R/C MODEL BUILDER

volume 10, number 103 $2.00 AUGUST 1980

ISSN 0194 7079

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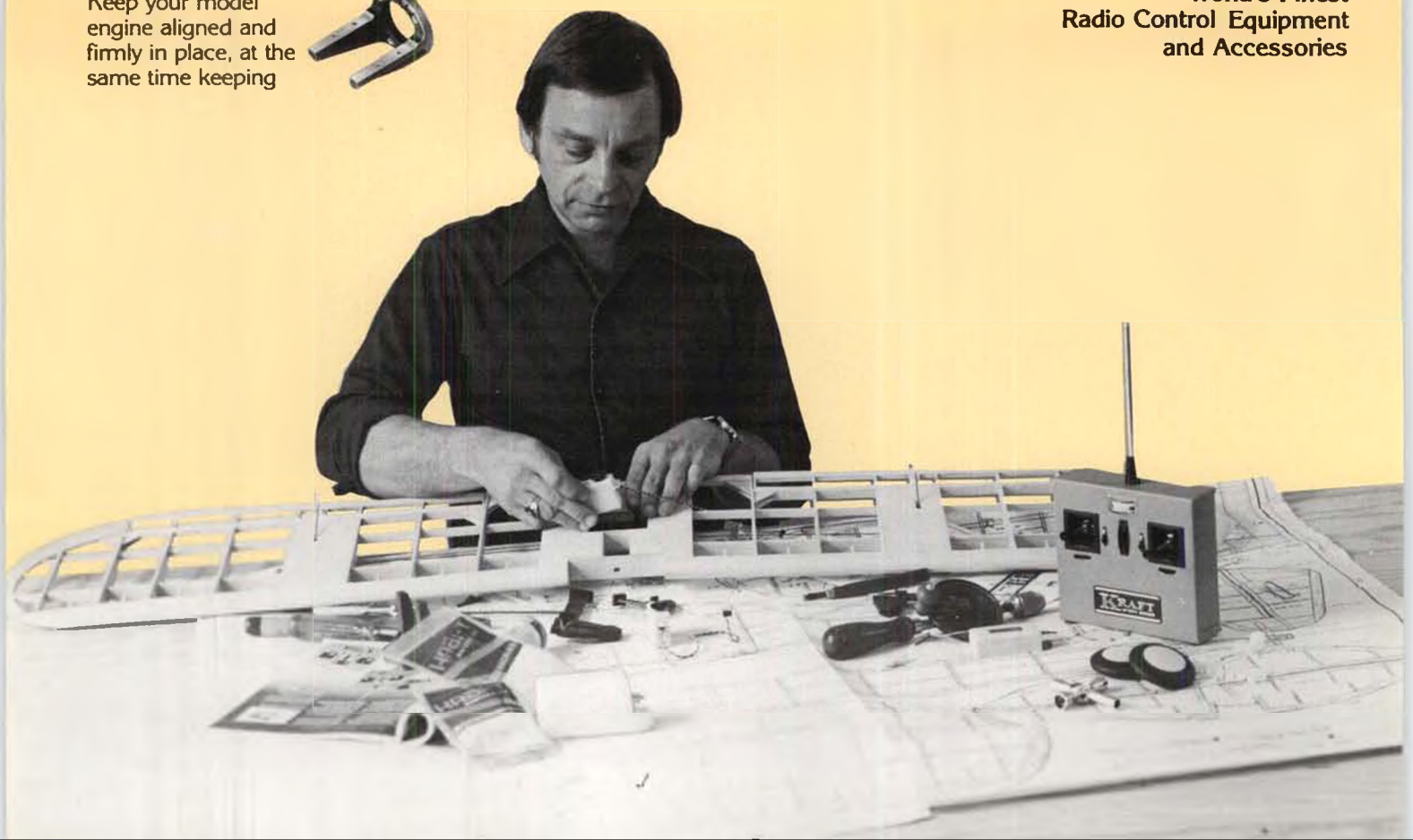

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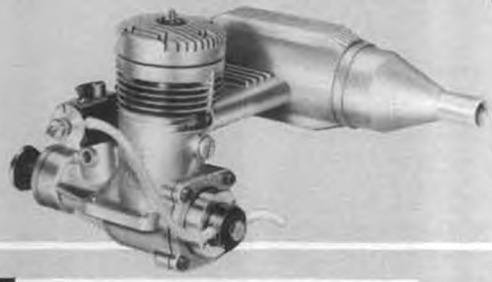

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R/C MODEL BUILDER

AUGUST

1980

volume 10, number 103

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

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FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: First things first; those dimples belong to Jean Hunt, Glendora, California. She's holding a beautiful, orange silk covered PB-2 Old Timer/Antique built by her husband, Joe. (MB Plan No. 877-O.T.) The engine is an O.S. .60 Blackhead, converted to ignition and using a shielded, transistorized ignition system, both by 77 Products. Futaba radio. Transparency by Cecil Weatherly III, Hacienda Heights, California.

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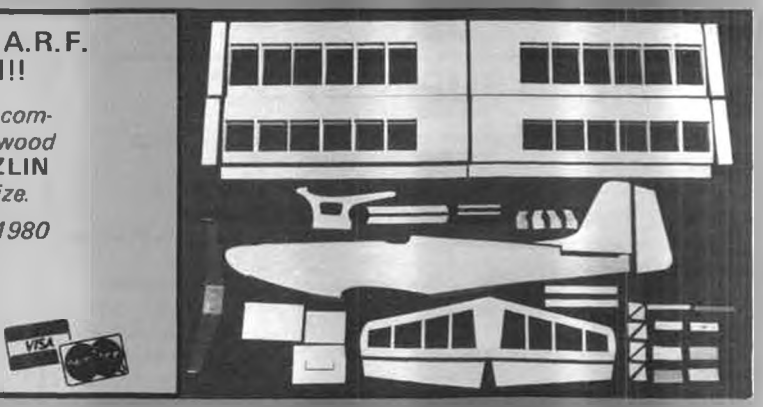

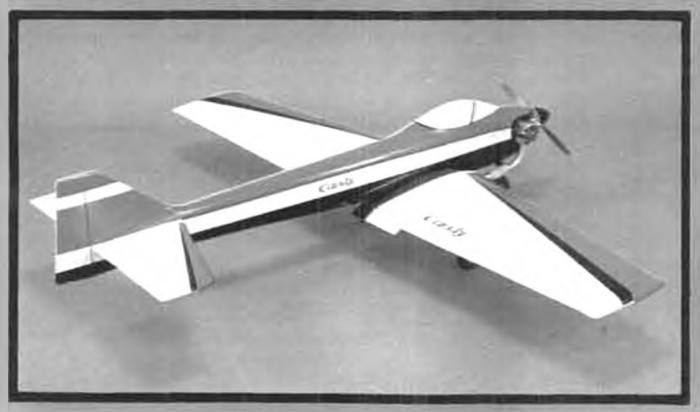

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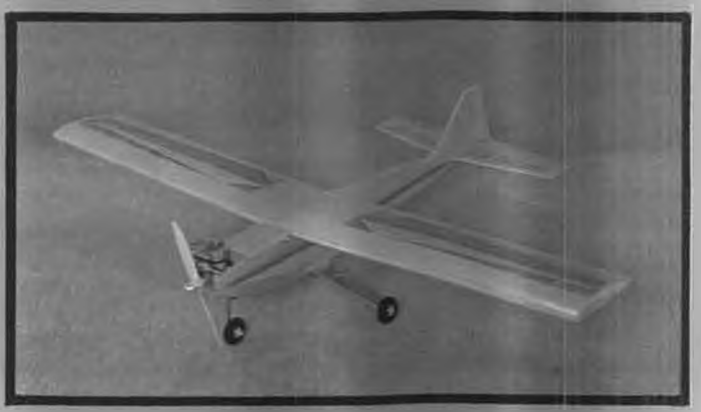

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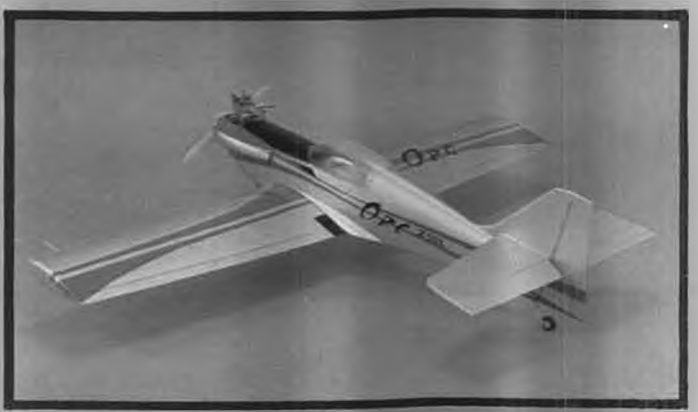

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KIT INCLUDES MACHINE SANDED RIBS AND PRE-SHAPED FUSELAGE SIDES

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Recommended Radio	3 channel
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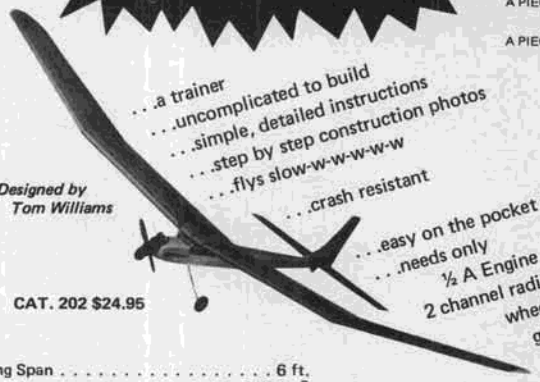

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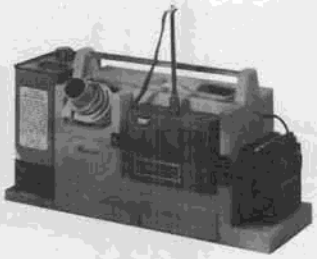

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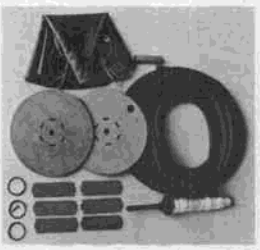

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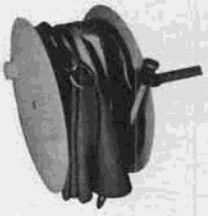

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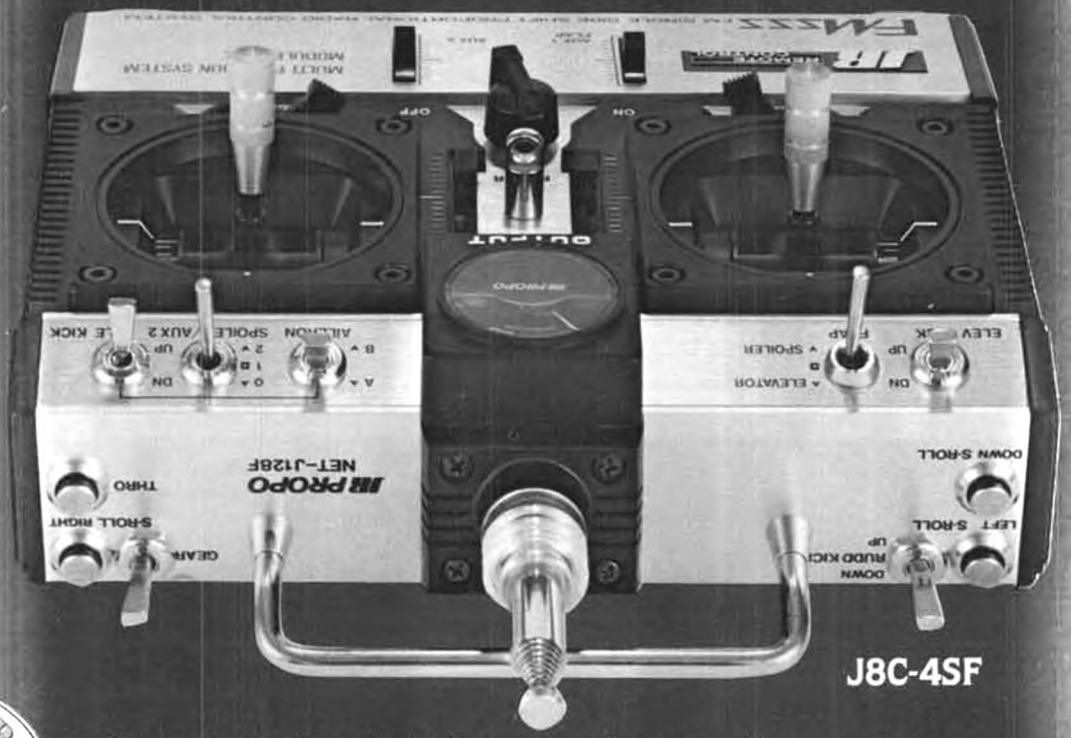

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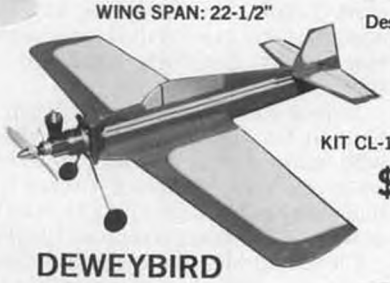

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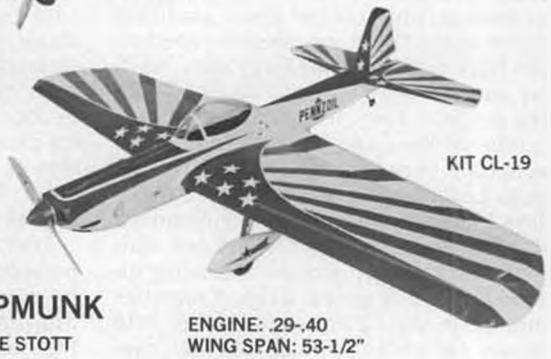

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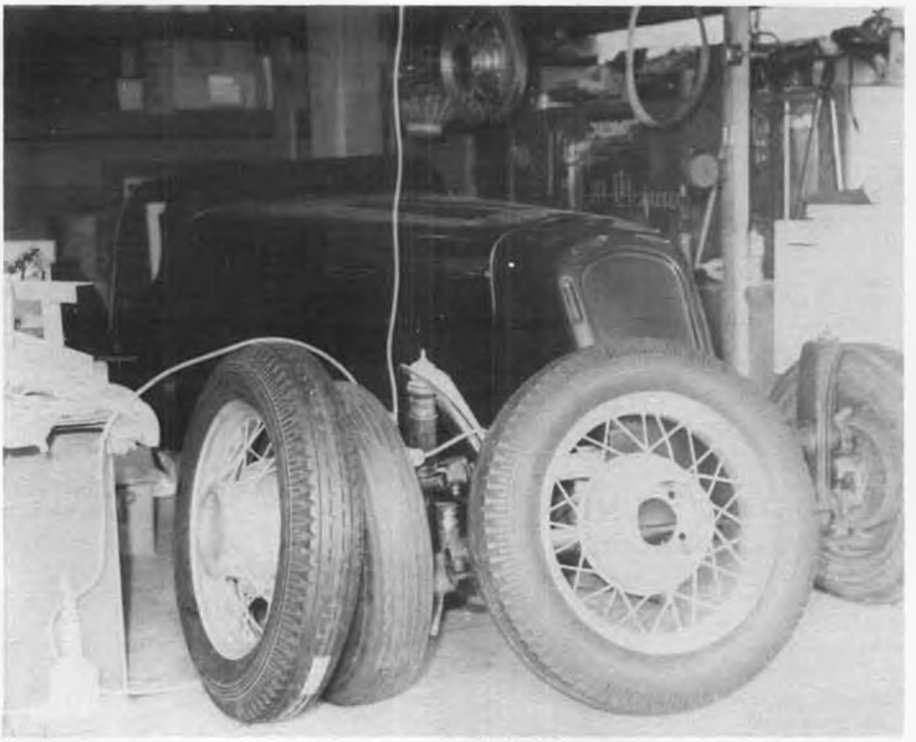
from Bill Northrop's workbench . . .



Progress report on our '31 Alfa replicar. Fiberglass body is in position to check for proper fit. The original Volkswagon wheels are still on, but the 1932 Ford 18" wheels have been silver spray-painted, new 550 x 18 tires added, and are ready to mount with special adaptors.. Gear shift and pedal assembly still have to be moved back about 3 feet, steering column extended the same amount. Progress is very slow. Detroit we ain't!

THOSE COLLECTOR PLANS

How sweet it is . . . when you present something a little different to your readers and the response shows that you did something right! We're referring to our publishing of plans from what might be called classic scale kits of the Golden Era of modeling, the late '30s. Along with publishing the plans, we are also making full-size copies of the plans available to our readers. And as a final touch, full-size copies of the printwood are included, so that modelers may reproduce these fine old kits.

There is a catch, however. We must depend on our readers as the source for this series. The Miniature Aircraft Corp. Curtiss F-11-C4 "Goshawk," published in the August '79 issue happened to be part of our own collection. As a result of our initial plea, John Banwell, Fort Dodge, Iowa, loaned us his kit, also by Miniature Aircraft Corp., for the Grumman F3F-1, which appeared in the June '80 issue.

First thing we do is repair the original plans. From many years of folding and unfolding, the crease lines gradually come apart. These are carefully taped on the back side, along with any tears. Next, an auto-positive is made directly from the original. Then, using the original as a guide, all lines and lettering in the torn areas are repaired and filled in on the auto-positive. This is now ready to make final black-line prints for our customers.

All of the printwood is laid out with edges butted, in groups according to thickness. Each group is taped together and shot separately (if 1/8 and 1/16 sheets are photographed together, one group will be out of focus!), and then joined to make one print of all sheetwood. This print is included with each full-size plan order, even though it does not appear in the magazine with the plan. Finally, the complete kit, as received, is returned to the loaner within a few weeks, carefully wrapped, and shipped U.P.S.

If you have a classic kit from the Golden Era and would like to share it with fellow model builders, let us know what you have. Miniature Aircraft Corp. had many other beautiful kits in its line, as well as Tomasco, Wanner, Ideal, etc.

Cleveland kits cannot be used in this manner, as the company is still in business. Incidentally, you'll find the prices for our Collector Plans and patterns to be comparatively reasonable.

WESTBURG'S BACK

Those of our readers who are fans of Peter Westburg and his superb scale-view drawings will be pleased to know that he's back in action. Pete included the following author's note with his material on the Grumman F2F-1, which starts in this issue:

"I want to thank all of my many friends who took the trouble to write or call about my eye problems. I have had cataract surgery and lens implants in both eyes, and now have 20/20 vision beyond my fingertips. I use half-glasses for close work and am back to my old rate of drafting. I expect to do many more Golden Age airplanes for **R/C Model Builder.**"

Pete has told us about some of the projects that are coming, for all of which he has managed to acquire factory drawings. Just as a teaser, we'll tell you that one of them is another military biplane from the Golden '30's of aviation.

As you may already know, Pete retains rights on all the scale drawings published in **R/C Model Builder** or elsewhere. To obtain full-size prints of any of his drawings, consult his ad which appears on alternate months in this publication. For scale information and documentation, you can't beat 'em!

WHEREFORE ART THOU, CG?

In this day and age, any designer, builder, and experimenter of full-size or model aircraft, boats, and even cars, who is worth his or her salt, can discuss at great length the whys and wherefores of Center of Gravity . . . CG. Its magical effect, whether understood or not, is certainly with us at all times, and in most cases, we take it for granted.

Ken Sykora, however, a member of the Czech Team of Southern California, decided not to take CG for granted and conducted a thorough research into its origin and development. The summary of his investigation was put down over a year ago, and we have patiently kept it on hand, waiting for sufficient space to pass it on to our readers . . . Mr. Sykora.

IS CG NECESSARY?

The most confusing aspect of modeling is, of course, the old Center of Gravity (or, CG, to insiders) question. Since its mysteries reach back into old time modeling, tracing its history may help put it in proper perspective.

CG was initially documented by that famous Renaissance house painter, soap sculptor, and part-time banjo tuner, Leonardo de Pinchy. During his experiments to perfect the hubus lexon (HL) glider using starched vultures, in the summer of 1542, his test model spun in and was smashed. He was furious and exclaimed, "Centourus Gravitus!" (which was scholarly cussing in those days) and entered this comment in his notes.

Continued on page 112

"...THREE if by AIR"

(Letters to the Editor)

If anyone reading this column knows a Ronald E. Kirchner, please call his attention to the fact that Walt Schroder needs his address. Walt wishes to answer Ron's letter of April 25, 1979, which was forwarded from Model Airplane News without envelope or address.

Dear Bill,

I have been reading and enjoying Model Builder *for some years now, buying it at specialized book shops as it was not available locally. As soon as I took out a subscription you changed your distribution and it's on the newsstands here before I get it in the mail . . . you can't win!*

Please don't change the concept of the magazine. I am a scratch builder from way back (the only kit built model in my workshop is a Red Zephyr I built when I was 13 and that was in 1941!!!!). What I like in a magazine are good 3-views for scale (from peanuts to R/C) and good photographs of all types of original models that can inspire you to try something different.

I can appreciate the fine line you must walk between economics and ideals, but please don't go the way of other mags by catering to the builder who thinks 1/16th balsa is too delicate to handle and only knows how to shape a 60-powered "solid" model out of planks and blocks with a razor plane. Keep up the good work of making it a model builder's magazine.

Hoping no one lights the fuse in the Middle East and we can all continue to carry on the important things like modeling.

Kind regards,
Bob Parker
Albury, Australia

P.S. Apart from the usual radical minority, we are with you all the way in your country's efforts to free the hostages.

Thank you, Bob, for your kind comments about the magazine, and your support with regard to our international problems. When it comes to individual or national strife, it is then that you find out who your friends really are.

Dear Sirs,

It seems to me that the following story should be published in your magazine. My ------ radio went down with my boat in a small lake. After approximately 3 months, the boat was retrieved. The servos, after being dried and cleaned, still worked. However, the receiver did not. I sent the receiver to ------, at their main factory service for evaluation and repair. I was told the receiver was beyond repair and that I should buy a new one ($55). I asked what was wrong with the receiver and was told, "Every single part in it is burned out," and that no technician at the factory could repair it.

After several months of no radio, someone told me to call Authorized Radio Control Service of Orange County (California). I went down there and asked for Don. Don opened up the receiver and looked at it, and then took it back to the bench. He came back and asked if I could wait about 15 minutes for him to repair it! I said, "You're kidding me. How much will it cost to fix it?" He said that labor and parts would be $11.15.

After approximately 15 minutes, he brought the radio to me in perfect working condition, and it has worked ever since. I have also taken my ----- radio to him, and his first question is always, "Do you have time to wait for it?"

I feel that this type of individual should receive some kind of award, because he is the modeler's true friend, and absolutely honest and fair.

Bob Manoli
Huntington Beach, California

We're sure that publishing your letter is the best kind of reward anyone could present Don and his company. Hmmm. . . Guess we'll have to take him that old Micro-Avionics rig and see if he can get it going again. . .

Dear Editor:

I am writing to see if you can help me find a person who is familiar with the construction of delta wing model aircraft. I have designed a rather remarkable paper glider but I have not had the opportunity to pursue the idea beyond that stage.

The glider is capable of: 1) Straight glides; 2) Phugoid ocillations (porpoising); 3) Normal stall and recovery; 4) Normal spin and recovery; 5) Flat spin and recovery; 6) Inverted spin and recovery; 7) Lomcevak and recovery; 8) Inside loops in any plane; 9) Left and right 360° turns which return to the operator; 10) A Chandelle which returns to the operator; 11) A snap roll and recovery; and 12) A mid-air collision and recovery.

The glider is one molded piece, i.e. there are no movable parts or control surfaces, no trim adjustments and no attachments.

The operator can make the glider perform the maneuvers by using the proper force and technique at release.

I would be most appreciative if you could give me the names of some persons who could help me find out whether or not my design could be made into an R/C model.

Anthony Martin
3290 Montclair Ct.
Anchorage, Alaska 99503

We're publishing Anthony's complete address, as we're sure someone will want to contact him. . . •

Dear Bill,

Would it be possible for MB *to publish the addresses of its contributing editors in every issue, or perhaps, every other issue? I am sure that their addresses have appeared sporadically, but it seems that whenever I want to write to one of the CEs, his address is not in that issue and can't be found in recent issues of* MB.

Some other comments:

I am glad to see that MB *has not jumped on the "Miniature aircraft" bandwagon. Even though miniature aircraft may be grammatically more accurate than model in many cases, I think it's an unnecessary distinction. Changing the name of our hobby/sport won't change the general public's opinion of modeling.*

I was somewhat disappointed to see the addition of R/C to the title of MB. *Many other of my fellow FFers were also similarly struck. Surely* MB *has enough of a reputation among modelers that a name change was not really*

Continued on page 112

"Originally, I thought I'd build something for C-Gas....."

OVER THE COUNTER

• R/Cers who would like to leave their mark in the sky should check out DuBro's new Super Smoker Valve, intended primarily for smoke systems but also applicable for Pylon and R/C Old Timer in-flight fuel shutoffs. The valve measures about one inch square and can be mounted in any position. Of course, you'll need an extra servo to work the valve.

DuBro stresses the point that this is a *no-leak* valve, and once you pop it apart it's easy to see how they can make that claim. It's really pretty ingenious. Each line from the engine passes through the valve body *in one piece;* thus, unless there is a hole in the tube itself, there is no way it can leak. The cutoff action is done by a two-lobe cam on the end of the shaft that the pushrod arm is fastened to. When the servo turns the shaft, the cam lobes squeeze the tubing shut, creating a positive flow cutoff. The valve shuts off both the crankcase pressure from the engine and the smoke fluid flow to the muffler.

The valve is supplied complete with 34 inches of medium size neoprene fuel tubing, two bolt-on pressure fittings, two mounting screws, and complete instructions. Price is $7.95.

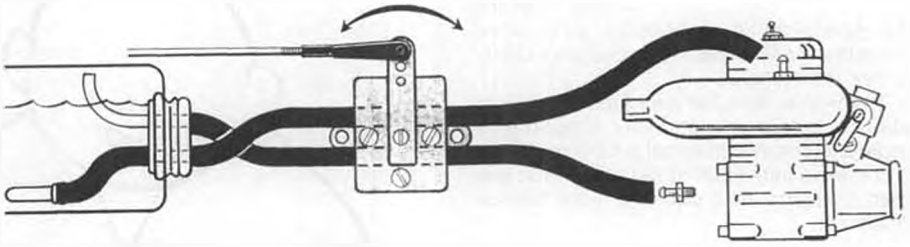
Another bit of news is that all of DuBro's smooth, slick, and treaded tires are now being supplied with hubs molded from metallic silver plastic, said to be more realistic looking than the old chrome plated hubs. The new wheels also have eight spokes, whereas the old ones had six. Sizes range from 1-3/4 inches to 3-1/2 inches, with prices of from $2.40 to $3.80 per pair accordingly.

From DuBro Products, 480 Bonner Rd., Wauconda, IL 60084.

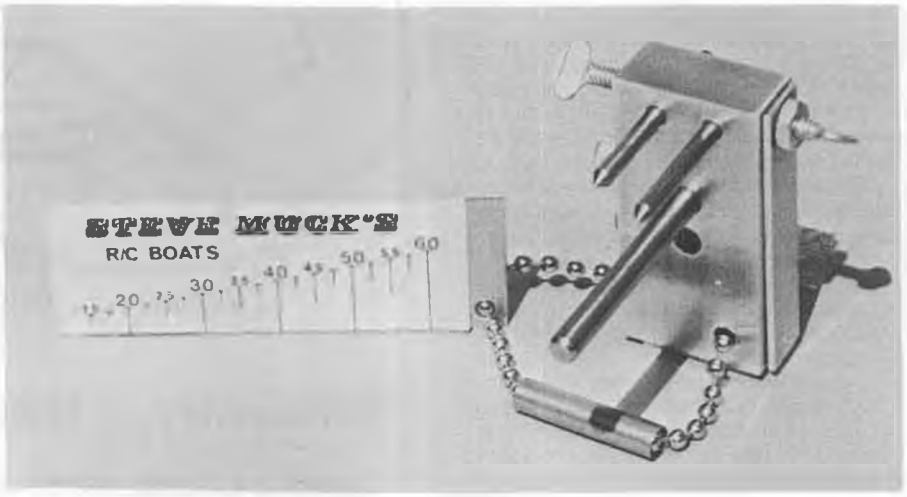
* * *

Midwest Products has a new model that we assume is part of Midwest's "Live Wire" program headed up by Hal deBolt . . . the airplane has an unmistakable deBolt look about it. The ship is the "Pattern Master," a very straightforward and therefore uncomplicated design billed as a pattern trainer for .40 size engines and four-channel R/C systems. It's bigger than most models in its engine size range (60-inch span, 720 sq. in.) for moderate flying speeds and docile yet positive control response. The kit features machined and die-cut parts, canopy, aluminum engine mount, steerable nose gear, Cam-Loc wing fastener, complete hardware, full-size plans, and

The "Pattern Master" aerobatic trainer from Midwest Products.



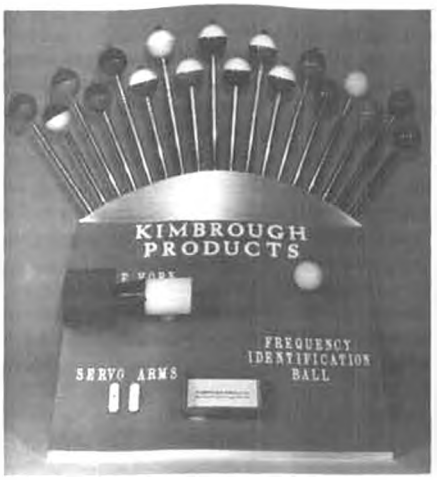
Line drawing of DuBro's Super Smoker Valve.



Prop pitch checking tool being produced by Steve Muck.

Now available in spray cans, Sig Supercoat dope.

A Giant Scale Bucker Jungmeister built from plans sold by Wendell Hostetler.



Novel frequency identification balls, new from Kimbrough Products.

Sig's inexpensive 5:1 rubber model winder.

instruction manual.

Also new from Midwest is their 1980 Model Airplane Kit Catalog, which lists all of Midwest's kits, Axiflo ducted fan systems, and balsa and finishing accessories. Complete kit features and specs are given for each model, including size, engine requirements, and recommended radio (if applicable).

No price was quoted for the new Pattern Master kit; the catalog is available now for 50¢. Midwest Products, 400 S. Indiana St., Hobart, IN 46342.

* * *

Have any of you boaters ever dug into your prop collection on a Sunday morning, selected one and thought it didn't have enough pitch? Then found another and thought it had too much? Now you can take the guesswork out of selecting a prop, and you can do it right at the lake site, too. Steve Muck's R/C Boats is selling a small prop pitch checking tool that can tell you the exact pitch of each blade, whether one blade is bent behind or ahead of the other(s), and if the diameters of all the blades are the same. Sounds like a must for any boater who is after maximum performance.

The prop pitch tool includes a pitch gauge and the tool itself; a key chain keeps them from becoming separated in your tool box. Also included is an instruction manual with photos to demonstrate exactly how to use the tool.

No word on the price, but you can find out from Steve Muck's R/C Boats, 6003 Daven Oaks Dr., Dallas, TX 75248.

* * *

For those who like small F/F rubber models, Sig has a nice, inexpensive winder available that sports a 5:1 ratio . . . great for Peanuts, small sport and scale models, etc. Judging from the calligraphic symbols on the case, we'd say it's an Oriental import. Retail price is just $3.95.

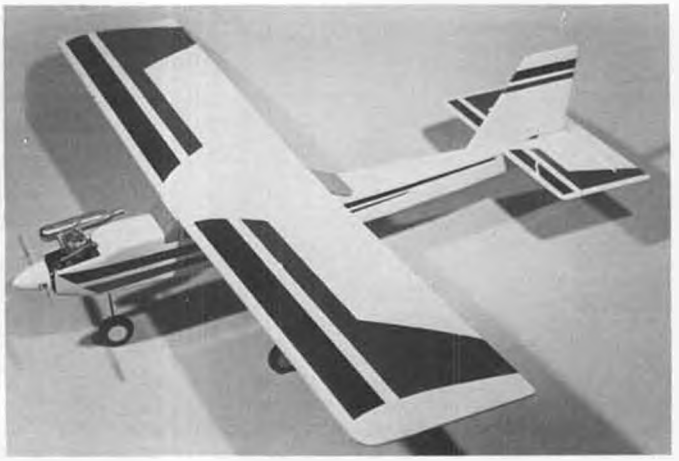
Sig also sends word that its Supercoat butyrate dope is now available in 16-ounce spray cans. All 25 Supercoat colors (including clear) are featured. Going price is $2.89 per can.

You can find out more from Sig Mfg. Co., Montezuma, IA 50171.

* * *

That Hughes H-1 Racer in the photo looks pretty neat, huh? Would you believe it's made completely of PAPER? Well, it's actually card stock, but it's still a striking example of what can be done

Attractive Hughes H-1 Racer by Meta Model.



Two new .40-size R/C kits from Northeast Aerodynamics, the "Sport-Air .40" (left) and "Train-Air .40".

with this largely unexplored medium of model construction. The H-1 is a 1/24-scale static display model, the first in a series of such model kits being produced by Doug Emmons, of Meta Model. Second in the series is the one-of-a-kind Cunningham-Hall GA-36, a mid-30's two-seater designed as a military trainer and civilian sport plane. An XB-70 Valkyrie and P-66 Vanguard are in the planning stages and should be ready soon.

These kits are very professionally done and are supplied in booklet form, with the parts patterns printed in full color on the pages. Instructions are extremely thorough and take you step-by-step through each sequence of cutting, folding, and gluing. These are surprisingly complex projects with many parts and will probably take you a few nights to assemble, unless you have had some prior experience with this kind of construction.

The Hughes Racer looks to be the more complicated of the two models currently available but is also the best one for the beginner, as it contains illustrated instructions and some practice parts. The Hughes also includes parts for both the long and short wings. Retail prices are $3.80 for the H-1 and $3.50 for the GA-36, or you can get both for $7.

Order from Meta Model, P.O. Box 221, Batavia, NY 14020.

* * *

Wendell Hostetler is offering plans for yet another Giant Scale bipe, this one the popular and agile Bucker Jungmeister. No particular scale was quoted in the press release, but the span is 77 inches, area is 1770 sq. inches, and the flying weight is from 22 to 26 lbs. The model is intended especially for engines of two to four hp and is stressed accordingly. Constuction is mainly balsa, basswood, and plywood.

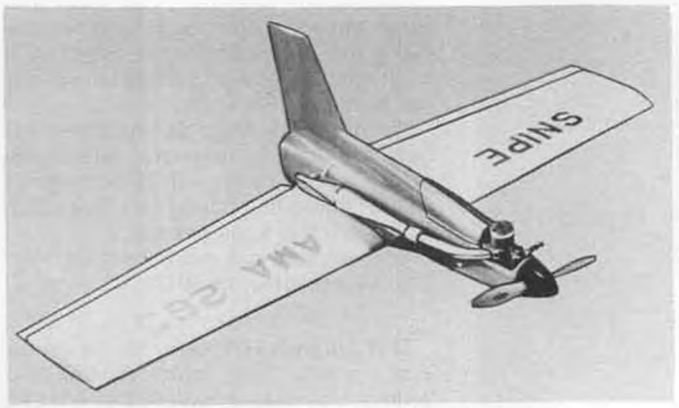
The plans consist of two 42x82-inch sheets and include an 18-page instruction manual that features sketches and photos and a pile of hints and info applicable to any large model. Going price on the plans is $21.50 (Ohio residents tack on that 4-1/2% sales tax). A cowl, cabane, landing gear, and various other parts are in the planning stages and should be available in the near future. In the meantime, interested plans buyers can contact Wendell Hostetler's Super Scale Plans, 1041 Heatherwood Lane, Orrville, OH 44667.

* * *

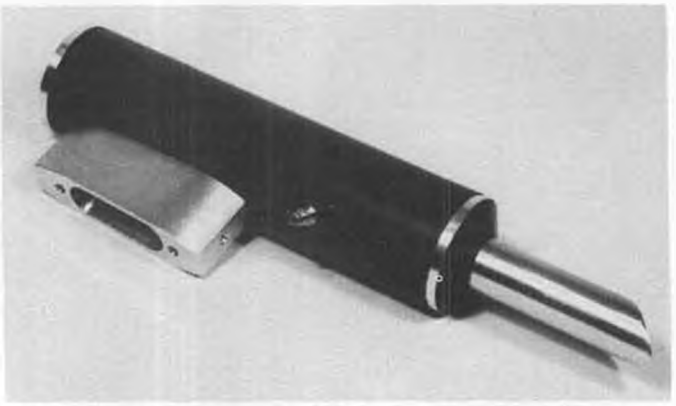
One of the many new items that made their debut at the recent MACS Show in Southern California was the frequency identification ball being made by Kimbrough Products. These 1-3/4 inch balls are intended to take the place of the colored ribbons on your transmitter antenna and are available in six solid colors for 27 mhz, seven half-white half-

Continued on page 109

Fairly large Beech Bonanza A-36 for .91's, built from plans being offered by Bud Caddell and Pat Hollock.



Interesting tailless from W-K Hobbies, the "Snipe".



The "Whispurrrr" universal muffler from Granite State R/C Products.

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

• Several recent incidents brought to mind the plight of neophyte modelers in today's engine market. The first incident happened in a large, well-supplied hobby shop. In one of the display cases, there were at least thirty or more different engines. Incredible! What a selection a particular customer faced. Obviously, he was about to purchase his first brand-new engine. I eased a little closer. He had one tired, used engine which a friend had given him, but now he was ready to go first class. In all earnestness, he asked the advice of the salesman. Unfortunately, it was also obvious that the salesman had little more experience than the customer. The situation had plenty of potential for disappointment, disaster, or call it what you may.

Just as I was about to offer some assistance, another eavesdropper gave a few suggestions. He gave him good advice, and followed it up with his phone number and an offer of help in getting him started in our hobby.

The second incident occurred a couple of weeks later in another much smaller hobby shop. A new customer wanted a particular engine. The owner didn't have one and was giving the big pitch for an engine he did have. Unfortunately, it was a poor second choice. I was glad to see that the customer didn't take the gaff.

Earlier this afternoon, while idly leafing through a current model magazine, I paused and counted the number of different engines offered for sale in one large discount house advertisement: 67!!! The new modeler almost doesn't have a chance. He's literally inundated with good and bad choices, he's often reluctant to seek competent assistance, or else there isn't any help readily available. Furthermore, there's a dearth of good engine reference material for the beginner modeler. There are engine columns and reviews in many issues of many magazines, but there is no comprehensive single volume or publication on engines.

Are things all that bad? It depends upon your point of view. A recent survey indicated that three percent of the AMA membership has been active in our hobby less than one year. Some may say, "Why get uptight about a measly three percent?" I disagree. Simple logic tells me that our future modeling experts must come from an accumulation of each year's three percent. Another point of view holds that all engines are good; some are just a little bit better than others. Again, I disagree. As my good friend Henry Nelson would say, "Junk at any price is still junk."

Enough editorializing. How about some recommendations for the newcomer? I'll assume three aspiring hobbyists. All have no experience, and each one likes a different general category . . . radio control, control line, and free flight. What's a good first engine? One that's easy to start, break-in and operate? For R/C, I'd suggest a .35 or .40 ringed engine with a baffled piston. This displacement range has enough power for stable trainers, a ringed engine is easy to break-in, and one with a baffled piston is docile enough for a "first" engine. Offhand, three reliable engines in this category come to mind: the K&B .40 R/C, Super Tigre G21/40 R/ C, and the O.S. Max .40 R/C. Any one of them would be a good choice.

For control line, I'd like to recommend a .35 ringed and baffled piston engine for the same previously mentioned reasons. Sorry, but there aren't any good ones currently in production . . . not with rings. There are several good .35's available, but they all have slug pistons, and that means quite a bit more break-in. Consequently, I suggest using the standard (no R/C carb) version of the S.T. G21/40 or O.S. .40. The little extra displacement will not matter because baffled piston engines are generally not in the high performance category . . . the last thing a beginner needs. Besides being good first control line engines, they are also excellent choices for later use in precision aerobatics.

If small-size free flight entices you, then your first engine is a simple choice: the Cox Tee Dee .049. It's the best engine for 1/2A category competition flying, and that's a good starting place in free flight. The engine is capable of very high performance, yet it is simple to break-in and operate. For your early flights, you can tone down the performance by merely adding several extra copper gaskets under the glow head and using a mild fuel.

Are the foregoing engines the only good ones for beginners? Certainly not, but they're as easy to handle as any I know. If you want any additional information along these lines, just write and send a large stamped, self-addressed envelope, or call me at (714) 830-5162.•

BERNHARDT

• A few weeks ago I had a booth in the Model and Craft Show in Long Beach, California. This is a yearly function in this area and devoted to almost every imaginable kind of craft-type hobby. My booth was devoted entirely to model engines converted to ignition operation, along with all related equipment. The spectator response toward this different approach to flying was greater than expected and most gratifying. Many were introduced for the first time to the type of flying that was done by their fathers, and the amount of questions they asked left this old bag with a slightly hoarse voice by the time the show closed. Big Daddy John Pond had a booth next to mine where he displayed samples of his Old Timer plans, and between the two of us, quite a few modelers will be joining the growing ranks of ignition Old Timers.

Greatest spectator interest centered around the four-cycle engine on ignition, and the two most asked questions were the power output relationship between glow and gasoline, and the possibility of radio interference from ignition. Because of the extreme amount of interest in these two subjects, I would like to briefly review them now.

Most people look at me incredulously when I tell them that pound for pound, gasoline packs more energy than dynamite. It's true! Gasoline contains probably the greatest amount of energy per pound of any commercially available fuel known today, including glow fuel with as much nitro as you wish to put in. Hard to believe? The secret in obtaining maximum power with gasoline or glow fuel is to correctly proportion the fuel with the proper amount of air to transfer the maximum energy to the piston per revolution. This is accomplished by adjusting the needle valve on the carburetor. Gasoline will require a considerably leaner needle valve setting for a given propeller rpm than you would use for glow fuel. If you were to run a test to compare the performance between gasoline and alcohol, you would find that gasoline would run your engine at least twice as long, ounce for ounce, at a given propeller speed. I have witnessed a .61 two-cycle engine, equipped with an ignition system and swinging a 14x4 prop at 8700 rpm at full throttle, run for 8-1/4 minutes on two ounces of gasoline and oil mixture. This same engine running on mild glow fuel would run no more than 3-1/2 minutes on the same amount of fuel. If the nitro content is increased, the rpm is increased and the running time is decreased. Alcohol (glow fuel) requires a good deal less air for a correct combustion mixture

Continued on page 101

Preview of coming attraction. This is the Flamingo, German aerobatic machine, scaled to .40-size R/C model by Roland Baltes. We'll be presenting a construction article soon.

The Flamingo passing by. Aircraft was made famous by German ace, Ernst Udet.

R/C WORLD

By BILL NORTHROP

• As mentioned in a previous issue, the 1981 Pasadena IMS Trade Show will again feature indoor R/C. However, there will be no endurance record trials! At the 1980 show, Tony Naccarato proved to us that endurance is no longer a practical show-time event.

His lithium battery powered electric model stayed up for an hour-and-a-half. Although we truly wanted to see him establish a time that would be hard to beat, crowd movement had to be restricted, and it was a long time to go without air conditioning and exhaust fans, which were turned off during the flight because of the dangerous air currents created.

The 1981 indoor event will be Electric R/C Scale. Again dictated by the fact that the models will be flown over the heads of spectators and exhibitors, the aircraft requirements will be similar to the previous endurance events. Models must weigh not more than 24 ounces and wing loading must not exceed 3 ounces per square foot. As the emphasis is no longer on duration, battery packs can be much lighter, allowing more of the total weight to go into scale detail and appearance. We envision large models of pre-World War I vintage, possibly with belt-driven props.

More specifically, the rules will be based on the AMA rules for Free Flight Rubber Scale. Total scale points will be a maximum of 100. Flight points will be a maximum of 90, acquired as follows: 50 points maximum for flight duration at 1 point for each 2 seconds of flight, 10 points maximum for flight perfection, 10 points maximum for scale flight speed, and 20 points maximum for landing perfection.

Obviously, maximum duration points are earned by staying in the air for 1 minute, 40 seconds. Flight path shall be the figure-8 as required for endurance flights in previous years. Hand launching will be mandatory, unless takeoff is individually approved by officials, though no extra points will be earned for takeoff.

Judging of flight perfection, scale speed, and landing perfection will occur throughout each flight, regardless of the duration. The number of attempts and official flights will have to be determined at a later date, but a flight will become official when the model is airborne for ten (10) seconds.

Team entries will be allowed, but a flier may only fly for one builder.

As in past years, all models and fliers must qualify on Thursday evening, January 8, just prior to the trade show weekend. This qualifying is absolutely mandatory. Any model or pilot not qualified on Thursday night will not be allowed to make any flights, official or otherwise, during the show. Static judging, quite naturally, will have to take place after the Thursday night flight qualifying. All entries will be on display in a special booth, except when being flown.

Complete sets of rules, with entry form, will be ready for mailing by the first of August, when official announcement of the contest will be published. In the meantime, start researching those plan files for something slow and light!

By the way, tentative plans include indoor electric powered blimp competition, but again, emphasis will be on handling and maneuverability, not speed or endurance.

Dennis De Wet, Cape Town, South Africa, and his pretty red and silver Gipsy Moth, built from MB plans. Complete story in text. Note famed, flat-topped Table Mountain in background.

A MOTH BY ANY OTHER NAME. . .

Although we "designed" the Gipsy Moth model which is the subject of the following short article, it's not so much an "ego kick" that prompts us to publish

Cub models built from M.E.N. (Model Engineering of Norwalk) Piper J-3 Cub kits, by Joe Borzelleri (N16496) and Jim Kitchen (N14696) hmmm, of Yuba City, California. Jim's model was the subject of a March '80 RCMB "Product$ in U$e" article.

it, but rather, we are proud that the model has brought so much pleasure to at least one person. After all, the Gipsy was a real airplane, designed and built many years ago by DeHavilland. We merely translated its beauty and charm, which already existed, into a condensed size.

The article is by Bob Munn, of Orem, Utah, and really describes the experiences of his friend, Dennis De Wet, from South Africa.

"I hope you might find the enclosed short article interesting enough to print. The philosophy regarding quarter scale . . . large, light, realistic . . . which you have mentioned certainly prevails with me and many of my friends. Dennis De Wet, a truly delightful modeler from Cape Town, has waxed so very eloquent in his descriptions of building your Gipsy Moth that I thought it would be of interest not only to you but perhaps to other like-minded people. With Dennis' permission, I have summarized from his letters and other items he has noted in their local 'Flysheet' to make up the enclosed."

THE LIGHT-HEARTED GIPSY
by Dennis De Wet,
as told to Robert Munn

*Bill Northrop's magnificent quarter scale Gipsy Moth (***MB** *June 1977) has inspired many a modeler. Here is the story of one master sport craftsman who made his dream come true in a way which we think typifies the real spirit of the "Big is Beautiful" movement.*

"Now it is strange how a mere name can sometimes capture your imagination and often mesmerize one into believing the object itself to be something beautiful, whereas it is in fact perhaps a bit ungainly. And so, quite some years ago, it was with me and the lovely 'Gipsy Moth' . . . what a beautifully romantic sound that name had for me and how I dreamed of building the model one day. A while back, browsing through some magazines, I came across some plans and building instructions for a Moth in the **Model Builder** *magazine. With rather casual interest I leafed through the pages until I reached a*

Another Old Timer Buhl "Bull Pup", built from MB plans, this one by Don and Bill Asbury, Waynesville, Ohio. Powered by O.S. 4-cycle.

The "Flying Overcast"! A 12-foot Super Tigre-powered Dragonfly (from MB plans) built by Buster Heath, Oregonia, Ohio. Bobby Keller, son of W-K Hobbies' Bill Keller provides anchor.

Le Gray, designer of the electric-powered, 1/4-scale Wimpy that was featured in our March '80 issue, gives an idea of its size.

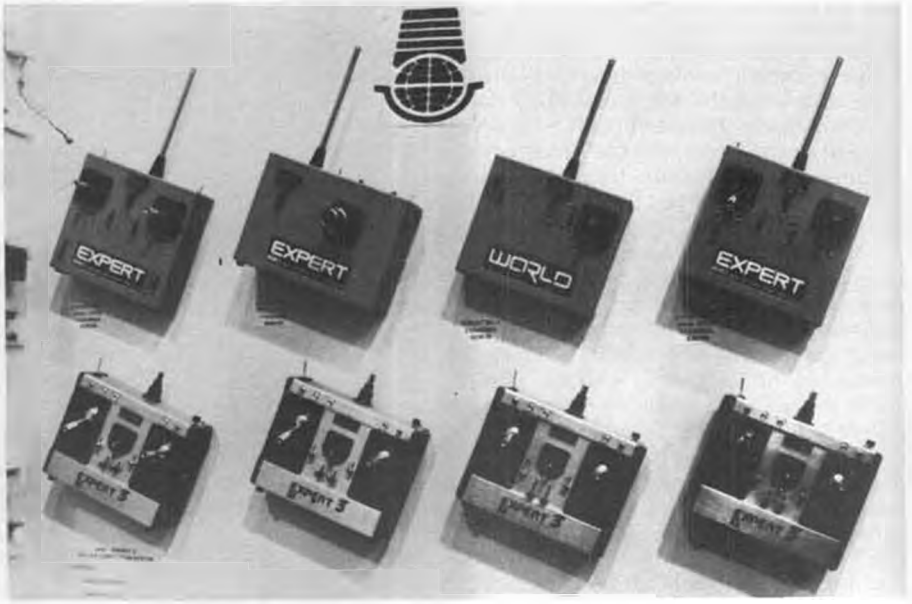
Curtis Christen, shown here with Wimpy, takes credit for building the model featured in the article.

Gary Rheault of Aeromarine raises his right hand and swears that twin in-line Quadra will run like a very big watch! More photos from the 1980 Toledo Trade Show.

Barb Shettler, the much better looking half of the Quadra marketing firm from Canada.

photo of the complete model . . . it hit me right between the eyes . . . nothing less than a quarter scale DH Gipsy . . . the whole 90 inches of her, beautiful, enticing and seductive . . . I'd had it! I could picture her sedately taxiing down the pits and out onto the runway, swinging into the breeze. She moves forward slowly with blue exhaust smoke trailing and then, trundling along at a leisurely pace, she lifts majestically into the air and makes for the open sky. I was already getting goose pimples!!"

So wrote my good friend, Dennis De Wet, a member of the Cape Radio Flyers and model builder of some forty years experience, during the summer of 1979. Dennis is known widely in the South African modeling community as a steady, affable type, always ready to help, always interested in a new sport scale project. He is a man who never lets details, be they of scale, or of wind, rain or other difficulties, stand in the way of his tremendous enjoyment of miniature aircraft. Having flown a Hawker Tomtit and a Fokker D-VII in stand-off and fun fly events in the Cape Town area for several years, Dennis moved into quarter scale with an Aeronca C-3 and a Piper Cub, the exploits of which would fill a book. But now the Moth had finally bitten him and wouldn't let go. He chose as prototype for his project the DH 60 G aircraft, registered in England in 1928 as G-AAAH, colored red with silver wings and tail surfaces. This aircraft flew from London to Kenya in 25 days, with the pilot getting sun stroke on the way. After logging 35,000 miles as an air taxi, it was sold in 1930 to Amy Johnson, who repainted the fuselage green, christened



The Expert Mk II and Deluxe Competition systems, displayed by World Engines at the Toledo Show. Deluxe sticks are open-gimbal, ball bearing. Many extra switches and buttons featured.

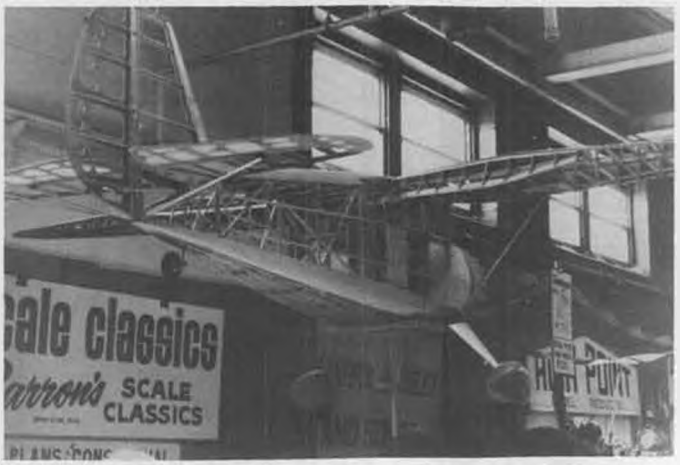
Top mail-order dealer, Tower Hobbies, had huge sign blimp over booth, where these lovely gals dispensed catalogs. (l to r): Tina Anderson, Sarah Hollis, Teri Silver, Judy Wolski, and Pat Junkins. The R/C blimp is manufactured by Peck-Polymers, was tethered during show.

Gary Keyes, in his MRP (Model Racing Products) booth at Toledo.

it "Jason" and flew it from Croydon, England, to Darwin, Australia, 9,900 miles, in 19 days. Enroute she had to patch a hole in the wing with adhesive tape, among other adventures, and carried a spare prop lashed to one of the wing struts. The aircraft was later bought for the Science Museum in London where it can still be seen.

Of the construction of his Gipsy, Dennis later wrote, "At the time, I can recollect looking at that pile of raw material on my bench wondering whether this dream of mine would become a reality . . . the project seemed to bristle with challenges and difficulties I had never before attempted . . . I had the feeling that I may have bitten off too much. (After completing the fuselage) . . . the very bulk of the aircraft was the thing that impressed me most, and perhaps also its absolute simplicity compared with modern day aircraft . . .

Continued on page 86

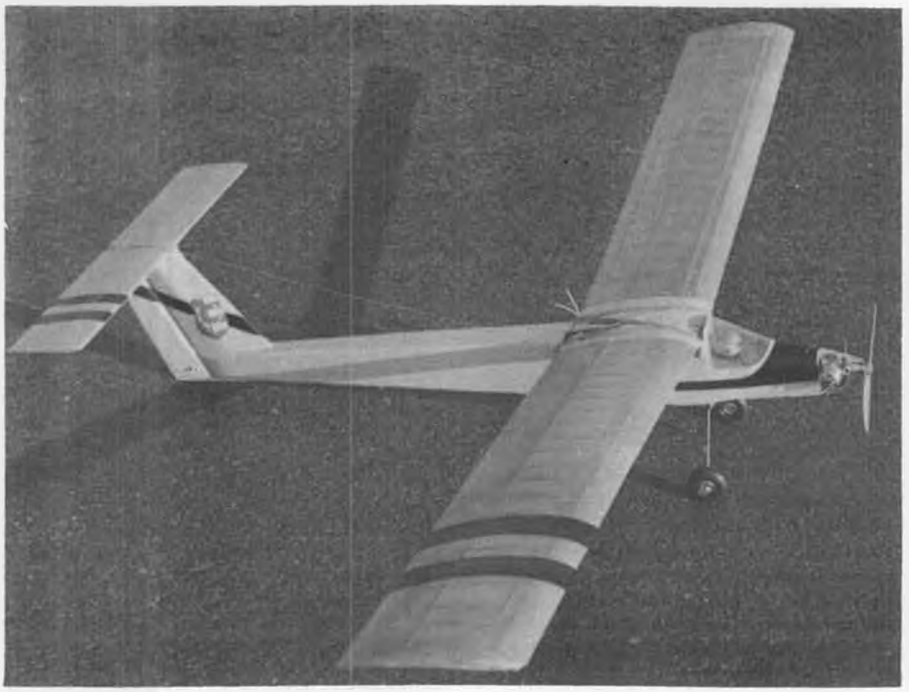


Huge quarter-scale Stinson SR-9 framework hovers over the Barron Scale Classics booth at Toledo. A Finished Stinson also on display.

Walt Moucha's 1/2-scale Fly Baby doesn't exactly dwarf Pat Flinn's "Astro Maggi" with its 15-foot wingspan. Pat's from Dearborn, Mi.

Brenda and Chris Wilson, C & C Hobbies, displayed the Piney Airframes at Toledo. All-pine, pre-fab construction.

Olympia Beer Unlimited Hydro, by Bill Pistello, Villa Park, Illinois. Power is an OPS.



PHOTOS BY AUTHOR

FUJAVAK

By PAVEL BOSAK . . . A slow, docile flier is this sailplane/motorglider from Czechoslovakia, named after a figure from an old European children's story. Makes an excellent choice for a beginner's first airplane.

• I am a keen model builder and I take part in M 3 pattern plane competition. At the beginning I was really enthusiastic about everything but soon I got tired of routine training, which seemed to be endless. I depended on concrete landing sites which are too far from my home. In summer I had to do a decision between bathing in a river or being baked by the sun on the hot concrete landing site. That is why I felt a need to build a model according to these criterias:

1) handlaunch
2) easy transport; small room needed
3) slow flight and landing speed
4) easy starting up engine
5) a chance of making flight longer by thermal soaring
6) a stable model, easy to control

According to these points Fujavak was built. It can be taken to pieces to a nice-looking package. Because a diesel engine is used, only a small bottle of fuel is necessary for flying. Plastic propeller is almost undestroyable. Model flies quietly, slowly, and is easily controlled. It is also easy to change it into a soaring glider.

My first version was controlled by its rudder only. With full fuel tank it went up to 1000 feet and from there it glided about 10 minutes. I flew it near a bathing pool and it was a big success. It was controlled by anybody with hands, from older gentlemen to women and girls. It was really fine but I was not fully satisfied. I wanted to fly before the eyes of an audience. That is why I built in a bigger fuel tank and to the engine I mounted an R/C carburetor. Then the flying was fantastic and the model with little throttle flew just about 15 feet above the ground which was admired by children and dogs especially. The last version of Fujavak has also elevator control. Thus equipped, Fujavak can also loop, and landing is also nicer. But for Sunday flying this arrangement is not necessary. I personally prefer two-channel R/C gear with rudder and throttle control. I also built a removable undercarriage for nice takeoffs. To the model belongs also the second half of nose, which, after the engine has been removed and the whole model rebalanced, is screwed to the fuselage and thus we get a nice training glider, easy to take off by tow-hooks and landing ski. I realized in Fujavak everything I wanted, and it was also built in a few versions by members of our club.

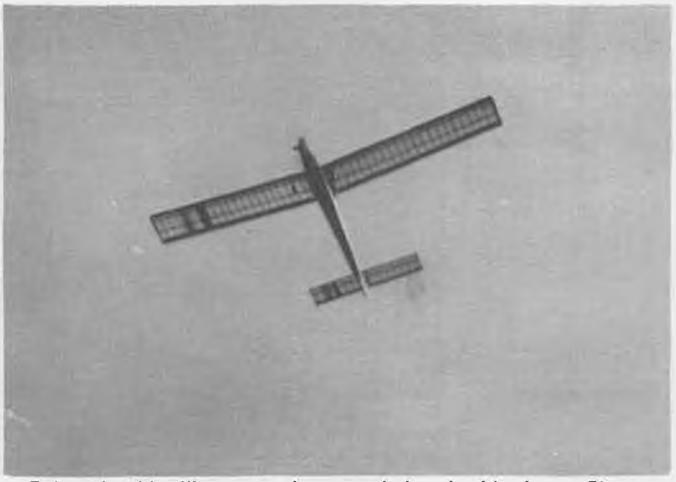
BUILDING

Personally I begin with wings. Cut balsa and plywood ribs, both 1/8 inch. Their shape and number are on the plan. For coupling both halves of wing we use 3/16 steel wire, ten inches long. On it we shall wind tubes of tissue glued with varnish. Beware of sticking tubes on wires! Tubes must easily slide on wire with minimum clearance. With the help of the tubes we shall join three plywood ribs and, according to plan, we shall build the wing frame. Use the rest of ribs

Our Czechoslovakian designer poses with his Fujavak, converted to the glider mode. Well-suited to both hi-start and slope soaring.

Pavel shows how the landing gear plugs into the fuselage; friction keeps it in place. Easily removed if necessary.

Powered version uses a Russian MVVS .09 diesel, gives long, satisfying flights with a 4-oz tank. Note plywood nose skid.



Fujavak's glider-like proportions are obvious in this photo. Slow, low-level fly-bys are easy with this bird.

and 1/8 x 3/16 spruce spars. At the same time cement trailing edge, which must be formed into the shape of a wedge.

The place where the ribs meet the trailing edge is stiffened with balsa triangles. Then we shall make leading edge cover, first the bottom and then top. The space between ribs is stiffened with balsa shear webs and thus we shall get a box beam leading edge. For both wing tips we shall use balsa blocks. For covering use silk, tissue, Monokote, etc. Tissue is the best, I think, because it makes the whole wing stronger. Paint the wing in a frame so that it will not twist.

STABILIZER

Its building is the same as that of the wings. All ribs are the same. They are from 1/16 balsa. Spars are also balsa, 3/16 x 1/8. Elevator tips are from 3/4 x 3/4 balsa block. The space between middle ribs is filled with 1/16 balsa. It is covered with tissue. Beware of twisting during painting.

FUSELAGE

The basic parts of the fuselage are two 3/16 balsa fuselage sides stiffened by 1/32 plywood. Now cut fuselage formers and engine mount. Their material and shape are on the plan. The engine mount is epoxied from seven pieces of 1/32 plywood. Do not forget to lay the plywood pieces cross grain. When dry, file into the proper shape according to the plan. The inner hole must be cut for the engine used. The important thing is the 4° down thrust. Then drill the holes for the engine bolts, and on the backside epoxy the nuts. Now cement the engine mount to former F1.

When dry, construct the whole fuselage and epoxy it. Once again, recheck engine down thrust. Now get a fuel tank ready. Use .015 metal sheet. Draw a tank plan on it, cut it and solder. Then solder the inside tubes. It is also possible to use a plastic tank. The size will depend on the engine used and how long flights you are planning. I use an MVVS 1.5 cc diesel, and with the described fuel tank with four oz. capacity, flights are about ten miuntes long.

Now make a fin. The core of it is a 3/16 balsa frame and a main spar, F5. Fin is covered on both sides with 1/16 balsa. It is also laid cross grain. Sand the fin and cement it to its place in fuselage. Now cover the bottom of fuselage with 3/16 balsa. Fix inside fuselage pushrod for rudder and throttle. Now cover the top of fuselage. Use 3/16 balsa for covering fuselage part from wing to rudder, and for part from cockpit to former F2 use 3/16 balsa planking. The nose is balsa block. The cockpit floor is 1/16 balsa and is pressed from 1/32 butyrate. (It can also be bent along the fuselage.) It is also possible to put a pilot's head into the cockpit. Now sand the whole fuselage and epoxy landing skid made of 1/8 plywood. Inside the fuselage epoxy floor F7, which has a hole for cementing landing skid. According to plan, drill the holes for bamboo pegs. Fix and epoxy 1/32 plywood discs on them. These discs also stiffen the side. Epoxy paper tubes for undercarriage on former F3. The inner diameter must be chosen according to the wire used. Now bind the wings to fuselage and check their incidence. Facing the engine, both wing tips must be at the same height and the rudder must be perpendicular.

Sand the whole fuselage and cover with tissue. Rudder is cut from 3/8 balsa, sanded, covered with tissue and bonded by nylon hinges. Solder the undercarriage according to plan from 3/32 steel wire. The wheels are two-inch Du-Bro. The second nose half is again cut from balsa block.

R/C GEAR

Fujavak was controlled by everything which we know in R/C control, from single-channel bang-bang to three-channel propo set. Choose your set according to how many elements you want to control. The most ideal flying is with two-channel control over rudder and engine. One hand is enough to do everything and in the other you can hold a cigarette.

FLYING

Before flying, check all angles and point of balance. Now try gliding from hand. If it does not fly straight put some

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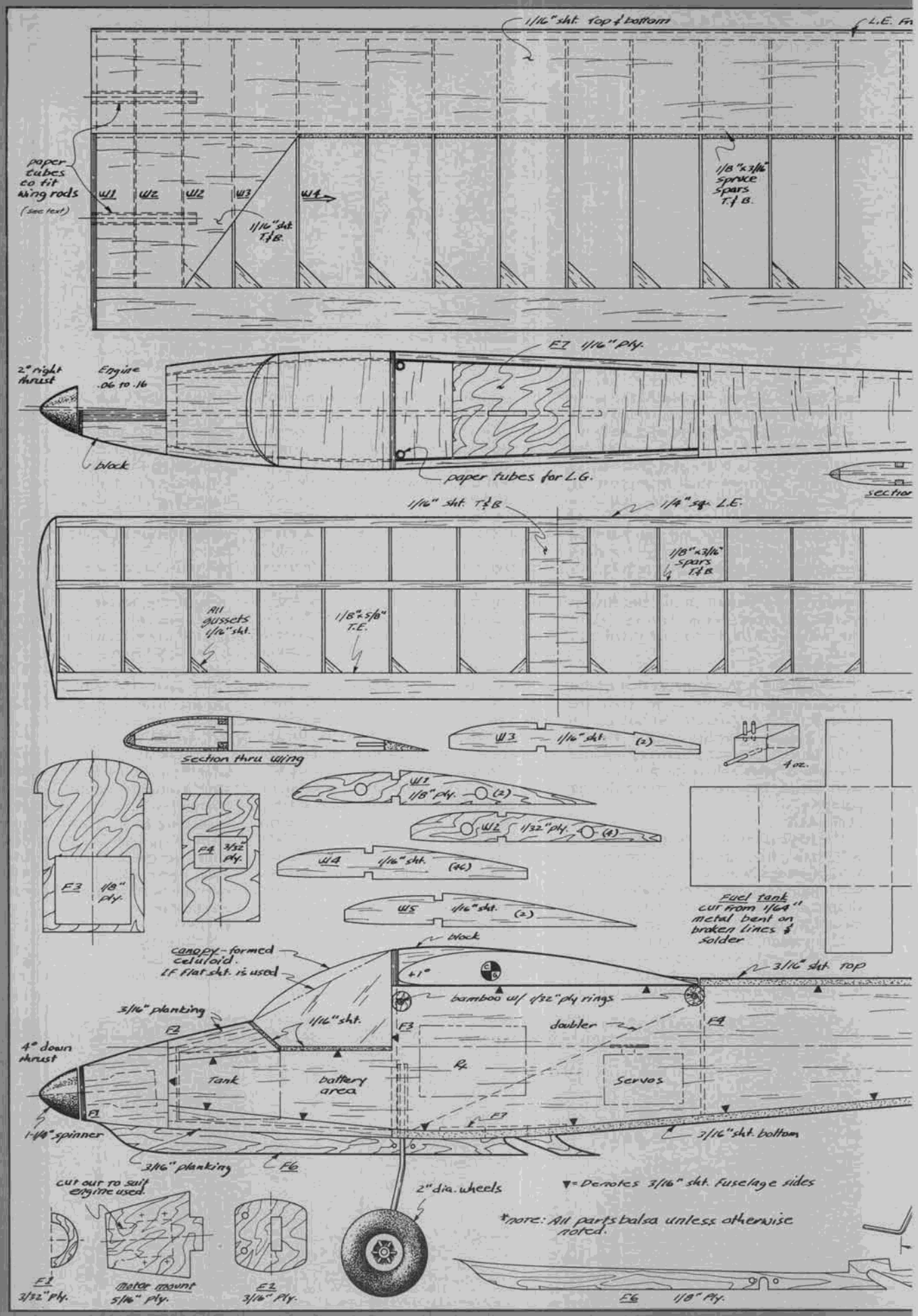
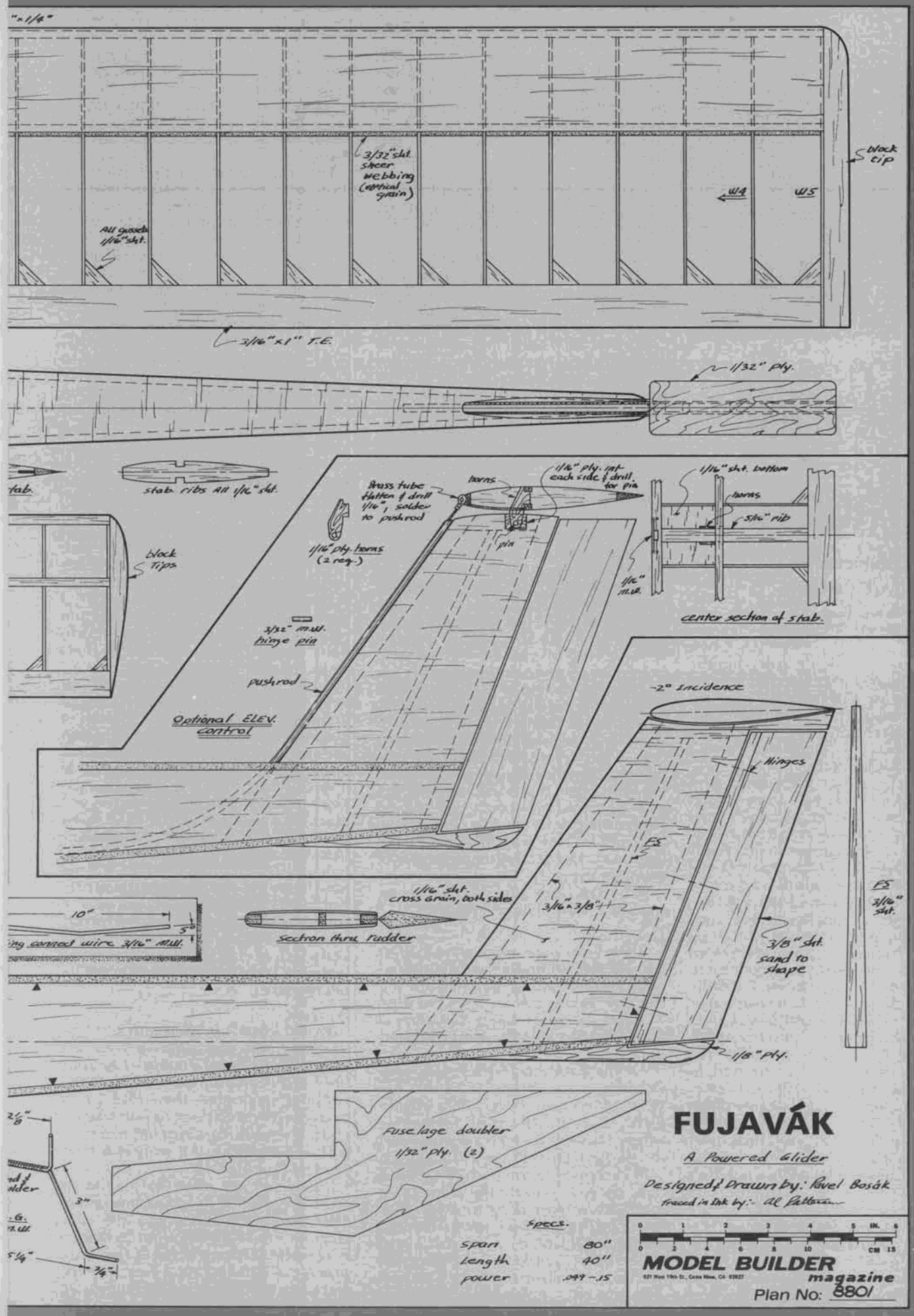
All set to go gliding! Conversion from powered to glider modes takes only a couple of minutes. Pavel prefers flying the model with two channels (rudder/throttle), but the plans show an optional full-flying tail arrangement for those who prefer this type of set-up.


1/16" sht. top & bottom
L.E.
paper tubes to fit wing rods (see text)
W1
W2
W2
W3
W4
1/16" sht. T.E.
1/8"x3/16" spruce spars T.E. B.
F7 1/16" ply.
2° right thrust
Engine .06 to .16
block
paper tubes for L.G.
section
1/16" sht. T.E.
1/4" sq. L.E.
1/8"x3/16" spars T.E.
All gussets 1/16" sht.
1/8"x5/8" T.E.
Section thru wing
W3 1/16" sht. (2)
4 oz.
W1 1/8" ply. (2)
W2 1/32" ply. (2)
F4 3/32" ply.
W4 1/16" sht. (4)
F3 1/8" ply.
W5 1/16" sht. (2)
Fuel tank cut from 1/64" metal bent on broken lines & solder
block
canopy - formed celuloid. If flat sht. is used
3/16" sht. top
+1°
bamboo w/ 1/32" ply rings
3/16" planking
F2
1/16" sht.
F3
doubler
F4
4° down thrust
Tank
battery area
Rx
Servos
F1
F5
1-1/8" spinner
3/16" sht. bottom
3/16" planking
F6
cut out to suit engine used.
2" dia. wheels
▼= Denotes 3/16" sht. fuselage sides
*note: All parts balsa unless otherwise noted.
F2 3/32" ply.
motor mount 5/16" ply.
F2 3/16" ply.
F6 1/8" ply.



FULL SIZE PLANS AVAILABLE – SEE PAGE 108

Flight INSTRUCTOR

Conducted by
DAVE BROWN
8534 Huddleston Dr.
Cincinnati, OH 45236

• Sorry about last month, folks, but the Toledo show and the preparation of new products and a display for it wiped out all of my time, so the column never got written. Fortunately, the mail wasn't very heavy at this time, so I haven't gotten too far behind.

I did pick up one gem during this period which I must pass on to you. In the past I have quoted Murphy's Laws and similar foolishness without ever having known the author or who it was written specifically for. For the first time, I must quote a "law" which was written by a friend and named for another friend whose actions warranted such honor. Hatmaker's Law was written by Roy Pinner and says, "If you want to go up, pull back on the stick. If you want to go down, pull back farther." Charlie Hatmaker deserves such accolade due to his prior dedication to all of Murphy's Laws, an example of which was his experience at last year's Mint Julep. On his first landing attempt he had to throttle up and go around due to the fact that his landing gear didn't come down completely. Once he finally got the landing gear down he ran off the side of the runway into the mud, and when his next flight came up his engine wouldn't start. Now, for many competitors at various contests this wouldn't be worthy of writing about, but in this case it is noteworthy due to the fact that all of the above happened in the full-scale Navaho he flew down to Kentucky loaded with our contestants from Michigan and Canada. It is actions such as this which make Charlie deserving of this honor, placing him right beside Murphy.

In response to this honor, Charlie has written a "law" especially for Pinner which makes reference to tangerine trees and their effect on low pull-outs, but that is another story. Let's go on to the more sensible letters I got this month.

Dear Dave:

I've been into R/C for about a year. I'm 13 years old. I know Don Lowe pretty good. I fly where he flies. He taught me how to fly.

I have a Kadet, Tweedy Bird, and a Smith Miniplane. My Dad builds them. Would you recommend that I go from the Kadet (about 20 or so flights) to the Tweedy Bird or the Smith Miniplane?

My Dad builds all of my planes except for a little bit. I want to know if I have to build the plane to enter it in competition. Is it natural for a 13-year-old not to like to build. If so, why?

My Dad says he likes to build them and I like to fly them. I ask him what's the problem? I've never crashed. Sincerely, John Keiser.

With an instructor like Don Lowe, you have put me on the spot for answers, but I'll try. Neither the Tweedy Bird nor the Smith Miniplane is an ideal second step airplane, in my opinion, but I think the Tweedy Bird would be the better choice of the two due to its trike gear and single wing (less prone to damage). In my opinion, the Ugly Stick or Kaos are ideal second step airplanes, with the Sig Kougar as another alternative. It is not uncommon to find a 13-year-old who doesn't like to build, but it is usually attributed to a lack of knowledge and/or confidence in his ability to do it successfully. Watch your Dad build the airplanes, ask questions patiently, and read the instructions that come with each kit, and soon you will want to try one on your own. As for building your own airplanes for competition purposes, it is only necessary for FAI competition or any scale event.

Your last line says you've never crashed. I wish I could say that!

Dear Dave:

A few years back, some of the pattern planes used airfoils that were symmetrical at the root and semi-symmetrical at the tips. Two examples were the Tiger Tail and the Sweet Tater. Nowadays all appear to use symmetrical foils throughout.

Are there advantages to the symmetrical/semi-symmetrical combination? What differences in handling characteristics would there be in the two wings? I have never seen a discussion on this design feature. Is it worth any space?

In determining the correct CG location, do you consider the plane's performance when stalling to enter spins, assuming that you have adequate elevator throw? It would appear that a nose heavy plane would require excessive up elevator to maintain the stall in a spin. Also, do you consider right-side-up versus inverted flight characteristics in placing the CG? It would appear that a nose heavy plane, when trimmed for level flight right-side-up, would require extra down elevator when inverted. I realize that motor thrust and angle of incidence affect this transition drastically, but I'm assuming these adjustments are all right. Sincerely, Jerry F. Wall.

The semi-symmetrical tip sections on those airplanes you mentioned give the effect of washout in the wing without any change in incidence angle. This is particularly effective at low speeds (high angles of attack) and of negligible effect at high speeds. It was a great theory back when the only slow maneuvers were done upright (landing, spins, snaps), but now that inverted slow flight is commonly required, it is of less use. Today, symmetrical sections all the way out to the tip are most common, with a slightly different airfoil at the tip to induce the root to stall first whether upright or inverted.

Balance, incidence, thrust offset, and control surface throw are all interrelated and sometimes difficult to differentiate between. I always start out with the balance, incidence, and thrust lines specified on the plans. I adjust almost everything from there, based on feel. For example, I have a certain preference for the amount of up elevator needed to maintain a normal glideslope on a landing approach as well as the amount of additional up elevator required to flair. Once the elevator throw feels about right in the air (loops, turns, etc.), I try some landing approaches and observe the amount of up elevator required to maintain the glideslope. If it tends to need a lot of elevator immediately after you chop the power but tends to balloon or requires no increase in up elevator as it slows down, then it probably has too much down thrust. If it tends to need more and more elevator as it slows down, to the point that the airplane becomes difficult to slow down without pulling a bunch of up elevator, it is too nose heavy. Also, if it tends to be hard to flair, it is probably slightly nose heavy. A tail heavy condition is indicated by very touchy elevator control when gliding and a lack of directional stability. When in doubt, leave it slightly nose heavy for safety's sake.

Hi, Dave:

Would like to ask what with and how do you finish your Tipo to keep the weight under 8-1/2 pounds? I'm using finishing resin followed with Ditzler automobile primer, then four to six coats of color with three to four coats of clear. The result is a mirror finish, but I'm wondering about the weight factor. Thanks, Paul Maharis.

You didn't say what the four to six coats of color and three to four coats of clear were. I'd assume you are using lacquer; if this is the case your technique is reasonable and I'd guess that your problem is with too much resin, primer, and paint on the airplane. You need to

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Pattern Flying

By DICK HANSON . . . Part 5: Rectangular Approach, Landing and Spot.

Although the maneuvers discussed this month may not be with us much longer, especially in the upper AMA skill classes and FAI, it is still important to know how to do them properly, if only to simulate disciplined full-scale flight procedures. It should also be noted that the approach and landing maneuvers are among the easiest, relative to technical skill and coordination, yet they are very often flubbed by even the best pilots. Usually this results from a psychological let-down after the more difficult maneuvers are completed and the pilot relaxes a little too soon, before the flight is over. However, points are points, and there's no use taking 5's and 6's, when 8's and 9's and maybe an occasional 10, are within the reach of even average fliers. wcn

RECTANGULAR APPROACH LANDING AND SPOT

The rectangular approach as described in the rulebook is very confusing. It calls for maintaining altitude until the final approach leg starts, but it does *not* mention any downgrade for loss of elevation, only a downgrade for "gallops in elevation." I am certain our contest board has an answer for this.

Assuming that you should maintain altitude, let's analyze the approach. The first thing that becomes apparent is that you must plan to enter the maneuver at an altitude that permits a predictable approach and descent to landing. This is something that you must decide with your own plane, as they are all different.

We recommend that you practice flying your model at slow speeds (keep some altitude for safety sake!) and become thoroughly familiar with how much control deflection, rudder, aileron, and elevator, is safe. Once you have decided on a comfortable slow speed, practice the crosswind to final turn at this speed and note what altitude and distance combination allows a *controlled*, low throttle (not idle!) descent. This takes a lot of practice, but do not simply try to chop throttle and dive in for a spot landing. It doesn't work.

Let's go through the entire sequence. You have just finished your downwind maneuver and must now set up for the upwind start of the rectangular approach. Reduce speed as you set up your heading, *at the correct altitude*, directly down the center of the runway. Approximately one second before reaching the judges (we assume the judges to be directly in line with the center of the landing circle), call the maneuver. Continue on until you have reached the imaginary edge of the normal judging frame (this is approximately 45° each way from center of the judges). Turn 90° outbound for a few seconds until you are approximately 300-400 feet out. Hold your altitude.

Turn 90° downwind until you are at a point parallel with the position you have learned is best for your descent path. Hold your altitude.

Turn 90° inbound to your final turn position which is directly in line with the runway. Hold your altitude.

Turn 90° for your final approach leg and proceed to descend as you practiced earlier. *You absolutely must practice the descent* or you won't get this maneuver to look right. As you descend to approximately six feet of altitude, make your final throttle and trim corrections for a nice flared landing. If you have a sticky throttle linkage, good luck.

We try to have the plane sinking a little too fast just before the six-foot altitude is reached so that we can hold in a fair amount of throttle during our last exciting moments. The idea here is to control the final sink into the center of the circle. As you approach the circle, keep adding elevator and reducing power to land early. Conversely, reduce elevator and add power to stretch the distance. This must be done carefully or you can end up in a sudden stall and a disgraceful pancake landing. (Actually it's quite good for the judges' morale, as their job is tedious and a little humor is appreciated.) Once you have touched down, let it coast straight ahead for 50 feet or until it stops, whichever occurs first. Announce "flight complete" and get your plane off the runway.

Now let's go back and analyze things a little further.

1) Does your model dive each time you do the 90° turn? If so, check your C.G., it's probably nose heavy.

2) If there is a wind blowing, are you having trouble keeping the wings level and holding the intended path along the rectangle? Don't worry about holding them level. There is no downgrade for banking the wings on the maneuver.

3) Does a crosswind foul you up on the final approach? If your answer is yes, you're normal. The rules call for level wings during the landing, which starts at two meters (approx. six feet). It will take lots of rudder practice before you learn to crab the plane and hold a straight line. Some planes just won't do it. It is also a very easy situation to turn into a lovely snap roll.

4) Does the model always bounce? If it's a taildragger (no tricycle gear), try landing on the tailwheel first. It works.

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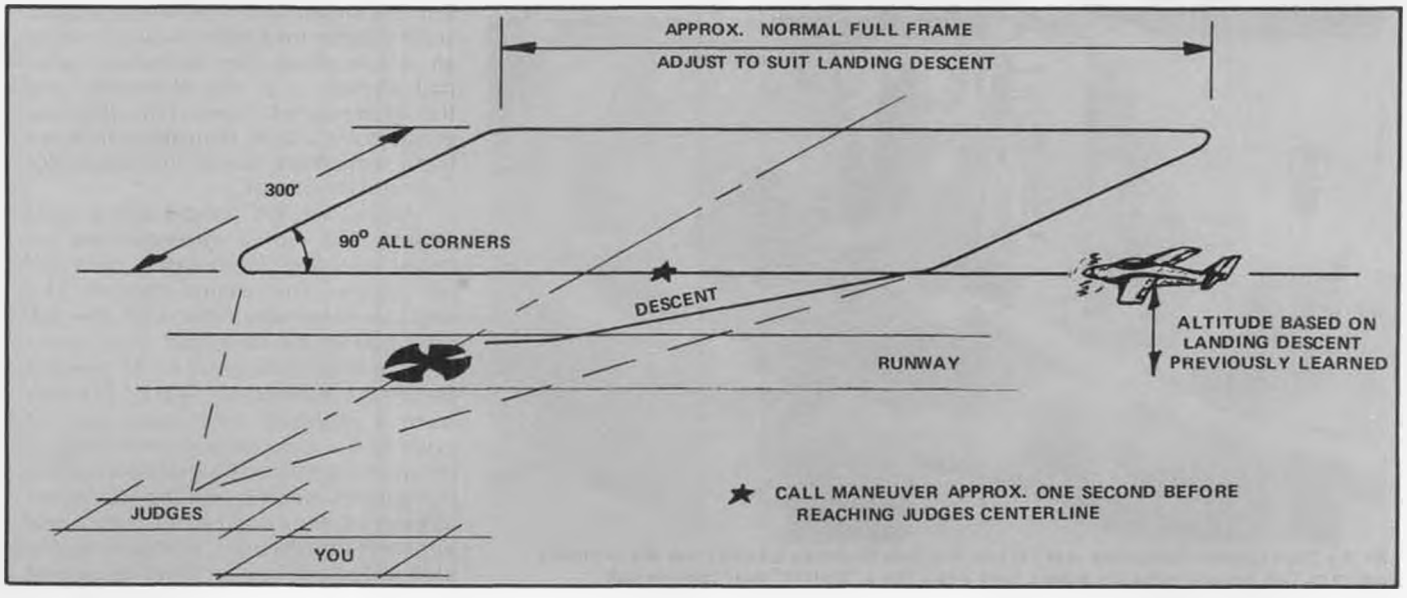

The first of a famous string of "Schneider Cubs", with its designer and builder, Alex Schneider. Plans were enlarged from a small free flight Cub produced in kit form by Capitol. Capitol's plans, incidentally, were drawn by one Walt Schroder! Above photo was taken in the spring of 1950.

FAMOUS R/C AIRCRAFT..... NO. 5 the 'SCHNEIDER CUB'

• This series of Famous R/C Aircraft could never be complete without including the "Schneider Cub," as designed, built, developed, and flown by Alex Schneider, of Northern California.

Alex and his Cub were key figures in the early history of radio control. Most significantly, they won the R/C event at the Nationals in 1952, '54, and '55!

Note that we said "*the* R/C event." From its inception in 1937 as a Nationals model aircraft event, radio control was one category. Contestants used whatever they could develop to control a model aircraft from the ground by radio signals. This "control" usually consisted of rudder . . . period, using one signal that released an escapement, powered mechanically or by twisted rubber, to turn the rudder in sequence to a preselected stopping point on either side of neutral.

However, the appearance of Alex and his Cub at an R/C contest was similar to Maxwell Bassett showing up at an early free flight contest with his gas-powered model when everything else was rubber-powered! Alex proved that the R/C rules, at least for some time to come, had to be revised into separate categories according to the equipment used.

It was also significant that to this day, the Schneider Cub has been the nearest to full scale of any model aircraft to win a major pattern competition! Maybe at last, the Las Vegas Tournament will bring this realism back after almost 30 years.

But we're getting away from the story. Back in the July 1955 issue of *M.A.N.*, Bob Beckman, who now writes a Giant Scale column for *Model Aviation*, wrote an article about Alex Schneider, who had already won two Nationals, and though it was not known at the time, was about to win a third. From this article, we learn something about the Schneider Cub and its creator.

"Alex's first R/C model was a scale Stinson 150 with a three-channel receiver affording independent right and left rudder, and engine control. This ship was never very successful. The stab area had to be increased from seven percent (the scale area) to 17 percent before the plane would fly at all. Takeoffs were a problem, with many days of nothing but ground loops and bogging down in the thick grass that covered the flying field. Hand-launching was never attempted; they don't hand-launch real airplanes and besides, at that time the club levied a $5 fine for hand-launching

At the 1954 Chicago Nats. Alex is at far left, and Bob Beckman is third from left in chief's uniform. Can anyone name the others. Sure looks like a "Schlitz" beer commercial!

an R/C model.

"The first Cub was built in the spring of 1950. It was built from the plans to a Capitol free flight kit of the Piper Cub. The model was very close to true scale, the only change being the usual increase in tail surface area. It had a 7-1/2 ft. span, 15 in. chord and Clark Y airfoil. The original flying weight was 4-1/2 lbs., but the control equipment brought the total weight up to about 7 lbs. The landing gear was lengthened in an attempt to improve ground runs in high grass, but that was the only change made. At first this ship didn't seem any more successful than the Stinson. The ground looping tendencies were so pronounced, even on a grass-free runway, that it was very difficult to get the plane in the air. Once the plane was in the air it was very floaty and rather hard to get down again.

"The ground looping problem was tackled first. The solution turned out to be repositioning of the landing gear closer to the CG. The gear was moved back, in small steps, as far as was possible without rebuilding the plane. Each change improved the ground performance and the process was continued in the construction of later models. On the latest model the wheel axles are about 1 in. ahead of the CG. This gives straight ground runs on both takeoff and landing with no nose-over tendencies on reasonably smooth fields.

"Once the takeoff problem was licked, the flying characteristics of the plane received some attention. To reduce the floating tendency, the wing was reduced to 12.5 in. chord and 7 ft. 4 in. span. The stabilizer was decreased at the same time. In all of his planes Alex has stuck pretty close to the 40, 20, 10 formula; tail moment, 40 percent of the wing span; stabilizer area, 20 percent of the wing area; and fin area, 10 percent of the wing area. The changes made greatly improved the performance of the plane. The weight was up to 7-1/2 lbs., giving a wing loading of a little less than 1 lb. per sq. ft. By our present standards the loading was a little on the light side, but the plane was the best and most consistent flier in the area.

"Alex flew this first Cub almost every Sunday for about a year. He never did much in the way of stunt maneuvers with it. Instead, he spent the time learning to handle the plane and the controls. It was a very steady, realistic flier and he got to the point where he could put it right where he wanted it every time. . .

"The second Cub, built in the fall of 1951, was the first to have a five-channel control system giving independent right, left, up, down and engine control. The construction was altered to bring the landing gear back, following the trend established with the first Cub. To reduce frontal area, the wing was lowered by reducing the cabin height. Wing and stab on this ship were in line and about 1-1/2 in. above the thrustline. The takeoff characteristics of the plane were good, but in the air it was a disappointment. The ship would drop the inside wing sharply in a turn, and once into a turn, opposite rudder had to be used to get it out. Even with the added elevator control it was a poor stunter. Loops were big, with a tendency to fall off to the side and turns had to be slow and wide to prevent spiral dives.

"In the spring of 1952 the third, and what turned out to be the last, Cub design was built. The wing was raised again to a point about halfway between the extremes of the first two Cubs. At the same time the stab was lowered a little and this combination cured the spiraling tendency. Nose and tail moment arms were shortened a little to tighten up the maneuvers and the landing gear was moved back to its final position. The wing was patterned after Walt Good's Rudderbug wing with washed-out tips and an NACA 6412 airfoil. Total dihedral angle in the wing was 12°. Total weight was 9 lbs.; wing loading, 19 oz. per sq. ft.

"This plane was completed a few months before the 1952 Nats and right from the first it showed real promise, the result of Alex's 2-1/2 years of work and experience. Takeoffs are easy and quick, the tail lifts in about 10 ft. and a touch of 'up' puts the plane right in the air. Size and weight have permitted this plane to fly normally and safely in winds that have brought many contests to a dead stop.

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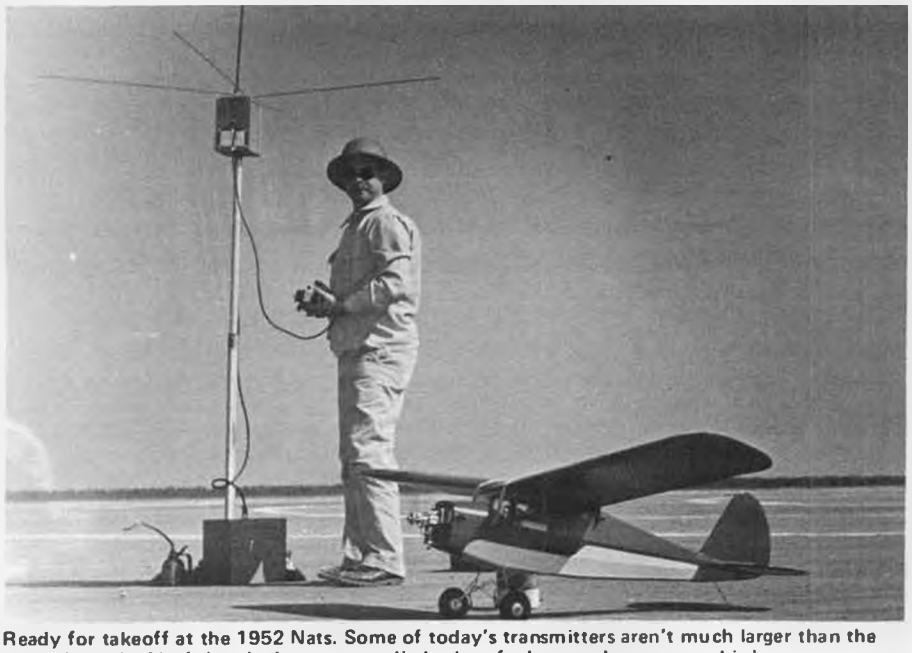
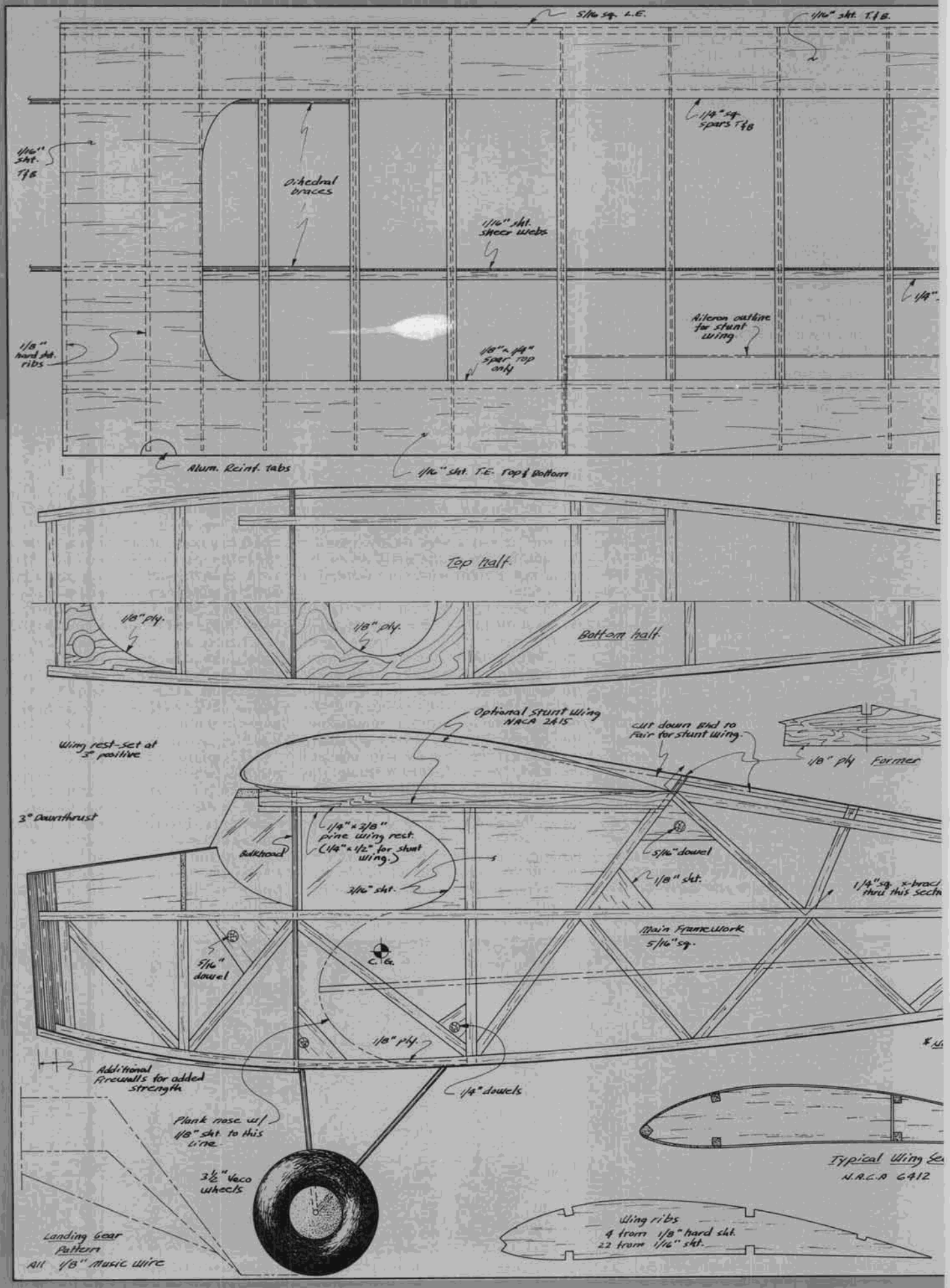
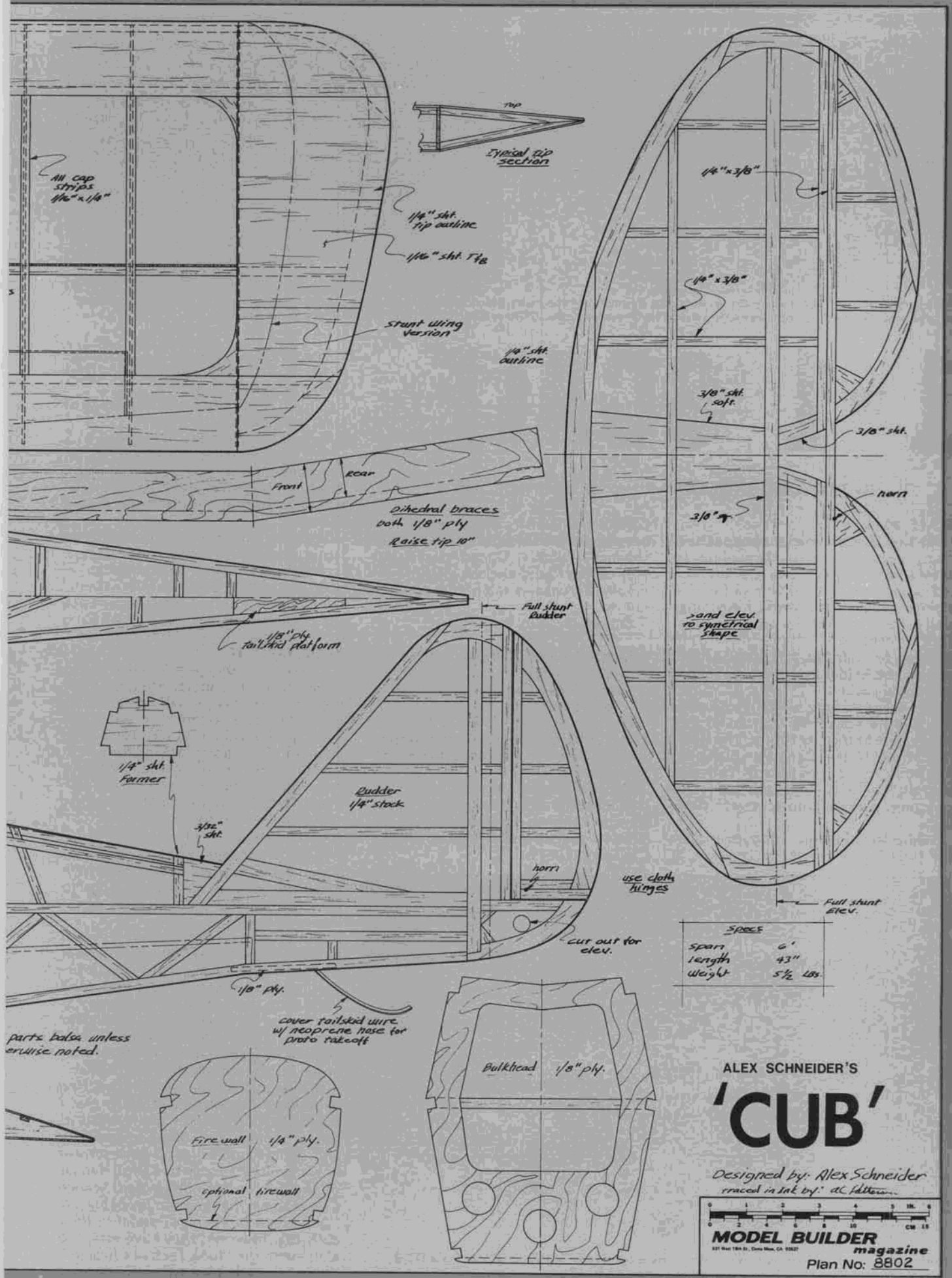


Ready for takeoff at the 1952 Nats. Some of today's transmitters aren't much larger than the control box in Alex's hands. Lot more realistic aircraft than modern pattern birds.

Spitfire .60 on ignition powered Schneider's Cubs. Note 3-tube receiver in cabin. Tubes rubber-banded to prevent vibration failures.

Alex and Dean Kenney at '55 Nats. Alex was first, Dean 3rd, and Bill Deans was 2nd. This was first year separating single from multi.


5/16 sq. L.E.
1/16" sht. T/E.
1/16" sht. T/B
1/4" sq. spars T/B
Dihedral braces
1/16" sht. sheer webs
1/4"
Aileron outline for stunt wing
1/8" hard sht. ribs
1/8" x 1/4" spar top only
Alum. Reinf. tabs
1/16" sht. T.E. Top & Bottom
Top half
1/8" ply.
1/8" ply.
Bottom half
Optional stunt wing NACA 2415
Cut down Bhd to Fair for stunt wing.
1/8" ply Former
Wing rest-set at 3° positive
3° Downthrust
1/8" x 3/8" pine wing rest. (1/4" x 1/2" for stunt wing.)
Bulkhead
3/16" sht.
5/16" dowel
1/8" sht.
Main Frank Work 5/16" sq.
5/16" dowel
C.G.
1/8" ply.
Additional Firewalls for added strength
1/4" dowels
Plank nose w/ 1/8" sht. to this line
3½" Veco wheels
Landing Gear Pattern
All 1/8" Music Wire
Typical Wing Section
N.A.C.A. 6412
Wing ribs
4 from 1/8" hard sht.
22 from 1/16" sht.



ALEX SCHNEIDER'S

'CUB'

Designed by: Alex Schneider

rraced in ink by: dC Editorial

MODEL BUILDER magazine

Plan No: 8802

Photos taken at the 1980 Toledo Show reveal just a handful of the many beautiful scale models on display...and also give an idea of the number of spectators present! Categories were featured for Precision Scale, Military Sport Scale, and Non-Military Sport Scale.

1 TO 1 SCALE

By BOB UNDERWOOD PHOTOS BY AUTHOR

SCALE '80

As July 20-26 rapidly approaches, many persons are making plans to attend Scale '80 in Ottawa, Canada. The indications are that the Ottawa Remote Control Club and the MAAC have things well in hand to make this a most memorable international championship. In addition to Scale '80, you'll find Sail '80 will also be held during this time period for model yachts.

The scene for the airplane competition will be Rockcliffe Airport, located 10 km east of the city center. The site is the home of the Canadian National Aeronautics' collection of full-size aircraft. There is unlimited space for camping, parking, and spectator viewing.

While this column will appear after the June 1 deadline for reservations at Carleton University or for meals and camping at the site, there are abundant facilities available. Commercial campsites can be found as close as 2 km from the site. The names and phone numbers follow:

Ottawa-Nepean Trailer Park: (613) 828-6632

Rideau Heights Campgound: (613) 825-1217

Poplar Grove Campground: (613) 821-2973

Pinegrove Court: (613) 825-2371

I do not have a motel listing, however, such information can probably be obtained from either:

Canada's Capital Visitors and Convention Bureau, 222 Queen St., Ottawa, Canada K1P 5V9, or: Scale '80, P.O. Box 9284, Alta Vista Postal Station, Ottawa, Canada K1G 3T9.

Not a Toledo prize-winner, but still a very nicely done ship is Ken Ames' Sport Scale DC-3, possibly from a Royal kit. Power appears to be two K&B .40's.

The schedule includes the following:

Fri. 18 and Sat. 19: Practice flying (Ha! Scale fliers *practice?*).

Sat. 19: Registration and beginning of static judging.

Tues. 22 through Fri. 25: Flying.

Sat. 26: Rain day or air show.

The banquet will be held Saturday night. The Sport Scale (F4) and Precision (F4C) will be intermixed in the flying during the week.

With the proximity of the site to the Eastern portion of the U.S. especially, it is anticipated that a large number of spectators will be on hand. International competition is a stimulating experience for all concerned, so plan to be on hand when it comes to a beautiful city, Ottawa.

PROBLEM TIME

The letter from Pavel Rajchart in the CSSR received so much attention a few months ago that I will try another interesting one on you. This one, from Tadeusz Szalinski of Lane Tech Prep School in Chicago, is looking for a most specific piece of information. While it was originally addressed to me as President of NASA, I felt we might expand the coverage beyond those members.

Dear Mr. Underwood,

NASA's newsletter was given to me by a friend and I thought it could be of help to us with our project. Could I appeal to your membership through your newsletter for help?

Our problem is to document by serial number a Boeing B-17 bomber that was present at the Chicago Municipal Airport on Sunday, October 17, 1943, for a dedication ceremony held that day as part of an air show held to sell War Bonds. This aircraft was named "Lane Tech of Chicago" and was one of four other bombers dedicated on that day.

During the past four years I have tried to identify this plane's serial so that I could use Air Force files to investigate its life. School sources, library references, and airport authorities all have proved negative. The Sunny Air Corps Hangar on the field was run by Fairfield Service Command at the time and probably lists "Lane Tech of Chicago" serial in their daily log; however, they have vanished along with the "Lane Tech of Chicago." There are no known photos or persons

who could attest to the serial number. We did manage to eliminate about 11,000 serials of the 12,000 produced, but aren't even sure of the model number . . . it was a late F or early G, had a chin turret with cheek blisters, olive drab paint, and a "new" (not seen before) national insignia. She also was factory fresh . . . no dirt, dings or scratches on her.

Can anyone out there identify her or offer a clue as to where to look for her serial number? If not, can anyone tell me where I can find delivery dates for the 1870 possible serial numbers that I have left?

Thanks much for your consideration of our problem. Hoping to hear good news.

Is there someone out there who can aid the research of this problem? Contact: Tadeusz Szalinski, Lane Tech, 2501 W. Addison St., Chicago, IL 60618.

SCALE DRAWINGS

A new catalog available from MAP (Model Allied Publications, Ltd.) presents a very wide range of aircraft drawings. They span early aviation types to 1913, WW-I, Golden Age, Schneider Trophy racers, WW-II, Light and Business, Modern Airliners, and Jet Age. There are varying scales available such as 1/32, 1/48, 1/72, etc. Some have extra detail of internal construction, cockpit, etc. In other cases you may find color details or historical information.

In the United States, four contacts are listed: Bob Holman Plans, P.O. Box 741, San Bernardino, CA 92401; Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488; International Scale Plan Service, 4 Cleveland Terrace, Hobart, IN 46342; Hobby Hideaway, R.R. 2, Box 19, Delavon, IL 61734. Home address: Model and Allied Publications, Ltd., P.O. Box 35, Hemel Hempstead, Herts, HP1 1EE, England.

CONTEST SAVVY

With the 1980 contest season in full bloom, some consideration of the types of approaches to contest activity may be in order. It often seems true that individuals new to the scale scene have little experience with contest techniques.

M.A. Zimmerman's Gipsy Moth placed a creditable 3rd in Non-Military Sport Scale at Toledo, but in our opinion it should have been 1st. In addition to the flawless finish and superb detailing is the fact that it sports a *working* replica of a Mk. 1 Cirrus engine! Featuring four cylinders and overhead valves, the engine displaces 1.11 cu. in., weighs 30 oz., and turns a 12-1/2x8 at 8800 rpm. Yes, it has flown.

This is perhaps due to the fact that they may have not been contest oriented in any phase of modeling prior to that time. A Pattern flier often has spent considerable time practicing and has developed more of a flight line routine. The new competitor in scale has been building more often than not and doesn't have the competition background.

PRIOR TO THE CONTEST

The preparation of a checklist is most helpful. There are a number of standard items to consider, such as props, glow plugs, etc., but be certain to take into account special needs as well. Often, little parts that are most likely not to be in another contestant's field box need to be considered. These items could include things such as touch-up paints, landing gear parts, bomb drop items, extra wheels, linkages for things like gear doors, fuel fillers, special battery leads, etc.

In addition, be certain to include your scale prop and spinner and static presentation. (If it is precision scale, don't forget the scale ruler.)

Colorful Grumman F9F-8 Cougar by Max Ettinger, from a Jet Hangar Hobbies kit. Max worked like crazy on this one, got it finished just in time for Toledo.

The magnitude of the number of items you take can be limitless, but some repair type things can be helpful. I usually include a Dremel with a cut-off wheel and miscellaneous tips, a Micro-Flame tool with silver solder, a small battery soldering iron, glues, etc. The tool box has a bunch of items such as pins, masking tape, engine and retract parts, clevis, wire, multi-meter, nuts, bolts, and all that jazz. And oh yes, have you remembered the transmitter?

One pre-contest preparation item that is most important is to see that your model is flown and properly set up. It has been all too frequent, even with Sport Scale modelers, that the first flight of the model comes in a contest situation. This is not only unfortunate for the competitor's peace of mind, but a dangerous practice as well. This year you should find that you are required to sign a safety declaration at an AMA sanctioned contest. Basically, it is a release which stipulates that you have flown the model in the type of maneuvers you intend to perform in the competition. While there is little possibility of checking the accuracy of how each contestant meets these requirements, it seems logical that you should think twice before *falsely* signing these documents. A last check should reveal that you have your AMA membership card and FCC license.

AT THE CONTEST

Arrive with as much time to spare as possible. To have to rush to prepare your model to meet judging schedules can be filled with frustrations. If you have that extra time, you can check out retract operation, flaps, whatever. A most critical point is to determine whether everything is hooked up properly. It can be a real shock to have them give you the go ahead on the flight line and you discover that working your ailerons retracts your gear or drops the bomb!

Continued on page 84

THE SIMPLEST GLIDER WING

By DAVE THORNBURG . . . Sailplane wings don't necessarily have to be built-up affairs. Here's how to make a thin, efficient soaring airfoil simply by joining two sheets of wood at approximately a 7° angle.

• Buried deep in Sig's long balsa list are two strange cuts of wood called SIG TAPERED-CUT SHEETS. Both are 1/4 inch thick by 36 inches long. One is four inches wide, the other three inches. They sell for about the same price as regular 1/4-inch sheet balsa, but they are not at all like regular sheet balsa. Oh, no. They are very special cuts indeed, and every glider flier ought to be aware of them.

What makes them unique is their cross-section: they taper from 1/4 inch thick on one edge to only 1/16 inch on the other (see drawing). Sig probably thinks everyone buys them to carve hand-launch glider wings. Oho! Have I got news for them! God intends Sig Tapered Balsa for one purpose only: the building of simple, strong, one-night wings for six-foot R/C sailplanes!

I first stumbled onto these tapered sheets back in 1965, when I was beginning to move away from R/C power flying and into soaring. Sailplanes, I was told, needed long wings. But think of all those ribs! There must be an easier way!

At that time Gerry Ritz and other free flighters were using an airfoil section created by a Czech chap named Jedelsky. The foil consisted of a thick, soft leading edge sheet joined to a very thin (usually 1/16 inch) trailing edge at a high undercamber angle (see drawing). For strength, they glued sheet ribs to the bottom and let them hang right out in the breeze!

This might be fine for free flight gliders, but it looked awfully draggy for heavier, faster R/C soarers. Sez I, why not eliminate the ribs by using a much thicker trailing edge? And Lo! There was Sig Tapered Balsa to fill the bill.

My first design based on this type of wing was the Zephyr (April 1967 *American Modeler*). The wing was six feet in span with a seven-inch chord. It had only 1/4-inch thick balsa in the leading edge, and the undercamber was almost as deep as a free flight's. But it flew fine for an ultra-simple single-channel design. As you might suspect, there have been a few improvements since then. A lot of the undercamber has disappeared, the leading edge has thickened to 3/8 of an inch, and the extreme taper of the Zephyr wing has been abandoned in favor of a constant-chord planform.

The result is a six-foot wing that can be built, ready for covering, in just a couple of hours. It's tough enough for hi-start launching, easy to repair, and fairly resistant to warps. And if you don't have the bucks (or time) for Monokote, you can even fly it raw. Or slap on a light and careful coat of Japanese tissue and dope.

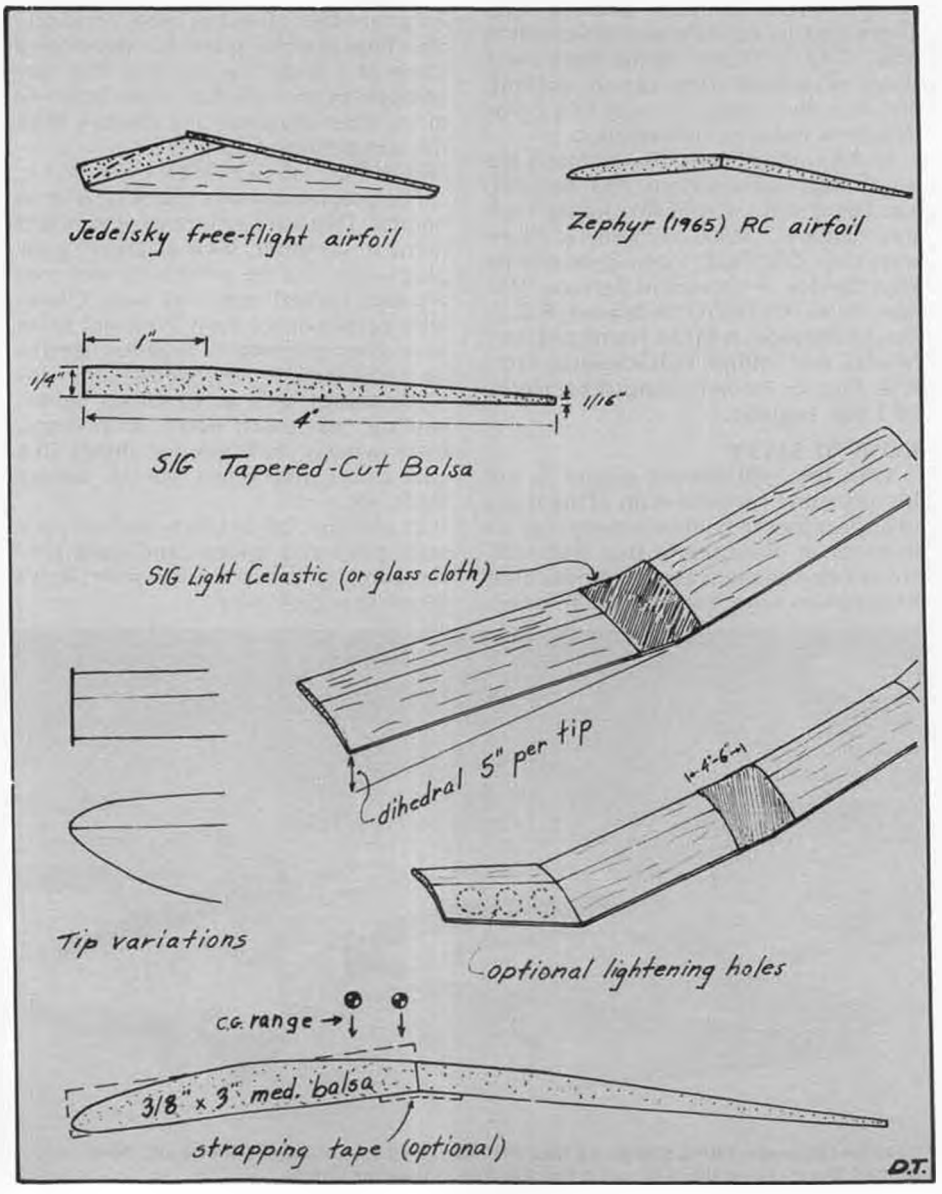
Such a wing makes a great quick-and-dirty replacement for a lot of the 70-80 inch kits on the market: Ace High, Soar Birdy, Super Questor, Square Soar, Wanderer, Drifter II, Anser, Pierce Arrow, Top Cat, etc. It lets you fly again on Sunday even though you trashed out your kit wing on Satuday afternoon.

Let's take a typical example of wing replacement on a stock kit, say the Wanderer 72. You were thermalling your meticulously-built Wanderer high above the rooftops and sordid reality of the city, when a kid with a styrofoam R/C butterfuly turned on and spun you right into the phone lines! The fuselage survived, but the wing popped off and landed in Jake Tinback's yard, and his bulldog ate it.

In a fit of pique you ripped the butterfly apart, fed the kid to the bulldog, and uprooted two phone poles with your bare hands, but when the dust settled you were still without a wing. What to do?

You stop by the hobby shop and select two sheets of extra-soft 1/4 x 4 tapered-cut balsa, two sheets of medium-soft 3/8 x 3 sheet stock, a package of Sig light Celastic, and some blades for your razor plane.

Back home, you plane a slight angle on the thick edge of the tapered sheets, join them with masking tape and white glue to the 3/8 sheet with about a quarter-inch of undercamber, and *presto:* two 7 x 36-inch wing panels! When the glue is reasonably firm, you shape them to the airfoil section shown in the drawings and epoxy them together with the appropriate dihedral. Then slap a layer of Celastic (or fiber-



glass cloth) on the center for reinforcement, and the wing is ready to cover . . . or to fly! Couldn't be simpler, eh?

Of course, you have to remember that when you strap this new, all-balsa wing to your Wanderer fuselage, you haven't got a Wanderer anymore. You've created an original design, and it's going to perform differently from a stock kit. The new wing is an inch narrower than the original, so your wing area will be down by around 70 square inches. This raises your wing loading slightly.

This new wing will weigh two to three times as much as the original, depending on how carefully you've selected the wood, and this too will raise your wing loading. More important, the new wing will be *heavier at the tips*, and this will tend to dampen the plane's rudder response, making the new ship seem a bit sluggish in turns. You can correct some of this sluggishness by simply increasing the dihedral a bit.

And what about dihedral? Most of the kits on the market today use polyhedral, or "double dihedral," rather than the simple V-dihedral used on full-scale sailplanes. Though a nuisance to build, polyhedral provides quicker rudder response and better stability in tight thermal turns than V-dihedral. Most modelers consider it worth the extra trouble to build.

If you put polyhedral into these all-sheet wings, you'll find that you don't need to reinforce the poly breaks with Celastic or fiberglass. Only the center break needs this extra strength. Just be sure to use a good, dependable epoxy glue on all three joints. And when you cut the polyhedral joints, be certain that they are *parallel* to the dihedral joint in the center! If they aren't you'll be building either washin or washout into the wingtips . . . and that's just like building-in warps!

And what about washout? Is it necessary in this type of wing? Here's my experience: If you build light, keep your wing loading at 7.5 ounces a square foot or less, and avoid obvious warps, you can leave the wingtips perfectly square and still not have tip-stall problems. But

A 1966 photo of Rob Smith holding one of Dave Thornburg's "Zephyr" designs, a six-footer flown rudder-only.

if your ship is heavy or badly built, you may have to build-in some washout. There are a couple of ways to do this.

One way is to warp it in, using heat (if the wing has been Monokoted) or thin dope (if the wing has been tissued). What you want to achieve is a gradual twist in the last six inches of the wingtip, so that the trailing edge at the very tip is about 1/4 inch higher than normal. In other words, you should be able to lay the wing panel on some perfectly flat surface, such as a good building board, and observe a 1/4-inch gap under the trailing edge at the wingtip, while the rest of the trailing edge and all of the leading edge remains flush with the flat surface.

A second way of achieving washout is to pick some wingtip shape that cuts away more trailing edge material than leading edge material. The old-fashioned elliptical wingtip shown on some of the planes in the photos does this perfectly. Another, and more currently popular shape, is the "tapered-trailing-edge, square-leading-edge" (Wanderer, Anser, Top Cat). By leaving the leading edge intact, and cutting away a wedge of the trailing edge, you effectively wash out the wing. (Don't ask me to explain the physics of it; the undercamber causes it.)

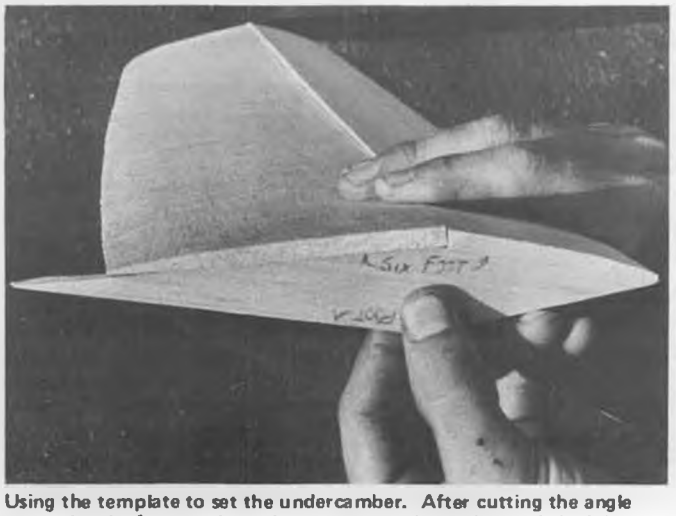
Just keep in mind the purpose of washout: to make the wingtip fly at a lower angle of attack (i.e., more nose-down) than the rest of the wing. When this happens, the tip will be the last part of the wing to stall, and the plane will be much more stable. Sometimes tip plates will prevent tip stalls on a square wing, especially if they're rolled up or down into the so-called "vortex tip" shape.

How critical is the airfoil shape on this wing? Not very. The shape shown at the bottom of the drawing is a typical sailplane airfoil: the undercamber is around 5/16 of an inch, measured at the joint, and the leading edge is fairly blunt (compare with Zephyr drawing). Undercamber and leading edge radius are the two significant variables. You can play around with them and find out a lot about how airfoils work.

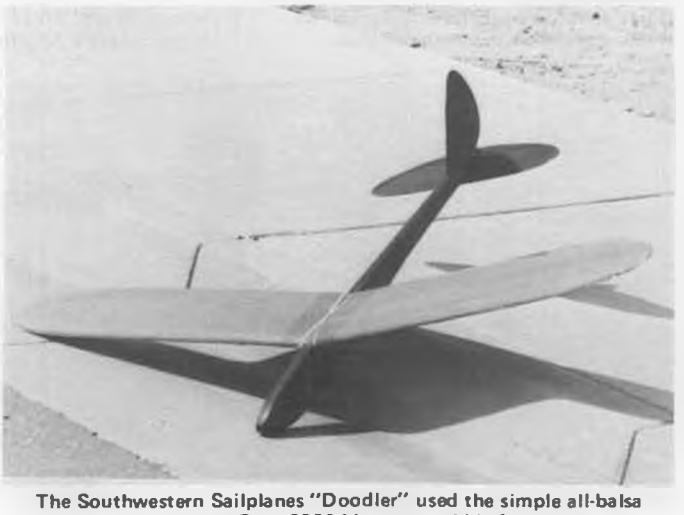
For example, you can lower the undercamber to just under 1/4-inch and your wing will fly faster; or raise it to just under 1/2 inch and it will be SLOW-SLOW-SLOW, but strong! Depends on what kind of performance you're after. The rule of thumb is: high camber means high lift and high drag and high strength, low camber means just the opposite.

And how about leading edge radius? It affects both speed and stall characteristics. A sharp leading edge will stall sooner and more violently than a blunt one. (This is another way to achieve tip stability: sand the final six to ten inches of the l.e. to a more blunt shape than the rest, and this will keep the tip from stalling before the rest of the wing does.)

Continued on page 94



Using the template to set the undercamber. After cutting the angle correctly, the front and rear halves are taped together and the joint filled with glue.



The Southwestern Sailplanes "Doodler" used the simple all-balsa wing described here. Over 2000 kits were sold before going out of production in 1976.

The contestants and their "beauties" at the recent "Build-and-Fly" contest at Torrey Pines. Entrants had three hours to dream up and build a model from scrap balsa. No two alike!

R/C SOARING

by Dr. LARRY FOGEL

PHOTOS BY AUTHOR

• There are pylon races and there are pylon races . . . and we've recently had both extremes at Torrey Pines. First, there was the Torrey Pines Gulls Pylon Racing Championships, a serious event co-sponsored by that club and this magazine. Invitations went out to one and all and, unfortunately for the host club, expert pilots came from all around. As a matter of fact, *all* the trophies are now in the Bay area just south of San Francisco.

Such aircraft generally weigh in at about five pounds (with the option of ballasting up to eleven pounds). These "mean machines" are the essence of efficiency. After the signal to launch, each pilot has 60 seconds to fling his plane off the cliff and climb on the lift. The planes then dive toward the start/finish line as the countdown proceeds to zero. The task is to fly five fast laps and finish above the cliff height.

Unfortunately, the weather didn't cooperate. Instead of tearing through the sky, most of the planes simply staggered around in the marginal lift. It was a challenge just to stay aloft. In fact, some of the flights ended on the sandy beach 350 feet below the starting point.

I'm not much for contests, but I entered a Hobie Hawk especially modified for high speed performance by Scotty Jenkins. I knew I'd have an advantage if the lift was light and be trounced if the wind picked up. Well, my strategy worked . . . for a while. I was doing right well until the middle of the afternoon, when the wind died completely. The CD declared "time out" for lack of wind. I was convinced that that was it for the day . . . and went home. Those with stouter heart stayed around and, sure enough, the wind picked up again and the contest went on without me. Evidently, patience *is* a virtue.

Corey Hellman's ship is aptly named, we think. Another conventional layout.

After the last heat of the last round was flown, the score indicated a tie for first place between Gary Ittner and Brian Irvine, with Rich Spicer next in line for honors. Rich had cleverly lowered his landing flaps to gain additional lift from the light air. There was a flyoff and Gary took first place. All in all, it was an excellent contest. Hopefully, next year's contest will be held under gale conditions.

The very next pylon race at the cliff was a "Build and Fly Your Own Design" type. Mark's Models contributed a pile of scrap balsa, pieces 1/2 by 3 by 36 inches or more. Each contestant grabbed chunks of wood, and without the aid of power tools, set to the task of putting together an R/C sailplane for the pylon event to be held three hours later. The resulting designs were quite a sight. Dave Watson put together a twin-tail beauty. As expected, Dave Freund built a flying wing. Corey Hellman constructed his "Bomb." There were other planes equally biodegradable. Designing such a plane is a real challenge!

Build-and-Fly winner was this fairly conventional design by Steve Neu.

By one o'clock, there was wind, and the pylon race began. Some of the planes flew "right off the board" . . . even if there was no board. Others

Ah, now it's getting interesting! Flying wing advocate Dave Freund came up with this tailless configuration. Crude, but it flew.

Another successful tailless was this no-sweep plank type by Steve Manganelli. Must have used an electronic mixer for the elevons.

Rich Spicer with Brian Irvine's more serious approach to slope racing. Weighs 5 lbs. empty, can be ballasted up to 11 lbs.

Another super-fast racer is the "Grand Boss" designed and built by Jerry Arana. Equipped with flaps for light-air flying.

Brian Irvine's ship in a tight pylon turn. Note the extremely small stab.

Arana's Grand Boss is a very capable machine, wins or places in most contests he enters.

required c-o-n-s-i-d-e-r-a-b-l-e adjustment. Steve Neu won the event.

An aerial combat destruction derby was scheduled as the last event of the day, but the wind died just in time. Both these pylon races are annual events. We all look forward to next year.

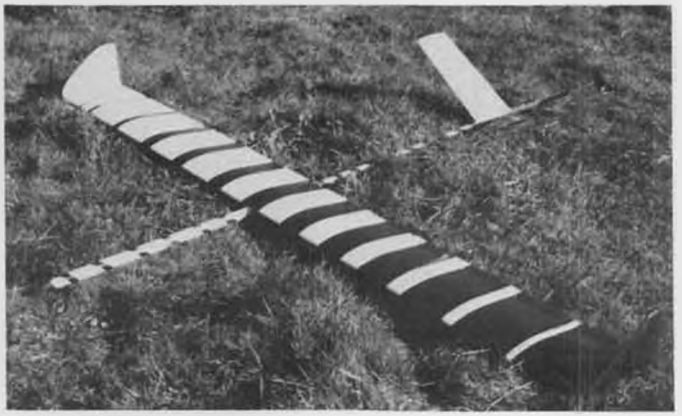
Bob Dodgson is already famous for his Todi, Maestro, and other designs. He's now come up with the "Camano" (emphasis on the second syllable), a new sailplane intended for FAI competition. According to Bob, "The challenge is to design a ship that's strong, maneuverable, capable of high launches (even from hand tow), and most important of all, is fast enough to run the FAI speed course in about nine seconds. This same design must also be light enough to outfly the floater-type gliders that capture the usual U.S. duration contests."

His solution is a clean, slender, strong seamless fiberglass fuselage, open on the top for installation of the radio gear and pushrods, then locked into the finished rigid form by adding the top deck of 1/8-inch plywood. A three-section progressive spar system provides strength in the lightweight built-up Eppler 193 wings that are top sheeted for accuracy of the airfoil. The wingspan is 111.5 inches, aspect ratio is 13 to 1, wing area is 936 square inches. Simple, dependable linkages are designed to prevent high speed flutter. The flaps are separately powered by a special low-drag linkage. The full-flying stab is mounted high so as to be out of the wing wash. The upper surfaces of the wings are blended into the fuselage to form a natural fillet. Total flying weight is 50 ounces, and it can be ballasted with up to three additional pounds. A four-channel radio is required for the flaps, ailerons (coupled to rudder), elevator, and spoilers. This new kit lists at $149.95 and is available from Dodgson Designs, 2905 S.W. Camano Dr., Camano Island, WA 98292. If you want more information, write Bob or call him at (206) 387-7412.

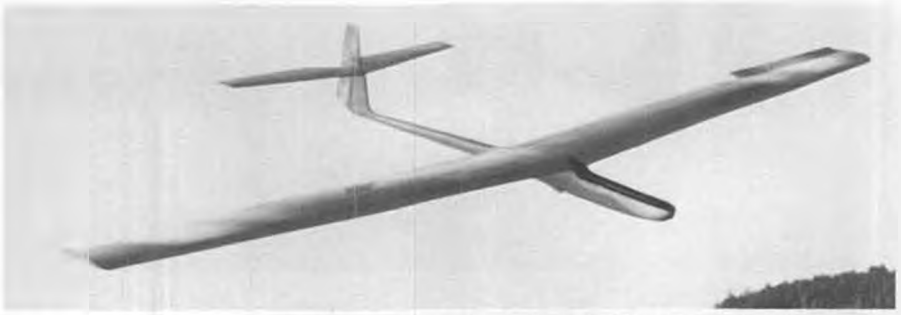
Peter Edridge of Marin County, California, is addicted to designing sailplanes. The "Dragonfly," a recent V-tail lightweight creation, serves as a prototype for his strictly functional slope racer, the F-1. The Dragonfly uses a pod-and-boom fuselage and foam wings. The boom consists of two vertically placed arrow shafts, the idea being strength at the lightest possible weight. This plane was designed strictly for super fun!

The F-1, on the other hand, is a more serious venture. The 120° (included angle) V-tail is intended to minimize drag. All of the radio gear is embedded in the wing to allow minimum frontal area of the fuselage (a fiberglass fishing pole). The 104-inch span wing is Peter's own design: semi-symmetrical and slightly concave on the upper surface

A lightweight slope soarer (and possible F3B competition glider) is the "Dragonfly" by Peter Edridge. Mighty skinny tail boom, eh?



A variation of Peter's Dragonfly is his F-1, an all-out slope racer. Fuselage is a fiberglass fishing pole, forcing all of the radio gear into the wing. A different approach to racing.



Dodgson Designs is now kitting the "Camano," expressly intended for F3B competition. Claimed to be extremely fast, it features a glass fuselage and fully-sheeted wings.

Another new kit on the market, Jerry Scott's "Dominator," a slope trainer/aerobatic glider. Text tells how to get one.

toward the trailing edge. It is of constant 10-1/2 inch chord and carries 1/2 by 30-inch ailerons. The winglets effectively increase the span without reducing the maneuverability.

Jaroslav Lnenicha's T-tail original goes up the line. Note the beautiful wide-open spaces, typical of sites in Czechoslovakia.

Peter really understands fiberglass construction. He described the different orientation of the individual layers, staggered to distribute the stresses. The fuselage can handle up to five pounds of ballast, so extra wing strength is required for high speed performance. Incidentally, he expects to drop the ballast (with parachute) in order to slow down for landing. Peter also mentioned the possibility of adding flaps. The ailerons are cut out of the wing and arrow shafts are used to make the perfect hinge fit.

Bill Drumm has been flying the F-1 "Magic Broomstick" to help explore its capabilities. Flight tests already show that a shorter fuselage provides adequate stability and improves the turning performance. I'd like to try my hand at this one. By the way, the advantage of one servo for each aileron was demonstrated when one quit in flight. Instead of crashing, the F-1 simply indicated the failure by the slower roll rate.

In terms of strictly aerobatic flight, let me introduce the "Dominator," designed by Jerry Scott of Los Angeles. Here is a slope trainer that can also be fully aerobatic. The 62-inch span covers 540 square inches with sweepback. The ailerons are coupled to the stabilizer to tighten up those turns, loops . . . whatever. The all-up weight is 28 to 32 ounces, that is, it flies at about eight ounces per square foot. That's fast enough, but not so fast that it can't be handled if you're just getting into slope aerobatics. You add up to two pounds of ballast if you really want to bore holes in the sky.

The wings are cap-stripped foam covered with Monokote. The fuselage is built up, and there's sufficient room for the DuBro mixer. If you like, you can fly this bird on ailerons/elevator without the mixer. If you want to get really fancy, you can add a third servo for separate flap control.

I first saw this bird flying under the capable hands of Dave Robertson of Orange Coast Hobbies, 14536 Brookhurst St., Westminster, CA 92683. It was his first flight at the controls of the Dominator, yet he demonstrated all the conventional maneuvers . . . including four-point rolls. Dave tells me that he carries the Dominator kit priced at $39.95. I expect it to be a best seller.

Jaroslav Lnenicha continues to keep me posted on R/C soaring in Czechoslovakia. His friend, Mr. Prokes, is now flying a three-meter span T-tailed sailplane weighing 1.7 kilograms. The airfoil is an NACA 4472, chosen after they confirmed its value through wind tunnel testing. Mr. Koudelka prefers the Eppler 387 section. His 2.7-meter span craft weighs about 1.8 kilograms and operates on ailerons, elevator, and rudder.

Jaroslav has been flying his own 2.5-meter span glider weighing 1.2 kilograms, also benefiting from the T-tail configuration. I expect to hear more about contest activity in that part of the world and will, of course, share this with you.

See you next month. •

Another T-tail sailplane from Czechoslovakia is this three-meter (118-inch) original built and flown by Mr. Prokes.

More of a slope type model is this 98-inch, 3-channel soarer by Mr. Koudelka.

Photo No. 1. R.B. McKenna with his venerable Super Buccaneer at Taft. Model is several years old now, still flies and still wins.

Photo No. 2. Impeccable construction is typical of all of Bob Oslan's models. His Megow Ranger really scoots with O.S. .25 conversion.

PLUG SPARKS

By JOHN POND

• It's that time again! It's that time of the year when this columnist loves to extol the virtues of his favorite event; the Texaco Event.

For the fourteenth consecutive year, the SCAMPS again staged its world renowned Texaco Event for free flight models. At the same time, SAM 21 again put on the R/C version of the Texaco Event for the seventh straight year. These meets are starting to get some whiskers on them!

Outside of the fact one meet is devoted to free flight and the other to R/C assist, the main difference is the outstanding reproduction of the Texaco Trophy (perpetual) offered by the SCAMPS. This is a highly prized trophy that really brings out the competition.

This year, because of the gasoline costs, accommodations, and meals rising to record heights, both contests were expanded to a two-day contest with numerous other events being added. This evidently is the answer to the gas crisis, as many modelers indicated they would not go to just a one-day contest. Their reasoning is that if you spend that much money, you might as well make the flying worthwhile.

This year is to be noted as the start of the 1/2A Texaco Event, both free flight and radio control. This event, first proposed by SAM 49, has caught on like wildfire in California. As a matter of fact, the event will replace the practically defunct .020 R/C Event at the Midwest SAM Champs. Hopefully this event will not suffer the fate of the .020 R/C Event.

Weatherwise you couldn't have asked for a better weekend, with both Saturday and Sunday featuring sparkling weather with very little drift. This was Taft at its best! Unfortunately more than a few modelers didn't bother to come up from the Los Angeles area, with the net result that the free flight areas looked a little sparse for contestants once the models started drifting off the field. Ironically, the meet had been extended to provide added events for other clubs but to no avail, as attendance from these clubs was poor. This was also noticeable in the R/C end of things, but the large contingent from the north more than filled out the competition sheets. The majority of the placings augmented this fact.

Picture No. 1 shows R.B. McKenna of Los Angeles with a Super Buccaneer he has been flying for years. Thanks to the sturdy construction put into this model by Berkeley Models (Bill Effinger), these types last for many years, surviving many hard landings and obstacle crashes. R.B. won last year, but had to be satisfied with third place in the Texaco Event.

Picture No. 2 shows Bob Oslan with one of his impeccable models that need no introduction. Bob Oslan was Contest Director for the free flight side of things, so was unfortunately unable to fly his excellent performing Megow Ranger.

As a sidelight, many contestants have inquired why this columnist, when acting as Contest Director does not fly. This is simply because he feels you can only do one thing at a time and do it well. Actually, in some side research, the columnist ran onto a mint set of printed AMA regulations for model flying in the

Photo No. 3. Looking down the Taft flight line at recent F/F and R/C Texaco meet. Monti Farrell with Lanzo in foreground.

Photo No. 4. Jack Alten did a fine restoration and R/C conversion of John Pond's old F/F Scram. Now uses Saito 4-cycle power.

Photo No. 5. SAM 21's Rich Kultti has been cleaning up regularly with this hot flying Buzzard Bombshell. K&B 4.9 makes it go.

Photo No. 6. One of SAM 30's hottest fliers is Jim Kyncy, shown here with his scaled up (to 93 inches) Gas Bird.

1940-41 era. In these rules, it definitely spells out what the writer has contended all these years; the Contest Director shall not fly in the meet he runs! No question about this regulation, it does keep nervous modelers from voicing unjustified complaints if the C.D. happens to do well at a meet.

Picture No. 3 shows the long flight line at Taft. Unfortunately, the free flight section shows up very poorly as most modelers were using their automobiles to retrieve their models. Noted in the foreground is Monti Ferrell. Monti is employed by the Cal Poly University at San Luis Obispo as an aeronautical assistant to Professor Nicholaides, the head of the Aeronautical section.

Monti has one of those jobs we all dream about; building and flying models for a profession. With a very heavy RPV (Remote Piloted Vehicle) program being conducted at the college, Monti is regarded as the premier test pilot and is in charge of all building, repairing, flying, and development of these radio directed airplanes. (We used to call them drones.)

Besides all that hustle and bustle in the RPV program, Monti finds time to build and fly his own models, organize a club, and run the Annual Pond Commemorative, a two day "biggie" held at San Luis Obispo every October.

This might be a good time to stop and note the winners of the free flight activities:

"DAWN PATROL" TEXACO
1. Cliff Silva (Roll/Baby Cyke) 39:00
2. Walt Parker (Ehling/Brown) 31:45
3. R.B. McKenna (Buccaneer/Ohlsson 60) 19:30

1/2A TEXACO
1. Sal Taibi (Powerhouse) 40:55
2. Bob Dittmer (Miss Philly) 33:31
3. Jim Persson (Mercury) 26:52

BROWN JR. ONLY
1. Walt Parker (Ehling) 40:28
2. Jim Ogg (Powerhouse) 31:31
3. Sal Taibi (Scram) 27:01

BEAUTY EVENT FOR BROWN JR.
1. Sal Taibi (Scram)

30 SEC. ANTIQUE
1. Sal Taibi (Anderson/Forster 99) 10:01
2. F.L. Swaney (Powerhouse/Orwick 64) 9:39
3. Abe Gallas (Kloud King/Madewell 49) 7:59

A/B PYLON
1. Bruce Chandler (Thermal Thumber/BK 15) 8:22
2. Cliff Silva (Gas Bird/Forster 29) 7:33
3. Jim Adams (Zipper/Forster 29) 7:25

CLASS C PYLON
1. Sal Taibi (Swoose/Forster 301) 12:04
2. Leon Nadolski (Sailplane/Orwick 64) 6:21
3. F.L. Swaney (Sailplane/Orwick 64) 4:46

Picture No. 4 shows Jack Alten's magnificent job of restoring Pond's old free flight Scram. Originally powered by

Photo No. 7. Pond's at it again! This time it's a scaled-up Playboy Jr. with K&B 3.5. Scaling the small one up has certain advantages over scaling the big one down...see text.

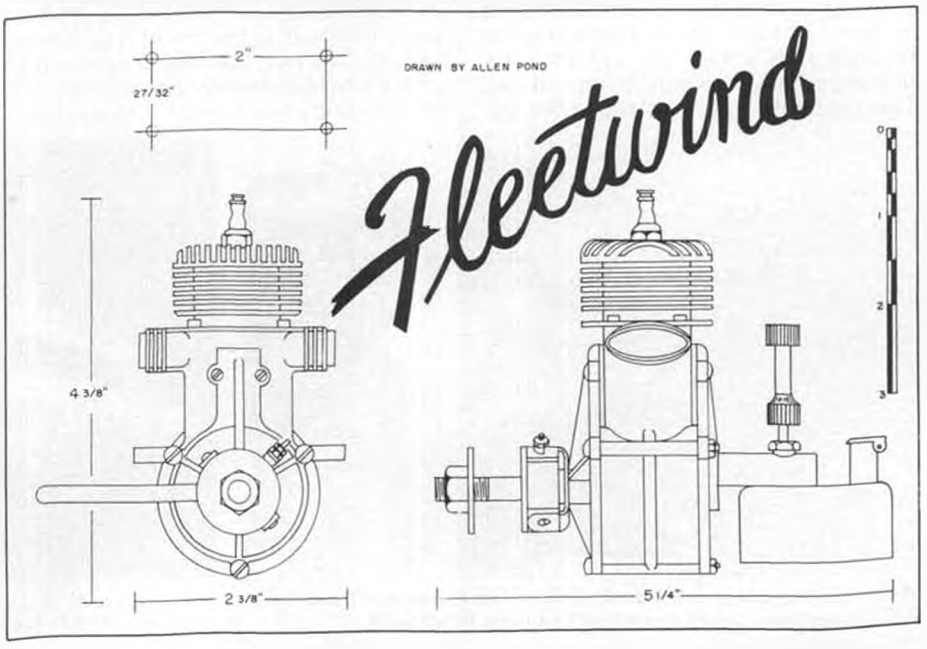


Photo No. 9. It's 1938 and John Drobshoff of the S.F. Vultures is all set to launch his Roy Wriston Diamond.

a Super Cyclone, Jack elected to use one of the Hobby Shack SAITO 30 Four Cycle engines for longer fuel endurance.

Jack found to his dismay that the engine did not use all the fuel, in many cases utilizing only about half of the allotted fuel. Jack is now of the opinion, when using larger propellers on the Saito and throttling back to conserve fuel, the large venturi plus the close proximity of the fuel to the intake valve has a tendency to "quench" the glow plug. This interesting theory remains to be proven. We will have more on this later.

Photo No. 5 catches Richard Kultti cranking up his hot Buzzard Bombshell. Rich, a newcomer to the old timer game, has had excellent luck in winning or placing in all contests he has entered. Rich generously concedes that Charlie Critch has been most instrumental in helping him over the rough spots in the learning process.

Picture No. 6 is of Jim Kyncy who comes all the way from Oroville, a good six or seven hour drive to Taft. Jim has turned out to be a real dedicated modeler, as attested to by his recent string of wins. The Gas Bird (Diamond Zipper)

Photo No. 8. Jack Alten about to launch Ted Kafer's 1/2A Challenger. Big props and low nitro give 6 to 7 minute engine runs.

shown here is a scaled-up version of the original Dennymite-powered model by Carl Goldberg. Scaling has apparently not affected any of the good flying qualities the original design had. Credit should be given to Don Bekins for first scaling the model to Texaco size and then proving the design could be effective in the Texaco Event.

Picture No. 7. Although Pond, the C.D. for the R/C O.T. Events did not fly, he brought down a scaled version of the Playboy Jr., as shown. The model was flown after the competition had closed at 3 p.m. and appears to have better flying qualities than the Playboy Sr.

This idea of scaling up a Playboy Jr. was first proposed and tested by Barnet Kernoff, who runs Tyro Models, of Palo Alto, California. His .020 model was so immensely successful that he proposed an A-B version of this model, as certain advantages were to be gained by use of the Playboy Jr. design.

To begin with, each Playboy is a

Photo No. 10. One of the two 1980 replicas of the 1940 Fireball control liner, built by Frank Macy. Fuselage is carved and hollowed, finished in automotive acrylic lacquer.

Photo No. 11. The SAM 7 gang looks over George Armstead's Beaumont Soaring Champ glider. From left: Armstead, Kip Christensen, Stan Colson, Kevin Barrett, and John Ennis.

Photo No. 12. Rex Bain of New Zealand shows how his 3-channel R/C Zipper flies.

Photo No. 13. South Africa's Jack Abbott with R/C Sailplane. Covering caused fuselage to twist, flies well anyway.

Photo No. 14. Charlie Critch cranks up the O.S. .60 4-cycle in the 9-foot Clipper built by Bill Bowen (standing). A real floater!

different breed of cat. As the Playboys descend in size, the tail moment gets longer and the elevator area gets larger. This particular 66-inch wingspan model has the same tail area as the 80-inch Playboy Sr.! As one can see, if he appreciates the effect of lifting tails on the glide, here is a new way to go with the excellent Playboy designs. Right now, Kernoff is developing a Class C version of the Playboy Jr. If the demand warrants it, he may produce kits!

Before wrapping up this Texaco report, it might be well to report the black cloud that has been striking Ted Kafer, ex-SAM 21 Prexy, for the past three contests.

Picture No. 8 shows an excellently built advanced Challenger for the 1/2A Texaco Event which Ted produced. Preliminary test flights indicated he had a winner. However, fate stepped in and dealt him a cruel blow as his model got in the way of John Drobshoff's big nine-foot Champion and was promptly chewed up, spit out, and the Champion continued on to an excellent flight completely undamaged. The ironical part of it all was that the Challenger was a design by John Drobshoff.

Picture No. 9 shows what the "Mad Russian" (John Drobshoff) looked like when he was young. It was taken in 1938 at the San Francisco Phelan St. Water Reservoir site, which was later built. This was one of the few sites left in the city where models could be flown.

John Drobshoff, who resides at 1675 46th Ave., San Francisco, is still quite active in modeling after all these years. He was one of the nine charter members of the S.F. Vultures which was founded in John Pond's basement room in 1935.

Well, we have procrastinated enough,

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HAYSEED

OLD TIMER Model of the Month

Designed by: Carl Hermes

Drawn by: Al Patterson

Text by: Phil Bernhardt

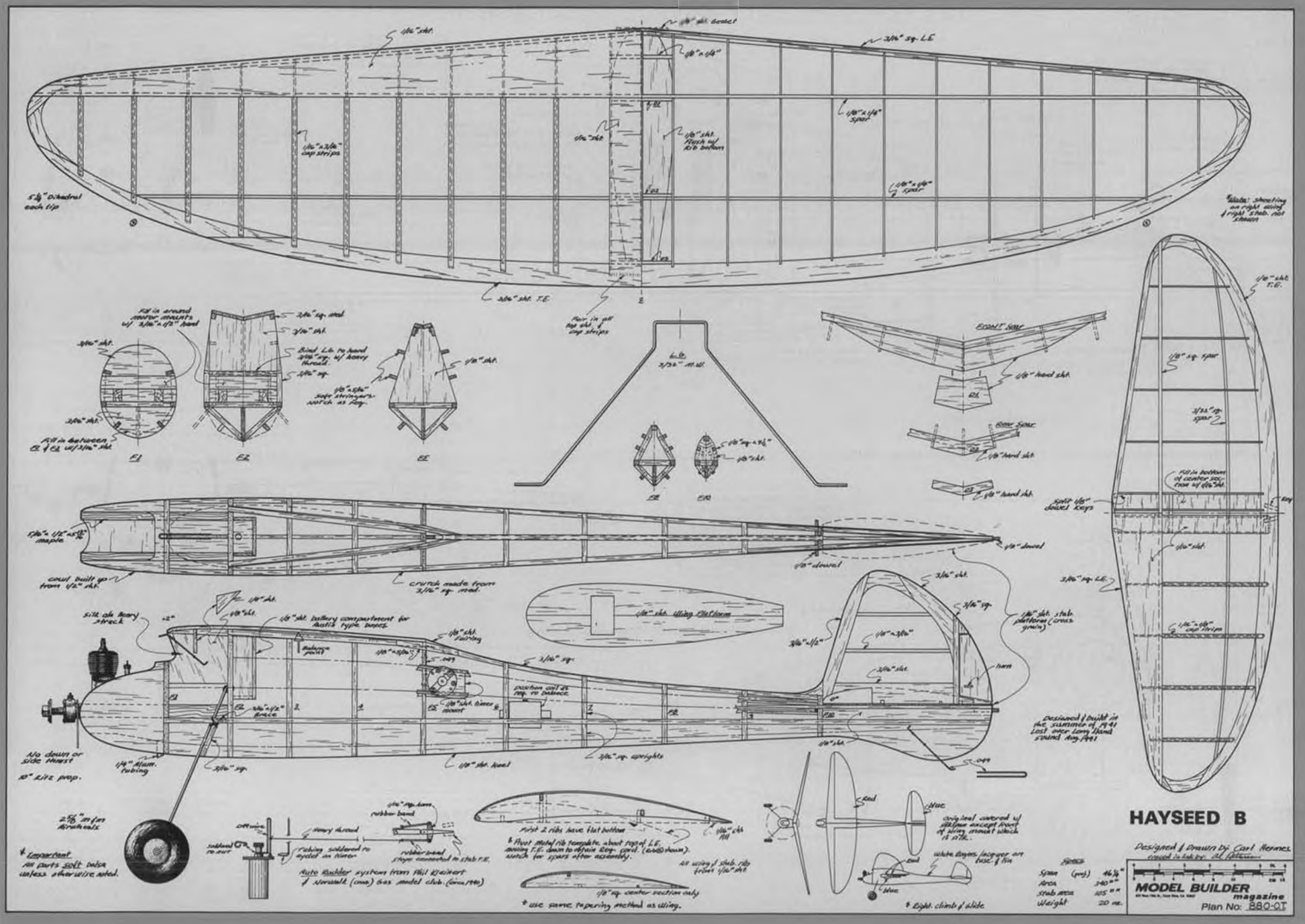
A youthful Carl Hermes with his Hayseed B, somewhere in Connecticut in 1941. Powerplant was an Ohlsson .23. Original color scheme was red, white, and blue; details on plan.

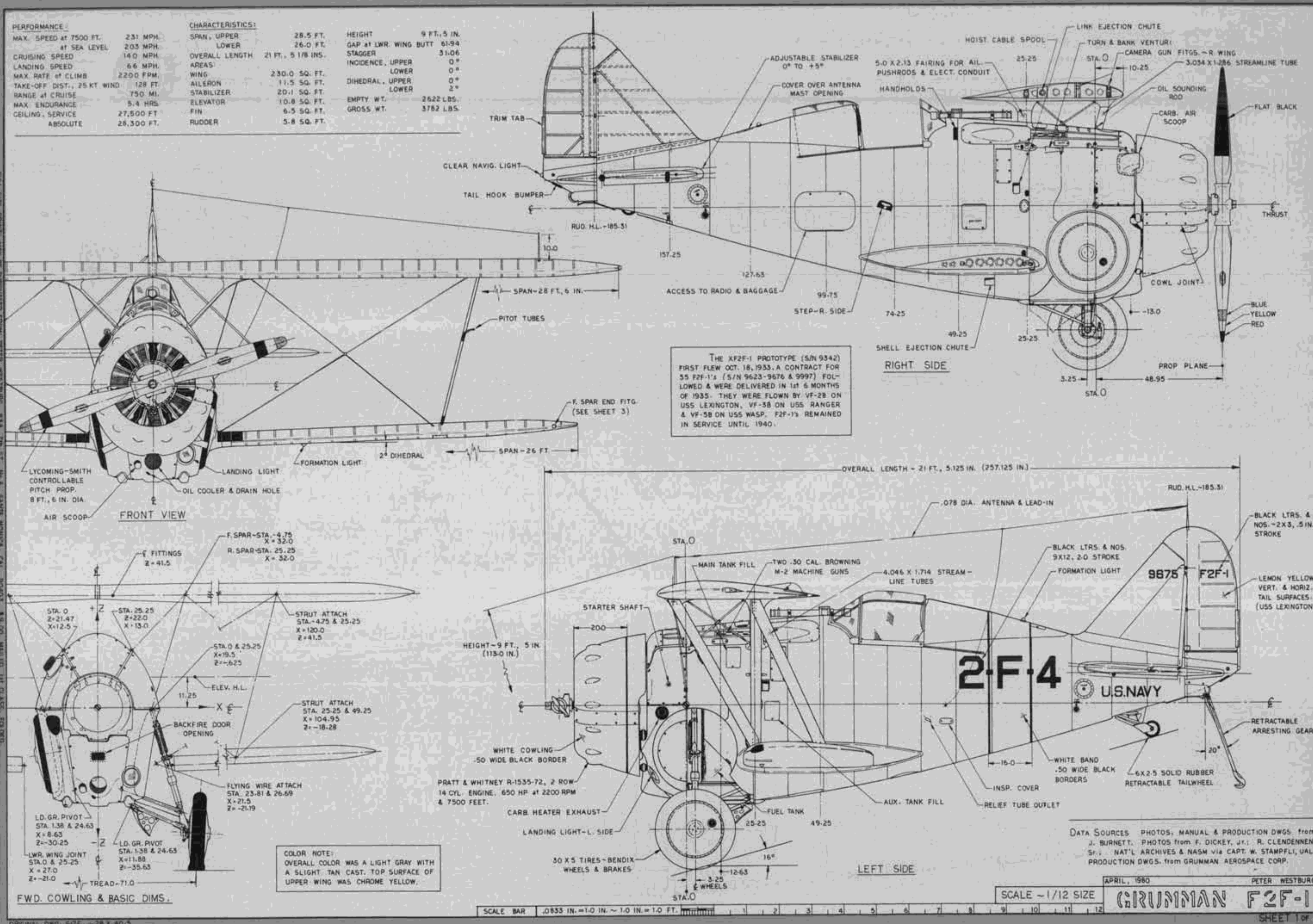
• Don't be surprised if you've never heard of the "Hayseed" before. Even though it was never published in a magazine or kitted, the SAM committee in charge of authenticating old designs has just recently put its stamp of approval on the Hayseed as an authentic, bona fide Old Timer, making it completely legal for SAM O.T. events. The model is a very clean design that sports, of all things, an auto-rudder operated by the Austin ignition timer . . . a very advanced feature for its time. The version of the Hayseed presented here was aimed at the Ohlsson .23, but those lucky enough to own both an O&R .19 and .23 today could fly classes A and B with the same ship, just by switching engines at the field.

We were fortunate to have the designer, Carl Hermes, on hand to give us a few words about his model. Here's what he has to say:

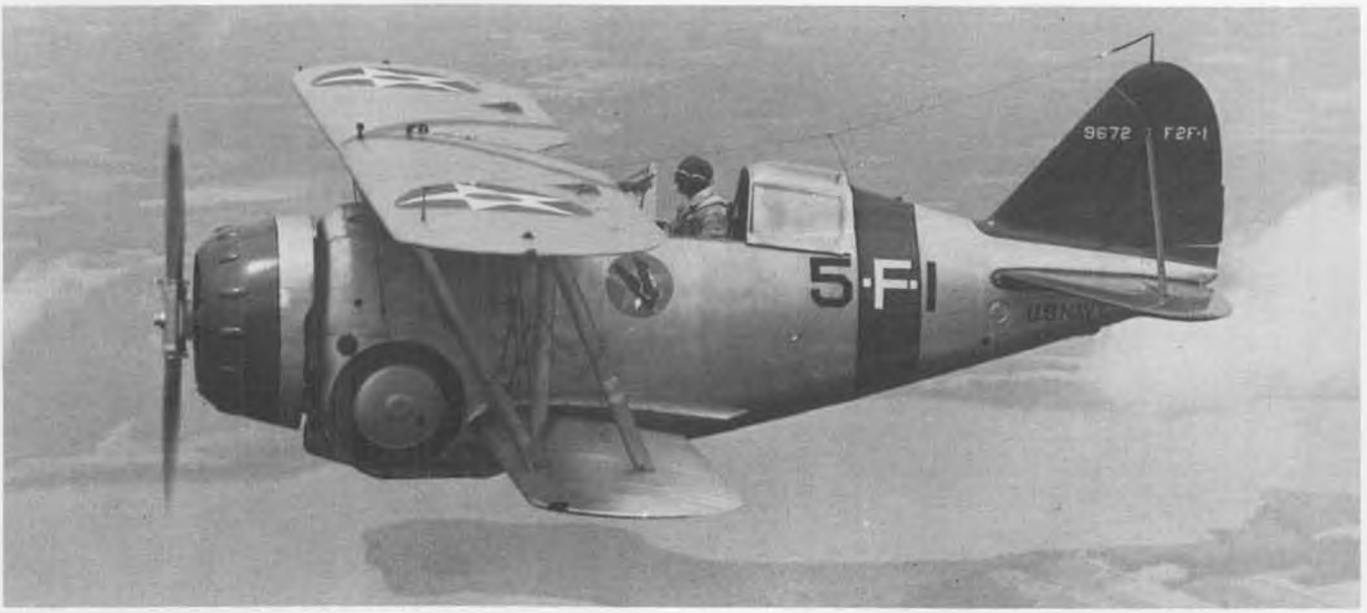
"Hayseed" was the name given to a series of gas jobs that were designed while I was growing up in Fairfield, Connecticut. They were all of the same basic design and came in various sizes. The biggest Hayseed used the Ohlsson .60 Custom or the Super Cyclone, since

Continued on page 102


HAYSEED B
Designed & Drawn by: Carl Florance
Lined in ink by: Al Pettersen
MODEL BUILDER magazine
Plan No: 880-QT
Span (proj.) 46½"
Area 340 sq. in.
Stab area 105 sq. in.
Weight 20 oz.
Designed & built in the summer of 1941
Last year long flood sound Aug 1941
* Important
All parts soft balsa unless otherwise noted.
* Use same tapering method as wing.
* Right climb & glide.
Auto Rudder system from Phil Kraikert & Norwalk (conn.) Gas model club. (circa 1946)
No down or side thrust
10" Lite prop.
2⅝" m for Aircraft
Fill in bottom of center section rear w/ 1/64 ply
Split 1/16" dowel keys
1/16" dowel
Fill in between CR & CR w/ 3/16" sht.
Fill in around motor mounts w/ 3/16" x 1/2" hard
Bind L.G. to hard 1/16" sq. w/ heavy thread
Note: shooting on right wing & right stab. not shown
Pour in all top sht. & cap strips
Still ole heavy stock
Battery compartment for Austin type boxes
Position coil as req. to balance
Rubber band stays connected to stab T.E.
Rubber band
Tubing soldered to eyelet on inner
Heavy thread
Offset
Rudder post
Original covered w/ silkspan except front of wing mount which is 1/16 sht.
White Dopes, lacquer are best & fin
First 2 ribs have flat bottom
* Float metal rib template, about top of L.E. raising T.E. down to obtain Req. camb. (camb shown). watch for spars after assembly.
All wing & stab. rib from 1/16" sht
1/16" sq. center section only
Fuse
Stab
Rud
Elev
Wing
Fin
Note: shooting on right wing & right stab. not shown
1/16" sht. T.E.
1/16" sht. Notch w/ rib bottom
1/16" x 1/16" spar
1/16" x 3/16" cap strips
5½" Dihedral each tip
3/16" sq. L.E.
1/16" sht.
1/16" x 1/16"
1/16" sht. Gusset
Front Spar
Rear Spar
1/16" sq. spar
3/32" sq. spar
1/16" hard sht.
3/16" sq. L.E.
1/16" x 1/16" cap strips
3/16" sht.
3/16" sq.
3/16" x 1/2"
1/16" x 3/16"
1/16" sht. stab platform (cross grain)
horn
.049
1/16" sht. wing platform
1/16" sht. battery compartment for Austin type boxes
1/16" sht. wiring
1/16" x 5/16"
3/16" sq.
1/16" sht. timer mount
1/16" x 1/2" brace
1/16" sht. keel
3/16" sq. weights
1/16" Alum. tubing
3/16" sq.
crutch made from 3/16" sq. steel
cowl built up from 1/2" sht.
5/16" x 1/2" x 12½" maple
1/16" sht.
1/16" sht. wing platform
3/16" sq. steel
3/16" sht.
Bind L.G. to hard 1/16" sq. w/ heavy thread
3/16" sq.
1/16" x 3/16" spar stringers notch as req.
1/16" sht.
3/16" sht.
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
L.G. 3/32" m. wi.
1/16" sq. x 2½"
1/16" sht.



FULL SIZE PRINTS MAY BE PURCHASED FROM: PETER WESTBURG, 834 7th ST., No. 6, SANTA MONICA, CAL., 90403. $9.00, MAILED 1st CLASS, FOLDED.



What a model this airplane would make! Shown here is 5-F-1, the squadron leader's F2F-1, based on the USS Wasp. Tail color was black; band, wing chevron, and cowl were red. Photo courtesy of Ron Clendennen.

GRUMMAN F2F-1

PART ONE

By PETER WESTBURG

• One of Grover Loening's engineers was a brilliant young man named LeRoy Grumman. He had a flair for things mechanical, and from his fertile mind came the folding landing gear of the Loening amphibians. This energetic young man went into business for himself, servicing and repairing Loening aircraft. He soon won a Navy contract to design and build floats for Vought Corsairs. One of his designs was a float with wheels that retracted entirely instead of merely folding up out of the way for landings on water.

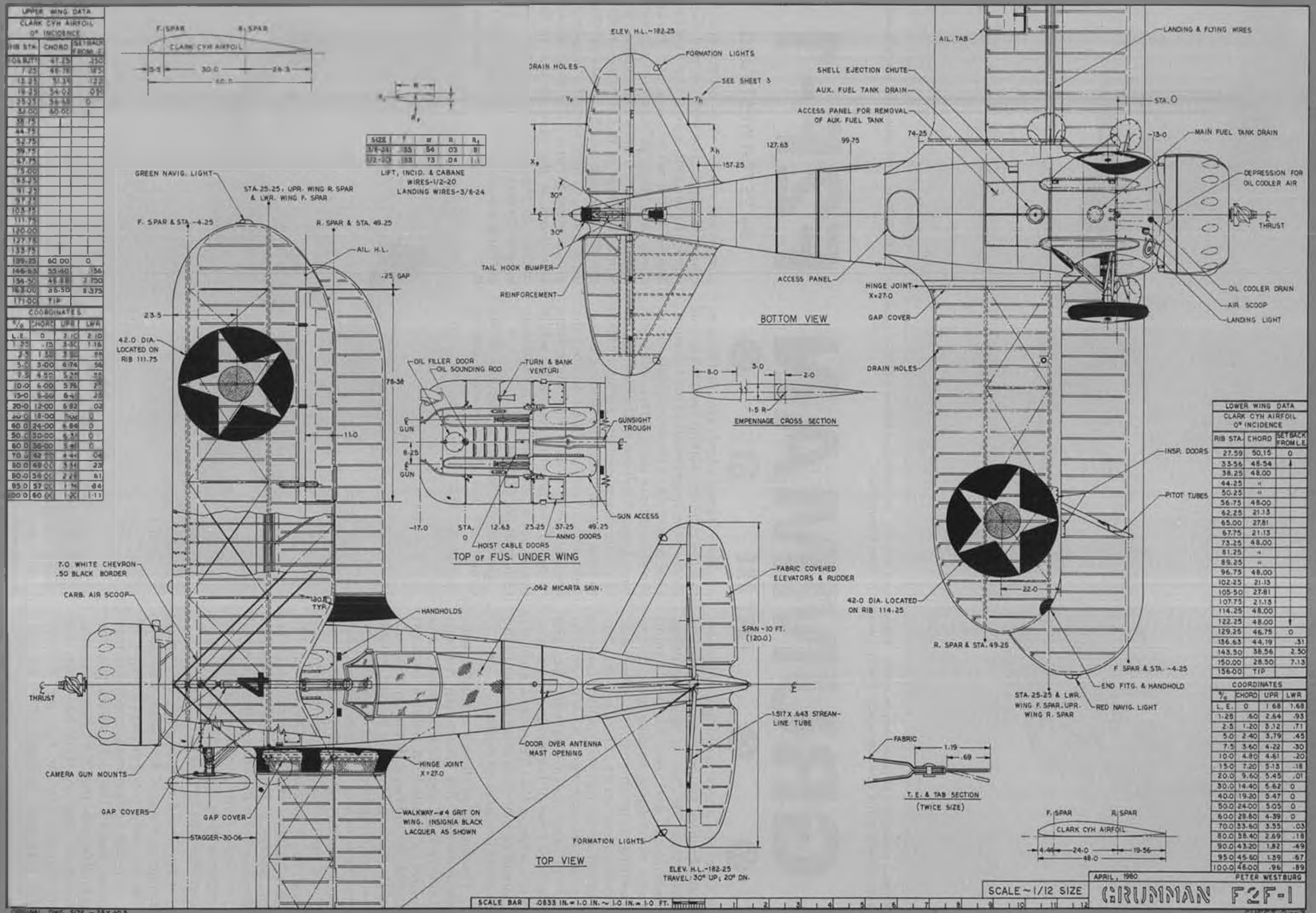
The quality of design and workmanship earned the Grumman Aircraft Engineering Corp. at Farmingdale, Long Island, a contract to build a two-seat fighter for the Navy. At the time (April 2, 1931), Navy philosophy tended toward two-seater fighter/bomber aircraft, and the new fighter was designated FF-1. Nicknamed Fifi, it was 20 mph faster than the Curtiss Helldiver with the same engine. The reason? The retractable gear. (Editor's note: A Grumman FF-1 is on display at the U.S. Navy Museum, Pensacola, Florida.) Navy policy changed and went from two-seater fighters to single-seaters. Again, Grumman won a contract, this time for the XF2F-1.

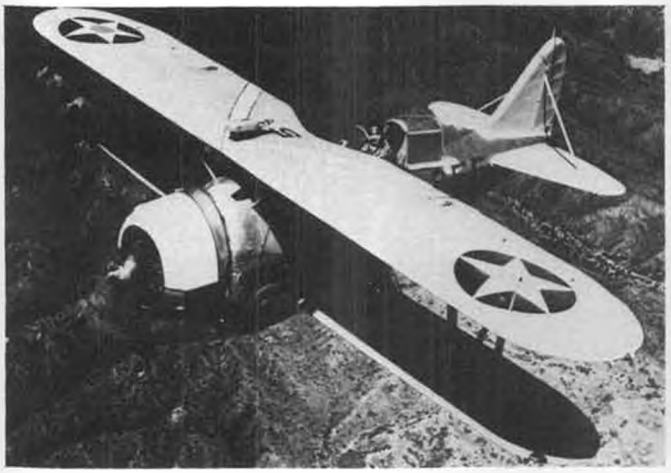
It isn't hard to recognize Grumman biplanes; they all had large stomachs. The big belly was a perfect example of the design compromises engineers must often make. The only satisfactory tire available was the 30X5 high pressure. Fitting it and the four-bar retracting mechanism into the fuselage dictated the maximum fuselage cross section. Starting with this shape, Grumman engineers faired a body around the two-row, 14-cylinder, 650-hp Twin Wasp and tapered the fuselage aft to the tail cone. One advantage of the deep fuselage was the discarding of standard Navy flotation bags. Enough volume was in the fuselage to create two watertight compartments to float the airplane in a landing at sea. Vent lines were provided so that the compartments would not burst from trapped sea level pressure air while flying up to the airplane's maximum ceiling of 28,300 feet.

One of the beautiful features of the Grummans was the minimum use of compound curved skins on the monocoque fuselage. The only formed skins were the engine cowl, the cowling behind it, the wheel cups, and the tail cone. All other skins were wrapped around pairs of frames and shingled aft. Some drawings of the airplane show a smooth fuselage profile; in reality, they were short, straight lines that appear to give a smooth curve. The most noticeable break in the contour was in the middle of the turtleback, where one long micarta skin over the homing loop antenna was used and a long skin aft of it.

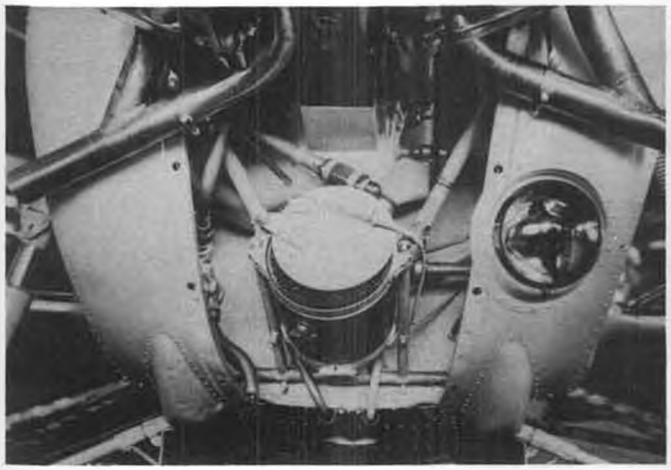
Continued

Flight 1 of VF-5B shows the differences in individual markings. It also shows that the wing fairings were not always painted the same. Ron Clendennen photo.


UPPER WING DATA
CLARK CYH AIRFOIL
0° INCIDENCE
RIB STA. | CHORD | SETBACK FROM L.E.
106 BUTT | 87.25 | .250
7.25 | 48.78 | 18.5
18.25 | 51.36 | 1.22
19.25 | 54.02 | .094
25.21 | 56.83 | 0
32.00 | 60.02 | 1
38.75
44.75
52.75
59.75
67.75
75.00
83.25
91.25
97.75
105.75
111.75
120.00
127.75
133.75
139.25 | 60.00 | 0
146.63 | 53.60 | .156
154.50 | 46.88 | 2.750
163.00 | 38.50 | 8.375
171.00 | TIP
COORDINATES
% CHORD | UPR | LWR
L.E. 0 | 2.10 | 2.10
1.25 .75 | 3.30 | 1.16
2.5 1.50 | 3.80 | .89
5.0 3.00 | 4.74 | .56
7.5 4.50 | 5.26 | .28
10.0 6.00 | 5.76 | 2
15.0 9.00 | 6.44 | .25
20.0 12.00 | 6.82 | .03
30.0 18.00 | 7.00 | 0
40.0 24.00 | 6.86 | 0
50.0 30.00 | 6.34 | 0
60.0 36.00 | 5.61 | 0
70.0 42.00 | 4.44 | .04
80.0 48.00 | 3.14 | .23
90.0 54.00 | 2.28 | .61
95.0 57.00 | 1.96 | .86
100.0 60.00 | 1.90 | 1.11
F. SPAR
R. SPAR
CLARK CYH AIRFOIL
3.5
30.0
26.3
60.0
SIZE | F | W | R | R1
3/8-24 | .33 | .54 | .03 | .81
1/2-20 | .33 | .73 | .04 | 1.1
LIFT, INCID. & CABANE WIRES-1/2-20
LANDING WIRES-3/8-24
ELEV. H.L.-182.25
FORMATION LIGHTS
SEE SHEET 3
DRAIN HOLES
SHELL EJECTION CHUTE
AUX. FUEL TANK DRAIN
ACCESS PANEL FOR REMOVAL OF AUX. FUEL TANK
AIL. TAB
LANDING & FLYING WIRES
STA. 0
-13-0
MAIN FUEL TANK DRAIN
74.25
99.75
127.63
157.25
DEPRESSION FOR OIL COOLER AIR
THRUST
OIL COOLER DRAIN
AIR SCOOP
LANDING LIGHT
30°
TAIL HOOK BUMPER
REINFORCEMENT
ACCESS PANEL
HINGE JOINT X=27.0
GAP COVER
BOTTOM VIEW
8-0
3-0
2-0
1-5 R
EMPENNAGE CROSS SECTION
GREEN NAVIG. LIGHT
STA. 25-25 - UPR. WING R. SPAR & LWR. WING F. SPAR
F. SPAR & STA. -4.25
R. SPAR & STA. 49.25
AIL. H.L.
.25 GAP
23.5
42.0 DIA. LOCATED ON RIB 111.75
78.38
11.0
OIL FILLER DOOR
OIL SOUNDING ROD
TURN & BANK VENTURI
GUNSIGHT TROUGH
GUN
8.25
GUN
GUN ACCESS
-17.0
STA. 0
12.63
25.25
37.25
49.25
HOIST CABLE DOORS
AMMO DOORS
TOP of FUS. UNDER WING
INSP. DOORS
PITOT TUBES
42.0 DIA. LOCATED ON RIB 114.25
22.0
R. SPAR & STA. 49.25
F. SPAR & STA. -4.25
END FITG. & HANDHOLD
STA. 25-25 & LWR. WING F. SPAR, UPR. WING R. SPAR
RED NAVIG. LIGHT
7.0 WHITE CHEVRON .50 BLACK BORDER
CARB. AIR SCOOP
30.0 TYP.
HANDHOLDS
.062 MICARTA SKIN.
FABRIC COVERED ELEVATORS & RUDDER
SPAN ~ 10 FT. (120.0)
THRUST
1.517 X .643 STREAM-LINE TUBE
DOOR OVER ANTENNA MAST OPENING
CAMERA GUN MOUNTS
HINGE JOINT X=27.0
GAP COVERS
GAP COVER
STAGGER-30-06
WALKWAY-#4 GRIT ON WING. INSIGNIA BLACK LACQUER AS SHOWN
FORMATION LIGHTS
TOP VIEW
ELEV. H.L.-182.25 TRAVEL: 30° UP; 20° DN.
FABRIC
1.19
.69
T.E. & TAB SECTION (TWICE SIZE)
F. SPAR
R. SPAR
CLARK CYH AIRFOIL
4.46
24.0
19.56
48.0
LOWER WING DATA
CLARK CYH AIRFOIL
0° INCIDENCE
RIB STA. | CHORD | SETBACK FROM L.E.
27.59 | 50.15 | 0
33.56 | 48.54 | "
38.25 | 48.00 | "
44.25 | " | "
50.25 | " | "
56.75 | 48.00 | "
62.25 | 21.13 | "
65.00 | 27.81 | "
67.75 | 21.13 | "
73.25 | 48.00 | "
81.25 | " | "
89.25 | " | "
96.75 | 48.00 | "
102.25 | 21.13 | "
105.50 | 27.81 | "
107.75 | 21.13 | "
114.25 | 48.00 | "
122.25 | 48.00 | "
129.25 | 46.75 | 0
136.63 | 44.19 | .31
143.50 | 38.56 | 2.50
150.00 | 28.50 | 7.13
156.00 | TIP
COORDINATES
% CHORD | UPR | LWR
L.E. 0 | 1.68 | 1.68
1.25 .60 | 2.64 | .93
2.5 1.20 | 3.12 | .71
5.0 2.40 | 3.79 | .45
7.5 3.60 | 4.22 | .30
10.0 4.80 | 4.61 | .20
15.0 7.20 | 5.13 | .18
20.0 9.60 | 5.45 | .01
30.0 14.40 | 5.62 | 0
40.0 19.20 | 5.47 | 0
50.0 24.00 | 5.05 | 0
60.0 28.80 | 4.39 | 0
70.0 33.60 | 3.55 | .03
80.0 38.40 | 2.69 | .18
90.0 43.20 | 1.82 | .49
95.0 45.60 | 1.39 | .67
100.0 48.00 | .96 | .89
APRIL, 1980
PETER WESTBURG
SCALE ~ 1/12 SIZE
GRUMMAN F2F-1
SCALE BAR .0833 IN. = 1-0 IN. ~ 1-0 IN. = 1-0 FT.
ORIGINAL DWG. SIZE ~ 28 X 40.5
SHEET 2 OF 3

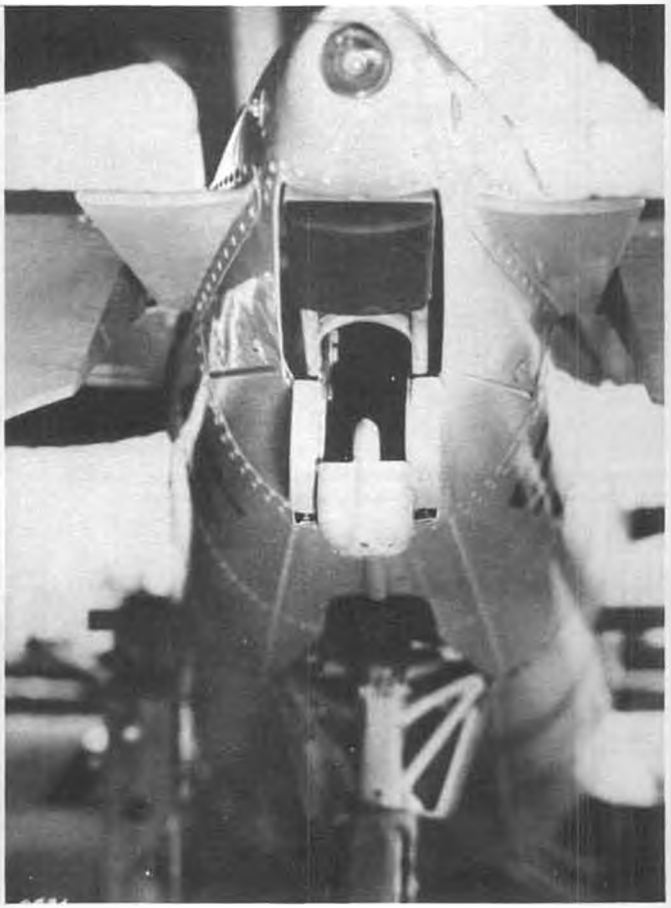


View of 2-F-5 cruising at 140 mph over mountains near San Diego, an enlisted man at the controls. Photo courtesy of Fred Dickey, Jr.

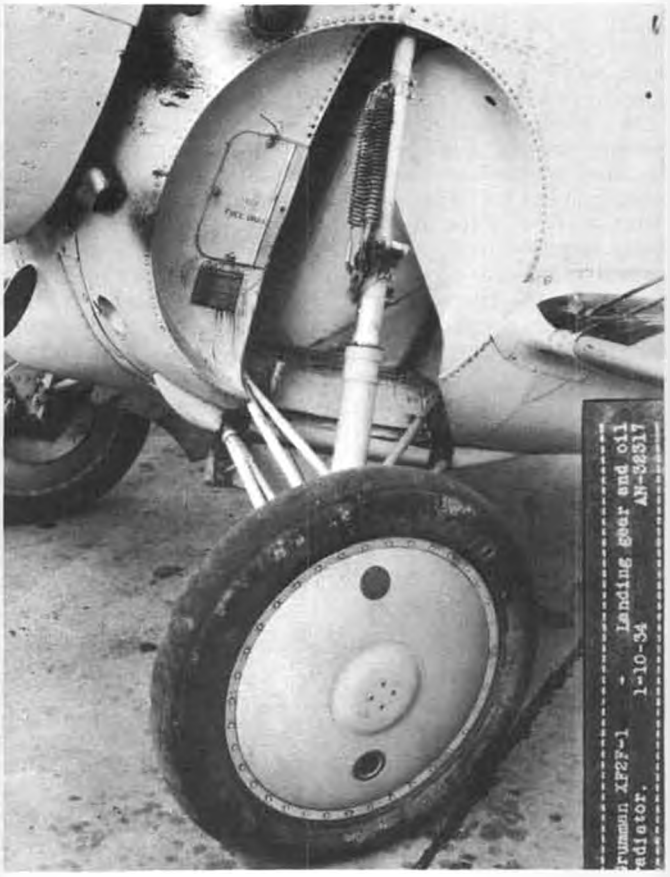


Landing light on the left side pointed down and left. Oil cooler had a cable operated shutter. National Archives photo.

Three F2F-1's out of North Island, San Diego, California. Wingtips are only inches apart! Photo courtesy of Johnny Burnett.

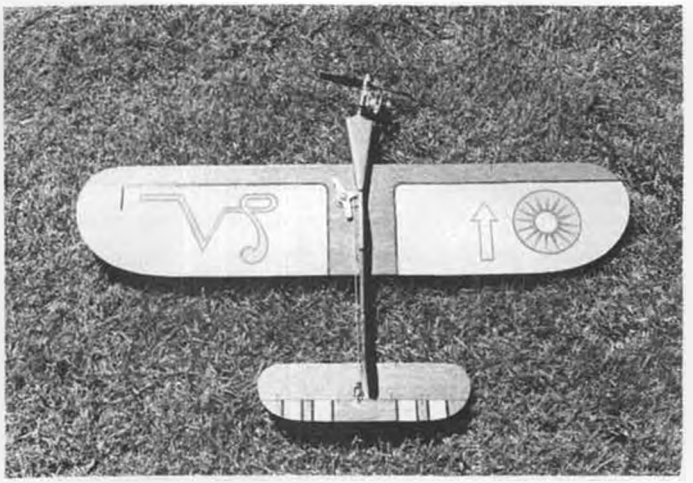


Tail hook was retractable into the fuselage. Hard rubber bumper took rebound. National Archives photo.



Landing gear was operated by sprocket chains from a shaft going back to a crank at pilot's right knee. Large 30x5 wheels were responsible for F2F-1's potbellied appearance.

Phil Mahoney built this neat Jetco Navigator. He loves it, but has some recommendations for making it better still; see text.



One of Tyrone Parker's slick all-balsa 1/2A control liners. Lots of engine offset lets him fly on 32-foot thread lines.

The 1/2-A SCENE

By LARRY RENGER

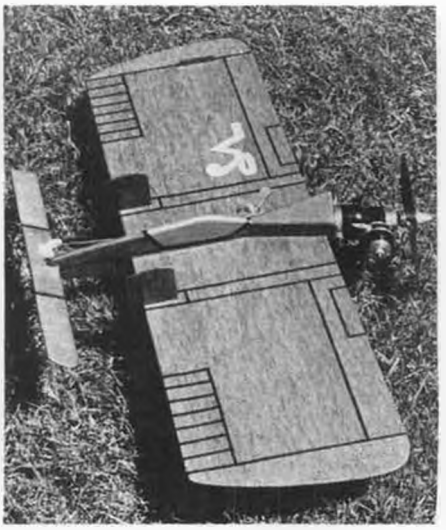
• Let there be LIGHT! Lightness is the key to performance in 1/2A modeling. I often come across people who complain about lack of performance, short engine life, poor model durability, squirrelly handling, or lack of maneuverability. Usually the first thing to look for in all these problems is excess weight in the model. Although I dearly love small models, it must be admitted that they are much more sensitive to excess weight than are the larger sizes.

Let's first look at some of the reasons that the "heavies" will bite you, then we can look at how to trim away those excess grams. Lack of performance is the easiest to see. Pure and simple, the power required to fly an airplane rises as the 1-1/2 power of weight. That is in straight and level flight; an added factor comes in when you are climbing. So if your model weighs 10% too much, it needs to fly about 5% faster, but that takes 15% more power to accomplish! Now, what would you expect that extra power output requirement to do to your engine? You will need to run it closer to peak output at all times, which means every once in a while you will maybe go just a bit too lean. Lean runs mean very short engine life. Trying for peak power all the time is also unsatisfying, since the model probably performs poorly when you fail to make the perfect adjustment.

Model durability problems come from two sources. First is the obvious one that the energy in a moving object is related to the square of its velocity. A 10% overweight model has not only the 10% extra mass, but a 10% extra impact force due to the extra velocity, and they are multiplied to result in a 21% total increase in the impact of any crash.

The second durability factor is structural. You are pouring more power through the airframe and stressing it by whatever the G's you pull times the excess weight, and typically, a heavy structure can actually have higher stress concentrations than one which has been lightened to relieve stress concentrations.

Squirrelly handling in the form of tip stalls, mushing, peculiar trim changes, etc. can all come as a result of overloading the wing. The laws of aerodynamics are, unfortunately, immutable, and they didn't write any waivers for the novice builder. If your airfoil or control surfaces are required to produce more than their maximum capability, they go on strike. Even the tail surfaces can go funny, and then you are in big trouble! Even the glide will be affected by the gain in weight. L/D changes drastically with changes in lift coefficient, and as you might suspect, it doesn't improve as the model gets heavier.



Tyrone Parker's combat-like 1/2A stunt job. Nice workmanship is typical of all of his ships.

What can you do about excess weight in a model? Well, if it is already completed, there isn't much you can do other than perhaps substituting a lighter radio (on an R/C ship). When you are starting with a new model, however, and think light all the way through, there is quite a lot that can be done. First trick in lightening anything (car, bicycle, suitcase,

Continued on page 94

Wild, man! It's a new one by Ken Willard, with Cannon rig and T.D. .049.

Cannon Super-Micro set leaves plenty of room to spare in Woody Woodward's Jetco Cessna.

Stock Tunnel winners at District 19 race in Needles, California: I to r, Frank Hu, 2nd; Norm Teague, 1st; Miss Needles, Sandy Learmont; Jack Garcia, 4th; and Joe Monohan, 3rd.

Modified Tunnel winners at Needles race: I to r, Dick Norsikian, 4th; John Brodbeck, Sr., 2nd; Miss Needles, Sandy Learmont; Richard Hazlewood, 1st; and Norm Teague, 3rd.

PHOTOS BY RICHARD HAZLEWOOD

R/C POWER BOATS

By JERRY DUNLAP

HAPPINESS IS HAVING A READER RESPOND TO A REQUEST

A few issues back I asked for photos from readers who were building the Excaliber II outboard tunnel that appeared in the December '79 issue. Although the response was somewhat less than overwhelming, one letter is better than nothing at all. Erroll Drinkwater, of Portland, Connecticut, sent along a photo of his boat under construction and the following letter.

Dear Jerry,

As the saying goes "You asked for it." The picture shows the boat minus the decking. It is my second boat. The first was a Dumas fiberglass Hot Shot. Note the electrical clips (Mueller No. 25) that I used to hold the sponsons to the center section. These come in many sizes and are sure handy.

I know that in any given design, there are faster boats. My question is what makes some faster than others (Excalibers). You must have followed this design and should know better than anyone what does or does not make them go. I found the plans easy to follow and the boat easy to build. Thanks for a fine design.

Erroll, I'm pleased that the Excaliber II is proving to be an easy boat to build from the plans. The question you pose about why one boat of a given design is faster than another of that same design is something many people ask. I'll attempt to give some possible reasons.

1) Not all boats of the same design are created equal. I would guess that I have seen around two dozen Excaliber hulls run in the last three years. Some ran very well, and the race results bear that out. Some ran just awful. One reason is that they were not created (built) on an equal basis with the others. The good running boats all have one thing in common: they were built accurately. I don't think I could have made some of those boats work properly because they were twisted and out of alignment.

2) Proper trimming of the hull, especially a tunnel, is very important. This factor was especially evident in the fiberglass versions of the Excaliber II. These boats were all the same, but some ran better because they were better trimmed. The fellows with the good running boats spend lots of time working with different props, varying the depth of the prop, adjusting the engine angle on the transom, placing weight in and on the hull, and experimenting with turn fins and turn fin locations. It takes a great amount of time and testing to get the maximum performance out of any hull.

3) Even though the engines in the NAMBA OPC Tunnel Class are required to be stock, not every engine runs the same. The successful model outboard tunnel racers that I know have at least two and often more spare engines. They work to get one that just seems to run the best. There is a knack to setting the needle valve to get maximum performance and not going past the point where the engine runs too lean and quits.

Well, those are a few of the major contributing factors to explain why two of the same type of boat will run differently. I didn't mention anything about driving skill but that certainly needs to be taken into consideration. Even the best running boats will not be successful in competition if the operator doesn't possess some skills.

Outboard Deep-Vee winners at Needles: I to r, Richard Fish, 4th; Jack Garcia, 3rd; Norm Teague (Norm really gets around, huh?), 2nd; and Craig Glasgow, 1st.

Stock Outboard Tunnel Enduro winners at Legg Lake, So. Cal.: I to r, Norm Teague, 3rd; Tim Hess, 2nd; Richard Hazlewood, 1st.

Modified Outboard Tunnel Enduro winners at Legg Lake: I to r, J. Rudasill, 3rd; George Campbell, 2nd; Jack Garcia, 1st.

PHOTOS BY LOU FOSCHI

Modified Outboard Deep-Vee Enduro winners at Legg Lake: I to r, Norm Teague, 3rd; George Campbell, 2nd; Jack Garcia, 1st.

Sport 40 winners at Legg Lake: I to r, Dennis Keck, 4th; Don Maher, 3rd; John Delong, 2nd; Rich Fish, 1st.

Lou Foschi, of La Verne, California, sent in the following letter containing a bunch of situations that a new model boater encounters.

Dear Jerry,

Just a few lines to tell you that I enjoy reading your column in **R/C Model Builder** *magazine. I have followed your column since you wrote for the "other" magazine, and I'm glad to see you make the change. I have been into R/C planes since 1960, but only as an on-again, off-again "Sunday Flier." Your column and going to see a model boat race one weekend has prompted me to give model power boating a try. I am in the process of building my first model boat kit now, one of Steve Muck's "Mini Dolphins."*

As a new model boater, I have some questions that may possibly be of interest to other neophyte model boaters as well, such as, what modifications do you make to a clunk type fuel tank so it will function backwards, as opposed to the usual installation in a plane? Does a boat have to be balanced like a plane? How do you compensate for the engine and prop torque, or is this a factor in a boat? Does the water intake line have to run up the right side of the hull, or does this matter? How do you properly break in a water-cooled engine? I am sure your

Very realistic and well detailed Miss Budweiser entered in Legg Lake Sport 40 class by the Keck family of the "Cavitators" R/C boat club.

Hooray for the ladies! Debbie Arnold ran this boat in Stock Outboard Tunnel at Legg Lake, was one of three women who competed.

Gale Whitestine's Miss Circus Circus won the 4th annual Apple Blossom Cup held in Wenatchee, Washington, on April 27, 1980.

Notre Dame by Les Ruggles has shown good speed in early races. Uses Picco engine.

PHOTOS BY AUTHOR

expertise will be of great help to me.

Now, if I can, I would like to put in my two cents regarding a column you wrote in the July 1979 issue of **RCMB** *on the subject of* **IMPBA** *vs.* **NAMBA.** *First of all, I agree with you, and do not understand why there are still two major organizations instead of one with sub-interest groups like in the model plane field. Anyway, I sent away for IMPBA's information regarding membership. As a result, I noted that IMPBA is rather vague on their insurance coverage, and out of approximately 75 sanctioned meets, the closest to me will be in Texas. However, they list directors as far west as California and Hawaii. On the other hand, NAMBA seemed to be fairly explicate on their insurance coverage, and listed at least eight sanctioned meets either in my immediate area or close enough for me to attend on a weekend, if only as a spectator for now, but hopefully to be able to compete in the future. Needless to say which one will be my choice.*

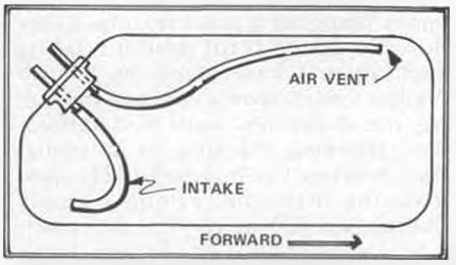
Well, that's enough for now. Thank you for reading my letter, I wish you much luck on your column, and keep up the great way you write it. I hope to read it in **R/C Model Builder** *for many years to come.*

By the way, if there is ever only one model boat organization, I recommend that it be named the "United States Model Power Boat Association." Your truly, Lou Foschi.

Thanks so much for the letters and comments about the column. I've included a drawing in the column this month to show what we do to the clunk tanks for use in model boats. It's very easy to do with the soft tubing provided in the clunk tanks.

The new Picco .65 ABC racing engine nestled in Les Ruggles' Notre Dame. Engine is available through Mutiny Model Marine; see text.

Les Ruggles' Notre Dame and Gale Whitestine's Miss Circus Circus battling it out through a turn at the Silver Cup race at Kent Lagoon, Washington, on April 13.



Balancing a model boat is important for ultimate performance, especially in the hydroplane and tunnel classes. However, it is not critical like it is in an aircraft. An aircraft that isn't balanced properly is a flying accident looking for a place to occur. The unbalanced boat will run . . . just not very well. A deep-vee is not nearly as critical to balance. I have

Continued on page 88

Jerry Brenner, holding the Slo-Mo-Shun V, and Bill Osborne, holding Tx, form a winning combo. Their boat has qualified for more final heats than any other R/C Unlimited in District 8.

The Slo-Mo-Shun V racing during the Silver Cup at Kent Lagoon. Finished in 2nd place for Bill Osborne and Jerry Brenner.

Roger Newton's wife, Marti, drove the Hawaii Kai at the Silver Cup. Looks to be almost a dead-ringer for the Slo-Mo-Shun V pictured directly above.

The author's Prather Products fleet, the 40-inch (reviewed in the October '79 issue) and 31-inch Deep-Vees. Both are finished in red and white K&B Superpoxy.

PRODUCT$ IN U$E

THE PRATHER PRODUCTS 31-INCH DEEP-VEE,

by JERRY DUNLAP PHOTOS BY AUTHOR

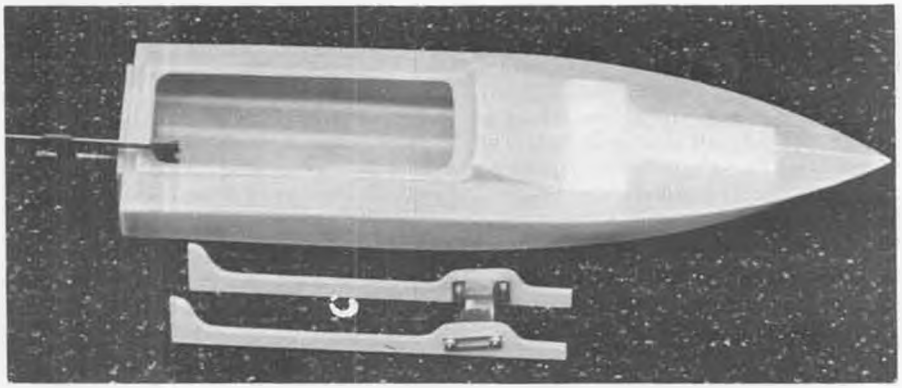
• It was just about a year ago to this issue that I had an opportunity to share with you my findings on the larger Prather Deep-Vee, for .40 - .60 size engines. In this month's article, I'm pleased to be able to report on the new 31-inch, .21 size deep-vee from Prather Products. I certainly hope that I'll be able to share another review with you on some yet-to-be-released boat from Prather Products in the near future. If it appears like this writer/boat racer enjoys working with the merchandise being marketed by Prather Products, the reader is correct.

There are some valid reasons behind that enjoyment. The boats now being produced by Prather Products, 1660 Ravenna Ave., Wilmington, CA 90744, are good designs. They look like offshore racing vees and run well. The epoxy fiberglass is proving to be a very durable material for model boating application. I have raced my 40-inch Prather Vee for over a year and the hull has not shown any signs of deterioration, checking, cracking, or delamination. And yes, I've bumped and bruised it during that time. I believe epoxy fiberglass is just as good as any fiberglass material I've seen used in model boating applications. The complete hardware kit available for the new 31-inch Deep-Vee is of excellent quality. For individuals building their first boat, it's very nice to have a hardware kit designed for that particular boat. Although I personally didn't need all the information contained in the instruction booklet provided with the kit, it is excellent for any newcomer to our hobby. The instruction booklets for both the 40 and 31-inch Prather Vees are just about the best I have seen in the fourteen years I've been building radio controlled model boats.

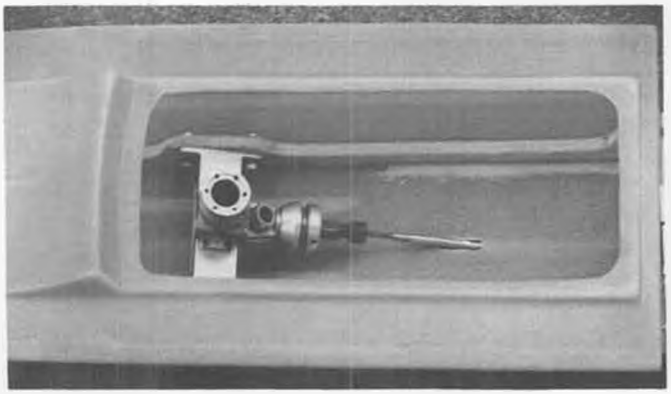
Let's take a few lines to describe the new Prather Deep-Vee for those readers who like to deal with specific information. Besides the 31-inch length, the boat has a beam of 9-1/2 inches with a 17 degree vee angle at the transom. As mentioned earlier, epoxy fiberglass is the material used. The deck is prejoined to the hull at the factory. Included in the basic kit, which retails for $89.95, are 3/8-inch hard maple motor mount rails, plywood for bulkheads, foam for flotation, and that very fine instruction booklet. For an additional $16.95, a hatch cover to add scale appearance as well as assist in keeping water in the pond rather than in the boat is available. The running hardware kit is priced at $64.95 and includes the following items: strut hardware, rudder hardware, trim plates, flex cable with stub shaft, brass shaft log with brass guides, drive dog, bearings, turn fin, and the necessary stainless steel nuts and bolts to attach it all to the boat.

Some of the things needed to be picked up at your friendly hobby shop are radio, engine, motor mount, fuel tank(s), propeller(s), finishing material, and glue. A very complete list of what is needed to complete the boat is found in the instruction booklet. There are any number of choices available for radios. I elected to use the same radio in the 31-inch Deep-Vee as I'm using in its bigger relative: a Kraft 2-channel in a G&M Models waterproof radio box. A radio box kit is available from Prather Products for $16.95.

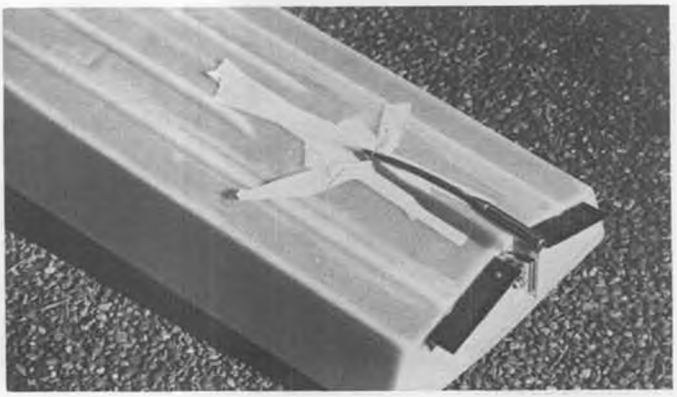
If you are interested in high performance, I'd suggest either the OPS .21 or the K&B .21. From what I've seen, these are the two best high performance



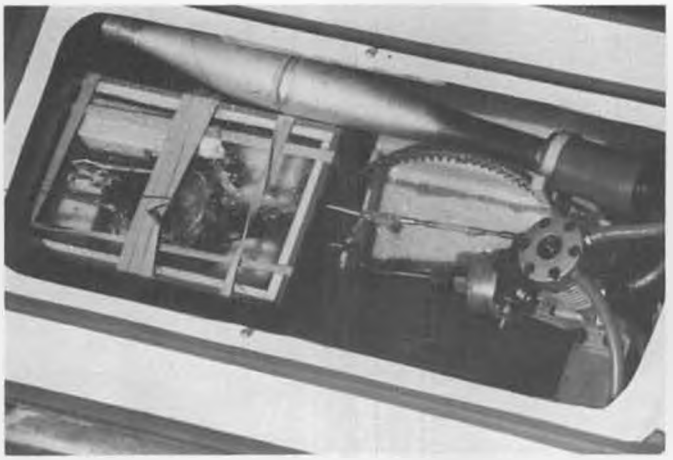
Epoxyglass hull comes with deck prejoined at the factory. Note T-shaped foam flotation block in bow. K&B Marine Specialties engine mount on hardwood engine rails.



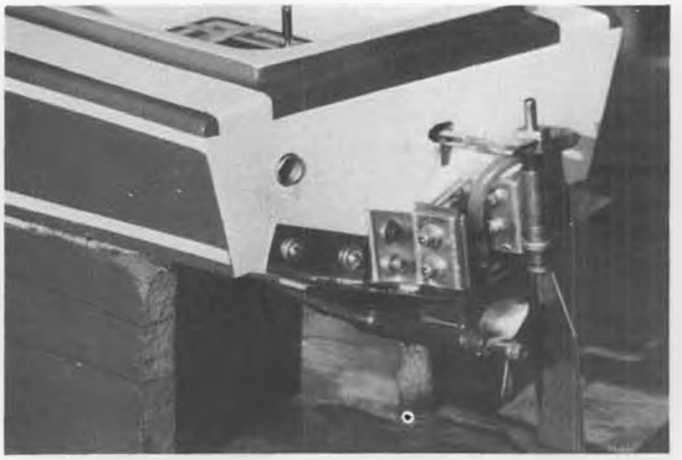
Shaft log all lined up and ready for the epoxy. Jerry uses an old K&B 3.5 crankcase bolted in place to ensure perfect alignment.



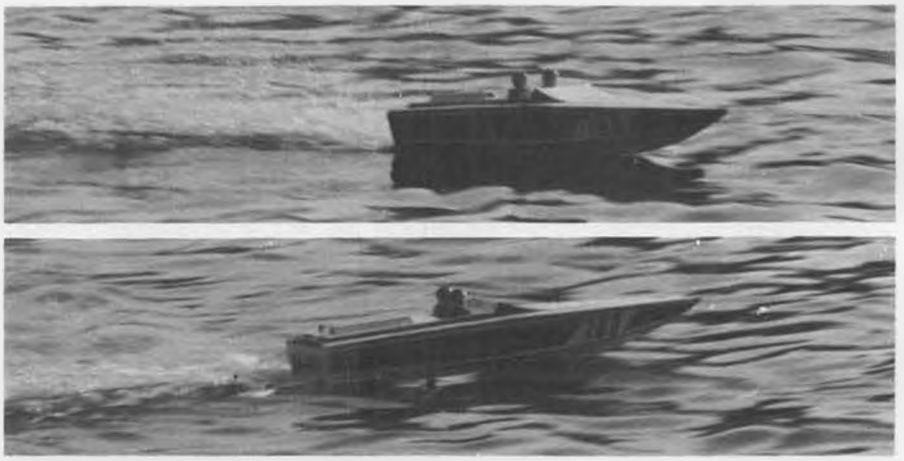
Masking tape on the bottom keeps epoxy from running through shaft log opening. Hardware is from Prather hardware kit.



K&B 3.5 is the aircraft version set up for marine use and equipped with Perry 40 carb. Radio is Kraft 2-channel in G&M Models box.



Prather hardware kit includes ride plates, strut and bracket, and rudder and bracket, all stainless steel. Prop is a J.G. G-25.



Two shots of the Prather 31-inch Vee doing what it does best. Dick Aubert has already established a NAMBA Class A Deep-Vee oval record with his.

engines in this displacement size. I elected to use a K&B because I had one available. As can be seen from the photo of the engine compartment, I've turned my engine around and made it rear exhaust. This is the aircraft version set up for marine use; you cannot reverse the marine version without changing the crankshaft. A Perry 40 carb is used for controlling engine speed.

Rather than spend a bunch of time explaining how to assemble the boat, I'll just tell you that the instruction book goes into great detail on all aspects of installing the engine, running hardware, radio system, fuel tanks, and finishing. I've enclosed a batch of photos taken while sticking, drilling, and fastening the above mentioned items to the hull. The tasks necessary to complete a hull like this one are fewer than building a boat from a wooden kit. However, it needs to be stressed that *careful* installation of all the components is the difference between a good running boat and a boat that simply runs.

RUNNING THE PRATHER 31-INCH DEEP VEE

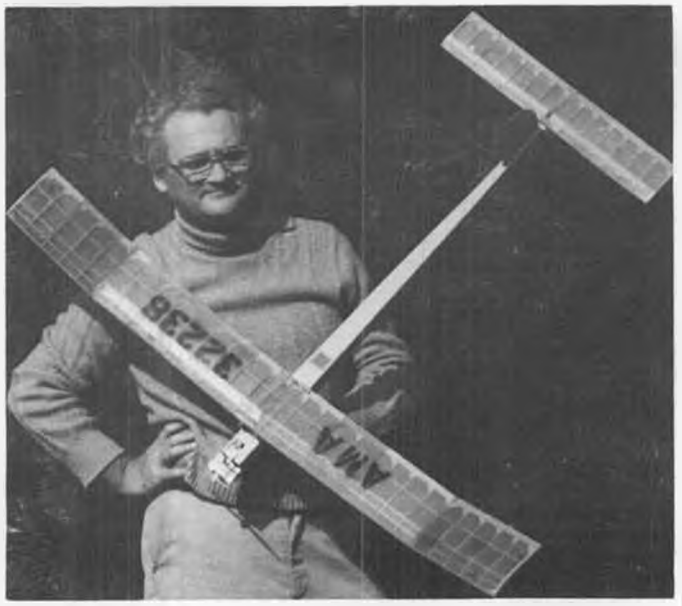
Since most readers are interested in performance rather than nuts and bolts, we'll get into that area. (I would be interested in knowing, however, what you readers look for in a Product Review type article. I can spend time on nuts and bolts if people are really interested in that sort of thing. When there is a good instruction booklet included with the kit, it just seems like a waste of time and print to rehash what's in the booklet. Drop me a line at 119 Crestwood Dr. S.W., Tacoma, WA 98498 and let me know your preferences in Product Review articles.)

After completing all the necessary steps, the Prather 31-inch Deep-Vee was ready for running. The initial trip to the pond proved valuable in providing some information that needs to be shared with those considering the purchase of this boat. That information dealt with the strut setting. For the first outing, the strut was set parallel with the bottom of the hull. With this setting, the boat ran very "stuck down" to the water. Although the speed and handling were acceptable in this situation, it is better to allow the boat to run slightly free. This is especially true when top speed is a consideration. Because I was short on time, I didn't attempt to adjust the strut during that first outing. Fortunately, the strut that comes with the hardware package is built to allow for adjustment, and it was a very simple adjustment to make. The strut was reset so the back of the strut is nearer the bottom of the boat than the front of the strut. This is known as running the strut in a negative position. I would guess there is about three to four degrees of negative thrust in the strut at this time.

The next test session proved that resetting the strut would allow the boat to ride loose. It was now necessary to begin bringing down the ride plates that had been lifted up during the initial test runs. The prop that proved to work best is a J.G. Products G-25 with some of the trailing edge cut back. There is some good news and bad news about allowing a deep-vee design to fly. The good news is that it will go faster. The bad news is that the handling characteristics deteriorate. This brings us to what is known as a compromise. All that speed isn't going to do you much good if you end up inverted at the end of the straightaway. Inverted flight is great for aircraft stunt models. It's disastrous for model boats. (I had an interesting experience running this boat in the inverted position. During one of the testing sessions, I

Continued on page 93

Our boating editor and reviewer is more than satisfied with the performance of his new boat. Won Class A Mono and Class A Deep-Vee with it at recent Longview, Washington race.



At left is Bill Baker, of Norman, Oklahoma, whose last-minute fforts to convert an old "Stratowake" Coupe to electric were rewarded with a 2nd place at the '79 Nats. Above, Howard Evanson with his Astro 15 Buzzard Bombshell. Who says electrics can't fly when it's cold!

ELECTRIC POWER

By MITCH POLING

• Bill Baker, who won the Mulvihill trophy in the free flight event at last year's National's, sent some excellent photos taken by his wife, Paula, of the electric free flight he flew in the Nats. I'll let Bill describe his ideas and techniques in his own words:

I didn't expect to be able to go to the Nats, and made the decision to go only about three weeks before. I spent most of that time working on my rubber jobs. I wanted to fly the electric F/F because it was the first time it was offered at the Nats, and was therefore a historic event. I wanted to use some of what I had learned flying electric sailplanes with you while I still had an advantage! So on the Saturday morning before (the event was flown on Thursday), I decided to fix something up. Although I had no time to build a new model, I had a VL unit and an Astro Flight 020. I could have put the VL on a Coupe, but the much higher power from the 020 made me want to use it. It boiled down to converting one of my 1/2A gas ships, or one of my rubber jobs. A much used "Stratowake," an old Frank Heeb design, got the job because conversion was so simple for it. It has a sheet box fuselage and a motor mount similar to the way you and George Beaver used to make, using scraps of sheet and triangular stock with five-minute epoxy. I took the batteries out of the case and threw the case away (unnecessary weight). You can see the air holes in the photos. The VL switch and charging jack were mounted in the pylon, and I put the timer between the pylons. The position of all these parts was governed by the desire for maintaining the same CG. The timer was one I had obtained from 77 Products. It is intended for Old Timer ignition events.

Bill Baker's quick-and-dirty method of mounting an Astro 02. Light weight is essential.

It is important to be able to get the full 25 seconds of motor run allowed, which you can't get from a K-Mart or a Tatone. As you can tell from the photos, the thing was wired and taped and rubber banded together "quick and dirty."

By Saturday afternoon it was ready to fly, and it did! The climb was not spectacular, but it was going high enough to thermal, and the glide was really good. I was glad I had no trim problems, and put it away. It weighed ten ounces, about two ounces over Wakefield weight, with 225 square inches. I felt I had compromised climb for glide, but at the Nats I outclimbed everything but Bill Jenkin's Electric Country Boy. All the other models I saw were just too heavy and did not climb well. The high times, first and second in open, used the Astro 020. Jenkin's winning Country Boy was by my estimate about 75% of the size of the Jim Clem designed 1/2A. It was very lightly built. The motor was glued to the

Bill uses a 77 Products (see ad p. 109) ignition cutoff timer, runs 35 seconds max.

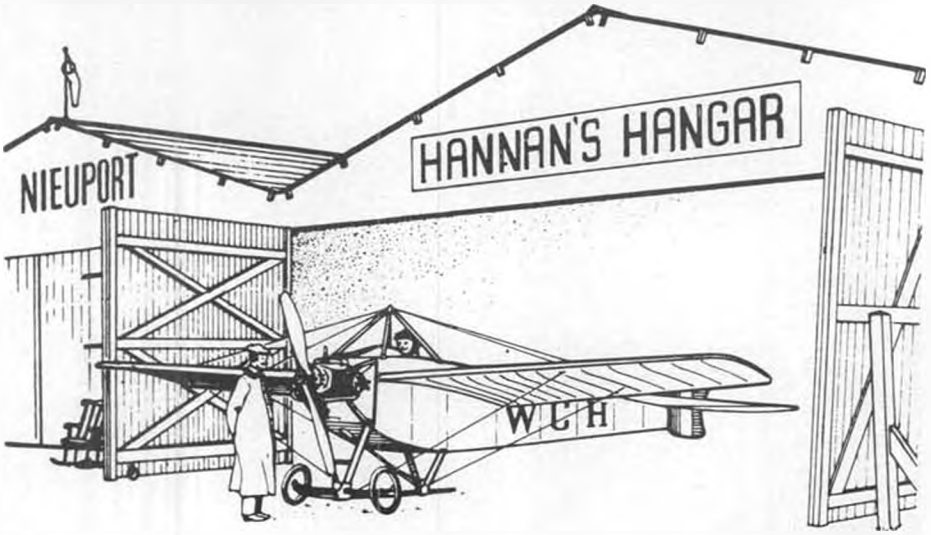
airplane, saving a lot of motor mount weight. There was a notch in the pylon, and the motor fit right in this; batteries were epoxied near the motor, so all the weight was near the CG. He is a super air picker, too. He held the record in the event, which I broke but held for only a few minutes, for I missed a max by a few seconds, and he just went on and on. It is a good event, I hope it becomes popular.

The trim for an electric is more like rubber than for gas, as the power burst and cruise at lower power is like rubber. I use a right-hand circle in both climb and glide. Most of the models at the Nats used geared motors, and mostly they were just not up to the task. I suspect that they were trying to fly too large and too heavy models. The third place open model was very well made and had a homemade gearbox and a folding prop. I think that if one goes with gears, the folding prop is a good idea. A big prop has big drag compared to the little 5-1/4x3 Top Flight nylon that the Astro 020 uses. I was planning to use a spring-

Continued on page 103

FREE FLIGHT AND CONTROL LINE

Another gem from the board of master designer/builder, Bill Noonan. This Farman 198 is powered by a Brown CO_2 engine.



"... The trouble with most politicians is that's all they are."

• This month's all-too-accurate quotation is by famous science fiction writer/prophet/philosopher, Ray Bradbury, from an interview in the *Christian Science Monitor.* Let us rejoice that our hobby/sport is relatively free from politics, and strive to keep it that way!

FIRST THINGS FIRST

Regular readers may recall the rather protracted discussion concerning the word "canard" as applied to tail-first aircraft. Writing in the March, 1980 *Air International,* Mr. Burns, Chief Aerodynamicist for British Aerospace, had this to say on the subject: "The term 'canard' originates from the Bleriot tail-first aeroplane of 1911, so-called because it resembled a duck in flight, with the wing at the back. The Focke-Wulf Ente of 1933 bore the same name (duck) in its own language. The term canard thus applies strictly to the whole configuration, but is now frequently used (misused) as a synonym for foreplane, as in reference to canard surfaces."

MY MOM, THE TRUCK DRIVER

What on earth could a cartoon book by that title have to with model building? Just this. It was authored by Kathy McDaniels, an active modeler from La Mesa, California. Further, it features several cartoons relating to our hobby, one of which we reproduce here by permission of the publishers. Kathy is quite a remarkable lady, being not only a model builder but a skilled motorcyclist, off-road auto racer, skier, prize-winning equestrienne, and devoted mother! Apart from these avocations, she has the more than somewhat unusual occupation of driving a 10-ton dump truck for her living!

Kathy's book presents still another facet of her many talents, and is a showcase of her wonderful sense of humor. While much has been written by

One of several model-oriented cartoons in "My Mom, the Truck Driver"; see text.

others about liberated women, from theoretical points of view, this delightful publication offers refreshingly joyful no-axe-to-grind insights from one who is not only equaling or beating men at their own games, but somehow manages to earn their respect in the process. *My Mom, The Truck Driver* is available directly from Communication Creativity, 5644 La Jolla Blvd., La Jolla, CA 92037. Price is $3.95 plus $1 postage and handling. We think you'll like it!

FRENCH INVASION?

Model building becomes more international with each passing month. According to *Modele* magazine, a sizable contingent of French builders are planning to attend the October "Giant

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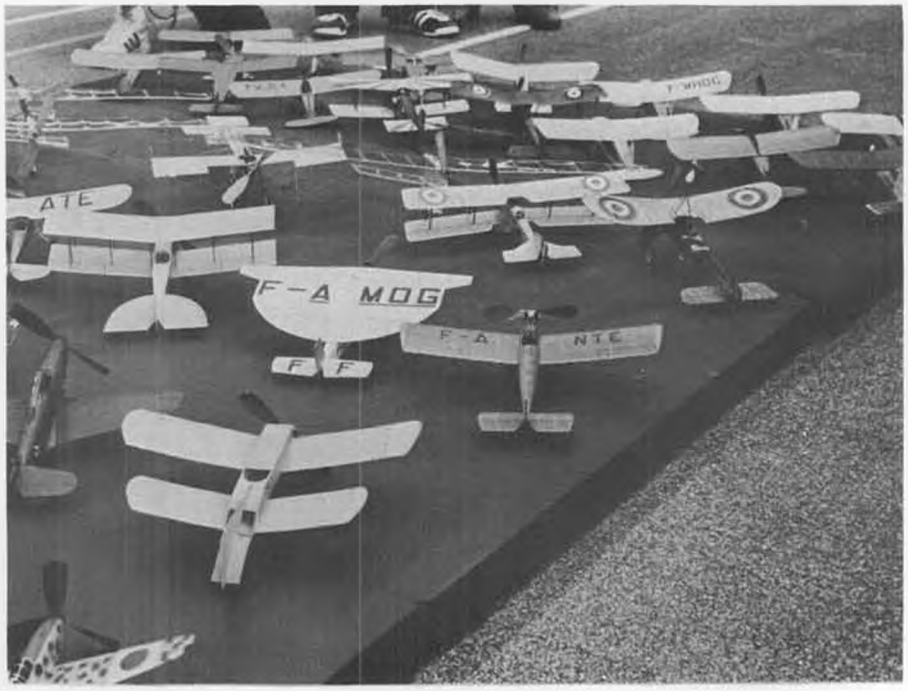

Some of the entries in a recent Paris Peanut contest. Note tandem-winged Bleriot in foreground, three Gossamer Condors, and saucer-wing Farman 1020. Photo by Alain Parmentier.

The late, great C.O. Wright, sitting on his ever-present camp stool, gets an assist with his F/F helicopter from Sal Taibi, during a Nats. Model bore his AMA No.6.

PHOTOS BY FUDO TAKAGI

FARMAN 1000

By WALT MOONEY . . . Of the many Walt Mooney Peanuts to appear in RCMB, the Farman 1000 is the second one built to the Miami 9-inch-fuselage rule. Text includes much valuable flight trimming info.

• I've been known to get lucky and be able to write that a model flew off the drawing board without requiring adjustments. I've also made poor choices that would not fly well no matter how they were adjusted. The Farman 1000 is a third level of success. It would not fly as it was originally built and originally drawn; however, after a comprehensive flight test program and some modifications to the size of the horizontal and vertical tail, the model has become a very enjoyable project that flies in a smooth, stable fashion. As a consequence, after a paragraph or two about construction of what is a fairly simple model, this article will be devoted to flight testing a recalcitrant (hard to fly?) model.

Starting at the front, this model has a four-bladed propeller. The propeller is made up of two Sleek Streek plastic propellers. Note that the propellers are not notched into each other, but rather are stacked so that one is in front of the other. Cut the front of the propeller hub off of one and the back off the other. Drill a 1/16-inch hole through the prop shaft hole so they can be slipped over a short length of aluminum tubing for alignment and bond them together using Hot Stuff or equivalent.

The fuselage side frames have considerable curvature along the bottom at the front, so this area is made from 1/16 sheet. The top of the fuselage is slightly above the longerons and is constructed from 1/32 sheet.

The wing is constructed using sliced ribs. The upper caps are located just inboard of the lower caps of the ribs. They are thus doubled where they are cemented to the trailing edge member, which adds to their strength. The top of the wing between the root ribs and from the front to the rear spars is covered with 1/32 sheet to match the rest of the fuselage top.

Finally, I recommend that you build the tail surfaces to the suggested-by-flight-test tail enlargement size if you want a model that flies nicely. Why? The rest of this article will explain.

The model was built as shown in the photos. The scale tail was ridiculously small, so it was enlarged to some extent on the first try.

Bill Hannan, my son Curtiss, and I decided to have a Sunday morning flying session and the Farman 1000 was one of the models taken out for a flight test. The day was perfect . . . absolutely dead calm, dry, and about 68 degrees F.

We put about 200 turns in the rubber motor, checked the model one last time for warps, and launched it over the grass of the playing field. Good thing the grass hadn't been mowed recently! The model did a diving right turn into the ground. It appeared to be somewhat erratic, as well as out of trim, so thin sheet balsa horizontal tail extenders were added to give more tail area as well as some up elevator. This eliminated the dive, but the model did an erratic spin entry which indicated that it would benefit from some more vertical tail area.

The horizontal tail extenders were about 1/2 inch wide. The vertical tail was extended in span about an inch above the rudder. This made the model stable enough, but the added weight at the aft

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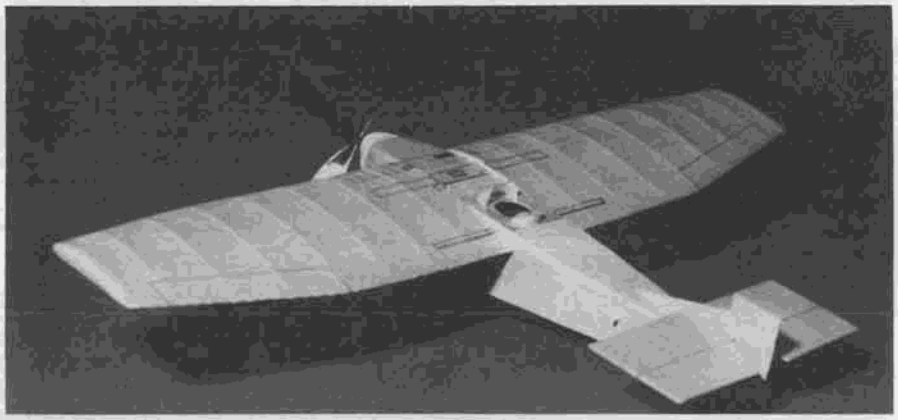


Upper photo shows the Farman as originally built with the scale size (i.e., almost nonexistant) vertical tail, which gave problems. Enlarged vertical surface (lower photo) was the answer.

Soon to be published is Walt's Hanriot H-19 Peanut. Similar to the popular DH-6.

THE WINGS ARE MADE WITH 1/16 BY 1/8 BALSA LEADING AND TRAILING EDGES. THE WING SPARS ARE CUT FROM 1/16TH SHEET BALSA. TIPS ARE CUT FROM 3/16TH BALSA SHEET.

LEFT WING

RIGHT WING

1/32 SHEET COVERED CENTER WING CARRY THRU.

NOTE HOW TRAILING EDGES ARE SCALLOPPED BECAUSE OF, FULL SCALE, WIRE TRAILING EDGE.

ALL WING RIBS EXCEPT THE ROOT RIBS ARE MADE UP OF SLICED TOP AND BOTTOM CAPS.

TYPICAL WING RIB SECTION

REAR MOTOR PEG

CARVE NOSE BLOCK FROM 1/4TH BLOCK BALSA. LOCATOR BLOCK TO FIT BODY FRAME IS ALSO 1/4TH.

COWL TOP IS CARVED FROM 3/16TH BLOCK HOLLOWED AS SHOWN BY DOTTED LINE.

AMUSING SCALE TAIL OUTLINE

FOUR BLADE PLASTIC PROPELLER.

FUSELAGE TOP VIEW

COCKPIT HOLE IN TOP DECKING

TOP OF FUSELAGE AFT OF WING CARRY THRU NOTCH IS BUILT UP FROM TWO TAPERED 1/32ND SHEET PIECES ABOVE TOP LONGERONS AND COVERED WITH FLAT 1/32ND SHEET WITH ITS GRAIN CROSSWISE TO THE FUSELAGE.

SUGGESTED BY FLIGHT TEST TAIL ENLARGEMENT

VERTICAL TAIL

HORIZONTAL TAIL

THE TAIL SURFACES ARE BUILT UP DIRECTLY OVER THE PLAN USING 1/16TH THICK PIECES. NOTE HOW THE TRAILING EDGE PIECES ARE SCALLOPPED TO SIMULATE WIRE TRAILING EDGES.

PLASTIC WINDSHIELD

BALSA BACKREST

PECK PLASTIC THRUST BEARING.

1/16TH SHEET NOSE SIDES

1/32ND THICK STREAMLINED STRUTS

BASSWOOD STICK TAIL SKID.

FUSELAGE SIDE VIEW

COVER MODEL WITH JAPANESE TISSUE.

SOLID ROOT RIB PATTERN

3/4 DIAMETER WHEELS

LANDING GEAR WIRE

FRONT VIEW

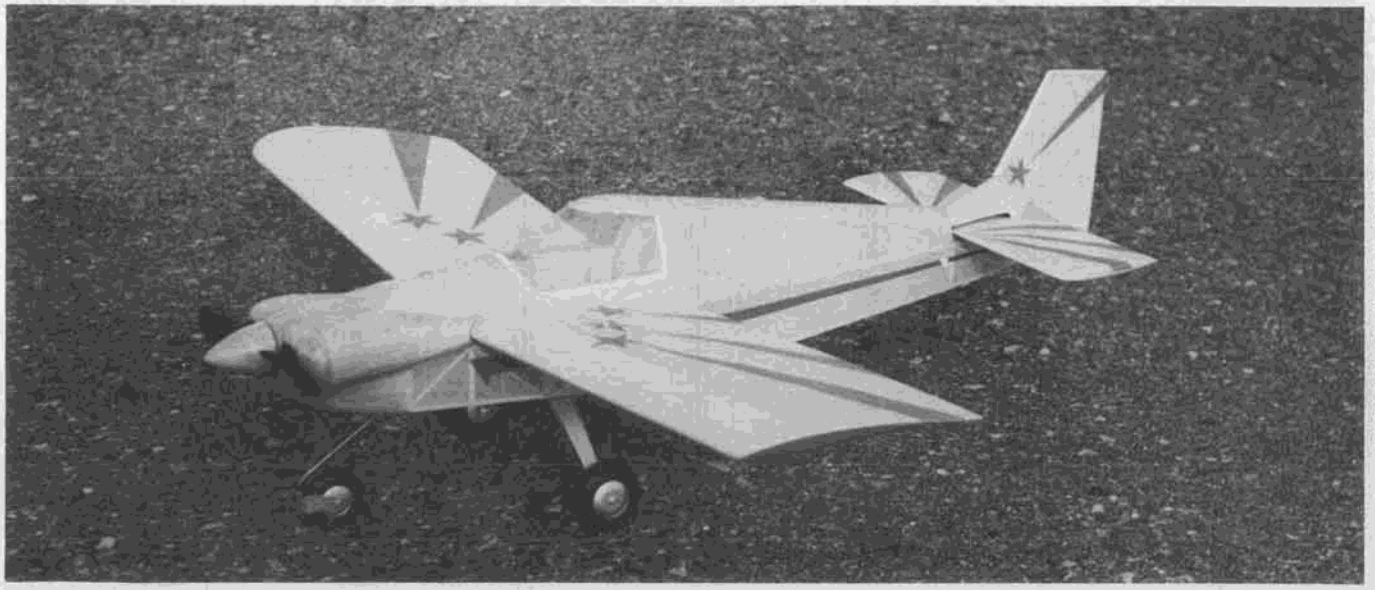
TIP RIB PATTERN

FARMAN 1000

A 9 INCH "MIAMI" PEANUT

BY Walt Mooney 03-12-80

(WING SPAN IS 15 INCHES)



PHOTOS BY JACK McCRACKEN AND COUNT ALEX PISANA

le POTTIER P-70-S

By EMMANUEL FILLON . . . Electric F/F Scale at its best! Designed by a top French modeler and built for this article by Jack McCracken, the Pottier is a fine, stable flier. Text by Count Alex Pisana.

• Relatively unknown in the U.S., Emmanuel Fillon is a legend in his own time in France. With a good deal of rubber and power experience behind him (he won the 1937 World Wakefield title) Mr. Fillon is presently in semi-retirement in the town of St. Raphael on the French Riviera, turning out a steady stream of interesting and very flyable scale ships, all the way from electric Gossamer Condors to styrofoam peanut Spitfires. Having had incredible good luck with his Desoutter and Petit Brochet models with electric power, we decided to help him become known to **RCMB** readers via this nifty little ship which Jack McCracken generously built and flew for this purpose. First and foremost, Fillon designs, like this one, FLY!

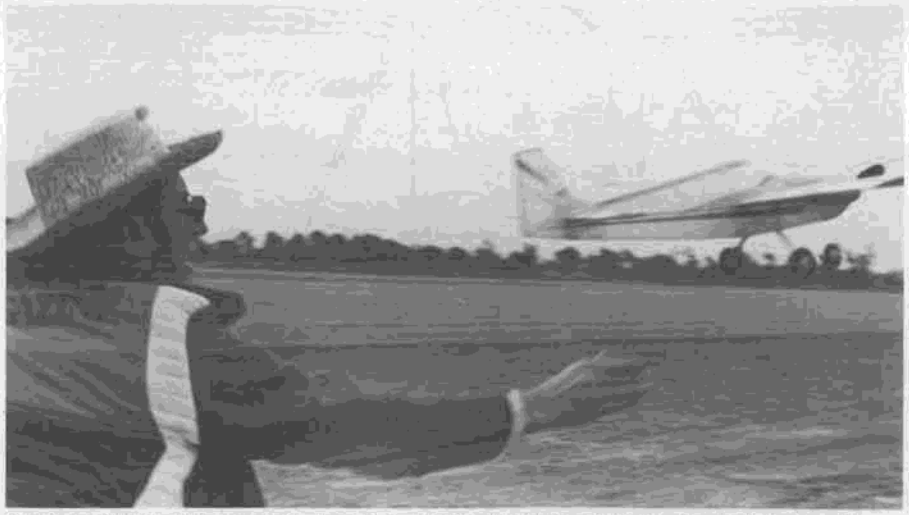
Assuming that you have built a rubber job or two, you do not have to be reminded that light planes fly better, and this is doubly true with electric. We used the VL Hytork 48 motor/battery package, but the design could be adapted easily to other units or even .02 gas. It would make an incredibly good schoolyard R/C subject. It could be thermalled if built as a rubber model!

The weight of the VL unit is a bit less than three oz., so to have a really good flier, the rest of the ship should not add more than three more to this figure. No nose weight need be added to any electric model, as it is a simple matter to slide the battery pack forward or backward for balance.

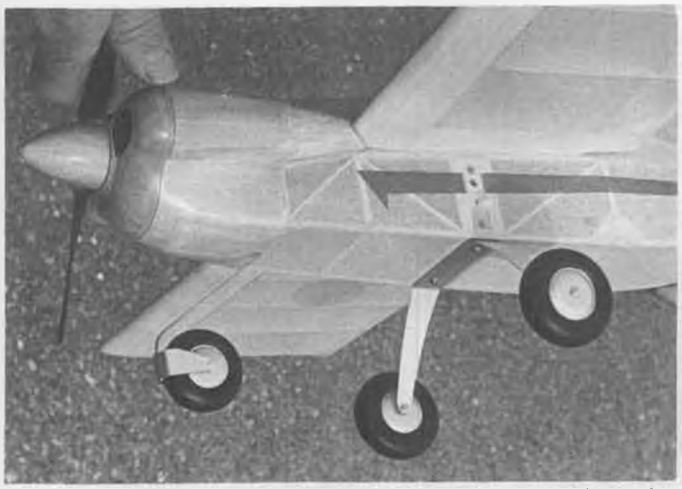
WING CONSTRUCTION

The wings are made with a full "D" section spar, with the spar made in upper and lower pieces. Start by pinning the T.E. over the plan and assembling the ribs to it, along with the lower half of the main spar. Pin down and Titebond together. Then add the top half of the main spar and insert the 1/16 x 1/8 rear spar and glue. Add the 1/8 hardwood wing-locating dowel stub and epoxy on the 1/16 ply male wing-mounting tongue parallel to the building board while the tips are blocked up to one-inch dihedral. The 1/32 sheet balsa leading edge may now be bent around and glued on. Fillon soaks his and bakes them on a form in the oven, but the McCracken method of just bending it around the front of the ribs worked fine. Wiping a little ammonia on the outside of the

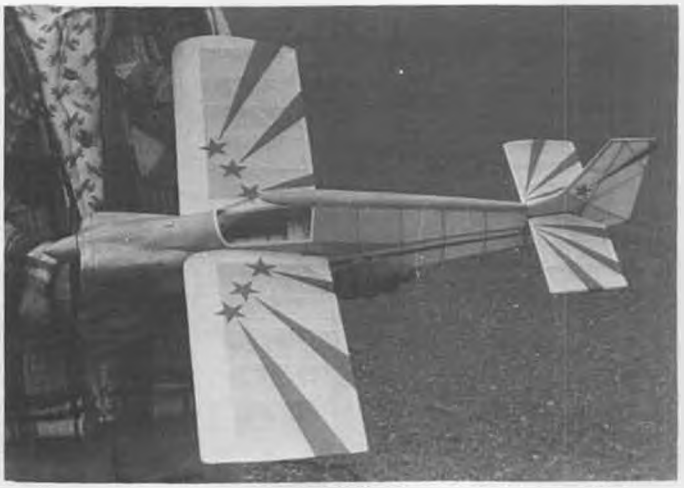
Master builder Jack McCracken and his Pottier, built from Fillon's plans. Racy lines make it an ideal sport F/F subject.



Count Alex Pisana does some testing of the McCracken/Fillon Pottier. His verdict: superb flier! Would fly well as a rubber model, too.



Landing gear is simple and straightforward. McCracken used plywood and screws to mount main gear; easy to remove if needed.



Just enough color tissue trim to make it interesting! This little ship would be right at home in a pylon race!

Count Pisana gives the Pottier the ol' heave at Mile Square, So. Cal. Note tall grass over which testing should always be done.

The Pottier is one snazzy looking little airplane, wouldn't you say? Stab mounts with rubber bands, easy to change incidence.

sheet with a cotton ball will aid in the bending. You may now tack on and shape the wingtips of soft balsa or low density styrofoam. Remove when shaped and hollow to save weight. Trace a left wing from the plan and build the second of your pair.

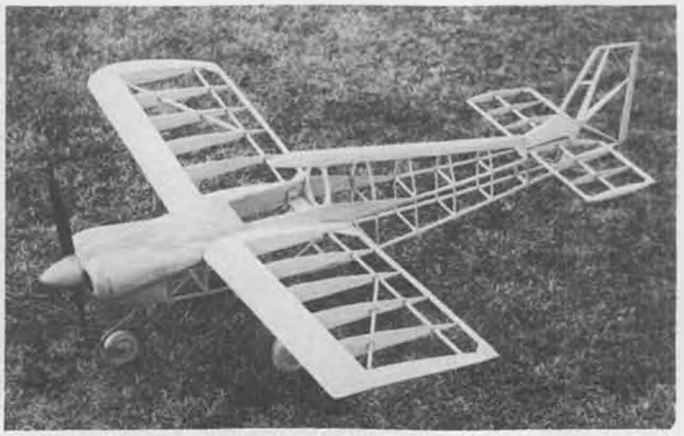
STAB AND RUDDER

The tail parts are made symmetrical and contribute in no small measure to the fine, stable performance of the model. Use a few pieces of scrap for packing up the L.E. and T.E. during construction. Note that the S-2's are cracked and then angled back to the stab T.E. Rub some glue into the cracked area. The soft balsa or styrofoam filler piece on the rudder will get shaped after the fuselage is completed so that it will fair nicely into the top of the plane. It, as with the wingtips, can then be removed and hollowed. The stab is held down with rubber bands attached to small wire hooks on the fuselage to allow for easy incidence adjustments for flying.

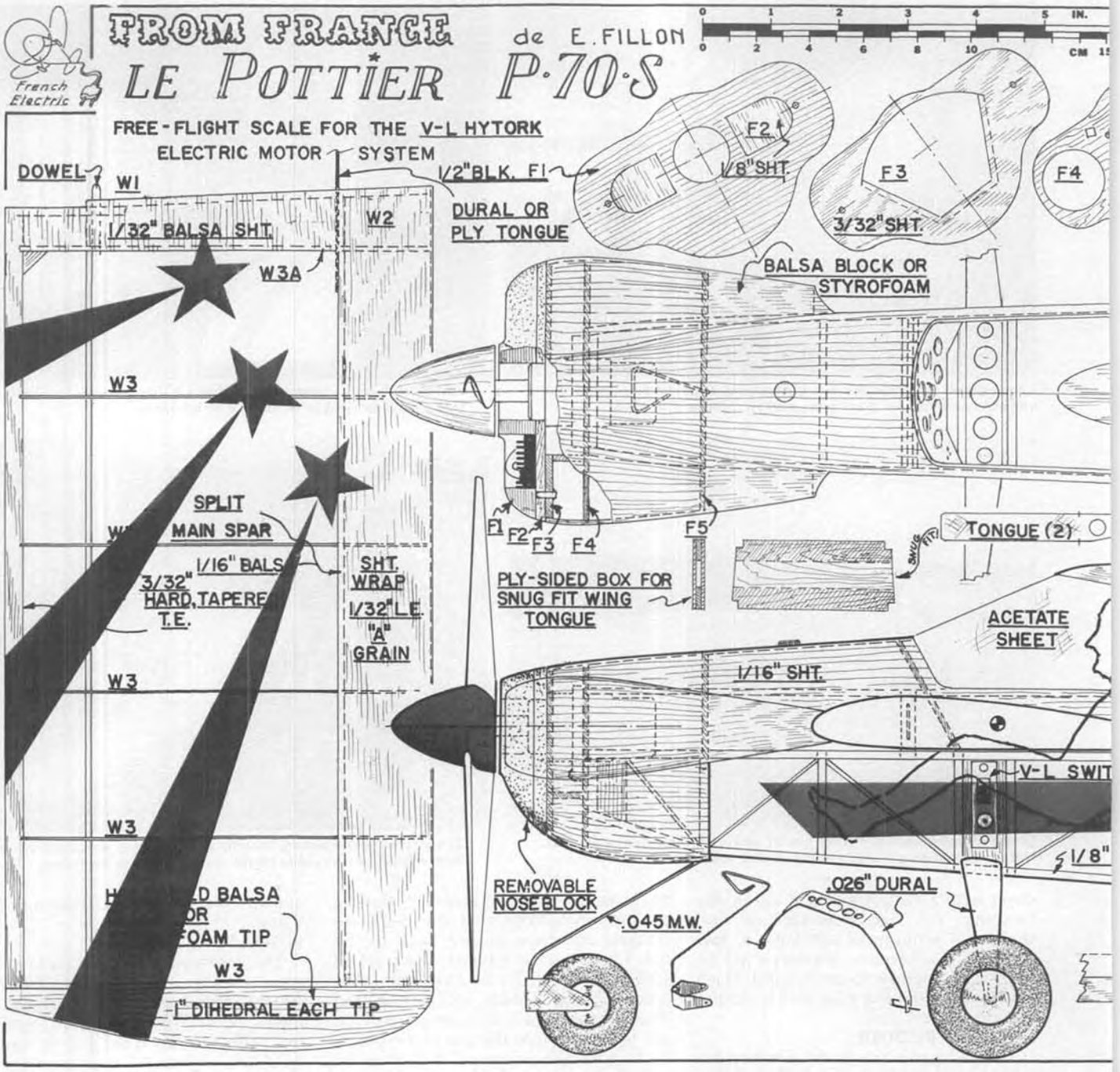
FUSELAGE

The fuselage sides are made in the usual manner over the plan from 1/8 square and 1/8 x 1/16 medium balsa. The lower two longerons would probably not suffer unduly if they were made of hard balsa. When the sides are dry, crack the rear half slightly inward at the F-6 bulkhead and glue in the cross-struts. Assemble the F-3 and F-5 formers to the

VL Hytork motor cowls in well behind removable nose block. Dummy cylinders (William Bros. or homemade) add realism.



Bare-bones shot reveals very simple and conventional construction. Diagonal brace in wings is not shown on the plans, but helps prevent damage in the event of a wingtip-only landing.

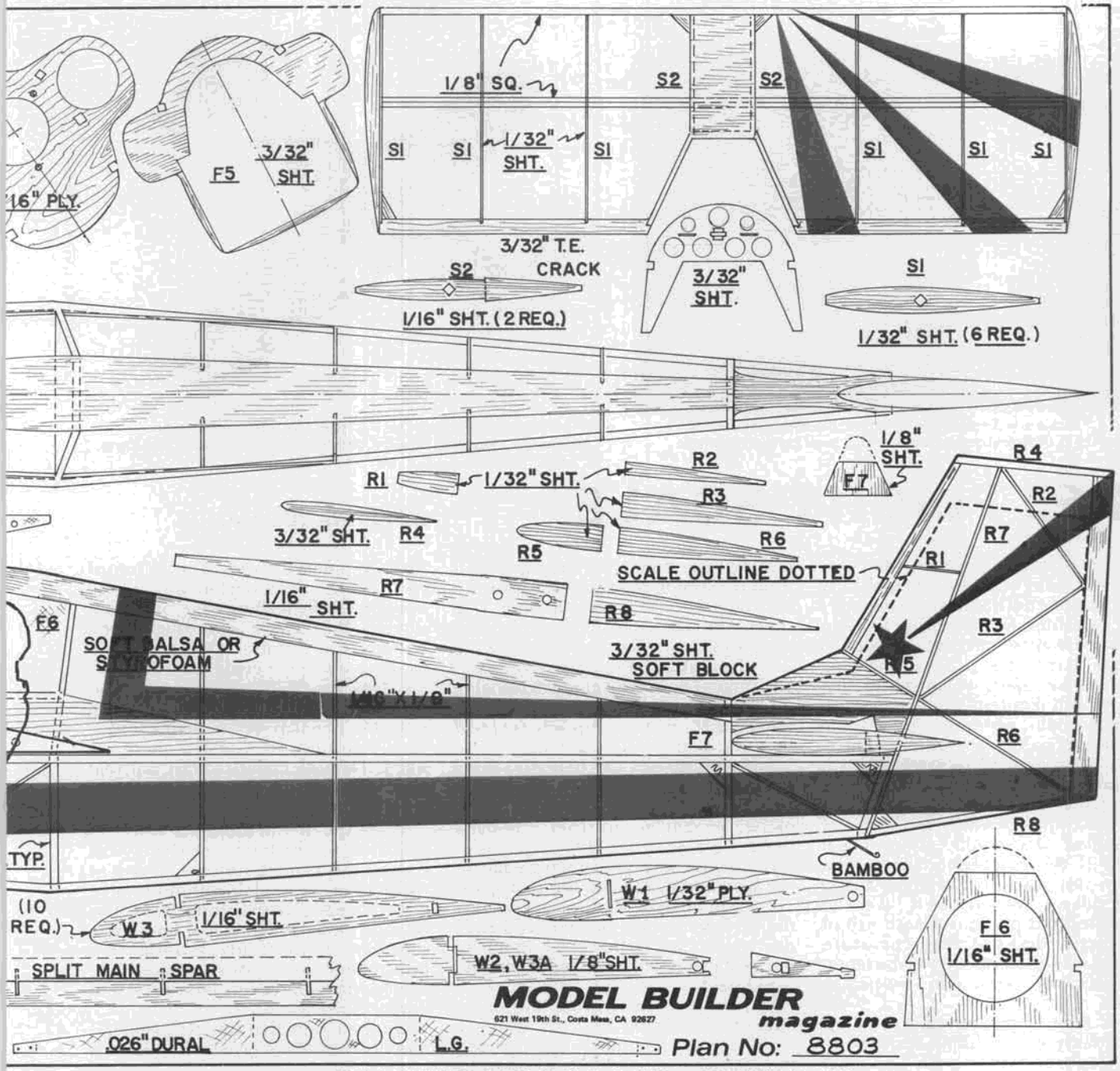


The Pottier just beginning to rotate for takeoff. Nose gear permits straight, stable ground runs, is a real lifesaver when landing in rough areas.

fuselage box. Add F-6, F-7 and the soft balsa spine which extends from the canopy to the fin. It may be hollowed out to save weight.

The front end is now sheeted with 1/32 "A" grain balsa which, again, will go on easier if the outside is wiped with ammonia. If you are using Super Jet, Hot Stuff or whatever to do this, please remember to wear glasses. One should be as careful with this glue as with a hot soldering iron or a sharp Uber Skiver!

The VL Hytork motor can now be mounted to F-4 when you are done sanding. It has a radial mount and should pose no problems. For other motor units, you may want to make a balsa tube to mount the motor in. Make the nose block removable, using two hardwood dowels or dress snaps (could be tack-glued on if you are in a hurry). The spinner is turned out of a shaped balsa



FULL SIZE PLANS AVAILABLE – SEE PAGE 108

block or a balsa rocket nose-cone, with a hole through the center for the prop-mounting screw. Cut out the wide end to receive the prop. Spinner can be epoxied to prop. A snug-fitting hard-wood plug can be made to cap off the end of the spinner and hide the hole (make one with a shoulder so it won't drive down in and be hard to get out if you have to change a prop.)

UNDERCARRIAGE

The main landing gear was bent from T-6 aluminum sheet with small machine screws bolted through to serve as axle stubs. Jack mounted the gear to a plywood piece across the bottom of the fuselage with screws. The nose gear was bent from music wire (1/32 on the original proved a bit light) with thin "tin" used to finish the job. Epoxy upper

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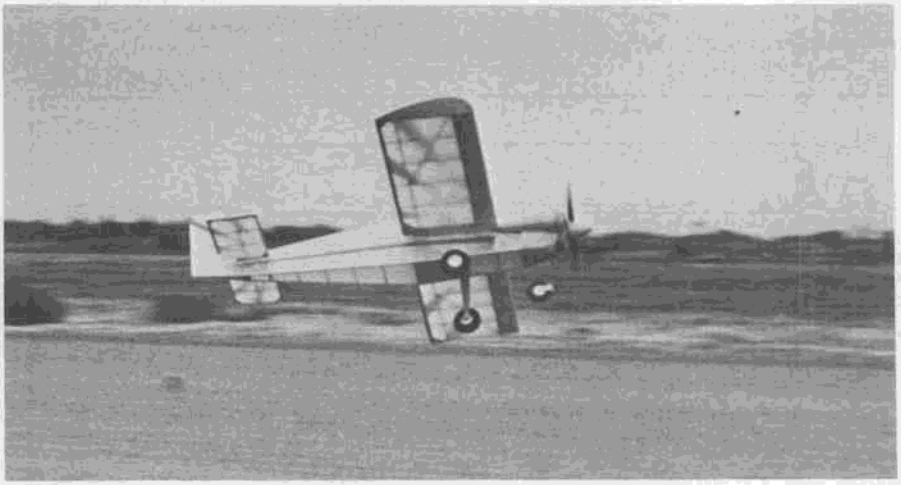


VL motor tends to torque the model into a left pattern. One might want to wash-in the left wing or add a bit of right thrust if the left turn is too tight for your taste.

Famed F/F scalers in England, John Coker (foreground) with SE-5, Eric Coates in back watching Rex Oldridge prep his big Albatross.

Mind-boggling detail on this P-51B F/F ship by Cedric dela Nougerede. Powered by Cox .049, span must be around two feet.

PHOTOS BY CEDRIC DELA NOUGEREDE

FREE FLIGHT SCALE

By FERNANDO RAMOS

• Those of you who have read this column for any length of time already know that I do not enjoy wing building. I don't care how simple a wing is, I can find some way to make work out of it! On one of my latest projects, the wing has a double taper, which means that each rib is a different size. I wanted to use spliced ribs, which in general is the best way to go for tapered or elliptical wings. However, on this model, the rib thickness at the root is so great that using a completely flat-bottom airfoil is not desirable. In other words, the radius of the leading edge would not flow like it should if the completely flat-bottom section was used. Yes, I know that I could still use spliced ribs if I were to curve the front portion of each half of the lower ribs, but that curvature changes with each rib, due to the taper, and that's more work than I wanted to tackle.

After a bit of pondering, I came up with a fairly easy solution for making thick tapered wings with the least amount of effort (see Fig. 1). The first thing I did was to laminate the trailing edge and wingtip as one unit, using alternate pieces of basswood and balsa. While this was drying, I cut out the leading edge from 1/8 sheet, tapering it from the root to the tip. The spars were also tapered and were cut from 1/16 sheet. After the laminated portion of the wing was dry, it was pinned down flat over the drawing. The leading edge was also pinned down and glued to the wing tip, as were the spars. When dry, the trailing edge near the tip was propped up three degrees, for washout.

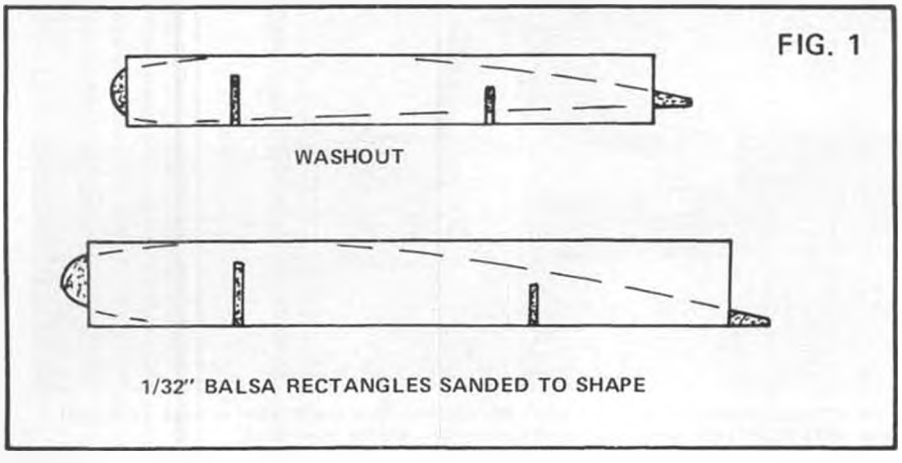
The root rib was the only rib I drew out, and it was cut from 1/16 sheet. From here on out, the rest of the ribs were merely rectangles cut from 1/32 balsa sheet. Because of the three degrees of washout, not only is the trailing edge off the workboard, but also the rear spars. This means that the balsa rectangles near the tip have to be a bit taller and have deeper notches so that the bottoms of the rectangles will be tangent to the workboard.

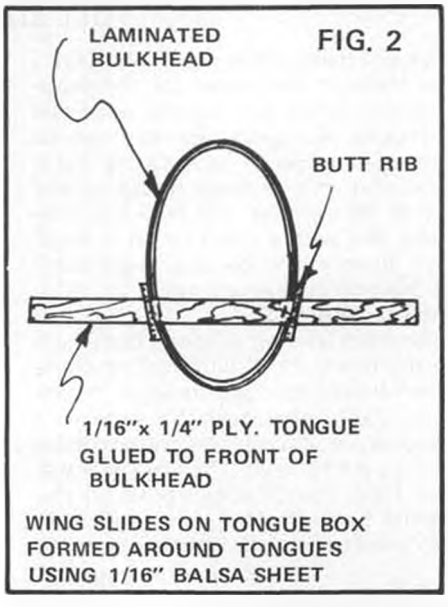
By now you can see what I've done, and what's coming next. By taking a fairly long sanding block, I first sanded the rear taper of each rib, followed by the front portion. Before going too far, I sanded the top of each rib from the root to the tip in one motion. This assures height uniformity of all the ribs. All that was left was a bit of cleaning up on each rib to complete the wing. The bottom of each rib was then sanded with a nice upsweep at the leading edge, and those ribs near the tip were sanded flush to the bottom of the spars. At this point, the washout was quite evident.

I think you will agree that this is an easy way to make tapered wings. Believe me, this is much easier than plotting each individual rib. Granted, there is a slight waste of materials, but not that much. I feel that it is worth it, considering the time saved.

While still on the subject of wings, in preparing for the trip to the Flying Aces contest this coming summer, I have to make all of my models with removable wings for easier transporting. Doing this on a gas model isn't much of a problem, since weight is not nearly as critical as it is on a rubber model. My solution is quite simple and requires very little effort and time to accomplish.

On the model that was discussed last month, I had made plywood bulkheads





Larger than most U.S. scale jobs is this extensively detailed BE-12 by Bill Dennis, shown here with his wife, Tricia. Great flying model.

Another fine example of English craftsmanship is John Coker's Sop-with Triplane, detailed right down to the lettering on the tires!

which had "tongues" and were glued onto the laminated bulkheads. This worked out just fine, but I found that the model did not need this amount of reinforcement provided by these plywood bulkheads. On a WW-II subject, I used two pieces of 1/16 plywood, 1/4 inch wide, running straight across two of the bulkheads. I found this to be more than adequate, simpler and much lighter.

These plywood tongues (see Fig. 2) were glued while the fuselage was still attached on a jig for accurate wing alignment. The next step was to glue a butt rib against the fuselage with the tongues running through the ribs. The root rib of the wing and the next outboard rib are notched to receive the tongues. The wing is then clamped into place against the butt rib, keeping it perfectly aligned with the butt rib. The next step is to surround the plywood tongue with 1/16 sheet balsa. Each piece is cut so that it fits snugly between the ribs. Then glue is applied to the *outside* of each joint *only*. If the glue is allowed to ooze, there is a very good chance that the wing will be permanently attached to the tongues, defeating the removable wing feature. That's why I only glue the outside of the joints. After all the sheeting is completed, the wings are removed and the box area is doused with Jet. That's all there is to that!

Cedric dela Nougerede's Peanut Tiger Moth sports just as much detailing as its bigger brothers. Note "spin strakes" on top rear fuselage, used on the full-size Moth to improve spin recovery.

And . . . still more wing construction. While building another of Flyline's super kits (Curtiss Seagull for the Flightmasters' Stahl-Lindberg fun contest), I decided to lighten the wing structure. I felt that by using spliced ribs, weight could be saved over conventional construction. However, this wing had a shape similar to the one I mentioned at the beginning of this column. So, now what? Well, by using the root and tip ribs, I was able to determine how wide the spars should be, and the amount of taper. These spars were cut from 1/16 balsa sheet. The ribs except the root rib

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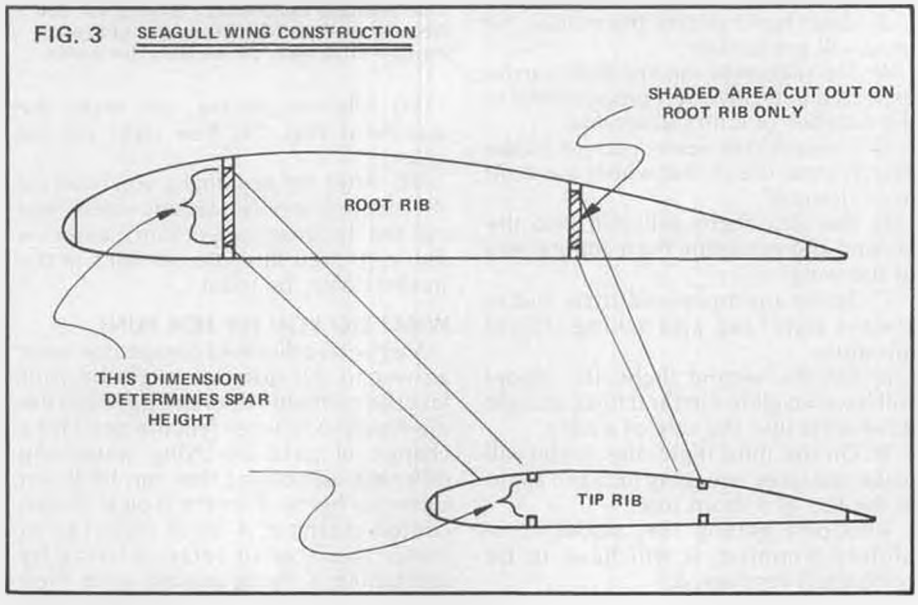
FIG. 3 SEAGULL WING CONSTRUCTION



Ced dela Nougerede's latest is this 1/10 scale SE-5, a little over 30-inch span. Uses lots of thin sheet metal in nose section.

Clarence Haught had his troubles with nice triple-fin FAI Power ship at rainy Northwest Semifinals.

An old photo is this one taken at the long-gone free flighter's paradise: Gardner Field, Taft, California. Pictured is Al Vela with one of his numerous FAI designs.

FREE FLIGHT

by TOM HUTCHINSON

PHOTOS BY AUTHOR

• It's that time of year again, when spring has finally sprung. The flying season is underway again, so you take a look around your shop and what do you see? Mine is littered with the partly-built dreams of last winter: a couple of Nordic wings almost ready for covering; a 98% complete FAI Power model; one of the original batch of Maverick kits, now with surfaces aged for three years, still needing timer and DT hookup; a Burrito Brother with no fuselage to match the newly-covered wings and stab. In addition, there still remains the debris from last season: the fleet of HL gliders that consists solely of models afraid of heights and which refuse to get lost; a Rossi whose last official flight ended in a plowed field, right up to the exhaust port; a 1/2A that's needed a new covering for two years; a B ship with wings that creak and crack on each DT; and three rubber models whose stabs were left behind two moves ago. How did the workbench manage to get so dirty without anything ready to fly? (It always seems to take three days to get ready to go flying, just in time for the weather to change.)

Now the warm sunshine and green fields are beckoning seductively, and I'm two days behind ole WCN's deadline already. Let's get this over with so I can experience those joys of first flights so eloquently described by Harry Murphy (in the *CIA Informer*):

MURPHY'S LAWS OF FIRST FLIGHTS

1) When assembling the model on the field for the first time, the fuel tubing and DT string will have yet to be added.

2) The engine will flood and it will take at least an hour to get it started, while blowing three or four glow plugs (or the rubber will break on the initial winding, knocking out half of the fuselage formers).

3) Upon hand-gliding the model, the prop will get broken.

4) The success of the first flight can be expected to be inversely proportional to the number of critics observing.

5) The resultant power pattern will be exactly opposite to that which was built in or desired.

6) The first flight will stall into the ground and stovepipe the leading edges of the wing.

7) Some unimpressed little kid is always watching and asking stupid questions.

8) On the second flight, the model will have no glide turn and head straight downwind into the side of a barn.

9) On the third flight, the model will make one large sweeping turn and alight in the top of a thorn tree.

10) Upon getting the model completely trimmed, it will have to be completely recovered.

An unidentified flier gets a good launch on his 1/2A Ramrod 250 at Taft during the late 60's.

The American camp spots a thermal for Bob White at the Taft World Champs. U.S. team manager Dick Myer on left with thermistor.

11) After recovering, you make the statement that, "It flew right off the board."

12) After the next flight, you head for the nearest service station, where you call the designer long distance and cuss him out, then flush the remains of the model down the toilet.

WHAT DO YOU FLY FOR FUN?

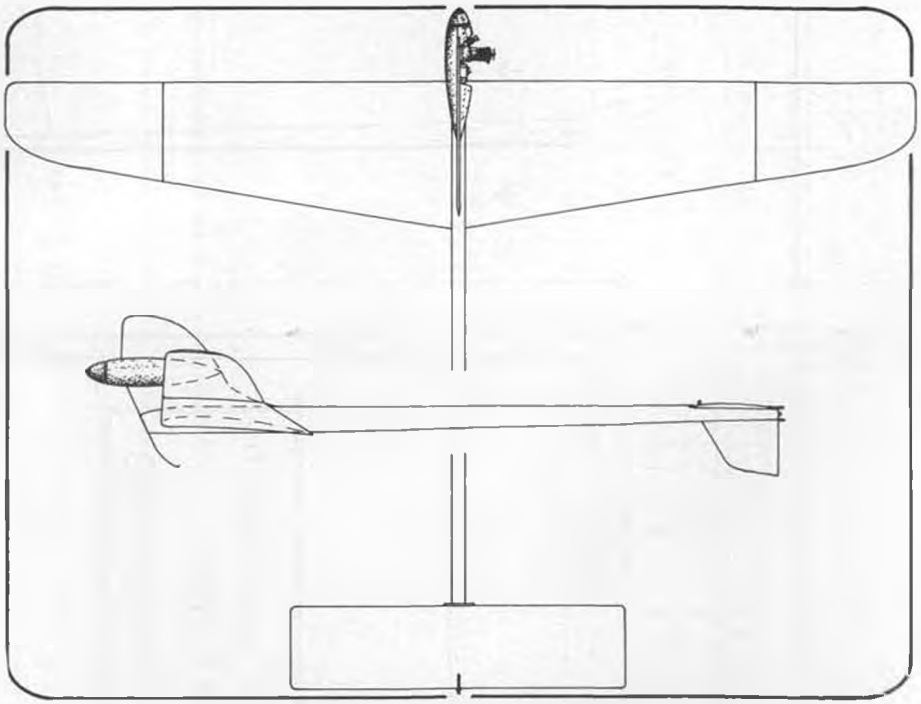
Maybe, as a die-hard competitor, your answer to this question might be your favorite competitive event. But even the die-hards sometimes feel the need for a change of pace by trying something different, something that can be flown closer to home than the typical all-out contest machine. A lot of clubs like to foster this sort of relaxed flying by combining a flying session with their

'He says he likes my fuselage.... especially at formers A and D!'

regular meetings. Indoor flying sessions during the winter months are fairly popular, from the accounts I see in print. Outdoor sessions are usually on the order of monthly contests sponsored by the club, but during the summer months, when daylight extends a bit further, a lot of clubs meet at the local field for trimming sessions or hold contests for small-field models. Such regular events as HLG, Coupe, or P-30 are ideally suited for this purpose, but some other clubs have tried to be a little more original.

The San Diego Orbiteers sponsor a Sleek Streek Fun-Fly Contest, using the North Pacific model. They even have two classes: Stock (right from the package) and Modified (only requirement is to be able to read the red SLEEK STREEK lettering on top of the wing). They have prizes for high time, and for the most unusual Modified Streek. They even award an annual trophy for high point man at these after-the-meeting events! Other ready-to-fly models could be used; for instance, the Stratobats sponsor a competition for Super Gliders. Other special classes can be set up, either using a specific design (like the MIAMA club's Peck ROG rise-off-water indoor event), or some specific rules designed to entice beginners (P-30 started this way, and the Orbiteers sponsor A-6 fun-fly events, too).

Or maybe the idea is to fly your regular models in a different manner.



AUGUST MYSTERY MODEL

This could encourage more club participation, without needing to build special models (a sure way to limit entries). The Boeing Hawks came up with a very interesting set of events for their May Madness Contest. Look them over and see if your club might want to try some flying for fun, too:

1) EVENT: Hand Launch Glider Cross-Country.
   Object: To get as much flying time as possible in five minutes.

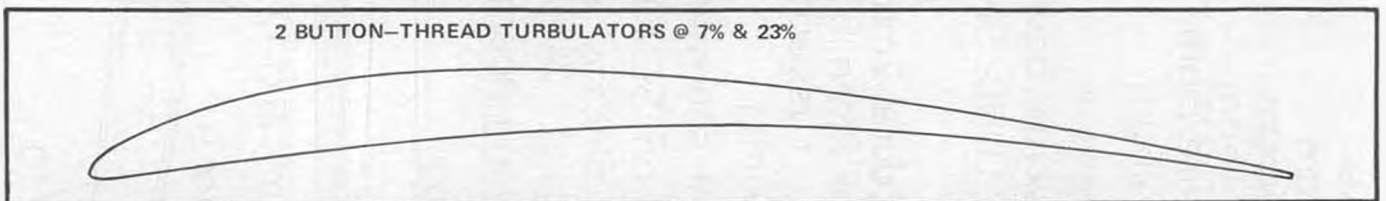
The contestants shall be divided into two equal groups. Each group will time the other. Each timer will be paired off with a flier. At the start, all fliers will launch. A five-minute master clock will be started by the CD. Each timer will start his watch when the flier launches and stop it when the glider touches the ground, or any other obstruction, or is caught by the flier. The flier must be back to the starting area at the end of five minutes. His late time will be deducted from his total flight time. After the first group flies, they time the other group. Highest total time wins.

2) EVENT: Rubber Spot.
   Object: To land as close to a thermal pole as possible after a 20-second minimum flight.

From a spot of the contestant's choice (but more than 50 feet from the thermal pole), launch any class rubber-powered model. The closest landing to the base of the pole wins. Distance will be measured to the nearest foot. Hitting the pole is NOT an automatic zero. Unlimited attempts during the 45-minute contest time frame will be permitted.

1973 World Wakefield Champ Loffler winds up at World Champs in Wiener Neustadt.

DARNED GOOD AIRFOIL — GARD G8910



STATION	0	1.25	2.5	5	10	15	20	30	40	50	60	70	80	90	100
UPPER	0.5	2.2	3.1	4.5	6.4	7.5	8.3	9.4	9	8.4	7.5	6.2	4.5	2.6	0.5
LOWER	0.5	0.1	0.3	0.6	1.5	2	2.5	3.5	4	4.5	4.4	3.4	2.8	1.5	0

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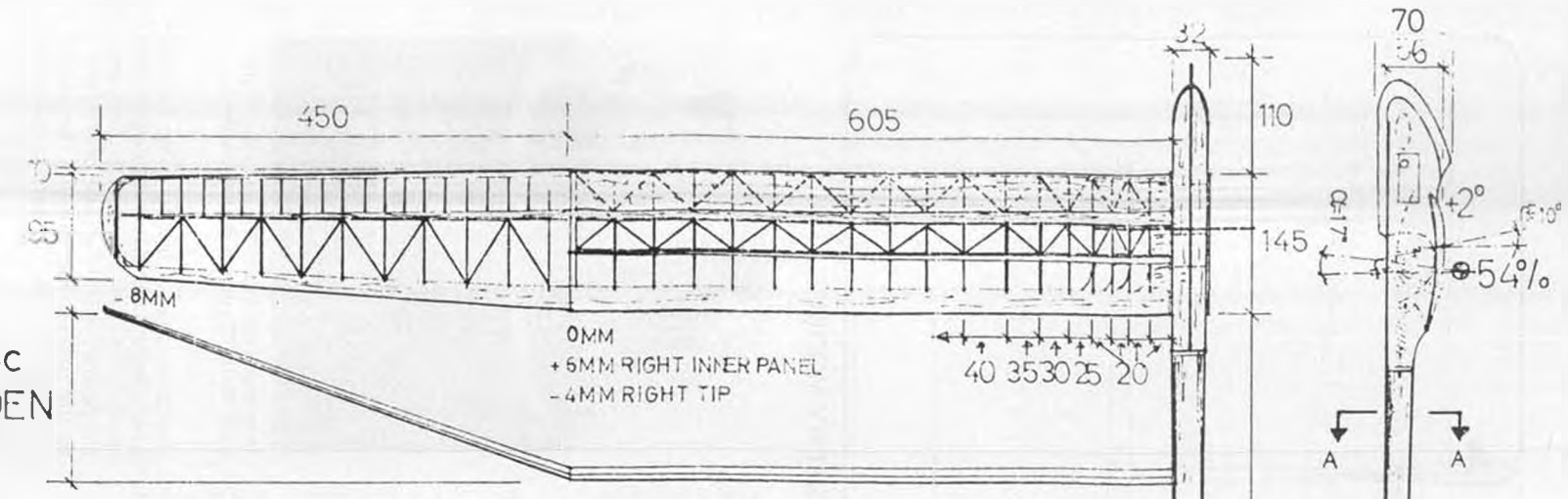
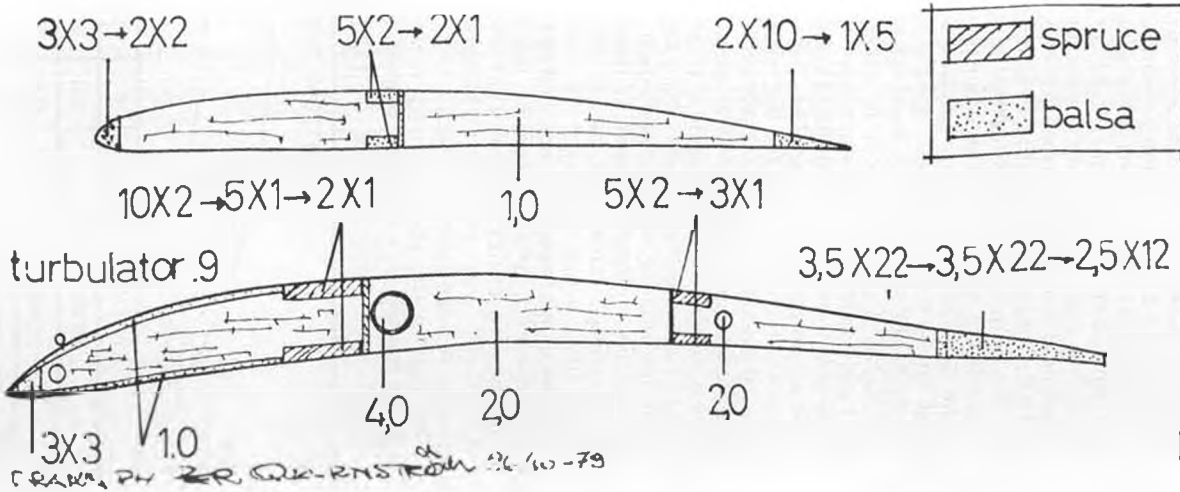


"QUEREMOS" by Per Qvarnström
2nd WC 79 Taft Calif.
1st Sierra cup Sacramento



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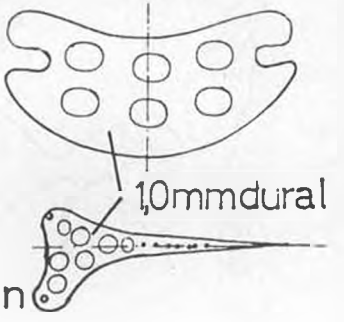


Jason Kendy, this month's featured Junior (actually became Senior in 1980) shows off his White designed Twin Fin Mulvihill ship.

Bill Davis turns loose his Class B Ringo at Taft, possibly during the U.S. F/F Champs, judging by the campers and tents in background.

3) EVENT: Gas "LeMans Start."
Object: To get as much flying time as possible in 120 seconds.

On "GO," run 50 feet to model, start engine and launch. Master clock starts on GO and runs 120 seconds. Individual timers start their watches with launch and stop with master clock. Longest total time in the flights wins.

4) EVENT: Towline "Up and Off" Scrambles.
Object: To get the longest flight in a mass launch without picking air (120 second max).

All fliers will rig up on one line and tow no further than a second line. No circle towing is allowed. You may launch before you get to second line if you wish. The winner is the highest three flight total.

THE GREAT AMA NATS FREE FLIGHT RUNAROUND

Terry Rimert has been to all the recent Nats as NFFS "Unofficial Events" CD (and will do the same this year), and is not too happy about the flying sites offered to free flighters. Here's an excerpt of his comments in the MIAMA *Hangar Pilot:*

After two pretty good years at Lake Charles in 1974 and 1975, it started to go bad in 1976 in Dayton, Ohio. Free flighters had to run all over the state to get their flying in. . . . Neither field (Wright Patterson or Springfield) would be considered a good F/F site.

In 1977, we did it again, California style. Norton AFB for indoor, then a trip south each following day to a dust bowl where afternoon flying was terrible, but great in the morning. All the F/F was far enough from the C/L and R/C and AMA HQ that getting to any of them took huge parts of your flying time away, and gallons of gas (relatively cheap then).

In 1978 we got relief . . . Lake Charles again. Burton Coliseum was a fine indoor site, and the F/F site was good, close to other activities and HQ. No half-hour trips needed to pick up a trophy or watch R/C Scale.

Then in 1979, they got even. Mead, Nebraska . . . one hour's drive from ANYWHERE, and they didn't even have a map to get to the F/F field, or the indoor site, or even AMA HQ. . . . After the hour drive, the field at Mead didn't look all that good, either. It wasn't. Exceptional weather and two-minute maxes all week saved a lot of planes from being lost in the corn. (Many were lost, however.)

This year, we are going back to Ohio where it all started in 1976, and we are going to be separated from the rest of the Nats again. Why can't we pick a good field this time? Why are we seemingly just an afterthought?

GRRRUNT! 1973 World Power Champ, Vladimar Horcicka, puts his all into launch during flyoffs at Wiener Neustadt.

"Flying here is a real challenge."

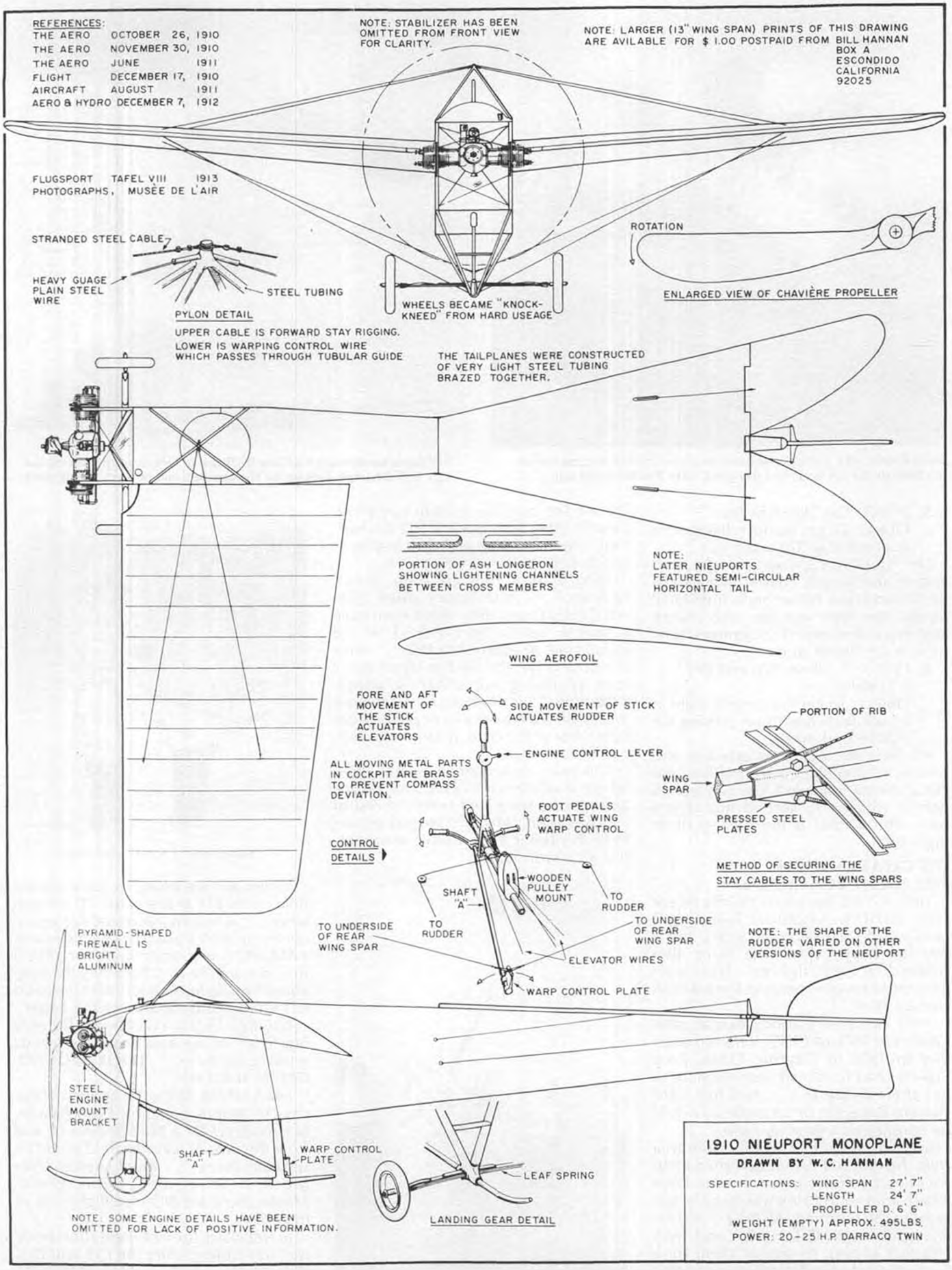
When are we going to get a decent field to fly F/F at the Nats? I'll tell you when . . . when an interested F/F group comes up with a place to fly!! No one in AMA HQ is scouting around for a likely site, nor are the R/C fraternity thinking about free flight. So guess who has to do it?? We do, and the sooner the better.

Is there a field in YOUR area? The only big fields in my area have big forests growing on them. . . . LOOK AROUND, GET IN TOUCH!!

I don't think Taft is the answer. Three days of grubby camping I can handle, but six days? Or a 35-mile drive to and from the site? At least the field would be suitable there . . . much better than Mead, or Riverside, or Springfield. Maybe there are NO free flight sites in the USA?

In Nebraska, the free flight attendance was way down, while the C/L and R/C didn't suffer much . . . BUT AMA LOST 26 GRAND!! Is free flight subsidizing the rest of the Nats?

Continued on page 71



This is the type of aircraft that might best fit the requirements of the IMS Pasadena Trade Show Indoor R/C Scale competition, scheduled for next January. With a maximum weight of 24 ounces and 3-ounce wing loading allowed, something very light and with plenty of surface area will have to be used. For more information on the contest, check the R/C World column in this issue.

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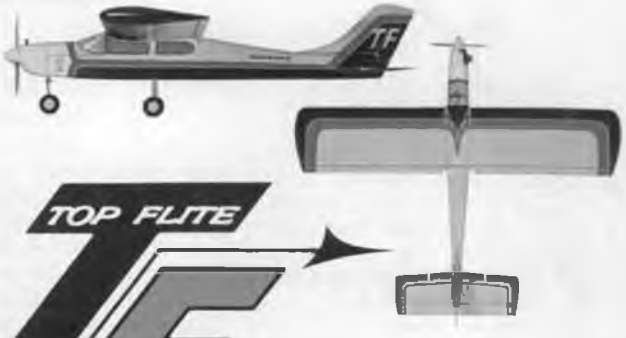

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F/F .....*Continued from page 67*

Terry's comments bring up some interesting points. The bulk of entries at all AMA Nats has usually come from free flighters. Thus, free flighters have provided most of the Nats revenue. There's no doubt that a poor choice of a F/F site tends to cut down Nats participation. A bad Nats site makes a potential flier start to think about traveling to Taft for the USFFC instead. Who wants to risk their best ships and the year's vacation at a poor field, if the alternative of a better contest exists elsewhere? I helped organize the initial U.S. Free Flight Championships to provide such an alternative, because West Coast free flighters were tired of traveling to the Midwest every year to compete on poor fields in poor weather. We wanted our own world-class event to provide national competition more than once every blue moon, whenever AMA decided to permit a West Coast Nats.

The other point Terry brings up is even more urgent to consider. WHERE ARE THE FLYING SITES? We've held three of the last four FAI Team Selection Finals at Taft, because Finals participants were tired of the bad weather experienced at more centrally located sites. Are there any suitable sites in other parts of the country, with a group of people willing to help run a Nats or FAI Finals? Maybe the money AMA is willing to spend on the Nats could be better spent on finding ways to obtain flying sites. *Continued on page 72*

F/F . . . . . *Continued from page 70*

One way to begin this would be to compile a list of current flying sites used by AMA Chartered Clubs. A questionnaire could be circulated to all clubs, asking for information about the flying site currently being used (nearest town, owner, restrictions on use, size, contest suitability, normal weather conditions, terrain outside the field boundaries, map or route to reach field, etc.). Completing the questionnaire could be a requirement for granting chartered status each year. Publication of a flying site directory would be a useful function of *Model Aviation*, and a copy of the directory could be included with the AMA rulebook to all members. What do you think?

JUNIOR OF THE MONTH: JASON KENDY

I first met Jason at the 1977 Nats in Riverside. He was flying one of our kit Ultimate Dragmasters and doing very well with it, so we struck up a conversation. He ordered some more wing ribs later on, then I noticed his picture as one of Bob White's chase crew the day Bob set the Mulvihill record last spring. Bob pointed him out as an up and coming young flier when I spoke to him at the World Champs, so I wrote to Jason for pictures and information when I started thinking about doing this feature. Here's his reply:

Dear Tom,

I have given you the pictures of my favorite airplanes, a Twin Fin Unlimited and a Vol Libre Wakefield (my second Vol Libre is on the way). I have been quite successful with these models, and they are a lot of fun to fly.

I haven't been doing a lot of work with my Dragmaster because of the mass of events I have to be able to manage at contests. I have been really working on Wakefields lately, maybe because of the inspiration of the recent World Champs.

I had a real pleasant surprise at the last contest I went to, a Wakefield Team Contest at Lake Elsinore. I was picked on a team with Bob White and Bill Wiley, and our team won! It was the first contest for my Vol Libre and it per-

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Signed _____

formed exceptionally well.

Any other Juniors (or Seniors) out there who've had success in free flight? Send a clear black-and-white photo of you and your favorite model, along with a short description of you, your model, or your modeling career, and I'll include them in this column.

DARNED GOOD AIRFOIL:
Gard G8910

The Wakefield airfoil used by Wake expert John Gard on his exceptionally good-flying calm-air models has become one of the standard sections for such use. (Walt Ghio used it on his phenomenal Wake at this year's World Champs, and Bob White has used it in the past.) This month's section was suggested by John as a good Nordic section, and is published here for the first time, I believe. It is a fairly thin (6%) section, with the maximum undercamber fairly far back. Notice that two turbulators are specified, in the usual Gard locations at 7% and 23%. It might also be useful for a Wakefield section.

MODEL OF THE MONTH:
Per Qvarnstrom's QUEREMOS

A month or so after the World Champs, this 3-view was sent to the **RCMB** office with no explanation. There's no question that Per flew well during his visit to the USA; he copped his second place at the World Champs with an outright win over most of the same fliers at the Sierra Cup. (Paul Lagan called him the top glider flier he saw in this same period. Said that Per also had his attractive wife around to distract the opposition . . . probably not deliberate?)

The model used at Taft and shown here is his tenth A/2 and was developed from Ehtenkov's 1973 winner. (Per was a Junior flier when he observed the Russian glider team in action at Wiener Neustadt and resolved to fly in the same style.) The airfoil shown is sort of a Benedek 6356 with less undercamber and about 1% thicker. Per says that the still-air performance is about 10-15 seconds less than a true 6356, but feels that its handling and consistency are worth the loss and make the model a good contest machine. (I get the feeling that the current A/2 trend is towards slightly thicker airfoils for stronger structures, hoping to gain more from a vigorous launch than is lost by the poorer glide.) Note the warps shown on the plan: the wash-in on the right main panel begins only 100mm (four inches) from the dihedral break. The towhook is raked back ten degrees from the pivot point at the forward (straight tow) position.

MYSTERY MODEL

This one might be too easy. The very high thrust line (engine above wing), tapered wing, and underslung rudder are very distinctive. This model reflected a very plausible but short-lived theory as to how to control looping on a power model. The idea was that the thrust, being positioned above the wing, would provide a nose-down moment to avoid loops. I once built an experimental 1/2A FAI model to test out the theory (prodded on by Dick Mathis). The first flight of the model pulled a tight loop and nearly hit me on the back of the head! So much for theory!

Bob Stalick built one of these (the design shown) and still vividly recalls trying to trim it. His fruitless efforts were witnessed by the club expert. After watching a few flights closely, the expert finally gave Bob these words of wisdom: "You got a real problem there," and walked away.

Continued on page 80

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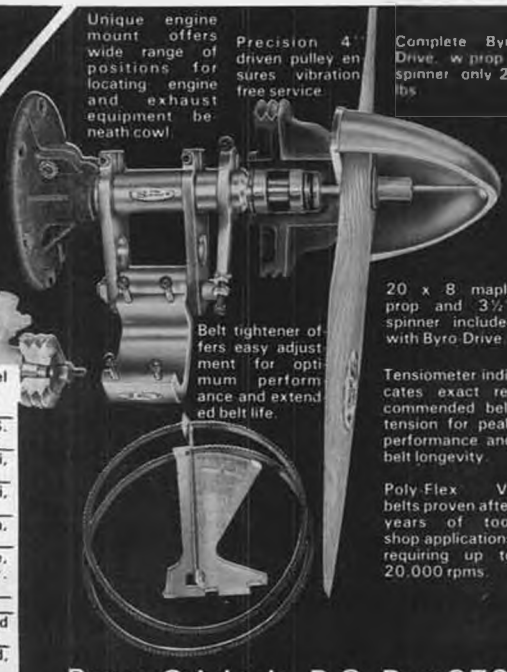

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(fan & starter extension not included)

Wing Span - 47"
Length - 74½"
Effective wing area - 750 sq. in.
Ready-to-fly weight - 9½ lbs.
(less opt. tanks & rockets)

Wings easily removed for transport.

BYRON ORIGINALS
Byrojet

The proven Byro-Jet is specifically designed for today's Schnuerle .60s and low nitro fuel. This simple yet highly efficient fan system is constructed entirely of rugged glass-filled nylon. Total weight, less engine & pipe, only 11 ounces.

Model shown with optional rockets and fuel tanks.

Authentic 1/5 Scale P-51D Mustang

Now you can recreate in accurate 1/5 scale one of the most famous fighter aircraft of WWII – the P-51D Mustang. After more than three years of testing and development, this classic fighter of 36 years past has finally been judged ready for the modeling world. Experience the thrill of realistic sound and unbelievable flight performance plus standard features never before offered.

All things considered, the P-51D from Byron Originals represents the ultimate in authentic scale modeling. Call or write for details.

Included in Kit
Exact scale landing gear, with functional Oleo strut, serves as a good example of the authentic details evident throughout the P-51D.

Complete Power Package Included in Kit Price!
- Complete drive unit & mounting
- 24" nylon four-bladed prop
- C.D. ignition Quadra engine
- 5½" Spinner

Wing Span - 85"
Length - 76"
Ready-to-fly weight - 23 lbs.

Factory Price
$499.95
plus $9.00 shipping
(retract system optional)

Exclusive Quick-start Capabilities!

Byro-Jet's exclusive quick-start capabilities makes starting a fast, easy and safe operation. No complicated belt-start procedures and no hatches to remove and reassemble. Simply attach starter extension to your Sullivan starter...insert into tail pipe until contact is made with the fan...and hit the starter.

Byro-Jet Tuned Pipe System Complete
$48.95
Plus $1.50 Shipping

Exclusive Tuned Pipe System!

In addition to increasing power output by 15%, this unique Byro-Jet Tuned Pipe System provides the necessary noise suppression plus a means to completely conceal muffler within fuselage. Available for both rear and side exhaust .60 engines.

Ida Grove, Iowa 51445

IMPORTANT: You must check an engine below (B) to receive proper Byro Jet Pipe and/or Fan Unit
Send me:
- ___ Pitts Special Kit(s) @ $212.95 plus $12.00 shipping and handling
- ___ Pitts & P-51 Fiberglassing kit @ $39.00 ea. plus $2.50 shipping
- ___ Byro-Drive(s) Model No. ____ (See model listing) at $98.50 ea. plus $2.50 shipping
- ___ Byro-Drive II (Quadra engine included) at $243.00 plus $3.50 shipping
- ___ Byro-Drive II (Quadra not included) at $138.95 plus $2.50 shipping
- ___ P-51D Mustang Kit(s) at $499.95 plus $10.00 shipping. (Quadra and drive unit included)
- ___ P-51D retract system at $135.95 plus $2.50 shipping. (Gear not included)
- ___ MiG-15 Kit(s) @ $136.55 ea. plus $8.00 Shipping & Handling (Choice of four decals see below)
- ___ F-16 Kit(s) @ $196.55 ea. plus $10.00 Shipping & Handling (Three decal kits included)
- ___ F-16 Tank & Rocket option @ $26.95 (includes shipping and handling)
- ___ Byro-Jet Fan Unit @ $49.95 ea. plus $2.00 Shipping & Handling
- ___ Sullivan Starter Extension @ $11.50 ea. (Includes Shipping & Handling)
- ___ Custom Byro-Jet Pipe System @ $48.95 ea. plus $1.50 Shipping & Handling
- ___ Epoxy/fiberglass Kit @ $22.50 plus $1.50 Shipping. (MiG-15 & F-16)

A. Check one MiG-15 Decal Kit:
___ 1. Chinese ___ 2. Russian Aero. Team ___ 3. Russian ___ 4. Czech Aero. Team

B. Determine engine to be used and check accordingly.
- ___ Webra .61 Speed #1030 Front Valve, rear exhaust.
- ___ Webra .61 Speed #1030 Front valve, side exhaust
- ___ O.S. Max .60 & .61 FSR, Front Valve, S. Exh.
- ___ Rossi .61 & .65 ABC Rear Valve, Rear Exh.
- ___ Webra .61 Speed #1024 F. & R. Valve, S. Exh.
- ___ H.P. .61 Gold Cup Rear Valve, S. Exh.
- ___ O.P.S. .60 & .65 Speed, R. Valve, R. Exh.
- ___ O.S. Max .61 VF Front Valve, R. Exh.
- ___ O.S. Max .65 RSR Rear Valve, S. Exh.
- ___ Undrilled Mount Also Available

Name _____ Phone _____
Street or RFD _____ Apt. # _____
City _____ State _____ Zip _____
___ I have enclosed check or money order for $ _____
___ Please charge to MC# _____ Exp. _____
VISA# _____ Exp. _____
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MILLER No. 2017 SPRAY SET — 40% OFF

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Develops 2 horsepower! An engine suitable for large models with its scale-like sound and realistic performance. Comes with muffler and mount. Runs on gasoline.

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Ideal for model making, hobbies, general bonding, & repairs. Comes in twin plastic squeeze bottles for big jobs. Packed in heavy-duty plastic pouch with instructions.

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This versatile tool is a jigsaw, disc sander, buffing wheel & flexible shaft tool. Includes 9 saw blades, 6 sanding discs, cloth wheel, wire brush, polishing compound, flexible shaft & 12 piece accessory set.

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GOLDBERG FALCON 56 MK II — 39% OFF

A reliable, rugged, & easy-to-fly balsa trainer. Redesigned, it features a longer, wider nose & a strengthened wing with aileron hardware. 56" span. Requires a .19-.40 size engine & a 3 - 4 ch. radio.

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This powerful, high quality ball bearing engine comes with a Perry carb and features Perry Directional Porting for increased power.

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LATRAX CORVETTE W/RADIO — 37% OFF

Won a 1st & a 2nd in the ROAR NATS!

Add 8 AA pen cell batteries to the radio, charge the car for 15 minutes, & you're ready to race!

THIS IS A FANTASTIC VALUE! Comes with a powerful 2 ch. radio (w/wheel stick) already installed, 6 cell nicad battery pack, & a quick charger. 16" length. Runs up to 30 mph! Electronic speed control.

RETAIL $209.95 **NOW ONLY $124.98** **MBM212**

GOLDBERG SKYLARK 56 MK II — 35% OFF

Extensively improved construction, strength, and flight performance! 56" span. Requires a .30 -.40 size engine and a 4 ch. radio. This fun-to-fly balsa sport plane has pattern capabilities. It makes a great low-wing trainer.

RETAIL $56.95 **NOW ONLY $36.98** **MBM181**

GOLDBERG GENTLE LADY — 28% OFF

A great way to break into the world of sailplanes! This simple-to-build kit flies slowly enough for a novice, yet is clean and efficient enough for competition. Requires a 2-3 ch. radio. Has a 2 meter wing span.

RETAIL $24.95 **NOW ONLY $17.98** **MBM481**

MIDWEST TAYLORCRAFT — 35% OFF

An easy-to-handle, realistic, aerobatic, RC trainer. This balsa kit features aluminum motor mount & landing gear, ABS cowl, & instruction manual. 55½" span. Requires a .29 -.45 size engine & 4 ch. radio.

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CRAFT-AIR FIELD BOX — 43% OFF

Made of hi-density polyethelene, ready to use, lightweight, easy to clean, & practically indestructible. 22" long. Not a kit. Features a removable accessory well on the top & drawer in the side.

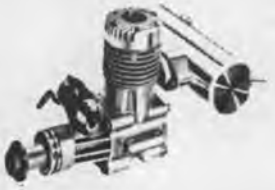
RETAIL $34.95 **NOW ONLY $19.98** **MBM148**

COX TRADEWINDS SAILBOAT READY-TO-FLOAT — LOWEST PRICE EVER! 53% OFF

This new ready - built RC sailboat has a 60" height, and a 35.9" length. Requires a 2 channel radio. Easily sailed using one servo for rudder control.

RETAIL $169.95 **NOW ONLY $ 79.98** **MBM427**

K&B .21 RC SCHNEURLE W/MUFFLER (No. 8380) — 37% OFF



Features ABC cylinder and piston, ball bearings, and Perry Carb. Rugged, powerful, and dependable. No break-in period required.

RETAIL $80.00 **NOW ONLY $49.98** **MBM406**

DUMAS BIG SWAMP BUGGY — 38% OFF

This rugged & stable airboat runs on water, dry grass, or snow. Requires a .40 -.60 size engine & a 2 ch. radio. 31" length. Mahogany & birch plywood construction.

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MBM106	Airtronics Olympic II	54.95	38.48
MBM107	A-Justo-Jig Wing & Fuse Jig	59.95	39.98
MBM411	Associated RC 300 Car Kit	190.00	119.98
MBM113	Associated 6 Cell Car Kit No. 3012	102.00	69.98
MBM412	Associated 6 Cell - Asmb. No. 3024	119.50	79.98
MBM114	Badger 200-1 Air Brush Kit	35.00	24.48
MBM115	Badger 200-3 Deluxe Kit	45.00	29.98
MBM460	Bolink 1092 6 Cell Performance Car	130.00	84.48
MBM427	Cox RTF Tradewinds Sailboat	169.95	79.98
MBM485	Bolink Performance Car w/2F	260.00	189.98
MBM123	Bridi RCM Trainer 40	58.95	39.98
MBM125	Bridi Dirty Birdy 40 - wood	64.75	45.28
MBM126	Bridi RCM Trainer 60	67.95	47.58
MBM127	Bridi Super Kaos 60	74.95	52.48
MBM454	Super Coverite 47"x15' - white	38.84	27.98
MBM132	Coverite Balsarite - 8 oz	3.50	2.58
MBM137	Cox RTF Cub w/Engine & Radio	121.95	74.98
MBM138	Cox RTF Cessna Centurion	79.95	48.98
MBM418	Cox RTF Piper Arrow	78.95	54.98
MBM139	Cox RTF Sportavia Trainer	99.95	69.98
MBM461	Cox Electric Sportavia	149.95	104.98
MBM521	Cox RTF Eagle Sailplane w/Radio	99.95	69.98
MBM462	Cox RC Bee .049 w/Muffler	21.95	14.98
MBM134	Cox Tee Dee .049 Engine	27.95	14.98
MBM387	Cox Tee Dee .051 Engine	27.95	16.98
MBM486	Craft-Air Golden Eagle Sailplane-NEW!	99.95	64.98
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MBM409	Craft-Air Upstart (3/16 inch)	19.95	13.98
MBM141	Craft-Air H.D. HI-Start	56.95	32.98
MBM148	Craft-Air Field Box	34.95	19.98
MBM149	DAE Series IV Power Panel	38.95	24.98
MBM151	Devcon 5 Min. Epoxy - 9 oz	7.95	4.98
MBM487	Devcon 30 Minute Epoxy - 9 oz.	7.95	5.48
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MBM478	Fox .40 BB RC Schnl. w/MK-X Carb.	79.95	47.98
MBM490	Fox .45 RC Schneurle w/MK-X Carb.	64.95	38.98
MBM457	Fox .60 RC Eagle w/MK-X Carb	79.95	49.98
MBM177	Fox 1.2 Cubic Inch Twin	250.00	174.98

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MBM501	Fuji .40 RC BB Schneurle w/Muffler	79.95	52.98
MBM481	Goldberg Gentle Lady Sailplane	24.95	17.98
MBM392	Goldberg Falcon 56 MK II	54.95	33.48
MBM181	Goldberg Skylark 56 MK II	56.98	36.98
MBM522	Cox RTF Electric Hawk w/Radio	139.95	94.98
MBM183	Goldberg Senior Falcon	74.95	46.88
MBM403	Goldberg P6E Curtiss Hawk Bipe	52.95	33.58
MBM184	Goldberg Handi-Tote	19.95	13.98
MBM476	Goldberg Super Jet - ½ oz	4.50	2.98
MBM186	HB .15 RC BB w/Muffler	45.50	32.78
MBM187	HB .25 RC BB w/Muffler	59.00	42.48
MBM190	HB .40 RC BB PDP	89.00	63.98
MBM189	HB .50 RC BB	80.50	57.98
MBM191	HB .61 RC BB PDP	125.50	89.98
MBM430	Hi-Flight Mirage	69.95	44.98
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MBM192	Hobbypoxy Formula 2 Epoxy - 8 oz	4.75	3.28
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MBM405	Jet Hangar .40 Ducted Fan	69.95	56.98
MBM424	K&B .19 RC	60.00	35.98
MBM206	K&B .21 Inboard Marine w/Muffler	81.00	49.98
MBM205	K&B .21 RC Outboard	110.00	65.98
MBM406	K&B .21 RC Schneurle w/Muffler	80.00	49.98
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MBM438	K&B .40 RC RE Schneurle w/Muff.	110.00	69.98
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MBM453	Lanier Jester	75.95	46.98
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MBM213	Leisure 1/8 Dune Buggy	199.95	159.98
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MBM214	Mark's Models Wanderer 72"	24.95	15.98
MBM217	MEN Trainer .15-.25	37.95	27.68
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MBM507	MRC RC Rough Rider - NEW!	117.95	84.98
MBM230	MRC RTF Cessna w/Enya .35 RC	449.95	277.48
MBM231	MRC RTF Cherokee w/Enya .40 RC	499.95	314.98
MBM229	MRC RTF Hawk Trainer w/Enya .15	99.95	74.98

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MBM442	MRC Lamborghini Countach LP500S	77.98	45.98
MBM443	MRC Martini Porsche 936 Turbo	68.98	39.98
MBM508	Bud Nosen J-3 Cub - 9'	119.95	79.98
MBM468	Bud Nosen Citabria - 9'	99.95	71.98
MBM421	Bud Nosen P-51 - 8.5'	169.95	119.98
MBM444	Bud Nosen Big Stick - 8.5'	129.95	84.48
MBM238	Ohio Superstar Softglas - Qt	10.95	8.78
MBM240	OPS .65 RC Marine w/Tuned Pipe	246.00	179.98
MBM510	Orline Victory Stick - NEW!	49.50	35.98
MBM523	Precision ABS El Diablo - NEW!	99.95	74.98
MBM446	O.S. Max .40 RC w/Muffler	84.95	59.48
MBM469	O.S. Max .45 FSR RC w/Muffler	119.95	79.98
MBM519	O.S. Max .25 RC w/Muffler	49.95	34.98
MBM470	Peerless 1/12 Electric Porsche	110.00	49.98
MBM511	Pica Gluit Aliphatic Glue - 12 oz	3.19	2.58
MBM255	Pica Waco	99.95	66.98
MBM251	Pica Cessna 182	109.95	66.98
MBM253	Pica T-28B	99.95	59.98
MBM256	Pica Duelist 2/40	99.95	64.98
MBM260	Quadra 2 Cu. In. Aircraft Engine	139.95	94.98
MBM262	Robart Incidence Meter	19.95	13.98
MBM471	Robart Super Pumper MK IV	24.95	17.98
MBM265	Rhom 2 Gear - mains	87.00	56.58
MBM266	Rhom 3 Gear - firewall	125.00	79.98
MBM267	Rhom 3 Gear - flat mount	125.00	79.98
MBM268	Royal Photocell Tachometer	39.95	33.98
MBM513	Royal B-17 Flying Fortress	169.95	135.98
MBM272	S&O Battery Tester	29.95	19.98
MBM514	Semco 202FS Muffler (.20 - .40)	13.95	9.98
MBM515	Sig Cessna Skyhawk 172 - NEW!	89.95	66.98
MBM415	Sig Beechcraft Bonanza	77.50	54.98
MBM275	Sig Piper J-3 Cub	49.95	35.98
MBM516	Sig Kadet Junior	34.95	25.98
MBM276	Sig Kadet Trainer	43.95	31.68
MBM279	Sig Kavalier	49.95	35.98
MBM277	Sig Kougar MK II	52.50	37.78
MBM278	Sig Smith Miniplane	59.95	42.98
MBM285	Slimline Std. Muffler for K&B .35-.40	9.95	4.98
MBM517	Sonic GR-3A Retract System	59.95	41.98
MBM304	Sonictronics No.1250 12v. Fuel Pump	16.95	12.68
MBM431	Spickler Quickie 500	43.95	32.98
MBM295	Sterling Fledgling	48.95	29.98
MBM296	Sterling ½A Corsair	35.95	22.98
MBM305	Sullivan Electric Starter	38.95	24.98
MBM306	Sullivan Deluxe Starter	41.95	27.28
MBM472	Sullivan 24 v. Electric Starter	49.95	33.48
MBM452	Supertigre X-11 RC Schnl. w/Muffler	45.95	31.98
MBM307	Sureflite Skylane 182	44.95	28.98
MBM308	Sureflite All Foam J-3 Cub	44.95	28.98
MBM310	Sureflite Spitfire - foam	44.95	28.98
MBM259	L.R.Taylor Power Pacer 9.6 v	59.95	46.98
MBM390	L.R.Taylor Multi-Charger	24.95	19.98
MBM408	L.R.Taylor Super Power Panel	89.95	69.98
MBM425	Top Flite Contender 40	54.95	35.98
MBM316	Top Flite Contender 60	62.95	39.98
MBM320	Top Flite F4U-1A Corsair	99.95	59.98
MBM473	Top Flite F8F Bearcat	99.95	59.98
MBM315	Top Flite Freshman Trainer	52.95	34.38
MBM314	Top Flite Heat Gun	32.95	21.98
MBM313	Top Flite Sealing Iron	22.95	15.98
MBM413	Top Flite Trim Seal Tool	15.95	11.98
MBM311	Top Flite 10x6 (6) Super Maple	9.00	6.28
MBM321	Tower RC Long Plugs - 6 plugs	8.94	5.48
MBM322	Tower 12 v. Starter Battery - wet	25.95	12.98
MBM323	Tower 12 v. Battery Charger	13.95	6.98
MBM439	Webra .61 RC Schneurle (speed)	229.80	109.98
MBM440	Webra .91 RC Schneurle	268.35	149.98
MBM333	X-Acto No. 5083 Dlx. Knife Chest	9.29	6.98
MBM334	X-Acto No. 5087 Knife & Tool Chest	34.95	22.98
MBM337	Zinger Props 10x6 - 6 each	8.40	5.88
MBM338	Zinger Props 11x7 - 6 each	9.60	6.68

Remember, these are only a few of the several thousand different items that Tower Hobbies stocks. If you need an item that does not appear in this issue, give us a call to see if we have it. The chances are good that we do. By all means compare our prices before you buy elsewhere; you'll be dollars ahead.

Radio Sale!

MODEL	NOW ONLY	STOCK NUMBER
TOWER HOBBIES	TOWER HOBBIES	TOWER HOBBIES
6 Channel w/2 KPS-14II Servos	$169.95	MBM397
6 Channel w/3 KPS-14II Servos	194.95	MBM398
6 Channel w/4 KPS-14II Servos	219.95	MBM339
6 Channel w/4 KPS-15II Servos	229.95	MBM340
Tower KPS-14II Servo	25.00	MBM399
Tower KPS-15II Servo	30.00	MBM480

THIS SALE IS NOT RETROACTIVE

KRAFT KRAFT KRAFT	KRAFT	KRAFT	KRAFT
KP-2AW (Wheel) w/14IIA's	$149.95	$101.98	MBM344
KP-2AW (Wheel) w/15IIA's	155.95	105.98	MBM345
KP-2A (2 Stick) w/14IIA's	149.95	101.98	MBM346
KP-2A (2 Stick) w/15IIA's	155.95	105.98	MBM347
KP-2AS (1 Stick) w/14IIA's	149.95	101.98	MBM348
KP-3AS w/KPS-14IIA's	164.95	109.98	MBM433
KP-4A w/KPS-14IIA's	329.95	209.98	MBM350
KP-4A w/KPS-15IIA's	341.95	218.98	MBM351
KP-6A w/KPS-14IIA's	359.95	229.98	MBM352
KP-6A w/KPS-15IIA's	371.95	237.98	MBM353
KP-5C w/14II's or 15II's	414.95	299.98	MBM354
KP-5CS w/14II's or 15II's	424.95	305.98	MBM355
KP-7C w/14II's or 15II's	549.95	389.98	MBM356
KP-7CS w/14II's or 15II's	559.95	399.98	MBM357
KPS-14II Servo	44.95	32.98	MBM358
KPS-15II Servo	44.95	32.98	MBM359
KPS-18 Servo (Super Mini)	59.95	47.98	MBM360
KPS-14IIA Servo	39.95	27.98	MBM361
KPS-15IIA Servo	42.95	29.98	MBM362

FUTABA FUTABA FUTABA	FUTABA	FUTABA	FUTABA
FP-2GS	109.95	74.98	MBM363
FP-2F w/S-7's	149.95	98.98	MBM364
FP-2F w/S-23's	134.95	89.98	MBM365
FP-2E w/S-7's	149.95	98.98	MBM366
FP-3S w/S-23's	144.95	94.98	MBM368
FP-3S w/S-20's	169.95	109.98	MBM369
FP-3FN w/S-23's	219.95	139.98	MBM383
FP-4FN w/S-23's	289.95	179.98	MBM370
FP-4FN w/S-16's	319.95	199.98	MBM371
FP-5FN w/S-23's	319.95	204.98	MBM372
FP-5FN w/S-16's	359.95	222.98	MBM373
FP-6FN w/S-23's	339.95	209.98	MBM374
FP-6FN w/S-16's	369.95	229.98	MBM375
S-7 Servo	39.95	29.98	MBM379
S-16 Servo	39.95	29.98	MBM378
S-23 Servo	29.95	22.48	MBM483

MRC MRC MRC MRC	MRC	MRC	MRC MRC
No. 2000 2 Ch. w/MR-12's	99.98	69.98	MBM474
No. 4000 4 Ch. w/MR-12's	249.95	169.98	MBM475

SANWA SANWA SANWA	SANWA	SANWA	SANWA
No. 8120 2 Channel	99.95	69.98	MBM520

If you think you can identify the critter, send in your guess to the **RCMB** office. First correct answer wins the free subscription.

Now, let's go flying! •

F/F Scale . . . . *Continued from page 63*

were cut as shown in Fig. 3. The lower portion of each rib was pinned down, followed by the spars, then the upper rib halves. Pretty easy, actually. Some of you may wonder if I indeed saved any weight, considering that the stock model uses only four 1/16 square spars, whereas the spliced rib method required wider tapered spars. I think so.

One last parting shot on wings. Whenever I build from a kit with printed wood, I try to cut out each part a hair above the line, then sand the part to the line. The Seagull was done no differently. However, when I painted the wings chrome yellow, the black ink edge of the ribs was very noticeable. The next time, I will sand the ink line until it no longer shows. No big deal, but something to think about. Enough about wings for a while!

I have an addendum to the covering technique I mentioned sometime back. This involved the use of drafting tape to help trim tissue after it has been applied. I won't go into detail for those who might have missed it, since I feel I have improved upon that particular method. This system is particularly for covering a multi-stringered fuselage typical of WW-II types, where the covering can only be done between a pair of stringers at a time, due to the compound curves of the fuselage. In the past, I have preferred to apply the tissue wet for a smooth, taut finish. However, I have been having trouble with the tissue overshrinking, causing the stringers to sag between bulkheads. Needless to say, this is most aggravating. The following is what I'm doing now, and I'm most satisfied with the outcome.

Each section of tissue is applied dry, using thinned-out white glue. I follow this with a light mist of water. When the water dries, I coat that section with thinned nitrate dope (50-50 dope and thinner). When the dope dries, the edges are trimmed. (On the first section covered there are two edges which can be easily trimmed.)

Next, take some 1/4-inch drafting tape and lay it over the tissue already applied so that one edge overlaps the stringer where the next strip of tissue will be attached by 1/32 inch (just half of the stringer). Glue is brushed onto the taped edge as well as the next stringer, followed by the strip of tissue. That strip is water shrunk and coated with nitrate dope as before. When this dries, take a very sharp razor (I use a double-edged razor blade broken in half, with a point) and cut right on the tape edge. Pick one end of the tape and pull it back on itself. The excess tissue will peel off clean, leaving a sharp edge every time. A couple of careful swipes with some fine sandpaper will help feather the edge before adding any more clear dope. The Seagull was done in this manner, and I found it to be the easiest way yet to cover these types of fuselages. One last comment: start on the bottom and work toward the top. Each overlap will be facing downward, making the covering look even better.

* * *

George James has come up with a neat idea using Jet, Hot Stuff, etc. When you drill a piece of balsa, it usually happens that as the drill comes through the other side, it splinters. To avoid this, Jet the backside of the sheet or block before drilling, and this will no longer happen. Clever, eh?

I've had a chance to see the latest Flyline product, the Farman Moustique. In the typical Flyline tradition, this kit is of the highest quality in every respect and should provide many hours of building and flying fun. Included is much documentation provided by an article written by Bill Hannan. It is designed primarily for R/C but could easily be made into a great F/F scale model. I hope to be able to get started on this one by summer.

I feel that I need to make an explanation regarding the reason I mention Flyline models and their products so frequently. First off, I am primarily a scratch builder and seldom build from a kit. Flyline sends me one of each of their kits for review. When I build one of these, I will tell them if everything has gone off without a hitch. If it doesn't, I tell them where I had found some errors and they make changes to correct them. Every kit that I have already constructed has flown, many of them as F/F models. Flyline has an excellent product, as most of you already know. No other manufacturer sends me its F/F scale models for review, and certainly, I will not spend the money and time to give them a review for nothing . . . time is too valuable!

* * *

Late in March I had the pleasure of meeting another modeler friend from England. Cedric dela Nougerede and I have been writing to each other for quite some time. He had a chance to come to this country on business, so we had a chance to meet each other in person. Unfortunately, he did not have too much time to spend, but we did the best we could with the time available. Ced left me with several photographs of beautiful F/F scale models built by him and his friends in England. I hope these will help inspire you to tackle some project you've been dragging your feet on!

In closing this month's column, I would like to mention a fine F/F scale newsletter, *Max-Fax*. This fine publication is put out by the Washington, D.C. Maxecuters model club. They boast such well-known modelers as Don Srull, Hurst Bowers, and Pat Daily. Pat does the editing chores with zeal and diligence. For those who are interested in receiving this outstanding publication, send $9 to Pat Daily, 14908 Rocking Spring Dr., Rockville, MD 20853. •

Instructor . . . . *Continued from page 24*

develop a technique of sanding most of it off. At 8-1/2 pounds, it is possible your weight increase is in other areas also, for example, careful wood selection can save four ounces and lightening holes in wing joiners, formers, landing gear plates, and tank floor can save another three to four ounces. Remember, every little bit adds up, and if you start out to save every gram possible it's amazing how light you can build an airplane. I once built a Phoenix 6 at 6 lbs. 14 oz. ready to fly with retracts and muffler. I use acrylic enamel over automotive primer and simply paint the whole airplane one coat of white and mask it for one coat of bronze.

Dear Dave:

First of all, congrats on your 2nd place win in Johannesburg. I bet if you drank something other than water you would have had 1st place.

Dave, I have a problem and I have asked several experts and gotten exactly opposite answers. I have a Cox Gere Sport with an O.S. Max .15 and it is a real pleasure to fly. It is built stock and the

CG is as specified. The wheels are about 2-1/2 inches forward of the CG. My problem is that I can't get the thing to R.O.G. I first tried to take off with the fixed tail skid as shown on the plans, but I couldn't get more than five feet down our asphalt runway before the fool thing would start to spin either to the right or left. Then I switched to a steerable tail wheel connected to the rudder. This helped quite a bit; now I can get rolling down the runway and up to about 95% of flying speed before it goes into its little dance. Holding a little right rudder doesn't seem to help, neither does a little up or down elevator, nor does quick application of power vs. slow application of power. Also, there is no preferred direction of the spin, it goes either way. I have read many articles saying that toe-in will help a taildragger to track straight. In a right turn the left wheel drags more and the right wheel rolls freely, thus tending to turn the plane back to the left.

OK, fine. However, I received a real nice letter from John Elliot of Cox and he says that toe-out is the possible answer to my problem. The reasoning goes like this: if the plane starts to swerve left, the weight transfer is to the right wheel which is toed out, and due to the extra weight, this wheel will try to toe-out further, tending to pull the plane to the right.

Well, since the wind chill factor is about -20 for the past month, I thought I would try you. Anyway, it will be quite a while before the weather permits me to try either toe-out or toe-in, so perhaps you could use this problem in your **RCMB** *column. Happy Landings, Alan Knight.*

This was part of my first-ever column, and I immediately got a letter from Phil Kraft who disagreed with my suggestion that toe-in would help, saying that a full-scale Pitts requires toe-out in order to make it stable on the ground. I believe both theories are valid, and which one will work best depends on the vertical position of the CG, position of the landing gear fore and aft, and the spacing between the wheels. Basically, if the CG is high (tall landing gear), the landing gear mounted far forward, and the wheel tread narrow (as in the Pitts) the weight transfer theory works well and toe-out is required. This also prevents the airplane from flipping over when landing slightly sideways in a slip. With short, widely-spaced landing gears placed just forward of the CG, toe-in helps create the directional stability required. Basically, if the airplane tends to ground loop in a skidding manner with both wheels remaining on the ground, I'd try toe-in, but if the airplane tends to ground loop with one wing tip scraping on the ground in a large circle or arc, I'd try toe-out.

That's all for this month . . . keep those letters coming. Dave Brown, 8534 Huddleston Dr., Cincinnati, OH 45236. •

Pattern . . . . . *Continued from page 25*

Usually a tricycle gear plane which

bounces is simply going too fast. We do *not* recommend setting up the plane with a short nose gear so that it assumes a negative lift profile upon touching the ground. I really don't know who thought out that set-up in the first place. It's quite squirrely on takeoffs especially, usually resulting in a jump-off instead of smooth rotation.

5) Does the plane steer badly on landing? If so, try the landing gear set-up recommended in the first article (April). It allows the plane to land on the mains, then continue to coast on the mains with the nose wheel held off until the plane is almost stopped. It's much easier to steer this way because the rudder is gentle at low speeds. If possible, use a spring centered nose gear and keep turning capabilities to a minimum. There are no taxi demonstrations required anymore.

Next month we will start on the additional maneuvers required for the advanced pattern.

I hope these reviews are helpful to those of you who live in areas remote from active pattern flying. The real way to learn quickly is to have lots of active competition. Where possible, get a flying buddy to review and critique your maneuvers. Here is a situation where two heads are definitely better than one. Try to teach a maneuver you have learned to someone else and you will be surprised how it will help you analyze your own flying. In many cases you will improve after you have taught someone else. And that's a fact. •

Schneider . . . . *Continued from page 27*

Maneuvers are tight and precise and very realistic. The plane is so stable that Alex had alternately to pulse down and right or left rudder to hold it in the three-turn spiral dive called for by the rules. Ground control on both takeoff and landing are excellent. Common practice is to start the engine and leave the plane sitting by itself on low engine while Alex checks the controls; then, a punch at the engine button on the control box puts the engine on high speed and the plane is off. Landings are often made on low engine and the plane is taxied back to the transmitter.

"Two weeks before the 1952 Nats, Alex had the wing on his ship pull off in a high speed spiral dive. The fuselage was completely demolished and the post mortem showed that the 1/4 in. dowels used for the wing rubber bands had broken. With some hard, fast work, a new fuselage with 3/8 in. dowels was completed in time for the Nats. Spiral dives and power dives are done on low engine now, instead of high.

"After the 1952 Nats, Alex worked on lightening the control equipment and no changes were made in the design of the plane. The plane flown at the 1954 Nats was essentially the same as the 1952 model, but a little lighter. The overall weight of the present model is 8 lbs.; wing loading, 18 oz. per sq. ft. The 6412 airfoil used has been thinned out a little to increase airspeed. The flying characteristics are similar to the 1952 model, but maneuvers are quicker and cleaner.

"A scaled down, 6 ft. span version of the Cub was built in 1953. This ship outperforms the larger version, but fuel feed problems prevented its use at the 1954 Nats. Originally powered by an Orwick .29, it is now being equipped with a Fox .35 with two-speed ignition. Experiments, primarily with the wing design, will be conducted with this plane in an effort to improve flight characteristics during inverted flight and outside loops without sacrificing normal flight performance. This 6 ft. version is what Alex will probably fly at the 1955 Nationals. (He did, and he won again. wcn.)"

Like many R/C'ers back in the '50s, we heard a great deal about the fabulous "Schneider Cub," but never actually saw it. Surprisingly enough its plans have never been published until now. The same Bob Beckman who wrote the *M.A.N.* article also drew up the original formal plans for the Cub, and prints could be obtained. One set of prints found their way to our old Delaware R/C club, and then member Mike Hudak built a copy. For that time in history, it was a big model, though extremely light. Mike was a telephone company employee, and electronics experimenter, and built up his own reed

radio and servos. His experimental radio went into the Cub, and for one brief, but exciting Saturday summer afternoon, the club members present at the flying field were treated to a display of slow, majestic, and realistic maneuvers that none of us had ever seen performed by a model. Unfortunately, when Mike got something working, he went for broke, and in spite of our warnings, flew repeatedly on already used dry cells picked up at work. When the cells went out, so did the Cub, its light framework exploding like an eggshell when it dove in full bore.

The plans shown are for the final version of the Cub, the one that went on to win the 1955 Nationals. We would especially like to thank Alex for lending us the original photos used with this article, and include excerpts from the letter he sent with them, as follows:

"When I think back about the primitive radio equipment we used in those planes at that time, it makes one wonder how we had the encouragement to continue. As you probably know the first R/C planes were free flight planes, quite large and extremely light. The radio controlled the rudder only (escapement) and not too dependable. With the development of the resonant reed receivers we had much more to work with and could build models that not only looked like full-size planes but also flew like them. I am very glad to see the modelers today building the 1/4 scale, because they fly very realistic and maneuver like an airplane should. Of course, the radio equipment has come a long way since those early days in R/C; very reliable, and with unlimited possibilities using the servos available.

"Although I am no longer active in R/C modeling, I still keep in touch with my good friend, Jack Albrecht, in Oceanside, California, who is an 'Old Timer' and really enjoys building and flying the older models. I have not flown much since the early '60s, when I belonged to the 'E.B.R.C.' of Oakland, California. I was a member of the 'Mustangs' in San Francisco from 1948 through the late '50s, and during those years we flew control line, free flight, and R/C. I won the R/C Nationals in '52, '54, and '55 with my 'Cub' I developed from the Capitol kit that was available at that time. The radio gear was made by Rockwood with 8 channels (resonant reed). Hard tube receivers in those days required lots of batteries, as did the servos, which were home built, plus the engine ignition batteries, so the wing loading was quite high, but it made good flying planes with good penetration in windy weather. •

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1 to 1 . . . . . *Continued from page 31*

If it is a hot, sunny day, try to use a shelter. Hot sun can be a severe problem with heat build-up in the model and can hurt your radio system. Canopies and finishes are not always compatible with old Sol.

Check in with the contest management and prepare any paperwork necessary. Pay attention to any special contest or field requirements. These include a wide range of items, from scoring to flying procedures. Be certain you are completely clear on any of these items. During the pilot's briefing that is generally held, be sure you ask any necessary questions.

Walk the takeoff area and select your best takeoff path. Look for bumps, rocks, tar strips, grass clumps, etc. that might cause trouble. Check out reference points you might use to line up on during the flight. Distant signs, trees, etc. make excellent points to use. Pay close attention to wind direction and peculiarities. Is there any chance the wind

might bubble over nearby trees? Check out the remainder of the field. Often strange dips can cause problems if an emergency landing is required away from the regular landing area, and it's nice to know whether your model is going to disappear from view two feet in the air before it touches down.

Acquaint yourself with the manner in which the management has set up its operation. Do you fill out one master copy of flight maneuvers or all copies? How many are needed? Where will the impound be located? How are they labeling flight lines? What method is used for frequency control? Do you have a call sheet ready for your intrepid pit crew? (And for heaven's sake, make sure that it's filled out the same as the score sheets you give the judges!)

KEEP THE STATIC OUT OF THE STATIC

You will be called to the static judging area. It helps to determine ahead of time how your model looks best, and when you place the model in the judging area, work toward that presentation. This can include such things as flap position, gear door position, scale prop, etc. Use care in placing the model in the area so that the sun works for you. Many aircraft have a "good side" which you might want to show off. Determine whether they want you to remain in the area to move the model to different positions.

You may wish to point out some specific items concerning the model that may or may not be in the presentation. Be on hand to promptly remove the model from the judging area.

At this point *promptly* proceed to prepare it for the flying rounds. This will include mounting the flying prop, fueling the model, and if the antenna is in a retracted position, remember to pull it out. You *may* be able to run up the engine prior to the flying. Should you have a servo controller like that sold by Kraft, a transmitter is not needed. Be certain, however, that in running any engines you obtain permission and remove your model to a remote pit area so you don't disturb the others. *Do not* do this at the flight line.

FLIGHT LINE NEXT!

When you are called to the flight line, proceed promptly to the ready areas. If required, have your score sheets handy and be certain that your caller has his call sheets. It helps, especially the first few contests, to include on the call sheet those things necessary to remind *you* when things happen. I have often included such things as when to lower gear, flaps, etc., so they are not forgotten.

Make certain your box contains items that might be needed for any flight line emergency. Include spare prop and plug (and items necessary to change them), retract pump or freon, etc. (Did you get the transmitter from the impound?)

When you turn is next, place your model on the runway, positioning it so you won't blow dust on the judges. Whether you head into the wind or not will be determined by your taxi maneuver if you are using one. It is far nicer to taxi out to a takeoff position rather than carrying it out.

The judges have the score sheets, you've cleared up any unusual maneuvers or items of your presentation and you fire up. Don't rush it unnaturally. Make your moves deliberate and think ahead.

Much more leeway is given in scale than pattern, relating to where you stand during takeoff. Purists certainly will suggest that you stand at the runway edge, but if you feel more comfortable behind the model, by all means stand there! Many models, especially with conventional gear and tail skids, are bears to keep straight. Incidentally, be very alert while on the line, especially if there is a flier downwind of your line. A spinner in your ear tends to cause a headache.

Once airborne, move to a position near the judges. You may wish to stand at either end of the judges' line, but stand back a step or forward several to eliminate the possibility of blocking their view of the model at any time during the flight.

Call out your maneuvers loud and clear and remember to call them complete. In addition, remember the *entire flight* is in essence being judged for realism. As a result, watch the intervals *between* maneuvers in order to keep that portion of your flying realistic as well. When it's over and you've greased in a 10-point landing, let the judges know you've enjoyed flying for them

and go sit down and relax. Next time it will be easier!

TOLEDO

It's been a couple of years since I've been able to get to Toledo, due to small things such as an operation and my parents' 50th anniversary. We've included some photos of some of the scale types this month. I must confess that I was surprised at the amount of participation. Perhaps my memory is clouded, but there seemed to be far fewer models presented. Several other persons expressed the same thought, and one can't help but conjecture as to the reason. One problem, and one which is virtually impossible for the management to solve, is the handling of the models by the spectators. As I photographed Bob Godfrey's model, I was surprised to see it shaking in the viewfinder. I assumed that it wasn't taking off, and as I checked I found a gentleman kneeling before it, intent on determining how the gear tucked up so neatly into the belly. He managed to get one gear out!

At any rate, the winners were:

PRECISION SCALE

1)	Glen Bussman	Wilga (also Best of Show)
2)	Bill Mikesell	Grumman Hellcat
3)	Jim Funduk	Starfighter (also Achievement Award)
4)	Bill Raferty	F.W. TA-152
5)	Bob Godfrey	Grumman F3F-1

SPORT SCALE: NON MILITARY

1)	George Clapp	Fairchild
2)	B. Fehrenbach	Cessna 180
3)	M.A. Zimmerman	Gypsy Moth
4)	Ron Saporito	Fairchild 24

SPORT SCALE: MILITARY

1)	Joe Spallone	Corsair
2)	Andy Wallace	Nieuport 24
3)	Gerald Snelling	Fiat CR42
4)	Walt George	Thunderbolt
5)	Bob Vail	Fokker Triplane

Enough for now . . . on to Ottawa! •

R/C World . . . *Continued from page 19*

the elevator and rudder seemed huge, and suddenly I got the strange feeling that I wasn't playing with a model airplane anymore . . . I plunged ahead into those four massive wing panels and chewed up sheet after sheet of balsa producing an unending line of undercambered ribs . . . there were 136 subribs, incidentally!" But when the aircraft was at last completed down to the functional rigging, struts, cabane, and a "grim looking pilot . . . I realized later that it was no wonder he looked grim after enduring engine failures on his maiden flight!!," the project weighed but 11-1/2 pounds, certainly very light for over 2,000 square inches of area.

On October 28, the Gipsy was displayed at the Cape Radio Flyers "Giant Model" air show, one of their continuing public events. Present were a number of large, or quarter-scale models, including a reduction drive powered quarter-scale Liberty Sport, a Bleriot, a Nosen Citabria, a beautiful Cessna 150 now being kitted by Radio Control World in South Africa, several Piper Cubs and Aeroncas, plus others. Interestingly enough, a substantial proportion of South African quarter-scale models seem to fly very well, even at higher altitudes, with a good 60 engine swinging a 14x4 to 15x6 propeller. Realism, not toy model performance, is the name of the game in the view of most.

After having the 78 engine he had originally installed in the Gipsy freeze up on the first two attempted flights, Dennis replaced it with an O.S. Max .60 FSR swinging a 14x4 propeller. "With the motor set a little rich, one felt that a lift-off might be possible at about 3/4 throttle, and so it proved to be. After a run of about 10 feet the tail lifted and I found a little up elevator was needed to keep it running smoothly with the wheels still on the ground. After about 75 feet she lifted so gently and gracefully that it was difficult to tell at which exact spot she had become airborne. The Gipsy climbed straight out over the trees and marine drive without faltering or showing any signs of instability. The glorious sight of that large red and silver bipe in the sky certainly quickened my heartbeat if nobody elses! Aileron response was positive with no rudder required in the turns. Elevator reaction was reasonable . . . scale cruising speed seemed right at about 1/3 throttle and very little more was required in general flight. Touch-and-go's needed 3/4 throttle to get the wheels unstuck from the runway. Realism in flight was superb and one very experienced judge commented that he would have given it perfect marks in that department. I was almost caught out on the landing, as I'd overlooked the effects of all those struts, rigging and undercambered airfoil. On the approach, the throttle was cut right back and the Gipsy almost stopped dead in her tracks . . . this bird had to be flown right in and the throttle chopped just before touch-down. After that, a 20-foot run brought her to a standstill. So now you've met my new sweetheart . . . and what a love she is! We hope to be together for some time, and to keep you company down at the field for many Sundays to come!"

MAN WITH THE GOLDEN THUMBS

The following story was written by Laurie Garnier and published in the SACRAT (Southern Alameda County Radio Controllers, Inc., California) newsletter, edited by Helen Marco. It is excellent.

He woke up before the alarm could go off. It was as though there were a ringing in his head, a special alarm that would not wait for an ordinary clock. That ringing said, "Wake up, wake up, today is your day."

With an unacustomed vigor he rose from his bed. Gone today was his usual muzzy, slow waking up. He felt alert, active, years younger and pounds lighter. He glanced at his sleeping wife and smiled. A thought crossed his mind but was quickly discarded. That could wait. He made his ablutions, dressed and went into the kitchen, ignoring the crunch under his shoe as he crossed the living room. Nothing, not even un-put-away toys, was going to spoil today.

He put water on the stove to boil and looked out the window. He was dazzled and yet he knew that was how today had to be. The sky had been rinsed clean the night before and was clean and sparkling blue, blue, blue. There was enough breeze to keep it cool but not enough to call it windy. Impatient, he turned off the water before it came to a boil. Enough of waiting . . . he would buy coffee on the way to the field.

Fingering his car keys in his pocket, he walked to the garage. There stood his beauty, his electric blue and gold pin-striped scratch-built and designed, unnamed, untested, and unflown pattern ship. Alongside, also on charge, was his trusty, sturdy green and yellow Ugly Stik. It showed careful repairs and hasty patches, like combat medals, but still flew with the best. He unplugged them and put the chargers away. He loaded the two airplanes carefully into the station wagon. The flight box and fuel

had been stowed there the night before. The whole operation took only minutes. Nothing would slow him down, delay him or keep him from flying . . . not today.

After arriving at the field he nodded at the other fliers, unloaded the car. He took his transmitter to the impound table. Hot dog! He was the only one on red-and-white. It really was his day.

He knelt and assembled the two airplanes. It seemed as though the toughest thing he would do today was decide which to fly first. There was no conflict. First the Ugly Stik to build confidence and warm up the fingers. Fueled, he took it to the pit area, tested the controls. The Super Tigre started on the first flip. Satisfied that the old bird was in prime condition, he took it out to the runway. Balls to the wall, off and up, up, up. It soared and screamed and looped and rolled for what seemed like an eternity. Then three smooth touch-and-goes and a final landing so smooth he had to check twice to see if it was really on the ground.

Now the test. The pattern bird. Fill it up. Fire up the Rossi Peg had given him for his birthday. Started on the first flip. Out to the runway. Off and up. Oh, what a bird. No. Not a bird. A bird would be jealous of this ship. An angel, then. Yes. This must be how an angel flies. Smooth and straight, responsive, powerful, yet light and sensitive on the controls, even at quarter throttle. Fly, angel, fly.

Sam waved to Ed who nodded. "Nice day, huh." "Fly your Chaos yet?" "No, too many on red and white . . . I'm still waiting my turn. Damned shame about Frank yesterday. Just keeled over and died at his workbench. Heart, I guess. Hell of a builder too. Never could fly worth a damn, but he could really build 'em."

Frank smiled at his unnamed pattern ship, did a four-point roll, and glanced at his hands. His thumbs shone gold in the sun and he thought, this must be what heaven is like. •

Power Boats . . *Continued from page 49*

found it best to keep the weight as far back as possible in the deep-vees. However, I have seen hunks of lead taped to the bows of deep-vees to keep the bow down in windy weather.

To compensate for engine and prop torque on a hydroplane, the prop shaft and strut are sometimes offset at between three to five degrees to the left (looking at the top of the boat). Lead is often added to hydros on the left side to help keep that sponson from lifting. On deep-vees and monoplanes, the aft rideplates or trimplates are used to assist in correcting for ride problems caused by prop and engine torque.

I suppose the main reason that you see the water intake line running up the right side of the hull is because most model boaters like to exit the water on the left side of the hull. Exiting the water on the left side allows the operator to see if the water is exiting the hull during a race . . . although I must admit that during a race I've never really had time to look for the water coming from the cooling system. It really doesn't make any difference to the water.

Although some model boaters break-in new engines on an air prop, I've always done my first running in a boat. It is always a good idea to take any new engine apart to check for any problems prior to running. I've never found anything wrong, but I have discovered that bolts were not sufficiently tightened. Many modelers like to reassemble the engine using a product like Loctite on the bolts. This is a very good idea if the engine is a high performance racing engine. The engine should be run on the rich side for the first 20 to 30 minutes. I have found that the manufacturers are doing a good job of giving break-in information in the instructions furnished with their engines. If these instructions are followed, the engine should receive an adequate break-in process.

Regarding the column I wrote back in July of '79 on "IMPBA vs. NAMBA," I find it very interesting that only two people responded in writing to that column, and you were the second. Don Typond, editor of *Model Airplane News*, was the other and he expressed the same sentiments as you about having two organizations for model boating. The only reason that I am so involved in

NAMBA is because I live on the West Coast. Like most situations where you have two groups doing the same thing, politics and personalities sometimes stand in the way of what is possibly a better answer. I still don't think two model boating organizations is the best answer. But I'm finding it much more rewarding building a new model boat than attempting to design a new model boating organization. I can live and operate with two model boating organizations if that's the way it has to be.

LOU FOSCHI STRIKES AGAIN

Lou wrote me another letter and sent along some photos of the race held at Legg Lake, in Southern California, on the weekend of April 19 and 20. I certainly want to thank Lou for taking the time to do this. We're always open to coverage and photos of your events. Here is Lou's report.

Thank you for the letter in answer to my questions, your answers helped out a lot. Since my first letter to you, I have been in touch with one of the local clubs in my area, and was asked to be an official at a weekend race. The races took place on the weekend of April 19 and 20. The events consisted of Outboard Deep-Vee Enduro, Sport 40, Stock Outboard Tunnel, and Modified Outboard Tunnel Enduro.

The races were hosted by the "Prop Nuts" and were attended by the "Fish & Chips," "Alii," and "Ron's Drain Lines" racing teams and the "Cavitators" and "Modeleers" model boat clubs. The "River Rats" R/C club from Needles, California, were also in attendance. They did not go home empty-handed, with a first and second in Stock Tunnel and a third in Modified Tunnel.

Also in attendance on an individual basis was Norm Teague, who is with Powerboat *magazine. I understand* Powerboat *gives trophies at the end of the year for what is called the Outboard Series. John Brodbeck from K&B was also there.*

I am enclosing some pictures that I took. They turned out a little dark but I hope you might be able to use them anyway. One of the pictures is of Debbie Arnold, who competed in Stock Outboard Tunnel. I must apologize for not getting pictures of Rosie Garcia, who competed in Outboard Deep-Vee, and Rich Fish's wife who competed in Sport 40. My hat is off to these gals and also to the ones who were pit persons. They are really something else. This shows that model boating is a family hobby/sport, possibly more so than planes or cars.

Thanks again for your helpful letter. You are the first writer in any magazine I have ever written to. Hopefully I am not making a pest out of myself, because I feel I have made another friend. Sincerely, Lou Foschi.

1980 DISTRICT 8 R/C UNLIMITED SCHEDULE OFF TO EXCELLENT START

The 6th Annual Silver Cup for R/C Unlimiteds was the initial event for this class in District 8. Thirty-three of the mini-Unlimiteds showed up on April 13 at Kent Lagoon to begin the season-long racing schedule. Stops along the schedule will include Tacoma, Olympia, Portland, Spokane, Kennewick, and return engagements at the Kent Lagoon. The Silver Cup event features a course shape patterned after the full-scale race that is held in Detroit. The left turn is large and the right turn is smaller. This is the only such event during the entire year that doesn't use a traditional oval course. The pear-shaped course makes for some interesting racing, especially in that very tight right turn. The weather was ideal for a model boat race, or any outdoor activity. Lots of sun and only a slight breeze made for an excellent racing situation.

The race format was total points based on three qualifying heats and a final heat. The final results were rather interesting when one considers the boats that placed in the top six positions. All of the top five boats were not boats that one might consider the real "hot" hulls. Here is the list of the top six boats, drivers, and points:

1)	Hamm's Bear, Curt Weston	1500
2)	Slo-Mo-Shun V, Bill Osborne	1369
3)	Smoother Mover, Jerry King	1325
4)	Smirnoff, Al Rock	1225
5)	Slo-Mo-Shun IV, Doug Schultes, Jr.	1152
6)	Atlas Van Lines, Don Bronson	1100

It is also interesting to note that the boats that placed second through fifth are conventional, round-nosed hydro-

planes that raced in the 1950's and 1960's. This just goes to prove that the R/C Unlimited design isn't as important as good preparation, skillful driving, and some plain old luck. The results of the consolation and final heats were as follows:

2nd CONSOLATION

1) Notre Dame	Jack Haugen
2) Pay'N Pak	Roger Newton
3) My Gypsy	Doug Schultes

1st CONSOLATION

1) Miss Circus Circus	Gale Whitestine
2) Squire Shop	Rocky Fridell
3) Smirnoff	Al Rock

FINAL HEAT

1) Hamm's Bear	Curt Weston
2) Smirnoff (alternate)	Al Rock
3) Smoother Mover	Jerry King
4) Slo-Mo-Shun V	Bill Osborne
5) Slo-Mo-Shun IV	Doug Schultes, Jr.
6) Notre Dame	Les Ruggles
7) Atlas Van Lines	Dan Bronson

The second District 8 R/C Unlimited event found thirty-two boats in Wenatchee prepared to race it out for the 4th Annual Apple Blossom Regatta. This event is hosted by Doug Simon and the Red Apple R/C Flyers and is one of the most popular events on the schedule. Doug and his friends in Wenatchee really knock themselves out to put on a fine event. The Apple Blossom Regatta race format featured the "Winner-Take-All" final heat with two consolation heats. All entries raced in three qualification heats, gathering points for the final heat or consolation races. Good racing conditions graced the qualifying heats. The wind picked up just as the consolation races were beginning, and the two consolation races and the final were run with a strong wind kicking up ten-inch waves. But after all the spray had settled from the final heat, Gale Whitestine's new Miss Circus Circus had withstood all the challenges to take home the Apple Blossom Regatta trophy. The results are as follows:

2nd CONSOLATION

1) Atlas Van Lines	Dan Bronson
2) Hamms' Bear	Curt Weston
3) Gale VI	Skip Churchhill
4) Valu Mart	Morrie Lemke
5) Miss Supertest III	Doug Schultes, Jr.
6) Cott Beverages	Ken Haugen

1st CONSOLATION

1) Esquire Products	Joline Fridell
2) Country Boy	John Earnest
3) Squire Shop	Rocky Fridell
4) Slo-Mo-Shun IV	Doug Schultes, Jr.
5) Olympia Beer	Larry Knudson
6) Hallmark Homes	Kraig Duncan

FINAL HEAT (WINNER-TAKE-ALL)

1) Miss Circus Circus	Gale Whitestine
2) Notre Dame	Jack Haugen
3) Miss Bardahl	Butch Melewske
4) Smoother Mover	Jerry King
5) Notre Dame	Les Ruggles
6) Pay'N Pak	Bill Smiley

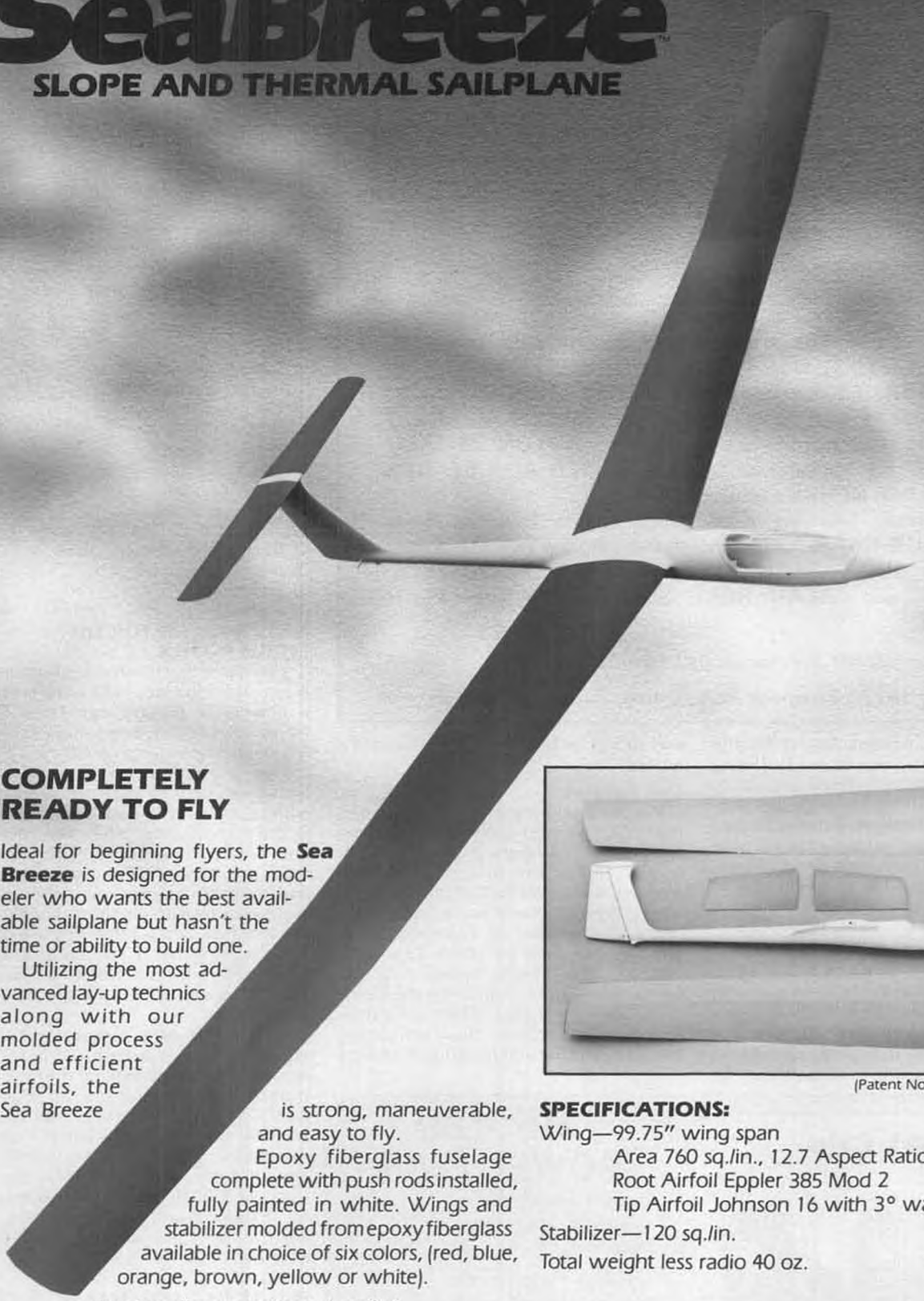
MORE INFO ON R/C UNLIMITEDS

Up here in District 8, the name Les Ruggles and Mutiny Model Marine are well-known by those who race and follow the R/C Unlimiteds. Since the founding of this event some half-dozen years ago, Les has provided a great amount of leadership in the way of building hulls, providing plans, organizing races, and serving on the District 8 R/C Unlimited Contest Board. Through Mutiny Model Marine, Les is currently offering a number of services that could be of interest to participants in this class.

An item that is creating a bunch of interest is the new Picco engine that is now available for model boating. Mutiny Model Marine now has this engine available. Les and others have been using the engine in their Unlimited boats and report the performance is excellent. The cost is around $180. Les also does engine modification on any

SeaBreeze™

SLOPE AND THERMAL SAILPLANE



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Ideal for beginning flyers, the **Sea Breeze** is designed for the modeler who wants the best available sailplane but hasn't the time or ability to build one.

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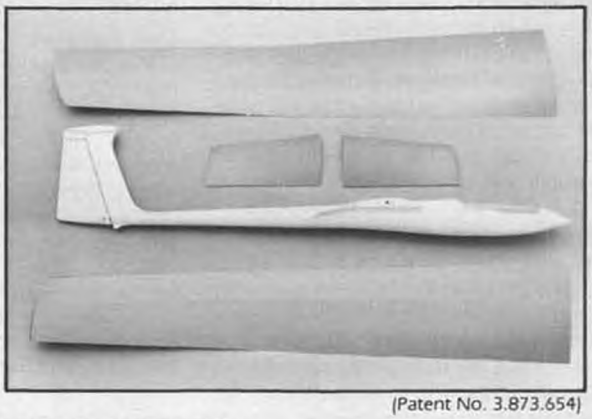

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SPECIFICATIONS:

Wing—99.75" wing span
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type of engine. Mutiny Model Marine provides a plan service for building models of the Unlimiteds and does sponson refinishing to improve performance. Les reworked the sponsons on Ron Erickson's record-holding Miss Circus Circus. Those interested in finding out more about the services of Mutiny Model Marine can write Les at 13417 S.E. 233rd St., Kent, WA 98031.

NEEDLES RIVER RATS R/C CLUB HOSTS DISTRICT 19 RACE

Richard Hazlewood, Commodore of the Needles River Rats R/C Club, sent a nice letter and some photos of their race back in March. It sounds like good things are happening in that area in the way of model boating. Here's Richard's letter:

Dear Jerry:

We are enclosing pictures of the first four place winners and their boats from the race we had here at Needles, California. This is the first race that the Needles River Rats R/C Club has sponsored. We felt that it was a big success and everyone had an enjoyable time. The race was held on March 22 and 23, 1980, at Park Moabi, which is a San Bernardino County facility on the Colorado River at Needles. There are excellent camping facilities, clean restrooms, and good fishing and hunting, if anyone is interested.

This was the first race of the Powerboat Magazines Outboard Championship Series this year. The first race was scheduled in Los Angeles but was rained out! The Outboard Championship Series consists of three classes: Outboard Deep-Vee, Tunnel Hull Stock Engine, and Tunnel Hull Modified Engine.

We might have another race here this year the first part of November. But, during the 1981 racing season, we will have at least three races here at Needles. We would appreciate it if you could use these pictures in your magazine to let people know that we do have a nice site and facilities, and we do have something here at Needles besides just desert. Sincerely, Richard A. Hazlewood.

RACE RESULTS
MODIFIED TUNNEL
1) Richard Hazlewood
2) John Brodbeck
3) Norm Teague
4) Dick Norsikian
STOCK TUNNEL
1) Norm Teague
2) Frank Hu
3) Joe Monohan
4) Jack Garcia
OUTBOARD DEEP-VEE
1) Craig Glasgow
2) Norm Teague
3) Jack Garcia
4) Richard Fish

NEW PRODUCTS FOR THE MODEL BOATER

Two items that have recently come my way that I think would be of interest are a new prop pitch gauge from Steve Muck's R/C Boats, and some R/C carbs from Ed Fisher. Steve Muck's Pitch Gauge is a rather neat little tool that allows the user to measure prop pitch with a scale provided with the tool. Besides measuring pitch very quickly and easily, this tool can be used in repairing props, measuring diameter, and repitching a prop. A very compact and handy instrument that fits easily into the tool box. Sorry, I don't have a price, but I'm sure that if you contact Steve Muck, 6003 Daven Oaks, Dallas, TX 75248, he can give you the needed information.

Ed Fisher making carburetors? That's right. Well, sorta right. What Ed is actually doing is reworking the new K&B outboard carb for use as a .21, .45, or .65 carb. The carb, as reworked by Ed, will help fill the need for a barrel carb for marine use. The prices are as follows: .21 and .45 carbs cost $23 and the .60 carb goes for $31. Please enclose an extra $2 for handling and shipping costs. For more information, write Ed Fisher, 12004 Marine View Dr. S.W., Seattle, WA 98146.

FULL SCALE RACER MAKING WAVES IN MODEL BOATING EVENTS

Norm Teague, who works for Nordskog Competition Center as a boat rigger and mechanic, has proven to be very adept at model boat racing. Norm is well-known in the high performance full-scale racing arena for his work on all forms of racing boats. Last year Norm became interested in model boats, and

the race results certainly show he knows how to set up and race models as well as full-scale boats. It appears like those trophies being sponsored by *Powerboat* magazine, owned by Bob Nordskog, are reappearing in the company's showcase.

FINISHING THE FINAL LAP

This month's column contained a variety of material because someone took the time to get it up here. I certainly appreciate the efforts of the people who send in material for this column. What's happening in your area? Material can be sent to Jerry Dunlap, 119 Crestwood Dr. S.W., Tacoma, WA 98498. I'm waiting to hear from you. •

Prather . . . . . *Continued from page 51*

flipped the boat on the deck. I usually secure the hatch cover even for test runs, and it was on when the boat flipped. The boat flipped while going down the straightaway and did what amount to a half-roll. The forward motion kept it going for about 30 feet because the hatch cover caused the boat to skip across the water. I had time to shut off the engine before the boat came to a stop. I would definitely recommend the hatch cover for use with the boat.)

I will offer a couple of other suggestions that should help improve the performance of the boat. A transom-mounted skidfin on the right side of the transom will assist in keeping the boat steadier in the corners. This fin can extend about 3/4 inch below the chine and be 1/2 inch in width. Extend the rudder as deep as possible without placing the rudder shaft below the ride plate. This will help keep the boat from rocking from side to side while going down the straightaway.

Based on my testing of the Prather 31-inch Deep-Vee, I think the boat should be very competitive in the .21 deep-vee and heat racing events. At the time of this writing, the design holds the NAMBA Class A Deep-Vee oval record. Dick Aubert, past District 9 Director, established the new record at last year's NAMBA Nats. Because of its length and width, the boat is much better suited for calm water heat racing or enduro racing on calm water. I have tested the boat in rough water and it must be driven with a great amount of care, and the speed has to be reduced as well. However, since most model races are conducted on sheltered bodies of water, this usually isn't a problem. But if it's a rough-water

deep-vee you're looking for, this boat comes up a little short in that respect.

The Prather 31-inch Deep-Vee will make a good boat for the new model boater or the veteran. It has the potential to be among the fastest boats in its class, and since it currently holds a record, it's safe to say it is quick. The whole package is well thought-out and I can recommend it for those interested in this type of boat.

LAST MINUTE NEWS

Just the day before mailing in this review I used the Prather 31-inch Deep-Vee to win the "A" Mono and "A" Deep-Vee events at the District 8 race held in Longview, Washington. Since this was the first time I had raced the boat, I was more than pleased with the results. •

Fujavak . . . . . *Continued from page 21*

lead into its nose. If the front part of model is too heavy set stabilizer to -4°, but not more! If this is not enough put some lead in the tail or make the front part lighter. It is also possible to move the batteries a little bit backward or to use a lighter propeller. Try gliding with empty tank. Now fill it with fuel, start up the engine, set it at half rpm and throw it against the wind. Set the rudder and elevator displacements so that the model is controlled on both sides with the same easiness. If it turns to the left after the engine stalls, then engine axis must go a little bit to the left too. And the other way round. Then you must set also the rudder. After all that has been done, try flying with full tank. With full throttle model takes off quickly even from the ground. With a little throttle, nice flying can be performed at very little height. If you change your model to a sailplane, try slope soaring or thermic flights with the help of towline or hi-start.

That is all I can say about construction and flying with Fujavak. To anybody who will build it, I wish nice weekends and many flying hours. Questions can be answered by way of correspondence care of **RCMB**. •

Simple . . . . . *Continued from page 33*

Now here's a surprise for you: the sharper the leading edge, the slower your wing's top speed will be. That's right, a blunt entry not only stalls more gently, it also gives you a wider speed range! Sound ridiculous? Try it!

If you're into designing your own ships, this wing offers lots of possibilities: everything from 36-inch slope racers using ailerons and very low camber, to seven-foot polyhedral floaters with high camber and big lightening holes in the trailing edges.

A couple of words of caution. I've built gliders up to 90 inches in span using this construction method, but I consider any span over 84 inches to be unsafe, even when reinforced with strapping tape. Strength varies with the density of the balsa and the depth of the undercamber; flatter, faster sections are naturally not as strong as sections with a deeper camber.

Most failures occur right at the edge of the Celastic; staggering the top and bottom edges will help. And never, *never* run a razor blade along this edge when covering the wing as you're almost certain to score the wood and cause a later wing failure.

Next month: the "Hollywood Square," a six-foot glider using this simple sheet-balsa wing. No full-size plans needed: build it today and fly it tomorrow from templates and instructions in the September **R/C Model Builder.** •

Half-A . . . . . *Continued from page 46*

I mean anything!) is to figure out where the heaviest components are. It makes no sense to spend a lot of time cutting weight out of a small component when you can easily do more good with less effort on something big. Second rule of thumb is that a bit of weight off the tail of a model will allow something like four times as much weight to be removed from the front. If you have a perennial problem with tail-heavy models, that is a significant clue that you are building heavier than the original model prototypes. Even if you have to add tail weight after lightening the aft fuselage, the total weight will still be less due to the moment arms involved (always put tail weight as far aft as you possibly can). There are several routes to go in making things lighter. You can use lighter wood, sand parts thinner, or cut holes in them. A better job of contouring solid balsa slab stabilizers is one of the most beneficial of all the lightening jobs you can do! Not only do you cut weight out of the most critical spot, you improve the aerodynamics, too.

On wings, the spars should be tapered by one means or another as you proceed from the root to tip. The tips of most models are overstrengthened, so the wings always break at the root. You can actually produce a less fracture-prone wing by lightening the structure of the tips.

Glue is a sneaky but pernicious source of excess weight. First, really close-fitting joints will allow you to have strong joints without excess adhesive. Then, the cyanoacrylate adhesives are the lightest. Probably old Ambroid comes next, but it is a terrible pain to use correctly. After that, I prefer to use the aliphatic resin glues in most places. It has good filling power, fatigue resistance, and is easy to work with. You must use it sparingly, though, as it is relatively heavy. Don't forget to wipe off any excess and dribbles. Last in the world of heavy are epoxy and polyester. These aren't inherently all that heavy, but they seem to always be applied with a shovel. If you want to fillet a joint, use a triangular section of wood, not a glob of epoxy! Get some paper towels and wipe the excess off. Two wiped-on coats of epoxy seal as well and are much lighter than a single heavy coat (let it set up between coats, of course).

Finally, consider your choice of finishing materials. There are startling differences in the weights just between the various colors of plastic film coverings. Clear doped silk is light, and tissue is lighter. Don't think that the tissue covering won't stand up; I covered my "Skydancer" design with good old Japanese tissue, and that was a model powered by 10-lb. thrust rocket motors! I never had the tissue strip off, even when there were punctures. Painted colors, especially light colors, are typically heavier than a transparent finish. If you feel like experimenting, make up a 100 sq. in. panel of various finishes and weigh them (a pharmacist can give you accurate weights if you haven't access to a good scale). If you must paint the model, an undercoat of silver will allow you to use fewer pigment coats for the same even coverage. Remember, use filler for smoothing, color only for color, and clear overcoat for gloss for the lightest finish, and don't be afraid to sand like crazy.

I received some new photographs and a long letter from Tyrone Parker. He designed the Pusher Delta control liner I showed a few months ago. The two models shown are by Tyrone and the photos by Dave Purchase. I don't know what these guys do for a living, but the quality of construction and photography is of a very professional caliber. He has a lot of hints on how he does things, so I'll be lazy and just publish his letter as is:

Dear Larry,

I am working on plans and instructions for my best designs and hope to soon have them completed and in the mail to you for inspection.

I have enjoyed fine reliability and durability from the Cox 290 type engine found in "Wings" and "UFO" plastic planes, which are occasionally on sale at various drug stores in this area at very reasonable cost.

I make A.J. Walker type fuel cells from Safeway latex neoprene household gloves by snipping off the digits and slipping one end of a length of silicone fuel line half way over a 3/4-inch length of 1/16 I.D. brass tube. Trim the fuel line so that the uncovered half of the brass tube protrudes from the open end of the glove digit and the other end of the fuel line reaches to within 1/4 inch of the closed end. Then tie the open end of the glove digit around the end of the fuel line over the brass tube with nylon heavy duty thread. Seal the knot with cyanoacrylate adhesive, then slip another length of silicone fuel line over the protruding end of the brass tube and trim the other end of the fuel line to reach comfortably over the engine fuel intake tube. Slip a 1/2-inch length of neoprene fuel line over the engine fuel intake fitting and slip a 5/8-inch length of 1/16 I.D. brass tube into this line till the tube touches the fitting. This leaves 1/4 inch of the tube protruding from the edge of the backplate.

I have found this type of fuel cell to be really durable. I have enjoyed consistent engine runs on 5% nitro fuel when the cell is filled only until it reaches its natural contour. The fuel flows easily into the vacuum created by the engine as the regular air pressure collapses the cell around the remaining fuel.

I have a mylar notebook cover that I cut reeds from; they are about the same thickness and flexibility as the brass ones and are more fatigue resistant.

I use Cox silencers and Cox 6x3 black

propellers. One of my engines set up in this way has used about a gallon of 5% nitro fuel during the past year and still runs just fine. Still has the same glow head it came with, too.

I use 32-foot lines of Conso 721 white bonded finish heavy-duty nylon thread tied directly to the nylon bellcrank, and have found this line to be fuel and abrasive resistant and of minimal weight and drag, as it is very small in diameter yet great in strength. It does stretch a bit when new, but after a few flights it becomes reasonably stable while retaining a nice cushion.

I set the engine thrust line about 9° toward the outside of the circle, which keeps the plane right out on the ends of the lines. I don't use any wing tip weight, as the plane flies level without it. I use a single safety pin type wire loop line guide set at the wing tip where the plane balances when suspended at the wing tips.

I use a monowheel landing gear assembled from a 4-5/8 inch length of 1/16 music wire and a Sig 3/4-inch diameter nylon hub wheel. I bend 1/8 inch of one end of the wire back to a right angle, slip the other end through the hole in the wheel hub, slide the wheel over to the bend, and bend the long length on the other side of the wheel hub up to a right angle.

When the back of the carburetor backplate of the Cox 290 engine is examined while set in the side position with the straight side to the right and the curved side to the left, there is a small web projecting in from the top inside edge of the backplate just to the left of the top right screw head; directly across and projecting in from the bottom inside edge of the backplate, just to the left of the bottom right screw head, there is another web. I drill a 1/16-inch hole in the corner formed by the right edge of the top web and the inside edge of the backplate and parallel to the engine mount holes. Cut a 1/16x1/16 inch notch in the bottom edge of the backplate just to the right of the bottom web. Bend 1/4 inch of the top of the landing gear wire forward to a right angle and slip it into the top hole; the down part of the wire sets into the bottom notch. The landing gear fits nicely between the webs and the screw heads and sets securely between the backplate and the firewall. The engine is secured to the firewall with No. 4x1/2 inch sheet metal screws.

I have a 9x24-inch piece of insulation board with a one-inch length of 1/4-inch diameter nylon tube bolted to the outside back corner with a 1/2-inch diameter nylon washer on top. After starting and adjusting the engine, I set the plane on the board with the outside leading edge of the stabilizer set behind the tube, which prevents the plane from moving forward. The washer prevents the stabilizer from sliding up over the top. I set my fuel/field kit and government Ni-Cd ignition battery at the trailing edge of the outside wingtip to prevent the engine offset from pivoting the plane around, and when I'm out at the handle I just gently pull till the tip of the stabilizer clears the tube and the plane takes right off. Tyrone Parker, 2705-1/2 N. Proctor, Tacoma, WA 98407.

Next model is a fun/sport two-channel design by Ken Willard. It was on display at the Pasadena IMS Show, in Bill and Charlie Cannon's booth. You can guess what the model is named! A Tee Dee .051 provides the power, and considering where it was displayed, you might even be able to surmise what R/C equipment was used.

Also on display at the Cannon Booth was Woody Woodward's Jetco Cessna in framework form. I had a photo of the front end with the G-Mark Twin .12 a couple of months ago. This time I want to show you just how much room is left over in this model with Bill's latest airborne system. I have seen .40 sized scale models more crowded than that!

Final two photos are of a Jetco Navigator as built by Philip Mahoney. His major changes to the model include removable floats and a water rudder. In addition, the engine pod was made removable and the balsa pod was hollowed and polyester resin coated to become the fuel tank. Phil cautions that the model, as designed, is too weak in the windshield area and you should replace the clear windows and windshield with balsa sheet and paint the window areas in. He also said that he would prefer to

reshape the rudder to make it vertical and give it a bit more area. The elevator needs to be full span and another half-inch more chord would be useful, although it requires reworking the stabilizer.

Phil uses a Webra 1.5 cc diesel with R/C carb for power, and control is by Cannon "Mini," using three of his available four channels. Total weight is 32 ounces dry with a 225 mah battery pack. Takeoff is in about 20 to 25 feet and very realistic. Hand launches are difficult due to unresponsive elevator and the high thrust line. Phil says that a 30-foot hill is useful as a starting point! (Perhaps some upthrust would cure that?)

Well, my fingers are wore out to a nubbin, so I guess that's it until next month. •

Plug Sparks . . . *Continued from page 40*

here are the results of the SAM 21 R/C Texaco Contest held April 12 and 13 at Taft:

CLASS ABC (10 entries)	
1. Rich Kultti (Bombshell/K&B 29)*	23:25
2. Jim Kyncy (Gas Bird/K&B 29)*	21:20
3. Monti Farrell (Lanzo/Merco)	12:44
ANTIQUE (15 entries)	
1. Ross Thomas (Cloudster/K&B 35)*	31:47
2. Jim Kyncy (Dallaire/OS 60)*	31:28
3. Nick Nicholau (Dallaire/OS 50)*	30:00

As noted by the astericks (*), these times include flyoff times which were quite small, as flights were limited to 10-second engine runs. That really separates the men from the boys!

TEXACO (21 entries)	
1. Jim Kyncy (Gas Bird/OS 4/c)	36:38
2. Phil Bernhardt (Ehling/Super Cyke)	32:14
3. Ross Thomas (Eaglet/OS 4/c)	31:36
1/2A TEXACO (7 entries)	
1. Jim Kyncy (Playboy Jr.)	16:42
2. Jack Alten (Playboy Jr.)	11:15
3. Ernie Payne (Lanzo)	9:32

At the close of the contest, C.D. Pond announced this prestigious seven-year-old R/C Texaco meet was being taken over by SAM 49. Inasmuch as this annual meet has literally been held in their "back yard" and the northern boys come anywhere from 250 to 450 miles to attend this meet, the Los Angeles Club, SAM 49, headed up by Bill Cohen, offered to take over the running of this meet. This will give SAM 49 two dates at Taft, one in April and the other in December, which fittingly closes out the O.T. R/C season.

ENGINE OF THE MONTH

In trying to trace the ancestry of old engines through advertisements appearing in the old model airplane magazines, one can easily get tripped up as some engine manufacturers advertised in only one magazine!

Such is the case of this engine of the month, the Fleetwind 60, as produced by the Hoof Mfg. Co., then located at 6543 S. Laramie Ave., Chicago, Illinois. The initial advertisement of the Fleetwind appeared in the March 1946 issue of *Air Trails*, featuring a full page (and those old *Air Trails* pictorial magazines were large pages!) extolling the virtues of this new engine. Credit for development of this engine has generally been given to V.S. Jennings.

After two consecutive full-page advertisements in *Air Trails*, the advertising was abruptly dropped in favor of a photo appearing with a dealer/distributor, the first being Gene Robertson's in Charlotte, North Carolina. *Model Airplane News* finally broke through with an advertisement by Ace Model Shop, featuring the Fleetwind in the May 1946 issue.

Advertising by various distributors still followed with R&H Hobby crafters of Chicago, Illinois, featuring the Fleetwind in their August 1946 ad in *Air Trails*. In an effort to generate sales over the Christmas holidays in the December 1946 issue of *Air Trails*, the Hoof Co. came out with the idea of a complete mount with a complete ignition system (designated Model E-2) which consisted of a 5 x 6-inch plywood base with suction cups to hold the mount on any table, box, etc. This item sold for $29.75 as compared to the unmounted version less coil and condenser for $24.75.

Advertisements were far and few between thereafter, with only American Hobby Center carrying the Fleetwind on their list of available engines. In August of 1947, the price was dropped to $19.50 in an effort to spur sales, but to no avail, as the last mention of the Fleetwind was in the February 1948 issue of *Air Trails*. Another engine that succumbed to the tremendous competition for the .60 size

motor market.

Many of the engines that came out after the war were the fertile brainwork of many engine designers who had four years to think up novel ideas for producing a better engine with subsequent additional power. Among those, like the Barker with Manumatic valve, Melcraft with a front ram induction, etc., the Hoof engine was quite innovative in the method of removing engine parts.

The dual bypass covers offered a new method of removal. Another feature was the removable cylinder head and barrel. This was removed simply by loosening the four hexagonal head bolts. Instructions say, do not remove the bolts as they are mounted in the crankcase. After loosening the bolts, simply twist the cylinder, and the whole assembly pops off. Of course, a special wrench was provided for the bolts. However, this did not prevent the modeler from making his own wrench from a nail file. This interesting "bayonet" type cylinder removal only required a quarter of a turn to lift it from the crankcase.

As if this wasn't enough, the Fleetwind motor also featured removable front and rear crankcase covers, the front carrying the crankshaft and rear cover having the rotary disc valve attached.

Actually, the engine was self-defeating, as so many parts required constant attention to keep everything tight to insure good running qualities. Irwin Ohlsson found this fault in his early Miniature and Gold Seal engines, where removable bypass cover plates could be over-tightened, hence warping the covers.

For those interested in the fabrication of the Fleetwind, the cylinder barrel, and head (one piece) was machined from steel, as were the piston and crankshaft. The crankcase, bypass covers, connecting rod, and timer housing were made from aluminum. Incidentally, the connecting rod was riveted to the piston, eliminating the need for wrist pin pads. (Strange, with so many other parts removable.)

The bearings were made of bronze, and the gas tank was made of light sheet metal with a light sheet metal cover pressed into the tank. The gas tank was held in place by hexagon nuts screwed over the needle valve body and locked onto the intake tube.

Performance figures were not the most encouraging to the modeler looking for the best available power plant. With a cylinder bore of 15/16 inch and 7/8 inch stroke, giving a displacement of .60 cu. in., and weight of 12 ounces bare, the engine was rated at .35 to .40 brake hp by the Hoof people. Claims were also made of 10,000 rpm using a 13-inch diameter propeller with a 3-inch pitch.

Strobatac tests by the *Air Trails'* personnel in charge of the engine analysis found the engine only turned 6,500 rpm using a standard 14 inch F/F propeller. Using a high-pitch 12-inch prop, performance was increased to 7,600 rpm and finally with a 10-in. dia., 9-in. pitch prop, the best rpm obtainable was 9,600. However, at the top end, the needle valve was noted to be quite critical, as the points had a tendency to float. It was generally conceded that a heavier spring or augmenting spring, such as produced by Bunch, would eliminate this problem.

Fleetwinds: Where are they all now? You'll have to contact your local engine collector as this is where most of them ended up.

30 YEARS AGO, I WAS. . .

In connection with locating a suitable site for the Midwest SAM Champs (finally settled on Wright-Patterson AFB), Bryan Wheeler, who for a time had permission to use Richards Gebauer AFB, writes in answer to this columnist's inquiry about other sites in the Kansas City, Missouri area.

Your last letter relating your friend's recollection of Swope Park brought me some chuckles; especially from your statement, "Why we had not considered Swope Park for the SAM Champs!" He indicated this was a huge area on the south side of town with all kinds of space (and only a few trees).

I am reminded of how tremendously large the football players looked to me when I first entered high school in 1938. To bring out my point:

Swope Park was indeed the site of the first Jimmy Allen Model Contests in which the Bluebird design was flown in

competition. Before that, during World War I (1918), some hero type pilots were bringing some Thomas Morse Scouts into the Kansas City area to bolster a Liberty Bond drive. A heavy overcast moved in and dispersed the formation. In the confusion, some of the pilots mistakenly identified the Swope Park Mall as their intended airport and promptly executed a landing . . . all of them successfully!

However, times do change. The field is much smaller due to encroaching improvements such as roads, shelters, etc., and the trees are now giants! To compound our troubles, during the post-war days of wild and woolly control line flying, the city finally passed legislation prohibiting the flying of model airplanes on the Mall.

In retrospect, one of my high school football heroes is the postman on my route and he doesn't look so big either. As a matter of fact, I have often threatened to fall on him (Wheeler is over 250 lbs.) if he ever folds one of my airplane magazines!

Columnist note: Weren't those the days when we didn't have all these environmental people telling us we are noise-polluting the air?

SAM CHAMPS

For those who don't receive the Society's newsletter, "SAM Speaks," the Annual SAM Championships (Old Timer Nats to you) will be held in conjunction with the AMA Nats being held also at Wright-Patterson AFB, Dayton, Ohio (August 8 through 10).

The welcoming "bean feed" will be staged at Wright University on Thursday evening, August 7, beginning at 6 p.m. This social affair is intended for all the fellows to again meet and swap lies about what they have been doing for the past year. In addition, the get-together also serves as a meeting place where last minute announcements about the Champs can be made.

For those wishing to enter the SAM Champs, obtain an entry form from the SAM Champs Contest Manager Bob Larsh, 45 S. Whitcomb, Indianapolis, IN 46241. Suggest you write immediately if you need dormitory space as this will go fast once the entries start coming in from the AMA contestants.

Bob Larsh has been doing a terrific job as Contest Manager and the way this Champs is sizing up, it should be a real great meet. For those who love to fly, we have more events than ever.

While talking about events, Joe Beshar, former SAM President, will run the Electric .020 Free Flight Event at W-P AFB. Rules are simplicity themselves: 1) Any old timer model, scaled or otherwise, is eligible; 2) Power is .020 Astro-Flight electric motor or equivalent; 3) Provide model with two-prong female Dean Connector with positive terminal coded red. All charging will be done by the C.D.; 4) Official flights will be 3 minutes with 10 seconds recorded as an attempt. Total high time of three flights wins it.

O.T. CONTROL LINE

On Monday following the SAM Champs, this columnist will stage two old time control line events on August 11 at Wilmington AFB. These events will be stunt ignition powered and stunt glow powered.

Stunt rules will be the 1950 AMA Stunt pattern and judging will be headed up by Carl Hatrak. This should be a pack of fun, so don't miss it! Enter on the field, it's that easy!

FIREBALL

Picture No. 10 shows a real honest-to-goodness "Fireball" as designed and manufactured by Jim Walker. John D. Macy of 5200 S.E. Jennings, #11, Milwaukie, OR 97222, submitted this photo showing one of the two Fireballs he has built.

Macy is looking for help in tracing the history of the Jim Walker Fireballs. He intends to make drawings of each version. It is Frank's dream to do the whole project up complete with Fireball logo,

history on Jim Walker, and the contribution he made to aircraft modeling.

Macy further states that if the project is not feasible from a commercial standpoint, he will still do it and donate the drawings, models, etc. to a model aircraft museum so that posterity can learn and appreciate Jim Walker and his Fireball that started all this control line business.

Columnist's note: At the recent MAC Show in Long Beach, California, a Fireball kit was introduced by Modeler's Mansion, a hobby shop in Gardena, California. These two efforts should certainly preserve the old Fireball!

Picture No. 11 shows the SAM 7 gang giving George Armstead's latest creation, the Beaumont Soaring Champ, the once over. This excellent towline glider has not enjoyed the popularity one would think a Nationals win would bring it.

SAM 7 Chapter is to be commended for its efforts to revive and maintain an old time towline event. Although entries to start have been small, a gradual increase has been noted in successive contests. Perhaps by the time the SAM Champs gets back to their area in 1982, the event may again be reinstated in the SAM Champs slate of events.

Picture No. 12 comes all the way from New Zealand. Rex Bain of 3 Grassydowns Pl., Hamilton, New Zealand, sent in this photo taken of his three-channel R/C Zipper being flown at Fielding, at a Vintage meet organized by Rex.

Rex was the chairman of the N.Z. Association of Vintage Aeromodellers. Rules down under permit designs to the end of 1950 (similar to English rules). There are approximately 50 active O.T. modelers in New Zealand and still growing.

Rex states, after his visits to the World Champs at Taft and a SAM 30 O.T. meet at Sacramento, that Californians don't know how lucky they are to have such excellent flying sites and most important . . . weather to add to their enjoyment of the hobby.

Picture No. 13 is from another faraway place, South Africa. Jack Abbott, who is one of the guiding lights of the O.T. movement in South Africa, sent in this photo of his R/C controlled Comet Sailplane. Several months ago we did an article on the South African activity and this is the sailplane we mentioned that had trouble in the sun. Still a good flier after being rebuilt!

Our last picture, No. 14, shows Charlie Critch cranking on Bill Bowen's airplane. This nine-foot Clipper, powered by an O.S. .60 four-cycle engine, has proven to be an excellent flier. Unfortunately, the model was still being trimmed out during official flights. Some badly needed incidence changes in the tail were required between flights (with only two official flights allowed!). Despite this, Critch did a nice flying job and did well over 20 minutes. Not too shabby for a starter!

SAM AT TOLEDO

For the fifth year in SAM history, a SAM booth has been manned at the Toledo Weak Signals Trade Show. No question about it, SAM enjoys a tremendous public exposure at this most heavily attended show.

According to Tim Banaszak, Secretary/Treasurer, this is an excellent time to promote new members and catch those members who have forgotten to renew their membership. In this respect the SAM booth more than amply repays itself for the time put in by the SAM volunteers. These incidentally were Tim Banaszak, Karl Speilmaker (who opened the booth on Friday), Mrs. Clarence Andre and Cora Stevic from Butler, Pennsylvania, and of course, Clarence Andre. We missed you this year, Joe Beshar!

The real piece-de-resistance was the Static Show for Old Timers run annually at Toledo. This year was no exception, as the judges, Banaszak, Spielmaker, W.V. Stevic, and Bob Lonseth, were almost stumped when it came to picking a winner. All the old timer models were so beautifully constructed it was very difficult to separate them. As a matter of fact, the third-place winner, Bill Ferretti, was only third because his model was covered with Monokote, and some of the judges felt that silk and dope models rated higher. Regardless of the foregoing, Ferretti's model won the regular open static exhibition as staged by the Toledo Club for the best Monokote application. This, incidentally, makes the second year in a row that an old timer decorated with Monokote has won the Top Flite Monokote Award!

Although to be eligible for the static judging, your model had to be radio controlled, there were an outstanding number of other varieties of free flight models on display. This all helped attract the crowd to the booth.

Finally, after much head scratching, the judges came up with the following winners of the Fifth O.T. Static Display:

1. Ken Kalaynik
   Megow Cadet on floats, with ignition, finished in silver and blue.
2. Gordon Pearson
   Guff with ignition, finished in red and black.
3. Bill Ferretti

Dallaire Sportster in transparent yellow Monokote, beautifully trimmed. This model won the Top Flite Monokote Award!

4. Tom McCoy
   Super Buccaneer (just another beauty).
5. Steve Mozurkewich
   Miss America. (How could this one lose?)

In all, about ten models were judged. Good thing the Toledo Trade Show was three days long; otherwise, the judges might not have been able to pick a winner. As far as this columnist is concerned, they were all winners, as they have discovered what makes old timers tick . . . FUN!

A round of special thanks should go to the sponsor, Tom Schoneau, proprietor of M-N-M Model Shop, for providing excellent trophies to fifth place. Too bad we didn't have a prize for Karl Speilmaker's Twin Pusher. That one aroused a lot of interest! Get ready for next year's Toledo Show. It's going to be a winner!

1/2A F/F TEXACO

We published the 1/2A R/C Texaco rules a month or so back, but somehow or another we never did get the rules as promulgated by the SCAMPS. Quite a few free flighters are interested in this new phase of fun so here they are:

1. Model designs must be Antique; i.e., pre-December 31, 1938 (SAM Rules).
2. Models may be scaled to any size not exceeding a plan form of 50-inch wingspan.
3. Construction shall conform to present SAM Rules.
4. No weight requirements.
5. Any glow engine (reed or rotary) not exceeding 0.05/cu. inches may be used. Diesel conversions are not permitted.
6. Any alcohol-based fuel (only) may be used (no restrictions as to nitromethane mixture).
7. A maximum of a 1/2-ounce of fuel shall be allotted for all models regardless of size and weight.
8. Timer remains at point of takeoff or hand launch (depending on C.D. decision). Time begins at release and ends at touchdown, or when model cannot be seen any longer by timer (no field glasses are allowed).
9. No maximum flights. Three (3) official flights allowed, with largest accumulated total time to determine winners. Three (3) unofficial flights permitted, an unofficial being defined as any flight under two minutes. Any attempt may be declared official but only prior to taking any future flights.

Well, there you have it men. Another good way to lose models. In R/C assist, the boys are climbing darn near out of sight with 1/4-ounce of fuel. Imagine what those lightweight free flight models are going to do with a 1/2-ounce! Goom-bye!

THE WRAP-UP

At this point, the columnist would like to thank all those fellows who have contributed photos, news items, contest results, and general information. This is what makes a successful column. As Walter Winchell once pointed out, "A columnist is no better than his sources."

So if you didn't see your stuff published this time, please don't get discouraged. There are many reasons for non-use of material: i.e., write-up is badly dated, photos are not suitable for publication (this means photos not centered, faces in shadow, distracting background, etc.) and no information on subject submitted. By now you get the idea. Keep that stuff coming! After all, the other guy is interested in what you do, too! •

Fuel Lines . . . . *Continued from page 15*

than gasoline, and when operating at wide open throttle, your engine will consume more than twice as much mild glow fuel per minute as it would if operating on gasoline.

"Well," you say, "considering the current price of glow fuel, I have been seriously thinking about going over to ignition. However, my main worry is that I just can't sacrifice any of the power I presently have on glow with moderate nitro." My advice would be to choose an engine for ignition conversion with approx. 20% larger displacement than what you are using on glow. After all, if you find you don't need all the available power, you don't have to use it. It really seems silly to me to choose an engine for ignition conversion that requires it to run flat-out all the time to put on a decent performance. A little extra in reserve is always nice to have, and gives a certain feeling of security. Also, a large engine operating under reduced throttle will run cooler and quieter and will have a lot longer life.

One of the fringe benefits of ignition over glow is a cleaner model, because of the reduced lubrication in the gasoline. Gasoline-to-oil ratios usually are about 8 to 1 for engines with piston rings and ball bearings. An idle speed of around 800 rpm is not uncommon with large props, and starting can be done by hand. And let's not forget the cost of fuel. If the amount of flying you do now takes a gallon of glow fuel each week, you can

get in the same amount of flying on 1/2 gallon of gasoline. I'm sure you know the cost of glow fuel vs. gasoline these days.

Now, what about this business of ignition interference with radio? Well, it happens to be true. Every time the ignition points open, a spark occurs at the spark plug. Simultaneously, an electrical arc takes place between the breaker points. This also causes radio frequency signals to travel throughout the entire ignition system, and it is these signals that affect the R/C receiver, which in turn sends erratic commands to the servos, causing them to jitter and dance. We have seen some brands of R/C receivers that seem to be immune to ignition noises and work perfectly even when mounted right next to the ignition system. However, the vast majority of present-day R/C gear is greatly affected by ignition interference even when the two systems are mounted as far apart as possible in the model. To the best of my knowledge, there are only two practical solutions to this problem:

Solution No. 1: Completely enclose, in a metal cover, all components that make up the ignition system and ground it to the engine. This would include the ignition points, batteries, coil, condenser, spark plug, switch, and all wiring. When properly constructed, this system works flawlessly. I have had a system of this type operating with an old Heathkit R/C unit for over eight years without a single case of interference.

Solution No. 2: Install a transistorized ignition system. Here's how it works. In a standard ignition system the points act as a switch to open and close a circuit of the batteries and the primary winding of the ignition coil. When the points close, approx. four amps of current are consumed by the coil's primary windings. When the points open, an arc develops between the points, causing them to pit and burn. This arc also is one of the major causes of electrical noises that play hob with your receiver. With a transistorized ignition package, current is made to flow through the primary windings of the ignition coil by the use of a switching power transistor. This switching transistor is turned on and off by a smaller signal transistor, which in turn is turned on and off by the ignition points. Instead of the normal four amperes going through the points, the little signal transistor requires only 1/10 ampere. This amount of current is so small that no arcing occurs between the points, and therefore no radio interference. This allows the breaker points to operate completely exposed and without shielding. It also eliminates pitting and burning of the points, giving them an almost unlimited life. Of course, all of the remaining electrical components of the ignition system must be enclosed in a metal cover (even aluminum foil will suffice) to prevent stray signals from escaping and getting to your radio, but this should present no problem.

A word of caution. It has come to my attention that there are a few "operators" who are advertising in certain model magazines who claim they can provide you with an ignition system that is compatible with any R/C system. My advice to you is to make them prove it. Insist on a full description and written guarantee. Finally, ask for a list of satisfied customers. After all, it's your money, and you have the right to know if the ignition system you are paying to have installed on your engine was made from the top cover of a metal fence post or a piece of certified aluminum bar stock! •

Hayseed . . . . . *Continued from page 40*

they were the hottest engines of that size at the time.

Chester Kowalkowski of Bridgeport won the Connecticut State Championships at New Haven in 1940 with one of the big ships. Carl Cappozi, Bill Wargo, and I also flew the model at contests all over the East Coast just before the war. Frank Bushey (the ex-AMA President) and Jim Grant from Hartford picked up the design around 1947 and proceeded

to do fairly well with it. Jim made the longest official flight with the design to date by clocking over 57 minutes at Hicksville, Long Island, in 1947. A slightly smaller "C" version, developed for the .49 engines after the war, is shown in Zaic's 1951-52 Yearbook.

With the low aspect ratio, this ship was not a fantastic glider in dead air. However, it seemed to have an ability to utilize to its best advantage any thermal activity. It had what Frank Zaic used to call "thermal bounce," which I attribute partially to the smallish stab.

There were two Hayseeds designed for the Ohlsson .23 and of the two, the one shown turned out to be the best. It was flown throughout the summer of 1941, placing fairly well in several of the smaller contests that were on the East Coast at that time. The auto-rudder idea shown on the plane was picked up from the Norwalk, Connecticut group, who were using it on Comet Clippers at that time.

In a Christmas card from Bill Wargo came the following news. "I finally lost my big 'C' job (Hayseed) last July 1979. It caught the only thermal of the day at the contest. When it was last seen it was at about 2,000 feet heading toward Windsor Locks from Rocky Hill Meadows. I suppose they can't last more than forty years." Bill had been flying this ship steadily at Old Timer contests for most of that time.

The Hayseed B spans 47-1/2 inches and has 350 square inches, so a .15 is the biggest glow engine you could use for O.T. R/C events. The O.T. F/F rules were recently amended to include *projected* area (as if the rules weren't complicated enough already!), so after laying it out on the drawing board we get a projected span of 46-1/4 inches and area of 340 square inches. Minimum required weight at this area is 18.9 ounces. •

Electric . . . . . *Continued from page 52*

loaded switch, normally on, so I could hold it off, then when I threw the model the motor would start. But I dropped the idea because of the nearly 1/2 ounce the switch would have added. If I were to fly the event tomorrow I would get rid of the switch and charge jack, and I would cut maybe an ounce off the plane by replacing some sheet balsa with tissue. If I were to start from scratch, I would keep close to the design and airfoil and area, but would try to get the ready-to-fly weight down to eight ounces. I wonder how it would be to use cells of less capacity, but use more of them? (I think this is the way to go. MP) *At the Nats, I would run the battery down after each flight so I could fully charge without risking overcharge. I was using only 25 seconds of an (estimated) two-minute capacity. If I were to work on this event with any seriousness, I would look for some cells lighter than the Astro 020 pack, and maybe add some voltage. Maybe six 100 mah? The problem might be that cells of this size might not deliver the current.* (The GE 100 mah cells will. MP)

Thank you, Bill, for all the good information. Bill taught me all I know about soaring and picking air, he knows more about reading the air than anyone I know, and his advice has a lot of experience behind it.

Howard Evanson sent a photo of his M.E.N. Buzzard Bombshell charging up during a winter flying session. Since this is a summer column, I can't resist running it now! He said it was so cold and windy that no fly-bys for inflight photos were possible, but he did fly until the hot coffee ran out! The Buzzard uses an Astro 15 geared to a Y&D 13x10 prop. The weight is about 4-1/2 pounds, with a Benson SC-2H motor control with auto-shutoff and an EK three-channel radio. Howard says that the fancy "Spirit of St. Louis" cowling took less than an hour to make. He used thin aluminum sheet, drew half-inch squares on it, and made the metal swirl effect with a drill press and a small round steel brush. Howard built a Bombshell in 1948, and remembering the problems he had in covering the undercamber, he decided to build it with a flat-bottom airfoil, an 11% Clark Y. He says this flies great and is much easier to build. I have had several columns on the virtues of Old Timers as electrics, they are superb.

Howard got started in electrics the hard way: he broke his leg! It was a

serious break which left him on crutches for six months, so he couldn't pursue the high start or winch line in his main interest, R/C soaring. Electric power solved the problem, now he says that he passes the other gliders on the top of the winch with his Astro 15 powered sailplane! Howard has been so convinced of the merits of electric power that he and his flying partner, Craig Christensen, have started a business distributing electric flying products. If you happen to be in the twin cities area in Minnesota, you might give them a ring or write to C&F Electric Airplane, 7118 123rd St., Apple Valley, MN 55124, phone (612) 432-4975. Charge up and fly high! •

Hannan . . . . . *Continued from page 54*

Scale" event in Las Vegas, Nevada. Over 100 of them have expressed interest, and more than 20 models are being prepared for the trip. The magazine rounds off its prospectus with this optimistic note (freely translated): "Let's say to the American modelers, here we are!"

PARIS INDOOR COMPETITION

At the other end of the scale, so to speak, Jean Frugoli and Alain Parmentier have reported on a very successful meet conducted during March in a Paris gymnasium. Classes flown included "Cacahuetes" (Peanuts), "Sainte Formule," and EZB.

The response was gratifying with about a hundred models entered, of which 59 were Peanuts. The variety of types reflected one of the chief attractions of this class, and included aircraft from every era of aviation history. Indicative of the diverse entries is this random sampling: Gossamer Condor (three of 'em!), Bleriot VI (two), Bleriot XI, Hirondelle, PB 6 Racek, Puss-Moth, Dixon Nipper canard, Wright "L" Scout, P-38 Lightning, Waco SRE, and the very obscure Farman 1020 ultra-low aspect ratio design, which according to Frugoli, "has cut the grass under our feet." The model, constructed by Alain Parmentier has considerably more wing area than most Peanuts, and when properly adjusted is expected to be a world-beater. We hope to present additional photographs from this important meeting in a future issue.

THOSE PESKY AUTOGYROS

Like ornithopters, model gyroplanes are seldom-seen birds, being perpetuated by a mere handful of persistent enthusiasts. Mechanically they are much simpler than helicopters, since their rotors are not power driven, yet they remain aerodynamically complex and frustrating to tame. Tom Nallen, of Chicopee Falls, Massachusetts, has been experimenting with kite versions of the critters with the following results: "Never having messed with anything like this before, I've got a lot to learn. Flapping blades, coning angles and the vagaries of tethered flight in differing windspeeds can really test the old patience. Finally got one (36-inch rotor, three blades) to fly predictably in a moderate breeze. Took it down to Cape Cod a couple of weekends ago for the acid test. In two days (actually only minutes of flying) the wind tore a rotor head apart and caused maneuvers that I'd never even thought about before. After a number of splintered and broken blades (I brought plenty) I got one good flight and quit while ahead. My wife still snickers . . . quietly . . . once in a while!

"So far, I think the most important discovery I've made about autogyros is that if you have one flying steadily, passing dogs will bark and jump at it." Ah, the tribulations of experimental models!

GO-AIR

Remember the photograph of Walt Winberg's charming compressed air powered model on page 49 of **RCMB's** April '80 issue? If not, look it up right now! Plans for this classic-looking jewel are now available from Buzzer Model Airplane Co., 52 Newbury Rd., Howell, NJ 07731. Provisions have been made for adaption to the new Buzzer CO_2 engine or an electric motor, in case you'd rather not GO-AIR. No price was stated, but a stamped envelope would undoubtedly fetch that information, along with a list of other offerings. Please tell them **RCMB** sent you!

MAX FAX

And while we're plugging things, one of the enjoyable club newsletters received here at the hangar is the voice of the D.C. Maxecuters, and is edited by Pat Dailey. Featured is club news, contest reports, handy hints, excellent photographs, model plans and opinions from a truly talented group of builders in and around the Washington area. This month's full-size plan is of the Santos Dumont 14 bis canard, a prize-winner by Don Srull.

Subscriptions to Max Fax are available at $9 per year from Allan Schanzle, 8311 Exodus Dr., Gaithersburg, MD 20760.

WEALTH

Bishop Wright, father of Orville and Wilbur: "All the money anyone needs, is just enough to keep from being a burden to others."

C.O. WRIGHT

Another Wright, a highly-respected

aeromodeller, has passed from the scene at age 84. C.O. Wright was a school teacher, principal, pioneer for women's rights, author, historian, and all-around model builder for many years. An enthusiastic competitor and mentor to generations of youngsters, C.O. was also the sixth president of the Academy of Model Aeronautics.

Although he was active in numerous facets of modeling, our personal memories of him center most strongly upon his dedication to free flight helicopters and scale models. In the latter category we recall an incident which underlines the gentleman's natural philosophy: During a Kansas Nationals, the F/F Scale event was plagued by unusually severe wind conditions, which had already taken a toll in damaged entries. However, Wright was determined to achieve an official flight with his magnificent and highly detailed Antoinette monoplane. This fragile-appearing pioneer aircraft, although a previous Nationals winner, seemed totally inappropriate for battling gales of wind, and C.O.'s son Bob urged his father to put the model away rather than risk it to the elements. We shall always remember Wright's calm reply, which went something like this: "Son, if you can build 'em in the first place, you can always repair them." Words of inspiration to us all.

BILL FIKE

Another designer, Bill Fike, of Anchorage, Alaska, has also passed away, according to *Sport Aviation*. Although remembered for his piloting activities in full-size aviation circles, Bill is assured a lasting nitch in the annals of model history as well, because of the influence on scale modeling created by his controversial Fike "E" design. Its low aspect ratio wing planform gave it special advantages, especially in Peanut Scale events, and confounded many theorists with its ability to fly stably without dihedral.

SEMI-SCALE EVENTS PROLIFERATE

Midway between purely duration indoor models and flying scale is a category of types combining some of the appeal of each. Years ago realistic (but non-scale) indoor models were common, but were gradually "refined" to take advantage of rules loopholes, until they lost all semblance of realism.

Some time ago the Manhattan Cabin class was evolved on the East Coast of the United States, in an effort to revive interest in attractive aircraft that would perform well, yet require less time and skill than scale or microfilm models.

At approximately the same period of time, also in the eastern United States, an outdoor class with similar aims was developed and labeled Embryo Endurance, and caught on well enough that several kits were manufactured to help meet the interest.

The next variation upon the semi-scale theme, again from the East, was the Bostonian class, with rules parameters to insure reasonable realism, yet allow plenty of scope for individual creative

expression. With a wingspan limit of 16 inches and a weight minimum of seven grams, the models were ideally suited to small indoor flying sites. As an incentive to increased accent on good appearance, a "charisma factor" was included in the rules.

Walt Mooney took more than a casual interest in the Bostonian event, having spent a number of years in the Boston area, apart from his attraction to the concept. However, he felt that the original weight minimum was a bit too low to encourage junior participation, not to mention many less-than-finicky oldsters! Thus he proposed a West Coast version of the event, similar in most respects but specifying a 14 gram weight minimum. At approximately a half-ounce, he reasoned that nearly anyone could build a competitive model which would even be rugged enough for outdoor flying. To back up his convictions, Walt designed some half-dozen models and offered plans to members of the San Diego Scale Staffel club. Result? More than twenty entries the first time out!

Meanwhile, Ed Whitten reports plenty of enthusiasm for both Manhattan and Bostonian models in New York ("An Empennage of Two Cities," he called his report), and Dr. John Martin says that both classes will be flown at the West Baden, Indiana, indoor record trials. An interesting sidelight, emphasizing the good-humor aspect of the events, is the appropriate names which have been assigned to some of these models: "Skyscraper Too," "Metro-Gnome," "Nuther Thing," "Back-Bay Bellanca," and "Weigh to Go." We think they will catch on in a big way, and a few letters might convince ye olde Editor to publish one of the designs in your favorite magazine.

KEEP ON TRUCKIN'

We've all heard sad tales of lost models, but this one has a fresh twist. It seems John Hutchison was testing out his new Bostonian model during an idle moment in the parking lot at work. Suddenly he noticed a supervisor approaching, and rather than risking the need to explain why he was "playing with toy airplanes," he simply slipped the model into a nearby truck and went on about his business.

In due course, after the boss had left, John returned to the parking lot to retrieve his model. Imagine his dismay at finding the truck gone! (We also wonder what the reaction of the driver may have been to this "toy" landing inside.) •

Farman . . . . . *Continued from page 55*

end resulted in a stall under power and in the glide. The up elevator trim of the extenders was reduced and the model dived straight ahead, so we knew it needed some up elevator to counteract the nose-down pitching moment of the large undercambered wing.

We wound the motor to about 600 turns and got a beautiful, smooth, circling flight with the now somewhat grotesque-looking "Farman 1000+." The dihedral was just about right as built, but the tail surfaces were obviously too small.

With the modifications the model was very stable and it appeared to both Bill and I that the tail areas were now larger than necessary. The horizontal tail extenders were cut down to about 1/4 inch in width and the model still flew smoothly. It was slightly nose heavy, so enough ballast was removed to compensate for the elevator extender removed. Would it be possible to reduce the height of the vertical, which was almost 1-1/8 inches taller than the drawing? We cut off 1/4 inch, rebalanced the model and it flew very nicely, so off came another 1/4 inch. It still flew fine, although the wide, smooth left circle had changed to a straight power flight with a steep right gliding circle. A little left turn was put in the rudder and the model was back to flying smooth left circles.

Obviously the helical slipstream has a large effect on a tall vertical, resulting in a left turning moment. As the vertical was shortened this effect disappeared until the right rolling moment imparted by an unpowered four-bladed propeller (even though it was windmilling) caused the model to go into a steep right gliding spiral. A little left rudder corrected this problem.

The addition to the top of the rudder was reduced to 6/10 of an inch and the

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model still flew satisfactorily.

Bill joked, "How will we feel if you remove all of the modifications and the model still flies?" Well, it won't fly well at the small size shown on the plan, so if you aren't a real expert, build the tails to the largest size.

If you build your model very light and intend to only fly it indoors, the horizontal tail as originally drawn is quite probably adequate. The vertical tail is another matter. If you stick with the four-bladed propeller, it will need to be bigger than originally drawn. A two-bladed propeller will be less destabilizing and may allow a scale vertical, but I wouldn't bet on it. One nice thing about tail surfaces, they are simple and small and easy to build, so it's a small effort to make some scientific experiments.

Now, lest I get some letters commenting disparagingly on my model adjusting efforts, which happened when I said I couldn't make the Fokker Triplane Prototype model fly satisfactorily, a final statement. "I'm sure there are a batch of modelers out there who can make this model fly well with the small tail surfaces, and at least one will probably be a Junior." •

Pottier . . . . . *Continued from page 61*

end of wire to fuselage. The wheels were turned from balsa to save weight.

EMPENNAGE

The vertical stabilizer/rudder is keyed to the fuselage with three stubby bits of 1/8 hard dowel, or tack-glued on the fuselage with the stablizer in place. After packing up the L.E. of the horizontal stab a bit so that it will rest on the fuselage at the angle shown, shims can be added fore or aft as needed to change the flight

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trim. Add hooks for the rubber band hold-downs after covering.

COVERING

Model may be covered with Japanese tissue for best results. Colored tissue trim will keep the weight down. Leave the area under the pilot open so that balance adjustments may be made to the batteries. A snugly-fitting 1/16 sheet "trapdoor" can be fitted later. Do not use more than two coats of thinned clear dope if you want to keep it light.

FLYING

Steam out any warps in the wings, vertical or horizontal stabilizers. Test over tall grass if you can find any. Correct any tendency to dive by adding thin shims under the rear of the horizontal stab (assuming the C.G. has been properly located per plan by moving batteries). Shim under L.E. if plane stalls. Batteries should be shifted only if it looks like you are getting a ridiculous amount of shim stock packing involved. Rudder adjustments may be made by cementing a small piece of clear acetate sheet to the T.E. of the rudder. If you have the approved VL charging unit, start out with about a one-minute charge at two amps and see how long the motor runs. You want about five seconds for the first test, gradually building up to the biggie of two minutes at two amps. If you don't have the charger, you can use a lantern battery with a car taillight bulb soldered into one of the charging wires. It should glow brightly when the batteries are down and gradually get dimmer as they fill up. It's a bit wasteful, but keeps you from overcharging. The original model required no side or downthrust adjustments, but these can be made by shimming behind the radial motor mount if necessary. Some fliers have reported better results using a slightly larger prop than that supplied with the VL unit, and if higher power is required, an extra cell can be added to the battery pack for more zip. Happy landings! •

Counter . . . . . *Continued from page 14*

colored for 72 mhz, and five half-black half-colored for 53 mhz. The balls are molded from plastic that is claimed to be solvent and fuel proof.

Some of the balls' special qualities are that they are very light, are easy to keep clean, can't get tangled up, and are easy to change if necessary. The thing that impressed me the most is that the colors are very bright, and there is no ambiguity between colors . . . no mistaking red for orange or blue for purple, which is sometimes easy to do with some flags.

Only a buck a ball, from your favorite dealer or direct from Kimbrough Products, 1430 East St., Andrews Place, Unit E, Santa Ana, CA 92705.

* * *

We received a sample of the 2-5/8 inch scale Bonanza A-36 plans being sold by Bud Caddell and Pat Hollock. (Bud did the designing and building of the prototype, Pat did the drafting of the plans.) This is the same model that was featured on the cover of the April '80 *R/C Scale Modeler*, as a close-up photo of the nose that revealed flawless detail and workmanship. I've spent more than a couple of minutes looking at that photo and still can't find anything that gives it away as being a model, it's so well done.

And the plans are equally as nice. The three monster sheets show all necessary part patterns and a bunch of scale detail, and there are several isometric and exploded sketches to help the builder through the tougher spots. The airplane is obviously not for the inexperienced

builder, even though the prototype has proven to be a very docile flier and could almost be compared to a low-wing trainer.

As mentioned earlier, the scale is 2-5/8 inches to the foot, a figure chosen because it permits a Webra .91 and Tatone manifold to fit comfortably inside the cowl. Span is 86 inches, area is 1300 sq. inches. Weight of the prototype model is 16-1/2 lbs., but the designer feels the model will carry 18-19 lbs. before the performance begins to deteriorate. Construction is mainly balsa and plywood (lots of it!) with some plastic forming and fiberglass work thrown in to make it interesting.

The plans sell for $17.50 plus $1.50 postage, and are shipped rolled in a mailing tube. To aid builders with the finishing, the designers also have "Beechcraft" fin decals available for $2 per pair. Engraved metal fuselage plates that say "Bonanza" and "A-36" can also be had for $5 for a set of four. From Caddell-Hollock, 1525 Badham Dr., Birmingham, AL 35216.

* * *

Bob Brodeur of Granite State R/C Products favored us with one of his company's "Whispurrrr" mufflers, manufactured in three different sizes and designed to mate with seven different adapters that will fit everything from .09's to .80's.

The Whispurrrr mufflers seem to be completely conventional in design and feature very nice workmanship. They are a combination of machined aluminum bar stock and seamless tubing and have a black (anodized?) finish. The manufacturer claims these mufflers will meet the FAI noise limit of 84 db; indeed, along with the press release came a copy of a letter from a Mr. Irvin Searl, who states that he tested the Whispurrrr mufflers on three different airplanes and engines (all .60 size running between 11,000 and 12,000 rpm) and recorded a maximum of 82 db.

All three sizes of the Whispurrrr muffler retail for $15.95, complete with strap and bolts. Adapters are an additional $3.95 each. A 3/4-inch extension can also be purchased for $3.95. Which adapter you will need will depend on your brand and size of engine; best bet would be to send an SASE and ask for the order and price list for Whispurrrr mufflers and related accessories.

Granite State R/C Products, 405 Main St., Nashua, NH 03060.

* * *

Eric Lister, well-known in R/C sailplane circles for his "Sailplane Designer's Handbook," has just finished another publication that goes hand-in-hand with the SDH. The new one is the "Drag Reduction and Structures Handbook," and contains 56 pages of info on airfoils, all forms of airplane drag reduction including V-tails and flying wings, shows drag reduction techniques for turns and windy weather flying, and lists ten different forms of drag reduction and shows how effective each one is.

The structural design information is laid out in a step-by-step procedure for determining whether or not your wing is strong enough to withstand the kind of pullups you intend to do. An example of how to work the numbers through a design case is given, fully worked out.

The data in both the drag reduction and structural design portions of the DRSH is applicable to all types of R/C models, even high-speed power ships. The book contains 14 tables and 35 figures, and all the data is given on the page where the discussion is located, not put in the rear somewhere.

All in all, the DRSH can pull 10-20% of the drag out of your model and can show you how to design a wing that will never break for the type of flying that

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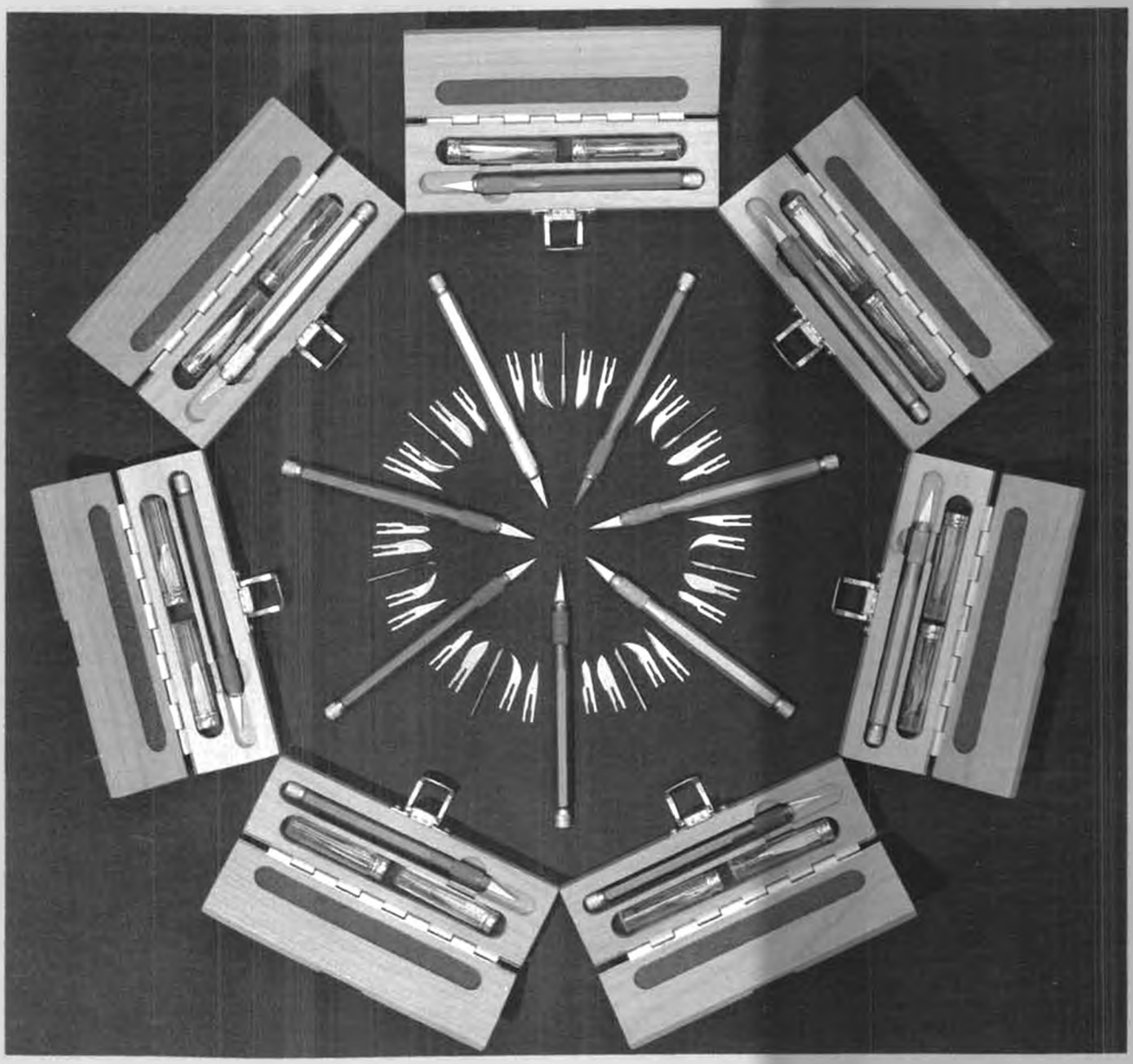

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The Drag Reduction and Structures Handbook costs $5.98 and is available only from Eric Lister, 410 Regina Dr., Clarksburg, MD 20734.

* * *

W-K Hobbies, the outfit whose fuel we told you about last month, sent us a short note about its latest offering, the "Snipe," a 51-inch tailless sport/pattern model for engines up to .46 cu. in. The kit features an epoxyglass fuselage, foam wing cores, hardwood parts, rolled plans, and an instruction sheet, for $59.95.

Interested fliers can learn more from W-K Hobbies, 19 N. Main St., Centerville, OH 45459.

* * *

A Massachusetts-based kit manufacturer by the name of Northeast Aerodynamics has two new models for .40 size engines: the Train-Air .40, a high-wing trainer type; and the Sport-Air .40, a low-winger that looks like a loose copy of a Piper Cherokee or similar aircraft. These airplanes were designed to cope with the brute power developed by today's standard .40 R/C engines, and are thus larger than most models you'll find in this engine size range. Physical specs are the same for both models: 58-inch span, 625 sq. inches of wing area, 42 inches overall length, and 4-1/2 to 5 lbs. flying weight. Both also have a semi-symmetrical airfoil with flat section, and since the dimensions are the same, we assume that the same basic wing design is used on both models.

The kits boast all balsa and ply construction with all parts machine cut, along with plans and instructions. Retail prices are $52.95 for the Train-Air and $57.95 for the Sport-Air. Wing and fuselage kits are also available separately. From Northeast Aerodynamics, 568 Main St., Haverhill, MA 01830. •

Letters . . . . . *Continued from page 11*

necessary. Don't misunderstand me; I am quite aware who pays the bills. It just seemed like a rather useless change to me

I don't have any criticisms of your editorial policy or subject coverage. It is excellent, and your CEs are all very good.

Yours truly,
Chris M. Matsuno
St. John, Missouri

Thanks for your constructive comments, Chris. We'll try gradually to incorporate contributing editor addresses into their column titles. In the meantime, here are some of them. Why don't you put them in your little black book? Or did you throw that away when you took up modeling?

Bill Hannan
Box A
Escondido, CA 92025

Walt Mooney
(see "Bag of Peanuts" ad)

Fernando Ramos
19361 S. Mesa Dr.
Villa Park, CA 92667

Tom Hutchinson
3255 N.W. Crocker Lane
Albany, OR 97321

You hit the nail on the head when you commented on who pays the bills. We really personally prefer the original name, and still use it in conversations and on many of our printed forms. As with Bill vs. William or Chris vs. Christopher, let's just consider it our nickname.

Workbench . . . *Continued from page 10*

Three hundred years later, the famous French model developer, Pierre Poilu, used Leonardo's notes to analyze his early failures, and thus mistakenly assumed that his problems were also, "La Gravitation de Centre." (Pierre was eventually successful, and is credited with the first rubber powered model. He also discovered the folding prop by launching a fully wound model into a stone wall; but this idea was not fully appreciated until the perfection of prop hinges some 75 years later.)

In England, the famous modeling pioneers, P.D.Q. Jensen and R.P.M. Stringbag, also contributed to the CG movement. They are remembered chiefly for the first indoor engined free flight (with a steam powered Conastoga wagon) at the London Fun Trucking Exhibition of 1878. However, their real contribution was the English translation of Poilu's data which clarified his La G de C as simply, Center of Gravity.

U.S. modelers quickly slangized this to, "CG," which became ubiquitous (with the exception, of course, of Russian modelers who call it, Navozajuskisanovitch . . . which roughly translated means, "small mule with a blue nose.")

During the Golden Age of the '30s and '40s, CG was vigorously dissected in the legendary Winter/Goldberg debates, which raged in the national mags for two decades. Winter proclaimed CG could affect stability if it was positioned two chords above and about six inches behind the model. Goldberg poohpoohed this concept, maintaining stability only required a very high pylon, and painting the model red. (These stimulating arguments were voided, of course, with the advent of radio control models, as AMA rules no longer required them to show proof of a CG.

In the end, it was the grand old math maestro, Charles Grant, who finally solved the whole CG dilemma. After only 642 pages of equations he proved that if CG was a stability problem, it could be removed. And, as if this staggering revelation were not enough, he also added the critical fine point that all the others had missed; i.e., CG should only be removed 1/32 at a time, and on high performance models the limit could be as small as 1/64!

Once this major breakthrough had been made, of course, the apple fell, and the whole concept became obvious to the rankest layman . . . and another page in modeling history, was history."

WHERE ARE YOU, RON?

Will Ronald E. Kirchner please write Walt Schroder, in care of this magazine? Walt requires the address so he can answer Ron's letter of April 25, 1979 which was forwarded from M.A.N. without envelope or address. •

SUPERTIGRE SCHNUERLE S-40 R/C S-36

Mr. G. (Garofali) takes this opportunity to introduce the new series "S" Supertigre with a slight assist from Mr. M - that's me, the writer, John Maloney. Supertigre's, out of the hands of Mr. G, have been around since very shortly after World War II and for many years dominated the racing events of the U/Control circles. In U/C's heyday, 50% of all U/Control events at the U. S. Nationals were won by Supertigre engines. Undoubtedly, U/Control speed competition was the proving ground for engines, as the high RPM was virtually destructive. Mr. G is the old man of the speed circle business.

We bring up this history to bring some insight into our commentary on the structure of the "S" series. The "S" series is a twin ball bearing engine with a MAG V carb, loc cone retained drive washer, bar stock rod, aluminum piston with ring, and a massive bar stock, squish band head. Years of experience have told Mr. G. just what brand of cast iron to make the rings out of, how much ring clearance, how to design the head so it retains heat (thermal dwell) when the engine is idled down. In glo engines a certain amount of head heat aids good ignition. The piston is of a special cast aluminum alloy to keep the piston expansion and growth to a minimum. The pistons are heat cycled in the factory so that most of this growth is dissipated before the engine is assembled. The machine bar stock rod is of a special aluminum alloy and is one of the best in the business. Mr. G's bearings will generally outrun most model airplane bearings over the long haul; hence, the reputation that Supertigre has for long life.

We have here at World Engines another oldtime speed man, Harry Roe, who tested this "S" series. These results are on 5% nitro fuel with no muffler. 9–4 prop – 18,100. 9–6½ prop – 15,800. 10–6 prop – 14,000. Harry is delighted with this new addition to the Supertigre range and comments that the S-40 series, from a design standpoint, is the big brother of the new X-25.

Supertigre S-40 with throttle and muffler – $99.95. S-36 U/C less muffler - $77.95.

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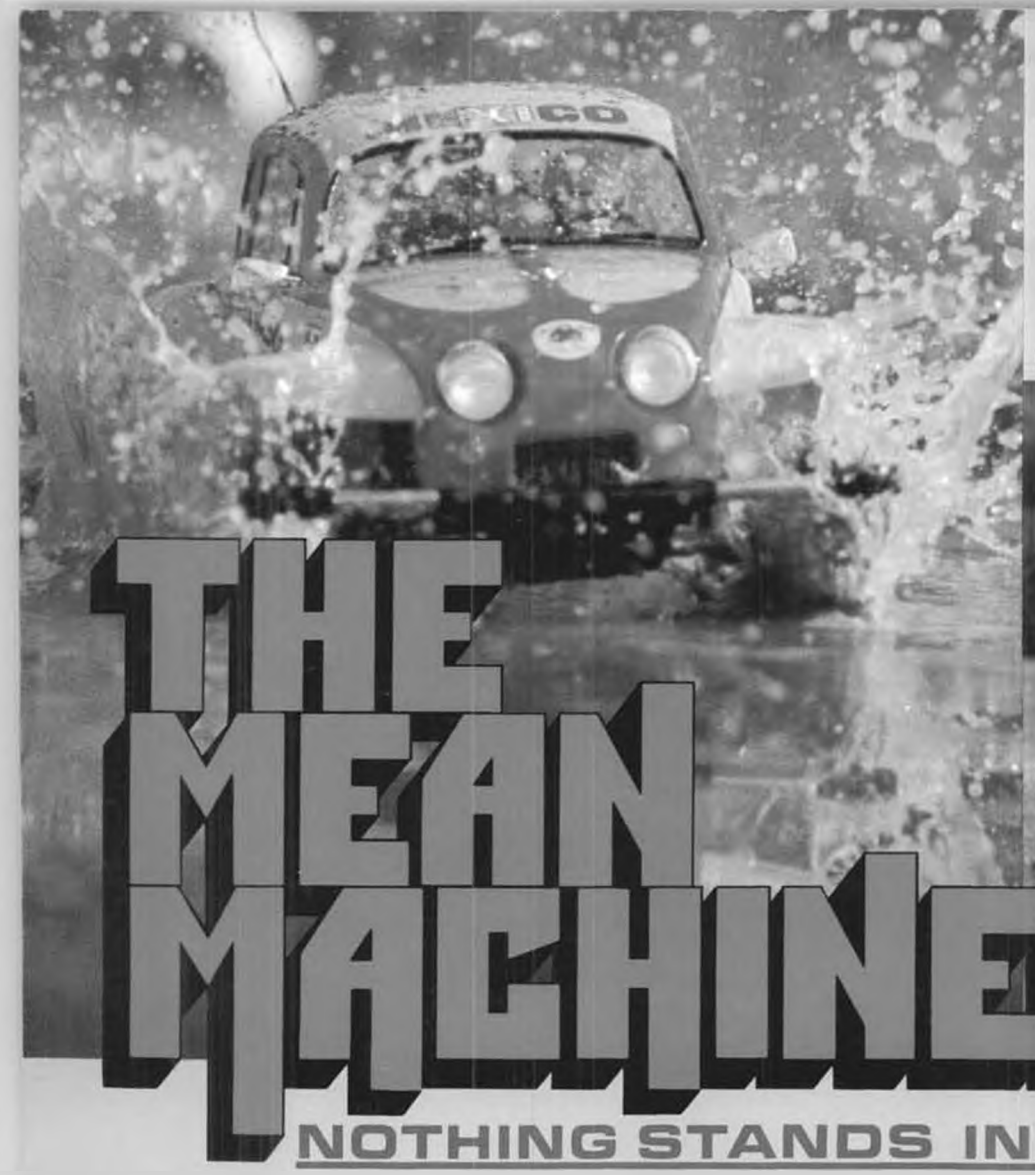

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It's all here, from the thick reinforced fiberglass main frame to the specially constructed front bumper. The only vehicles that come close to these revolutionary mean machines are the full size buggies. See these at your hobby dealer and get moving off the road.

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