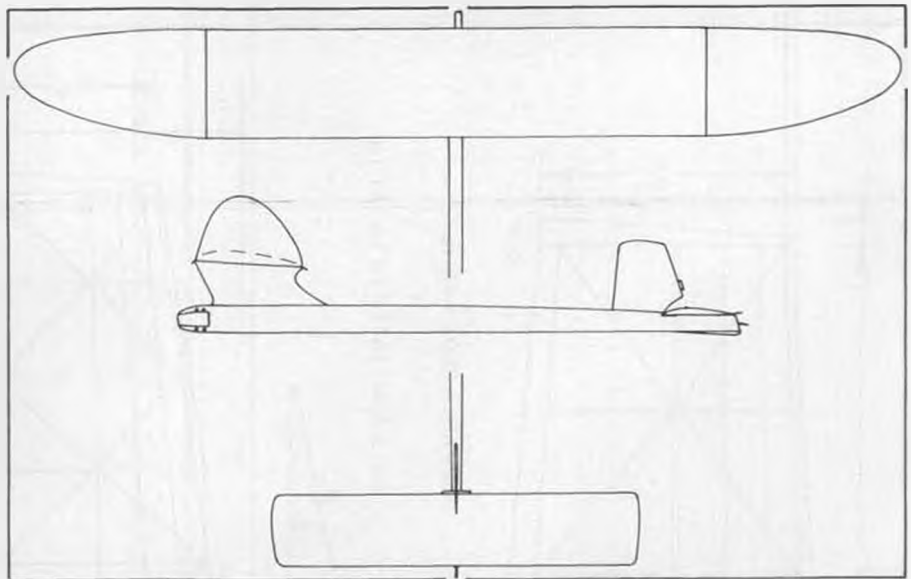
Tom Cashman shows how a Montreal stop mechanism should work at N.W. FAI Sympo.

**NEW CONCEPT: F1C.
SOME FOOD FOR THOUGHT.**
by Bob Stalick (from the "WMC Patter")

Maybe great or semi-great minds run in the same direction. Tom Hutchinson and I were returning from the February FAI Sympo at Clatskanie together and our conversation shifted to FAI Power. What would it take to fly consistently and win?

Naturally, the talk centered around the recent Taft World Champs and Rocca's model, Koster's model, and all of the others we had seen. Then the talk shifted to good gliding models we had both seen. Olofsson's theory of the powered glider reemerged. After all, seven seconds of engine run was all there was for a three-minute max. No doubt that glide was of extreme importance. Climb was still important, but not at the expense of glide.

Look at the Chinese flier, Quinfei! No auto-surfaces, not even a good engine, modest layout . . . in short, nothing fancy, except for exquisite construction. The mental pencils began to fly. Design concepts emerged. Thick airfoils for glide, rounded nose entry on them. Lightweight wings and extremities. C.G. should be a bit back, say right around 70%. Use the tail moment arm of Rocca. Keep it simple, but strong. D-box construction, maybe open structure geodetic.



SEPTEMBER MYSTERY MODEL

Make it glide well. Koster's best climb was to 580 feet or so. Lost a bunch on the transition, glide was mediocre, compared to others. Koster's model is a masterpiece of technical innovation. It is also less than consistent even in his capable hands. A slipped launch and the flight is not even average.

What is needed? Something forgiving and consistent. Undercambered wing airfoil, like Rocca's or Quinfei's? Perhaps, but it should be around 10% thick.

Wing and stab same foil. Built to seven ounces or so in the wing, aspect ratio not over 10/1. So, what could such a model look like?

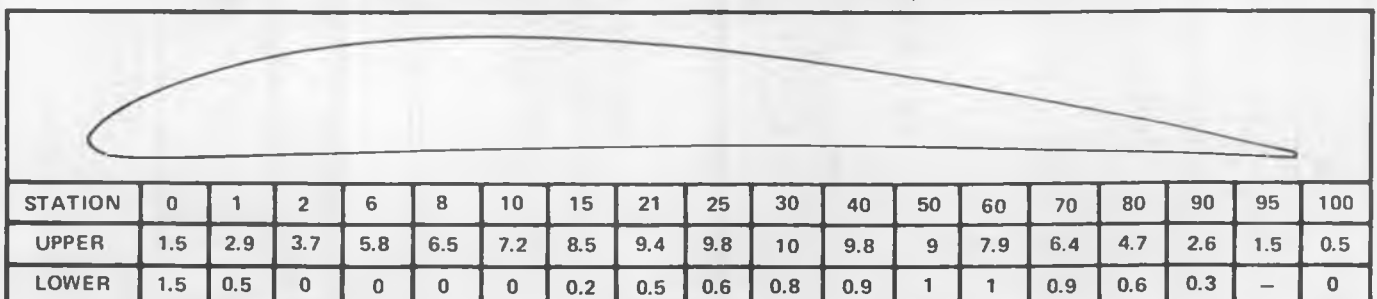
NEW FAI 1980

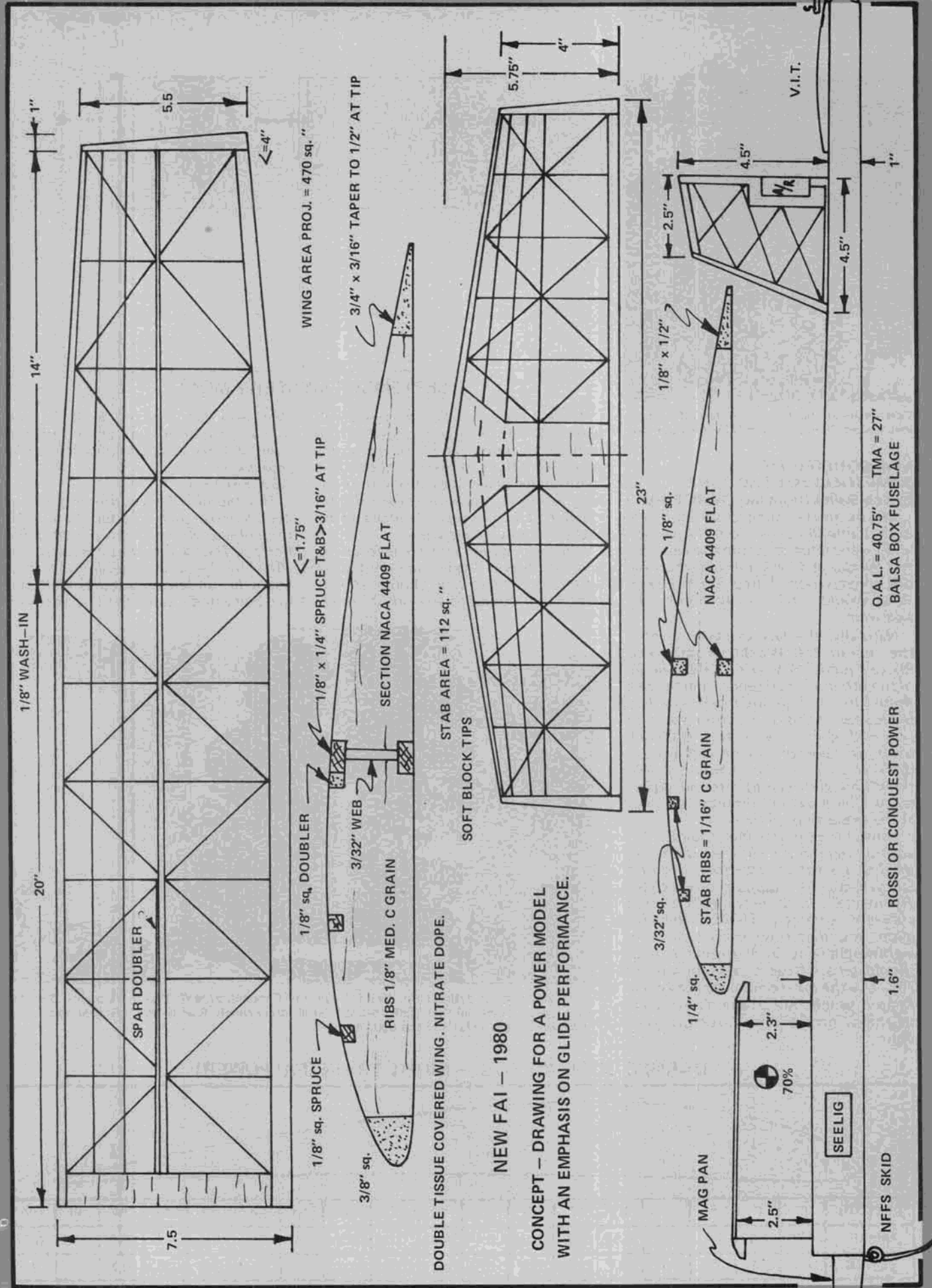
This month's 3-view presents a concept sketch of such a model. The airfoil is the same as Rocca's, except with a flat bottom. The total thickness is just under 10%. Use the same airfoil in the stab. It could be undercambered as well, but flat-bottomed is easier to trim and cover.



Bob Stalick presents details from World Champs F1C models at N.W. FAI Symposium. See text for his ideas on a model that "falls through the air more slowly than others". According to Thomerson's Law. (That's in the text, too.)

DARNED GOOD AIRFOIL – NIGHT TRAIN (FAI POWER)





WING AREA PROJ. = 470 sq. "

1/8" x 1/4" SPRUCE T&B > 3/16" AT TIP

SECTION NACA 4409 FLAT

RIBS 1/8" MED. C GRAIN

1/8" sq. DOUBLER

1/8" sq. SPRUCE

SPAR DOUBLER

STAB AREA = 112 sq. "

SOFT BLOCK TIPS

NEW FAI - 1980

CONCEPT - DRAWING FOR A POWER MODEL WITH AN EMPHASIS ON GLIDE PERFORMANCE.

DOUBLE T ISSUE COVERED WING. NITRATE DOPE.

O.A.L. = 40.75" TMA = 27" Balsa Box Fuselage

ROSSI OR CONQUEST POWER

NFFS SKID

SEELIG

70%

MAG PAN

1/4" sq.

3/32" sq.

STAB RIBS = 1/16" C GRAIN

NACA 4409 FLAT

1/8" x 1/2"

23"

V.I.T.

4.5"

4.5"

1"

4.5"

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Bruce Kimball shows how to make prop blades from a twisted sheet of balsa (a la George Perryman), instead of carving them from a block. After soaking thoroughly with hot water (left), the blade is held over a hot stove and twisted to the shape desired. More details in text.

The wing could be two-piece, as per Lars Olofsson. Rigidity by geodetic structure, surface strength by double tissue covering. Nitrate dope with a spray coat of epoxy clear would help.

Stab is 22% of wing, on a 40% tail moment arm, which is not extreme by today's standards. Simple fin arrangement. Place it in front of the stab to shorten the fuselage over rear fin arrangement and simplify from the three-fin layout. Location of fin is not a critical factor, as long as it is above the thrust line. The use of a pan is universal, but streamlining the engine area could be accomplished with this design. Fuselage is a simple box, hollow aft of the pylon for weight saving. Simple pylon of moderate height. Construct a weight box behind the timer area so that the model can be ballasted up to 750 grams. Use fiberglass cloth only around the firewall area, and cover the remainder of the fuselage with silk and nitrate dope, with a spray coat of epoxy.

The important ideas to remember are stated at the beginning of this article. Strive for glide and consistency. Put in the best engine you can get your hands on, but don't work it over so much that it becomes erratic and finicky. Make sure the timer works each flight . . . remove glitches. Use a double hammer type VIT; it's the most reliable, as you can see everything on it, and there is no direct pressure on the timer or the VIT lines. Remember Murphy's Law.

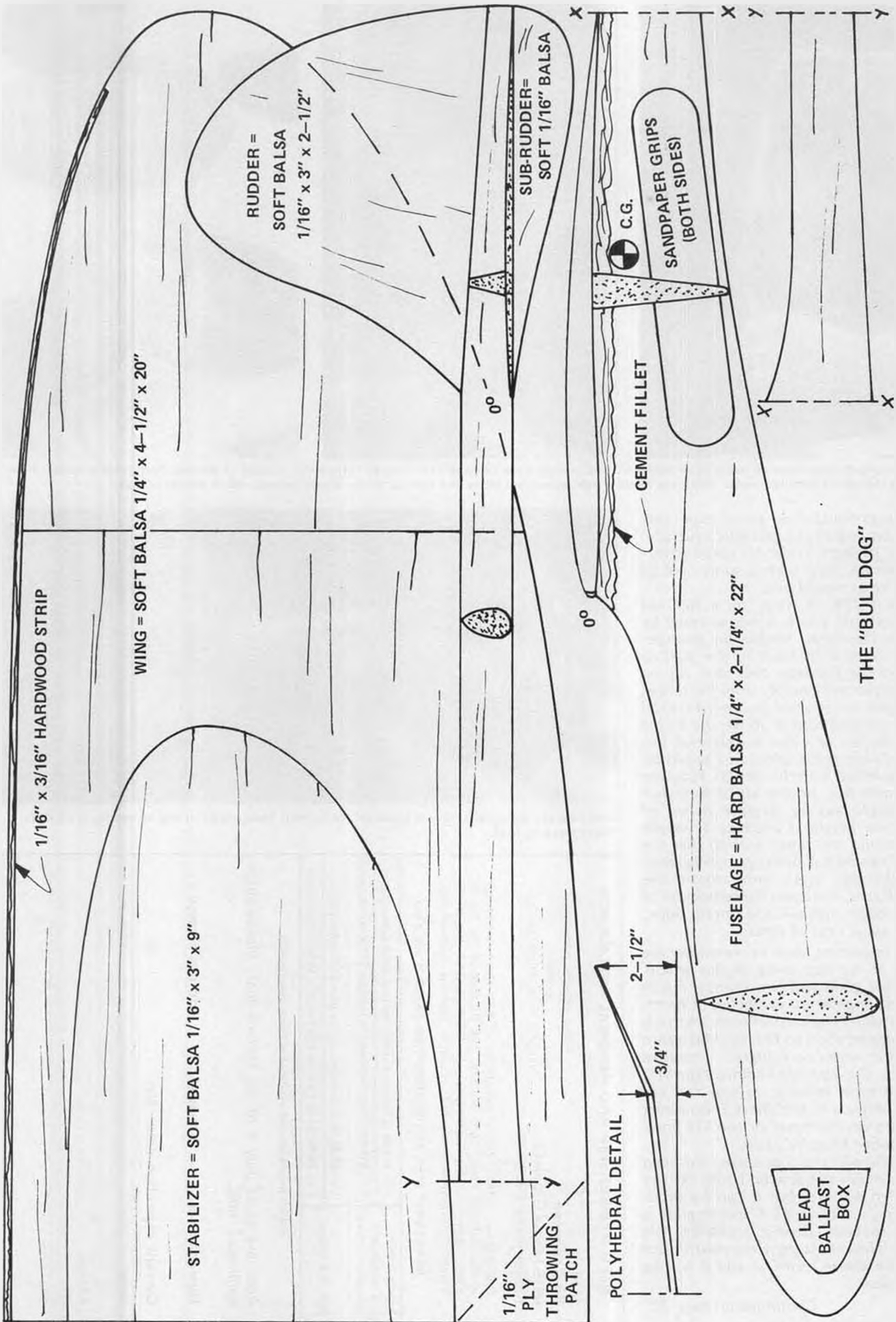
Doodle with the concept as I did. Even design an FAI size Spacer. Looks like the old High Society, but it can be modernized . . . or can it? A Spacer glide is tough to beat. Give it a chance. FAI Power is less of a scare when you think of it in the above terms — and it will be successful.

Continued on page 72



And here are the results. Bruce matched the formed blade (top) to one carved from a block. Twist stays in, too!

NFFS MEMBERSHIP AND RENEWAL APPLICATION	
Mail to Kit Sonensen 8616 Maple Grove Ct. Sacramento, CA 95828	Make checks payable to the National Free Flight Society
Subscription rates include annual fee of \$.50 for membership in the National Free Flight Society. The balance of the fee in each category is for Subscription to FREE FLIGHT, the NFFS Digest. Subscriptions are not available without membership.	
MEMBERSHIP FEES AND SUBSCRIPTION RATES (1 and 2 yr.)	
Age 19 & over and residents of foreign countries.	1 yr. \$10.00 (\$.50 membership fee plus \$9.50 subscription)
	2 yr. \$18.00 (\$1.00 membership fee plus \$17.00 subscription)
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Ages are as of July 1 of the current year. Please circle applicable fees.	
New member <input type="checkbox"/>	Renewal <input type="checkbox"/>
Address change <input type="checkbox"/>	
Current expiration date: Mo. Yr.	
Name	AMA #
Address	
City, State	Zip



THE "BULLDOG"



≡ BULLDOG ≡

By WILLIAM LANGENBERG . . . An all-out competition HLG, a bit larger than most, for experienced builders and strong arms. It's the 23rd (and best) in a series of HLG's designed by the author.

• In recent years the popular model magazines have featured a substantial number of so-called "beginners" projects. Before proceeding further with this article, I feel it should be made clear that BULLDOG does not fit into this category. On the contrary, BULLDOG is a hand-launched glider designed for the experienced modeler with a better-than-average throwing arm.

This model is the twenty-third in a series of original hand-launched gliders which I have built over the past decade. It was christened BULLDOG because its abilities to stay together on the most powerful launch and to soar on the slightest thermal reflected the tenacious qualities of its namesake. BULLDOG's predecessors ran the gamut in respect to size, proportions, weight, and force arrangements. Through the experience gained from these models, the basic design on these pages gradually evolved.

BULLDOG is somewhat larger than

the average outdoor hand-launched glider, yet it is not so bulky that the modeler with a good throwing arm cannot achieve impressive height on the launch. In addition, the relatively large size and low wing loading enable this model to float on upcurrents to which its smaller competitors do not normally respond. And probably most important, the large size tends to keep the model in sight longer after it catches a thermal.

The fuselage profile of BULLDOG provides a relatively large, low frontal area. This tends to lower the center of gravity and makes the rudder area less critical. A polyhedral, undercambered wing with fairly shallow polyhedral angles is used in conjunction with this fuselage design. Such a combination provides excellent lateral and longitudinal stability. BULLDOG is a stable flier in both calm and windy conditions, with neither the lateral rocking nor susceptibility to spins prevalent in many

hand-launched gliders.

So much for the history and design theory behind this model. I believe it is sufficient to say that when properly built and flown, BULLDOG will present a threat at any contest.

CONSTRUCTION

These instructions will be brief, since the reader is assumed to be familiar with hand-launched gliders. In general, try to use the designated grades of balsa in order to keep down the weight. Bear in mind that the performance of the glider will be in direct proportion to the care used in its construction.

RUDDER AND STABILIZER

Select some 5-6 lb. semi-quarter grained 1/16 sheet balsa for the tail surfaces. Cut them to their required outlines. The rudder is sanded to a streamline shape. Sand the stabilizer into the airfoil section shown on the

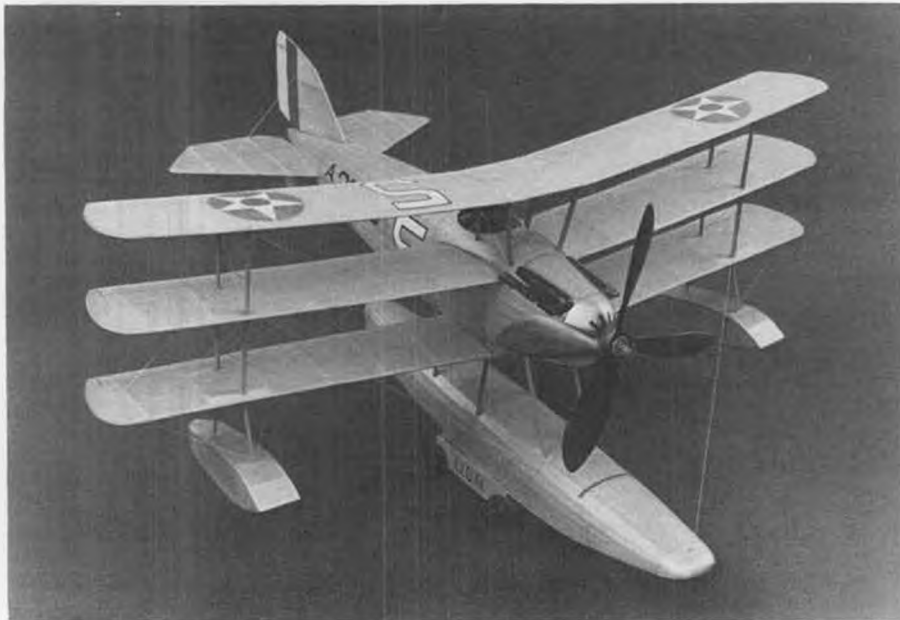
Continued on page 96



Like any competition glider, the Bulldog requires careful and accurate construction to obtain maximum performance.



The wind-up. Takes more than a flip to get good altitude with a glider, especially a large one like the Bulldog.



Bill Noonan's rubber-powered Curtiss 18-T-1 was a featured construction project in the November '79 RCMB (Plan No. 11792, \$3.00). OK, who'll be the first to do a Peanut?

FREE FLIGHT SCALE

By FERNANDO RAMOS

• Jim Jones, of adjustable balsa stripper fame, has acquired some first-rate industrial-grade razor blades. For some time, I have been using so-called "industrial" blades which were supposed to remain sharp through a reasonable amount of use. Needless to say, mine never lasted long enough to justify the extra cost. However, Jim's blades are very good, and the sharp edge lasts considerably longer than any I have previously used.

The price, I feel, is comparable to blades of less quality, costing \$6.00 per hundred plus 65¢ postage. Or you can buy 12 blades for 72¢ plus 20¢ postage as a try-out. These are single-edge blades, without the usual metal back, and have a thickness of .009 inches. Don't let the "no backs" sway you from trying these out, because I found they feel no different than the conventional single-edge razors. Jim's address is 36631 Ledgestone

Drive, Mt. Clemens, MI 48043.

William Pine, 5955 S.W. Glenbrook Road, Beaverton, Oregon, has announced that he has taken over the Aero Era line of Peanut and Grapenut plans to be marketed under the same name. They have many fine plans which I know will be of interest to many Peanut

modelers. The Grapenut size are eight inches in span. Three of these little gems that I know are available in this series are the Sonera I, Fike E, and the Gere Sport. These plans are very well done.

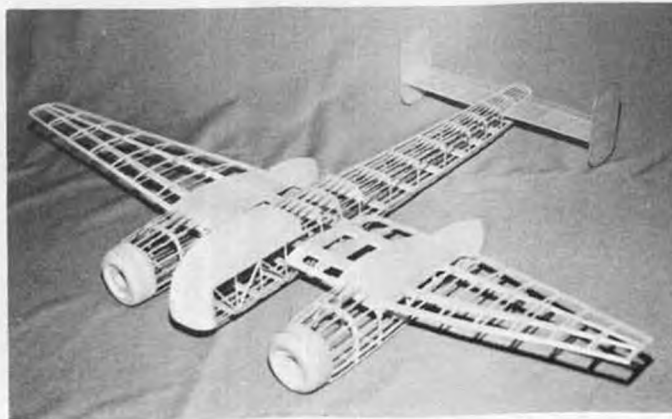
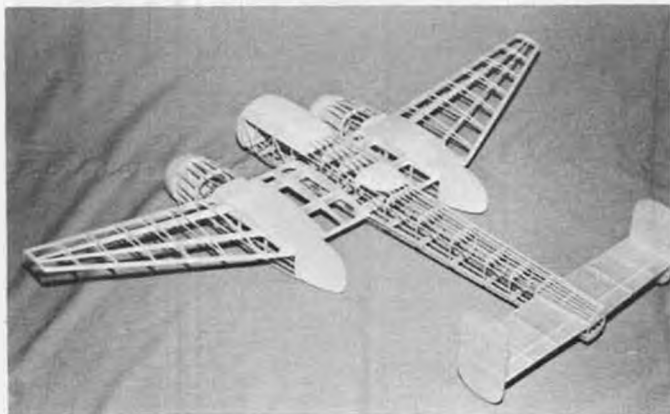
Paul Steele, who considers himself the oldest novice around, gave me quite a few hints that I would like to pass along to you. On a cabin model, after the two sides of the fuselage are finished, Paul sands them smooth and pins them flat against the building board with the right and left side facing up. He then takes his windshield material and glues on the side windows. This provides him with a steady platform and leaves both hands free, and the entire trimming job is made much easier. When he is ready to cover the model, he uses a brush on the structure to remove any sawdust that might attach itself to the acetate. Paul also uses Wilhold R/C 56 glue for attachment, which is an outstanding product for this purpose.

On real light rubber models, Paul uses cigarette wrapper cellophane for windows. After attachment to the model, he sprays ammonia water over the cellophane, which causes it to shrink drum tight, resembling regular acetate. Another use Paul has found for ammonia water is to shrink tissue, rather than using plain water or just alcohol. He claims the results are far better and more rewarding than either of the aforementioned ways. He found this out by accident when he picked up the wrong bottle when spraying his tissue. I haven't tried it out yet, but I will, and I'll let you know my findings.

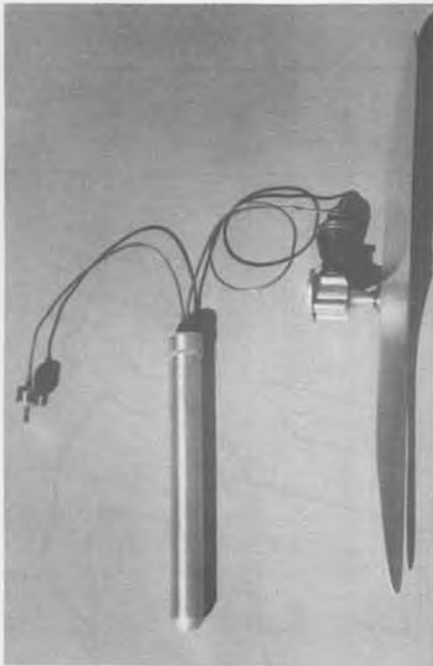
Rod Hancher, of 11 West Grant Street, Houston, PA 15342, which is in the



Our F/F Scale columnist's "Halloween Special" is this black-and-orange General Aristocrat, from a Flyline kit. Uses Cox .020 with Davis Diesel conversion, weighs 8 oz.



One of Fernando's current projects is this Arado 240 rubber twin, chosen because the nacelles are long enough (12 inches) to completely enclose the motors without running them back to the stab. Span is 33 inches.



Bill Baker sent this photo, taken by his wife, Paula, of a Cox Pee Wee .020 converted to CO₂ by Stan Denton, 1107 S.W. 42nd St., Oklahoma City, OK 73109. Bill says the little jewel runs like a sewing machine. Perfect for F/F Scale!

Pittsburgh area, wrote me an interesting letter. Apparently, he had been building and flying R/C models quite frequently, only to find that the sport had become too sophisticated. All worry and *no* relaxation! So, instead of giving up the hobby, he discovered rubber flying scale, and he's now having a ball! He would like to hear from anyone living in his area so that flying scale can be further pursued.

• • •

Often, there are times when vacuum forming wheels is desired to hold down a model's weight. I have never had any trouble molding the two wheel halves, but when I try to match one wheel half with the other, there always seems to be some distortion to contend with. I suppose that this can be attributed, in part, to the thinness of the material after forming. I could use thicker acetate, which would probably make the mating of the two halves easier, but I'm too cheap and lazy.

While struggling with a pair of vacuum-formed wheel halves, I decided that there just has to be a better way. So here's another approach to wheel making for your next scale project. The first thing I did was to make a couple of wheels from two laminations of 1/8 balsa, and turned them in my Sherline lathe. (A drill motor will work just as well.) I drilled a hole through the balsa and Super Jetted an aluminum tube through the center. This tube provides a method of attachment to the lathe or drill motor, and also provides a bearing for the wire axle. The emphasis on the wheel should be the tire, because this is all of the balsa that I want exposed. Once satisfied with the tire shape, the excess



Maj. Ed Heyn built this 20-inch Georgias Special from drawings in the 1931 *Flying and Glider Manual*, an EAA reprint. Built for indoor scale, it has dyed condenser paper covering, molded acetate cowlings, and pre-war celluloid wheels.



Peanut Scale 1929 Elias Aircoupe, designed from data in the 1930 *Aircraft Yearbook*. Prop clearance is such that a gnat has to lie on his back and suck in his stomach to get under it. Another of Maj. Ed Heyn's scale models.

tubing is cut off by rolling a razor blade back and forth over the tubing. Next comes the neat part. I cut out the hubs of the vacuum-formed wheels (on this project I used Williams Bros. Vintage type) and fitted them to the balsa tires. They looked great, and were very light. If desired, the inner disc can be

mounted, then the wheel placed on the axle and retained by soldering a small washer. Then the front disc can be mounted, concealing the method of wheel retention. Naturally, the tires and hubs should be painted before they are mated.

Continued on page 71



Another of Fernando's Flyline kit models is this Bucker Jungmeister with Cox .049. Wings and tail are tissue covered, fuselage is tissue over silkspan. It's R/C...*WHA T!!!*

GENERATION GAP

Haven't heard that phrase for a while, have you? The dreaded old Generation Gap, where one generation was supposed to be so far out of touch with the other, even within family units, that nobody could relate much to what other people, older or younger, were doing and why.

I grew up hearing about the gap that was purported to exist, but never actually saw much evidence of it. Close family and all of that. Now I have my own family. The G-Gap concept has never been a factor in our way of life. The two kids are people, not just little folk to be yelled at, ignored and kept out of the way until they are big folk.

So a few minutes ago, when I was all set to bang on the typer once again, notes laid out somewhat haphazardly, pictures strewn here and there, blank paper at the ready and, most importantly, the ever-present radio set on the hot station and blasting, it was a flash-back experience to have Joshua come downstairs . . .

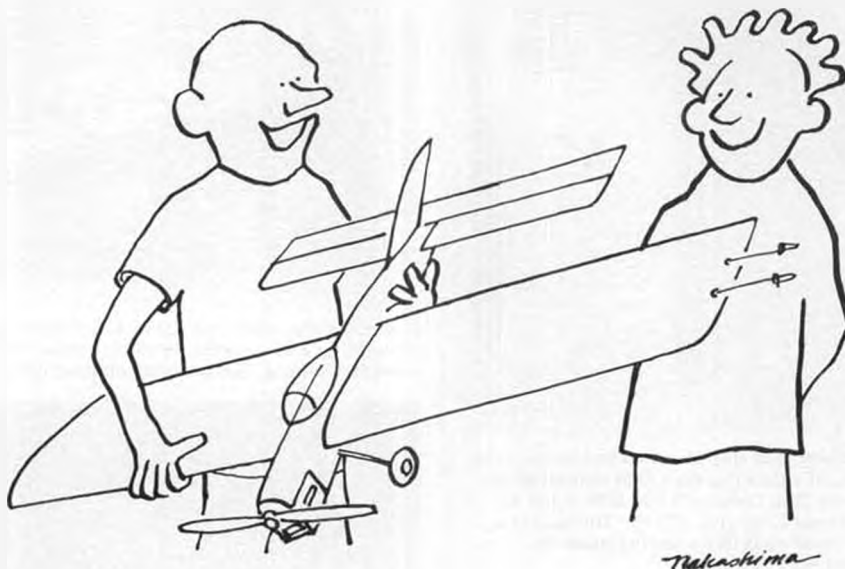
"Whatcha doin', Dad?"

"Deadline time again, doing another C/L column for **Model Builder**."

"I need something to do, is there anything to build?"

"Yeah, why don't you build that new rocket kit over there?"

You have to understand that part of the scheme is to share the workshop with the wee folk, always having something for them to put together, paint, or whatever. And so Josh and I have of late become Rocket Freaks, with new kits



"S=m.f. Simpler equals more fun!"

mysteriously showing up unannounced. With the kit at hand, he sets up the bench for some serious whacking and gluing and is getting right down to it when . . .

"Dad, could you turn down the radio, or change to another station?"

"Uh, not really. I like things just like they are."

"But all they play is hard rock and you have it so loud I can't think."

Gasp and double-gasp. I can remember my own father saying almost exactly

the same thing to me when I would share his workshop. He didn't like "my" music too much, and of course I always played it way too loud.

I sit here now, typing away while some compromise music, bubble-gum rock (I refused to listen to any disco) rumbles softly in the background, just low enough where I won't be annoyed by the PMC's (pimple medicine commercials) and we are both happy.

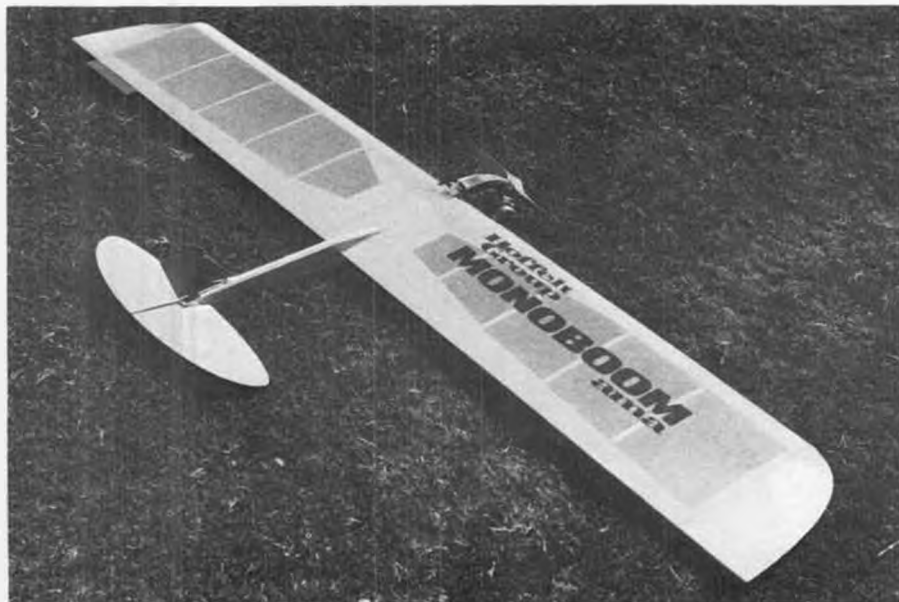
I absolutely refuse to have a Generation Gap, even if applied in reverse of the usual way, but what a shock it was, having my music too loud and too much of the hard rock variety for my own son . . .

THE "OTHER" GAP

Of course there are a lot of other kinds of gaps, but for now we will talk about the gap existing between C/L modelers and an organization set up to do whatever it is that C/L people want out of an organization, primarily dispersal of information, although many other things can also be accomplished.

This gap is now starting to close, thanks primarily to the efforts of a person most of us know simply as "Doc," more formally as Dr. Laird Jackson. Doc has just circulated a four-page letter, interesting not only for the fact that a record low of only three paragraphs were used to subdivide the contents, but for the concept and initial plan of organization set out. Copies were sent to all leaders in each special interest C/L group, the leaders of the AMA, and the press people dealing with

Continued on page 64



Mike Hoffelt's Monoboam AMA standing still. Inboard trim tab proved to be the most effective means of fine tuning. Fuel from inboard low-pressure bladder passes through fuel pinch-off on top of nacelle. See text for D.D.'s comments on the kit.

Butterfly II

Easy To Fly

**KIT INCLUDES MACHINE
SANDED RIBS AND
PRE-SHAPED FUSELAGE
SIDES**



Designed by
Bill Carter

Wing Span 99 in.
Wing Area 916 sq. in.
Airfoil FB1151
Recommended Engine Size 09 - 19
Recommended Radio 3 channel
Flying Weight 50 oz.
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**TAKE-APART WING
REMOVABLE TAIL**

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Up until the time of the introduction of the BUTTERFLY II, the most popular kit trainers on the market have required flying skills far beyond those expected of one just entering the sport. In fact, the vast majority of these "trainers" were never successfully flown. Typically, their take-off and landing speeds are 35 to 40 mph. Of course some of the "trainers" were never completed, yet many, which were beautifully built, were reduced to rubble on their first day out.

The BUTTERFLY II is not only rugged and crash resistant, but it takes off and lands at only 18 mph; time to observe, time to think, time to correct. This slow flight also gives it a true-to-scale flight appearance, i.e., more like an eagle in flight than a housefly.

The entire R/C model industry wants you to succeed, and Craft-Air, Inc. is proud to be able to give you the best chance of success.

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... step by step construction photos
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Wing Span 6 ft.
Wing Area 573 in.²
Flying Weight 24 oz.
Landing Speed 16 m.p.h.
(most trainers . . . 25-35 m.p.h.)
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Engine049 reed valve
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A PIECE O' CAKE TO BUILD
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... easy on the pocket book
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½ A Engine
2 channel radio
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**INCLUDES CLEAVES,
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A QUALITY FIELD SUPPORT BOX AT A REASONABLE PRICE.



- Ready to use — NOT A KIT
- Roto-cast polyethylene
- Light weight and practically indestructible
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- Large 12½x6¾x2 drawer for props, tools, etc.
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in about
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(1/8" rubber)
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- A launching pod that drops off when the engine stops, and comes down on its own parachute.
- Fits all sailplanes up to 10 ft.
- Automatic drop or command drop (3rd channel not required).
- Takes engine up to .15 cur. in.
- Low engine power requirements (.049 takes 2 lb. glider 600').
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DUAL RANGE Expanded Scale Voltmeter

The only device which allows pilot to predict safe flight time available from receiver and transmitter Ni-Cads.

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2. MEASURE THE POTENTIAL OF YOUR BATTERY BEFORE YOU FLY!

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SPORT SCALE

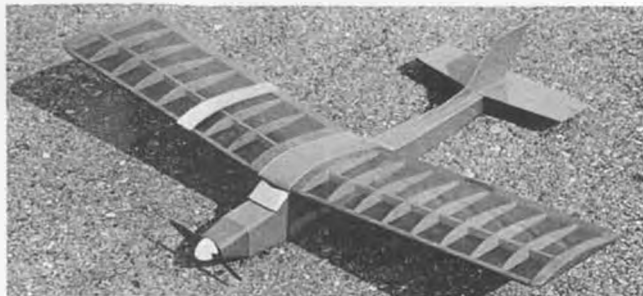


THE PORTERFIELD COLLEGIATE is the ideal model for the sport scale flyer. Its gentle and forgiving nature make it perfect for beginners, yet it is quite responsive in skilled hands. The all balsa construction is light and strong. The Porterfield can rog from a grass field and climb steeply to avoid obstacles. Its light wing loading lets it land on a dime and give nine cents change! Join the quiet revolution and *enjoy the Porterfield Collegiate in your neighborhood park or school yard.* Wing span 69.5 in. Area 695 sq. in. Weight 4 lbs. with 3 channel radio and Astro 15, can also use Astro 25 or 15 to 25 glow engine.

1018

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SPORT TRAINER



The **ASTRO SPORT** is a pert little sport trainer designed for the popular Astro 05 flight system. It can be built with a high wing and cabin for rudder and elevator control, or as a shoulder wing with ailerons for pylon racing and aerobatic flying. Span 37 inches, wing area 292 sq. inches, weight 28 oz. with a light weight 3 channel radio. **1019**



ASTRO FLIGHT INC.
PIONEERS IN SILENT FLIGHT

C/L.....Continued from page 62

C/L subjects.

Doc is suggesting that we capitalize on the existence of the special interest groups, try to get them to all work together, publishing each newsletter within one big newsletter, thereby reducing costs as well as the effort required. Doc refers to it as sort of an "umbrella society." working for a publi-

cation that would be able to present line drawings and pictures of reasonable clarity.

Naturally enough, the concept goes further than just the newsletter. What we are looking at is the possible formation of a for-real National Control Line Society, the tackling of an all-encompassing newsletter being the first big step. If you can help in any way, including just giving Doc some of your ideas, I would like to have you contact Laird G. Jackson, M.D., Thomas Jefferson University, 1025 Walnut Street, Philadelphia, PA 19107.

I would like to further emphasize the point by saying that we have very few, in fact only one, C/L person like da Doc. As it stands now, he is ready to commit extravagant amounts of spare time and effort into getting a National Control Line Society going. If the response is not sufficient or if Doc has to do it all, we will see the potential for a NCLS go away, as one man, even Doc, can't do this alone. If this attempt fails I am afraid it will be a very long time before we have another Doc come along, willing to bring the NCLS into the world of aeromodelling.

THE LATEST FROM HOFFELT

Mike Hoffelt is at it again. This time he has released the MONOBOOM AMA, and it has to be the most exotic kit ever offered to the C/L fliers, in addition to being one of only a handful of truly impressive kits in all of modeling. Somebody should have been contacted to edit out a few spelling mistakes in the instruction manual, but that is getting too picky when dealing with a kit as specialized as this one is. Still, I have to complain about something, right?

Wood selection and cut is all excellent in the kit. The hardware included is the best stuff available and more complete than you can imagine. Hey, Mike even includes the single leadout guide. Sure, it's only a short bit of brass tubing, squashed down almost flat, but the sucker is needed to build the model

properly and so there it is in the hardware package.

The ribs have been machine sanded to shape, so are very accurate, something that is probably quite important to this design. The motor mount assembly itself is done with more care than most scratch-builders exert. The maple blocks have even been routed for inseting the flanges on the engine case.

Unfortunately, my pictures of the kit are still being developed, so a close look at some of the neat things in this kit will have to wait until next month. If you can't wait, drop a check for \$30.50 (\$28.00 for a single kit, \$2.50 for insured shipping) in the mail to the Hoffelt Group, P.O. Box 99774, San Diego, CA 92109. Or maybe you and a buddy want kits; in that case a Triple Kit is \$76.00 and the shipping fee is the same at \$2.50. Be sure to specify whether or not you want the MONOBOOM FAI or the just-discussed MONOBOOM AMA, as they are the same price.

MORE FROM HOFFELT

In searching about for high-zoot stuff to use on his models, Mike came across some rivets in a surplus store. These rivets are a kind of stand-off type, just the hot tip for installing lines directly to bellcranks; in this case the rivets install very nicely on a Perfect aluminum 'crank. Should work fine on the Fox units also, as well as home-brew items.

Evidently the people running the surplus store aren't into C/L flying. Not knowing a good thing when they see it, they allowed Mike to scamper off down the street, clutching a bag of over 1,000 pieces, all bought for next to nothing.

Now the good part. Mike says he really can't use all of the rivets and will actually send them out for free to anybody who can use them and sends him a stamped, self-addressed envelope. I would advise you to go for it. I recall that back in the days when I was heavy into Rat and Goodyear, I looked high and low for something exactly like these

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rivets and never came across anything that worked too well.

"SPEED PATTERN" EVENT

Still more stuff from Mike Hoffelt, this time it is an excerpt from his most recent letter . . .

Been working on the Speed Pattern rules proposal, refining and polishing, but I'm not quite satisfied with it yet. The concept is really capturing people's imagination and from the interest shown I have hopes for it to really explode. Bob Hunt is very enthusiastic, wants to do a feature article and really get behind it.

The idea is to have an event that is easy to run and judge and easy enough to fly

that it will appeal to a wide segment of the C/L fliers. The airplane is unlimited, maximum motor size is a .40, motor uncowed from lugs up and cylinder centerline back. Constant I.D. exhaust only, FAI fuel, .018 by 60-foot lines.

The circle arrangement consists of a timing marker centered downwind and two window markers 12 feet high, marking a 90° segment of the circle. All maneuvers must be contained within the window, entry into and out of the window must be below the 12-foot markers.

The pattern is comprised of five timed laps. When ready to commence his timed attempt, the pilot signals the three judges by raising and lowering his arm as he passes them. Upon passing the timing marker the watches are started. When next entering the window, the pilot does three consecutive inside loops. Second lap, three consecutive outside loops. Third lap, one horizontal eight. Fourth

lap, one vertical eight. The watches are stopped on the next (fifth) lap as the plane passes the timing marker.

Now I know the pattern seems oversimplistic, but in practice even advanced level sport fliers have difficulty doing it properly, within the confines of the window. Most have problems in exiting under the altitude marker. The pattern has evolved to this point with the idea being to make it a challenge but not overly intimidating to entry level competitors.

This is a rather bare-bones exposition, lacking as it does the precepts, definitions and rationale, but you get the idea. Well, Dan, what do you think? I'll send along a copy of the completed proposal when it is done.

As long as Mike asks what I think of Speed Pattern, I should probably have some comments, and do, of course, but as I have never actually flown the proposed pattern (I will soon, however) my thoughts may not be exactly in line with Mike's.

First thought is that the maneuvers ought to be a piece of cake for anybody who has had reasonable success in Combat flying. The Combat guys are quite used to flying fast models, fast not only in level flight but through the turns as well. The exit height out of maneuvers might present a problem, but only for those who don't think ahead. I like to think ahead whenever possible and would tend to simply fly the whole pattern right down on the deck, as low as comfortable, which means potential danger for worms and such sticking their little heads up for a peek. Our flying field has a few gophers in it once in awhile, and these little critters long ago learned to do a low-crawl whenever they are above ground. With the tops of the maneuvers being so low, coming out under the marker ought to be no problem at all.

But flying the pattern would only be a part of the exercise; choice of a model would be quite another. A lot of Combat models would do well initially, but even then a few changes might be in order. For instance, it might prove beneficial to set the control throws to a setting where, at full up or down, the fastest loop possible is done. Notice I said *fastest* loop, not the tightest loop. This is a speed event, where getting from point A to point B in the least amount of time is the goal. Even when A and B are both at the bottom of a loop, just taking the short way around isn't any guarantee of getting back to B as quickly as possible. As I think about it more, the exit speed from the loops will have to be a consideration. No use doing three fast loops, only to have the model bogged down and needing to accelerate back up to top speed.

Long pause for more thought and a huge cup of coffee . . .

Back at the typer, it seems to me that maybe those silly Californians, minds blurred from flying year round, might have come up with something worthwhile this time. I can hardly type, my

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mind is filled with thoughts of the perfect Speed Pattern model. It will need a really snotty .40, something with tons of rpm and super torque in mid-range. The K&B 40 Pylon motor is the logical choice, maybe the only choice, as it has super power on top as well as more torque than any high rpm engine has a right to. And you can get parts for K&B's.

Props might be a slight problem, as the R/C Pylon guys (or at least the rule makers) haven't figured out that glass props really are the way to go, but there are lots of glass Rat props around that could be depitched enough to work. Still, wood props from Top Flite and Rev-Up would be OK, at least until somebody molds up some decent glass props.

For a model, the MONOBOOM AMA would probably be the best choice for now, as it is this model that has inspired the Speed Pattern event in the first place. Still, I don't particularly like to fly other people's designs and so would be looking for something of my own while working with the MBA. Something super light, high aspect ratio, thin wing section, streamlined as possible, very slightly nose-heavy to promote stable (read "fast") level flight, yet with quick response for immediate entry into maneuvers. Actually, that is in fact the MBA itself, so a home-brew design might only give a few of us a chance to mess with tricky structure, structure that in a normal Combat plane is regarded as not worth the effort, due to the expendable nature of the model. I have always loved the geodetic rub structures in F/F models, one of the many reasons I still

enjoy building and flying F/F models. Now here is a chance to use techniques learned there in a super-fast, show-biz type of C/L model.

Hey, in the last hour or so I have really had my crank turned by the whole idea of Speed Pattern, ought to be a really great event to play around with. Guess I'll have to do like the rest of you and wait for Hunt to tell us all in a future issue of *Flying Models*.

HE LOOKS (KINDA) LIKE DIRTY, BUT HE AIN'T

Got a call from Rich "von" Lopez the other night, and after the usual hootin' and hollerin' Rich asked that I mention the fact that Small-Bore (1/2A, .049, whatever) Combat will again be a part of the Nationals scene this year. I think MACA will be running it, although not real sure on that point, but flying will take place on Thursday of Nats week, right after the completion of Jr./Sr. Fast Combat. It will be a double elimination pyramid and everyone can enter, as there will not be any age classes to be concerned about.


Rules for the models and such are pretty much what is used all around the country; any model, any .049 engine with most using Cox TD .049's, lines must be .012 by 35 feet. This year Cox will again be sponsoring the event, so there will be plenty of stuff given away. ●



1 to 1 Scale . . . Continued from page 29

trailing edge of the tip airfoil in relationship to the root to change the angle of attack to help defeat snap-rolling or stall tendencies. When you cut a foam core using wash-out, you can cut the degree required right into the core. However, it is or can be more difficult to maintain the wash-out when the core is sheeted. Of course, the easiest way to achieve this is to use the portion of the block from which the core is cut as a guide. But remember, you will find it more difficult to "eye" the wash-out or check for it while the sheeting process goes on. And once the wing has been completely sheeted, the likelihood of correcting a mistake such as warp is rather remote.

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seriously weakening the wing, unless you can effectively add some kind of spar to it. Check with a Pattern buddy and inquire whether he ever lost a bird due to a broken wing; you'll probably find that if he did, it broke across the wheel well and not at the root.

Another problem often develops from improperly prepared sheeting joints on either built-up or foam types. After you have everything completed, you may find that the seam gradually begins to loosen up and bend upward. I work hard to see that the skin seams follow a spar line to make it easier to glue down solidly.

Internal linkages for ailerons and flaps can be a problem in a foam core wing if you are not able to use torque tubes to actuate them. Slots and holes have to be cut into the core instead. While this isn't any real problem, it does require care and planning. If you are using 90° bellcranks, make certain those platforms for mounting are *firmly attached*.

Some advantages of the foam core include the fact that it is generally much faster to create. When it is cut, you automatically have developed the

tapered lines in the airfoil from root to tip (if it is tapered). With the built-up, you have to develop that taper through varying rib sizes. Foam has come to be a cheaper method, generally, since the foam costs very little, while the balsa required for ribs can be quite costly.

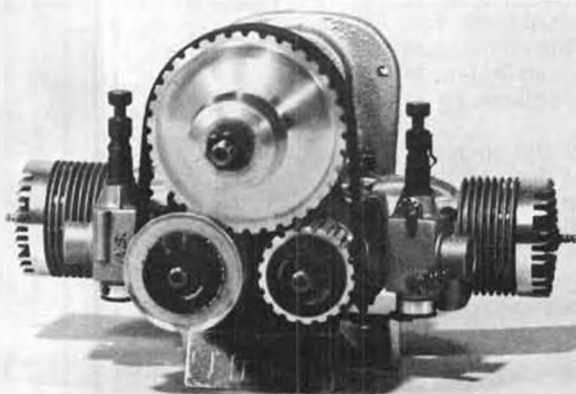
The foam wing is easier to repair. When you smack a landing light or your tool box or a judge's chair leg, it is a reasonably simple matter to cut out the section and insert a new one. A built-up wing can be quite a bit more complicated to repair.

The attachment of landing gear is much easier in a built-up wing. A few plywood doublers, a gusset or two and some epoxy and you're in business. A foam core requires plates or blocks glued to the very soft foam material. As a result, one or two hard landings can produce far more strain than the foam can stand. If at all possible, tie the mounting in a foam core into the spars (if any) and the leading edges (if any).

The thought has probably passed through your mind that, in general, the wing configurations I've mentioned are of the fully-sheeted variety more commonly associated with aircraft of WW-II or recent vintage. The general assumption is that for the old "see-the-rib-outline" type, the choice is only a built-up version. Not true! Some years ago Charlie Litzau, a model builder of great talent from my area, produced an excellent scale model of the PT-17. The wings of this model were sheeted foam cores; however, there were 1/16 capstrips added over the 1/16 sheeting, which produced a rib effect when covered with silk. The resulting wing was very sturdy, quite resistant to warping, and easy to construct. I have used this technique once and found it most realistic and easy. Do be careful with wood selection, however, and keep it light.

A last thought on sheeted wings, foam or built-up, revolves around an idea

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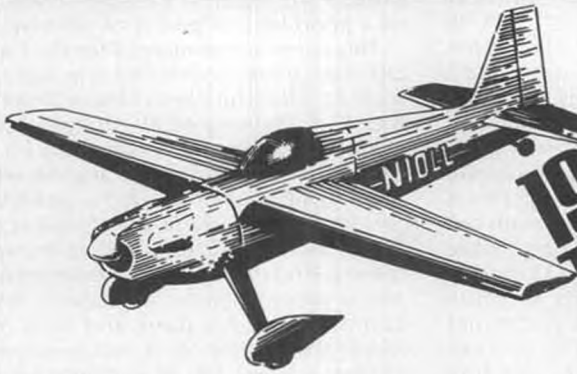
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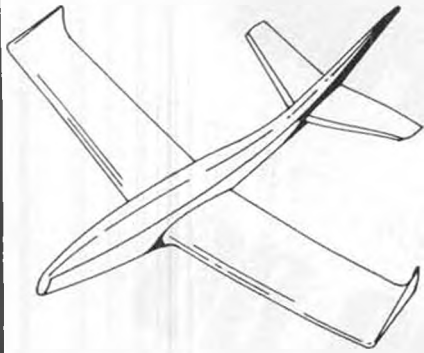
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borrowed from Claude McCullough, an outstanding scale modeler. Most kits and scratch builders tend to use 1/16 stock to sheet their wings. Claude has always recommended 3/32 stock and I tend to agree most sincerely with this. Consider, if you will, that when you sheet with 1/16, even the stingiest amount of sanding is going to leave you with very little stock remaining. This is especially true if you have to even out some high and low spots. It is very simple to wind up with less than 1/32 inch of stock. That's probably going to cause you a peck of problems if you're not careful. By starting with 3/32, you can tolerate a great deal more sanding without a paper-thin surface remaining. If you are careful with your balsa stock, your weight penalty will be absurdly low, amounting to just a few ounces. In addition, if you should be cutting panel lines, you are far less likely to go all the way through and allow the sheeting to curl, split, etc.

If you have any good hints to pass on with this wing thing, drop a line to the column.

LETTERS

A few months ago I included a letter from Robert Benjamin, who gave some of his feelings concerning scale modeling. Another letter has been received from him which contains some excellent advice. Here it is, reproduced in its entirety:

Dear Bob,

Many thanks for using my letter in your June column. Maybe you will help some of my long-lost model building friends to catch up with me!

I have some more material for you. No

doubt you are aware of some of it already; nonetheless, I thought it would be a good idea to pass it on anyway.

This is not a commercial for the EAA, although it may sound like one. For the scale builder who doesn't know about it, the EAA (Experimental Aircraft Association) could be the answer to a lot of problems. The EAA is for anyone who loves flying, and although it is intended for, and mostly made up of, full-scale fliers, homebuilders, and restorers, there are no membership requirements, and a model builder is perfectly welcome to pay his dues and join the national organization. If you join a local chapter, expect lots of encouragement about how easy it would be to get your license, but even so, knowing the local troops can be the key to a lot of good information.

A national membership costs \$25 per year, and will get you a year's subscription to the EAA's magazine, Sport Aviation. In case you have never seen a copy, this gem is a treasure chest of information and good photos of homebuilts, antiques, classics (1946 through 1952), and restored warbirds. Homebuilts, in case you haven't figured it out, are superb scale subjects. Their structure often lends itself to almost exact reproduction, and many are simple enough that you can model them as almost exact reproductions. Moreover, the majority have some aerobatic capabilities, giving you a natural range of interesting scale flight maneuvers to perform. In addition, if you are devoted enough to sleuth out the information, you will find that there are probably several "one-only" airplanes within driving/photographing distance of your home. Think about that for a while. Most of the foregoing also applies to the classic lightplanes (Champs, Luscombes, Porterfields, etc., etc.); moreover, the pages of Sport Aviation will often yield really different, verifiable color schemes for these airplanes.

All of this leads me to the initial reason for writing. There is a lot of easily accessible information lying around unused, available nearly for the asking. The EAA Air Museum Foundation, a sister organization to the EAA, makes available a series of "how-to" publications intended for the homebuilder. Several of them would be invaluable reading for the serious model builder. On the strength of one point alone; specifically, the gross misinformation I have read in various construction articles on the characteristics of a good glue joint, the following titles ought to be on your "must" list:

- "Wood, Volume 1"
- "Wood, Volume 2"

"Wood Aircraft Building Techniques" These are available for \$3.65 each. Also of interest to the scale builder are:

"Modern Aircraft Covering Techniques," \$3.65. (Read this one before you try to represent rib stitching and taping.)

"Theory of Wing Sections," \$7.00.

The above-mentioned publications

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The address for the EAA, for membership (magazine) applications, is: EAA, P.O. Box 229, Hales Corners, WI 53130. Sincerely, Bob Benjamin.

NEW STUFF

A note and photo from Tom Keeling of T & D Fiberglass Specialties lists three cowls for big birds. As I understand the note, the cowls go with plans produced by Wendell Hostetler for the Bucker Jungmeister, Liberty Sport, and Skybolt. They are epoxyglass moldings and range in price from \$23.95 to \$25.95 postpaid. From T & D Fiberglass Specialties, 30925 Block, Garden City, MI 48135.

Robart has new landing gear available for P-51 type aircraft. These are not functional gear legs, but instead a cosmetic treatment to existing struts and are very realistic in appearance. While the outward appearance looks like a complicated set of bends are required, this is not the case. The set includes the shock arms, etc. They come in two sizes, for .40 sized and .60 sized models. Robart Mfg. Co., 310 N. Fifth St., St. Charles, IL 60174.



There once was a modeler named Fred
Whose models seemed to be made of
lead.

The building, fantastic;
The wing, like elastic.

Fred ought to take up tennis instead! ●

F/F Scale . . . Continued from page 61

I love to experiment by doing the various conventional methods differently, so that I can short-cut the building process. However, there are times that I end up doing the whole project over due to my blunders. For example, while trying to finish a WW-II model for the Flightmasters F.A.C. meet, I decided on using a paint that I was not too familiar with, and treated it the same as I would Floquil. You cannot imagine the mess I had on this once-upon-a-time, lightly built model! There was no way that I was going to remove the entire paint job by stripping it with thinner. The solution was simple: just throw the model into the trash! Of course, that would have been the easy way out, but I figured there had to be some way out of this mess.

I have a tool called an "air eraser," which is like a miniature sandblaster. It uses different grits of aluminum oxide powder. I decided to try this tool to blast off the mess I created on the model. To my amazement, it removed all of the paint without doing any damage to the covering. After blowing off the grit and tack-ragging the model, I shot it over using trusty Floquil. The results were satisfactory, but by this time I had had it with this project, and ended up pitching the model into the trash anyway.

There are two reasons for mentioning this incident. First, don't experiment on a perfectly good model, use an old

structure instead. Any fool knows that, right? Almost! Second, the air eraser can be used to weather WW-II type aircraft, if used correctly. When time permits, I'll do an article on this type of finishing.

Here comes yet another method of obtaining fuselage shape without the need for lofting or knowledge of drafting. One thing that can be said about scale modelers is that they are very creative. It amazes me how they come up with so many different ways to accomplish the same thing. The following is no exception. I was talking to Ken Smith the other day, and by chance, I had asked him how he goes about lofting or coming up with fuselage cross-sections. The first thing Ken does is draw the profile of the model's fuselage onto a piece of tag board material. A datum line is drawn on this profile, and vertical lines are made everywhere a bulkhead is necessary. The next step is to look at the plan (top) view, and from this, you can determine how wide each bulkhead should be at each specific location. From this, Ken is able to cut out one-half of a bulkhead of approximate shape, and these are glued onto the profile at right angles.

Once these have dried, Ken takes either string or stringer material (1/16 sq.) and holds it across the templates and checks for "flow." If, at a particular station it is high, he trims until the stringer fairs from one end to the other. If there is a bit of a gap, he adds material until the stringer becomes tangent to

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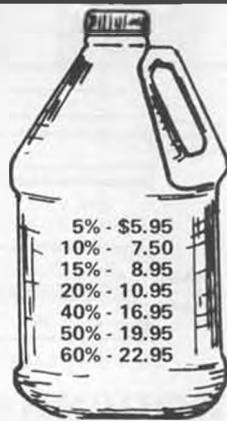
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the bulkhead. Once he is satisfied with all of the stringer locations, he then can make a full-size bulkhead (or two halves if the half-shell method is desired).

So, you have still another option for tackling one of those so-called "tough" fuselages. By the time we get through with you, you will not have any excuses for not building those favorite odd-ball types we all enjoy! And . . . on top of this, wait until next month, I have yet another novel approach to building fuselages!!

While still on the subject of Ken Smith, he designed a couple of gliders called "Penny Weight Models." These are two 1/48-scale precision die-cut models, of

the F-86 Sabre and the Russian Mig-15 Fagot. They get their names because it takes a penny to give these nifty little gliders their proper CG. They have color and markings, and are extremely well done. If you want something different to do while watching TV, these are just the ticket.

They are packaged by Stratton Air Engineering, the same outfit that makes the airplane kites, and can be found in hobby shops throughout the country, and also in the Smithsonian. They are a bargain at \$2.00, and can be hand launched or rubber band launched . . . neat fun!



Free Flight . . . Continued from page 57

Bob's comments are particularly pertinent when contrasted to most published comments on the World Champs, which emphasized the complexity and sophistication of the Power models seen at Taft. Good models need only be complicated enough to fly consistently well . . . any more sophistication than absolutely necessary is gilding the lily and inviting trouble. The photos of Rocca's winner all showed the exquisitely carved hardwood cowl, but his No. 1 model had the engine sticking out in the breeze on a homemade Tatone type mount. He only went to the slick-looking model when the homelier one wiped itself out on some power lines.

Bob's point about a good-gliding model needs a bit of clarification. He's not talking about pure dead-air type glide. Flyoffs are won by models that make the most of thermal air, no matter how light. Rocca's model made the six-minute max, while Kibiki's second place ship fell about 15 seconds short. The difference was in the ability to ride out the light air for as long as possible. This ability can be helped with light extremities, a moderate aspect ratio (long wings have too much inertia) and a buoyant, well-trimmed glide that will turn into lift quickly. Too much streamlining can adversely affect this; a slightly draggier model has a more constant glide speed (slower) and won't penetrate through light patches of lift. (Koster's flappers always impressed me with their thermal-riding ability at low altitudes, much more than with the climb, which was not much better than average for a world-class F1C.)

As Bob says, play with the concept. It doesn't have to look like the 3-view (mine would have a D-box wing and a rear fin).

DARNED GOOD AIRFOIL: "NIGHT TRAIN" FAI POWER

This DGA should fit right in with Bob's "make them fall slower" approach. George French's "Night Train" design was the standard by which FAI Power models of the late '60s were measured. As late as the 1971 World Champs, a standard "Train" was on the British team, and 2/3 of the U.S. team were flying derivative designs. This should be a good choice for a nice-gliding F1C, with enough thickness for a torsionally stiff wing without the need for fully-sheeted surfaces. The conservative undercamber should make it easier to trim out under power than more radical sections (stay tuned for some of these later!). It might even work well if the undercamber were left off!

MYSTERY MODEL

This month's MM has some of the features that would be desirable in Bob's Concept F1C. It was reliable, consistent, and easy to build. It even has a forward rudder! Another distinguishing feature was the flat center section, with tip dihedral only. While back at Texas A&M, Dick Mathis and I drew up a tapered tip version for a C/L Combat flier who

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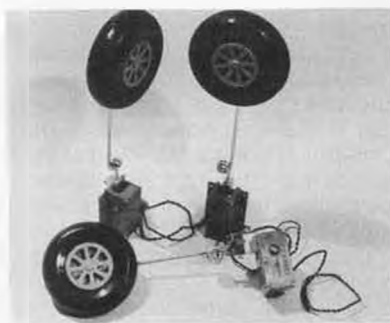
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thought he'd like to try FAI. Within a couple of months, he was whipping the socks off the best FAI fliers in the Dallas-Ft. Worth area! (Maybe that's where Dick got the idea for using tip dihedral in his F/F designs?) If you think you can identify the mystery ship shown in the drawing, send your guess to the R/C Model Builder office; earliest identification wins a free subscription.

BRUCE KIMBALL'S MAGIC PROPS

Bruce wowed the whole group at the Northwest FAI Symposium with his demonstration of a method for easily producing rubber model props, without any carving, and in less than half an hour, too!

Bruce's method is actually the one used by George Perryman for the last 30 years or so. George's description of his prop-making technique always sounded so sketchy in all his construction articles that I never thought it would work very well. At the very least, I thought it would be impossible to make two similar blades, or to duplicate an existing blade.

Bruce, being less skeptical, figured that if it worked for George, it might work for him, so he tried it. IT WORKS! Bruce finds that it is very easy to make exact duplicates of any carved prop with this method, and he proved it by coming up with a couple of blades to match a carved Bob White style Wakefield blade of Tom Cashman's, right in front of our very eyes.

Here's how to twist your own prop blades. Bruce cuts out the blade shape

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from hard C-grain balsa (1/8 for Wakes, 3/32 for Coupes). He sands in an airfoil, like on a HLG. Then he holds the blade under the hot water tap for a few minutes, until the blade is well-soaked and limber. The next step is to hold the wet blade over a hot stove and twist to the desired shape. The blade is twisted about 15 degrees; Bruce says the wood won't bend any more than that, and you can feel how far to go very easily. When

dried out over the stove, ply reinforcements at the hub are glued on and the prop is pitched for a wire hub, just like a carved blade. Take a look at the pictures of Bruce in action, and try it on your next rubber model, if you don't feel like making a pile of chips.

COVERING WITH SILK AND TISSUE

When you get above 1/2A size with a gas model, a single layer of Japanese tissue won't hack it, unless you always fly at Taft. The stresses of flying a large A, B, C, or D model on the average flying field in this country is enough to make you think twice about your choice of covering material, unless you enjoy patching tissue punctures. Here's a solution, reported by Ralph Prey in the *Satellite*:

Here's a system that Lou D'Elia gave to

me from Bob Hunter. It's for double covering a wing or stab of a large C or D ship, using silk over tissue. Here's how it goes:

1) Apply the tissue in the normal manner, shrink and put on three coats of 50/50 nitrate dope with inhibitor.

2) Apply the silk on the bottom first, spraying it with a Windex bottle and pulling the silk tight. Use thinner around the edges to secure the silk to the tissue. Lap the trailing edge, and then sand off any excess. Next, cover the top, again using thinner around the edges to stick the wet silk to the tissue. After the silk has dried, use 50/50 dope to lay down all the edges (only the edges, not open structure!).

3) Spray the first coat, using 20/80 dope (20% dope, 80% thinner), being careful you don't move the silk while spraying. Continue using 20/80, spraying or brushing as desired. If you decorate, use 20/80 to secure the decoration (and use inhibitor each coat).

The above system uses less dope to fill up the silk because the tissue is underneath the silk to keep the dope from running through to the underside.

Ralph had some problems using this system, however:

I must be a jinx when it comes to covering lately. I tried the above system, stuck to it very faithfully, step by step. What happened??? A DAMN MESS! When it came to spraying the first coat onto the silk, the silk started to wrinkle just like it does when it is wet with water; it sagged in places, and as the dope dried, it stuck in some places and made big creases in others where air was trapped between the silk and the tissue. I put it away for several days, and when I came back, the creases had pulled out, but were noticeable. I kept on spraying more coats, and right now, it is FAIR. There are some creases showing, but they don't stick up too bad. I covered the main panels with silk and the tip panels with double tissue; however, I brushed the first coat on the double tissue covering, and it came out perfect. I don't get it. . .

I haven't tried using silk over tissue, but have had good results with double tissue. As Ralph says, the wrinkles in the last layer disappear with time, as the dope tightens over a period of weeks, perhaps. I suspect his problems came from spraying too heavily, or the silk not shrinking tight enough before doping. Maybe brushing would work better (start from the center and work outwards, to minimize wrinkling), or the silk could be stuck down with thinner after shrinking. Clarence Bull showed a neat trick for doping silk. He uses a polyurethane foam brush (available commercially for about 69¢, or cut from a scrap piece of foam; test to make sure that it won't dissolve in thinner). The foam sucks up the excess dope, so it doesn't glob up inside the silk.

If you need nitrate dope, try Bob Ellington (2913 Edwards Ave., Bakersfield, CA 93306). He's selling Flo-Cote brand (formerly put out by Lucky



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Hannan Continued from page 50

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balloon is initially spread flat upon the ground with its net arranged on top. As the filling proceeds, many sacks of sand are hooked onto the netting around the periphery of the balloon. As it begins to assume a rounded shape, the weights must be moved down the net in a uniform manner. This task, involving dozens of people, some of whom were drafted on the spot, is coordinated by a director with a loud voice or electronic bullhorn.

During the tedious filling operations there were plenty of other activities to engage the spectators. For example, the U.S. Post Office had set up an official substation and was doing a brisk business in "balloon mail" ("guaranteed delivery, only we're not sure where"). Souvenir stands were marketing everything from commemorative T-shirts to exotic enameled balloon badges. Also on sale was the journal of the Balloon Federation of America which, like the



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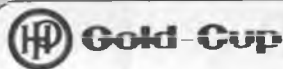
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Heavy-than-air aviation was represented too, by the static display of a high-performance sailplane, demonstration of a tail-first powered hang glider, and fly-bys of vintage biplanes. Would you believe a formation consisting of some Stearmans, an N3N, a Waco, A Stampe, and a Spad? Truly a "mixed bag" of two-wingers!

As the actual race got underway (very leisurely, since about four hours was allowed for departing), a band played, people cheered and the crews tossed flowers to the audience. Some spectators, who in their enthusiasm were running along beneath the balloons, got

a surprise in the form of a sand ballast shower!

Something like 75 hours later, the race was officially over. Double Eagle IV, one of the transparent balloons, had broken the 1908 duration record, and another U.S. entry, Cloud Dancer, had won the distance prize, covering some 526 miles to land northwest of San Francisco. Under the Gordon Bennett rules, the winning country plays host to the following year's event. Mile Square has been reserved for April 25, 1981, and we hope you will join us in being there!

AND SPEAKING OF VINTAGE TROPHIES

According to the May issue of *Sport*

Aviation, Dr. Paul MacCready has been selected to receive the prestigious Collier Trophy, for the greatest achievement in aeronautics or astronautics in the preceding year. The Collier award was established back during 1911. Special recognition has also been extended to pilot Bryan Allen of the Gossamer Albatross channel-crossing flight team for his role in the historic achievement.

PROJECTS, PROJECTS, PROJECTS!

Most model builders seem perpetually trying to get one project finished before starting a newer one. Perhaps our attention spans are not what they should be. (As I type this, I try to avoid being distracted by the three unfinished fuselages seasoning on the wall alongside my desk.) But what of full-scale reproduction builders? Evidently they must suffer from the same affliction. As Fernando Ramos has already reported, Bill Turner, of Gee Bee Z fame, is now preparing to start a VERY ambitious effort, in the form of a full-size D.H. Comet! But he also has not lost interest in building a reproduction Hall Bulldog Racer!

HAPPY BIRTHDAY HENRI

Rear Admiral L.S. McCready favored us with a letter telling of his recent visit to Europe. While in France, he attended a celebration honoring Henri Fabre, the first man to successfully fly an aircraft under its own power from the surface of water. Now 97 years young, Henri performed the amazing feat of teaching himself to fly a floatplane of his own design (a canard pusher, at that) back in 1910!

FAREWELL MAX

Max Holtzner is dead at the age of 87. A former World War I German flier and a test pilot for Pfalz, Max had begun his interest in aviation with models. His lengthy career encompassed virtually every aspect of flying in Europe, South America, and the U.S. He was also a popular member of such enthusiast organizations as the Cross & Cockade Society. We'll miss you Max!

HOWARD McLEOD

Model building lost another staunch supporter recently with the passing of Howard McLeod at the age of 57 years. An active modeler in his youth, Howard spent many years in the Southern California aviation industry, and had an encyclopedic knowledge of aero history. He was one of the better qualified of local scale model judges, and had served in that capacity at many Flightmaster events and at the U.S. Nationals when they were held in California.

In addition to providing research assistance to builders, Howard had served as a helper in some of the Model Builder Postal Peanut contests. His subtle sense of humor and boundless enthusiasm will be long remembered.

OLD-TIME MODELS OR OLD-TIME MODELERS?

Abstracted from the newsletter of the Michigan Antique Modelers: "I've always wanted to have the Old Timer Hand Launched Glider event at our contests. Talking about entering HLG to



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8.5"	4-5-6-7	12"	4-5-6	22"	6-8-10
9"	4-5-6-7	14"	4-5-6	24"	6-8-10

some of the fine gentlemen (to be a gentleman you must be born before 1943) I've heard comments of, 'We can't compete with the younger strong arms.' And, 'I was just having some fun.' (See how O.T. and fun keep coming together?) However, when suggesting an O.T. HLG event only for those born before 1943, I usually get a shoulder shrug for a reply. I don't know how to interpret this, so I am going to do some research. The question will be: *Would you enter the 'Gentlemen's O.T. HLG event,' and why?*" Joe Kresnak.

SIGNS OF THE TIMES

Since the fuel crunch, gasoline stations in California have been using a flag system to indicate their supply status to passing motorists. A green flag symbolizes fuel available, while a red flag means none. One particular station, located in San Marcos, has gone the system one better. In addition to the green flag, they fly the black "Jolly Roger" pirate pennant, presumably as a warning to brace yourself for the price!

AND SPEAKING OF INFLATION

From "ICARUS," in the May English magazine *Scale Models*, this comment regarding increasing plastic model kit prices: "I fear that the honeymoon is rapidly ending, plastic simply is not the cheap material it was and it looks like it's getting worse. Who knows, one day Liz Taylor may show up in plastic earrings!"

PERFORMANCE LIMITS?
Throughout the history of competition, rules have been modified with the stated objective of reducing performance. Indianapolis has repeatedly demonstrated the problems involved in drafting and enforcing such regulations, as applied to auto racing. And both full-size and model pylon racers have long been the subject of controversy in this respect.

For indoor model flying, weight minimums are the usual limitations imposed in an effort to restrict performance. When announcing his 14-gram weight minimum for "West Coast Bostonian," Walt Mooney was greeted by much skepticism that such a factor would preclude experts always winning. His reply? "Any model that does over a minute, we smash it!"

Poolboy Continued from page 19
the necessary upthrust, can be achieved by different means. One is to shim the bottom of the mount with some 1/16 hard balsa. I prefer to cut out a disc of 1/16 plywood, then sand it away until one side of the circle is paper thin, then glue it in place.

As noted on the front view, a Pee Wee .020 could be substituted. Yes, it has four mounting holes, but you can get away with using only two. You could also raise the location of the engine mount if you wanted to use a standard .020 prop; this would require some adjustment to the upthrust because of the higher thrust line. How much? Only a flight test will tell.

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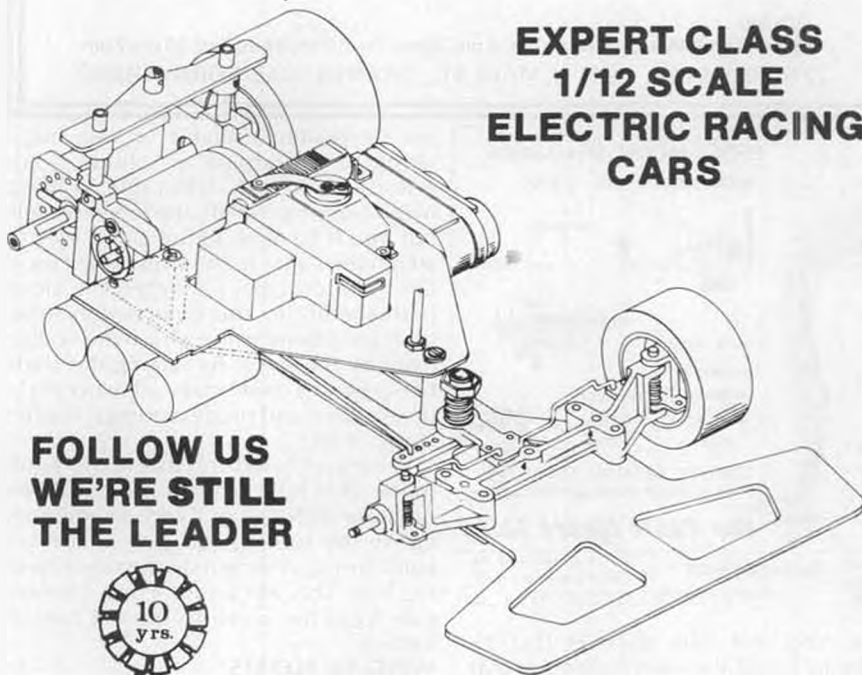
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carved out of soft balsa. It is only for appearance, and can be omitted if you don't want to bother with it.

WINGS

The wings are standard rib-and-spar construction, with the dihedral in the upper wing achieved by inserting a piece of 1/2-inch trailing edge stock lengthwise between the two center ribs as shown. You may have to sand it slightly to get the right amount of dihedral.

INTERPLANE STRUTS

These are made by slitting coffee stir sticks lengthwise and gluing them together as shown. They are not really functional, just cosmetic, but they do help to align the upper wing with the lower. Note that the diagonal member joins the uprights with a bit of the latter extending out. That is so the ends can be inset into the "wells," which are cut from fuel line tubing and Hot Stuffed to the Monokote covering at the locations indicated. They will stay in place while in flight and will easily snap out for dis-

assembly or in the event of a rough landing.

EMPENNAGE

Both the stab and fin use 1/16 balsa sheet throughout. The lightening holes are more for appearance than weight reduction, but with transparent Monokote covering it adds to the overall impression of lightness. Hinges for the rudder and elevator are made with 1/2-inch strips of Monokote. They're plenty strong; after all, the air loads here are measured in ounces.

RADIO INSTALLATION

At the time of this writing, you have no choice. The only radio unit which will fit in the Poolboy is the Cannon Super-Mini unit. The servos fit snugly in the compartment aft of the step in the hull, the receiver in the compartment just forward of the step, and the 100 mah battery pack (with case removed) is located as shown on the plans, just ahead of the bulkhead at the leading edge of the wing, which needs a hole cut in it to allow insertion of the battery

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pack. You will soon discover that it's tricky to install the switch through that same opening, but persevere, you'll make it.

The flexible pushrods from the servos to the tail surfaces were fabricated from nylon tubes which I happened to have left over from an RPV project. They may

not be readily available to you, but a satisfactory substitute is: Sullivan Gold-n-Rod cable, with .030 cable inside a nylon housing, will do the job very well, but you'll have to figure out a way to attach the cable to the adjustable clevis. On the prototype, I attached the clevis permanently to the inner nylon tube, then put a bend in the wire at the end up front by the servo. By varying the angle of the bend, I could make adjustments in the elevator and rudder settings. There's always a way.

Where the nylon tube exits from inside the hull, it is best to seal the opening with epoxy. Then, in addition, epoxy the tube to the side of the 1/8 balsa fairing as shown on the top view of the hull. This will assure a firm connection from the servo to the tail control surface.

WING TIP FLOATS

These are carved from solid blocks of lightweight balsa. No big deal, but one of them gave me fits on the first test flight; more about that later. Note the 1/16-inch dowels pressed into the front and rear ends, to which the mounting

rubber bands are fitted.

That just about covers the construction of the Poolboy. Admittedly, it's not exactly for a beginner, but for those details that I may have glossed over, most of you can figure out your own solution. At least, I hope so. If you can't, then write me care of **R/C Model Builder**, and I'll try to answer your questions. But send me a self-addressed, stamped envelope, please.

FLYING

The Poolboy was designed to accomplish a specific mission: take off from a swimming pool, and land in it if you, the pilot, have the spot landing skill. But the takeoff was the principal criteria. For that reason, the C.G. and the step on the bottom of the hull are further back than you would normally expect them to be. They are set that way for the fastest takeoff possible from water. As a result, once the Poolboy is airborne, it is very, repeat very sensitive to elevator movement. On the drawing I have indicated the elevator horn attachment of the clevis at the outermost point, so the movement is small. Even so, with the prototype, it was so touchy that I finally extended the distance further by inserting a 3/16-inch block of wood under the elevator horn.

Of course, if you are not particularly interested in a minimum distance water takeoff, you can add a small weight to the nose of the hull. This will tame down the elevator, and increase the takeoff distance. The choice is yours. We tried various weights on the nose; a quarter attached to the top of the hull with servo tape made the model very much less sensitive in the air, and also increased the takeoff distance to around thirty to thirty-five feet. This latter effect probably could be minimized by moving the step forward slightly so that it would still be under the C.G., but that would make the radio receiver compartment pretty snug. Besides, it's more fun to have a snappy little job that really keeps you busy.

When assembling the model preparatory for flight, be sure that the tip floats are not put on backwards. On the first test flight I was so eager to get the model in the air that I put one of the floats (the one on the left wing) on backwards and didn't notice it. With the .010 screaming, I set the model down in the water and it spun around in tight circles to the left as the float dragged it around. At first I thought I had a torque problem, but when I retrieved the model and looked at it, I felt pretty foolish. Mr. Dum-Dum had done it again! When I installed it properly, the next launch was perfect. Takeoff run was about fifteen feet, climbout excellent, and the flight was really exciting to watch. The Poolboy met the specs.

Electric Continued from page 23
best weight range for the Astro 020 R/C planes is in the 14 to 16 ounce bracket, which is hard to do with most digital radios on the market. Bill Cannon's

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radios have always been the lightest available, and I have used them consistently for the last five years. Now Bill has come out with the lightest servo yet, the Super-Mini, at .5 ounces. It is so small that it looks like a half-scale model when put beside most other servos. I have been using these servos for nearly a year, mostly in my Astro 020 seaplanes, and I am very satisfied with them. They have survived several duckings with no ill effects, and have impressive power and speed. Some idea of their small size is given by the photo of one next to a Bantam Midget servo in my Widgeon. The Midget weighs .85 ounces, and looks huge in comparison! The small size is a real relief in installation in the 020 planes. The size is just right to make the 020 fuselages look big inside, with room for fingers in the installation steps. So, if you like small planes, I highly recommend these servos, available from Cannon R/C Systems, 13400-26 Satcoy St., No. Hollywood, CA 91605, phone (213) 764-1488.

Till next time, enjoy electrics! •

Soaring Continued from page 38

also find the *Modern Soaring Guide*, second edition, by Pete Bowers to be of interest. This book is of broader interest. It is published by Tab Books, Blue Ridge Summit, PA 17214 (1979), and sells for \$6.95.

The real reward for putting this column together each month comes when

you receive letters like this:

I am writing to tell you how much I enjoy reading your article each month. It has inspired me so much that I thought I would send you a couple of photos of my latest projects. One is an Olympic II, and the other is a Nomad. The Nomad is manufactured by Balsa U.S.A., but I'm sure you know that. As you can see in the photo of the Nomad, the center section of the wing is planked with 1/16 balsa. The plans call for it to be all open framework, like the rest of the wing. Adding the planking to the first three ribs makes the wings just that much stronger and more pleasing to the eye. The plans also call for 3/16-inch rods that hold the wings to the fuselage, with the option of

using 1/4-inch rods instead. Definitely use the 1/4-inch rods; you can purchase them yourself at a hobby shop for under a dollar, and they are well worth it. So, if there is anyone out there who is building a Nomad or a Breezy, here is some good advice to make a good plane even better! Good flying, Robert Bartolotto, 11508 Leggett Street, Norwalk, CA 90605.

Thanks, Bob. Sure appreciate the good words.

See you next month. •



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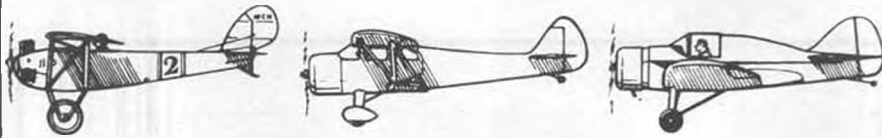
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Hollywood . . . Continued from page 31

directly to Sig, in Montezuma, Iowa. Or, send me twelve bucks and I'll ship you two matched 36-inch wing panels and the Celastic to join them; I'm at 3635 Mt. Vernon, Sebastopol, CA 95472. (Sorry, but my wings aren't hand-carved any more . . . I've got a big, noisy machine that cuts the upper surface of the airfoil. All I do is round the leading edges and hit 'em a few licks with a sanding block. Laziness strikes again!)

FUSELAGE

As everyone knows, fuselages don't fly; all they do is hold the tailfeathers in place to stabilize the wing. So if the fuselage shown on the drawings doesn't suit you, draw another one. Copy an

Aquila, or a Schweizer 1-26. Or a shark, or your Aunt Gertrude's nose. Designing fuselages is harmless fun. It'll take your mind off sex for a few minutes.

On this size glider, I suggest medium 3/16 or hard 1/8 sheet for the sides, and 1/8 sheet for the top and bottom aft of the wing. Up front, use the hardest 3/16 or 1/4-inch balsa you can find; gliders almost always crash on their nose.

Note the dual function of the hatch; it also serves as a wing incidence block, raising the leading edge of the wing 1/16 inch higher than the trailing edge. This should be about right for the rearward CG shown. If you decide to move the CG further forward, you'll probably need more shim under the leading edge. Ditto if your ship comes out heavy, i.e., over 30 ounces total weight (a well-built Square weighs around 26 ounces).

The fuselage in the drawings is "bare bones," designed to get a reasonably experienced modeler into the air quickly. Choose your wood with care and it will be reasonably durable just as drawn. To toughen it up you can do three

things: add bulkheads, add triangle stock to the corners, or Monokote it. Personally, I like the triangle stock (see optional fuselage cross-section A-A) plus Monokote. Also, a strip of Celastic or fiberglass along the bottom from the wing forward makes a dandy landing skid.

Note the absence of a rear wing dowel. Just slip half a dozen No. 64 rubber bands over the fuselage before putting the wing in place, then stretch them forward to the front dowel. One less dowel equals that much less drag, and drag is all that keeps small airplanes from flying as well as big ones.

One last word on the fuselage: be sure to fillet the top of the towhook with epoxy, if you build the fuselage shape shown. Otherwise the tow ring will wedge itself into that crack and you'll never get off the towline!

EMPENNAGE

Use medium-weight C-grain balsa for the rudder and stab. (C-grain, remember, is the stuff that doesn't bend crossgrain.) I like Monokote hinges . . . they're easy to make, very tough, and perfectly airtight. Cloth or figure-eight thread hinges will also work. Stay away from commercial nylon hinges for the Square. They're heavy, and too difficult to install in such thin surfaces.

RADIO INSTALLATION

If you've built R/C models before, what can I tell you? And if you haven't, you'll need help from someone who has, or one of the how-to books published by the various model mags. Put all of the components as far forward as humanly possible. Even then, you may need an ounce or so of lead in the nose; be prepared to slip a piece of tire weight alongside the batteries. Don't put the lead back with the servos, or under the receiver, etc. Takes twice as much lead that way. Put it all the way up front, even if you have to smash it flat with a hammer and slip it in with a ramrod.

In sailplanes, I always mount my servos with 1/16-inch thick double-stick foam tape. If the hobby shop is out of it, try the hardware store. They sell it for mounting pictures on the (landlord's) walls. I like cablerods for hooking up the control surfaces. If you use conventional pushrods, make them from 1/4-inch square hard balsa. Don't use dowels or arrowshafts, they're too heavy.

FINISH

There are two schools of thought here. One of them says, *Before you finish a model, fly it. If it doesn't fly, it doesn't need a finish. If it does fly, it's finished!*

I like that.

The other school says, *No matter how quickly you toss a model together, you can double its performance by putting some care and attention into its finish.*

I like that, too. It probably describes best how I build most of my models, or at least most of my sport models, like this one. I toss the basic structure together very quickly, using quick epoxies and Hot Stuff, and then spend about half the time I've saved putting a good finish on

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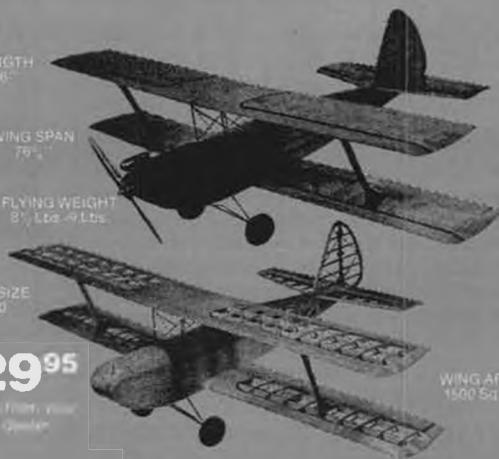
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the model. On sailplanes particularly, I pay a lot of attention to cleaning up the exterior and reducing drag. Reducing drag on a glider is exactly equivalent to increasing horsepower on an engine-powered model. As a result, my models fly better than most, and I get a reputation for being a good pilot. And I like that.

For example, suppose my club is having a one-design competition for Hollywood Squares. I'd clean up that fuselage by about 50%. Use triangle stock in every corner, then round the corners off with a plane and a sanding block. If the rules permitted, I'd narrow the fuselage to one servo wide, stand my receiver on edge, and rebuild my battery

pack to fit. If not, I'd at least streamline the nose and fill that big gaping hole at the tail. And bolt the wing in place, or move the front dowel inside, to get rid of all that dowel-and-rubber business hanging out in the breeze. And, oh yes, plug that gap between the wing undercamber and the top of the fuselage. It'll not only reduce drag, but keep the wing from rocking.

On the empennage, I'd sand everything to symmetrical airfoil shapes. That means rounding all the leading edges and tips, and feathering the trailing edges exactly as the cross-section drawing indicates. (Incidentally, Skip Miller says he's feathering the empennage leading edges on his new Saggitas, just

like the Europeans do. And Skip Miller's Saggitas are FAST!) I'd Monokote everything, and use Monokote hinges for sure. I'd move that rudder horn down inside the fuselage by bending a simple yoke out of 1/16 piano wire.

As to the wing, I'd build polyhedral, and use much lighter balsa for the tips than for the center sections. I'd experiment with wingtips... NASA winglets, flat plates, vortex tips. I'd build the lowest permissible undercamber, and take quite a bit of wood off the bottom when carving the leading edges (i.e., give her a healthy dose of Phillips entry). I'd definitely use the strapping tape. By contest time I'd probably have 20 hours in the model, including covering and

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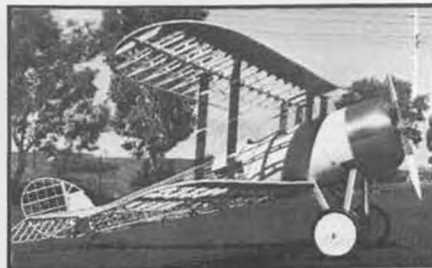
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radio installation, but it would hold its own with any two-meter ship on the market, by then. And outlast my enthusiasm for it by years!

BoatsContinued from page 33
the Jr. Streaker on display. It can be powered by an electric motor or by a .10 glow engine.

I also have some results of the first District 19 R/C Unlimited race held on May 10 and 11, at Legg Lake in South El Monte. Leonard Feedback, District 19 R/C Unlimited Chairman, provided the standings for the Champion Sparkplug Regatta. The winners are as follows:



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- 1) Joe Monohan (Miss Van's PX)
- 2) Mike Deming (Shakey's Special)
- 3) Ralph Henry (Country Boy)
- 4) Sam Hall (Miss U.S.)
- 5) Elmer Keck (Miss Budweiser)
- 6) Russ Kominitski (Notre Dame)

On a negative note, one of the boats was lost to thieves. Legg Lake has two small islands covered with underbrush. It seems that the Miss Redman belonging to Dennis Keck ran into one of the islands. Before they could get to it in the retrieval boat, some guys in a rental boat grabbed it and split the scene. The boat was equipped with a Futuba radio and powered by an OPS .60. The boat should be easy to spot, as it sustained damage resulting in the transom and driver being torn off the boat. These were

recovered by the owner. It is requested that the model boaters in the Greater L.A. area keep an eye out for the boat. Any information should be forwarded to Leonard Feedback, 7906 Spinel Ave., Cucamonga, CA 91730.

**MOVING TO THE NORTH,
SOME RESULTS FROM
NORTHERN CALIFORNIA**

Guy Davis of the Sacramento Model Boat Club provided us with the results of the District 9 Points Race held on April 26 and 27. There were 103 total entries with all but three coming from within District 9. A regulation five-lap, .9 mile course was used for the heat racing. The fastest time of the meet was turned in by Jim Whitlatch's Octura Wing Ding in C-Hydro with a 1:19.77. This was the third District 9 race of the year. The results were as follows:

- A MONO**
1) Dick Aubert
2) Bev Power
3) W. Gallagher
B HYDRO
1) Howard Power
2) Guy Davis
3) Dick Aubert
A HYDRO
1) Dick Aubert
2) W. Webster
3) Ed Windfeldt
C MONO
1) Bev Power
2) L. Pike
3) Irv Hartsook
B MONO
1) B. Joshnick
2) Ron Russell
3) F. Canning
C HYDRO
1) Howard Power
2) Jim Whitlatch
3) Gary Frank

Bev Power, who gets my vote as the best Female Model Boat Racer in N.A.M.B.A., sent along the following report on the race sponsored by the Gold Coast Model Boaters on May 24 and 25.

We had approximately 140 boats entered with most of the representation being from District 19. Saturday was terribly cold and windy, much to the dismay of the A Mono drivers. In C Mono, I won with my Dumas Deep-Vee 60 "Day Tripper" which we built back in 1974 and have run ever since. It holds (or held) three records, two national championships and two district championships in the C Class. Guess I should tell Dumas about this. (It's in print now, Bev, so you don't have to.)

Sunday, hydro day, was not so windy and we got in four rounds of racing in each of the classes. Our local club took 1st, 2nd, and 3rd in Sport 40. Tom Anderson won his first 1st place trophy in C Hydro. A large number of new boaters finished in the top ten spots. On Monday, we had a Deep-Vee race with ten-minute heats. There were 42 entries and some excellent driving around an odd-shaped course with a left-hand turn.

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The final results are as follows:

A MONO

- 1) Ron Russell
- 2) Gary Frank
- 3) Bruce Johnston

B MONO

- 1) Irv Hartsook
- 2) Bruce Leininger
- 3) Ed Windfeldt

SPORT 40

- 1) Bev Power
- 2) Harry Dewey
- 3) Woody Canterbury

A HYDRO

- 1) Art Hammond
- 2) Theresa Mchlayne
- 3) Wally Stewart

C MONO

- 1) Bev Power
- 2) Mike Shellhart
- 3) Gary Johnson

X HYDRO

- 1) Howard Power
- 2) Tom Anderson

B HYDRO

- 1) Ron Russell
- 2) Wally Stewart
- 3) Dick Aubert

C HYDRO

- 1) Tom Anderson
- 2) Howard Power
- 3) Cecil Reynolds

AND MOVING EVEN FURTHER NORTH...

The Longview R/C Boaters hosted the first District 8 race on May 3 and 4 at Longview's Sacajawea Park. Dave and

Nancy Austin served as event directors and there were 68 entries. This was the first of seven District 8 points races. Other races will be held in Portland, Seattle, Tacoma, Kennewick, Spokane, and Medford. The weather and water conditions were excellent. Your "R/C Power Boats" writer set a new record with his Ward 33.5-inch deep-vee in A Outboard Mono. The results of this race were:

A HYDRO

- 1) Jerry Dunlap
- 2) Mike Wight
- 3) Tom Dudley

A MONO

- 1) Jerry Dunlap
- 2) Bill Read
- 3) Jesse Shehan

B HYDRO

- 1) Jerry Dunlap
- 2) Randy Seiser
- 3) Stan Hoagland

B MONO

- 1) Bill Hornell
- 2) Doug Smith
- 3) Jerry Dunlap

C HYDRO

- 1) Ron Erickson
- 2) Larry Knudson
- 3) Randy Seiser

A DEEP-VEE

- 1) Jerry Dunlap
- 2) Jesse Shehan
- 3) Vic Drew

B DEEP-VEE

- 1) Ron Erickson

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- A OPC TUNNEL
- 1) Bill Brazzle
 - 2) Doug Smith
 - 3) Stan Hoagland

THE 3rd ANNUAL HOBBYTOWN REGATTA

This event has become one of the biggest drawing cards for those who race the .21 outboard tunnel boats in District 8. There were 27 entries in the Stock OPC Tunnel class this year. A new event for the schedule, Sport 40, was added this year and six of these boats made an appearance. The Hobbytown Regatta is sponsored by Bill and Ruth Brazzle, owners of Bill's Hobbytown, in

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the Puget Sound Model Boat Club. It was again conducted at Lake Waughop, site of the 1980 NAMBA Nats. Most people attending this year will probably remember the day better as the day Mount St. Helens erupted, rather than the day we conducted a model boat race. The activity on the mountain had no effect on the racing, but May 18 will be a day that long remains in the minds of those of us who live in the Northwest.

The Stock OPC Tunnel competition is divided into two different events, and the overall winners are determined by how they placed in the two events. The first event of the day for the tunnels was heat racing. Following the heat racing, five-minute enduros were run. The overall winners when the two events were combined were:

- 1) Tom Dudley (Klampon Kai)
- 2) Stan Hoagland (Excaliber II)
- 3) Doug Smith (Klampon Kai)
- 4) Shawn Hoagland (Excaliber II)
- 5) Bill Brazzle (Hughey Tunnel)

The final results in the Sport 40 competition were:

- 1) Jerry Dunlap (Muck Sport 40)

Spanaway, Washington. The contest has become a social as well as competitive activity. The potluck luncheon served between a break in the racing has become a tradition. You might leave the contest without an award, but you'll never leave it hungry!

This year's contest was directed by Joe O'Daniels and Jesse Gray, members of

2) Bud White (Dumas Atlas Van Lines)
Merchandise prizes were awarded the winners rather than trophies, and the win for Tom Dudley in the tunnel event was worth \$50.00. Not too bad for an afternoon's efforts at the pond!

WANT A REALLY TOUGH SERVO?

JoMac Products, Inc., 12702 N.E. 124th Street, Kirkland, WA 98033 is now offering a heavy duty servo for use in model boating and aircraft applications. The servo comes with either Futaba or Kraft plugs and sells for \$40.00. A ball bearing top is also available for this servo, and it carries an \$8.50 price tag. The order number for the servo is 458, and a reverse direction is also available. Order number for the ball bearing top is 465. I have been using this servo since 1977 in my outboard tunnels and outboard deep-vees. I have never stripped any gears in this servo, and that is really quite an accomplishment. Anyone looking for a strong servo for steering their outboards will want to give this JoMac servo strong consideration. I can recommend it highly.

ANYTHING HAPPENING EAST OF THE ROCKIES?

This column is taking on a real West Coast flavor in its coverage of model boating events. I know there are things happening in other parts of this country. 119 Crestwood Dr. S.W., Tacoma, WA 98498, that's the place to send your results, comments, or photos. Come on, Midwest and East Coast, let's hear from ya.

I.M.A.C. . . . Continued from page 15

had everyone covering their sweaty sport and T-shirts with double jackets.

If you want a change in weather, stick around for 5 minutes. . .

Following a brief pilot's meeting conducted by Roger Schlenker, competition got underway about 9:30 on Saturday. The Sportsman Biplane Class outnumbered all others, with 40 contestants, next was Sportsman Monoplane with 13, Advanced Biplane with 9, Advanced Monoplane, 6; Unlimited Biplane, 5; and Unlimited Monoplane with 3. Giant Scale, with mono and biplanes combined, brought out 18 contestants.

Sig kit aircraft dominated both the biplane and monoplane categories, with 28(!) Skybolts, 12 Chipmunks, 7 Smith Miniplanes, and 4 Clipped Wing Cubs. Sig was also represented by 2 Cessna 150's, and one each Citabria and Liberty Sport.

Some other aircraft present that we noted included Aeromasters (4), Midwest Pitts (2), and one each Cass Pulsar, Sterling Waco, Pilot Staggerwing Beech, Concept Travelair, Cass Skybolt, Gee Bee Line Dreamer, Stafford Chipmunk, and Midwest Chipmunk.

In the Giant category, there was more variety, with Byron Pitts being the only kit showing more than one (3). Others included a Cass Skybolt (stretched wings to over 1000 sq. in.), Bridi Cosmic Wind, Platt Jungmeister, Mallory Models Laser,

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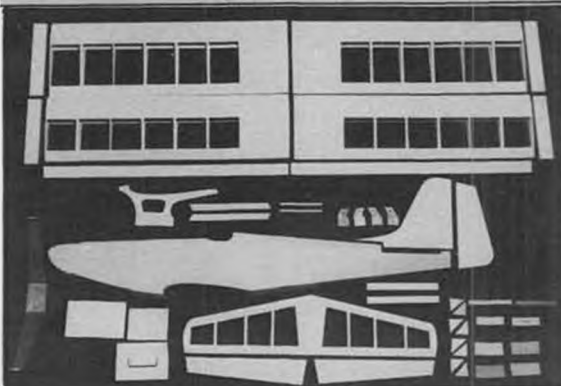
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YAMATO \$59.95

Balsa USA Sopwith Pup, Concept Fleet, Nosen Citabria, Nosen P-51, Sterling PT-17, and Sig Yak P18. Originals included a beautiful Krier Great Lakes and a Skybolt from Hostetler plans.

Perhaps the most unique procedure at the contest was the super-simple and easy-going flying order system. A ready line for each 72 mHz frequency was set up perpendicular to and at intervals along the flight line. An all-6-meter and all-27 mHz line were also established. When it was announced that Round One would begin, contestants simply put their models in line behind their frequency marker, if they felt like it. Two flight sites were in constant operation, side-by-side in front of the control tent/transmitter impound. While two planes were flying "in the box" for the two sets of judges, flight line directors would check the lines for any pilots who were ready to fly on a frequency not already in the air. Two aircraft would take off and fly in a holding pattern, waiting for the two in the "box" to finish their schedule. When one or both of these left the box, the pilots on hold would be "steered" to their flying site, their score sheets handed to the judges, and they would fly into the box to begin their schedule. Meanwhile, the previous two would land. Takeoff and landing, of course, were not scored.

Whenever a frequency line became empty, the announcer would call attention to the fact that a line was open. As a

round neared completion, an announcement would be made that the round would be ending in a half or three-quarter hour, so that anyone who had not taken a turn, could get in his flight. There was no hassle. If your engine wouldn't start, or something didn't seem right, or you'd rather eat a sandwich than fly at the moment, come back later! This was a contest in which you could relax and enjoy while competing.

It was interesting to note how the sharper pilots with fast, groovy planes, managed to stay in the box, or aerobatic zone. Flags set up across the runway marked an angle of approximately 60° to either side of the judges. A maneuver had to be performed on each pass in front of the judges and the plane had to stay in the zone until all maneuvers were finished. Even turn-arounds had to be in the zone. As a maneuver was completed, the pilots would quickly turn their aircraft to fly out and away from the judges, along and just inside the 60 degree line. They would then climb, do a Split-S to build up speed, and come back along the 60-degree line. When they reached the proper point, they would then turn their aircraft so its path was parallel to the flight line, and perform the next maneuver, followed by another turn out and always along the other 60-degree line. Sneaky but effective!

Early Sunday afternoon, the Sig Air

Force did its thing. First Maxey Hester in his Decathlon, then Hazel in her blue Pitts, and finally Glen in his red Pitts, put on aerobic demonstrations. An FAA observer was on hand for full authorization of the aerobatics. Both Hazel and Glen are qualified to fly within 500 feet of the ground during their demonstrations. Unfortunately, on this day, the ceiling was too low to allow some of the more interesting maneuvers, but we still were treated to an excellent mini-air show.

During the show, tabulators busily checked scores and put together the list of winners in the R/C competition. The first five in each category won a beautiful selection of Sig merchandise, with each one getting a Sig R/C kit and a gallon of fuel, plus other first quality items. There was a total of 7 categories times 5 places, or 35 prizes, with the first three in each category winning desk pen sets with appropriate nameplates. No one went home empty-handed. After the prizes were awarded, all contestants were given a gallon of fuel and a large bottle of aliphatic glue! Not only that, all of the Des Modelairs who worked at the contest received generous gift certificates redeemable then or later at the Sig factory.

Speaking of factory, the Sig facility was open for tours all weekend, and most of the contestants took the opportunity to walk through the many buildings and departments that comprise the whole

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Flying Near Airports? Be Careful!

Free Flight or Radio Control flying near airports, or in any situation which might involve the possibility of models being in the vicinity of full-scale aircraft operations, must be avoided—or conducted so as to eliminate any dangerous situations. Models should not be flown in the proximity of full-scale aircraft operations unless the flyer has someone else with him for the sole purpose of watching for full-scale aircraft and supervising the flying so as to prevent accident possibilities.

PROTECT YOUR RIGHT TO FLY!

**Safe Flying Is
No Accident!**

operation. Except for raw materials, Sig Mfg. is an almost completely independent company; cutting its own wood, mixing and pouring its own fuel and glues, printing its own decals, making its own kit boxes and bubble packs, molding its own parts, cutting and bending its own wire, and so on. In our travels, we would have to say that it is second only to the huge Johannes Graupner factory in Kircheim-Teck, West Germany.

Reaching the end of this report, we feel as though we have left out many things. Actually there is almost no way to describe the friendly atmosphere that prevails throughout a visit to this calm and quiet oasis of modeling way out in the middle of nowhere (we guess Montezumas won't like that "nowhere,"

but after the hustle, bustle and population density of Southern California, there's just no other way to describe it). We can only suggest that you plan to visit Montezuma, Iowa the next chance you get, and while you're at it, why not take in the 7th Annual Sig IMAC Championships? We'll see ya there. . . ●

List of Winners

(Sig kit unless noted otherwise)

UNLIMITED BIPLANE (5 entered)

- 1) Doug Brueshaber, Skybolt
- 2) Keith McClure, Skybolt
- 3) Bill Hiller, Midwest Pitts
- 4) Roger Schlenker, Smith Miniplane
- 5) Harold Lee, Smith Miniplane

ADVANCED BIPLANE (9 entered)

- 1) Don Kadous, Skybolt
- 2) Darrell Gideon, Skybolt
- 3) Bob Nelson, Skybolt
- 4) Chuck Jones, Skybolt
- 5) Jerome Zebrauskas, Skybolt

SPORTSMAN BIPLANE (40 entered)

- 1) Bill Schneider, Knight Twister (Hager Plans)
- 2) Don Fuller, Skybolt
- 3) Denny Baker, Skybolt
- 4) Steve Hershberger, Skybolt
- 5) Albert Kretz, Skybolt

UNLIMITED MONOPLANE (3 entered)

- 1) Keith McClure, Chipmunk
- 2) Bill Hiller, Midwest Foam Chipmunk
- 3) Dean Maupin, Chipmunk

ADVANCED MONOPLANE (6 entered)

- 1) Darrell Gideon, Chipmunk
- 2) Bob Nelson, Zlin (Mod. Sun Fli)
- 3) Chuck Jones, Chipmunk
- 4) Don Kadous, Chipmunk
- 5) Jewel Ness, Clip Wing Cub

SPORTSMAN MONOPLANE (13 entered)

- 1) Denny Baker, Chipmunk
 - 2) Larry Kramer, Cessna 150
 - 3) Ted Stone, Orig. Clip Wing Cub
 - 4) Brad Morris, Clip Wing Cub
 - 5) Albert Kretz, Stafford Chipmunk
- ##### GIANT SCALE (18 entered)
- 1) Wayne Boots, Bridi Cosmic Wind
 - 2) Pete Frankenthal, Byron Pitts
 - 3) Burnis Fields, Concept Fleet
 - 4) Dale Frye, Sig Yak P18
 - 5) Jerome Zebrauskas, Cass Skybolt (enlarged wings)



Choppers . . . Continued from page 25

indescribable sound that tells you that everything is functioning in perfect harmony. This expands beyond vibration to some extent and includes overall set-up, such as correlating engine with blade pitch (on collective machines) and other small but important areas. Some of you may have seen the Harley Davidson TV commercial with the slogan, "It's more than a machine." Well that's what a perfectly tuned chopper sounds, looks, and flies like, more than a machine. Yet, we had better leave this subject before we get into trouble.

As an overview, keep in mind that it takes power to vibrate a helicopter, power that can be more usefully used to give greater reserves when the need arises. Vibration also wears out parts. A smooth-running bird will last longer and provide greater reliability than one



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Greetings:

The United Helicopter Association, through the cooperation of this magazine, is offering you a chance to voice your opinion in the forming of a new model helicopter association. The main purpose of the association will be to unite, promote, and help the sport of model helicopters.

This questionnaire will enable us to find out what the majority of the modelers want in an association, there seems to be an enormous interest within the helicopter group to form a "united voice" so we all can contribute to new rules and regulations for contests.

The names, addresses, and the end results of this questionnaire will be made public, so that the modelers may contact each other in different areas. A newsletter can also provide helpful articles and a calendar of events



and happenings throughout the world.

I ask that whether you're an expert, beginner, or even if you're only thinking of getting into model helicopters, that you please take time and 15 cents to complete this questionnaire and help us to help you.

Thank you, Mike Mas

NAME _____ CLUB NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

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ARE YOU FLYING A HELICOPTER NOW? _____ IF SO, HOW LONG? _____

HOW MANY HELICOPTERS DO YOU NOW OWN? _____ LIST TYPE(S)/MOST USED FIRST _____

WHAT TYPE OF FLYING DO YOU LIKE BEST? SPORT, FUN-FLY, CONTEST _____

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WHAT DO YOU CONSIDER THE MOST DIFFICULT WITH HELI? _____

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that shakes continually. This is especially true when applied to radio gear, and the life of servo pots and wipers.

Finally, we've found that after we've flown a "dialed in" helicopter we can't stand to fly one that shakes, so the smooth hover desired in the end provides an incentive to work for along the way. Once achieved, it gives great satisfaction through many smooth and reliable flights.

Thursday, October 9 — Doors open at 9:00 a.m. in the Showboat Convention Center for static display of models. A one hour free cocktail party, from 6:00 p.m. to 7:00 p.m. for those persons with banquet tickets. At 7:00 p.m. a sit-down dinner will be served, consisting of Prime Rib dinner with all the trimmings. The Q.S.A.A. meeting, awards, and drawing will be from 8:45 p.m. to 10:15 p.m.

Friday and Saturday, October 10 & 11 — Flying will start at 8:30 a.m. It will continue until 5:00 p.m. with no break for special demonstrations or lunch. We expect 175 planes, and this way we will not be taking up any of your precious

flying time. After all, that's why you are here.

Sunday, October 12 — Flying starts at 8:00 a.m. and will continue until 1:00 p.m., at which time the perpetual awards will be given out. At this time we will have our drawing for prizes.

Here are some things you will have to know so you can help us do a better job for you:

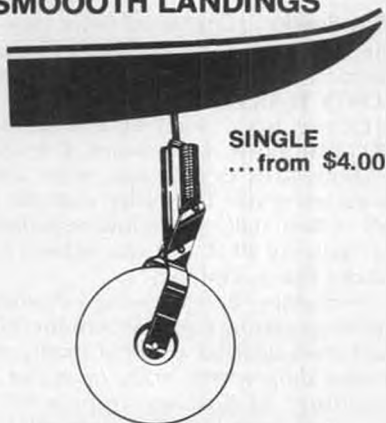
1. All entries must be prepaid by September 9, 1980. This will be the deadline.

2. Entry fee will be \$25.00 per pilot. Here is what your entry fee covers: Banquet Dinner; Cocktail Hour; Flyers Packet; Insurance, if you are not an

R/C World . . . Continued from page 12
bowling ball!

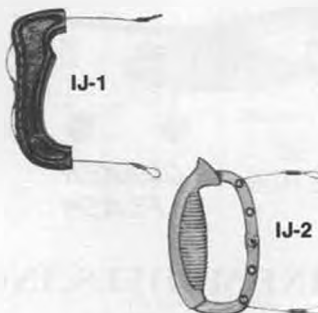
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3. We have 400 rooms available. Prices for the rooms are: \$29.50, double; \$27.50, single. Shut-off date for the rooms will be no later than September 9, 1980. For room reservations, send your request and at least a one night deposit to: Rex Perkins, Planning Director, 900 Crazyhorse Way, Las Vegas, Nevada 89110.

4. All models must be either stand-off or full scale. Q.S.A.A. definition of scale is a reasonable outline, so as to readily identify the model of an existing aircraft.

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5. In order to fly Friday, Saturday and Sunday, you must have flown your plane

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A REQUEST

When a person has been in the radio control hobby for 25 years, as we have

(good grief!), it becomes difficult not to take many things for granted when writing the "R/C World" column. We shudder at the confusion that must result when a non-modeler, or a modeler who has had a moderate amount of C/L and/or F/F experience, decides to seriously investigate the possibilities of getting into R/C. Aside from the actual construction, finishing and aerodynamic trimming of an R/C aircraft, there is a myriad of choices in radio gear, electronic accessories, control system fittings, connectors, test instruments, and so on, that can leave the newcomer in a complete state of hopeless bafflement.

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Plug Sparks...Continued from page 44
the same time saw the demise of some of
them.

FORTY YEARS AGO, I WAS...

Picture No. 7, sent by Phil Stanson,
6831 Eastondale, Long Beach, CA, really
is about 40 or 45 years ago, to be a little
more accurate. The older man on the
left is Bert Hall, the fellow responsible
for getting Phil and the others into
model flying. Phil says:

I remember Bert as having a shoe store
and then getting into a WPA model class.
Bert then opened a sort of shanty style
model shop where many of us did our
building. As business improved, he
acquired a nice little shop in north Long
Beach with living quarters in the back.
Bert and his wife, Ruth, ran this shop for
several years during which time Bert
built many gas models of excellent
craftsmanship that sold easily.

I can recall when he would take four
or five of us kids to Rosecrans and
Western, which was the big flying area
then. This was all done in a Model A
coupe, planes in the rumble seat and
fuselages tied on top, going at 25 mph on
nine-cents-a-gallon gas.

I flew my Modelcraft Scout (far right
on ground) under Bert Hall's supervi-
sion. In those days, we would follow the
model with our finger on the rudder to
keep it running straight on takeoff. I
remember running under the plane
every foot of the flight until it finally
landed just about where it took off.

The last flight of the Scout was in the
summer of 1938, I think. The first flight
ended up quite some distance from my
field box, so I simply wound up the
Autoknips timer and started up the Baby
Cyclone again for another flight. After a
few minutes, I realized I hadn't released
the flight timer and stood there watch-
ing the model drone farther and farther
away to the north.

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less-than-average experience in R/C
would find most helpful to them. Of
course, it's kinda tough to be in the
middle of building a model and have to
stop and write a letter and then wait for
an answer before continuing. But per-
haps we can help solve your problem for
the next guy to come along, and by vice-
versa, the answer to his question can
help you.

Anyway, to get more in tune with
the kind of problems the non-expert

modelers need solving, we'd like to hear
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Finally running out of gas, the model executed only what I can describe as a "catching the third wire" maneuver. The model always seemed to glide twice as fast as it did under power. My Dad and I motored at top speed to the area but couldn't find the model. The Japanese farmers were no help as they spoke no English. So, over to Gotch Airport, payment of three or four dollars, and a plane was hired to find the errant plane. It didn't take three minutes to find it in the weeds. We got back so quick the pilot actually gave us a refund of \$1. Needless to say, I didn't fly the Scout after that hectic day.

Bert Hall, a real colorful character, did a great deal for us in organizing a group of ten to fifteen boys at Houghton Park in north Long Beach. We built in the basement of the clubhouse. We flew in the park, as there weren't so many trees then. Starting with Comet Phantom Flash R.O.C. models, then Bunch Scorpion Jr. planes, we eventually ended up with gas models. Some of the older members were the pacesetters. I remember Chalmer Stone, who went on to become a master builder of scale models, eventually ending up as a model builder for one of the major aircraft firms.

Bert set a good example for us by his examples of workmanship. I felt he was compelled from a vanity viewpoint to rework anything he built until the model was good enough to be viewed without adverse criticism. He also made it a point

of honor never to stretch the rubber more than 50% when measuring for a sale (haw!). One thing for sure, the noseblocks in our rubber jobs never fell out from slack rubber! They stayed nice and tight, wound up or not.

Some of the good memories with Bert were the trips we made, like attending the L.A.G.M.A.A.S.C. (shouldn't be hard to figure that one out) where Bill Atwood was giving a preview of his Phantom Bullet. Then there was the trip to the Trade Show in Pasadena where we marveled at the Burgess Battery Co. display of a flashlight bulb powered by two electrodes stuck into a lemon. They were also demonstrating a two-volt wet cell that came in a hard rubber case. I thought Bright Star D size cells were the best.

Bert could make the neatest fillets I ever saw. He could fair the fins and stabilizers on his ships to the fuselage with perfectly symmetrical silk fairings that never stuck in the wrong place (like mine). He was also very good on painting, with orchid as his favorite color and neat pinstripping. Too bad it didn't rub off on me.

To summarize Bert Hall, I would say he was not a competitive flier but that he was a competitive builder. Well, time flies, and here I am rejoining AMA and the Flightmasters to again build a couple of nice flying scales. Too bad I can't use Sloan's Liniment on the CO₂ gas capsule, as it sure heats my shoulder.

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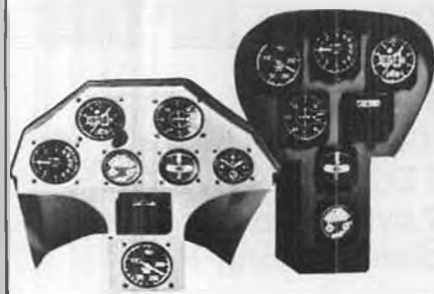
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Picture No. 8 was sent in by Bruce Lester of Toronto, Canada. This picture of Winnie Davis with his Big Gull is one of a series of shots taken by Bruce we hope to run in succeeding issues.

Most everyone on the West Coast has seen the Big Gull replica recently built by Cliff Silva, but this shot of the original is interesting in that Winnie only took one flight that day. The model flew perfectly (took off like an arrow) and promptly lost itself. After many hours of tramping around, Winnie and Pop Schreiber happened on the model. With the wind coming up in the afternoon, Davis felt discretion was the better part of valor and decided not to take a chance on losing it again.

Picture No. 9 comes from far-off Australia. John Tidey, 36 Claremont Ave., Adamstown Heights, N.S.W. 2289, Australia, sends in this picture of his Enya .29 powered Playboy. As John relates, the trimming flights prior to the Australian Nationals showed great promise. At the Nats they were required to R.O.G. with an engine run of 20 seconds.

John says his Playboy outclimbed and outflew the rest, as the Enya was really "honking" as it took the Playboy to about 500 feet. The Playboy put in three good flights with near three-minute maxes in light rain! Might mention the results of the Australian Nats Old Timer event looked like this:

- | | |
|-----------------------------|-----|
| 1) J. Tidey (Playboy) | 368 |
| 2) J. Stone (Cloudster) | 172 |
| 3) B. Knight (Sci. Mercury) | 115 |

Tidey goes on to say he also has a Miss Philly powered by an Atwood .60, with three-channel radio. We'll talk about that in the next issue.

Picture No. 10 comes from our 1980 SAM Champs Contest Manager, Robert K. Larsh, 45 S. Whitcomb, Indianapolis, IN 46241. Bob is a member of the Central Indiana Aeromodellers (CIA) that gives out a most unusual award for outstanding members for the year. The photo shows a "Blue Max" type award that Bob won. It is this type of award that modelers truly cherish.

Picture No. 11 is another one from Australia, this time from Max Starick

with an old design called the "Sky Rover." Max, who can be reached at 57 Rellum Rd., Greenacres, South Australia 5086, restored this old model with painstaking care and flights later proved how well his efforts paid off.

Max writes a column on Old Timers, called "For Old Timer Sake," in the Australian magazine, *Airborne*. This has proven to be the most popular column in the magazine. What else did you expect?

20th STOCKTON O.T. ANNUAL

Yep! It's really that old now! This contest is the granddaddy of them all. This year's annual, scheduled for September 27 and 28, will be held at the Fresno GMA field outside of Madera, California.

To help sweeten the pot this year, SAM 21 has been invited to run the O.T. R/C events in conjunction with the regular O.T. F/F events being run by the AMPS (SAM 32). These meets are also being held in conjunction with the Fresno GMA Annual.

Those interested in the free flight end of things should call or write Jim Persson at 3749 Gettysburg Court, Pleasanton, CA 94566. For the R/C events, contact Ted Kafer, 1468 El Oso, San Jose, CA 95129. With a two-day slate of events, there should be plenty of flying for everyone!

JIM WALKER MUSEUM

Frank D. Macy, who reported several months ago on his Fireball restoration, has now expanded his program to include a museum primarily devoted to Jim Walker ideas, planes, kits... you name it.

Frank has been extremely busy lining up personal collections of the Walker family, has taped discussions of the unique A.J. production machinery, has lined up a professional photographer, and has recruited several volunteers to build the exhibit and get volunteer typists and workers. The whole thing is taking off so fast, Macy says it is just tremendous the respect people have for Jim Walker.

In addition to this museum project, Frank is also collecting material for his book, *Jim Walker, Fireball in the Sky*. This book will include all sorts of photos, interviews, a description of Jim Walker's life and activities, and best of all, the ideas that have become a part of modeling for so long that many people don't know where it all came from.

Frank will keep us posted on the Jim Walker Museum and let us know when it will be open to the public.

SHADES OF 1937!

That's what Jerry Persh called the Brainbusters Spring F/F Meet. The Brainbusters also sponsor a fall contest, each meet with no help from other clubs.

Anyway, Jerry reports the Brainbusters found out that Old Timers was meant to be fun; hence they allowed rubber models to compete with the gassies (all under SAM rules, of course!). Jerry sez out came Kordas, Jabberwocks, Alvie Dagues, etc. to fly against Playboys,



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Clippers, Interceptors, you name it. It really was a fun event.

As a point of interest, it turns out that rubber can more than hold its own against gas, as Jerry sez his Dague placed third! As a side note, this may not be true in California, but in the restricted space the Brainbusters fly from, the area is a great equalizer!

The Brainbusters are to be commended upon continuing their traditional meets and for keeping the fun alive. They don't ask for much recognition, but this columnist figures they need all the help they can get and deserve!

CORRECTION PLEASE!

This columnist depends very heavily on the various newsletters to get contest results. Hence, it is no great surprise to find some of the contestants' names are misspelled, in wrong order, etc. We are only as good as our sources.

What really surprised this writer was a long distance call from Sal Taibi, drawing our attention to the fact on page 36 of the July '80 R/C Model Builder issue, we had Art Crovella as winner of the O.T. Rubber event. No such thing! This event was won by a woman, Agnes Crovella!

To say Agnes was tickled pink to beat good rubber men like White, Faykun, etc. is putting it mildly. Imagine her dismay when she was classified as a man beating other men. What can you say? Women are so scarce in this hobby that we want to encourage the dears all we

can. So, Agnes, we're sorry you didn't receive proper recognition. Hope this does it!

QUICKIE NOTICE

Just heard from Alan Smith, 7520 Atlanta Ave., Cudahy, CA 92201, who states he has the last Hetherington engine ever manufactured. That ought to be a prize. Go gettun, engine collectors!

Picture No. 12 shows one of Clyde Austin's designs that was never completed. Gordon Coddling, who is responsible for this photo, is thoroughly intrigued by the model and plans to restore it completely. As an interesting sidelight to the life of the Austins, it turns

out that wifie, Vera, did most of the model building for Clyde in those days. How about that? Not only cook your meals but get your models ready too!

FLORIDA FLASHES

Terry Rimert reports the Annual Rebel Rally started off terrible weather-wise, but as soon as the wind did a 90 degree switch, things were simply great down the long, narrow runway.

Old Timers had their ups and downs at this meet, with .020 Replica drawing 17 entries; on the other end, Cabin Gas only drew two! With eleven entries in the Rubber event, it wasn't long before the swamp began to fill up with models. Those gators must enjoy a diet of model

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Despite the strong winds dominating the meet, everyone seemed to be having a good time. Results showed Al Wright the winner in the .020 Replica event with a Brooklyn Dodger; this is Al's third straight win! What can you say about Rubber except that George Perryman placed first. However, Lee Campbell with a Sparky and John Blair with a Gollywock supplied close competition for second and third respectively.

According to the Rimert report, it appeared that if you could get in two flights in some events, you could place. The swamp was real hungry that day. Other event winners were Blake Oliver, first in O.T. Pylon with a great flying Arden .19 powered Aerbo, with Jim Walston (Westerner) in second, and Eck Calder in third place. For persistence, Bob Baker really earned his win, as he took six attempts to get one good official flight. We hope to see you boys in Dayton.

OBIT NOTICES

Seems we are all being gradually caught up with, but we must acknowledge the passing of two O.T. enthusiasts. Richard Ploeger (you know, the big,

tall guy from Sunnyvale) recently died in his sleep at the rather young age of 52. Dick was working out of Houston at the time.

The other is Chuck Rogers, who ran a hobby shop up in Grants Pass, Oregon for years. Chuck had been long suffering from cancer of the throat and it finally caught up with him, despite removal of the voice box.

We're gonna miss these boys!
THE LAST LAUGH!

We should have started the column with this story, but Picture No. 13 vividly tells it all. Carl Hatrak, the Czech Team Captain (and winner), tells how it all happened in a letter directed to Ken Sykora, SCIF Newsletter Editor.

Dear Ken,

As I won't be at the next SCIF meeting and knowing the facts will be distorted, I should like to state the true facts of the Czech Team Challenge. I should like to say I was amazed at the number of fliers who had the courage (or guts) to take up this challenge. Just goes to show the club is not dead. (Some guys never learn who are the best, do they?)

First off, that tricky C.D. (the guy who wears the funny spiked helmet, Von

Chandler or something) sent me out to time Texaco at 11:30 a.m. There was just no way I was going to get back to the firing line by high noon. Well, when I got back, the rest were waiting for me. I found out later they were willing to fly without me but were afraid this would cause an international incident.

Secondly, during the morning hours, some club members gleefully noted dissension among the Czech Team. This was true, as Bill Krecek was almost kicked off the team. Only a last-minute plea from the Czech consulate changed my mind and retained him on the team. Andy Faykun was not allowed to fly as his papers were still not in order. So this left a two-man team.

On the flight finally, using my good motor (only three knots), I put in 58-9/16 winds as I didn't want the model to climb out of sight. After winding up, more chicanery developed as I had to hold my model for ten minutes as that same guy with the spiked hat allegedly broke a motor.

Finally, the moment of truth and we were off (in more ways than one). I was surprised to find a few of the contestants staying with me but of course, class will tell. These fellows must be learning something or else Krecek is talking again. I must reluctantly give credit to Wade and Clark for making it interesting but they have finally learned you can't beat "old age and treachery."

I suppose there will be all sorts of statements made about the unfair superiority of my model and new kinds of challenges. However, as far as the Czech Team is concerned, there is nothing more left to prove and we hope that this matter is dead and buried.

Hence, I will not be at the next meeting, as I have been asked to speak at the Aeronautical Seminar at Princeton University. The subject, of course, is the trimming and flying of R.O.G. Model Aircraft.

Signed, Carl Hatrak, Manager, So. Cal. Czech Team.

Copies to: Pope John Paul, Rabbi Ginsburg, Fairfax; C.S.S.R. Consulate, Prague; Brad Levine, SCIF Pres.; F.A.I. Homologation Committee, Paris; A.M.A., Washington; Cottontail Ranch, Nevada; and Von Humberger, West Berlin.

After that much fun, the best idea is to quit while you are ahead. We'll run a special picture of the winner next month.

Dolphin Continued from page 44

big ship circled around the vicinity in which the little one had landed. The total gas bill involved in retrieving the plane amounted to \$9. If that aviator hadn't sighted the gas job, the latter may never have been retrieved. You know how some of those farmers are.

Just how many Dolphins were built as free flights is unknown. It was originally designed for the Texaco event, where the models were allotted fuel according to their weight, giving heavy models a chance to compete on an equal basis

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with the lightweights. But by the time the Dolphin plans appeared in print, the fuel allotment had been dropped and replaced by a 20-second engine run for all models, regardless of weight. In his article, Petrides recommended going to a 1/3-hp engine for a faster climb (his original ship used a 1/5-hp Brown Jr.), but it's obvious that even with a full horsepower up front the Dolphin still wouldn't be able to get any appreciable altitude in 20 seconds, much less compete against the early Zippers and other pylon jobs that had rocket climbs.

The Dolphin may have been obsolete for free flight by the time it was published, but it proved quite popular among the early R/C pioneers, who liked it for its stable flight performance and sturdy construction, and because it was large enough to get those mammoth R/C rigs off the ground in the first place. We suspect that the same will hold true today, i.e. that more Dolphins will be built for R/C than F/F.

The Dolphin spans 108 inches, is 68 inches long, has 1300 sq. inches of wing area, and originally weighed 85 ozs., for a wing loading of 9-1/2 ozs./sq. ft. Original color scheme was orange wing and stab and metallic blue fuselage and fin. As was the practice in those days, any mention of a balance point was carefully avoided, both on the plans and in the text, leaving the builder to figure it out for himself. A good starting point would be 8 to 8-1/2 inches aft of the wing leading edge at the root, a figure we arrived at by locating a 30 to 35% C.G. range at mid-span and then projecting this over to the fuselage. ●

PeanutContinued from page 51 doesn't weigh very much. It's draggy, but it's important to the character of the model.

I omitted all the brace wires because they are awful draggy. They are shown on the three-view, so you can add them if you want to do so.

All the strutting on the model in the photos was made from model railroad basswood. This can be obtained in lots of sizes and looks great when it is sanded to the proper cross-section. Thicker ribs are shown wherever struts are located. The vertical struts are made with pointed ends which penetrate the surface of the wings and are buried for a short distance into the ribs. When properly positioned, a single drop of Hot Stuff or other instant adhesive will make the attachment permanent.

The fuel tank on the Hanriot was in the center section of the upper wing, a fairly common location for gas tanks in early biplanes. To obtain more fuel volume, the tank airfoil is thicker than the wing. After the upper wing was assembled (and in the case of the model in the photos, covered with tissue), the center portion of the top wing was covered with soft 1/16 sheet balsa which was sanded to the correct "thicker" airfoil shape and then covered with tissue. Gas tank caps are simply circular balsa

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pieces.

The exhaust stacks on the model were made from thin plastic tubing. Balsa dowels will also work.

The model was covered with green tissue. One picture I have of the real airplane shows the engine cowling to be shiny metal, so that area is painted with aluminum dope.

I am thoroughly impressed with Fulton Hungerford's spoked wheels. They are strong, long lasting, accurate, and I think utterly beautiful. Therefore, I used them on the Hanriot. Of course, in reality they were probably almost always covered with fabric, so solid wheels would be just as, if not more, scale, but I hate to hide Fulton Hungerford's handiwork. (Please forgive me, all you scale purists out there.)

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Note that the nose block has two bumps at the top front to clear the engine cylinder heads. The bumps are needed to look right, so carve accordingly.

Make the windshield out of thin transparent plastic. Fold it so it looks like three flat pieces.

Cowl openings in the front of the nose

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model and requires the most effort to build. Start work by choosing a sheet of 5-6 lb. semi-quarter grain balsa 1/4 x 4-1/2 x 20 inches long. Cut the wing to the proper outline and then glue the 1/16 x 3/16 spruce strip to the leading edge. When this is dry, taper the wing blank from a 1/4-inch thickness at the center to 1/16 inch at each tip. Next, sand the proper undercamber into the lower surface. Then carve and sand the wing into the final desired airfoil shape. Finally, cement in the required polyhedral angles as shown on the plan.

FUSELAGE

Use a piece of 15 lb. balsa 1/4 x 2-1/4 x 22 inches long for the fuselage. Carve and sand it to shape using the cross-sections shown on the plan. If desired, the fuselage may be built up using a 3/16 x 3/4 inch piece of spruce for the tail boom spliced or laminated into a forward section of balsa.

ASSEMBLY

Glue the stabilizer in place, followed by the rudder and sub-rudder. When these are dry attach the wing, ensuring a good fit between fuselage and undercambered section. Install the throwing patch and check alignment throughout. Double coat all glue joints for added strength.

BULLDOG should balance at the C.G. point on the plan. I have long favored permanent ballast over modeling clay, since balancing clay can produce up to three times the coefficient of drag as the normal fuselage cross-section. Permanent ballast in the form of lead can be inserted in the nose and smoothed over

with glue or plastic wood, thus permitting a smooth fuselage contour to be maintained.

FINISHING

Two coats of thin nitrate dope should be sufficient for the empennage and fuselage. I recommend the following procedure for the wing. Rub talcum powder into the pores of the wood and wipe off any excess. Seal the powder with one coat of thin nitrate dope. Then sand the wing smooth. Complete the finishing process by applying two more coats of nitrate dope and then polishing the wing with automobile wax. Be sure to add your AMA license number to the upper right wing as shown in the photographs.

FLYING

BULLDOG should weigh about 1.2 oz. complete. Before attempting test flights, remove any warps which may have appeared in the flying surfaces. Then adjust model for left circles of about fifty feet in diameter. Because of its size and polyhedral arrangement, BULLDOG can safely handle a considerable amount of rudder. For best results, the glider should be launched at a 45° angle to the right. When properly adjusted and thrown, it should make about three-quarters of a turn to the right before leveling off into a left glide. Alter direction of launch until the model pulls out on top, heading into the wind. Practice launching the BULLDOG until you are confident the model will pull out into the wind under varying weather conditions.

Under present contest conditions, the hand-launched glider event inevitably involves an element of luck. I firmly believe, however, that you can become more consistently lucky by developing your ability to find and launch into thermals. In this regard, do not hesitate to piggyback off a competitor circling overhead in a thermal. You can be certain your competitors will piggyback off you if they can!

Workbench . . . Continued from page 6
traded that two-wheeler in for a four-wheeler.

INDUSTRY NEWS

Just received word from Joe Bridi that Bridi Hobby Enterprises has purchased Pro Line Electronics, Inc., lock, stock, and transmitter; in other words, the works. Pro Line will become a division of Bridi Hobby, headed up by Lou Stanley, whose background is computer design and electronic engineering.

By the time you read this, the entire Pro Line operation will be set up at Bridi Hobby Enterprises, 1611 E. Sandison St., Wilmington, CA 90744, (213) 549-4971. Dick Van Horn, formerly with Pro Line in Phoenix, will be handling production and repair.

For those who may not know, the name Pro Line was not just an arbitrary authentic-sounding title pulled out of a hat. Sometime following the 1968 Olathe Nationals, a group of the country's top fliers pooled their resources and founded the company. We don't know

block are simulated with black ink, as are the control surface outlines.

The tail skid is made out of two pieces of basswood. Fill in the bottom of the fuselage at the aft end between the lower longerons with a small triangle of balsa to support the tail skid.

The insignia goes on the top of the top wings, on the bottom of the lower wings, and on both sides of the rudder, in the locations shown. As far as I can tell there were no other markings on the real airplane.


Thermals forever! Even indoors. ●

Bulldog Continued from page 59
plan.

WING

The wing is the main element of the

FLY ELECTRIC



- VL-101 Electric propulsion system shown—using Hytork 48 motor and planetary gear box, SJ-3 switch & charging jack, and B-33L fast charge ni-cad flight battery—total weight 2½ oz.—will power models 25 to 50" wingspan weighing up to 10 oz.
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who exactly came up with the name, but to the best of our knowledge, the group included Jim Whitley, Don Coleman, Ron Chidgey, Ed Izzo, and Ed Keck. The man who designed and developed the Pro Line system was Jim Fosgate. With such top name fliers using the equipment, and winning with it, there was no doubt among most R/Cers that the name was fully appropriate.

Pro Line eventually became a subsidiary of Pace Industries in Phoenix, Arizona, when some of the founders gradually dropped out of active competition. Though possibly not as well known in recent years as it was in the early '70s, it is still considered a top radio in design, performance, and reliability, and undoubtedly, the new association with Joe Bridi's company will bring it back into prominence.

To quote a release from Leisure Dynamics, it was announced on June 3, 1980 that "... it is shifting certain operations and administrative activities from its Cox Hobbies factory in Santa Ana, California, to its other facilities, beginning June 30, 1980, and to be completed by the end of the year. . . Under the announced plans, all hobby product operations will be located in Southern California, while a single toy and game product group will be established in Minneapolis under a restructured management group consisting of key Cox and Lakeside Division personnel."

In a nutshell, this says that all of the Cox non-model toy stuff is moving to the Leisure Dynamics home base of Minneapolis, Minnesota, and the Cox engines will continue to be produced in Southern California. Where the engines will be produced is still up for conjecture as of this writing (6/27/80), but it will not be at the familiar Warner Avenue facility in Santa Ana, now all but completely closed.

WHAT GOES UP. . . ?

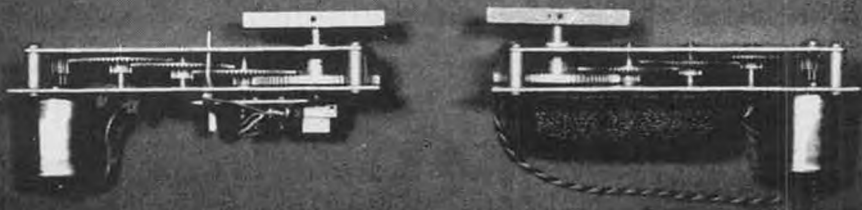
Besides inflation, model rockets! In fact, for the first time in the event's history, the World Space Modeling Championships . . . the "Olympics" of Model Rocketry . . . will be held in the United States. It is scheduled for September 7-12, 1980, at the Naval Air Engineering Center in Lakehurst, New Jersey.

Much like the model aircraft world championships, the rocket champs are sanctioned by and run according to the rules of the FAI. It's also interesting to note that the Eastern Bloc nations have dominated the sport and also hosted the first three world championships: Vrsac, Yugoslavia in 1972, Dubnica, Czechoslovakia in 1974, and Yambol, Bulgaria in 1978 (there was no meet in 1976). We wonder if these nations will be represented at Lakehurst.

And what a small world it is! Read the following description of one rocket event, as described in a Damon Corporation press release, which furnished all of the rocket information herein:

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uses the principle of next year's Space Shuttle flight program: recovering rockets as gliders. A boost/glider must take off vertically as a rocket and return to the ground as a glider, although the dropping of the propulsion pod with a streamer or parachute recovery device is permitted. Flights are scored on the basis of maximum time from lift-off to the instant the glider portion lands. Since hot air rises, the object of each contestant is to find a warm air current and ride it for all it's worth. Cold air is "down air," causing gliders to sink quickly; contestants try to avoid these air currents at all costs. Most of the gliders are radio controlled by the contestant from the ground.

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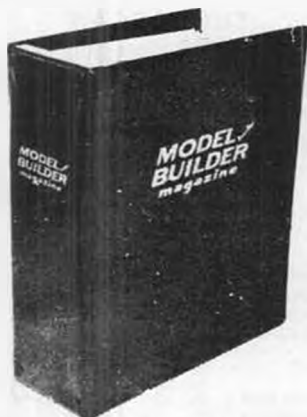
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The championships are open to the public. For more information contact: Howard Kuhn, NAR/1980 Space Modeling Championship Meet Director, 7206 Beechwood Rd., Alexandria, VA 22307, (703) 768-3273; Anne Rabushka, Damon Corp., 115 Fourth Ave., Needham Heights, MA 02194, (617) 449-0800, x187, or Nick Grand, Public Affairs Officer, U.S. Naval Air Engineering Center, Lakehurst, NJ, (201) 323-2620.

HANDY HINT

Before leaving the rocket subject, here's one from the "Craftsman's Corner," a column in the Model Rocketeer, official journal of the National Association of Rocketry, an NAA affiliate.

Answering the question, "Can I get a shiny surface without a lot of rubbing compound and elbow grease?" the Craftsman's Corner said, "Ask anyone who's been in the Army. He's learned the trick to having shoes shiny enough to shave in without spending hours polishing them. Get a cotton ball and a can of Glo Coat floor wax. Saturate the cotton and "paint" it very gently onto the model. Don't rub! The results will be perfect for photos and demonstrations, not to mention impressing other modelers!"

We're not so sure that Glo Coat will get along with glo fuel, and we're not sure about its weight, but it seems worth investigating.

HELICOPTERS UNITE!

If we have room, somewhere in this issue you will find a questionnaire put out by the United Helicopter Association, which was formed at the Toledo Show under the urging and direction of Mike Mas. If for some reason we were not able to include it, and you're interested in the furthering of an R/C helicopter organization, contact Mike at P.O. Box 1172, Altamonte Springs, FL 32701.

If you write to Mike, be sure you print upside-down. That's the only way he can read!

Counter . . . Continued from page 9

Piper J-3 Cub, a 1/6-scale Piper L-4 observation plane, and a few others that I can't recall at the moment.

Sole U.S. importer of Svenson kits is Bill Toussaint, of Svenson Models, in nearby Irvine, California. Bill recently brought one of the big Stampe kits to the RCMB office, and we all had a chance to give it the once-over before sending it out to be built for a future Products in Use review article. Wood quality, workmanship, and hardware were all top-of-the-line, first-class in all respects. Hardware includes a nylon fuel tank, prebent landing gear and cabane struts, a combination aluminum and A.B.S. plastic cowling, rigging cable and related fittings, and the biggest clear plastic canopy I've ever seen in my life. Plans consist of six sheets and show both open and closed-cockpit versions. Engines called for are a geared .60 or direct-drive .90, or a 30cc gasoline powerplant.

According to the kit box, the model has a wingspan of 2,096mm, a length of 1,725mm, total wing area of 119 sq. dm, and a weight of 6,000 grams. Translated into English we get an 82-1/2 inch span, 1,844 sq. inches of wing area, a length of 68 inches, and a weight of 13-1/4 lbs. What was that talk about a geared .60? Remember, WCN's 1/4-scale Gipsy Moth of old flew fine with an ancient Fox .59, and it was a larger airplane than the Stampe, and just as heavy. A good .60, ungeared, should do a fine job of flying the Stampe most realistically.

The old maxim, "You get what you pay for" could be reworded to say "You pay for what you get," and this latter bit of wisdom certainly applies to the Svenson 1/4-scale Stampe and probably to the other Svenson kits as well. They are not inexpensive. The Stampe kit described here is priced at \$325, but in return you are getting quality that few kit manufacturers can rival. Whether the extra quality is worth the extra bucks is up to you to decide.

If you're interested and would like to learn more about the Svenson kit line, contact Bill Toussaint directly at Svenson Models, 4941 Seaford Circle, Irvine, CA 92714.

Sig has a new covering material called "Koverall," a very strong polyester based fabric that is doped to your model's structure using the same techniques as you would with silk, and then shrunk tight with an iron or hair dryer. Dope, enamel, or epoxy can be used for the final finish.

Koverall comes 48 inches wide, in 36 or 72-inch lengths. One of the biggest advantages of the material is that the grain runs perpendicular to the 48-inch width, i.e. along the 36 or 72-inch dimension. The Giant Scale guys especially will like this feature, as it allows covering the top or bottom of up to a six-foot wing panel with a single piece, and with the grain running spanwise, the way it's supposed to be. Now there's no

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From Sig Mfg. Co., Montezuma, IA 50171.

Those neat fiberglass cowls in one of the photos are products of T&D Fiberglass Specialties, headed up by Tom Keeling. From left to right in the photo are a 1/3-scale cowl for the Pitts S-1 (Byron or Sheber), for \$28.95; a 1/4-scale Super Cub cowl for \$21.95; and a 1/4-

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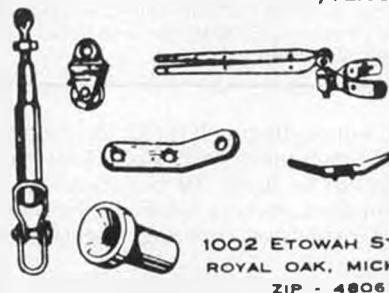
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scale ring type cowl for \$29.95. This latter item will fit a Gee Bee Model Y Sportster, Boeing P-26 Peashooter, Boeing F4B-4, and any other aircraft using the same type of cowl and engine. All that's required on the modeler's part is to cut away the unwanted sections (between cylinders, etc.) and add the aluminum tubing for the pushrods.

These aren't all the cowls that T&D has available; Bob Underwood has a blurb and photo in his "1 to 1 Scale" column this month on three others, intended especially for the big Skybolt, Bucker Jungmeister, and Liberty Sport plans sold by Wendell Hostetler (see last month's "Over the Counter"). From what can be seen in the photos, the cowls are of very high quality with air scoops, oil coolers, and panel lines molded in as necessary.

From T&D Fiberglass Specialties, 30925 Block, Garden City, MI 48135.

Not exactly new, but still a neat product is the Cooney Gapless Hinge put out by Fourmost Racing Products. The hinge comes in two sizes and is extruded from a very strong but flexible kind of plastic (some type of polypropylene, maybe?). The hinge material is packaged in three-foot lengths, with the small size being for surfaces 1/8 to 3/16 of an inch thick, and the large size for 1/4 inch and thicker.

As can be seen in the drawing on page 9, the hinge has a web that is embedded into the wood, which means, naturally, that you have to cut a slot in the wood. So, as a companion accessory to the hinge, Fourmost has a slick little slotting tool that will cut those slots quickly and accurately. The design of the tool is such that you can adjust it to cut a slot in the center of a piece of 3/32, 1/8, 3/16, and 1/4-inch balsa. Actual cutting is done by a No. 19 X-Acto blade.

Installation of the Cooney hinges is easy. After cutting the slot, use a pin to punch holes all the way through the wood, about 1/16 of an inch from the edge and at intervals of one inch or so. Push the hinge into place, then put five or six drops of Hot Stuff or other thin cyanoacrylate into each pinhole, both sides. Whatever these hinges are made from, it gets along real well with these glues. Go ahead and pin the hinges if it makes you rest easier, but I really don't see much point in it. We Hot Stuffed a 1-1/2 inch piece of the large Cooney hinge into some 1/4-inch balsa, then tugged and pulled and never did manage to rip it out. We finally ended up tearing the hinge apart at the pivot point but only after using a knife to start the tear at one end, and even then it took considerable force to break. Amazing stuff.

Three feet of the small Cooney hinge costs \$1.95, while the large size will set you back \$2.50. From Fourmost Racing Products, 4040 24th Ave., Forest Grove, OR 97116.

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ing big, heavy, fast-flying warbirds and the like are finally being offered a power system that will meet their needs adequately. Aeromarine Enterprises is now producing the "Ultimate 2" powerplant, consisting of two Quadras coupled together and mounted in tandem on a single set of bearers. An Eastcraft Specialties on-board electric starter is standard equipment, since the alternate firing set-up of the engines (done deliberately to cut vibration to a minimum) makes the unit almost impossible to start by hand. The Eastcraft starter provides an extra measure of safety, too, as it lets you stay a discreet distance away from that meat-cleaver known as a "prop."

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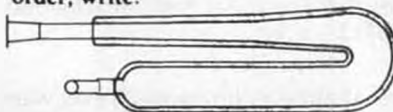
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as you see it in the photo, with the exception of the prop and spinner. Each unit is test-run at the factory and is tuned for maximum performance before being shipped.

Aeromarine's new power system sports a total displacement of four cu. in., weighs 10-3/4 lbs. (don't forget, that weight includes the Eastcraft starter), and is claimed to put out 5-1/2 horsepower, which is rather amazing as a single Quadra is generally considered to be a two-hp engine. Peak rpm figures for the Ultimate 2 are listed as 8,700 with a 20x10 prop, 6,500 with a 24x10, and 4,450 with a 28x10. Idle speed is around 1,800 rpm. The press release states that wind tunnel tests have shown that the Ultimate 2 will pull a 40 to 50-lb. airplane at 75 mph and better. Whether or not such a machine is carrying the concept for Giant Scale a bit far is for you yourself to decide, but at least there is no longer any reason to have big, heavy airplanes staggering uncertainly around the sky, due to a lack of power!

As advertised in the May '80 issue of RCMB, the introductory price of the Ultimate 2 is \$695, complete and ready to go. A marine version is also available, no doubt for a few dollars more. You can find out more from Aeromarine Enterprises, 709 Longboat Ave., Beachwood, NJ 08722.

Just about everything you'll ever want to know about model engines is con-

tained in an excellent handbook from Harry Higley, titled, strangely enough, *Harry's Handbook for Miniature Engines*. It's a 90-page compendium containing 16 chapters that cover topics from basic theory all the way up to advanced repairs and reworking for higher performance. The book is laced with 230 photos and illustrations, mostly photos of the different types of engines and design features talked about in the text. Also included are a few line drawings to illustrate basic engine operation and to graphically define some of the terms that are a bit difficult to explain in words.

One of the book's best points, one that will appeal to a broad majority of modelers, is that the text is written in such a way as to make it easy to read and understand, thus making it meaningful and useful even to a rank beginner. The author does come out and admit that his book is a bit wordy in some spots, but only to avoid a quick and therefore incomplete explanation that would otherwise leave the reader confused. And unlike other books dealing with the same subject, this one has no technical math to put up with... in fact no math at all except in the chapter on fuel, where various mix ratios are discussed.

The *Handbook* is primarily intended for sport fliers, yet there is enough content that even the self-proclaimed "expert" can learn a few things. It's truly for everyone interested in model en-

gines.

The *Handbook* is available for \$9.95 in some of the larger hobby dealers, or order direct from Harry B. Higley & Sons, 433 Arquilla Dr., Glenwood, IL 60425.

Another book/reference work being released to the modeling public is *Big Is Beautiful*, by Dick Phillips, well-known Giant Scale advocate and contributing editor to RCM. The book, of course, deals with the design, construction, and flying of big model airplanes. It's a 50-pager broken down into chapters on selecting a scale subject; how to draw your own plans, if necessary, including various methods of enlarging existing drawings; construction techniques; powerplants; control systems; different types of suitable coverings and how they are used; and then, when you've run out of excuses and your buddies are constantly pestering you and asking over and over when you're going to bring that monster out and send it up, how to go about trimming and flying the thing.

The last few pages list sources of plans, scale documentation, materials not usually available in hobby shops, and sources of the several different chainsaw type gasoline engines currently being used in the biggies.

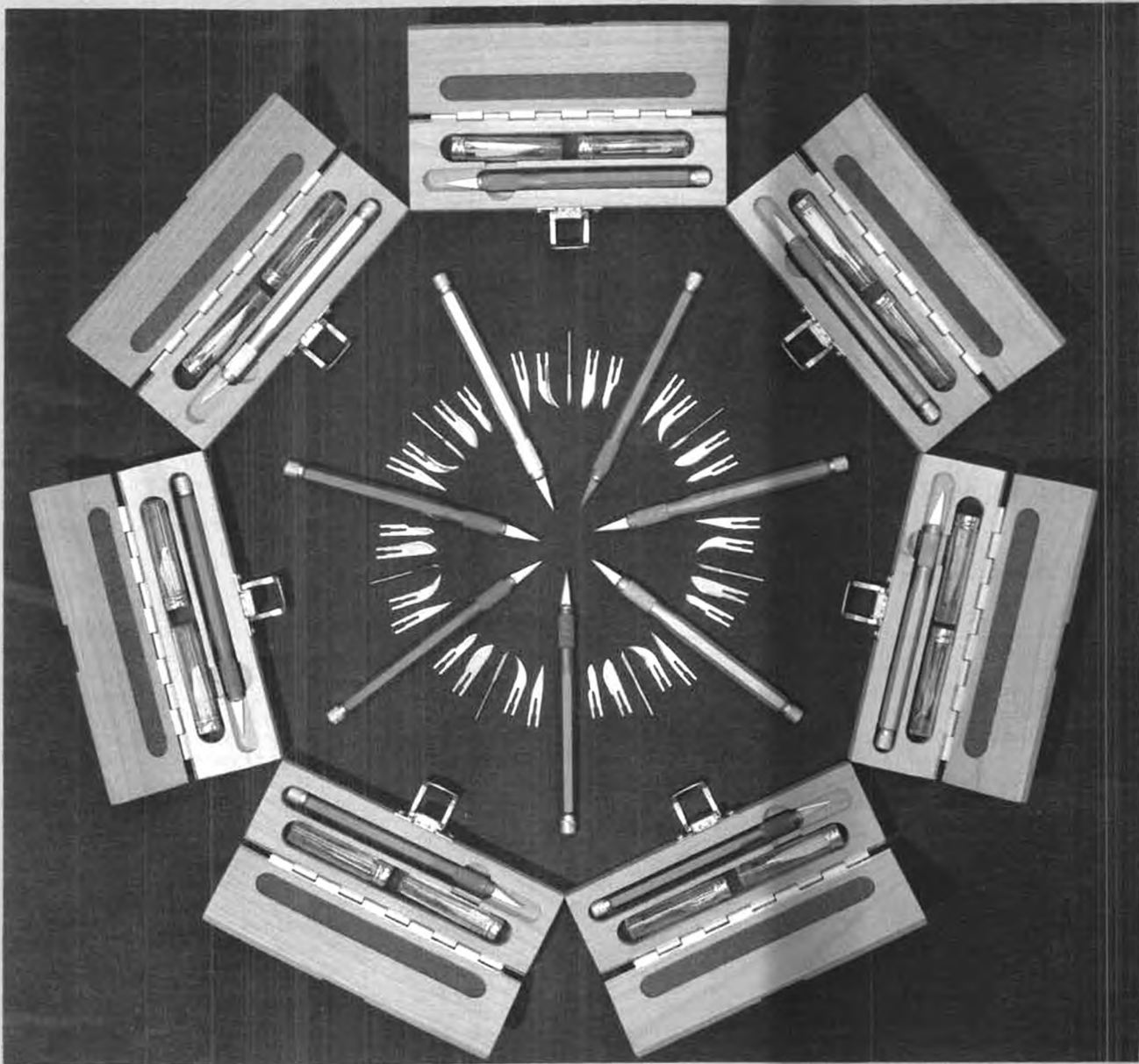
The only thing that seems to be missing is a table of contents, but at 50 pages it really doesn't take too long to hunt up a particular section. Personally I would like to have seen more artwork, both photos and line drawings, to supplement the ideas put forth in the text. As it stands now there are eight photos, all on the last page.

Big Is Beautiful seems to be aimed especially at those who are either contemplating building a large model or are already in the process of doing so. If this includes you, you would be doing yourself a big favor to get hold of a copy, as it contains a ton of valuable info that can save you a lot of grief later. Copies can be had for only \$5, from Dick Phillips, 853 Reid Crescent, Prince George, B.C., Canada V2M 3W6.

Interested in a full-size, cordless, fully self-contained electric starter? C&D Enterprises has just recently announced the "Start-Pac," a strap-on ni-cd battery system that can be adapted to probably any electric starter on the market. The total system consists of a 12-volt, 1.2 ah General Electric ni-cd pack contained in a metal box (other voltages are available on special order), main mounting bracket, plugs, jacks, and other necessary hardware... everything but a battery charger and the starter itself. Note that although we used automotive hose clamps to secure a Sullivan starter to our sample Start-Pac, and although the manufacturer recommends this type of clamp, they are not provided.

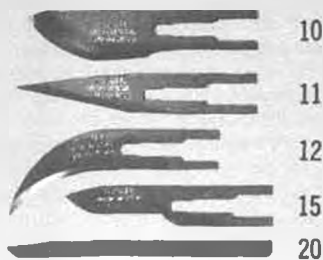
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separate wall type ni-cd charger for the Start-Pac for a nominal \$7.95. However, if you already have a charger that can put out 15 volts at 120 ma, you can bypass this item.

We'd say the C&D Start-Pac is a good buy at \$49.95. From C&D Enterprises, 10042 Merrimac Dr., Huntington Beach, CA 92646.

Charlie Smith sent a short note saying he has two new additions to his excellent line of R/C Scale plans. One is a 1-3/4 inch scale (63-inch span) replica of the Vought Kingfisher OS2U-1 and OS2U-3 (seaplane and landplane versions of the same aircraft). The other airplane is an old favorite of the C/L Carrier folk, the Grumman AF2S Guardian, in 1-1/4 inch scale (75-inch span). This latter model is especially well suited to Precision Scale competition, on account of its many operating features.

The Kingfisher plans consist of four sheets and sell for \$19.50, while the three-sheet Guardian drawings are priced at \$17.50. Be sure to add an additional \$1.50 to these prices for postage and handling.

From Smith Plans, 9422 N. Fairway Blvd., Sun Lakes, AZ 85224.

Letters Continued from page 7

Model Builder Society and R/C Model Builder Magazine . . . the same old story. Ours was only a facetious remark, however,

we did in fact propose to AMA, before **Model Aviation** magazine was started, all model magazines be given the option of carrying AMA's news monthly, FREE, with those mags taking the option being endorsed by AMA as "official publications" and allowing members to choose one of these "official" mags with his or her membership.

Dear Mr. Northrop,

I feel compelled to make a few comments in regard to Mr. Olsen's statements in regard to sound perception by the adult human (Workbench, July 1980)

To borrow a phrase from Mr. Olsen: let's "start at the beginning." First, one must remember that sound in the low frequencies is perceived not only by the hearing but also by physical feeling (air mass movement). The threshold of low frequency which one will detect, of course, is a function of the speaker gain (volume or loudness) and the quantity of air mass moved. The latter is of course a function of the speaker size (cone diameter). I can easily perceive as low as 20 cps as a single tone at 5 watt speaker power (about 10% max. power) from a 15" speaker, and I am 59 years old. At this frequency up to approximately 50 cps, the sound is perceived more by feel than hearing (usually first in the knee caps). This is what gives the dynamics to music.

In the high frequency range it is somewhat trickier. I, for example, can hear 15,000 cps, but not 12,000 cps, then I pick it up again below 12,000 cps. In my opinion, anyone who cannot hear or perceive lower than 120 cps is essentially deaf.

In regard to the last paragraph about spending money for speakers that deliver sound ranges from 25 cps to 25,000 cps there are very

good reasons for this. First, what is not usually understood about hi-fi, and this includes most hi-fi dealers as well, is that the extreme high frequencies combine with base lower frequencies to produce overtones that are the musical quality and tones that we do hear (harmonics). Just try listening to a speaker (preferable 15") with a 12-15,000 cps range and one with a 20-22,000 cps range and you will see (hear) what I mean. Incidentally I know of no speaker system that will guarantee greater than 22,000 cps. Secondly these high quality speakers are of higher efficiency requiring less power, thus saving cost in the amplifier. In other words it's better to put the dollars in the speaker than the higher power amplifier for high quality sound.

Perhaps RCMB should confine itself to model building rather than getting into the hi-fi field. Remember, a little knowledge is a dangerous thing, or misinformation is no information.

Regards,
Cliff McBaine
La Habra, California

Also, nothing ventured, nothing gained. By sticking our neck out with an inexperienced opinion, we got you to write us and put the record straight. To quote the January 1980 issue of **Consumer Reports**, "It's easy to spend much more than necessary for high-quality sound. . . . Accurate reproduction, **CU** believes, is the most important thing you can ask of a loudspeaker." Perhaps our opinion was OK, but our way of saying it was not.

Dear Mr. Northrop—
Just curious. . . .

Out of approximately 50 photographs that appeared in your 8-page feature on the 1980 Toledo Show (July '80 RCMB) what was accomplished, or done, that would be of interest to your subscribers? Only 6 or so of these photographs showed anything (models) that would be even mildly interesting to most readers.

Is (R/C)MB now going to become an industry trade publication too? I recognize that your advertisers are paying a good share of the cost of the magazine, but, so too, are we who buy it. And, for one, I could care less what your advertisers look like or what their display booth looked like. Would suspect many others feel the same way.

Looks to me like the tail is really starting to wag the dog.

Sincerely,
Chuck Wood
Seattle, Washington

It's difficult to report on a trade show. Ask any of the magazine publishers, and they'll tell you they would just as soon do nothing about them. Toledo, for instance, had 195 exhibitors. If we ran photos of 194, we'd catch hell from the 195th. If a manufacturer, who is one of our advertisers, has nothing new to show, and we leave him out, but show a non-advertiser's new product, we catch hell . . . and if we think that modelers might like to see the live person behind the inanimate company name that brings them model products . . . we catch hell.

As to who is the wagger and who is the wagee, you, the modeler and ultimate consumer run the show. Perhaps we don't always interpret your message correctly, but we keep on trying. Communication in both directions is most important, so keep those cards and letters acomin'.

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MRC builds these radios to last . . . whether performing during AMA SHOW Team exhibitions, or Sunday sport flying. After all, it takes a dependable radio to keep the Red Baron happy and a reliable one to give you the confidence to enjoy your hobby to the fullest.



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