The MODEL BUILDER

DECEMBER 1972

65 cents

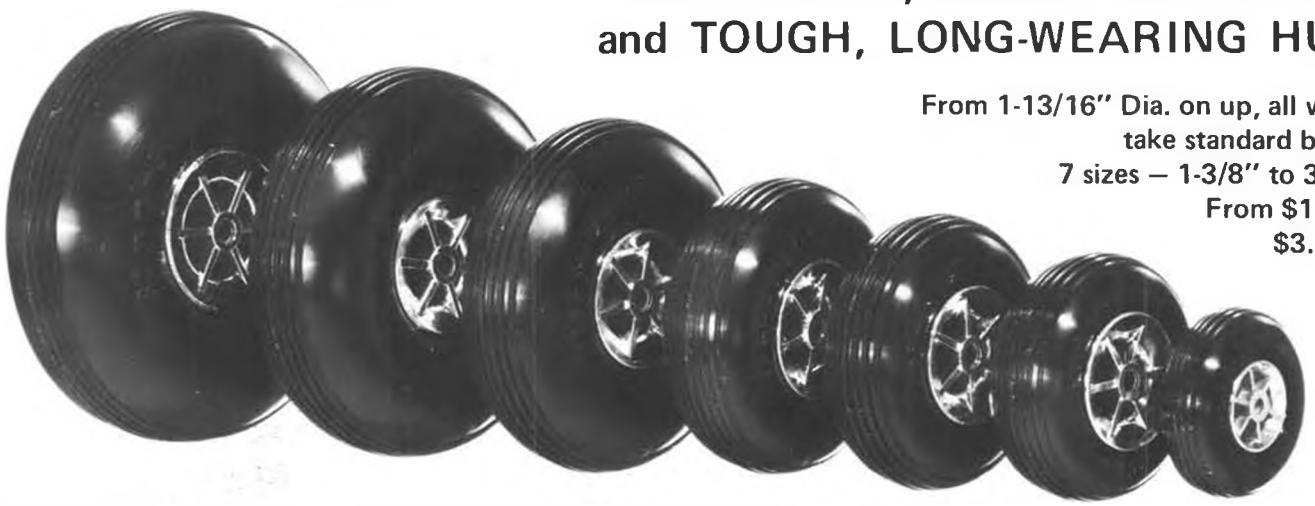
volume 2, number 14

SEASON'S GREETINGS

CARL GOLDBERG

NEW! CG LOW BOUNCE WHEELS

With SHARP, CLEAN RIB TREADS
and TOUGH, LONG-WEARING HUBS



From 1-13/16" Dia. on up, all wheels take standard brakes.
7 sizes – 1-3/8" to 3-1/8"
From $1.89 to $3.19 pr.

Tested and proven in the field by famous fliers, we believe you, too, will be well pleased by these very attractive new CG Low Bounce Wheels. Ask your dealer to show you the size you want!

NEW! Spring Steel E·Z LINKS with 10" Rod

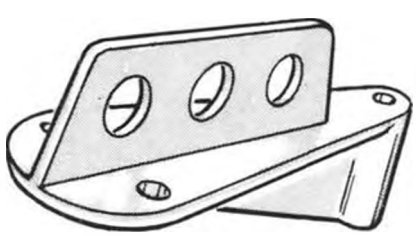
39¢ Each or 6 for $2.25

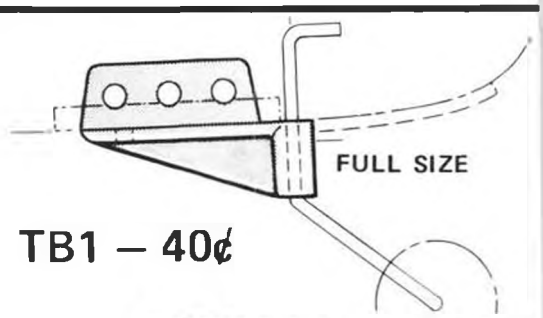
New E-Z LINKS not only save you money, but are made of spring steel and have quality threads that work smoothly without galling. The rod hardness is just right, too – not too soft.

E-Z LINK, complete with 10" Rod – EZ1 – 39¢ ea., 6 for $2.25
E-Z LINK, less rod – EZ2 – 2 for 59¢

Spare **LINK RODS** Strong, quality threaded rods to work in 2-56 clevis. Rod hardness just right. LR1 – 6 for 59¢

NEW! Nylon TAILWHEEL BRACKET





TB1 – 40¢

The simplest tailwheel mounting bracket yet – just cut a slot in the rear bottom of the fuselage, smear epoxy on the glue fin, and slide it into place.

AVAILABLE IN CANADA

P.S. For best service, see your dealer for items you want. If not available, write direct; add 55¢ per item ($1 outside U.S.). Minimum order $1.

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I am sending 20¢ for 8 pg. Illustrated Catalog with "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment, and Radio Control Definitions.

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OVER 46,000 JOINED IN 1972
7,000 more than the year before!

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AMA* MEMBERSHIP OFFERS:

liability insurance • special discounts • official rules manual • competition privileges

magazine subscription • exclusive decals • aid to air youth • national recognition

Subscription to American Aircraft Modeler is included with AMA adult membership—includes AMA News. Members under 19 can purchase the magazine at a special, low, AMA rate.

Discounts on special items stocked by AMA Supply & Service Section—books, magazines, pins, decals, etc.

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Official Rule Book included with all AMA memberships. This manual details the specifications by which different types of models are built and flown and clarifies most of the specialized model aviation terms—a real aid to understanding model magazine reporting.

***The Academy of Model Aeronautics**—a non-profit organization, organized in 1936; guided by regional officers elected from among the membership. National headquarters is in Washington, D.C. AMA members have privileges in other organizations: National Miniature Pylon Racing Association (NMPRA) open only to AMA members. Membership in the Nat'l Free Flight Society (NFFS) is $1.00 less to AMA members. All AMA members are automatically part of the National Aeronautic Association (NAA) and the Federation Aeronautique Internationale (FAI); may become voting members of NAA—with other special benefits—for half price, and may obtain an FAI sporting license for international competition.

Liability Insurance is included with all AMA memberships. Bought separately, this insurance would cost more than the adult AMA membership fee. Coverage is for $300,000!

Special Offer Coupons—New for 1973, a combination of more than 20 free and special introductory reduced rate offers from model industry firms included with all AMA memberships—altogether worth more than $30 in savings!

Super Decal Sheets—a big 9" x 12" sheet contains AMA wings and FAI emblems in many sizes; another 7½" x 9" vinyl self-stick decal contains an attractive bumper sticker and also the official AMA Safety Code.

Competition Privileges: All AMA members are licensed to enter the National Model Airplane Championships and all other non-restricted meets (over 500 each year—fun-flys, local, state and regional meets, and record trials); to establish national and international records; to compete on U.S. teams in World Championships (two held per year).

TO JOIN AMA USE THE FORM BELOW: AMA membership ends each year on December 31, regardless of the date a membership application is received. Late-year membership policy is as follows: those who apply between August 1 and September 30 pay full one year rate, but will receive half-year credit toward the next year's membership—they must, however, use this credit by July 1 of the next year; those who apply between October 1 and December 31 pay full one year rate and receive full membership for the following year, plus whatever days of membership remain in year of application.

APPLICATION—1973 AMA MEMBERSHIP

Academy of Model Aeronautics, 806 Fifteenth St., N.W., Wash. D.C. 20005

FOR THOSE 19 OR OVER BY JULY 1, 1973

Includes all membership and competition privileges—and American Aircraft Modeler subscription.

☐ **Open** $15.00

☐ New ☐ Renewal (number _____)

FOR THOSE NOT 19 BY JULY 1, 1973—*Check One Only!*

FILL IN DATE OF BIRTH Mo._____Day_____Yr._____

☐ **JUNIOR OR SENIOR—No magazine** $3.00
Includes all membership and competition privileges—except American Aircraft Modeler subscription.

☐ **SAME AS ABOVE—with subscription** $7.50

MAIN INTEREST *(Check only one):* __CL __FF __RC __INDOOR __SCALE __ALL

1973 Membership expires Dec. 31, 1973

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Address _____

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The MODEL BUILDER

DECEMBER

1972

volume 2, number 14

Subscriptions $6.50 per year, $11.50 two years. Single copies 65 cents. Add $1.50 for postage per year outside of U.S. and Canada (Except APO)

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CONSTRUCTION

Cover: This month's cover is special in several ways. It is our first full color cover, and as a Christmas present to the General Manager, Anita Northrop, it just happens to be a photo of her! The scene is Sepulveda Basin, Van Nuys, California, Nov. 18, 1971, and the occasion was the North American Flightmaster's Jumbo Rubber Scale contest. The model is Walt Mooney's De Havilland Humming Bird, which was later converted to .049 power and pulse rudder (Ace Commande). It was featured in a construction article in the May, 1972 issue of MODEL BUILDER. Ektachrome photo by Bill Hannan

This was Jim Kirkland, doing what he liked most. The ship is his newest, and last design . . the Nutcracker. The scene is the FAI Team Trials at Huntsville, Alabama, just three months ago.

from Bill Northrop's workbench . . .

There has been an awful lot of hash lately in reference to AMA's dues increase and also to its methods of reaching its members with organizational news. Unfortunately, most of the controversy has been brought about by the editor of a certain "limited interest" model magazine, who has chosen to stray even farther than usual from the subject of modeling in order to combine these two somewhat unrelated items into a huge rhubarb.

Supposedly, all of this harangue was to point out to AMA's modelers, who he apparently feels can't think for themselves, how badly its elected officials were treating their fellow members. Actually, however, his one and only goal is to chop down a particular competitor in the model hobby publishing field. To accomplish this, he is literally "using" the membership by carefully selecting the most appropriate moment to raise a big stink.

We're not going to go into a long and detailed discussion of facts and figures, because as anyone knows who has only casually observed the antics of our politicians, "facts and figures" is a two-ended tool that works in either direction. You select the end that does what you want, and go to it.

Let's try looking at this situation a little more philosophically, and by that we mean, "search for truth through logical reasoning rather than factual observation." (Webster's Seventh) First of all, let's momentarily set aside the magazine portion of the hassle, and look at the dues increase.

Do you know the difference between an optimist and a pessimist? An optimist says that a half a glass of water is "half full," whereas, to a pessimist, it is "half empty."

As applied to the AMA dues increase for Open members, the pessimist concludes that we're going to pay 50 percent more than last year and get nothing more for it. The optimist figures that an extra five bucks a year doesn't amount to a hill of beans in today's expanding economy, and it will at least allow us to keep what we have.

Wonder if the 6 foot tall pessimist, who is standing in 5 feet of water, would insist on staying put while a two foot tide comes in?

Our own view on AMA dues; past, present, and future, is more in line with the optimist's. Even back in the early 50's, when we renewed after having allowed our membership to lapse in 1941, we gave ourselves an answer to the most often asked question, "What do I get for my dues money?" By that time, we had already enjoyed many years of aeromodeling and simply felt that we owed a debt to somebody . . . lots of people . . . for the many pleasures the hobby had already given us. The organization was, and still is, the backbone of it all, run for and by the modelers themselves, and therefore it was the logical focal point of our debt of gratitude, even though it was only a few bucks worth.

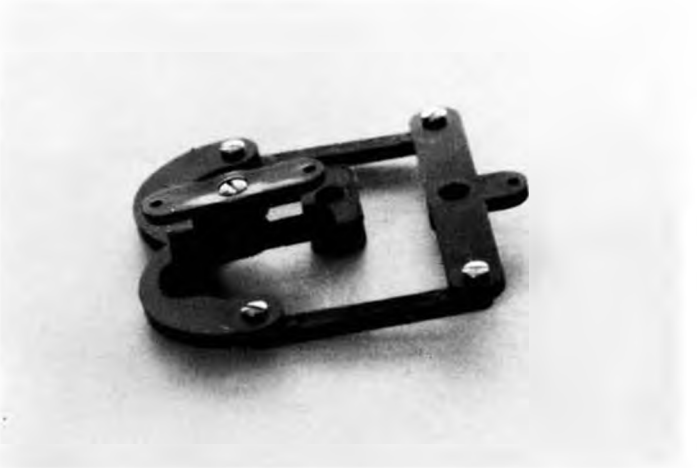
Prior to WW II, the Open dues were something like $2.50 or so, but in comparison, M.A.N. sold for 20 cents, Bill Barnes Air Trails and Flying Aces cost 15 cents, 1/8 square balsa strips were 3 for a penny, and a new Ford went for $795! If you think the AMA dues are bad, compare them with the dues for most any other national organization, and while you're at it, ask your wife

Jim Kirkland, retired career enlisted man in the U.S. Air Force, and an internationally known modeler, died of a heart attack on Saturday, November 4, 1972. He was helping another modeler unload a drum of methanol and complained of back pains. Taken to the hospital in an ambulance, he was dead within an hour. He had had no previous heart trouble. He would have been 48 later in November.

Jim was best known for his accomplishments in radio control, in which he has been rated as one of the top ten over the past 10 years or so. He won the Nationals in 1963, and placed second in 1968, which put him on the U.S. World Championship team headed for Bremen in 1969. Two of his better known designs were the Beachcomber and the Triton. Just this year, Jim placed fifth at the Nationals, finishing the competition with a borrowed plane after being shot down by one of the two interference flukes. We last saw him at Huntsville, Alabama, where he placed 6th in the FAI Team Trials.

Jim is survived by his wife, Mignon ("Mig") and his 18 year old son Jimmy, who had just gotten married the week before. He was buried on Monday, Nov. 6, 1972 near his home town of Hartford, Alabama.

A portion of the Collector's Series of twelve 1/48 scale model kits being offered by K & B, featuring WWI and between-war planes.



New interaction-free "mixer" by Kraft Systems for ruddervators, elevons, and flaperons. Fits "Brick" or two KPS-12s. See text.

how far she'd get in the local supermarket with 15 bucks . . . and don't try to take her out for a decent dinner if that's all you happen to have in your pocket!

The magazine thing, of course, is a little closer to home . . . now . . . but we still prefer to view it philosophically, and as one not directly involved.

Costwise, you're paying 33 cents a month (postage included) for about 8 pages of information on AMA activities. We say "activities" rather than "news" because the information comes to you three months after being compiled.

Being in our present position, we won't comment on the relative values of editorial content in the model magazines, but if you like what you get in the other pages of AMA's current information vehicle, fine, you can't beat the price. If you don't happen to care for it, don't read it! It's the same as using a "blab-off" to avoid TV commericals, switching off the radio news analyst, or not going to "skin" movies . . . the choice is yours. It's still a free country.

Of all the AMA literary output, we personally enjoy the Competition Newsletter most of all. It's a shame that the material presented in this publication couldn't go to all members. Currently, it is optional at $3.00 per year, and we understand that only a small percentage of the total membership subscribes.

Edited by a top former free flight power competition flier, Carl Wheeley, CN has a very short lead time, so that its content is extremely current. It contains advance information on rules changes, detailed reports on major national and international competitions, articles on design theory, and a constantly updated AMA sanctioned contest calender.

We would like to see AMA take the following action on the magazine situation: First, close out the deal with AAM (This would afford all of the model magazines equal opportunity to attract advertisers on their own relative merits . . . a move which should eliminate the hassle on that subject!). Though we're not exactly sure why, this cannot take effect until January 1974.

Next, expand the Competition Newsletter to include the material which is currently published in AAM (Sixteen pages is a practical size, from the point of view of printing costs), and beginning at the termination of the current deal,

The Aeromodeller Annual 1972-73, an amazingly thorough review containing many 3-views of the best. By R. Moulton and Laidlaw-Dickson.

R C Helicopters, Inc., demonstrated its Bell Jet Ranger model for ten consecutive, successful days at the Zagreb International Fair, Yugoslavia, at invitation of U.S. Information Agency. Flown by Len Sabato and Sal Battaglia. Write to 4550 White Plains Rd., Bronx, N.Y. 10470 for more info.

Self-contained electric fuel pump from Royal Products. Hangs on gallon can. Price, $9.95.

New fuel for glow engines features synthetic lubricant, comes in four different nitro strengths to suite various conditions. Can labels are color-coded. More info in text.

distribute the "AMA Report and Competition Newsletter" to all members.

The problem is, could AMA afford to circulate 50,000 AMARCN's a month without a further increase in dues? Don't forget, the present newsletter is an optional item costing a member $3.00 per year extra, over and above dues. Also, it has no paid advertising to help defray publishing costs (And . . . ahem . . . if you don't mind, folks, we're certainly not about to suggest that our advertisers should spread their budget any thinner!)

On the other hand, the current magazine arrangement is costing $4.00 per year, per member, which is a buck more than the 8 to 12 page newsletter. It seems to us, therefore, as though it could be done without a further dues increase.

Another somewhat nebulous factor in favor of hanging AMA's news on a magazine's coattails is the idea that the "word" will thus get to the nation's non-member modelers. For one thing, we would imagine that most all of the model magazines would be willing to display AMA advertising and membership coupons at no charge, particularly if by doing so they are just helping AMA, and not also, in turn, one of their competitors. Such ads would actually reach more non-members since they would not be limited to the circulation of one magazine, but possibly all of them. In addition, it is not too unreasonable for AMA to consider distribution of the "AMARCN" to the 3,500 to 4,000 hobby shops around the country . . . the most likely places for non-AMA modelers to come in contact with it. It could be sold for 50 cents over the counter, with a rebate of the full purchase price to anyone who joins by using "The enclosed membership coupon."

Continuing our bad habit of doing things at the most inopportune moments, we now bring up the subject of a price increase for The MODEL BUILDER. We're not going to try to justify the need for taking this action with a long dissertation on how tough things are. We ALL know that!

We would however, like to give you a couple of things to mull over while you're going "Humph!" First of all, surprisingly enough, the idea of a price increase was brought to mind by some of you, our readers, who have taken the time to write complimentary letters about MB and in some cases have simply asked, "Why don't you charge more?"

Secondly, of course, there is the postage increase on second class mail (Talk about paying more and getting nothing, if not less for it!) We won't

World Championship team member from Italy, Graziano Pagni, with his Super-Morris HF. Weight is 9 lbs. Uses Pro-Line radio, Rossi eng.

Raul Papini is 1972 Italian Champion in "Sport Class." Model is the Morris HF, 8 lbs, Pro-Line, Rossi 60 RV-ABC. Pro-Line retracts.

New heavy-duty Octura 4-40 motor mount for .40 engines and some smaller 60's, in background. Regular model in front. See text.

New Octura 60 Multi-mount from high tensile aluminum extrusion. Photo shows various ways to use mount on beams or blocks.

Starting battery clip from Royal Products can be adjusted to suite size of cylinder head.

bore you with all the details on this. If it interests you, borrow a copy of RCM for December 1972.

Finally, whether you realize it or not (This sorta snuck up on us too!), we have built up our editorial content in one short year to a size that is comparable to the other mags. By so doing, we figure we're in a position to justify a comparable price tag.

Therefore, beginning with the January 1973 issue, The MODEL BUILDER will cost 85 cents per copy. Subscription rates will accordingly increase to $8.25 for one year, and $14.00 for two years. Canada and Mexico subscribers must add $1.50 per year for additional postage, all other countries add $2.00. If our friends from overseas are real gluttons for punishment and desire MB by airmail, and extra $18.50 per year is required.

THINGS TO DO

According to public relations information just received, Miami, Florida is scheduled, from January 16 to 21, to be the scene of the first international air races to be held in the United States since 1937. Labeled "The Great Miami Air Race," the featured events will be for Unlimiteds, Formula I, Sport Biplanes, and T-6s.

The five-day show will also feature commercial jet airliner displays, experimental and antique aircraft, fly-bys, aviation seminars, and aerobatic demonstrations.

Proceeds from the show will be used to build and promote an aviation museum in Miami. The Greater Miami Chamber of Commerce, Charles Babcock President, is organizing the whole deal. Naturally, the annual event, which will take place at the New Tamiami Airport, cannot miss as a tremendous tourist attraction.

* * *

The 5th Annual Tangerine International R/C Championships will take place near Orlando, Florida on December 29, 30, 31, and January 1. Events include Pattern (A, B, D novice and D expert), Sport Scale, AMA Scale, and Formula I Pylon. Contact Walt Schoonard, 2080 Sharon Dr., Winter Park, Fla. 32789, or Clinton Smith, 106 Hillcrest St., Altamonte Springs, Fla. 32701, for further information.

* * *

The RAMS of Seattle are sponsoring their 8th Annual Radio Control Model Show on February 3 and 4, 1973. It will be held for the third consecutive year at the Sea-Tac Motor Inn, across from the Seattle-Tacoma International Airport.

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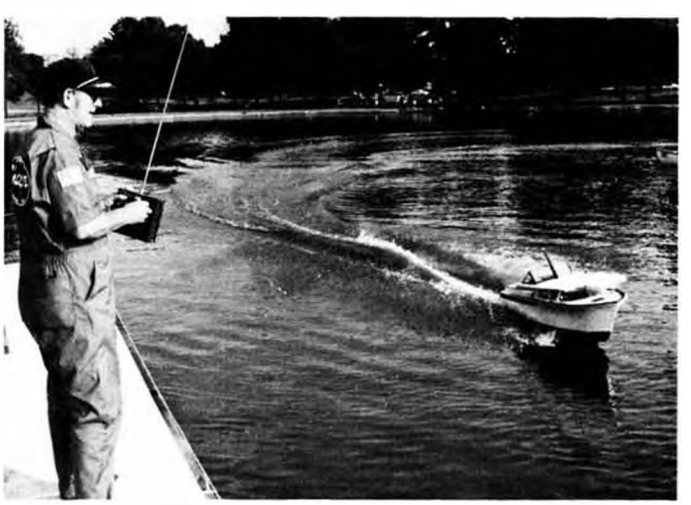
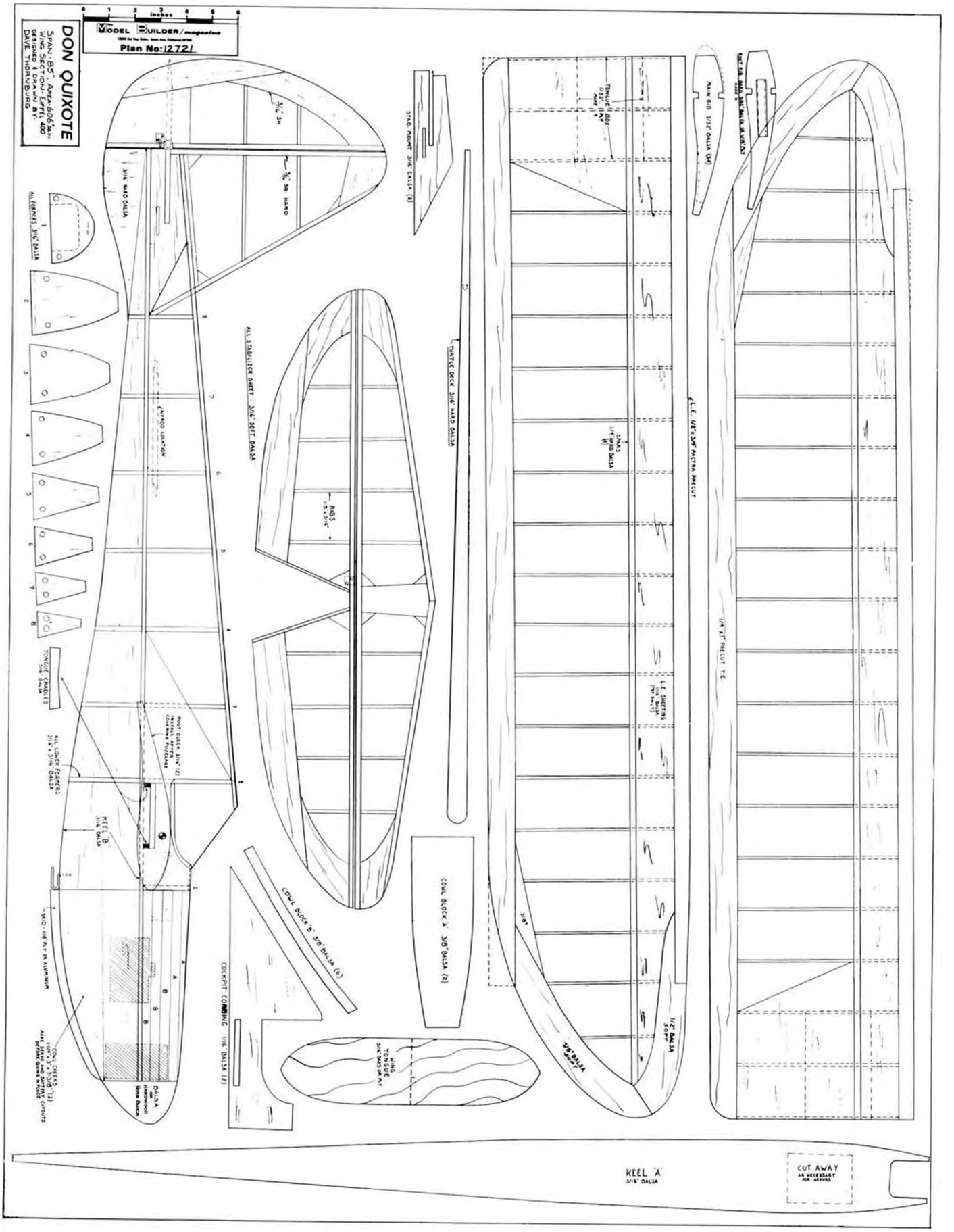
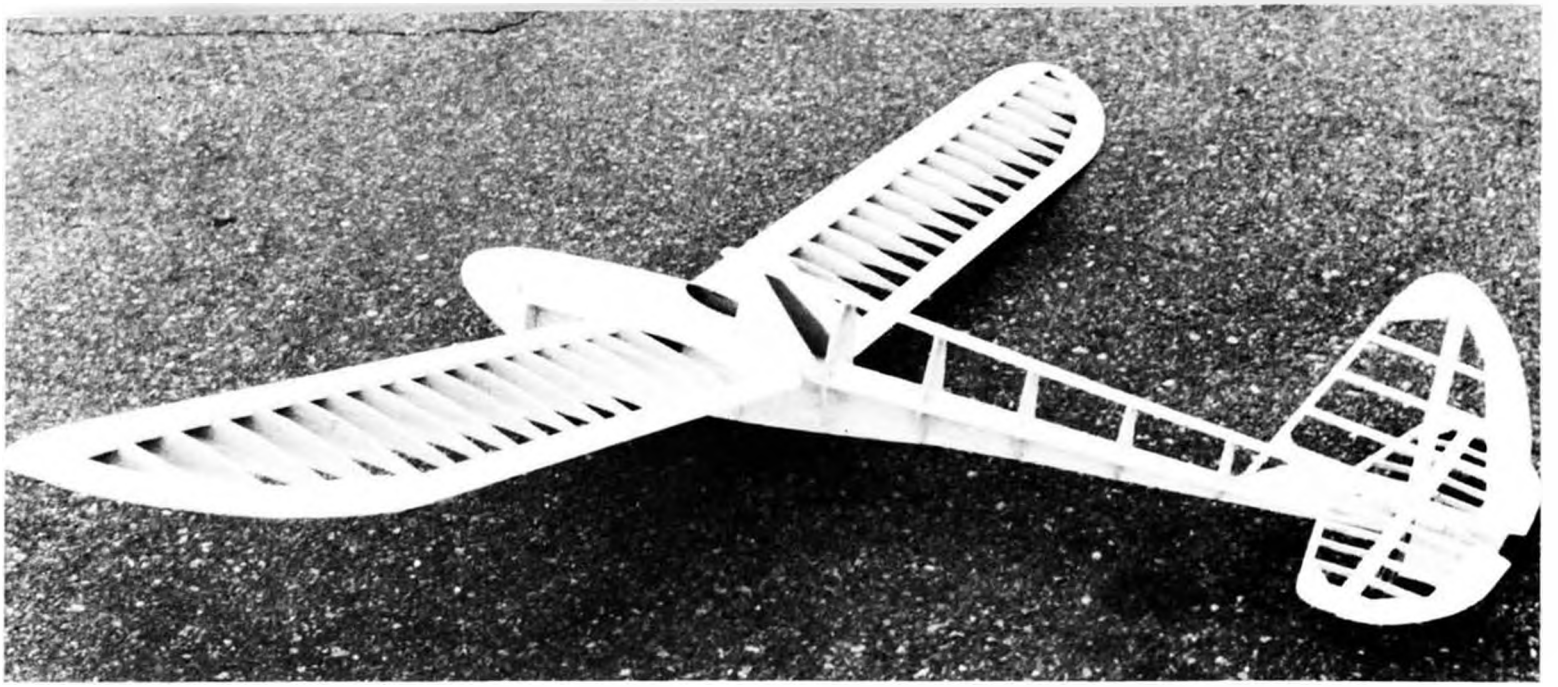
Clayton Thoms, Pekin, Ill., pattern maker for Caterpillar Tractor Co., and two of his boats. Kits for both to be available from Hartman.



A Tecumseh 3 HP engine moves this cruiser along at 25 to 30 knots. Length is 61". Tugboat is 42" long; superstructure partly completed.



FULL SIZE PLANS AVAILABLE – SEE PAGE 64



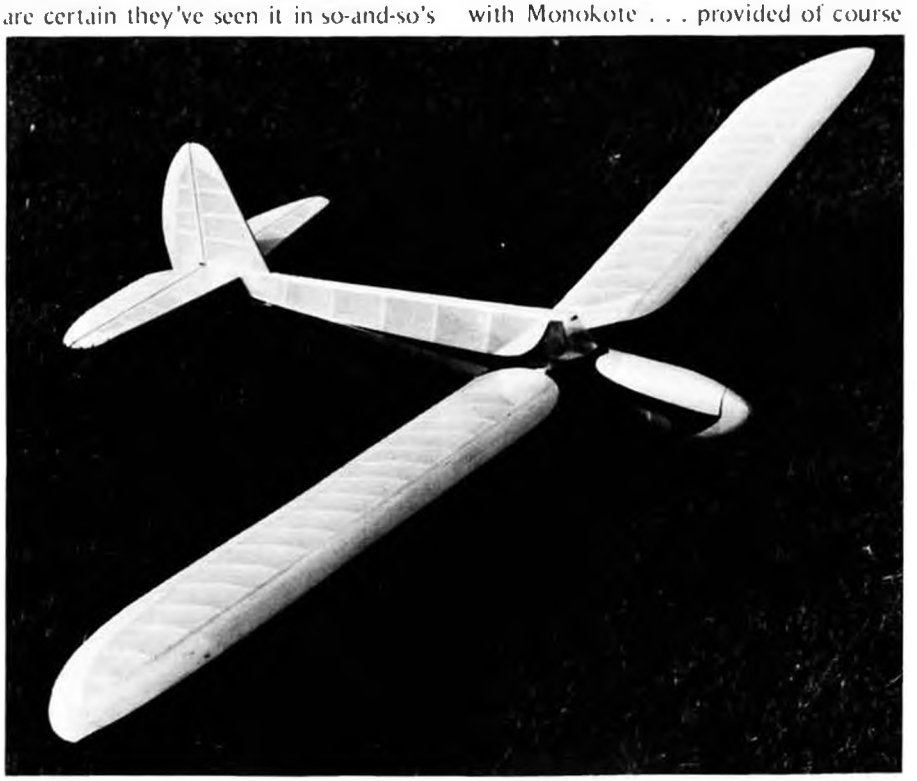
A bit of the old and a bit of the new are combined in this picturesque soaring machine. A little out of the modern rut in construction and looks.

IT LOOKS LIKE . . . . DON QUIXOTE

Reminiscent of several famous designs of the past, this soarer combines the classic beauty on the outside with the convenience of modern technology on the inside. **Text and photos by Dave Thornburg**

● Don Quixote is pure nostalgia. Not instant nostalgia, mind you . . . it takes more than a weekend to build, even with sheet balsa keels to take the headache out of fuselage alignment. But it will be worth the effort, because the completed airplane has that classic look of the forties. Old timers will assure you they've built dozens like it in their freeflight days; youngsters are certain they've seen it in so-and-so's collection of *Air Trails* or *Flying Aces*.

Actually, the Don's antiquity is only silk deep. Underneath its eight coats of thinned nitrate dope lie generous amounts of sheet balsa (a rare commodity in the forties), a few modern conveniences such as Nyrods and precut trailing edges, and a newfangled digital radio to bring it home again. I could even forgive you for covering yours with Monokote . . . provided of course that you use one of the transparent colors, to show off its beautiful framework.



In keeping with the kinda classic lines, Dave covered D/Q with colored silk and eight coats of clear nitrate lacquer (T'ain't nice to say "dope" any more.).

Construction is easy, though time-consuming, so let's get cracking, as the British say. Decide on your radio system before beginning the fuselage, and make the appropriate cutouts in the main keep pieces for servos and battery pack. The current crop of two-channel "bricks" will fit beautifully; just remember that they are not immune to shock damage, and need at least 1/4 inch of REAL foam padding all around. For sailplane work, I like to bury my antenna within the ship and just "plug in" as I install the radio. A piece of very light music wire epoxied down the keel and culminating in a plug up by the receiver serves the purpose nicely. Be sure you leave enough pigtail on the receiver to add up to the factory-recommended antenna length, and you should have no problems. Fliers who cling to the superstition that antennae ought to be as nearly vertical as possible are horrified by this practice, but don't let them dissuade you. The last piece of equipment I had that really needed a vertical antenna was a Berkeley "Super Aerotrol" rig. Ask your grandpa about that one, chile.

('Scuse us for buttin' in, Dave, but here's a way to hide the antenna without chopping it. While the framework is open, install a piece of Nyrod outer tubing . . . or to save money and

weight, 3 soda straws butted together and taped . . . in the fuselage with the front end in the receiver compartment. When installing the receiver to fly, simply feed the antenna into the tube. It will thus be loosely confined in a straight line back through the fuselage. Ain't that clever? WCN)

Be sure to drill the Nyrod holes when cutting out the formers, and don't forget to install the rod casings before you cover the fuselage. The blocks for the nose section are all standard sizes, available from any good hobby shop (or any good scrap box). Tack-glue the cowl in place between a roughed-out noseblock and a completed cockpit combing for final shaping with a sanding block. Hollow the two cheek blocks for a snug fit around your batteries before gluing them in place and carving them to shape.

The tongue slots in the 1/16 inch cockpit combing are critical to wing alignment, so you may prefer to cut them only after the combing is installed. Check the wing tongue for fit and alignment, but don't install it until the fuselage has been covered. Ditto the 3/16 inch balsa root blocks.

Leave the main cowl in place until the fuselage has been covered and doped, then cut it loose carefully with a thin, sharp razor blade. Glue the tongue in place with liberal amounts of epoxy . . . why trust ordinary glues in high-stress areas? Same goes for the towhook.

The wings are simple enough, but if you're not accustomed to undercambered foils, there are a few points to watch. When laying the pieces out over the plan, block up the front of the precut trailing edge 1/16 inch before pinning it to your workbench . . . a piece of 1/16 square balsa makes a fine block. Next, pin down the 1/4 square lower spar, add the ribs (omitting the four at the tip), and glue in the upper spar. Glue the leading edge in place, and then tackle the tip blocks. The object is to create built-in washout in the tip section: do this by blocking up the trailing edge tip blocks so that the final three ribs will remain flush with the others on their top surface, but have to be trimmed progressively on their bottom surfaces (see rib template on full-size plan).

Add the 1/16 inch sheeting between the top spar and the leading edge. When dry, remove wing from plan and sand or plane the leading edge and tip blocks to proper cross-sections. The tongue box consists of two pieces of 1/32 inch plywood inserted into the slots in the first three ribs and held in place while drying by a piece of 1/4 inch scrap between them. If you worry a lot, you may want to fill the gaps between the wing spars and the tongue box with scrap balsa, to help transfer flight loads directly from the wing tongue to the main spar structure; in any event, coat this

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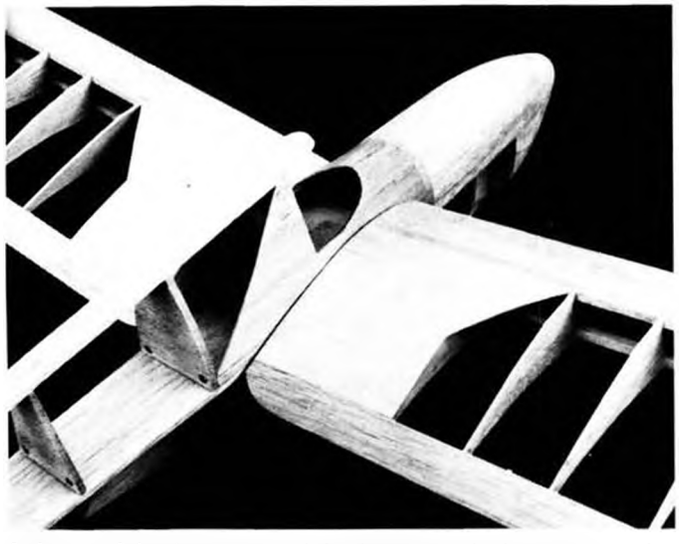
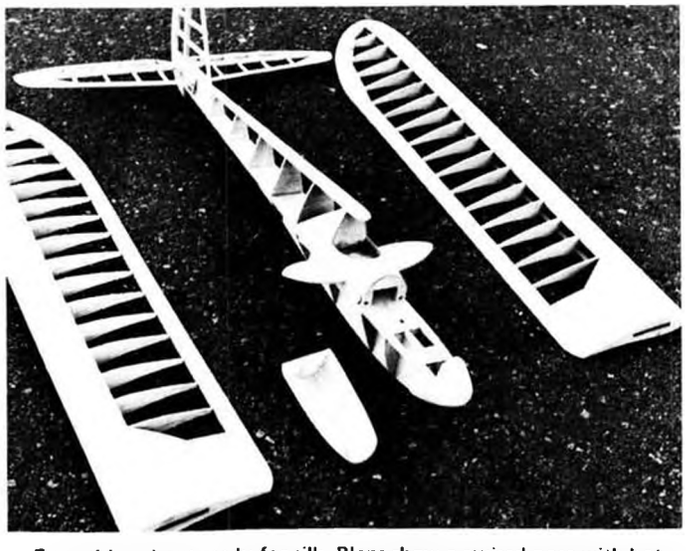
Jan Thornburg forces a smile in windy 20 degree weather . . . Note snow on mountains in the background. The scene is Albuquerque, New Mexico.



A closeup of the clean, neat, and simple structure in the cabin area of fuselage. Note the holes for Nyrods. Put 'em in before you cover!



Everything about ready for silk. Plans show a revised nose with bottom chin blocks extended to the wing L.E. for added strength.

Modelers assemble for a revival of the Texaco Trophy competition at Lake Elsinore in late December, 1971. These are members of the SCAMPS (Southern California Antique Model Plane Society). OK, old-timers, how many planes do you recognize out of the past?

FREE FLIGHT

by Mel Schmidt

Mel Schmidt takes us on an investigation of the unusual phenomenon which is taking place in model aviation, the increasing popularity of the "old-timer" models. Could it be because they're more relaxing?

● We can still remember hearing and then seeing a free flight gas model in flight for the first time. It came over the houses and trees in level flight with its owner on the run.

Later, we learned about a store in the city which had kits, motors and supplies of all kinds. For us, visiting Eastman's Hobby Shop in Fresno was a special treat. We would go as often as possible, even if it was just to look.

At first we didn't have enough money to buy a gas kit, but eventually earned it. Our first free flight was a Brooklyn Dodger and we worked for months to build it. One reason it took so long was that we spent much of the time just starting and fiddling with that ignition engine.

Years have gone by since and in this wonderful hobby and in looking back, those first years just may have been the best. This month's column written by men who still fly the ships of that time. Read and enjoy . . .

JIM DEAN: Editor of "HOT LEADS."

The objective is the preservation of the old time spirit of model flying, the fellowship and respectful give-and-take among enthusiasts pursuing the wonderful sport of building, and flying miniature aircraft. Club meetings are more of an excuse to get together a couple of times a month to exchange brags and experiences, compare plans and accomplishments, and to generally enjoy each others company, rather than to praise Roberts Rules and play politics.

Contests are held, and competition is keen, but any flyer is apt to find himself standing, and admiring the flight of a rival's ship as it climbs into a thermal, forgetting in the pleasure of the moment, to launch his own craft in the prevailing piggy-back fashion. Trouble encountered at the field leads to many offers of assistance; spark plugs, batteries, fuel, and any other available required items, as well as tremendous amounts of advice being offered.

The contests are not held primarily to "make money," or to perpetuate the personal glory of a few, but are formatted to enable the membership to compete with their favorite models. The awards are minimal, with the trend being toward giving useful prizes instead of "mantle-monsters." Who wouldn't rather win a hunk of good silk than an anodized aluminum and imitation marble trophy? We schedule no events as "crowd pleasers," nor for "education." We have no program for the "little ones," nor for the where-can-I-buy-one-too crowd. We take pride in building and flying our models and in discovering a "new" old-timer to spring on our buddies.

A popular category in the old-timer movement is the .020 powered miniatures. This is the 1940 So Long, by Bob Oslan. Bob's Cal Aero-Model kits the So Long and Brooklyn Dodger for .020.

And still another category of old-timer, the "New Old Ruler." These are newly-designed planes to fit the 1941 rules. This one is the "Swift," designed by Bob Oslan. Span is 58 inches, and the engine is a Forster .29 . . . ignition of course.

D. RHEAUME: "SCIFS" Club

You should have seen . . . Larry Clark's red Miss America boring up in a 70 degree climb. He tells us he finally found the courage to open up the Super Cyke and it pulled Miss America up in a fashion seldom if ever seen for her. Later Brick Brickner tried the same medicine on his beautiful red and blue Miss, with the same results.

You should have seen . . . Bruce Chandler's Black Knight swing left on take-off, straighten out, and then inexplicably do a slow roll into the ground. Are we right in saying that most crack-ups are due to turning or looping -- but a slow roll? No explanation from Bruce or spectators . . . though there were plenty of theories.

You should have seen . . . Bob Hunter's Playboy Sr's power pattern. Straight away it went . . . unlike most O.T. 'ers, which screw their way up. Bob must have found bad air consistantly not to place.

You should have seen . . . the wing of Joe Messing's Bombshell lift off whilst flying through some sort of weird shearing air. Plenty of bands holding it, he said. Always something, eh Joe? Should we tell them about you having the cam on 180 degrees backwards on your Cyke? No? O.K.

You should have seen . . . Frank Swaney's new Monokoted Sailplane fly. Just great! Only problem is, Frank always has an over-run. We've timed him at two separate meets this year and even if he pulls that Austin timer (which he insists on using) out only 1/32 of an inch he still is sure to get 2 or 3 seconds over. Too bad, Frank . . . It's a good ship.

You should have seen . . . Bob Oslan's rubber ship (Competitor, we think) climb out. Rubber always climbs round and round . . . right? Wrong! Bob's model makes one or two tremendous power circles. Peculiar, but he won Rubber.

You should have seen . . . and heard Andy Faykun's .020. Andy, who is known for his rubber flying, had the best running, highest whining Cox .020 I've ever heard. So what did he do . . . that's right, flew it O.O.S. and lost it!

RALPH PREY: Editor of "SATELLITE."

There comes a time in all walks of life when a look back "to the good old days" is necessary to each of us in order to cope with the problems of today. I don't care if you're 50 and eating cotton candy with the grand children at Ringling Brothers Circus or in your mid 20's poking around a junk yard looking for Ford flathead parts; it's that look back that gets you going ahead again.

With model airplanes, it has been the Old Timer Models that have "pepped up" the modeler and the hobby. For-

"Whadayah mean it's been done?!

Bob Oslan, Huntington Beach, California, and his Brooklyn Dodger. More info on these .020 miniatures in the text.

Andy Faykun and his .020 Gladiator at Sepulveda Basin, near Los Angeles, Calif. The .020 specs call for 36 inch maximum wing span.

tunately too, there are those modelers among us who are doing something about it, which prompted us to pass along the following items to your attention. Sorta to Pep you up.

Take Jim Noonan for example . . . Jim's a long standing friend of ours and an excellent model builder in the midwest . . . Milwaukee to be exact. He has a very intriguing mail order "Thing" going on; strictly old time models and related supplies. To give you an idea of what he has to offer, his catalogue of goodies includes lists of plans for old time gas and rubber models that date back to 1932. What's more, he has balsa wood in the "old style" 18 inch length with selected strips and sizes packaged in 10, 25, and 50-piece bundles of light, medium and hard. All types of model coverings are available such as; RICE PAPER, the original Japanese tissue (white) used 40 to 50 years ago; GOLDBEATERS SKINS . . . rare, ancient model covering material approximately 8 by 24, in yellow, green, blue, and black. In addition he has a rare stock of hundreds of other old timer goodies. So you're wanting to get "Pepped up" by a look back to the good old days, drop Jim a note. OLD TIMER MODELS 7454 West Thurston Cir., Milwaukee, Wisconsin 53218.

Here's another example of guys "on the go" for you in getting on the old timer bandwagon. Two well known West Coast modelers very active in old time models have formed a partnership and have a unique idea in merchandising kits for old time models, Chuck Partch and Gene Wallock took a long hard look back into the good old days and regenerated a 40 year old idea of offering kits to modelers. Chuck and Gene announce a series of Rib, Former and Outline Kits for Antique and Old Time Models.

These partial *(Why not call 'em "Partch-ial" kits? WCN)* kits will enable the modeler to build the outstanding designs of the Pre-World War II Era at reasonable cost in a minimum of time. Plans are not included, however they are readily available from John Pond, 4135 Avati Drive, San Diego, CA 92117, or Jim Noonan at the address above, in Milwaukee. Chuck and Gene call their partnership P&W MODEL SERVICE and you can order your goodies from them at P.O. Box 925 Monrovia, CA 91016.

This partial kit approach was prevalent in the 1930's because of the then tight money (depression). For this same reason some 40 years later, tight money that is, it appears the same technique is again practical. All kits offered have been proof-built to insure template integrity. In cases where the construction has been altered, this is spelled out in the kit description.

Here's a list of kits currently available soon: Kit 101 Megow "Ranger" A-B Pylon — $6.00, Kit 102 Aircraft "So-Long" A-B Cabin — $6.00, Kit 103 Comet "Clipper MK I" Antique — $6.25, Kit 104 Comet "Clipper MK II" C Cabin — $7.25, Kit 105 Shulman's "B Skyrocket" B Cabin — $6.00, Kit 106 Megow "Korda" Rubber — $4.25.

And here's what's in the mill, to be available soon: Comet "Sailplane," Berkley "Super Buccaneer," Dallaire "Sportster," Jasco "Floater," Struck's "Record Hound," Scientific "Mercury," Lamb's "Climber," Cleveland's Playboy JR & SR and Sal Taibi's Powerhouse.

Now, if that doesn't jazz you, read on . . .

Ed Kelley and his good wife Rose, and their sons, also have an EXTRAORDINARY line of old timer kits available of the ole BUZZARD BOMBSHELL and a cute little BUZZARD BOMBSHELL for .020 Replica. You can get these very excellent kits at your local hobby shop.

Even if you don't plan to enter an old timer contest, it's FUN to build a kit like Ed's BOMBSHELL, 'cause all the wood is hand picked and the ribs and formers are all form sanded on a drum sander. Dave Prey is currently building one of Ed's full size Bombshells, and he has trouble putting down the glue stick . . . it's FUN! LOOK FOR ED KELLEY'S BOMBSHELL'S . . . 4K'S MODELS is his BY LINE.

And here's another manufacturer of

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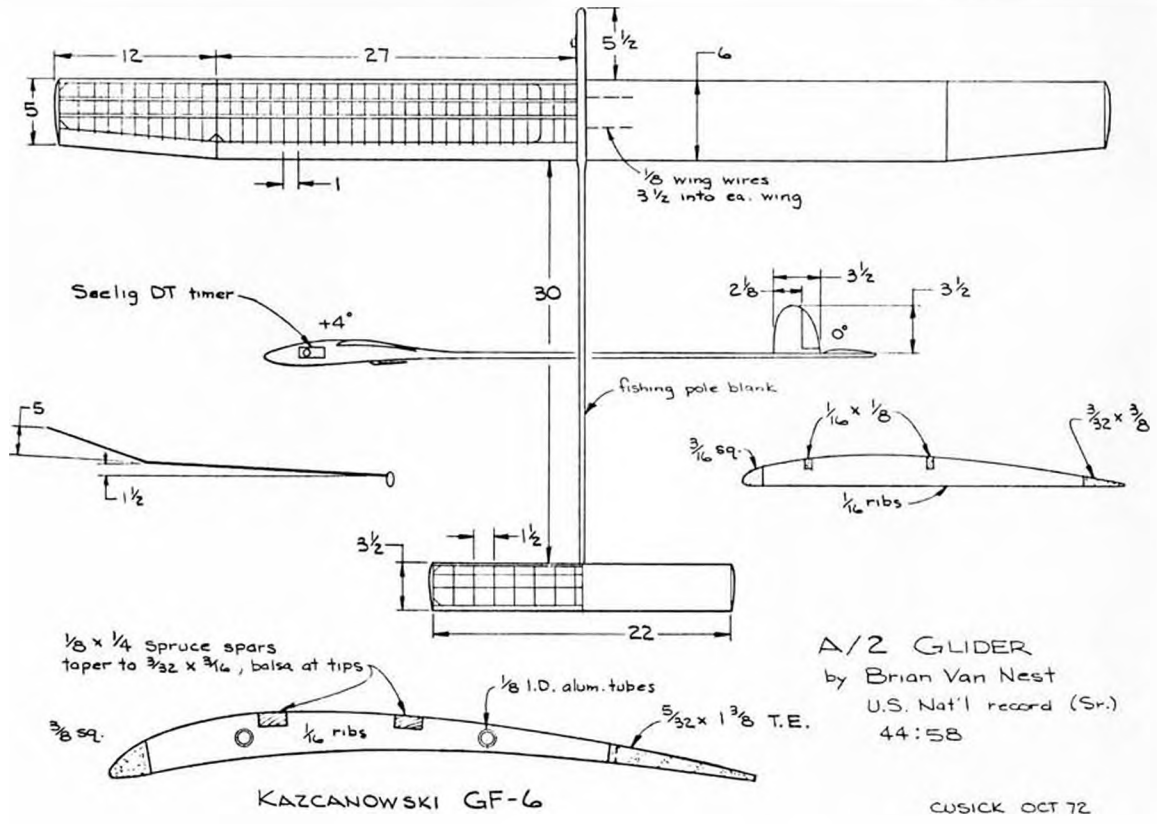
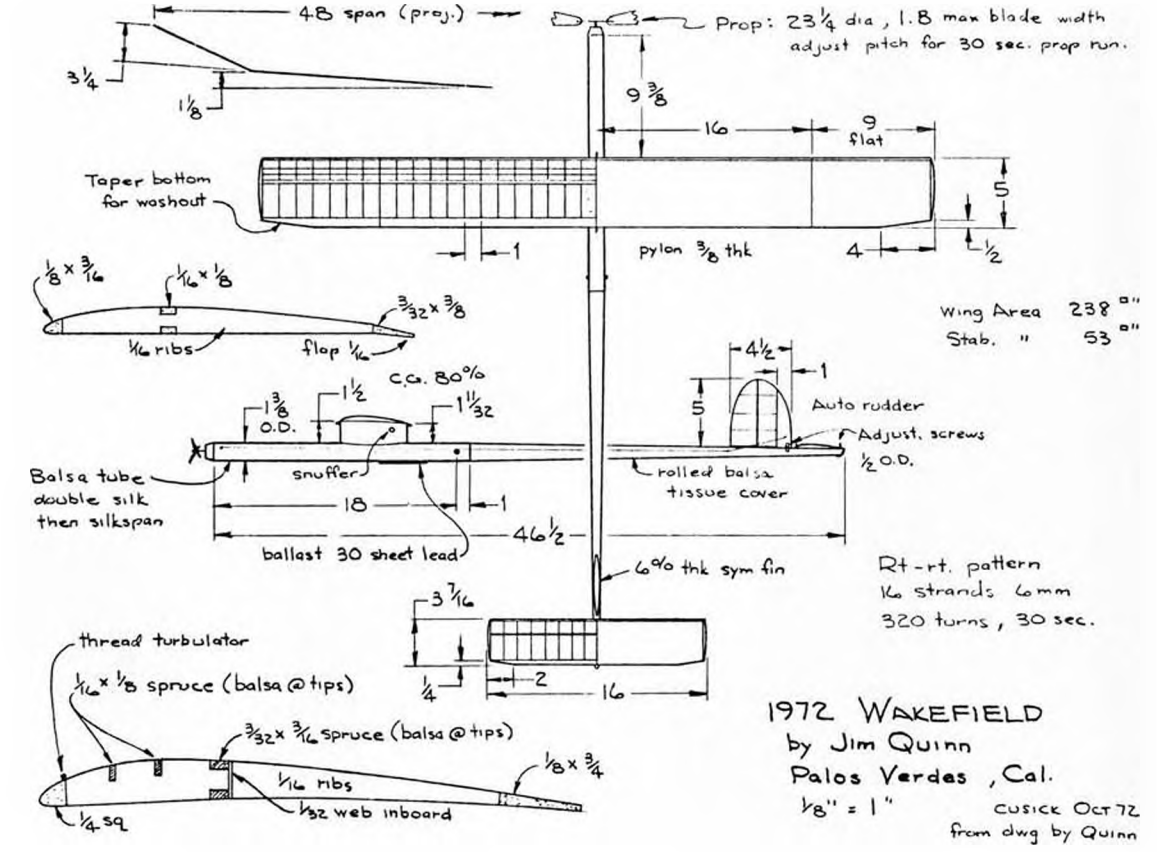
Jack Transue's Cleveland Playboy Senior, held by Miss Karin Brock. Jack has won numerous trophies with this model of a famous 1940 design. Power is an ignition Ohlsson .60.



FAI f/f Report

By
AL VELA



● Made a short visit to K&B in hopes of grabbing one of the new Schneurle Ported 15 engines, but I was told that I was one and a half weeks early in order to have one of the alcohol versions . . . the nitro types are in full production and by the time you read this, chances are good they will be on the hobby shop shelves.

John Brodbeck Sr. promised me one of the alcohol types as soon as they are ready, as we are planning to do some testing on the available fiberglass propellers, such as Bartels, Van Nest, and the black N.F.F.S., as well as my own. Hope to give a report on R.P.M. as well as handling characteristics. The engine looks promising, and in my opinion, has a strong potential to qualify for the high performance that top F.I.C. machines demand.

Down in Elsinore, we had a long talk with Bob (The Godfather) White concerning his approach on Wakefield propellers. Such is the simplicity of his masterpieces. That anyone can be fooled, yet when one sees the actual performance, it's just incredible. While others turn in lot's of machining hours, Bob does it in a snap with a piece of 3/32 wire and a pair of pliers. But this is one of so many things that makes rubber so tough. Bob also explained his approach on pitch. He uses a "mixed pitch," starting with 27 inch at the hub end to the 50 percent point, then decreasing to 23 inch at the tip of the blade. He also features a turbulator at the maximum point of the blade chord (about 10 percent.) This turbulator is a strip of 1/64 X 1/32 balsa. There now, see how simple is the No. 3 propeller in the world?!

F.I.C. ENGINE PANS

We have had many questions from power flyers concerning the "Shaw" mount that I designed for Guy Shaw. These pans are of high quality sand casting and fit the Rossi 15 like a glove; also Tigers . . . for those who still use them; and with a little work, will mount almost every 15 available. They are fully machined for zero-zero thrust settings, and you don't have to be a magician to fit the landing gear, as they come predrilled to slide in the wire and secure it with a set screw. For more on this, contact: Guy N. Shaw, 1851 S. Euclid, Ontario, CA 91761 (Only a mile from this reporter.)

WESTERN FREE FLIGHT ASSOCIATION INTERNATIONAL CHALLENGE, by Bill Hartill

The Western Free Flight Association was formed Feb. 6, 1965 at a special meeting of concerned FAI F/F modelers at Tulare, Calif. The association was formed to promote two things:

1. Improved FAI team selection methods for maximum effectiveness of the USA in World competition.
2. Expanded FAI F/F activity in the Western U.S.A.

Under item 2 above, the WFFA has sponsored an annual contest known originally as "Western FAI Invitational." Various approaches have been tried on contest format. This year, we have changed the name to "International Challenge" and included the best parts of previous meetings.

For those who weren't at Taft but promise to make it next year, and for those that were there and aren't sure

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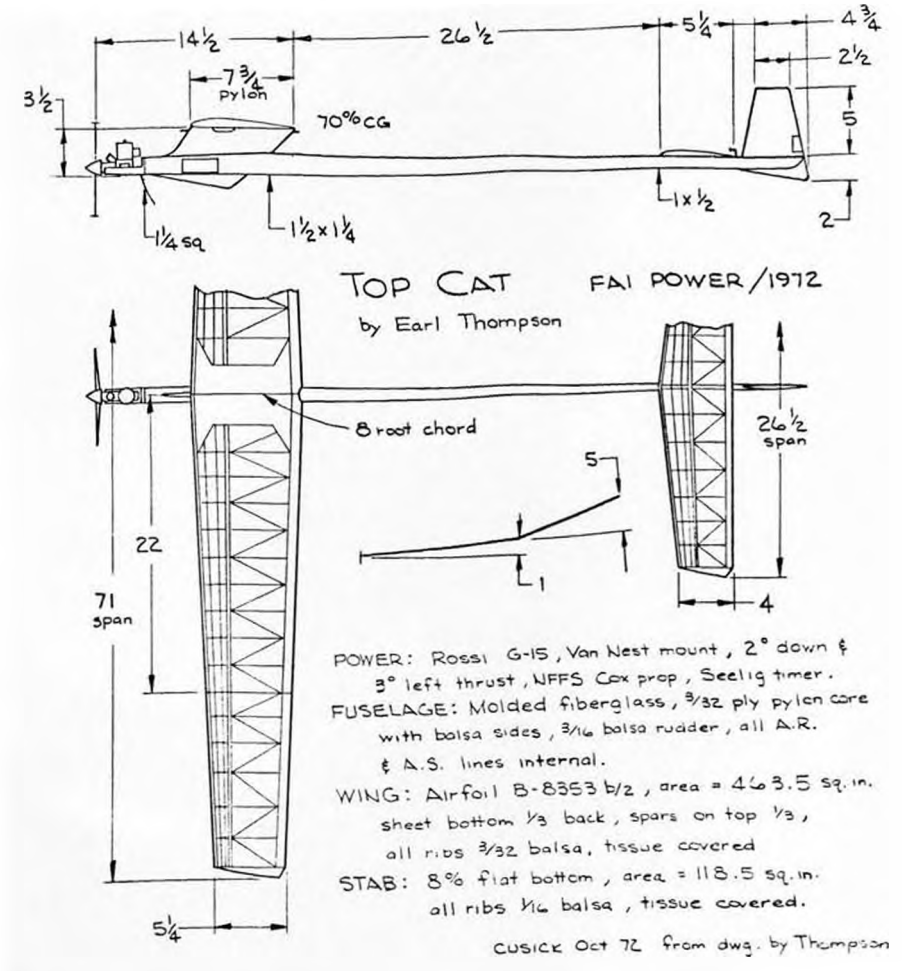

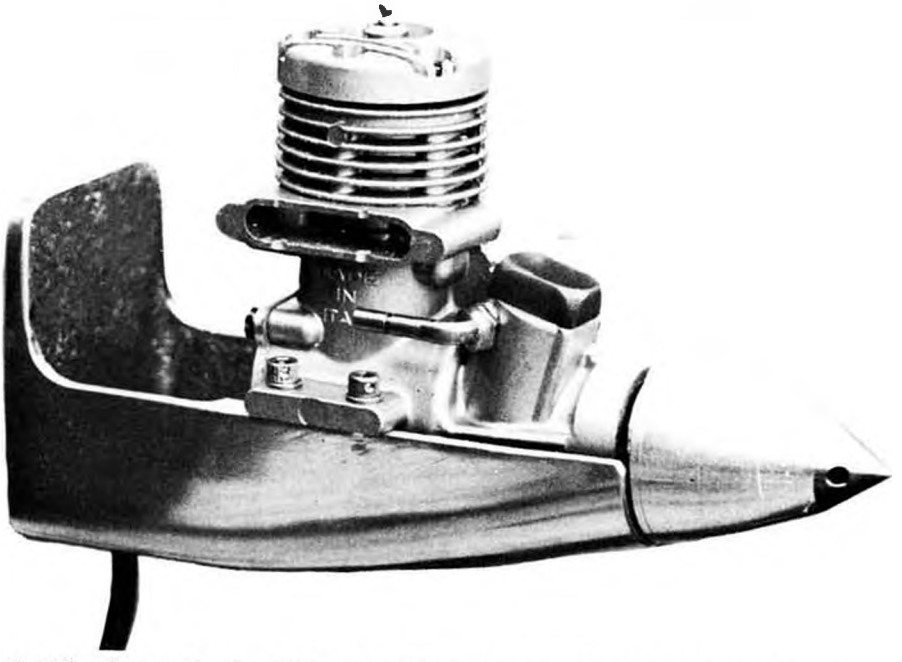

The "Shaw" mount for Rossi .15 engines. Will also fit many other 15 size engines. See text for further information on availability. Designed by our FAI reporter, Al Vela.

Steve McFarland holding his father Lew's "bi-controllable" Akromaster. The same plane will fly U/C or R/C, depending on whether you hook up a pair of lines or flip a switch. A Danish model, yet! Hmmm. Who'll be the first modeler to build and fly a three-way airplane?

CONTROL-LINE

By Dick Mathis

FAST RICHARD'S ALMANAC

● Model builders are frequently found lamenting the lack of "good" balsa, both in kits and on the dealer's balsa rack. It's interesting then, that most of them know little about how to select the right balsa for their needs even when presented with the best possible selection. Recognizing what amounts to a national calamity, I present the FAST RICHARD CONNYSEWER'S GUIDE TO THE PROPER APPRECIATION OF BALSA. *(It's "CORNERSLEWER," Dick, everybody knows that! WCN).*

If we do this right, the result is something good . . . a stronger and lighter airplane that flies better, lasts longer, resists warps better, and doesn't explode upon crashing. Most of us simply look for the lightest balsa we can find, which is wrong. The GRAIN of the balsa is equally as important. It is well known that some kit manufacturers select neither for grain nor lightness . . . the economics of kit manufacturing dictate that they "cut what they got," so you end up with rock hard wood for the tail and "punk" for the spars and wing leading edge. Your airplane then comes out tailheavy, crashes, and the wing crumbles. Ditto for the stuff in balsa racks. . . it is not graded either, unless you pay extra for SIG graded balsa, which still

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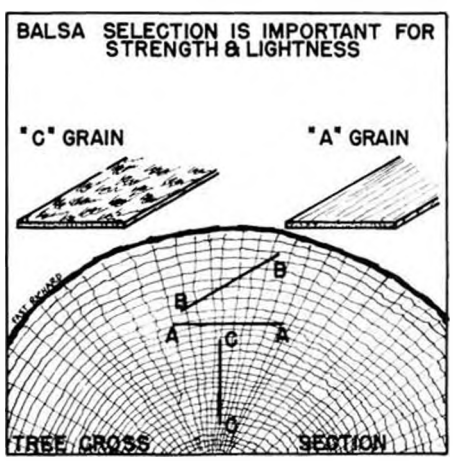
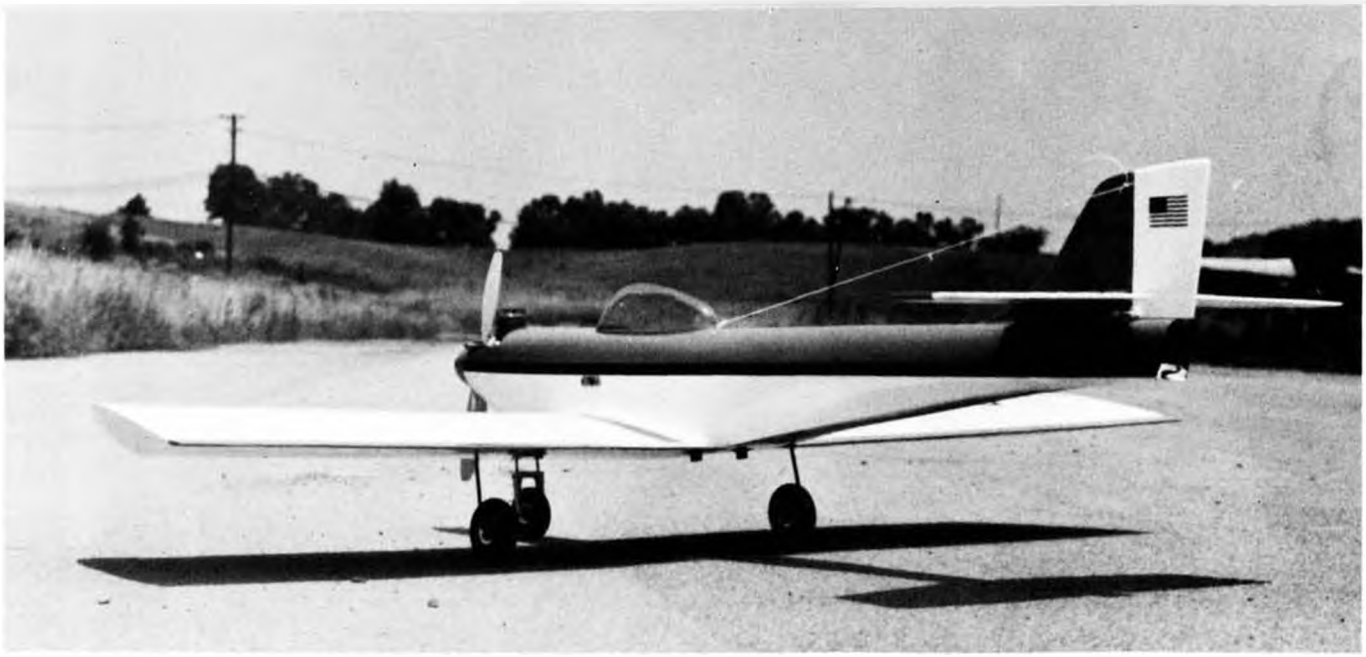




Bill Osborne built this Hyperon III, a design by Gary Paar. Construction is a little unique, employing a rolled plywood fuselage and foam cored wings covered with wet cardboard. Wing area is 600 sq. in., and the power is an OS .40. Photo by Roy Stephens, Tri-Cities Aero Modelers.

RADIO CONTROL REPORT

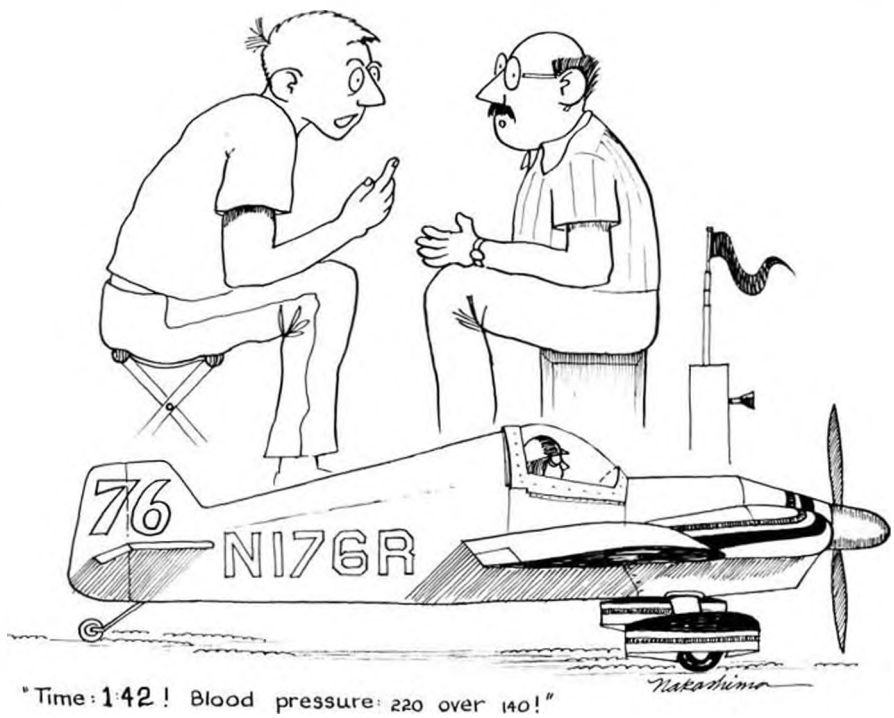
At great risk to life and limb . . . and magazine . . . we turn loose upon you the Walter Mitty of Radio Control . . . that controversial conversationalist and ebullient editor . . . Nashville, Tennessee's only non-hillbilly, Frank Schwartz . . ?

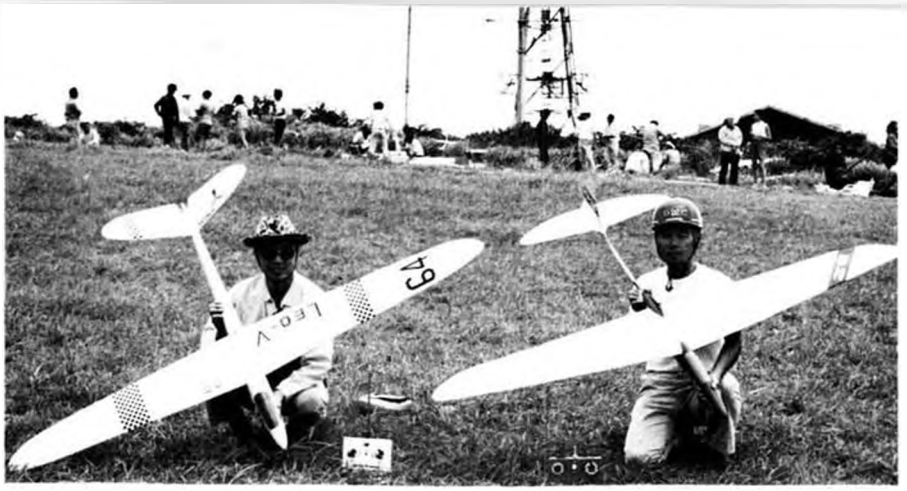
● Well, my dreams have finally come true. Now I'll be a famous (?) columnist and get to see my name in print. Seriously, my intention is to write an R/C column for the average R/C'er, or Sunday Flyer as he is commonly called. After looking at other R/C columns I find that they are highly specialized as to racing, competition, or product reports that duplicate the fantastic claims of ads. Don't get me wrong, I enjoy racing, I fly in competition and I really dig all the new products, but as I agonize over this old typewriter, I'm trying to "take a bead" on you R/C'ers out there and those of you who have been hesitating about "getting in," and trying to figure out just what would appeal to you most. As the comedian said to a non-responsive audience, "I know you are out there because I hear you breathing." Well, I know you flyers are out there, because otherwise the industry wouldn't be enjoying the tremendous business you give them.

So here we go. First of all you say, "Who the heck is he?". Name, in case you didn't read the by-line is Frank Schwartz. I live and work in Nashville, Tennessee, and I'm not a hill-billy . . . at least I don't think I am. I've been building models of all kinds since the middle thirties . . . and I'm not as old as that might make me sound. R/C is my real thing and I've been fooling with it and flying it since I found out the stuff could be made to work . . . and that was when you had to make the R/C equipment yourself. I fly for fun and some contests . . . once in a while I even get a trophy. I've been writing for the sheer pleasure of making a contribution to the hobby for many years (that's all the Editor says I'll get for this . . . the sheer pleasure) and have edited a Club Newsletter for almost fifteen years. Wonderful bunch, my club members . . . they read my magnificent articles that border on positive genius and say nothing . . . even when I get in trouble with a manufacturer for cutting him too close to the bone . . . but then all us budding geniuses and near prophets are neglected.

So much for that.

If any of you are still with me *(Ho Hum . . . sure Frank)* by this time I should say that I'd like to hear from you as to what material you would like in *your* R/C column. Don't expect lengthy answers or possibly any answer





Winners in the Second All-Japan Slope Soaring Contest; (left) Mr. Yoshitaka Tajima, first place, and (right) Mr. Yamada, second place. Both are excellent designs for speed task flown.

The block from which came the chip! Walt Moucha Sr. and his BD-5 Micro. Scale is 4"=1', 78" span. Webra 61 has 23" shaft extension. Weight, 11 pounds. Full size one, somewhat revised from this configuration, has flown at last . . . after many kit orders had been taken.

at all, but I would like to know that you are doing more than just sitting out there breathing.

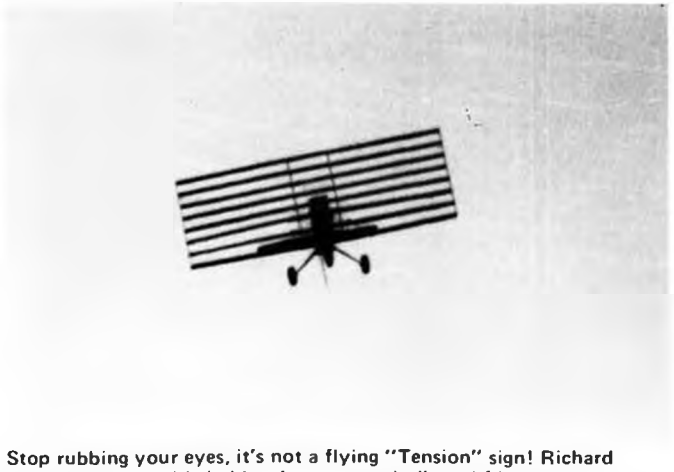
By this time you are also aware that this column is not necessarily for the contest or specialized R/C'er. Too much is already being written for the minority. I think the big majority of R/C'ers are the ones called "The Sunday Flyer" . . . you have a plane . . . perhaps two . . . one R/C outfit . . . if you are lucky, and the wife doesn't holler, you have maybe two. You spend as much time fiddling or building as you can without neglecting the family or having the wife lock you out of the bedroom . . . or you may be a teenager who has to work to pay for the hobby . . . and if you are like me, you love the hobby and never tire of "hangar flying." (Maybe the name of this column should be "Hangar Flying" even though it should be strictly R/C . . . although sometimes I whomp out a rubber powered FF or look at the beautiful plans for the powered FF and say to myself, "One of these days when I have more time . . .")

Nevertheless, my friends, if you are a model builder, you are engaged in one of the most satisfying and self-rewarding hobby activities I can imagine . . . and probably the most misunderstood by the general public . . . and by some wives as well.

OK, so we all agree that R/C and model building in general is just great. You are wondering where I'm going to lead you next.

I've loved airplanes since they were a rarity . . . I can remember when I was a kid, running outdoors to watch an airplane fly over the neighborhood . . . they were not too common. Nothing would do but when WWII came along I joined the Navy and took a shot at being a Navy pilot. That didn't work so good since I get airsick, especially doing Cuban Eights in the N2S bipes . . . so fortunately for the Navy, they put me in PT boats (No, I didn't know Mr. Kennedy) and I didn't have to lean out of the plane to get sick, I just hung over the torpedo tube and suffered. However, since I don't think I have the guts (literally) to pilot the real thing, I'll content myself to love the big birds from afar and go on madly building and flying models.

It is hard to stand calmly by and watch an R/C plane take off and even just fly around without getting a big kick out of it. There's something magic about it to me. I see people who come to our flying site on Sundays and get a large charge . . . the kids are worse (they always want to see



Stop rubbing your eyes, it's not a flying "Tension" sign! Richard Francis, Philadelphia hobby shop owner, built and flies this aerial

"Venetian Blind." Power is a Veco 50. Site is Mustin Field, Philadelphia Naval Base. Rear portion was grafted on from a previous wreck.

Here's the chip! Walt Moucha Jr. with his 3"=1' Spezio Sport DAL-1 Tuholer. Span 74-1/4", weight 13 pounds. Model features folding wings, operating wing and tail lights, radio light, gas cap. Covering is rib stitched and taped, cockpit controls work. This and BD photo by Larry Moucha.

you crash) and hear the innumerable questions . . . first off . . . they always have to know how much it costs . . . *as if pleasure had a price* . . . then did you build it yourself . . . how do you make it do what it does and what happens when the motor quits . . . right? Right! Usually I keep an ear out for the real interested party, and like the old corner dope peddler, I'm looking to get someone hooked . . . on R/C. It is just that it is, as far as I'm concerned, so good it should be spread around and appreciated. Yes, indeed!

So far so good. You know of my love affair with R/C models. If you will let me know your specific desires, I'll try to tailor this column to your wishes. No one should have to suffer from my drivel issue after issue without having something to say about it . . . and even the editor might cut off my free subscription and manufacturers might not send me truckloads of goodies to try out and write glowing and loving reports about (send 'em to me, fellas!) so we will get back to specifics.

I was speaking of the hobby being so good that it should be spread around. I'm sure that at your flying field, things are pretty much the same as at mine. It's kinda "big toys for big boys" and the kids get left out. Finally, in our local group we have some sympathetic Dads who help the teenagers out and a couple with after-school jobs who desperately try to keep in R/C with their spare change. Some of our local kids can competitively beat the socks off old-timers like me and they build great too. They have their share of bad luck with crashes and such, but they need encouragement more than anything else. If you will look at the spectators watching at your flying field, there is probably a potential Junior champion and untested and untried builder par excellence, just waiting to be found. I found that lots of kids, as well as adults, are standoffish and most reluctant to speak to the "hot shot pilots" even though they are dying to know more about it. Sometimes they get carried away and will buy a kit and R/C outfit on their own, without good advice, and get off on the wrong foot, so it's up to you to lend a helping hand, especially to the kids who only need a few minutes of your time . . . and your encouragement.

Next issue, I'll try to talk about planes, engines and equipment . . . at least along the lines you are thinking . . . not the super duper World Champ type . . . but Mr. Average R/C'er. I know you are out there . . . Aren't you? Write to me, Frank Schwartz, 2400 West End Ave., Nashville, Tenn. 37203.

SLOPE SOARING IN JAPAN
by Yoshiro Sato

● Slope soaring is very popular among Tokyo area R/C glider enthusiasts, mostly because there are some good slope sites near Tokyo. However, thermal soaring contests are rare, one of the reasons for this being that we don't have a wide open area like Miller Meadow in Chicago.

The second All-Japan Slope Soaring Contest was held by the Japan R/C Glider Association on Aug. 20th. We had 46 entrants. Of course, I competed, as did my son Bobo Sato. I did not have time to build a new plane because we had made a trip to the U.S. Soaring

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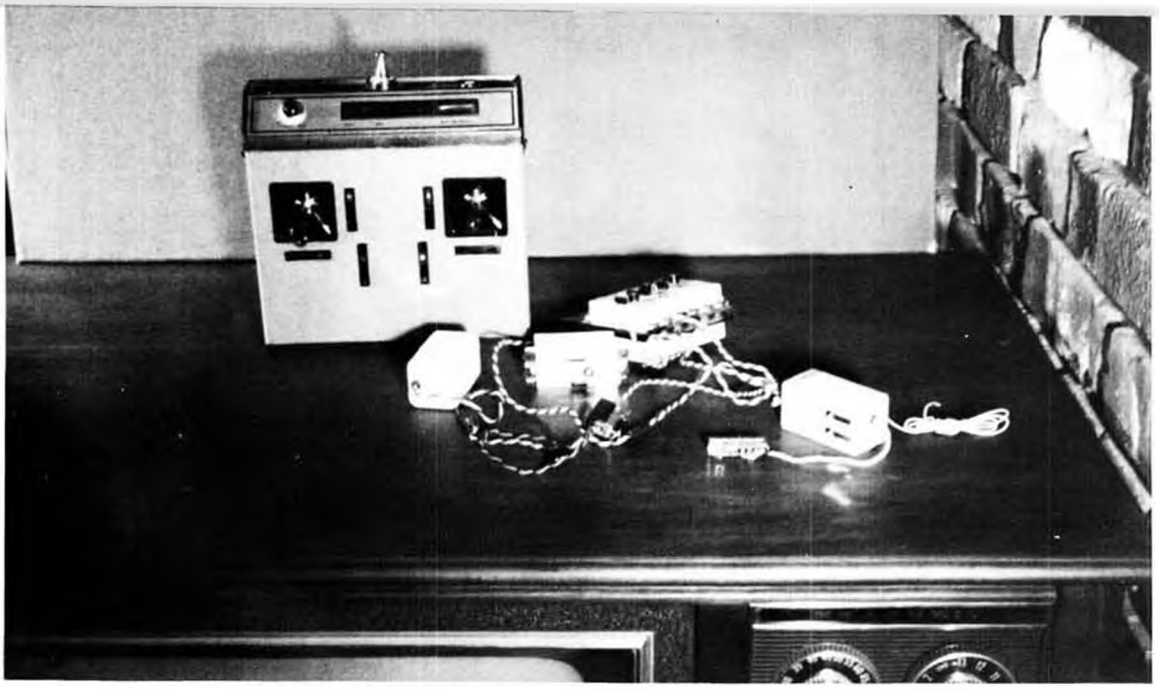
Ahead of its time, the "Viper," designed by Max Beauchamp. This is MB editor's ship, damaged in move from east. Does anyone have a fuselage to spare? We still have the rest.



PRODUCT$ IN U$E

HEATHKIT GDA-405 R/C SYSTEM

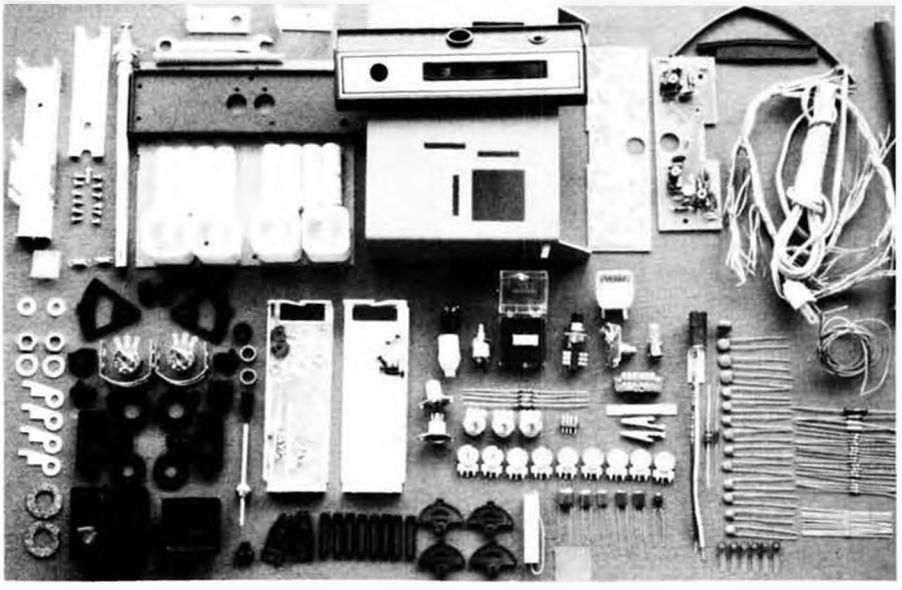
MB's editor reviews the newest radio control system offered by the leader in electronic equipment kitting, the Heath Company, Benton Harbor, Michigan. Test bed and additional assistance by Hal Okert.

● In January of 1968, the Heath Company of Benton Harbor, Michigan really shook up the R/C troops when it introduced the first kit for a digital proportional radio control system. Many people doubted that such an exotic piece of electronic equipment could be assembled by Mr. Joe Average into anything resembling a workable system. Even that short five years ago, reliability was nowhere near what it is today, and even the top technicians employed by the R/C manufacturers had their problems, much less the poor unknowledgeable modeler.

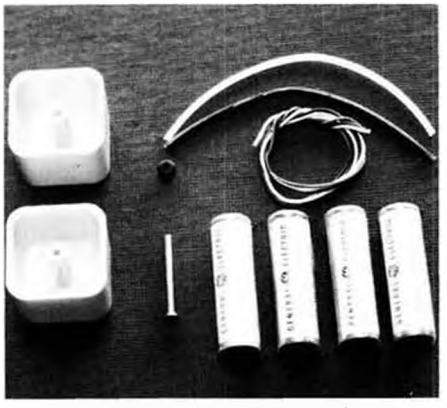
However, the "Doubting Thomases" were perhaps unfamiliar with the genius of the Heath Company for making electronic wizards out of anyone who can read, make check marks, solder, and use a few ordinary tools that can be found in most any home workshop. Starting many years ago with a kit for an oscilloscope, the Heath Company has expanded its line to include most any electronic item you can imagine. All are in kit form, and are designed so that the average individual, who is moderately handy with light tools, can assemble them. Knowledge of electronics is entirely unnecessary. The 1973 catalog contains amateur radio equipment, automotive test instruments, an electronic calculator, marine instruments, educational kits, garage door openers, intercoms, metal locators, organs, a microwave oven, phonographs, power supplies, ham radios, stereo and hi-fi components, television, and even a somewhat non-electronic trash compactor and a trail bike.

Our own total electronic knowledge could fall through a tea strainer, and yet, over the years, we have successfully assembled Heathkit FM tuners, stereo amplifiers, a depth sounder, several test instruments, and most recently, a 24 in. color TV. The latter has been in operation for over 3 years and even survived a trip across the country in a U-Haul trailer.

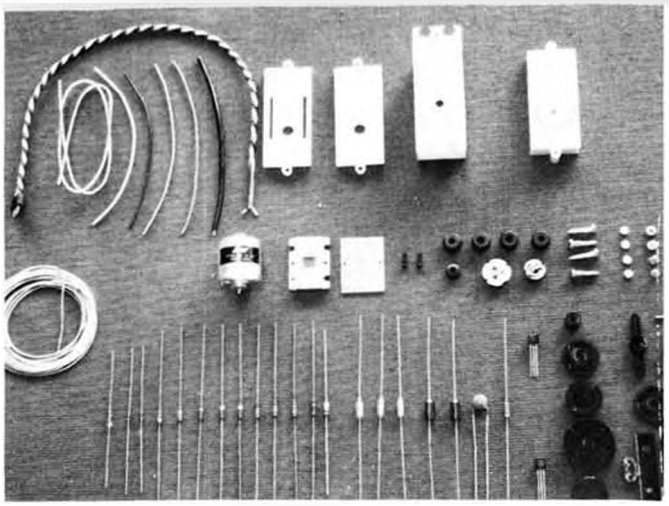
The new GDA-405 systems represent the third models introduced by Heath. Thousands of the first GD-47 and the



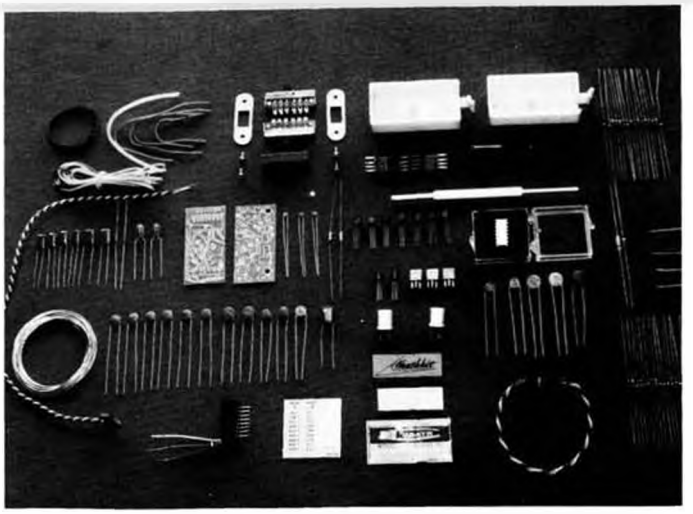
Layout of transmitter parts, with only one stick assembly shown. Note completed RF board and wiring harness. Working from a layout like this makes finding things easier during construction.



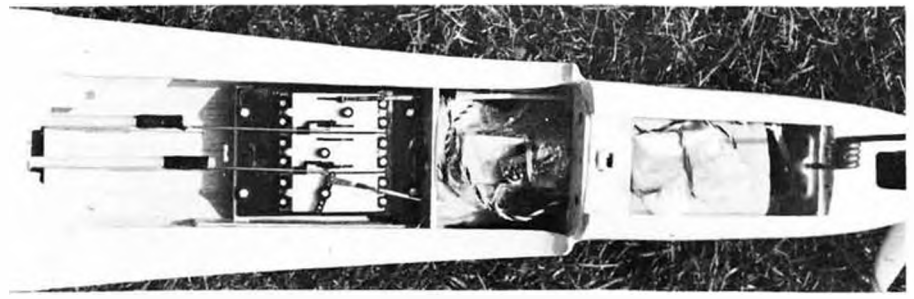
Receiver battery pack is easy, but take care to avoid future problems from vibration.



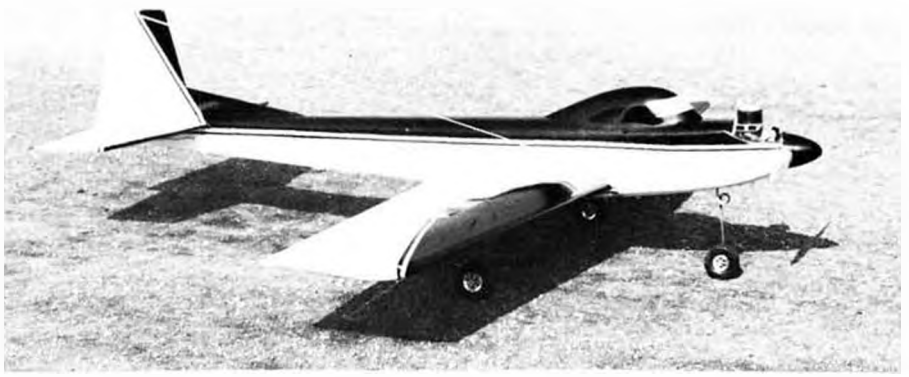
Servo parts. That little IC to the right of the motor makes up for a lot more of them! Kraft KPS-11 mechanics, with Heath electronics.



Receiver parts out for inspection. Note two crystals and extra switch for frequency selection. Note the decoder IC in the plastic box.



Installation in Hal Okert's test plane. Three servos are in Kraft-Hayes mounting tray. Receiver just ahead, with frequency switch strapped on. Battery in forward compartment. Convenient.



Hal's modified Kaos with twin-plug Merco 60. Landing gear is correct length for smooth takeoff but nose gear should be turned 180 degrees to put coil at rear.

The grip may seem a little awkward, but we had asked Hal to hold the xmitter so we could see it better in the viewfinder. Trainer button can be seen near his left thumb.

later GDA-19 systems have been built and are in use by modelers in all corners of the world. Also seen in many areas, is the 3-channel GD-57, an economy model for cars, boats, gliders, and simpler airplanes.

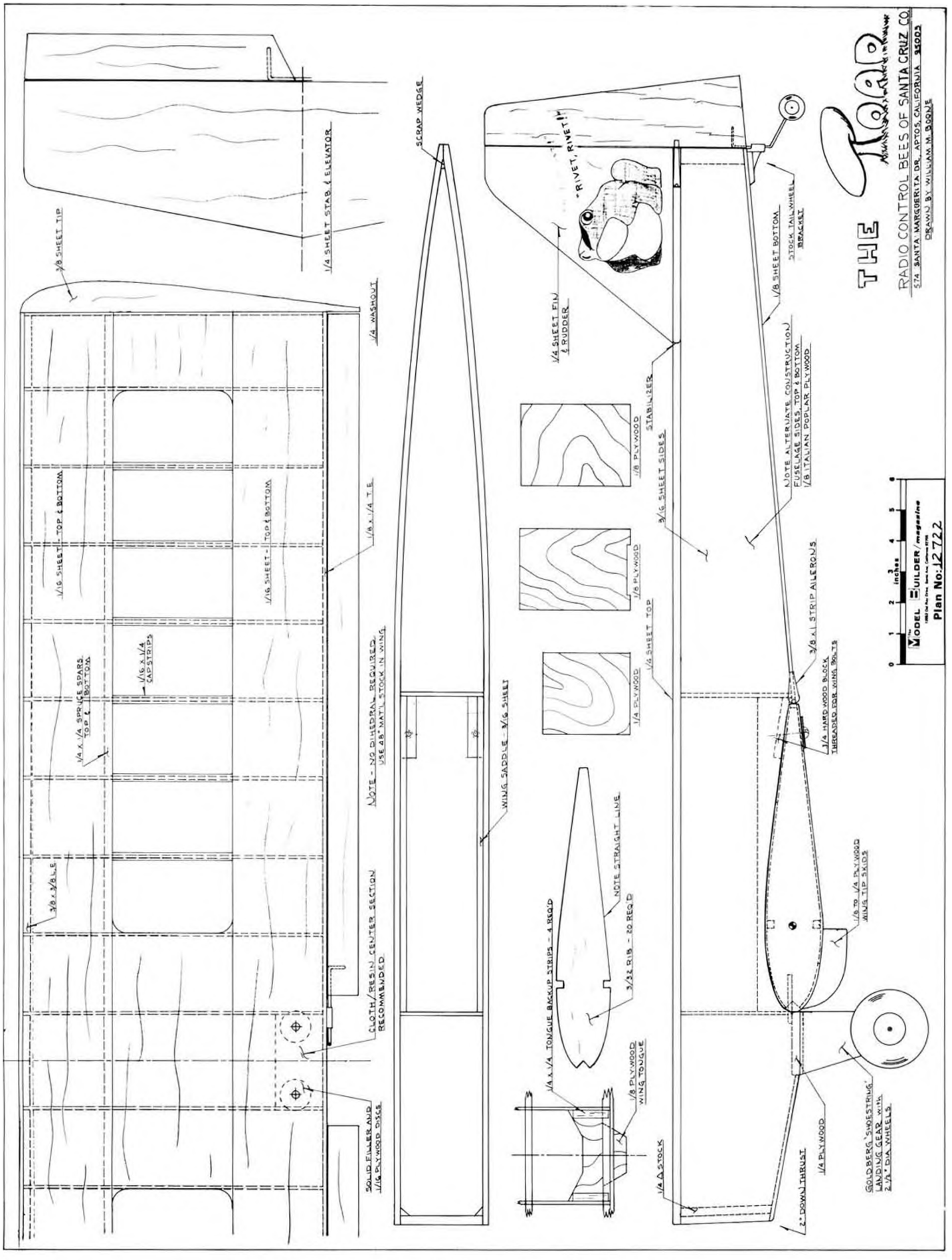
The latest model is an 8-channel unit available with either a single or dual stick transmitter. The dual stick version, complete with transmitter, receiver, four servos, and all batteries, sells for $249.95. The single stick unit is $20 more.

The systems feature dual frequencies in all bands (27, 72, 53 MHZ) except single only on 75.640. The transmitter has trims on the four basic controls, three TAB controlled positionable channels, and one two-position switched channel expressly for retract landing gears.

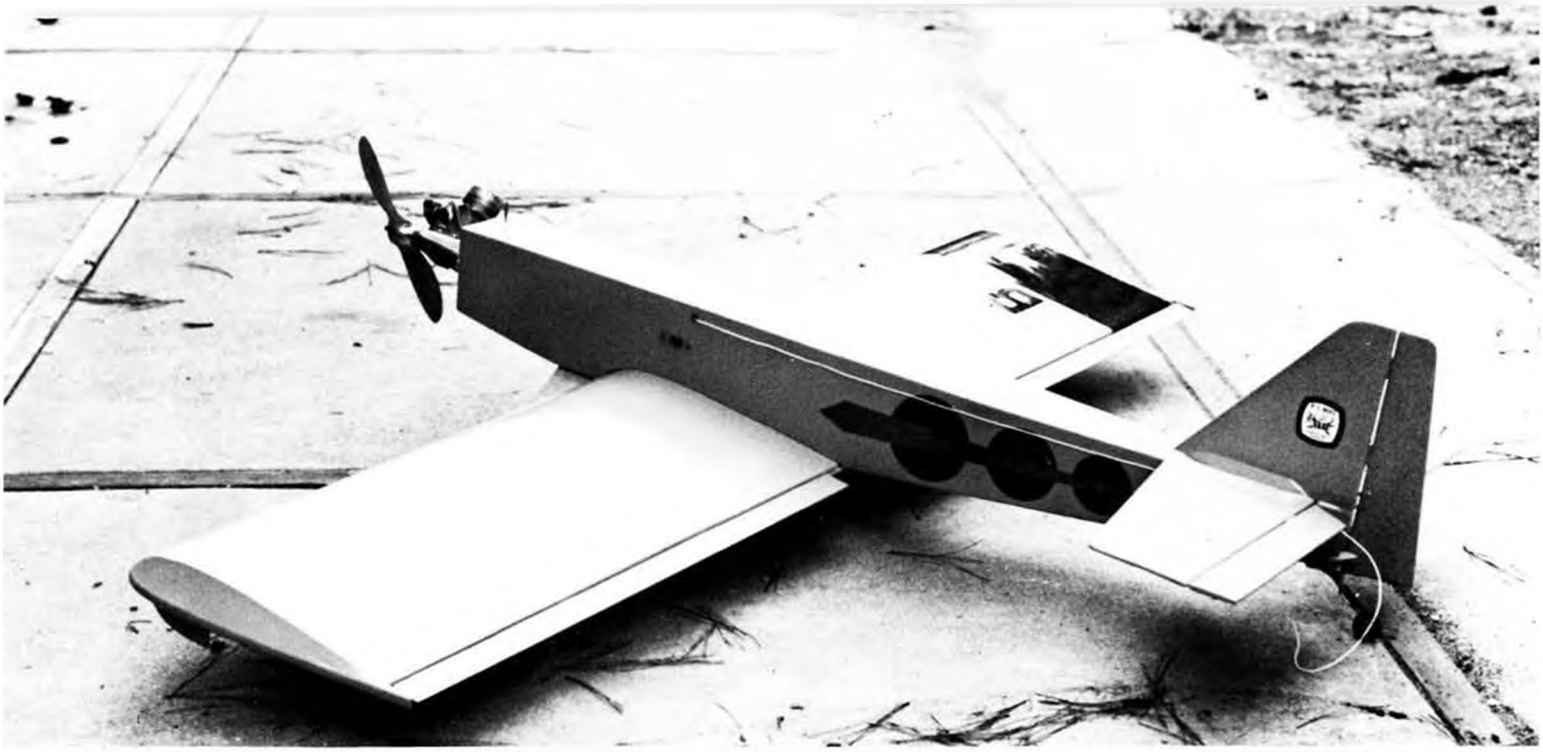
Frequency change on the transmitter is by a coin-operated rotating switch,

Continued on page 56

Now you can see the plane, but not the transmitter! Oh well, it works. Just believe it!



FULL SIZE PLANS AVAILABLE – SEE PAGE 64



If you've ever wondered what a plane would look like if its construction were really "straight forward," now you know! Here is the epitome of fast, simple construction in a model that most anyone can build. One-design racing should really get the casual fliers out for competition.

T "RIVET" O "RIVET" A "RIVET" D

A ONE–DESIGN PYLON RACER COMPLETE WITH A SET OF RULES

This may be the answer for the sport flier who wants to compete on an equal equipment level with his fellow modeler. The idea of a one-design has been talked about many times. Maybe this is it. Text by the editor from material furnished by Gil Horstman.

● The TOAD resulted from the combined designing efforts of Bob Franics and Bill Boone, who were developing a one-design pylon racing airplane for the average club sport flyer, primarily in this case, members of the R/C Bees of Santa Cruz County, California. Bob Francis is a well known manufacturer of fiberglass pylon racing models and the source of Francis Products Finishing Resin. Bill Boone is president of the R/C Bees. Although timing and general design similarities would indicate otherwise, development of the TOAD and Glen Spickler's "Quicky 500" pretty much took place independently.

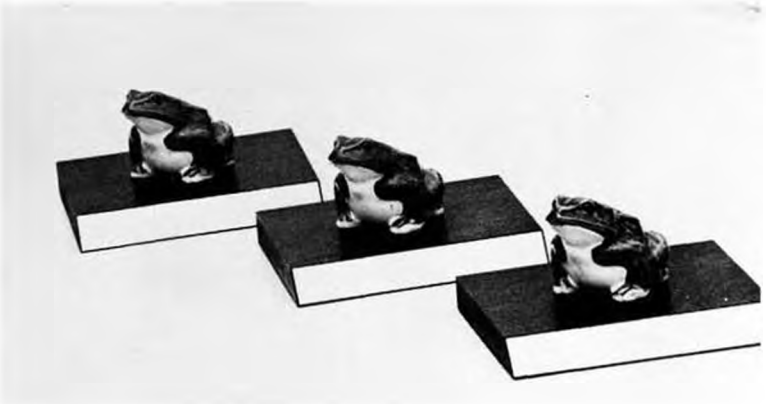
Glen's design, featured in AMA's magazine, though as easily constructed and as much of a general purpose airplane as the TOAD, is considerably faster than what the Santa Cruz designers were after. The airfoil is only 11-1/2 percent as compared to about 17-1/4 percent on the TOAD. This airplane came about as the result of the desire to accomplish several goals. First, Gil Horstman, as Sec-Treasurer of the NMPRA, had received many letters, stating concern over the organization's lack of a program to develop new Formula I pilots.

Secondly, Gil, Bob, and Bill were concerned about the speed and handling of a design that any modeler of average experience could build quickly and fly without too much difficulty.

Finally, they wanted a racing event that wasn't another 2-in-1 affair (One race is around the pylons, the other is the equipment race that always develepes in the background, and where the all mighty buck is the dominating factor.)

Going back to the first problem, it is fast becoming obvious that quarter midgets, though growing rapidly in popularity, are also beginning to settle into the same specialized rut as Formula I. The building time is nearly equal to Formula I, and it already has its set of "professional racers" who dominate the win

"Alright, gentlemen, first of all . . THAT . . is a pylon!" Well known pylon flier and model manufacturer, Bob Francis, lays down the rules.



Trophies . . rivet . . for the first . . rivet, rivet . . TOAD race seem very . . rivet, rivet, rivet . . appropriate. Furnished by Bill Boone . . RIVET.

Winners of the first . . rivet . . TOAD race (l to r): Bill Mandarino, 3rd, K & B 40; John Rouse, 2nd, HP 40; and Jim Patrick, 1st, HP 40.

Gene Sanford cleaning his plane after a heat. Incidentally, that's not a field-box he's using. It's a TOADstool. . .No doubt there will be some wild paint jobs to try to cover up that one-design.

columns.

It was felt that a one-design of a simple nature would be the way to avoid this problem. An Ugly Stik might do the job, but it's too big. Also, to somewhat resemble a racer, the plane should at least be a moderate to small low wing design. Bob Francis made the rough design layout based on the above parameters and the bees developed a simple set of rules to team up with the airplane.

The design was completed by Bill Boone and it fell right into the second requirement; a plane that was quick to build, rugged, and also easy to fly.

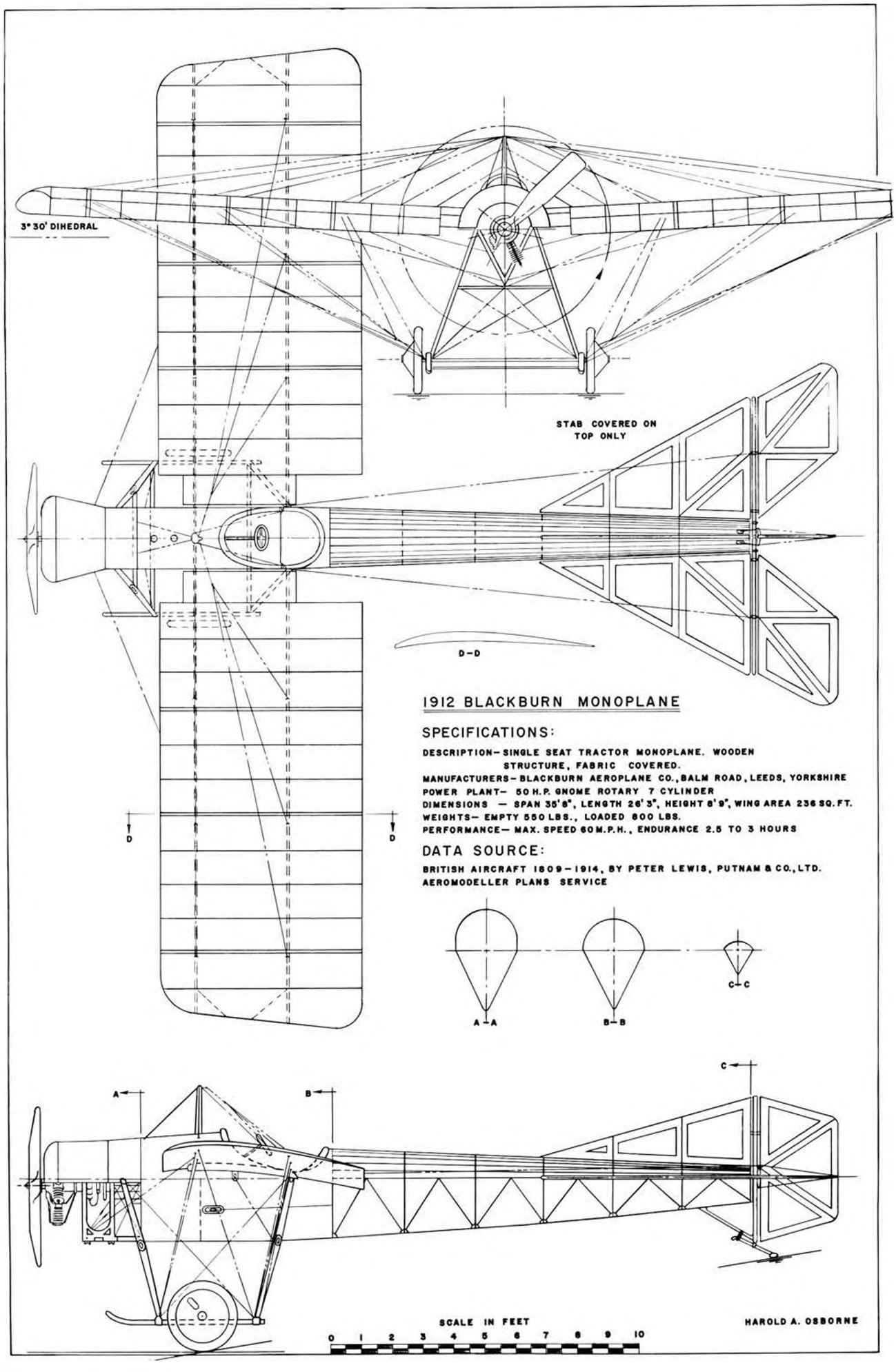
The rules developed by the R/C Bees fulfilled the final requirement. The combination of front rotary engine, muffler, 10X5 prop, and 10 percent fuel put everyone on the same equipment level. All of a sudden, racing came down to one thing . . . Who was the best pilot?

The first race was a great success. There were 18 entires, with some flyers sharing airplanes. Well known Formula I flyers Joe and Ed Foster, Bob Francis, and Gary Korpi were on hand to help the contestants. They released airplanes, called turns, and gave the pilots help in flying the best course. Quite an inspiration to the novice racers!

Race horse starts were employed, and with the planes being so equal in speed and acceleration, it was quite exciting to see them all lift off and head for Number One pylon at about the same time! Considering the closeness, it was interesting that only two mid-airs occurred. In one, a plane lost its fin but landed safely while the other plane went on to finish the race. The pilots were Gil Horstman and Gary Korpi. Ron Sheldon and Jerry Arana did a more complete job, totaling both ships.

Continued on page 55

A three-plane . . . er . . . Toad heat about to get under way. Gary Korpi has just released John Rouses model. Similar speeds of various Toads add to the excitement; even though slower, they're flying close together a lot of the time. It should make a great general sport plane too.



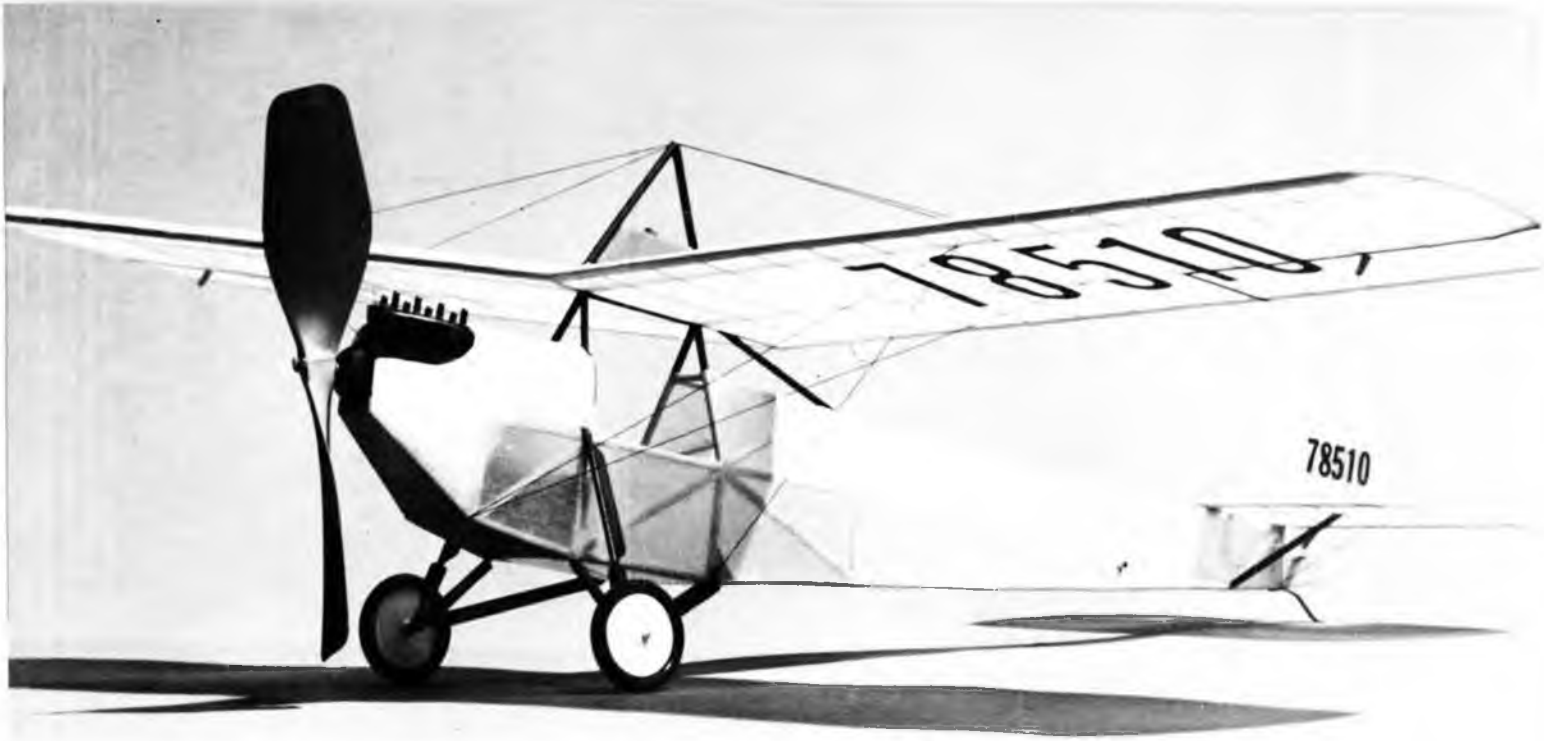
1912 BLACKBURN MONOPLANE

SPECIFICATIONS:

DESCRIPTION– SINGLE SEAT TRACTOR MONOPLANE. WOODEN STRUCTURE, FABRIC COVERED.
MANUFACTURERS– BLACKBURN AEROPLANE CO., BALM ROAD, LEEDS, YORKSHIRE
POWER PLANT– 50 H.P. GNOME ROTARY 7 CYLINDER
DIMENSIONS – SPAN 35'6", LENGTH 26'3", HEIGHT 8'9", WING AREA 236 SQ. FT.
WEIGHTS– EMPTY 550 LBS., LOADED 800 LBS.
PERFORMANCE– MAX. SPEED 60 M.P.H., ENDURANCE 2.5 TO 3 HOURS

DATA SOURCE:

BRITISH AIRCRAFT 1809–1914, BY PETER LEWIS, PUTNAM & CO., LTD.
AEROMODELLER PLANS SERVICE



This 22" span Longster placed second in static points at the Nats. Built by Bob Clemens, Rochester, N.Y., from drawings in the 1933 Flying and Glider Manual. Weight is .85 ounce.

FREE FLIGHT ... SPORT & SCALE

Next time you're in your favorite hobby shop, mosey around the model railroad department, it might have some interesting surprises if you're a real scale nut . . er . . buff.

By Fernando Ramos

Most scale modelers probably aren't aware of the numerous model railroad goodies that are applicable to the building of model airplanes. The model railroad section of an all-purpose model shop is a most fascinating area, but is often overlooked. Found here are many specialty tools that are useful to the scale aircraft modeler. And surprisingly, many scale airplane modelers are also interested in model trains. The amount of scale detail one can incorporate in a model railroad diorama is endless.

OK . . . let's look into some of these specialty tools and accessories.

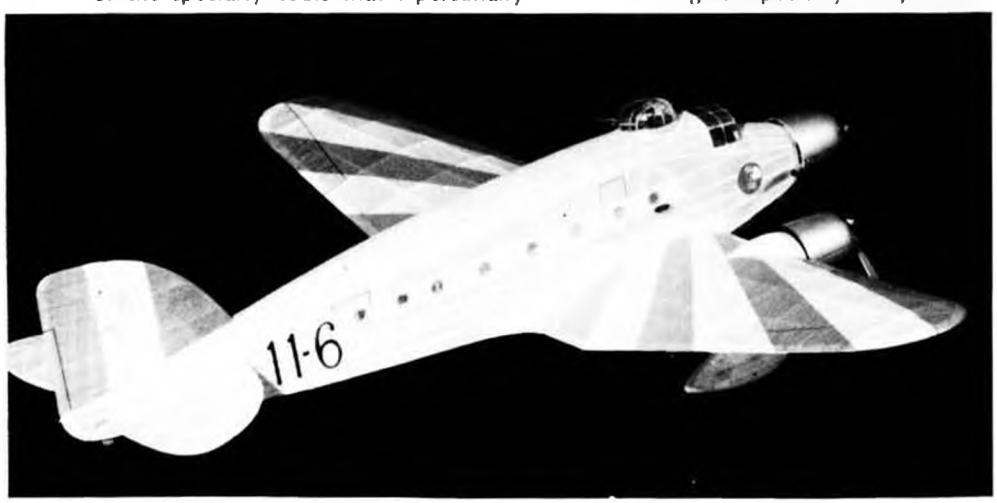
First, I would like to mention a few of the specialty tools that I personally feel will be very useful to the scale modeler. One such item is Kemtron's soldering paste. As the name implies, this is not a liquid but rather a definite paste, and it is comprised of a high percentage of tin. Whenever you have to sweat solder a joint, this product has no equal. All that is required is a thin layer of the paste on the joining sides, clamp the parts together, and heat. The solder melts at a very low temperature, but it is quite strong. It is also ideal where very small parts are involved, and an especially neat job is required. In the event the solder should harden in the jar, just add a little water and stir.

Another great specialty tool, is a metric tap and die set. One may quibble about its being metric, but with both the taps and dies, it is easy to make your own screws or bolts. The smallest tap in the set is small enough to practically thread a human hair. Threading the smallest pins available is quite easy. The set is comprised of fifteen dies and thirty taps, along with a die holder. You can use a pin-vise for the taps. The cost of this set is around $15.00, and it is imported from Japan.

There are more times than not when an extra pair of hands would come in handy, particularly when soldering parts together . . . a holding jig could solve your problems. As you can see by the photo, the arms of this device can be moved in any direction to facilitate handling of parts. The base is weighted so it won't move easily. It is also ideal for holding parts that have been glued or painted, while they dry.

Fine reamers or broaches are ideal for making small holes in wood or metal. They are square in cross-section and are tapered from the base to the tip. Occasionally, one may require a hole that is in between drill sizes and this is where a reamer does a great job. They come in a set with a pin-vise holder which has a hallow handle for storage of the reamers.

Good files are a must in model railroading, considering all the brass that



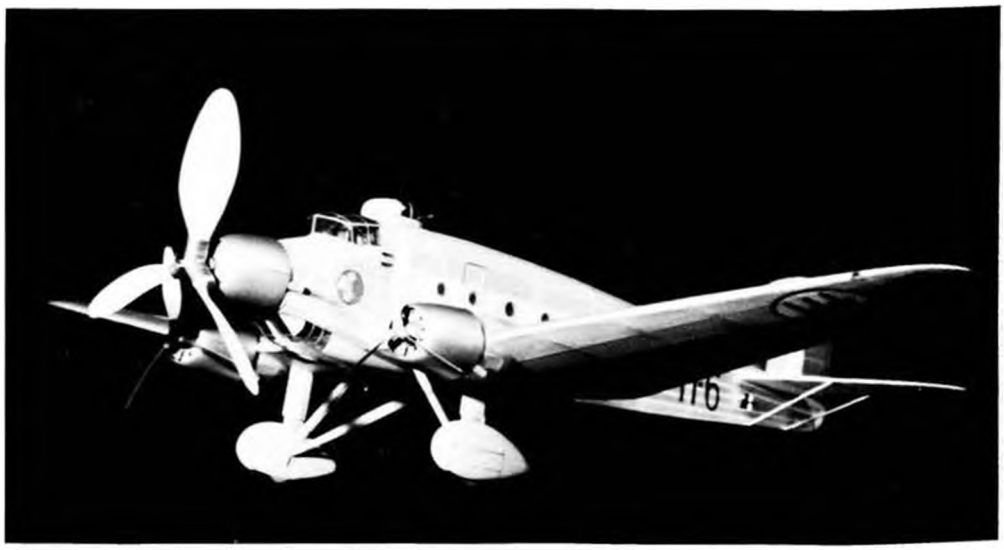
This beautiful Savoia Marchetti S.M. 81 was built by Pres Bruning, Detroit, Mich. Scale is 3/8" to the foot, and span is 30-1/2". Covered in pale yellow Sig superfine tissue.

has to be filed. So, if you are looking for good small files, the railroad side of the counter is the place to find them. All kinds of pliers for bending intricate shapes are also available. Or, how about a gadget for making rivet detail in metal? Or perhaps an electronic soldering unit? These are for the man who has nearly everything. The list can go on and on.

Most scale modelers are already familiar with the very small brass screws, washers and nuts that come in round, flat, fillistered or hex shaped heads. These too, are usually available in metric and come smaller than 0-90 in size. But what about all of those lost wax brass castings of which several can be used on model airplanes? Let's look to see what possibly could be used.

To begin with, there are turnbuckles which are very small (1/8 inch in length for HO gauge. O gauge is about twice as large) and they come in both brass and plastic. These could be used on WW I aircraft. They actually have a hole running through them, so mounting is no problem at all. They would be non-functional . . . strictly for looks. Another item that could be incorporated on a scale model is a clevis made from brass. These can be used on any aircraft that has external control cables. These devices could be soldered to the end of a wire and attached to the control horn in a prototypical fashion.

Another interesting casting is the valve. In many early aircraft, the fuel valve was located inside the cockpit or in a line coming out from an external wing tank, etc. With very little effort, a locomotive globe valve can be reworked to resemble the common stopcock valve found on those early machines. All that is required is to remove the conventional wheel-type handle and solder a small "bat handle" type (fabricated from some scrap brass) using some of the Kemtron solder mentioned earlier. The air pipe valve could also be used in this application with no modification at all. Incidentally, these castings come in two different scales, so be sure to examine both sizes to determine which would be more applicable. Along with these castings are numerous brackets and a variety of small springs which may come in handy. The best thing of course, is to check over the appropriate catalogs (Kemtron & Grandt) to see what is available.

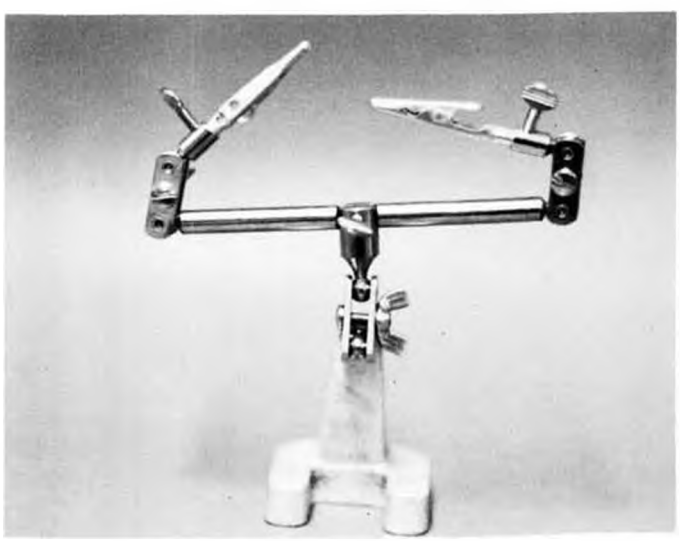


Another shot of Pres Bruning's Savoia Marchetti. Ship flies on center, 10" prop only, while others windmill. Best time to date, 34 seconds. Power is one loop each of 1/4 and 1/8 rubber, 2-1/2' long.

Most modelers, when needing wire, usually think of piano wire. However, there are several different sizes of brass wire, as well as phosphor bronze wire, in hair-like diameters. There are many uses for this fine wire, especially for rigging anchor points on smaller biplanes. The brass wire bends quite easily, yet it is very strong. Phosphor-bronze wire is springy, like piano wire.

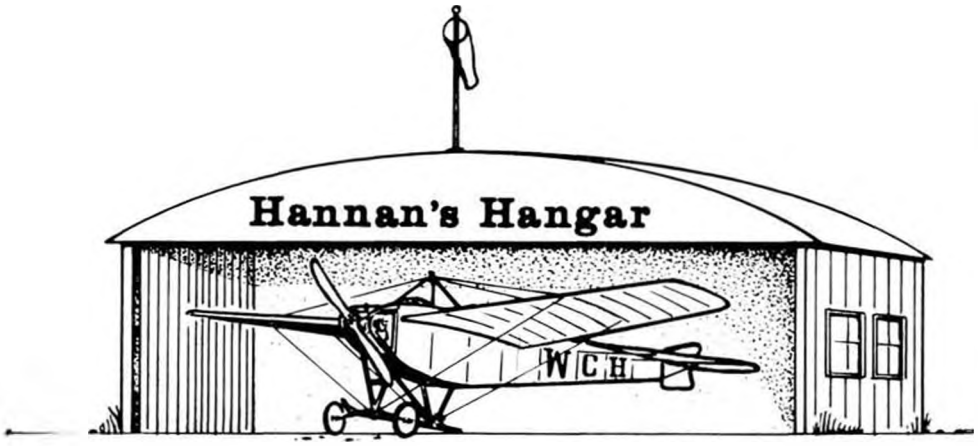
I can't say enough about Floquil. This is a model railroad paint, and its uses in scale modeling are endless. The beauty of this material, in addition to the fact that it comes in about every color imaginable, including such greats as earth, rust, grimy-black, concrete, etc., is that it's great to use on bare wood. One coat covers beautifully. Let the first coat dry, sand, and apply a second coat and you're done! (There will be a complete article devoted to the use of Floquil, as an overall finish on both gas and rubber models, in a future issue of MB).

I have only lightly touched on an area that I feel scale modelers should consider in order to make their detail work easier. You'll never know what's on the other side of the model shop unless you take the time to look. You may find some goodies that will help you be a winner at the next contest! ●



Holding jig is great when soldering or gluing small parts. Arms move in any direction, heavy base prevents jiggling. Looks like a crab!

When you need a small hole that just happens to come between standard drill sizes, it's nice to have this reamer set handy.



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

● FAVORITE AIRCRAFT READER SURVEY RESULTS

Many thanks to all of you readers who took the time to answer our questionnaire. We were pleasantly surprised by the response, and geographical spread, which included California, Connecticut, Montana, Ohio, Oklahoma, Oregon, Illinois, Texas, Washington, Virginia and England (Aeromodeller and RCM & E Managing Editor Ron Moulton). Also, we received some club replies. Pretty good for a "limited circulation" publication!

Compiling a truly objective list of "winning planes" proved very difficult, and confirmed our opinion that model builders are individual thinkers, rather than conformists. In an effort to obtain a more easily compiled list, we grouped individual products under their manufacturer's name. Some may object that this colors the results, and we can only say that no bias was intended. We are presenting the results in order of votes cast, along with a few personal comments from the author and our readers.

PIONEER

1. Wright "Flyer" (the most clear-cut victory of the survey)
2. Antoinette, 1910 Cessna and Demoiselle (3-way tie). Other nominations included the Curtiss pusher, Deperdussin, Fokker "Spider," and Sikorsky "Grand."

WORLD WAR I

1. Fokker Products. Triplane, D-VII and D-VIII
2. Close on the heels of Tony's flyers in virtually tie popularity were Nieuports (Models 11, 17, and 28), S.E. 5, Sopwith "Camel," and SPAD. Also mentioned were the Thomas-Morse Scouts. Albatross DIII, DH-5, and the Staaken R IV.

INTERWAR

By far the greatest variety of opinions were registered in this category, and apparently most of our poll repliers favor aircraft of this era. (Model designers and manufacturers take note) It was evident that many of our voters felt a single choice was not enough, Winners were separated by the narrowest margins, and there were no runaway "victors."

1. Stagger wing Beechcraft
2. Ryan products. (even split between "Spirit of St. Louis" and ST)
3. Curtiss Hawk P-6
4. Lockheed Vega and "Winnie Mae" tieing with Ford Trimotor
5. Stinson products and Waco products received approximately even mention, but no specific models seemed favorites over others. Others included the Monocoupe, Rearwin "Speedster," F4B-4, American Eagle, and Hawker Super-Fury.

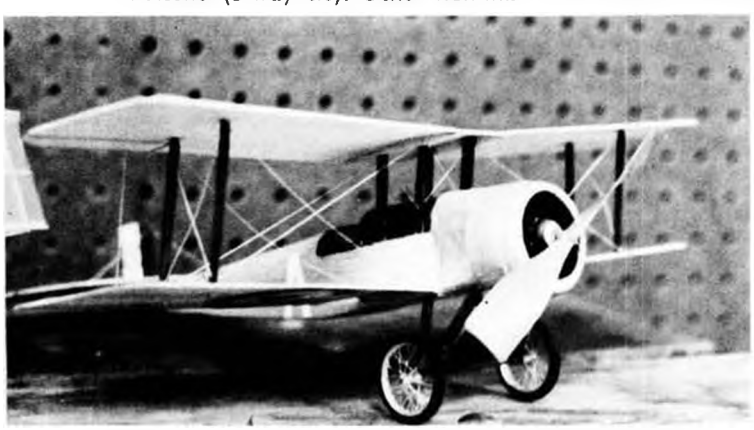
RACING

We had expected a Gee Bee victory here, but such was not the case.

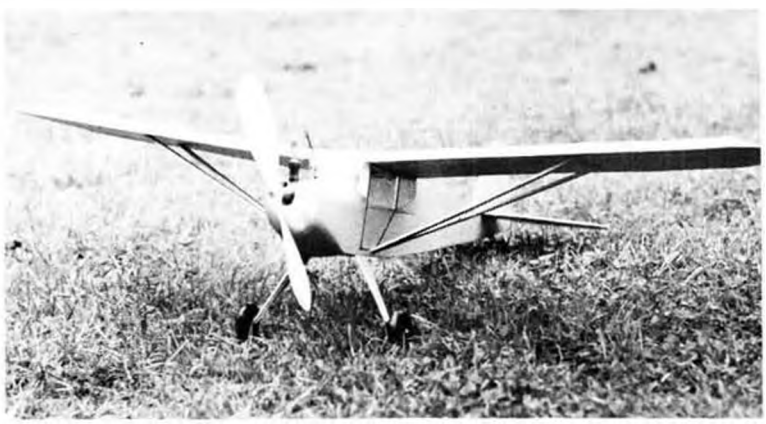
1. Supermarine S6-B
2. Gee Bee
3. Folkerts
4. Other favorites included the Schoenfeldt "Firecracker," "Shoestring," "Swe' Pea," "Mr. Mulligan," Cpt. Page Navy Racer, Laird "Super Sol-

Continued on page 48

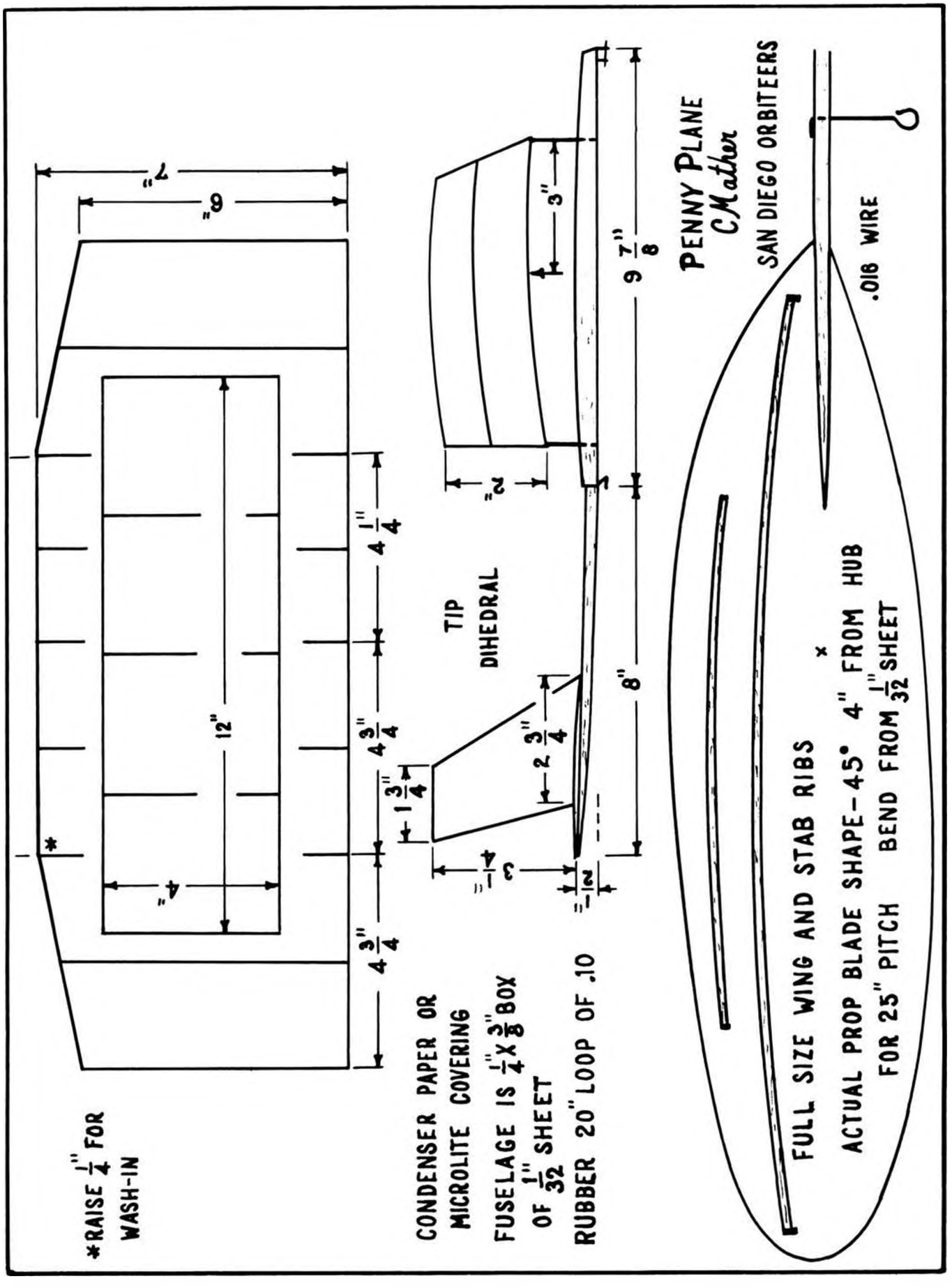
McDonnell "Doodlebug," R/C model by Major Tom Stark, placed 3rd at McDonnell contest, also flown at Nats. Blue Max radio, OS .25 power, weight 4.25 lbs. Scale is 1-1/2"=1'-0".



Bristol Scout by Jeff Laner of Florida. Spoke wheels by Fulton Hungerford (See Hannan ad, this issue).



Flying scale model AUSTER, by Pete Redhead, England. Powered by Brown Jr. CO_2 engine. Total weight is 7/8 ounce. Wms. Bros. prop.



Mather's Penny Plane turned 6.5 minutes in a school gym with 22 foot ceiling; 13.35 minutes at Santa Ana blimp hangar. The 3/32 x 1/32 inch wing spars taper to almost nothing. Prop blades are wet-formed at a 15 degree angle over a large coffee can.

A configuration that set the style for many homebuilts in more recent years, the Stahlwerk appeared in 1922. A natural for flying scale modelers.

STAHLWERK

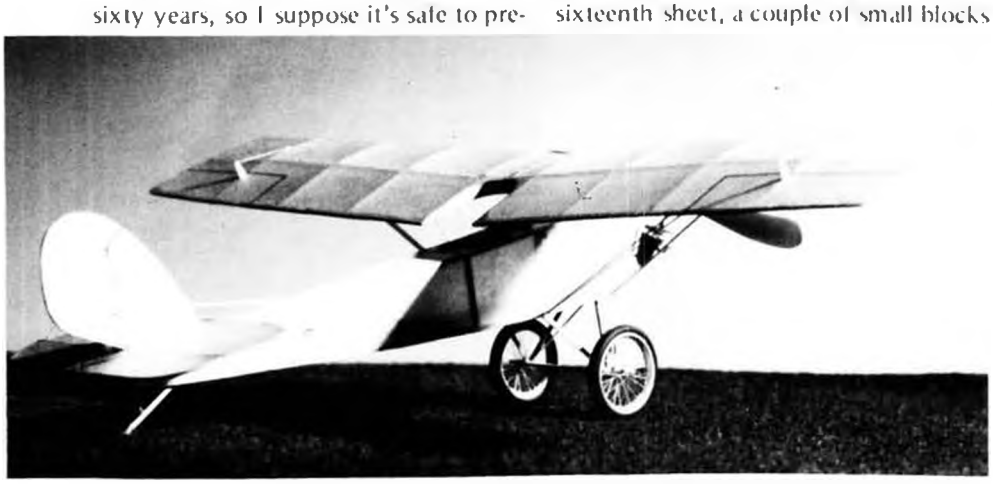
What true modeler hasn't, at some time or another, started with nothing more than a pair of wheels, and built a whole airplane around them? This little parasol is a natural for rubber scale. By Walt Mooney

● This is an airplane that I had seen pictures of from time to time over the years, but had never had a three-view from which to make a drawing. Thus, as a model, it was put off for years. When Fulton Hungerford came out with his spoked wheels, I got hold of a pair of them and spent some time looking for the ideal scale to put them on. Not too long ago, in a Polish magazine, I found a three-view of the Stahlwerk monoplane, and in no time, this model was in the works.

The Stahlwerk is a classis configuration, first conceived during WW I, and still being built today by many homebuilders, in the form of the Pietenpol and the Baby Ace. The high wing parasol monoplane has been with us almost sixty years, so I suppose it's safe to predict that it will still be built as a full size aircraft as long as homebuilders continue to want to build cheap, safe, open-cockpit airplanes.

The Stahlwerk is something of an antique; it was flying in 1922. It obviously used war surplus wheels and they look overly large for the airplane, which adds to the model's charm. The three cylinder, uncowled motor allows cylinder detail on the model without making the motor the major part of the project.

This model was built out of my scrap box. It was surprising how little material it actually took to make it. Six pieces of one sixteenth square eighteen inches long, one piece of sixteenth by eighth, fifteen inches of one sixteenth dowel, a few square inches of thirty second and sixteenth sheet, a couple of small blocks of eighth sheet, a foot of thin piano wire, a piece of sixty-fourth plywood (one inch wide by six inches long), wheels, cylinders and prop, a quarter tube of cement or less, half ounce of dope, same of thinner, two feet of monofilament line, two square inches of black tissue, and about a third of a sheet of white tissue will do the job and leave a little to put back in the scrap box. The use of a plastic propeller, Hungerford wheels, and Williams Brothers cylinders, simplifies the job. Total time on this model, including the drawings and this article, but discounting water and dope drying times, which took place at the end of a building session, was twelve hours. My actual building time was eight hours. Of course, I was pushed a little by my illustrious editor's schedule, and even so I probably delayed it a little.



Laminating makes those rounded tail surface outlines a cinch to build, and they're strong, too. Little touches, such as control surface lines, cables, and horns "make" a scale model.

The model flew right off the board with low power, but with more winds it required a thirty second shim of down thrust and about a thirty second of down elevator to keep the model from stalling under power at the beginning of the flight. The landing gear is pretty far aft, but even so, all takeoffs are easy. The model shows no tendency to groundloop and on smooth surfaces it lands beautifully. The least little obstruction results in a nose over, but because of the light weight the model is immune to damage from flight-caused accidents. The best flight to date was a

scarey, above-the-rooftops 50 seconds, after a takeoff from the nearest street intersection.

The model construction is much the same old thing, for the most part. The fuselage is a square box with the two sides built over the plan first. All the fuselage forward of the wing is built out of block or sheet. There is no need to try to keep the nose light, however, try to keep the aft end of the model light. The bottom of the cowl has some curvature to it and may require wetting to allow that much bend, or use two layers of thirty-second sheet, if you desire.

The wing and tail structure is simply assembled over the plans. The only thing that may require some effort is the tail outline. This laminated outline looks very good, is strong and light, but it takes a little more planning. If you think this will give you trouble, just cut the tail surfaces out of light thirty-second sheet balsa and make the model even simpler than it is on the plans.

For the tail outline, cut out patterns from one eighth sheet to the shape and size of the inside of the outline. Sand the edges to make sure there are no sharp corners or rough spots on these forms. Then wax the edges so that glue will not stick to the forms. I use color crayons for this waxing because it's easy to see that the job is complete. Select firm springy thirty-second sheet balsa for the outline and sand it smooth with fine sandpaper on both sides and blow it free of sanding dust. Now slice off several one sixteenths widths. Thin out some white glue 50-50 with water to use as a laminating adhesive. Get some masking tape and tear off half a dozen one inch lengths and put them easily at hand. Now coat one side of one of your sticks with the adhesive, place a second one against it and wet the outsides of this combination. Now lay one end of this "wet noodle" on a straight part of your waxed form outline and wrap a piece of tape over it so it is held securely to the form. Procede to wrap the balsa around the form, taping it in place where necessary. You must maintain a little tension on the part as you wrap or it will crack in a sharp break instead of bending smoothly around the form. The horizontal tail outline may be made in two halves or carefully lapped during lamination for a one piece outline.

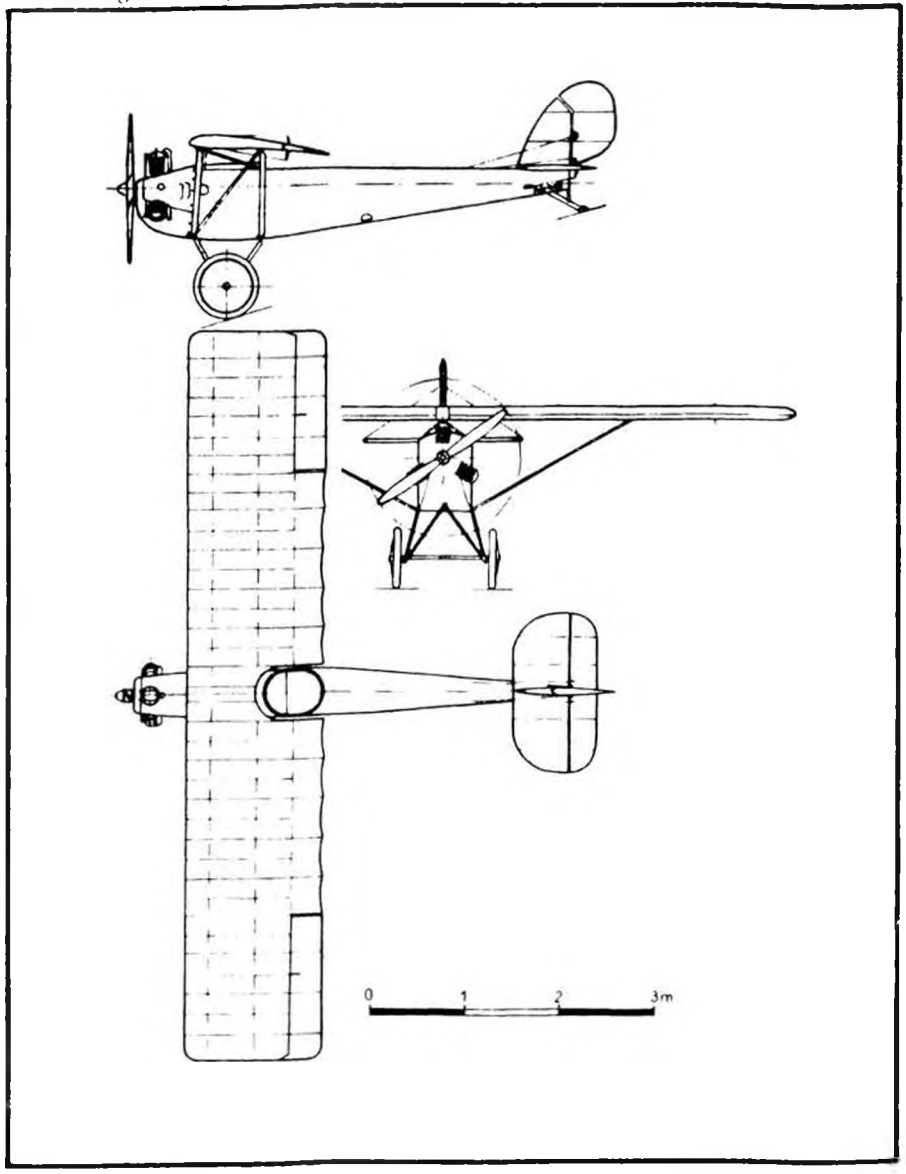
After the outlines are thoroughly dry, they can be carefully removed from the form and set on the plans where the rest of the tail assembly is made.

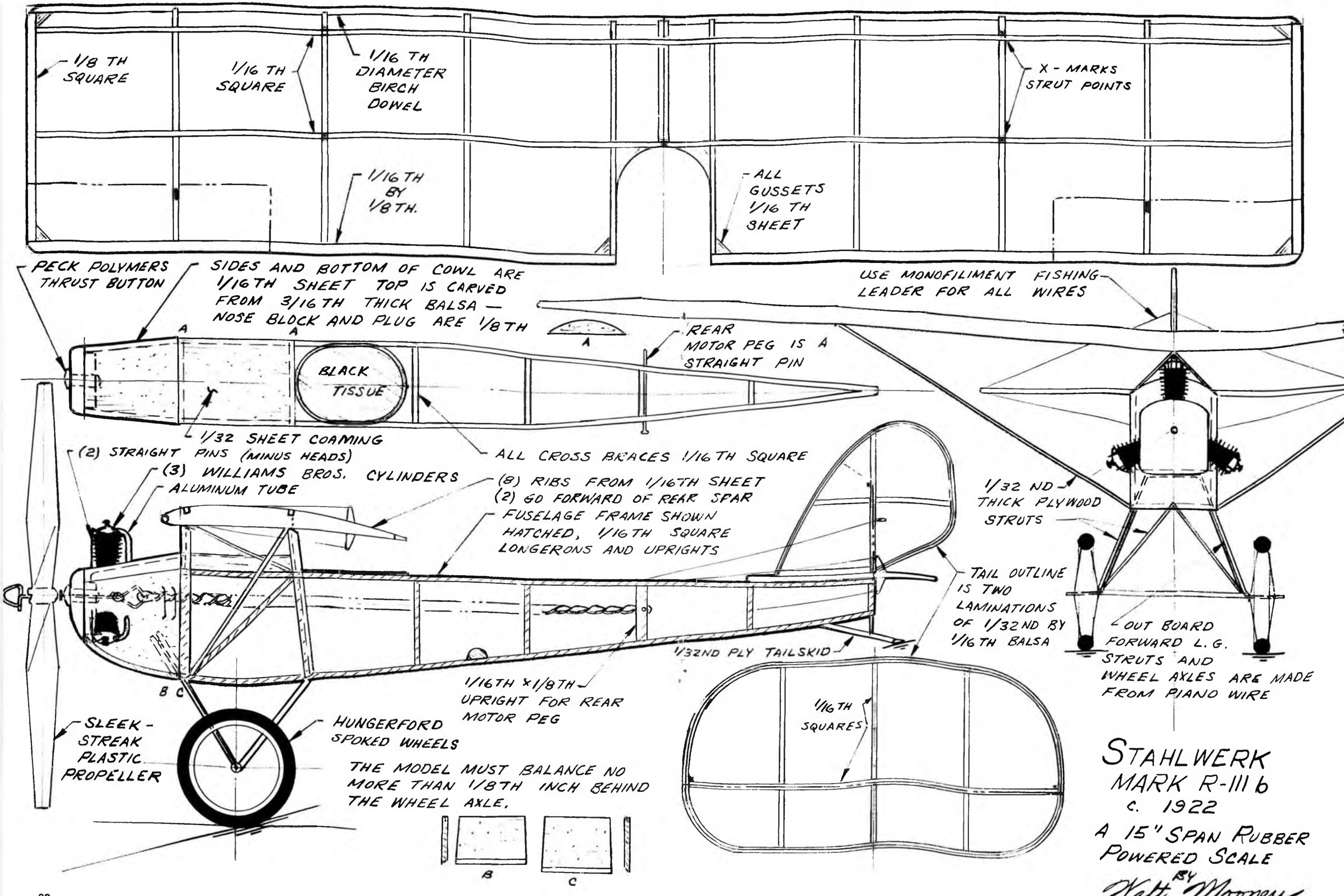
Don't forget the gussets shown on the wing drawing. At the center wing cutout the rounded gusset is actually three thicknesses of one sixteenth balsa to go the full wing thickness. Lean the top of the center ribs towards the tips enough to give the dihedral shown in the front view. After the wing assembly is dry, remove it from the board and cut it apart at the center. Make the spars smooth with respect to the center ribs and cement the two halves of the wing together at the right dihedral angle.

Check the little Stahlwerk against the three-views and you'll see that Walt made very few alterations to the scale outline. The narrow landing gear tread has no effect on ROG's.

Covering is strictly the same old procedure. Apply adhesive only around the outlines of the parts to be covered. I use thinned out white glue and it works well. One exception to the outlines-only rule is the undercambered lower surface of the wing, where adhesive must be applied to all the ribs. The model was given one coat of thin dope all over after the tissue had thoroughly dried from its water shrinking. The cockpit

Continued on page 48





STAHLWERK MARK R-III b

c. 1922

A 15" SPAN RUBBER POWERED SCALE

By Walt Mooney
10-21-72

DEC 1972 Vol 2 No 14

A real . . ly big one! John Donelson carries Allan Sewell's 14 foot HP-14T after successful test flight. Both are members of Harbor Soaring Society.

R/C SOARING

By Le Gray

We have performance claims . . We have performance opinions . . What we don't have is performance data . . facts. Challenge your resident expert to put his money where his mouse is. Maybe he hasn't seen the article. Read on . . . impress your friends . . . . . Oh, you don't? . . . Well read it anyhow.

● The numbers racquet . . . make that "racket" . . . can mean different things to different people. Such as a "gaming" enterprise promoted by person or persons allegedly operating outside the law. Such as candidates for political office interpreting the latest public opinion poll to their own advantage. Or the mileage boasts of automobile manufacturers. Or sailplane designers . . . full-scale or model . . . quoting or implying figures of performance.

The old saw claiming that "Liars figure and figures lie" is a bit harsh, but interpretation of most data can vary.

There is no intent to imply that performance characteristics of any given sailplane . . . presented in any manner . . . are exaggerated, overstated or less conservative than might seem prudent . . . especially with reference to The MODEL BUILDER's advertisers. It's just that performance measurement is a problem, and with models, accurate data is usually outside the realm of economical acquisition . . . if even possible. And there is certainly no "standard" to guide the collection or presentation of any such model data.

So how does this tie with the "numbers racket?" Simple. The performance of a sailplane is always quoted on the basis of a numeric scale. Whoever heard of a lift-drag ratio of CF to A? And about "racket?" Well, some other word might be a better choice, but then "racket" is kinda zingy.

Usually, sailplane performance is discussed as a relationship of lift versus drag (L/D) . . . whether you're talking full-scale or models. On occasion, rate-of-sink (Vs) is also subject of conversation. In man-carrying craft, L/D seems to be of greater interest. In models, Vs is usually of more interest, though dialogue can be heard on most fields about "L over D."

These specific areas of interest are for good reason. In man-soaring, modern competition is based on distance . . . high L/D ratios. With models, the name of the competition game is primarily that of duration . . . minimum sink rate . . . though the more advanced contests these days often include tasks for speed and distance.

Extensive studies have been conducted to determine full-scale performance. Some studies have been made by teams of independent experts. Others have been accomplished by various technical institutions. Still others have been the result of a designer's or manufacturer's development work. These studies involve many hours of flying under recorded . . . if not controlled . . . conditions, extensive instrumentation, and much data analysis. To one degree or another, they provide qualitative and comparable performance measurements.

What kind of parameters have been established for full-scale? The popular American-built Schweizer 1-26 claims an L/D max of 23. That means it can cover 23 horizontal feet for every foot of altitude lost, in still air, under no-lift/no-sink conditions at an optimum airspeed. The same sailplane offers a Minimum Sink Rate (Vs min) of 2.7 feet per second (fps) . . . again under no-lift-or-sink conditions and at a specific airspeed.

Towards the other end of the scale from the 1-26 is the high-performance German Schempp-Hirth "Cirrus" with an L/D max of 44, and a Vs min of 1.64 fps. And reports on the new 20-plus meter span super designs cite absolutely staggering performance. A recent press release on the Italian-built Caproni-Vizzola A-15 "Calif" talks of an L/D max of 51 to 1, and a Vs min of less than 1.64 fps. That's like 50 miles of soaring range from 5,000 feet of altitude! A guy could starve . . .

So the point is that full-scale sailplane performance has been recorded with reasonable accuracy, and nominal parameters are L/Ds upwards from 25

or so, and Vs mins in the range of 2 fps give or take a half foot.

Remember, these numbers are for full-scale vehicles which are significantly more efficient than models. If you hear a modeler make reference to his latest creation with numbers like these, you better take his temperature. The big difference can be attributed to relative size . . . or scale effect . . . or more specifically, to Reynolds Number which has to do with the displacement of air molecules by a moving body, and the velocity and length of that body. Maybe a quick example would be worthwhile. In Frank Zaic's book, "Model Glider Design," it is stated that Reynolds Number is: 6,300 X Speed (fps) X Chord (ft). To keep things simple, we'll use "made up" sailplanes. First, a full-scale machine. Say the speed is 60 mph, which is 88 fps, and the average wing Chord is 4 feet. Reynolds Number is 6,300 X 88 X 4 which is 2,017,600. Now let's see what a scale model of this "play-like" design might see insofar as Reynolds Number is concerned. How about 1/6th scale . . . 2 inches to the foot? Would come out about the span of many popular R/C sailplanes. And we'll use 15 mph as the flying speed. Reynolds Number is 6,300 X 22 X 0.67 which works out to be 92,862. Quite a difference . . . like by a factor of 21.5 . . . but which has no direct correlation to performance variances. Fortunately. Models are considerably better than one-twentieth as efficient as full-scale.

So much for the technical jazz. Let's get down to the practical mine-will-stay-up-longer-than-yours world.

Truly accurate performance measurements would be tough to get on models, but we should be able to establish fairly good approximations without too much trouble. Might even develop some crude ideas that could inspire the more inquisitive among us to pursue the intellectual challenge.

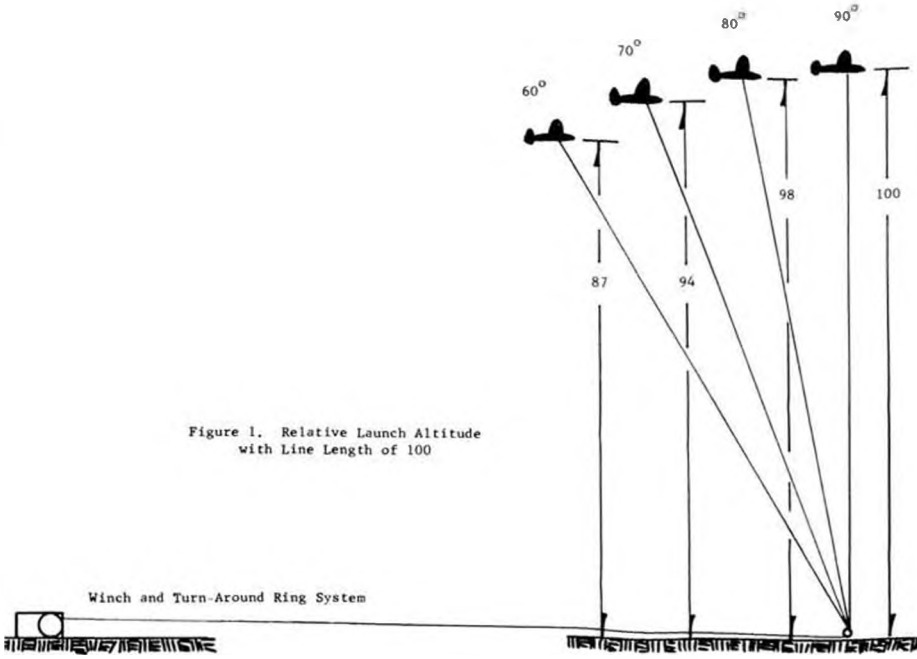


Figure 1. Relative Launch Altitude with Line Length of 100

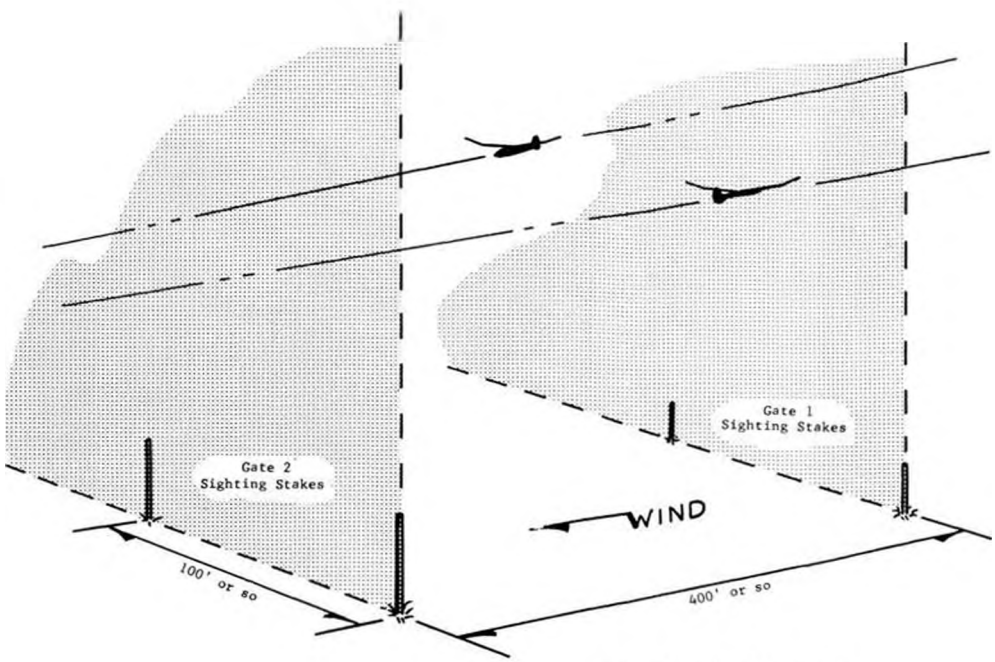


Figure 2. Timing Trap Layout

First, let's see what kind of L/D ratios are reasonable. And what Vs rates make sense. We can use the world as our wind tunnel.

Let's say we're launching with a 1,000-foot winch or hi-start line. Next assume that our sailplane releases the towline at an altitude someplace between 40 and 60 per cent of line length . . . call it 500 feet. A reasonable flying speed is 17 mph (25 fps). Now, let's say that an average, no-lift/no-sink flight checks out to be 4 minutes even. Don't know about the guys at your field . . . and it may come as a shock . . . but in some of the less progressive areas of the country, a "four-minute/dead-air" sailplane is considered to be a pretty fair hunk of model. Honest.

So this dude flys for 4 minutes (240 seconds) at 17 mph (25 fps) for a total of (240 X 25) 6,000 feet. Just a little more than a mile. Since it came off of the towline at 500 feet, it has sunk those 500 feet while traveling forward 6,000. A rather advanced exercise in division (6,000/500) shows an L/D of 12.0 to 1.

Rate of sink? Try 500 over 240. You'll get 2.08 fps. Not too bad . . . compared to the man-carrying craft even. That is, it isn't too bad if you don't consider the fact that a full-scale Cirrus, weighing around 900 pounds, theoretically could climb at 0.44 fps (2.08 - 1.64) in a thermal in which our 3-pound-or-so model could only sustain. So let's not consider that.

Take another example . . . one more closely representing one of the "dawgs" the other guys drag out to the field. Call the launch to be 400 feet with a resulting 3-minute duration. Speed of 15 is reasonable. This time we get 180 seconds at 22 fps for a total distance of 3,960 feet. L/D is (3,960/400) 9.9 to 1. Vs is (400/180) 2.22 fps.

One more. Launch at 400 feet. Dead-air time is 3 minutes and 30 seconds. Flying speed is 20 mph (29.4 fps). L/D is (210 X 29.4/400) 15.3. Vs is (400/

FAI design flown by Gary Korpi and designed by Paul White and Jan Sakert. Low frontal area obvious in this view. Tandem wheels in fuselage.

pylon

By Chuck Smith

Legs are always an interesting subject, maybe even when we're only talking about the landing gear kind. If they're put together right . . . landing gear legs, that is . . . they'll mean more to your racer. Chuck tells how.

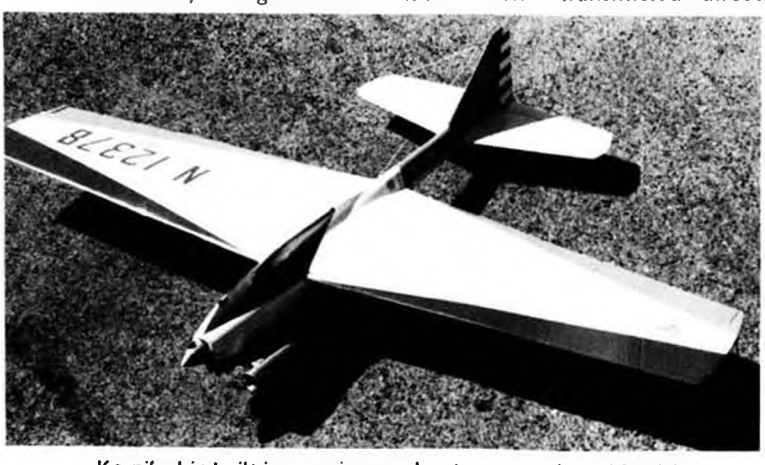
Most of our pylon racers have two types of landing gear, dural aluminum or 5/32 inch music wire. Aluminum landing gears are usually the easiest to install, since they just have to be bolted to either the fuselage or the wing. The biggest advantage of the aluminum gear is that no fairing must be added to reduce drag.

My first pylon racer had a landing gear of this type and since I wanted it to have the least amount of drag possible, I didn't settle for just rounding the leading and trailing edges of the aluminum. Instead, I spent several hours filing down the gear to an airfoil shape with edges almost razor sharp. However, I regretted this later when even a moderately hard landing tended to flatten out the gear. This is a disadvantage of this type gear, even when the aluminum isn't filed down, so I had just compounded the problem. In order to increase the stiffness of the landing gear, some flyers have bent their own from titanium.

The main purpose of any landing gear is to absorb the forces which occur when an aircraft settles down for a landing. It has been my experience that a landing gear made from 5/32 inch music wire does this job better than aluminum.

This type gear only absorbs upward forces, whereas forces to the rear are transmitted directly to the airframe. On the other hand, 5/32 inch music wire is usually installed in a hardwood mount in which the end of the wire, bent up at 90 degrees, is held stationary with a portion of the wire secured to the mount but allowed to rotate. Most of the forces incurred by the landing gear is absorbed by the torsion action of this section of wire, similar to the torsion bars in some automobiles. Since the wire rotates when absorbing most shocks, both upward and rearward forces are absorbed.

Unfortunately, a length of 5/32 diameter wire sticking out into the breeze at speeds over 150 MPH can create an excessive amount of drag,



Korpi's ship built in one piece, makes transportation a bit sticky. Wire skids on wing tips maintain ground stability.

Ed Foster's latest version of the Francis Shoestring. Smaller fuselage dimensions are the most notable change.

Jack Stafford designed his P-39 for the FR K&B 40, had to use this special spinner to fit the RR model. Ship is for sport and FAI racing.

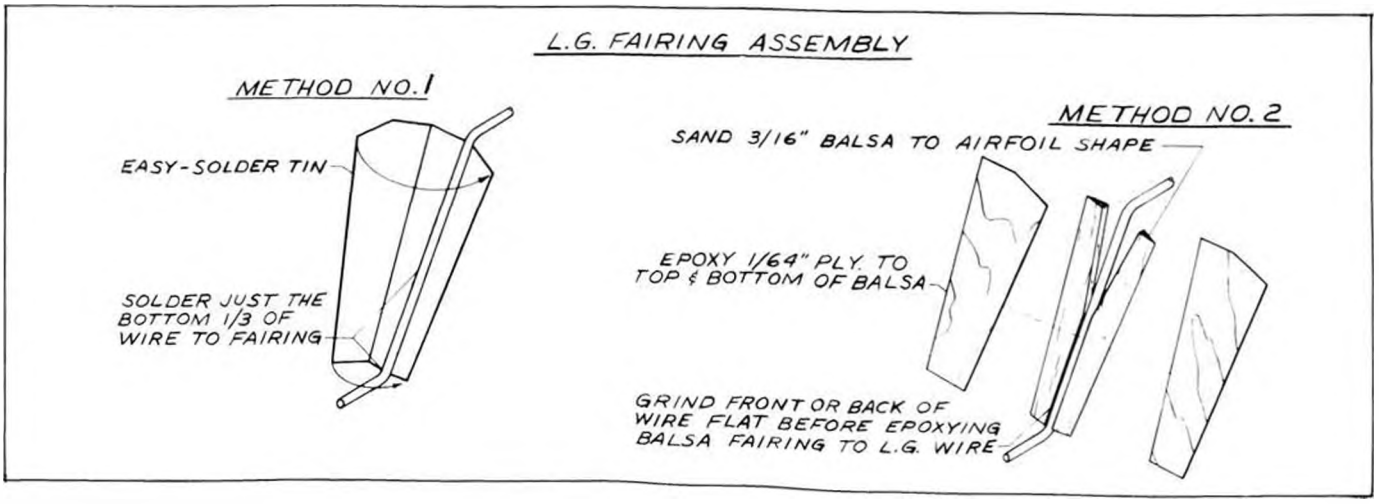
Stafford's P-39 uses Goldgerg retracts, is suprisingly fast in spite of numerous scale details. Should make popular kit.

Her name is "Bobbi" Nordin . . . . . Oh, him? . . Sorry, hadn't noticed. It's Don Powell, and he placed 4th in the FAST Club "Rooki Race."

Winner of the FAST Club "Rookie Race" was Juan Martinez. Stafford Mustang, K&B. This was his first Formula I contest.

which is obviously something we don't need. Theoretically, this drag can be reduced almost two-thirds by giving an airfoil shape to the wire; therefore most of our racers have fairings installed on the landing gear wire. These fairings seem to create more problems, for both rookies and experts, than any other structural feature. It seems that on almost every racer we have built over the past three years we have used different techniques for making these fairings. The following are the various methods we have used.

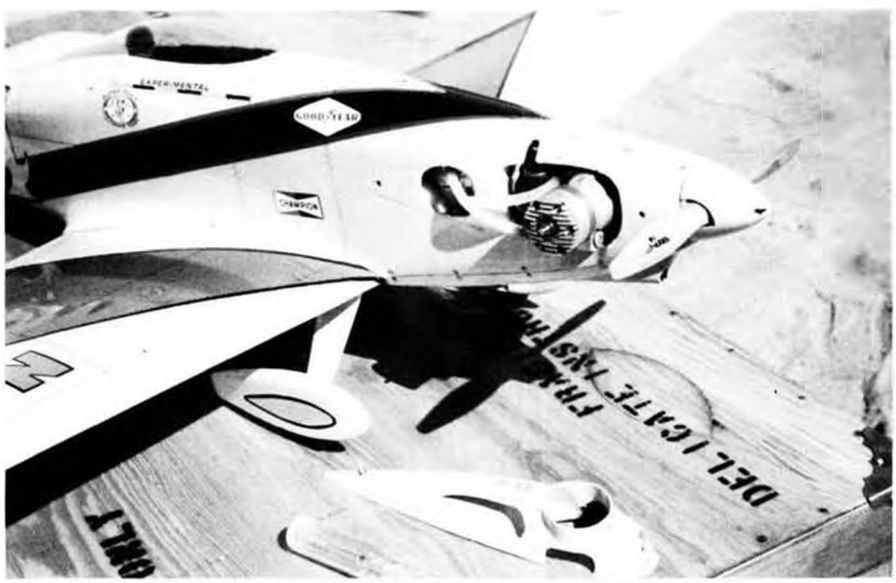
The easiest method, which is specified in some kits, involves just epoxying a balsa fairing to the rear of the wire and then sanding the trailing edge to an airfoil shape. To add strength, fiberglass is epoxied around the wire and balsa. *Continued on page 53*



Don Dombrowski, owner of House of Balsa, also owns this Shoestring built from his kit. It's very fast with the ST .15 up front. Watch for review.

PYLON/4

By Don Panek



Paul White's Minnow with the prototype K&B Schneurle .15 bolted in. Hard to tell it from a Formula I airplane. Rev-Up props again becoming popular with increased availability.

● A great number of queries have come in the way of requesting what models, engines, etc. are most used by the West Coast quarter midget flyers.

To begin with, the most popular engine has been the Super Tigre 15 R.C., prior to this, the O.S. Max 15 R.C.. A Super Tigre which has been broken in with care and utilizing a method described in a previous report, will turn better than 15,000 rpm, with 15% nitro fuel and a 7/6 prop. The new K&B 15 should better this by another 1,000 rpms. Remember, these are stock, out-of-the-box engines available at your dealer, not re-worked hot rods. The Q.M.R.C. rule covering propellers, disallows the use of nylon for safety reasons, and all data gathered has been on wood stock propellers. When checking out an engine, try at least 3 different props of the same make, pitch, and diameter. You'll be surprised at the different readings each will give you. The power curve of these engines would be ideally suited for a 7/5 prop, but none

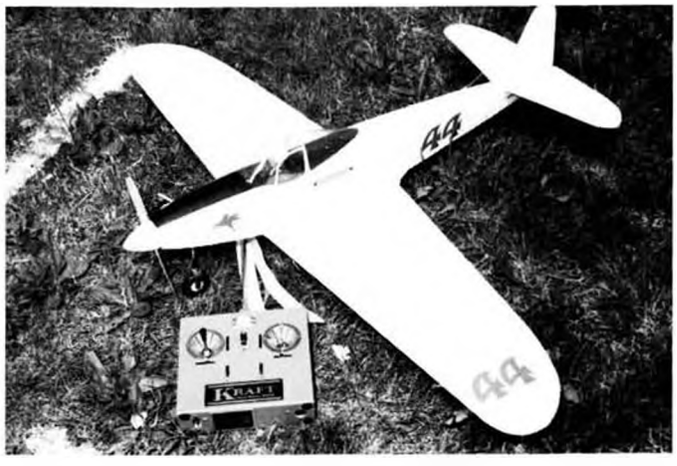
San Diego winners (l to r): Bob Novak 2nd, Tom Melshimer 1st, and Jack Stafford 3rd. Bob and Tom both used Bob's RS Systems radio.

Flight line at San Diego. Extremely smooth strip made the idle rule really mean something. Wide course was a bit rough, however.

Bob Dart's QM Midget Mustang with OS .15.

Bob Gademer's winning Midget Mustang, designed by Ed Nobora. ST .15 power, Kraft radio.

"Little Gem" by Austin Leftwich. ST .15 power. Austin retired the AMA Pylon event with a record that still holds.



Tom Clark's P-63, designed by Ed Nobora. OS .15 power, Kraft radio.

are available, presently.

Due to the rule which allows models of any full size aircraft ever raced in closed course or cross country events to be entered, a great variety of designs have appeared. No one model has dominated the races, but some of the characteristics of the winning models are semi-symmetrical airfoils, insert ailerons, small frontal area, and a weight which does not exceed 3 ¼ lbs. I personally enjoy seeing models of planes ranging from the golden age to the most recent Formula I types competing in a heat. It sure breaks the monotony of seeing only the same type models with different paint jobs!

When you're ready to select a design or kit for this event, pick one which can be assembled without having a great number of fillets and odd wing and tail configurations. I know of a couple of designs, where lacking the wing fillets and having the tail assembly right on the money can lead to a short lived model.

A great many clubs throughout the country are planning quarter midget meets for 1973, and a question arises as to what course to run. A two pylon, three or even a four pylon??? At present, the West Coast flyers have settled on a three pylon course, after trying both the two and the four. The distances and placement of the pylons are still being evaluated at monthly contests, to assure that the final course selected will be one which is most comfortable to the flyers, and of utmost safety to all.

Jim Kelley and his ST .15 powered model of Whitman's "Chief Oshkosh." Ship is very fast, but Jim seems to prefer the inside of the pylons . . .

Having recently talked to Bob Penko, of the Mentor, Ohio Club, regarding the activities of his area, he suggested that the course and fuel to be used should be noted in the contest announcements. I personally think this is great for determining by trial and error, a final course, and a fuel. However, we must establish a universal course and fuel standard if we want this to be a national event.

SAN DIEGO RACE REPORT

by Fred Reese

The race was held on October 15th and was sponsored by the San Diego Drones RC Club at their field in Lakeside. Saturday it rained, but Sunday was clear and warm for the race.

The course was an unusual and not very popular triangle, 385 feet long and

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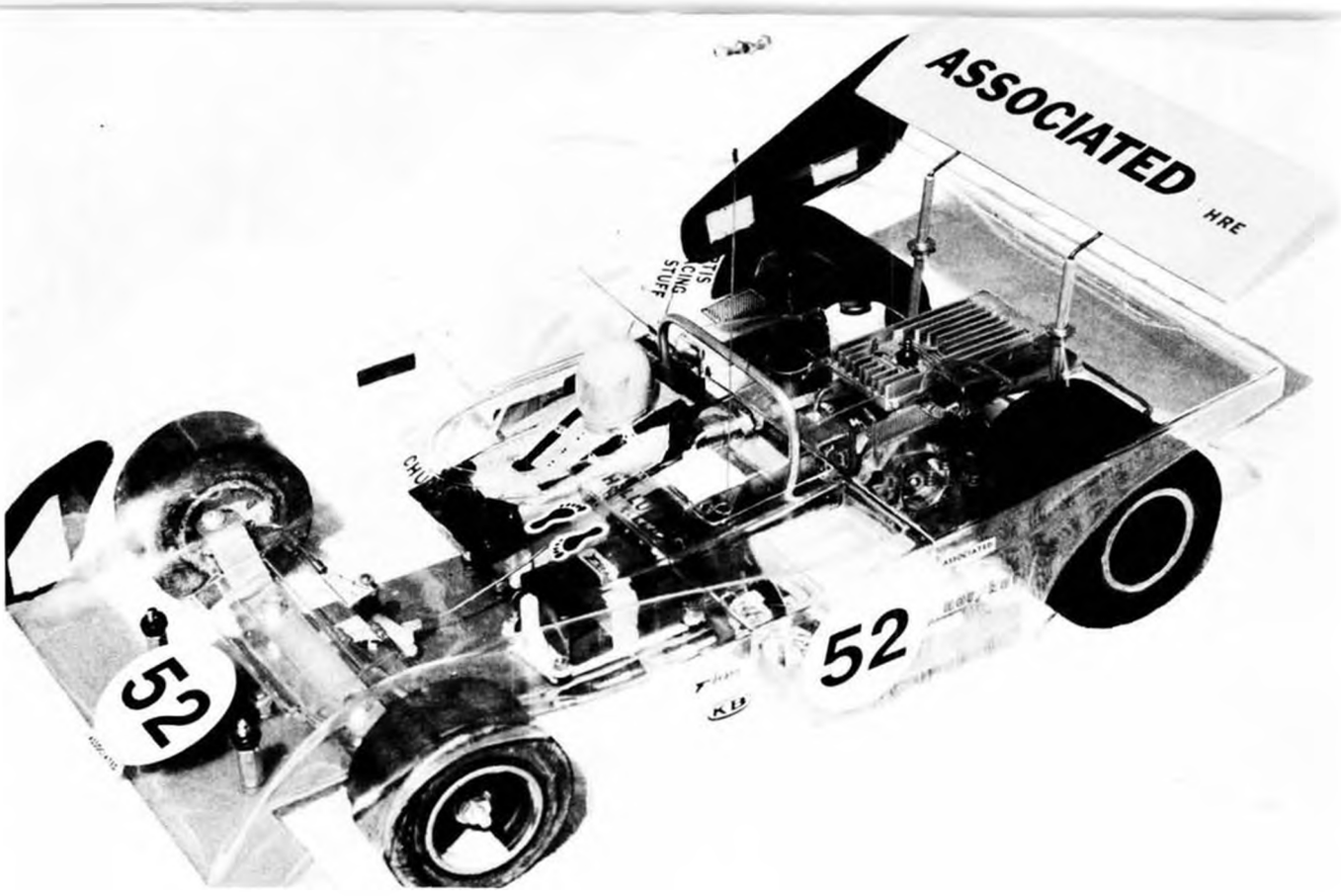


R/C AUTO NEWS

This month we present a photo and word picture of the assembly of a championship quality radio controlled race car. Follow it step by step and you'll be well on the way toward success of your own. By Gene Husting.

● Chuck Hallum is the 1972 National Road Race Champion, and is currently leading the 1972 So. Calif. R/C Car Series. When we heard that Chuck was putting a new car together, we knew MB readers would like to learn some of his SPEED SECRETS, so we obtained his permission to show you this latest creation.

Chuck puts a priority, when building a car, on its remaining relatively stock, mild, reliable, efficient, practical and driveable. Now if you read that last sentence and didn't learn his "speed secrets" you read it too fast. Re-read it. Nowhere was the word "speed" referred to. That's because Chuck feels that road races are not won on the straightway, but rather, in the corners. Chuck is a former National Model Airplane Racing Champion, so he knows how to hop up an engine. But rather than go all out on speed he concentrates on handling. A classic example of this was at the Nationals, where we can't remember seeing him pass another car on the straightaway, yet he passed 1, 2, and even 3 cars in a single corner, lap after lap. And there are many more corners than straightaways . . .

It's quite obvious that Chuck is an exceptional driver, but he's also the first to agree that a good driver must have a good car. The two go hand in hand.

Being the National Road Race Champion, you probably think that Chuck simply has to appear at a race with his car and he's immediately the quickest driver there, without any practice. Chuck doesn't count on this. He knows that to be able to beat the best takes plenty of practice. As a matter of fact he does more practicing than any other driver, including novice, amateur or expert. He spends hours learning the correct method to take each turn the quickest way possible and getting the car to respond without any wasted motion.

Now you know, if the national cham-

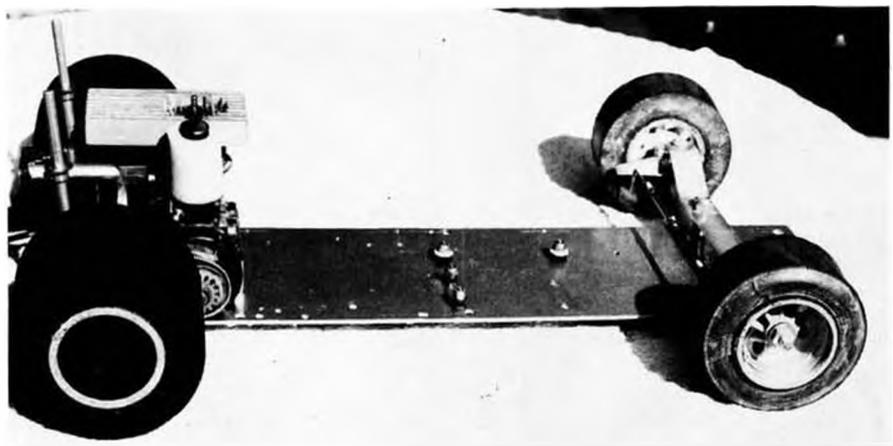
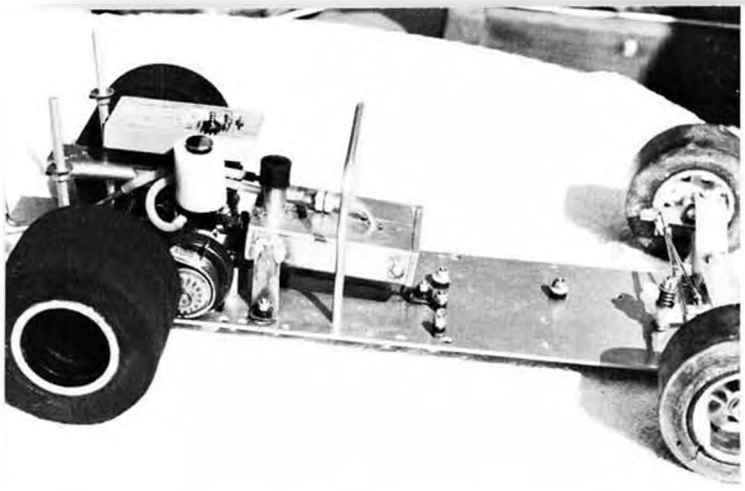


Photo No. 1



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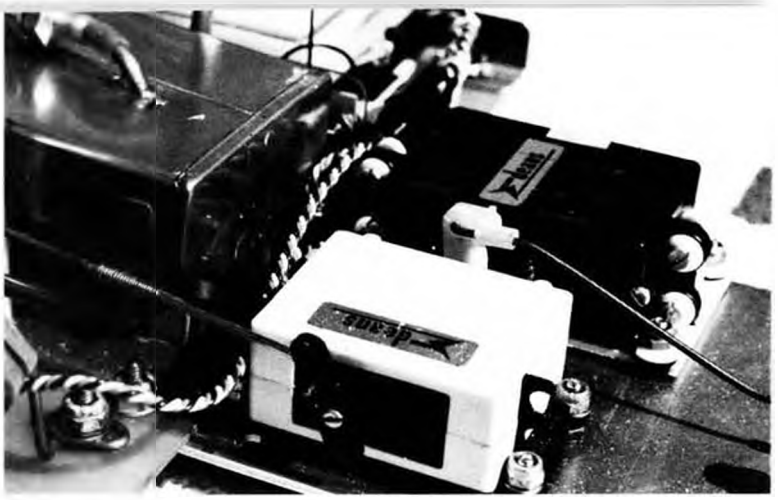

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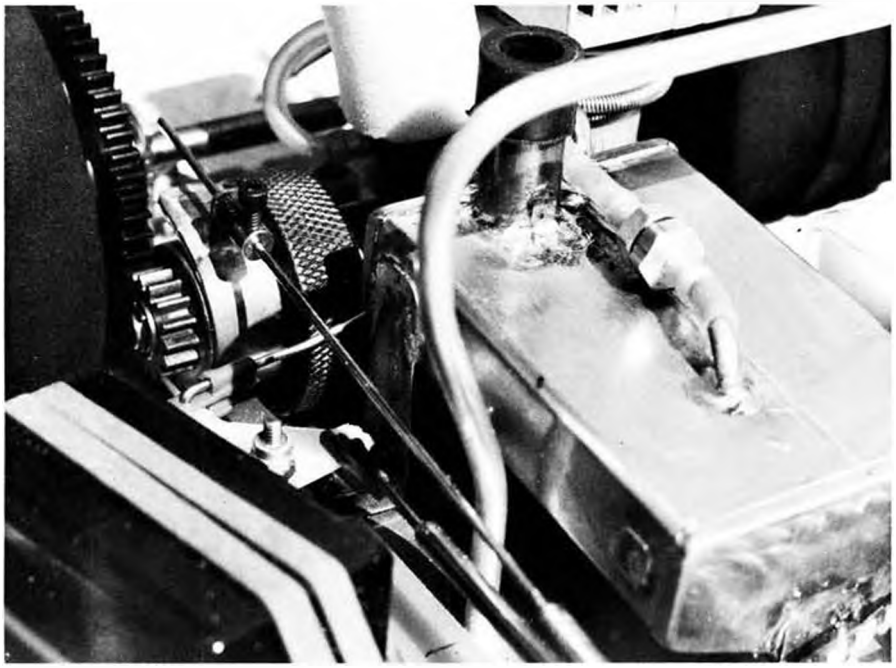

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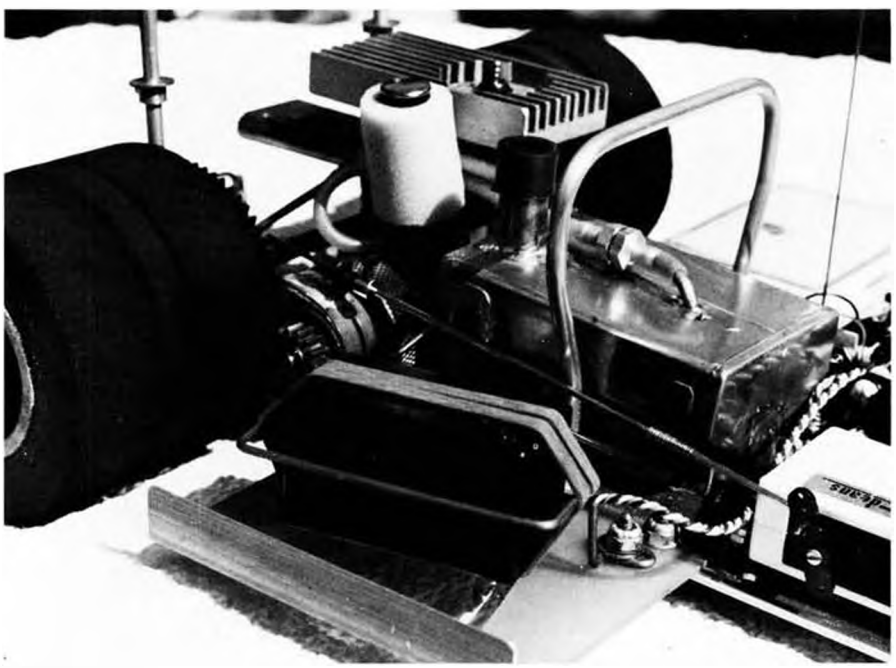


Photo No. 5

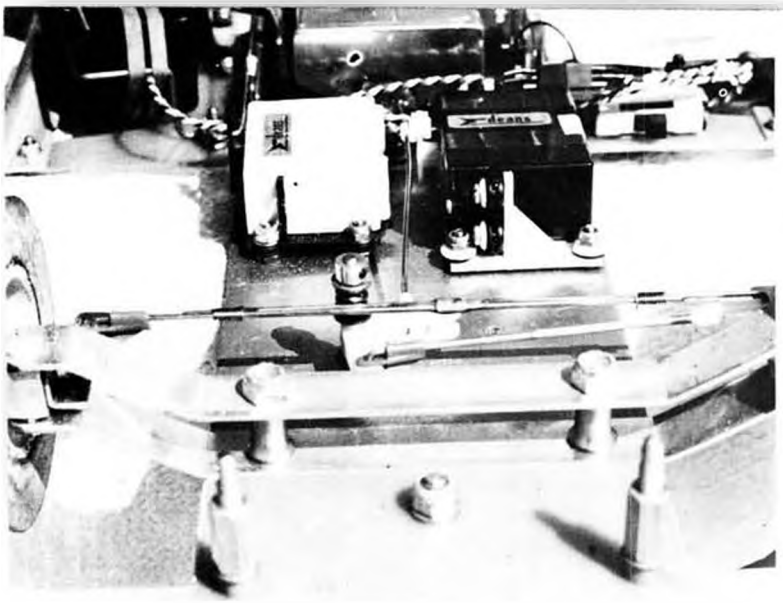
pion feels he needs all this practice, then it's obvious that you too should practice all you can before a race. It really helps.

So, let's follow Chuck as he goes through the construction of his new car.

Photo No. 1 Chuck uses the basically stock Associated RC 1 car. The front end is set with a slight amount of negative camber on the outside wheel (left-hand on road car). Extra caster is added to the front end by putting .020 to .060 shims under the front of the axle. No toe-in used. With this setup the front end gives better tire bite and steerability. The tires wear square and are switched left-to-right each racing day. A 12 inch wheelbase seems to be about the best of those tried. The new Associated front end does not require any modification.

Photo No. 2. The fuel tank is mounted in from of the engine because Chuck uses a "chicken hopper" type of fuel pickup, which used to be popular in planes. This type of system, plus a stock Veco 19 engine and a stock Perry 19 carburetor, gives Chuck an amazing amount of fuel economy. He is generally able to go 30 to 50 percent further on a 4 oz. tank of fuel than his competitors, which enables him to run most 30 to 40 lap races without making a pit stop. The tank is also angled with the front mounted lower than the rear. The pickup is in the front and this combination allows him a 3 lap warning before he runs out of fuel. Just one of the many little things that add up to one big winner!

Photo No. 3. A reliable, trouble free radio is a must for winning performances, and Chuck uses the popular Dean's radio. As you can see, there is a white and a black servo used. The white servo is the standard Dean's servo used on planes and boats, and it works great as the throttle/brake servo. But for the steering, we require a servo which has stronger gears and more torque, so Dean



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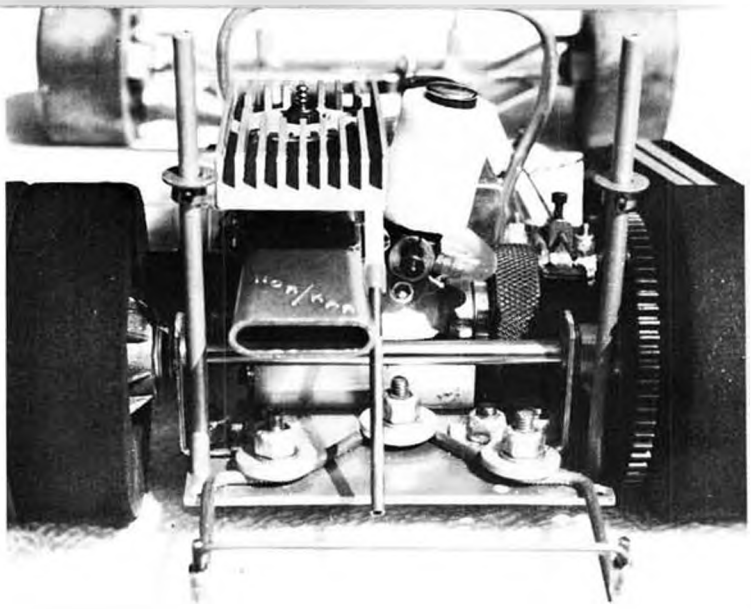


Photo No. 7

has an optional servo using the (Orbit) PS-5 mechanics and Dean's electronics. A perfect combination. The servos are mounted to servo trays, which in turn, are mounted to the chassis through rubber grommets. These should be mounted so that the rubber is slightly compressed, but not so much as to lose the dampening effect of the rubber.

Photo No. 4 . The throttle and brake linkage is shown here. The brake linkage runs directly from the servo to the brake band. A spring with a set-screw collar is used to regulate the exact amount of brake pressure required. The throttle linkage goes through an override to a bellcrank and makes a right angle to the Perry carburetor. The throttle linkage must be adjusted so that the pressure stops as soon as the carb is fully opened. Any further linkage action can end up with a broken carb. A Dynamic fuel filter is used and some type of fuel filter is a must. An air filter is also a must.

Photo No. 5 . The battery is mounted on the right-hand side of the car in a piano wire bracket. Rubber bands are used to suspend the battery in the bracket. The batteries should be shock mounted in some manner in order to prolong their life and give good power. A side pan of epoxy board and aluminum angle is used to protect the car from getting crashed from the side, which happens so often in a race. A solid roll bar, mounted to the chassis, makes picking up the car an easy matter for fast pit stops. A C/L rat-racing fill on the back of the fuel tank is also a must.

Photo No. 6 . The steering linkage must be installed so that there is absolutely no bind whatsoever. The slightest bind can cause trouble. You should be

Continued on page 52

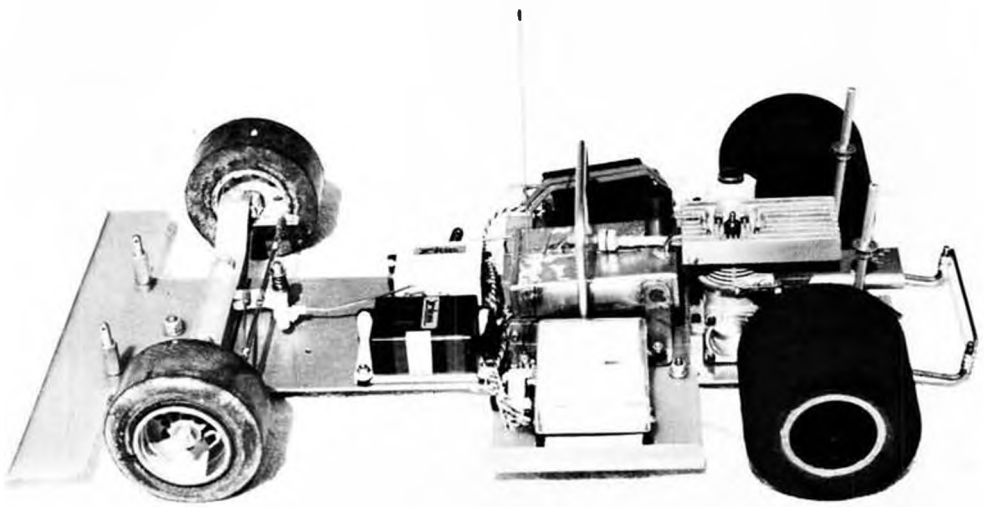


Photo No. 8

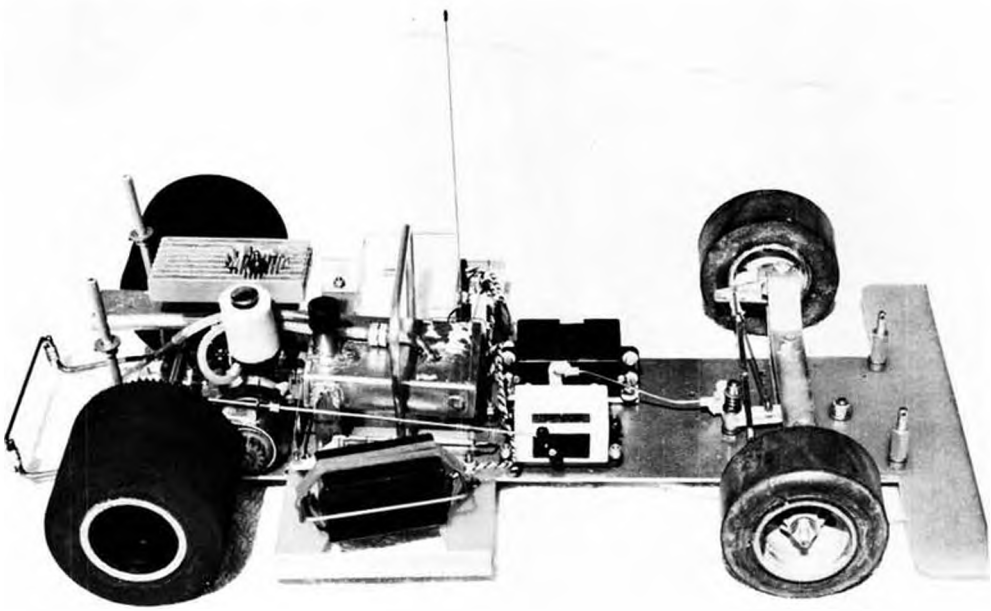
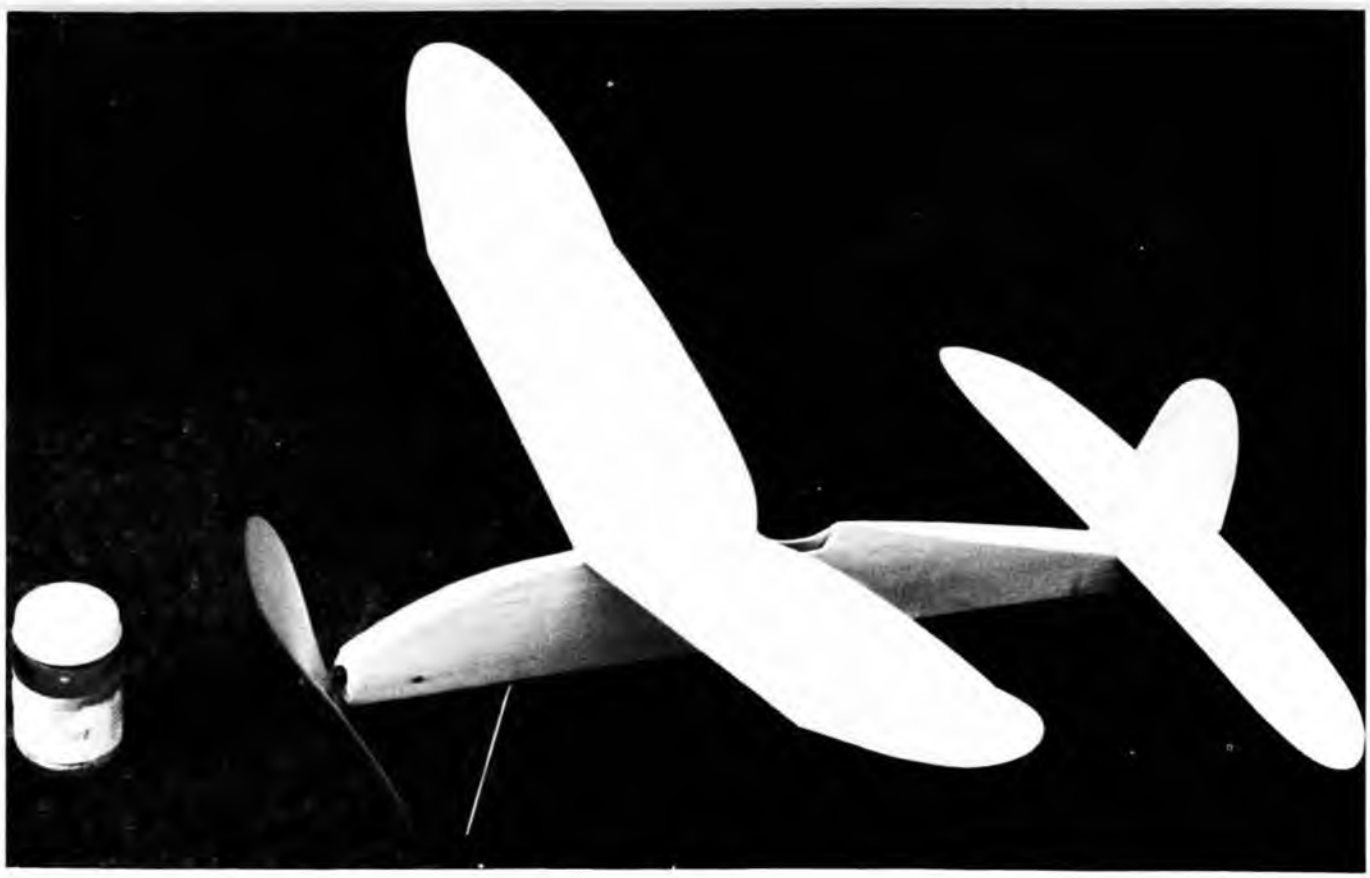


Photo No. 9



Sort of "New Rulerish" looking sheet balsa sport free-flight that can be built in a couple of evenings. Make up your own kit and have at it!

the FORTY-NINER

By Dave Thornburg

A great little all-sheet-balsa sport free flight. A perfect trainer for that potential FAI team member. A quick and easy-built one-design for club competition . . . or just an evening's pleasure at the school playground.

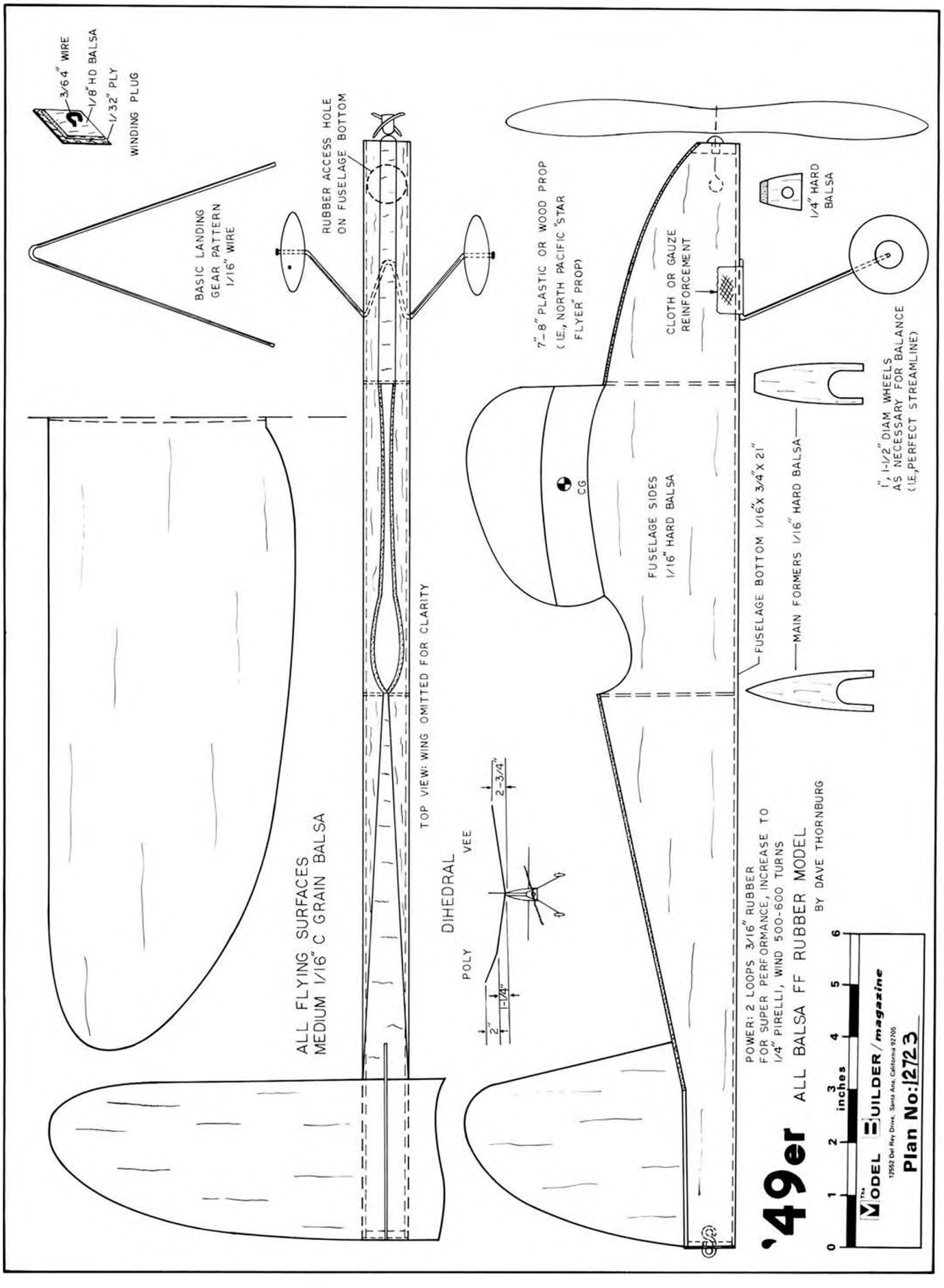
● Taking a shortcut through an empty ballpark this afternoon, I paused near second base and surveyed the open spaces around me. What a surprising amount of uncluttered air, and right in the middle of town! I ached for an old Jim Walker "Hornet", or some similar rubber-powered stick model. No, a Hornet would climb right out of a field this size . . . what's needed is something with just a bit less performance. A rubber scale job? Those light poles look deadly. Say! What about the Forty-Niner?!

I rush home and dig through the Crash Club, a huge pasteboard box in the garage. Sure enough — it's still whole! I gently extricate the old girl from a dozen other models, and put the eyeball to it. Time and the river have warped her up a bit, but warps have a way of counteracting each other in Forty-Niners. The 8 inch Paulowina wood prop is shattered, but I quickly pirate a 7 inch plastic one from a retired North Pacific "Star Flyer". Stuffing a winder into one pocket and a bottle of Sig rubber lube into another, I grab the Forty-Niner and head for the hobby shop. The dealer eyes my plane as I lope in the door. "No returns on used merchandise!" he quips. Ignoring his humor, I sprint out with six-and-one-half feet of 3/16 inch rubber, knotting it on the run. Slopping some lube into one palm, I work it into the rubber for two full blocks, arriving at the ballpark with a motor ready for installation.

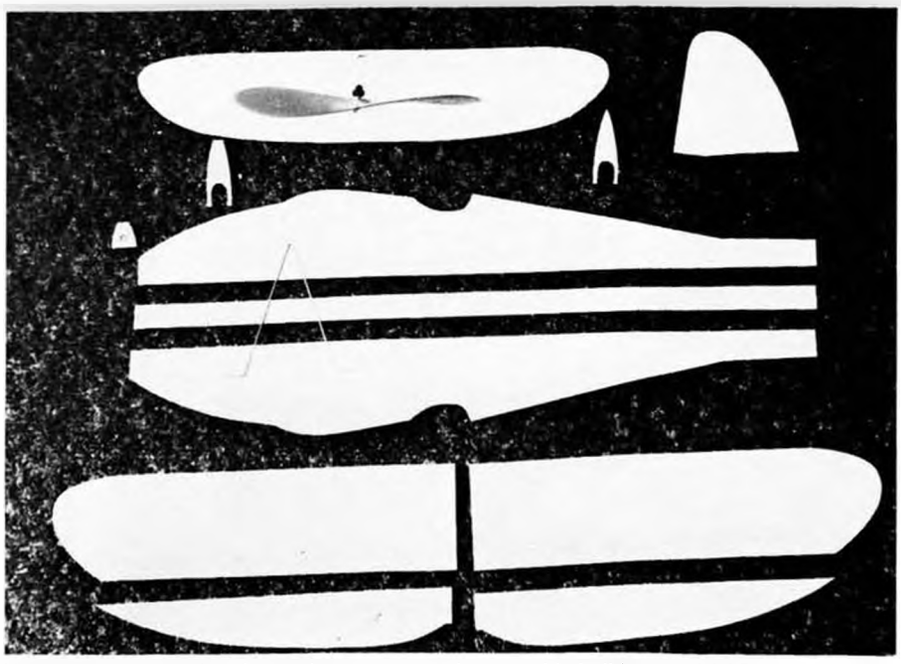
A scrap of baling wire materializes beneath my lucky feet, and I use it to fish the double-looped motor down through the ancient, lube-soaked fuselage. With prop and tail plug in place, I try a gentle test glide. Hmmm . . . the warps have done her in: she wants to turn right. Left turns are safer under power for these high-pylon types. I breathe on the rudder trailing edge, bending it gently to the left. The next glide is better: shallow left turn. Since the prop has zero sidethrust, that should do it.

With the prop held delicately between the arches of my shoes and the plane standing giddily on its nose, I stretch the motor a foot or so and crank in 80 turns for a test hop. Launched into a

Try THIS on your Wakefield! Can you imagine a non-modeler seeing this from a distance?



FULL SIZE PLANS AVAILABLE – SEE PAGE 64



What an excellent project for getting a youngster interested in building models! Patterns could be made out of cardboard and passed around. One-design club contests? Hey, no folders allowed!!

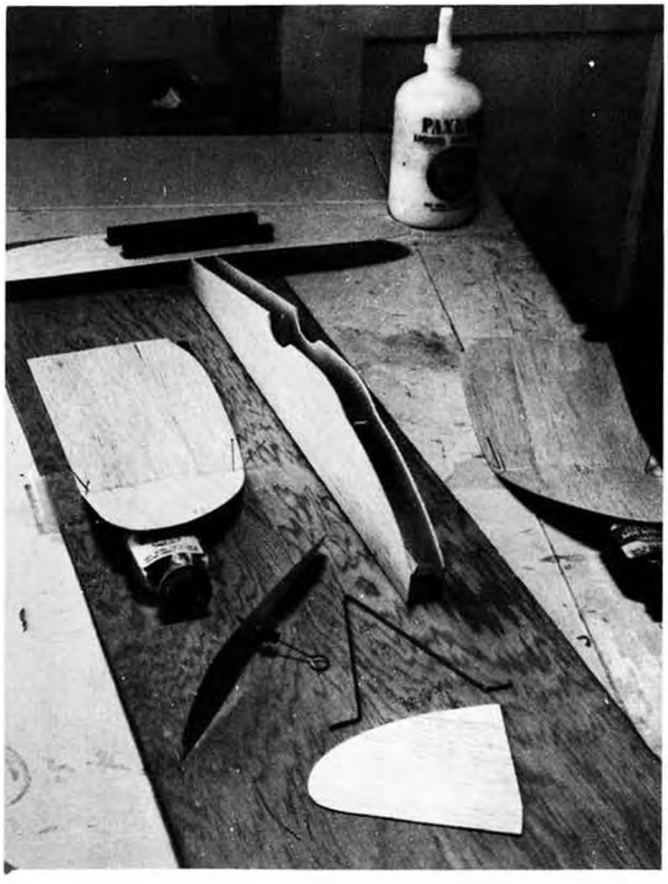
slight left bank, the Forty-Niner climbs out gently, with a fairly smooth transition from power to glide. It is dead calm, and the little plane makes one slow circle before dropping into a bouncy three-point landing near home plate. I retrieve it, increase the winds to 150, toss it up again. A bit more left rudder should cure that slight tendency to hang on a prop near the end of the power run. This adjustment made, I crank in 500 turns and let her rip: up, up into the calm July afternoon, its propeller whirring fiercely . . . then the long glide, as gentle and silent as its shadow, into the warm outfield grass. She will take as much as 600-700 turns, and the park is hardly large enough to contain her on these full-power flights. Over and over I toss the Forty-Niner up into the quiet air, over and over it glides back to me on silent wings. Such pure pleasure a screaming engine can never deliver, and all for a single evening's building time.

You can have this enjoyment, too. Here's how.

Begin with two pieces of hard C-grain balsa, 1/16 x 3 x 36. From one cut the two fuselage sides and the two large formers. From the second piece cut the fuselage bottom, a simple rectangle 3/4 x 21. Mark the former positions on this piece and glue the large formers in place, using a dope bottle or strategically placed pin to insure that they remain vertical until dry. Cut the nose former from 1/4 or 3/8 hard balsa, first drilling the hole for the thrust washer and then drawing the former around the hole (this keeps the wood from splitting out during the drilling operation). Glue this former in place with no down or side thrust. Downthrust is automatic due to the positive incidence in both wing and stab; if more is needed, the nose former is thick enough so that it can be added by sanding or cutting right out on the flying field.

When the formers are sufficiently dry, run a bead of cement down one edge of the fuselage bottom and maybe a 1/2 inch up each of the large formers. Put one fuselage side flat on the workbench and lay the bottom carefully in place. Pin it into correct alignment.

Continued on page 63



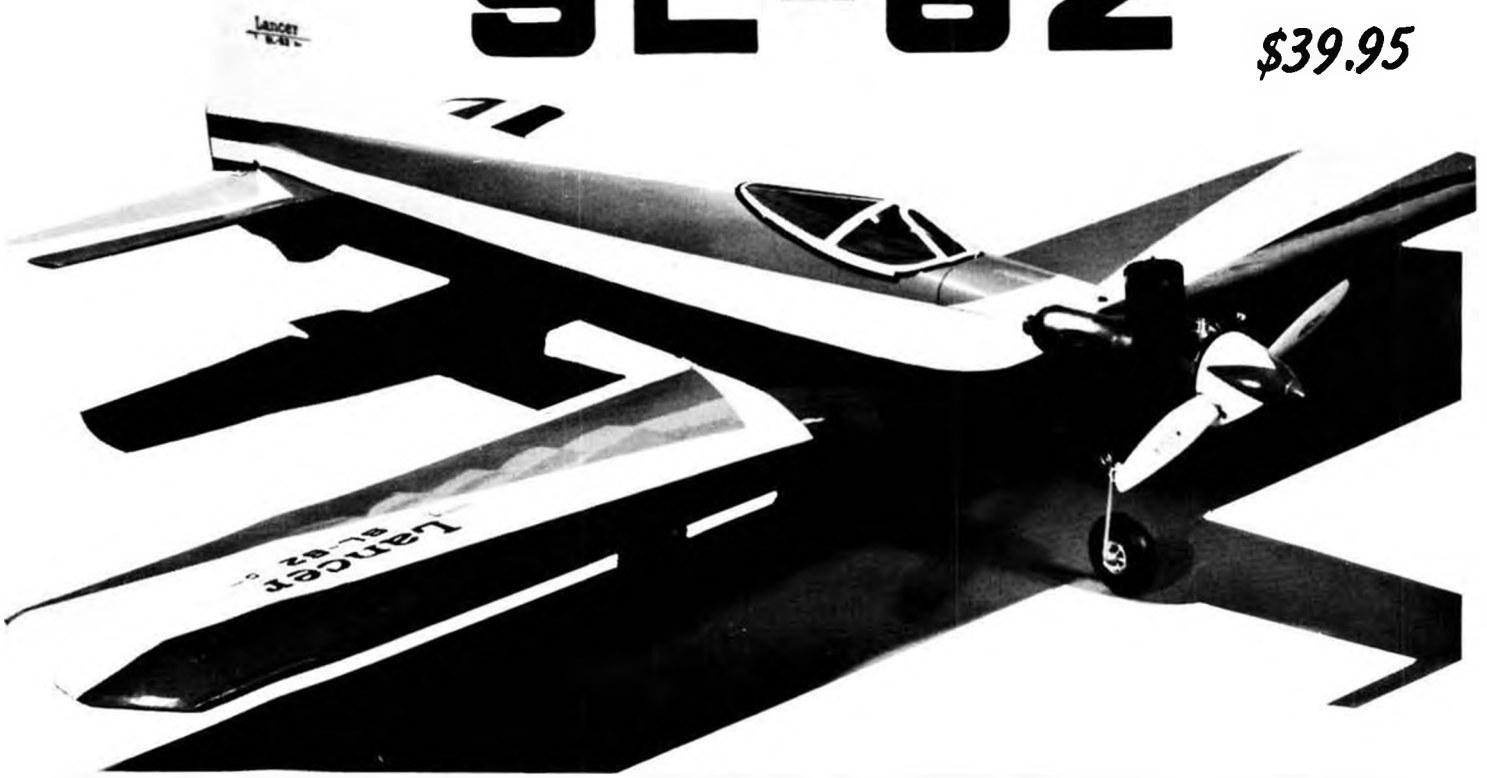
On second thought, maybe we better call the 49er a one-evening project. Please pass the 5-minute epoxy!

Posed or not, it sure looks good "coming in over the fence." Plastic props are available, also semi-finished balsa . . or carve your own.

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 Magnifiicent 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.
- ☐ "Secrets of Model Airplane Building." Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.
- ☐ "Secrets of Control Line and Carrier Flying." Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed. No checks. Only U.S. money orders or currency accepted.

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Take a Good Look at These.....

Fabulously-Authentic Super-Detailed "Stick Model" Kits

THEY'RE FAMOUS

Piper Cub Super Cruiser is a classic 3-passenger light plane of the forties, and an old time modeler's favorite. • 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 CO_2 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.

SPAN 35½"
SCALE 1"=1'.0"

KIT E-6 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
12 Pack — 16 lbs.

THEY'RE AT YOUR DEALER

GET OVER AND SEE THEM NOW . . . BUY ALL THREE

STERLING MODELS, PHILADELPHIA, PA. 19144 USA

Stahlwerk . . . *Continued from page 31*

opening and the step hole were simulated on the model with black tissue and the fuselage was given a second coat of dope.

Details such as the india ink control surface outlines, the engine cylinders and the louvres are added next. The cabane struts and the landing gear struts are made of one thirty second ply. This is two layers of sixty fourth ply laminated. Install the wire landing gear strut first, then build up the wood struts to match the plans. Note that the wood struts are not cemented to the wire ones and thus do not support the airplane. The wire can therefore spring under load and absorb the shock.

The cabane struts are installed by notching the top coaming to take them. After they are dry, cut a small V notch in the center of the wing where they will attach and cement the wing in place. Block the wing tips in the proper position and cut the main wing struts to length from one eighth wide strips of sixty-fourth ply and cement them in place. Install the tail and the wheels and then the propeller. The model is now complete except for the control wire and tail brace details.

Cut the control horns from little scraps of ply. Poke pin holes in the tissue where the wires penetrate and cement the ends of the monofiliment line in place. When these are dry, cement the other ends to the control horns. The same technique is followed for the tail brace wire. Make sure there is a dry drop of cement everywhere the line penetrates the tissue. You can now tighten the wires by holding the model over a source of heat. I use a burner of the kitchen stove for my heat source, and I always hold a hand between the flames and my model to make sure I don't eliminate the model at this point!

A single loop of one eighth flat rubber is adequate power. ●

Hannan . . . . *Continued from page 28*

ution," "Miss Los Angeles," Travel Air "Mystery Ship," and Roscoe Turner's Wedell-Williams.

GLIDER

Oddly, quite a number of readers left this category blank. Evidently gliders do not command the interest of "regular" aircraft. Perhaps the future will reflect a change in this attitude.

1. Minimoa
2. Tie between Schweizer products and Fournier RF-4 (purists might object to the later machine being included since it is powered.)
3. Bowlus products Albatross and Baby Albatross. Other types singled out for mention included the Northrop Primary, the 1922 Fokker biplane glider, Cirrus, Caproni A2J, Diamont, Bergfalke, Waco Troop Glider and the Hamilcar.

WORLD WAR II

Lots of varigated opinions in this class, but a pronounced victory for the leader:

1. North American "Mustang"
2. Lockheed P-38
3. Tie, Grumman F4F "Wildcat" and Supermarine "Spitfire." Other nominations included the Russian I-16, Hawker "Hurricane," Curtiss P-40, Douglas C-47, Boeing B17, Fairchild PT-19, Northrop P-61 and FW190-D

POSTWAR

Interesting mixture in these results between civilian and military A/C.

1. Stolp "Starduster"
2. North American F-86
3. Lockheed products. "Connie," U-2, C5A.
4. Boeing products. B-47, 737 and 747. Also-rans included the Citabria, Bede 5, Bellanca "Viking," Piper "Tri-Pacer," Northrop YB-49 Flying Wing, Westland Wyvern, B-36, Pilatus Turbo-Porter, Puffin (Man-Powered)

Reader comments were amusing:

"Lockheed C5A (Kept Perryman at work in Atlanta!)"

"Skip this group, they're nothing but guided missiles."

MODEL

We anticipated difficulties in arriving at a single favorite in this group, especially considering that more models have been constructed over the years than real aircraft. Nostalgia seems to be the dominant factor in our reader choices but some of the newer models also received votes.

1. Comet products. Sailplane, Zipper, Clipper, Intercepter, and Sparkie
2. Cleveland "Playboy"
3. "Ugly Stick"
4. "Aeromaster"

Others receiving favorable mention included the AMLA R.O.G., (sort of dates the audience, eh?), "Zombie," "Miss America," "New Ruler," the ORIGINAL Thermic 18, Korda "1939 Wakefield Winner," "Lucky Lindy," "Harbinger" A/2, Scientific "Flea," " Starduster, " Veco "Smoothie," Proctor's "Antic," "Flash" HLG, "Taurus," and Fliteglass Schweizer. So there you have it, gang. And to those of you who don't see your favorites but didn't vote, there is always next time. Maybe.

* * *

Mr. Ken Miller of Australia reports an effective method of adding subtle coloring to lightweight scale models. The model is covered with regular white tissue, but the covering is shrunk with a mixture of Pelikan brand plaka poster color, well diluted with water. A splendid "vintage" effect can be obtained with a mix of white, lemon yellow and brown.

* * *

Yet another good idea on tissue treatment, was sent in by Lloyd Wood, of Florissant, Missouri, who suggests using RIT brand dye to color white Japanese tissue. Lloyd mounts the tissue on a frame, and shrinks it with a solution

consisting of 1/3 box dye to 8 ounces of water. After drying, a single coat of Sig "Lite Coat" clear dope is applied, while the tissue is still on the frame. Lloyd then lightly sands the tissue with 600 sandpaper and applies it to the model.

* * *

Peanut Scale enthusiasts might consider the various "premiums" offered by the Planters Company for use as prizes in contests. Among the offerings we've seen, are pencils, banks, spoons, and even wrist watches bearing the "Mr. Peanut" logo. The Las Vegas Vultures model club even makes special badges for their Peanut Scale contests, by pouring epoxy inside the plastic lids furnished with cans of Planters nuts. Flightmaster Joel Rieman discovered that Mr. Peanut has also been offered in the form of a Peanut Butter making machine for kids, and the colorful plastic gadget stands almost a foot and a half tall. Check Planters Peanut bags for the company address.

* * *

In California, for an extra fee of $25, a motorist may order a special license plate with the wording of his choice. Some obtain their initials, last name, etc. But the one that caught our fancy during a recent contest at Sepulveda Basin said: "GO FLY I"●

Free-Flight . . *Continued from page 13*
splendid old timer kits . . .

MICRO MODELS of Covina California has a line of old timer kits that will absolutely amaze you when you pop the lid. The ribs are all drum sanded, as are all the formers and wing & stab outlines. The wood is very excellent CONTEST quality. The plans are full size and in detail. We bought their kit of the 1938 MERCURY, and .020 Replica, because it looked so perfect.

Editors Note: Here are two more O.T. Suppliers. Cal Aero-Model, 7142 Bluesails Dr., Huntington Beach, CA 92647 (It's Bob Oslan, guys.) Is producing .020 Replicas of the 1940 So-Long and 1942 Brooklyn Dodger. Try your dealer first.

The second, is Hobbies Unlimited, 23262 S.E. 57th St., Route No. 3, Issaquah, Washington 98027. Owner Tom Cope is offering a complete kit for Henry Struck's 1940 "New Ruler." Construction set includes rolled full size plans, precision hand cut parts, authentic old-timer metal engine mounts, etc. Price is $29.95, postage paid.

The New Ruler is 6 foot span, and can be powered by any of the old ignition reliables, or glow engines of about .35 displacement.●

FAI . . . . . . *Continued from page 15*
what happened to them, here it is.

Labor day weekend, Sept. 3, Saturday, contestants started arriving at Taft and soon there was a good group at the motel pool. Along about 3 p.m., everybody headed for the field to do some testing and get ready for the fly off. (Special events were held Saturday, including fly-offs in Wakefield, Nordic and Power, in which contestants started right into fly-off rounds without the preceding series of maxs.)

A mild front to the south and west had caused a wind of about 10 mph which is higher than usual for Taft. There were a few high scattered clouds of about 70 percent coverage, and temperature was about 90 degrees.

The Wakefield flyoff started at 4:00. Three competitors; Val Sidlauskis, Irv Aker and Jim Quinn all made 4 minutes. Bob White was up good but went OOS at 222 sec. In the next round Val won with 250 sec. over Irv's 228 secs. Great flying!

Nordic fly-off started at 5:00. At the signal, ships had to be in the air within 4 minutes. Ghio was first to go; Hartill and Livotto followed within 25 seconds. There was lift, but Ghio was only on the

edge of it and was short of 4 minutes with 213 secs. Livotto and Hartill both DT'd from altitude. Juan took his eyes off his ship in the chase and lost track of it. No one else maxed so we called it a draw and later helped look for the lost Nordic.

The FAI power flyers were out twiddling their needle valves and DT'ing under power, trying to appear casual about it all. But they couldn't be interested in a fly-off. Perhaps it was the thought of figuring out where to set their timers for the reduced engine runs.

The model retrieval race (the race rules were that you had to carry a simulated model, made out of pine boards, around a short course marked by flags. Mounted on the simulated model was a receptacle for a water-filled paper cup. The water level was measured before and after the race and the score adjusted accordingly.) Andy Faykun posted a good time on his ATC 90, only to be beaten out by Brian Hartill who borrowed Andy's trike. Russel Hartill thought he had a great idea. He tried to carry the water in his mouth but could not keep a straight face. George Barhman moved real fast on his "Pachyderm Special" bike but suffered total ignition failure at the first turn. Eventual winner was Billy Hartill with a real smooth race.

After dinner that night a hospitality room (two adjoining rooms) was opened at the Topper Motel and wall to wall people enjoyed the refreshments, conversation, Olympic Sports on two TV sets and a slide show in the patio of action at Caddo Mills and the F/F World Champs in Sweden.

Most people finally got some sleep and it was back to the field the next morning for the main event; seven rounds of one hour each, starting at 8 a.m. Following are some of the highlights. First, the weather turned out better than the day before; very little wind, and hot, but not oppressively hot.

In the first round of Wakefield, there were only 4 maxes out of 9 flights. This seemed rather surprising in view of the good weather and generally high Wakefield standards. Apparently the good solid morning air had already separated into ups and downs and the contestants hadn't broken out their scientific thermal detecting gear.

The second round was even more of a surprise . . . only one max . . . that by Dick Gildersleeve flying his all-sheet, high aspect ratio ship. Third round wasn't much better, and then things picked up in the fourth and fifth. Jim Quinn had moved into 1st place and stayed there, followed by Bob White. Gildersleeve, Faykun and Ghio tossed third place around for awhile with Dick G. locking onto it. The seventh (last) round saw 5 maxes out of 5 remaining competitors. Looks like they really started to get serious at the end.

There were 15 entries in Nordic; including Billy Hartill (a senior) proxy flying his Dad's Tuggy Buzzard, and Russell Hartill (a senior) proxy flying Dave Linstrum's "Floridian."

Two more seniors, Brian Van Nest and Marty Thompson were flying, and one junior, Floyd Aker, battled it out to the end.

These young fliers did a terrific job, with Brian Van Nest coming in First, with 7 maxs. His Dad, Bob, followed in second, dropping 16 seconds in the first round. Ed Wogulis was right behind in 3rd, dropping 20 seconds in the first round.

In the first round Billy Hartill, proxy flying his dad's Tuggy Buzzard, was short of a max by 14 seconds, the highest non-max time of the round. Russell Hartill did a great job flying Dave Linstrum's proxy entry. Russell was unfamiliar with the ship, a "Floridian," and was plagued by some unfortunate breakage. But he still managed to get three maxs and a 175 (Jim Patterson set the fuse too short, sorry Dave.) These proxentries were a lot of fun, and we hope more can be encouraged next year.

Dennis Mihora had some beautiful high aspect ratio ships finished nicely in transparent red Monokote. He has been doing a lot of work with turbulators and aerodynamic refinements. Some day he will come up with the ultimate solution and we can all copy it.

FAI Power saw a very high standard of flying. These ships are not exactly forgiving. One mistake and that's it. Earl Thompson won with 7 maxs, using his Top Cat in the first two rounds and his Tom Cat for the following five. Top Cat is his calm air ship, using a full tapered, built up wing, tissue covered. The Tom Cat is the ship that he used at Caddo Mills. It is all sheet covered and flies better in average air. Earl's engines were sounding very good and his climb pattern was excellent.

Dave Parsons dropped a few seconds in two rounds and then hung in for 2nd spot.

Doug Galbreath came out of partial retirement to have at it again and showed that he still can show these young upstarts what FAI power is all about. He also carefully selected a couple of downers to give everybody else a

break!

Ken Oliver came on strong, but also found a couple of holes. Sometimes you wonder about Taft being such a terrific place to fly. It has downdrafts just like anywhere else, and sometimes it seems we have more of them. Tom Hutchinson appeared to be trimming his "Burritto Bomber," trying to figure out what he had at Caddo Mills.

Livotto had a new ship that looked like a Vela design and it flew quite well. However, the ST up front sounded so-so, which just isn't enough these days. *(Yes Bill, the design that Livotto was flying is one of my "family." This one is the "Lipstick MK 5." After the CIAM banned nitro, I designed this ship with the diesels in mind, the "Etta" in particular. The project was dropped due to many problems, but the design was flown very successfully with Tigers. Doug King, Bob Orth, Sandy North, as well as your reporter, flew this design for two seasons with good results.*

In the case of Livotto's version, I redesigned it for V.I.T. operation by merely moving the rudder to the rear to facilitate the V.I.T. installation. I have my doubts if it should be flown with a Rossi. Al Vela.)

Van Nest figured it just wasn't his day and the ship decided to prove that conclusively in the third round.

Next year we expect to have more entries, including a lot more proxy contestants. Start planning now. Date will be sometime after the Semi-finals. ●

C/L . . . . . *Continued from page 16*
isn't bad since SIG prices are lower than the other's to start with.

Grading balsa takes longer than cutting it. For example, balsa to be sawed comes from Equador in blocks that average 3 inches square. The grain of sheets that come from the blocks depends on which way the block is sawed, but many times the block is warped or rough on one side, so to minimize the waste of cleaning up the bad side, it is cut regardless of the grain. The mills in Equador also charge more for grading and packaging extra light balsa since it is scarce and takes more labor to select and store separately. Some kit manufacturers go ahead and select the right grain and order light balsa from the mills, but you pay for it and they usually manufacture freeflight kits on a short run basis, rather than ukie kits, since the ukie customers are not as critical and hate to pay extra for the quality, supposedly.

Anyway, the accompanying diagram shows how the different grain patterns result. Balsa sheets cut along A-A will have a smooth, even color with long straight grain lines. It is excellent for any area where the sheeting must be curved, as in leading edge planking. Pick a sheet of "A" grain 1/16 and see how easily it can be rolled into a curved shape. Since this cut was made to include as much of the annular growth ring of the tree as possible, it was all growing at pretty much the same time and it will be consistent in texture and weight from edge to edge. You see, the weight of the balsa is dependent on the amount of rainfall in a given growth year, and since this varies, one tree may have many different weights of balsa depending on which annular ring is being cut. The problem with "A" grain; it is too flexible when used on rudders, stabs and elevators and flaps, making it warp prone.

Sheets cut along C--C are very rigid and have a scallopy, marbled surface texture. Try to wrap them around a curved surface and you have a crack. "C" grain should be used for ribs, trailing edges, flaps, rudders, stabs and elevators. Sheets cut along B--B are the most common and can be used anywhere that pure "A" or "C" grain are not called for, such as, fuselage sides, or blocks to be carved.

When it comes to weight, balsa is measured in pounds per cubic foot. Extremely light balsa is 3.8-5.5 lbs./cu. ft. It is also very rare and weak for average modeling uses. Indoor flyers and competition freeflighters hoard this stuff like gold. More common is the 5.6-8.0 range, but you still see very little of this in kits or in the balsa racks. I build most of my airplanes with 5.6-8.0 balsa since it offers a nice compromise between lightness and strength. Balsa in the 8.1-10.0 range is fairly common and should be used for high stress areas, such as profile fuselages, leading edges, trailing edges, and big spars. Small spars and super high stress parts such as Goodyear fuselages should be made of very hard wood in the 12-15 pound range. This wood is tough to mark with a fingernail and is very resilient. Of course, it's also lots of fun to cut too! One of the joys of working with light balsa is that it cuts and sands easily, besides giving a better airplane.

Of course, if you are creating your own airplane, you can design around the balsa grades you have available. For example, an elevator on a big profile stunt-

er could be fairly hard 1/8 "C" stock or light 1/4 sheet and still come out weighing about the same. It's always better to use the thicker, lighter size, from a strength and aerodynamic standpoint, if the wood is available. It will be more rigid (less flutter) and, when airfoiled, will be more streamlined. I usually design my own stuff to use light rib wood that is slightly over 1/16 thick, rather than medium weight wood that is right on 1/16. Gives a lot better wing. Of course, you can do this when you own your own kit business and you have thousands of board feet of balsa to pick from, but it is feasible for you to substitute light 3/32 for heavy 1/16 next time you have a chance.

How do you get the balsa you want? Ask your dealer to let you know when he gets a fresh shipment of balsa in, and be the first one there. Select carefully and buy more than you think you can possibly use. A light piece of "C" grain balsa is always worth having whether you need it immediately or not. You should also be careful in picking kits. Usually, a dealer stocks several of the kit you want. Pick the one with the best wood, or even better, if you really know your dealer well, and you have the nerve, ask him to let you switch pieces between kits. Wood selection is an important aspect of successful modeling. The top flyers usually go to great lengths to get the wood they want, but just a little extra care will pay off even for the sport flyer.

MCFARLAND'S AKROBAT

How about an airplane that can fly either ukie or R/C stunt? Lew McFarland's Akromaster (accompanying photo) has been flown both ways! The same airplane does either, just switch on transmitter, or connect the control-lines. Its credentials as a ukie stunter were proven at the '72 Nats, where Lew took fourth place. It sports a Webra 40 and is held by Lew's son Steve. The Akromaster is Lew's first departure from his famous Shark 45 design, and, before that, the Ruffy, both of which are well known kits. I think Akromaster plans are available from X-Cell Models, 504-1/2 Euclid Ave, Lexington, Kentucky 40502. ●

R/C Cars . . . . *Continued from page 42*

able to disconnect the linkage at the steering servo and, with the front wheels off of the ground, the wheels should turn from full left lock to full right lock with absolutely no bind . . . not the slightest! This is also true of your throttle/brake linkage. Chuck used a Thorp servo-saver on his car, which is a good unit. Delta also makes the same type in a more heavy duty model. Either one of these is recommended. The main control linkage from the bellcrank goes to left front wheel because this one does most of the controlling of a road race car.

Photo No. 7. A stock Veco 19 engine is used with a Nor/Kar heat sink and exhaust. Chuck made his own engine mount from aluminum in order to make a stiffer mount with better heat transfer to the chassis. A high gear ratio of 4.2 is used to give good fuel economy and also to make the car smoother on acceleration and thereby easier to drive. A Curtis drill blank axle is used and installed in ball bearings in the rear axle "L" brackets. Ball bearings are also a must in the clutch assembly. The fuel overflow tube can be seen along with a rear bumper. Silicone seal is used to mount the carburetor, which prevents any air leaks and assures a smooth, reliable idle.

Photo No. 8. The radio receiver is mounted on the left-hand pod. Chuck made a plastic container and then mounted the receiver, in foam, inside the plastic box. This effectively shock mounts the receiver and also keeps it clean from oil and dirt. The box lid can be opened for easy crystal replacement. Most radios now come with interchangeable crystals, so if you have not acquired your new radio yet, make sure that you specify that it have changeable crystals. Rechargeable nickle-cadmium batteries is another feature that you'll want. The excess wire leads should be carefully positioned and taped so they don't move around and become caught in the servo linkage or drag on the ground and become disconnected.

Photo No. 9. The completed chassis, with body and wing, weighs 5 lbs. 1 oz. The R.O.A.R. minimum allowable weight is 5 lbs., and Chuck feels that for optimum performance from the engine, including acceleration, fuel consumption and braking; and for the body with air control devices to be most effective, he wants his car to be right at 5 lbs. The Associated car is designed to be a perfect handling machine and yet to be as simply constructed as possible to eliminate any unnecessary frills which only cause trouble. Chuck has proven that the car does what it was designed to do. And by following Chuck's advice you too can be a champion. But don't forget – even champions need practice. ●

Pylon . . . . . *Continued from page 37*

The problem which occurs with this method, and one which must be dealt with in any fairing, is that excessive force on the landing gear is not entirely absorbed by the torsion action, so the wire tends to bend. Since the fairing is installed when the wire is straight, any fairing which is attached to the entire length of the landing gear is bound to crack and come loose when the wire bends to a curve. Most of this bending occurs at the top of the wire, closest to where it enters the airframe. This is where our fairings would always begin to break.

In addition, the epoxy would always seem to break loose along the entire length of the wire and the fairing would just rotate freely around the landing gear. When this happens, the fairing is probably creating more drag flapping in the breeze than just a bare wire does!

Our next attempt at fairings eliminated this rotation problem. We first ground down a flat spot on the back of the wire before epoxying the balsa in place. This keyed the fairing into place and even if the epoxy broke loose from the wire, the fairing still would not rotate.

Since our first method left a rather blunt leading edge on the fairing, we also glued a 1/2 inch strip of balsa to the front of the wire and sanded it down to a sharp edge. This was also covered with fiberglass and formed a very clean fairing, but again this also cracked at the top on a rough landing.

Terry Prather recommended that we use .015 inch ABS plastic for our fairings. This is a very quick method, but it too had problems. We cut the inner and outer sides of the fairing out of the plastic sheet and glued the leading edges together with acetone in the form of a V. The bottom one-third of the landing gear wire was then very liberally coated with a 5-minute epoxy, the plastic fairing was placed over the wire, and the trailing edges were brought together and glued with acetone. Clothes pins were used to keep the T.E. together while everything dried. It's important that the fairing be adjusted at this time so that they are as close as possible to 0° incidence to the airflow.

These plastic fairings proved to be too brittle and their main weakness occured when the landing gear had to be grabbed by the hand and bent forward to return them to their normal position. The leading and trailing edges seemed to be constantly unglued since the bond formed by the acetone was not strong enough. The fairings did not crack when the wire bent, however, as they were not attached to the landing gear near the top. This enabled the wire to move freely inside the hollow fairing. This feature has been incorporated in all of our most recent methods for fairings.

Another technique I've seen used with the ABS plastic utilizes silicone rubber to fill the inside of the fairing. The silicone rubber absorbs most of the forces exerted on the fairings while still remaining attached to the wire. However, this method also has problems staying together when bending the landing gear forward by hand.

In order to get more strength, we switched to K&S Easy Solder Tin for the fairings. Since I have never been very good at the art of soldering, I have never really liked this method, but once the fairings are made, they never give any problems. I have seen racers totally destroyed in crashes, but their tin fairings were still attached, though somewhat wrinkled.

The tin fairings may be made either in one piece and folded over at the leading edge, or in two pieces and soldered together at both edges. The bottom of the fairing is soldered securely to the bottom one-third of the landing gear wire. The tin is then bent to an airfoil shape and soldered together with the top of the fairing at the edges. The shape of the fairings at the top is important so that the fairing does not hit the airframe when the landing gear is bent forward or backward. Since the fairings must be angled in this area, it is here that the fairings create the most drag. This is another advantage of aluminum gear, since it can be cleanly faired into the airframe.

The one disadvantage of the tin fairings is that it is almost impossible to get a smooth airfoil shape. There always seems to be a ridge where the tin goes over the wire. Because of this, we have tried other methods.

The first begins by again grinding the back of the wire to a flat and epoxying 3/16 inch thick balsa to the front and back of the wire in the shape of the fairing. This is then sanded to an airfoil shape. The inside of the balsa is then cut away beginning half way up the wire (see sketch). The balsa is then coated with epoxy and a 1/64 inch plywood skin is glued on. The top of the fairing is then coated with fiberglass and the leading and trailing edges are sanded to a sharp point. This gives a very smooth fairing which will hold up under all but the most disasterous of circumstances.

This method takes extra time, so to alleviate this we tried another method. This uses two pieces of 1/32 inch plywood, cut to the shape of the fairing. The leading edges are then angled so that when they are epoxied together they form a V shape. When this is dry, the bottom of the wire is coated with a generous mixture of epoxy and microballoons. The plywood is then put over the wire and the trailing edges are epoxied together. When dry, the edges can be sanded sharp and very smooth,

resulting in a quick and durable fairing.

* * *

NOTES FROM ALL OVER

As is shown in the contest results, Kent Nogy now holds the Formula I record with a 1:23.4. What is really phenomenal about this is that 1972 has been Kent's first year of racing! Kent is apparently one of those flyers who seems to have been form with the ability to fly Formula I . . . at Los Alamitos, we were timing how long it took Kent Nogy's plane to fly from the number three to the number one pylon. He averaged 2.5 seconds, which works out to about 164 MPH . . .

In Monroe, So. Carolina in October, Bob Violett did a 1:34.8 in FAI! Everyone who saw Bob fly at the Nats knew his plane was capable of this speed. FAI is definitely not for rookies. It takes a tremendous amount of talent and effort to get a plane to run on FAI fuel (alcohol and methanol only) at these speeds . . .

The NMPRA needs your support. To join, send $10 along with your AMA number to P.O. Box 356, Milpitas, Calif. 95035. A monthly newsletter and participation in district and national championships makes it well worth the money. ●

Pylon/4 . . . . . *Continued from page 39*

about 150 feet between pylons No. 2 and No. 3. Fast times were a few seconds under two minutes and averaged about 2:20. The wide spread between No. 2 and No. 3 caused many cuts as the No. 3 pylon did not come into the pilot's field of vision until he passed it.

There were twenty-seven entries and after four rounds of flying, Tom Melshimer won it, flying his OS powered Cassutt. Bob Novak's "Little Mike" was second. Both Bob and Tom were using Bob Novaks new RS Systems radios. Jack Stafford finished third with his ST powered P-51 and PCS radio.

Jim Kelley was turning in very impressive times with his Tigre powered "Chief Oskosh," but pylon cuts took him from contention. In fact, there were many of us who fell victim to this malady.

Paul White was there with a prototype K&B .15 in one of his beautiful Minnows, but for demonstration only. If the production engines go like that one, I guess we will be ordering new K&B engines as soon as they become available. I had a chance to fly my Tigre powered "El Bandito" against him and although there wasn't as much difference as Paul would have liked, the K&B was faster. Using the same Rev-up series 400, 7 X 6 props and K&B 500 fuel, the K&B was turning 18,000 rpm on the ground, compared to my Tigre's 16,500.

Our thanks to the Drones for the good races and to Don Dombrowski's House of Balsa who donated a Shoestring kit, and to Jack Stafford who donated a P-51 kit for the raffle. ●

CONTEST RESULTS

Fast Club Rookie Race, Mile Square, Calif., Oct. 21.

1. Juan Martinez	Mustang	K&B	1:46.5
2. Tom Christopher	Minnow	K&B	1:54.0
3. Tony Amezcua	Shoestring	K&B	1:56.5
4. Don Powell	Minnow	K&B	1:42.2
5. Jerry Silverman	Shoestring	ST	1:57.8

Bird's Formula I, Los Alamitos NAS, Calif., Oct. 28-29.

1. Kent Nogy	Miss DARA	K&B	1:23.4
2. Chuck Smith	Miss DARA	K&B	1:30.3
3. Bob Smith	Miss DARA	K&B	1:24.3
4. Terry Prather	Minnow	ST	1:23.8
5. Mike Bridges	Miss DALLAS	ST	1:28.2

Quixote . . . . . *Continued from page 10*

area liberally with epoxy. Add the 1/16 inch top sheeting over the root ribs and sand the wing for covering.

Covering; ah yes. Covering. Maybe you've never covered an undercambered wing. Lucky dog! The whole trick is in the sag. Whether you use Monokote or silk, you have to allow a lot of slack in the concave section aft of the lower spar, otherwise the covering tightens up and pulls away from the ribs, transforming your beautiful cambered foil into a 25% thick Clark-Y! You don't want this.

To avoid it, prepare your framework carefully. For Monokote, go over each rib with a damp tack cloth, to be sure you stick to solid wood and not a layer of balsa dust. For silk, give each rib at least two coats of thinned dope, and let dry thoroughly before covering. With both materials, work from leading edge to trailing edge, getting a good stick to the area forward of the lower spar before tackling the concave section. Leave plenty of slack, and hit each rib heavily with a bead of dope (or the iron). Don't seal the trailing edge until things look good in the undercambered section. After this, the top covering is a snap.

The empennage is of conventional construction. If you've gotten this far, you won't need any help with it.

Now a word about holding the wing in place. For tongue-and-box designs

such as this one, almost everyone uses hooks on each panel with a rubber band through the fuselage. You can do it too . . . why be different? Personally, I never use anything but a few coats of dope on the tongues to fatten them up for a tight fit in the boxes. No, I've never lost a wing in the air. I once landed with about 30 degree sweepback in the left panel, but this was my own fault: forgot to preflight the plane, and there was a bad crack in the tongue box structure. If the thought of seeing air between the wing root and fuselage scares you, by all means use the hook-and-rubber device, or balsa cotter keys through the top sheeting and into the wing tongue. Coward!

TOAD . . . . . *Continued from page 24*

One other ruling possibility came out of the first race, but its implications could make it difficult to establish, if the TOAD class were to become a national event: Regarding the front rotary engine rule, it would make the races all the more equal if a specific engine were used. Within a given area or club this might be possible. In Bakersfield, for instance, the BARKS all race with K&B 71 series engines.

Materials used in construction of the TOAD are completely up to the builder. The only requirement is that the finished product must conform to the established one-design outline.

The fuselage may be fiberglass, plastic, wood, concrete, or what have you. However, an engine cowl is not permitted, and the corners may not be rounded more than to a 1/4 inch radius. The landing gear must be mounted on the fuselage and be of flat dural aluminum. A Goldberg Shoestring gear is just right. See the accompanying rules for further specifications.

The plans show a simple plywood fuselage using an inexpensive 3-ply plywood. Sig has a light 3-ply plywood that should be just right. If balsa is used, add some cross pieces to resist buckling.

Construction of the airplane, if built according to the plans presented, is so simple that it needs no description. One suggestion: Don't leave the leading edge of the wing pointed. It makes the plane over-sensitive on elevator. A good, sturdy motor mount is very important in cutting down vibration. Also, a sturdy, well-balanced spinner is important. Makes electric starting easier, too!

One more building hint. Bob Francis suggests it, and it can be used on all types of airplanes, in addition to the TOAD. The idea is to put the framework all together with as good a mechanical fit as possible. Then, brush on a good coat of Francis Products Finishing Resin along all the joints. The result is a strongly glued structure accomplished in considerably less time than with conventional methods.

You might know Bob Francis would suggest something like that!

PROPOSED RULES FOR "TOAD" CLASS RADIO CONTROL PYLON RACING.

September 11, 1972

(Italicized additions suggested by editor)

1. OBJECTIVE: To form a class of pylon racing for the novice and/or the "Sunday" flier competitor that will be in the spirit of aircraft racing as well as challenging for the contestants.

2. GENERAL: All AMA and FCC regulations covering the R/C flier, his plane, and equipment, will be applicable to this event. The contestant will be allowed two entries. He can only use his alternate model if the first model becomes unflyable. Consideration for the safety of spectators, contest personnel, and other contestants is of prime importance. Any unsportsmanlike conduct or hazardous flying will be cause for immediate disqualification of the offending

flight. *(Second disqualification shall be cause for disqualification of flier for remainder of contest.)*

3. MODEL AIRCRAFT REQUIREMENTS AND SPECIFICATIONS:

3.1. FUSELAGE

3.1.1. Outline shall conform to one-design plans.

3.1.2. No engine cowling.

3.1.3. No wing fillets.

3.1.4. Fuselage corners may not be radiused more than 1/4 inch.

3.2. TAIL SURFACES

3.2.1. Fillets allowed for strength.

3.2.2. Steerable tail wheel or steerable skid required.

3.3. WING

3.3.1. Airfoil shall conform to one-design plans in shape and size *(from root to one inch from tip.)*

3.3.2. Minimum wing span shall be 50 inches, including tips.

(Weight limits should be specified)

3.4. LANDING GEAR

3.4.1. Fuselage mounted only

3.4.2. Dural aluminum gear required (Goldberg Shoestring or equal)

3.4.3. No fairing, streamlining, or wheel pants permitted.

3.4.4. Wheels shall be balloon rubber type, 2 1/2 inch diameter minimum.

3.5 ENGINE

3.5.1. Shall be .40 cubic inches maximum. More than 1000 produced. *(Nominal .40?)*

3.5.2. Muffler or silencer required. *(Effective)*

3.5.3. Factory stock with factory stock carburetor. Have method to kill engine on command from transmitter *(Without having to roll inverted)*

3.5.4. No rear rotor engines permitted.

3.5.5. No modified engines, ie., metal and/or parts removed to develop a "speed" engine.

3.5.6. No pressure systems permitted.

3.6. PROPELLER

3.6.1. Shall be stock, standard wood 10X5 only.

3.6.2. No speed props permitted.

3.6.3. Modification limited to removal of wood from one blade only, for balancing purposes.

3.6.4. Two inch spinner allowed. No needle nose spinners permitted.

3.7. FUEL

3.7.1. Ten percent nitro maximum permitted.

3.7.2. Supplying by sponsor is recommended.

3.8. RACING SPECIFICATIONS

3.8.1. NMPRA race course should be used when possible. Variations at sponsors option due to field or safety considerations.

3.8.2. Ten laps following unassisted R.O.G. ●

Heathkit . . . . *Continued from page 21*

making it impossible to change frequency accidently. On the receiver, a separate slide switch controls frequency.

The receiver is about the same size as the larger servo (KPS-11 mechanics) and contains a nine-junction connector block into which the servos and power are directly connected, eliminating a lot of excess cable. Connectors are Joe Martin's Multi-Con type, and are held in place in the receiver by a sprung lip. Miniature (GDA-405-4) or sub-miniature (GDA-505-4) servos are available at the same price.

The transmitter has the dual changer built in for "pumping up" both receiver and transmitter nickle cadmiums. Another outlet is tied into the RF and encoder circuits for the purpose of connecting a Trainer Cable. The cable is wired for "one way" operation, in that which end is plugged into which transmitter automatically makes one the trainer and one the "trainee." A sprung button on the slope-front top of the transmitter case kicks the system in or out.

Building a GDA-405 system is really quite easy. The main requirement is proper attitude. Don't try to hurry and don't, above all, try to anticipate the instructions. It also seems best to not work steadily for more than about two hours at a whack. As we said 5 years ago when describing construction of the GD-47, it is our firm conviction that you will have least trouble in transforming the Heath radio from a pile of parts to a useable control system if you will adopt AOBO, "Attitude Of Blind Obedience." Just read the instructions, do what they tell you, and check off each step as you complete it . . . AOBO.

The transmitter took us about 10 hours to build, test, and adjust, and we can only add a couple of suggestions to the instructions provided. Be extra careful when selecting parts to assemble the stick controls. A couple of the parts are only minutely different and are easy to mix up. When mounting the gimbals, spread them a little to make sure they spring snugly into mounting holes.

When mounting the charging and trainer cable outlets, be careful not to over-tighten the self-tapping screws into the molded plastic case bottom. You

could strip the threads out.

Be especially careful when tightening the set screw for the No. 7 channel control tab. Watch your clearance with the RF circuit board.

The relative output meter is used for tuning the receiver before it is permanently mounted in the transmitter. Instructions say it may be necessary to loosen the mounting bracket in order to slip the meter in place. Problem is that the screw heads have already been covered by the self-sticking panel cover! Try to keep all of this loose until you're ready to "button up."

We forgot to time ourselves on the receiver construction, but physical assembly took two evening sessions. Wiring the switch harness and testing took another evening. The receiver consists of two PC boards, the receiver and the decoder. Components are plugged in and leads are cut off and bent over for additional strength against vibration.

We found that when installing and soldering the connector block in place, it was best to firmly clamp the block to the PC board so it would remain flat after completion.

In all illustrations showing the switch harness, it appeared that the charging cable came from the "ON" end of the switch body, and the receiver and battery cables came from the "OFF" end. As it actually turns out, the receiver cable comes from the "ON" end, and the charging and battery cables come from the "OFF" end. Nothing earth-shaking, but . . .

In our opinion there is only one serious error in the receiver instructions. We discussed this with Heath's product Manager, Bill Hannah, and chances are that a correction will be made. Bill is an R/Cer, and the man who is mainly responsible for the company's decision to market R/C equipment kits.

The instructions regarding tuning of the receiver, using the transmitter meter, are quite clear and accurate, however, they do not indicate that a range check is necessary at this point. The range check does not enter the picture until the system is completed and installed in an airplane. The problem is that the tuning test, if done according to the instructions, will not detect a lack of range. Everything checked perfectly with our unit, and yet we discovered later that due to a faulty component on the RF board, the transmitter was not putting out full strength: antenna collapsed range was about five feet instead of fifty or more. The thing is, we weren't aware of it until after the meter had been permanently installed in the transmitter. Once corrected, the range has been proven to be excellent.

We selected the larger KPS-11 type servo to go with our 53.3/53.4 system. Although the circuit board is small, the I.C. chip reduced the number of components to the point that assembly is less than 2 hours per unit. Construction and centering comes under the popular category known as "straight forward." We built one in order to check out the system and then turned the remaining three over to Hal Okert, who also happened to have an airframe handy for flight test purposes.

Hal's model is a somewhat modified Kaos, a well known design by Joe Bridi. A KPS-11 servo tray holding three across for elevator, rudder/nose wheel, and throttle was installed in the roomy fuselage. Strip aileron servo was also a standard installation.

We were afforded the honor of making the first test hop . . . of both radio and plane. Flying site was a baseball diamond at Cal Tech, about an hour's drive north of Santa Ana.

Ground testing of the system consisted of checking the controls at all engine speeds and then taxiing from the starting point at third base, out around second and back, and then a cross-wind takeoff through the short-stop's normal position. Best compliment we can offer is to say it was "a piece of cake," and we were soon shooting touch-and-go's between first and second base. Control response is "right there," and stick action is smooth and accurate. Although it is a kit designed for the general hobby public, the Heath radio has not been compromised. It's top quality.

We wouldn't hesitate to recommend the Heathkit GDA-405 radio to anyone except possibly an all-thumbs hacker. Even then, if Mr. Hacker managed to get the parts somewhere within reach of each other, one of Heath's service centers would probably get it going for him.

Probably the best feature of all, is the fact that if you're a real model builder, you can extract a great deal of pride in saying, "Yep, built it myself . . . even the radio." No need to tell them how really easy it is . . . ●

Soaring . . . . . *Continued from page 35*

210) 1.9 fps. Maybe lead-sleds are good. If you can keep 'em up.

It would seem rather obvious that most rc sailplanes are going to fit into the general area of performance shown by these examples. One thing for sure. It's going to take one helluva piece of

equipment to do markedly better than L/D of 15.0 with a Vs of less than 2.0 fps.

Next time some clown talks about his supership having an L/D of 20, do a little arithmatic and make up your own mind as to whether he's sick. Give him credit for a 500 foot line release, use 17 mph for speed just to keep it easy, and see what kind of still air duration he needs to get that kind of efficiency. If L/D is 20, then dead-air duration must be L/D X Altitude/Speed (20 X 500/25) which works out to be 6 minutes and 40 seconds (400 seconds), which just ain't bad at all . . . At all. Sink rate for this helium carrier is 1.25 fps.

Wouldn't take any personal checks for over $2.00 from anybody that claimed an L/D of better than 15, either. Let him fly first.

But these are just examples . . using numbers out of the air, so to speak. Try different values . . . make up your own. Chances are as long as you're in the realm of reason (that sounds like the name for a new kingdom at Disneyland) the L/D and Vs you end up with will be about 10-or-so and 2-or-so. Respectfully, of course. Just no way that those values are going to be better than 20 and less than 1. Same sailplane, same weight, same trim. With what we know now.

Maybe we can get some real measurements without much effort. Might even be fun if we don't get carried away with shooting for too much precision in our data. We only need three values for any sailplane under scrutiny: Dead-air Duration, Release Altitude, and Air Speed.

Take Duration first. It may not be the simplest or easiest, but it's the least involved measurement. Pretty well comes down to timing a whole bunch of flights . . . in stable air . . . no-lift/no-sink.

Best conditions for checking dead-air duration could be in the early morning or late in the evening. But don't bank on it. Depends on your locale as well as the conditions of the day. May be that the thing to do is to fly frequently from early till late. Another way would be to keep an account of all your flights for several sessions . . . at different fields, if available. But record at least 15 to 20 flights . . . or more. Discount those that are obviously thermal flights, and those where you really fall out of the sky. Average the balance.

A couple of things to remember when collecting flight duration data. Fly smooth . . . or even better than that, fly smoothly. Stay off of the controls as much as possible. Every time you wiggle a control surface, you increase the drag of your sailplane . . . which means faster sink. Avoid sudden or sharp maneuvers. Make big, gentle turns . . . and only as necessary to stay in the field.

Don't get in a hurry. The bigger the sampling . . . that is, the more flights you record . . . the better chance you have of coming up with meaningful numbers.

Of course, for dead-air duration time to be usable data, the related flight launch altitude must also be known. You'll need help, but about all that's required is a capability to walk while counting the number of steps taken. And write. While standing still.

To make life simple, and have some control over the situation, an Electric Winch with Turn-Around Ring is recommended for launching. Other set ups will probably work, but rather than take the time to discuss different procedures or systems, we'll stick to the Winch and Turn-Around . . . you adjust for your particular arrangement.

Run out about 6-or-700 feet of line. This will give a reasonable launch altitude, and be below some of the stronger thermal action. Remember, you ain't looking for lift on these rides.

Next, calibrate your Helper. That is, check the length of his strides. Have him pace off a measured distance of, say, 100 feet. Very likely a comfortable stride will reach about 3 feet, less 10 per cent. On this basis, 33 plus 3 or 4 strides will probably cover the 100 feet. Or there about. But check, 'cause you need to know. Your Helper must be calibrated because he's going to do some rather important measurements-by-stride in this operation.

One fringe benefit . . . for you, the pilot . . . is that your Helper will also be acting as line retriever. All you gotta do is keep him convinced that it's all in the interest of science. You got it made.

Here's the idea. The amount of string between the ground-anchored Turn-Around Ring and the tow hook on the bottom of your plane is a convenient, direct and usable measurement of your release altitude, provided that you release over or nearly over the Turn-Around Ring. By extending the line that dropped from the tow hook . . . without unreeling more from the winch

drum . . . and pacing it off with "calibrated" strides, a fairly accurate altitude can be calculated.

Here's how it works. The Helper is stationed out at the Turn-Around Ring. You launch. Try not to drift with any crosswind that may be puffing around. Hopefully, there's not much. Under ideal conditions, the flag should drop very close to the ground line running back to the winch. As you approach release height, slow the winch so as to "float" off the line. 'Tis the Helper's job to note where you came off . . . what angle "up" . . . in relation to the ground. For best measurements, you should be dropping the line at 80-plus degrees . . . almost or even directly above the Turn-Around Ring.

Your Helper should let you know when your launches look about right. He's out there and can judge better than you . . . so let him help. It'll make him feel important . . . and, remember, he's retrieving the line.

Once the line is released, the Helper starts for the downed flag, walking straight along the ground line, and counting strides from the Turn-Around Ring. He picks up the flag, and continues walking toward the winch . . . still counting . . . until the launch line becomes taut. He should be able to feel the drag of the winch drum turning when slack is out of the line. At this point, he stops and records the number of strides he has taken.

If the flag and launch line have drifted, the Helper should bring the flag over near the ground line, and then go back and start pacing off the distance from the Turn-Around. Can't have him milling around all over the field, counting all the while. He's a calibrated measuring device.

Assume that all went well, and that the Helper's strides worked out about as above . . . say 36 per hundred feet. Further, assume that he counts off 87 paces. How high was the launch.

Right away we know that it was more than 200 feet . . . 72 (36 X 2) strides. In fact, it was 200 feet plus 15 strides (87 less 72). Now, multiply the 15 strides by 3 feet per each to get 45 feet . . . then subtract 10 percent. This makes the 15 strides equal to 40 feet (45 less 5). Total altitude at release, 240 feet . . . IF release was directly over the Turn-Around Ring.

With just a bit of trigonometry . . . and I mean just a little bit . . . we find that only directly over the Turn-Around Ring can you get full height for the amount of line measure. Brilliant. And that Assistant Prof at Texas thought that I didn't understand Trig! Not so. I wanted to go overseas.

At an angle, ya got out more string than you get in release altitude. At 80 degrees . . . 10 degrees off vertical, you're getting about 98 per cent. That is, altitude at release is about 2 per cent less than measured line length. Not worth worrying about. Probably closer than your calibrated measuring device.

At 70 degrees . . . 20 degrees off vertical, you're getting 94 per cent . . . losing about 6 feet per hundred. About 2 strides worth. Not good. But at 60 degrees . . . 30 degrees off vertical . . . you're only realizing about 87 per cent of line length in launch altitude. So try to hold to 80 degrees or better . . . and don't drift sideways. No provision or correction is included for side angles. Figure 1 shows the relative launch altitudes versus release angle.

Enough of the scientific stuff.

Data for each launch . . . once you are groovin' on the release point . . . should be recorded for release angle . . . go or no-go for 80 degrees or better . . . for flight duration, and for line length at time of release. Flight time doesn't mean a thing in these performance trials if you don't know how far your sailplane fell.

So now that dead-air duration time and release altitude are known, all that's needed is a fix . . . you're pardoning the expression . . . on air speed.

Speed recordings will also take help . . . and a modest set up of equipment. But it shouldn't be too difficult to check. The major needs are a tape measure, such as used to calibrate your Helper . . . at least 25 feet long, and 50 or 100 would be better . . . a few poles or "sighting stakes," a stop watch, and at least one honest friend. Two would be better. That may be asking too much, but try . . . for science.

With the measuring tape and poles, set up a course . . . or "timing trap" if you want to sound jazzy . . . similar to the one shown in Figure 2. The actual layout can vary with your field, but a flight path directly in line with the wind is best. With this setup, you'll have to fly the course in each direction and then average the times to calculate speed for each flight, but at least you won't have to "crab" to stay on course . . . as if the layout were crosswind. But whatever the arrangement, no-wind conditions are desired . . . though seldom available.

The gates on your course . . . that is, the course length . . . should provide as much run as possible. Look at it this way. The validity of your measurements will depend on the accuracy of the stop watch used, the accuracy of the course layout, and the accuracy of the "start-Stop" sightings. If your watch reads in fifths of a second . . . as it probably does . . . timing accuracy can be little better than plus-or-minus one-tenth second. That's interpolating actual time to the nearest one-fifth second mark on the watch. If it takes only 10 seconds to fly the course, then divide 0.10 by 10 and you get one per cent accuracy which means an error of as

much as 0.15 mph at a speed of 15 mph.

Now, stretch the course to where it'll take around 20 seconds to fly through. All else being equal, accuracy has increased to 0.5 per cent . . . 0.075 mph at 15 mph. Quite acceptable, and certainly not the governing element in the total accuracy of your speed measurements.

Assuming that a 15 mph (22 fps) flight speed is a reasonable expectation, set the course with gates 400-or-so feet apart. Keep written records of all flights. Make an upwind and downwind pass on each, so as to get a true, average speed. As with Duration, record a whole bunch of data . . . the more the better and the more realistic your final performance measurements will be. And that's the whole idea.

Obviously, launch altitude is of no significance on speed runs . . . at least not from a measurement standpoint. Just get high enough so that passes over the course can be made without pressing. You're looking for normal flying speed, which requires an unhurried entry and leisure turn around for the trip back through the gates.

The math to convert time to speed isn't too heady. Divide Distance (D), in feet, by Time (T), in seconds, to get feet per second. Multiply this by 0.6818 to get miles per hour. MPH is 0.6818 D/T.

Now for the "honest friend" bit, and why two are best. Their task is to sight across the poles and judge when the sailplane passes a gate . . . at whatever altitude. Attention and care will be required to get accurate sightings, and it is this business that will most likely introduce gross errors in your measurements. Take the time to work out the techniques with your crew.

One guy has the watch . . . he's the Timer. The other has a flag . . . he's the Flagman. If a flag isn't available, use a hankie. In this case, the guy with the hankie is . . . well, he's your friend, that's what he is. Call him whatever you like . . . and can get away with.

So, the Flagman . . . or Hankie Guy . . . makes a signal when the sailplane passes his gate. The Timer does his thing with the stop watch down at the other gate. He also keeps the records. If you don't have two friends, forget about the Hankie Guy and act as your own flagman. But it'll work better with two. You should concentrate on flying.

Here again, the trick is to fly smoothly . . . and as straight as possible. Tap the rudder to stay on course, but keep off the elevator. Remember, the elevator is a sailplane's speed control device. It is for power planes, too, but we won't go into that. Try and travel a straight course for a spell to stabilize speed before starting any timed pass. A steep turn dumps altitude and increases speed. Make big, easy turns if you're close to entering or re-entering the course.

And that's it. Hardly pin-point accuracy, and thermal sensors and optical measuring devices would be a step up. But with any data at all, crude as it may be, you can develop some rather revealing characteristics about your own sailplane . . . and pretty well know when somebody else is playing with numbers instead of facts. Blowing smoke, so to speak. Besides, you can be the first kid on your block to have any real knowledge of R/C sailplane performance.

A couple of sidelights. Might be of interest to fly tests with your machine ballasted to different wing loadings. The heavier the faster . . . but perhaps the more efficient with better L/D, though maybe with greater sink rate. Then again, maybe not. So try and find out. Check performance with different trims, too . . . both aerodynamically and CG position. No telling what you may discover. And it might even be as much fun as just driving around the sky all day . . . Again.

If you really want to get sneaky, check your competitor's . . . and/or Old Flying Buddy's . . . launch altitudes and performance. All ya gotta do is to be a "friend" and retrieve his line for him a few times. After all, what are friends for? Or if you feel that being devious in that way might not be in the true spirit of sportsmanship . . . or if you don't particularly want to be friends with your competition . . . then retrieve the line just as a matter of "doing your part." Who's to know that you've taken note of the angle of release, and that you're pacing off the amount of line used to launch . . . and that there's a stop watch ticking away in your pocket?

A couple of quick calculations . . . easily done in your head, where nobody knows but you . . . and you can pretty well size up his performance. As to his launch technique . . . which is fairly indicative of his overall capability . . . if he's getting less than 40 per cent of total distance from Winch to Turn-Around, he's not much to worry about. But if he's topping 50 and maybe pushing 60 per cent, you better move your hook back and get serious. He's hot.

Just remember, rc soaring is a sport

for gentlemen . . . and ladies. And it doesn't matter how you play the game, the important thing is whether you win or lose. Or something like that.

One more point. The launch release point suggested in this blurb is intended for easy and convenient data measurement. Directly over the Turn-Around Ring is NOT necessarily the optimum release point for maximum altitude when using a winch . . . but we'll talk about that another time.

When you get all this scientific knowledge in your hip pocket, you'll probably discover that Vs min comes at slow flying speeds and L/D at a bit faster. Should you stumble onto a wing sec- that gives the best of both at the same speed, tell no one . . . but call direct. Try 408/246-4359 Your nickel.

. . . That's It . . . ●

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

Nats, so I bought a custom-made ship. This sailplane was made by the Sagami R/C Hobby Shop and is named "Playboy." About six Playboys competed. They are very excellent ships for normal conditions, I think.

Contestants met for a briefing at 8 a.m. at Hakone, a famous sight-seeing place. The mountain where the contest was held is named Kurogatake and has a beautiful grassy slope. I would guess that this is one of the best slopes in the world. We were, however, disappointed in the weather, which was foggy and windy. The wind speed was over 50 feet/min. Sometimes we could not measure the speed, it was so strong. How cold it was, even for August!! The slope site was even more windy. Mr. Isao Hirasawa made a trial flight, and Mr. Misorogi (who makes the Playboy) was about to launch his glider, when suddenly, a strong wind came and he was pushed down, wrecking the ship! Our contestants weren't afraid of the strong wind, but we did not have any radar for the fog, so we waited until 10 o'clock, when the fog disappeared. The contest then started, though it was still windy.

The rules were based on the FAI Slope Soaring Task, but some parts were changed. The flying time was 3 minutes, and then we had to land in 20 seconds in the landing place (100M X 50M). The score was 20 points for a landing bonus and 25 points for each passing.

Many contestants could not fly their gliders smoothly. My starting order was 14th. I got 18 passes (last year's winner had only 16) and a landing bonus in the first round. I thought that I had a chance to get a big trophy. But my dream was shattered. New records were made one after another. The highest score was 25 passes in 3 minutes, made by both Mr. Yamada and Mr. Tajima. Both of their gliders had thin elliptical wings and were painted yellow (which had no relationship to the performance). I could recognize them as gliders, just like Pylon Racers. Anyway, these Pylon Racer-type gliders won 1st and 2nd place. However, since they both had the same score, CD Isobe decided to have them compete with each other. Mr. Yamada launched his pod and boom (aluminum TV antenna) ship. He was really excited . . . too excited. As a result he could not fly in an exact pattern and lost time; he made 37 passes in 5 minutes (we used a 5-minute flight this time). Mr. Tajima started his Leo-V, V-tail glider. He flew precisely and made 41 passes, so he won the 1972 championship.

The day was very windy, so many contestants broke their gliders on landing, Mr. Tajima among them. His ship's fuselage got cracked in the first two rounds. In a panic, he fixed the crack. After he got 1st place with this damaged fuselage, he taped over the crack; then photographers took some pictures of his ship.

We flew only 2 rounds, but got very tired. The contest was really hard-fought. I don't know how high the American slope soaring level is. I hope that some American contestants will join our contest next year and show us. Come to Japan!! ●

Workbench . . . *Continued from page 7*

There will be spectator-selected Best of Show prizes in twelve categories of planes, four of boats, and three of cars. In addition there will be manufacturer's displays of latest equipment, kits and accessories. A banquet will be held on Saturday night with a guest speaker.

For further information write or call Dave Harvey or Bill Bone, 3612 S. 263rd, Kent, Wa. 98031. Phone (206) 852-6583.

"STARTING . . . NOW!"

Phil Kraft has won many trophies in aerobatic competitions, but the Second Place he earned in a recent contest held at the Oceanside Airport has probably given him the biggest thrill. Reason for this is that instead of entering the old reliable Kwik-Fli, Phil was using his new 2-place Pitts, which is flown from the cockpit instead of the ground!

The occasion was the Annual Air

Show, and Phil's first try at full scale aerobatic competition. Cliff Weirick, Kraft Systems V.P., served as caller . . . er . . . pit crew. Many local free-flight, control-line and R/C modelers were on hand to congratulate Phil on his achievement.

Good thing he didn't have to call out maneuvers to the judges before doing them!

* * *

HAS ANYBODY HERE SEEN . . .

Local modeler and ex-pilot of a Waco UPF-7, Bill Barnett, is looking for good 3-views of this pretty biplane. Naturally, such a drawing should include some fuselage cross sections, wing ribs, and sufficiently accurate dimensions and detail to facilitate the creation of model construction plans.

If you can help, please drop us a note, or contact Bill directly, at 2530 Fairway Dr., Costa Mesa, CA 92627

OVER THE COUNTER

JMD Fuel Labs, P.O. Box 235, North Olmsted, Ohio 44070 (216) 777-0570, is producing a new line of glow fuel mixes featuring a synthetic rather than vegetable oil lubricant. Available in four different nitro blends (5, 10, 25, and 35 percent), the mixtures are immediately indentified by the colored can labels. Prices range from $5.80 to $7.10 per gallon FOB plant.

We figure that with a name like Jack Daniels, the owner of JMD just can't hardly go wrong! Wonder if . . . no, it couldn't be.

* * *

Royal Products has two new items for the engine department of your field box. One is an electric fuel pump which is entirely self-contained. Molded of high-impact plastic, the pump bottom encloses two pencells for operation, and a built-in hook permits the case to be hung from the edge of a gallon fuel can. Of course, if you want to build the pump into your field box and take the advantage of increased battery capacity, larger batteries may be wired directly into the pump motor power leads. Price is $9.95.

The second item is a clip-on type starting battery holder, designed to take a "C" size nickle-cadmium or dry cell battery. The arm that hooks onto the plug's centerpost is adjustable in order to accomodate various cylinder head diameters. Price is $1.49.

* * *

We mentioned John Tatone's "Hinge it" tool set several months ago. After numerous unfortunate delays, the handy item is now available. The set consists of a specially shaped knife blade in a wooden handle and an adjustable metal centering guide. Adjustment is for the various thicknesses of surfaces to be hinged. The knife blade is shaped so that it scoops material out of the slot, leaving plenty of room for the hinge and epoxy. Price of the set is $2.95.

* * *

Octura Models has announced two new motor mounts for R/C model power boats; the 60 Multi-mount, and the 4-40 HD. Both are high tensile aluminum extrusions for maximum strength.

The 60 is supplied with end flanges drilled, but motor mounting pads are undrilled. Four 8-32 socket head cap screws are supplied for engine installation. Mount will take .40 through .65 displacement engines.

The 4-40 is similar to the 60, but is for most .40 size engines. Four 6-32 screws are furnished for mounting engine. Price of the 40 mount is $4.25; the 60 mount is $4.95. Add 10 percent if you order by mail from Octura, 8148 N. Milwaukee Ave., Niles, Ill. 60648.

* * *

Carr's Boatyard, 2713 Blaine Dr., Chevy Chase, Maryland, 20015, has many items for the R/C model yachtsman. Claiming to be the only U.S. model yacht sailmaker, the company can furnish 2 ounce white Dacron or 3 ounce white, red, light blue, or gold Dacron sails for the Santa Barbara, East Coast 12-meter, 36/600, West Coast 12-meter, 10 rater, 50/800 (Marblehead), International "A," Hall Meter, and will quote on others. Sails may also be ordered in stripes. Write for quotation and design suggestions. Prices of solid colors are in the 20 to 30 dollar range. Write also for list of boats available.

* * *

How about a Bag of Peanuts? Our indefatigable Peanut Vendor, Walt Mooney, has a bunch of peanuts for you that are guaranteed not to make you fat. In fact, you'll probably get thinner from chasing them!

Walt has assembled a group of Peanut Scale full size plans into a booklet entitled "A Bag of Peanuts." Some of the planes have been published, others have not, but all have been built and flight tested. In addition to the plans, there is a page of photos and a page of general instructions which applies to all.

The booklet is intended to be dismantled in order to use the plans, so basically it's a bunch of 11X17 sheets, stapled together and folded once in the middle for mailing in a 9X12 envelope. There are 14 Peanuts and 2 additional

model plans for a total of 16. Price is $5.00, first class postage and California sales tax paid. Order direct from Walt Mooney, 2912 Cabrillo Mesa Dr., San Diego, CA 92123. Please send check or Money Order.

* * *

Just received a new doodad from Kraft Systems, Inc. Developed by Joe Martin, the 6-piece molded nylon assembly is a non-interacting devise for operating elevons, flaperons or ruddervators from the Kraft 2-channel brick or from two KPS-12 servos. Main feature, of course, is the fact that the device avoids the necessity of sliding one servo, or in the case of the brick, having one output push or pull against a fixed rod, thus moving the whole brick for pitch control. Available in a few weeks, the price will be $3.49. ●

49er . . . . . *Continued from page 45*

Now bead the other edge of the fuselage bottom and add the second side. Pin or weight it and set the whole business aside to dry.

Cut the wing and empennage pieces from medium-weight C-grain 1/16 inch sheet, butt-joining pieces if necessary to get the appropriate widths. Round leading edges and feather trailing edges, using a block and fine sandpaper. Don't lavish hours on this particular operation, because the Forty-Niner has far too much frontal area drag to glide like a contest model anyway: just make everything round and smooth enough to show that you care.

Now for the dihedral breaks. Pin the inner wing panels to the workbench, with a common lead pencil under them at the high point of the airfoil (i.e., parallel to the leading edge and about 2 inches back from it.) Be sure that part of the pencil protrudes out past the outer end of each panel, so that the tip panel, when pinned in place, will rest on it at its high point also. Now fit both tips, getting as close to 2 inches of dihedral in them as possible. The dotted lines on the plans should insure a pretty close fit, but these are strange times we live in, and you may have to cut and trim the pieces a bit for a really neat joint. When the joint looks good, pin and glue the tip panel in place. You'll probably glue the dihedral joint to both the pencil and the workbench in this process, and wish you had put waxed paper or handi-wrap beneath it before you began. I do this every time, and that's why I didn't warn you beforehand. (Unless your workbench is small, you'll want to cut it loose from the plans before test glides. Do so.)

When the tip dihedral joints are dry, join the wing panels directly upon the fuselage, using blocks and bottles and what-have-you to jig the whole plane into proper alignment. My center wing joints are invariable the worst in the county; it's easier to hold a finger over this joint when showing the model to anyone than to make it properly to begin with. However, *you* ought to do better. Oh, yes: glue the stabilizer in place so that it can be drying along with the wing.

While these are drying, tackle the details. Put together a prop shaft, thrust bottom and washers. This is not as easy as it used to be; few hobby shops stock these items anymore. *(Marlow Engineering, see advertisement, has all of this stuff. Contact Len Marlow or get your dealer on the stick.)* Piano wire makes a good prop shaft; a necklace bead epoxied into a large washer makes a satisfactory thrust button; and ordinary dress sequins (available at craft or sewing shops) will pass for washers. Attach the shaft firmly to the prop with a half loop in front. The Star Flyer plastic prop has a built-in freewheeling arrangement, but it is questionable whether it is worth the trouble to make the prop freewheel. The gain in efficiency is negligible.

Build up the rear winding plug from 1/32 ply and 1/8 balsa. Use a reworked paper clip for the rubber hook, and glue or epoxy it firmly in place. DON'T FAIL to slip a piece of spaghetti tubing over both this hook and the section of the prop shaft where the rubber touches it. This simple precaution will double the life of your rubber motors. Incidentally, wire insulation, stripped off carefully in 1 inch lengths, makes great spaghetti tubing.

(Editor's Note: As a young modeler in the 1930's we used to read about spaghetti tubing in the magazines, but the only variety we were familiar with came in a box from the grocery store! Tried unsuccesfully to force the stiff, brittle stuff onto a hook. Even softened some in hot water, put it on the hook, and waited 'till it hardened again. No dice! Gave up and wrapped strips of adhesive tape around the wire.)

Bend the landing gear from 1/16 inch piano wire, making the center bend first and the wheel bend last. Add the wheels and secure them with a drop of solder. (Bending the tip of the wire sharply works almost as well as solder, but takes a little more wire.) When the plane is dry, cover the top of the fuselage with 1/16 inch balsa, glue or epoxy the landing gear in place, and cover it with a patch of gauze for extra strength. Install your rubber motor and you're in business.

HOP-UP DEP'T. The 3/16 inch rubber makes for slow, gentle climbs, especially at less-than-maximum winds. For really spectacular corkscrew climbs, go to 1/4 inch rubber. Try to get genuine Pirelli; it outlasts other rubbers by a wide margin. Sig is a good source for both rubber and propellers. The landing gear is great for R.O.G.'s, but it's really a lot of drag. Take it off to improve the glide. You may have to add compensating weight, but it will at least be more streamlined. (Try a washer glued to the bottom of the fuselage right at the nose.) About now you'll begin to have to worry about thermals, and here you're on your own - I prefer the low-and-slow sport version, myself. Good luck! ●

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Price includes Third Class postage and reprint of building instructions. Add 35 cents for Special Handling, for possible faster delivery. Add 50 cents for orders outside of USA. California residents add 5% sales tax.

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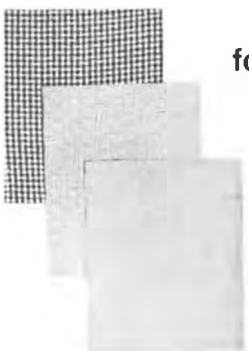
The K&B "MATCHED FINISH SYSTEM"

Every material required to pre-finish and finish your model plane.

The K&B "Matched Finish System" includes all the pre-finish materials such as Resin, Fiberglass, Micro-Balloons Filler, Primer and Clear plus K&B Super Poxy Paint to complete your model with the most beautiful, tough and durable finish available. The entire line is designed to be totally compatible, comprising a "Matched Finish System"... for a model at its best!



K&B FIBERGLASS for fuselage and wing areas

Available in 3 weights—38" wide	LINEAR YD.
#8160—LIGHT ¾ OZ. CLOTH For all wood airplanes—cover 100%.	$2.95
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K & B Volan-A Fiberglass is the highest quality, tough weave fiberglass available and is made especially for use with polyester or epoxy resin. Excellent contouring qualities. Easy to apply to compound curves. White in color it becomes invisible with **one application** of resin.

K&B POLYESTER COATING RESIN

Easily workable:

Minimum Sanding.
Little if any clogging of sandpaper.
Adjust curing time by the amount of catalyst.

Durable:

Does not become brittle.

#8150—1 Qt. including catalyst **$3.95**

K & B Polyester Coating Resin has been developed to include all the characteristics desirable in a resin and its application. For the most favorable results use with K&B Fiberglass as part of the "Matched Finish System."

K&B Micro-Balloons FILLER

One Pint $1.49

When mixed with polyester resin or epoxy glue K&B Micro Balloons Filler, No. 3 in the Pre-finish Group, is unequalled for filling large dings or dents. It, also, may be mixed with lacquer, varnish, paint, or cements to cover small dents or scratches. Again, for best results mix with K&B Polyester Resin. Ideal for fillets, moldings, and special forms where light weight but strength is a must. A glass material, it is impervious to all model solvents. Easy to cut, carve, or sand. Pure white—no dark spots to hide.

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Super Poxy Paint goes on glossy and stays glossy. Mix and use! No waiting time! No hand rubbing. Cures and dries in short time. Sets up quickly (none faster). Unaffected by manufactured fuels and least affected by ultraviolet sun rays.

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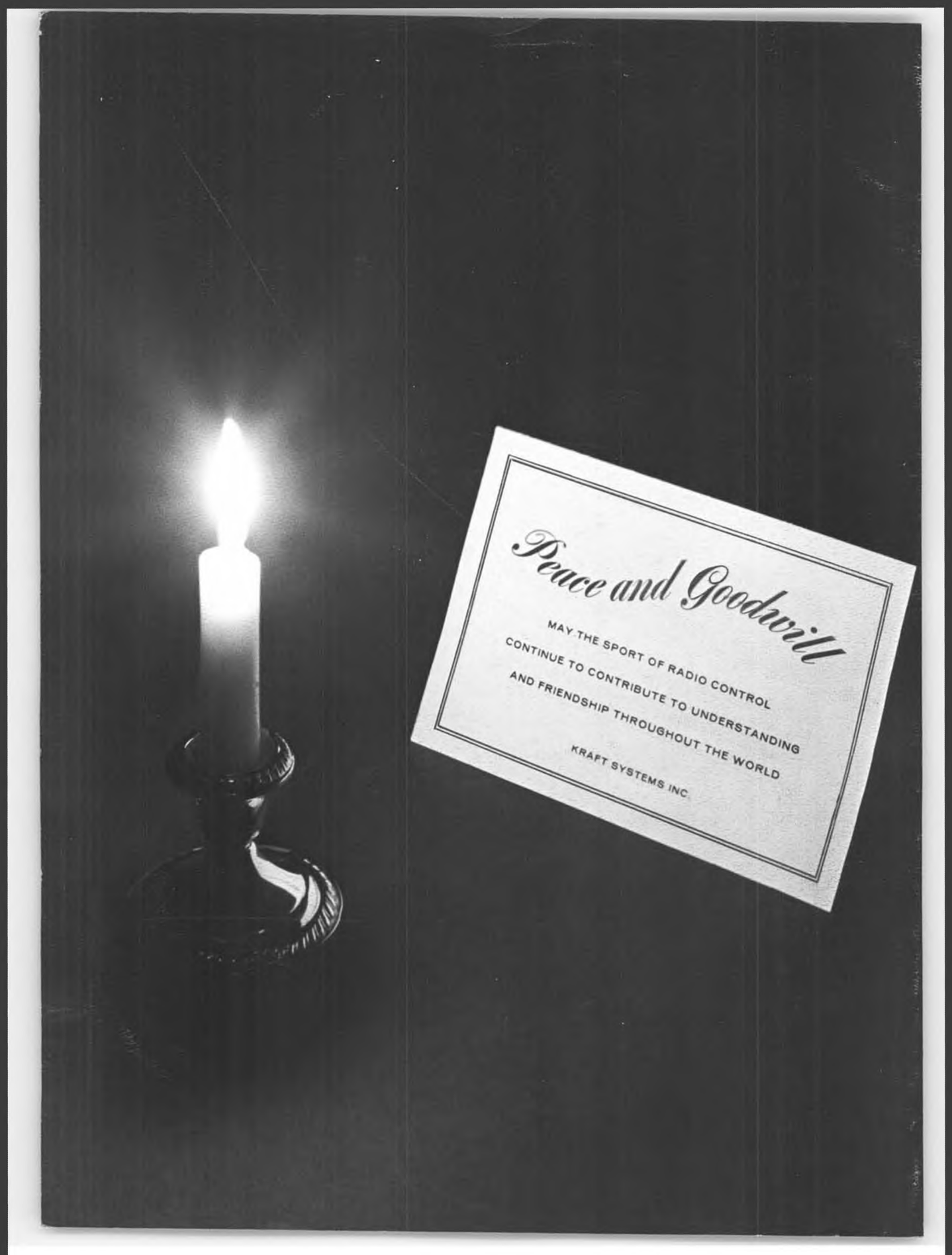
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