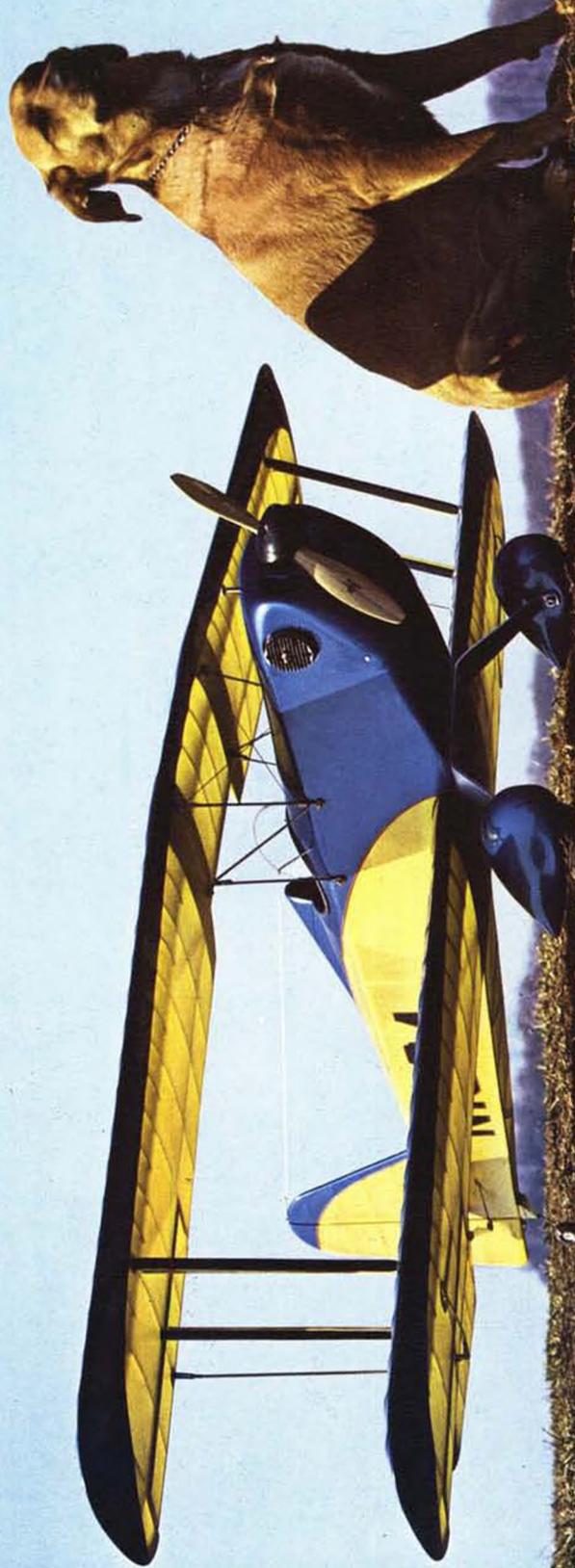


The MODEL BUILDER

JANUARY 1973

volume 3, number 15

85 cents

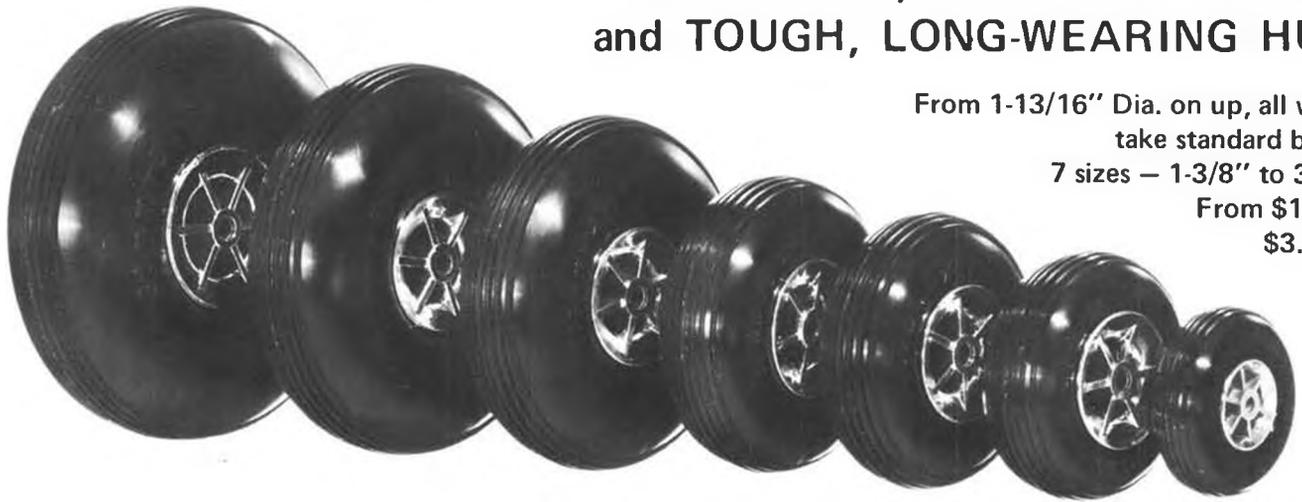




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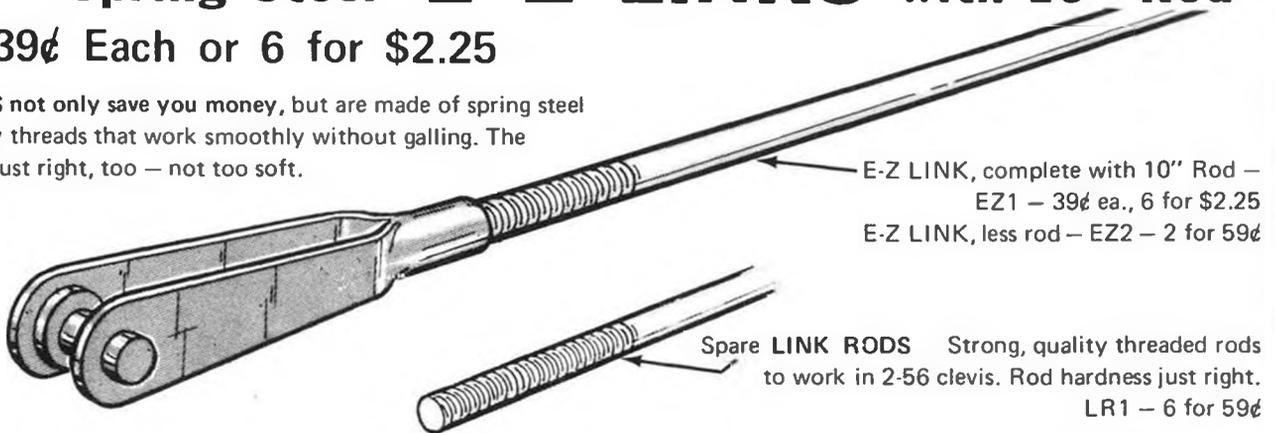
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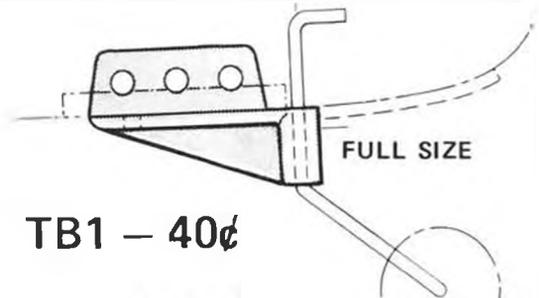
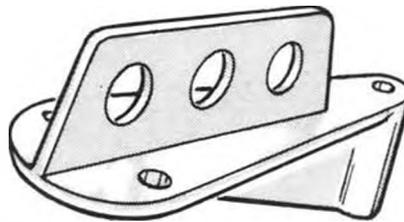
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The MODEL BUILDER

JANUARY

1973

volume 3, number 15

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Cover: "The Sproose Goose and Ginger." The ae oplane is the t e l t h in a series of original biplanes designed and built by MB.s editor. That nice little gal with S.G. belongs to Arnie Lipschutz, Wilmington, Delaware; R/Cer and builder of many T'Wingers (S.G.'s balsa cousin which was published in M.A.N., March, 1969). S.G. is still alive and well, and will soon return to the air with Veco power and Pro-Line radio. Photo taken in the spring of 1967 by Bill Northrop



Congratulations to Walt Schroder, who has just completed 12 years with Model Airplane News and is now starting on a baker's dozen. Walt was responsible for this editor's debut in the publishing field when he made us R/C Editor of M.A.N. in January, 1965. Thanks, Pops . . . I think.

from Bill Northrop's workbench . . .

● THE NATIVES

ARE GETTING RESTLESS

In recent months, U.S. model magazines, and many model airplane club newsletters around the country have displayed the Model Aircraft Operating Standards issued by the Department of Transportation, Federal Aviation Administration.

For the most part, modelers have calmly accepted the standards, though with some reservations toward the 400 foot altitude limit. Because they are standards, not rules, and because the advisory circular's strongest language "encourages voluntary compliance with these standards," it would appear that no earth-shaking curtailment of modeling is going to occur. Better that the "Feds" are satisfied to ask . . . and trust us to "watch it," rather than jump in with a bunch of enforceable rules, which the standards are not.

In recent weeks, however it has been noted that in some areas, the modeling natives are getting restless . . . feeling some concern about just how much authority is in back of the standards, and wondering, if allowed to go unopposed, could they become federal laws.

Actually, the only part of the advisory circular that is unrealistic and highly unsatisfactory to modelers, is Item C. It simply states "Do not fly higher than 400 feet above the surface."

Look back at John Ferrer's article in the September 1972 Free Flight column in MB. According to John's calculations, gas-powered ships flying under Category I rules can reach altitudes of 500 to 800 feet on 10 to 15 second engine runs. In fact, if they don't, they're not very competitive.

R/C soaring is the one single class of modeling to which this advisory item is completely ill-advised. Most any glider comes off a winch tow or hi-start at more than 400 feet of altitude, and is easily capable of going higher under the guidance of the transmitter operator on the ground.

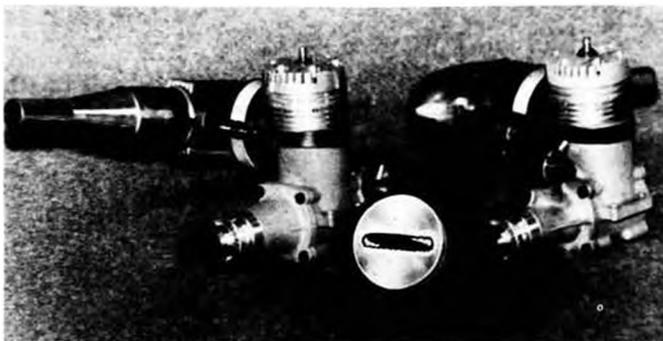
When you think about it, free flight modelers would actually be in more of a predicament than R/C soarers if this item became federal law, even if it included a condition that allowed specifying certain "above 400 foot areas." With no immediate control over the aircraft once it leaves the ground, a free-fighter would have no way of comply-

ing with an area restriction.

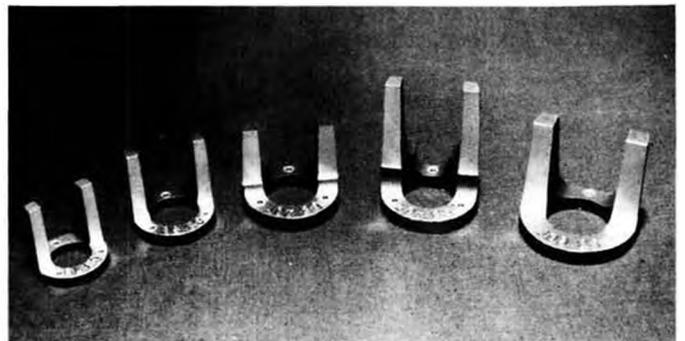
In recent weeks, reactions to the FAA advisory have gone beyond the discussion stage, with AMA Headquarters receiving personal mail along with other letters representing local and national interests. The primary target is the 400 foot altitude limit, with other comments regarding the relationship of AMA insurance to the FAA advisory in general. One national organization has threatened independent action, suggesting that it would go directly to the FAA with its arguments against the advisory.

Our own carefully considered opinion on the matter is that we should all, in accordance with AMA's wishes, cool it!

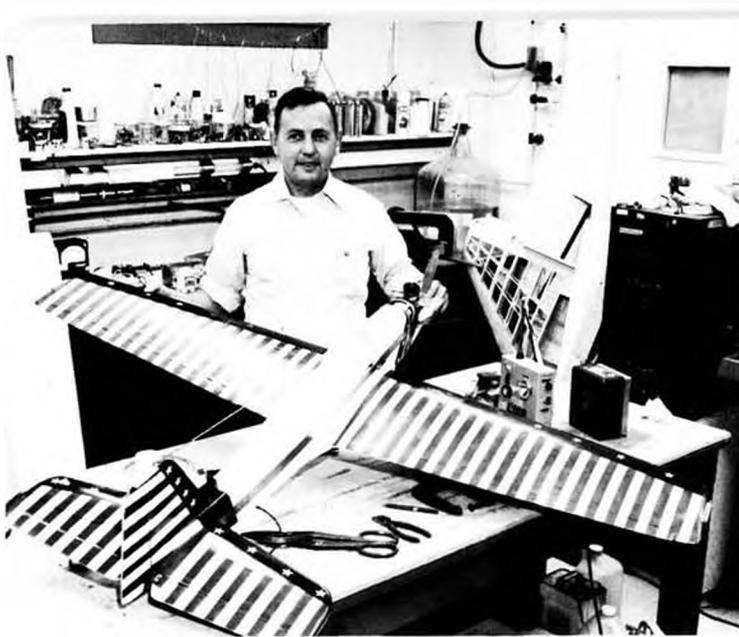
First of all, the "AMA" in this matter is mostly John Worth himself. As Executive Director of AMA, he represents the largest subsidiary of the National Aeronautic Association, which is officially recognized by the FAA as the representative of sporting aviation in the U.S.A. In this capacity, John is constantly in close touch with the FAA and they now enjoy a highly compatible relationship. They know, and we all should realize, that the whole situation



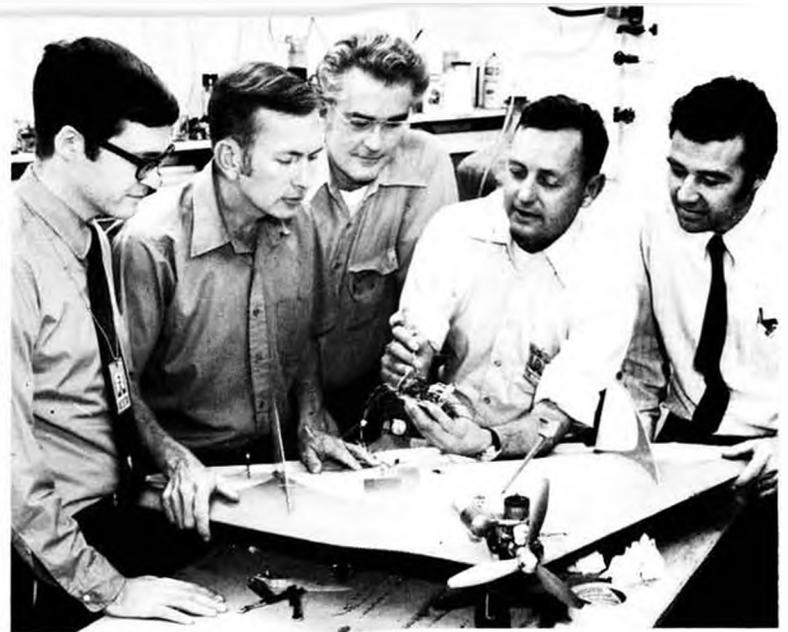
Aero-Sports' Vari-Adapt muffer adapter allows installation of a muffer at most any angle to the line of thrust.



C. B. Enterprises machined, heat-treated, cast aluminum motor mounts. Sizes for .15, .30, .40, .60 front rotary and .40 rear rotary.



Where is the Los Angeles Times headline for this one? Maynard Hill, using one of those "threats to the airways," has just made a discovery that will undoubtedly benefit full scale aviation in many ways.



Sensors on the models can read the earth atmosphere's levels of static electricity. Any variations in the model's flight path are detected and fed into the airborne R/C system, causing immediate correction.

The standards are therefore something the FAA can point to if someone yells "What have you done about them damn toy airplanes?" As an advisory circular, the standards do not require compliance, they are just guidelines. The FAA is asking us to let the circular exist for a year or so and indicates that ample time will be given for our inputs before any move will be made, if at all, in the direction of "regulations."

The main reason for "Cooling it" is that we can live with the "status quo," and above all, we don't want to antagonize the FAA into further and more powerful action. In the meantime, to

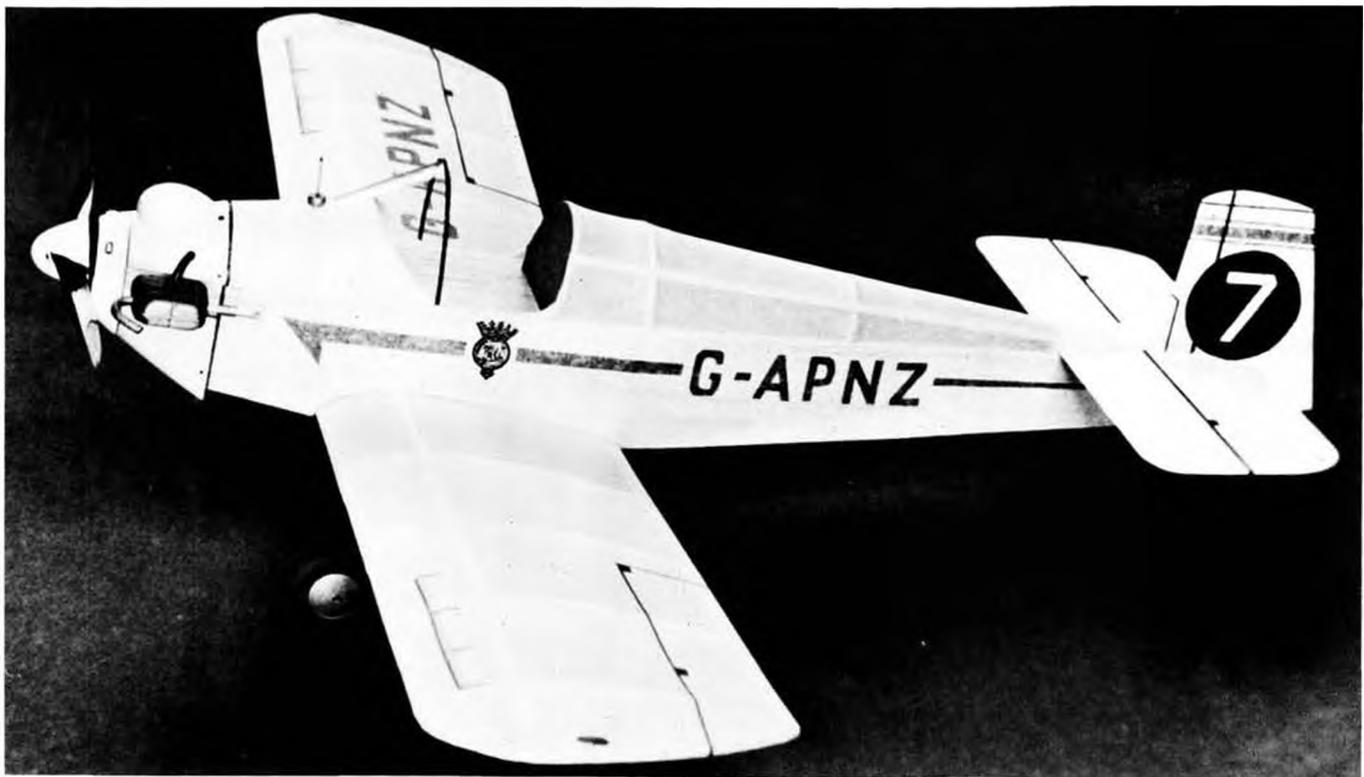
is very critical, and above all, nothing should be done that will rock the boat.

Look at it this way. The FAA has been under a great deal of political and news media pressure (Remember all of those blown up headlines about model airplanes threatening the safety of commercial aviation?) to do something about the "danger" of model airplanes hitting full scale aircraft.

The advisory circular is therefore an "appeaser" to get the politicians and newspapers off the FAA's back, and although AMA tried to get them to use our Safety Code, the FAA came up with its own standards.



John Tatone is right on the ball! Here's his new mount for the K&B schneurle .15. Price \$2.95.



The newest Peanut scale kit from Peck Polymers, P.O. Box 2498-MB, La Mesa, Calif. 92041, is this 12 inch span Druine Turbulent, as designed, built, and flown by peanut specialist Bill Hannan. Kit will be released in February. Distributors and dealers inquiries are invited.



Bob Seigelkoff's test ship for C. B. Enterprises muffler mount. Tight cowling with no cooling to muffler works fine. HP 61 engine, Orbit radio, Hobbypoxy finish. Midwest 3-1/2 inch spinner.

make sure of its strategy under the circumstances, AMA has its legal council exploring the situation. Its success in dealing with the FCC in obtaining and maintaining legal radio frequencies indicates that similar action with the FAA will probably be our best bet.

As for the FAA standards being the basis of our AMA insurance, it just ain't so. As a matter of fact, our AMA Safety Code is the new basis for AMA insurance coverage, starting in 1973. And if you take a look at the Code, you'll realize that our insurance will now be related to how we fly rather than what we fly. In other words, the matters of size, weight, and power no longer are restricted for insurance purposes!

The idea is that, if the safety code is observed, anything goes as to model size and weight. Of course, rules for different

competition classes still govern model specifications, but models for fun and sport flying are wide open . . . if flown within the Safety Code.

Meanwhile folks, cool it on the FAA standards. As AMA suggests; if you plan to fly over 400, either regularly at a particular flying site, or on a specific occasion during a contest, (1) pick a reasonable location which is known to be clear to full size aviation activity, and (2) let the FAA know what, when, and where you're going to be flying. What the hell . . . it makes good sense anyhow.

THINGS TO DO

The annual Weak Signals Mid-Winter R/C Conference, the mecca for manufacturers, distributors, dealers, and modelers having anything to do with radio control modeling, is about to happen

again, for the 19th year. The scene is the Lucas County Recreation Center in Maumee, Ohio, just south of Toledo, along the Ohio Turnpike, and the time is February 24 and 25, 1973.

This is truly the BIG ONE. No manufacturer, in particular, should miss this opportunity to take his product directly to the dealer and consumer so they can feel it, heft it, wiggle it, or whatever.

WANTED MODEL AIRPLANE PRODUCT DESIGNER.

Leading midwestern airplane manufacturer needs a top notch model airplane and product designer. Must have been in modeling at least 10 years and have basic background in all phases of flying models, especially in control line and radio control, with emphasis on scale.

Should be proficient draftsman, an excellent model builder and flyer. Also should be able to write instructions and follow product through to completion.

Many company benefits, and a ground floor opportunity for a creative designer. Salary commensurate with ability.

Send resume to this magazine.

The Southern California Control Line Association Western States Championships (whew!) is being hosted by the Navy at North Island N.A.S., San Diego, California, on February 3 and 4. (Anybody wanna bet the 1973 Nats isn't going to be at Glenview N.A.S. this year? We wouldn't bet a penny against it!) Just about every known category of C/L competition will be flown, including Fast and Slow Combat, Rat Race, AMA Goodyear, FAI Team, Slow Rat, Stunt (Jr./Snr.) (Open), Carrier (Profile, C.I.I,



C.B. Enterprises muffler mount shown inverted with four exhausts. Normally supplied with two stacks and two plugs.



Side-mounted HP 60 in C.B. muffler mount. Nose gear may be mounted every 90 degrees. Real clean front ends now possible.



Southwestern Sailplanes' Baby Bowlus is of all-sheet construction. Jedelsky-type wings, without exposed ribs, comes in two assembled, shaped and sanded panels. Six foot semi-scale model builds quickly, will take any two-channel system . . . loose or in brick form. Price is \$19.95.

CI.II), AMA Scale, Dive Bombing, all speeds, etc.

OVER THE COUNTER

In the October issue of MB, we mentioned REMCO, P.O. Box 22414, Denver, Colorado 80222, as a possible source of 1/4 x 32 spark plugs for ignition engines. Ralph Mroch, owner of REMCO, sent us a note of thanks for the publicity and added more info. At the time of our first mention, Ralph was conducting a survey to see if there was enough interest in ignition plugs to warrant new production. The survey was positive, a plug company has been contracted to produce the plugs exclusively for REMCO, and delivery is expected in mid-January. Price will be around \$2.00 to \$2.50.

Ralph also indicates that his company will be producing a new spark ignition engine which should be ready about March of 1973. The engine will be a .29 and 3-view drawings are shown on page 43 of this issue.

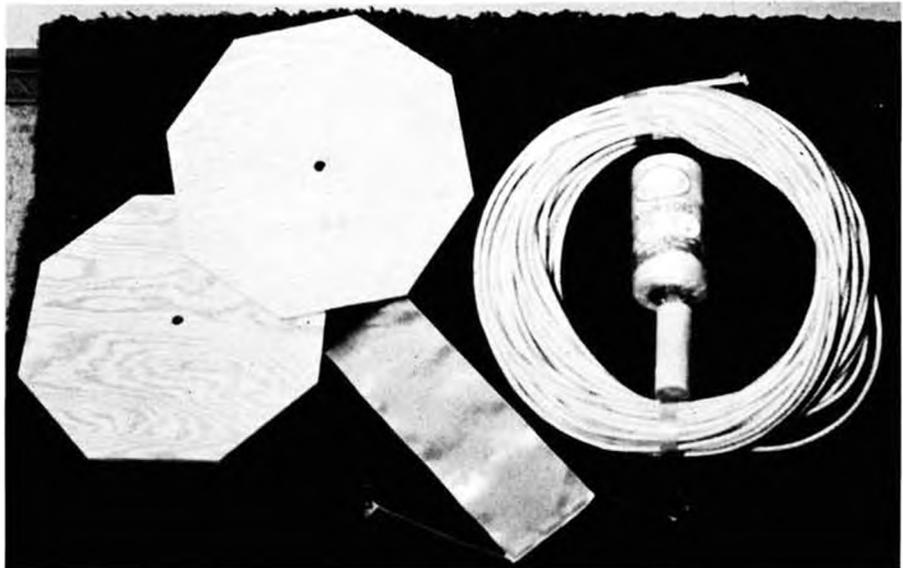
The company also manufacturers new Super Cyclone and Anderson Spitfire engines, and can supply parts for both. In addition, a limited supply of Rocket engines and parts are available. Write for all information.

* * *

Dave Thornburg, designer of the Don Quixote and Forty Niner presented in last month's MB, is now in the kitting business, operating under the alias of "Southwestern Sailplanes." The address is 917 Princeton S.E., Albuquerque, New Mexico, 87106.

We just received a sample kit of his highly prefabricated Bowlus "Baby Albatross," the classic pod-and-boom sailplane of the Golden Era. The "Baby Bowlus" is primarily a quicky, semi-scale kit, featuring all sheet balsa con-

Continued on page 62



Ridgewood Hobby Supply's Easy-Up Hi-Start kit sells for \$19.95, comes complete with 100 feet of 3/16 inch dia. cloth covered exercise cord and 536 feet of braided nylon cord.



Totem field box kit by Ridgewood Hobby Supply sells for \$15.95, and features outside locations for fuel supply and transmitter. More info in "Over the Counter."



Always a sucker for that transparent finish, we covered the Goose with yellow Silron, used many thin coats of clear nitrate, added blue butyrate trim and black butyrate numerals, then finished with several coats of butyrate clear. Rudder area has been enlarged for better knife-edge flight.

SPROOSE GOOSE

By Bill Northrop

The S. G. proved one thing for sure; you can build a light, and obviously very strong model out of spruce. Although a little more tedious to build, we've had many requests for plans. Here they are . . . updated.

● If this airplane happens to look familiar to you, it's probably because you were a reader of Model Airplane News in early 1969. The March issue contained our construction article on the T'Winger, for which the Sproose Goose (I'm a licensed poet) was the prototype.

S.G., which was completed in the winter of 1966-1967, was the result of an all-out effort to avoid the use of balsa as much as possible and/or practical. The experiment in our opinion, was a complete success. Essentially, the only balsa in the plane is the sheeting around the wing dihedral joints (bottom center section is mostly 1/16 ply), the fuselage sides and decking back to the cockpit, and the headrest. Other than a few more scraps here and there, the plane is built entirely of spruce.

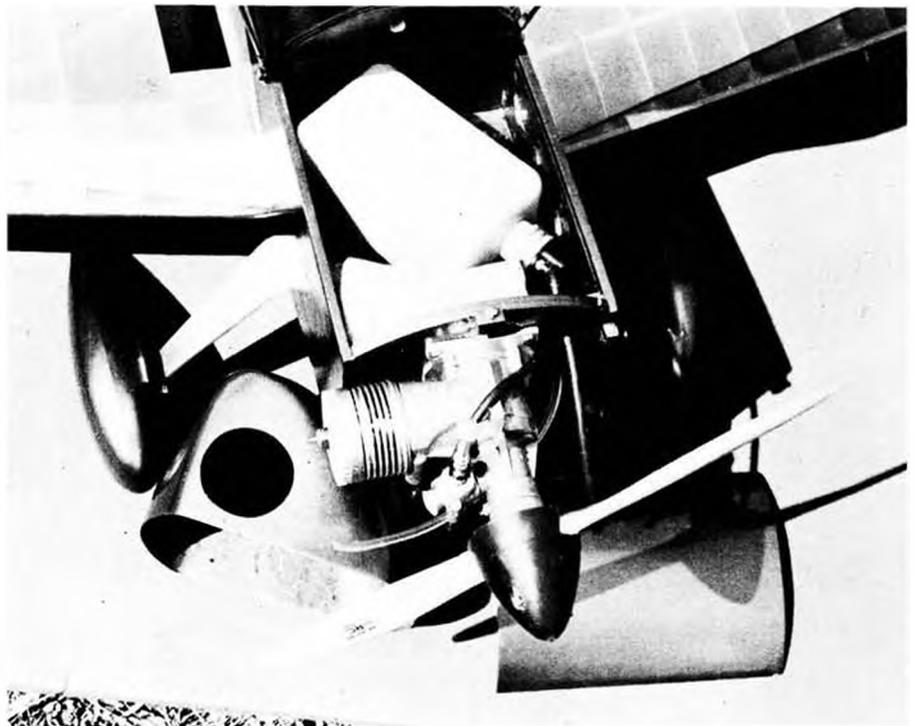
The finished plane, ready to fly except for fuel in the tank, weighs 6 pounds, 10 ounces. With a wing area of 880 sq. inches, the loading is in the 18 to 22 oz/sq. ft. range, depending on the percentage of total area you may assume is effective in this biplane configuration.

The T'Winger, which was developed from the S.G., was of more conventional construction, using mostly balsa, with the usual scattering of ply and hardwood. The "S.G. T'Winger" was first redesigned in balsa for fellow Delaware

R/C'er Arnie Lipschutz, who has since gone on to build somewhere in the neighborhood of 5 or 6 in the past 3 or 4 years. This design, being of more easily obtained materials, was chosen for the M.A.N. article. It's interesting to note that to date, except possibly for

Arnie's two latest modified versions, none of the balsa models came out as light as the Sproose Goose!

With today's skyrocketing balsa costs, the spruce experiment has even more meaning now than it did six years ago, when S.G. was completed. Actually,



How's this for accessibility? Tank cover is locked down by fiberglass cowl (available from Dwight Hartman, see text), which in turn, is bolted to nose in three places. Cowl muffles sound nicely.

ready-cut spruce from your hobby supplier won't save you a great deal. In addition, many shops don't carry a very complete line of sizes. And of course, if you're going whole-hog with the idea, you'll need some sheet stock, which you just can't hardly git nowhere!

The trick to all of this is the old do-it-yourself bit. Obviously, this isn't a crashed - last - week - and - need - a - plane - for - Saturday type project, so anyone tackling the job shouldn't mind preparing their own spruce material.

First of all, you'll need to beg, borrow, or steal the use of a table saw. Obtain a small-tooth, plywood cutting blade. This blade will leave a smooth finish on the cut wood that won't require sanding prior to use.

Better lumber yards carry clean, unknotted spruce. Select your own if possible. We prefer nominal 1 X 4 material in 6 foot lengths (Oh, the beautiful R/C glider wing spars!) Cutting 2-inch wide sheets of 1/16, 3/32, 1/8, etc. is quite easy. Incidentally, when you start figuring costs, based on lumber that runs around \$1.00-\$1.75 a board foot, you can also see some economy.

Now comes the big surprise. Compare your spruce strips in weight and strength with balsa. The spruce is only a little bit heavier, but many times stronger. Consequently, you can go to smaller wood sizes, resulting in stronger and lighter construction.

By the way, we have checked with Dwight Hartman, Hartman Fiberglass Products, Argenta, Illinois 62501, and the cowl is still available for \$4.50 post-paid. Carve your own if you care to, but the fiberglass one is hard to beat.

The coat hanger wire used for the cabane struts is the unpainted type, slightly over 3/32 diameter. Don't let its softness fool you. Once the unit is completed (those eyes in the ends are very easy to form) and bolted in place, it's as rugged as music wire, with much less effort. As an alternative, you may cut out the "N" pattern struts from 1/16 sheet aluminum.

Top and bottom wing panels are exactly alike, only the center sections differ. Dihedral Joiners may be cut from 1/4-inch spruce, tapered to match the sweepback of the wings. Alternately, 1/16 aluminum joiners may be cut, bent, wrapped onto spars with button thread or copper wire, and epoxied.

Outboard struts are necessary in order to maintain proper spacing of wings, thus keeping ailerons lined up. We chose to make all horns and aileron connecting rod fittings from 1/16-inch micarta, but who follows the designer's ideas?



Coat hanger wire cabane struts are rugged, yet easy to bend into shape. Short aluminum tube brings antenna clear of windshield. Flew for two seasons with PCS "metal can servo" radio.

Most important thing about fuselage alignment is to start out with an absolutely flat 1/4-inch ply firewall bulkhead. Note the extra large holes for the should be obvious that S.G. is not a project for anyone without a great deal of building experience.

Since publishing the T'Winger we've had many requests for plans for the spruce version, and since these were kinda rough, we figured it was time for an update.

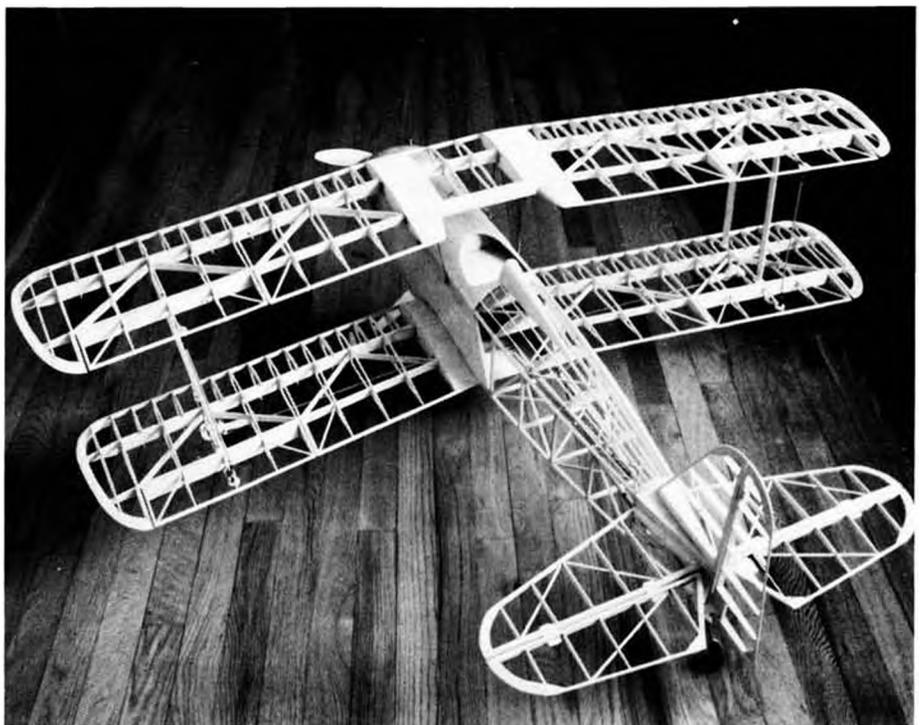
The plane is an excellent flier . . . extremely comfortable on the controls. If the weight is kept down to a reasonable figure, it is an agile aerobatic performer . . . very realistic in appearance and manner. Under dead-stick conditions, it doesn't sink like a brick, and

ground handling is quite precise for a tail-dragger.

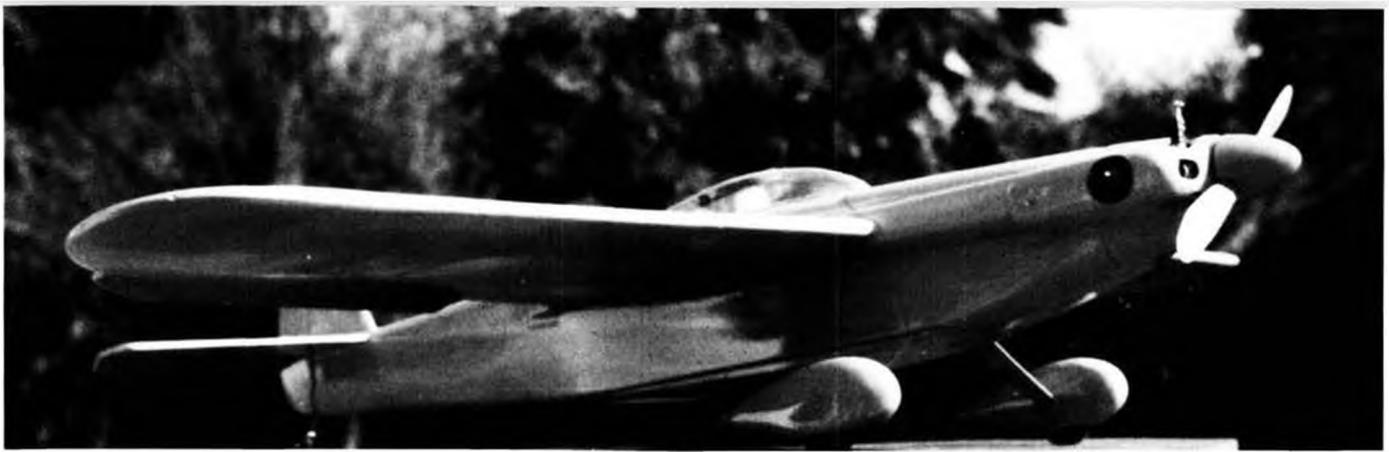
The Sproose Goose is the twelfth biplane we have designed, and in our bottom wing dowels in bulkhead B. For easy alignment, the ply rings are lightly epoxied over these large holes with the wing in place. After setting, the wing is removed and the rings are further epoxied for maximum strength.

This was not intended to be a full-blown construction article, because it is my opinion, from an overall performance view-point, the best of the lot. If you decide to tackle it, we'll be glad to offer any verbal assistance you may need. Let's hear from ya! ●

(Plans and more photos, next 2 pages.)



Here's the inside story on the 56 inch span S. G. Except for balsa fillet blocks, headrest, front fuselage sides, wing and cowl sheeting, it's all spruce! Ribs are sliced from shaped block.



Test ship Number 1 with one coat of light blue Superpoxy. Trim and radio yet to be added. Ship is built in one piece. Hatch in bottom.

PRODUCTS IN USE

DUMAS HI-PRO SOARER by Lee Hunt

HOUSE OF BALSA 1/4 MIDGET SHOESTRING by Hal Okert

● A headline proclaiming "Le Gray Takes Stunt at '73 Nats" would send scores of modelers scrambling for their optometrist. Would you prefer "Bilgri Burns Thumb Starting Dynajet?" How about "Larry Leonard Sweeps D Gas Free Flight at Taft?" Not too likely, right?

Well, how about an RC sailplane kit that should appeal not only to a foam, fiberglass and epoxy freak, but to the old timer who huddles alone in the corner during club meetings mumbling about such things as banana oil, bamboo wingtips, prewar tissue and Comet's Sailplane?

Paradoxically, Dumas' Hi-Pro Soarer, 101 inches of sport/competition glider, has such appeal. If there was ever a happy medium between the "Open the box, turn on the switch and fly it" foam wonders and the ultimate in model sailplanes which requires 7 1/2 years to plete and features such niceties as scale

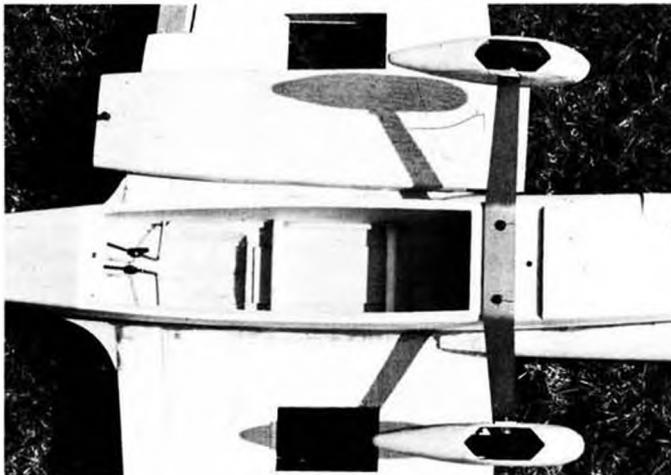
termite holes in the wing ribs, this is it.

Take the fuselage. The novice will be delighted to find the kit offers a fiberglass fuselage. The old pro will be pleased to discover Dumas has left some of the building to the builder because he has to epoxy two halves together to form the fuselage. Being neither novice nor old pro, I can't say I was too excited about this element of construction. To make the operation a bit more palatable, I taped the halves together, chanted hopefully, "Please fit, please fit," and then felt rather silly to have concerned myself about the whole thing in the first place. The fit was close to perfect and a short piece of dethermalizer fuse taped to a length of 1/2 inch square balsa solved any problems I might have had reaching some of the less accessible spots with glass tape and resin.

With the fuselage together you begin to realize there's one thing the Hi-Pro's

designer, Harley Michaelis, can't do, and that's to design an ugly or even a run-of-the-mill sailplane. Those who have seen his Miskeet know what I'm talking about. The Hi-Pro is no different. It is abundantly evident that more than a little care and thought went into the design, and I've yet to meet anyone, modeler or non-modeler, who thought otherwise.

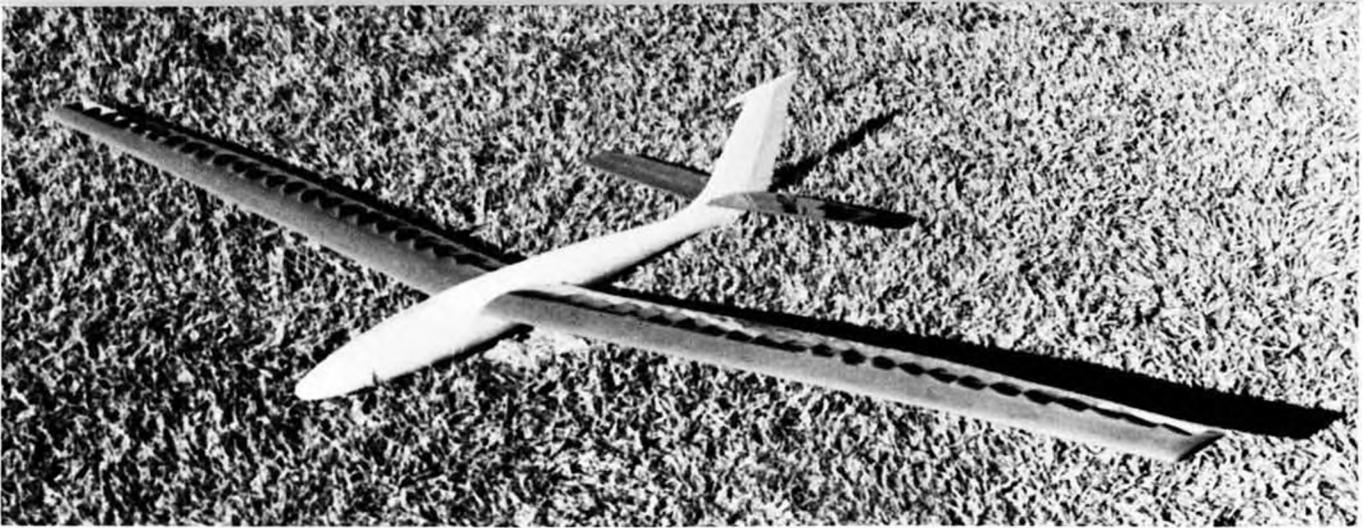
As with all things, however, there is a price, aside from the \$39.95 you'll have to ante up before you get out the door of your friendly hobby dealer's. The fin, for example, is a built-up frame 3/16 inch thick and is sheeted with 1/16 inch balsa on both sides. Since the fin is to be slipped into the fiberglass fuselage and trimmed so that there is no contour change noticeable around the joint, considerable care must be used. No problem for our old timer, but the beginner will have to work a bit to get the effect of a one piece fuselage/fin.



Fiberglass tube spars extend through fuselage and full length of wing. Aileron linkages are ready to install, with correct bends. Glass cowl.



Ship No. 2 is "Rickey Rat" version featuring clipped tips. Latest K&B schneurle 15 drops right in. Air duct is needed in left cheek.



Completed Dumas Hi-Pro soarer, designed by Harley Michaelis. Span is 101 inches. A nice building project for beginner or expert.

Done properly, the result is both strong and visually appealing.

Not quite so appealing was the wood selection for the wings. It may be that I received a kit not representative of all Hi-Pro kits, or at least I hope not. The beginner will be perfectly happy with the wing stock, but those intending to do battle with the ship probably will want to sift through the wood carefully. Since spars, leading and trailing edges varied considerably weight-wise, it was necessary to make sure the heavy spar on one side was balanced by the heavy leading edge on the other. Not an ideal arrangement to be sure.

Moreover, while it's nice to have a prenotched trailing edge, the notches simply didn't match the plans. I doubt many thermals will be able to tell the difference, but such inattention to detail flaws an otherwise excellent kit.

The stabilator reflects the appealing and efficient double taper planform of the wings, combining beginner-pleasing simplicity with light weight. Since the stab halves remove from their music wire mounts in seconds, easy and safe

transportation to the field or slope is ensured.

Equally ensured is your reputation as kamikaze pilot extraordinaire if you use the tow hook placement as shown on the plans. The shown hook location is approximately 3 inches too far forward, and Harley Michaelis suggests a more reasonable hook placement at the CG, which is the front wing support wire. There's no reason to doubt Harley's claim that the Hi-Pro is good for up to 25 knots, suggesting adequate penetrating power, and since he took first at the Spokane Memorial Day Glider Meet with one, the design's credentials are first rate.

Novice or pro, you may never see Le Gray clutching a U-control handle, but you should have a look at Dumas' Hi-Pro Soarer. It may be what you've been looking for. ●

House Of Balsa SHOESTRING

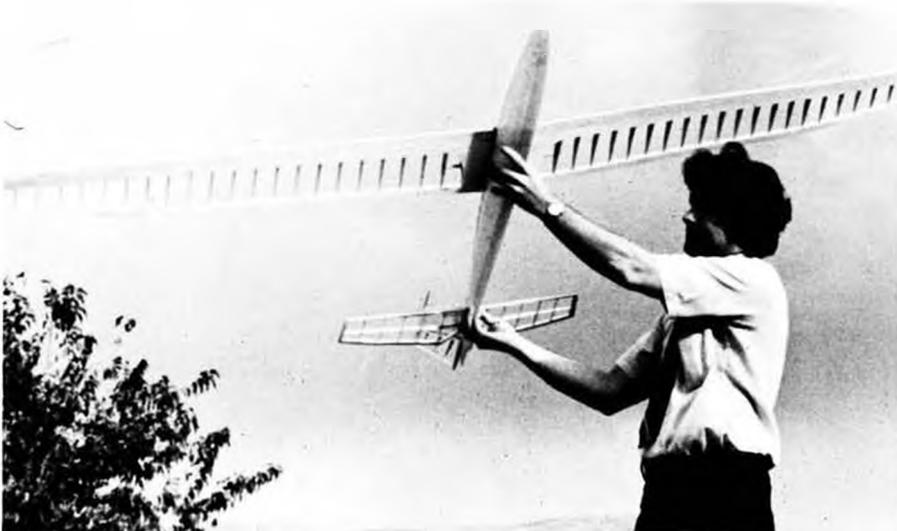
● There are at least six new Quarter Midget racer kits on the market at this time and as the sport gains in popularity, there will be many more, from the larger kit manufacturers. This particular

event has brought forth some new manufacturers who have entered into the kitting field with different and/or refined model construction concepts. The Shoestring kit from House of Balsa is one of the new breed.

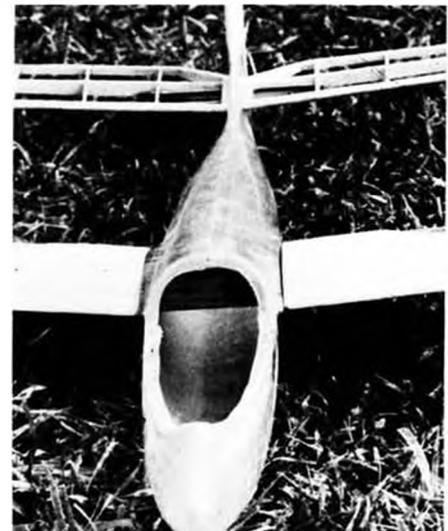
The box contains separately packaged pre-cut or die-cut balsa and/or plywood parts, and each package is identified as "engine compartment," "wing," "fuselage," etc. The materials furnished are of a selected grade, each for its particular use (kind of different from some kits on the market today). A complete and detailed instruction booklet is furnished, and due to its completeness you only have to use the furnished full size plan for reference purposes, in a few instances.

There is no need to go into a step-by-step construction article, but we will attempt to bring forth the more salient points of each construction step as defined in the instruction booklet, and comment as required.

A good place to start is page one of said instruction book (*I like your logic! WCN*). In true, proven Heathkit style,



San Fernando Silent Flyer Lee Hunt holds the Hi-Pro structure aloft for an appropriate view. Wings and tail have a pleasing plan form. Fuselage joining was not the chore expected.



This view shows hardwood wing-mounting blocks in fiberglass fuselage. Note stab dihedral.



Charley says, "This bird is all skin and bones!" House of Balsa test ship No. 1 just after completion of framing up and rough sanding. Many completed parts makes the ship fast building. Fred Reese just completed the 1972 season as high point champion, flying "Bandito" version.

we can check off each portion of construction and go by the numbers. Starting with the fuselage assembly, using precut fuselage sides and formers, we construct a box, then proceed to the next step and one of the most detailed; the engine compartment. A lot of engineering went into this compartment design in order to eliminate or minimize any front end vibration which, in turn, allows the engine to perform at its peak R.P.M. This being a competitive aircraft, the integrity of this design is most essential, and should not be deviated from by the builder. This phase of construction allows you to align the engine and contour-shape for spinner installation prior to assembling the compartment to the fuselage.

After completing the engine compartment phase, it is bonded to the already constructed fuselage box (fits perfect). You then proceed to add bottom sheeting and plywood block (precut) for landing gear and hatch cover installation, and do some preliminary top hatch and top block shaping. The top block is just tack-glued to the fuselage at this

time. Later, it is removed to facilitate the integral wing construction.

The wing construction technique, as previously stated, is very ingenious, utilizing two fiberglass arrow shafts for the center spars. Don Dombrowski put some real engineering into this concept. The shafts are inserted into precut holes in the fuselage sides which assure you of proper wing alignment to fuselage. All ribs are die-cut, including shaft holes, assuring you of proper rib alignment. You have to use the plan here to mark the rib location on the shafts. After marking, you slide the ribs on the shafts and epoxy them at their respective locations. While this assembly is still on the workbench inverted, you sheet and cap strip the bottom of the wing. When dry, remove assembly from the bench and sheet and cap strip the top of wing, install leading edge and tip blocks. Two sets of tip blocks are furnished; rounded for the original Shoestring, and squared off for the later, clipped-wing version.

The ailerons are installed, using the 3/32 torque rod that is sleeved and pre-bent, and the angles are correct. This

completes the integral wing and fuselage assembly.

Tail assembly is of standard sheet construction, using precut, select, hard balsa furnished. Because of the high location of the stabilizer, the fin and stabilizer can be glued together, assuring alignment to each other, prior to bonding to the fuselage.

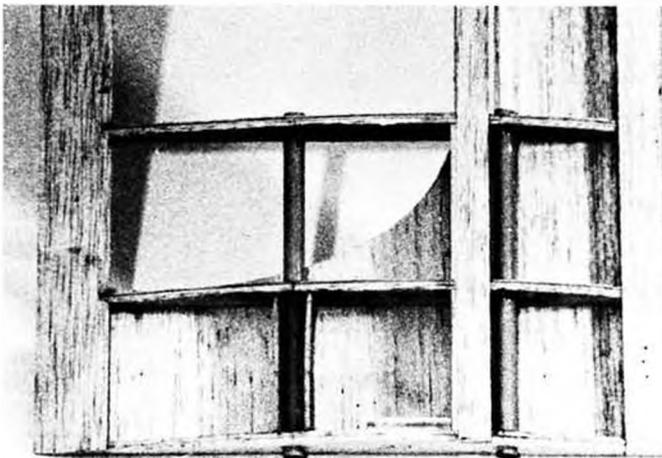
Cheek cowl installation is simply a matter of installing the precut cowl blocks and the removable right front fiberglass cowl, and shaping balsa blocks to the proper dimensions while matching the fiberglass portions.

Canopy and the base plate is furnished. No special techniques are required for their installation.

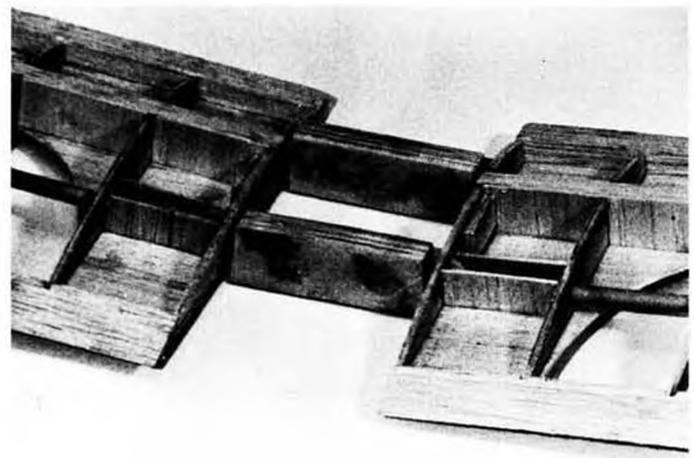
Wheel pant assembly: This is probably the most detailed wheel pant in existence, but very easy to construct (10 piece assembly). When it's complete, it fits the aluminum gear strut perfectly. It is self locking at the correct angle and will not rock.

As we stated at the outset, this is not intended to be a complete instruction

Continued on page 61



Left wing panel of Hi-Pro, showing fiberglass arrow shaft tubing for wire wing dowels.



Pre-drilled hardwood fuselage blocks fix dihedral and hold wing dowels in place. Top sheeting will add further strength.



Dick Alpisa, Salinas, California, built and flies this version of our Bi-Prentice design (November 1971 MB). Done up in the colors of a Douglas mail plane, with red fuselage and silver cowl and wings, it's powered with a Veco 61, ailerons added along with less dihedral. Bob Thompson photo.

RADIO CONTROL REPORT By Frank Schwartz

In spite of many requests, we continue with our new R/C columnist, the Nashville Nemesis. Also we have another report on the latest contest in Mexico, by Eloy Marez.

● Well, now, just how do you go about getting into R/C? And can you learn to fly, and what kind of plane and equipment should you get? "I've been reading . . . or rather watching you fellows fly," you say, "and sure would like to learn." Great, let's kick it around.

You hear this all the time, that is, "I'd sure like to get into R/C" . . . and I sometimes see a newcomer appear at the flying field with the wrong outfit and any old plane, and certainly can see disaster coming . . . in the form of an installation that won't work or a big, wipe-out type crash.

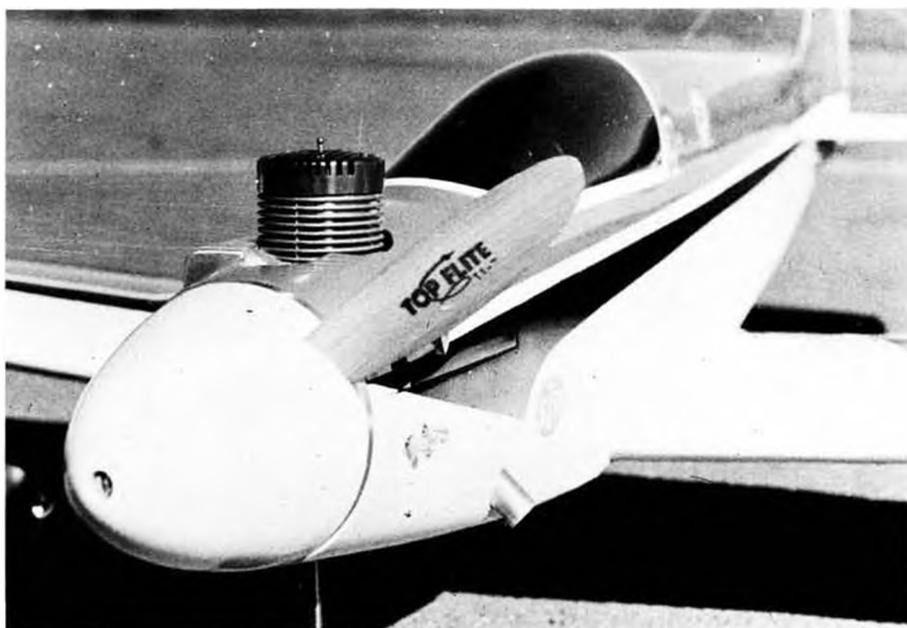
First, I should qualify all the following by saying that it is strictly my opinion . . . but opinion based on experience, so you can at least assume that I'm speaking from experience. Besides that, I'm not trying to sell you anything . . . that is, nothing but R/C.

If you have dreams of your first plane being a B-25 or perhaps a P-47, with flaps, retracts, wing lights, fully equipped cockpit and all the other goodies; and of showing up at the field one day in the near future to astound the rest of the R/C types . . . forget it! If you are serious in that line of thinking you will never get to the flying site. Simple enough; you must learn to fly first . . . and for the same reason that no one in his right mind would encourage you to buy a Rolls Royce to learn to drive in . . . simply content yourself

with a basic trainer type plane. And brother, there are all kinds of so-called "trainer planes!"

Some kit manufacturers advertise that "Balsa builds better" and I'm inclined to agree with them. Surely the plastic planes will get you in the air faster . . . but you won't learn to build a model airplane. The plastic planes are fine for getting to learn to fly . . . but what about after you learn? You may find that you are ready for something better

but don't know how to build it! And there you are, able to fly and without the ability to construct a "good plane." So, with all due respects to the "plastic" planes . . . they do fly well and they go faster . . . my experience is that they do not stand up as well as the standard balsa construction type plane (particularly during a beginner's training period). In the standard types, I also include the fiberglass and foam (balsa covered) airplanes. When you want a good contest



Bob Seigelkoff's "LUV." OS 60 with C. B. muffler mount, Midwest 3-1/2 inch P-51 spinner. New muffler mount really improves front end appearance.



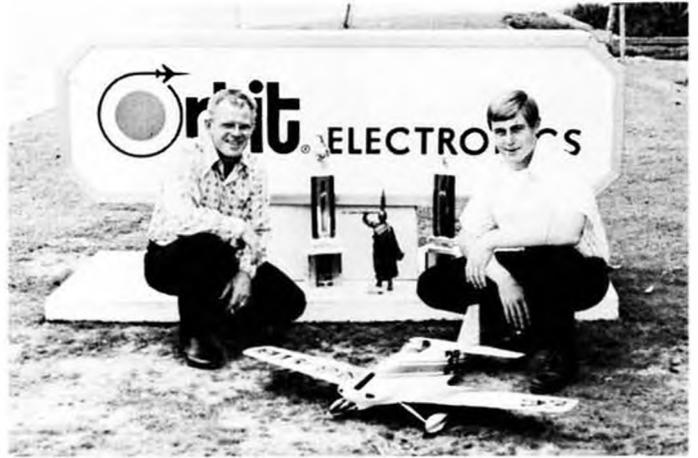
Wouldn't cha know who had to win the Orbit-donated First Place Pattern trophy in Puebla, Mexico? Phil Kraft, of course!



A close second to Phil in the pattern event in Mexico, was Benjamin Castaneda. Mexican Air Force officer awards trophy.



Henry Bartle receives one of his two First Place trophies from Mexican AF General Fernando Hernandez-Vega.



Back home with the loot from Mexico, Louie Zienneker (left), and Henry Bartle, in front of the new Orbit plant.

type plane for aerobatics or even good fun flying, this might be the way to go . . . after you have learned to build.

Some of you right now might be saying "Well, I don't like to or don't want to build, I just want to fly." OK, stick with the plastic planes. As far as I'm concerned, half the pleasure is building . . . the other half is flying what you built. So I say, as the ad says "Do your self a favor" . . . build it. After all, that's what modeling's all about!

Now the problem of which plane to build. Many planes are advertised, at

least on the box, as "trainer," and a wide range of engine sizes and variety of control options can be applied to this number of what I think should be more correctly designated as "so-called" trainer types. Assuming you don't know how to fly R/C, you should have the plane that is "forgiving." That means it will accept your faltering first attempts without getting totally out of hand. It should be of simple construction and not be a high speed bomb in the air, although it should be capable of some simple maneuvers . . . that is, as soon

as you learn to keep it on an even keel.

As I said, there are many kits advertised to be "trainers, but also with contest type performance" . . . this is just what you don't want as a beginner. True, it may look sleeker and sharper, but it will quickly reduce itself to kit form again, in the hands of a rank beginner. If the trainer type plane has contest potential, it is definitely not for the beginner . . . at least not as I see it.

Now you see the reason for a beginner's plane that flies well and is forgiving and builds easily also. OK . . . we



Anyone for Mexico City contest on Easter Weekend? Marta Alicia Garcia.



Governor of state of Puebla, Mexico, was an interested spectator.



Avid R/C modeler, Enrique Guzman, is famous Mexican TV and film star.



Luis Castaneda's daughter, Jovita, with his Formula 1 racer.



Salo Feiner, daughter Rita, and Open Pylon ship. Rita calls, scolds Salo when he goofs.



Mexico's answer to Barbara Henon, Guadalupe de La Vega, Mexico City, with her Cirrus.

are at the point of my recommendation. Experience says the Top Flite Headmaster is not only a fine kit, easy to build (you can't do it wrong if you read the instructions), but it is also the ideal beginner's plane and can afford you many fine flights. Its good habits will help you. It will loop . . . even outside loops if you get brave. It is also capable of very good barrel rolls. Nice landings are easy if you remember to flare out before touching down, and the trike gear helps here as well as on takeoffs. Silk and dope are my preference for covering the plane, but Monokote works well, too. I suggest being careful on the wing's front hold-down dowel . . . make sure it is secure. Also beef up the front firewall with extra wood, and epoxy the whole area . . . hard landings can rip this bulkhead right out. Any good .15 to .19 engine will fly this plane just fine, and if you want to have what is called "sparkling performance," put in a ST .23 or Fox 25. Actually, a good .19 might be best.

Don't get the idea the plane is a "goat." In the hands of a good pilot it performs great. As a matter of fact, at our field, you can regularly see Bob Reuther and Ellis Newkirk (Nationals



Things you can win at Mexican contests. Nope, Elia belongs to Manuel Santos. . Heck!

class B champ . . . 17 years old) making low inverted passes with the plane. You just have to be good, and the plane is fantastic . . . and no ailerons either.

If the Headmaster looks too "square" to your liking, consider Joe Bridi's Basic Trainer. It's a tail dragger, and flies very realistically with ailerons . . . and a good

Continued on page 48

MEXICAN R/C CONTEST REPORT

By Eloy Marez

The Eleventh Annual R/C Contest sponsored by the Club Aeromodelista de Puebla, Mexico, was held November 18 - 20, in that city. The contest site was the Mexican Air Force Base located on the edge of the city, the type of large open paved flying field that city dwellers dream about. The events included FAI Pattern; Formula One and Open Pylon; and RC Gliders.

Close to 100 entries in the various events were made, with Pattern receiving the most. All of Mexico's modeling 'brass' was present, as were a number of US enthusiasts. Among the latter were Louis Zieneker, Henry Bartle and Yours Truly, who comprised the Orbit team; Phil Kraft and Martin Barry of Kraft Systems; and George Aldrich, of 'Nobler' and racing engine fame.

The proceedings were officially opened by the flagging off of an Open Pylon race by the Governor of the State of Puebla, Sr. Gonzalo Bautista Ofarril. The Governor's delegation included a large number of city and state officials who were duly impressed by our 'toy' airplanes and who, I am firmly con-

Continued on page 48



Roberto Guzman, in straw hat, Mexico City, was first in glider event.



A Windfree times 1-1/2 by Armando Torres. Very pretty. Are you looking, Mark?



East Coast/12, 1972 Central Division Championship Regatta underway at Greenbelt, Maryland. That's some kind of a peaceful scene, isn't it?

STRICTLY SAIL

By ROD CARR



EC/12 Class founder, Buddy Black, Tampa, Fla., is 1972 class champion.

● In order to provide the information that you as a potential skipper will need to choose a model yacht class, it is necessary to consider the criteria you will use in your choice. I see them to consist of the following in some order:

- 1) Availability of active local group or your determination to start one.
- 2) Size considerations relating to physical constraints (You can't transport a 9 foot model if you only own a bicycle!!).
- 3) One-design or formula class.
- 4) Cost, though it is the R/C gear which is the major item, kit costs do vary from class to class.

With these items in mind, and assuming that you will end up racing . . . most do, let us make a visit to each of the AMERICAN MODEL YACHTING ASSOCIATION's class of vessel. If space permits, we may also explore the classes which are still working toward the twenty boat minimum required of a sanctioned class.

For our first class, this month, we will gather together the relevant information pertaining to the EAST COAST

12-METER. This vessel is a 9/10 inch to-the-foot scale model of a real 12-Meter America's Cup boat which never got beyond the tank testing stage. In point of fact, that is exactly what the original plug was, the testing tank model. Saved from oblivion by Buddy Black of Tampa, Florida, the EC/12 was designed to be sailed with men aboard, in defense of the America's Cup. A modified sail plan has been fitted to the model, and after two years of nationwide competition, the East Coast 12 has settled down as a very popular one-design. Each boat meets a set of class specifications which were chosen to keep each boat on an equal footing. The EC/12 is 58 inches in length overall, with a 72 inch mast, and displaces 26 pounds.

The one-design aspect of the class is controlled by allowing manufacture of the hulls only by authorized firms. These are listed at the end of this article. The bare hull alone may be procured, or one may obtain a complete kit as noted below. Arrangement of the deck and sup-

Continued on page 58



The "Spectral" searching for a thermal. The wing and stab should be dark, for visibility.

ANDY McAFEE'S

spectral

Our young author/designer presents a thoroughly developed and tested soarer which is particularly suited for single channel operation. Also, there are some new super-light two channel systems . . .



Designer/author, Andy McAfee, flying off of Snake Hill, in Malibu Canyon. Single channel does not limit capabilities, but requires more skill and some different techniques.

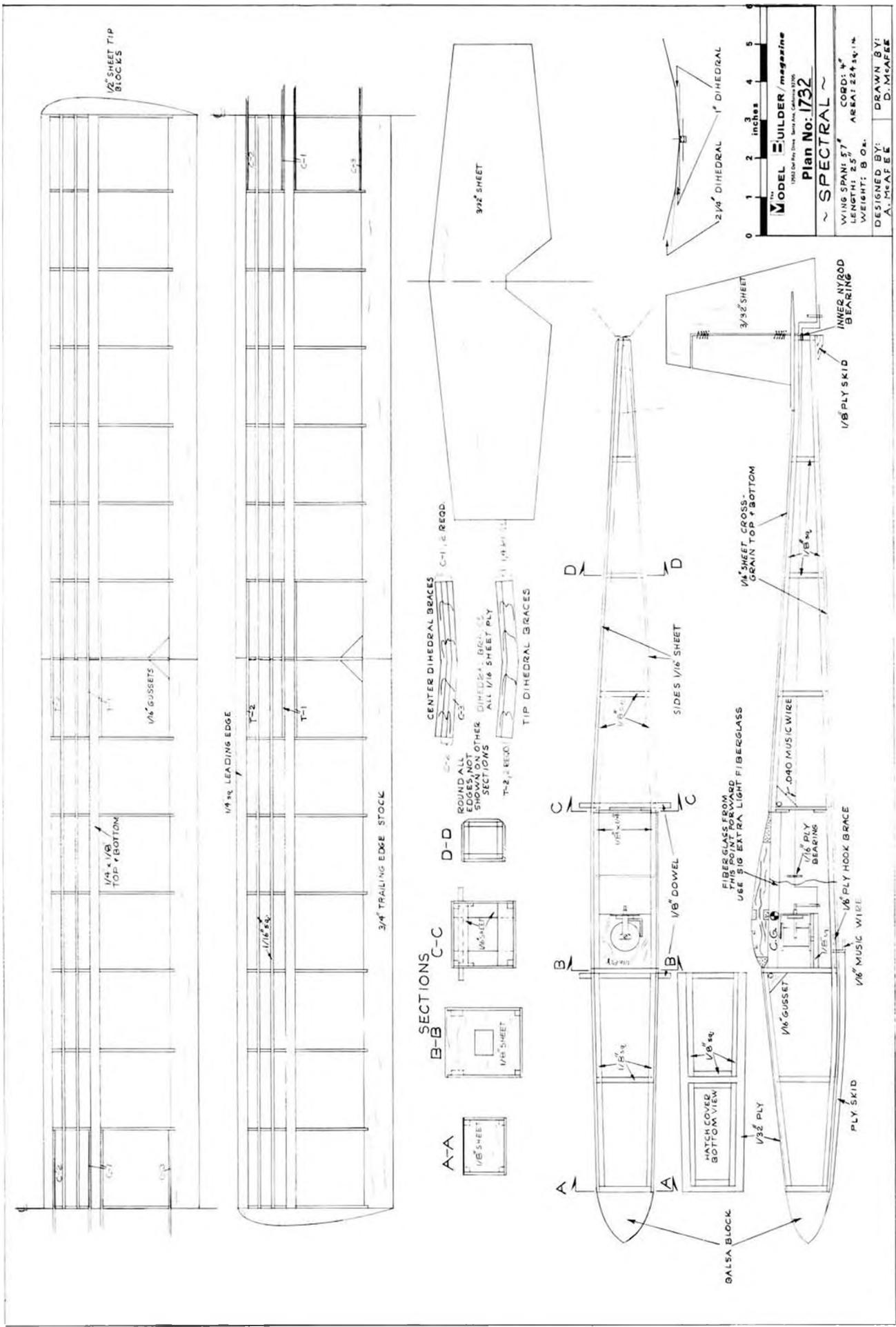
● After flying single channel for about a year, and flying many different designs, I wanted to design something that would fly good. During a meeting of the San Fernando Valley Silent Flyers, Jerry Krainock introduced a set of plans for a two channel, Jedelsky wing glider. I wondered, since I have not had much design experience, if I could scale down the plans in order to have a plane that was sort of my own, but easier to build.

This was prototype No. 1. It had a four foot wing span and weighed eight ounces. I thought perhaps the flying characteristics could be improved by adding a different wing. I decided to use the Micro Fish wing because it had a constant chord. With this wing the plane flew much better. This was prototype No. 2. Next, the wing was made lighter and a few other modifications were added. This brings us to the present design.

The Spectral is very conventional, easy to build, for the beginner or expert, flies outstanding, and best of all, it is inexpensive. The Spectral has a fairly fast but smooth glide, which adds to its high performance. The wing span is 57 inches and the all-up weight is approximately eight ounces. The glider is capable of doing loops and other stunts. With it, I have achieved LSF 1 and practically LSF 2. We have also done well in contests.

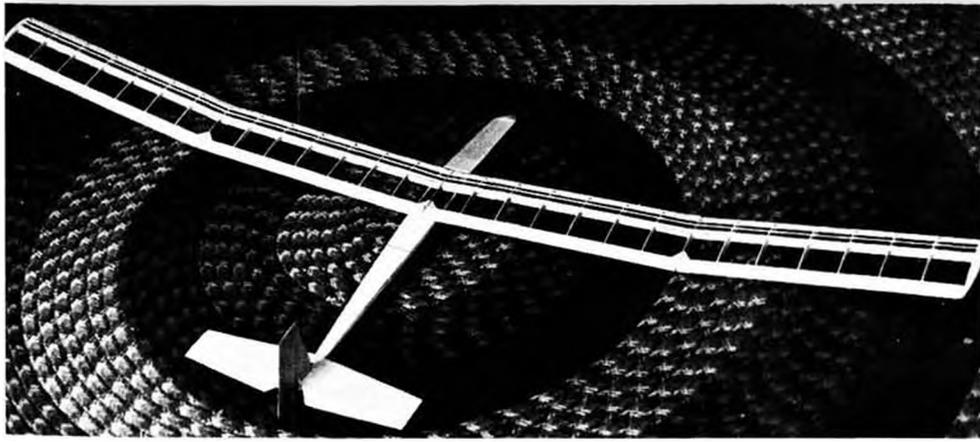
FUSELAGE

Start by selecting a medium light



THE MODEL BUILDER / magazine
 1983 Old Hwy. Santa Ana, California 92706
Plan No: 1732
 ~ SPECTRAL ~
 WING SPAN: 17" CORD: 4"
 LENGTH: 25 1/2" AREA: 224 sq. in.
 WEIGHT: 8 Oz.
 DESIGNED BY: A. RAJEE DRAWN BY: D. MCFEE

FULL SIZE PLANS AVAILABLE – SEE PAGE 64



Uncovered framework of Spectral discloses the ease of construction. Untapered wing makes rib chopping a snap, too. New super-light 2-channel systems could go in. Fatten fuselage a little.

piece of 1/16 X 3 inch balsa. Then cut out the two sides, making sure they are exactly the same. Pin the sides down to a flat surface and glue in all 1/8 inch square longerons, wing braces and cross pieces. Next cut out all bulkheads from 1/8 inch sheet.

The fuselage is assembled directly over the plan for ease of construction and proper alignment. First install bulkheads B and C in place, let dry. Then join the tail and add cross pieces. Next, glue in bulkhead A, and when the whole thing is dry, take up and sand the edges, add wing dowel gussets. Next plank the bottom only. Cut the actuator platform from 1/16 inch ply and install. Now install the front and rear torque rod bearings. Install torque rod using actuator for alignment. Now plank the top and

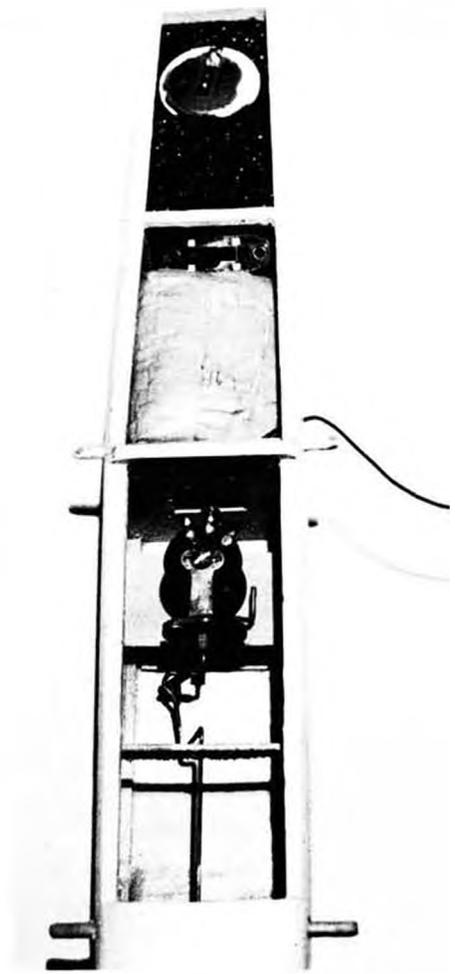
epoxy the hose block in place, shaping it to the contour shown. Round all edges of the fuselage. Construct the hatch cover from 1/32 inch ply and add the 1/8 inch square braces.

TAIL SURFACES

Stabilizer, elevator, fin, and rudder are all cut from light 3/32 inch sheet, sanded to shape, hinged, and glued in place. Watch that alignment!

Now it is time to fiberglass. Of course, it isn't needed if you like to repair a lot. Don't think the fiberglass is too heavy, you need the weight in the nose anyway. Refer to the February 1972 issue of MB for Le Gray's instructions. Do what it says except don't use 4 ounce cloth; use Sig lightweight fiberglass cloth.

Continued on page 53



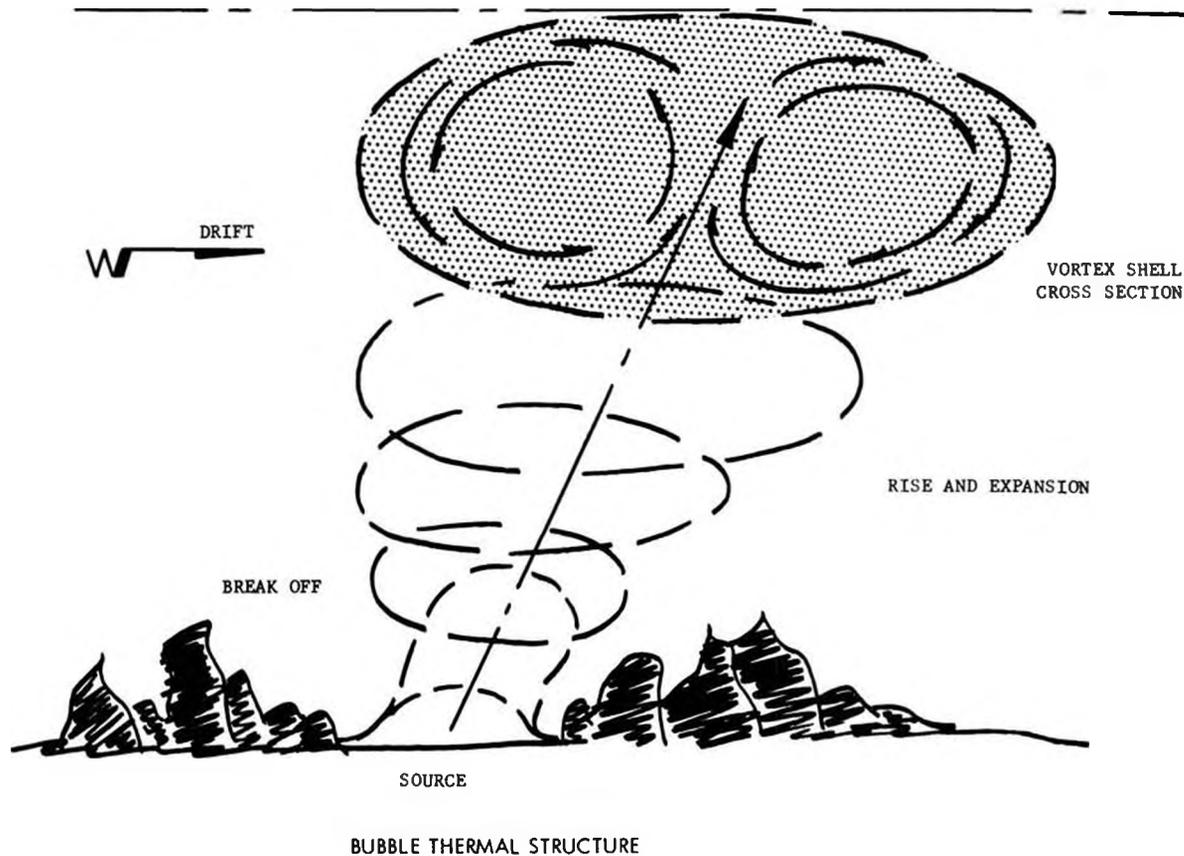
Ace Pulse Commander has plenty of room. Lots of soaring on a thin budget!



The whole ball of wax, showing two towing methods; the rubber and string Hi-Start, and the good old two-legged winch. Who needs more?



Shading his eyes with transmitter, Andy is flying on the campus at Pierce College, home field of the San Fernando Silent Flyers.



R/C SOARING

By Le Gray

The subject of our lecture this month is THERMAL FORMS AND STRUCTURES, or PROBLEMS I'VE HAD WITH GAS. . . a few notes about the stuff that keeps our buddies in the air while we practice landings . . . again, and again, and again . . .

● "Hey, Mac. How ya know it's goin' up?"

"It gets little, Dummy."

Some of our kibitzers and pilots are eloquent, though devoid of superfluity . . . and even courtesy. But this simple two-line repartee sorta sums it up.

On "strong" days . . . when good lift abounds . . . anyone can enjoy those long, lazy rides. The sky is falling up . . . the Law of Gravity has been repealed . . . every pilot is a champion, and each sailplane an aerodynamic marvel. On these days, ya just can't miss. You don't need good piloting technique . . . or even good eyesight. Get a launch over a couple of hundred feet and you're on your way.

The opposite of these glorious conditions are those mean and miserable times when sailplanes beat towlines back to the ground. The air is all "down." Again, no need for soaring skill, fancy gear or sharp senses, because

if there's no lift, nothing goes up . . . Nothing. Not even your Old Flying Buddy's machine . . . which seems to float on ridiculously poor air . . . that you can't stay up in.

But R/C soaring is most often conducted under average . . . typical . . . call it "normal" conditions. Some lift . . . some sink . . . and lotsa in between. This is where skill shows up. Fast. As does lack thereof, unfortunately.

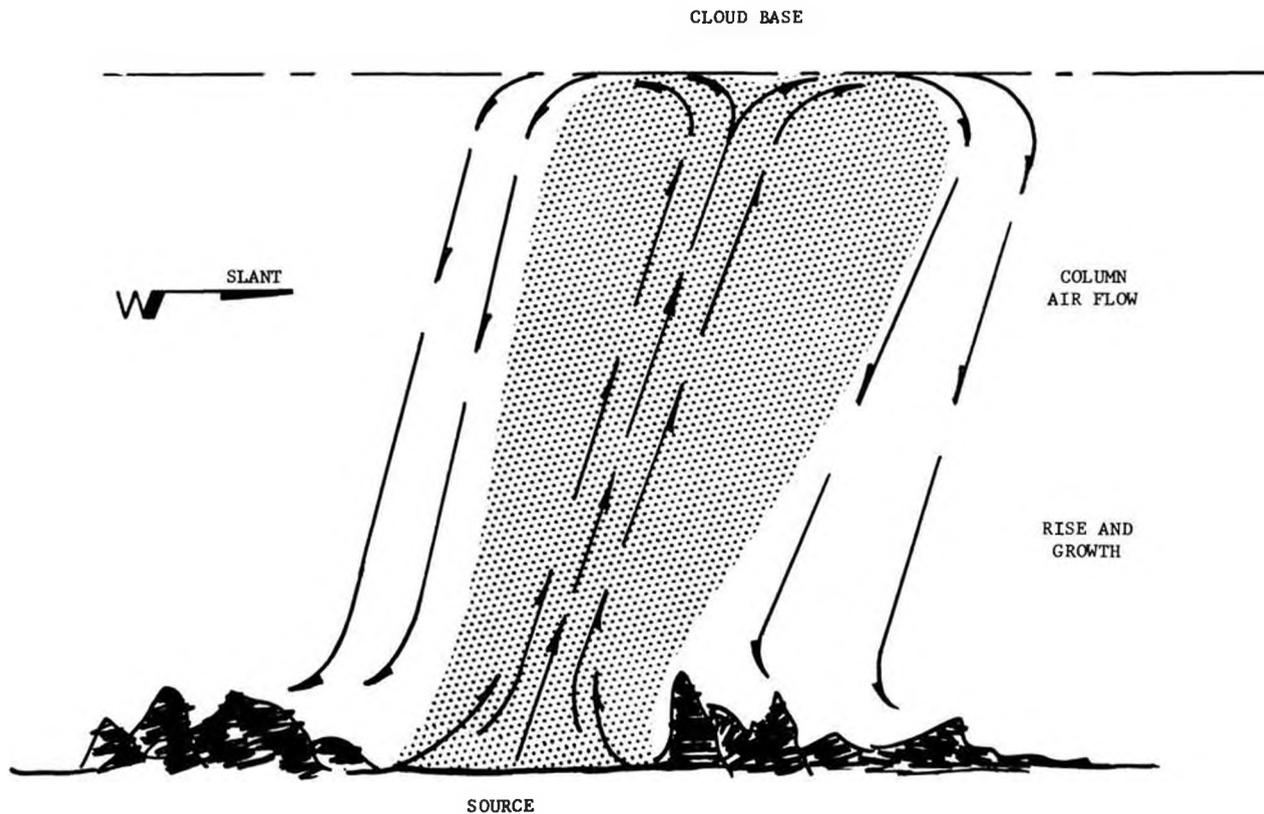
In the realm of man-carrying, soaring flight, reference is made to the science of micro-meteorology, indicating relatively small areas of study . . . like several square miles or even miles' square: quite small considering the more normal studies of weather patterns over continents or hemispheres. But the R/C soaring pilot is interested in sub-micro-meteorology . . . air masses over a roof-top, a parking lot, or a half-acre field.

An R/C sailplane can utilize extremely small areas of lift. In fact, it must

utilize extremely small areas of lift for sustained flight at low altitudes. Unfortunately, you can't see a thermal . . . large or small. You can see the results or evidence of thermals . . . be it dust devils, clouds, leaves, paper, trash can lids, or sailplanes . . . or birds. But you can't see "it." You can feel its presence sometimes . . . wind change, temperature, direction or velocity. Or even atmospheric pressure. You may know it's there . . . but you can't see "it." What does one look like . . . what is it we're chasing? Spooky.

An in-depth study of meteorology will not be presented here. Honest. However, a little discussion of some of the basic characteristics of thermals might be appropriate. It won't hurt. Stick around.

The fact that thermals are bodies or columns of warm air will hardly come as a shock. Nor will the fact make news that warm, light air rises when it is sur-



COLUMN THERMAL STRUCTURE

rounded by cooler, heavy, more dense air. It may not even be a surprise that the air is not heated by the sun . . . at least, not much.

Let's go a bit deeper.

Thermals result from the heating effect of the sun's rays on the earth's surface. As the earth is heated, the air in contact with it is heated by conduction . . . transfer by direct contact. As the surface of the earth is quite varied in texture, composition and color, different areas heat up at different rates and to different temperatures.

A practical example of this varied

heating bit can be demonstrated in any parking lot on a sunny day. Put your hand on the top of a black car. If the sun has really been beating down for a while, the surface will be quite uncomfortable. Like hot! Now, try a white car. It will be considerably more pleasant to the touch . . . maybe even cool. The dark color absorbs heat. The lighter surface reflects the sun's rays, absorbing less heat, and stays much cooler.

Now, if air is warmed by contact with surface features of the earth, it's obvious that, in the preceding examples,

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CUMBERLAND GLIDER RECORD TRIALS

Text and Photos by Dan Pruss

● For the sixth straight year, the CAMS (Cumberland Aircraft Model Society) and the DC/RC groups sponsored the Cumberland Glider Record Trials. While no records were attempted, the two groups did provide the manpower for those who wished to make any attempts to break existing records. However, again it turned out to be a large scale fun fly climaxing a long contest season . . . no entry fee, no prizes, no evil-eyed judges . . . just fun. About fifty fliers from seven states made up the group. The site is atop Ole Knobley, a hill whose path the local angels fear to tread.

Now mind you, the mile or so trek up to the top isn't exactly that foolhardy a stunt. However, the eyebrows that were raised by the natives at the local watering holes when told what we were doing in their fair countryside had to be the same expression ole George W. got while he stood in his boat in their local river, posing for that painting. (No wonder they looked at him funny. Old "Nutty George" thought he was crossing the Delaware! WCN)

Anyway, Saturday morning, Dave



At the Cumberland R/C Glider record trials, Nov. 4 and 5, Maryland. Neil Liptak launching Carl Lorber's AS-W12, Carl on stick. 13 ft. span.



Carol and Otto Heithecker, Gus Wiklund, Jerry Mrluk, Liz and Earl Pell, Art Slagle; all members of Greater Detroit Soaring & Hiking Soc.



GDS&HS members cheese, sausage, and a drop of wine . . . the only way to live . . . Car top box carried 7 gliders to the scene.



Walt Good, the Ray Smiths, Cavannaugh, John Strong & son, Carl Lorber, teh Don Clarks, John Patton, the Tom Holders; in back, it's Jay Stargel and Ula Lorber; Tom Rankin & son in front. All DCRC.



Jack Lester, Jack Alderson (an old flying buddy from way back), and Lloyd Carter, of the Dover, Delaware Mosquitos.

Gish and cohorts, of the CAMS, got the twenty or so car caravan moving up the single lane ox-cart trail. With their words of encouragement along the road - - "one car at a time, no stopping, keep your momentum, look out for that sharp pointed rock (Rock hell! it's just the top 15 inches of a mountain they ain't uncovered yet, Clyde)." And we didn't even tear out the transmission this time.

The view from the top is worth it. Overlooking the picturesque Potomac

valley with rolling hills to either side, amid all the quiet, almost convinces one that its Designer must have had R/C soaring in mind. What makes Ole Knobley the fun place for gliders is the northwest winds that prevail in the autumn and winter months. If the velocity is sufficient, a wave is formed from out across the hills and valleys. It becomes a challenge to get your flying machine down . . . not up!

The face of Ole Knobley isn't a sheer bluff but a gradual drop off to a shallower hill and then the drop to the valley

Continued on page 53



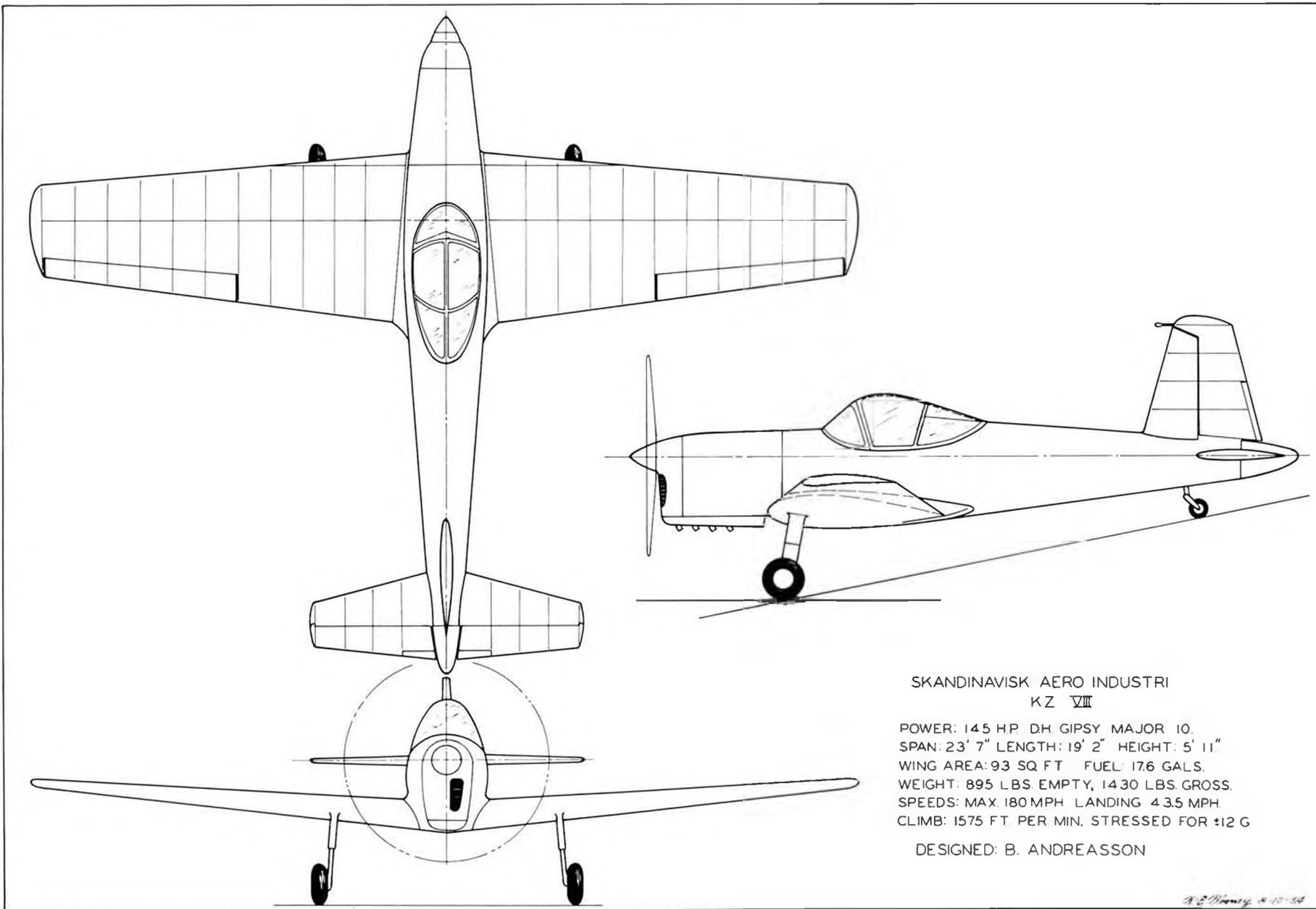
Cumberland Aircraft Model Society (CAMS), members, Dave Gish, Rick Miller, Bob Riggs.

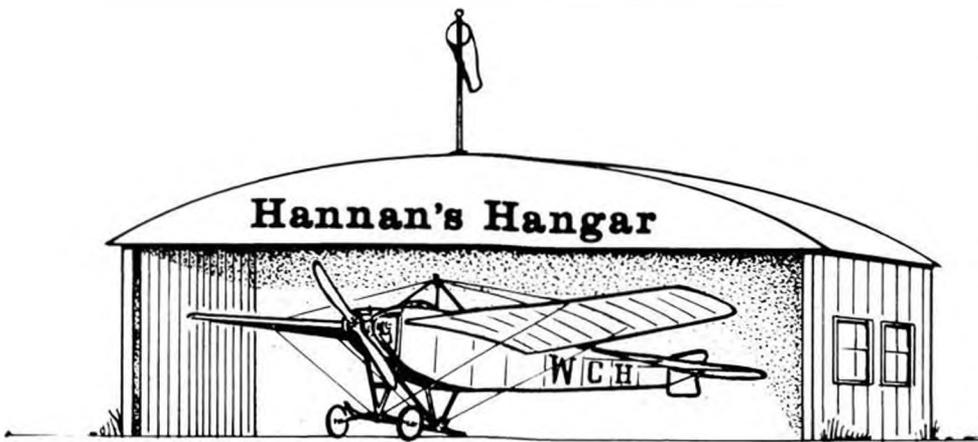


Neil Liptak, Dave Burt, and Dan Pruss with a few feet of soaring wings. Note apparel!



Dave Burt about to have a turn at the stick with Neil Liptak's 11 lb. Nelson KA-6. Both are members of Chicago area S.O.A.R. (Silent Order of Aeromodeling by Radio).





Bill Hannan's Crosby profile speed job uses model rocket tube to enclose rubber power.

... Being a column devoted to miscellaneous ramblings of an aeronautical nature ...
By Bill Hannan

(Written by the yard, cut off by the foot) *(Published by the inch. WCN)*
SIMPLE AIRCRAFT ARISE

●Lin Reichel reports a great increase in rubber-powered scale interest. The recent Erie Model Aircraft Association (Pennsylvania) attracted 66 entries, of which only 7 were gas powered. EVERYBODY TALKS ABOUT THE "JUNIOR PROBLEM"

But Richard and Ed Whitten are doing something about it! They organize postal contests, also coordinating with the National Free Flight Society and Lin Haslam. The rules, dates, and results are published in a fine little newsletter, aimed strictly for the junior builder. Entries have been received from as far away as England and Austria, and contest categories include; hand-launch glider, towline glider, simple rubber "stick" models, and profile flying scale. For a sample copy of the "STAR SKIPPERS" newsletter, send 25 cents to Whitten Flying Dutchmen, P.O. Box 176, Wall Street Station, New York, N.Y. 10005.

R/C glider manufacturer Mark Smith (Windward, Windfree kits) recently

made successful tests of his latest hang-glider, in the Vista, California area. Mark reports that incipient stalls are much more easily noted from outside the aircraft than while piloting one!

ELECTRIC AEROPLANES ANYONE?

The NAR Flightmaster Annual scale contest featured a special class for models with electric power. Most entrants pirated motors from Mattel "Superstar" plastic free flight models, but the class winner, Tony Naccarato, Jr. used an assemblage of his own, in Sterling Aeronca C-3. Although the wing loading of most entries was lower than for the Mattel model, overall performance was reduced. Evidently the increase in drag from the larger stick and tissue scale airframes was the culprit.

BOOKS, BOOKS, BOOKS

Looks as if the latest rage is the publication of collections of plans in group form. Walt Mooney's "Bag of Peanuts" is the first to be completed. Containing 15 construction plans, a page of photos, and construction articles, the "Bag" is available for \$5.00, directly from: Walt Mooney, 2912 Cabrillo Mesa Drive, San



PHOTO BY BILL WARNER

England's well known small-scale model builder, Doug McHard, with Hawker "Demon." He is expert on CO₂ power. See text.

Diego, CA 92123.

Hal Swanson, of Modernistic Models plans a similar venture, and we'll provide additional details as soon as they are available.

Rumors have it that a book of racing plane plans is soon to be published in the Detroit area, and there are also rumblings of a WW II flying scale model book to be produced in Canada.

GO FLY A KITE

When the cruel wind interferes with your model flying, transfer your frus-

Continued on page 54

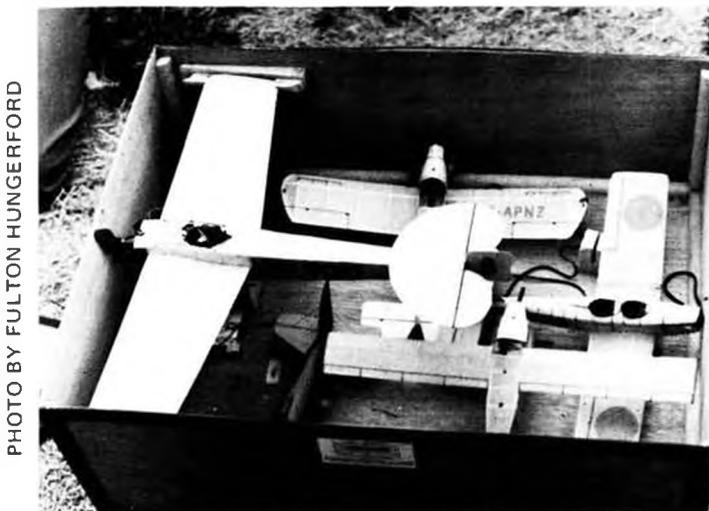
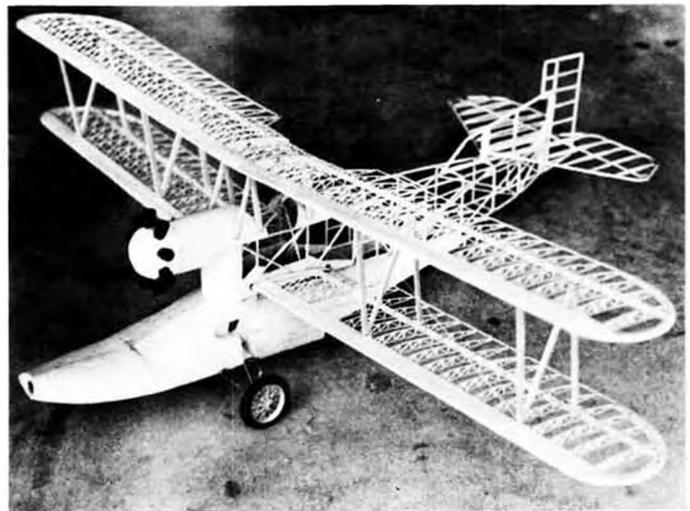
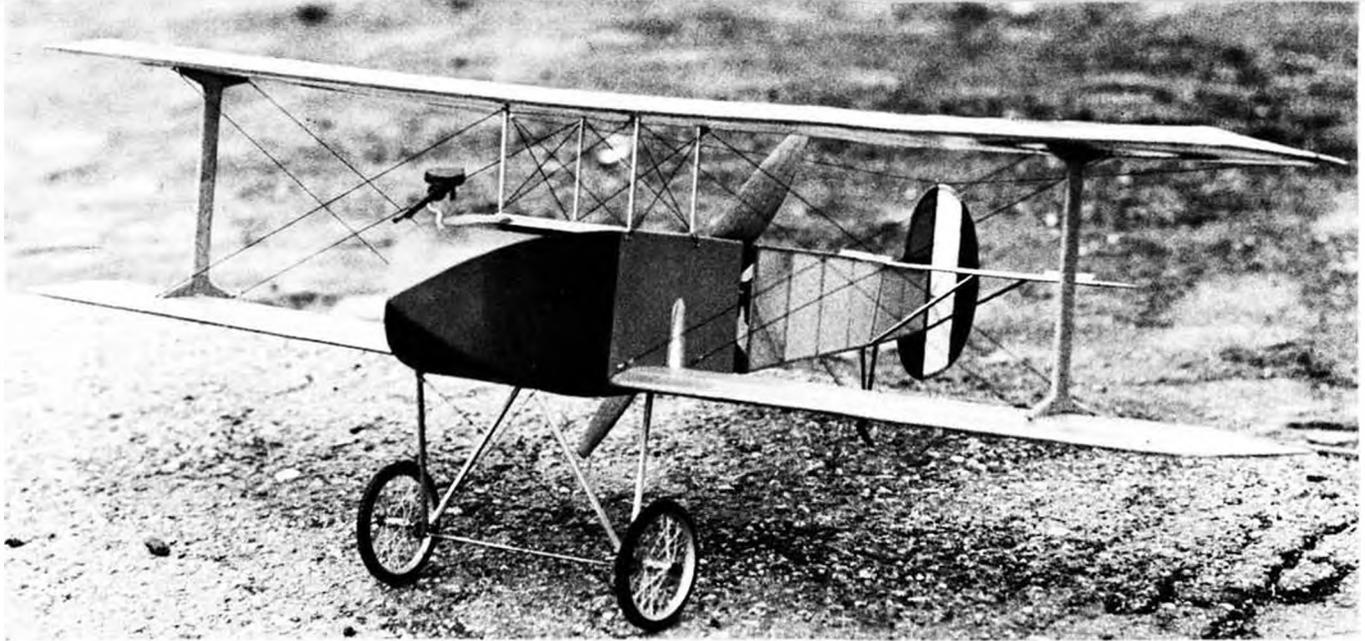


PHOTO BY FULTON HUNGERFORD

Bill Hannan's "Peanut Hangar." Nieuport is actually a larger, CO₂ powered model. Prototype Peck Turbulent on bottom.



Can you guess how Fulton Hungerford made the ribs for this rubber powered Loening amphibian? L.G. retracts manually.



Joe Tshirgi's electric powered WW I Defaux. No, you don't replace the longerons after every revolution of prop! Entered Flightmaster's Annual.

FREE FLIGHT ... SPORT & SCALE

Story and photos of the 23rd annual NAR Flightmasters scale contest, with the first official event for electric scale. By Fernando Ramos

● The NAR Flightmasters is the largest F/F flying scale organization in the world. It has an active nucleus in Southern California, plus numerous members all over the United States as well as many foreign countries. The roster is well over 300 members.

Each year, it hosts several specialized scale contests and around October, the biggest of all F/F scale contests, the Annual. This year was the 23rd annual contest, and one would have to be there to believe it.

The contest begins on Saturday evening with static judging of all models at North American Rockwell's Recreation Center in Inglewood. This provides an adequate (or nearly so) amount of time to judge all of the models, and gives

the contestants and spectators an opportunity to see them all in one place at close range. This also gives the modelers a chance to exchange ideas and techniques and do plenty of airplane talk. Many modelers enjoy this part of the contest perhaps more than the actual flying and competing.

The Annual consists of the following free-flight scale events: (all age groups) gas, rubber, Peanut CO₂, exhibition (non-flying), and the newest to be added this year, electric scale. There were more than 80 planes entered in all the categories combined, with over 60 contestants.

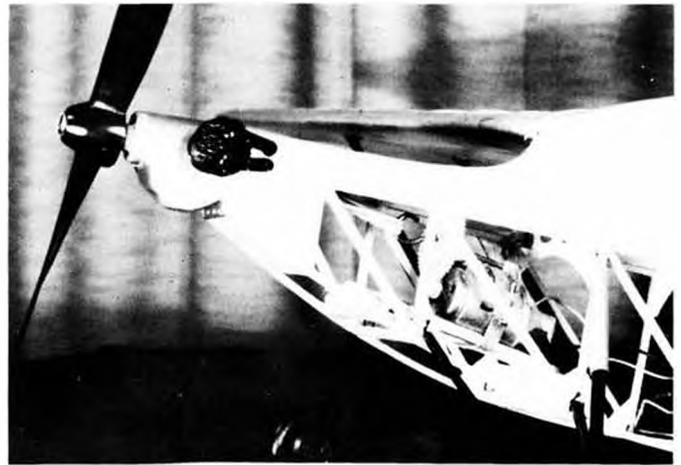
The judging is done as follows: There are usually three judges for each of the major events, that is, events in which

there are the most models entered. One judge will take the fuselage (this covers engine, cowl, landing gear), another the wings, and the third gets the tail group (*The latter also gets a lot of razzing! WCN*). Each judge is therefore responsible for only one third of the total number of points possible. The advantage, of course, is that the overall judging is completed rather quickly and above all, fairly. This also eliminates time-consuming discussions among the judges, as well as a possible dominance of one particular judge. AMA judging is followed, and the overall job takes about three hours.

On Sunday morning the contest moves to the Sepulveda Basin, where the contest begins at 8 a.m. For the four



Bill Warner's Petite Brochette whirrs by Bill Stroman's head. This electric placed third in the first-time event held at NAR annual.



Close-up of modified Mattel electric drive installation in Warner's model. Note rubber band drive train. Electrics are coming thing.



Paradox. This model being launched by Doug Mooney is CO₂ powered, but the full size aircraft is driven by an electric motor!



Bob Haight, Las Vegas, Nevada, with his Lockspeiser LO1A. Scale modelers are possessed by urge to come up with unusual subjects.

PHOTOS BY TYNEE VIDAL, FERNANDO RAMOS, & BILL WARNER

hours of contest flying that follow, one can see no less than five or six flying scale models in the air at any one time. This is truly a remarkable sight, and it is almost impossible for one person to adequately cover the action.

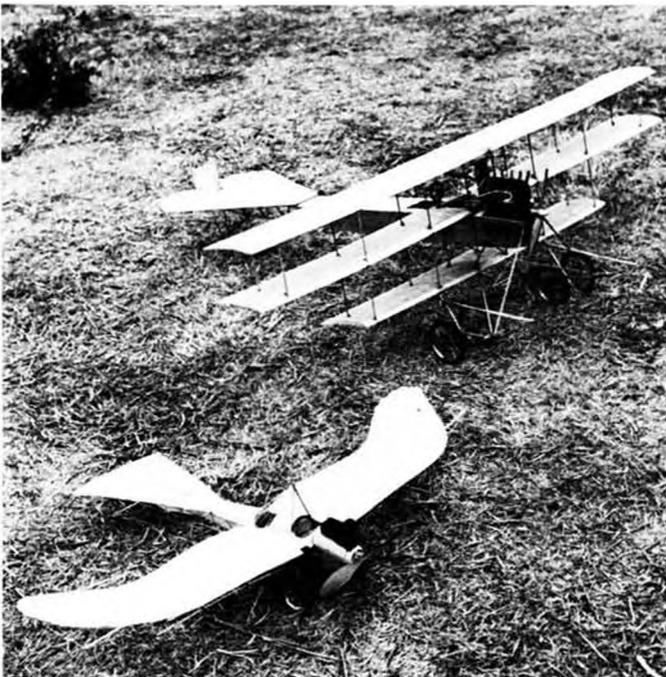
As stated earlier, a new event was added for the first time this year; electric powered flying scale models. Due to the extreme interest developed of Mattel's introduction of the "toy" electric F/F model, many modelers have been experimenting with their power unit. There were seven electric models entered and not all were powered in the same manner. Some used small electric motors

with nickle-cadmium batteries, others had a stripped-down Mattel unit using only the basic motor and gear, batteries and switch, and still others used the entire original power unit.

Performance of the electrics varied from model to model. I personally feel that design for electrics is quite critical. From an initial observation, many models had too high a wing loading for the amount of power that the electric motor develops. Another factor to consider is the propeller. The one that comes with the Mattel is designed to fly their plastic/styrofoam model, but I feel that other propeller designs should be exper-

imented with for more efficient performance. I feel that an ultralight design such as the Supermarine Sparrow, when electric, etc., is the way to go for this event. In other words, low power, high aspect ratio.

(It appears too, that drag is an important factor to consider. The Mattel airplane is a very simple, high wing cabin model, which, in addition to being light, has very low drag. Scale models, on the other hand, usually have a lot of exterior detailing, struts, flying wires, etc. Biplanes too, have about half again as much drag as monoplanes. Until the power-to-weight ratio of the electric



Chuck West's gas powered Avro Triplane, and CO₂ powered Taube. See what we mean about urge for the unusual modeling subject?



Bill Stroman's Mattel electric powered SE-5A. Entire nose comes off (purposely) with power unit. Too much drag affected performance.



The classic pose of Walt Mooney, doing his thing. Here he's launching his Skyraider (November '72 MB). It's a surprisingly good flyer.



Jack McCracken, Flightmaster's president, judging the electrics. Not an easy job.

units improves, choice of scale subjects will be highly limited. WCN)

Like all new events, there are some growing pains, but the enthusiasm is definitely there. By this time next year I'm sure we will be seeing some big advances in electric flying scale.

Gas F/F scale is still a very tough event to compete in, and to my way of thinking, the most rewarding and self-satisfying of all the scale categories. One particular gas F/F was an Avro triplane with three very flat wings; absolutely no dihedral. Yet, it was flying low and slow, looking every bit like the real machine. It was quite a sight with all those necessary interplane struts, rigging, and wire wheels.

Rubber models were taking to the air quite readily, with endurance still the main criteria, as dictated by the present AMA rules. CO₂ has increased in popularity, and the fine craftsmanship and successful flights reflect this.

Probably one of the most popular events, is Peanut scale. Many clubs have been held together by the sheer fun and low cost of Peanut scale flying. There were twenty-eight entered in this year's annual, and when they were flying, it looked like a cloud of locusts. The duration of these diminutive models is quite impressive. Sixty seconds is quite common, and it usually takes a minute or better just to place.

There is no doubt that this scale contest is one of the best in the United States, and if any of you get a chance to see it next year, do so. (George Meyer, designer of the famous Little Tool

biplane, came up from his home in Corpus Christi, Texas, just to be on hand at this year's annual contest. WCN) It is not only a fun experience, but also a learning one, and therefore will result in helping you to be a better scale modeler. ●



Dave Albert with rubber powered BD-4, took first in Junior Rubber.



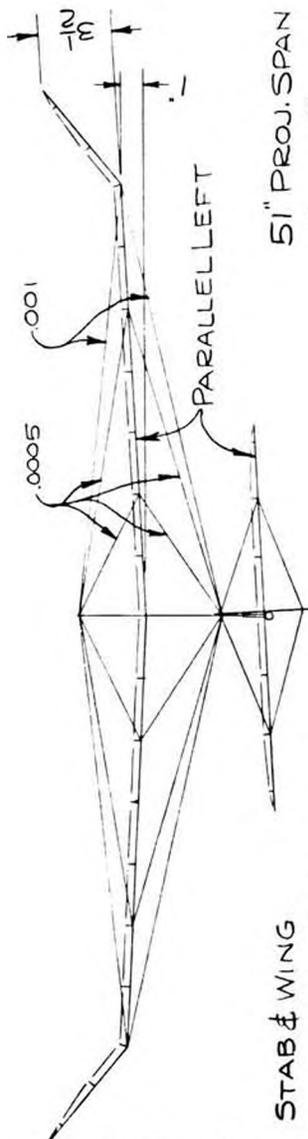
Bill Warner adjusts his CO₂ powered Eastborne Electric Brochette in foreground.



Walt Mooney's Jumbo Scale Ipanema crop duster. "How come you ain't tall, tan, young, and lovely?"



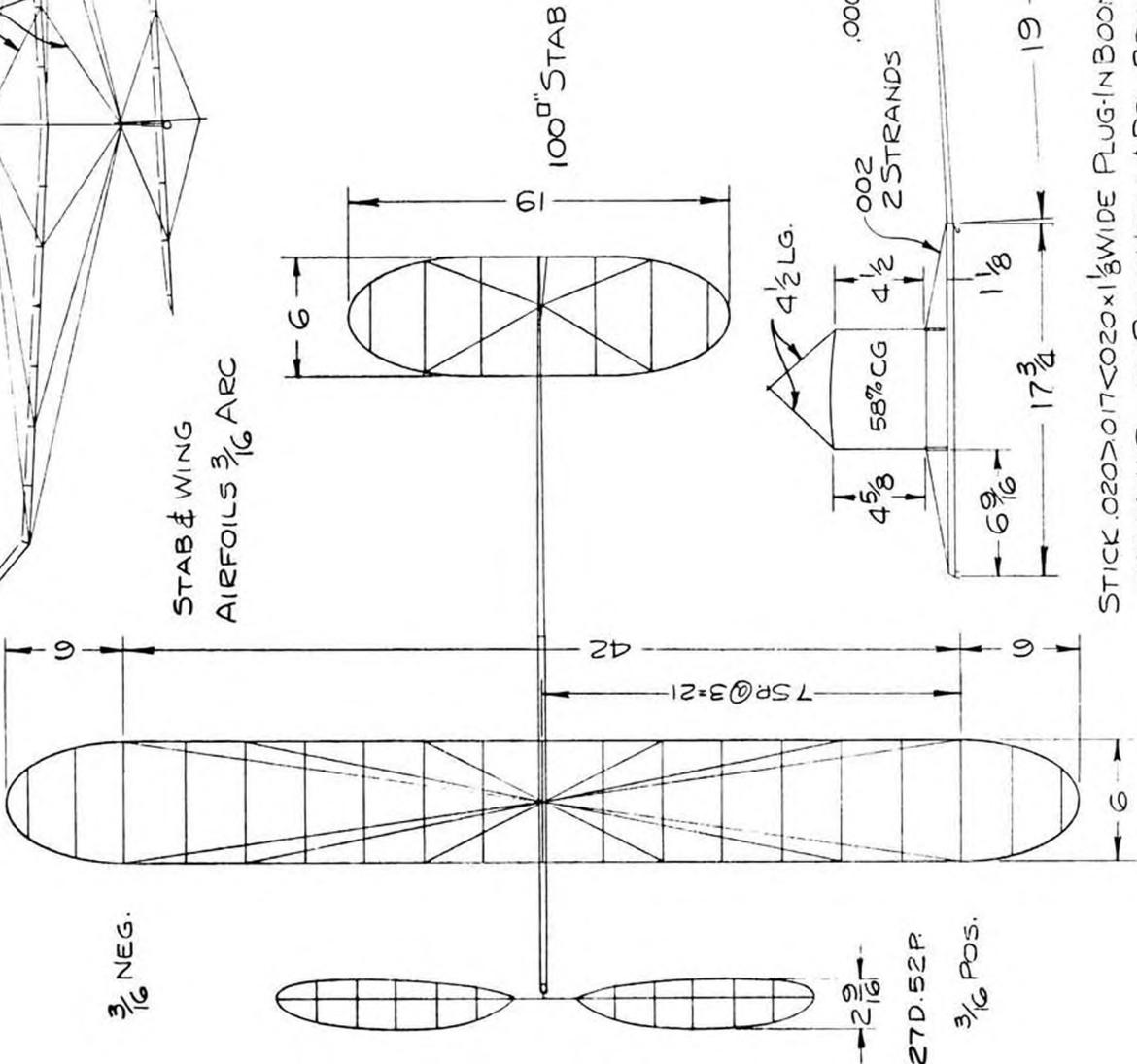
Bill Hannan's Peanut Druiue Turbulent (out of the box this time), is prototype for latest Peck-Polymers kit. See "Workbench."



51" PROJ. SPAN
296.55"

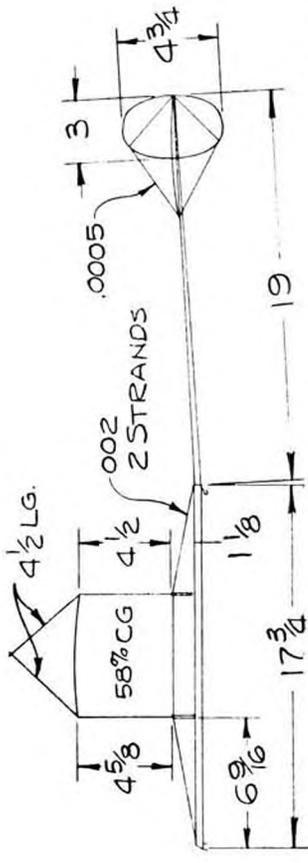
WING .0264
STICK ASSY. .0376
PROP. .0122
TOTAL .0762

.085x19 PIRELLI
R.P.M. 32 CRUISE
36 CLIMB



3/16 NEG.

27D.52P
3/16 POS.



HIGH ASPECT D
A. ROHRBAUGH

STICK .020 > .017 < .020 x 1/8 WIDE PLUG-IN BOOM > 1/16 I.D.
.020 M.W. SHAFT, REAR HOOK & DEL. BENG.



This dramatically lighted photo brings out the esthetic beauty that is typical of rubber powered scale models. Ship is excellent flyer.

“OLE TIGER” IN THE SHELL

“Ole Tiger” is bigger than most Peanuts, but it’s all legal! The racer’s low aspect ratio wings cram a lot of area into the 13 inch span limit. What’s more, it’s a great flyer. By Walt Mooney

● This is a model of a really sharp little racing airplane called “Ole Tiger” by its owner-pilot, Bob Downey. The real airplane started out its life as the Miller “Little Gem.”

One of the problems facing the designer of Peanut Scale airplanes is the quest for sufficient area while still keeping within the thirteen inch wing span rule. Racing airplanes with their low aspect ratio wings are a great solution to this problem. The next problem is to find the racing airplane that can be turned into a stable model. Ole Tiger is a very good configuration in this respect and gives, in addition, a nice long fuselage for a fairly long motor. The propeller that can be installed is quite large and the basic structure is relative-

ly simple. The color scheme is gaudy enough to suit anybody.

In order to get by with a small horizontal tail, it was decided to use a symmetrical wing section as on the original. This has resulted in a model that is easy to trim and looks like a racer should.

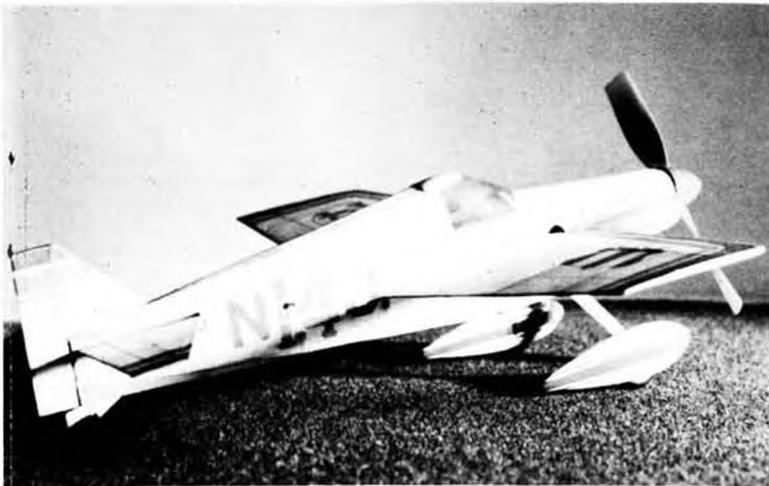
Structurally, the model consists of a stick balsa box fuselage with formers top and bottom and stringers over the formers to give the proper shape. Forward of the instrument panel, the top of the body is covered with 1/32 sheet balsa, and forward of the landing gear, the bottom of the body is carved from a solid block of balsa. On the model in the photos, the cowl cheeks are made of plastic formed over a balsa mold by means of a Vacu-form toy; however

they can be carved from two balsa blocks with equal success.

The landing gear has a thin wire structure with sheet leg fairings and plastic wheel pants (On the model in the photos). Here again, balsa block wheel pants can be made with equal success, if plastic isn’t your bag. A single half-shell mold is carved for the vacu-form operation. It is very important that this balsa form be exactly symmetrical about the wheel pant’s horizontal axis if the plastic parts are to be usable as both the right and left halves of the pants. If there is any question as to whether your mold is symmetrical or not, it’s probably better to carve a left and a right mold and

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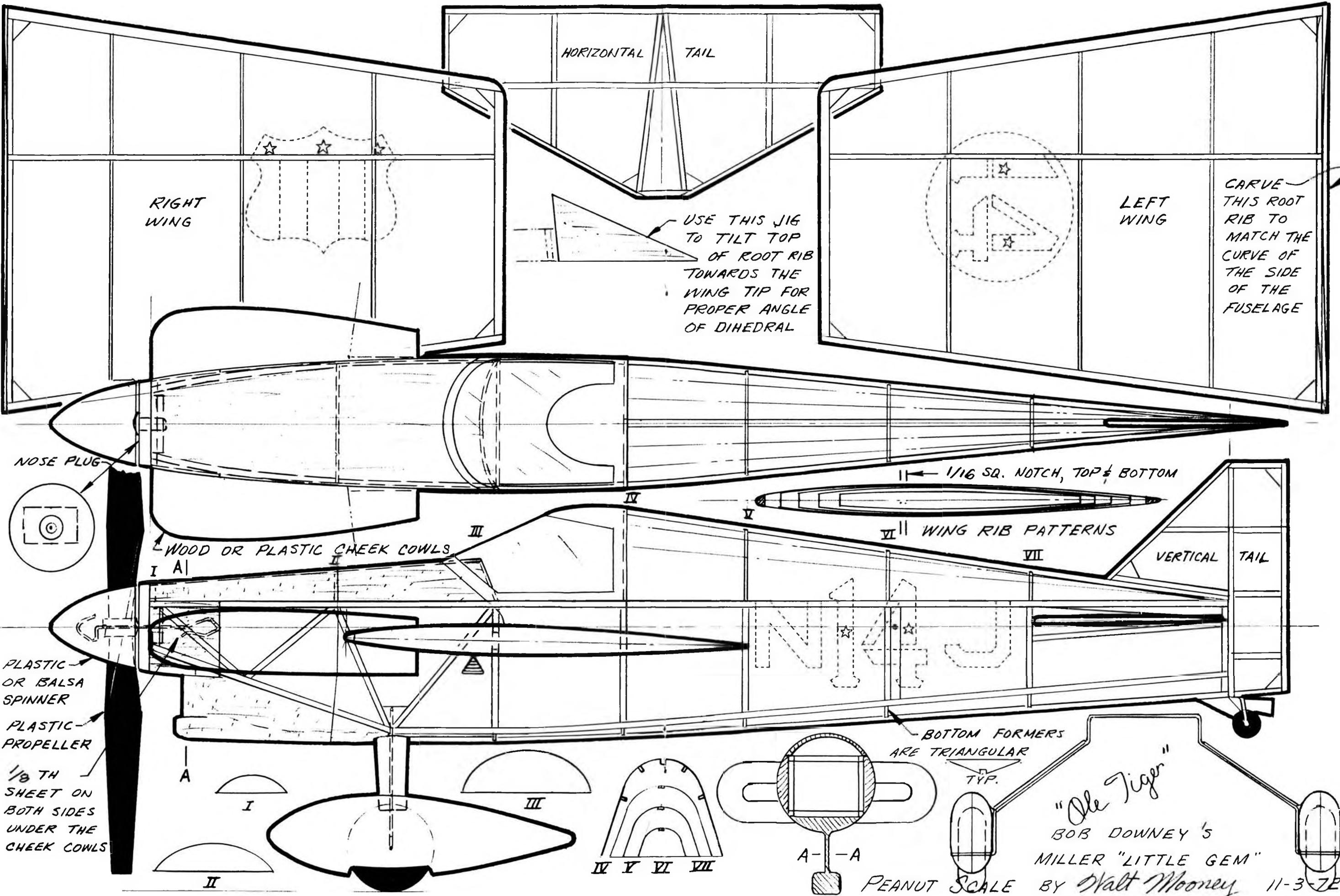
PHOTOS BY FUDO TAKAGI



Windshield, cheeks, and wheel pants were molded on Mattel Vacu-Form on the original. Pants and cheeks can be carved from balsa.



Short, stubby wings provide lots of area within 13 inch Peanut Scale limit. Plenty of stability in spite of small tail surfaces.



RIGHT WING

HORIZONTAL TAIL

LEFT WING

CARVE THIS ROOT RIB TO MATCH THE CURVE OF THE SIDE OF THE FUSELAGE

USE THIS JIG TO TILT TOP OF ROOT RIB TOWARDS THE WING TIP FOR PROPER ANGLE OF DIHEDRAL

NOSE PLUG

WOOD OR PLASTIC CHEEK COWLS

PLASTIC OR Balsa SPINNER

PLASTIC PROPELLER

1/8 TH SHEET ON BOTH SIDES UNDER THE CHEEK COWLS

1/16 SQ. NOTCH, TOP & BOTTOM

WING RIB PATTERNS

VERTICAL TAIL

BOTTOM FORMERS ARE TRIANGULAR TYP.

"Old Tiger"

BOB DOWNEY'S MILLER "LITTLE GEM"

PEANUT SCALE BY Walt Mooney 11-3-7E



PLASTICS CAN BE BEAUTIFUL

By Col. Bill Phillips. Too many times, plastic R/C models, or "Rubber Ducks," are slapped together in an emergency situation, and don't get the care and attention that can turn them into decent looking airplanes. Bill puts forth some hints that will transform that "Ugly Duck" into a "Beautiful Swan."

● There is no denying that the ARF (Almost Ready to Fly) "Plastic Bombers" (or for that matter the fighters, too) are outstanding flying machines. They should be . . . they were in many instances designed and engineered by professional aeronautical engineers. Besides that, as the old adage goes, "the proof of the pudding is in the eating." Experience has proven that the Plastic birds perform very handsomely and are capable of any maneuver the pilot is skilled in performing.

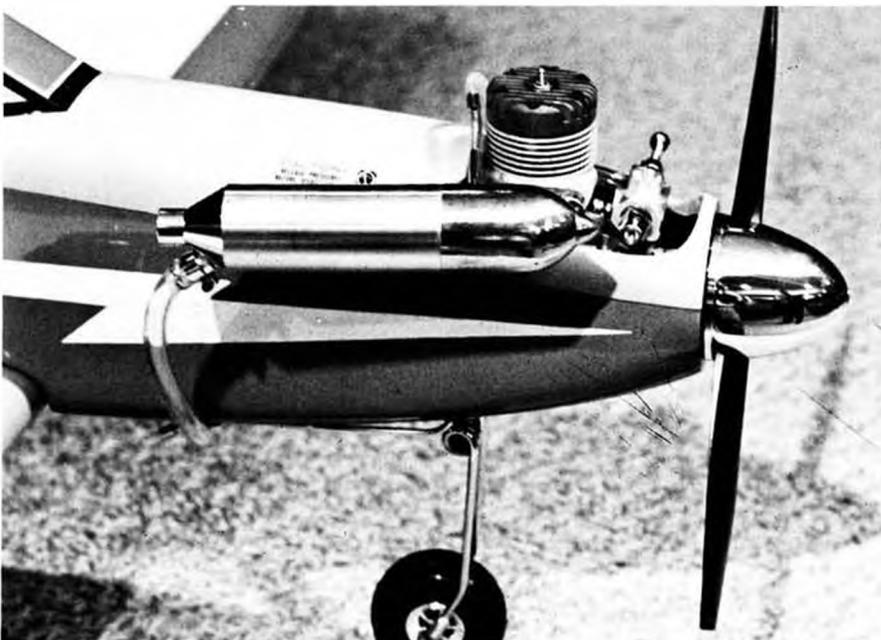
Unfortunately, the immediate reaction of too many R/C bugs, when first confronted with an ARF Plastic, is usually one of dismay . . . the darn toy

is made of plastic; therefore, can't perform too well or have a long life, and lastly, could be almost impossible to trim. We have already put aside the flight capability, so let's talk for a moment about its life span and the ability to make it a "show piece."

The following thoughts and techniques are passed on for what they are worth and have been applied to quite a number of ARF aircraft . . . most recently to the Pilot "Five-Star" and the Lanier "Dart." Let's cover for a moment the life of a plastic model and how I attempt to lengthen its existence. We will start at the nose of the aircraft and hopefully wind up at the tail.

As an example, after first assembling the Dart cowl, the average modeler will find it to be rather flimsy. This technique has been covered by others but I believe it is worth repeating. I cover the entire outside of the cowl with masking tape to keep the pretty plastic from getting scratched and/or disfigured by various building materials. I then line the interior with very lightweight fiberglass in appropriate size strips. Rather than use polyester resin I use Epoxy Resin or Hobby Pox (Formula II) in heavy doses, letting the residue run into the nose section. Polyester resin has been used equally as well. After curing for 24 hours, I repeat the process with a second layer of the same fiberglass and another coating of resin. Again, after yet another 24 hour curing period, the excess fiberglass is cut from the trailing edge of the cowl, sanded to fit the fuselage, taking into consideration engine and crankshaft alignment, and lastly removing the masking tape. You will now find that you have a very sturdy cowl, similar in quality to fiberglass and one which will last through the life of the bird (less those dreaded crashes). The same technique can be used in the fuel tank and servo compartments. This will enhance the life of the plane significantly. We will come back to engine cut-outs after completing the fuselage.

Next, let's beef up the nose and fire wall. We will derive two benefits. I install two maple blocks approximately 1 inch square on the aft side of the fire wall, positioning one near the bottom of the fuselage and the other near the top. This allows a space between



Northfield-Ross muffler with sludge trap aids in keeping airplane clean. Black prop with yellow tips helps you spot prop arc.



Plastic sheet wheel covers add a realistic touch. A carefully applied coating protects all trim and makes clean-up an easier job.



Line from residue trap in Northfield-Ross muffer, and filler overflow tube are firmly attached to model, improving the neatness and ease of cleaning.



Col. Bill Phillips is justly proud of the finished plastic bird. With a little extra effort, they can be made to look a lot better than the usual fuel-stained "Rubber Duck" that we see so often.

the two for your nose gear tiller arm. (Obviously this is for internal steering capability.) After installing the blocks, redrill a 5/32 inch hole for your nose gear. You will find this makes the nose of the aircraft much stronger, and pays off tremendously on hard nose wheel landings. The other by-product with this firewall beef-up includes the ability to radial-mount your engine (in the Dart). In this regard, a rectangular 1/4 inch aluminum plate of suitable size is bolted to the rear of the crankcase and the entire engine is then held to the fuselage by four No. 6 by 1-1/2 inch sheet metal screws. I have yet to have these screws even attempt to back out.

Now back to fitting the cowl once the engine is installed. Admittedly, this is a minor time consuming exercise but with some patience exact cut outs can be made to clear the cylinder, carb, needle valve, muffer and for that matter anything else that cannot be crammed inside the cowl. Make the cut outs sparingly but have the cowl clear all engine surfaces by a minimum of 1/16 inch . . . preferably 1/8 inch. The cowl can be held securely to the fuselage by 4 or 5 No. 2 half-inch sheet metal screws on top and sides with a couple on the bottom. Another technique is to use No. 2/56 by 1/2 inch Hex Head bolts, if you really want to give it that "finished look." I have used both methods and they perform quite satisfactorily.

Let's now look at the rest of the fuselage. After carefully cementing the tail surfaces in place with Air-O-Cement (Acetone/Keystone), install either Nyrod, Sullivan Golden Rod, or Kavan type push rods. Now pour the

Continued on page 59



Ed Rankin (lt) is NMPRA's President for 1973. Monty Montcrief holds Ed's Miss Dara in preparation for race against Bob Smith.

PHOTOS BY CHUCK SMITH

pylon

By Chuck Smith

●The 1972 Tucson Winter Nationals was by far the largest R/C contest held west of Chicago. With over 120 entries in pattern, over 10 in stand-off scale, and 64 entries in Formula I, this contest has actually become too successful for only a three day affair; there just isn't enough time for everyone to get in enough flights. In pattern, each contest-

ant flew only three times, with the top 20 percent getting one additional flight.

In Formula I, only five rounds were flown, although we flew until sundown. This presented a very dangerous situation in that, late in the afternoon, the course was situated so that the aircraft would fly through the sun immediately

before turning around the No. 2 pylon. This caused Jerry Boyce, from Bakersfield, to crash near the No. 3 pylon when he lost sight of his Minnow. Larry Leonard set a new record for low flying



Kent Nagy's record holding Miss DARA (1:23.4). Note plastic bag over the family K & B Schneurle 40. Kent was second at Tucson.



Jack Stafford's new and fast Rickey Rat. Ship built in one piece. Highly modified Shoestring.



Terry Prather tunes his Tiger with tac. Had a 1:25.9, but two-cut one heat to come in 9th at Tucson. Terry's dad, Al Prather, holding.

while attempting to fly under the sun. On one lap "suicide" Larry never had his wing tip less than three feet off the ground as he rounded the number two and three pylons!

The Tucson R/C Club, with Bob Angus directing them, did an excellent job of running the race. I don't think anyone could have squeezed in more rounds in the time that was available. Despite some grumblings about the low number of rounds, the Winter Nats had the most exciting heats of the 1972 Southern California racing season and a very good rotation of the top flyers in the five rounds.

The first round saw Bob Smith beat Larry Leonard by a surprisingly large margin. Whit Stockwell was lucky to have his aircraft after his first flight, when on his landing approach, he noticed that the right half of his stab was hanging down at a 30 degree angle! Surprisingly this made little difference in the handling characteristics and Whit landed without difficulty. In my first heat, I tried too hard to beat Terry Prather and cut the No. 1 pylon, which gave me a second.

In the second round on Saturday, Whit Stockwell's repaired Minnow beat Dan McCan in a very tight race in which Dan cut trying to catch the "Berkeley Flash." It was obvious after this race that Whit was on his comeback trail and



Bob Smith, winner at Tucson and 1972 Southern California District and NMPRA National Champion.



Bob Stockwell launches son Whit's K & B powered Minnow. Whit beat Dan McCan in this heat. Bob has turned NMPRA Newsletter editorship over to Ed Hotelling.

was in a good position to repeat his win at Tucson in 1971. Larry Leonard and I were matched up in this round, with the results being the same as my race with Mr. Prather. Terry was matched against Ed Hotelling, our new NMPRA newsletter editor. Both aircraft were evenly matched in speed and both pilots went back to the pits with a zero from two cuts.

The third round was highlighted by the heat between Kent Nogy and Whit Stockwell. Whit triumphed again when

Kent cut on the fifth lap trying to catch him. Whit loosened up his course but still turned a 1:30.1. Since Kent came within less than one third of a lap of lapping Whit and making up the cut, it was obvious that Whit's K & B powered Minnow was capable of times in the low 1:20's.

Bob Smith, Ed Rankin and Jack Stafford were also matched in the third round. Ed, NMPRA President for 1973, had looked forward to racing Bob and

Continued on page 60



Arlen West had his best performance at Tucson, with 6th place finish. Harry Gould holds Arlen's K & B powered Ballerina.



Bob Smith and Whit Stockwell walk to starting line for race to decide first place. The Berkeley Flash cut twice, was bumped down to 10th.



PHOTOS BY DON DOMBROWSKI

PYLON/4

By Don Panek

● Winter, the season for most builders throughout the country, means building time, and for the individual clubs, a period in which to prepare a schedule of coming events.

With this thought in mind, I suggest to those individuals and clubs, consider building a 1/4 midget model and scheduling a contest in the forthcoming season.

For the modeler, numerous plans, kits and accessories are now available for your selection, and with more to come prior to the Spring thaw. The construction time and cost to build these models are minimal, and the end result - - - a model capable of competing in a racing event, also doubling up as a sport job. I don't suggest a beginner to at-

tempt a quarter midget, but anyone who has built a few balsa kits and has successfully flown for a couple of seasons is an eligible candidate.

Next, the club and scheduling the event. This is the point where considering the rules to be used comes into play. I must confess that as of now, no single published rules is really being utilized throughout the country. I know now, how Cliff Weirick felt after he was invited to a quarter midget contest recently. His response, "Sounds great, but who's rules are you guys going to use?"

At the end of this column, we present the rules currently being used by the Q.M.R.C., which, after two years of trial and error have succeeded in pro-

viding a safe, enjoyable and thoroughly exciting event. Anyone desiring an extra copy may send a self-addressed, stamped envelope (8 cents) to The MODEL BUILDER. Groups desiring more than one copy, send 5 cents per copy in stamps or check.

The rules are a composite of those published by R.C.M., and from the Mentor, Ohio Q.M.P.L., and the results of actual contests conducted (approx. 22 races) by the Q.M.R.C. and the San Diego Drones. In publishing these rules, my only goal is to establish a sound basis from which to establish order to get the quarter midgets started nationally. REMEMBER . . . We must start somewhere, and SOON!

RACE REPORT

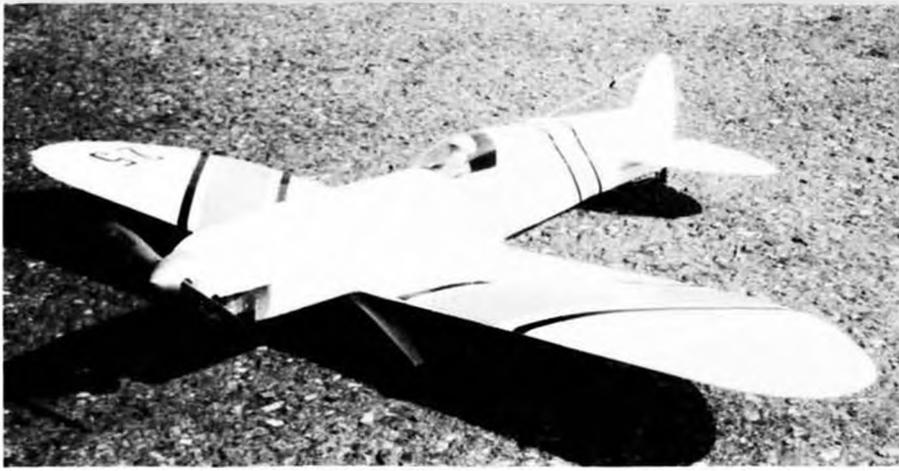
The Q.M. contest held on Oct. 29th by the Q.M.R.C. had 31 entries, resulting in a great day for all participants. At the pre-race meeting, all the pilots agreed to the "race-horse" start, which in my opinion, is the only way to go! Not one plane was lost due to the all-



QMRC race winners, Oct 29th. (l to r) Fred Reese 1st, Dick Ribenstart 2nd, Henry Bartle 3rd.



Tom Christopher's P-51, built from a Stafford kit.



Dick Ribenstart's Miss Los Angeles is his original design taken from famous Brown racer.



Fred Reese is high point champion of QMRC for 1972. Bandito is House of Balsa Shoestring.

for-one takeoff, but during the course of the day a few decided to get together in the air, or kiss the pylon. Don Dombrowski, House of Balsa, gave a thrilling display of how to corner a pylon at a negative six inches, too bad he couldn't repeat it for those who missed it. The contest ran smoothly, with Jack Stafford as starter and a great crew of helpers. The results, after a fly-off, are as follows: First place, Fred Reese, El Bandito, S.T. 15; Second place, Dick Ribenstart, Miss Los Angeles, S.T. 15; Third place, Henry Bartle, Little Mike, O.S. 15. The next scheduled meet is for December 3rd, and can you believe - - - Dec. 31st, New Years Eve! I can predict the winners of the meet on the 31st; Jack Daniels, Jim Beam and Old Grandad! A GREAT GROUP!

For those modelers who design their own Quarter Midgets, I would appreciate if they would send plans, photos and data. I can't honestly commit this magazine to publish them, but I would like to make others aware that plans are available from individuals across the country.

In the next report, I will touch on some of the kits available, hints on better performance and with luck, a close up on the new K & B 15 engine.

REMEMBER, the rule that makes Quarter Midget Racing an event for ALL, is the IDLE rule, DON'T ever DELETE IT!!!! Don Panek, 17834 Hiawatha, Granada Hills, CA 91344.

QMRC PYLON RULES

1. OBJECTIVE:

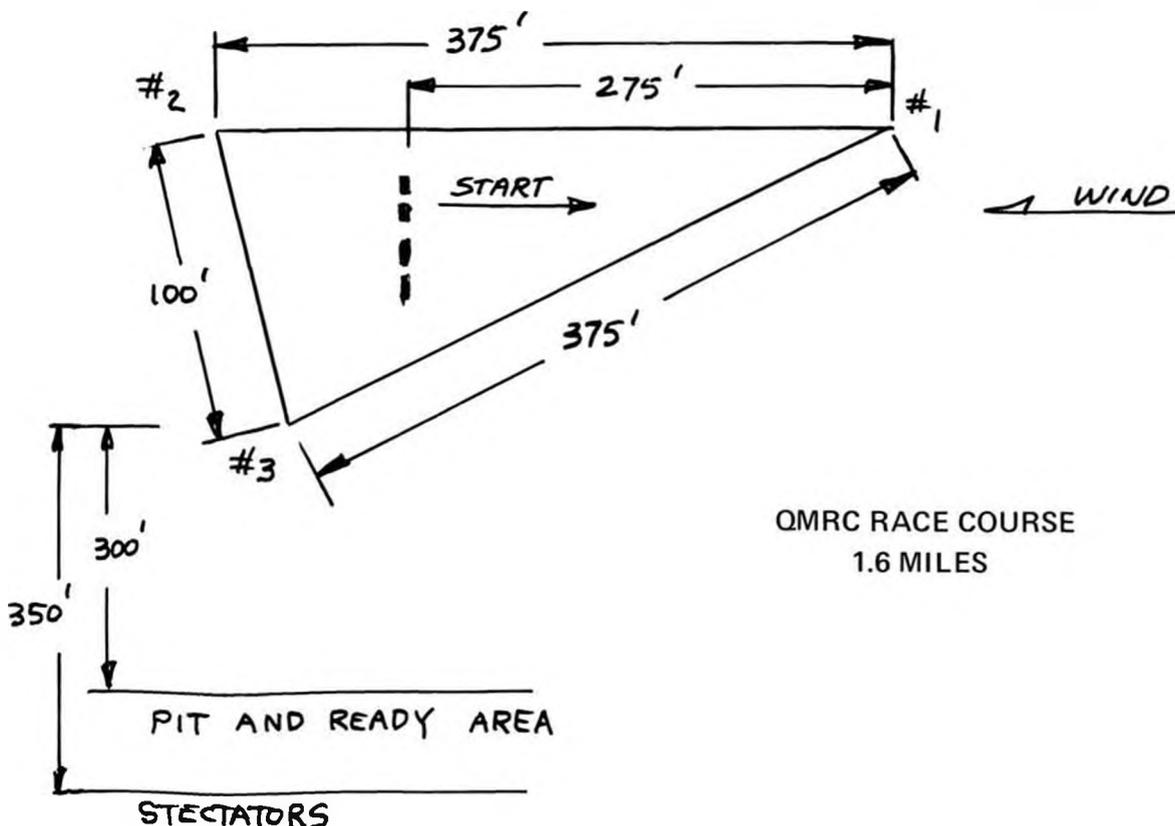
To provide closed course racing for

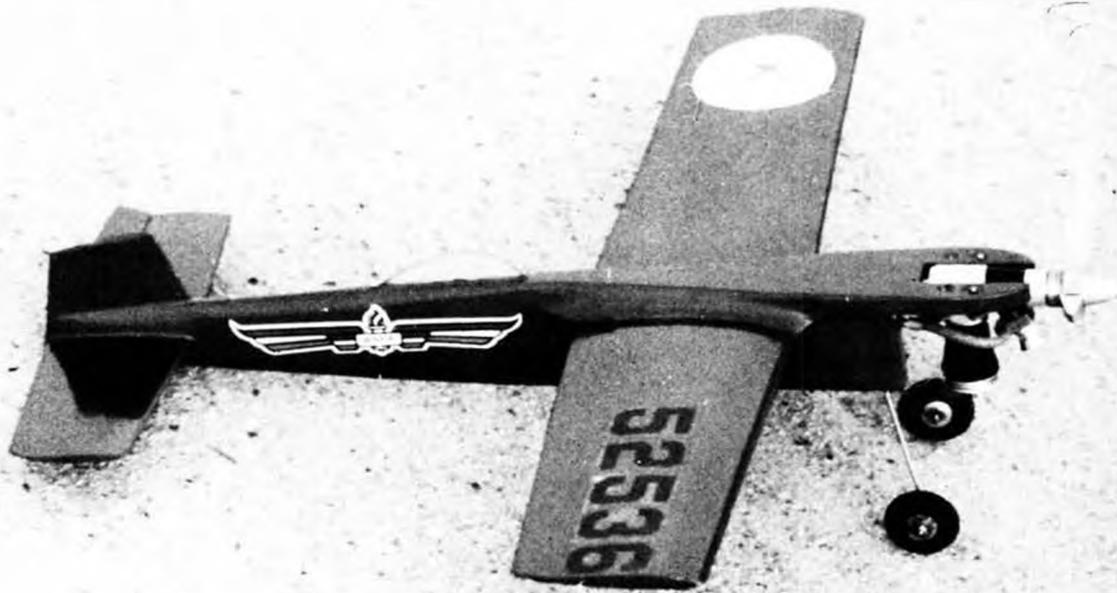
the sport flyer and novice racing enthusiast.

2. GENERAL:

All AMA and FCC regulations covering the R/C flyer, his plane and equipment, shall be applicable to this event, except as noted herein. There shall be no limitation on the type of radio equipment fitted to the plane, or the number of controls. The contestant shall be allowed two entries in this event. He can only use his alternate model if the first model is not flyable. The

Continued on page 62





Rick Westbrook's record setting 1/2A Proto (Profile) racer. Used single LH single blade prop, 5-1/8 D x 4.6 P, 5-1/4

CONTROL-LINE

PHOTOS BY JOHN & JIM WADE, DALE KIRN

Fast Richard was temporarily lost while laying out a new two-lane footpath through his native Snider Swamp. Lucky for all of us, he'll be back next month. Meanwhile, back at the circle, here's Dale Kirn.

● Control line speed flying on the West Coast is coming alive! Eighty one (81) speed planes were entered in the 2nd Annual "ALL SPEED MEET" held on November 18 and 19 at Los Alamitos NAS, California. It was hosted by Speed Flying Anyone - Club, and the CD was Bev Wisniewski. Even the weather was cooperative - upper 60's to lower 70's.

Interest in 1/2 A events was fantastic! There were 21 protos and 11 speed planes entered. Over half of these planes

were flown by Juniors.

The speeds in 1/2 A were very good. Rick Westbrook (Los Angeles) set a new record in 1/2 A Proto (Profile) at 86.50 MPH. He flew a plane of his own design. The engine was inverted and the bell-crank and control lines were exposed under the wing. Of special interest was the fact that he used a single blade, left hand prop (5 1/4 diameter X 4.6 average pitch).

In the 1/2 A Proto (Jr.) event, where

the flyer can fly either a profile or a full bodied plane, Mary Kirn (age 10) turned a respectable 81.79 MPH flight with her two-line Torky. Her left hand Tee Dee .049 was swinging a 5.4 diameter X 4 1/4 pitch single blade prop (made from a Kirn-Kraft injection molded left hand prop).

Joe Kirn, age 8, captured first place in 1/2 A Speed (Jr.) with his two-line Torky at 85.93 MPH. This was done with the same prop and fuel his sister



Winning combination: Si Westbrook and 11 year old son, Rick. Rick did 86.50 MPH to establish new record.



Dale Kirn's gang, busy in 1/2A events (l to r); Mary (10), Kathy (9), and Joe (8). All good flyers, especially with Torkies. Wonder why?



Jet team entry of Jerry Thomas (l) and Jim Wade. Modified tailpipe and head brings 188 MPH! Thomas starts, Wade flies.



Beautiful new flying site, Anaheim Stadium. You must be a member of Anaheim MAC in order to use it. Jim Wade starts plastic PT-19

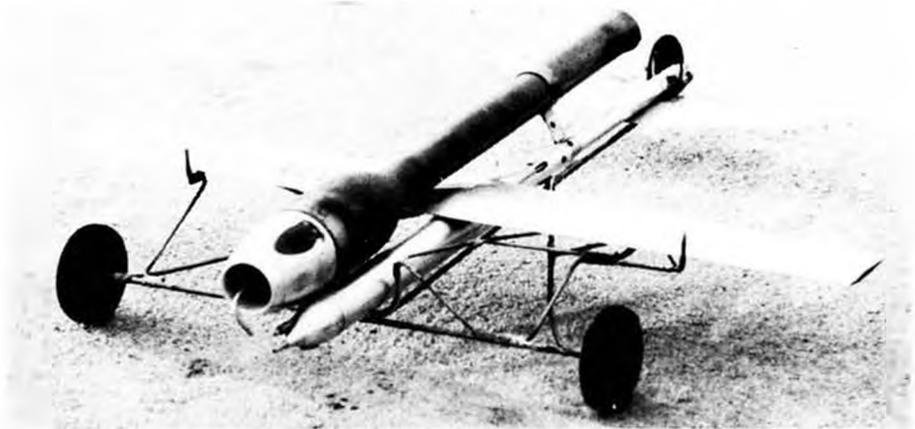
was using.

(Dale doesn't mention it, but the Kirns are his'n.)

In the Senior categories, Jim Wade (Anaheim, Calif.) turned in very respectable speeds of 93.81 MPH (1/2 A Proto) and 100.49 MPH (1/2 A Speed). Both winning flights were with his proto ship. This kinda knocks the theory that you have to have a "little" speed plane in order to go fast.

Charles Legg (Council Bluffs, Iowa) had some problems getting the right settings on his home-made, tuned pipe .049. However, even with "bad" settings, he took first in 1/2 A Speed (Open) at 106.47 MPH and first in Proto at 90.69 MPH. Guess his equipment wasn't used to flying warm California "winter" weather.

Every first place in 1/2 A events was won with a single bladed prop. All were left handed, except for Charles Legg's planes. He flies clockwise, so the conventional engine rotation gives him the



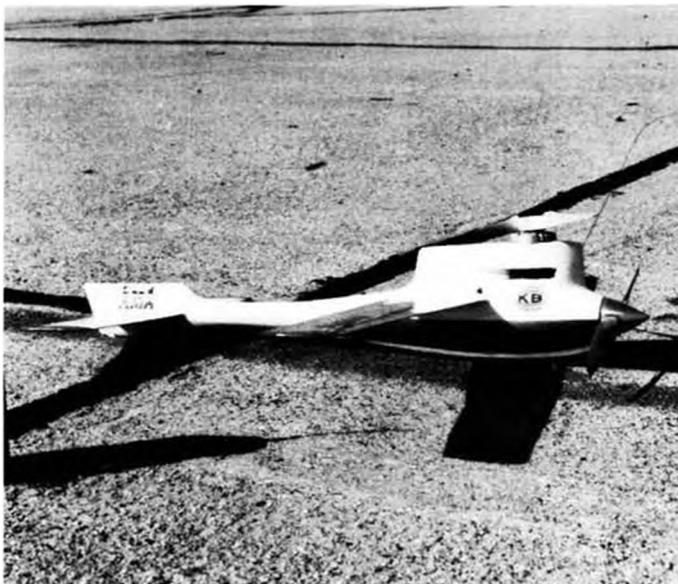
All metal jet by Thomas/Wade. Engine is at 45 degree angle to outside of flight circle. Came within 1 MPH of setting new speed record.

desired torque effect on take off.

The open Class A Speed record was broken again by the team effort of Newton/Nightengale/Beatty. A super swift 172.84 MPH this time. Sure is getting difficult for the clockers to time flights this fast.

Chuck Schuette edged the FAI Speed record up slightly to 154.80 MPH. Not bad considering the plane was flown on two lines (required) and NO nitro in the fuel. The advancements made in .15's in the past few years has been fantastic,

Continued on page 57



Neat looking K & B .29 speed job by Joe Stream. Features a fiberglass fuselage and metal wings. Also flown in Class C with K & B .40.



Jim Rhoades and his Hoyt-designed sidewinder. Uses Mono-Line control system.



MB Editor's .020 replica So-Long, build from Cal Aero-Model kit. Weighed just under 4 ounces at this stage. Cox TD, Tatone Cut-Off timer.



PLUG SPARKS

By Jack Transue

There is so much "New" interest in the "Old Timers" that we felt they deserve more than a passing glance. Our columnist is a regular participant in this activity. The name of the game is "Relax and Enjoy."

● Starting a new column is like starting a new model, one doesn't know quite where to begin, until he has checked all of the pieces over very carefully and decided that everything will look O.K. when completed. As you should have guessed by the title, this column will be written for, and about old time free flying (Old Timers).

It is also hoped, through this column, to bring more people into this part of our hobby. The past contest season has seen more and more modern free flight clubs having one or more Old Timer events at their meets. The .020 Replica event is beginning to be one of the most popular events for Old Time free flight contests, and has even spawned several new manufacturers who have brought over a dozen new kits on the market. This would be as good a time as any to give a plug to some of these individuals and their products.

First Bob Oslan of Cal Aero-Models has come out with a couple of cuties. The first is Bill Englehardt's 1940 design So-Long and the next, Sal Taibi's 1941 Brooklyn Dodger. Bob had been flying the So-Long for about three years before he decided to bring the plane on



PHOTO BY MORRIE LEVENTHAL

Jack Transue, our "Plug Sparks" columnist with his winning .020 Brooklyn Dodger, another Cal Aero kit. Original Dodger was famous Sal Taibi design.

the market, so it is really a time proven design. We built the Dodger back in April of this year and have done well with it in competition (Won the last two contests over Mr. O while he was flying his So-Long). By the way, Sal Taibi of Competition Models is doing the die-cutting, and as would be ex-

pected, the workmanship is excellent. The kit we received was one of the first run off, and each die-cut piece seemed to want to fall out by itself. The Dodger was built from the original set of plans, so there were still a few bugs to be worked out of the design. All in all, two really fine kits. They are on the hobby



Chuck Partch holds and Gene Wallock cranks up rubber in Korda job, one of many they are partial kitting as P&W Model Service.



Cliff Silva, in chair, with his Ehling designed Texaco model, Air Trails.

dealer shelves now, so check with your local hobby outlet and pick out your favorite.

Micro Models of Covina, California, was actually the first to come on the market with an .020 replica kit. They now have eight different kits on the shelf, and it is understood that about a half-dozen more are in the works. Sam Blumberg, president of Micro Models, showed us a prototype model of Carl Goldberg's Sailplane. If you thought the full size one was a bear to build, just wait until you try to wrestle this little half-size beast off the building board and into the air. On the first test flights, it was determined that the ship was a little over weight but this problem will be eliminated in the production model.

This might not be a bad time to bring up the subject of weight, as it applies to these small models. Keep 'em light. Check your wood carefully, and if it

looks as if the model is going to weigh more than 5 oz. (3-1/2 to 4-1/2 is ideal), then start replacing the heavy wood with something lighter. Above all, bear in mind that old free flighter axiom, "keep the tail areas light." This has been the failing of many otherwise finely designed and built models. These little replicas with their seemingly weak engines can be unleashed monsters, with careless workmanship.

So much for a lesson in model building, but then again, isn't that what this magazine is all about?

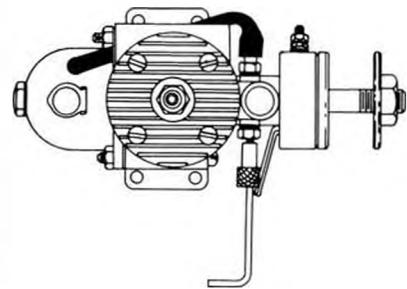
Anywho, Micro has eight fine models on the market now and you really couldn't go wrong with any one of them.

Now for some full size talk and problems. Seems as though every time we go to a contest, whether modern or old timer, we hear the same thing over and over, "Gosh, I sure would like to start flying this old timer event, but where do

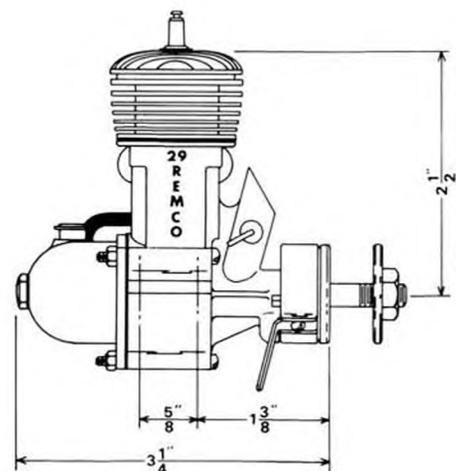
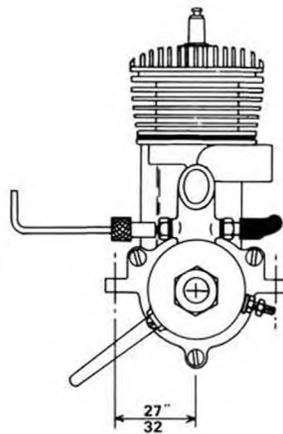
you get an ignition engine?" Most current old timers are using engines they had picked up years ago, and which were just collecting dust until the old timer movement brought them out again.

MECA held their swap meet recently in Anaheim, Calif. and we joined the couple of hundred or more interested people who went to see what there was to be had . . . and for how much. Well, one word can sum up both questions,

Continued on page 57



Jim Dean, "Hot Leads" editor, with his Riser Rider. He's not as unhappy as he looks.

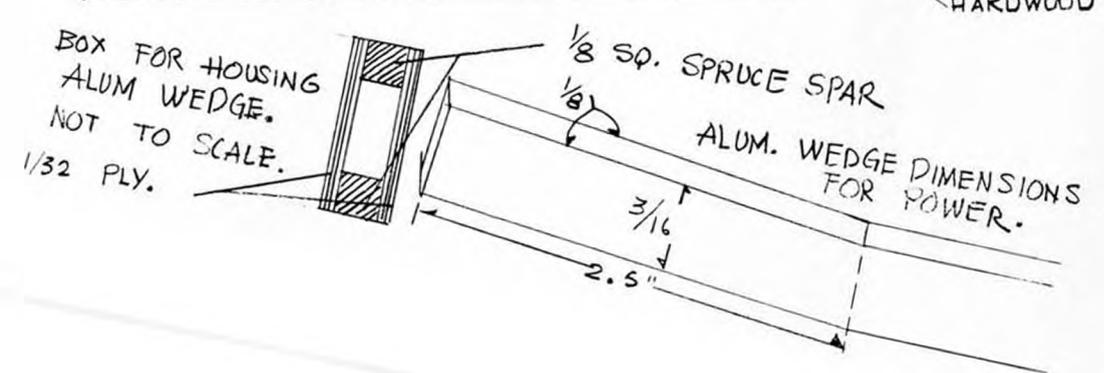
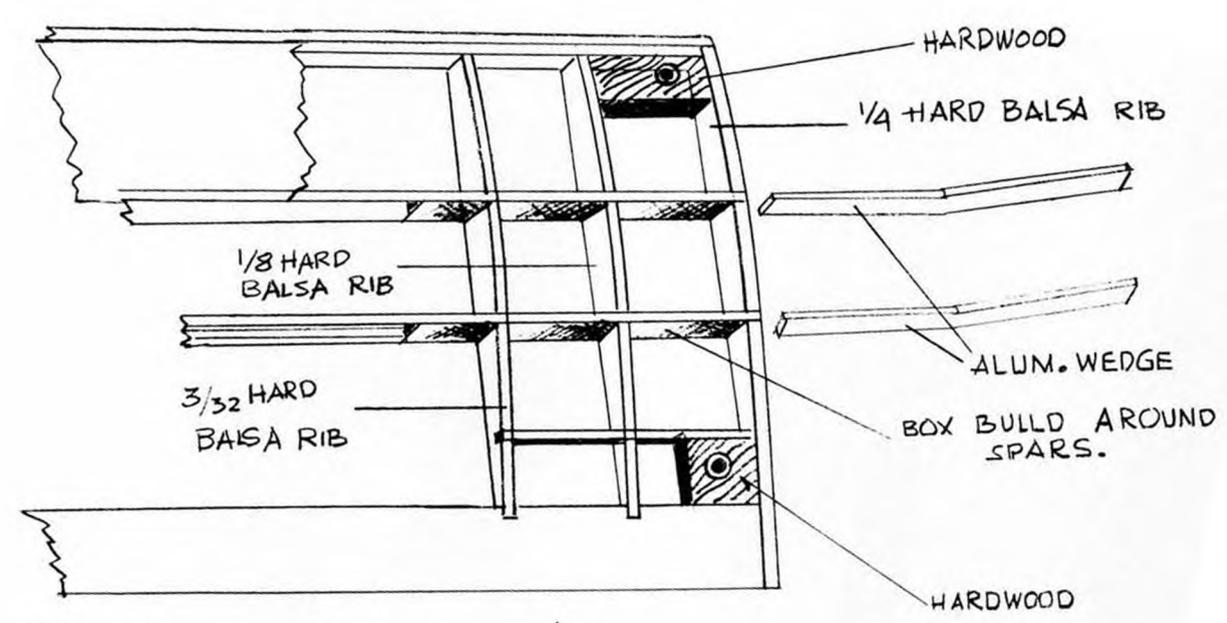


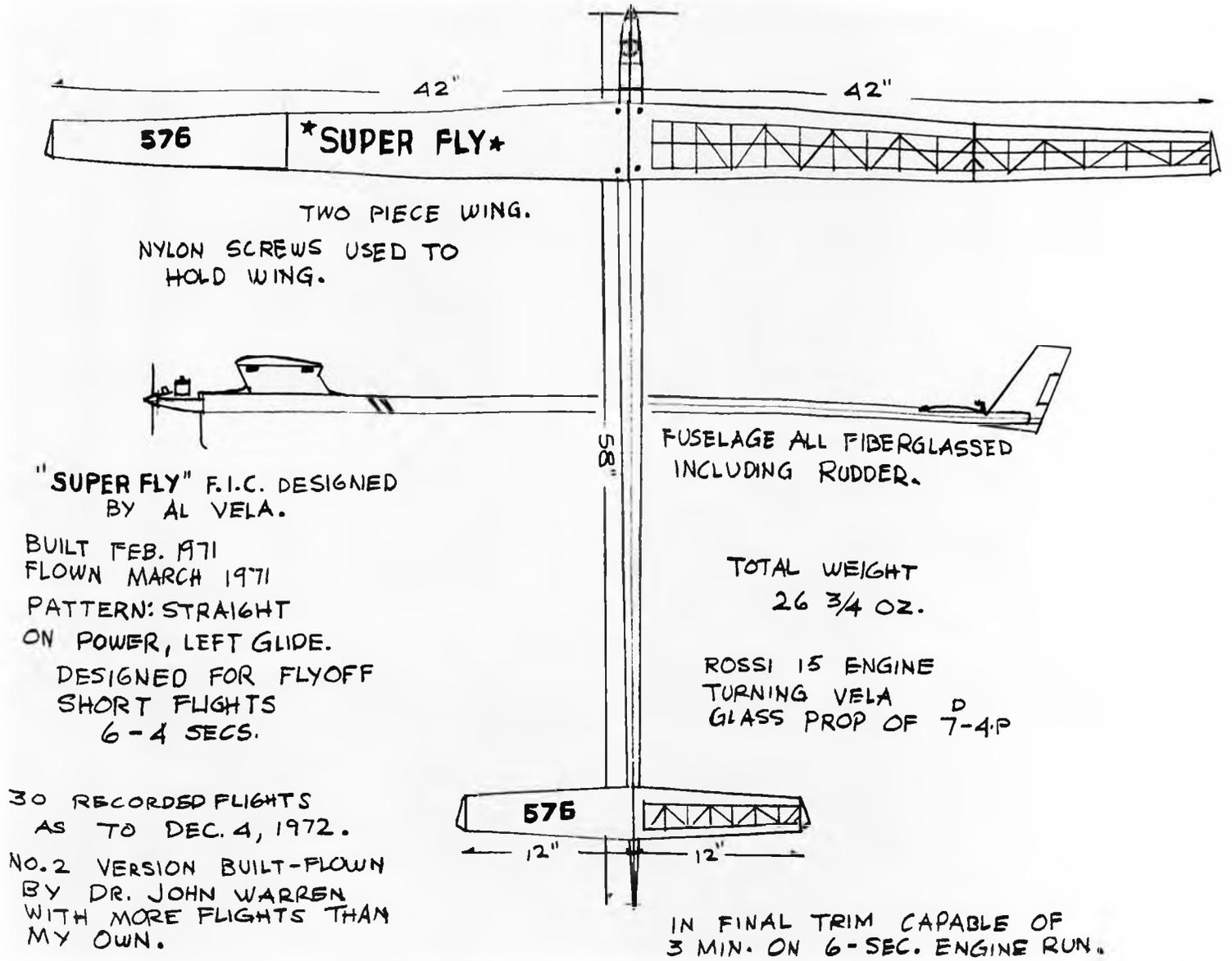
Brand new ignition 29 to be manufactured by REMCO, Denver, Colorado. Company has also contracted a firm for the manufacture of new spark plugs. Read more in "Workbench" column.

Our FAI Free Flight columnist, Al Vela, with "E-Z Boy", 1/2A free flight design of his which was featured in the Feb. 1972 issue of MB.



FAI f/f Report





"SUPER FLY" F.I.C. DESIGNED BY AL VELA.

BUILT FEB. 1971
 FLOWN MARCH 1971
 PATTERN: STRAIGHT ON POWER, LEFT GLIDE.

DESIGNED FOR FLYOFF SHORT FLIGHTS 6-4 SECS.

30 RECORDED FLIGHTS AS TO DEC. 4, 1972.

NO. 2 VERSION BUILT-FLOWN BY DR. JOHN WARREN WITH MORE FLIGHTS THAN MY OWN.

TWO PIECE WING

● I am using this system in my new fly-off design. Being a wing of moderately high aspect ratio, one piece construction becomes kind of impractical for transportation . . . especially if your car, or your travelling plans, are European.

It's not a new approach, but what makes the system worth mentioning is the use of aluminum joiners instead of the usual wires. The latter tend to roll inside the tubing guides when the wing is put together, and also allows too much flexing. In addition, the wire system adds too much weight.

The joiners are held in place using a guide box in each panel. I use a plastic material from the model railroad counter of the hobby shop (*Are you listenin', Fernando? WCN*) to build the guides, but you can also use plywood. The best idea is to locate the main top and bottom spars to that they form part of the guide boxes.

This system could be employed in all three of the FAI free flight classes.

TIPS FOR NEWCOMERS TO FAI

In my 15 or more years of working with F.A.I. power, my concern has been mostly with the high performance of the machine rather than depending too much on favorable weather conditions. To be at all competitive, it takes a great deal of skill and talent plus top craftsmanship and design ability to create a high performance airplane.

F.A.I. competition requires full modeling time, and choosing one class out of the three will allow you to concentrate and get the best results from the one you choose. It is good practice to acquire the coaching of a top flyer with experience in the class. Working alone, learning the hard way, can take a long time and can be very discouraging. Most good modelers are willing to help and will probably feel complimented that you wish to follow their lead. Usually,

they are quite willing to have a flying partner with whom to share their long hours of experience and acquired knowledge. With the right approach, you could say you have found an instructor.

Avoid taking the "easy" way out. Slap-together construction, cheap materials and second hand equipment will keep you in trouble. "Sloppery" is the "Dirty Monster," the number one enemy in your aircraft, especially nowadays, when so many sophisticated gadgets are in use. In power particularly, many top flyers are using auto stabs, auto rudders, engine cut-offs or flood-offs, D.T.'s, variable chamber, etc. individually, in various combinations, or everything at once. All of this is in strong contrast to the old "shim and glue" approach. ●

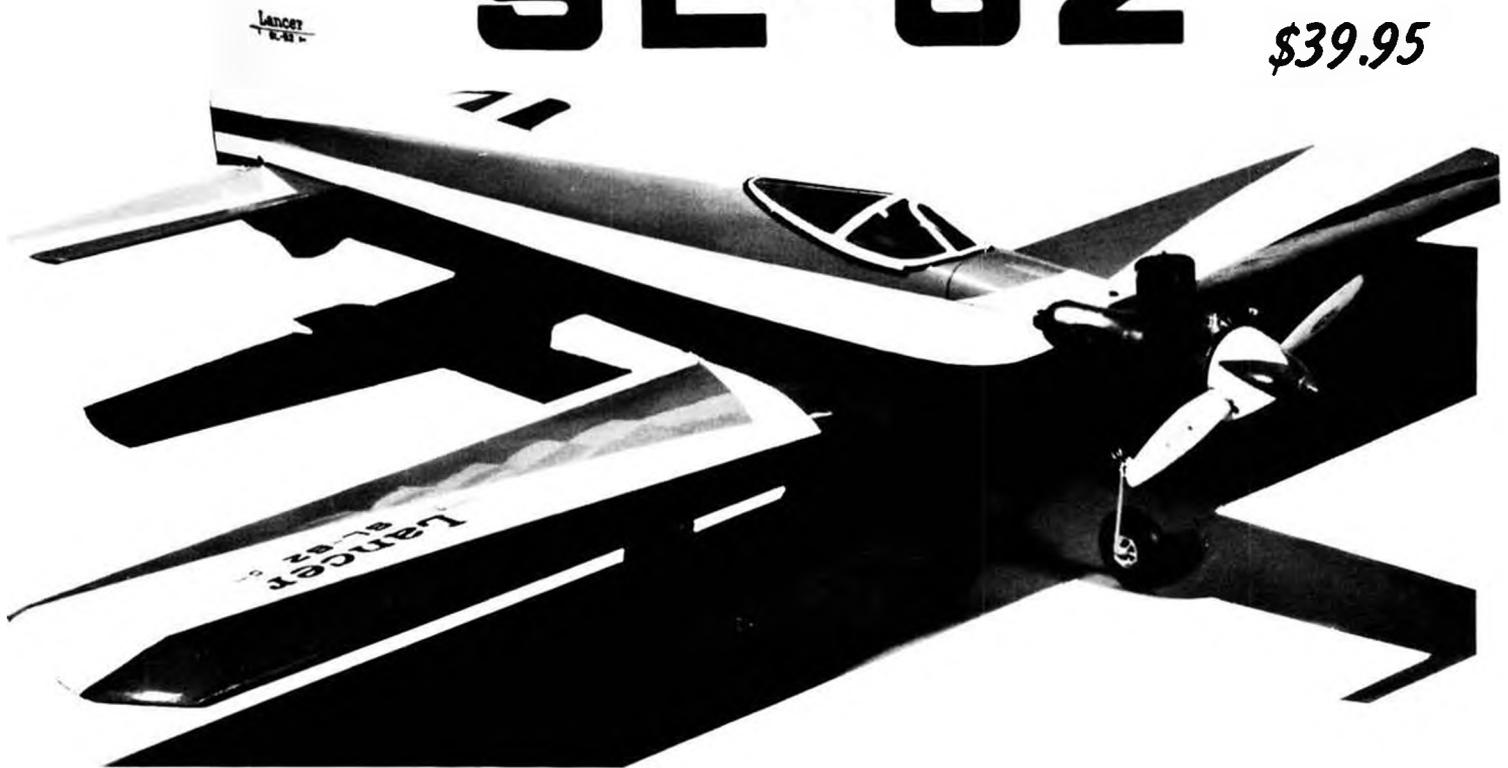
Next month we will have a report on running the new K&B schneurle .15 engine, without R/C throttle, on regular 75-25 F.A.I. fuel. ●

A Magnificent Flying Machine for .60 engines

Lancer

SL-62

\$39.95



KIT FS-30 SPAN 62" LENGTH 50" AREA 700 SQ. IN. FLYING WGT. 6¼ LB. ENGINE .60

A Contest-Caliber Sport Flyer

The Magnificent SL-62 is the result of 2 years' design and testing to meet the "if they had only made it this way" suggestions directly from the R/C Flyers in the Field. The result is this 62" Span beauty which has fulfilled expectations and aroused great enthusiasm with the R/C Flyers who have seen and flown the test models. Collective engineering-design is reflected in the fast and easy way the SL-62 goes together, and the flying . . . well, you've just got to take the Stick to believe it; it's that good.

Finest Quality materials include Prime Grade, Density-Selected Balsa sanded to micrometer tolerance. Imported Birch Plywood, etc. Fuselage features Die-Cut one-piece full-length sides, Plywood doublers (that go past wing for maximum strength), five Bulkheads — accurately Die-cut; combined with shaped Nose and Cowl blocks, quickly

go together to make a sleek strong fuselage; Topped off by a jet-shaped Canopy. Rugged custom made Aluminum Engine Mounts make engine installation a pleasure and formed music wire Tricycle gear includes fully-sprung stress relieved Nose gear.

Unique table-top construction insures a warp-free wing, a must for top performance. Wing parts are Die-cut, shaped, etc., to insure fast accurate assembly; and Balsa Sheet covering keeps warps out, resulting in a light rugged wing. Tapered strip Ailerons provided, are simple to install using the new ready-to-use simplified Aileron linkage units. Wing assembles to fuselage with nylon screws in hardwood nut-block provided, in the unusually complete Hardware pack which includes all the special nylon R/C fittings required. Rudder and fin are sheet, Stab is built up and sheet covered to keep it permanently flat.

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If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., \$1.25 minimum outside U.S.)
 Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories; etc. 25c enclosed.
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• Citabria made by Bellanca — a real aviation pioneer, is the sleek, powerful, modern light plane, a familiar sight at many airports • Curtis P-40 Warhawk. Work horse of World War II, made immortal by the Flying Tigers in China and Burma.

THEY'RE UNIQUE

Because such amazing detail scale authenticity is achieved with kits that are relatively easy to build. Plans include 3 views of full size Aircraft and show how to install movable controls from cockpit. Authentic color scheme shows on full color kit box lid.

THEY'RE VERSATILE

Kits can be built 6 different ways: Rubber powered, as supplied, then using 020, 049 or CO₂ for power: Free Flight, Control Line, R/C (with pulse or single channel) for static scale. Any way makes a museum-like model.

THEY'RE EASY TO BUILD

Just about every frame member is accurately Die-cut from the finest quality Balsa Wood, sanded to micrometer tolerances . . . and every part is numbered to insure fast and accurate assembly as shown on easy step-by-step plans.

THEY'RE COMPLETE *

Highly detailed plastic parts included, simplify the assembly and add a genuine touch of realism-in-miniature. Covering material, pre-formed wire parts, wheels, authentic decals, hardware pack that includes control system parts; is a partial list of the contents of these fine quality kits.

* Dry Kit. Rubber power material supplied.
Other power and equipment not included.

THEY'RE AT YOUR DEALER

GET OVER AND SEE THEM NOW . . . BUY ALL THREE
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SPAN 35½"
SCALE 1"=1'.0"

PIPER CUB
SUPER CRUISER 7.95
12 Pack — 15 lbs.



SPAN 33½"
SCALE 1"=1'.0"

KIT E-5 CITABRIA 7.95
12 Pack — 15 lbs.



SPAN 27"
SCALE ¾"=1'.0"

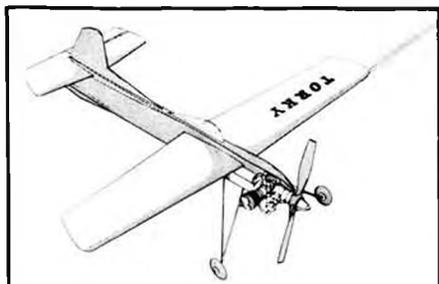
KIT E-4 P-40 WARHAWK 7.95
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Piper Frame

Citabria Frame

P 40 Frame



TORKY 1/2 A PROTO (PROFILE)

Custom made kit - balsa/hardwood. Tank and landing gear assembly completely finished! No drilling or soldering required! All necessary hardware included.

PRICE: \$10.50 (Postpaid). Send check or money order. No C.O.D. available. Mail order only.

FRONT NEEDLE VALVE ASSEMBLY For Tee Dee .049 or .051



\$2.50

FEATURES

1. 128 threads per inch for finer adjustments.
2. Nylon seal over threads and needle valve body which keeps air from sucking down the thread area. Prevents "false" needle settings.

This custom needle valve assembly will help you get more consistent engine runs - flight after flight.

KIRN-KRAFT

SEND 10¢ FOR LIST OF
OTHER 1/2A ITEMS

P.O. BOX 224
ANAHEIM, CALIF. 92805

R/C Report . . . Continued from page 17
.15 will do the job; standard construction and also a fine kit. If you are really in a hurry, try the Pilot Box Fly or Jr. Box Fly. The wing is foam, plastic covered, and the fuselage and tail surfaces are plywood and balsa respectively. Still my first recommendation is the Headmaster. (Sig's new Kadet, introduced recently, appears to be an excellent choice also. WCN)

Naturally, you probably know the local R/C'ers. They are usually glad and very willing to lend a helping hand . . . as well as plenty of advice. Choices of trainers and radios are as varied as there are brands . . . as well as the variety of suggestions you can get. You can be sure that they will all agree on one point . . . go slow and don't get in over your head, try the trainer first, and learn to fly. Even if you can fly a full sized plane . . . it is different, believe me. In our area we have found from experience that the Headmaster, as a first plane, is a wise choice, and we have plenty of fliers here who started with this plane and will back me up. They'll tell you that they are glad the local Club and fliers pushed this type of plane for their trainer.

Remember that any hobby of this

type requires some expenditure. You won't get in for nothing; not any more than you can go boating without a boat and motor, or skiing without skis and proper clothing. Same here, you will have to buy a kit, motor, radio, and some accessories. Cheap is cheap and good is good and sometimes the cheapest thing you get is the most expensive, since you often have to replace it with something that is right . . . which you should have gotten in the first place. Right? . . . Right! If you are expecting me to tell you what brand to get, I can't. Again, opinions vary so much in different areas that you will have to find out what is flying best and what is most popular in your area (also why), and go from there. If you buy for price and price only, you will be in trouble.

Now the question is; should you get a three channel and move up later . . . or go the whole bit and get four to six channels? Again, should you get a three channel and learn to fly well, you will probably be looking around for a buyer for the three channel so you can get the four to six channel you should have gotten in the first place. Therefore remember the old Japanese R/C adage: "It only costs a rittle more to go first crass." Seriously, that's a fact. A little more is the difference between the three channel and four channel rig. (Of course, Frank is referring to the modeler who is primarily interested in powered aircraft. For the hobbyist whose interest centers around R/C powered boats, sailing yachts, race cars, and soaring, the more economical two and three channel sets are adequate. The soaring enthusiast, however, should consider a four channel radio, with the possibility of outfitting two gliders at less cost than buying two extra servos separately. WCN)

I've heard some people say they will wait until prices go down. Not much chance of it. Time was, and it wasn't too long ago, that the price of an old style reed receiver and transmitter (less batteries, servos, plugs, chargers, and all the other necessary items now included in a proposit) was just about what you can pay for a current full house outfit . . . ready to go, and all you do is install it in your plane. Don't wait . . . prices are more than fair, and the equipment is so reliable as compared to the stuff us "old timers" used to tinker with, and cuss, that it is the difference between day and night.

Now that we have covered what type of plane is best for the beginner and the general type of equipment to get, you are ready to head for the local

R/C shop. Good luck and let's keep in touch.

Changing the subject slightly, let's talk more about this crazy hobby . . . R/C. I'll be glad to hear from you, and if you have any decent photos of yourself and your plane, who knows . . . you might get in the column. As I said before, I can't answer all the mail, but I'll try. If you are stumped, perhaps I can help. Or if you want suggestions and advice, we sure don't charge for that either. (A stamped, addressed envelope would be nice, though. Write to: Frank Schwartz, 2400 West End Ave., Nashville, Tenn. 37203.

It would be highly unfair of me to say that this radio is better than that, and so on. Even if I did say that I personally prefer the Headmaster as a beginners plane, chances are, in many areas the local R/C types recommend something completely different. Good, that's what makes horse races. Nevertheless, if any manufacturer gives me the opportunity, I'll try some straight-from-the-shoulder informal-like product reports. Worst I can get is lynched. (After me, that is! WCN)

Again, I'd like to hear from you out there. What you want in a column definitely is important. There are good books on how-to-do-it in R/C and even to go down that road again and I feel you don't want to drag through article No. 76 in "how to get started in R/C." If you live long enough you might get to the end of the series. I'll try to keep this on a lighter plane . . . that is, on the subject you want to read about . . . maybe throw in some hint's and kinks you never thought of . . . That's it for this time, fellows . . . Y'all write!

Mexico Continued from page 17
vinced, stayed much longer than they had intended to.

As on a previous trip to Guadalajara, the three hour flight to Mexico City by Mexicana Airlines was the epitome of courtesy and understanding; even to the three of us who boarded their 727 carrying two racers and a Kaos, plus miscellaneous brief cases, satchels and camera bags. In as highly a competitive industry as the airlines, Mexicana doesn't have to wear any 'We Try Harder' buttons. It is obvious that they not only try, but that they succeed.

Another amongst the many pleasant aspects of attending contests in Mexico, is the ease with which customs is cleared upon arrival. As a world traveler of some experience in over ninety countries, I am always prepared for the

worst. However, in this case, it took only minutes for the Customs Officials to decide we were not hippies, dope smugglers or hijackers, after which the only delay was caused by their interest in our birds and the fact that we traveled so far just to compete.

Our way then lay across 90 miles of toll road from Mexico City to Puebla, Mexico's fourth largest city, via the courtesy of the Puebla Club. This took us from the 7,500 feet altitude of the Capital, to over 10,000 feet with magnificent views of Popocatepetl (Remember the song?) and Ixtacihautl, Mexico City's twin volcanoes, and back down to 7,000 feet at Puebla.

The high altitude took its toll on the sea level flyers, including Phil Kraft, who lost the lead on the first two days to young Benjamin Castaneda, of Puebla, son of well known Luis Castaneda. By the third day however, the old master was back in stride and put in the highest scoring flight of the meet to put Benjamin back into second. The third place in this event was won by Salo Feiner of Mexico City, and all were winners of large beautiful trophies donated by Orbit Electronics.

The FAI Pylon race was won by well known Marcial Davila of Cuernavaca. Second and third places went to Roberto Mathelin and Manuel Sierra.

Both Formula One and Open Pylon First Places went to young Henry Bartle, of the Orbit team. Henry is only 17 years old, and is definitely one of the up and coming youngsters to keep your eye on. In this contest, racing against pilots of greater years and experience, Henry won every race he was in. It must be considered that he too was handicapped by the high altitude . . . and by my calling.

The race that won him first in Open Pylon will long be talked about in Mexican pylon racing circles. Though four planes took off, it was really a two plane race with Gaston Mathelin's HP 40 Quarter Midget taking off first, and Henry's Ballerina taking off fourth. The first half of the race saw Gaston's Midget more or less a half lap ahead, then a gradual shortening of the gap began to be noticeable. Through the ninth lap, the lead changed back and forth, and it became evident it would be a close finish. Gaston's QM had the speed advantage, but usually lost out on the turns. Going into the last lap, Henry outturned him on two and three, with Gaston again passing on the straight. Again Henry took the lead coming out of number one and maintained a definite but not lengthy lead all the way

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back. A few more feet were gained on the last two pylons, enough to dispel any doubts, but still very close. Ramon Virgilio and Salo Feiner, both of Mexico City, were second and third place winners, respectively.

Formula One, though not quite as close or exciting as the Open races, was still a clean victory for Henry Bartle. Second and third places in this event were won by Benjamin Castaneda and Louie Zienneker.

The RC Glider event was the first one of national scope to be held in Mexico. The high altitudes seem to have more noticeable effects on these birds

than it does on power ships, and large size seems to be a requirement. I played "Yes it is; No it isn't" with myself over a Mark Smith 'Windfree' with polyhydal wing, 'till its landing. It turned out to be a Windfree Plus 50 percent, scaled up from the magazine article. The ships were winched aloft, with flight times and spot landing counting for points. This event included the only lady flyer present, Mrs. Guadalupe de la Vega, of the Capital City. Unfortunately, she did not place, but was heard to say something about women's lib, and 'next year.' Roberto Gusman, of Mexico

Continued on page 58

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Soaring Continued from page 23
the air touching the black car top will get warmer quicker than the air near the white car. The same as your hand.

The heat transferred from a single car top will hardly warm enough air to generate a thermal suitable for soaring. So how about a whole parking lot full of black cars? Or, how about a black, asphalt parking lot with no cars? Or a large, tarred roof? Or a big, flat field? Most any dark surface absorbs heat . . . surface heat warms the air . . . and, thus, we have the potential for thermal development.

But it's all relative, and dependent upon irregularity in composition and color of the ground, and its features. So you see, Fred, not all "irregularity" is a problem . . . no matter what the man on TV says. Anyhow, and the point is, just heat is not enough. For good thermal activity, variation is needed which will provide differential heating . . . different rates and amounts . . . to the air. A given mass of air will rise only when its temperature is higher than that of surrounding air. This type of heating action is caused by ground surfaces or features which are in close proximity, and which absorb heat and thereby warm the air at different rates.

Dark surfaces are best, but light colored areas can also provide thermal action . . . especially when surrounded by the cool colors as typified by green grass and blue water. This cool stuff usually means "down" air.

More and more, R/C soaring enthusiasts are discovering their local schoolyards. Not only are these areas convenient, clean and well manicured, but the variation in topography . . . surface and features . . . that they usually offer is great for thermal development. Parking lots, streets and sidewalks, large flat roofs, baseball diamonds, swimming pools, football fields, green areas and

bare ground make for differential heating.

Full-scale sailplanes, flying higher and covering more ground than their R/C counterparts, can utilize other and larger sources of thermal action . . . such as that developed by towns and cities . . . industrial plants, fields of dry crops and other major generators . . . not really available to models. With R/C, we're a bit closer to the ground and more dependent upon highly local conditions. Sometimes the bigger stuff is down where we can use it . . . "the sky is falling up, the sky is falling up" . . . but even without it, there's enough small action to make the R/C sport interesting. Obviously.

Some wise guy is going to remember one Sunday last July when it was so hot at the flying field that leftover firecrackers were going off by themselves. Nothing was staying up. The ground was hot . . . the air was hot . . . everything was hot . . . saturated with hot . . . the same hot, and thereby conditions were relatively stable. And dead. Or, it may have been a "muggy" day . . . high humidity . . . wherein a great portion of the sun and earth's heat was dissipated by moisture in the atmosphere, leaving little heat remaining to warm the air. Just heat alone won't do. The air must be unstable.

Late sleepers in coastal regions . . . and quite possibly in many other parts of the country . . . may miss a lot of good soaring. The usual "low clouds and early morning fog" . . . to quote local weather forecasters . . . keeps the lid on things and holds the surface fairly consistent at nighttime temperatures . . . and moistures. With the first break in the overcast . . . or rays of the rising sun . . . the warming process starts, and the differential heating takes off.

The first air to be warmed-up rises, taking sailplanes and a patch of overcast

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with it. Pretty soon and for at least a little while, everything is "up." It starts with the first little peek-a-blue, so to speak. And what a great time to test fly a new design. You're sure you've got a world beater. Just look how it performs in that early morning "dead" air. Sure. And quit while you're ahead. Sometimes it seems the lift is better before . . . and after . . . the "heat of the day." Fools ya.

So the air is heated by warmth from the ground. That means we've got hot air. An easy commodity to come by in the R/C soaring sport . . . and columns. But what about thermal action . . . rising air . . . that's suitable for our use? Thought you'd never ask.

Thermal action is initiated when a warmed mass of air breaks away from the ground and begins to rise. This break-a-way can result from either the strength of the air mass itself, or from some outside influence such as a little breeze or other local disturbance. In the latter case, the breeze helps "tear" the thermal from its contact with the surface. In either situation, cooler surrounding air flows in to replace the rising air.

If the surface which warmed the air mass is of limited value, the developed and released thermal will be a "bubble" or free-floating mass. In all probability, it will be one of a series or chain of thermals generated by the same source. The spacing or time between thermal development and release is dependent upon the "power" of the source. "Yeah for da power!" A marginal source may require several minutes or even hours to warm each new batch of cool air sufficiently to create the energy required for thermal release.

However, if the surface is a strong heating source, the incoming cool air will be warmed quite rapidly, and a continuous "feeding" of the original ther-

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mal is maintained . . . without interruption . . . to result in a "column" thermal.

So there you have the two types or structures of thermals that are generally considered valid by most theorists: the "bubble" or "free-floating" and the "column."

The "bubble" is the more complex of the two, so let's consider it first so that we can move on quickly before we get in over our heads . . . some more.

The birth of a free-floating thermal, of course, begins with the heating and break-a-way process that we've just covered. Once the bubble is free, its direction of movement is upward . . . obviously. Its rate of ascent will depend upon its density relative to the density of the surrounding air. The greater this difference, the faster the ascent. Thus, thermals identified as "strong" have a larger density variance from surrounding air than would a "weak" thermal.

Now that this free-floating mass has started its travel upwards, it will continue to rise until it stabilizes. This will occur at an altitude where the density of the thermal mass is equal to that of the surrounding air. But, remember, the atmosphere is less dense and the air

temperature is reduced . . . due to ever increasing cooling affect of the surrounding air. This cooling causes the density of the rising air mass to increase. The combined results of reduced atmospheric density at altitude, and the continuous cooling action makes the thermal "top out" . . . reaching its point of equilibrium. So, any single thermal bubble has only a relatively short life expectancy . . . usually just a matter of minutes. Like maybe ten.

As it rises, several things happen to our fickle, free-floating friend. First, it drifts, as do many free bodies in uncontrolled travels . . . but that's another story. The thermal air mass is moved over the countryside by the action of horizontal air currents . . . wind. Like a free balloon, it has no ties to the ground and assumes the direction and velocity of its environment . . . the air currents. This is why useful thermal action is found downwind from the source. And, the further downwind, the higher the action above the ground.

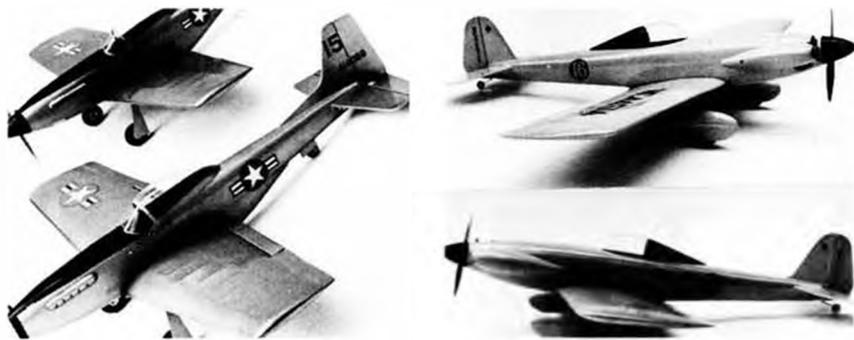
Some air movement is needed for thermal development . . . to help "tear" the heated masses from the ground so that they can rise and be useful energy. However, too strong a wind will destroy

any possibility of successful thermal soaring. Heavy wind scatters . . . breaks up thermals before they can fully develop to worthwhile size, or drives them downwind too far, too fast. In this latter situation, a sailplane can easily be carried beyond its capability to return to the flying field . . . no matter what its altitude.

The second thing that happens to our fickle friend as it floats its way through life is that it changes form or shape as it drifts and rises. It will usually spread a bit . . . that is, take on a flatter shape . . . due to the natural expansion of warm air, and the lower resistance presented to its expansion by the less dense surrounding air at higher altitudes. That's why thermals are bigger . . . cover more area . . . and are accordingly easier to find and use at altitude than down close to the ground.

Many writers . . . who seem to know what they're talking about . . . would have us believe that the original air mass takes on a form sorta like a doughnut or ring. This is referred to as a "Vortex Ring" or "Vortex Shell."

The "Vortex Shell Theory" is fascinating, though rather complex. Essentially . . . and undoubtedly, over-simpli-



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fied . . . this theory considers the rather obvious concept that the air at the center of a given warm air mass will be warmer than the air at its outer edges. Why not? The outer air is next to the surrounding cooler air that lets our mass be a thermal in the first place. Then, too, the middle air has just gotta be insulated from the outside world of air by the air in between. So let's buy the idea. Besides, if we don't, this column is going to get short . . . quick.

Now and accordingly, if all the above is true, it follows that the inside, warmer air will rise faster than the rest of the bubble. As a result, the relative upward velocity of this center . . . or "core" . . . causes the outermost air of the bubble, now a "ring," to flow downward and inward, to replace the rapidly rising air of the core. In this manner, a circulation of the air within the structure is initiated. Like a smoke ring blown by a guy lying on his back. Or maybe, an upside down bathtub drain.

The advocates of the Vortex Shell Theory explain that the flow in the core is traveling upward faster, and thereby reaches its "top out" altitude sooner than the balance of the ring. Makes sense. This upper air apparently hits a temperature . . . or a density . . . or a temperature/density level through which it cannot penetrate. Like a lid. The core air is then deflected outward where it mixes with the downward flowing air of the outer shell. And around she goes.

So what have we got? A big, invisible doughnut of turbulent or gusty air with "down" on the outside and "up" in the

middle, and a mess of everything else in between. Sounds familiar. (*Yeah. As only Johnny Mercer could do it!* WCN)

The dimensions of this activity can be widely varied. The core can stretch from a couple of hundred feet or so up to several miles. Similarly, the outer dimensions can be from several hundred feet to many miles. The important thing is that the core will always be smaller than the balance. Brilliant. So, there's always more "down" than "up." But the "up" will be of greater velocity than the "down" . . . happily. There's a reason. There's more area . . . or volume . . . of non-rising air than there is of rising air. Accordingly, downward air has more area . . . volume . . . over which it can spread, and its affect or force is diluted. But always, "up" and "down" strength are related. That is, the stronger the "up" in the thermals, the stronger the "down" in the areas between the thermals. And, the closer to the core, the stronger the "up" . . . the closer to the thermal shell the stronger the "down."

Column thermals are a bit different. As the name suggests, this type of structure is similar to smoke or dust rising into the sky from its source on the ground. The column thermal starts life in the same way as does the bubble thermal. But there's a difference. The bubble is one of a series from a source which generates only an occasional thermal. The column develops from a heat source which has adequate energy to produce an uninterrupted, continuous flow of rising air.

As with the bubble, the column thermal has a core that is the strongest lift portion . . . is surrounded by "down" air . . . and tops out at some altitude equal to its density/energy. The column thermal is also affected by wind, but rather than drifting free, as does the bubble, the column "slants" or "inclines" downwind. Under some circumstances, of course, the column thermal can "tear" or break-a-way from its ground anchor, and thus become a free-floating mass acting much like a very tall and slender bubble.

Column thermals do have the advantage of offering direct visual evidence of their existence . . . cumulus clouds; that is, they do if there is moisture carried aloft in the rising thermal column. Under these conditions, the water vapor condenses when it reaches a higher, cooler altitude. The vapor thus becomes visible and is identified as a cumulus cloud. These clouds mark the top of a thermal column . . . or, at least, the top of where a column thermal used to be. That's because the cloud will remain for a little while after its source has died away. So, while a cloud is building, it is a pretty good bet that there is a strong thermal action feeding it . . . from someplace upwind. Dry days . . . or areas where there is little moisture in the atmosphere, result in "dry" thermals that offer no reliable, visible marker.

There's a lot of talk these days about "inversion layers." Usually with reference to smog and stale air conditions. This so-called inversion condition exists when temperature of the upper air within a given layer . . . vertical depth . . . of the atmosphere is warmer than the air below it . . . rather than cooler. Like it's supposed to be. Thermal masses can't rise in or beyond this layer, and cannot develop into usable lift. This situation keeps smog and other air pollutants from escaping, and it keeps a stop on the thermal development.

One difficulty in discussing . . . or thinking about thermals, is that of the physical description of their form and structure. Thermals have minds of their own . . . so to speak . . . and refuse to conform to the convenient shapes that we have a tendency to visualize. After all, a thermal is a gaseous body and thereby pretty well at the mercy of wind currents and other atmospheric conditions. There is no known and set pattern or shape . . . so keep your mental pictures flexible.

As the saying goes, "Lift is where you find it," and the best hunting will always be over dry, smooth areas that

absorb and give off heat. Higher ground is a good bet . . . though perhaps unrealistic in R/C soaring. Also, look for "wind shadows" . . . areas that are protected from cooling breezes but that are in direct sunlight.

Perhaps the best non-mechanical thermal hunter would be a small, bare-foot boy. Send the kid out ahead of the sailplane . . . like a "runner" in the "bush." When he starts jumping up and down a lot, you'll know he's found a good thermal generating source. Ignore his cries of pain. Work the lift.

Typical "full scale" thermal activity . . . if there is such a thing . . . reaches upward to 3,000 or even 5 or 10,000 feet above the ground, and much higher altitudes are not unusual. Vertical velocities have been recorded to 8,000 feet per minute, and 1 and 2,000 fpm are quite common. Chances are, though, at R/C soaring altitudes, 500 fpm would be classified as a "boomer" and anything stronger a "killer." And many of our "low level" thermals fizzle out at just a few hundred feet above the ground.

But that's enough for now. Meteorology is a big subject and an interesting science, and anyone involved with soaring of any kind needs some basic knowledge of it. Local libraries probably have many volumes worth reviewing, if you're so inclined. However, for the practical minded who is looking for directly related and usable data, the comprehensive treatments usually found in the library stacks may present sort of an overkill. The Soaring Society of America (SSA) publishes quite a list of soaring-related material, and their separately bound, Chapter 5 of the "American Soaring Handbook" series is appropriate. Chapter title is "Meteorology." Price is \$1.00, postpaid, from SSA, Box 66071M, Los Angeles, CA, 90066. Californians should add 5% state sales tax. Try a copy. You'll enjoy it.

Thermal action develops in weird places . . . like out over the ocean . . . or up in the Arctic . . . and in the middle of winter as well as summer. And in the dead of night. So look for 'em anywhere . . . anytime. The main idea is to not act surprised when you find one. That'll keep the other guys wondering what it is you know that they don't.

There's the bell. School's out. ●

spectral Continued from page 21
WING

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and cut out 30 ribs. Stack them together and sand, then, with a razor saw, cut the spar notches. Next notch the trailing edge 1/8 inch for the ribs. Pin down leading and trailing edges and bottom spar. Glue in all ribs except at the dihedral joint. Let dry. Then add top spars and let dry.

Remove from board and sand leading and trailing edges to shape. Now sand in the proper dihedral, trim spars to fit, and epoxy the dihedral braces in place, doing the tips first and then the center. Add in the dihedral joint ribs and gussets, and sand the whole thing smooth for covering.

RADIO INSTALLATION

The way I mounted my radio was to put the battery all the way up front, the receiver next to bulkhead B and the actuator under the wing. If your system doesn't have connectors, you will have to modify bulkhead B in order to slide the actuator through. Be sure to use foam to protect your equipment.

COVERING

The model can be covered in many ways: The wing in Silkspan, Japanese tissue, or light weight silk Monokote. The fuselage can be covered the same. I used transparent red Monokote on the wings and stab. The fuselage and rudder were covered in Japanese tissue and then painted white. There are two very, very important things: No. 1 is to put in at least 3/8 inches of washout in each tip. No. 2 is to finish the wing in a dark color for visibility.

FLYING

Before you go out for the first flight, you must make a few preliminary checks. No. 1, you must make sure all controls are working properly and all surfaces are aligned. Next you should balance the plane approximately as shown. Now you should try some test glides and adjust weight or incidence to accomplish a smooth glide just below a

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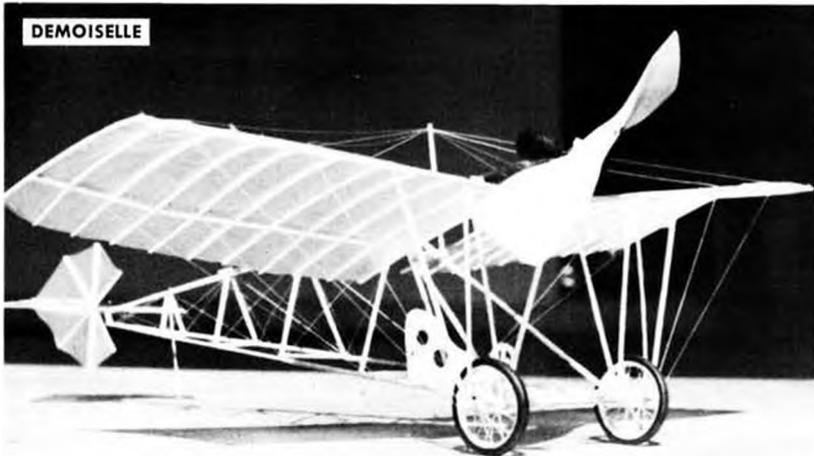
stall.

Since the plane is too small for most electric winches, you will have to construct a means of launch. For one, I use a hand tow consisting of between 100 and 200 yards of light nylon or fishing line. This amount seems sufficient enough for a good launch. Another way is to use a high start, consisting of approximately 100 feet of 1/4 inch flat rubber, connected to 100 yards of light nylon or fishing line.

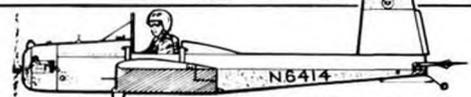
Flying single channel is not as easy as one might think. Rudder-only flying is somewhat of a lost art these days. It takes a little bit of practice in order to fly it fairly well. I hope you have a lot of fun and GOOD LUCK! ●

Cumberland . . . Continued from page 24 becomes sudden. This is mentioned because, when the goddess of breezes blows favorably, one must decide whether to inch out across the second hill and test the lift or cower behind the beer cooler. If the wind is sufficient, the model will stay at about eye level for several hundred feet and then - - - WHAMO! It's no way but up. This scribe had the exhilarating feeling last year when his eleven pound NELSON KA-6 went out over the valley, not gaining an inch of altitude until a seemingly eternity passed. Then the wave took its effect. In seven minutes, the twelve foot, 24 ounce wing loaded bird was overhead and nearly out of sight!

This year the wind wasn't quite as strong, but it was steady for the two days. Saturday A.M., most everyone had his share of airtime. Otto Heithecker from the G.D.S. & H.S. (Greater Detroit Soaring & Hiking Society) flew a swept back flying wing that nearly everyone on the hill took a turn at during the two days. Tom Rankin of DC/RC had his perenial OSPREY as did Fred Collins



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DEMOISELLE PEANUT plans, by Walt Mooney. . . 60 cents

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from Pittsburgh. Their fourteen foot wings blocked out the sun for hours.

Don Clark, of DC/RC, trying for his four hour flight to satisfy the LSF Level IV, was near the two hour mark when his ship collided with club member Jim Reed's ship. Both planes tumbled out of the sky in a somewhat graceful manner until near the ground. They then separated . . . both too low to recover and head back out over the ridge . . . and landed with no scars. Many others achieved their slope duration flights for lesser LSF levels. Alex Shashaty and Nick Ross from Youngstown, Ohio, among them.

Saturday night, Dave Gish engineered a banquet around a prime rib dinner. The camaraderie and good fellowship of the evening again proved what this sport is really made of.

Sunday morning, the hill was still there but fewer cars groaned their way up the obstacle course. Those with faint heart parked below and trudged their way to the top. If the LSF ever finds it necessary to establish a sixth level of achievement, two trips up Knobley could be a step towards this penance. Now you gentlemen from the land of sunshine and oranges it must be told that no bikini clad maidens adorn these slopes . . . Nay! With the mercury well under the bottom fourth of the gauge, the proper attire is that of snowmobile drivers. Alas! It is somewhat hard to tell the boys from the girls. *(Got news for you, Dan. Nowadays, even bikini outfits don't help too much in sorting them out! WCN)*

About noon, more and more gliders took to the skies until there were twelve at one count. Cumuluses, Cirruses, Olympic 99's; originals like the ELIP-SOAR, SABRE SOAR, OSPREY and others traded places constantly to maintain the count. Watching the majesty of all this while lunching on cheese, saus-

age and a little wine, and overlooking the valley below makes one wonder why anyone would want to go fast and turn left!

During the afternoon, the full scale sailplanes began soaring the ridges around us. Incidentally, it was these gents who were first aware of this local wave effect and told the CAMS and DC/RC groups of its potential. As they flew about, they respected our air space and we didn't jeopardize theirs. How's that for compatibility, FAA? However, the highlight of the afternoon came when Carl Lorber readied his thirteen foot ASW-12, launched it, and flew out over the ridge. At the same time a full scale ASW-12 was making passes out in front of us. Carl gave the stick to Walt Good, who did a most respectable job of flying it. As he was coming from right to left on one pass, the real ASW-12 popped out from a more distant hill and pulled up to what appeared to be abeam of Carl's machine. As both passed in front of us, it was a neck and neck race, with Walt streaking out in front of what suddenly had become an impromptu race. Surely a case of cat and mouse but it looked good and the movies taken should make good viewing this winter.

As for driving 1200 miles to fly for fun, it was worth it, and a great way to end the contest season. Thanks a lot, CAMS and DC/RCers, for a great outing. We'll be back next year . . . spare oil pans and all! ●

Hannan Continued from page 26
tration to a string-tethered aircraft! For \$1.00, membership is available in: The Maryland Kite Society, 7106 Campfield Road, Baltimore, Maryland 21207. This brash and breezy organization publishes a rather tongue-in-cheek but informative newsletter "every so often."
MISCELLANEOUS

Here at Hannan's Hangar, we are firmly converted to using rubbing alcohol rather than water for shrinking tissue. This idea, which was brought back from France by Bill Warner, seems to exert much less strain on delicate structures. *(No wonder. The alcohol relaxes the "grain!" WCN)*

* * *

Len Marlow is now marketing a line of machine-cut propellers for rubber-powered models. These are reminiscent of the type found in "good olde days" pre-war kits, and require only a minimum of shaping and sanding. Len reports that they can even be used, with fair efficiency, "as is," by youngsters who may not yet be up to the task of finishing. A plus feature is the pre-drilled prop shaft centering hole, a must for true running. Priced from 10 cents to 25 cents each, these props are available in 4 1/2", 5", 6" and 7" diameters. Why not send 20 cents for Marlow's catalog of these and other small model goodies?

* * *

Here at the hangar, we always look forward to the arrival of a new Aero Modeller Annual. The 1972-73 edition has just arrived, and as usual, it is a genuine treat to peruse. Containing articles and designs from all over the world, it is truly an international collection of model aircraft developments, including F/F, C/L, and R/C. Ever wonder how those fibre glass propellers are made? A fully illustrated story shows how Jurgen Bartels does the job. Interested in Magnet-steered gliders? Here's a good run-down. How about an R/C model with an aspect ratio of 1 : 1? They've got one here! In addition, there are items regarding electric power, Wankel engines, computer-drawn airfoils and much more.

Of particular interest to small scale model enthusiasts, is the comprehensive



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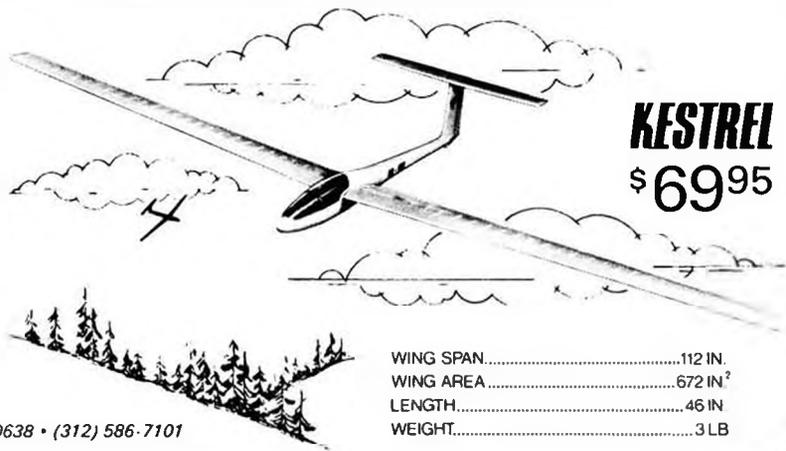
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WEIGHT.....3 LB

article on CO₂ engines, authored by Doug McHard, who has carried out a great deal of research on charging methods in order to arrive at the best possible duration. In addition, Doug has devised a method to permit easy interchangeability of engines from model to model.

The 1972-73 Aero Modeller Annual may be ordered directly from: Model & Allied Publications Ltd., 13/35 Bridge Street, Hemel Hempstead, Herts, England.

HANNAN'S HANGAR VISITS NORTHPROP'S HANGAR

Everybody knows that model airplane magazine editors "have it made," right? After all, they get to attend ALL the major contests, travel around the world visiting model manufacturers, have their pictures on front covers, and all those neat things. Well, if that is the mental picture you have, dear readers, think again! Recently, Bill Northrop asked yours truly to assist in the preparation of an issue of The MODEL BUILDER. In case you have never thought about it, magazines, like model aircraft, are assembled from MANY individual pieces. Each contributor sends his article, photos, drawings, etc., to the editor in slightly different form, which means that each must be edited and prepared to suit the format of the publication. Meanwhile, the various advertisements for each month's issue are also arriving, along with products for review, letters to the editor, frantic phone calls, contest reports, visitors and like that.

As each article is edited, it is passed on to the repro-typist, who transforms it into the neat rows of copy you see in the mag. Hers is a particularly demanding job, in that everything must be typed at least twice, in order to establish the exact width required. While this is going on, the editor is busily creating the layout, using a "dummy" or storyboard system, which involves making

reduced-size rectangles representing each page of the publication. Once the general arrangement has been established, each page must be designed in full size, which is quite a challenge, to say the least. Each photo must be suitably cropped and sized, to produce a pleasing arrangement, and the amount of copy must be figured to properly fill the remaining space. Titles and illustrations must also be allowed for, as must the magazine identification and page numbers.

In most cases, submitted photos are a different size than will be used, and thus careful computation of the new sizes are necessary. Then too, the photo captions must be written. This involves more than may at first meet the eye. In addition to being informative and (hopefully) interesting (*and hopefully accurate. WCN*), the captions must fit within a required area. Thus, they often must be rewritten several times, until the desired result has been attained. And I think you will agree that Bill Northrop's captions are among the best to be seen anywhere!

Once all these components have been sized and gathered together, they must be individually affixed to master sheets. Again, the similarity to model building enters, and this assembly stage is generally referred to as "paste-up," even though actual paste is not used. This tedious process also includes an additional proofreading. When errors are found, the corrections are made directly on the paste-up, which in some cases, means replacement of individual words or sentences, which must be realigned with the existing copy. In addition to the fact that this work is so exacting, it must be remembered that it is also done under the pressure of deadlines. Then too, the total staff of The MODEL BUILDER is quite limited, and certainly nothing like the huge numbers of

people employed by large publications, such as Time, Life, Sports Illustrated, etc. Thus, everyone fills several roles, and is assured of "never a dull moment."

A typical near-deadline day at The MODEL BUILDER, goes something like this: Arise, eat breakfast, work, eat lunch, work, eat supper, work, snack, work, and perhaps around 2 AM, sleep! Yet, there is a spirit of good humor that prevails even under these hectic conditions. Bill seems to have a nearly inexhaustible supply of energy and puns, that keeps everyone going, even when they may be well past the point of fatigue.

While all this is going on, General Manager, Anita Northrop, is not only attending to the business side of the operation, but is somehow finding time for her SECOND job, in real estate marketing! Fortunately, she is assisted in her office duties by capable Joby and Debbie who also pinch-hit in splendid fashion at preparing snacks, answering the phone and all the other things that need attention.

Two other members of the "staff" deserve special mention. They are Charlie and Andrew (Digit) Wyeth, the all-important feline crew. Somehow, the presence of these two natural clowns has a stabilizing effect on things. In the wee small hours of the morning, one wouldn't be too surprised to see them tossing a tiny hand-launched glider around.

And just think, a lucky editor gets to create one of these magazines every month!

* * *

In keeping with the tradition of naming everyone and everything in the Walt Mooney household after an aircraft designer, their recently acquired pet rabbit has been dubbed "Bellanca."



a Bag of Peanuts

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Mooney Continued from page 31 make sure they match.

The horizontal and vertical tails are simply made of 1/16 square sticks, directly over the plan.

The wings are made with sheet balsa ribs, 1/16 square balsa spars on top and bottom, a 1/8 square leading edge, and a 1/16 by 1/8 trailing edge. Because the wing section is symmetrical, it is necessary to block up the leading and trailing edges above the surface of the plans while assembling the wings. The root rib is made of two layers of 1/16th. Most of the first piece is carved away to match the curvature of the sides of the fuselage. The wing tip is made from 1/8 square. The gussets on the wings and tail are extremely important if tissue wrinkling at the corners of the surfaces is to be avoided.

The nose block is made from two pieces of 1/8 sheet. One is circular to match the diameter of the spinner and the other is rectangular to fit into the front of the fuselage. Make the grain of the two pieces perpendicular to each other for maximum strength. I used a Peck Polymers thrust bearing and a North Pacific plastic propeller. The propeller hook is bent from 1/32 diameter wire. The rear motor peg is a straight pin; a length of wire will also do. Make sure the sharp ends are sanded off so your helpers won't get stabbed.

The spinner in the photo was made over a balsa mold on the vacu-form and again it can be made from a balsa block, if desired.

The fuselage is built up of two sides that are assembled over the plans. These are then made into a box structure by cementing them together at the tail post and adding cross braces at each upright. Formers are added and then the stringers are cemented in place. Only the top center stringer is notched into the form-

ers, all the other stringers are cemented onto the outer edge of the formers. Both center stringers should be rather stiff 1/16 square balsa, the others are 1/16 by 1/32. After this assembly is dry, add 1/16 by 1/8 balsa doublers to the inside of the fuselage uprights where the leading edge, spars and trailing edge of the wings will attach. These three uprights on each side must be much stiffer than would be necessary on a more ordinary model because the rubber motor is directly in line with the wing and therefore there is no wing carry-through structure. All the wing loads, including impact loads have to be carried by these three fuselage uprights.

Before covering the model, all the structure should be carefully sanded. The leading edges of all the flying surfaces should be sanded to a rounded cross section and the trailing edges should be tapered. The wing tip has a rounded cross section but the tips of the tail should be left square.

All of the model is covered with white tissue. Water-shrink the tissue and when it is dry, give all the pieces a single coat of thin dope. The color trim on the wings, tail, and aft fuselage is red and blue tissue. Carefully lay it all out on a piece of transparent paper. Tape the colored tissue on a suitable cutting board and tape your layout paper over it. Using a razor blade, cut through every piece to get the trim and then dope them in place. Note that there is more than one of each piece of trim, so have enough layers of colored tissue under your layout to do the complete cutout job at one time.

The control surface outlines, the circle around the numbers on the wings, and the name on the cowling ahead of the windshield are drawn on with India ink. The color trim on the nosecowling, spinner, cheeks, and wheel pants is plas-

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tic model enamel. If these parts on your model are balsa, this trim can also be tissue or model airplane dope.

Note that at the aft end of the fuselage, the opening for the horizontal tail is triangular in shape so that the tail can be adjusted to help the flight trim of the model.

Start final assembly by cementing the wings in place to the sides of the fuselage. Each wing must have exactly the same angle of incidence and dihedral. Fit the cowl cheeks in place and cement them securely. Cement the vertical tail on the top of the fuselage and make sure it is aligned with the top stringer and is truly vertical. The landing gear wire should be cemented in place in the fuselage before covering.

The wheel pants and wheels are now installed. Five minute epoxy works well to hold the pants on the wire and the wheels are automatically held in place on the wire by the sides of the pants. Cut the wire fairings from thin sheet and cement them in place between the fuselage and the wheel pants.

The canopy was made on the vacu-form also, but again, it is possible to carve the top of the canopy from balsa, cement it to the former behind the cockpit, and then wrap the canopy around it from a single flat sheet of thin plastic.

The tail wheel is carved from scrap balsa.

The little stars in the trim are white. On the model, they were cut from a three inch sticky-backed American flag decal, and simply stuck in place.

The center of gravity of the model should be about a quarter of an inch ahead of the wing spar. The original model was nose heavy and required a lump of clay ballast at the tail for flying. One loop of 1/8th flat rubber a foot long will power the model, and flies the

original in a mild manner. A loop of three sixteenths will result in a more sporty flight but the model is still very stable and easy to fly.

Raceplanes of R.S. Hirsh, 8439 Dale Street, Buena Park, CA 90620 has a good 3 view for 50 cents. Racing Planes volume IV by Reed Kinert also has a three view and several photos of "Ole Tiger." ●

C/L Continued from page 41 especially with the tuned piped FAI engines. K & B, Kosmic, Super Tiger and Rossi have done a fine job in this area.

First in Junior B Speed (144.75 MPH) and B Proto (131.19 MPH) were both won by Max Snyder of San Diego, California. His brother, Scott, won B Proto (Profile) at 114.24 MPH. Rich Palmer took first in Open B Proto at 141.34 MPH.

Jim Wade's first in Senior B Speed (159.94 MPH) was just a bit faster than Luke Roy's first in Open B Speed (159.51 MPH). In practice flights, Roy's B really turns on, but when official flight time comes up it always seems to get a little nervous. One of these days, Luke is going to get it all together at the right time.

Class C Speeds were relatively slow, especially in Open, which was won at 153.00 MPH by Newton/Nightengale/Beatty. Scott Snyder won Junior at 145.10 MPH and Tom Stream was first in Senior at 144.64 MPH.

The team entry of Jerry Thomas/Jim Wade put in a near record flight in Open Jet Speed at 188.41 MPH (present record is slightly over 189 MPH). After the meet was over, they discovered that two 4-40 tapped holes were "unplugged" in the head of their engine. This not only caused difficulty in starting that flight, but slowed down the speed, perhaps 6 to 10 MPH, or more. They flew a semi-upright mounted engine in an all metal plane. The engine was cocked at 45 degrees to the outside of the fuselage . . . when viewed from the front. Several Hoyt designed sidewinders were flown. This design has dominated the jet event for some time. It will be interesting to see if the Thomas/Wade upright design can surpass the sidewinders.

Norm and Barb Drazy brought a new upright jet, but did not fly it. They finished it the night before ----. The engine was sporting a very interesting home-made head.

To sum it up, the contest was a success. This was the first time in many years that a two-day speed meet had been held on the West Coast. It is safe

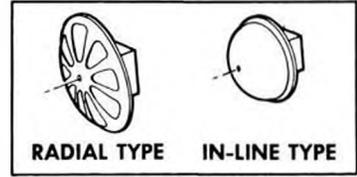
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to assume that more meets of this type will come next season.

NEW FLYING SITE - The Anaheim Parks and Recreation Department is forming a control line model airplane club. The authorized flying site is a section of the Anaheim Stadium's parking lot - southeast section.

This super-smooth asphalt area is ideal for all types of control line flying . . . except combat. It even has a restroom and a drinking fountain on the site.

A two-hour flying demonstration of different types of control line planes was held in early November. This event was publicized through the local newspaper and two radio stations. The turnout was extremely good.

The site has already been booked for several Sundays in December. On the first two Sundays in January (the 7th and 14th) the club will be giving lessons to youngsters who have received Ready-To-Fly planes for Christmas. Representatives from both Cox and Testors will be on hand. Flying hours will be from 9:00 - 3:00 on each Sunday.

The Parks and Recreation Department has provided the club with 200 movable stands to mark off as many circles as they need for each flying session. After the flying is done for the day, the markers are removed and stored. With cooperation like this, the club will be able to offer a valuable service to the local model airplane enthusiasts. Hats off to Anaheim!! ●

Plug Sparks . . Continued from page 43 plenty! Never saw so many old-time ignition engines in a lifetime. Not really being an engine collector, we went to see if we could find anything for sale that could be bought for flying purposes. Man, if you didn't have any trading material, the price they were asking would have put you in hock for the next 100 years, and in some cases this was for an engine out of their junk box! One fellow I talked to had an Ohlsson Gold Seal that he admitted had a cracked piston and would not run, yet his asking price was \$65.00!

We don't want to make this into a column for engine collectors, only for those who are truly interested in using these engines for flying purposes. If any of you have ignition engines in good running condition and would sell them for a reasonable amount, send us a list of what you have to offer, and for what price, and we'll list it here in the column.

In California we have been flying the ignitions in competition with the glows by giving the glows a 15 second motor run (5 minute max) as a handicap. Class A entries have all been glow due to the lack of suitable class A ignition engines . . . even O/R 19's are getting scarce, and a good Bantam or Arden just plain costs too much to see going OOS. As we said before, no collectors, please, you have your own rag in which to go to for your source. Let the fly-boys use this outlet for his needs, and believe me they are great. 'Nuff said.

We would like to hear from clubs

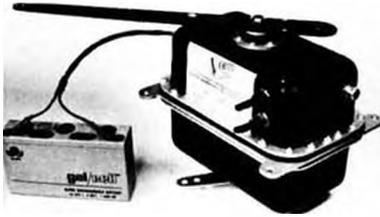


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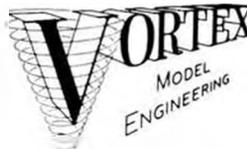
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and other organizations which are in O.T. activity. What about "Old Ruler" type rules for instance? Are you allowing an original airplane designed around the 1941 rules (wing loading, fuselage, cross section, etc.) to fly with the known designs, such as Buzzards, Dodgers, etc.? Next year, the SCAMPS are going to allow any plane to be flown in the "Old Ruler" event, as long as it meets the 1941 rules. This would mean in effect, that a person could come up with an original design or if he wanted to he could even take the wing off a Clipper or Mercury and put it on a Buzzard or Miss America. There are people who are going to scream their heads off and yell something about B designs, and walk away wringing their hands in despair, but remember that most of you have just as much talent at designing an original plane to the 41 rules as did the Taibi's, the Korda's and the Struck's. In other words, why can't Old Timers, like modern F/F's, be original too? See you next month.

Strictly Sail . . . Continued from page 18 erstructure is completely optional. This allows each skipper to give his boat a

distinctive air, and still maintain the one-design criteria. As can be seen in the photo, the sail plans of the vessels come in for their fair share of striping and artwork. All this is done to provide instant identification for the skipper on shore.

The EC/12 has shown herself to be a very good light air vessel. Excellent performance and exciting racing will be accomplished in winds as low as 2 knots. This makes the EC/12 a good choice for those who may be sailing on lakes and reservoirs where strong winds are the result of storms rather than diurnal air movement. The boat features a full keel with rudder mounted directly aft of the keel. This reduces to zero the probability of fouling your rudder on twigs, leaves or other debris; again, a good choice for land-locked bodies of water with attendant vegetation.

At the present time, there are three regatta series scheduled for the 1973 season in East Coast 12's. The locations and dates should be confirmed by contacting the fleet captain in each case.

Washington, D.C.: Capitol R/C MBC 2nd Sunday, April through November, Cas Woodbridge, 3411 Mansfield, Falls Church, Va. 22041.

Tampa/St. Pete, Florida: Golden Triangle MYC sailing all year, monthly events, Ted Tolson, 105 25th Ave., N.E. St. Petersburg, Florida 33704.

Philadelphia, Penn.: Delaware Valley MYC, 3rd Sunday, March through Oct. John Krick, 214 Rively, Glenolden, Penn. 19036.

Still to be scheduled are 2 and possibly 3 AMYA Divisional Championship Regattas, and final scheduling for the Annual Class Championship Regatta (ACCR) which is set for Tampa in 1973.

Further details on competition dates and locales are available from the East Coast 12-Meter Class Secretary: Bob Harris, 7628 Dunston, Springfield Va. 22151. It is Bob who handles all the paper work so necessary to the smooth running of the organization.

At the present time, there are 4 authorized sources of fiberglass hulls for the class. Each manufacturer may be contacted for brochures and price lists.

Buddy Black, 3004 Samara Drive, Tampa, Florida 33618, (Hulls, sundries).

Carr's Boatyard, 2713 Blain Drive, Chevy Chase, Md. 20015, (Hulls, decks, fittings, R/C gear, complete kit, sails, construction manual).

Hartman Fiberglass R/C, 233 Melrose, Argenta, Ill. 62501, (Hulls, decks, spars, accessories).

Reynolds Mfg. Co., 3010 Chris Lane, Orlando, Florida 32806, (complete kit).

The prime address that you should have at your fingertips is that of the AMERICAN MODEL YACHTING ASSOCIATION Secretary: Charles H. Black, 4761 Niagra, San Diego, CA 92107. Mail him your \$3.65 annual AMYA dues, and obtain in return your shoulder patch, constitution and racing rules, regatta schedule, and best of all . . . the QUARTERLY NEWSLETTER. The latter is worth the price of the dues regardless of all the other goodies.

Have questions about sailing, want to air your views? Drop me a line: Rod Carr, 2713 Blaine Drive, Chevy Chase, Md. 20015. ●

Mexico Continued from page 49 City, took first with his Orbit guided soarer, while Gaston Becherano and Jorge Lipsey took second and third.

One of the highlights of all contests, the awarding of the trophies, was enhanced by the fact that they were presented by Mexican Air Force General Fernando Hernandez-Vega, Commander of the Base. General Hernandez-Vega is an avid model airplane booster, was present during most of the meet, and provided, in addition to the field, vehicles for contest site transportation and a

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very efficient looking group of his military police for crowd control.

A raffle of a built up Crusader, complete with retract gear and Orbit 6-12, was run in conjunction with that weekend's drawing of Mexico's national lottery. Mr. Hugo Ayala, of Mexico City was the lucky winner, who traded his 100 pesos (\$8.00) for the winning ticket. I have to discuss this with Jovita Castaneda, beautiful daughter of Luis, who assured me that the ticket she sold me was the winner.

Appreciation and admiration must be expressed to the Club Aeromodelista de Puebla, headed by Jose 'Pepé' Roviro, not only for the hospitality shown the US visitors, but for their excellent running of the contest as a whole. An example of the caliber of Mexican contests can be obtained from their solution of how to feed such a crowd. Would you believe tables for eight, white linen tableclothes, full place settings, and white jacketed waiters who serve you three-course meals, plus your choice of beverage and desert? At the flying field yet! The only thing lacking was a spot for a siesta after such a meal.

The next contest scheduled in Mexico is at Mexico City on Easter week. Another event to watch for is the 1973 Fun Fly, to be held in either the Capital, Guadalajara, or Acapulco. The site is not firm at this writing, but the date will coincide with the MAC Show in Anaheim in 1973. This is the same type of event as the Hawaii Fun Fly of this year. Exact information on both of those contests will be available to me as soon as it is firm, which I will gladly pass on to anyone interested. Should you desire your name added to the list of parties to be notified, please contact me via the Model Builder, or directly at Orbit Electronics, 1641 Kaiser Ave., Santa Ana, CA 92705 (714-540-1404)

Plastic R/C . . . Continued from page 35
tail of the bird full of Polyurethane foam. Pour this foam in 2, 3, or even 4 small batches in order to avoid having the foam completely cover your servos. It takes approximately 10 to 12 minutes at normal room temperature for the foam to completely solidify and cure. Therefore, if there are any objectionable bulges in your fuselage they may be carefully hand massaged back into normal configuration during this time period. Many modelers worry about the added weight but after very careful weighing I find the average model picks up only a total of 3 to 4 ounces. Personally, I think the added weight is well worth the long life that is afforded the fuselage. For an even lighter foam, pre-heat your two parts of Polyurethane foam (separately) to approximately 150°F and it will expand even more and cut the added weight in half.

While talking about the use of Polyurethane foam, it might be worth mentioning that the wing fillets on Lanier aircraft can also be filled with foam. In this regard, once the foam has set, sand down carefully to the contour of the wing, then coat with Epoxy Resin. This will seal the foam and give you exceptionally nice wing fillets. Sig Expoxolite can be used equally as well and is extremely strong.

Little can be done to improve upon the life span of the basic wings since they are already extremely well made and do possess the proper structural integrity.

Enough said about improving upon the structural integrity of the plastic birds. Now let's trim the plane and make a real show piece out of it. Before the advent of various "Trim Kits," I have trimmed many of my plastics with ordinary vinyl shelf paper; commonly referred to as "contact paper." It is

merely sheet vinyl with an adhesive back, looks extremely well, and adds virtually no weight to the basic aircraft. Caution — DO NOT STRETCH as you apply. Of course the design is left to one's own imagination. Other materials used include sticky Monokote, zip poster board tape, 3M vinyl tape (No. 471) of various widths, decals, Mid-West vinyl numbers, etc. In short, use anything that will enhance the appearance of your bird, since we are going to seal it in place. Okay, now that you have got all this "stuff" applied, let's seal it so that you won't strip it off the first time you wash the airplane trying to eliminate all that castor oil and other junk that accumulates on your masterpiece after each flight.

I am sure many modelers have attempted a sealing process on plastic birds only to come away in complete frustration because the darn stuff peeled right off or when applied to the thin vinyl on the wing and tail, the foam and vinyl covering politely but quickly melted away right in front of their eyes.

Here is my technique and it works, WITH SOME CAUTION.

First, make sure all decals and other trim that have been added have all edges completely pressed in place. Next, dampen one of your wife's dishcloths or better yet, one of your baby's diapers (if you still have any around) in DuPont Prepsol. Carefully but thoroughly wash down the entire plane with Prepsol and avoid handling afterwards to the maximum extent possible. Prepsol is a solvent which completely eliminates any traces of grease, silicone, or other substances immediately prior to painting a virgin plastic or metal surface.

Next mix up your Sealer. I find that a Sealer of clear acrylic lacquer or clear butyrate dope thinned to about one part of material to 7 or 8 parts of acrylic lacquer thinner does the best

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job. DO NOT use butyrate thinner, since it is too slow in drying. Use acrylic lacquer automotive thinner . . . a good grade. I refer to this mixture as a "wash coat," which I believe is the term used by professional automobile painters and perhaps some furniture finishers. In any event, the material to be sprayed will appear to be almost as thin as water.

Now carefully spray ONE wet coat on the entire surface of the airplane. DO NOT go back and spray a second coat, particularly on the wing and tail surfaces. You will be sorry if you do since, as mentioned earlier, your vinyl (shelf contact paper) can melt and the foam will disappear in front of your eyes. (This will not happen with the new 'Hard Skin' wings and tail surfaces.)

If you do feel that a second coat is required, or desired, wait a minimum of 24 hours, then follow the same procedure again. You will now find that you have a glossy bird with all the trim, decals, etc., firmly sealed under a top coat, which will shed that "greasy kid stuff" readily. If you want an even shinier finish, some DuPont rubbing compound, either red or white, and a bit of elbow grease, will give you a superior finished product.

The above techniques may sound time consuming and laborious . . . they really aren't. Frankly, I think you will find both the extended life of the aircraft as well as the appearance are worth the effort involved. "You should try it, you'll like it" . . . it is only work . . . besides, that's what this hobby is all about. Good luck with the Plastic Air Force! ●

Pylon Continued from page 37
the effect this had on his nerves began to show on the starting line. He began by dropping his transmitter as he was setting his plane down, and when his engine wouldn't fire-up, his electric starter kept hitting the spinner off center and almost broke the prop. A shot of fuel into the exhaust finally got the engine started with seconds to spare, and the race was on.

Bob quickly built up a comfortable lead and appeared to have an easy win when, from the back of the pack, Jack Stafford appeared on his tail. To everyone's surprise Jack's new mid-wing Ricketty Rat was faster than Bob. Bob's tight flying is what earned him first place in this heat.

The fourth round began with three flyers tied for first place: Bob Smith, Whit Stockwell and Arlen West. A heat early in the round saw Jack Stafford beat Arlen, putting him down one point. This meant that the heat between Bob Smith and Whit Stockwell would decide first place. Bob Stockwell, before the heat, was quoted as saying "If Whit cuts, it won't be my fault." Whit took off ahead of Bob but Bob was in the lead at the end of the first lap. it wasn't long before Whit had one cut at the No. 1 and before the race was over he received another one, which meant he was knocked down from first to tenth. As an indication of how luck enters into racing, on Bob's last lap his crankpin broke and he coasted over the finish line.

Also in the fourth round, Kent Nogy beat Larry Leonard, which made them 1 - 1 for the season. In my heat, I raced

my arch rival, Bob Bleadon, and fulfilled a promised threat: I rolled by him when I lapped him. Since he was having a bad engine run, I didn't have the heart to roll when I lapped him a second time.

He didn't speak to me for a while after this heat. He said it was like kicking a man when he's down.

Only one heat in the fifth round affected the placings of the top flyers. In that heat, Whit Stockwell beat Arlen West. This resulted in a four-way tie for fourth place between Larry Leonard, Jack Stafford, Arlen West and Henry Bartle. A flyoff resulted with a finish in the same respective order. Henry Bartle seemed to come out of nowhere, to finish the contest only two points down. Henry had a very strong showing at our last rookie race and was only beaten by Stafford and Rankin at Tucson.

I noticed only one mistake made by the workers at Tucson, when two flagmen started flagging the same plane. This is the least number of errors at any contest this year, and I think the Tucson club should be congratulated.

I can't close without mentioning Paul White's performance. Paul always has one of the fastest planes at any contest, and for the first two days at Tucson, his underwear must have been too tight because nothing went right. While we sat through Pattern, Paul was telling everyone how his new trick Minnow was much faster than his old one. So in the first heat Paul went to the starting line with his world beater and couldn't get his engine started because he had let his alligator clips touch and short out his battery. On Paul's second flight, he got in the air but cut the pylons about

seven times. He was slightly frustrated by this time, and before his third heat he was asleep flat on the ground up until a few minutes before going to the starting line. Again, he didn't get started, this time for a reason I thought could never happen: neither the fuel nor pressure line was connected to the engine! That evening, Paul was feeling no pain . . .

RESULTS

(1) Bob Smith, Miss DARA, K & B, 1:26.9; (2) Kent Nogy, Miss DARA, K & B, 1:27.0; (3) Dan McCan, Miss DARA, K & B, 1:31.5; (4) Larry Leonard, Miss DARA, K & B, 1:32.3; (5) Jack Stafford, Rickety Rat, K & B, 1:37.9; (6) Arlen West, Ballerina, K & B, 1:39.5; (7) Henry Bartle, Minnow, K & B, 1:42.2; (8) Chuck Smith, Miss DARA, K & B, 1:34.4; (9) Terry Prather, Minnow, ST, 1:25.9; (10) Whit Stockwell, Minnow, K & B, 1:30.1; (11) Joe Vartanian, Miss Dallas, ST, 1:34.0.

* * *

SAFETY

This word should be foremost in the mind of every pilot and Contest Director. With the speed at which today's aircraft are traveling, it is essential that every established safety procedure be adhered to and not compromised!

Of the utmost importance is having the pit and spectator areas outside the minimums specified in the AMA Rulebook. The 1972 Nats showed that the 150 feet specified in the rulebook is not really enough. I believe that this minimum should be increased to 300 feet for 1973. This distance greatly reduces the chances of someone being hurt by one of our racers. (*Will so propose. WCN*)

With the course set up outside the minimums, this leaves only the ones on the course with any possible chance of injury. This is why the number of people inside the triangular course should be kept to a minimum, which means that those flyers on the starting line must be the only contestants on the course. The ready line, for those in upcoming heats, must not be located between the No. 2 and No. 3 pylons.

A barrier of at least 1/2 inch plywood, in front of the flagmen at the No. 1 pylon, is an essential safety measure. Two years ago at Tucson, such a barrier saved the flagmen from possible injury. Barriers for the pylon judges at the No. 2 and No. 3 pylons and for the protection of the lap counters are added safety devices which should be used. Matters of safety cannot be left up to chance.

Contest Directors and the Starter on the flight line must be aggressive in their administration of contests to ensure

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that all safety measures are taken. Pilots who show any sign of unsafe flying must be disqualified immediately before they hurt someone.

Next season in southern California, there will be a safety officer at every contest. Before a contest is begun, he will check that all safety measures are met. If they are not, he will have the authority to declare that the contest will not count toward championship points. NMPRA vice-presidents should organize such a system in their districts to ensure that every contest will be a safe one.

Some people dislike pylon because the aircraft travel at such high speeds. They fear that an accident in Formula I will affect our entire hobby, which is probably true. But if we follow prescribed safety precautions, pylon racing can be as safe or safer than the other aspects of our hobby.

In the November Competition Newsletter, Chuck Anderson gives an argument to eliminate Formula I and II by stating that our racers have "more kinetic energy than a 30-06 Springfield rifle bullet." This argument loses all relevance when you consider the kinetic energy of a pattern ship. We have accurately measured the speed of an 8 pound

pattern ship (an average weight among most .60 powered airplanes today) at over 100 mph in level flight. This works out to the same kinetic energy as a 5 pound pylon racer traveling at 160 mph.

The danger of planes traveling close to 160 mph relates to the fact that a pilot must have much faster reactions to keep the aircraft under control. I can't explain why, but during the past two years, with pylon aircraft traveling faster and faster, I have seen less erratic flying than three years ago. It may be that most pilots now try pylon racing only if they feel they have developed the basic skills they need. I hope this is true, because this solves many safety problems.

Join the NMPRA today! ●

Prods. in Use . . . Continued from page 14

article. In order to do complete justice to this kit, the 16 page construction booklet would have to be reproduced in its entirety, as it contains step by step procedures, sketches, and photos. Also included in kit are reproductions of 3-views of the full size planes, from R.S. Hirsch and from Model Airplane News.

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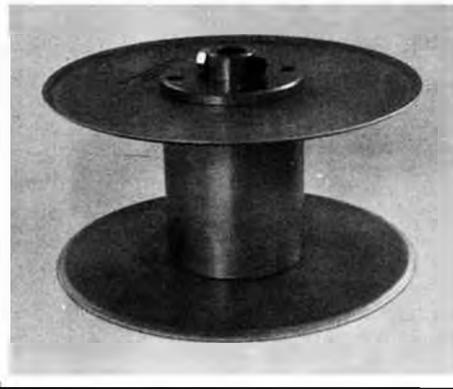
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To sum it all up, the Shoestring kit by the House of Balsa is of high quality and is very detailed and complete. All materials required to complete the model, which are not included in the kit, are listed in the instruction booklet. If you don't happen to have this material on hand, you should procure the spinner, pilot, and wheels at the same time you pick up your kit. Since this kit came out, the Williams Bros. introduced their new Mark II series spinners featuring a locked cap, which allows use of an electric starter.

Incidentally, the House of Balsa Shoestring kit sells for \$32.95, and a separate wing kit is available for \$11.95.

Workbench . . . Continued from page 7
struction.

The most unique item in the kit is the six foot wing, which comes in two panels and is just about finished. The construction of the wing, as Dave refers to it, is "ribless Jedelsky," since it employs the Jedelsky-Benedick airfoil but without the exposed ribs. The two sheets in each panel are glued up, planed down, and hand-sanded to finished condition.

All other parts are machine cut, and assembly should only take a couple of

evenings, less Monokote or Solarfilm covering and radio installation. Kit will sell for \$19.95 direct or through dealers. Flying weight is 22-26 ounces with most any single or two channel digital.

C.B. Enterprises, 21590 Cloud Way, Hayward, CA 94545, is doing great things for the front end of engine powered model aircraft.

Five sizes of machined heat-treated, cast aluminum motor mounts are available; for front rotor 15,30,40, and 60 engines, and for rear rotor 40's. Prices range from \$4.25 to \$5.95. The company thinks enough of these mounts to guarantee them for life, with the exception of stripped threads.

The latest product from C.B. is a real break-through in front end design, and should become very popular. The unit is called a muffler mount, and the name is right to the point. It is a motor mount with a hollow section in place of the usual backplate. Exhaust is picked up from the engine in a small expansion chamber which is fitted to the engine exhaust stack. From here, it is transferred into the hollow backplate by a short flexible plastic hose, and is then discharged through multiple tail pipes to the outside. The overall result

is a very clean and uncluttered front end for the airplane. Scale buffs should love 'em!

The muffler mounts will be available in February 1973, to fit the following engines: HP 61, Webra 60, OS 60, New Veco 60, Fox Eagle, Super Tigre, Blue Head, and Enya 60. Price was not yet announced.

* * *

The "Totem" Field Box and the Easy-Up Hi-Start are the first items offered by Ridgewood Hobby Supply, P.O. Box 2045, Vernon, Conn. 06066, a new manufacturer in the R/C field.

The "Totem," selling for \$15.95, is a highly prefabricated kit for a field box which can be assembled in less than two hours. It has room for tools, props, starter, etc., a small item drawer, and features an outside, gallon fuel bottle holder on one end and an outside transmitter holder on the other end.

The Hi-Start includes 100 feet of 3/16 inch cloth covered exerciser cord, 536 feet of braided 75 lb. test nylon cord, a flag, hardware and storage reel. Kit costs \$19.95.

Both of the above items are available direct. For postage add \$1.00 (Totem) or \$.75 (Hi-Start) east of Miss., \$1.50 (Totem) or \$1.25 (Hi-Start) west of Miss. Dealer inquiries are invited.

* * *

Aero-Sports and Crafts, Inc., 970 E. Northwest Highway, Mount Prospect, Ill. 60056, is offering a variable angle muffler adapter, called the Vari-Adapt. Its purpose is to allow the installation of a muffler at any angle relative to the thrust line of the engine.

At present, the units are limited to 3 types that permit rotating Kavan mufflers on K&B 40, S.T. 51-60, and HP 40. Cost of each is \$4.95. Adapters for other types are planned. ●

Pylon/4 Continued from page 39
owner and pilot of the model shall be the same. No team entrys. The owner pilot shall have current AMA sporting licenses. Consideration of safety for spectators, contest personnel, and other contestants is of the utmost importance in this event. Any unsportsmanlike conduct or hazardous flying over a controlled spectator area will be cause for immediate disqualification of that flight.
3. MODEL AIR CRAFT REQUIREMENTS:

Models entered in this event shall be semi-scale or recognizable replicas of propeller driven aircraft that have completed in Closed Course, speed record attempts, or cross country racing. In case of unusual or little known designs,

the builder-flyer shall produce documentation to verify that such a plane did exist and compete as specified, upon request from the C.D.

4. ENGINE(s):

Total displacement shall be not over 2.50 cc or .1524 cubic inches. Engine(s) utilized shall be stock (no reworking), available through normal retail channels and 1,000 or more of the same R/C version shall have been made available in the United States. The engines shall utilize the R/C carburetor as supplied with, and cataloged for it by the manufacturer of said engine. No crankcase, exhaust, muffler, or other type of pressure shall be applied to the fuel tanks. No diesel engines will be allowed, as their fuel and operational requirements would be detrimental to the spirit of the event.

5. MUFFLERS:

Only commercially available mufflers shall be utilized if so required and specified in advance by C.D. No tuned pipes.

6. ACCESSORIES:

Items such as wheels, spinners, and general hardware shall be commercially available through normal retail channels and be available in quantities of 1,000 or more.

7. PROPELLER(s):

Commercially available, wood, two-bladed, fixed-pitch props shall be used. Wood removal from one blade is allowed for reasons of balance only. At least one label shall remain on the prop blade. No nylon props, for safety reasons, are allowed.

8. SPINNERS OR PROP NUTS:

A rounded spinner or AMA prop nut shall be used.

9. FUSELAGE:

At the widest point the basic fuselage must be at least 2-3/4 inches wide, measured within the wing chord area. At the deepest point the fuselage must be at least 5 inches deep (including windshield, canopy, or headrest). These points need not coincide.

10. LANDING GEAR(s):

Landing gear shall be non retractable and wheels must be free rolling. A tail skid, if utilized, shall point to the rear of the aircraft. No brakes allowed. Minimum wheel diameter shall be 1-1/2 inches.

11. WING(s):

No minimum span required, thickness shall be 7/8 inch measured outside fuselage wing fillets and progressing in a straight line taper to the tip. Wing area shall be a minimum of 300 sq. inches.

A biplane shall have not less than 5/8 inch upper wing thickness, measured



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on a line projected vertically from fuselage side, as in a top view, at the point of fuselage and wing intersection. Lower wing shall be not less than 1/2 inch thick at projected root, provided its area is not less than 2/3's of upper wing area.

12. WEIGHT:

Ready to fly weight, less fuel, shall be 2-1/4 pounds minimum and 4 pounds maximum.

13. MATERIALS AND WORKMANSHIP:

Materials and workmanship shall be of a satisfactory standard as to not be a safety hazard. The C.D. and/or race starter shall be empowered to disqualify any unsafe or damaged aircraft.

14. RACING NUMBERS (Optional):

Racing numbers shall be at least 1-1/2 inches high and placed in scale racing positions.

15. REGISTRATION NUMBERS:

Registration numbers shall be at least 1-1/2 inches high and shall consist of the last 2 or 3 numbers of the entrant's AMA number and placed on the upper right and lower left wing panels. The letter N will precede the registration number and the initial of the entrant's last name shall follow the registration number. Alternate: Registration numbers at least 1 inch high may be placed on both sides of fuselage.

16. IDLE REQUIREMENTS:

Contestants will have a maximum of 1-1/2 minutes to start engines. If after 1-1/2 minutes have elapsed, an engine has not started, or quits, a zero is given for that heat. The starter shall now signal for engine idle. Mechanics or helpers will release aircraft and they shall remain stationary. Aircraft movement or engine quitting results in a zero

for that heat.

After 10 seconds, starter signals for mechanics to retain aircraft, and for full throttle. Engine failure at this point results in zero for the heat. No restart. Aircraft are then released at 1 second intervals.

OPTION: "Race horse" starts will be allowed if field conditions permit and, if so desired by the majority of the contestants.

At completion of each heat, lap counters or timers shall observe that the contestant's engine is idling (running) at point of touch down.

17. FUEL:

Fuel shall be commercially available, contain not over 15% nitro, and shall be supplied and/or specified by the hosting group.

18. RACE PROCEDURE AND SCORING:

Starting position shall be by drawing lots. Each aircraft shall be held aloft before each heat for the three pylon judges to take note of their color and type. Pilots shall fly 10 laps only. After completion of each heat, the pylon judges and starter will note any cuts and score the race in the following manner: Four (4) points for first, 3 for second, 2 for third and 1 for fourth. For a dead stick landing, (engine quits prior to wheels touching ground) delete one-half point from acquired score. If a pilot cuts 1 pylon and still finishes race, only 1 point is awarded. Two (2) cuts result in a zero for the heat! Planes finishing without cuts will be given full points award, ie. first across the finish line with 1 cut will be awarded only 1 point! Second to finish, no cuts will receive 4 points, etc. ●

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