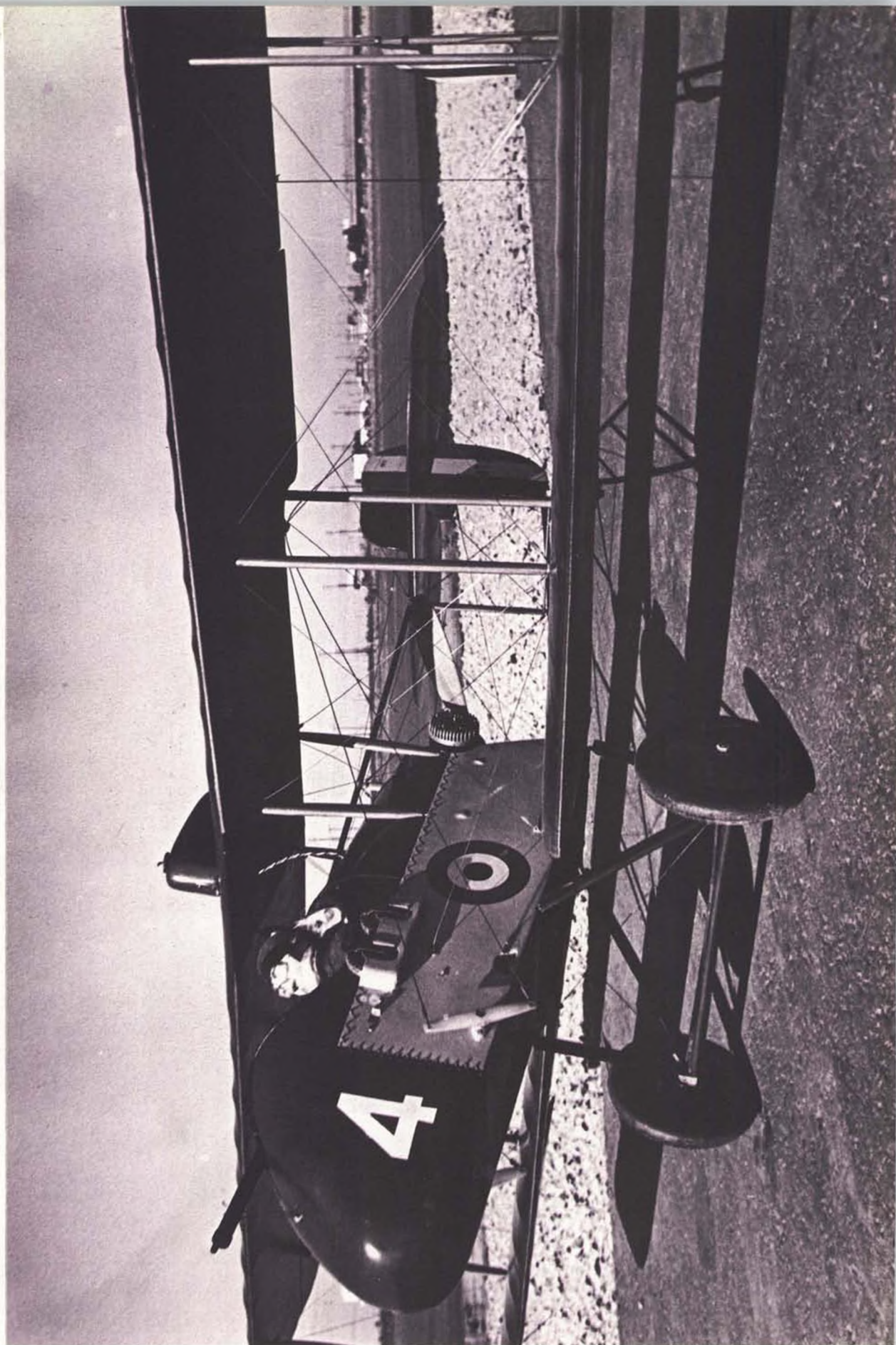
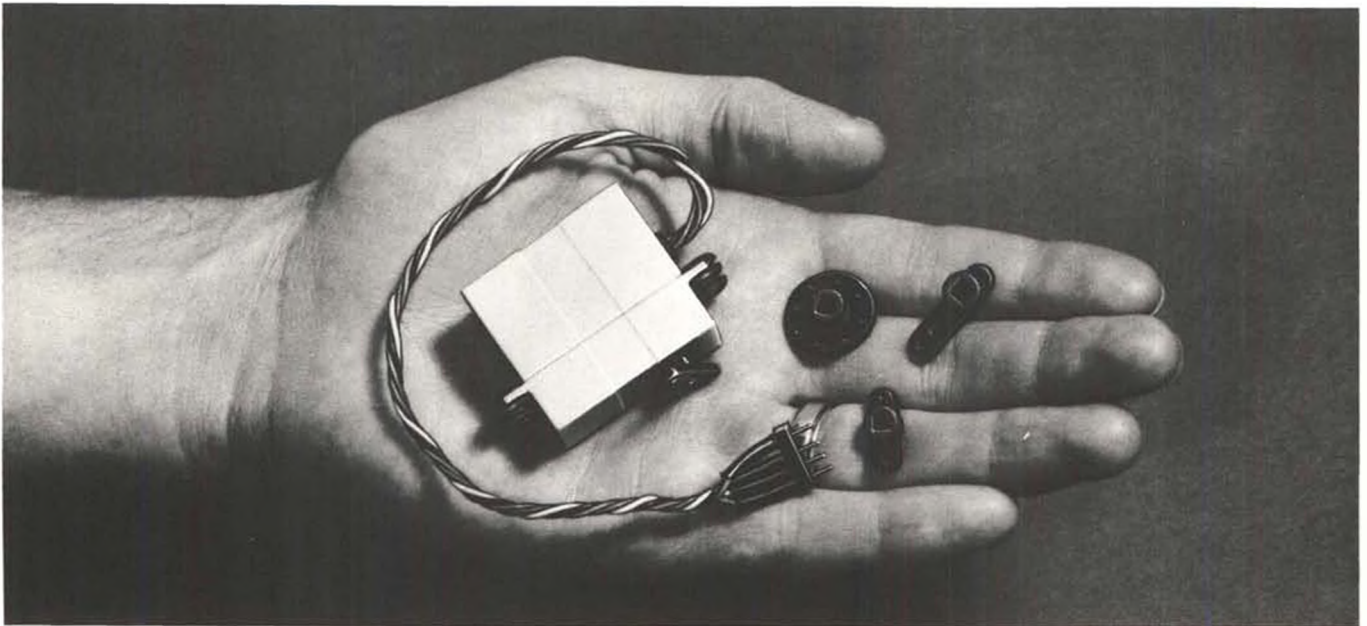


# The **MODEL BUILDER**



FEBRUARY 1972  
volume 2, number 5

50 cents



## 1¼ ounces, 3-pound punch!



**New Heathkit Sub-Miniature Digital Proportional Servo** utilizes an integrated circuit to trim off excess bulk. The Sub-Mini weighs-in at 1.25 oz., measures 1 $\frac{7}{8}$ " from mounting ear to mounting ear, yet provides the same 3-lb. thrust of much larger servos. Features include 90° rotation in 0.5 seconds; 1% position accuracy; ceramic variable control feedback element; nylon gears and molded nylon case. Just 18 components install quickly on printed circuit board. Includes 4 rotary outputs, is compatible with all Heath R/C Systems and most others. Measures 1 $\frac{7}{32}$ " H x  $\frac{23}{32}$ " W x 1 $\frac{1}{8}$ " L.

**Kit GDA-19-42**, 1 lb. ....24.95\*

**Heathkit Miniature IC Servo** gives you digital circuitry, proportional control, in a package that weighs 30% less, is 25% smaller than conventional servos — but outperforms them with 4 lbs. of thrust. Includes both linear and rotary output assemblies, universal mounting ears. Weighs 1.75 oz., measures 1 $\frac{5}{8}$ " H x  $\frac{7}{8}$ " W x 2 $\frac{1}{32}$ " L.

**Kit GDA-19-41**, 1 lb. ....24.95\*

**Heathkit 5-Channel Systems** include 4 servos; Heathkit Miniaturized Receiver; Slim Line Transmitter with Kraft sticks, built-in charging circuit; flat-pack nickel cadmium batteries & free soldering iron. Specify frequency desired.

**System Kit GD-19S**, with Sub-Miniature Servos for 12-oz. flying weight, 11 lbs. ....224.95\*

**System Kit GD-19M**, with Miniature IC Servos for 14-oz. flying weight, 11 lbs. ....224.95\*

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**Low Cost 3-Channel Propo Rig** includes 500 mW transmitter with trim controls, miniature receiver, flat-pack batteries, 2 standard servos, plugs, connectors, charging cord, free soldering iron.

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**Kit GD-206**, 2 lbs. ....19.95\*

**Heathkit Thumb Tach** gives 0-5000, 0-25,000 ranges.

**Kit GD-69**, 2 lbs. ....19.95\*

**Heathkit "Spectre" Car** includes snap-on plastic body, chassis, wheels & tires, fuel tank, R/C equipment box, gears, axles, servo linkages, all hardware, decals.

**Kit GD-101**, 11 lbs. ....39.95\*

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7,000 more than the year before !**

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- 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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\***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.

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**Member of chartered club?**  
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March, 25 years ago, Troy, New York

## from Bill Northrop's workbench . . .

FIRE!!

●Wynn Paul is the Head Coach of the Greater Lexington Swim Association, which is affiliated with the AAU. He has coached four National AAU Championship teams, 15 All-American AAU and Collegiate swimmers, six national record holders, and so on. As a "rekindled" modeler, he has competed off and on since 1967; finished ninth in C/L stunt at the 1971 Nationals, and placed

13th in FAI stunt tryouts. He has also been a club newsletter editor and CD'ed many Lexington Model Airplane Club contests.

What does all this have to do with fire? Not a darn thing, but have you ever heard Tommy Smothers tell about the time he fell in a big vat of chocolate? He yelled, "FIRE!"

When his brother Dick asked why, Tom replied, "If I had hollered 'CHOC-

OLATE' do you think anyone would have come to pull me out?"

The gimmick here is that if we mentioned the "Junior Problem" in the title you probably would skip on to the next paragraph. Stay with us for a moment, 'cause it looks like Wynn may have hit the nail on the head. We'll try to sum up his six page letter to all AMA officials and to the national publications, in a few words.

What Wynn is saying, and it makes a lot of sense, is that we need more age divisions for the lower age modelers. When you stop and think about it, the average person acquires basic knowledge and common sense at a rapid rate in his early years, and then this acceleration tapers off after maturity, depending on environment, background, education, etc. The ability to coordinate hands and mind, and to soak up advice obviously improves at a much more rapid rate between the ages of . . . say 6 to 10, than it does between the same time spread of 20 to 24, for instance.

In swimming there are six divisions: 7-8, 9-10, 11-12, 13-14, 15-17, and open. In tennis it's: 10 and under, 12 and under, 14 and under, 16 and under, 18 and under, and open. Football, baseball, and basketball have similar groupings, as do most other competitive activities. In modeling, 14 and under is sort of spreading it thin.

Wynn proposes that the AMA should, for a start, regroup at 10 and under, 11-13, 15-17, 18-21, and open. The next suggestion may have been made with tongue in cheek, but he also proposes a "vete an division" or those 50 and over.

## The MODEL BUILDER

February 1972 volume 2, number 5

**Cover** This DeHavilland DH-2 was scratch built by Frank Conyne of Huntington Beach, California, to a scale of 2-1/4 inches to the foot. The 63 inch span, 94" 80 powered, 6-1/2 lb. model has cable operated controls from an Orbit radio, uses hand carved left hand prop. Photo by Chuck Colwell.

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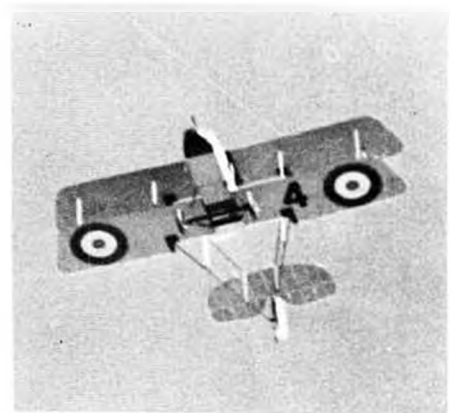
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 Dick Mathis Control-Line  
 Mel Schmitt Free Flight  
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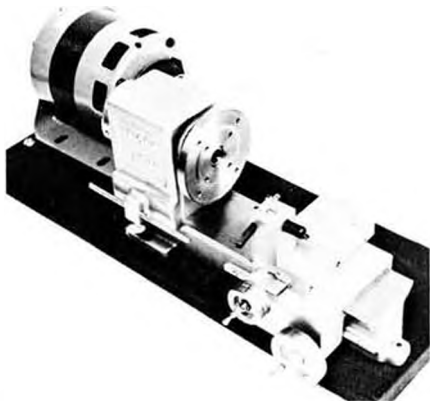
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Yes, it does fly. Here is our cover bird on a takeoff run at Marshall Field in Costa Mesa, Calif.



And in case you still don't believe it, Frank brings the DH overhead for an inspection pass.



Universal Developments' "Micro Lathe." Bed length is only 10-1/2". Tolerance is .0005".



Orbit Electronic's new PS-3 IC servo. Beefed up gear train will handle any application.



The new Orbit PS-6 IC servo. Both employ an IC chip that does the job of 30 transistors.

Anyhow, Wynn's main contention is that kids like to compete with others their own age, and in the tender years, a birthday or two presents a tremendous gap.

Obviously, the events would have to be tailored to suit the categories, and in Wynn's report he details some ideas on this as well as methods of awarding prizes, etc.

Knowing the average amount of interest aroused when the subject of junior modelers is brought up, we will not try to hold your attention any longer, but for those who are interested, and anyone who wants to see modeling continue after we of the "and over group" modelers hang up the winder, starting battery, and transmitter, contact Wynn at 1060 Cross Keys Road, Lexington, Kentucky, 40504, and let's see what we can do about it.

#### JOIN THE NAA

In case you don't know, the National Aeronautic Association is the U.S. representative to the FAI. Under the NAA come all of the national subdivisions of aeronautical interest, such as the Soaring Society, the Balloon Federation, the parachutists, and of course, the Academy

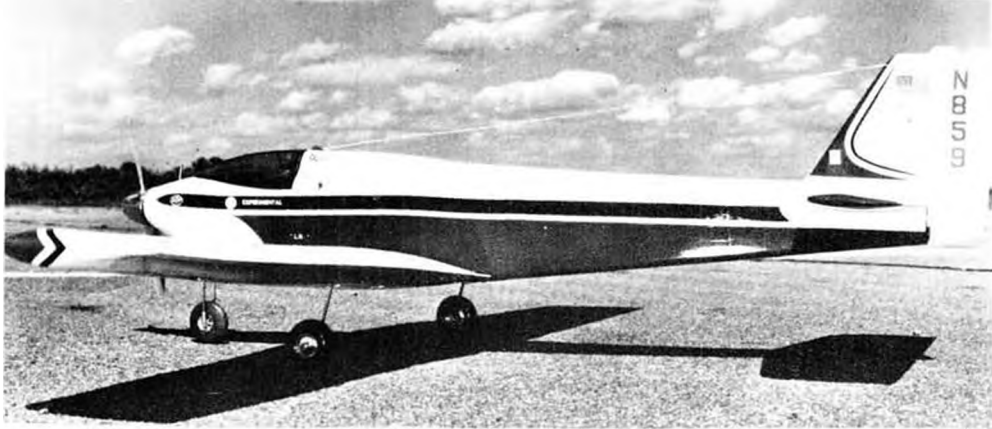
of Model Aeronautics (Sometimes called the American Medical Association if you don't spell it out!). As a member of a subdivision, you are entitled to join the NAA at half price, or 5 bucks. For this you get a lapel pin, a couple of nice looking decals, a 20 or 25 percent discount from National Car Rental, and the monthly NAA News. We got a kick out of these two excerpts from the January issue:

"Bureaucracy - 1908 Style: The Aeronautic Society of New York, established in 1908, used Morris Park in the Bronx for demonstrating many of the early experiments of that era. Morris Park had no hill high enough for the practice of gliding, so a tall structure was built from the top of which gliders were launched. One time an enthusiastic glider pilot remained on top of the structure nearly a whole day, waiting for the wind to blow in the right direction. Then a building inspector for the city of New York held that length of occupancy had converted the structure into a dwelling, and as it had neither plumbing nor a fire escape, he condemned it as unfit for residential purposes and ordered its removal!"



Vortex Model Engineering's latest sailing yacht, the 50-800 class "Soling." LOA 50", mast 60".

"Kennedy Airport may have claimed a new world's record for baggage cart flying when the thrust from a taxiing Boeing 727 recently blasted a 1500 pound cart into the air, over a fence, and into the street. After wiping out three cars the cart came to a halt 450



One of Sig Mfg. Co.'s new line of kits for 1972, the Maxey Hester designed "Komet." Wing span is 67", and the foam cored wings are available with balsa or plywood skins. Molded fuselage top.



Another new Sig kit for 1972 is this re-engineered model of the well known Citabria. The airfoil has been changed to flat bottom and there are many molded plastic parts. Price is only \$31.95.



The editor's 2 inch scale Travelair 2000. Originally published as a construction article in M.A.N., plans were all sold out and discontinued, however they will now be available from Model Builder.



Cute little 1 inch scale "Lightning" built from new kit by Dumas Products. Price is \$9.95.

feet away, or nearly four times the distance of the original Wright Brothers' flight in 1903."

#### ABOUT THOSE FULL SIZE PLANS...

Apparently our selection of construction projects for the magazine hit a lot of soft spots... they're moving real fast and keep us hopping in the printing and mailing department. You may have noticed that we no longer offer the mailing tube for rolled drawings at a dollar extra. There are several reasons for this. Mainly it's a problem of stocking. How many folded plans to stock in relationship to rolled plans? Stock all rolled plans and fold them to order? If you've ever worked with blue-line prints you know the answer to this one. When the prints come out of the machine they are as limp as a bedsheet and very easy to fold. However, once they have dried they become extremely stiff, and if stored rolled, are almost impossible to fold properly.

One thing we would not do would be to open up a folded print and then roll it and ship in a tube. Tch, tch! This would be dirty pool, but it has apparently happened elsewhere because we have had orders that specifically instructed us not to pull that one. Fear not, we won't!

So... that leaves one problem... the guy who really wants a rolled print... probably because he wants to build the plane without having the creases in the plan trying to push the wood up from the building surface. The answer is fairly simple. Get your trusty steam iron (not the one you use for Monokote!)



The Northfield-Ross Oil Separator muffler, designed specifically for the Ross Twin, may also be used with most current .60 engines by way of adaptors available from N.R. "Look, Ma, no sludge!"

and simply steam press the creases out of the print! You can store the print in a relatively small space until you're ready to use it, or, if you simply have to have that rolled print, roll it while it's still warm and damp . . . and limp, from the steam ironing. Okay?

Incidentally, we've had quite a few requests for prints of the plans for the Travelaire 2000 which we designed at 2 inches to the foot and had published in M.A.N. about 5 years ago. This plan has been discontinued by M.A.N., however we called publisher Walt Schroder the other day and have obtained permission from him to rerelease the drawings. Following a bit of updating, we will have them ready to offer along with our other full size plans . . . probably in about a month. We've got to say it is one of the better scale biplanes for flying ability.

#### THINGS TO DO

The biggest to-do of the year, the 1972 AMA Nationals, has been firmly set for the usual time, the last week in July, which happens to work out to be the 24th to 30th. People often wonder why this date isn't set much sooner. It's simply that the Navy has to give us the final word, and it doesn't usually happen until about now.

Also because of the situation regarding deactivation of many Naval Stations around the country, the site will again be the Glenview Naval Air Station just north of Chicago.

\* \* \*

As mentioned in Chuck Smith's column last month, the Russians turned in several new modeling world records for speed, namely 213.7 mph land plane, 183.6 mph seaplane, and 113 mph for gliders. These records should not be left unchallenged by U.S. modelers. We have the know-how and the where-with-all to do the job. The glider record has fired up members of the Tustin Model Club and the Torrey Pines Gulls to the extent of scheduling a two-day glider speed record trail on April 15 and 16 at the well known Torrey Pines site north of San Diego.

Anticipating a large turnout, it has been decided by the clubs to hold eliminations on Saturday, the 15th, and allow only the top 10 qualifiers to make attempts at the record on Sunday (or further attempts, if someone manages to

*Continued on page 45*

# ANNOUNCING... commander '72

NEW CONCEPT IN PULSE RUDDER-ONLY



Ace R/C is proud to announce the Commander '72. Continuing research in the field of pulse proportional rudder-only has produced several significant breakthroughs. These are incorporated in the Commander '72, resulting in the finest pulse proportional radio system to date.

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The transmitter has increased output to overcome interference

All of these 1972 modifications give you a radio that you truly can be proud of and one that will give you the most FUN out of this hobby, whether you are a beginner or expert.

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Rudder follows directly the movement of your stick.

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Easy installation; actuator has only one moving part. Minimum maintenance.

#### -INEXPENSIVE

Initial cost of system, airplane, and engine is low; one transmitter and receiver can be used for many different styles and sizes of planes.

#### -IDEAL FOR THE BEGINNER

#### -GREAT FOR A FUN OUTFIT FOR THE EXPERIENCED FLYER

#### COMMANDER '72 R O SYSTEMS

Completely wired and tested, with transmitter, receiver, actuator, nicad battery air-borne pack and charger, switch and connectors. Transmitter battery not furnished.

10G15-Baby System '72	\$69.95
10G15T-Baby Twin System '72	\$72.95
10G16-Standard System '72	\$71.95
10G17-Stomper System '72	\$74.95

26,995, 27,045, 27,095, 27,145, 27,195  
Please Specify Frequency

Flite paks, extra chargers, actuators and parts, and batteries available separately.



#### DICK'S DREAM KIT

Highly Recommended for Beginners

- 1 34" Foam Wing Moulded sections
- 1 Top grade die cut wood parts
- 1 For .020 engines
- 1 Commander Baby or Baby Twin
- \* Owen Kampen design

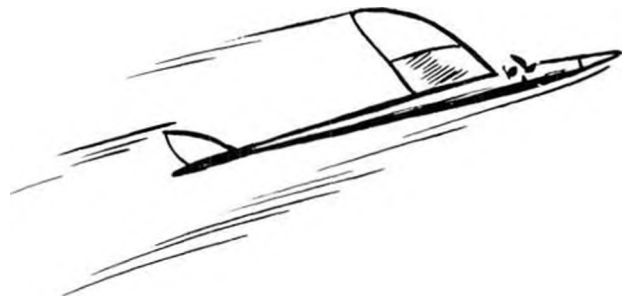
No. 13L100 Dick's Dream Kit \$5.95



#### ACE HIGH GLIDER KIT

- 1 70" Foam Wing - Moulded sections
- 1 Precision Machine cut and sanded wood
- 1 For .049 Power Pod parts supplied
- 1 Recommended for Rudder Only Standard or Stomper Commander
- \* Owen Kampen design

No. 13L104-Ace High Glider Kit \$14.95



# **BACKFIRE !!**

"Dear Bill:

I liked the first issue you put out. I bought it at California Model Supply in Fullerton on my recent furlough. I'm a missionary bush pilot flying a Cessna 185 Skywagon. I collect model engines (about 124 now) and fly R/C using an Ace Commander R/O outfit plus an EK Champion 5 channel rig. Boy do we spook the Africans! This controlling little "BUZZERS" way up in the sky is real witchcraft! I also do dogfights with our very inquisitive and vicious African chicken-hawks. They see the model and attack it for real like they do the fast flying pigeons. What a ball . . . out maneuvering them.

Something I wanted to inform you about is the fact that this country has changed its name from REP. DEM. Du CONGO to REP. Du ZAIRE' You pronounce the new name "ZAA-EAR". This is the ancient name of the Congo River. Nothing so permanent as change!

Gordon S. Fairley  
Mission M.E.U.  
Rep. Du Zaire, Africa

**Those dog(?)-fights with the chicken hawks sound like great sport. Our chicken hawks in California are just that. . .chicken! They won't stick around and fight.**

"Good Morning Bill:

As you know, pylon racing in the Chicago area has been a "dry well". Up until now there has been a lot of talk, but nothing ever happened.

Tuesday of this week, a group of us, representing most of the major clubs in the area, got together and formed a pylon racing club -- Chicago Pylon Club. Some

of our members include Jerry Nelson, Jim Grier and the Hillers.

First of all, our purpose is not to hold our own races, but instead to help local clubs, with good flying fields, to hold the events. We will assist in every way possible, from the setting up of concessions, getting the contestants and helping to officiate.

At this time we have four firm and three possible commitments from Chicago area clubs for pylon races this coming season. The main event of each racing meet will be Formula I. The host club will then decide whether they want Formula II, FAI, or Open Pylon for the second event.

In order to get a good solid racing season under the belt this year we need help from you. The only way we can get a reading on how many other "frustrated" pylon flyers there are in the mid-west is through the pages of your magazine. What we could use is the prominent mention of our undertaking.

Anyone interested should write to: Bruce Balko, Balko Machinery Co., 2445 Hamilton Dr., Elk Grove Village, Ill. 60005. Bruce in turn will send out information on racing dates and locations, and will keep the writers informed of all new dates that will come up.

Anything you can do will be appreciated."

Frank Morosky  
Hoffman Estates, Ill.

**Hope this will do you some good, Frank. Perhaps contacting Bror Faber, NMPRA President would help. The new officers are really gettig fired up to put R/C Pylon out in front.**

"Dear Sir:

I had just about given up on all the model magazines until I saw your Walt Mooney series of rubber jobs. Please keep this type of model coming."

James W. Goodwin  
Broken Arrow, Okla.

**Don't give up, Jim. Help is on the way. Walt Mooney has a bottomless pit of peanuts. . .or is it BAG of peanuts. . . . Anyhow, he has an open lease on our center spread.**

"Hi Bill:

Congratulations on your new magazine. While scouring the Virginia suburbs of D.C., for balsa and monokote plus a suitable power plant for my "Big John" O.M.T. (Fox .78 R/C), I came across No.'s 1, 2, 3, of The MODEL BUILDER.

Having run the gamut of R/C ships from my first Livewire Trainer as a 'high-schooler' in '56, through the Bramco era (what, no 3V4 and no B batteries?), up through the Smog/Astro Hogs, Low-Enders, Stormers, Kwik Flies and all the other F4 Phantom-performance-types, including one of the real ones in the U.S.N., I have come to your belief, "if it has two wings . . . it's GOT to be good." The only one I've ever owned and flown was a small single channel 36 inch span kit, the name of which escapes me, in the late fiftys or early sixtys. Small, it was, with cascaded Varicomps and K & B .15, but much fun. In your "Big John O.M.T." article in 67 RCM you mentioned some changes for the next season. Increased empennage surfaces was one but the other was upper wing ailerons. Did this ever come about or could Yogi handle



look to **Orbit**  
for **LEADERSHIP** in '72



# Orbit

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that one? Would appreciate a note if you could shed some light either from personal experience or thru someone else you might have known or heard from.

Also, M.A.N. is out of your Travelaire 2000 plans. Do you plan a reprint of same or do you have full size rib and former templates? Any help along this line would be also appreciated. Maybe you could broadcast an S.O.S. for some full size plans. Another bipe nut might have some stuck to his bench for overspray, as I will pay the asking price for them.

May the New Year bring success to you and yours in the publishing field.

Peter N. Holland  
Leesburg, Virginia

Dear Pete.

The only change made was to increase the rudder area about 100%. The modified one looks like a P-40 rudder and has about a 5 or 6 inch chord at the widest point. This gave us snap rolls, easy spins, and the satisfaction of not needing more or larger ailerons.

Re the Travelair, see this month's "Workbench" column.

"I have obtained a few of the first copies of your new magazine from Bob Nelson in Waterloo and am very happy with the direction this periodical seems to

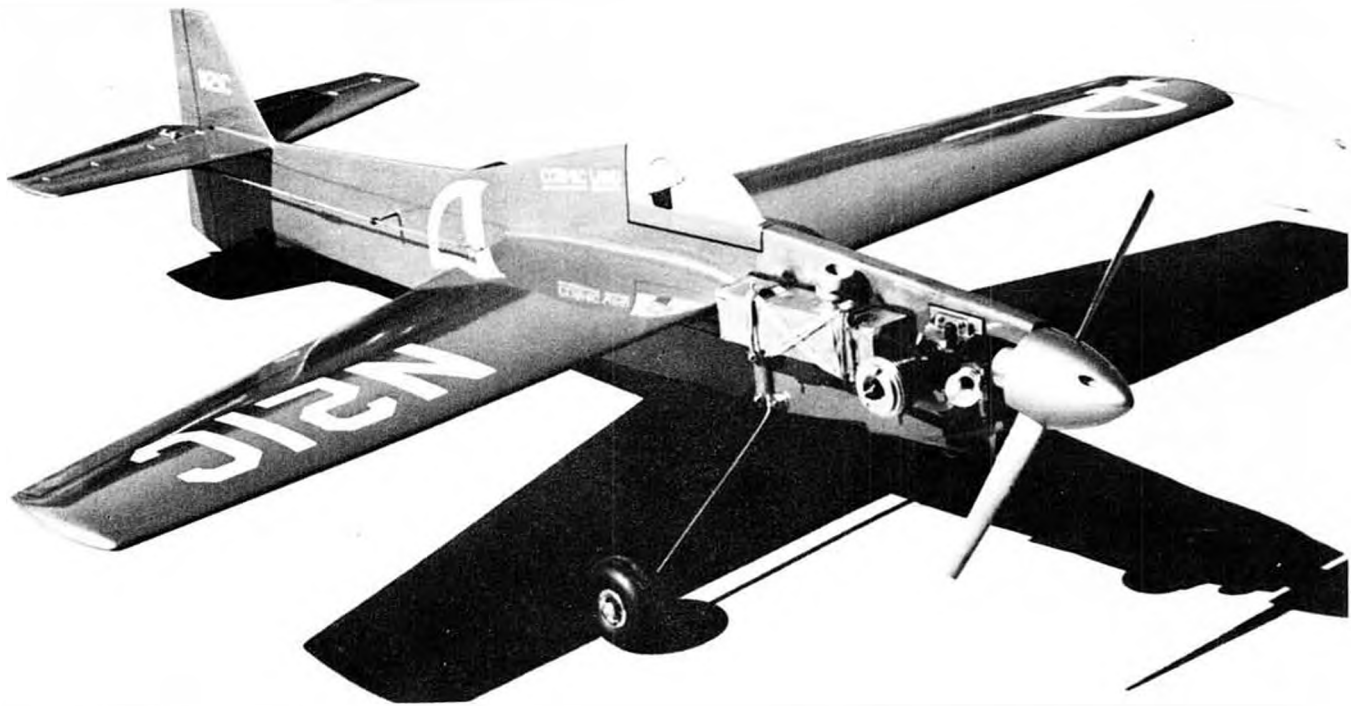
be going.

The format and the photo size and clarity is something I liked immediately; as did the style and completeness of the copy, such as the addition to the story about the LSF soaring competition that got under the "X" and "Y" brands of mylar covering material mentioned in other publications by Le Gray."

Ed Harris  
Cedar Falls, Iowa

*Continued on page 44*





The business side of John's mirror finished profile Goodyear racer. Spinner would be replaced by acorn nut for fast changes during races.

# MINNOW

## PROFILE GOODYEAR

By John Penhallow

What better way to introduce control-line construction articles in *The MODEL BUILDER* than to feature this beautiful Profile Goodyear "COSMIC WIND." Build one for this fast growing event.

● I wanted to start this article with a list of contest wins this fabulous model has accumulated, but alas it has never been in a contest. I also thought it would be nice to tell you this is the end result of 9 test models, all of which were winners but this one incorporates the best features of all 9 and is super, however, this is the only mid-wing Cosmic Wind I have built. This model was designed for contest flying but rather than jeopardize my standing as a

"famous bench racer" I've done no more than work out some of the bugs. There were only two of these, the pressure system and the finish. The pressure system was easily corrected and the finish is too embarrassing to talk about.

At this point let me digress to tell you about the man carrying craft I have copied. There were two Cosmic Winds registered N21C and with race Number 4, but not at the same time. The first was the low wing Minnow which

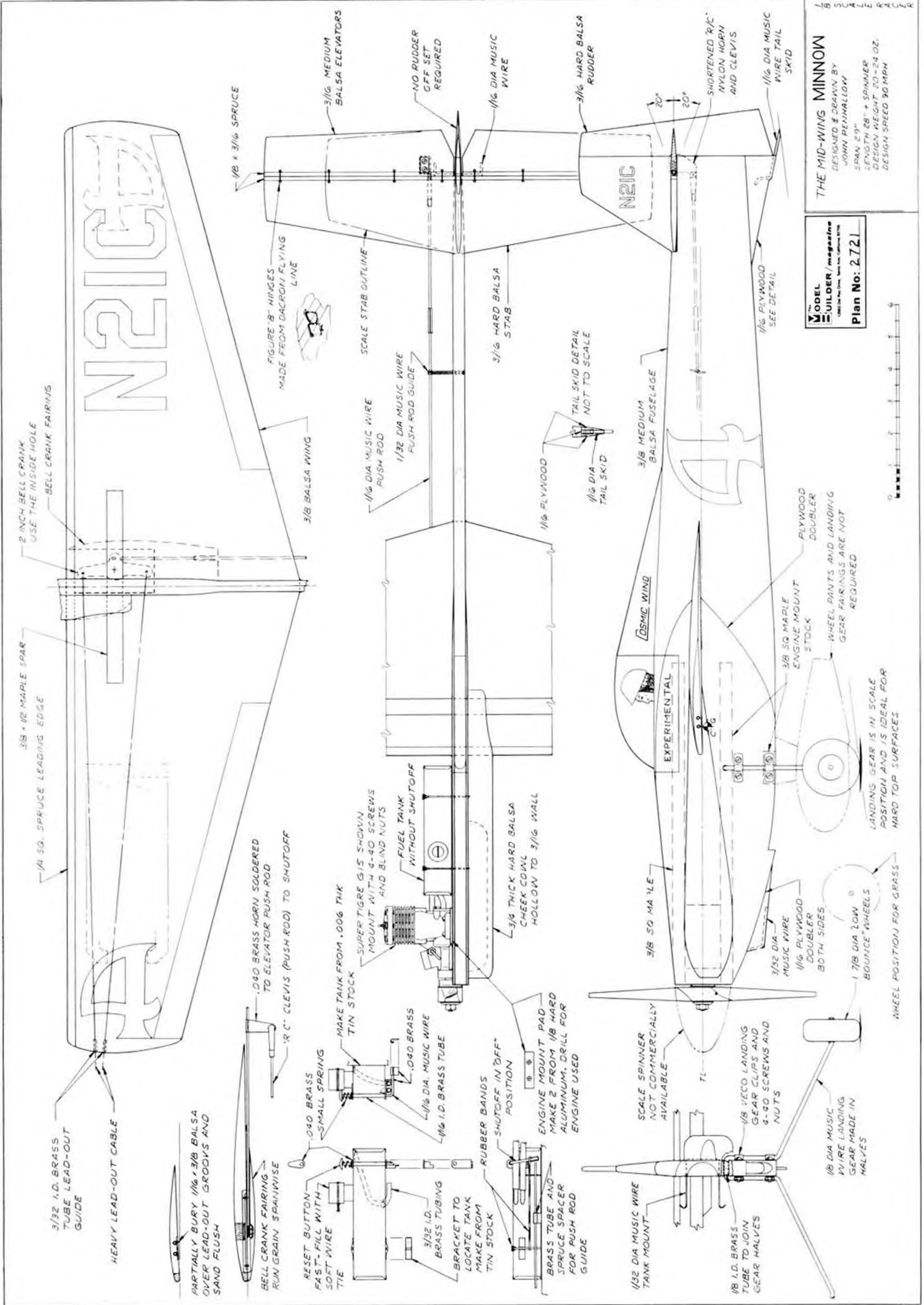
won the 1948 Goodyear Race with Herman "Fish" Salmon at the controls. The other is sometimes called the "mid-wing Minnow" and was also raced by Herman Salmon. This was an effort to improve the already good performance of the low wing Cosmic Wind, and except for the wing, engine and landing gear, it was a new airplane. It raced at Cleveland in 1949 finishing fifth at 175 m.p.h., six m.p.h. faster than his 1948 winner.

Some time after the 1949 Goodyear Race, work pressures forced LaVier and Associates to get out of air racing. The low wing Number 4 was reassembled and sold with Little Toni (No. 3), Ballerina (No. 5) and the remains of the midwing ship, to Pacific Air Racers. Irv Culver designed a new wing and the airplane was rebuilt as Miss Cosmic Wind registered N36C, race Number 6. As Miss Cosmic Wind it was raced until 1967 but due apparently to over weight it was never very successful.

There are as many ways to build this model as there are people to build it so I will tell you what I did and then you can do it your way if you prefer.

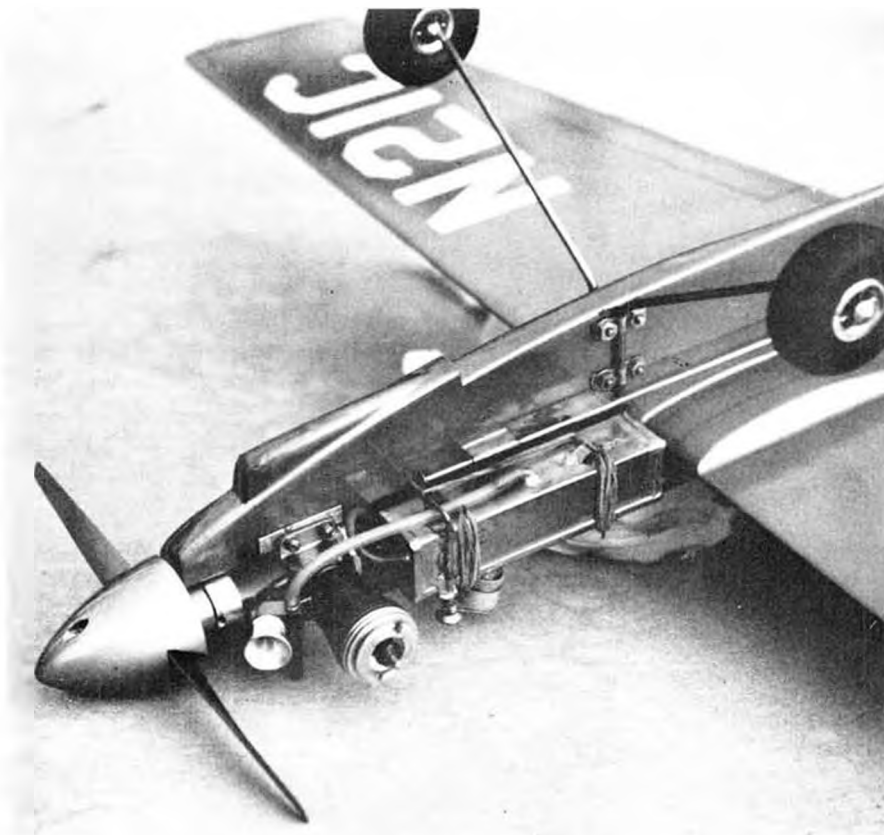


Pilot's eye view of the Cosmic Wind. Profile Goodyear is fast becoming one of the most popular racing events in control line. Designer/Author is well versed on full size racing activities.

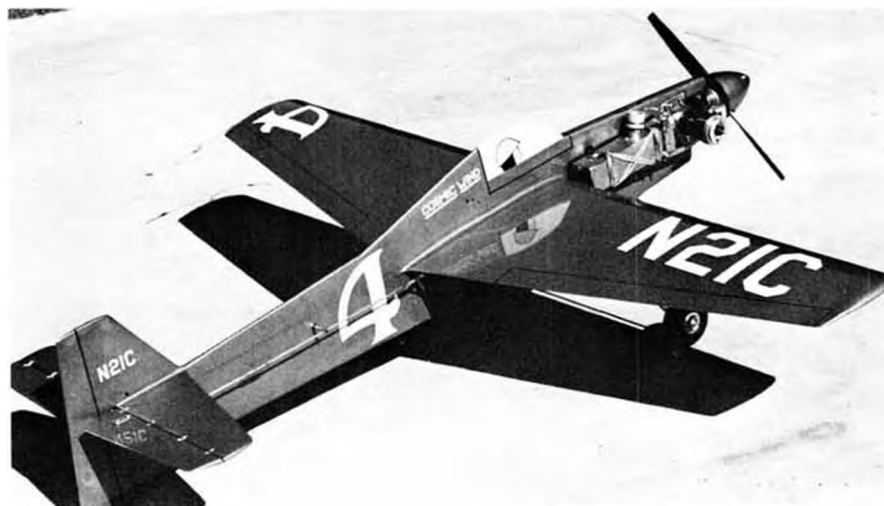


**THE MID-WING MINNOW**  
 DESIGNED & DRAWN BY  
 JOHN PENNALLOW  
 SPAN: 2' 0"  
 LENGTH: 28" • SPINNER  
 DESIGN WEIGHT: 20-24 OZ.  
 DESIGN SPEED: 90 MPH

**MODEL BUILDER magazine**  
 Plan No: 2721



A view of the "plumbing department." Note fuel shut-off tripped by a shot of down elevator. It's nice to know when you are going to land. Homemade tank strapped on by rubber bands.



Note reflection of pilot on wing surface. A smooth finish is not only nice to look at, but it's a lot easier to clean up and adds MPH. Large fill nozzle on tank helps to make those fast pit stops.

I would like to point out some possible variations for the sport flyer. The most obvious one is to omit the fuel shut off, although as your building and flying ability improve, a fuel shut off can be a new adventure, and fun too. The other is not to bury the bell crank and lead outs as shown on the plan. To do this, omit the maple spar and the wash out in the wing tips. Mount the bell crank under the inboard wing with 1/16 thick plywood discs about one inch in diameter on the top and bottom

of the wing.

I prefer epoxy glue for everything on this type of model with the possible exception of using Sig-Bond or Titebond for things like spruce/balsa joints and balsa sheet butt joints.

**THE WING:** It's not likely that you will have a sheet of 3/8 inch balsa wide enough for the 7-1/4 inch root chord so you'll have to butt join smaller pieces. A good start would be 3 inch wide medium balsa with 1/4 sq. spruce leading edge and 4 inch wide soft balsa trail-

ing edge. The spruce leading edge will help resist hanger rash and the pit man's thumb, or shin, whichever comes first.

To make carving the wash out in the wing easier, add 7/8 inch to the tip chord when cutting the outline. Shape the wing to the flat bottomed air foil shown. When that is done to your satisfaction recut the trailing edge to the outline shown on the plan. The trailing edge will now be as sanded at the root, progressing to blunt at the tips. Now with a large sanding block sand the bottom of the wing to bring the trailing edge back to proper section. I like it at least 1/32 thick and a rounded 1/16 won't hurt.

Dig out the bell crank recess 1/8 inch deep and cut a slot for the 3/8 x 1/2 x 6 inch maple spar. Cut the matching bell crank recess in the spar before glueing it in the wing. Some of the spar will have to be trimmed off the top side of the wing. Do this carefully and with a sanding block, or you will only sand away the balsa around it.

To bury the lead-out cables, dig a 3/64 inch deep by 3/8 wide groove for each lead-out. In the center of each groove dig a new groove 1/8 deep by 1/8 wide. An X-acto "F" blade is just the ticket. Install the brass lead-out tubes and cover the lead-out groove with 1/16 by 3/8 balsa strip. After glueing let it sit for a few minutes, then run a wire through to be sure the tunnel is free of glue. When the glue is dry sand the balsa strips flush. Install the bell crank with lead-outs and push-rod. Use a flush head screw for the bell crank. It won't make the plane go any faster but it will look better.

**THE FUSELAGE:** If you don't have a piece of balsa 3/8 thick by 6 inches wide by 26 inches long, then start by glueing smaller pieces together to make a fuselage blank. Even if you do have 6 inch wide stock on hand it is a good idea to make the fuselage from two pieces split on the thrust line. This will give you a point of reference for aligning the wing and stab. Note the leading edge of the wing is on the thrust line and the trailing edge is 1/16 above the thrust line. If you expect to fly over 75 m.p.h. this is important, but for sport flying the flat bottom of the wing can sit on the thrust line. If you're working with two pieces, cut the wing

*Continued on page 38*

# R/C SOARING

This month our "Modeling Classroom" visits the domain of the Soaring editor for a lesson in the easy way to strengthen the nose of your plane with glass cloth and epoxy. By Le Gray

Heavy damage from a "prang" can be most discouraging. And, like it or not, a plain, old-fashioned, country-variety "crash" is going to happen on occasion to everyone. The C/F Ratio... number of Crashes divided by number of Flights...seems to approach a value of "One" for some of the more inexperienced fliers. It never gets to "Zero". Something always happens...sooner or later...that breaks the record as well as the sailplane. And, of course, there are those pilots who seem to be "accident prone"...which has nothing to do with mistakes while lying down.

The problem is survivability...structural integrity adequate to withstand rough landings and, at least, minor accidents. A review of the sailplane structure indicates the most obvious candidates for damage are the nose and other parts of the fuselage forward of the

wing. It's simple: the nose is out in front and hits first in ordinary accidents and second in others: the fuselage forward of the wing encases the radio gear, the mass of which presents significant load stress problems for the surrounding structure.

Most R/C sailplanes require a couple of ounces of ballast in the nose for proper location of the center of gravity. But instead of making old dumb lead airsick at each flying session, why not replace it with "functional" weight. That is, increase survivability by replacing...not adding...weight.

How is this accomplished? Impregnated fiberglass.

If the room cleared at the mention of "fiberglassing", pay it no heed. Let the faint hearts live with the myth that "glassing" is a real mess and a big chore. Tain't so...if you got a gimmick. And we got it. No sweat...at least not much.

About materials. We'll need fiberglass cloth. There are various weights or thicknesses. "Two Ounce" is about perfect. This is light weight glass...after all we're not building a Corvette body...but not super light, such as silk. It's more like nylon or cotton. The specific weight is really not critical, but the recommended "Two Ounce" stuff is easy to work around compound curves and is adequately strong with only a single layer. Check your hobby dealer. He probably has just what you need. Or there's the SIG Fiberglass Kit.

Next...impregnating resin. This can be either epoxy or polyester. There are many polyester resins available...especially in hardware and builders' supply stores. Most are of no use to us...so check for advice from other modelers, or make your own test samples before goofing up the nose of your new sailplane. Again, the SIG package deal may be your best answer. We can suggest, without reservation Hobbyoxo Formula 2 glue. This product is an epoxy resin, is available in any hobby shop, and it works...beautifully. So, this discus-



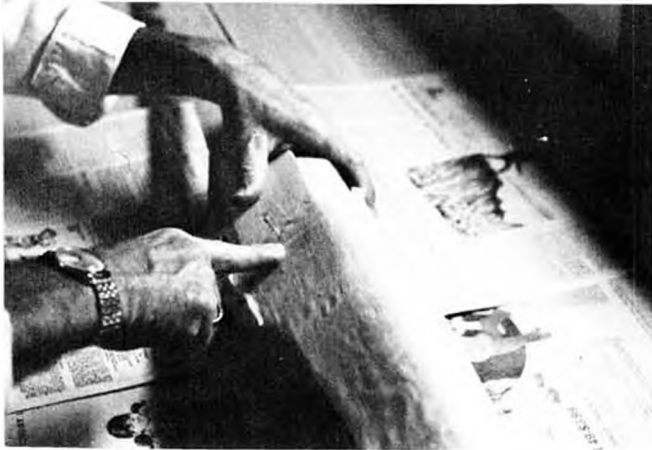
Bert Inoue caught these "just before" and "just after" shots of a mid-air during a slope soaring session at Simi Valley, Calif. Matt Tennison's Windward got the worst of the deal, whereas Gene Molnar's original with sheet wing and ply fuselage kept on going.



1. Materials and tools layed out for the job. Tack cloth used to clean dust from model. Everything is there but the newspapers!



2. A single piece of fiberglass cloth covers all. Masking tape holds it in place as you get started. Two ounce cloth seems best for the job.



3. A bead of glue seals the edges of the cloth to the structure. Finger is used to massage the glue through the cloth and into the wood.



4. The cloth will follow the nose contours . . . with a little care. "V" shaped gores may have to be cut out to avoid overlaps and creases.

sion will be made with reference to use of Hobbypoxy. With other resins, the basic procedures for application and finishing probably will be about the same, but we can't guarantee it.

The tools needed include masking tape, scissors, razor blade or X-acto knife, scraper blade, straight edge, acetone, acid or other expendable brush about half-inch wide, model airplane glue and garnet paper. That's about it. Oh yes, an artist's palette knife...a skinny spatula...is needed.

The principle is to build a shell around the fuselage, forward of the wing. In so doing, the fiberglass is "laid up" over the pre-shaped structure. Since no parting agent will be used, the glass will bond to the structure, thus making one unit out of the whole works.

A couple of things to keep in mind. For a good bond, the structure should be clean, and it should provide a continuous surface. That is, don't try to glass across large open areas...such as between longerons or other skeletal frame-

work. Also, no concave surfaces...these require special tricks and treatment and present problems that aren't needed right now.

In a typical layup, the glass is carried from the nose to behind the leading edge of the wing. The glass does not reach the hatch...or canopy...mating line, either on the fuselage sides or at the nose. A layup of glass and resin adds a "thickness" which will spoil the contours developed in the bare wood. Also, cured resin and glass make a very hard material to trim for a clean and even fit to the hatch. So leave a little space. It won't degrade the strength and it makes the job much easier.

Decide where you want the glass to go. Cut a piece oversize by an inch or two all around...one piece for the whole job. Turn the fuselage bottom side up. Smooth the glass over the bottom surface, front to back, and tape in place. Then smooth the glass down the sides and, again, tape in place. You'll notice that glass cloth works easily...that it will pull in any direction...just try and keep

the weave pattern so that it looks about the same on either side of fuselage center. Take time to work out excess material...not just wrinkles...but "looseness". At this time, a skin-tight fit isn't necessary, just keep it smooth over the structure.

You'll probably find that you can get a good job in this glass covering chore from the back up to about three inches or so aft of the nose...to about where it starts getting "pointy". If so, you're doing fine.

Now, forget about all the wrinkles and excess material that have gathered up around the nose. The next step is to tie down that which is smoothed out. Using model airplane glue, apply a "head" of cement over the imaginary line which will be the finished aft edge of the glass. Take your finger and rub the glue through the glass and into the wood underneath. Take care that no wrinkles, looseness or "gathers" develop. If so, pull glass free from wood, get things smoothed out, and re-gue. Keep the glue "seam" limited to about



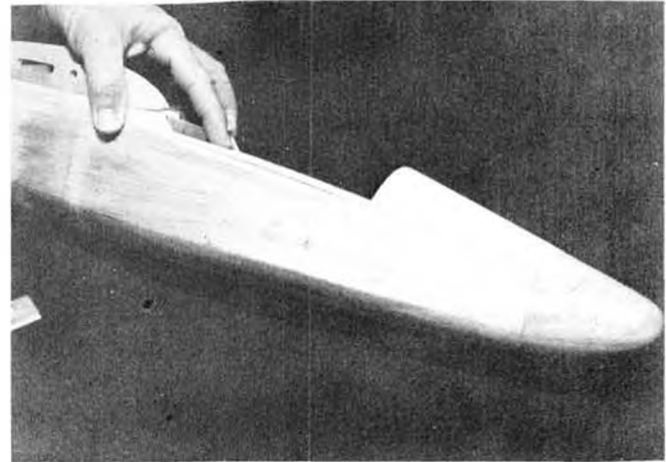
5. With a cutting guide such as a piece of file card, the excess cloth is trimmed, leaving a clean, straight edge. You're now ready to pour!



6. "If the phone's for me, I'm not at home." Does it ever fail? Note the disposable epoxy mixing dish . . . a piece of aluminum foil.



7. After spreading with the spatula, brush out the epoxy with a stiff bristled disposable brush. The better the job, the less sanding later.



8. The hatch-fuselage contours still match up as a result of trimming the cloth short of the joint line. No strength lost as a result.

3/8 inch in width. Notice that the glue sets up in about a minute or less.

Clean glue from fingers with acetone. This is important. Fiberglass is very easy to "snag", and dried glue on fingertips can drive you nuts.

Next, tie down the side edges. Apply a bead of glue down one side of the fuselage, along where the trimmed side edge is to be. This bead should carry from the aft glue seam to an inch or so short of where the cloth starts bunching around the nose. Rub the glue into the wood. As the glue is drying, pull the cloth taut to remove all wrinkles and looseness. Repeat on opposite side of fuselage.

With the experience gained so far, the more complex contours around the nose can be attacked with much confidence. How much may be open to question, but "much" implies more than "none", so have at it.

Turn the fuselage bottom side up and, working from back to front, smooth glass evenly over the lower portion of the nose and up the sides. Glue

down. Work cloth around the nose tip to a little beyond the center line. Glue down. During this "nose job", you may find that some wrinkles develop that could be smoothed out if the previously tied down side edges could be adjusted a little. In this case, simply apply a coat of glue, which will act as a solvent, to the seam you want to adjust. Then pull the cloth however you need to get the wrinkles out. Trim excess material away.

It's always possible that "gores" . . . v-shaped pieces may have to be cut away to get cloth to lay down around the nose. If so, do so. Avoid overlaps wherever you can and glue cloth at or just beyond the center line. As you get closer to the tip of the nose, you'll be gluing more and more fabric to the structure. This is okay, just keep overlaps to a minimum.

To finish the side, work cloth over the top of the nose. The procedures and techniques are the same as just used around the lower part. Remember to make the rearward glue seam, that will

run across the top of the nose, about a half an inch or so in front of the forward hatch mating surface.

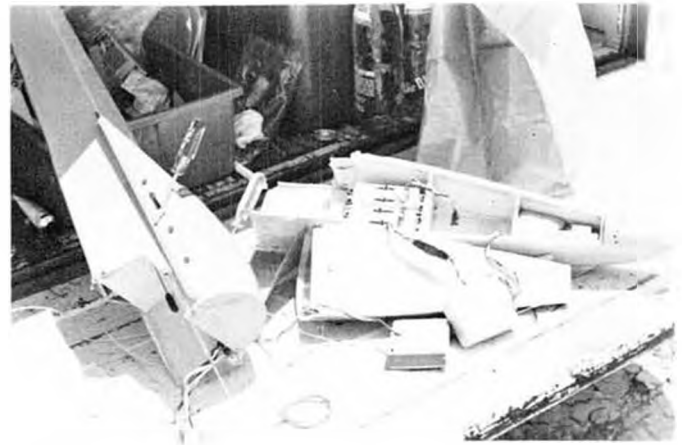
One side's complete . . . so finish off the other. Bring mating cloth edges to fuselage center line, but avoid overlaps.

Now to make final trim lines. Use a straight edge or other tool as a guide. Card stock can be useful at the aft seam where you'll be cutting down the side panels and across the bottom. Use a sharp razor blade or X-acto knife. Make all cuts in the glue seam area, through the glued-down cloth. Avoid cutting into wood structure. However, if you do don't fret. The epoxy resin which will be smeared over the whole works will fill in a "gool" and make it stronger than original.

The first trim cut is the aft edge . . . across the bottom and up the sides. Carefully pull away excess material outside of the trim line. If your cut is good, this should just be a matter of pulling the glued-down cloth up and away from the wood structure. There should be no . . . repeat, no . . . ravel or loose strings. It



9. Final step is to scrape the resin surface with a razor until all shiny areas are removed. This is particularly important for Monokoting.



Proof of resin-glass pudding. Dead fall of 40 feet from power lines didn't fracture glassed area. Fast epoxy repair . . . ship flew next round.

there are, don't try to pull, but rather cut them away. Apply additional glue as necessary. You should have a perfectly clean, sharp and secured...that is, stuck down...aft edge.

Following the same procedures, trim sides of material horizontally along each side of fuselage. These side cuts run from the trimmed aft edge forward to just short of the front hatch mating surface. Take away excess material, clipping as necessary to relieve at the forward end of trim cut.

The last trim cut is across the top of the nose, in front of the hatch mating surface. Start at top center, cutting down the side to meet the previously cut horizontal trim line. But, don't go straight all the way down. Instead, cut a round corner which turns and meets the horizontal edge. This rounded corner is not really important, but it is a professional touch that requires no additional effort.

Repeat on opposite side of nose.

Check total surface of cloth for loose strings...brush away lightly. Check all edges for ravel...cut away and reglue as necessary.

The hard part's over. If you've paid attention and followed instructions up to this point, the rest is a breeze. If you haven't, you're about to find out why the room emptied several paragraphs back.

To proceed to the epoxy bit. Mix the stuff up in any container you prefer. Kitchen aluminum foil, folded double to about 4 by 6 inches, and with a half-inch lip turned up all around works fine. Some guys use the plastic lids that come with coffee cans these days. It's up to you.

Make a couple of puddles of Hobby-poxy Formula 2...one puddle of Part A and one of Part B, each about the size of a silver dollar. Use the palette knife and mix it up...good.

Lay the fuselage on a side. Using the palette knife, carry epoxy to side center area of glass cloth. Put on plenty...we want it to soak thru the cloth to the wood underneath. Take the knife and spread it . . . like butter and syrup over pancakes . . . fore and aft and down the side over the bottom. Watch for "runs" into areas where you don't want it . . . such as outside the glass cloth area. Catch any runs that start and pull them back with knife.

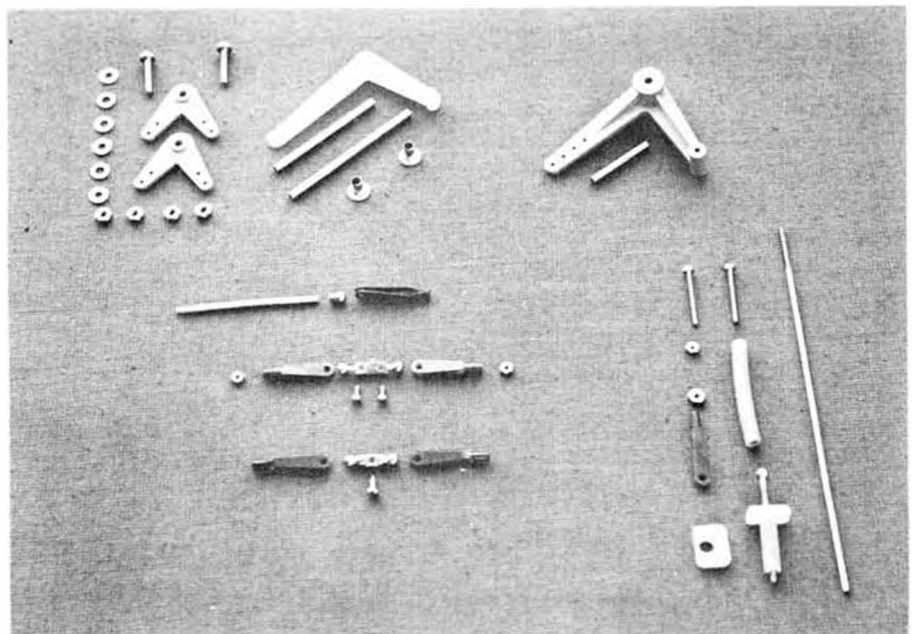
Repeat on opposite side, holding the fuselage internally or aft of the glassed area or wherever you can...but don't lay it down on wet epoxy.

By this time, the glass cloth will start disappearing. Fine. That means you're getting good penetration with the epoxy, because when glass is adequately saturated, you can't see the weave pattern.

Now, using the acid brush, stroke fore and aft over the epoxy to smooth it out and get an even spread. Carry epoxy to a feather edge just beyond cloth trim lines...not too far, but just enough to alleviate a ridge. Transfer any excess epoxy picked up on the brush to "dry" areas someplace else...or remove it if need be by wiping from brush. If you pick up any loose threads or ravelings, get them out now or file them off later after the epoxy cures.

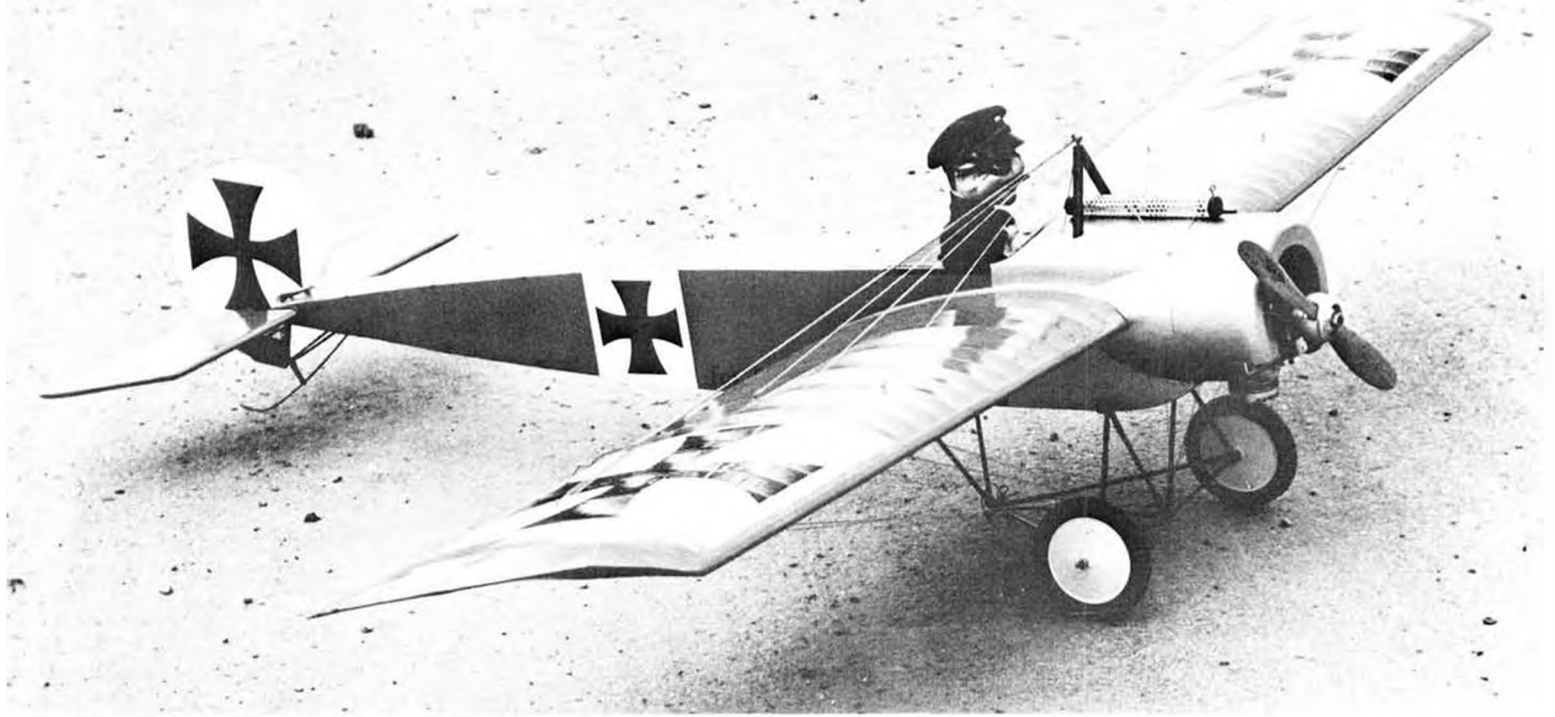
Keep smoothing as epoxy starts to get "less loose". Don't quit too soon be-

*Continued on page 39*



Assortment of glider hardware available through Midwest Model Supply. Note snap-on ball type connectors for ailerons on plug-in wings. Large cranks for flying stabs. Send for parts list.





# FOKKER E-III

This Fokker E-III "Eindecker" comes from the drawing board of well known German model designer Berni Huber. Just the thing for WW I contests or general sport flying for those who enjoy realism.

● Antiques have always fascinated us, therefore, its no wonder that the Fokker E-III caught our eyes. This ship had a clean and simple construction for its time, which makes it easy to model. A monoplane further, as the name implies (ein, or one decker) has only one wing, which keeps the building expense down to the minimum.

From the somewhat primitive Fokker Spider of 1910, a whole series of monoplanes followed, which all had basically similar construction characteristics. Later planes (1912-13) were marked with M1 and M2 (the M stands for military); these were followed by the M.3, M.3A and M.4. These models proved unpopular with their pilots. By the end of 1913, the M.4 was declared a failure, whereupon Fokker abandoned the construction of this aircraft and took on his former assistant Martin Kreutzer.

Fokker had to produce a successful new design if his firm was to survive. In 1913 he had seen a Morane-Saulnier type H monoplane at Johannisthal, which impressed him. This plane had achieved a

number of successes that year so Fokker was determined to copy it.

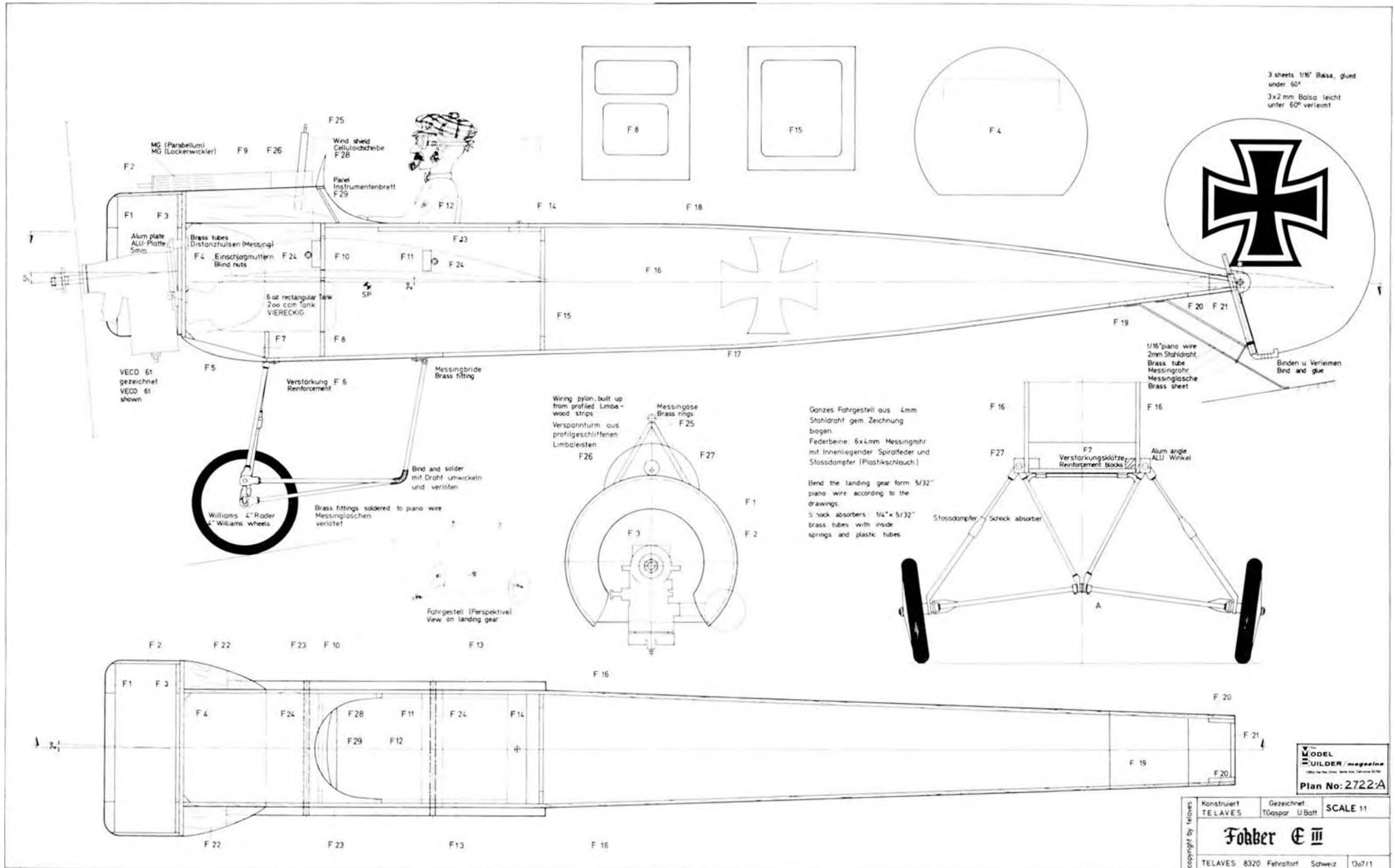
For this purpose, a damaged type H was rebuilt at Schwerin. However, the Fokker-monoplane was not a minute copy of the French types, as only the principal shapes were copied . . . the structure was completely new and considerably stronger than the Morane-Saulnier. This new Fokker monoplane was given the number M.5, and after the 80 HP Gnome engine was available, it was successfully flown. Two variations, one with a shorter and one with a longer wing span were tested, whereby the type M.5L (longer) proved somewhat slower, but in return was better handling.

Mounted with a LMG 08 (light machine-gun), these planes were given the military marking E-I. Later the E-II was built, whereby the wing area was reduced, to give a hoped for increase in the aircraft's speed. Unfortunately however the E-II proved more difficult to fly. The wing area was enlarged again and received the name Fokker E-III, (type number Fokker M.14), which proved very suc-

cessful. A total of 600 Fokker monoplanes were built and were used successfully on all fronts. There were considerable variations regarding equipment and painting. For details, see reference Profile Publication No. 38, "Fokker Monoplanes".

The model is a free supported middle design, whereby the cabling has a more decorative character. The fuselage has a simple solid box construction. The engine is bolted to an aluminum plate hanging on the first fuselage former. The top part of the revolving (scale) motor is covered with balsa. The wheels and related parts have been directly copied and are equipped with guide rods and telescopic legs. The all flying stabilizer and rudder are true to the original.

The wings are laid out in two parts whereby they are fastened with two music wires in typical soaring glider fashion. This method is relatively simple and clean, but has the disadvantage that it cannot stand unscale maneuvering. Without a doubt, however, it is





Here we have the "up, up, and away" routine as the Eindecker climbs out after takeoff. The big engine is nice for getting off the ground, but after that 1/4 power is plenty for most flying.

strong enough for stunt flying when flown "softly". The cabling is only symbolic and made of rubber band. Those wishing to go all out should use stranded wire rigging similar to Lou Proctor's Antic.

Flight behaviour of the E-III has proven good, though it is not quite what you would call a trainer. It is controlled by elevator, rudder and throttle; we decided against the ailerons. We chose a relatively powerful engine that turns a large propeller slowly. A level flight is achieved with 1/4 power, which gives a realistic sound in contrast to the howling noise of a model engine at 13,000 revolutions. A muffler totally enhances the scale flight and sound of the model.

In the air, it is a real joy to maneuver the Fokker E-III. One must get used to handling the model as a full scale aircraft. The flight altitude is controlled by the power of the engine: to climb, one must give a bit more power, the elevator is

only used a little.

Landing is not critical, and thanks to the give of the soft landing gear, it's even possible on rough ground. Tall grass is not advisable as it would catch in the excess of wire landing struts.

The plan of the Fokker E-III gives the basic concept of the model. With our "true to life" model we have emphasized that it represents the original, although, in favor of less building expense and weight, we have not carried it to the last detail. However, the plan incorporates the basics for a scale-model. If you wish to superdetail the model, refer to the Profile Publication.

#### BUILDING INSTRUCTIONS

##### Editor's Note:

Burni Huber lives in Germany and his model designs are based on materials commonly available there. Some of these materials are not so common here in the USA. A particular example is the 5/32 inch balsa plywood used for the bulk-

heads and outer shell of the Eindecker fuselage.

A modeler who is capable of scratch-building from plans will have no problem making the substitutions and alterations necessary to achieve the end result, so we'll not attempt to make more than a few suggestions here and there.

Incidentally, we've seen that balsa plywood in Germany, and it's a GREAT building material. Some of our manufacturers should look into the possibility of producing it. The strength-to-weight ratio is phenomenal.

#### FUSELAGE

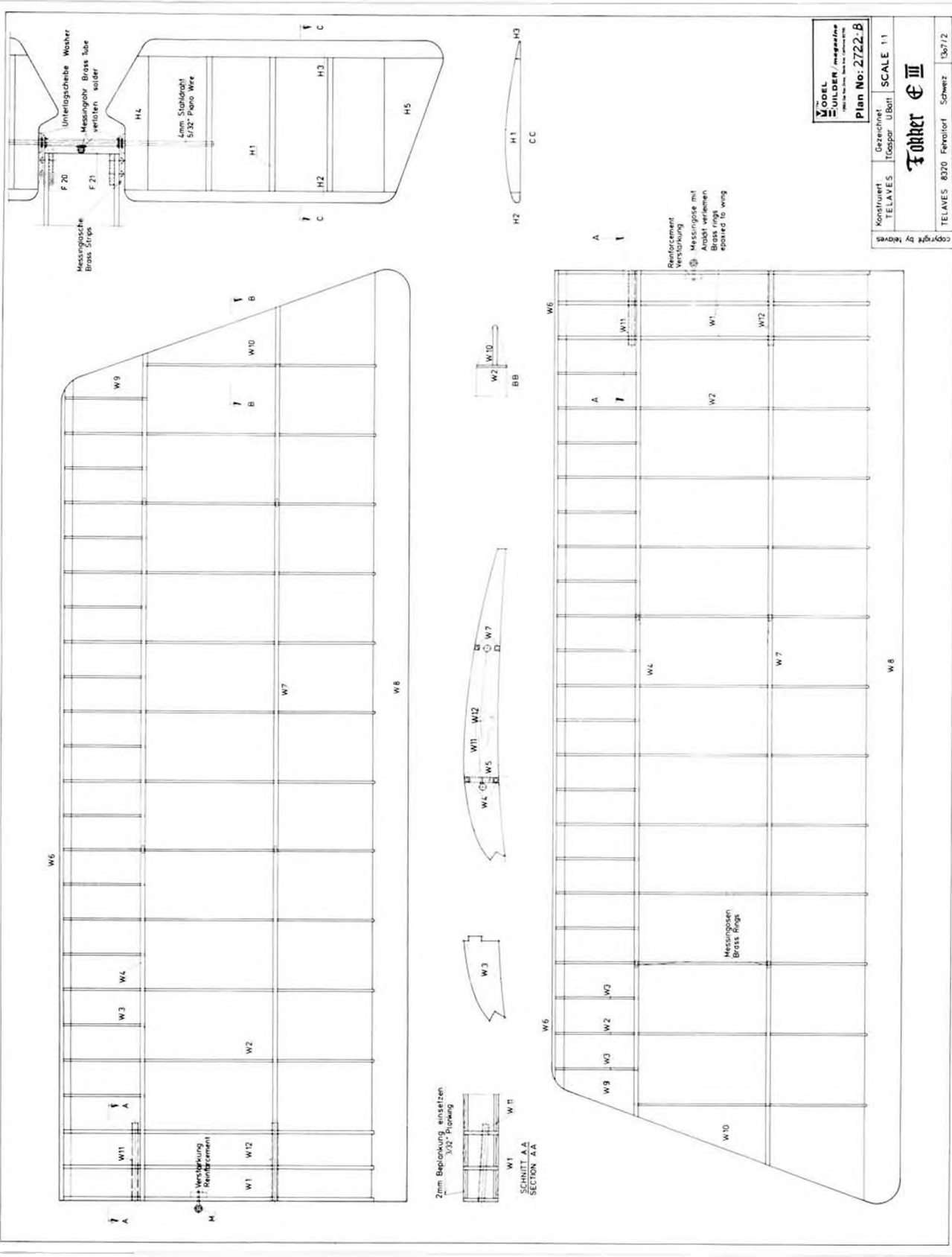
The fuselage is started upside down on a building surface for alignment. The side sheets F-16, the top F-18 and the formers are prepared (do not forget the blind nuts for engine mounting in former F-4); fix the parts on a flat building surface in such a way that F-4 hangs over the edge. The fuselage outline is formed by balsa blocks at the rear portion. The fuselage bottom can now be glued in place. Be sure not to forget the reinforcements.

That's all for the rough building of the fuselage. Glue the connection-ribs F-23 according to the dihedral and sand and glue fillers F-22 and F-9. You now can build up the engine cowl, based on former F-1.

The cover F-12 is now sanded until it fits into the fuselage and the stops F-13 and F-14 are glued. Now drill the holes for the brass tubes F-24 and epoxy in place. The struts F-10 and F-11 are prepared, glued and epoxied to the fuselage sides at the same time. The bracing pylon is built up by profiled Limba-strips. (Beats me. I'd use brass tubing). The MG (Williams "Spandau" or "Parabellum"



Ship is a surprising combination of construction simplicity with excellent scale effect. Pilot looks a little oversize. Williams wheels, Veco .61



## PARTS LIST

No.	Description	Material	Size
F 1	Engine cowl former	balsa	3/8"x6"x6"
F 2	Engine cowl planking	balsa	1/8"x2-3/8"x20"
F 3	Engine cowl former	ply	1/8"x6"x6"
F 4	Former	ply	3/16"x6"x6"
F 5	Filler	balsa	3/8"x4-5/16x4-3/4"
F 6	Floor reinforcement	ply	5/32"x4-1/16"x6-1/2"
F 7	Auxiliary former	ply	5/32"x4-1/16"x1"
F 8	Former	ply	5/32"x4-1/16"x5"
F 9	Former	balsa	1-3/8"x4-5/16"x5-3/4"
F 10	Strut	limba	5/16"x1"x4-1/16"
F 11	Strut	limba	5/16"x1"x4-1/8"
F 12	Cover	balsa	5/32"x4-1/16"x7-11/16"
F 13	Stop	balsa	5/32"x5/32"x5"
F 14	Support	ply	5/32"x3/16"x4-1/16"
F 15	Former	ply	5/32"x4-1/16"x4-5/8"
F 16	Fuselage sides	balsa ply	5/32"x5-1/8"x40"
F 17	Fuselage bottom	balsa	5/32"x4-1/16"x30"
F 18	Fuselage top	balsa	5/32"x4-1/16"x28"
F 19	Reinforcement	ply	5/32"x3"x3"
F 20	Doublers	ply	5/32"x7/8"x1"
F 21	Cover	balsa	5/32"x3/16"x2-3/16"
F 22	Engine cowl imitations	balsa	1-1/8"x3"x4-1/8"
F 23	Ribs	limba	5/16"x1-5/8"x12"
F 24	Tubes	brass	3/16" I.D. tubing x5"
F 25	Pylon	limba	5/32"x5/16"x4"
F 27	Alum. Knee		see drawing
F 28	Wind screen	celluloid	see drawing
F 29	Instrument board	balsa	see drawing

The E III banks in for a deadstick landing. Ship is controlled with elevator, rudder, & throttle.

machine gun) is mounted after finishing. The engine is bolted, with the back cover screws, to a rigid aluminum plate which, in turn, is bolted to the former F-4. Another possibility is to use commercially available engine mounts. If a smaller engine than specified is used, be sure to reduce down thrust by approximately 2 degrees.

### LANDING GEAR

The landing gear is a problem and we advise not to begin with building before it has been thoroughly studied from the photos and the drawings. We first bend the rear triangle shaped stirrup, which is a unit together with the two guiding links. The guiding links are cut to length and the brass tubes, which we flatten after fitting, are soldered to the music wire. Then prepare the center horizontal guiding link which is soldered to the stirrup in the rear portion. Then build the two supporting struts and the telescopic legs. For the latter it is very important to find a compression spring with a smaller diam. than the wire, so the compressed spring can not be jammed in the tube. The plastic tube is used as a friction dampener. The bent axle is then made. Solder a collar to the two supporting struts for fixing the axle to prevent turning. The tail skid is made from 3/32 inch piano wire, bound and glued to the reinforcement plate F-19, and supported on the rudder bearing by the means of a brass collar. The bearings for both elevator and rudder are made up of 1/4"-3/16" brass tubes, soldered according to drawing. Solder two fixing plates (3/32

*Continued from page 42*

### WING:

W 1	Ribs	1/8" ply	see drawing
W 2	Ribs	3/32" balsa	see drawing
W 3	Auxiliary ribs	3/32" balsa	see drawing
W 4	Boom	spruce	5/32"x5/32"x27-1/2"
W 5	Spar Web	balsa	5/32"x3/4"x30"
W 6	Leading edges	balsa	3/8"x3/8"x27-1/2"



Pilot certainly couldn't complain about the view, though it might get a little breezy at times! Ship is a natural for WW I events that are so popular now.



Half-A practice combat ship by Steve Fauble, Dixon, Illinois. A great way to remain sharp at low cost in materials and fuel.



There's a swelling wave of interest in .15 powered ukie events around the country. First to achieve official status was FAI team racing, but it never was too popular. Goodyear racing, however, has virtually replaced FAI team racing and is already very popular at AMA contests. It helps that the kit manufacturers are supplying new, modern kits for the event.

The next event in the .15 class that will probably become an official AMA event is FAI combat, and then maybe the sharper manufacturers will try some good kits for us .15 combat freaks. The standard kit for .15's at this time is the Goldberg "Satan". It's pretty sparse after that. There have been several designs published in magazines, notably Netzeband's "Splinter" in Model Air

# CONTROL-LINE

By Dick Mathis

Chapter Two of "Fast Richard's Almanac" stresses the economy of the .15 engine airplane for events usually associated with the "Big Iron." The "Spoiler" can be built directly from the plan opposite.

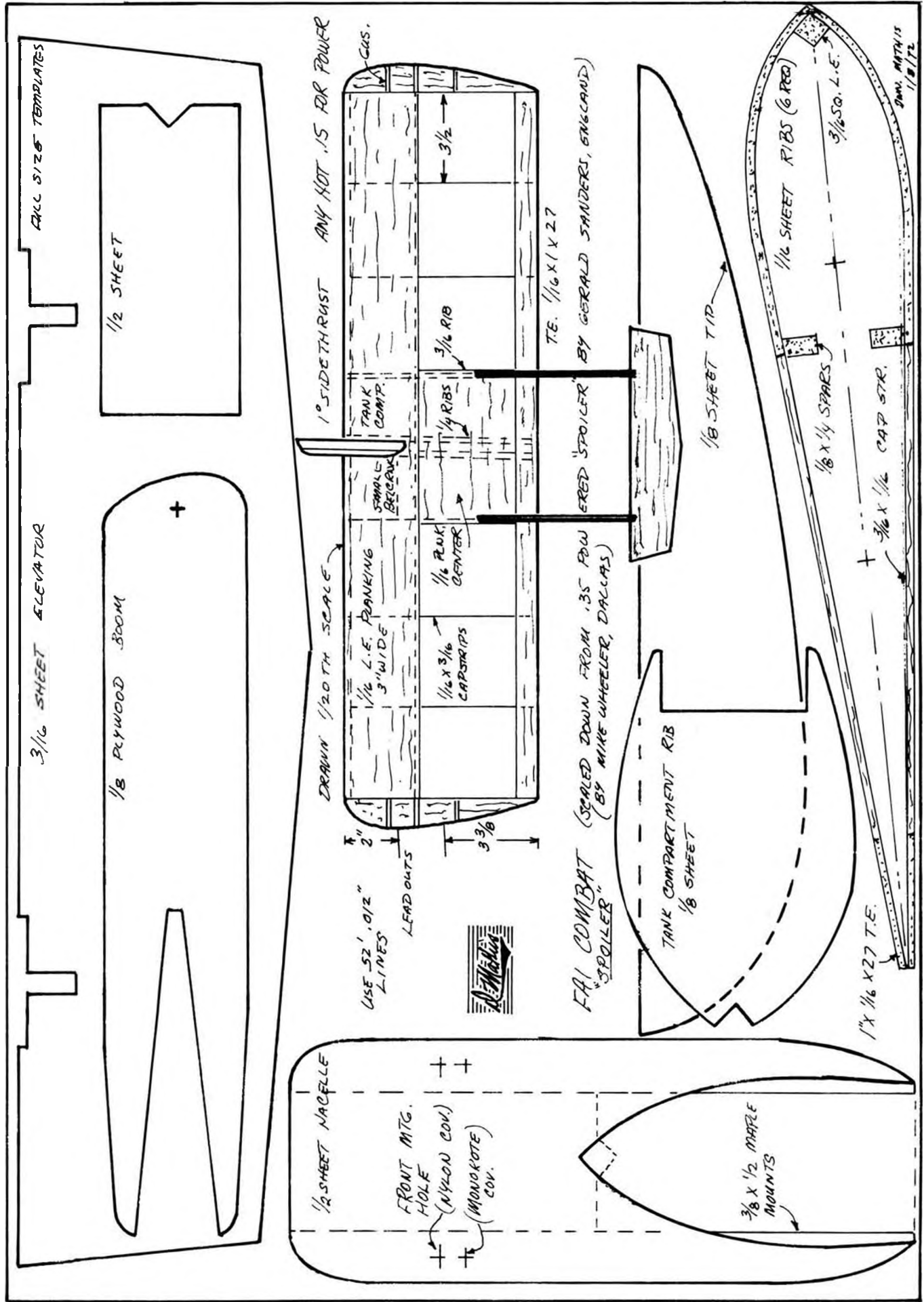
Plane News and my "Tear-Along-the-Dotted-Lion" in Flying Models. I am publishing the adoption of this combat class every chance I get, because I really think it's more fun, and definitely cheaper, than .35 combat. Regardless, it would give the real contest combat flyers twice as much action to have both

.15 and .35 classes.

The fellows around here (that was . . . er . . . Texas, wasn't it? ed.) are pretty hot on FAI combat now, and many of them think the FAI "Spoiler" is the berries. Mike Wheeler of Dallas scaled the first one down from Gerald Sanders' original .35 plans. The "Spoiler" has been



Taylorcraft built in 1946 from scratch. Dick doesn't have the gentleman's name. Sir, would you care to identify yourself? Flies with Atwood .60 on ignition. Can you believe how cheap is fuel?





Sig's new Zlin Akrobat kit for stunt. Designed by Mike Stott, it spans 51 inches and will use a .29 to .40 engine, price \$14.95. Formed plastic engine cowl and canopy, heavy duty hardware.



All-time combat king, Riley Wooten, Lubbock Texas, with one of his "Vampire" foam combat kits. He's a cool flier . . . and hard to beat!



Taken almost six years ago, stunt maestro Bob Geisecke shows the easy way to start an inverted engine. Of course! Start it right side up! Model is his famous red "Geisecke Nobler."

responsible for a couple of top national wins and it should be wild in its shrunken condition with a hot Cox or Super Tigre inspiring it. The plans accompany this month's column, if you're interested. Most of the important parts are drawn full size so you can start now.

That brings up another question. If .15's work for combat, why not for stunt too? There are some nice .15 stunt kits on the market already. The Top Flite "Jr. Nobler" is probably the closest to being a full house super stunter. George Aldrich, it's famed designer, even used one to qualify for our FAI world championship team years back. There is also the "Magician .15" and the

"Shark .15" by Midwest and Jetco respectively. The "Magician" is Jim Silhavey's design and the "Shark" is Lew McFarland's. Both are former national stunt champs and their designs reflect this quality in their flying ability. Another .15 kit is the "Jr. Flite Streak" which is a good stunt trainer and might be a good combat ship too. Ditto for Sterling's "Ringmaster" (for slow combat and basic stunt).

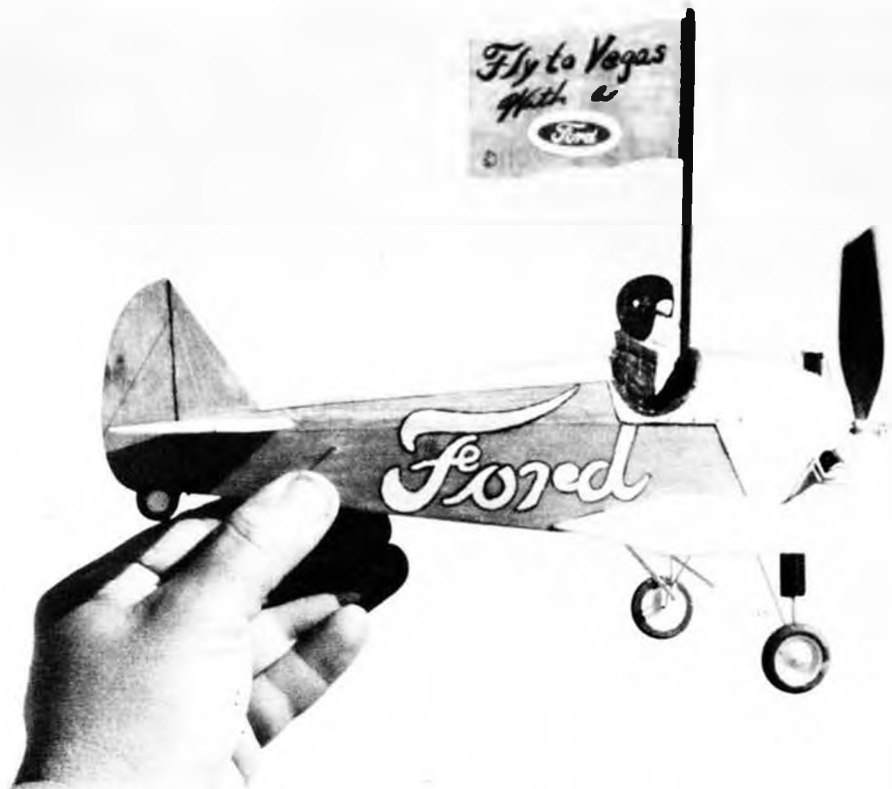
Why doesn't someone try a real super stunter with .15 power? I mean with all the goodies-like full cowl, good finish, flaps, and serious flying? Might be competitive and it would sure be nice for the younger flyers, since it's cheaper

and less trouble to build and haul around. I can remember Don Still's "Stuka" with a Fox .24 which was a National and International winner anytime he flew it. Being small and light, it REALLY turned tight. Any idea? Next month I'll try to have a drawing outlining the general requirements of a hot .15 stunter. If you've got one, let me see it.

One of the photos accompanying this column shows a rarity. It's a "Taylorcraft" sport scale ship built in 1946! What's neat though, is that the picture was taken in 1967, right after it had been flown for the umpteenth thousand time. The plane had an Atwood .60 on ignition and would fly around for 15 minutes on a thimblefull of fuel while the rest of us paced around waiting our turn. I can't remember the owner's name but it doesn't matter since the old timer from Austin, Texas didn't believe in magazines anyway. He had a whole fleet of similar models that he flew regularly. Bygone era.

Ever wonder how to start an inverted stunt engine on the first flip? Look how stunt maestro Bob Geisecke does it. Turn the model over and bring the piston up against compression. Fill the venturi to the top with a fuel prime. Hook batteries and run the prop thru slowly a couple of times holding the prop firmly, until you feel the bump. Now it is ready for the cherished one-flip get-a-way. No exhaust prime needed. Let's hear from you. ●





Walt's version of the little Ford Flivver is going to set the aerodynamicists into a tizzy! That "flag" is up there to make up for lack of dihedral!!

## PEANUT FORD FLIVVER

By Walt Mooney

Here's one that will keep the self-appointed aeronautical engineers busy explaining for a while. Walt raised the flag and the no-dihedralled Ford "Flivver" turned into a "Stable Mable". Sets you to thinking, doesn't it?

● Did you ever want to build a scale low wing model but felt discouraged because it had absolutely no dihedral and the addition of dihedral would make it lose its unique character? The Ford Flivver is a model like that, except here is a sneaky development that makes it like it was on rails. All we did was make the pilot carry a flag. The flag provides the necessary dihedral effect and the Flivver flies with an absolutely flat wing as far as dihedral is concerned.

Lest I get credited with a new discovery, let me say that a gentleman named Lanchester, in the 1880's, used this forward vertical fin to make a tandem wing glider fly. Everything has been done before, but sometimes the ideas can get added together in a slightly different manner and the result is an interesting new answer. This simple little model of all sheet balsa construction is a different approach and is quite an attention getter on the flying field.

All the surfaces and most of the fuselage is constructed using 1/32nd sheet balsa. Medium hard quarter sawed balsa is ideal. Note the grain direction indicated on the plan. The fuselage bottom covering should have the grain running across the fuselage.

Cut out all the parts and sand the edges smooth. Only two wing ribs are required and these are actually cut from the bottom edge of the fuselage sides.

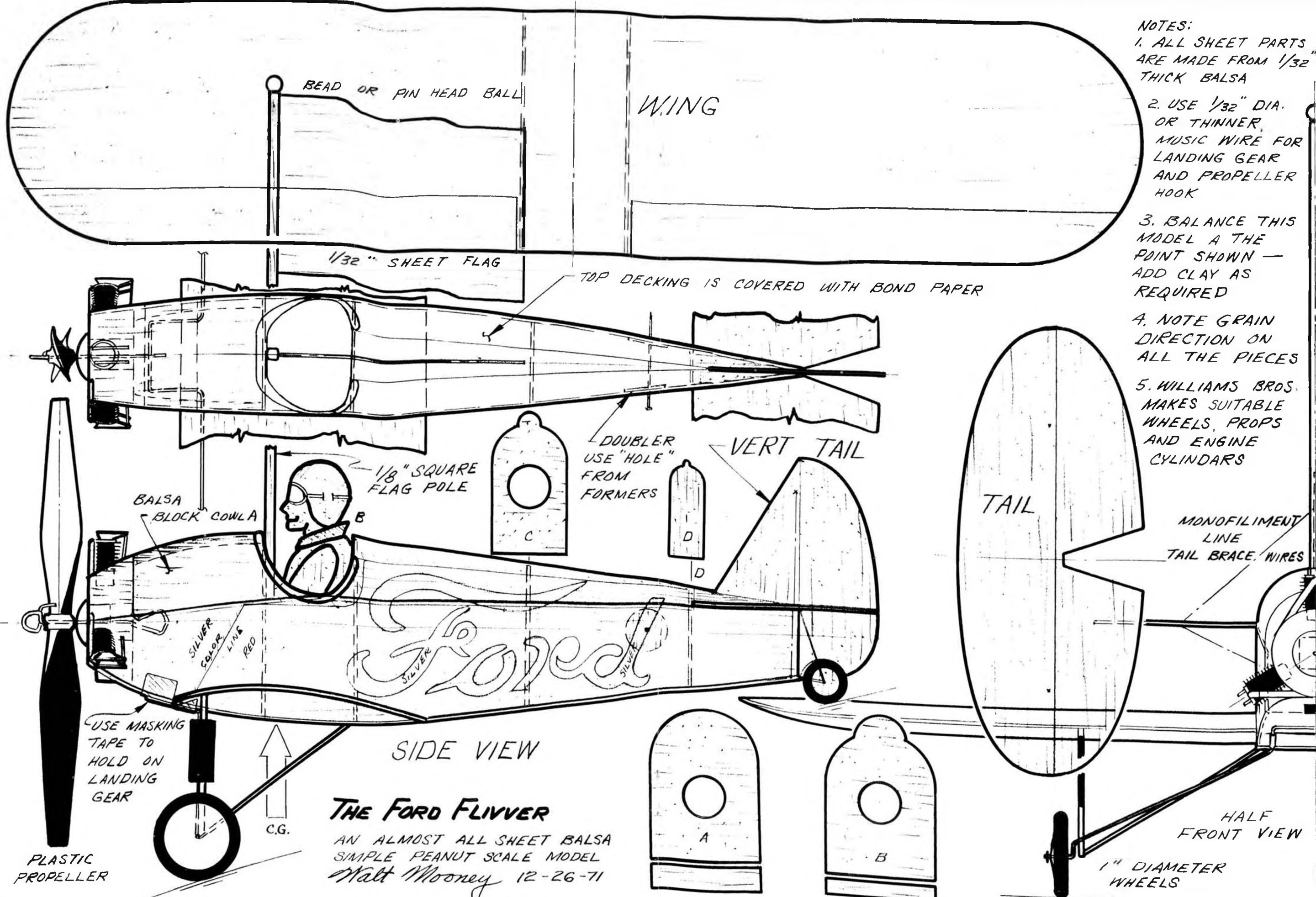
*Continued on page 43*



How's that for a wide tread? Now Ford can claim they had it before Pontiac! Little flivver is all sheet balsa for fast yet light construction.



Yes, it do fly! The Mooney family had five Fords at the New Year's Day Peanut Scale contest in Las Vegas. How's that for sobering up?



- NOTES:
1. ALL SHEET PARTS ARE MADE FROM 1/32" THICK Balsa
  2. USE 1/32" DIA. OR THINNER MUSIC WIRE FOR LANDING GEAR AND PROPELLER HOOK
  3. BALANCE THIS MODEL AT THE POINT SHOWN — ADD CLAY AS REQUIRED
  4. NOTE GRAIN DIRECTION ON ALL THE PIECES
  5. WILLIAMS BROS. MAKES SUITABLE WHEELS, PROPS AND ENGINE CYLINDARS

**The Ford Flivver**  
 AN ALMOST ALL SHEET Balsa  
 SIMPLE PEANUT SCALE MODEL  
 Matt Mooney 12-26-71

The MODEL BUILDER

The MODEL BUILDER

FEB 1972 Vol 2 No 5



Flying companions huddle prior to mass "A" gas flyoff at Taft. Take a close look... how many are there? Who's holding that plane in back?

# FREE FLIGHT

by Mel Schmidt

## THE COST AND HANDLING OF FUEL

There are many good commercial fuels in the hobby shops, but they're not all alike in content or in dollar value. For example, one name brand sells for \$2.85 per quart while another is only \$1.85. You would expect the higher cost fuel to have more nitro, or something. Not true! In this example, the fuel costing \$1.85 has the more expensive ingredients. The exact contents of the lower cost fuel is stated on the label while the contents of the other is available only by analysis. Some fuel suppliers are very reluctant to tell what's in their product. On the other hand, why shouldn't a flyer know what he is paying for and what is being run through his engine? Both Sig and Fox now state the contents of their fuels on the labels. They have no dark secrets, their fuels are excellent, and are fairly priced. We believe the other fuel suppliers should do the same.

Mixing your own brew is a lot of extra trouble and may not result in a cost saving if the amount used is small. But if you use fuel in quantities and know something of the effects of Nitro-methane, Methanal, Lubricin N-1, Polyoxide Oil, Ucon Oil, Castor Oil and Propylene Oxide, mixing your own may be the way to go. Two other modelers share the costs with me in buying bulk supplies to mix our own. However, for an active free flier, mixing solo, it hardly seems worth the trouble.

There are certain guidelines for handling fuel that you should know about. If you mix your own, do it in a warm dry place... not out in the garage on a cold night, when the air is damp. Why? Alcohol attracts water. Have you ever noticed spilled fuel on the top of your fuel can turning white? This is moisture in the air being absorbed by the alcohol.

By the way, when you're mixing fuel,

be sure there are no open flames around.

Some fuels improve with age. This is true for castor based fuels but not for fuels using Polyoxide Oil, Ucon Oil or Ether. And it is important that the container be completely sealed to prevent evaporation and water contamination.

This is even true on the flying field. We follow a general practice of shaking the container just before use. The Polyoxide based fuel we use for our Cox engines settles in layers.

We believe Clarence Lee to be an expert on fuels and engines. So, if you want to hear it from an expert, read his book entitled "The R/C Engine." We found it worth much more than the \$3.95 it sells for. The following is a direct quote from Lee's book. As you can see, his comments are applicable to all engine users.

"If you have used Castor Oil for the lubricant, set the fuel where it will get warm during the day and cool at night



Winning team at the Thermal Thumbers' annual Wakefield Team Challenge at Lake Elsinor; J. Quinn, M. Schmidt, and J. Waters.



"Team Satellite," left to right and top to bottom; Mark Sommer and Keith Wright, Bob Hunter, Mike Schwartz, and Bill Hunter. The plane?

while it is aging. This will solidify some of the fats in the oil and they will settle to the bottom. This is not necessary if you use Ucon Oil for lubrication. You have all noticed, at some time or another, white specks floating in your fuel that look like cracker crumbs. Usually this is caused by the fuel getting hot at the flying field and then cooling off when you get home. It is worse when the fuel is cold. Warming the fuel will cause the white specks to dissolve again. By pre-seasoning the fuel, you can eliminate most of this problem to begin with. Most of your commercial fuel manufacturers mix their fuel in drums or tanks and let them sit outdoors where they will get warm during the day and cool at night just for this reason. Occasionally you will get some fuel that has an exceptional amount of the white crumbs, and they do not go away when the fuel is warm. This is caused by the Castor Oil having gone rancid. This happens when the fuel is too old. Once this happens, the fuel will really cause varnish and carbon and should not be used. A little bit in cold weather is normal. If the fuel looks like half a dozen soda crackers have been broken up in it, the Castor has gone rancid and it is no good."

If all of this is more involved than you care to get, just remember to buy a fuel that the engine manufacturer recommends and then handle it properly.

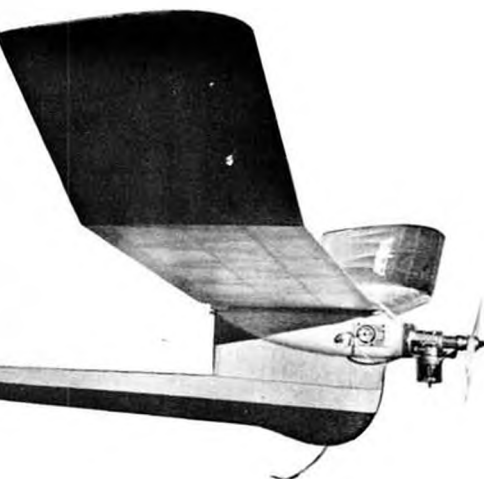
Commentary on:  
THE NEW AMA GAS RULES --  
very nearly as presented,  
by TOM HUTCHINSON  
in the January "Satellite" newsletter:

As a result of FF Contest Board voting, new rules are in effect as of Jan. 1, 1972. The method of flyoffs has been changed so that the max remains

constant, but engine runs are reduced on the extra flights. For instance, in Cat. I (5 min. max), the first flyoff flight will be with a 10 second engine run. If the max is made, the next flight (and all others) will be with an 8 second run, until a max is missed.

The first thing to be said about these rules is that they're OFFICIAL. Which means that these are the rules you'll be flying with until 1974. (ALL AMA rules have been frozen until then). They were adopted using the regular procedures of AMA contest boards, and all flyers were asked to submit their opinions to their Contest Board member. After all of these inputs were received, they were adopted . . . with only 2 dissenting votes. So . . . there shouldn't be any complaints about the manner in which these rules were adopted.

It's also suggested that you TRY the new rules, before doing any complaining about them. (You have nothing to worry about if your present ships aren't capable



Sig's latest competition free flight kit, the "ABC Scrambler," Plane designed by Jim Clem and Bob Hanford. Geodetic surfaces. \$9.50.

of maxing out, since only flyoff flights are affected. Besides, if the ship won't max, it's not the rules fault.) I've been testing my present ships with the shorter engine runs and results are encouraging. If you take the time to do a little testing too, you'll discover that 5 minutes on a 10 second engine run isn't impossible (although harder to do than 6 minutes on 15 sec. run). Good FAI ships are capable of this much performance, even though restricted in weight, engine size, wing loading and fuel, why shouldn't an unrestricted AMA gas model be capable of even more performance?

If you are worried about switching from a VTO launch to a hand launch for the flyoffs, you shouldn't be. Any ship trimmed to VTO properly will be even easier to hand launch, since you can put the model into it's groove immediately, with the aid of your strong right arm. Many models waste a lot of their present engine run with poor VTO's anyway, so their hand-launched flights may end up



Does this qualify as scale? Loren Williams, Palos Verdes, CA, and his .010 powered FAI design. Span is 24 inches, area 72 sq. inches, and the weight is about point . . . er, zero over infinity.



SCAT Club's Dick Gildersleeve secures the tail boom on original Wakefield. Oldest FAI event.

nearly as high as a VTO, even with a shorter engine run. (High-thrust designs may be a problem, since the engine's concentrated weight is high above the rest of the fuselage, and most right-handers tend to bank the model away from their natural (left) pattern. In this case, it may be wiser to VTO all flights and take the performance loss in favor of consistent launch. (Or just practice more.) (or become left-handed. ed.)

A little test flying should be enough to settle worries about timer accuracy. You only need 2 new timer settings; one for the first flyoff, and another for all the other flyoff flights. This is only one more setting than you probably use now.

If it sounds like I'm prejudiced in favor of these new rules, you're right. For one thing, it shouldn't take all day just to fly one event. The number of extra flights should be considerably reduced and each flight should take less time to retrieve. Flyoffs shouldn't be any harder to time than regular flights (less likely to go O.O.S. if you hit a boomer at the top of the climb). More important, most flights should stay on the field. It takes long enough for a max flight to begin with.

I've always liked smaller, faster gas models (more fun to trim), but have felt discriminated against in the past, because the rules favored larger, slower models which were easier to see on long flyoff flights. Now, with these changes, smaller, lighter models which will take full advantage of the shorter engine runs are worth the effort to build and fly. Optimum sizes should be 200-300 sq. in. for 1/2 A (as long as weight is 6 oz. or less), 400-500 sq. in. for .15-.23 engines (15-18 oz.)

and 600-700 sq. in. for BC (24-30 oz.). Even before the rules were changed, I've noticed a shrinking in size and weight for the better flying ships seen at contests. Notice that weight as well as wing area should be reduced, or glide may suffer . . . a lighter ship climbs better, too . . . engine weight should be considered carefully, since now it will be a larger proportion of total airplane weight. Power-to-weight ration is what counts, so plain-bearing engines (such as Cox, OS MAX, Greenhead Torps, old style Johnsons, etc) may be preferable over powerful, but heavy machinery.

It's not necessary to discard all your old models and start building a fleet of new ones from scratch. If your old ships are capable of maxing out, use them for the first 3 flights and have something new for the flyoffs. Even here, you can have a special flyoff ship by just putting a larger engine in a present model. If you decide to build something new, a number of kits are available. In 1/2 A, for example, M & P's "Mini-Pearl" is just about perfectly suited for the new rules, as is the Ramrod 250 and the original Starduster. A lot of the more ancient 1/2 A kits may be of the right size, too. A 1/2 A Galaxie or Starduster 350 should be the right size for a Cox .09 Class A ship, but some structural modifications may be necessary in the latter. The Galaxie 585 should handle .29's and .35's, if you extend the tail moment arm by about 6 inches. Any FAI class design capable of handling the power of a good Rossi .15 shouldn't have any problems with a .29 or .35, but the glide might not be as good as with a true lightweight.

As far as flying this new breed goes, it is important to get a good transition on the shorter engine runs. Right/right power patterns seem to transition better for a pylon design, in addition to making it easier to handle high power. High thrust designs already go left/left and are flown with more incidence, so this shouldn't be to much of a problem. Auto-rudders could become more common, but usually aren't necessary if the model is moving out fast enough.

#### LOOKING FOR A GOOD .29?

If you are looking for a good FF .29, then you should consider the LS Fox .29X. Larry Scarinzi reports the timing, cleans and reduces internal friction and then carefully reassembles the motor. The result is an engine that is fast, starts easy and runs smooth. You may doubt that the Fox .29X can be a hot free flight engine. Well we weren't convinced either, until we had the chance to tach three LS Fox .29X's at the Nats. The Fox has been underrated for serious free flight work. Jim Clem is convinced after winning the "B" Gas event at Chicago.

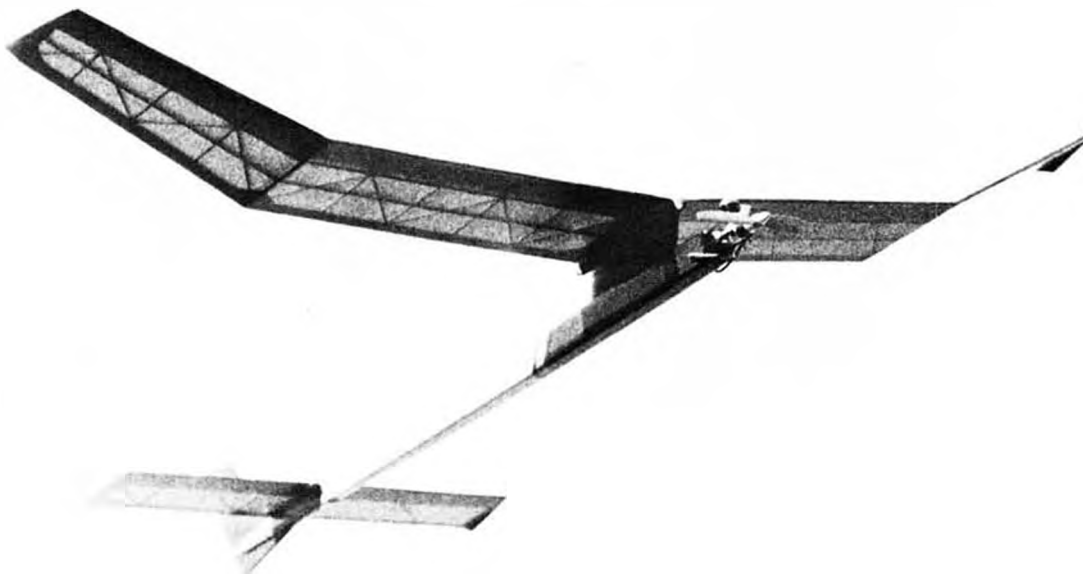
What is the cost? If you supply the .29X, the price for rework is \$12.50 plus \$1.25 postage. Larry charges \$21.50 plus postage for a new .29X with rework. For further information on the LS Fox .29X or other LS customized engines, write to Larry Scarinzi, 191 Parsippany Road, Whippany, New Jersey 07981. We have ordered a new LS Fox .29X and will do a factual report on it very soon.

#### FLASH! NEW TAFT FLYING FIELD

Standard Oil Company has approved

*Continued on page 44*

The MODEL BUILDER



Al Vela's latest design, the 1/2A E-Z Boy, floats by on one of it's first test glides. Al favors larger ships for new 1/2A rules.

# "E-Z BOY"

Artist - modeler Al Vela designed "E-Z Boy" as a full bore competition airplane for the popular half-A event, but did it with the novice builder in mind to encourage new blood. He believes this configuration is best suited to the new AMA rules, where the glide will be more important than a rocket climb. By Al Vela

● E-Z-Boy is my first 1/2 A in the last four years or so since the "Tototl" (Aztec Eagle) published in the Aug/Sept. 1966 issue of Sig Modeler Magazine. I mentioned this particular design because these two little birds came to life in a very similar way. Both were a project for a new publication although they are formulated differently.

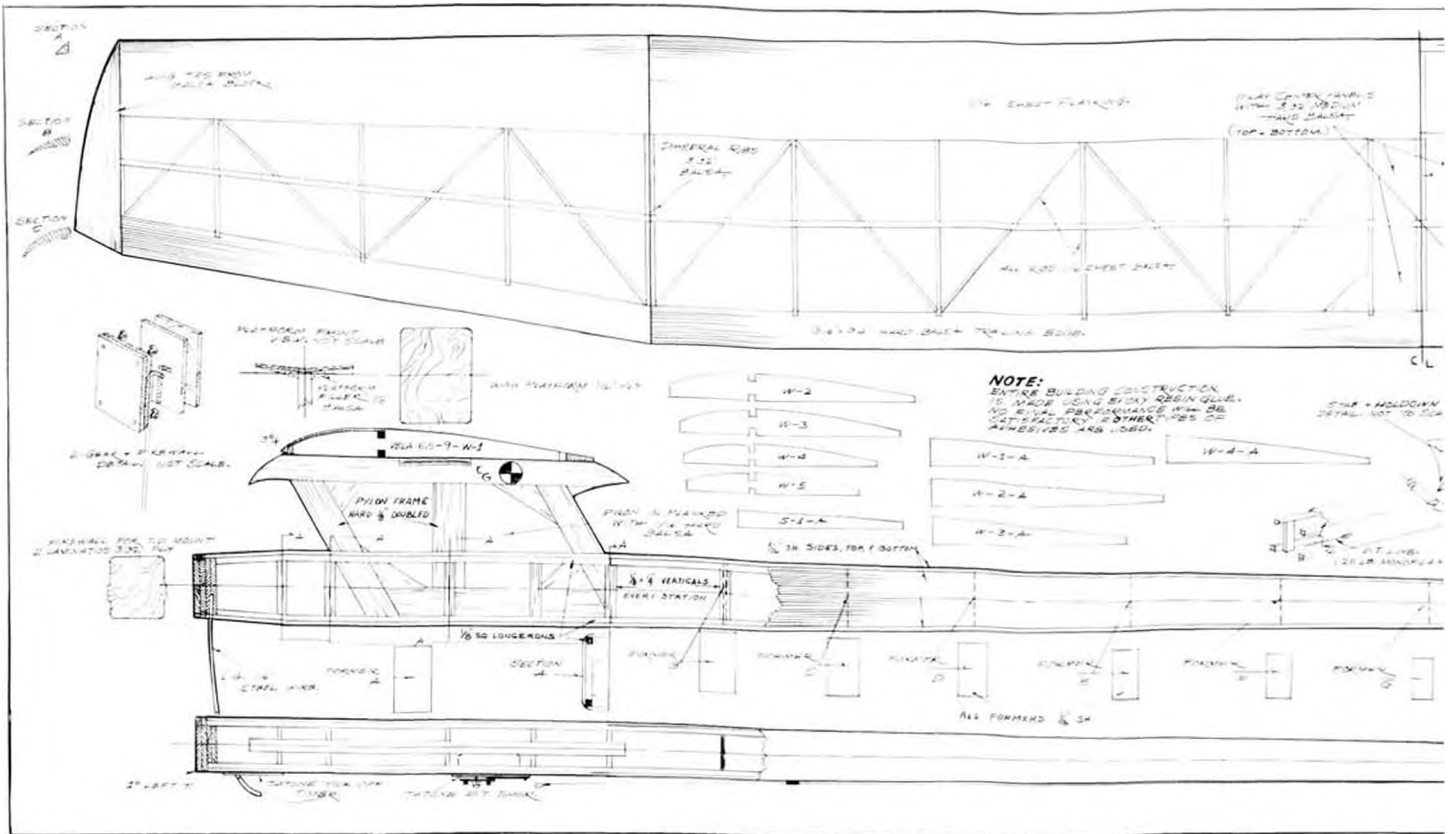
By the time the E-Z-Boy is published an entirely new set of rules will be in operation and so it was designed with these rules in mind. The approach is toward a more consistent craft emphasizing the glide factor. It is my belief, relying on extensive experience in F.A.I. power, that glide will be more important than a rocket climb.

The present designs in the 1/2 A class are the birds with very small wings and big stabs; a combination that will work fine if you can give them time to get up there where the strong thermals are. In other words, it is a sort of gamble . . . if you get the rising air you can say you got a max, but if you don't, the thing will come down faster than going up! With the old rules, this combination of design was fine, but at the present, there is no room for gambling. There are several factors of great importance to consider, such as transitions, accurate timing in the fly-off, launching with precision and, in the short engine runs, the GLIDE.

To get to the real competition one must get first the three 5's. So the need for climb is here! This was also considered in designing this little bird. The sections used have the characteristics of fast climb and good glide . . . not the floating kind of a FAT rib, but a penetrating glide less affected by drastic currents, or as the usual expression, ups and downs. The "E-Z-Boy", when properly trimmed, will attain the necessary climb to make the 5's with 12 second engine runs.



Al tunes up the .049 Cox engine prior to a test flight at southern California's favorite free flight site, Lake Elsinore. Fear not, the wind always blows AWAY from the water! Long tail moment.



**FULL SIZE PLANS AVAILABLE – SEE PAGE 48**

For several years I had been sold on the D.T. fuse, but in the last two years, I have been bringing my ships down by the way of mechanical timers, and I have found that a precise timing can be obtained by using this device. So this is another feature incorporated in the craft.

Many flyers are not willing to use the timer D.T. for fear of malfunctioning. I

would like to say I was one of them, but with the necessity of operating V.I.T. (variable incidence tail) in my F.A.I. ships I was practically obligated to use D.T. timers in order to operate auto-rudder-auto-stab and D.T.. This is when I learned that by giving them good maintenance and keeping them impeccably clean they will give you the confidence to rely on them.

Basically, the E-Z-Boy planform was created using some of the German school of design, although the all balsa wing and stab are not used . . . only the approach in aerodynamics and proportional balance. By this I mean not a FAT section, a short fat wing, and a big stab, but the more balanced aspect ratios of the German school, using more area in the wing, a safer C.G., relatively small stab ala F.A.I., (30% of wing area. Quite enough by using all the area, with the turbulence of the rudder removed from the top of the stab).

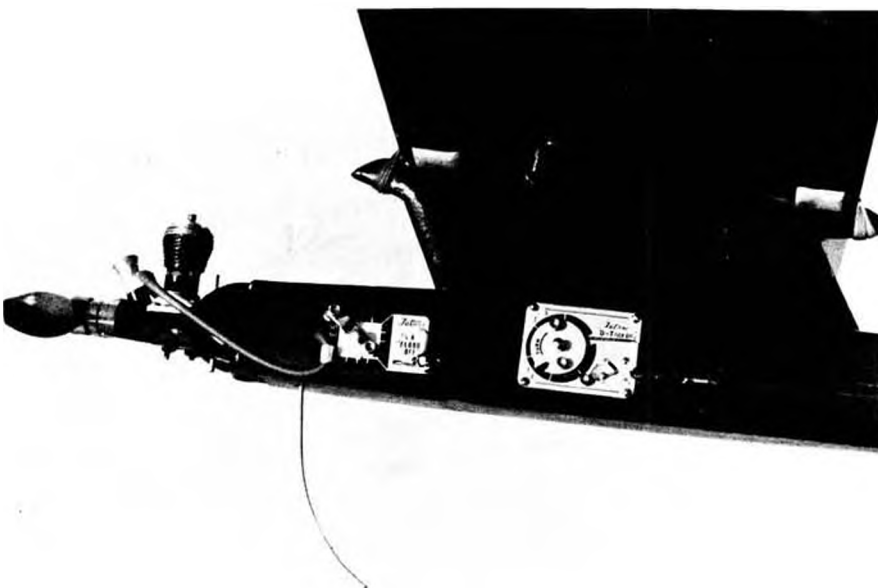
There are several more factors that I can mention about the design, but this will take quite a lot of space and I feel I have covered the most important parts.

**FUSELAGE:**

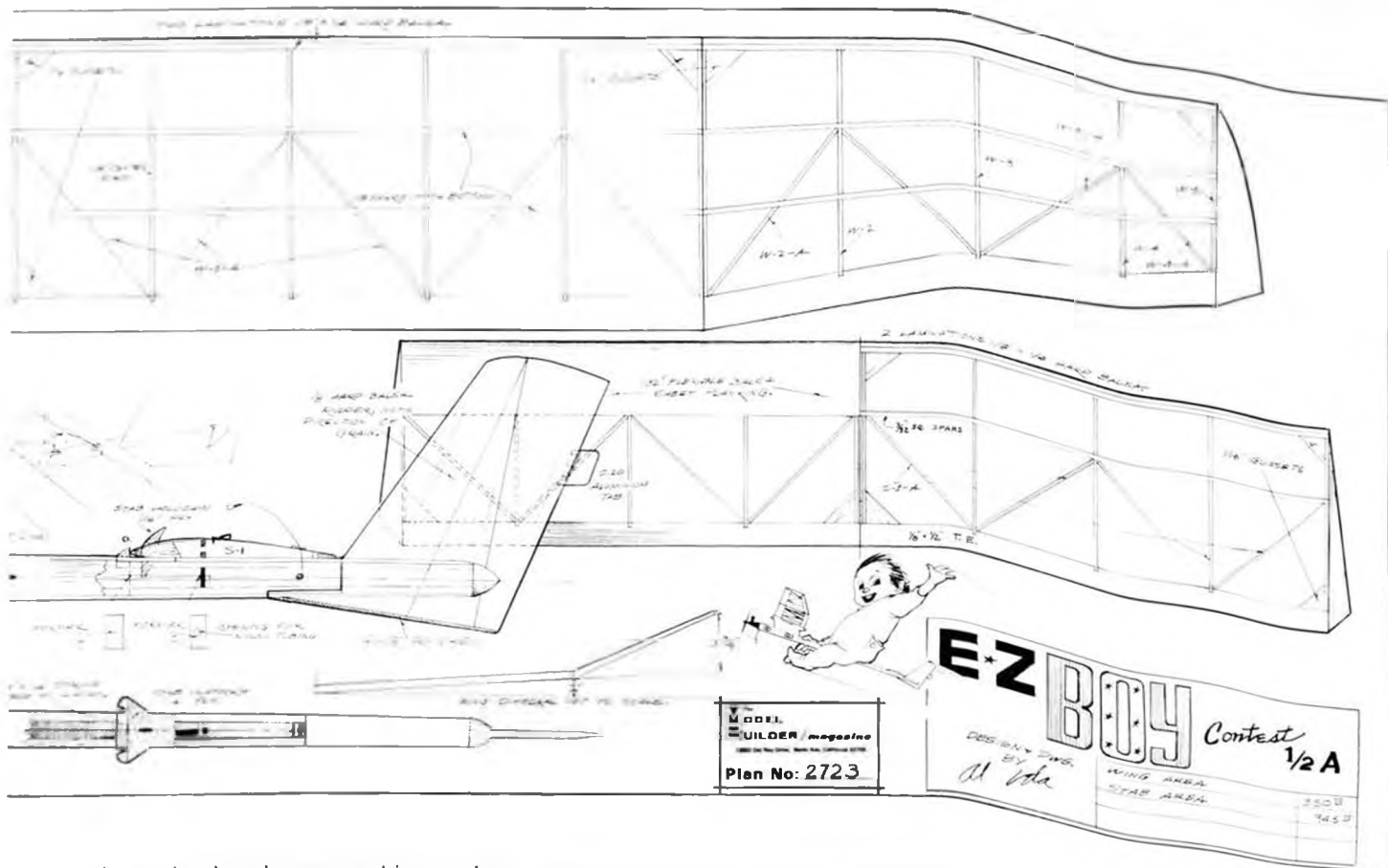
This is the backbone of the model, as it is the axis about which all the forces act. Build it as true as possible from the plans. If you are a modeler of experience you will find the plans very simple but if not, study them well until you get the message.

**WING:**

The type of construction used here is one of the simpler ones. The templates



Tatone "Flood-off" timer is being used as a cut-off for simple installation without pressure. Tick-off D.T. timer allows tail pop up. 1/2A's are simple and inexpensive way to join in competition.



drawn in the plans are a bit oversize. This extra wood should be sanded off when finishing.

#### STAB:

Here is probably the easiest part of the project, except for the installation of the D.T. line . . . again study this part well.

#### TRIMMING:

Begin by checking all the principal parts of the bird. Wing should be set at 2 degrees positive incidence and the stabilizer at zero incidence (in this case parallel to the center line), and center of gravity at 70 percent of wing chord. Be sure the wing is well keyed and fits good in the pylon. There is no room here for sloppy fitting.

Hand glide the model in calm air until you get the right glide. Re run the engine and check timers before going to the flying field. This will save you trips without profit.

When in the field and ready for the initial flight, set timer for a four second run, run engine at full bore, prop on forward. If you build it right she will go almost straight. Try a second flight with 6

seconds engine run. If she goes too tight to the right correct this with a bit more left thrust. Remember, left thrust works as if you have washed in your left wing panel looking from the front, so your next flight should be the same six seconds, but straight up.

Now, when you get to this point, start using the aluminum tab in the rudder. Bend it to the right very little. Keep trying this until your power pattern is slightly right and pointing the nose up. Get your power pattern first, then work on the glide.

For glide turn, use stab tilt. Flight pattern should be right-right, that is, right under power and glide to the right. Remember to shim the right side of the stab for right turn, looking from the rear.

With the recommended steps in trimming, and working true from the plans, you should be able to have the bird in the air in one morning. But keep working until you get the utmost from the ship.

Good luck. I will be looking forward to seeing many of these birds in the coming contests! ●



E-Z Boy takes off on another successful test hop at Elsinore. AI designed ship specially for M.B.





The "Mustang 450" is latest Formula I kit, a new release from Sig Mfg. Co.. Features foam cored wings, molded fuselage top and cheeks. \$29.95.

# pylon

By Chuck Smith

● Pylon racing has been growing steadily in the years since it was conceived in 1965. It has not, however, grown at the rate that many modelers thought it would. This has been due to two main factors: general lack of leadership within the NMPRA and the misconceptions which many flyers have about the sport of pylon racing. The results of the latest NMPRA election, however, indicate that things will be a changin'.

Bror Faber, NMPRA's new president, has more knowledge and experience in pylon racing than just about anyone else in the sport, as is indicated by his second place finish in the 1971 Southern California District Championships and the superb job he did as this district's VP. More important, though, is the fact that he is essentially a born leader, as is suggested by his success in his career as a reliability engineer for McDonnell Douglas. Bror also served as president of the B.I.R.D. Club several years ago and the momentum which he put into this club is still being felt today.

Bror knows the problems which face the NMPRA and this year he has an extremely able group of district vice-presidents, which should make the NMPRA's presence felt throughout the country. Al Prather, Southern California's District VP is working closely with Bror and has already shown his effectiveness in this area with about as much enthusiasm and dedication as one can expect from one man. Al's situation is unique among the district VP's because most of the 170 plus flyers which he represents live within a radius of about 100 miles; therefore, he essentially does not have a communications problem and can take actions which would be impractical for the other VP's.

Al's first act was to distribute a questionnaire to which 86 Southern California members responded. He evaluated the results and presented them to a heavily attended general membership meeting in January (where a custom ST 40 was raffled off to raise over \$180 for the district). Using the questionnaire as a guideline, committees were then established



In spite of apparent "high compression", Jack Stafford managed a 2nd place in FAI at Los Al



Terry Prather cleaned up twice at Los Alamitos; first in FAI and then afterwards with the paper towels. Clothing proves it was a bit chilly!



Bob Smith discloses speed secret that got him a third place as a team with Jeff Bertken at Los Al. Ship is PB Products P 51, "Miss BS."

which will discuss and RECOMMEND programs in the following areas:

- (1) Safety, Mel Santmyers  
Chairman
- (2) Race Procedure, Chuck Smith  
Chairman
- (3) Beginners Program, John Brodbeck - Chairman
- (4) Expert Pilot and Championship Points, Bob Smith - Chairman
- (5) Publicity and Promotion, Terry Prather - Chairman

There is an average of about twelve members on each committee and hopefully, there will evolve from them more required safety provisions, a pylon contest directors handbook and a national and district championship point system which will be accepted and used in every NMPRA district during the '72 racing season.

An important factor in the growth of pylon racing is communication. This problem will be solved in 1972 for NMPRA members by the excellent newsletter Bob Stockwell is editing. The newsletter features the news and views from NMPRA officials, and contest reports from around the country. (The best way for NMPRA members to contribute to the organization is to write a report with pictures of contests in his areas for the newsletter).

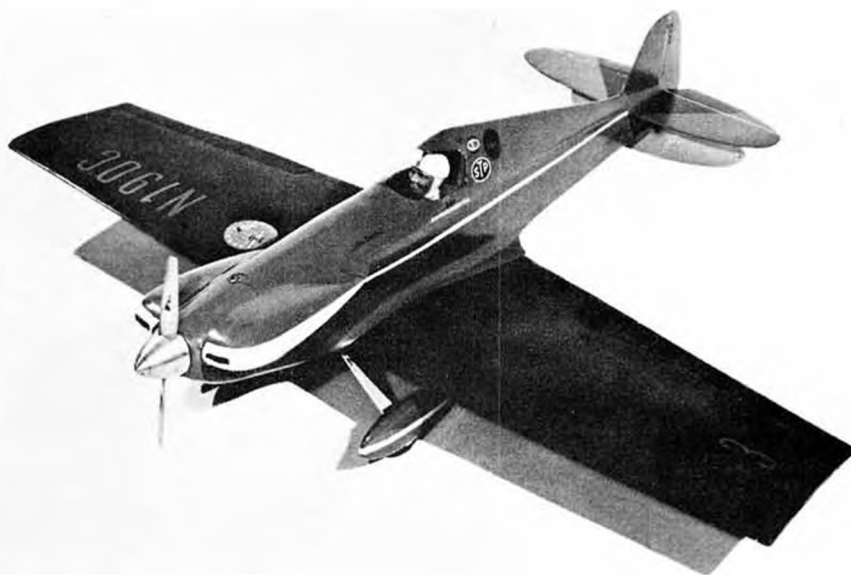
Unlike the NMPRA newsletter, I hope that this monthly column will reach ALL flyers who have an interest in racing. I do not plan to concentrate on long contest reports, but would appreciate contributions of photos and contest results, which should consist of the names of the top finishers along with their fastest heat time, type of aircraft, and make of

engine. I would also like to feature a pylon racing contest calendar for the entire country. For this to be possible, I need either club officials or CD's to send me contest dates and location, along with the events being flown and who to contact for further information. I hope that this feature can be a help to racing pilots, but more important, it should be a guide to where the action is for those interested modelers who do not yet have racing in their blood. All contributions for this column should be sent to: The MODEL BUILDER - Pylon column, 12552 Del Rey Dr., Santa Ana, Ca. 92705

The contest results and calendar, however, will have to take a back seat to what I hope most to accomplish in this column --unlocking the secrets of being a successful pylon racing pilot. My purpose will be

to encourage the rookie racer by interviewing some of the top pilots in the country and discussing the various combinations of techniques which can lead to success. I think it might also be useful if you, the reader, could send in questions, such as in Clarence Lee's RCM column, and if I can not answer them, I'm sure I know someone who can, I hope that by following this column, more modelers will be able to experience the thrill of competition and the pure fun which the sport of pylon racing can provide.

BRITISH INTERNATS? -- The FAI has determined that FAI pylon has not had enough international competition up to this time to warrant holding a world championship this year, so the British have changed their original proposal to conduct such a contest this summer. Eng-



"Miss Dallas", kitted by John Garabedian, already has a long list of wins to its credit. Kit features machine cut parts, foam wing cores, molded fiberglass wheel pants and cheek cowls. Price is \$48.



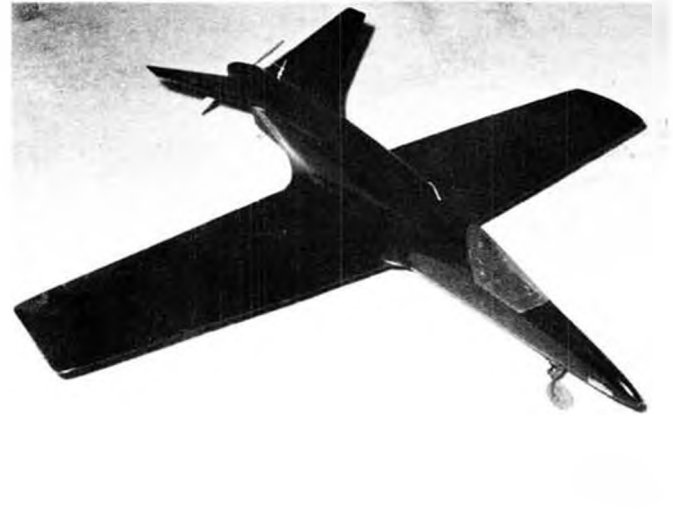
Bob Upton, The MODEL BUILDER's western advertising rep, placed his Minnow II in fourth at Los Al. Bob is old hand in RC pylon racing.



Veteran Formula I team Jay Replogle (r) and Dick Wadell with their original FAI ship. Los Alamitos inactive but still a Navy installation.



Jack Hertenstein and his ST 40 powered FAI Shoestring. Original muffler. Look at those fat wheels! Would you believe pizza slicers?



Wayne Wainwright's original design "Pangolin" (Australian ant eater) inspired by BD-5. K & B 40, 420 sq.in., V-tail, a trifle hot!

land now has plans to hold an international contest for FAI pylon, with an open entry list, August 25-28. This means that anyone in any country who can make it to England with an FAI pylon racer can compete. The AMA has already begun to make plans for a round trip chartered flight from New York to England for this contest. This flight would require at least forty persons and would cost a modeler about \$300, which would include food, lodging and the \$75 entry fee.

Unfortunately, there seems to be a few snags developing in England at this time. The British SMAE is afraid the contest will be dominated by an overwhelming number of Americans, and is considering placing a limit on the number of pilots allowed from each country. I can't really see why the British have made an issue of this, since the large number of entries that this contest may attract would

be a big boost for the future of international pylon racing. I'm also sure that England would be well represented by a large number of its own pilots.

There is also a hassle within the SMAE over whether the contest can be guaranteed to be a financial success. Hopefully, these problems will soon be resolved, so any pilot who would like to visit Europe in addition to enjoying his hobby (and maybe beating a few Russians) should probably begin to make tentative plans now, because reservations and down payments for the chartered flight must unfortunately be made early in the year.

#### B.I.R.D.'s FAI PYLON CONTEST

The B.I.R.D. Club, Inc. of Carson, California has become the guiding force for FAI Pylon in the Southern California area. Under the leadership of Contest Director "Big John" Elliot, the BIRD's held a one day contest on Saturday, Dec.

11 that was thoroughly enjoyed by all the participants. The contest site was the Los Alamitos NAS and 20 pilots flew six cold (50<sup>th</sup>) rounds of racing.

NMPRA's 1971 National Champion, Terry Prather, again (yawn) captured first place. Terry flew his Supertigre powered Miss B.S., with Goldberg retracts and ST muffler, to the top time of the season in FAI: 1:47.8. He almost had a perfect day, except for his race with yours truly. In that particular heat, I turned the second fastest time of the day, 1:48.6, and actually lapped Terry. Of course, Terry had the usual weak excuses of his retracts not working, engine 500 rpm's down, and cutting a pylon. So much for my moment of glory . . . three zeros kept me out of the running.

When the racing was over, Jack Hertenstein had enough points for second place; however, upon inspection of his

*Continued on page 40*



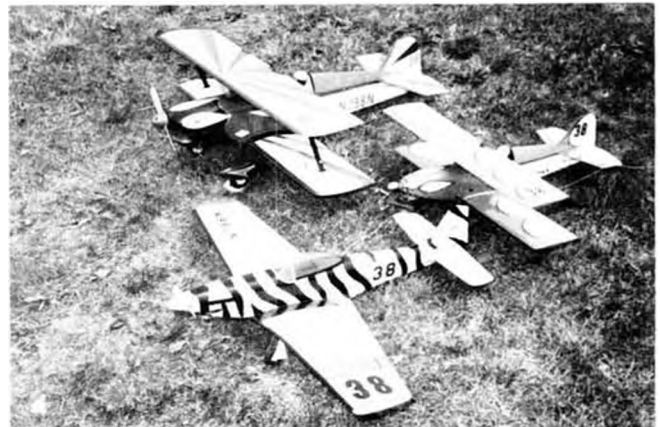
Ray Bingham's "Ballerina," built from K & K kit. Fiberglass fuselage, foam wing cores. Max .15 power, light blue acrylic finish. Roy Stephens pic.



The current World Champion in Quarter Midget racing, Ed Nobora, Mentor, Ohio. Ship is his QM Mongster, to be featured in M.B.

## PYLON/4

The Quarter Midgets are booming in popularity, and next month we will have some rules and contest reports. . .also a construction article for a very successful design by Fred Reese. Meanwhile, here's what some others are building....



More of Ed Nobora's fleet. The QM Mongster has a 600 sq.in. big brother, and the other is an ST .15 powered QM, 300 sq.in. P-51.



Fred Reese's QM "Miss Cosmic Wind", ST .15 power, which placed 1st in recent races at Mile Square. Will be featured in March M.B.



From Victoria, Texas, Brad Shephard's converted Sig doubler (Brad's design) No.14, and Gerry Myers' "Minnie Minnow", glass and foam.



Can you name this plane? This profile sport free flight scale will appear as a construction article very soon. Hint; it did not serve in WW II.

## FREE FLIGHT ... SPORT & SCALE

By way of this picture page we introduce a new section of the magazine which will have it's start next month under the capable direction of a well known NAR Flightmaster, Fernando Ramos.



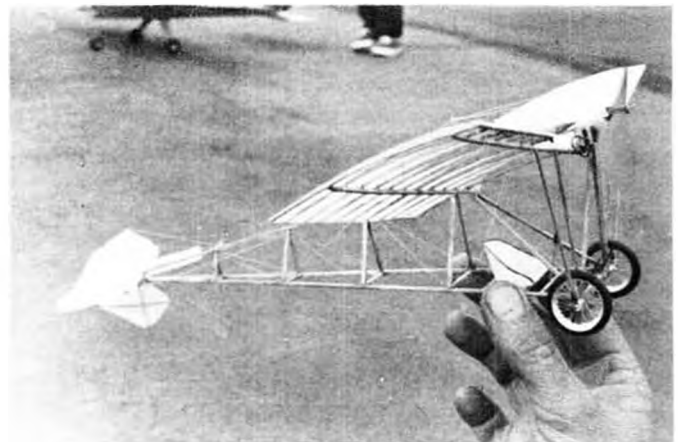
Sig's one inch scale Schweizer 130 for free flight, control line, or small single channel radio.



Sig's one inch scale Super Cadet for free flight rubber, but it will convert to power.



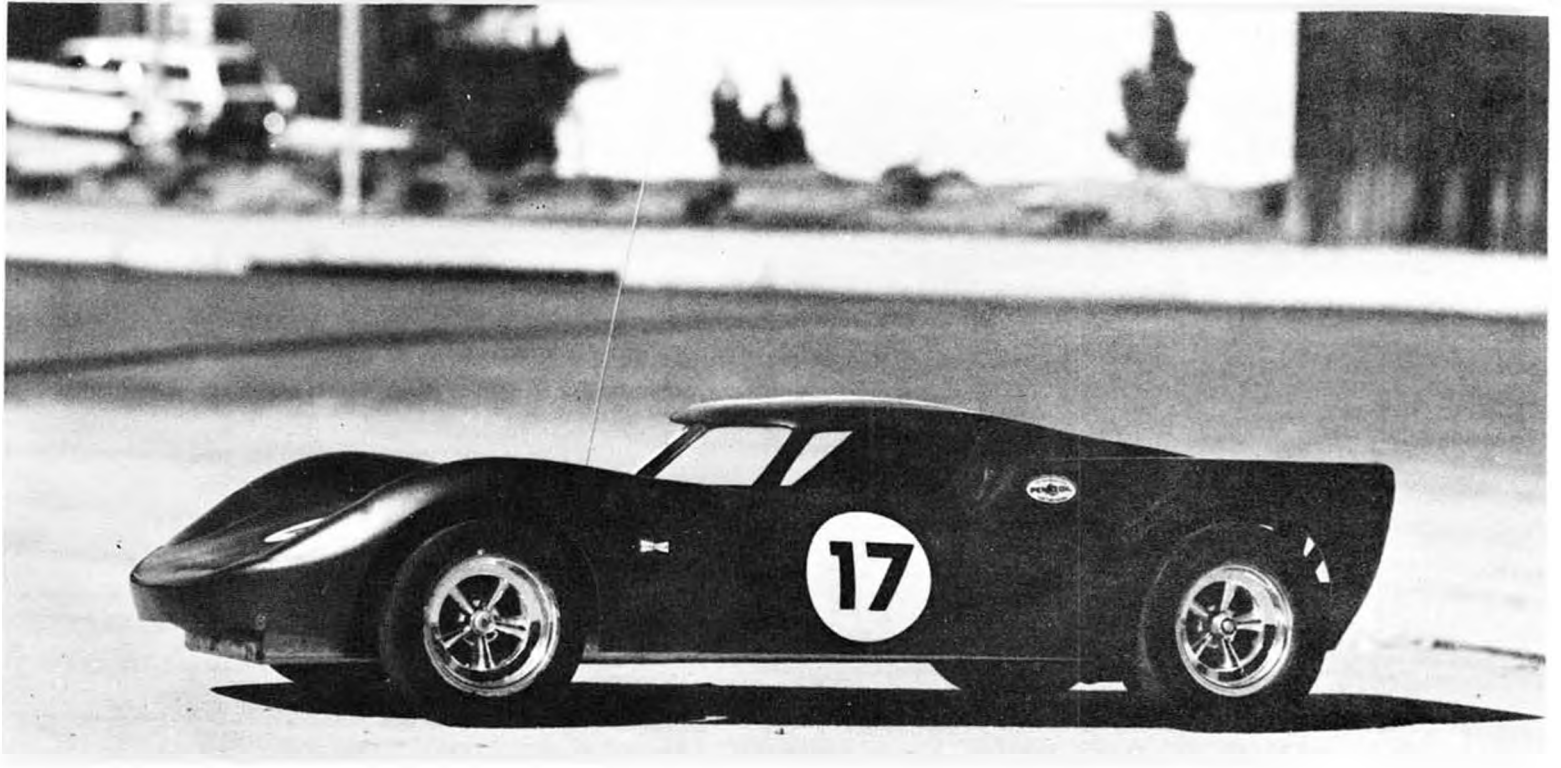
First of Sig's new Classic series of Golden Age models, the Cabinaire. Strictly for rubber, it spans 22 inches.



Peanut scale Demoiselle built from Hannan plans by Fred Reese, Hermosa Beach, Ca. Note beautiful little "wire" wheels (thread).



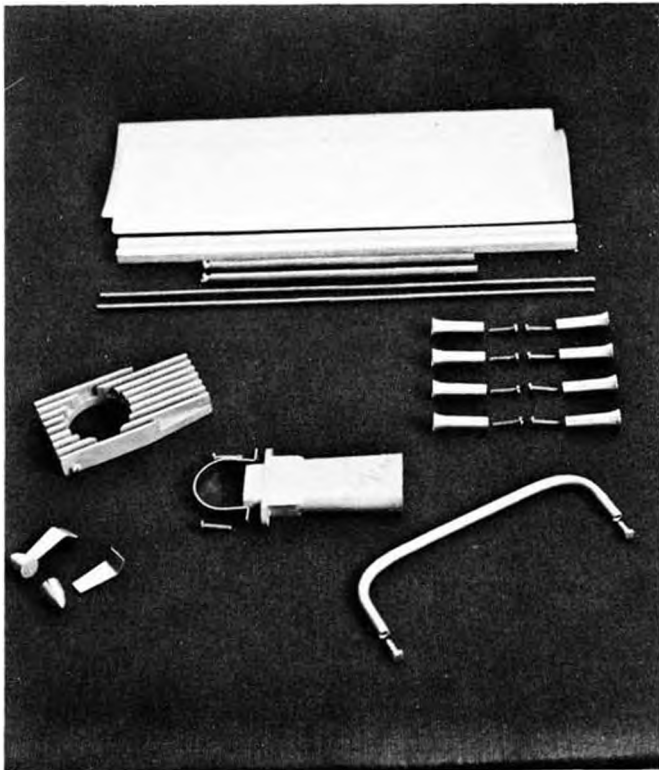
Another new Sig free flight scale intended primarily for rubber power, the Stinson L-5 Sentinel.



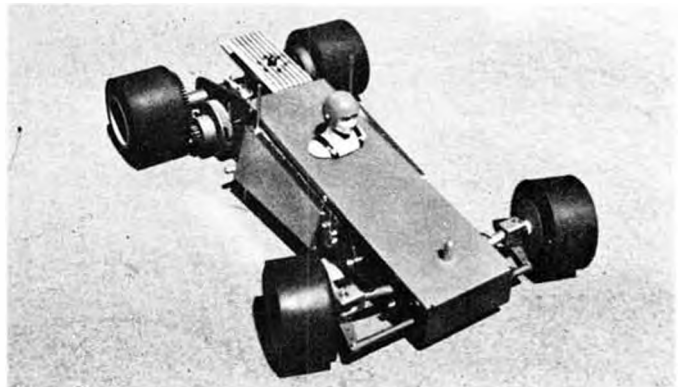
The editor's "Spectre" by Heath Company. Power is Veco .19. Orbit radio.

# R/C AUTO NEWS

R/C cars have been a puzzler. The whole concept is exciting, but so far, it has not received the wide-spread popularity many enthusiasts have expected. We feel it's because a communication center is needed. So . . . here it is if you want it. . . Gentlemen, do we start our engines?



Assortment of functional and decorative accessories for R/C cars from NOR/KAR. Read all about them in the editor's "Workbench" column.



Prototype of interesting car being built by Stan Waters of Reseda, California. We'll have a complete description of it in the next issue.



Beautiful scratch built Mercedes W125 by Phil Foster and son from Seattle, Washington. All wire wheels are I.S. on tubular frame. This is a category that might increase interest in the sport. SCALE!

# The *Flying Season* IS HERE!

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**Minnow** . . . *Continued from page 10*  
slot and glue them together. Next cut the outline and glue the 3/8 sq. maple pieces in place. The outboard plywood doubler must be notched to clear the buried bell crank and engine mount pads. These two cuts are not shown on the plan because they are cut and fit operations depending on how you buried the bell crank and what engine will be used.

Bevel the edges of the plywood doublers before you glue them to the fuselage, especially the rear edges where they sweep away from the fuselage outline. It's easier to do this now than after they are glued and the better the bevel the smoother the fuselage will look when it is finished. If the plywood you have is like mine it is not flat so when you glue it to the fuselage it will have to be clamped. I have found 3/8 sq. engine mount stock and rubber bands make very good clamps for jobs like this. Use a pair of mount blocks with rubber bands pulling them together on each side of the fuselage, 3 or 4 clamps should flatten even badly warped plywood.

The tail skid is the only part of this airplane that is not like other airplanes. Cut three pieces of 1/16 thick plywood to the sub fin outline then cut one to accept the 1/16 dia. music wire skid. Glue the three pieces together with the wire in the center. This assembly is small enough to clamp in a bench vise so it should be no problem. When the glue is cured, shape the skid as shown on the plan and add it to the fuselage.

The tail end of the fuselage is thinned to meet the 3/16 rudder and the rest of the outline is rounded to suit your whims. Don't thin the aft fuselage any more than is needed for a smooth radius on top and bottom, as it will only weaken it. Nothing much to the cheek cowl, just carve it from hard balsa and hollow the forward part as shown on the plan. Glue it on after the wing is installed.

Drill the engine mount and landing gear holes and press in the blind nuts for the engine and the 1/8 I.D. joiner tube for the landing gear. At this point you need to pick the fuel tank you are going to use. There is nothing magic about the tank shown on the

plans but it does work. For simplicity, a rectangular commercial tank of 2 to 3 ounces may be used. It will probably require relocation of some or all of the tubes to suit the mounting and shut off hardware. When you have the tank, locate it on the fuselage and drill the 1/32 holes for the wire attach hooks.

**TAIL FEATHERS:** There is not much to do but cut out the rudder, elevator, and stab parts, add spruce strips to the stab and elevators, and round the edges.

To make the holes for the sewn hinges, drill with a 1/16 dia. drill and fill the hole with thinned clear Hobby poxy paint. When that sets, redrill to 1/16 dia. If the hole is still fuzzy, repaint and redrill. This may seem like a lot of work for a crummy hinge hole but it makes a clean hole to push that dacron line through and seals the stab from exhaust oil. (You learn something new every day! ed.)

**ASSEMBLY AND FINISH:** Time has come to put it all together. Glue the wing and fuselage together. The elevator push rod guide is made of 1/32 dia. music wire wrapped one and a half times around the push rod. Push it through the fuselage and bend the ends, one up the other down. Cut a small recess on the inboard side and epoxy glue it in place. Now you can put the bell crank fairing on. Bend 2 "U's" from 1/32 wire and slip them through the holes in the fuselage, then bend hooks on the ends to hold the tank. Mount the tank with rubber bands to pull the wire tight and then glue the cheek cowl on.

Be sure the wing/fuselage/cheek cowl joint is a good one, it gets all the tough treatment. This area should be covered with glass cloth or nylon tape and epoxy glue. While you're "glassing," throw some around the tail skid. Add the stab and rudder and make whatever fairings you like. I like very small ones made with epoxy glue. The elevator halves are added after finishing. If you are using a shut-off, add the guides for the push rod and you are ready to start finishing.

Give the plane a once-over for nicks and rough spots, fill and/or sand as required and apply a heavy coat of thinned Hobby poxy clear paint. If things are smooth, a light sanding and a coat of Hobby poxy filler and some more sanding should give a perfect paint base.



# Wik Model Kits

HOLDER FAI R/C SAILPLANE WORLD RECORD  
FOR CLOSED COURSE DISTANCE

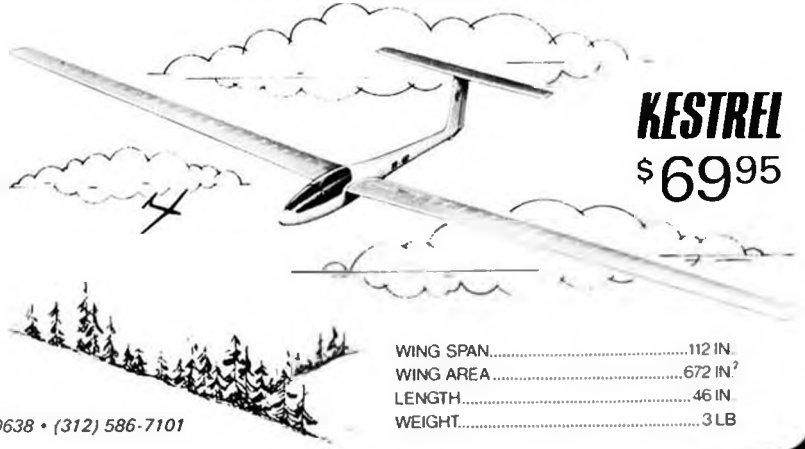
A competition sailplane with excellent thermal and slope flying ability  
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WING SPAN.....112 IN.  
WING AREA.....672 IN<sup>2</sup>  
LENGTH.....46 IN.  
WEIGHT.....3 LB

READ the instructions before using the filler. It makes work a lot easier.

The A.M.A. Scale Racing rules don't allow "scale" trim. They do encourage a "scale like" finish, so if you are aiming at contest flying, check the rules before you paint.

Herman Salmon's plane was a dark bronze color and I did my model in Hobbypoxy. When the job was done I felt I qualified for a PhD in alchemy. It took a lot of mixing and had to be sprayed and I don't recommend that you try it. Pick some nice non-metallic color, silver excepted, preferably one in a can on the shelf.

All the numbers and letters are cream color. I made decals with Hobbypoxy paint and decal paper which my friendly hobby dealer just happened to have. It is not likely yours will, so try an art supply store next. I made one large sheet of cream decal and cut out the numbers and letters I needed. India ink outlines of the control surface, canopy separation, etc., also add to the appearance of the plane. When all the trim is on, spray a coat of clear Hobbypoxy over everything. That last coat of clear should, of course, be the same brand and type as the color coat.

I hope you didn't forget the elevators when you were finishing the rest of the plane. Put a drop of glue in the holes that the 1/16 joiner wire goes in and put the elevators in place. Cut several three foot lengths of dacron 1/2 A flying line and hang them from the wall or ceiling with small weights at the other end to pull them straight. Coat lightly with "old fashioned" aeroplane glue. This will stiffen them and make them easier to handle when you're pushing them through those nice clean

holes you made. I thread the line through three full figure "8's", pull it tight, and tie a square knot on the bottom. Put a drop of glue on the knot and you now have a first class, field repairable hinge. Install the R/C control horn and hook up the push rod. Put a little glue on the threads of the screws that hold the horn to keep them there.

If you haven't already bent the landing gear then do so now. The bigger the music wire gets the harder it is to bend and I have no short cuts. Mount the landing gear, wheels, tank and engine and you are ready to fly. . . I think. Oh yes, you'll need a prop and control lines and a handle and, oh well, you're supposed to know all that.

**ODDS AND ENDS:** The Super Tigre shown on the plans doesn't have a spinner. Check with your hobby dealer for the prop drive from a Tigre 15 diesel. I am not yet convinced that small wheels offer a significant speed advantage for a plane of this size and am also convinced that the "low bounce" wheel is an aid in pit stops on hard-top surfaces.

No "hot glove" contacts are shown because I don't have them on my plane and you may not grab the model in the same manner I do anyway. I do think they are necessary for consistently fast pit stops. A "fast fill" and fuel shut-off are necessary for contest flying. Their purpose in life is to get through those mandatory pit stops in the least possible time.

Having all the equipment for the job is only the start, however. Now you must form a team (pilot and pit man). and practice with this equipment. By practice I don't mean two test flights on the morning of the contest either. I do mean to fly every chance you get

and then some, in calm weather, windy weather, and everything in between. I don't want to make Scale Racing sound like it's all work and no fun, but anything is more fun when you win.

If you find some part of your equipment is not working to your satisfaction then change it, a little at a time. If you make a big change, the new thing may work but you may have passed the point at which it works best, so work slowly and test each change thoroughly. It will all pay off in the end.

The airplane is a conventional design and doesn't do any tricks on take-off, so there is nothing to watch out for. If you're flying from a smooth paved surface, little more than neutral elevator is required, but flying off grass may be quite different depending how tall the grass is.

About this point I should be wishing you many happy landings and a lot of trophies. The happy landings I do wish you, but you'll have to earn the trophies . . . ●

**Soaring . . .** *Continued from page 14*  
cause the better surface you can establish at this time the easier the final finishing task will be.

Set aside to cure...bottom side down, nose slightly low, or hang it up by the tail. The position during cure is important because runs will develop, but if the fuselage is set in the proper attitude, these runs will be into a "safe" area. Put a drip paper under it.

This whole impregnating sequence shouldn't take over about 10 minutes or so. If it does, don't panic...just keep working for a good job, with the epoxy smooth and even over the area you can handle. Mix up more and apply in steps





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if necessary. Keep in mind to get good preliminary coverage and penetration with the palette knife, and a smooth, even and well-feathered surface with the brush. Then the next step...finishing... will be much easier.

After cure...preferably overnight... take medium grit garnet paper with a sanding block and start to work. First, knock off hardened "drips" and "sags" that set up around the nose and on the bottom. Next, give a general sanding over all areas to knock down any build-ups and to re-establish contours that may have gotten wavy...particularly around the nose. If you sand down into glass areas that were "dry", don't worry about it.

Wipe away sanding dust and apply a second coat of epoxy. This time, use only the brush. Except for those areas where raw glass cloth was exposed by sanding...and therefore need a good penetrating application, play like you are painting it. Smooth...with minimum brush marks. This coating will probably only take a mix of 50 cent size puddles.

Again, let cure and then give a light sanding...except on build-ups... with fine

grit garnet paper. It should be starting to look pretty good to you, but there's a bit more to get the finish we want.

The next step is to work the cured resin down to a really smooth finish. If you use a polyester resin, a thorough wet sanding with wet-or-dry sandpaper may be adequate finishing procedure. However, an epoxy resin, such as Hobbyoxy Formula 2, is considerably tougher, stronger and harder than polyester resins and requires a different approach.

Epoxy requires "scraping"...that's with a long "a"...to get a good surface finish. A Hobbyoxy Scraper Blade and Holder is recommended. This is sort of a double-edged razor blade suitable for the Jolly Green Giant. If your local hobby dealer can't supply you, order direct by mail. Otherwise, use a new, single-edged razor blade...but it's a poor substitute.

A bit of technique is required for proper scraping, but basically it comes down to learning by doing. The main thing is to have the blade at a slight angle...top leaning towards direction of motion...so that the edge "drags over" rather than "chisels into" the surface.

This scraping process will dress the epoxy down to a metal smooth surface. Work over the entire impregnated area... it may take awhile...until a consistent "mat" finish is obtained. A "shiny" area indicates a depression that the scraper blade hasn't reached. Keep working these local areas and you'll see that the shiny spots get smaller and finally disappear. When this happens, it's smooth.

Add nose skid or other accessory attachments after finishing the resin surface. One note of importance; usually only polyester resin will bond to a polyester resin surface...and epoxy to epoxy. So plan to use the same resin for bonding to the impregnated surface as was used to impregnate the glass cloth.

From here in, you're on your own. Fill, prime, sand or whatever for your preference of finish. This is where we stop on account we're a card carrying member of the MonoKote fan club. Our sailplanes are covered entirely and exclusively with Super MonoKote...and don't let anybody tell you that it won't go on over glass or around the pointy nose of a sailplane. It will. Just don't get in too big a hurry.

This fiberglassing is a little extra work...and adds about an ounce of weight...but try it. It's time well spent. Your sailplane won't be indestructible, but then it won't bust where it's been glassed, either. If it does, you'll be able to pick up the rest of the fuselage, the wings and tail with a vacuum cleaner●

**Pylon.....** *Continued from page 34*  
engine, it was found he did not have an operable barrel carburator. "Big John" disqualified him, a decision that Jack accepted gracefully. This sets an important precedent which other CD's should follow when someone does not conform to the rules. (CD's: If you're not as big as John Elliott, just carry a big stick! ed.)

#### FAI PYLON

I have talked to many flyers about the good and bad aspects of FAI R/C Pylon racing and most have agreed about one thing: the current rules need some revision. This is not to say that the rules we have now are not good, because they are, but they could be better.

There has been some debate about whether the FAI course specifications

have any advantage over the Formula I course. Some modelers claim that since the No. 2 and No. 3 pylons are about 30 feet farther apart in FAI, it is therefore easier and safer to fly. This is not the opinion, however, of most pilots who have flown the FAI course in this country. The greater distance between pylons means that an aircraft must stay in an almost 90° bank for a longer period of time, which makes the turn more dangerous, especially when flying a tight course. The larger distance does have an advantage over the Formula I course, however, because there is more area between the pylons for the pilots and workers, which is somewhat safer.

The distance to the No. 1 pylon on the FAI course is about 15 feet shorter than the Formula I course. Most proposals put forth to change the Formula I course have included INCREASING the distance to No. 1 so that the rookie pilot would have more time to line up for the turn. This small difference in the distance of the FAI course, however, seems to make very little difference for most pilots.

Some officials have suggested that the FAI course be adopted as the standard in this country. Substituting it for the Formula I layout. This would eliminate the hassle which is involved in running a contest with both the FAI and Formula I events. Last season, most CD's solved this problem by just flying the Formula I course. This will probably continue to be the case this season, because FAI will still be the minority event. I personally could easily accept a ruling which would either stay with the Formula I course or make the FAI layout standard, since both have their advantages.

One strange FAI rule states that the flagman at the No. 1 pylon should raise "his flag above his head" as the aircraft draws level with the pylon. It also states that a cut will be signaled by "waving his flag from side to side at or below waist level". This is a classic case of European anti-Americanism. It's the complete opposite of what we do! Waving the flag below waist level is impractical when there is a barrier in front of the flagman. These rules probably should be, and are, ignored in this country.

The FAI rules only require that engines for R/C pylon be of .40 cu. in. displacement, have a barrel type carburetor and a muffler (but not a tuned pipe). This

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means that a flyer can run a stock production engine or a one-of-a-kind special. This rule will determine what the future of FAI Pylon will be. This event is already as specialized as Formula I, if not more so. Several top flyers I have talked to believe that FAI will soon be a step up from Formula I, with the speed of the two events becoming almost equal.

I feel that the FAI's open engine rule will soon discourage many modelers from flying the event. When hand made engines begin to appear in FAI racers, the event will be in the same alley as FAI U-Control Speed, with the same limited appeal. The engine specialists in this country already have their work cut out for them in trying to beat the world speed record now held by Russia. This is where all efforts in engine development should be channeled. For the good of pylon racing, the FAI should include the NMPRA's production engine specs in its rules for FAI Pylon in 1975 (which is the earliest possible date). The only reason the FAI did not accept a production engine rule in the first place was so modelers from behind the Iron Curtain could run their homemade engines.

Scale requirements for FAI aircraft have also been subjects of debate. The FAI rules state that "the models must be of the semi-scale type and their general lines must be in accordance with those of full sized aircraft. Competitors may be required to justify any unusual or unconventional features of their model designs

with documentary evidence of similar full sized aircraft". The rules also disallow flying wings and Deltas. It was felt by some flyers last year that this rule would disqualify some Formula II prototype aircraft but since in FAI a modeler can combine an unlimited number of features for different aircraft into one model, it is very unlikely that any CD could disallow any aircraft (except for, perhaps, someone who builds a large version of a U-Control speed ship). If the Platypus can qualify, anything can!

Some modelers feel that the FAI rules should require that a model be a scale replica of one full size aircraft. Most FAI aircraft today are following this trend; however, it is difficult to design a model to look scale when the rules require that the wing must be about 600 sq. in. Most full scale racing aircraft are characterized by their small wing areas. The Japanese team at the Internats had P-51D's that had fuselages built in proportion to the size of the wing and were too big to be competitive. If the FAI wants the racers to resemble full size aircraft, the wing area rule should be changed to around 500 sq. in. so that plans can be built with more aesthetic proportions.

The problem with the requirement of scale planes in FAI is that there is only a limited number of full scale aircraft which are competitive when scaled down. I therefore believe that the present rules should be retained so that modelers will have one racing event in which the design

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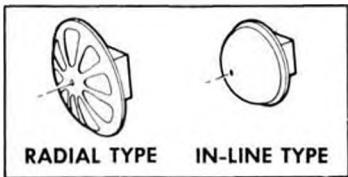


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is left up to their own imagination. This means that a larger variety of aircraft would be in the event, which is important for spectator interest. The Pangolin, experimental ship of Wayne Wainwright's is an example of the radical designs possible in FAI.

FAI Pylon evolved from the Formula II event. The question has now arisen about whether Formula II should be dropped in favor of just two racing events, Formula I and FAI. Formula II is currently popular only in the Northeast section of the country, where it has drawn more entrants than Formula I in some contests. The Northeasterners are therefore understandably reluctant to let the NMPRA or the AMA eliminate their event. I believe, however, that the days of Formula II are numbered. The original intent of the Formula II rules was to put a large wing on a Formula I size aircraft, thereby making a slower airplane. This concept has been proven wrong over the

past two years. The 1970 Nationals almost had a Formula II aircraft as top overall qualifier and last year Vern Smith set a record time for Formula II with a 1:34. It has become obvious to some flyers that Formula II has an equal, if not greater speed potential than Formula I. This is most likely due to the lack of check cowls and the larger wing, which gives better performance in the turns.

I personally like to fly Formula II, but it has now come down to the point of eliminating one of three events. I hope that 1972 will be the year that certain key people will begin to see the light about Formula II.

From all indications, 1972 will be the biggest and best year for miniature pylon racing. With this bright note I would like to close this column by giving a warm welcome to the fine group of flyers in Florida who have joined the NMPRA this year. Thank you for supporting the national organization! ●

### RESULTS

Name	Aircraft	Engine	Best Time
1. Terry Prather	Miss B.S.	ST	1:47.8
2. Jack Stafford	Mustang	K&B	1:55.8
3. B/S Assoc.	Miss B.S.	K&B	1:53.9
4. Bob Upton	Minnow II	K&B	1:57.9
5. Dan McCan	Miss B.S.	K&B	1:54.5
6. Dick Riggs	Firecracker	K&B	2:00.5
7. Tad Sato	Miss B.S.	K&B	2:11.9
8. Nupen/Faber	Minnow	K&B	2:11.2
9. Joe Martin	Ballerina	K&B	2:15.0

E-III..... Continued from page 19

inch brass sheet) to the horizontal tube, this allows the whole thing to be screwed to the fuselage. A 3/32" piano wire, lead through the lower brass collar, stiffens the bearings against F-19.

### RUDDER

The rudder is cut out of a sheet, made up of three 3/32" balsa sheets, glued under a 60° angle. The 3/16 inch piano wire axle is epoxied in place after completely finishing the rudder. (There MUST be a better way.)

### WINGS

The wings are built up in two separate halves. The main spar consists of the spar web W-5 and the two cap spars W-4. A 15/64 inch strip below the main spar and a 3/32 inch strip below the front edge of the trailing edge are used as a jig.

The fitting in of the brass tubes W-11 and W-12 into the ply ribs is a very important operation, because this position sets dihedral. The holes are exactly drilled after the section A-A in the plan, the brass tubes are epoxied to place and stiffened against the spar with balsa fillers.

### Editor's Note:

To ensure equal and proper dihedral (2" under each tip), drill tubing holes in W-1 ribs slightly oversize. Block up wings on bench with tubes in place, joined to each other by pieces of wire dowel. When everything is in alignment, LIGHTLY epoxy tubes in place. After epoxy is set, dismantle wings from each other and install reinforcing balsa filler blocks.

The brass loops (use small cup hooks) are used to strain a rubber band across the fuselage, which holds the two wing halves together. The smaller brass loops are used to fix the bracing imitation (made up of thin rubber bands.)

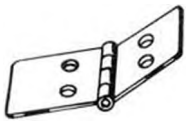
### ELEVATOR

The elevator is also built up in two halves, epoxied to 3/16 inch piano wire. (I would use brass tubing and key it to stab with 1/16 wire through holes in tubing). Be sure to remove all grease from the wire by sanding it and clean it with

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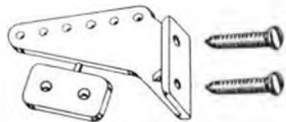
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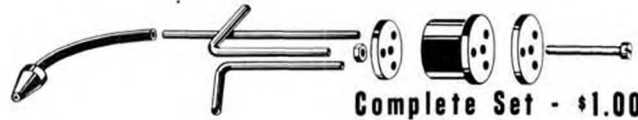
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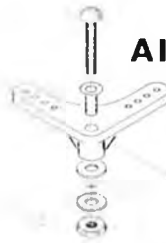
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thinner. Use C/L cables to operate rudder and elevator.

### COVERING AND FINISHING

Cover the whole model with medium silkspan. Do not moisten the silkspan for covering the chambered bottom wing surface. Fix the wings after EACH doping procedure immediately to a flat surface to prevent twisting. Coloring can follow after the specific full size aircraft. Our prototype was khaki colored with silver front parts.

### FLYING

The first flight does not offer special problems. With the CG in the correct position and elevator and rudder in their proper setting, the Fokker E-III will fly immediately. Use +50 degrees deflection for elevator. With a .60 engine, the plane will take some 10 yards for take off, then the model will climb at a steep angle. Throttle back and level off. The horizontal flight is effected with 1/4 power, which gives a realistic acoustic background.

Now you are on your own. But don't forget, this is an early WW I aircraft. If you're going to pull violent, 1972 maneuvers, make sure that your wing bracing is for real! ●

- W 7 Auxiliary spars
- W 8 Trailing edges
- W 9 Wing tips
- W 10 Wing tips
- W 11 Tubes
- W 12 Tubes

### ELEVATOR:

- H 1 Ribs
- H 2 Leading edges
- H 3 Trailing edges
- H 4 Fillers
- H 5 Tips

### RUDDER:

Sheets

balsa

3/32"x10"x10"

**Ford . . . . . Continued from page 23**

Cement these in the proper place on the lower surface of the wing and add the lower parts of formers A and B between them. Add the fuselage bottom covering from one rib to the other.

Cement the aft end of the fuselage sides together and then proceed forward, adding the formers in the proper positions, and then at the very front, the noseblock, carved from a block of

- balsa 5/32"x5/32"x30"
- balsa 5/16"x1-3/16"x33"
- balsa 5/32"x1-5/8"x2-3/8"
- balsa 5/32"x3-3/16"x8"
- brass 3/16" I.D. tubing x2-1/2"
- brass 3/16" I.D. tubing x2-1/2"

- 5/32" balsa see drawing
- balsa 5/16"x3/8"x10"
- balsa 3/16"x5/8"x11"
- balsa 1/2"x1=3/8"x5"
- balsa 2"x1-3/8"x5"

balsa 1/2 inch thick with the grain running line with the fuselage. With the grain running in line with the fuselage. With the grain in this direction it is easy to punch the hole for the thrust bearing button using a piece of tubing which has a sharpened end.

The plans show a carved balsa front cowl, although the model in the picture has a vacu-formed plastic one for two reasons. First the original model needed

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a little clay in the nose to balance it for flying, and second, all five of the Mooney family made Flivvers for the Las Vegas Peanut Contest and once one cowl was carved it was easy to vacuum form four others.

The top decking aft of the cockpit is folded and formed from bond paper. From former D to the end of the fuselage above the horizontal tail there is a scrap of carved balsa. Cover the bottom of the fuselage with sheet, the grain running across, and cement the wing in place. Shape the front of the nose block as shown in the front view.

The propeller may be any of the plastic ones currently available. I would not advise one of a larger diameter because of the propeller's effect on stability, but slightly smaller ones should present no problems. Bend the landing gear wire and attach it to the fuselage with a couple of small pieces of masking tape.

The model was given a light spray coat of "Magic" brand spray can sanding sealer (available at Standard Brands Paint stores) and then lightly sanded. The red color was put on using a red felt pen. Silver plastic model enamel was used to paint the top and nose of the model and the Ford sign on each side of the fuselage. The wings and horizontal tail were left plain balsa in the interest of less weight.

Control surface outlines and paint separation lines are made with a fine black felt pen.

Details are then added. These include cylinders, rocker arms, pushrods, and intake manifold tubes on the engine. Also include the tail bracing wire and the landing gear brace legs and dummy shock absorbers. Note that the aft leg and vertical leg with the shock absorber is not cemented to the wire but only to

wing and the fuselage and of course to each other. The tail wheel and the cockpit combing are painted black as are the tires on the wheels if the wheels are wood.

Most of the above details are optional as far as flying is concerned, but the last details are essential if the model is to fly safely. The pilot and his flag make the model laterally stable so add them now. Make sure the flag flies parallel to the centerline of the fuselage. If it is angled to one side or the other it will have the effect of an aileron and cause the model to roll. Fly your favorite flag. (Mine is the STARS and STRIPES but this is only a toy airplane and not important enough to fly Old Glory). My wife's Ford flew the Jolly Roger. ●

**Free Flight.. Continued from page 28**

the use of their Taft (California) property for free flight. The location is one mile north of the Taft city dump. Gene Spence, of the Taft Chamber of Commerce AND the Taft Condors, has devoted much of his time to make this possible. The site is reported to be even larger than the fields used before. It is open to all free flight clubs and flyers. We expect the 1972 U.S. Free Flight Championships will be held there. ●

**Backfire! .. Continued from page 7**

"Dear Bill:

You've gone and done it! I've never subscribed to any of the modeling magazines because of my only interest being in the sailplane and soaring line.

Every month I thumb through each of the modeling publications and only purchase the ones that contain good articles in this field.

Well, the exception has been made and

my first subscription fee preceded this letter by at least eight days.

I hope for you ALL the success you so well deserve. Also, the covers are as they should be . . . EXCELLENT, and my former teenage daughters can no longer accuse me of bringing home 'Playboy'."

William Heine  
Battle Creek, Mich.

"Dear Sir:

If you have a November copy please send one for my records. Wife sold my copy. Thanks!

Mercury Hobbies Inc.,  
New Orleans, La.

Cancel the divorce proceedings. Another copy is on it's way.

"Dear Willie:

You goofed. However, Phil Kraft and Co. will enjoy it, so let's let it slide as far as your readers are concerned.

On page 4 of your number 2 issue, you list one shot as the 'Kraft display in the exhibition tent.' Tweren't so.

I made that bloody thing to help the public understand R/C from how it worked, to how much it all cost. Common questions asked by anyone seeing R/C for the first time. It was made specifically for the World Championships, but will also be appearing at future Nats and other large R/C bashes. All the little white 'blobs' are cards with info on them, and if you look at the picture of the display board closely, you will see the AMA wings glaring back at you. Just under the wings is a sales pitch for AMA . . .

Kraft, Fox, Top Flite, Sullivan, Wings, Dubro, Royal, all donated (for the most part) the parts and pieces for the 3' by 4' panel. The strings you see, go from ex-

planation to the part being explained by the card.

If I build one more of the d--- things, I may even begin to understand R/C myself . . .

P.S. Your magazine looks great!

P.P.S. You owe me a royalty of \$200 per issue for using my drawing . . . my attorneys, Bailey, Beli, Darrow, and Fink will be in touch with you as soon as the new overland railway is through to the coast."

Bob Lopshire

Dear Umberto,

Thanks for the correction about the display board. Why don't you take it out to the field? Who knows? . . . Maybe it will fly!

Re the overland railway. . . I understand it's bogged down somewhere east of Wichita, Kansas. It seems there's this bunch of grown men who play with toy aeroplanes who own a field for flying them that is smack on the intended right-of-way for the railroad tracks. Not only that, they're members of the "Biplanes Forever Society" of which Fink and Darrow are president and treasurer respectively. You don't stand a chance of collecting!

"Dear Mr. Northrop:

First of all let me congratulate you on your new magazine. I was curious at first as to how another entry would make out in the field, but the comments have been good and your book is an attractive newcomer.

The reason for my letter is that I have been looking all over for a photo of our "mobile office wagon" at the World R/C meet. On page 14 of your November 1971, Volume 1, No. 2 issue, the second photo from the left (or center line) has

our buggy parked to the left of the hangar. Would it be possible to purchase one of these from you? If so, please let me know how much and I will mail you a check immediately.

Thank you and best wishes with your new publication."

Richard H. Palmer

Pine Brook, New Jersey

Thanks for your kind comments, Rich. I'll send you that photo, but in the meantime, I'll publish your letter in case someone may have taken a better picture of your "office."

"Dear Bill:

Our Eighth Annual West Coast Antique Airplane Fly-In is scheduled for May 19, 20, 21 and 22.

Your readers who are scale fans (and who isn't) would enjoy attending this display of 250-300 old aircraft plus many homebuilts, flying exhibitions, etc.

We'd appreciate a note in your excellent new magazine."

Frank Womack

Los Gatos, Calif.

Okay, Frank. Just tell us where it will take place.

"Dear Mr. Northrop:

I am an old modeler of over 30 years experience and have several multiships, C.G. and R/O for fun flying. Have also built several large slope/thermal gliders this winter as this looks like a nice change. I prefer built up models of the sport "look like airplanes" type rather than the run of the mill pattern and pylon racer types.

I think you need some promotion work for your magazine as I never knew

it existed until I ran across it by accident in a hobby shop.

Best wishes for success!

John W. Chandler

Saint Paul, Minn.

John, we are currently only selling through hobby dealers and personal subscriptions, but even so, the circulation passed 10,000 in January. Not only that, because of the distribution method, all of the copies are going into the hands of active modelers. Our best promotion is by the readers themselves. The fact that they will write and compliment us, as you have done, is very heartening. Thanks very much. ●

**Workbench** .. Continued from page 5

set a new record on Saturday while qualifying). In accordance with FAI rules, a new record will require a speed in excess of 115.26 mph, or 2 percent greater than the present record of 113 mph (if that happens to be the exact figure).

Electronic equipment will be on hand for accurate timing and recording of speed through the trap. Incidentally, the trap is 50 meters long, and the calculated speed is the average of two runs in opposite directions. If you're thinking you can dive the glider to pick up speed and then zip through the trap, forget it! First of all, the maximum altitude through the trap must not exceed 20 meters, and secondly, you must fly through a 25 meter entry prior to the trap, also at no more than 20 meters above ground level. You can dive prior to the 25 meter entry, but by the time you reach the trap, your speed will probably be not much more than the

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actual maximum speed of your glider, a fair requirement when you think about it. One thing for sure, a successful attempt is not going to result from haphazard trials with standard slope or thermal gliders. It's going to take a special kind of a bird with low drag, high wing loading, and smooth, positive control.

An entry fee of \$5.00 will be required, and from this, should a record be established, the sponsors will pay the \$20.00 submission fee specified by the FAI. FAI stamps, also necessary for anyone competing in an FAI affair, will be on sale at the site.

\* \* \*

Chuck Gill, our East Coast Advertising Rep, will be CD'ing a WW II Jamboree at Lakehurst Naval Air Station sometime in August. We'll firm up the date later. Actually to be called a WWII Scramble, there will be four events, and to qualify, the plane you enter must have seen service in somebody's airforce between 1939 and 1945 (No, Dum-Dum, you enter your model of the plane. Don't show up dragging a full-size Stuka!).

#### GOOF DEPARTMENT

If you're a scale modeler and paid particular attention to the photos on page 36 of the January issue, you are probably already aware of our caption error regarding Jack Elem's model, bottom row, center. Correct, it's not a Fairchild, it's a Cessna Model A.

Next, if you back up to page 21, you'll see an unidentified aircraft. Somewhere between our paste up table and the printing press, the title Standard Austria slipped away. Perhaps you put two and two together by looking at the opposite page. However, there was also scale information left off. The

drawing is scaled at 1 inch equals 3 meters. Not quite good enough for scaling up for construction purposes, but it's nice to know something about it's actual size.

Finally (We hope!), back up one more page to 19 and the "White Trash" drawing. Bill Watson of Van Nuys, California was first to call in regarding a minor error. As Bill noted, wing ribs W-4 and W-5 should be the same length aft of the spar as shown for W-5. Bill also noted that the leading edge sheeting for the main wing panels was not specified (it's 1/16 inch thick top and bottom). Thanks much to "Hawk-Eye" Watson. The master drawing has been changed to make these corrections, but a whole mess of prints have already gone out. Hope you all catch the goofs in time.

#### OVER THE COUNTER

This month we have a gang of new kits. As is usual, the manufacturers take advantage of the winter lull in flying activity to get their new products ready for the modeling market, and then cut them loose all at the same time! You won't find all of their pictures in this section, but just keep looking . . . they'll show up somewhere.

Sig Mfg. Co. has bombarded us with a whole batch of kits covering all categories of modeling. In R/C there are three; one each for pattern, scale, and pylon. The pattern ship, designed by Maxey Hester, shows strong European influence, particularly the influence of one individual from the small country of Liechtenstein, Wolfgang Matt. His design, the Super Star, was the most copied airplane seen at the World Championships in Doylestown, and no one can doubt the logic of the configuration. The high profile and fairly thick wing

section are a direct result of the requirements for successful pattern flying in FAI competition. Sig's kit, the "Komet", features foam cored wings and stabilizer, full length fuselage sides, molded fuselage top and tinted canopy, and aluminum engine mounts, along with the usual die-cut balsa and plywood, and hardware. Price with balsa wing skins is \$37.95 . . . with plywood wing skins, \$42.95.

The scale ship is only partly new, but should be extremely popular, particularly since it lends itself to use as a full scale, sport scale, or sport only airplane. We say partly new, because it is a re-engineered version of the Citabria previously available from Sig. The new kit features many molded parts, complete hardware, aluminum landing gear and engine mounts. Most noticeable design change is the semi-symmetrical airfoil which is now a milder behaving flat bottom section. Best of all, the price of this 69 inch span model is only \$31.95.

Sig's entry in pylon is a Formula I Mustang. Designed by Hank Pohlman, the Mustang 450 was first seen at the Tangerine Internationals in Florida, where it's smooth handling and slow landing capabilities were very impressive. The kit, which sells for a modest \$29.95, includes molded fuselage top, check cowl, and carburetor air scoop. Wings are foam cored balsa skinned, and plans include isometric assembly illustrations. A special feature is a detailed set of instructions for a fiberglass resin base finish which provides a smooth, glossy exterior with a minimum of effort.

In the free flight department, Sig adds another competition model in the ABC Scrambler, designed by Jim Clem and Bob Hanford. With a Nationals win already to its credit, this 570 sq. inch can be flown in three events (if you can change engines fast enough). Wing and stab are of geodetic construction, assuring freedom from warps. The kit, which includes die cut parts and covering material, sells for \$9.95.

Other ships in Sig's free flight department include a one inch scale Super Cadet for .020 to .049 engines, a one inch scale Stinson L-5 Sentinel primarily for rubber but adaptable to .020, a one inch scale Schweizer 1-30 (powered version of the 1-28) for .010 to .020 power, and a semi-scale, strictly rubber

powered sport ship called the Cabinaire. This 22 inch span model is reminiscent of the types built and flown in the middle thirties, and was designed by Paul McIlrath, a recognized expert in sport rubber models. The above kits, in the order mentioned, sell for \$5.50, \$4.95, \$4.95, and \$1.50. The first three would also make interesting projects for simple radio ships, using the light weight pulse rudder Commander by Ace Radio Control.

And there's one more. Like the bug that hit the windshield, Sig is all over. In control line, Mike Stott has designed a beautiful .29 to .40 stunter based on the Zlin Akrobat. The kit, which sells for \$14.95, includes formed plastic engine cowling and canopy, a complete hardware set with a heavy duty bellcrank and plated flap horn, and plans illustrated with isometric views to aid in construction of the 51 inch span model.

While on the subject of control line kits, but leaving Sig at last, we have a new profile stunter called the "Trophy Trainer" put out by, of all people, R/C pylon racing buff John Garabidian. Featuring rapid construction through the use of a foam wing, John's ship can be built in two evenings (and that includes stopping for dinner!). Designed by Tom Warden, the ship has a 55 inch wingspan, weighs 48 ounces, and uses a .40 size engine. The kit, which sells for \$12.95, is a real kitchen table project, since, according to John, everything is cut to shape. All you have to do is glue it together!

Speaking of R/C Pylon, John's JB Models, at 909 N. 3rd St., Montebello, Calif. 90640, also kits the very successful "Miss Dallas" for Formula I. All parts are machine cut to size and the kit includes foam cores for wings and comes complete with all hardware. Cheek cowls and wheel pants are molded in fiberglass. Span is 43-1/2 inches, area 455 sq. in., and the price is \$48.00. In the hands of such fliers as Joe Vartanian, Lee Frey, Mike Bridges, and NMPRA Pres. Bror Faber, "Miss Dallas" has placed in 6 out of 9 major pylon races, including two firsts, two seconds, and three thirds. Not bad for a wood airplane!

The "M" in M & P Products, whose ad you'll see elsewhere in this issue, stands for Mathis, and that stands for "Fast Richard", and the "P" stands for

pool, and we don't want any of that here in River City . . . . (whoops, got off the subject). No, the "P" really stands for Peadon, Tom, that is, and the two of 'em have some real dandy "Paramount" booms for A/2 Nordics or whatever. The 36 inch jobs weigh 27 to 29 grams and the 48 inch ones weigh 33 to 37 grams. The lightest ones will be shipped first (as soon as you send them \$5.00 each). They're made without pigment to save weight and are sanded smooth (no spirals). Deflection is only one inch per 6 ounce load.

Ed Shipe stopped by the other day (if you know he's coming, round up all the coffee in the neighborhood) to show us the newest boat out of the Vortex Model Engineering shipyards. Called the "Soling", this boat, which is somewhat smaller than their Santa Barbara One Design, should become a very popular addition. The LOA is 50 inches, beam is 12 inches, displacement is around 17 pounds, mast is 60 inches above the deck, and sail area is 793 sq. in. Developed by the Santa Barbara designer, Tom Protheroe, the boat is patterned after the 50-800 International Marblehead Class. Available now only as a completed factory finished model for \$350, the kit will come along sometime in the spring.

Another sailboat, not quite in the same size or price class as the Soling, is being introduced by Dumas Products. Scaled one inch to the foot, Dumas is offering an exact scale model of the popular 19 foot Lightning Class sailboat. The model is built with plywood frames and mahogany planking, and is equally well suited for actual sailing or as a dis-

play model. The kit contains all necessary construction materials along with complete plans and instructions, and sells for \$9.95. Looks like it could also be an interesting subject for a small R/C installation. In addition to being just another modeling subject, the little Lightning should also be of great interest to past and present full size Lightning owners, as well as yachting organizations, Sea Scout Troops, etc.

Northfield Precision Instrument Corp., otherwise known as "The People Who Make The Lou Ross' Twin", has come up with a major breakthrough in mufflers for model engines. It's interesting that several years ago, when writing for M.A.N., we jokingly said that it would be nice if you could run a tail pipe from a muffler back through the airplane and out the tail, thus eliminating all the gook that usually collects on a plane after only a few moments of running. We suggested that with this arrangement you could stick a cork in the end when you were through flying and head for home without the usual long cleanup process. At home, you would merely hang the plane up nose high, shove a drip pan under it, and pull the cork! Northfield-Ross has almost turned this into reality.

The N-R Oil Separator Muffler, as its name implies, extracts about 1-1/2 ounces of exhaust oil from 10 ounces of fuel run through an engine. The average fuel contains around two to three ounces of oil to every 12 ounces of fuel, and of course, all of this is exhausted, unburned through the exhaust stack, and the majority of it ends up slimed all over the airplane . . . a heck of a mess to clean

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off, particularly in cold climates. The N-R muffler claims to accomplish this with negligible power loss.

Naturally, this muffler was primarily developed for the N-R Twin, but with adaptors now available from the company, a single muffler may be used on the following eight engines; Enya .60, HP .60, Merco .61, O.S. Max .60, Supertiger 60-G and V, Veco .61, and Webra .60. The mufflers, ready to bolt on the Ross twins, are \$16.50 each. Adaptors for any of the above engines are \$5.00, and 1 inch long extensions for clearing cowls, etc., are an additional \$4.50. Gaskets and screws are included with each adaptor and extension. Mufflers weigh 2 ounces each and the adaptors weigh an additional 2 to 2-1/2 ounces.

\* \* \*

Universal Developments, P.O. Box 5253, Orange, Calif. 92667, is offering a genuine precision Micro Lathe for the home workshop, which has actually been developed for and used in many production factories. The bed is cast iron, dovetailed. It has gib adjustment, cross slide, and carriage. Swing is 4-1/2 inches. For \$99.95, the unit comes with adjustable tool base, mounting base, hinge brackets for motor, two 6-speed pulleys, collet closure and five collets from 1/8 to 9/32 inch diameter, tool post chuck adaptor, one 1/4 inch capacity Jacobs drill chuck and one high speed tool bit. The unit may also be had without the 1/10 HP - 110 volt, single phase electric motor for \$84.50. Write for further info and a long list of accessories available.

\* \* \*

Orbit Electronics, 17312 Gillette Ave., Santa Ana, Ca. 92705 (Phone 714-540-1404) has introduced two new servos aimed at the needs of all types of R/C applications, such as planes, cars, and boats. The new servos combine speed, power, beefed up gear train, and small size. Heart of both the PS-3 IC and the PS-6 IC units is a monolithic IC chip which features an advanced design bridge circuit that does the job of 30 transistors (glad they don't collect unemployment!). This circuit is claimed to provide fluid smooth movement of the servo output arm or wheel and tight resolution with 4 to 6 pounds of thrust, depending on the mechanics used. The IC chip also produces unequalled center-

ing response while reducing weight and improving resistance to shock and vibration. Greater noise immunity from external sources and the servo motor are also claimed through the use of a reference generator coupled with the input amplifier. We'll be doing a product test soon on the '72 Orbits, and will let you know if all of the above translates into good news.

\* \* \*

In case you aren't aware, NOR/KAR is the custom R/C car products division of NORCO MARINECRAFT, owned and operated by Roger and Dick Norsikian, 13556 Chase St., Arleta, Ca 91331. Jack Garcia has joined Dick in operating the car accessory division, and they have an interesting line of both functional and decorative accessories for the R/C car enthusiast. In the functional category, there is a machined, finned, clamp-on heat sink which fits the Veco and most other .19 size engines and sells for \$5.95. Also available, with or without rotary exhaust control, is an exhaust header which actually scavenges, improving acceleration and top end performance . . . as well as keeping the car interior a lot cleaner. Next is an accessory, the usefulness of which we were doubtful about until we saw it in action at the Cunningham Museum race track in Santa Ana. This is a wing, as used on the full size car, which is supposed to increase traction on the rear wheels by air pressure on the wing's top surface. All we can say is that you should see the same car running with and without it. It's as simple as that!

Decorative accessories include a roll bar at 98 cents, velocity stacks at \$1.65 for a set of 8, and a pair of racing mirrors for \$1.30. Pictures of these accessories are on the introductory car R/C car page elsewhere in this issue.

\* \* \*

Also shown elsewhere, probably in Le Gray's soaring column, you'll find pictures of several R/C glider accessories available through Midwest Model Supply Co., 6929 West 59th St., Chicago, Ill. 60638. The items shown are primarily replacement parts for the Rowan, Wik, and Graupner gliders, but would come in handy for anyone building original designs. Included are aileron horns, "flying stab" bellcrank horns, and pop-off ball and socket type connectors for aileron servos where plug-in wings are used. ●

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