

# **MODEL BUILDER**

MARCH 1974

volume 4, number 28

ONE DOLLAR



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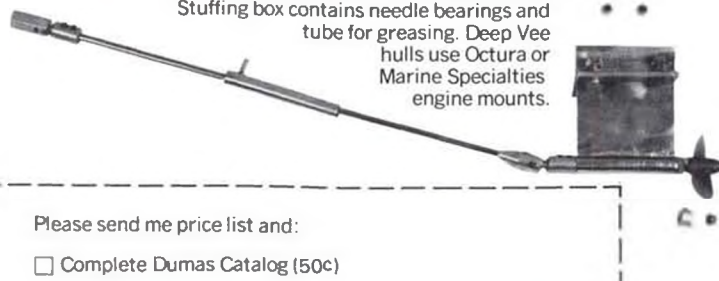
**Hydro** — Typical hardware for Atlas Van Lines 40, Drag'n Fly 40 and 60 and similar models. Includes plated steel universal joints with hardened pins, turn fin for sponson mounting (not shown), welded brass strut with needle bearings, adjustable aluminum mounting bracket, aluminum rudder bracket, brass water pickup, and welded stainless steel rudder. Photo shows threaded plastic propeller (various plastic and bronze props are available), drive dog and prop nut for use with unthreaded props, and needle bearing brass stuffing box.



**Mono** — Typical hardware for SK-Daddle 20 and 40 with inboard rudder installation. (Outboard rudder mount similar to Deep Vee.) Trim plates (not shown) are available. Includes hardened aluminum motor mount, welded brass turn fin, plated steel flywheel, brass or steel universal with hardened steel pin, brass water pickup tube and rudder assembly, threaded drive shaft for plastic prop with shear pin hole for unthreaded prop. Drive dog is used for certain types of special props. Stuffing box has Oilite bearings.



**Deep Vee** — Typical hardware for Deep Vee 20F, 40F, 60 and 60F — basically similar to that for hydros. Stuffing box contains needle bearings and tube for greasing. Deep Vee hulls use Octura or Marine Specialties engine mounts.



**Scale** — Typical hardware for powering Trojan Cruiser, Coast Guard Life Boat and similar scale models. Single or multi-motor and/or shaft installations are possible using the Adapt-A-Drive transmission unit illustrated, as well as for increasing or decreasing gear ratio, changing distance between shafts and selecting counter-or same-way- rotation of props. Includes brass gears with Oilite bearings, nylon coupling rods, universals, shafts, brass stuffing boxes, nylon struts and props. Rudder assemblies are brass with plated steel steering arm. Servo-operated Dumas speed and direction control unit provides proportional forward and reverse speeds and neutral. Famous Dumas Pittman motors are available in 6- and 12- volt versions.

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6. C'aire 10-ch. 27.195. Rec, 5 servos, Pak & Chgr. \$70.
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Oct/Sept 1971

First issue!  
Beanpatch, multi-  
Peanut Jodel, Saret.  
Fairchild 2, scale,  
for F or F/F.  
R/C Wing Champs.  
10 Nats reports.

Vol. 1, No. 1 \$6.00



November 1971

Nancy, R/C soarer.  
R/C Pattern World  
Championships.  
Peanut Fokker D VI.  
LSF Tournament story.  
Bi-Prentice, R/C biplane  
trainer.

Vol. 1, No. 2 \$3.00



December 1971

Curtiss-Wright Junior  
R/C 2" scale.  
R/C Twin Trainer  
75" span, for .40's.  
Peanut Laird LC-DC.  
Volkspine 3V-1  
3-views.  
How to build light  
"wire" wheels.

Vol. 1, No. 3 \$1.00



January 1972

SHOCer F/F by Mel  
Schmidt.  
White Trash, famous  
R/C soarer.  
Peanut Ord-Hume.  
Chet Lanzo's famous  
rubber Puss Moth.  
Curtiss Robin 3-views.

Vol. 2, No. 4 \$1.00



February 1972

Minnow U/C profile  
scale racer.  
Fokker E-III R/C scale.  
Al Vela's E-Z Boy 1/2A  
E-Z Boy 1/2A, Al Vela.  
Peanut Ford Flivver.  
Fiberglassing over balsa,  
by Le Gray.  
Spoiler, FAI Combat.

Vol. 2, No. 5 \$1.00



Mar/April 1972

Yankee Gull R/C glider,  
8' to 12' span.  
Miss Cosmic Wind, QM  
R/C Pylon racer.  
Peanut Scale Bucker  
Jungmann.  
Siebel 1/4A F/F scale.  
Mr. Mulligan 3-views.  
FAI power "Folder."

Vol. 2, No. 6 \$1.00



May 1972

Seahorse II, R/C sea-  
plane. For .19-.35.  
D.H. Humming Bird,  
F/F or R/C pulse.  
Peanut Fokker V-23.  
Whetstone 1/2A U/C  
combat.  
Ryan ST 3-views.  
Tethered Cars, R/C sail.

Vol. 2, No. 7 \$1.00



June 1972

Bob White Wakefield.  
Mongster QM biplane  
R/C pylon racer.  
Calif. Coaster R/C  
glider. Sheet wing.  
Three profile Peanuts.  
Deperdussin 3-views.  
Pesco Special 3-views.

Vol. 2, No. 8 \$1.00



July 1972

Fairchild 51, 1" scale,  
R/C or F/F.  
SAM-5 A/2 Nordic.  
1912 Avro G rubber.  
Comanche C stand-off  
R/C scale.  
Travelair 2000 2" scale  
R/C, by Editor.  
Chester Jeep 3-views.

Vol. 2, No. 9 \$1.00



August 1972

Bonzo standoff R/C  
sport pylon scale.  
Counterfeit, tailless  
A/1 Nordic.  
Shoestring R/C QM.  
Peanut Taylorcraft on  
floats, also big one.  
Fairley Delta 3-views.

Vol. 2, No. 10 \$2.00



September 1972

Coleen-12 R/C glider.  
Baby Boomer, sport  
.020 F/F.  
Paper (?) Glider, CO<sub>2</sub>  
jet.  
Little Toot semi-scale  
R/C for .40 power.  
Nesmith Cougar 3-views

Vol. 2, No. 11 \$3.00



October 1972

Stephens Akro R/C  
sport scale.  
Mini-FAI F/F for .010.  
Peanut Bellanca biplane.  
1972 Nats reports.  
Chester Special 3-views.  
Electric power analysis.  
Internats R/C pylon.

Vol. 2, No. 12 \$3.00



November 1972

Torky 1/2A proto pro-  
file by Dale Kirn.  
Seagull, R/C flying  
boat for .29 to .45.  
Peanut Skyraider or  
26 inch span.  
LSF Tournament story.  
Tethered cars.

Vol. 2, No. 13 \$2.00



December 1972

Don Quixote R/C glider.  
T.O.A.D. one-design  
R/C pylon racer.  
Mather's Penny Plane.  
49'er, rubber sport F/F.  
Peanut Stahlwerk.  
1912 Blackburn mono-  
plane 3-views.

Vol. 2, No. 14 \$3.00



January 1973

Sproose Goose R/C  
biplane for .60 power.  
Spectral R/C glider for  
single channel.  
Peanut Ole Tiger.  
First "Plug Sparks" col.  
Andersson KZ VIII  
3-views.

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# MODEL BUILDER



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1974

volume 4, number 28

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## CONTENTS

### FEATURES

WORKBENCH, Bill Northrop .....	4
OVER THE COUNTER, Bill Northrop .....	6
RADIO CONTROL REPORT, Frank Schwartz .....	12
R/C PYLON, Tom Christopher .....	14
PLUG SPARKS, John Pond .....	17
O.T. POWERHOUSE R/C, Bill Northrop .....	22
CHOPPER CHATTER, John Tucker .....	24
MAIN SHEET, Don Prough .....	26
F/F SCALE, Fernando Ramos .....	32
HANNAN'S HANGAR, Bill Hannan .....	34
FREE FLIGHT, Bob Stalick .....	38
NFFS NEWS .....	41
R/C SOARING, Le Gray .....	42
CONTROL LINE, Dale Kirn .....	45
R/C AUTO NEWS, Chuck Hallum .....	50

### SCALE VIEWS

DOUGLAS YO-31C/Y10-43, Peter Westburg .....	27
---	----

### CONSTRUCTION

OSPREY 1, Dave Ramsey .....	7
LITTLE GEM, Austin Leftwich and Brad Shepherd .....	16
POWERHOUSE, .020 REPLICA, Gene Wallock and John Pond .....	20
PEANUT SES, Walt Mooney .....	35
THE GNAT, Bill Warner .....	48

Cover: David A. Ramsey, Chester, New Jersey, built this 70 inch R/C scale model of the Osprey 1, a homebuilt sport flying boat designed by George Pereira. It is the subject of Dave's construction article featured in this issue, beginning on page 7. Cover photo is from a 35 mm transparency by Robert Humbert.



## from Bill Northrop's workbench . .

### THOSE NATIONALS AGAIN!

Wouldn't you know it? We no sooner line up what could be the best Nationals site in many a year, and somebody comes along to pull the cork out of our gasoline tanks! If this keeps up, by 1975 the Nats is liable to turn into the biggest postal contest the world has ever seen . . . or maybe it'll still be held at one particular site and everyone around the country will ship their models to have them proxy flown.

"Joe Fumblethumbs, East Podunk, takes first in Class D Expert at the 1975 R/C Nats! His plane was proxy flown by Ron Chidgey."

Or . . . "Ron Chidgey just managed to beat out Harold Goldklank for last place. His plane was proxy flown by Joe Fumblethumbs."

How about . . . "Mel Schmidt placed 1st, 2nd, 4th, 6th, and 8th in Class B Gas, flying proxy for Bob Watson, Hardy Broderson, Dave Linstrum (*Dave Linstrum?*), John Duncan, and Rol Anderson, respectively!"

Oh well, back to 1974. Most info on the Lake Charles Nats has been published in AMA Mailing, but if you haven't noticed, the activity schedule goes from Tuesday, August 6, through Thursday, August 15. (Please forward all successful explanations to the family about where that second week of vacation went and we'll publish them).

In radio, Quarter Midget is set for Aug. 6 and 7 in the AM; Soaring in the PM. FAI Pylon is scheduled for Aug. 8 and 9 in the AM; Formula I in the PM. Formula I runs all day Saturday the 10th. All day Sunday, the 11th, goes to Sport Scale, in conjunction with the Air Show. Class C Pattern qualifying is flown all day Monday the 12th and Tuesday the 13th. C Pattern finals are flown, with "Museum" Scale on Aug. 14 and 15 AM, and A & B Pattern finish up the program in the PM of both days. Tentatively, helicopter activity is also set up for the 8th and 9th, PM.

In Free Flight, Indoor Events start on

Sunday, Aug. 4th and carry through Wednesday, the 7th. Outdoor F/F starts Wednesday with A/1 and A/2 Nordic, and B Gas. Wakefield and 1/2A Gas are on Thursday the 8th. Friday is for Unlimited Rubber and FAI Power. Coupe and A Gas Saturday, and C Gas, Rocket, and Scale are the last F/F events, on Sunday, August 11th.

C/L starts on Wednesday the 7th with Jr. Combat, 1/2A Profile, 1/2A Proto, Jr. Stunt, Dive B & S, Scale Racing Jr. and Sr. Thursday includes Sr. Combat, 1/2A Speed, Sr. Stunt, Open Scale Racing. Friday is FAI Combat, Jet Speed, Mouse Race, Profile Carrier. Saturday the 10th has Open Combat, A Speed, FAI Speed, Open Stunt, Jr. and Sr. Rat. On show day, Sunday, there is Open Combat Finals, B Proto, B Speed, Open Stunt and Open Rat. The final day, Monday, includes Slow Combat, Formula .40 Speed, C Speed, FAI Team, and Carrier I and II.

NOTE: All of the above schedules are tentative; subject to Executive Council approval. Also there are numerous unofficial events, such as Old Timers, Rubber Speed, Navy and Peanut Scale. Penny Plane, etc. that will be added.

We understand at least one motel, the Holiday Inn, which is close to the site, is already booked solid. Those wishing accommodations, other than what is usually offered by AMA for workers and contestants, had better get on the horn. The Downtowner Motor Inn is 318-433-0541. Ramada Inn is 318-433-9461, Lakeview Motel 318-436-3336. (These three are on the shore of Lake Charles. We picked the Downtowner.) Largest, most expensive, and with many added attractions, is the Sheraton-Chateau Charles 318-882-6130. Others include Belmont Motor Hotel 318-433-8291. Assunto's Hotel Courts 318-439-9436 (both near the field), Howard Johnson 318-433-5213, and Imperial 400 Motel 318-436-4311.

Lake Charles is in one of the hottest and most humid areas of the country, so take extremely light clothing . . . and lots of it, for frequent changes. August also happens to be the rainy season, so pack in some lightweight plastic rainwear. A few years ago in Chicago, all of the local stores sold out quick when we got a couple of wet days. Of course, the rain will probably feel good, but you'll need the plastic to cover your planes and equipment!

NO . . . NO . . . NO!

It is not our policy to publicly point out errors made in other publications, particularly ones in our hobby . . . mainly because it's all too easy to find ourselves on the same, wrong side of the fence. However, when something is

published that is seriously misleading, that could cause trouble for the hobby's relationship with a Federal agency, we feel it is proper to help in correcting the error.

In the January 1974 issue of one of our national model publications, there is an article on getting R/C licenses. The article implies quite clearly . . . and very incorrectly . . . that one may use the 6 meter band with a Class C license. Further, it states that the 27 Mhz frequencies are "assigned to R/C models," which would be nice, if it was true that no one else could use them. Finally, the mix up of frequency flag colors on 27.045 (red, not yellow) and 27.145 (yellow, not red) has apparently been picked up from the 1973 AMA Rule Book error (later Rule Book copies had a correction stamped on it in big, red letters).

Our chief concern is with the first statement, about the use of the 50-54 Mhz band. This is now, and we hope will continue to remain, the Technicians Band, one for which an examination must be passed in order to obtain a license and operate legally. Unfortunately, there are already too many modelers operating illegally on 6-meters, attracted by the minimal use in R/C. The effect of this magazine article could be like throwing gasoline on an already disastrous fire.

For many years, we have been annoyed by the continued use of 6-meter radios by unlicensed modelers. Perhaps this is partly because it was so damned hard for us to get our own Technician's license. Oh, it's not *that* difficult, but if you're not a "natural" for electronics, you really have to work at it; bone up on Ohm's Law, send and receive Morse Code at 5 words a minute, be able to answer correctly a large portion of about 100 multiple choice questions, and be able to sketch a couple of basic circuits.

Anyhow, it was just enough of a struggle for us that we feel it is something special and should be reserved for those who want it enough to work for it. We also think that R/C equipment manufacturers should require FCC Technician License numbers from purchasers of 6 meter equipment. They're easy enough to check in the FCC License Handbook.

In fact, wouldn't it be nice if radios could only be warranted with licensed modelers on ALL bands. At least then the FCC might have a better idea of how many of us are using the frequencies. It might surprise them . . .

### A MEMORIUM

We were fortunate enough some years ago to watch Bevo Howard perform in

his Bucker Jungmeister, and though he did astonishing things with the little biplane, none of it appeared reckless or without full control of his excellent flying ability. Report of his death last fall, while "doing his thing," left us wondering what could have caused it. He seemed to be the type who would retire after, not during his last performance.

It was therefore with some kind of inner relief and feeling of justification that we read this item in the January issue of "Worksheet," newsletter for the Western Ohio Radio Kontrol Society, writer unknown:

"When Bevo Howard was killed during an aerobatic exhibition in Greenville, North Carolina, last October, everyone who knew the handsome, ageless aerobat was stunned, for Howard was such a perfectionist . . . such a precise, highly experienced airshow expert . . . that "pilot error" was an almost inconceivable explanation for the accident (He hit a tree during an inverted pass and tore the upper wing off his Bucker Jungmeister). The probable cause of the crash is stranger than any surmise, it turns out: An autopsy showed that Howard had been poisoned by a black widow spider, and the spider's nest was discovered under the seat of his airplane. One of the first things hit by such a sting is said to be the optic nerve, and it seems likely now that Howard's sight was suddenly and severely affected by an insect bite that he either never noticed during the heat of flying or assumed had been nothing more serious than a bee sting."

#### WHEREFROM THE METHANOL?

Our comments last month on the glow fuel shortage situation proved at least one thing . . . *somebody's* reading this tripe! We received several letters pointing out our apparent lack of knowledge concerning the source of glow fuel's major ingredient, methanol.

Well, you were right about our name being at the top of the list of those who know nothing about chemistry . . . that is with the following exception:

"Willie was a chemist, but now he is no more, For what he thought was  $H_2O$  . . . was  $H_2SO_4$ !"

However, our statement that methanol is a petro-chemical still stands . . . with these additions; it was and still is made from wood, *and*, in recent years, it has been found even less expensive to derive it from *natural gas*.

Obviously, with our limited knowledge of these things, we would hardly make such statements without knowing the reliability of the source of information. K&B's Johnny Brodbeck, from whom we gained this enlightenment, points out that if the above is not true, then he and a lot of other people in the industry have been conned.



"Gee honey, 1500 square feet for your hobby-workshop and 1000 square feet for the rest of the house . . . . . are you sure that's correct?"

#### LSF NEWS

Dan Pruss, Plainfield, Illinois, has been elected president of the League of Silent Flight and will serve for two years, 1974 and 1975. Dan, LSF/060, is an airline pilot, and also is owner of Su-Pr-Line Products, manufacturer of Nyrod and associated items.

Also serving with Dan for the next two years is Barbara Henon, LSF/250, Pacific Palisades, Ca., vice president; John Nielson, LSF/240, Chicago, secretary; Hugh Stock, LSF/134, Saratoga, Ca. re-elected treasurer. Walt Good, LSF/063, former vice president, continues to serve as European coordinator.

One of President Dan Pruss' first moves has been to establish a new address for radio processing of incoming mail during 1974-1975. The "hot-line" address is P.O. Box 39068, Chicago, Ill. 60639. (Write it down now, and pin it up over your workbench.) The League's permanent address continues to be Box 2606, Mission Station, Santa Clara, Ca. 95051.

We understand steps are being taken to have a 1974 LSF R/C Soaring Tournament in California. Site and date unknown at this time. V.P. Barbara Henon is to be Tournament Directress.

And speaking of . . .

#### THINGS TO DO

The Soaring Nationals has been firmed up for July 22, 23, 24, and 25, 1974, and will probably take place at Lewis University, last year's site. The first three days will be for competition and the last day is set aside for a symposium, during which time there will be discussions about forming a national organization.

On June 15 and 16, 1974, the Golden TRIAD Model Masters will be holding the Southeastern Control Line Model Airplane Championships, a double A sanctioned contest. Site is the Memorial Coliseum Parking Lot, Winston-Salem, North Carolina. Wm. A. Pardue, Jr., 1201 Surry Dr., Greensboro, N.C. 27408 is the Contest Director.

There'll be more information coming along later, but for now, plan to come to southern California on the weekend of May 11th and 12th. This is the date scheduled for the big Model and Craft Show to be held at the Anaheim Convention Center, Anaheim, California . . . right next to Disneyland. Over 200 exhibitions are expected to occupy display booths in the huge hall, and there will

*Continued on page 72*



# OVER THE COUNTER

● Astro Flight, Inc. is now producing a Field Charger which is specially designed to rapid-charge both Astro 10 and 25 nickel cadmium power packs from motorcycle batteries. Special adapter cords are also available to permit rapid, on-field charging of 1972 and 1973 model Kraft, Pro-Line, and S&O radio receiver and transmitter packs (or any radio using 550 Ma GE half sub-C cells). The unit may also be used to determine the condition and state of charge of all of these battery packs.

The charger components are built into a compact field box which also carries the two motorcycle charging batteries, props, wrenches, epoxy, etc. (No cleaning solvents, rags, paper towels fuel pumps, electric starters, fuel cans, primer bottles, et al, are needed when you fly with electric power!). There is also a compartment for your transmitter.

The charging components are mounted on an instrument panel which carries a 0 to 10 Amp meter, a 15 minute switch/timer, a charging input and output connector, and a selector switch. The motorcycle batteries are charged through the panel connector by any external 12 volt charger operating off 110 volt house current. An adapter plug is furnished, and Astro Flight will have a charging unit available optionally.

To charge the electric motor power pack, an adapter cord is furnished with plug and jack to be used at the aircraft end. Plug everything together, put the



Flyline Model's 3/4 inch scale Bellanca "Skyrocket" for small R/C or rubber F/F.

selector switch on Low (Astro 10) or High (Astro 25) and wind up the switch/timer. In 15 minutes you're ready to go!

The Field Charger lists at \$29.95, less motorcycle batteries . . . which can be purchased at most cycle shops, Sears, Wards, Pep Boys, etc.

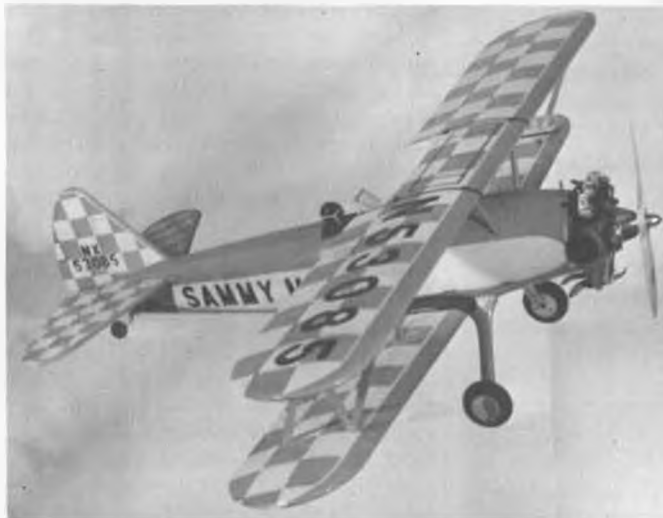
\* \* \*

Flyline Models is now producing its 3/4 inch scale Bellanca "Skyrocket." This model of a very historic classic spans 34-1/2 inches, and with .020 power, will take pulse or small multi radio systems. It would also make an excellent rubber scale ship. Price is \$7.95.

Kit includes super detailed rolled plans, scale wheels, decals, and top  
*Continued on page 63*



New 60 R/C engine being imported from England by Midwest Model Supply Co.



Sport Scale Boeing-Stearman Model 75 by Nick Ziroti, and Long Island Hobbycrafts, Inc.



Field Charger and equipment box by Astro Flight, specifically for charging electric motor flight batteries.





# OSPREY I

Build an R/C scale model of this striking homebuilt flying boat, which once again proves that you don't need brute power to take off from water . . . just good hull design. By DAVE RAMSEY

● The Osprey I has to be one of the neatest seaplanes I have yet seen. The full size Osprey is a single place, sport flying boat homebuilt, designed by George Pereira. It is constructed mostly of wood, covered with fiberglass. The only metal in the construction is the center truss which holds the engine and the wing folding assembly.

The Osprey I is painted white, Hugger Orange (auto paint), and black. The full size aircraft can be built for around \$1500, less engine, prop, and a lot of work. So for the time being I will have to content myself with my model. I feel that the model Osprey I is the most impressive flying and looking seaplane I have built, and I think that anyone building her will feel the same.

The full size OSPREY I is built almost like a large model, which makes it very easy to build as a scale project.

When my OSPREY was completed, she weighed 8 lbs., ready to fly. Due to the high thrust line and pusher configuration, the OSPREY does not act like an ordinary airplane. With power on, the nose wants to pitch down, and up elevator will have to be held in. This is quite apparent when taking off. When reducing power, the nose will pitch up.

With these power changes in action,

landing becomes most interesting. After many tries at making a good landing, I have arrived at this procedure: (1) Power reduced to establish a rate of descent, (2) when it is time to level out before the flair, cut back on the power. With the power at idle, the nose will come up and she will sit down just as nice as you could ever want. This does take practice, however, and after 30 or so flights, I am still working on the landings.

The model is stressed for hard flying and will take a beating. Acrobatics are no problem as long as you remember she is a *scale* seaplane.

One thing that puzzles people when they first see my OSPREY, is how can it get off the water, at that weight, with only a .40 for power. All I can say is she's got a good hull and 800 sq. in. of wing area. After all, the wing loading is light and more power for this scale airplane only equals more problems.

## FUSELAGE

The sides are cut first and the longerons are glued in place, along with the 1/4 inch square balsa strips. The formers are used to align these pieces. When the sides are completed, they are glued to formers F4, F7, and F8.

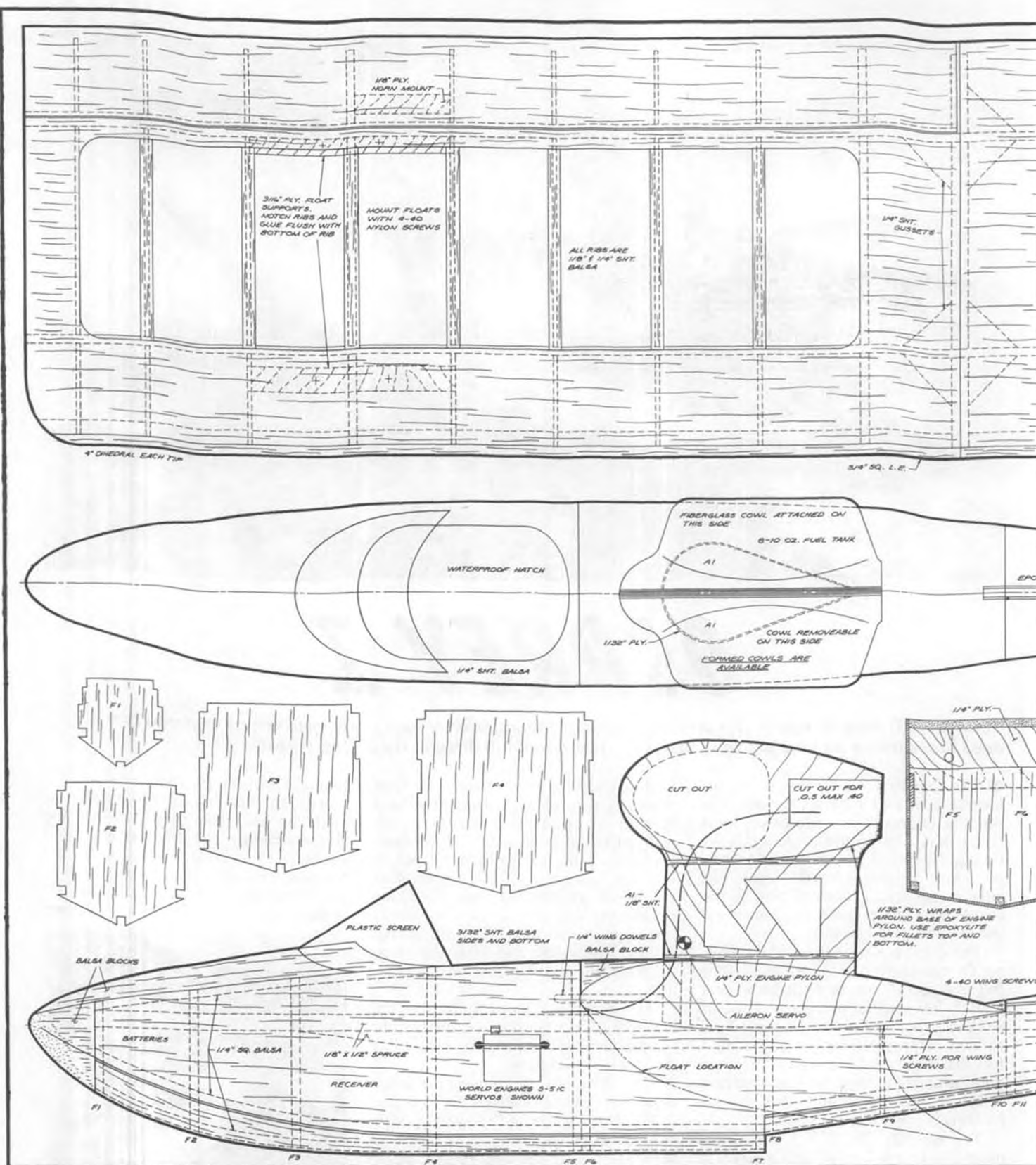
When the fuselage is square and dry, the sides are pulled together and the re-

maining formers are added.

NOTE: Plan your equipment installation and make the cut-outs in the formers before the formers are glued in place. For added strength to the formers, tack glue the cut-outs back in place and remove them before the hull is sheeted.



Author Dave seals up the radio compartment before another flight. Been wading, Dave?



## FIN AND RUDDER

The fin is made up of three pieces of sheet balsa epoxied together. Before these pieces are assembled, make a slot in the 1/4 inch balsa center sheet for the push rod outer tubing. The fin is epoxied together with the tubing inside. The fin is glued to the hull and an Epoxylite fillet is used to fair the fin and the hull and to add strength to the

joint. Light weight fiberglass strips should be used with the Epoxylite. The construction may look weak but it has not yet failed.

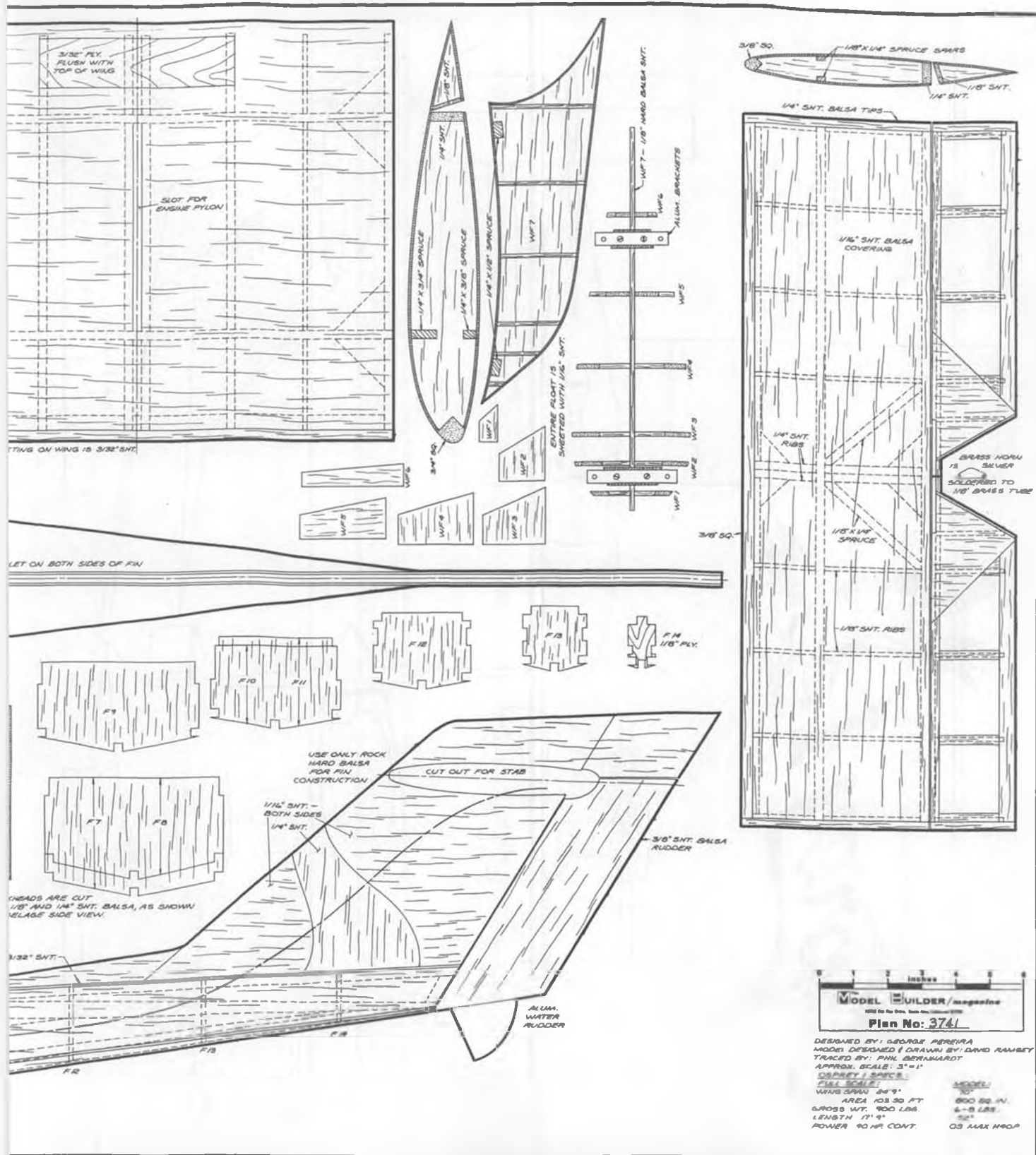
## STABILIZER AND ELEVATOR

The stabilizer and elevators are built up in the normal manner and the stab is epoxied at right angles to the fin. The elevator horn is made from brass sheet and silver soldered to a piece of

1/8 inch O.D. brass tubing and then epoxied to the elevator. Epoxylite fillets are used where the stab is glued to the fin.

## WING

The wing is built in three pieces; the two outer panels and the center section. Golden-Rods were used for the aileron connections. The wing sections are glued together with 4 inches of dihedral



under each tip. The motor pylon is epoxied between the two center ribs and squared up. The A-1 pieces are added to each side of the pylon. The motor should be fitted and the nylon tubing fitted through A-1 and the wing. Brass cable was used for the motor-servo connection.

## FIBERGLASS COWL

If you don't feel like carving your

own, cowls are available at \$ 18.00, postage included. See address at end of article. The right side cowl is epoxied to the engine pylon and houses the gas tank (8 oz. RST). The tank is mounted with the tubing outlets facing the *front*. GE Silicon Seal was used to hold the tank in place. The left side is removable, using 4-40 nylon screws to hold

it in place. Finally 1/32 inch plywood is wrapped around the pylon with Epoxylite, forming the fillet at the cowl and the wing joints.

## TIP FLOATS

The tip floats are easy to build, the only problem is bending the wood. If the sheeting is well soaked prior to assembling, it will be easier to work.

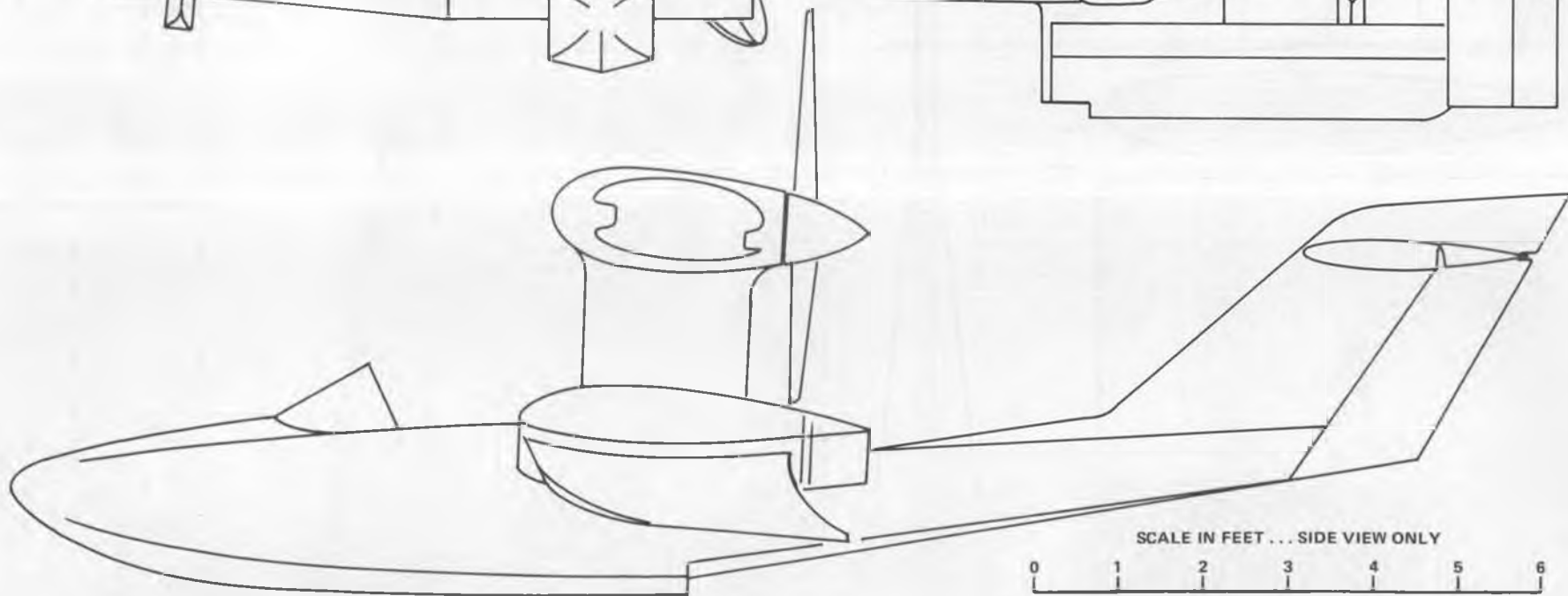
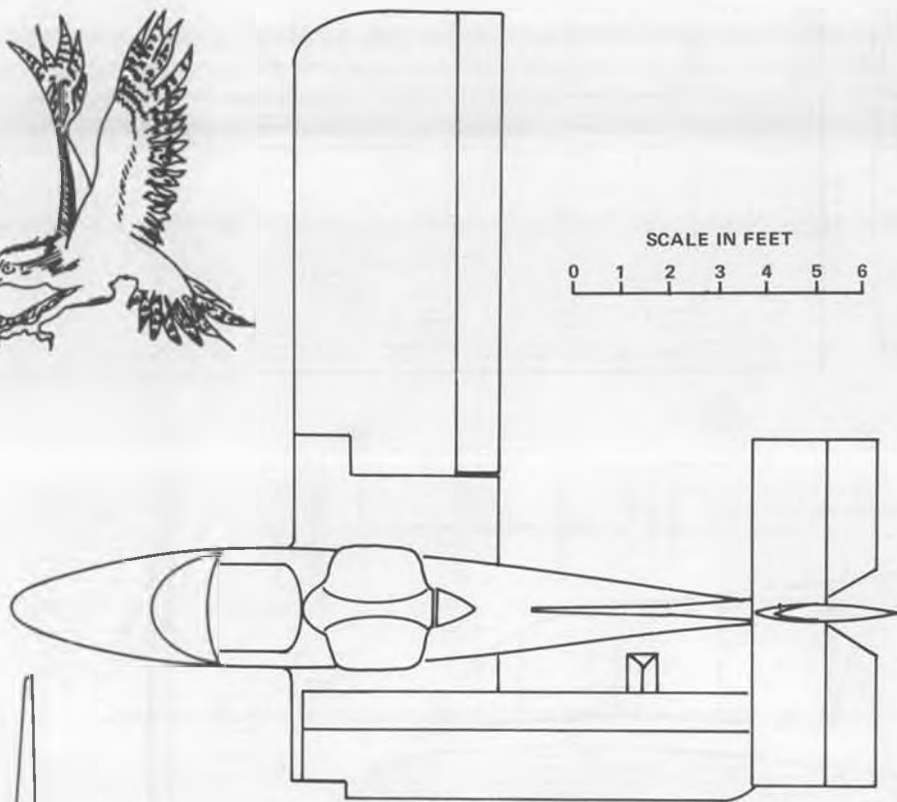
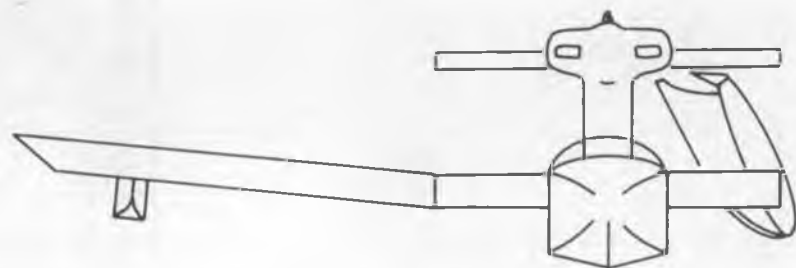
**FULL SIZE PLANS AVAILABLE – SEE PAGE 72**



# Corsprey 1

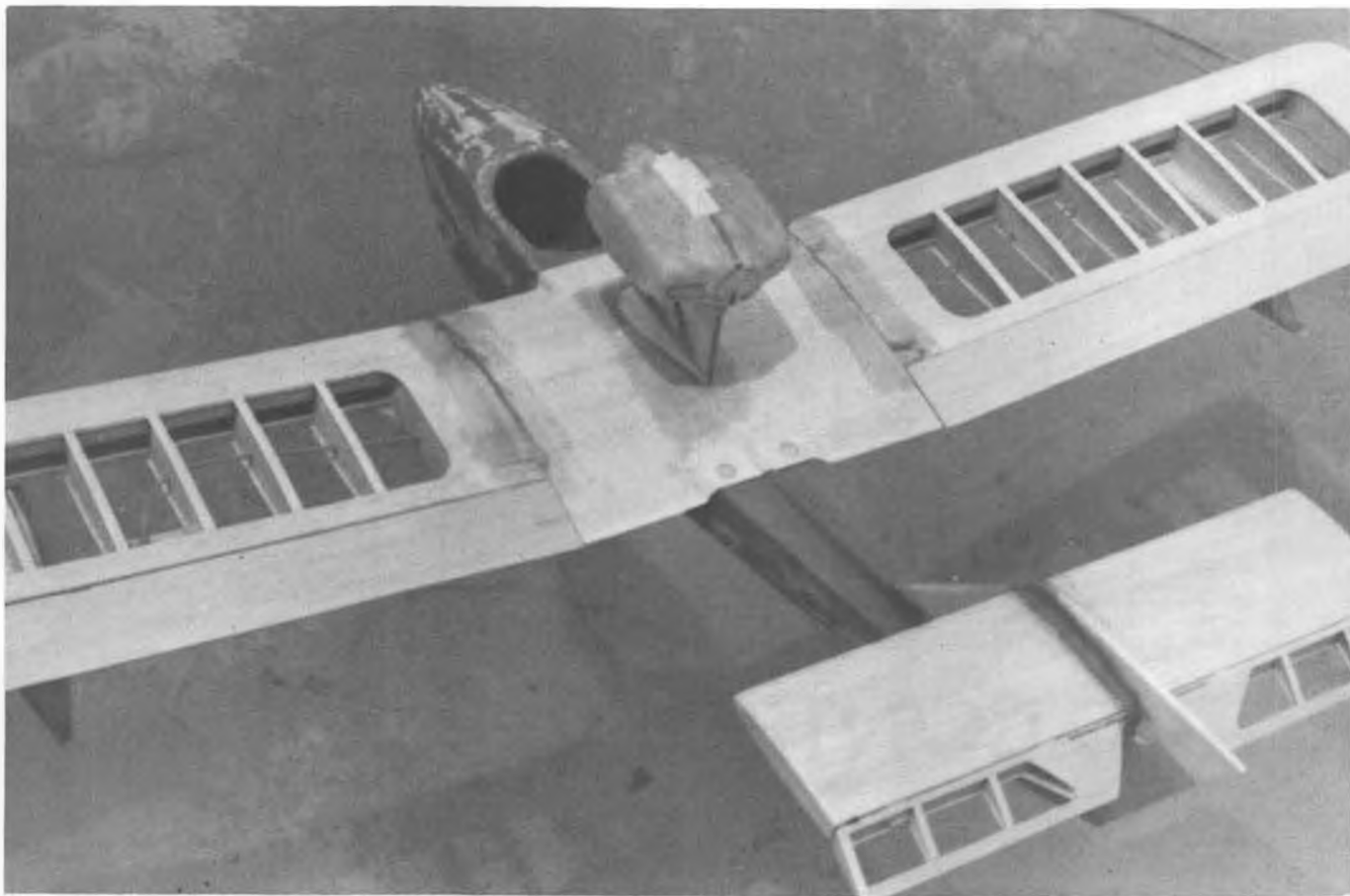


SCALE IN FEET  
0 1 2 3 4 5 6



SCALE IN FEET ... SIDE VIEW ONLY

0 1 2 3 4 5 6



Although designed and built primarily for personal amazement, the Osprey could be used in both Sport and "Museum" scale . . . problem is, you'd probably have to bring your own pond! Basic structure is quite simple. Engine pod could be hollowed blocks or fiberglass.

Ambroid works well with wet wood.  
**FINISHING**

I suggest that you cover the OSPREY with Coverite. Use finishing resin on the bottom of the hull for a glass like surface.

My OSPREY was painted with dope. Hobbypoxy would also work well. Colors are gloss white, orange and black.

#### **WATER PROOFING**

A must! GE Silicon Seal makes a good seal between the wing and the hull, and should be applied after painting the model. To make this, place a piece of plastic sheet (Monokote backing or Saran Wrap) on the bottom of the wing and tape it in place. Squeeze out a silicon bead along the hull where the wing touches the hull . . . Don't skimp. Fit the wing in place and screw it down tight, then back off one turn. Let dry for 24 hours. Trim the silicon on the outside when dry. Before assembling the OSPREY for each flying session, add a small amount of vaseline to the silicon before attaching the wing.

To waterproof the cockpit, make a hatch from 1/4 inch balsa that is 1/16 undersized all around when fitted into the cockpit. Paint with black epoxy. Attach 1/16 x 3/8 inch strips of golden foam (adhesive one side) to the hatch edges. The fit should be tight. A 1/16 wire loop is epoxied to the hatch so that it can be removed. A rubber band

between the hull and the hatch will keep the hatch from coming out while flying. The radio switch should be mounted in the hull. Vaseline should be used where pushrods exit.

#### **ENGINE**

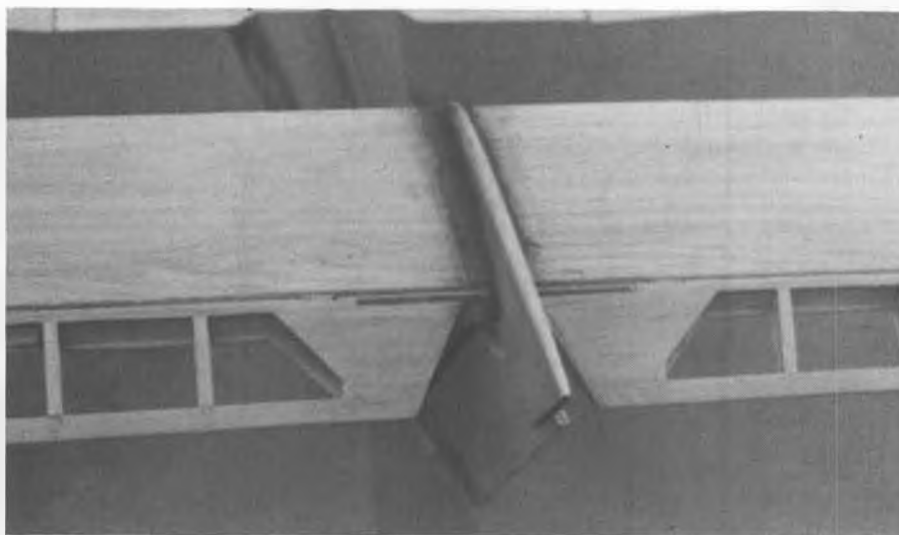
A .40 is recommended as the only size. A double ball bearing crank shaft is a must if you want the engine to last. Most engines work with tractor props, in which case a single bearing is OK. Since the OSPREY uses a pusher prop,

the forces work in the opposite direction on the engine. I wore out a plain-bearing OS .19 when used with a pusher prop. A 10-6 Tornado prop (PUSHER) is used with the .40 engine.

#### **FLYING**

ROW . . . Hold full up elevator and add full power. When the OSPREY climbs onto the step, hold about one half up and she will fly off. Don't yank it off.

*Continued on page 56*



Elevator is operated by Nyrod linked to brass horn which is soldered to tube/joiner. We'd feel better if a wire pin went through tubing into each elevator half.



C.M. Duffield, Thomaston, Texas, built this Stephens Akro from Oct. '72 MB plans. The 52" span model is 5 pounds heavy (!), and is powered by a Fox .36 R/C engine. Designer Brad Shepherd test flew the ship and reports excellent results.

# RADIO CONTROL REPORT

FRANK  
SCHWARTZ

● Probably very few readers, when they read this or portions of any magazines, are aware of the agonies of the author/editor. It would seem that the words just glibly slide from the mind, down the arms and onto the keyboard and, like magic, the column gets written.

It's not the actual writing that's hard. Heck, I can sit down and bang this out on the typewriter in three-quarters of an hour (even allowing for my poor typing) . . . No, it's not the typing . . . it's the problem of what to write *about* and how to *say* it. Nobody just wants to read about Joe Propnut who flies a Glitchmaster 6 in his Yahoo powered by a Grinder .58. No, not at all. The reader (we think) wants to know what's going on generally in his particular field of interest and perhaps new products, new trends and a general commentary on (in this case) R/C. So be it. Now, again, that old problem, what the heck to write about . . .

As far as I'm concerned, the majority of the manufacturers who make hobby stuff and R/C kits and equipment must be totally lacking in what makes for good PR (public relations). They will spend money for an ad and yet the old column editor is begging for them to send him advance info so he can give them a (get this) FREE plug and tell his readers about the product, and with a few exceptions, they completely ignore this "goodie." Whatever product you have ever read about in my column was the result of either the manufacturer sending me poop about a new product (you haven't read too many, have you?) or just digging it up myself. One notable exception is Kraft Systems; usually this

company sends me a poop sheet or something in advance of a new item and I'm glad to include it in the column for the benefit of my readers. Other manufacturers; if you read this magazine . . . or others, there is a moral to the story I just told.

I've often spoken of being "shot down" by faulty installation of a battery pack which becomes sensitive to intense vibration and for all appearances, the plane goes ape . . . then ka-blam . . . back to kit form. Most often our modeller, Joe Propnut cries out as his plane goes in, "I ain't got it . . . somebody's on my frequency!"

If Joe Propnut flies on the 27 mhz band this is a definite possibility. Back when R/C was in it's infancy you needed a Ham or Technician's license and you were on the 50 mhz band. Then we got 27.255 Mhz and you didn't need to

take a test and all that. Soon came the superhet receiver and the spots we were allotted in the so-called CB band. The CB band which, is dovetailed in and around our 27 mhz R/C frequencies has become a monster, created by the FCC.

It's written that the Good Lord created the Earth and Skies in six days, and if Bureaucrats had the job they'd still be setting up the paper work and then make a mess of it. The bureaucrats mistakenly thought about twenty years ago that a business type band was a good idea and they set it all up. It was easy to get a license, you just applied and sent in the money, got a cheap transceiver and began to play like the ham operators. Since the majority of CB operators do not observe the laws, in fact they break the law most of the time they go on the air, they have literally become a menace. They use cute



Art Snyder, a regular R.O.W. flier at Lake Elsinore, designed and is building this beautiful flying boat for .40 power. Will be presented in MB and fiberglass hulls will be available.





Nick Ziroti's "T-Jug" on slow fly-by. A popular Sport Scale kit.



Another view of Duffield's Stephens Akro. Very popular R/C sport scale design.

"code names," like "Cowboy" and "Fisherman," and such rot, rather than their legal call signs. Many use too much power, and all manner of violations of FCC rules and regulations. There must be close to three quarters of a million of these misguided folks messing up the airwaves with trivia. The FCC cannot control them or police the bands and it is obvious to anyone who monitors the CB bands that it is bedlam.

The CB'ers, and especially the industry they support, have wielded some real heft in Washington as far as legislation is concerned. Strangely, the FCC has, I have been told, been making life difficult for the Amateur Radio Operators rather than try to clean up the CB mess they (the FCC) permitted to come about. Radio Amateurs are a knowledgeable bunch, all capable of sending and receiving Morse Code. They often build and design their own very sophisticated stations, and their contributions to the science of electronics and their countless acts of public service in emergencies spans many, many decades.

But I digress. The problem for the R/C'er is that many CB'ers find the clear spots between their channels on 27 mhz most inviting, and coupled with one or more crystal manufacturers' misleading advertisements, they set up on the R/C spots. As a result, in many



Fred Van Kueren's P-51D taxi's out for takeoff. Sport scale or no, it sure improves the image to see a pilot in the cockpit. . . that little something extra . . .



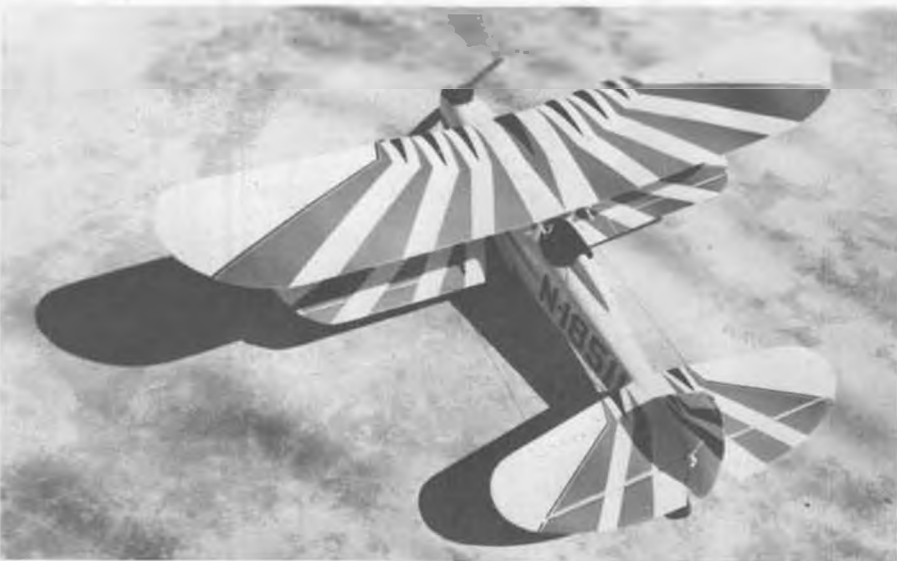
A little squarish, but there's no mistaking the familiar lines on Jerry Puleo's Messerschmitt. Ahem . . . er, the er, pilot . . . is leaning over to tie his shoelace . . . Right?

metropolitan areas, the R/C frequencies on 27 mhz are totally unusable. It would do well for any R/C'er who suspects 27 mhz interference to contact an amateur radio operator and ask him to monitor the R/C frequencies and see if such unlawful CB operation exists. Strangely enough, there is little you can do about it but complain to the FCC. You usually can't tell them who it is, since the CB'ers in 99 out of 100 instances do not use their Call Signs, and

therefore can't be traced. Then there is some law in FCC regulations that states that you cannot divulge the information you hear over the air between two other stations (assuming you are just "listening in"). So there you have it, a real dilemma.

Nevertheless, it's an ill wind that blows no good, and the R/C frequencies we enjoy are part of the Citizen's Band allotment, and I hope the CB'ers, by

*Continued on page 54*



Old Sterling Wizards never die, they just turn up with new paint jobs! This one by Bob Cousins, has Testors .40, Solarfilm with auto lacquer, contact paper trim, 4 coats enamel overall.



Winners at the O.P.R.A. Championships, Dayton, Ohio, October 14, 1973. (l to r): Dave Brown, Gary Villard, Bill Hager, Ed Nobora, Don Love, Bill Gademer, and Bob Gademer.

# PYLON

By TOM CHRISTOPHER

● We received a couple of interesting race reports from Canada and Ohio that we are going to cover this issue. The first is a report by Robert J. Rayzak of Sarnia, Ontario, Canada. Sounds as though these people really have a fun organization up there! This coverage pertains strictly to Quarter Midgets, while the Ohio race report by Bill Hager will cover Formula I, Quarter midgets and Open Pylon.



"Better win this one, Marv Kowalewski, or fix your own TV dinner tonight . . . TURN!"

FOREST CITY FLYERS, LONDON, CANADA QUARTER MIDGET PYLON RACE, SEPTEMBER 30, 1973. By Bob Rayzak.

"The Quarter Midget Pylon Race on September 30, 1973 was sponsored by the Forest City Flyers of London, Ontario, Canada, to promote pylon racing on a larger scale than had been previously realized in Canada. The contest was attended by twenty entries from Canada and the United States, was blessed with good weather, and en-

joyed the hard working assistance of many of the members of the Forest City Flyers. As well, we were fortunate to have Basil Derrough, Canadian National Pylon Champion (and member of the Forest City Flyers) as Contest Director. All-in-all the contest started well, proceeded smoothly, and ended successfully . . . in no small part due to the extensive number of prizes which could be given out thanks to the generosity of the R/C manufacturing companies. It seemed everyone had a good comment to make about the contest.

"The airplanes flew the 2 mile, 10 lap course suggested at the 1973 Toledo R/C Conference and sketched in the April 1973 issue of MODEL BUILDER. Fuel provided at the contest was 15%



Winners at Forest City Flyers 1/4 Midget race, London, Canada, Sept., 1973. (l to r): Larry Butt 3rd, Ernie Nikodem 1st, and Berney Polzin 2nd.



Larry Literovich, St. Catharines, Ontario, and his Fox 15 powered Cassut.

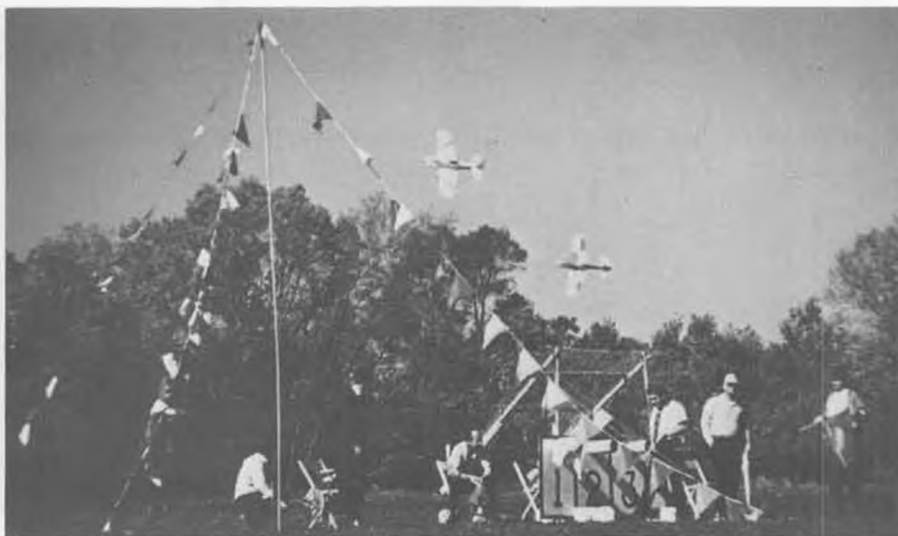
nitro (supplied by Joe's Hobby Center, Dearborn, Michigan) and engine idle was spot-checked. The models were not processed for adherence to other standard rules, since in this area, Quarter Midget racing is still a fun event. We stuck to a rule of "process by protest only," and there were no protests. As it turned out, the winners used standard designs which quite easily fit the rules.

"Certainly a strong factor contributing to the success of this meet was the considerable merchandise donated by the hobby industry. Because of this generosity, we were able to offer a prize to *everyone* who entered. Trophies supplied by the Forest City Flyers were given to third place. The prize schedule also included a large perpetual trophy to be retained by the year's high point flyer in local Canadian pylon contests. This perpetual trophy was awarded with first place this year and hopefully will provide incentive for a formal Canadian racing circuit next year.

"All twenty entrants flew their models but six were destroyed by crashes. The flying was smooth for the most part, and there were no threats to safety. The safety theme was further enforced by the pylon course being set far away from the pit and spectator area.

"Until the fourth heat the contest was a tie between Larry Butt of Forest, Ontario and Ernie Nikodem of Tonawanda, New York, both having perfect scores. In his fourth heat Larry experienced a failure of his rudder pushrod so could not take off and scratched that heat.

"The end of the fifth and final heat saw a flyoff required for third place between Larry Butt, Kevin Polzin of Westland, Michigan, and Tom Jacobs of Garden City, Michigan. This flyoff provided some exciting racing and included a gentle mid-air collision between Larry Butt's Snafu and Tom Jacob's Rickey Rat. Larry's Snafu sustained a broken



They gotta be kiddin'! How can those guys look that unconcerned with those two "turn lefters" almost on top of them. Telephoto or no, those planes are CLOSE!

aileron but continued on and won the fly-off. As well, Tom's Rickey Rat lost its canopy and dummy pilot and finished the race with no difficulty.

"Best time of the meet was the 1:57 turned in by Ernie Nikodem. Ernie's time was the only one of the meet under two minutes, but was followed closely by Bernie Polzin, Westland, Michigan, at 2:05, and Larry Butt, at 2:11. These times are as good as those which have been reported for Quarter Midgets anywhere in the modelling press.

"Following is a list of the entries who placed in the first ten, and a set of statistics gathered at the contest. The contest was so successful that it has already prompted a Quarter Midget event at the 1974 Canadian Nationals!"

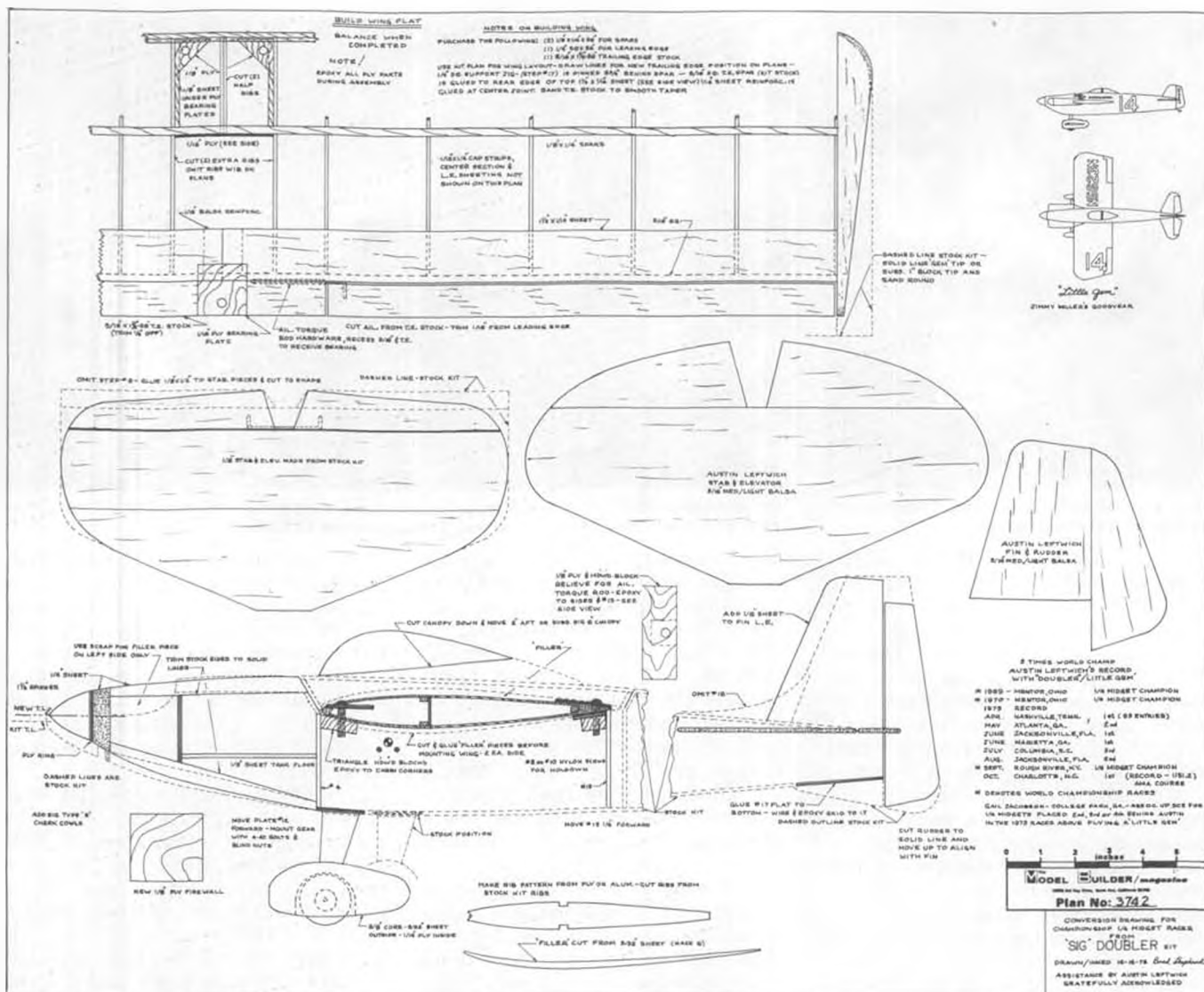
PLACE	NAME	PLANE	ENGINE	POINTS	BEST TIME
1	E. Nikodem	P-51	K/B	15	1:57
2	B. Polzin	P-51	S-T	13	2:05
3	L. Butt	Snafu	S-T	12	2:11
4	K. Polzin	P-51	S-T	12	2:21
5	T. Jacobs	Rickey Rat	K/B	12	2:34
6	V. Scanland	Minnow	S-T	11	2:30
7	J. Powers	El Bandito	S-T	11	2:48
8	F. Maidment	Snafu	S-T	10	2:43
9	R. Rayzak	Bonzo	K/B	10	2:47
10	F. Case	Cassut	S-T	8	2:55

*Continued on page 52*



Forest City Flyers contest organizers for QM races (l to r): Roger Sutherland, Larry Butt, Basil Derrough (Contest Director), Floyd Maidment, and Bob Rayzak.





## "LITTLE GEM".. QM PYLON CHAMP

Austin Leftwich's winning QM racer is a converted Sig "Doubler" kit. By BRAD SHEPHERD.



A winning combination! Austin Leftwich and his "Little Gem."

● When the "DOUBLER" was in the developing stages some 7 years ago, as a combination model for sport flying and a small pylon racer, it was hardly envisioned by this 'feller' who dreamed it up that it would eventually become the World Champion Quarter Midget racer

*Continued on page 56*



Proof of the puddin'. This southern gentleman talks slow but flies fast! Austin set an AMA record in "single pylon" racing that held until the event was retired.



This one hits home! MB's publisher had his first instructions in model building from the designer of "Miss Delaware," Steve Kowalick. A smaller version was latter kitted by Ideal and called the "Air Chief." Red Barrows, San Diego, built this R/C version of original.



# PLUG SPARKS

By JOHN POND

● Spark ignition with radio control! Yep, we promised it several issues ago and thanks to Fred Collins, we are pleased to give you the details that will work with *any* radio set. While it is true some sets seem to work OK with nothing more than a shielded high tension wire from the coil, there are others that still get bothered no end by the make-and-break ignition points. In future issues, we'll give you the latest dope on transistorized ignition and how it works. That's a promise!

Right now, we are concerned with the average Modeling Joe who wants to fly his Old Timer using radio control, but in the classic way, i.e., with an igni-

tion type engine. Not a bad idea when you consider the real shortage of methanol. First, try the shielded high tension lead as explained by WCN last month in his "Workbench" column. If that doesn't work, your immediate attention is directed to the electrical schematic. This is fairly self-explanatory but as Fred sez, there are some things to pay particular attention to!

First off, all wiring used should be no smaller than No. 18 AWG . . . gets too hard to push that current down those small cross section wires. Use shielded wire (No. 18 or larger, 51 RG is fine) on the ground wire and *ground the shielding* to the engine and the foil (or

metal) of the box. This is important!

Ground *only the shielding* of the coil wire leading to the moving points to the foil of the box. Not the wire! Likewise, the coil wire to the nickel-cadmium charging plug (if you use one). Again, remember, *only the shielding!* With this, the high tension lead does not need to be shielded. However, a 1/4 or 1/2 watt, 10,000 ohm resistor, soldered to the coil end of the high tension lead, will cure any problems in this area.

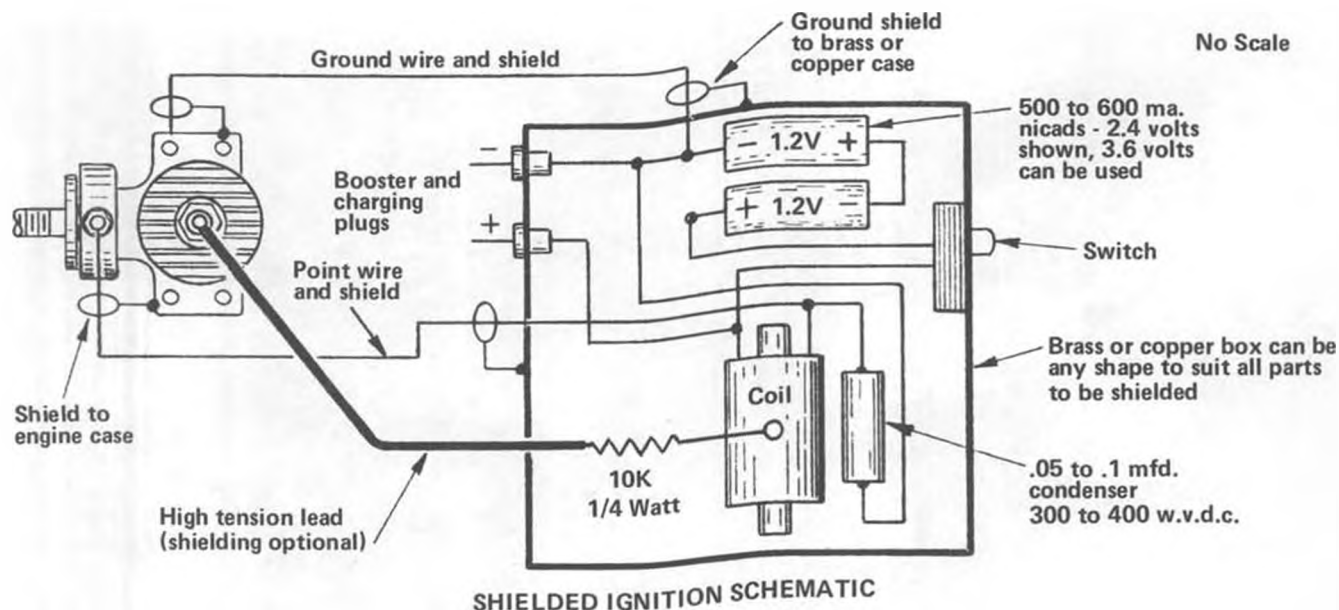
Some other observations: Do not use electrolyte capacitors or wax sealed condensers, as over a period of time, the engine heat could melt them! Be



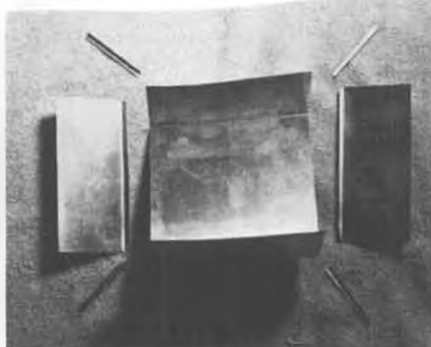
Winner of the TOT (True Old Timer) award goes to Al Hellman, who we see above with his first Flying Quaker and Baby Cyclone, 1937.



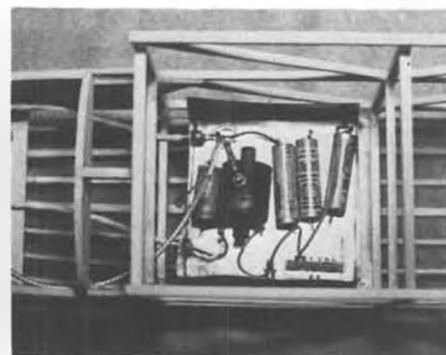
Here's Al today with his new, Super Cyke powered Quaker. He did a better job on the wing tip this time! SCIF member Al from L.A.



Some of the materials gathered together that are required for building shielded ignition box.



Box takes shape. Corner angles ensure tight solder joints.



Completed box with components in place. Plenty of room in Dallaire Sportster.

careful in grounding the shielding not to short out against the wire. Fred used a foil lined box, but the writer and Red Barrows used sheet brass boxes. Brass sheet will do the trick nicely and is easier to get than copper sheets. Besides, brass is primarily copper with tin added. (Sheet brass is available in most hobby shops.) If you use foil, you can make a balsa box. The important thing to remember is to completely cover the box with metal insulation (foil) to prevent the ignition noise from leaking out! All shielded wires are grounded to the box.

Inside the box, care must be taken

to avoid any shorting of the shielding to its connections! Heat shrink tubing over the shielding prevents shorting to the wire. Some shielded cable has an outside insulation. Collins also sez the aluminum foil he used is 3M Scotch Brand No. 425, which is a pressure type. 3M Scotch Brand No. X-1181 Copper foil can also be used. Of course, copper is much easier to solder, but finding a source is a real problem.

In wrapping up this discussion, while credit is due Fred Collins for the initial info, Red Barrows deserves a tremendous amount of credit in building up several setups for the writer to photo-

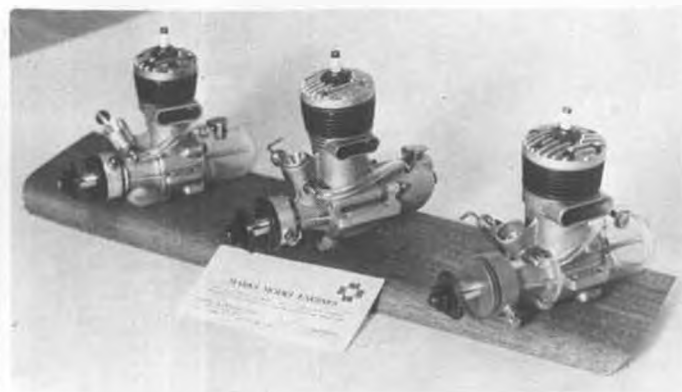
graph. If you have any doubts that this system works, rest assured, as the system is the same employed by Maynard Hill and Walt Good in their record attempts using ignition engines for economy fuel runs.

#### CONTESTS

No gas! Or darn little of it. This seems to be the theme on some of the opening contests. The Phoenix meet was cancelled because of lack of pre-entries. Reports received by this writer indicate gas was indeed hard to find in Phoenix, as gas service operators would only open for several hours and then sell only limited amounts, preferring to



Bruce Thompson, Toronto Canada, with his pretty red and white Scientific Red Zephyr. Design will soon be O. T. of the month.



Beautiful ignition conversions of glow type Torpedo engines by Mark Fehner. See text for more info.





Something about the roar of a Spitfire that draws a crowd. Lin Haslin kibitzed by Jay Jackson and Brad Anderson. A Bombshell, what else!



Neatly cowed Ohlsson 60 in Sailplane being tuned by Noal Hess. Ralph Day holds on. How about those Bonneville salt flats!

save it for the local citizenry.

Same story from Jim Kloth in his report from Florida on the King Orange International contest held at Jacksonville. Jim was able to get to the contest from St. Petersburg on a half tank of gas. He noted the lack of Florida contestants, but surprisingly enough, there were more out of state entries.

So plan ahead, men! If you are going to a meet, check with your auto club to see what is open. It isn't as bad as it is painted if some pre-planning is done before leaving. Matter of fact, at a recent control-line contest in Chula Vista, the Contest Director was a station operator, and opened up for those contestants in bad shape for a return trip.

On that same thought, the writer is approaching Gene Spence . . . the man who has made free flight flying available at Taft . . . about this situation. The writer proposes, if possible, that one station be prevailed on to open only for out-of-town contestants who can show their entry slip endorsed by the Contest Director. Shouldn't take too much gas, but sure would alleviate that uneasy feeling of how to get home. How about that idea to attract the modelers to Taft, Gene?

Anyway, we seemed to have digressed

from the KOI meet. Jim Kloth reported entries were down in Old Timers this year primarily because of lack of local modeler activity. In mentioning the rubber event, it goes without saying, "Gorgeous Gawge" Perryman took this event, closely followed by Jim Kloth's twin pusher.

Inasmuch as entries were low in the glow class, the .020 Replica class was combined, giving a rather lively competition. The .020 models placed one, two, and three. Those cuties are hard to beat!

Jim further states that with fields shrinking all the time, the .020 Replica class is gaining tremendously in popularity. Actually, as Jim has found out, they are a good way to relax from the highly competitive AMA and FAI Events. Also noted was an .020 size Sailplane employing a Mattel electric motor. We'll get more dope on that good flying combination.

"THE BIGGIE"

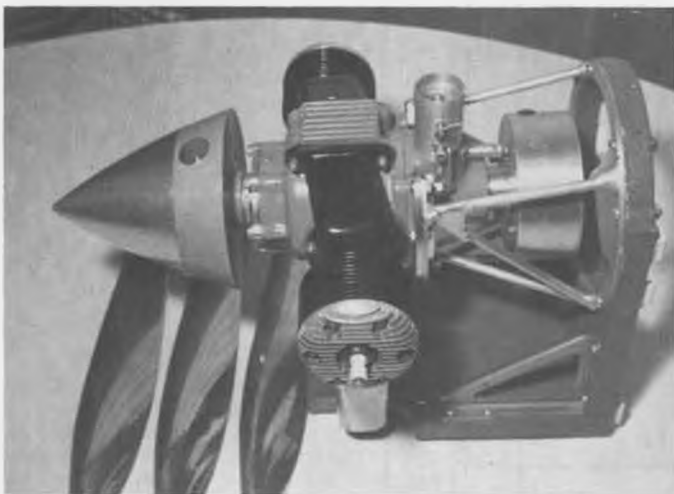
Received announcement of the SAM Old Timer Championships to be held at Lakehurst, New Jersey, July 2, 3, and 4 from the "Armenian Air Force Commander," Joe Beshar, one of the Contest Directors.

Holy Smoke! There are 16 events!



"Newcomer" Jim Noonan, 1915 twin pusher covered with gold-beater skin! Great flyer.

There are five R/C events and 11 free flight events. The only events missing (as previously reported) are the Unlimited Flying Scale, and Texaco type events, where motor runs are limited by the amount of gas they can carry. There simply isn't that much room for long flights at Lakehurst. →



Know this twin? Photo sent in by Bill Schambers, who says it is one of only 26 made. It's a famous name.



Bill Schambers also restored and photographed this Rogers powered American Junior Fireball. Still a pretty airplane.

# 020 REPLICA POWERHOUSE

Old Timer Model Of The Month

Famous Sal Taibi design, reduced to .020 Replica size, by GENE WALLOCK, text by JOHN POND.

● This month's design, the Powerhouse, by Sal Taibi, first appeared in Model Airplane News in September 1939. The model had been featured in many published photos prior to his, notably for its ability to rise off water. Up to this time, most designs employing the Forster 99 engine, ranged in size from 9 to 12 feet in wingspan. Taibi was the first to exploit the power potentialities of the Forster 99 in a smaller model designed strictly for the 1939 limited motor run events.

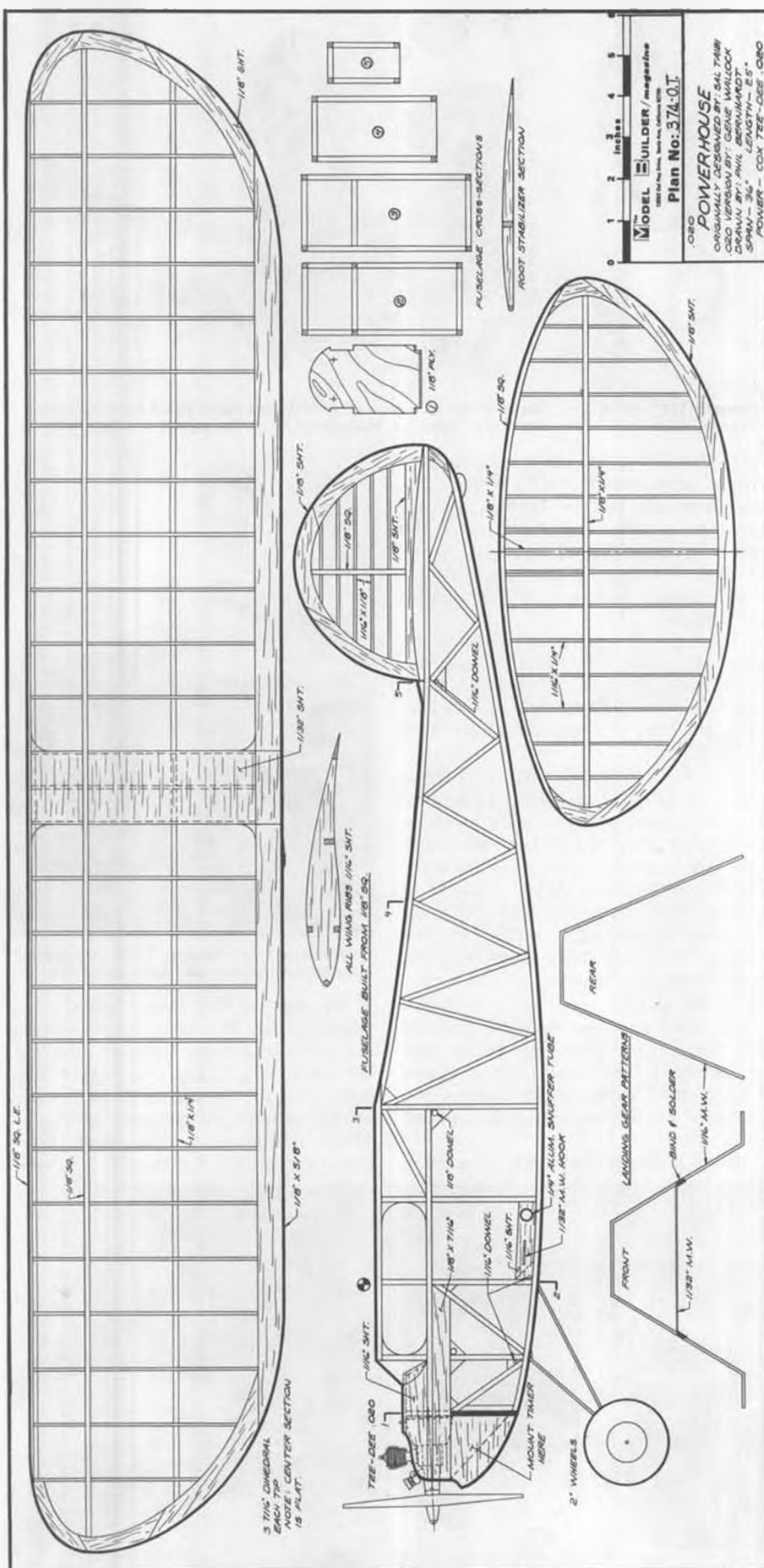
The Powerhouse reflects Sal Taibi's philosophy of model building to a tee; keep 'em simple and they simply fly! The construction of the original Powerhouse was simple, strong, and light; the main reason so many have been built.

According to Sal, he actually built a smaller version of the Powerhouse, but the details of this design have been since lost in limbo. Attesting to the popularity of the Powerhouse design, an English kit produced in the 1941-1945 era called the Air Master, put out by the Cloud Mfg. Co., was an absolute dead ringer to Sal's design. A smaller version was alleged to have been kitted, but the author has been unable to find a trace of this one.

The Powerhouse design is so popular that since being accepted in the Antique Class, it has taken all places in this event time and time again. The model flies in the classic cabin method; left under power, right in glide. The .020 version being presented is remarkably similar in power pattern.

Gene Wallock is responsible for the .020 plan being offered this issue. The model flew so well, that your F/F Flying Scale Editor, Fernando Ramos, had to build one. Fernando reports the model checked out almost perfectly on the first flight—only two test flights were required!

This model will also make an excellent vehicle for the new .020 Old Timer Free Flight Replica radio controlled event presently being proposed by the Old Timer Eagles for the S.A.M. Championships at Lakehurst. Using the small Ace Radio single channel system for rudder-only (weight is only 2-1/2 ounces), this ship makes an excellent competition model. In a 20 second engine run contest, who needs motor control? With the undercambered wing section, the Powerhouse can be a threat from most any altitude. Try one and see!



FULL SIZE PLANS AVAILABLE—SEE PAGE 72



F/F Scale editor Fernando Ramos built this .020 Powerhouse from Gene's plans. That's right, it's STILL a scale model!



Fernando says his Replica Powerhouse was trimmed out by the second flight. Anything looks that good HAS to fly!



Rocket powered King-Burd (1936), built by John Hammond, A.C.C. Club, Baltimore, Maryland.



Bert Pond, Longmeadow, Mass., winds his 1929 Burnham stick model during Chicago Nationals. He won event!

Also noted was the addition of a new event, Flying Scale, rubber powered. That should attract a lot of the SCAMA boys where Peanut Scale started at Pinkham Field. For entry blanks and info, write Woody Woodman (the other C.D.) at 389 Floral Lane, Saddle Brook, N.J. 07662 (or write this management if handier). The Bean feed starts at 4:30, July 1, at Fox Trot Circle on NAS Lakehurst. See ya there!

#### BIGGER AND BETTER CONTESTS

In reviewing the contest schedule for Old Timers in 1974, special notice should be given to the fact that, for the first time, the SCIF and SCAMPS Clubs are jointly sponsoring all contests for the year. This is simply tremendous!

With the combined membership, the problem of contest officials is considerably lessened. Finding qualified (and willing to work) people is always a headache. With such a joint effort, old timer activity in California should enjoy a banner year in 1974.

One of the interesting things that evolved from the joint managership is the addition of rubber scale to three of the .020/Commercial combination contests. Rules for this new scale event will be soon forthcoming. One thing for sure, the event will be much more informal than the Flightmaster detailed type contest. Emphasis will be on the Fly of flying scale. (Look out, John! You're gonna get yourself in . . . more trouble! wcn).

As if you haven't had enough trouble getting your gas job off water, the SCIF-SCAMPS have also added a rubber event. Maybe a switch of events may change your luck.

#### INDOOR OLD TIMER SCALE?

This is a new angle cooked up by the Willamette (Oregon) Model Club. Here in California we don't have to fly indoors during the winter, so the idea has never been tried. The WMC is going to include this with its February 10 contest. Is there no end to this O.T. fun? Here are the tentative rules for other clubs that might be interested:

1. Models will conform to the same categories as established by S.A.M.

*Continued on page 60*



Phil Oestricher, Ft. Worth, Texas, built this prop-saving Yogi, powered with a Torpedo .15.



Earl Welch and Brown powered Miss America at Willamette M.C. O.T. meet. Can you name ship in background? It's not a Sailplane!





Resplendent in metallic blue and opaque yellow Monokote, our O.T. Powerhouse from a Chuck Gill Models kit is all set to go. Completed model, with Heath radio and Enya 45 and Tatone muffler, weighs 5-1/4 lbs., dry. Picture taken in last week of January. Weep, Easterners!

## O.T. POWERHOUSE R/C

In which our editor combines a product review of Chuck Gill Model's O. T. Powerhouse kit with some hints on converting those glorious birds of yesteryear into R/C O.T.'s. "Let your fingers do the chasing!" By WCN.

● We don't want to get into a long discussion on the pro's and con's of adding radio control to an Old Timer free flight, but a couple of arguments on both sides of the subject might help to clear the air (If nothing else, that statement ought to please our ecologist-modeler).

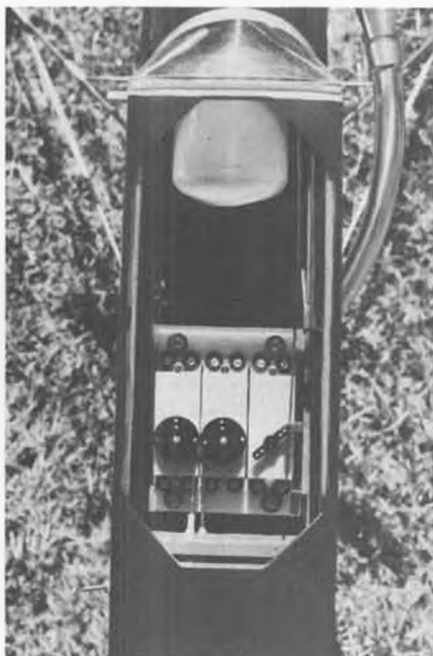
Authenticity is the strongest "con" argument against R/C in an Old Timer. The radio switch isn't offensive because it could pass for the ignition switch. And the elevator and rudder pushrods can be made unobtrusive enough . . . But that glow engine is a dead giveaway! It

vaguely resembles an ignition engine, especially if you're lucky enough to own a Champion glow plug, but once you crank it up, the pure image is shot. However, we may be well advanced in overcoming that argument (See "Plug Sparks" in this issue).

Next in importance to the nostalgic value of hearing the deep-throated roar of a relatively low RPM ignition engine hauling its aircraft into the air, we have the unequalled thrill of watching our creation climbing skyward in a beautifully stable, circling climb, followed by a smooth transition, and then a

floating glide back to earth . . . Comes the first "pro" for R/C . . . the glide is going to dump our balsa, plywood, silk, dope, blood, sweat, and tears hunk of yesteryear into a beautiful grove of tall maples . . . on Ebenezer Scrooge's property (before Christmas). A touch of remotely operated down trim, accompanied by a turn, and holding, into the wind, would save the day.

Yes . . . to the purist, the thrill of the chase may be gone by adding R/C . . . but don't forget . . . today's true old timer free flyer is in his middle forties, at *least*, and the fact that the



Sullivan 8 oz. tank protrudes into cabin area. Heath servos on Orbit tray. No crowding!



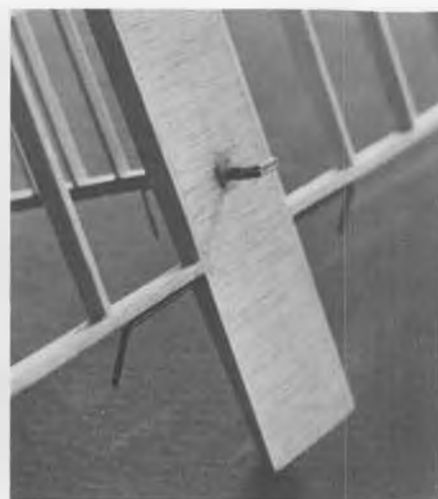
Extra diagonal bracing on top and bottom make up for soft plastic covering.



Tatone muffler on Enya .45 has extension to carry away ook. Royal spinner. Keil wheels.



Left wing panel carries prototype of new Model Builder decal. Generous stab typical of free flights, and a great asset to those who are learning to fly radio controlled models . . . honest!



Rudder tiller arm for inside installation, and coat hanger joiner for elevators.



Spruce 1/4 sq. spars and webbing are small weight penalty in exchange for stronger wing. Radio controlled maneuvers can add flight loads.



Rudder pushrod runs through tube guide epoxied to side of fuselage. Rudder tiller drops onto arm when tail is strapped to fuselage.

initials for Purist Old Timer spells "pot" could very possibly relate to waist-line dimensions! It's not as easy as it used to be to run across meadows and streams, through back yards, climb fences, shinny up trees, ride on the running board . . .

"What's a *running board*, Pop?"

"Get back to your Super Kaos, I'll tell you later!"

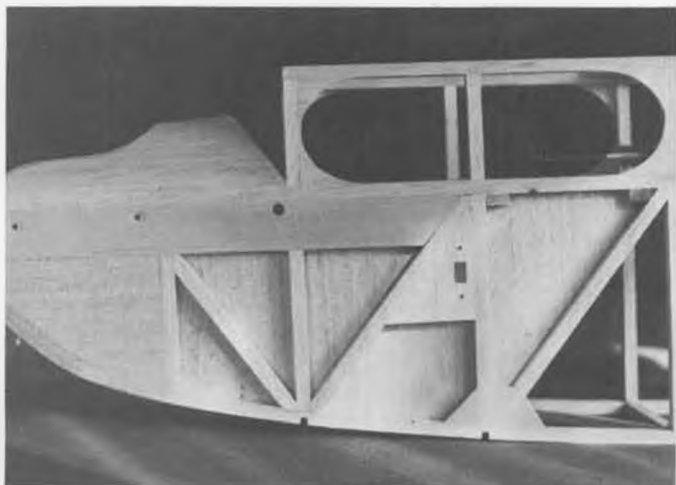
. . . of a rollicking jalopy, etc. Not only that, our booming population has eaten up flying space at a frightening

rate, and now that the oil companies are playing footsie with our very lives (3 cheers for the truckers), it's even more difficult to find room to turn a model loose on the elements.

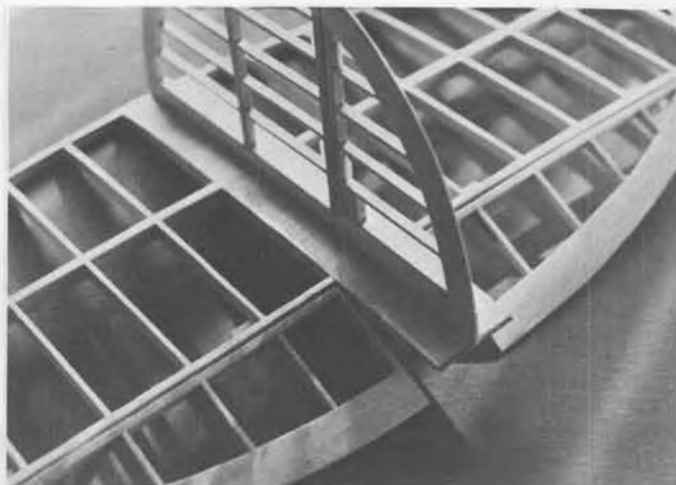
Let's face it, men, pure or not, R/C is fast becoming a necessity to Old Timer free flight, and maybe the modern generation F/Fer better take another look at Dick Mathis' dissertation on R/C-F/F at the 1972 NFFS meeting. Maybe that wasn't egg on his face after all (Hair yes, egg no!).

One more "pro" and we'll get off the soap box, or (empty) glow fuel barrel. Perhaps it's an unexpected by-product, but O.T. R/C could be one of the best promoters of R/C . . . except possibly gliders . . . to come along in many years. In our opinion, there is no easier way to get into R/C flying . . . and that includes gliders . . . than with an inherently stable, powered sport free flight. In spite of many ads to the contrary, the only *true* basic trainer for

*Continued on page 57*



Servo rails extend through inside sheeting. Sheeting and gussets reinforce longerons at notches for landing gear.



Providing hinged tail surfaces only requires the addition of a few extra sticks of wood. Note wire on T.E. for reinforcing.



Charlie Gilbert "at home" in his well equipped workshop. The chopper is one of his scratch-built designs, and excellent flier.

# CHOPPER CHATTER

By JOHN TUCKER



● This month, I'd like to introduce a good friend, Charles Gilbert, who is not only a master craftsman and design engineer but an ardent modeller as well. The accompanying photos will give you an idea of his excellent workshop *and* his model building prowess. Charlie has had the R/C Helicopter "bug" for a long time and has successfully designed and flown two scratch built choppers without benefit of plans or parts! After much arm-twisting, I finally persuaded him to give me some details on his latest project, the Hughes "500" Chopper, so . . . lets have him tell it in his own words:

## HUGHES "500" DESIGN CONCEPT (PART ONE)

"You know, I haven't been fooling with model helicopters very long, but in a short time I came to one basic conclusion: There are too many kit-choppers flying around and I yearn to see something different.

"I'm the type of guy who runs outside every time I hear a helicopter fly over and visit the airport to see them up close.

"After weighing all the pros and cons of the difficult full-sized machines, and even though some of them would pro-

bably be a better design from a modeling standpoint, I fell in love with the idea of building a Hughes "500". On the "pro" side, I listed the following:

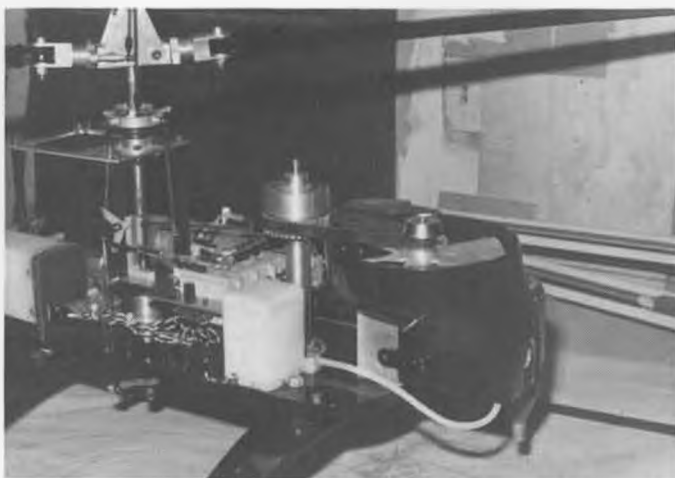
1. The full-size helicopter has outstanding performance and maneuverability.
2. The fuselage would be quite roomy for the installation of any type of mechanism I desired.
3. I haven't seen or heard of any 4-bladed rotors being used on models.
4. All the mechanisms could easily be placed "out" of the cockpit areas, and most of all . . .



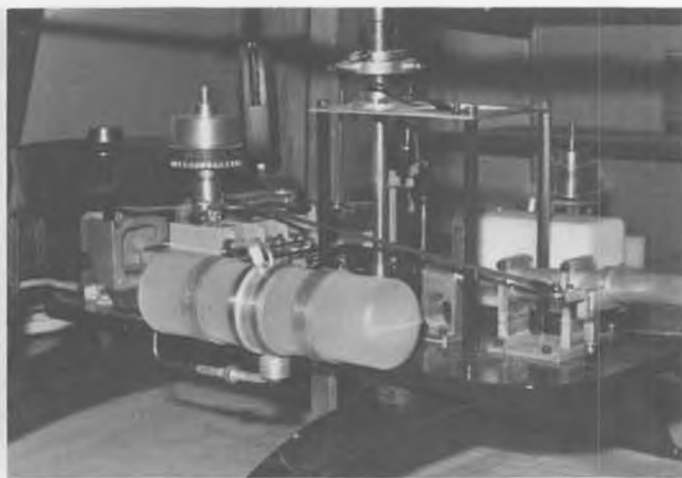
Charlie puts the finishing touches on the window outlines of one of the molds for the Hughes "500" he is in the process of building.



Rotor head components for the 4-bladed Hughes 500, plus O & R engine, plans and Revell plastic kit. We'll keep you posted.



Front end of Charlie's "open air" chopper. Note belt drive, cooling shroud, sealed radio and battery containers. Very clean machine!



Rear view of same chopper. Note double Sullivan tank. There aren't too many secrets about the mechanics involved!

5. I like the looks of the little "critter".

"On the "Con" side, I listed the following:

1. The tail boom is too short.
2. The tail rotor is too small.
3. There is a lot of window area to be vacuum formed.

"With these bits of information tucked away, I decided to have a go at it. At the nearby Fullerton, California airport, the Edison Company has several Hughes "500s" and they were kind enough to furnish me with a sheet out of the Maintenance Manual showing all principal dimensions and a small three view drawing.

"I scaled this up, and with the help of a plastic model, shaped the two halves of the plug to make a fiberglass mold. First, the halves were sawed to the outline shape and then doweled together, at which time the side view contour was carefully followed. After many hours of chiseling, planing, and sanding, the two halves were separated and mounted on flat pieces of chip-board with screws from the backside. I applied two good coats of Superpoxy primer and sanded smooth.

"Next, all the windows and lines were carefully layed out. The window areas were relieved 1/16 inch to allow for the thickness of plastic window material (I intend to use Butyrate). This material will be vacuum formed over a plastic mold that I will take from the plug. Since the side windows bulge out on this craft, it was necessary to use epoxy body putty to build these areas up and sand to shape. Next, all the dividing lines are carefully filed onto the plug using a triangular, jeweler's Swiss file. These grooves were then "burnished" smooth by running a fingernail up and down them.

Great care was taken to be sure there were no reverse curves on the plug which would cause the mold to be mechanically unseparable from the plug. One area where there is a *designed* "reverse-curve" is around the rotor shaft

at the top of the fuselage. I remedied this by taking a plaster "splash" of the area to make a separate fiberglass part to be patched in later. The final shell will be cut out and the separate fiberglass piece set in place.

"Several more coats of Superpoxy primer were then added, sanding between coats with 180 garnet paper and then wet-sanded with 220 and 400 wet-or-dry paper. After going over each of the filed grooves to make them uniform, and after puttying the small cracks between the plug and the flat surface, the

plug was waxed and polished and finally ready to pull a mold."

Now, if that isn't enough to whet your appetite, just wait 'til the next issue when he goes on to tell about the mechanics, unique starter drive, and that 4-bladed rotor which he hopes will enable him to slow *roll* the chopper!

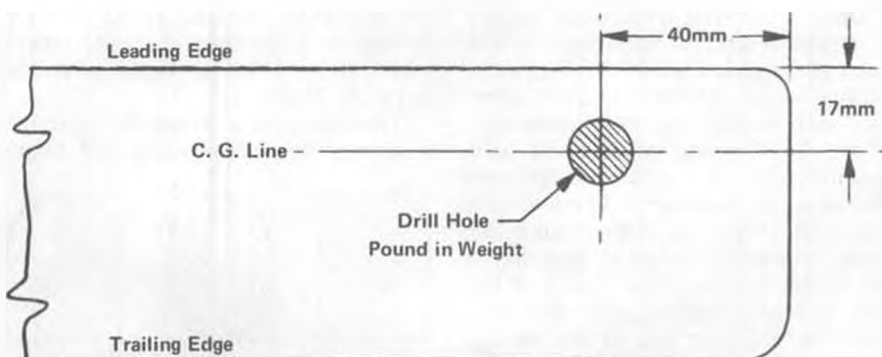
Here's another item to add to last month's "Kavan Report." It concerns weighting of the main rotor blades on the Jet Ranger.

After building and balancing the rotor

*Continued on page 66*



Tino Villanueva, with his Kavan Jet Ranger, at a parking lot "somewhere in Los Angeles." Helicopters could certainly be the answer to space and travel problems.



Location for balancing weight holes on the Kavan Bell Jet Ranger.





The author's championship winning Santa Barbara No. 679. Don adapted a Soling-M hatch cover and made his own wooden deck.

# main sheet

By DON PROUGH . . . Our sailing editor takes the mystery out of carving your own mast. It's easy if you know how . . . so here's how!

● One of the least understood factors in model yacht construction is the making of a good mast. Everything from toothpicks to broomsticks have been tried with varying degrees of success or failure. The purpose of the mast is to hold the sail in place so that the greatest amount of sail is presented to the available wind. Obviously, if the mast is not strong enough to take the pressure, it will break. On the other hand, if the mast is heavier and stronger than necessary, it will only add to the heeling moment of the yacht. Heeling moment is the amount of instability that is built into any boat with things above

the waterline. Regardless of the extremes, it is obvious that the model yacht cannot live up to its potential if poorly rigged.

The choice of mast making materials is usually limited to wood and alumi-

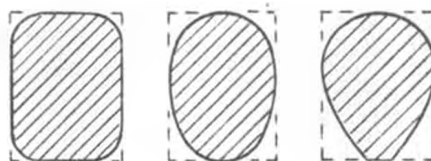


Fig. 1

Fig. 2

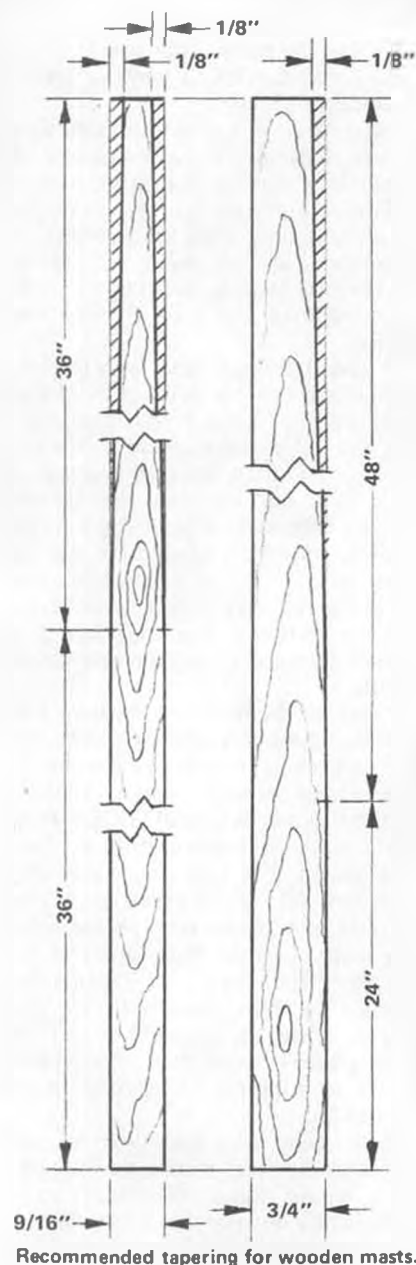
Fig. 3

Three typical mast cross-sections. No. 3 is best by far. See text.

num, because of cost and availability. The other options include stainless steel tubing, fiberglass fishing pole blanks, and titanium tubing. The cost factors make these items less common than they should be. The amount of control that any given type of material offers is determined by the rigging style of the yachtsman.

Wood masts have many advantages, the major one being cost. Spruce and Douglas fir are the two best choices, with pine a very poor third choice. Secondly, wood will be able to display the pride of the craftsman who shaped the mast. The last and most important advantage of wood is that the mast can be tapered and shaped to eliminate excess weight, and at the same time, shaped so that the mast can flex where necessary for control. Wood also has some disadvantages, such as; the small screws that hold the fittings in place

*Continued on page 62*



Recommended tapering for wooden masts.



The sleek and graceful lines of the Y10-43, sitting in the sun at Clover Field, Santa Monica, Feb. 18, 1933, are evident in this photo.

## DOUGLAS YO-31C/Y10-43 By PETER WESTBURG

● The one and only YO-31C was originally the fifth airplane of the five YO-31A's (MB, Jan. 1974), but so many design changes were made that it was given a new designation letter. The most apparent change was in the landing gear. The old split gear was replaced with a cantilever leg and low pressure tires in large fairings similar to the type used on the Curtiss Hawk P-6E. The cockpit was widened at the shoulder line and a blister added under the observer to give him more room to work in. The result was a considerably cleaned up airplane but it still had the troublesome gull wing. The 'C' served with the 1st Wing at Langley Field and the 99th Observation Squadron; it was still in existence in 1947 at the University of Illinois where it had been used for several years in classroom work.

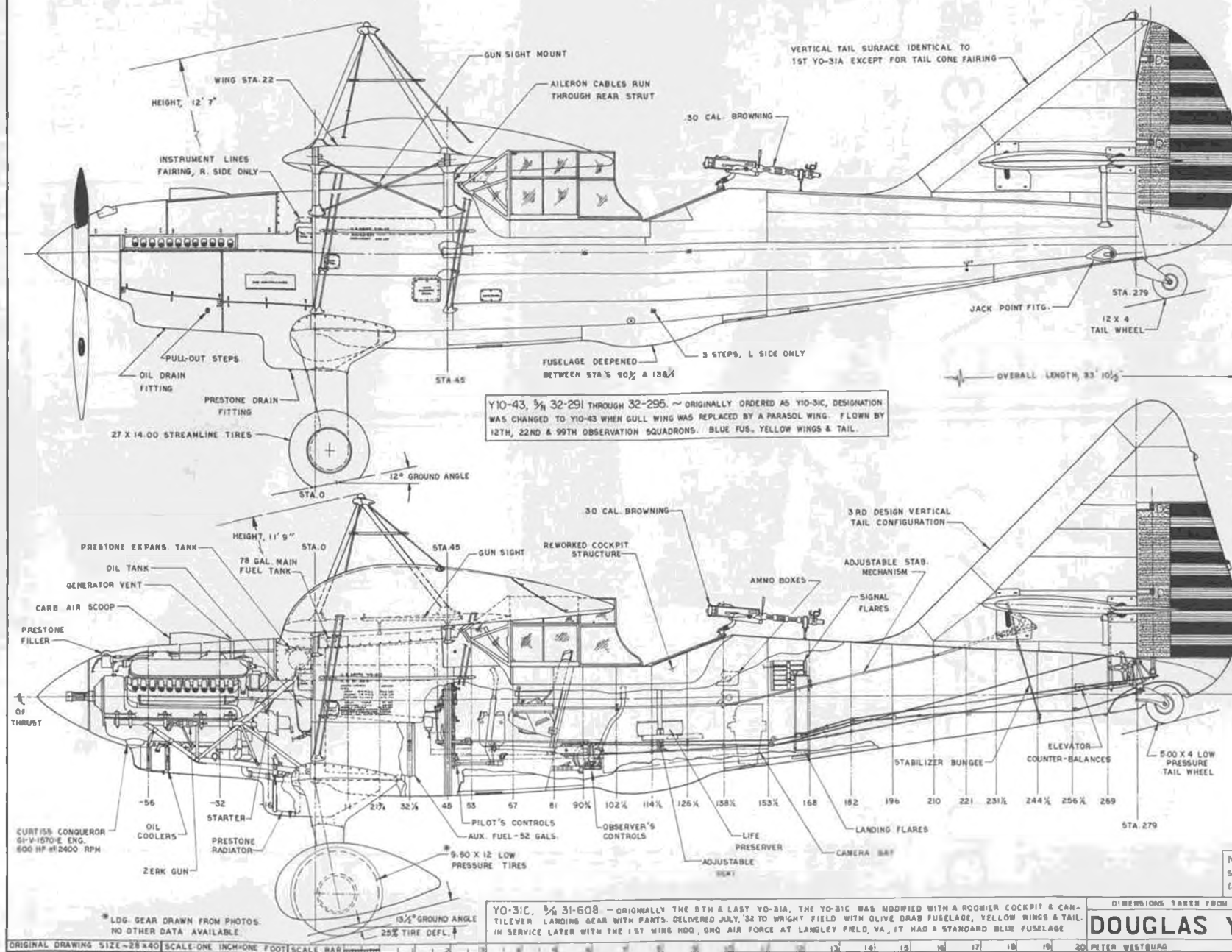
The number '1' in Air Corps designa-

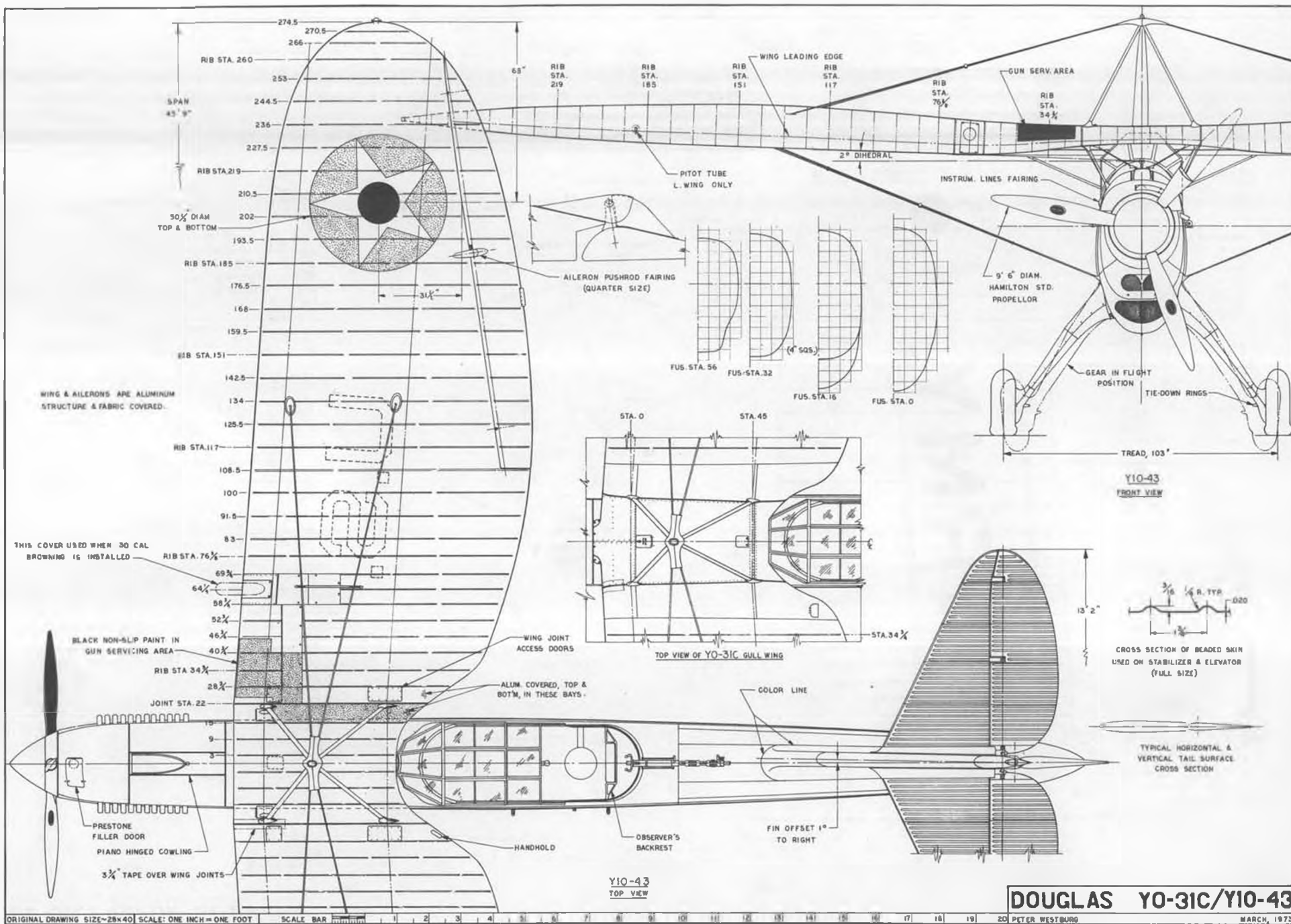


This short nose Y10-43 was the prototype of the O-43A series. (Pete Bowers photo.)



Beautiful picture of a beautiful airplane. The YO-31C at Wright Field in the wintery snow of 1932-33.



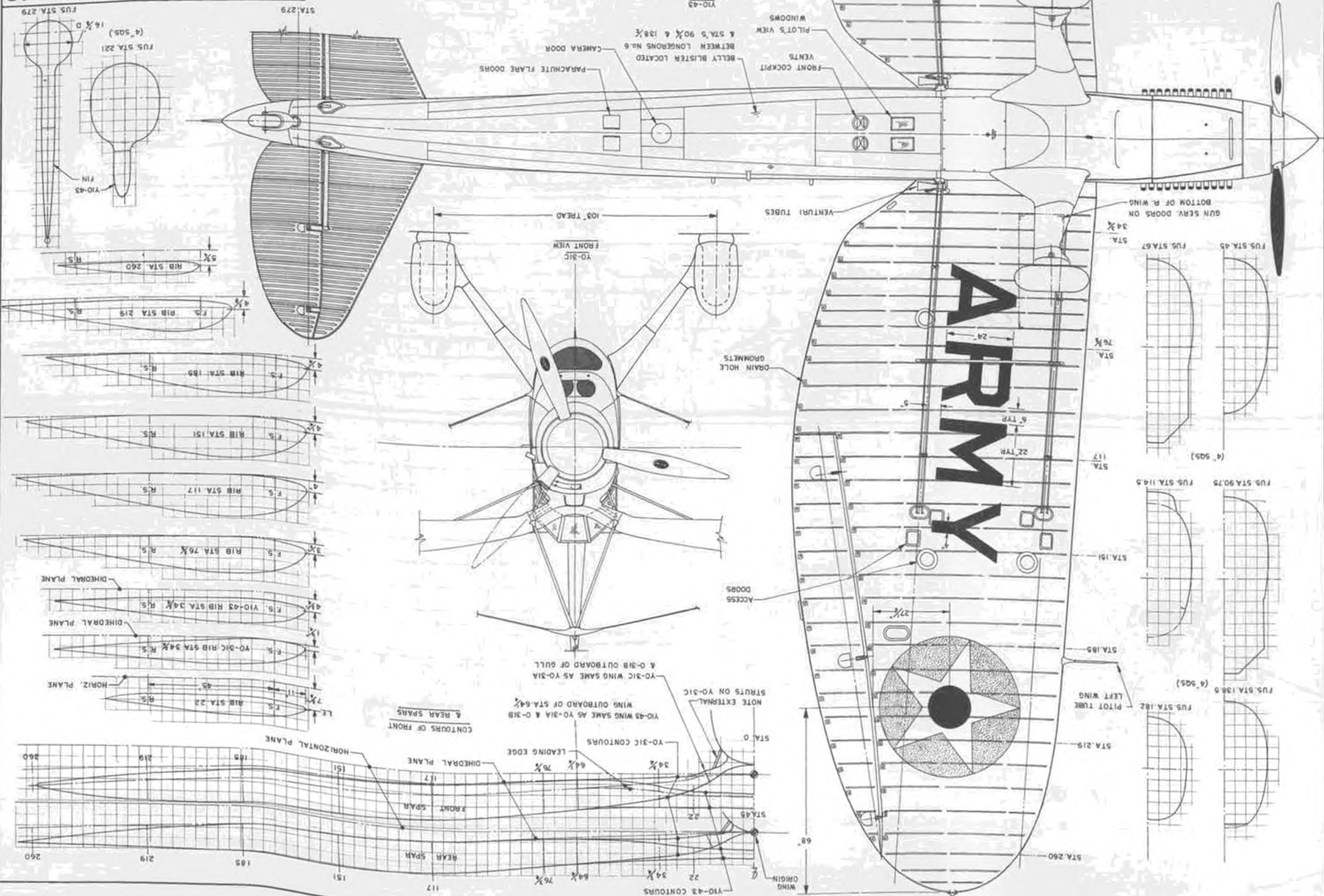


**DOUGLAS YO-31C/Y10-43**

PETER WESTBORG

MARCH, 1973  
SHEET 2 OF 3





These plans first published in the October 1973 issue of WINGS magazine.



The almost perfect lines of the Y10-43 with the original YO-31A vertical tail make it one of the most beautiful airplanes ever designed. Enough to make any good modeler's fingers start to itch!

tions had nothing to do with physical differences between airplanes; it indicated that the airplane had been purchased with supplemental funds instead of the regular fiscal year funds. Five Y10-43's were purchased in this way. At long last, the gull wing was changed to a center section on a level with the pilot's eyes, the wheel pants were discarded and the original YO-31A vertical tail was used. In spite of the cabane, the airplane had classic lines; the ugly duckling XQ-31 grew into one of the most beautiful airplanes to grace the skies. But they were unlucky airplanes; No. 4 crashed in 1933, No. 1 in 1935; No. 5 in 1936 and No. 3 in 1939. Only No. 2 survived and it was turned over to an aircraft maintenance school in 1941. ●



Lone YO-31C in service with the 99th Observation Squadron, Mitchell Field, Long Island. Long stacks were added to eliminate glare during night flying. Number put on before stacks.



A Y10-43 while in service with one of the squadrons in the 12th Observation Group. (Pete Bowers photo.)



Peanut Scale Fairchild KR-21, constructed by Bill "Hot Gnat" Warner from Modernistic Models plans (see Classifieds). Look at all those ribs! Must be about a half inch apart. Blown up, this could make excellent Sport Biplane R/C ship.

## FREE FLIGHT SCALE

By FERNANDO RAMOS

This month, Fernando turns most of his column over to a man who is highly respected for his knowledge in the subject, "Handling, winding, and storage of rubber motors" . . . by CLARENCE MATHER.

● There are many advantages to living in an area where there is bountiful modeling (both building and flying) all year around. For instance, in Southern California there are exceptional modelers, from whom one can learn many things. It is my intention, from time to time, to ask these individuals to share some of the techniques they employ in their outstanding modeling that set them apart from others. Such is the case of this first article.

For the past seven years I have had

the pleasure of flying with Clarence Mather in contests, and seldom have I seen him lose a scale rubber event. Clarence excels in all phases of modeling. He has, on several occasions, represented the U.S. in International competition, flying microfilm models.

Clarence's scale models are beautifully handcrafted and unbelievably light. He is quite serious about his modeling, and his numerous victories reflect this. The following are Clarence Mather's methods of handling, storing,

and winding of rubber motors for scale models. His ideas and opinions are based on his experience, and are intended for beginners in rubber powered flying . . . However, all of us can learn a great deal from him.

"In making up a rubber motor the rubber quality as well as the size should be considered. The former is a whole story in itself, but if you can find any Pirelli, it is the way to go. If not, then Filatti, Sig, or Dolby will be your alternatives. For first tests with a new model or new rubber, use a short loop that just reaches from the prop hook to the rear peg. It is easy to hand wind such a motor for low power tests, yet it will take sufficient turns so that the cruise and power burst conditions can be observed. Also, not much rubber is wasted if it is the wrong size.

"What size to use? At first it will be an estimate based on past experience. The model type, size, and weight, and the propeller diameter and pitch are some of the factors affecting the rubber requirements of a model . . . but the rubber quality is also important. The surest way is to fly the model! Typically, a Peanut scale model, built of sticks and tissue and utilizing a plastic prop, will fly on rubber from one-sixteenth to one-eighth of an inch wide. This refers to good Pirelli. Some other rubber may be thinner, or of lower torque, and the width will have to be greater. A series of sizes should be stocked in graduations of 0.010 inches. Don't worry about the rubber getting



Megow plans of yesteryear yielded this Jumbo Scale Taylor Cub, by Chuck Schobloher of the Cloudbusters. This and Waco SRE photo by Bob Clemens.



old before you use it. Some of the best rubber I've had was six years old and ten year old rubber may be excellent! Store the rubber in plastic bags. It is better to use too small a size than one too large so make up such a loop. Allow two inches for the knot.

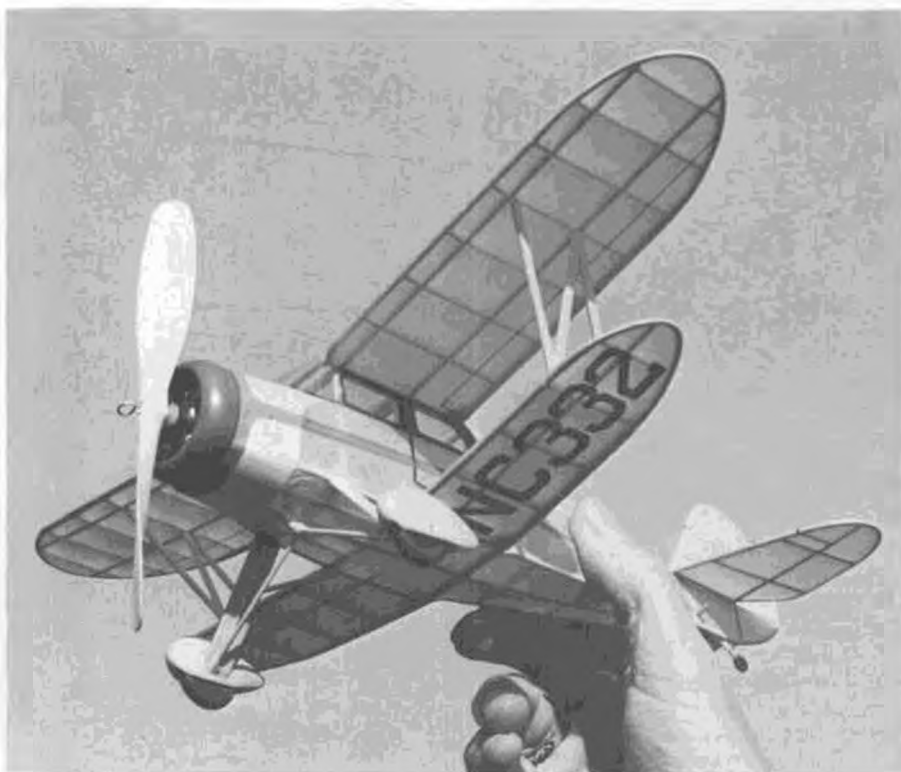
"The knot is of great importance, so tie it well. Avoid getting any sort of oil on the rubber before tying the knot. This means that clean fingers should be used! Fold the rubber strand upon itself, forming a loop (Fig. 1). Tie a loose conventional knot in the double strand near the cut ends (Fig. 2). Work saliva into the knot by chewing. Then pull the knot very tight . . . right to the breaking point of the rubber.

"Such a knot will hold quite well by itself . . . but one of two added steps is recommended. The easiest one is to moisten the loose ends of the loop and tie a square knot against the first knot, also pulling it very tight (Fig. 3). Such double knots hold very well.

"An alternative step is to tie the rubber with thread instead of using the square knot. A partner grips the cut ends of the rubber with a pair of pliers and stretches the rubber very tight. You loop moist thread around the taut rubber twice, right next to the knot, and tie securely (Fig. 4). In both cases trim the loose ends to one-eighth of an inch of the knot.

"Larry Calliau places the thread on the loop side of the knot, but most modelers place the thread on the cut end side. Larry has had excellent service with his method. Jim Richmond uses *no* knots in the rubber, but just holds the ends with thread and a little Pliobond glue! Don't be surprised if you have difficulty making Jim's method hold. He has some extraordinary talents.

"Sometimes it is desired to tie rubber that has been lubricated. First wash off as much of the oil or soap as possible. Then chew the loose ends for several minutes . . . flying rubber powered



Waco SRE in Peanut Scale, crafted by Fran Kastory of Pittsburgh, who used Earl Stahl plans reduced about 1/3 to get 13" span needed. Mooney's Peanut SRE was in the Nov. '73 issue.

models is more enjoyable if you develop a liking for the flavor of rubber and lubricant! Then tie the rubber with the knot and thread method previously described. Never trust a single knot on such rubber.

"In all cases, install the rubber motor so the knot is out of the way; behind the rear peg or hook.

"Rubber should always be well lubricated before using. The rubber must be wet all over. Many modelers lubricate their motors a day or more ahead of time so that the lube can soak into the rubber. I've never been able to notice any difference between such motors and ones lubed just before winding. Also, I've never been able to notice any

difference between the various mixes of lubricants. The commercial mixes are excellent. A mixture of green soap and glycerine is the old standby, and a fifty-fifty proportion is fine. Green soap is usually available only as a tincture which means it is an alcohol solution. The alcohol should be boiled off, and that is a smelly operation! Castor oil also is an excellent lube. I prefer the soap mixes because they can be washed off the rubber more easily for cleaning and retying.

"Store motors individually, labeled according to size and the rubber source. The small brown envelopes sold in stationery stores work well. The two-by-three inch size is fine for small motors, and the three-by-five inch size for larger ones.

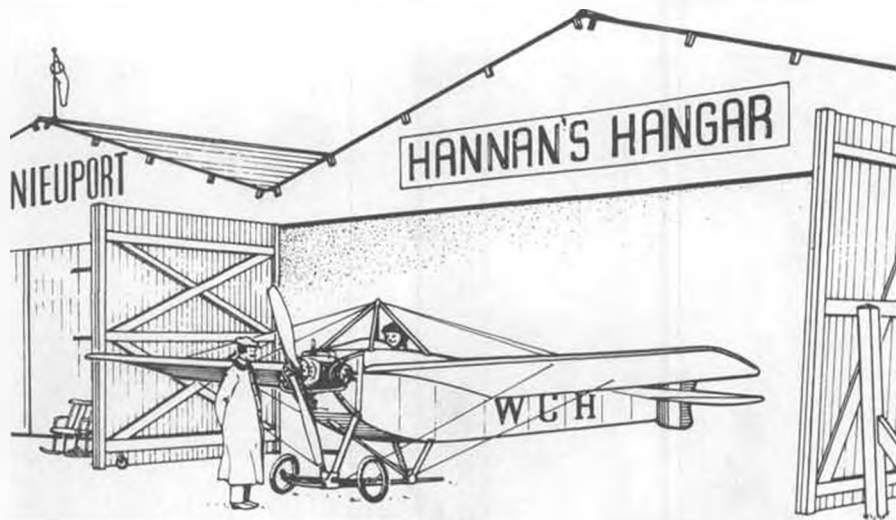
"If you are new to rubber powered models, practice winding at home. The commercial sixteen to one winders are excellent (*Marlow Engineering, see ad, makes 'em. wcn*). Small hand drills may be satisfactory if the gears are tight enough, but the low ratios of three or four-to-one require many cranks to fully wind a long motor. The type with two small gears on the shaft are much more likely to work well than the cheaper, single small-gear type. Be certain that the hook is securely chucked! Mount a screw hook on the wall or bench to hold rubber for practice winding and for breaking in motors. Remove any burrs from the hook by filing or sanding. Stretch a lubed motor three or four times its length before starting to wind.

*Continued on page 54*



Crosby CR-4 built by Pres Bruning is one of the Cloudbuster Venture "Race Wings" plan series, see their ad in this issue. Span of this rubber ship is 20 inches. Photo by Tom Hoyt.





If it flies, it just might land here . . . .

#### DOWN UNDER MODELLING

Received a letter from Alex Toth, who recently returned from Australia, with this report:

"Visited one of the biggest local hobby shops, where I was sold bass wood as 'sheet balsa.' When I requested the 36 inch long sheets be cut so that they could more easily be managed on the crowded train, the salesman broke them over the counter's edge! Next, I purchased an Aussie kit, spanning 30 inches, and was horrified to find the C.G. location shown on the plans well ahead of the wind leading edge! Howzat!"

R.C.P.S.M.A.S.?

A Radio Control Performance Scale Model Airplane Society is now open for participation. So begins an announcement from N.A. Taggart. The aim of the society is: "... to review aircraft types by experiencing similar achievements with models; and within this

community of interest to enjoy satisfactory, and stimulating model flying."

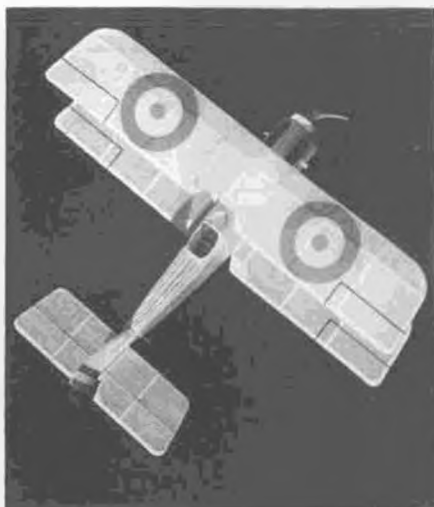
Perhaps the most unique concept of proposed organization is the fact that each member will be able to "reserve" certain aircraft types for his exclusive use, from a list of some 1012 available. Highly detailed guidelines have been formulated by Commissioner Taggart, which provide informative, if somewhat puzzling reading for the flying scale model fan. We are hardly certain that the whole thing is not a "put on" (*I'll buy that. wcn*), but the concept is certainly different than anything we've previously encountered. Doubtless, a stamped envelope would bring you a copy of this truly unusual prospectus. N.A. Taggart, 60 Park Lane, Chagrin Falls, Ohio 44022. *Cont. on page 61*



A close-up of Paul Cherubini's cute little Peanut Laird "Solution", shown here last month. Used Cleveland plans, but "Megow-ized" the structure. Flies 45 stable seconds. Bob Clemens photo.



Greve Trophy Race at Flying Aces Club meet in Connecticut. Clever idea . . . no clock needed. All launched at the same time. Winner is simply the last one down! Overall winner by heat eliminations, as used in R/C pylon, etc. Chester "Jeep" by Chet Bukowski (foreground) was eventual winner here, averaging one minute flights! Caudron by Don Garowfallow, "Ike" flier unknown. Photo by Bob Clemens.



Low aspect ratio wings provide plenty of area within the 13" span limit.



Note how stabilizer slot is widened at front to allow for incidence adjustment. Classic lines of the SE5 make it an excellent Peanut flier. Way back, the Megow kit was one of most popular.

PHOTOS BY FUDO TAKAGI

## PEANUT SE5

By WALT MOONEY

Sometimes we tend to overlook the obvious, and what could be "obviouser" as a choice for the most appealing and nostalgic scale biplane of all times? Still managing to be a little different, it's the SE5 model, no "A".

● There have been a lot of models of the SE5A, but not too many models of the SE5. The SE5 is a little simpler than its later version, and makes up into a very nice Peanut Scale. It has plenty of dihedral, lots of wing area because of being a biplane, and good nose and tail lengths considering that it is a World War One aircraft.

The model is fairly simple for a biplane, so the discussion that follows will just touch on the more difficult features. The aft end of the fuselage sides are constructed with a slot for the horizontal tail. Note that this slot is wider at the front than at the extreme aft end where it is only deep enough for the tail. The extra room at the front of the tail slot allows you to shim the tail leading edge up or down as required for flight trim.

Mounting the wings is perhaps the most difficult task. There are four cabane struts to support the center-

section of the top wing. The forward pair are vertical in the side view and the aft pair are hiding behind the rear wing struts. Cut out a little of the top fuselage sheet covering so the cabane struts can be cemented in place on top of the upper longerons. It may help to make a jig block to hold the top of the cabane struts while they dry. This can be done by taking a piece of 1/8 sheet balsa the size of the center section and cutting a tight notch at each location for the top of a cabane strut. Push the top of the struts into these notches and then cement their bottoms in place on the longerons. This jig block is easier to locate than the whole top wing. It can be twisted and nudged into perfect positioning before the cement dries. When the bottoms of the struts are firmly in place and the cement is really dry, pull the jig block off the top and cement the top wing in place.

Note that the bottom wing has two

center section ribs. These are supposed to just fit on each side of the fuselage. The top spar is removed between them and of course there is no covering on the top between them. The bottom wing is simply cemented on the bottom of the fuselage.

Check the wings before all the cement is dry to see that they are parallel when you look down on them from above.

Note that this SE5 had short exhaust stacks and no head rest. It also had quite a large windshield.

And now, on to another subject . . . A question that we are often asked is, "Where do you find this or that model supply?" Another is, "Where do you come up with a three-view?" I suspect that our illustrious editor won't let us have enough room to give complete answers to these questions (*Try me, wcn*) but we'll have a little go at it.

*Continued on page 64*

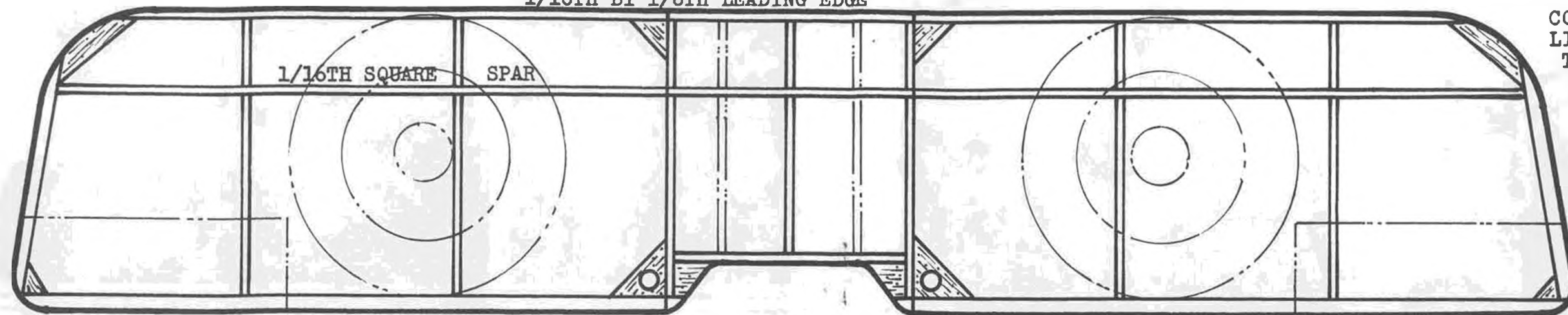


Coming next month, the Stinson Tri-motor Model "U" by Don Butman.



A trimmed North Pacific plastic prop takes the pain out of carving one. Thin monofilament fishing leader makes fine rigging wires. A little detailing goes a long way.

1/16TH BY 1/8TH LEADING EDGE



COVER WITH  
LIGHTWEIGHT  
TISSUE, NOTE  
ROUNDAL  
POSITION  
AND  
RUDDER  
STRIPES

POWER WITH  
ONE LOOP  
OF 1/8TH  
OR 3/16TH  
RUBBER

WING TIP PIECES AND GUSSETS ARE 1/16TH THICK BALSA

WINGS

1/16TH BY 1/8TH TRAILING EDGE

TOP OF FUSELAGE BACK TO FORMER "F"  
IS COVERED WITH 1/32ND SHEET BALSA.  
MAKE CYLINDER HEAD COVERS AND  
STACKS FROM SCRAP BALSA.

CENTER RIB (3) REQ'D. MAIN RIB (12) REQ'D.

MAKE RIBS FROM 1/16TH SHEET BALSA

COCKPIT OPENING IS UNSYMMETRICAL



G



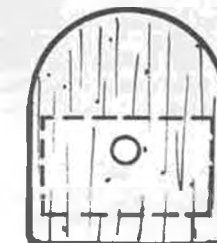
H



F



B, C, D, E,



A

1/32ND SHEET BALSA FORMERS

TOP CENTER STRINGER IS 1/16TH  
SQUARE, OTHERS ARE 1/32ND SQUARE.

1/4TH SHEET  
1/8TH BACK PLATE

NOTE THE DIHEDRAL ANGLE.

A

B

C

D

E

F

G

TOP VIEW, FUSELAGE

NORTH PACIFIC  
PLASTIC PROP  
TRIMMED TO SHAPE.

ALL VERTICAL TAIL  
PARTS ARE 1/16TH THICK.  
ALL STRUTS CAN BE HARD BALSA, OR BASSWOOD,  
OR THIN PLYWOOD, SAND TO STREAMLINED SECTION.  
USE THIN MONOFILAMENT FISHING LEADER  
FOR THE WIRE BRACING

SIDE VIEW

PECK POLYMER  
THRUST BUTTON

HUNGERFORD OR  
WILLIAMS BROS.  
WW I WHEELS



HORIZONTAL

TAIL

ALL PIECES  
1/16TH

ARE  
THICK

1/32ND SHEET BALSA  
TAIL SKID.

1/32ND DIA. PIANO WIRE  
FOR LANDING GEAR --  
DO NOT CEMENT TO THE  
LG STRUTS.

PEANUT SCALE  
SE5  
BY *Walt Mooney*

FRONT VIEW





Winner of the 1970 Coupe d'Hiver International event held annually in France was Jacques Griveau, shown here with winning model.



John Mace, Seattle, Wash. and ST .15 powered "Yankee Doodle," an FAI version of the Goldberg Sailplane designed by Phil Hainer.

# FREE FLIGHT

By BOB STALICK

● Here it is . . . March already. Since the January issue of M.B. just hit the stands a few days ago, I've had the chance to sample some opinions of my first M.B./F.F. column. I went to the local seer and prognosticator, J.W. Phogbound, and asked him for his opinion on how the first issue went. I asked, "How'd it go?" To which he responded, "There's only one direction remaining. Try again." I thought his comments were intentionally vague, but with resolve, I determined that I would follow them, and try again. So, hold onto your

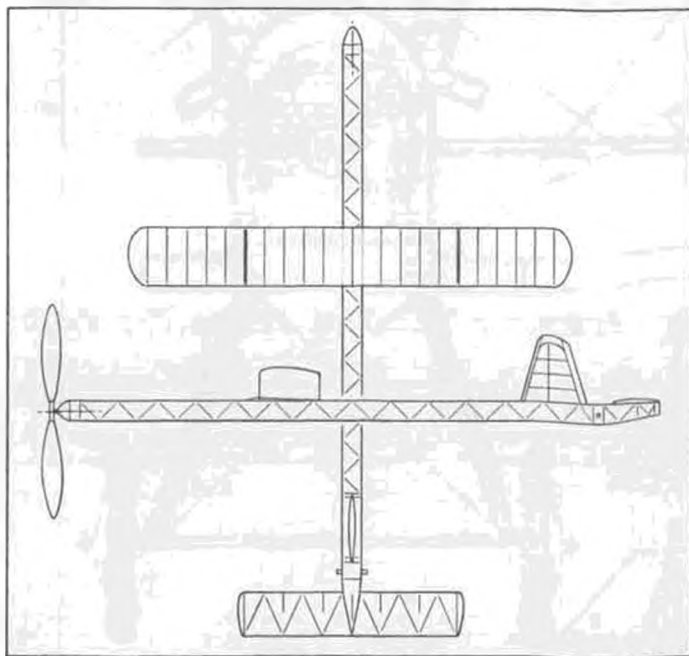
hats, here goes try number three. **DARNED GOOD AIRFOILS**

The foil of the month is the NACA 4407.5, which is a 7-1/2% version of the standard 4409. This one is specifically designed as a power model section for AMA Gas, although Rolf Hagel used a very similar foil (with a pointed and raised L.E. entry) on his FAI power winner at the 1971 Internationals. This section would also be in the ballpark for a stable, windy weather A/2 or Wakefield. In fact, it's just a good all-around-er. Try it on your next one.

## MYSTERY MODEL OF THE MONTH

The February Mystery Model was Stan Hill's Amazon 400, which was kitted by Berkeley in the mid-50's, although the kit version had an underslung fin instead of twin fins as on the original. This month's model is one of the first high performance Unlimited Rubber models developed in the U.S.A. **PLAN OF THE MONTH**

There are models which have earned a good reputation, but for some reason, have never hit the popular modeling press. Such a design is Al Riches'



MARCH'S MYSTERY MODEL



Winner of the 1973 Northwest A/2 semi-finals, Wayne Drake, with his "Sky Spangled Star Banger." Photo by Bob Stalick.



Mountie A/2. This ship is loosely based on Mike Woodhouse's Wichita series, and it has been a potent machine in the hands of Alan and his flying buddy, Ernie Avery, of the Vancouver (B.C.) Gas Model Club. Alan placed 7th at the 1967 Internats with the identical model shown on the three-view. Although addition of the fibreglas boom in later versions has added strength to the fuselage, the original is a bit more thermal sensitive due to its lighter load in the tail section. This is an ideal starter model for A/2 as it is of conventional construction and performs exceptionally well in all conditions, coming into its own in light lift or thermal activity.

#### TOWHOOKS

While on the subject of gliders, one shouldn't overlook the importance of a good towhook. Several sketches of towhooks you can construct yourself are included this month. What is important in any hook design is the ability to tow straight and kite the model when it's close to the top of the line . . . without the towing falling off . . . coupled with the ability to get the model off the line easily at your command. Each of the sketches show different ways of achieving this end.



1/16 Music wire ground to a point—reshaped as shown

The Evans design (No. 1), suggested to me by Ron Evans, uses a basic FAI Models Towhook assembly, with the wire replaced by a slightly longer piece of 1/16 music wire ground to a fine point and bent as shown. A sharp tug will flex the hook, allowing release on command.



2 mm wire 1/32 m.w. retainer

The Crowley design (No. 2) uses two wires. One is 2 m.m. music wire and forms the basic hook. The other is a lighter piece of music wire, approximately 1/32, which is soldered to the basic hook and bent to shape as shown. Its use is that of a retainer for the towing. Release is by pulling down and



Dick Dolby at Bong Trials, FAI, 1968. Model by Ed Dolby, Phoenix, Arizona.



Phoenix club members at the best model "field" in the country, the dry lake bed, Blythe, Calif.



FAI Models hook with rubber band retainer (band is held to fuselage by small wire hook—then looped over end of towhook).

back, allowing the ring to press against the retainer wire, flexing it down to release the ring.

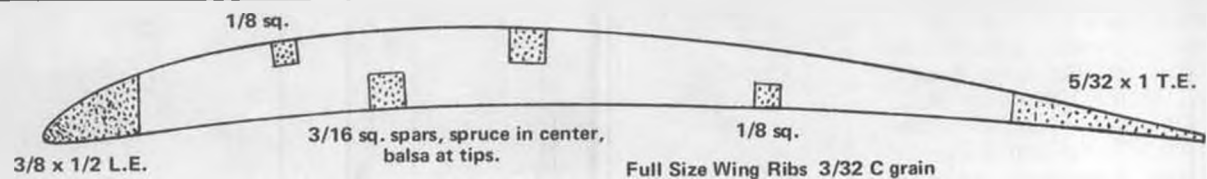
The Lenderman design (No. 3) is the simplest of the three. I use this one myself on an FAI Models Towhook assembly, and it works well. Essentially, it's

*Continued on page 70*

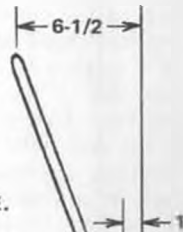
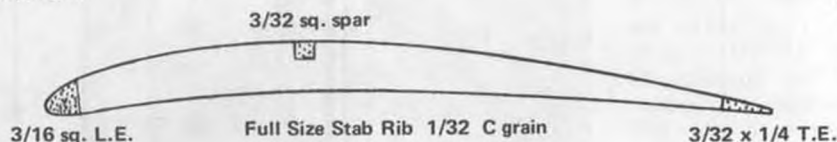
#### Darned Good Airfoil - The N.A.C.A. 4407.5



STATION	0	1.25	2.5	5.0	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100
UPPER	0	1.53	2.24	3.26	4.08	4.76	5.83	6.61	7.16	7.50	7.62	7.21	6.42	5.30	3.88	2.14	1.15	.075
LOWER	0	-.84	-1.08	-1.23	-1.23	-1.16	-.90	-.59	-.28	-.01	.37	.58	.80	.71	.58	.31	.13	-.075



1/2 soft block tips  
15-1/2  
1/8 washout



## MOUNTIE A/2 by Alan Riches

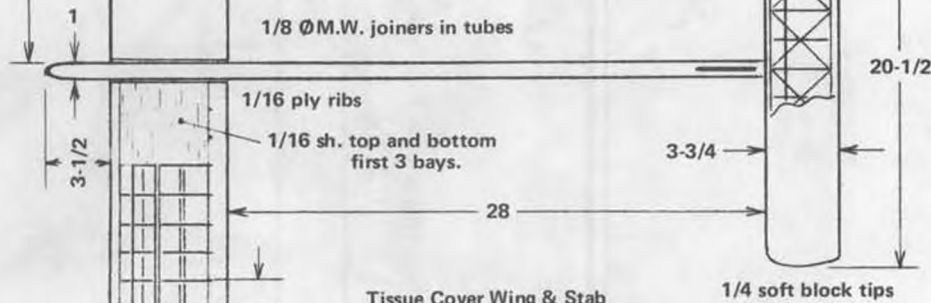
**Fuselage:**  
1/16 ply box to 3 inches behind wing, 3/32 sq. spruce in each corner aft to rear.  
1/16 light balsa sides with 1/16 balsa doublers on sides and bottom forward of wing T.E. NOTE: Later versions have fiberglass boom fuselage.

Wt.: 14.5 oz.

Wing Area: 445.5 sq. in. (Proj.)

Stab Area: 76.5 sq. in.

1/8 Ø M.W. joiners in tubes



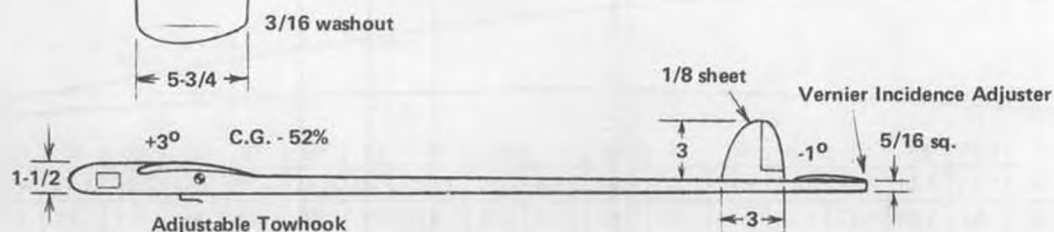
Tissue Cover Wing & Stab

Chord → 6"

MODEL FLIES RIGHT

1st—1967 Canadian Team Trials  
2nd—1966 Czech Autumn Postal  
7th—1967 F.A.I. Internats

SCALE 1/10





# NATIONAL FREE FLIGHT SOCIETY NEWS

## NFFS MEMBERSHIP BOOK

The new membership book is now available for \$1.50. The book will be especially helpful to members who are moving and want to find other free-flighters in their area. Free flight clubs having contests will find it useful for mailing out flyers advertising their contests. Manufacturers, of course, will desire a book for mailing out catalogs. Anyone wishing a NFFS membership address book, send \$1.50 to: B.J. Kelch, R.R. No. 4, Box 475, West Terre Haute, Ind. 47885.

## NEW ASSOCIATE V.P.

Hardly Brokenspar, our notorious Executive Director, has been appointed AMA Associate Vice-President. The National Free Flight Society is working very hard to establish a closer line of communication with AMA, and this appointment puts us just one step closer. Our congratulations to Hardy!

## 1977 FAI WORLD CHAMPIONSHIPS

Now is the time to start planning and building for the 1977 FAI program. The fly offs will start in the summer of 1975, with the final team fly offs the following year.

A plan of attack that some members of the Bong Eagles started was, I believe, an excellent one. Bob Whaley, then President of the Eagles, suggested that anybody interested in FAI power aircraft meet at his house to talk. The result of that meeting was a small club-within-a-club. Meetings were held every 2 weeks and each member was given an area to investigate, with a report due at the next meeting. A complete comparison of all previous FAI power winners was made. Nose and tail moments were compared, as well as areas, pylon heights, airfoils, building techniques, material strength, finishes, mechanical devices for A/R and V.I.T., engines, props, etc. Every known detail of power winners was thoroughly discussed.

Rather than try to design one plane and have everyone build it, the decision was made to let everyone build the aircraft they thought had the best chance. Some chose flappers, others went with elliptical tips, some with squared-off, simple designs. Many of the things that the Eagles decided in 1969 were necessary for a winning aircraft, are now more common in this country. One example is fiberglass covered sheeted wings. Thanks to many of the things



Ken Johnson and his rubber Coupe d' Giro or something. Photo by Carl Fries.

learned at those meetings, my sheeted, glassed Excelsior wing weighs only 7-3/4 oz., and I have one 90% completed that will weigh under 7 oz.

The single most important conclusion that came out of those meetings is this: Build an aircraft and fly it. Then fly it again and again . . . 50 or 60 flights on one air craft is not even enough. You must know exactly what that plane is going to do in all situations. A note book must be kept and every flight must be logged. List items such as temperature, humidity, prop, engine rpm, wind speed, whether it was sunny or cloudy.

The aircraft you build does not have



Scotty Harte releases Hawkeye 1/2A at Fresno Annual.

to be a super sophisticated type. One member of the group, Dick Swensen, built a modified FAI "Pearl" and is now qualified to participate in the team fly offs this summer. He did this by coming in first at the semi's at Bong last year. The trick to winning a place on the 1977 team is to **START NOW!**

## CLUB CONTEST PRIZES

The contest season is coming up fast and I'm sure that clubs across the country are making plans for their club contests. Memberships in the National Free Flight Society make excellent prizes and may be ordered early. Rather than spend 7, 8, or 9 dollars on a trophy, why not spend 6 dollars on a membership in NFFS. If the person who wins is already a member (which is usually the case!), we will just extend his or her membership for one year. Another thought would be that in addition to a small trophy, the Juniors be given a one year membership, it only costs a buck and I know they will love it. Pictures of NFFS membership winners will appear in this column . . . if the contest director will mail them to me.

## NFFS MEMBERSHIP AND RENEWAL APPLICATION

(Make checks payable to; National Free Flight Society)

Mail to;

B.J. Kelch, R.R. 4, Box 475,  
W. Terre Haute, Ind., 47885

### FEES

B. J. Kelch, R.R. 4, Box 475, W. Terre Haute, Ind., 47885			1 yr	2 yrs
RESIDENTS OF FOREIGN COUNTRIES			\$6.00	\$11.00
U.S. RESI- DENTS	Age 19 and up	AMA Members	6.00	11.00
		Non-AMA Members	7.00	13.00
	Age 15, 16, 17, and 18(Senior)		3.50	6.00
	Age 14 and under(Junior)		1.50	2.50
	Family membership*		1.00	2.00

All members receive NFFS Digest. Family membership fee includes all additional family members, but no additional copies of the Digest. Ages are as of July 1 of current year. Please circle applicable fees.

New Member ☐  
Renewal ☐  
Address Change ☐

Current expiration date:  
Month Year

Name	AMA No.
Address	
City, State	Zip
*Please list family members Name	
AMA No.	



Super-Javelot F-WCCB thermal hunting over French wine country.

# R/C SOARING

By LE GRAY

● R/C soaring has been . . . pardon the expression . . . "roaring" along for several years now. What started in the late 1960's as a highly limited and quite specialized aspect of aeromodelling has boomed into a widespread, fast maturing, major element of the sport. In addition to the intrinsic fascination and challenge of soaring, unrelated factors in today's world highlight certain of its attributes . . . such as silence and safety

. . . such as schoolyard flying sites. But even with all this going for it, one subelement of the R/C soaring sport is lagging . . . scale sailplanes.

In flight, almost any R/C sailplane provides a realistic appearance. Maybe this discourages or at least detracts from the initiative and enthusiasm necessary to build anything other than a simple, functional design. Or could it be due to a lack of readily available data? With

the exception of the few honest scale sailplane kits available, little else is seen on the field that even approximates full-scale lines and contours. It's a real shame, too, because there are literally hundreds of full-scale sailplane designs representing countries all around the world. Not all are super-sleek look-alikes either. Many have real character, interesting and unusual plan forms, and shapes that should stir the blood of any

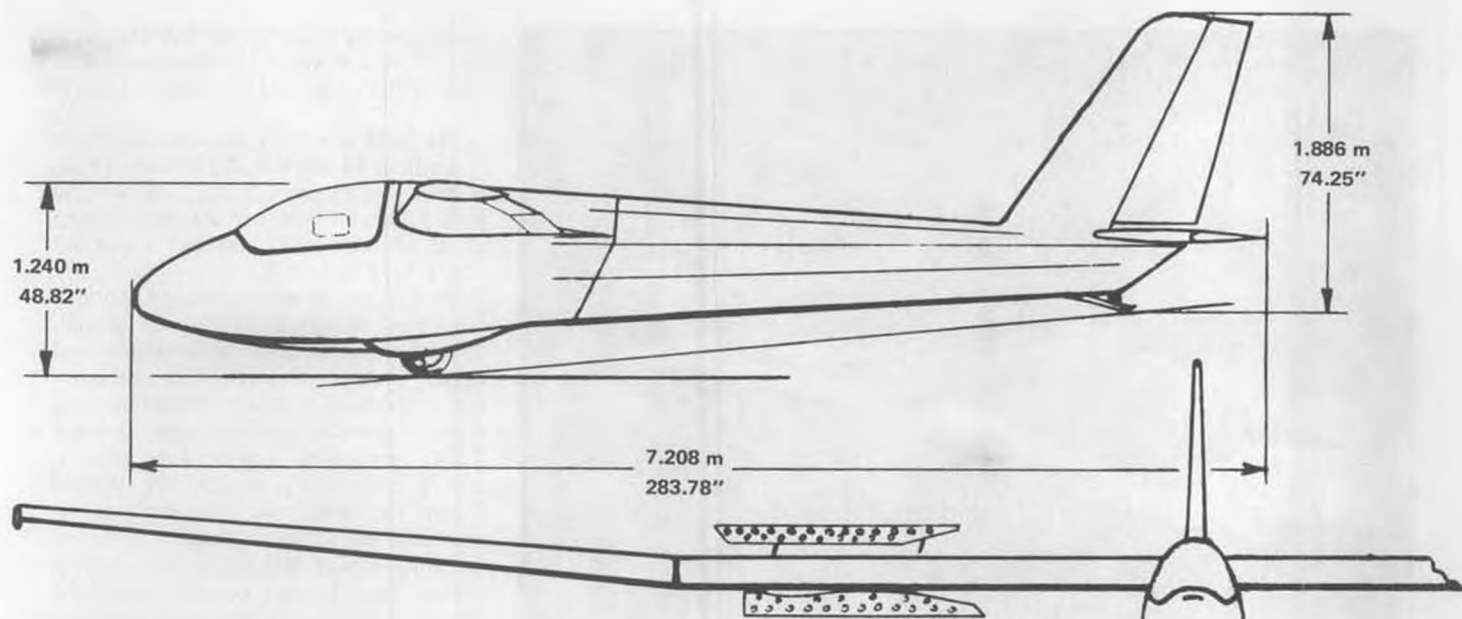


Javelot cockpit. Tow hook release at left on panel. Spoiler actuator handle at far left. Convenience bar in good spot for removing teeth!



Wassmer WA-22 on final approach displays unusual dihedral configuration. Ideal for modeling, but seldom seen on full size craft.

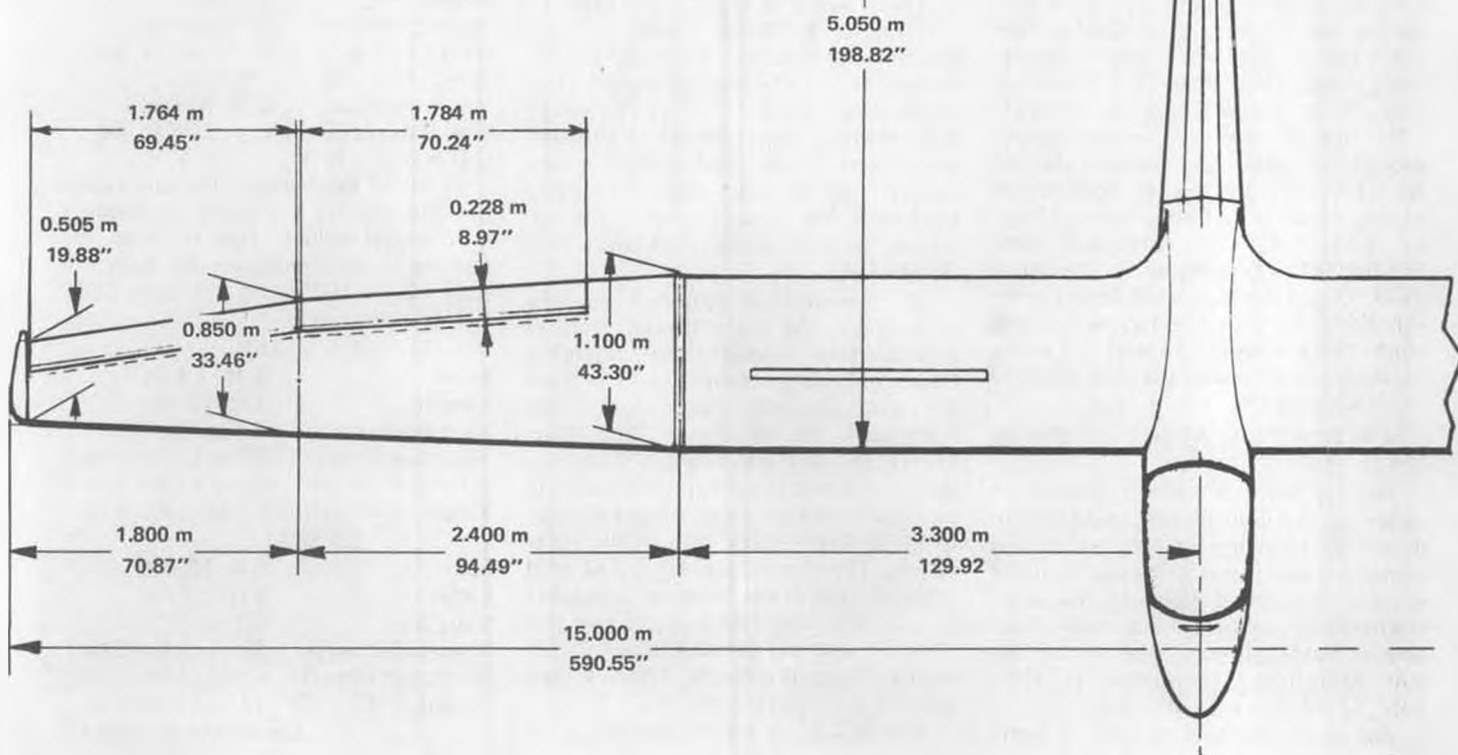




PLANEUR-WASSMER-WA.22-A

"SUPER-JAVELOT"

Scale: 1/4" = 1'-0"





Super-Javelot F-CCCB displays latest paint scheme above fields near Issoire, France.

scale enthusiast. In earlier days, man-carrying gliders were little more than very large models . . . both in construction and proportion. In the '30's and '40's . . . maybe even into the early '50's . . . the name of the soaring game was duration, not speed as it has been in the last decade or so. But even designs of current manufacture can offer excellent model performance potential while retaining exact outline relationship . . . if you're a bit selective.

The general theme of scale R/C sailplanes has been touched upon . . . or maybe even beaten to death . . . from time to time. But anyone who has had the opportunity to see a well-executed scale craft hold its own or even set the pace in open competition can hardly dismiss the subject. Like Konrad Nie-rich's heavy, fast, but efficient, "everything-works-and-they-FLY" beauties. Like Hans Langer's potent AS-W15. Like Bob Crumley's mind-boggling, though complex and trouble-plagued AS-W12. Like the highly competitive soaring capability of Bob Andris' Slingsby T-53. Like Chris Christen's little Briegleb BG-12, featured in the April 1973 issue. Like look what John Donelson has done with the HP-14 . . . and Hugh Stock with the Kestrel . . . really exciting performance, and very close to exact scale outline.

The possibilities are just too great to ignore.

In case the lack of information or awareness is a contributing cause for the dearth of scratch-built scale sailplanes, something positive might result by occasionally presenting data on full-scale configurations that are especially suitable as model subjects. Maybe the "Silent Rhinebeck" prophesied in MB's July '72 column will still come real.

Ask most any soaring buff to name

a lightweight, inexpensive, fabric-covered, sport soaring machine that is suitable for competitive fun in the hands of a weekend pilot and you'd probably get the "obvious" answer; the Schweizer 1-26. And that answer would be correct by most measures had there been one more qualification . . . "American-built." Without that last hooker, the answer could have been any number of machines from as many countries. Certainly, the subject of this month's chalk-talk would fill the bill . . . at least a heck of a lot of Frenchmen might think so, and THAT many can't be wrong. Their choice would probably be the Wassmer WA-22 "Super-Javelot," merci.

The Wassmer WA-22 "Super-Javelot" . . . French for Super Javelin . . . is a product of Wassmer Aviation, Issoire, France. It is a 15-Meter, Standard Class sailplane or "planeur" . . . which rhymes with manure, especially when sounded with tight nasals, and which means "glider" or if you prefer, "planing machine." The Super-Javelot is a popular, high-performance aircraft which first flew in 1961.

Of conventional structure for the early '60's, the Super-Javelot features a steel tube fuselage with fiberglass panels providing smooth contours from the wing forward. Fabric wraps the framework aft of the trailing edge. Flying surfaces are all-wood construction with fabric covering. Ailerons are in two parts on each wing, hinged parallel to the kinked trailing edge of the outer panels. The Super-Javelot . . . as with other designs in the Wassmer collection . . . incorporates rather distinctive (for full-scale aircraft) dihedral. The inboard sections have no dihedral. The outboard sections each carry 4 degrees.

The WA-22 is a development of an

earlier, rather unattractive WA-21 "Javelot II" which was a 15-Meter modification of the larger and even uglier Javelot I.

At least one truly outstanding flight is credited to the WA-22. In early 1962, Michel Vergnieres, flying one of the first Super-Javelots off the line, soared to an altitude of 32,500 feet above the home field at Issoire.

In France, as well as other European countries, Wassmer Aviation is a well-known manufacturer of sailplanes and light, powered aircraft. The company has a production history encompassing licensed fabrication of the popular Jodel D.112, including a glider-tow version, and a proprietary design, the WA-40 Super IV, which is a four-place, retractable geared sport-tourer.

Nonpowered Wassmers, in addition to the Super-Javelot, include the WA-30 "Bijave" which is a two-seat, advanced trainer of some 55-foot span, and looks to be a stretched Super-Javelot. A more contemporary design, the WA-26 "Squale" is their fiberglass, "Queen de L'Hangar" . . . or something like that . . . and a real French beauty she is. The Wassmer outfit has also produced such varied creations as the Fauvel-designed AV-36 flying wing sailplane.

Size, weights, and performance of the Super-Javelot should be of interest to the R/C soaring enthusiast:

Span . . . 49 ft. 2-1/2 in. (15.0 m)  
Length . . . 23 Ft. 2 in.  
Wing Area . . . 155 sq. ft.  
Aspect Ratio . . . 15.7 : 1  
Chord, Root . . . 3 ft. 7-1/4 in.  
Chord, Tip . . . 1 ft. 7-1/2 in.  
Section, Root . . . NACA 63821  
Section, Tip . . . NACA 63615  
Dihedral . . . 4 degrees  
Weight, Empty . . . 452 lbs.  
Weight, Gross . . . 770 lbs. max  
Wing Loading . . . 4.98 lbs./sq. ft. max  
Speed, Min Sink . . . 46.6 mph  
Min. Sink Rate . . . 2.29 ft. sec.  
Sink Rate, at 62 mph . . . 3.28 ft. sec.  
L/D Max . . . 30:1

A bit of third-grade slide rule expertise will convert the full-scale numbers into model values. Just to keep the options open, dimensions for both 1/6 scale (2" = 1'-0") and 1/5 scale (2.4" = 1'-0") are given:

#### 1/6 SCALE

Span . . . 8 ft.-2.4 in.  
Length . . . 3 ft.-10 in.  
Wing Area . . . 4.3 sq. ft.  
Weight, @ 8 oz/ft . . . 35 oz (2 lbs. 3 oz.)  
Weight, @ 10 oz/ft . . . 43 oz (2 lbs. 9 oz.)  
Weight, @ 12 oz/ft . . . 52 oz (3 lbs. 4 oz.)

#### 1/5 SCALE

Span . . . 9 ft.-10.1 in.  
Length . . . 4 ft.-7.2 in.  
Wing Area . . . 6.2 sq. ft.  
Weight, @ 8 oz/ft . . . 50 oz (3 lbs. 2 oz.)  
Weight, @ 10 oz/ft . . . 62 oz (3 lbs. 14 oz.)  
Weight, @ 12 oz/ft . . . 72 oz (4 lbs. 8 oz.)

Continued on page 68



Ray Smith, Lawndale, California, took first place in the Southwestern Regionals C/L Scale event with this A-26A. Span is 72 inches, weight is 15 pounds, and power is two Fox .60 Eagle engines.

## Control line

By DALE KIRN

### TEACHING SESSIONS

Anaheim Stadium was the site for the second annual "teach 'em how to fly," for Christmas. The Anaheim Model Airplane Club (control line division), Cox, and Testors spent the last Sunday in December for this organized activity. Over 300 potential flyers showed up, and at one time there were ten circles being used simultaneously!

Both Cox and Testors are to be commended on their efforts. Without

their help, the Club could not have handled the number of youngsters that showed up that day. And the fact that Cox and Testors were there added prestige to the activity.

The number of successful flights that day were quite high. This was due to the fact that there was NO WIND and it was about 75 degrees. California can be nice in the winter . . . sometimes . . .

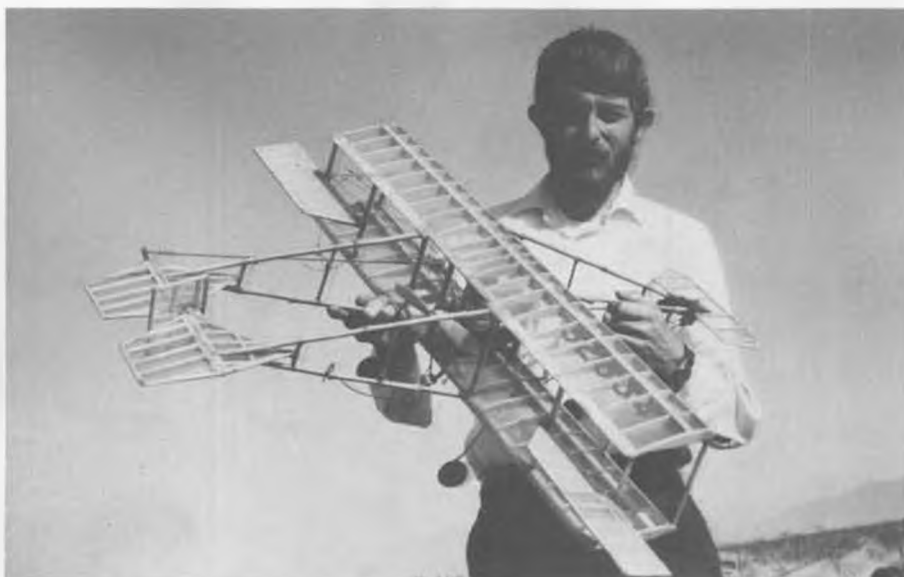
### STUNT

Now is the time for serious (and semi-

serious) stunt flyers to join the Precision Aerobatic Model Pilots Association (PAMPA). This organization was formed at the 1973 Nationals and is picking up momentum every month. A monthly "Stunt News" is mailed to all members. Just read the December issue (18 pages!!) and found it quite informative. It includes such topics as contest results throughout the country, new products for stunt flyers, proposed rule changes/comments, etc. . .



Skip Tracy (Phoenix, Ariz.) and Ole Tiger. ST .15 FR, 7 x 6 prop cut to 6 inch diam.



How's this for "Crazy Carrier?" Ted Kraver's Curtiss A-1. Bamboo and balsa construction. Enya .35 power. Top speed 50, low speed 35! Flies well.



Youngster at post-Christmas training session, Anaheim Stadium, was taught how to use his gift. Look out, Gieseke!



Noal Hess, SLC, Utah, and his 2 inch scale Boeing F4B-4 which placed 4th at the Southwestern Regionals. Fox .60, weight 8 lbs.

If you are interested in finding out more about this organization, write to: Wynn Paul, 1640 Maywick Drive, Lexington, Kentucky, 40504.

Results of stunt at the Southwestern Regionals are as follows: 1st, Tom Lay; 2nd, Rogger Barrett; and 3rd, Bob Whiteley. There was twelve entries. Of special note was the "quietness" of the stunt planes flown at this meet.

#### SPEED

Who sez it never rains in sunny California? T was the day before the first contest (Jan. 5 and 6) at the new Los Angeles control line area (Sepulveda Basin) and final preparations were made.

The three new circles were beautiful! Two circles completely blacktopped with a 90 foot radius. The other circle a "donut" type. And a neat blacktop pit area made in the shape of a "T". Then the rains came, and the parking area had not been finished . . .

However, the meet was held in spite of the bad weather. A few brave modelers ("super-dedicated" would be a better description) actually flew in the rain . . . and the cool (cold to us Californians) 45 degree weather.

This was the first contest of the year for the longer Class A speed lines (increased from 52 1/2 feet to 60 feet)

and several modelers were trying their best to establish records. In Senior A speed, Jim Wade turned 144.75 MPH, and the team entry of Newton/Nightengale/Beatty clocked 144.17 in Open. Jim Wade also established a new Senior 1/2A Proto record at a "cool" 98.64 MPH. Matt Kelly applied for a Senior Class C (.40) record at 120.59 MPH.

The real activity in the speed circles took place in Phoenix, Arizona on the week-end of January 20 and 21st. There were fifty-four speed planes entered!! And twenty-three of 'em were 1/2A's! Lot of new junior flyers coming up. And would you believe they came from



Class A (.15) record setters. Team of John Newton, Jim Nightengale, John Beatty (l to r) in Open; Jim Wade (kneeling) in Senior. See text.



Bob Jones, Santa Ana, Ca., and his 1/2A Proto Profile. LH crankshaft and single bladed prop. Placed 3rd in Regionals. Bob's 12 years old.





Larry Stephens, Phoenix, and his Douglas Skyraider. K & B 40, 9 x 8 prop.



Roland Baltes, San Pedro, California, placed 3rd in Phoenix with this new Ju 88 D-1. One inch scale ship is powered by two ST .40 rear rotor engines. Three year project.



Senior Steve Jones and his 4th place 1/2A Proto ship. Used two-line control system and left-hand single blade prop, turned 76 mph.



Nice looking Douglas A-1E Skyraider by Marvin Martinez, Phoenix. Uses ST .40 power.

as far away as Dallas, Texas and Salt Lake City, Utah . . . gas shortage and all?

Competition was fierce in Class A speed. Jim Rhoades (Salt Lake City) established a record early in the day with his Rossi .15 speed ship at 157.01 MPH . . . and backed it up. But, he didn't get to hold it long. Newton/Nightengale/Beatty came back at him with a 159.23 MPH flight . . . and backed it up for the record. In Senior A Speed, Jim Wade upped his previous record (144 MPH) to 153.00 MPH.

The team entry of John Shannon/Dubb Jett (Dallas, Texas) took first place in 1/2A Speed with one of their new tuned exhaust .049 engines at 108.92 MPH. They were flying the same plane they won with at the 1973 Nationals (at 111 MPH). Jim Wade took second in 1/2A Speed with his proto plane at an impressive 104.49 MPH. Jim doesn't have a tuned exhaust on his engine, but evidently has the right prop worked out to make it go fast. Third place in 1/2A Speed was 101.54 by Mike Bussell (Dallas, Texas) with a DJS .049

engine with tuned exhaust.

The 1/2A Proto (Profile) event was won by Mark Heller (Scottsdale, Arizona) at 73.56 MPH. K. C. Kellog took second (Phoenix area) and Bob Jones (Santa Ana, Calif.) took third.

In 1/2A Proto (Sr/Op), Jim Wade almost duplicated his record flight. Was just a bit off, but still turned 96.68 MPH for first place. Jim Rhoades took second at 84.16 MPH and Mike Bussell placed third at 83.38 MPH.

Another notable speed was first  
*Continued on page 60*

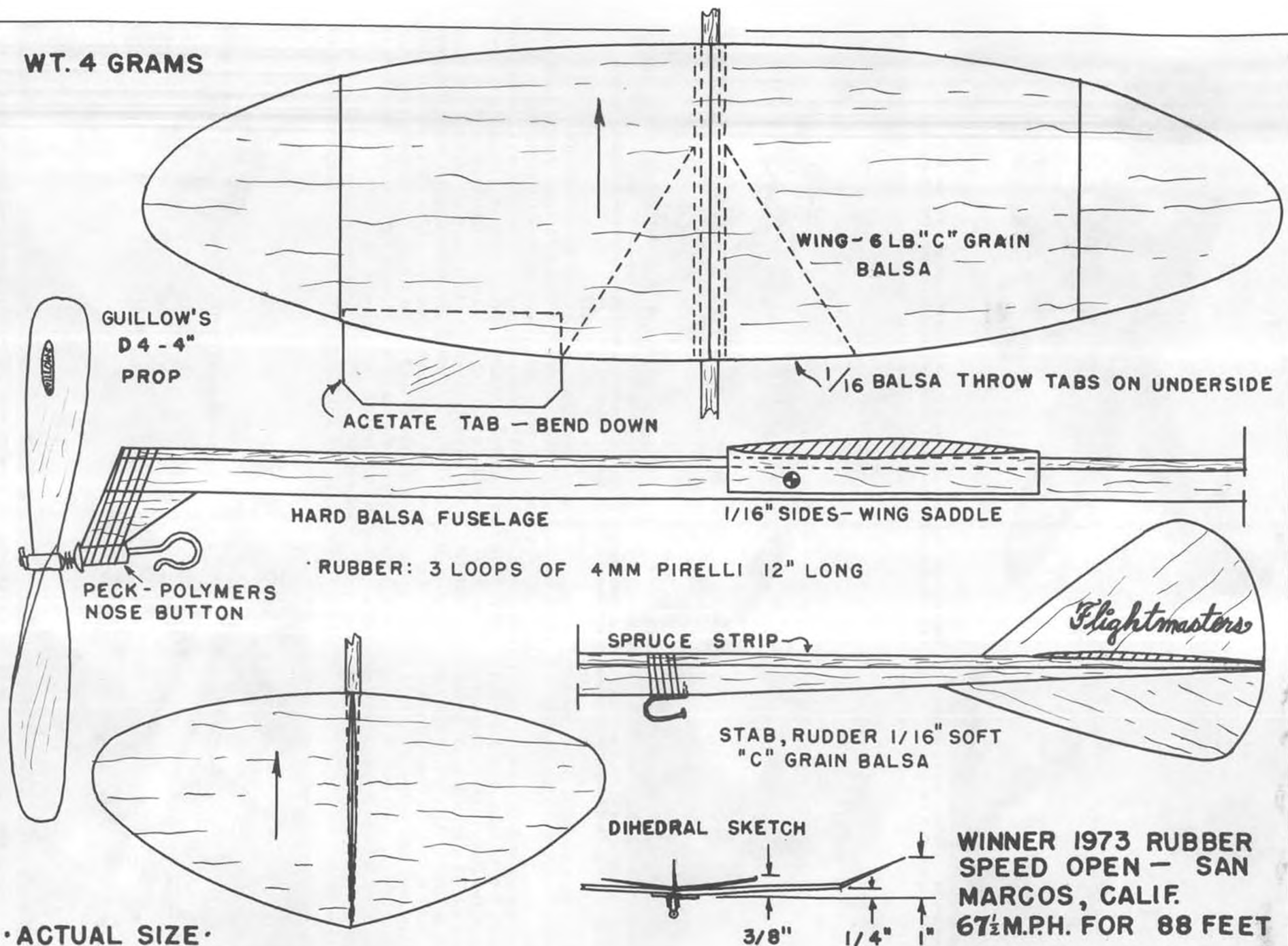


First in stunt in 24th Regionals was taken by Tom Lay, with this O.S. 35 powered, 55-1/2 " span ship. Pressurized off muffler.



Jim Rhoades, SLC, Utah, had Class A speed record for about 3 hours until beaten by Newton, Nightengale Beatty team. He turned 157.

WT. 4 GRAMS



WINNER 1973 RUBBER  
SPEED OPEN - SAN  
MARCOS, CALIF.  
67½ M.P.H. FOR 88 FEET



"HOT GNAT" held by author's son, John Warner. This relatively simple apparatus was clocked at 67 mph . . . decelerating!

# HOT GNAT

By BILL WARNER

● Having had the distinct pleasure of proxy-flying Jack McCracken's magnificent rubber speed job at the '73 Nats over a 200 foot course ROG, I was moved to compete in the Flightmasters meet later in the summer. After looking down 200 feet, the Flightmasters' requirement of only 88 feet and hand-launched at that, seemed pretty easy. About a one-hour building period produced a rework of my old Poly-Wog design with a symmetrical aerofoil and a spine to resist high-speed testing crashes. The project was topped off with throw-tabs, a-la-HLG. I figured that there was no percentage in starting at zero and finishing at 100 for an average of 50 MPH.

The wing was mounted using a saddle of 1/16 sheet on each side of the fuselage to allow for a rubber-band mounting . . . and sliding back and forth for balance during testing. As soon as the plane was flying an 88 foot course without gaining more than a few feet above launch altitude, the wing was glued on solid.

A celluloid aileron trim tab was added to help control torque reaction, though the plan was still prone to roll on high speed runs. This is known as dirty pool

by purists, but lies well within the province of possibility for getting there—"fustest with the mostest." I believe that rolling along the longitudinal axis coupled with my gentle launching toss may result in a rules change for next year's contest. Bill Hannan even made the comment that he felt the prop was holding the plane back! NFFS rules at the NATS precluded hand-launching or more than one 360° roll.

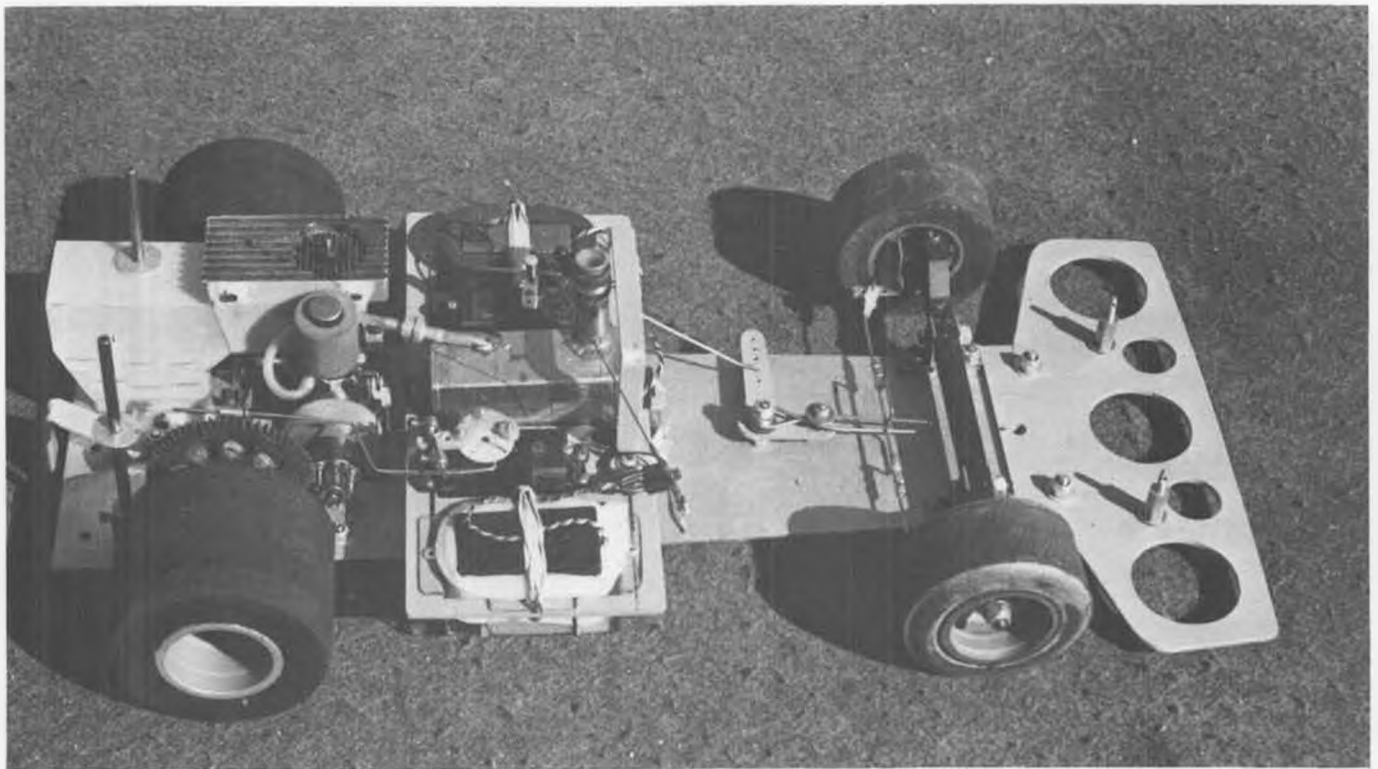
Weight is a large factor in a speed meet, the lighter models being the more successful. The Hot Gnat weighs 4 grams sans rubber. McCracken's Nats winner was a fragile stick-and-tissue ship with a light wing loading.

It might be noted that a thrust button is added rather than using tubing. Epoxied over thread windings, the button does not push back in a crash, and I find

*Continued on page 64*



Throwing tabs on the wing assist in giving the GNAT a flying start. Wish Bill wouldn't design such complicated models!



Component layout the author is trying on his latest car. Is based on East Coast types seen at the Nationals.

# R/C AUTO NEWS

By CHUCK HALLUM

One of the biggest problems with R/C cars is controlling the amount of power that can be delivered to the rear wheels. If the track conditions are off, such as when the track is dusty or is not used for a while, the cars usually have mucho power oversteer . . . you can hardly get on the throttle before you lose the rear end. The other critical time when power needs to be adjusted is when your car is set up for a long, high speed track and you have to run on a shorter, lower speed track. There are numerous ways that you can alter power delivery at the rear wheels; we'll discuss a few of them in this month's article.

Quite a few of the things I will be

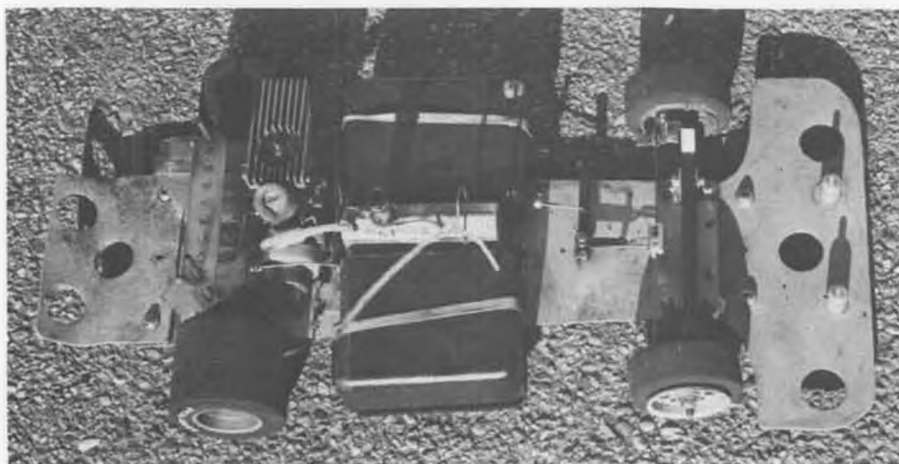
discussing are controversial, but you'll see that they are equivalent to other ways of doing the same thing. You can't afford (either money or time) to have a different car for each track, so you have to make do with adjustments on the one you've got.

Let us suppose you have your car set up properly for a given track and for some reason the traction is down. What can you do? First of all, the most apparent problem is that the car oversteers drastically at low speeds and a little more than normal at high speed. The optimum is to decrease torque delivery to the rear wheels (without effecting top end) and possibly decrease front bite,

slightly. Front bite can be decreased by going to harder tires of the same compound, or narrower tires. A little less aerodynamic force may also help. But there are numerous ways to decrease the low-speed rear end power delivery.

To decrease torque delivery to the rear wheels, the clutch can be adjusted to slip more at the lower speeds. On the top end, the clutch is fully engaged and the car speed is not affected. The same relative thing can be accomplished by increasing the car weight. Other means of decreasing the delivered low speed torque may change the top end speed. Going to taller gearing (a lower numerical ratio) will almost automatically cause the clutch to slip more and may give more top speed. Low speed acceleration is decreased, but the car really comes on down the straight. If the track is long enough, the higher straightaway speed could compensate for the decreased acceleration. (Although this says you could normally use more horsepower).

Other ways of decreasing torque delivery to the rear wheels are to decrease carburetor bore size or nitromethane content of the fuel. Both of these approaches decrease the top end capability of the car. Changing fuel is very easy, except the needle valve setting changes. Changing carburetor bore size is relatively easy to do also, and mostly requires a new idle setting. I have a tend-



Another way to get the weight to the rear, while protecting the radio gear from dirt and fuel.



ency to use these more than the weight change. I do change gear ratios from-track to track occasionally. Mostly I change fuel upward, increasing nitro rather than decreasing. Normally, I set my car up for about 7-8% nitro (such as supersonic 100), juggling carburetor size and gearing. If traction improves greatly I change to 18-20% nitro and get a torque increase and top end increase. (I always knew I was backwards!) This is like using Eagle 1200 or Supersonic 100 (caster oil lube only) and switching to Supersonic 1000, Eagle 1300 or Missile Mist, etc.

There could be two reasons that the slipping clutch improves low speed rear traction when excess torque is available. Obviously, the slipping clutch delivers less power to the rear wheels at a given engine rpm, but the engine speed increases due to slippage and the clutch shoes press harder on the liner due to centrifugal force, and some of the torque is regained. What power isn't delivered to the rear wheels shows up as heat in the clutch shoes and bell housing. I believe a second reason for traction improvement is that the engine is more decoupled from the rear wheels and the engine power pulsations are not transmitted to the rear wheels. When a clutch locks up, it seems extremely difficult to apply power to a car without having some control problems. With the same power delivered to the rear wheels, I think the slipping clutch gives better car controllability than a locked up clutch. Belt drive has a tendency to put compliance between the engine and rear wheels like the slipping clutch, and rear tire traction is good.

How do you make a clutch slip more? Well, as usual, there are two ways. First you can lighten the shoes, and second you can decrease the surface area of contact with the clutch bell liner. It is best to lighten the shoes. Figure 1 shows you how you can do this. It is of greatest benefit to decrease mass as far from the pivot point as possible. Figure 2 shows where it is best to decrease the contact surface area. Close to the pivot point there is a lot of mechanical advantage, so it is best to remove material from there. Decreasing the contact area has a tendency to increase temperatures and wear, so it is best to lighten the shoes if possible.

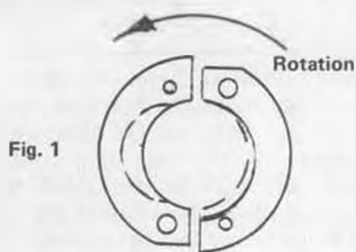
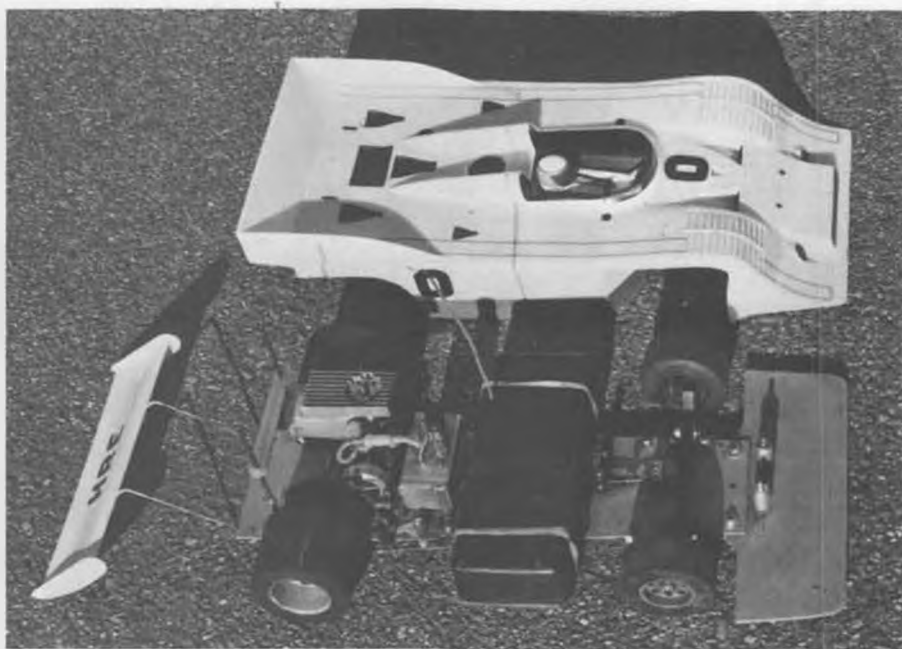


Fig. 1  
Lightening the clutch shoes will allow more slip. Shoe can be hollowed out as shown on left, or cut away, as shown on right.



Standard layout used during 1973 campaign is still a good system.

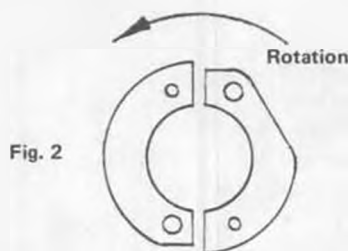


Fig. 2  
Standard shoe (Associated, Taurus) on left. Decreasing contact area by cutting away, as shown on right, increases slip. Stiffer springs will also help.

Well I guess that takes care of the clutch, etc. I think you all know how to juggle the nitro content around so I won't go into that.

As for the carburetor, I use a Perry. The same things I do in general can be done for any other carburetion schemes. Right now I have three sizes of throat available; 0.156 in., and 0.175 in., and 0.200 in. On a 5 lb. car the .200 in. carburetor throat and Supersonic 1000 fuel is about all I can handle. (The 5 lb. car is based on the Oct. '73 article on tires and Jan. '74 article on aerodynamics). On the shorter courses, Supersonic 100 and

*Continued on page 65*



To keep weight down as much as possible, hangers are used for radio equipment. Tank is hung on the rear to bring weight as far back as possible.

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NOW  
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**Pylon . . . . .** Continued from page 15  
14. The October 7 race was sponsored by the Alliance Balsa Bees of Canton, Ohio, in conjunction with OPRA. The October 14th race was held in Dayton, Ohio, and was billed as the Ohio Pylon Racing Championships. The race was co-sponsored by the Dayton Wingmasters. From the pictures and results, it seems as though they have some awfully good meets back there!

"The Alliance Balsa Bees put on a contest October 7, with Gary Villard, of Canton, Ohio as C.D. We had perfect weather for this one. You never know what it will do this time of year. There was a tie in Formula I between Bill

Hager and Gary Villard for first place. Bill ended up in first place because of a better time. It was too late for a fly-off. All in all we had a good day of racing.

### SPORT PYLON

1. Bob Mellen
2. Marv Kowalewski
3. Bob Gademer
4. A. Hemenger
5. Marshall
6. Ed Tisdial

### QUARTER MIDGET

1. Ed Nobora
2. Fred Johanson
3. Bob Penko
4. Bob Gademer
5. Bill Gademer

### 6. Bill McCalla FORMULA I

- |                  |        |
|------------------|--------|
| 1. Bill Hager    | 1:38.7 |
| 2. Gary Villard  | 1:38.8 |
| 3. Bob Singer    |        |
| 4. Bill Gademer  |        |
| 5. Ed Nobora     |        |
| 6. Fred Johanson |        |

"October 14, was the last race of the year for this area. We called it the Ohio Pylon Racing Championships. This contest was put on for the O.P.R.A. by the Dayton Wingmasters. We had a good turn out and the weather was perfect. At this race, we also awarded trophies to the champs in each class for the year. The guys worked hard all year to get points. We had a points system setup to determine the winners. The champs in each class:

Sport Pylon - Bob Gademer

Quarter Midget - Ed Nobora

Formula I - Bill Hager

Grand Champ overall - Bob Gademer

"We had a three way tie for first place in Formula I. Some fly-off! This was the best race of the day. The contest was a shot in the arm for the O.P.R.A. I think next year will be a great year.

The results for the races were as follows:

### SPORT PYLON

1. Marv Kowalewski
2. Gary Villard
3. Dave Brown
4. Fred Johanson
5. Don Lowe
6. Bob Gademer

### QUARTER MIDGET

1. Don Love
2. Bob Gademer
3. Bill Gademer
4. L. Penrod
5. Ed Nobora
6. B. Johanson

### FORMULA I

- |                    |        |
|--------------------|--------|
| 1. Gary Villard    | 1:40.2 |
| 2. Bill Hager      | 1:38.2 |
| 3. Dave Brown      | 1:49.5 |
| 4. Fred Johanson   |        |
| 5. Bob Singer      |        |
| 6. Zink/Berry Team |        |

Thanks a lot for the reports, fellas, it's always good to hear what's going on all over the country, and also in Canada and Mexico. We will strive to publish a record of the official times that we will recognize as MODEL BUILDER'S official record times. At present, until we have official notice, Kent Nagy holds the Formula I record at 1:20.2. The fastest QM time we have recorded for the two mile course is 1:48.8, and 1:29 for the QMRC (short course), both by Tom Christopher. The FAI Pylon record belongs to Bob Violett at 1:28.8.

At present, we do not have times for Open Pylon or 1/2A. If you know of these times, or suspect that you hold

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**7.95**

## STINSON RELIANT SR-8 GULLWING

Kit E8 Span 31 $\frac{3}{8}$ " Scale:  $\frac{3}{4}$ " = 1 ft.  
Classic 4 place cabin aircraft of the Golden 30's.

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Other power and equipment not included.

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☐ Secrets of Control Line and Carrier Flying—Including airtight, sailing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25¢ enclosed. No checks. Only U.S. money orders or currency accepted.

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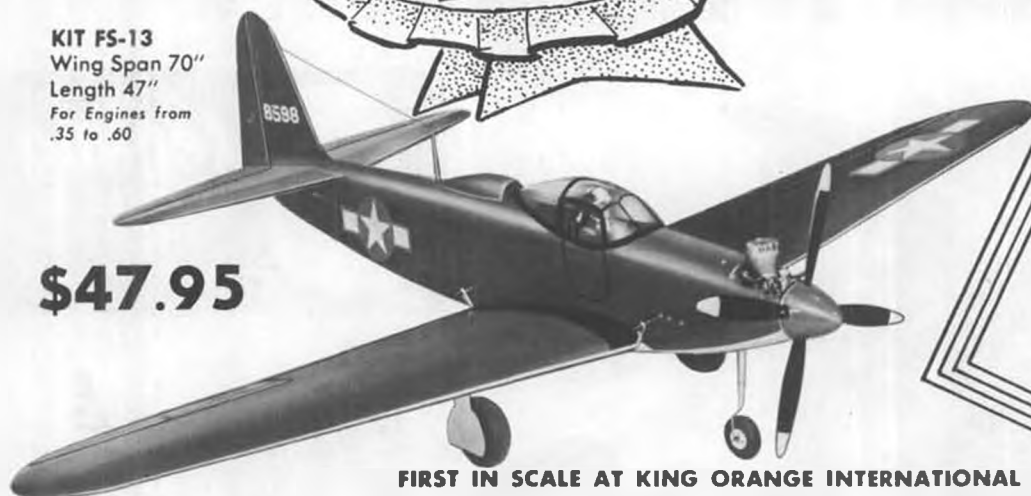
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Channel R/C**



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one of these records, please advise us! We have heard rumors that Terry Prather has lowered the Formula I record to 1:17! Wow! We cannot recognize this as official until we have the results! We would like to keep these times up to date. If you break one of these records please let us know as soon as possible!

Our new NMPRA president, Glenn Spickler, was seen at the QMRC season opener at Sepulveda Basin, Van Nuys, California. The January race was a huge success. Glenn was impressed with the race and the way it was conducted. Report in next issue! ●

**R/C Report . Continued from page 13**  
their gross misconduct, don't ruin it for all of us.

I wouldn't be at all surprised to receive some rather irate letters from CB'ers concerning my preceding remarks. My only comment to them, before they write is . . . be sure you are following the letter of the law in the operation of your station (in other words, that you operate legally) before you hollar. *(Don't worry, Frank. Any CB'er reading the mag is probably a modeler, and knows all about the lousy situation. wcn)*

Good friend Mel Hart of 936 Don-  
taos, St. Louis, Mo. 63131, is an old  
ham operator and also a rather accom-  
plished R/C'er. In addition to doing  
repairs on most makes of R/C gear  
(Mel's also an electrical engineer), he  
builds a heckuva plane. Photos show  
his museum quality Volksplane. It is  
*exact* scale, one-quarter size, which  
makes a six foot span. Weighs in at  
10-1/2 pounds and a Ross twin powers  
it. Even the hinges and control horns  
are hand made to duplicate the original.  
Super Coverite was used, with Sig dopes.  
Mel photographed all the instruments  
in the original plane and reduced them  
to scale size. He turned the cockpit  
details, like knobs and such, on his  
lathe. The throttle controls the radio  
on/off switch.

The full size plane from which Mel  
worked was built by Kilburn Adams of  
St. Louis. Kilburn is also an R/C'er and  
Mel says he gets some fantastic photos  
of models by flying them from a J3  
Cub and taking in-flight photos high  
above the landscape! Sounds great and  
maybe in a future issue we can show  
you some of those pictures.

Closing thought for you lovers for  
fine finishes: Hank Waechter of Nash-  
ville, Tenn., tells me that if you will  
strain ALL your dope and epoxy paints  
before you spray (or brush) them, you  
will get superior results. I'm told that  
the junk you stop from going into your  
sprayer is amazing. Hank says to use a  
piece of covering silk, or an even better  
filter is a piece of the old lady's stock-  
ing. *(Make sure she isn't planning to  
wear it again!)* ●

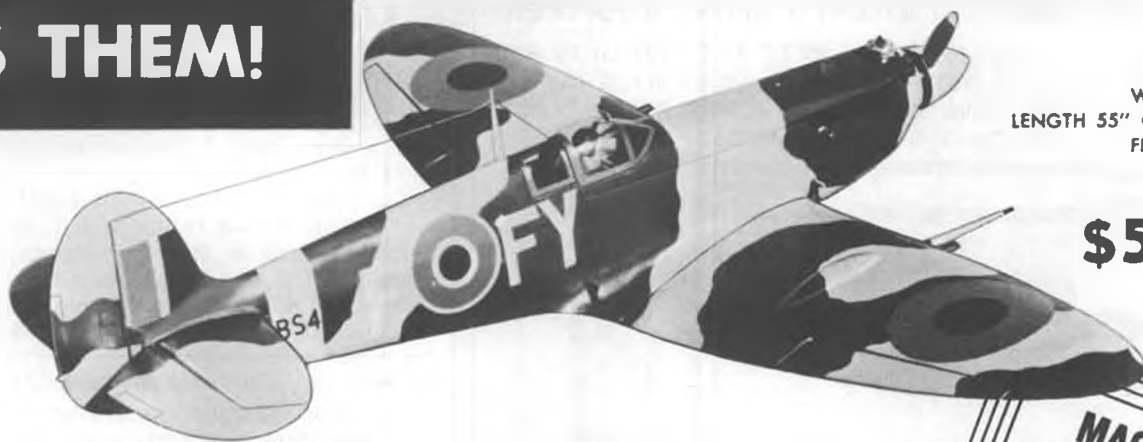
**F/F Scale . . . Continued from page 33**

Put in about half or two-thirds of the  
total winds while the rubber is stretched,  
and the rest as you move in to the fixed  
end. Stop when the distance from hook  
to hook is the same as it will be inside  
the model.

"How many turns to use? If the  
motor is new, put in about two thirds  
of the maximum possible for the first  
time. Increase the number about ten  
percent each winding. Most rubber will  
loosen up or "break in" with four or



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five windings. Some of the older rubber may take more. A broken in motor will deliver more total energy than a new motor, thus producing longer flights . . . providing that it is the correct size, of course.

"The total number of turns that a motor will take depends upon many things, including the loop length, the rubber width and thickness, the quality of the rubber, and how many times it has been wound. From time to time, charts are published giving the turns per inch as a function of rubber width. Usually, I cannot get as many as the charts show. Such charts are a good general reference, but you must feel out each loop. Practice with a short loop and increase the turns slightly each winding until it breaks.

"Wind the rubber slowly, stopping occasionally and feeling the hardness. That will give you an idea as to how many turns it will take and when it is near breakage. As the rubber gets hard, you better wind slowly and move in fast! The winding in that case is merely to use up the slack as you shorten the length. If you come in any appreciable distance without adding turns, the rubber will often form large knots which can jam up in the fuselage or even climb the rubber off the hook! And that can spoil your whole day!

"Developing this feel is important

because the same loop of rubber may take fewer turns or more turns on different days! Extreme temperatures, both high and low, usually reduce the turns possible in a motor.

"Sometimes, motors that have been used several times with good results will suddenly become brittle and break at low turns. Usually such motors will harden up rather quickly while winding. Thus, if you wind slowly and feel the rubber you can often avoid breaking it. The sixteen-to-one winders transmit a strong torque back to your hand and so help you sense the condition of the motor. Obviously, the number of turns that a motor will take is proportional to its length. So from the test loop you can tell closely how many to expect.

"Test the model with a short loop as described and change strand width if necessary. For longer flights, longer loops can be used. If the length is increased two or three times the original length, a slightly wider size may be needed to make up power for the additional weight.

"After a few windings, stretch the motor and inspect it for nicks or a loosening of the knot. Rubber that is wound to capacity will often begin to tear after three or four such winds. If wound to just eighty percent of capacity, the motors can usually survive several times as many. Each time a motor is

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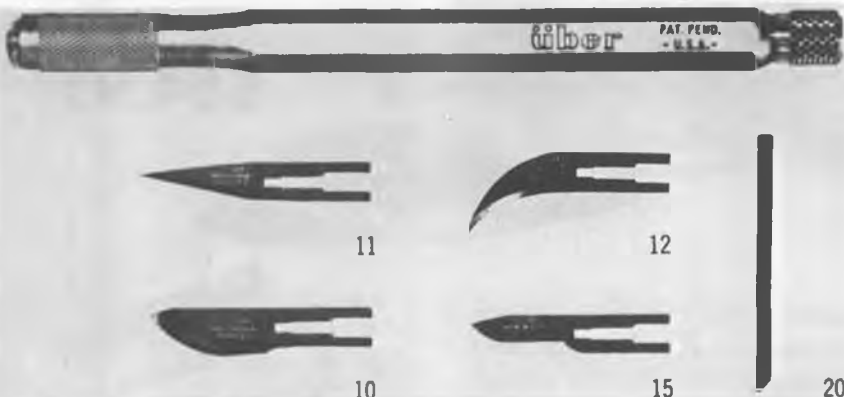
wound, mark its envelope with the turns used.

"Some modelers wind the whole prop and nose assembly, as well as the rubber, by means of a front hook in the prop shaft. It is safer to use a winding tube in the fuselage, which necessitates removing the assembly from the rubber. For small motors, up to 1/8 inch in width, plastic tubes, one-half inch in diameter, work well. A wall thickness of 0.010 inch will hold the broken strands. The tube should reach from the rear peg to an inch or so beyond the nose.

"Form a hook on each end of a

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piece of piano wire, 0.033 inch diameter, about an inch longer than the plastic tube. Remove the nose assembly from the rubber, hook one end of the piano wire onto the rubber, and slide the plastic tube over the wire and the rubber into the fuselage. An assistant holds the model by the rear peg and the front of the tube.

"Hook the winder onto the other end of the wire and wind the motor as planned. Stop the motor about an inch from the front of the model. Slide the plastic tube out over the wire and grasp the rubber about a half inch from the end, *very securely!* Allow the short end of the rubber to unwind, remove the wire and hook on the prop. This may seem awkward at first, but with practice, it goes easily and affords great protection for the model in case of broken motors! Broken pieces jammed in the tube can be fished out with a wire hook. The hole in the nose of the model must be large enough to admit the tube, obviously, so build models that way.

"I have had one or two motors break after the tube was removed from the fuselage. I suspect those motors had a nick that slowly grew into a break so inspect motors carefully before winding!"

Peck-Polymers, P.O. Box 2498, La Mesa, California 92041 has just released

its latest Peanut kit, that of the clipped wing Piper J3 Cub. The kit features top grade wood, proof-of-scale 3-views, step-by-step construction photos, specially designed nylon thrust bearing, rubber motor, plastic propeller and wheels (Photo in last month's "Over the Counter"). I personally feel that this is the best kit Bob Peck has designed, and if built just like the directions and plans, it will be a certain winner.

This is the first kit to incorporate a complete set of two-color mylar press-on decals. At first glance they appear to be like a regular decal sheet, but instead of having to dip them in water, you merely cut them out, peel from the backing, and press them on. The model is simple to build and I will have a flight report as soon as I have mine finished. In the kit is a flyer showing the many plans, kits, and accessories handled by Peck-Polymers, which are numerous to say the least. The price of the new kit is \$2.95.

Bob Holman, P.O. Box 741, San Bernardino, California 92402 is continually adding to his already long list of scale plans for F/F and R/C. As many of you know, Bob handles all of the Aeromodeller scale plans, and he has added several more from another source in England. These are plans drawn by well known English scale modeler, Har-

old Towner. Some of the new plans Bob has for rubber include the Bristol Beaufort and H.P. Hampden bombers. Yes, they are bombers! Considered for either F/F or U/C are the Hawker Typhoon, P-47D, and Fairey Barracuda. Send Bob a self-addressed envelope for his latest list of plans.

April 28 is the date for the Flightmaster's 2nd Annual Indoor Scale Contest, to be held in the Blimp Hangar, Santa Ana, California. The time is from 0900 until 1230! AMA membership will be required for flying. ●

### Osprey . . . Continued from page 11

To turn, use rudder and ailerons. Even with those huge ailerons you will need the rudder, especially when the nose is pitched up. You will need less than half power for normal flying; trim for level flying.

When landing, use the power to control altitude; the nose will pitch up when power is cut and will slow down. Stay off the elevator as much as possible during landings. If landed too fast, she will bounce. If this happens, add some power and up elevator.

Stalls are gentle and surprising. The first indication of an approaching stall is the feeling that your radio has stopped working. When in a stalled condition, the ailerons and rudder will become completely useless. In this condition, she will just sit there and that's it. If you decide to pull in more up elevator, she will drop a wing and spin. When the stall occurs, add down elevator and full power until speed has been gained.

### SCALE INFORMATION

Scale information is available from George Pereira, Osprey Aircraft, 3741 El Ricon Way, Sacramento, California, 95825. The cost is \$3.00.

I would like to express my thanks to Mr. Pereira for his time and help in building my OSPREY I.

For additional information regarding the model Osprey I, or built up fiberglass cowl, write to: David A. Ramsey, Box 78, Chester, New Jersey 07930. ●

### Little Gem . . . Continued from page 16

. . . not once, but three times, in the hands of one of the foremost pylon racing devotees in the country.

Austin Leftwich has used the converted DOUBLER "Little Gem" since winning his first World Championship for Quarter Midget Racers at Mentor, Ohio in 1969. Since that time, he has won two more World Champs, and a host of other trophies, using the same model refined to the degree shown on this conversion drawing.

We would like to quote a few things from Austin's most recent letter:

"Because of my successes with the design, and also because it is so easy to build (and fly), there are 8 other active competitors here in Atlanta who com-

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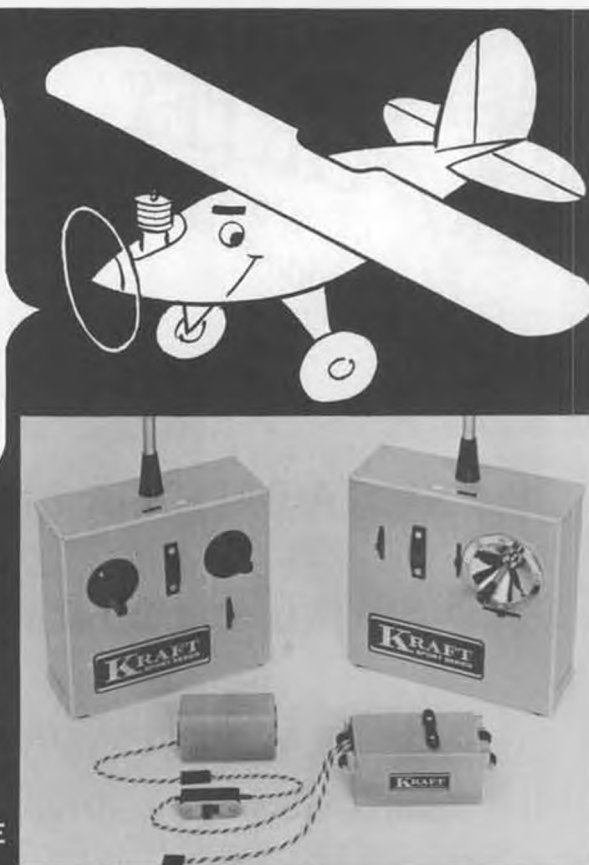
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pete with them. Five of them are novices who wanted very much to compete in the event, but were unsuccessful in trying to master the race course with some of the strictly Quarter Midget design kits on the market. Every one of them has managed to compete successfully with his version of the Little Gem.

"The enclosed sketch (incorporated in the drawing) has been distributed widely throughout the Southeast and there have been 30 to 40 Little Gem's produced from it. There were 17 Quarter Midget events in 1973 within 350 miles of Atlanta. I managed to compete in 8 of these meets, Gail Jacobsen (Assoc. VP SCE for Quarter Midgets) was flying a Little Gem and was either 2nd, 3rd or 4th."

My sincere thanks to Austin for his assistance in helping me prepare this conversion drawing. The record of wins speaks for itself . . . an inexpensive kit, a little imagination and who knows, you might even make the 'Champ' hustle a little harder. From the correspondence we've had over the past 4 years, he would like nothing better. He's a real great 'sportsman' and competitor who wants all modelers to get the same enjoyment he receives from the hobby. I tip my hat to him.

R/C O.T. . . . Continued from page 23  
R/C is a model that will fly entirely without help . . . as does a properly

trimmed free flight. . . The radio merely controls *where* the model goes, not *how* it gets there. Modelers who are building and flying O.T. R/C airplanes, whether to recall the "good old days" or to find out "what they are like," are discovering that this is the truly relaxing hobby they have been looking for.

Our building time is at a premium these days and yet we've been wanting to build an O.T. R/C in order to join the fun at various contests scheduled for the coming season. It was therefore a happy day when we received a sample of Chuck Gill Models' kit for Sal Taibi's famous Powerhouse.

The kit may seem expensive at \$44.95, but a mere look at the monstrous logs of balsa included should dispel any feeling of being "taken." In addition to the 5/16 sq. material for the fuselage, you will find 1/4 sq. and 1/4 x 1/2 wing spar stock, 5/16 sq. leading edge material, 1/8 x 1-1/2 trailing edges, and liberal amounts of 1/8 x 3/8 for the many stab ribs.

The wing, stab, and rudder outlines, as well as the wing ribs (huge!) and fuselage bulkheads are found on die-cut sheets of 3/32 and 1/8 balsa. Also included in the kit are hardwood landing gear mounts and motor mounts, balsa nose block, and pre-cut ply dihedral braces. Pre-bent 5/32 landing gear wires

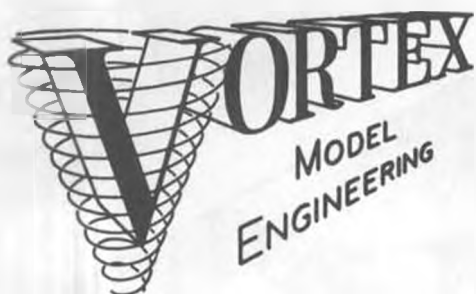
are furnished. Full size rolled plans, printed building instructions, and a copy of the 1939 Model Airplane News construction article are also included.

The model is kitted for building a free flight version, and as such, is adequate. However, we intended it for R/C, and therefore made some modifications. Since the mods would apply to most any OT-to-R/C conversion, we will hopefully clarify them as we go along.

O.T.'s can be radio controlled with one to three channels. For one channel, operate the rudder, with the engine cut by timer. For two channels, there are two choices; rudder and throttle, or rudder and elevator with the engine cut by a timer . . . we'd choose the latter. Three channel is the optimum; giving full control of the engine, in addition to rudder and elevator. If you want ailerons, forget Old Timers and go fly R/C airplanes! Ailerons aren't necessary, nor are they proper for O.T.'s!

There are two valid reasons for beefing up the structure in O.T.'s . . . one applies whether you build it for R/C or F/F, while the other applies to R/C in particular.

The first reason concerns the use of plastic covering films, such as Monokote or Solarfilm. By their very nature, they do not provide enough of the "skin strength" so necessary for the light-



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weight open structures usually associated with O.T. models . . . and most modern competition free flights, for that matter. Once covered with tissue, silkspan, or silk . . . water shrunk and doped . . . these otherwise flimsy frameworks become quite rugged. If you're going to cover with plastic film, "add more bones to the skeleton!"

Radio control will probably develop several new stresses in free flight structures, in addition to increasing those which are normally expected.

Because of the lightness of modern radio systems, extra wing loading on the O.T.'s is not so much a factor as are

the new, and oft-times unusual "aerobatic" maneuvers to which the craft may be subjected! With these thoughts in mind, let's modify the Powerhouse for radio control (Sorry 'bout that, Sal, you can't fight modern times!)

To outward appearances, the tail surfaces are the first obvious sign of the addition to R/C . . . The stab becomes stab and elevator, and the rudder becomes fin and rudder. A rule of thumb would be to split the vertical area 2 to 1 . . . two fin and one rudder, and split the horizontal area about 5 or 6 to 1 . . . one part elevator and the rest stabilizer. If any beefing up is required

at all, it would probably be in the stabilizer spar and trailing edge. There will be occasional extra air loads, and the trailing edge must be slotted to receive the hinges . . . which could weaken it slightly.

The 1/4 sq. balsa wing spar stock which came with the kit would have made an indoor flier's spine tingle with excitement! It made us go to the wood pile and dig out some 1/4 sq. spruce! While in the wood pile, we also picked up a piece of 3/32 sheet contest balsa for webbing. If you have any doubts about the value of webbing between the top and bottom spars, talk to anyone who has built and flown a few R/C gliders.

When joining the two panels to the center section, we dropped the dihedral about 2 inches in each . . . from 8 to 6 inches. This is not enough to change the character of the design, but will help smooth out the ship's reaction to rudder operation. While working on the center section, notch out the trailing edge and epoxy about a 6 inch length of coat hanger wire reinforcing. This will prevent crushing by the wing hold-down rubber bands.

Before covering that wing, stab, and rudder, especially if using plastic film; be sure to punch holes in all ribs so that trapped air will not puff up the covering when it is heated . . . during application and shrinking, or later, when the model sits out in the hot sun. An "exhaust" hole, punched in the bottom center section sheeting, provides the outside breather for this expansion and contraction . . . There's a huge volume of air inside that 7 foot span, 14 inch chord wing!

The heart of the model . . . the nerve center of the radio installation . . . the container for its flight power . . . is all housed in the fuselage, and it is here where the most modifications must occur in order to convert your O.T. for radio control.

To avoid marring the outside appearance, the first step after completing the basic structure, was to line the inside of the lower cabin area with 3/32 balsa. In addition to providing extra strength, this also gives the radio-protecting foam rubber something to lean against! A personal preference, though not necessary, was the substitution of grooved hardwood torsion bar landing gear blocks for the stock items. Set flush with the fuselage bottom, this meant slotting the bottom longerons, so we added 1/8 inch gussets at these points.

Servo rails of 1/4 x 1/2 maple were epoxied to the bottom side of the lower "window sill" longerons of the fuselage, and were locked in by the inside sheeting. The rails were spaced to accommodate Orbit PS-3 servo trays, which worked fine to mount the Kraft-made Heathkit servos of our GDA-405 sys-



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tem. Who says the stuff isn't getting standardized?!

One each Nyrod and Golden Rod (How's that for remaining impartial?) carry the servo motion back to the tail surfaces. The rudder push rod originally came out ahead of the stab, on top, but our Soaring Editor, Le Gray, on a weekend visit, so severely criticized us that we reworked it inside to a rudder tiller. A pain in the butt to hook up during assembly, but it sure looks a lot better (Boy, will *that* ever make him smug!).

Depending on ultimate usage, you may or may not want to install a large fuel tank. Normal O.T. competition requirements are for 20 and 30 second engine runs, and in Texaco, a 1/4 ounce of fuel per pound. Since we also expect to fun-fly our Powerhouse, we installed an 8 ounce round Sullivan bottle. (Hmmm. Wonder what it would be like to slope soar that crate?) A 3/32 ply tank saddle was epoxied across the fuselage, and the front wing rubber dowel had to be changed to two short pegs. Epoxied through holes in the big, permanent motor mounts, we don't expect them to come loose.

Speaking of motor mounts, the nice thing about the Powerhouse is the removable sub-mounts. These permit flexibility in engine installations . . . handy for us as we intend to experiment with larger and smaller engines than the Enya

45 shown. We're going to try a K&B 35 Stallion, a Veco 19, a 60 of some description, and get this . . . next month we'll tell you about our experiments with an Astro 25 electric motor installation. How about *that* folks, an Electric Powerhouse!

When sanding out the fuselage prior to covering, we noted a certain amount of lateral flexing. Thinking ahead about the Monokote that was going to be used, we grabbed some medium soft 1/4 square and added diagonal bracing top and bottom. The weight penalty was negligible, but the strength increase was tremendous. Set flush with the inside surface of the 5/16 longerons, they don't show on the covering surface, but look terrific when the light shines through. Incidentally, the ship is covered in metallic blue and opaque yellow Monokote.

The windshield and side window installation may be of interest. They are all held on with DJ Multi Stripe! By next month, when we report on the electric power experiments, we'll let you know how the window installation holds up. Sure makes a simple job of it, and it's decorative too!

Something else will have to wait until next month too. In a way, when you consider all the Powerhouses that have been built and flown over the years, it'll seem like an anti-climax to report on how our model flies . . . but we'll do it

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anyhow. The ship was just completed in time for this article, and in all probability, the first test flights will take place during the San Valeers Winter Nats, to be held February 16 and 17 at Taft, California, where we'll enter it in the R/C Texaco event, modified to an 1/8 ounce of fuel per pound of airplane.

Oh well . . . Isn't that about par for the course? ●

**C/L . . . . . Continued from page 47**  
place in Class B Speed (Jr/Sr/Op) at 191.01 MPH by Shannon/Jett. Mike Bussell took second at 171.85 MPH. First place in Class C speed was won by Norm Drazy at 175.20 MPH.

The weather at this meet was the best we've seen in years. It was in the mid-70's both days, with low humidity-(20-30%). No wind to speak of on Saturday. A little wind Sunday morning, but it calmed down about noon.

If attendance at this meet is any indication for this year, it sure looks good. Perhaps the "gas shortage" is not as serious as we thought . . .

**SCALE**

Interest in scale at the 24th Southwestern Regionals was quite good this year. Four multi-engines planes and three single engine entries. Ray Smith (Lawndale, Calif.) took first with his neat A-26A. It really flies nice. He won with the same plane last summer at a San Diego contest (see Sept. '73 issue of M.B.). Marvin Martinez (Phoenix, Ariz.) was second with his BF-110D-3 bomber, and Roland Baltes (San Pedro, Calif.) was third with a brand new (three year project) JU-88D-1 bomber. ●

**Plug Sparks . . Continued from page 21**

2. The model must be scaled down from the original, maintaining similar structural type, airfoils, moment arms, dihedral, etc.

3. Model must be rubber powered.  
4. Model wingspan limited to 24 inches projected.

5. Model must be tissue covered. Condenser paper or similar covering not permitted.

6. No folding props.

7. Models must R.O.G. Landing gear may be extended for larger rubber type propeller.

8. Model will be judged for fidelity to original scale.

9. All material sizes cannot be less than to scale. Larger sizes permitted.  
10. Six attempts to make one official flight.

11. Official flight is 5 seconds or more.

Hopefully, a good turnout will result. We'll try to keep track of this new old timer phase.

**ALL SHOOK-UP DEPT.**

Just received a letter from Al Schwankert of the New Jersey Old Time Eagles. He sez he couldn't sleep all night after reading the December Model Build-



er Plug Sparks Column. So, at 5:30 a.m., he sat down and wrote a letter from which are quoted parts pertinent to the proposed SAM change the writer advanced in an attempt to head off the scramble:

"We fly in average winds of 12 to 24 mph, with heavily wooded areas surrounding the field. One flying sight is only 75 yards from the Atlantic Ocean, bounded by the Connecticut River.

"Your ideas about flying hands-off radio under power are great, but there will be a lot of crashed ships, poor R.O.G. characteristics, very little precision flying, and darn few spot landings.

"We felt the same way about hands-off radio and thought this was the way to go. A meet at Lakehurst using rules similar to those you propose was held last June 24. In good spirits, we all entered with the intentions of winning with good ships and excellent pilots. At the end of the meet, a contestant meeting was held and it was unanimously agreed never to have a "hands-off" event again.

"I didn't see many ships go home in one piece, that day. I picked up the winner's plane with my four-wheel Jeep. His score was not high . . . He was lucky!

"Radios and engines are expensive, not to mention the cost of balsa. On the average, with fuel-control meets, we still lose seven to nine ships out of every thirty contestants. To change back to "hands-off" would only increase the loss. You do not increase activity in the sport with more crashed planes.

"John, please try it before thinking of a rule change. If it is run as an additional event, hold it last! I sure could tell the Old Timer R/C F/F boys what not to do!"

Well, Al, thanks for reading the column (hey, look WCN, somebody does read the stuff!) and for your comments. You're absolutely correct in your last paragraph. For this reason the writer has backed off (see previous

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issue) and decided to try it himself. Until that time, we won't propose any rule changes. Having two or three models on the work bench with various sizes of horsepower, it won't take long to run an evaluation.

## OTHER SIDE OF COIN

Just about the time the writer figured all easterners liked the hot free flight with even hotter engines, Ed Goretzka, of Timonium, Maryland, writes to say that the local F/F and R/C boys are in agreement that the over-powered R/C jobs somehow don't seem to be consistent with the normal relaxed air of old timer flying.

Ed, along with others in his area and New Jersey, have this feeling, but have been talked down, by the more vociferous. Ed sez, "I won't shout, I'll just do my thing and have fun." Hey! How about that? It would be interesting to poll the contestants for how they *all* feel. However, if you have an opinion, ya gotta speak up!

Ed concludes by saying this O.T. movement is gradually converting those red hot competitors who are too busy to smile and relax. We'll gettun all yet! **STAND CORRECTED!**

It is refreshing to the writer that somebody actually reads this column and takes the time to straighten out the writer. Latest example is a letter from Jerry Persh of Annandale, Va., who points out that the article on the Mini-Interceptor forgot that Persh, in 1969 at Willow Grove Old Timer Nats events, registered four maxes in a row! Jerry states the Goldberg Interceptor is a fine design, capable of meeting today's competition when properly adjusted and using a good engine. He's telling us! **ENGINES**

With old ignition engines getting harder to find all the time, it is a real pleasure to report that Mark Fechner

(MECA 659) has started an engine conversion business known as Marks Model Engines, 112 Clinton Ave., Salt Lake City, Utah 84103.

Mark will do engine conversion on any size and make of engine. Right now he is specializing in Torpedo engines because of easy adaptation. Deal works this way: You send your engine and timer you want installed. If you don't have a timer, he will supply one for \$4.00. The conversion consists of complete refinishing, the case gets a matte finish (like Super Tigre), the head is Klondyke gold, all black parts reblacked. Tanks are plastic or metal, yer cherce.

Conversion price is \$20.00 plus postage. All work is guaranteed and engines test run. Depending on size engine, Bantam, O&R, Torpedo, or Cyke timers are used for the "Klondyke Specials." **LAST WORD**

That guy, Bob Von Konsky, can think up more work for the writer than he can successfully avoid. Latest idea is to run an illustration or three view outline drawing of old ignition engines so the fellows can get a feel for the old engine they are currently considering. Would also help for mounting, cowling, etc. How about it friendly reader? I ain't gonna do nuttin' until I hear from you! Besides, it's time for pizza and beer. See ya next issue! ●

**Hannan . . . Continued from page 34**  
**NOTES FROM THE CLASSROOM**

We have quite a number of school teachers in our ranks, some of whom have managed to stir their favorite hobby into their curriculum. L.B. Cotter, of Granada Hills, California, is more fortunate than most, in that he is an instructor of Aviation Literature, and thus needs no excuse to introduce model building and flying to his stu-

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dents. His class has received the benefits of guest speakers, such as Frank Zaic, field trips and contests, with the objective of receiving education in all phases of aviation. All has not been smooth sailing, however, and problems common to us all have been encountered. For example, the football players and school band members just couldn't quite see why they should have to share "their" athletic field with "toy airplane flyers." Cotter's creative solution? The Great Indoor Rubber Powered Stick Model Flying Contest!, which was conducted in the school auditorium. The response from the students has been most enthusiastic, and Cotter reports that model aircraft are the best "teaching tools" he has ever known, and points out that models formed his own introduction to a life-long interest in aviation.


## THE INTERIOR BIT

With the ever-increasing accent on fidelity-to-scale, it might be well to re-examine every possible way of producing more realistic models. One of the more neglected areas is the pilot's com-


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partment. Materials required to furnish the inside are, for the most part, inexpensive and easily obtainable. The secret ingredient, as usual, turns out to be TIME. If satisfying results are to be achieved, sufficient hours must be devoted to the task. A few guidelines to contemplate:

1. All balsa wood in the cockpit area which will be visible to a viewer should be painted or covered. Otherwise, it will look exactly like what it is . . . balsa wood. Painted paper is one approach for covering interior walls and floor. If the coated variety is employed (such as magazine cover stock), very little paint will be required, as compared to common typing or writing-tablet stock.

2. If pins are used to represent knobs, throttles, etc., they will look exactly like pins. These items can be used as the BASIS of interior details, but should be suitably modified so they will more nearly resemble the intended parts. While on the subject, pins are also a poor simulation for rivets, and are usually grossly overscale for that purpose.

3. Whenever feasible, the cockpit components should be painted PRIOR to assembly. Trying to paint rudder pedals and such with a long, thin brush after assembly, is not conducive to neatness (or tranquility).

4. Exposed glue joints should be

carefully avoided. Probably the best way to assure a clean appearance is to mechanically fasten the details, which will then require very little, if any adhesive. As an example, the control stick can, in some cases, extend through the floor-board and be glued on the underside only, thereby presenting an absolutely glue-free junction as seen from the top.

This combination mechanical/adhesive method of installing components has the added advantage of keeping everything "tied down" in the event of a prang. Remember, the quality of cockpit details is far more important than the quantity.

#### AEROBATIC SEAGULL ROUTINES BY MARK SMITH

We are supplying the above well-deserved credit line for any of our readers who may see the film "Jonathon Livingston Seagull," since the producers, for reasons best known to themselves, went out of their way to omit this important information. Rest assured that Mark Smith of Escondido, California, fabricated AND flew the model seagulls for the aerobatic and dive sequences that appeared in the film. Just watch for the bird with "stiff" wings.

#### BACK TO THE BOOB TUBE

Time was when the television set was regarded as one of the worst detriments to a model builder's output. Now,

however, some rationalizers have risen to defend TV as serving as an actual INSPIRATION to modeling. They point out that old aviation flicks are frequently shown on late-late runs, and suggest examining TV logs for descriptions of forthcoming offerings. Some of these are admittedly real "bombs" from a plot standpoint, but sometimes feature rare and exciting aircraft guaranteed to make you reach for your 3-view collection!

The Flying Aces Club of Connecticut has even suggested compiling a list of old movies which contain flying scenes, since their titles do not always furnish that sort of clue.

Current fare also shown signs of aviation influence every now and then. Helicopters and lightplanes are common "props" on shoot-em-up series, as are airports. Then too, hang-gliders have turned up in such unlikely places as soap commercials and M.A.S.H. One of the boys in "THE WALTONS" is a model airplane nut, and his efforts are frequently shown for a micro-second or two. Even Sanford and Son can be seen loading what appears to be an old tailplane into their junk truck at the end of the show!

#### KEEPING TRACK

Model builders seem to suffer a common malady . . . a short attention span. Thus we find we can scarcely complete one project before a more interesting one comes along to distract one's best intentions. Bill Krecek has gone so far as to draw up charts, in order to keep track of all his current construction activities. The forms have categories for Peanuts, Indoor, Jumbo, CO<sub>2</sub>, Gas, R.O.W., etc. Alongside each division is a check-off space indicating the status of every project, such as: Proposed, Ready-to-finish, Needing Repair, and Ready.

Needless to say, most of us would have a lot of blank space in the "ready" column, but a definitely crowded condition in the "proposed" area! ●

**Main Sheet . . . Continued from page 26** can pull out, or even worse, split the mast while being installed. Another disadvantage is that it takes a great deal of time to properly shape and finish a good mast.

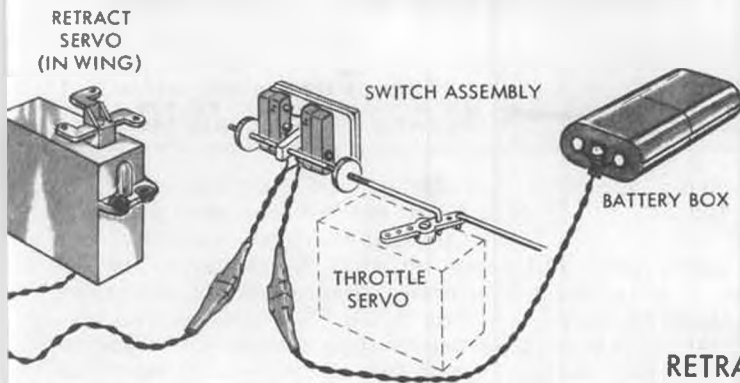
First step in making a wood mast is to select a clear (no knots) piece of wood with straight grain. Next, trim it to size for length and cross-section. As an example, a 72 inch mast should be 3/4 x 9/16 inches and a 60 inch mast should be 1/2 x 3/8.

The next step is to determine the shape of the mast and the taper from top to bottom. For simplicity, the 72 inch mast will be used for examples. Figures 1, 2, and 3 show the most common styles of masts found in wood. Number 1 is not only poor looking but will not allow the air to flow smoothly



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along the sides of the mast. Number 2 is much better, but not as effective as Number 3. The reason for the flat back-side on Number 3 is to attach the jack wire, which holds the sail next to the mast.

Once you have selected the Number 3 type mast, scribe or pencil in a set of lines to mark the width of the jack wire table on the back (aft) side of the mast. The so-called table is usually 1/8 inch wide. Make a corresponding set of marks down the front (fore) side of the mast, as these lines will also be used for shaping.

On the side of the mast, two thirds down from the top, make a mark at the front or leading edge. Draw a line from this to a mark that is one eighth of an inch back from the front edge of the mast at the top. Now very carefully plane off this section. Now redraw the double line on the front.

Using the same method as above remove from each side a tapered section from half way down the mast to the top. The amount to be removed at the top on each side is 1/8 of an inch.

Let's double check what has been done so far. The top of the mast should now measure 1 1/2 x 7/16 inch.

Next step to mark the sides of the mast with lines to guide you in trimming the rest of the mast down to the proper size and shape. Time and workmanship really show up at this point. To give you

a tip about rounding off the sharp corners use a piece of 2 x 4 x 8 inch long pine for a sanding and shaping block, and have at it. Bring the wood down to a nice finish with 180 grit aluminum oxide paper and check for straightness. If all is well, finish sanding with some 320 grit paper. Then use your favorite wood finishing material such as Superpoxy clear, varnish, or a clear urethane paint.

The spreaders should be attached to the mast about 28 to 30 inches up from the base. The lowers are also attached at the same point as the spreaders, and the attachment for the top diamond supports should be 19 to 20 inches down from the top. Drill a 1/8 inch hole through the mast and use 1/8 brass rod to form the support for the tubing that will be the spreaders and the diamonds. Next time we will discuss how to attach rigging wire, fittings, and special gadgets.

Counter . . . . Continued from page 6  
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"What's printed balsa, Dad?"

"Get back to your Super Kaos, I'll tell you later!"

\* \* \*

Long Island Hobbycrafts Inc., 722 Cross Bay Blvd., Broad Channel, N.Y. 11693 has announced its latest Nick Zirola stand off scale kit . . . the famous Boeing-Stearman Model 75. Decals and

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presentation booklet are included so that you may duplicate any of three versions; the Army Kaydet PT-17, Navy N2S-3, or Sammy Mason's stunt ship, "Checkers." The model has a 51 inch span (top wing), 760 sq. in. wing area, and a dry weight of 6 pounds. It's for .40 to .61 engines and 4 channel-plus radios.

Kit includes detailed plans, Williams Bros. dummy engine cylinders, die-cut and pre-shaped plywood and balsa, hinges, control horns, torque tubes, wind-screens, formed wire wing mounts and landing gear legs, Goldberg tailwheel unit, wing hold-downs, aluminum engine mounts, plus the presentation book-

let and decals previously mentioned.  
Suggested retail is \$65.00.

Midwest Model Supply Co., distributors and importers . . . not to be confused with Midwest Model Products . . . will have a new R/C .60 engine in stock beginning March of this year. Called the "Meteor 60 Red Head," this English import was used by Dave Haraker of the British R/C Aerobatic Team in Italy, and features a single Dykes ring, vented piston design, bushed connecting rod, double ball-bearings, Kavan carburetor, removable prop stud (avoids necessity of replacing complete crankshaft if bent in a crash), and muffler with pressure tap.

Engine is manufactured under most modern production processes, and power output is comparable with engines currently available. Price, with muffler, will be \$84.95.

**Gnat . . . . . Continued from page 49**  
the Peck-Polymers nylon button a perfect vibrationless bearing at high (or low) speeds. The little Guillow's 4 inch prop really buzzed for the .89 seconds that it took to run the 88 feet! A couple of brass washers is all you need to take up thrust, as the plane actually lags behind the prop according to McCracken's theory.

It might be added that with a longer loop of light rubber, this plane is a fair-to-Middlin' sport flier! It would be better to make it without a symmetrical aerofoil if endurance is your bag. Good luck.

**Mooney . . . . Continued from page 35**

First, LOOK AT THE ADVERTISEMENTS IN THE MAGAZINE. Almost always, if your local model supplier doesn't handle a supply you need, it is advertised somewhere. Also if it's not available locally, you can write to the manufacturer and manage to buy it. If you do this, enclose a self-addressed stamped envelope. Also mention the magazine that was carrying his advertisement. This makes two people happy; the editor, because he will probably sell

another ad, and the manufacturer, because he now will have some proof that he is using his money wisely when he runs an ad in the magazine. The self addressed stamped envelope, some times called "SASE," will certainly help get a prompter reply because you've just removed lack of envelopes or money for stamps as an excuse for not answering your inquiry.

In the Peanut Scale line (and they spill over into other sizes also), we'll list a few suppliers we have used and apologize for those we don't include.

For high quality "wire" wheels (balsa tires, silk spokes, and carefully scaled), it's hard to beat Fulton Hungerford of 1770 Lilac Circle, Titusville, Florida 32780. These wheels aren't exactly inexpensive, but if you value your time and want a super landing gear on an old time model, they are a must.

Several others handle nose plugs, wheels, propellers, and miscellaneous supplies. These are:

Peck Polymers, P.O. Box 2498, La Mesa, California 92041.

W.C. Hannan, P.O. Box A, Escondido, California 92025.

Marlow Engineering, 6850 Vineland, North Hollywood, California 91605.

Williams Brothers, 181 Pawnee St., San Marcos, California 92069.

Sig Mfg. Co., 401 S. Front St., Montezuma, Iowa 50171.

Bill Hannan, of course, also sells plans, as do the following outfits:

"Raceplanes," by R.S. Hirsh, 8439 Dale St., Buena Park, Calif. 90620. He has a very large collection of beautiful 3-views (or more) of many racing planes.

Cloudbuster Venture, P.O. Box 2921, Livonia, Michigan 48154.

Miniature Aircraft, Box 26263, Indianapolis, Ind. 46226.

Another outfit has things that will probably interest all dedicated modelers, although they don't sell model supplies as such. It is known as the Brookstone Company of Peterborough, New Hampshire 03458. Their catalog of hard to find tools affects me like Pavlov's Bell affected his experimental dogs. I drool

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a little. I doubt if there is a live modeler around that won't covet something in their wish book. Write for the free catalog and tell 'em Model Builder sent ya!

We'll try to cover Three View sources to a small degree the next time we have an article in the "Peanut Gallery." ●

**R/C Cars . . . . Continued from page 51**  
the .156 or .175 in. diameter carburetor throat are about right.

Here in Southern California, Don Amedo just chewed everybody up at the 1973 series race with a 5 lb. car. At the next two races, he was wiped out because he had too much power for the weight he was carrying. There were so many people practicing for the last series race that the traction was super and his car worked great. The next two times out the traction was worse and he should have backed off either on fuel, carburetion, clutch or gearing . . . but he didn't want to lose performance, so . . .

One other thing to consider is adding weight by changing the flywheel. This may have a double effect. First the weight is increased, and second the increased flywheel inertia may decrease the intensity of the power pulsations. Eggshell - thin flywheels not only increase the power pulsations delivered to the rear wheels, but also decrease the reliability of the engine idle conditions. There is some reasonable flywheel inertia that is optimum. In other words don't try to get the flywheel too light.

From what I can see, exhaust throttles keep the crank case pressure up at all times. When the throttle (exhaust) is opened, the back pressure is dropped, the crankcase is filled and ready to go. In fact it appears that the greatest problem is getting too much power when the throttle is opened. There may be some benefits (I'm sure there are) to working on an exhaust baffle, or butterfly, which opens gradually.

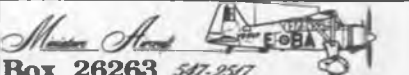
So far, I have only touched lightly on gear ratio. Gear ratio should obviously be changed if the engine peaks early on the various straight chutes on the track. You should consider a gearing

change when you have too much low speed power oversteer. A lower numerical ratio will decrease delivered torque to the ground. You may not be able to use the additional top end but at least the car will be more controllable. A belt drive which varies from a high numerical ratio (6:1 to, say 4:1) will be O.K. on a surface with good traction . . . but if it's slippery, there may be some problems.

One thing you must be careful of when using tall gearing, is clutch wear. In most road courses, 4.5:1 is a pretty good gear ratio. Clutch wear is reasonable, except with the super-power engines. A 4.25:1 ratio reduces torque delivery out of the hole and gives a little more top end, but the clutch will only normally last a couple of hours. Going to 4.0:1 on a road course can chew the clutch up in a few tanks of gas. For an oval car where the acceleration from low speed is minimal, a 4.0:1 ratio is O.K.

Seems as though what I've said so far is that on a sticky track, anything works (which isn't too often), and you just have the horsepower. But when traction is off, there are lots of little things you can do. All of them decrease performance on a good track but may improve performance on a poor or slippery track.

In last month's article on chassis adjustments, I neglected to mention wheel base. Longer wheel base has a tendency to give a car more directional stability, as long as the weight distribution and relative aerodynamic forces remain fixed. If you just push the front axle forward, there is more weight on the rear wheels and less on the front. So what happens? . . . More high speed oversteer, but a little better low speed stability. Dump a stock car body on this stretched chassis and you have something that is pretty good at low speed, but watch out as the speed picks up, because there is much less rear aerodynamic down force than with a sports car body. Short wheel bases, then, have more turning agility for tighter tracks. But to gain control, hard front



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tires and front axle caster may have to be used, particularly when traction is poor.

There are a few things which should be mentioned here which are not adjustments that can be made to a car, but rather, good racing practices that should be adhered to in order to make the car perform better or have a better chance of winning. Most important, come prepared to race whatever you do have. Be sure the radio batteries are good, all nuts, etc. tightened, have extra plugs and . . . I think you know all those other little things.

Keep your car clean so that you can tell when something is becoming worn

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out or has failed. Cleaning the car usually allows you to inspect it for loose parts too. Normally it is best to clean the fuel filter about once or twice per month during racing season and also check the fuel line for cracks, etc. (I lost a race because I didn't do that.) Last month, I had several car chassis pictured. Did you notice that they were all pretty clean? Top drivers usually have clean cars.

Wheel balancing seems to help a noticeable amount, particularly on the front. Balancing helps the tires wear smoothly. If they are not balanced, the tires seem to wear very erratically. On the front end, the bouncing caused by imbalance and out of roundness reduces tire side force capability. The rear tires are usually softer and a lower density material. Imbalance is usually caused by the wheel being out of round rather than rubber density variations as in the front tires. The softness of the tire allows it to accept a certain amount of imbalance

before it becomes a problem. But remember, it is always better to balance all of the tires.

Some of the servo linkage setups are important too. If a high speed idle is used, or you have an exhaust throttle, it is necessary to use a rear axle brake. The clutch bell cannot take the heat input from both the clutch and the brake. With a high speed idle the brake should be set to release quite quickly. Clutch wear is a problem, and could be much worse if there is too much overlap of brake and throttle (brake coming on while engine speed is still up). With a low idle speed there can be a little more motion for brake and throttle overlap. The larger motion may mean a little more controllability in the braking.

I personally like to use fairly long servo motions on both the throttle and the steering. Sharp small radius turns or long sweeping turns take full on or full off throttle and steering. But for those intermediate turns, you need partial

steering and full throttle or partial throttle and full steering lock. Partial motion positions can be obtained more accurately if the servo motion is large. It is most important not to make changes too rapidly (unless the track is super sticky). Slower steering and throttle changes neither upset the traction balance nor cause the tires to lose traction.

Well that finishes all the R/C car adjustments that come to mind. If I think of any more I don't believe I'll admit to it. I'll bet you didn't realize how many adjustments there really are. On the other hand, maybe you have one or two more! Anyhow, next month all the adjustments and their effects will be summarized and tabulated, and then a computer program to optimize the adjustments will be presented . . . See you next month. ●

**Chopper . . . Continued from page 25**

blades exactly as shown on the plans and instructions, a higher degree of stability may be achieved by adding additional weight in each of the blade tips. Individual blade C.G. will move outward and the increased mass will produce a higher stability factor (rigidity in space). Mr. Kavan recommends using the largest lead ball (included in kit) in each blade tip. Drill appropriate hole as indicated in sketch, pound lead ball into the hole and secure with epoxy. The surface may be refinished to shape with micro-balloons and covered.

Caution: the large balls weigh approximately 20 to 25 grams and are significantly large enough to improve stability. Weights of 40 to 50 grams are the *maximum recommended*, although 80 grams are in limited use. The important thing is . . . the greater the weight, the greater the danger of blade failure or subsequent damage to persons or property if struck by a thrown blade. At lift-off rpm, the forces are fantastic!! Getting hit with one of these weighted blades would be like getting hit with a 100 lb. sack of cement . . . it would probably go right through anything it hits (like a bullet!).



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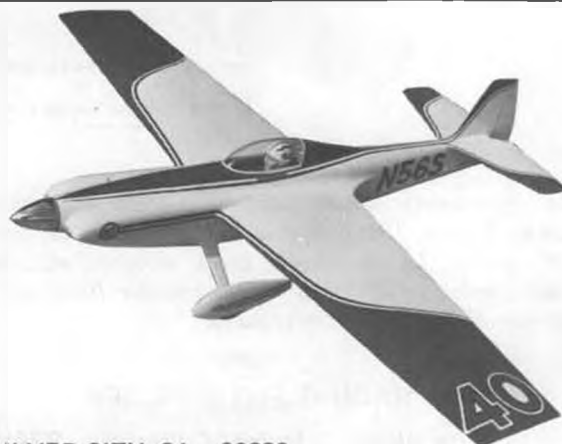


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So... keep it reasonable *and* safe. Make sure the mechanical parts in the head are in top condition at all times! (This applies to the "nut on the stick" too! Ha!)

Next month, we'll try to come up with some words of wisdom that answer the question, "Now that I've finished the 'dern thing, how do I get it airborne?" We've had many questions from new chopper pilots requesting information on radio installations, stick configurations, preflight and initial check-out procedures, tethering, training gear and how do you learn to fly? Although most

kit manufacturers include basic flying instructions, perhaps it would be appropriate to include monthly information in this column covering the areas of preflight and learning to fly. More later...

A considerable amount of reader response indicates a need for names, addresses and special help from "local-area chopper pilots". To this end, Model Builder requests you complete the form below and return it for filing in our offices. We anticipate using the names to determine R/C helicopter activity... to find out who can be contacted (by beginners) for special skills, etc... and

to bring to light interest in club activities and other special interests within the hobby. Such a listing will be made available to all chopper pilots requesting same. And speaking of club activity, high interest is being shown in the formation of a Southern California R/C-Helicopter Association, particularly after having been offered an exclusive flying site in the L.A. area, complete with paved heli-pads and *wide, wide* open spaces for flying! Anyone interested? Let's get those data cards in the mail today! "Nuff said for this month, BCNU soon! ●

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Type model or kit: \_\_\_\_\_

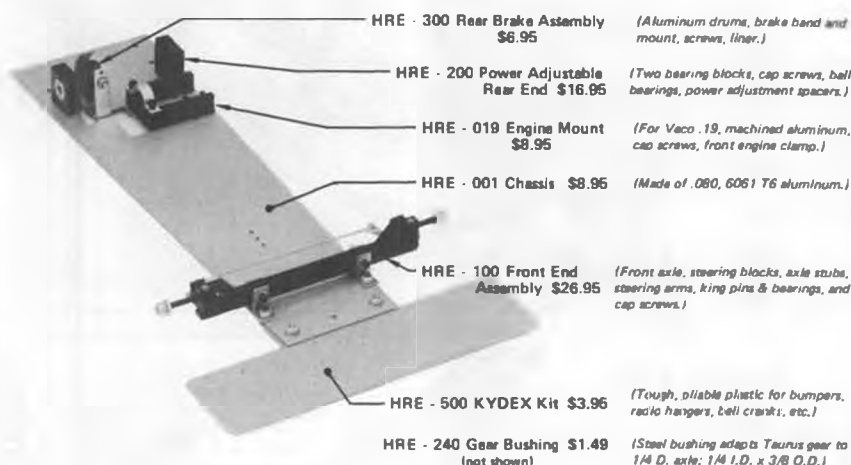
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#### R/C Soaring . . . Continued from page 44

Obviously, a model built to the 1/5 scale would offer the greatest soaring potential . . . 'cause it could better carry a reasonable weight for its area . . . and size and efficiency kinda go together. However, the 1/6 scale could be ideal for the small field activity discussed in the January 1974 column . . . if care was taken to keep the weight down to the 2-1/2 pound-or-less range. But either size . . . or others . . . the Super-Javelot should be a real crowd pleaser and attract much interest and admiration wherever shown and flown. And it would be a most unusual and original model subject to create.

The records maintained by the Soaring Society of America indicate that there are no Super-Javelots registered in the United States . . . at least, not as of a couple of years ago. Could make it rough to develop scale presentation material, were it not for your local librarian. Fortunately, "Jane's All the World's Aircraft, 1962-1963," as well as earlier and subsequent editions, contain a generous amount of data that could impress most any judge. Like maybe some of the following regarding the wing, as quoted therefrom:

"Incidence 4°. Single-spar wood structure, covered with wood forward of spar and with fabric aft of spar.

All wood ailerons in two parts on each wing, operated differentially. Perforated airbrakes above and below each wing, of wooden construction. Small end plate 'bumpers.' Total area of ailerons 1.44 m<sup>2</sup> (15.5 sq. ft.)."

Now how could he argue . . . or prove you wrong? Besides, it's all true and readily available . . . and more . . . from a recognized source. Incidentally, the three-view drawings, as well as the photos of the Super-Javelot, are direct from Wassmer Aviation, Issoire, France. Accurate and official. What else?

A scientific eyeball analysis . . . it's the eyeballs that are scientific, not the analysis . . . indicates that the WA-22 Super-Javelot is well-suited to reproduction as an R/C model. The stabilizer area may be a bit marginal, but a quick numbers exercise using the formulae and parameters suggested in the December 1973 column will indicate variations that are needed . . . and how much . . . if any.

Model construction techniques for the Super-Javelot will vary with individual preferences, but a built-up fuselage, using 3/16" square longerons and uprights for the internal structure looks promising. Would be a shame to not highlight the classic lines of the aft fuselage with fabric . . . or a modern counterpart . . . pulled taut over an open framework.

The smooth contours of the forward fuselage can be duplicated fairly easily utilizing soft balsa blocks and sheet stock carved to the appropriate shape. The weight will be needed for proper CG position, so why not have it come from "functional ballast" instead of giving old dumb lead a free airplane ride? Wheel installation can be solved without much problem by using the technique shown for the "Yankee Gull" in the March '72 issue. And any scale model looks ridiculous without a landing wheel . . . assuming the prototype had one.

The cockpit cover needn't discourage the scratch builder. The simple way is to cut an appropriate section from one of the large bubble canopies that are commercially available. However, if so inclined, the builder can readily create his own unit, and it will be quite comparable in quality to the store-bought items.

The first step in "rolling your own" canopy is to carve a balsa form, in place on the model, to the proper outline and contour. Remove from the model and add 1/4" sheet balsa to the front, bottom, and rear surfaces which extends the form length and depth to provide material for final trim and clean-up on the finished canopy. Do not apply ANY kind of surface finish, sealer, or otherwise to the form. Just sand smooth, and then cover the form with a clean, soft cloth . . . such as a cotton

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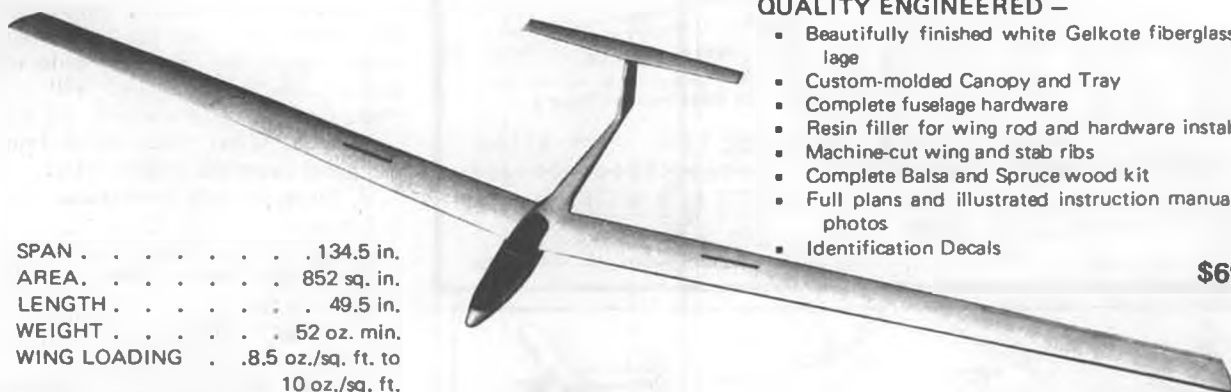
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handkerchief. This should be stapled to the under surface and ends.

Next, mount the form by some device . . . such as a couple of large eyebolts screwed into the bottom (not through the hankie, Dummy) . . . so that it can be secured to a stable base in some manner or other. Most hobby shops, catalog houses, or local craft and plastic stores can supply acetate or similar thermoplastic sheet. About 0.02 is the right thickness. From here on, it's fun and games. Staple an oversize hunk of plastic sheet between two lengths of yardstick or similar "handles," put it into a 300° oven for a minute or two until the plastic gets limp and pliable, remove and use the handles to pull the plastic down over the mounted form. A pair of gloves will be appreciated during this routine long after the echoes of anguish have quietened. Besides, scorched flesh can stink up a whole kitchen.

A not-so-good attempt can be reheated and worked again. A little experimentation with heat and time will be required. There are no set rules, except that of working quickly once the plastic is out of the oven and headed for the form. And don't put the form in the oven . . . and don't ask how this advice was developed. Apparently, some builders use a Monokote-type heat gun instead of the oven. Worth trying.

This canopy thing may take several attempts before an acceptable item is fabricated, so enough material should be available to make 3 or 4 units. Remember that you'll need at least one for the next show-and-tell bit at your club meeting. The whole thing is easy, but make it sound hard so you'll be an expert in the eyes of those who haven't tried it. Like most of 'em.

No reason that the wing can't be conventional in structure. The tapered


plan form should present no problems. Cut plywood templates for the ribs at each "junction," then sandwich the required number of balsa rib blanks between two plywood templates. Carve and sand the balsa sandwich to shape, remove, and zap . . . tapered ribs. Repeat as necessary. It really works.

Use spruce or similar hardwood for wing spars. It'll take a lot of sweat out of launches in rough weather, and at no weight penalty. When using spruce, make the component one standard size smaller than would normally be specified with balsa. For example, use 3/16 square spruce in lieu of 1/4 square balsa.

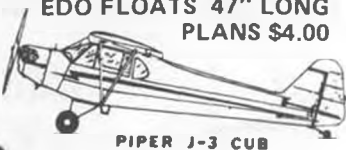


"Geez, it flies . . . . . let's find a publisher."


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Weight will be about the same, but with maybe something like twice the strength.

A temptation to fabricate tail surfaces for the Super-Javelot from sheet stock should be fought to standstill. Such structure will only cause ballast problems due to the short nose long tail moment ratio. A built-up, balsa frame is the only way to go.

Incidentally, plan on mounting the towhook off to one side or the other of the fuselage centerline. The landing wheel interferes with proper centerline position of the hook. The sailplane will never know it's being launched slightly

sidesaddled. But if the tow hook is mounted either in front of or behind the wheel . . . just to keep it on the fuselage centerline . . . launches will be disappointingly shallow or very squirrelly, respectively. And elevator control can't make up for the built-in problem.

Decorative trim should be applied for realism. Ailerons and spoilers can be simulated quite easily with narrow . . . say, 1/16 wide . . . trim tape or strips of plastic covering material. Use black. Looks great when carefully applied top and bottom. Use a ruler . . . keep it straight.

Okay, men. Who'll be the first? ●

**Free Flight . . . Continued from page 39**  
just a simple rubber band retainer which is tensioned enough to allow release with a backwards tug on the line. The rubber band is held in place on the fuselage by a wire loop.

Although there have been substantial developments in A/2 glider towhooks, including the complex Russian Circular towhook design, the basic requirements in hook design remain unchanged. A hook must be adjustable and allow for any control which the flyer will give to it. From that point on, it's really the model, the flyer and the air that determines winners or also-rans. Try fiddling with your present hook design . . .

chances are that just a little work will improve its performance for you.

#### SOME OTHER THOUGHTS

Along the same line, an A/2 can be made to perform better by trying different kinds of towings and towlines. For instance; try two differently equipped towreels at your next flying session. The first one should be equipped with a no-stretch towline and a large diameter, thick ring for calm air and better thermal "feel." This provides a never-fail release system. The other reel should be equipped with stretchy towline, such as monofilament, and a small, thin ring. This combination is ideal for absorbing windy towloads and saving wings and

things. Thermal "feel" isn't as important during windy weather, and the lift is more obvious anyway.

#### FINAL COMMENTS ON NORDICS . . . CALM AIR DESIGNS AND FLIGHT

In the quest for the ultimate calm-air A/2 design, there have been many theories advanced to attain this goal. At this point, there have been some agreements among the "experts" as to what to look for. Here they are:

1. Anti-fall-off towhook.
2. Light wings. Not over 2 ounces per panel complete (less wire).
3. Small fin area for thermal seeking trim.
4. Rearward center of gravity (57-62%). Good dead air time of 2 min. 50 sec., plus.
5. High lift airfoil.
6. Good tow stability.
7. Fast, no spiral D.T. . . . for those 3:02 D.T.'s!

Super stall recovery is not required or useful for several reasons:

1. This type of setup is usually achieved by long TMA/high lift stab combination, which can raise effective decalage to over 7 degrees, thereby killing dead air time (too much induced drag because the wing is forced to fly beyond its optimum lift/drag coefficient).

2. In light lift conditions, it is usually best to "grease" the ship off the line, barely disturbing the glide, so stall recovery isn't of vital importance.

3. More "bounce" for better thermal seeking and centering power. It may sound like a paradox to say that the "firmest" anti-fall-off towhook is required, when the need to float the model off the line is important, but if you can feel a puff of lift, or see another model in good air in time to build up speed to max altitude at desired launch release point, the rest is easy. Slow down until your ship appears to be hanging "still" overhead, turn until you're facing downwind and whip the reel straight back at your launcher like a tennis serve. This should yield a no-bounce release . . . but it does take practice.

In conclusion, it's important to realize that no one has yet designed the perfect three minute dead-air A/2, but the above recommendations should prove useful for a starting point in giving it a try. The last thing to do is to find a contest where there is dead air. I've given up trying, but since everyone is aiming at designing a ship for it, it must be out there someplace.

#### FEBRUARY MYSTERY MODEL

Marc Tachett, Anaheim, California, was the first reader to mail in the correct answer to the Mystery Model contest for February. He, and many others soon after, identified the model as Stan Hill's Amazon. It was interesting to note that nearly every answer to February's puzz-



ler came from a modeler who had actually built the model... either from the Berkeley kit or, as in Marc's case, from plans sent to him by Stan Hill.

This one turned out to be a bit of a fooler, in that everyone guessed the airplane correctly, but only a few seemed to know the designer! To quote part of a letter from someone who ought to know...

"I don't normally respond to 'Mystery Model' type items, but I really don't think that I have any choice on your February item since the Amazon shown is my wife Sandy's design."

The letter, of course, is from Stan Hill. Stan goes on to point out that the reputation of the design suffered from Berkeley's haphazard kit work, which brought about a massive error in the stab incidence. Par for the course...

As it takes the magazine at least a week longer to get to readers on the east coast than it does to those in Southern California, we've decided to put a handicap system into effect. Starting with this month's Mystery Model, answers coming from local readers will have an 8 day handicap, from Postal Zone 1 a 7 day handicap, from Zone 2 a 6 day handicap, Zone 3 a 5 day handicap, and so on down to 0 (zero) handicap for Zone 8. This should give everyone an equal shot at winning. So, have at it, Easterners!

#### FREE FLIGHTERS WE ALL HAVE KNOWN

So far, I've tried to include a little modelling "humor" in each column and until forced to quit (by popular demand), I would like to continue. This month's attempt follows the great American tradition of classifying, identifying, and labeling everything... no matter how big, no matter how small. We do it to insects, animals, fishes in the sea and out, words, models, engines, etc. etc. ad nauseum. Unfortunately, no one has ever tried to do a complete categorization of that most lovable of creatures: The Free Flighter. Here is Model Builder's attempt to fill this much maligned void. The list is supplied in alphabetical order, by type. An attempt has been made to state typical characteristics, as well as sub-types and observable auditory cries.

#### 1. The Craftsman (Buildibus Insanitus):

Has been observed building models for years. Even boasts of the time one of his creations flew, which happened during the memory of no one at the site. Needless to say, the model made a perfect max and was put away for safe keeping. Occasionally, the Craftsman is seen on the field with a new creation in hand, but not-quite-ready-to-fly. Auditory cry: "My new one's even better."

Sub-types: The Builder, The Perfectionist, The Measurer.

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#### 2. The Flyer (Maximus Idiocus):

Has been observed with models which appear to have been built before 1960 and flown in every contest since then... and have. Notable characteristics are multiple colored models... usually 41 or more shades of red. Holland Hornet or K & B Greenhead engines and eyedropper tanks or pneumatic timers. Also sports a series of sliced scars on hands and arms. Is usually found waiting in line near a large table or tent with a "Timer" sign posted in front of it. Auditory cry: "I've thought of building a new model."

Sub-types: The Expert, The Rules Interpreter, The Old-Timer.

#### 3. The Gadgeteer: (Fiddlimus Whirrand Clickus):

Has been seen with the latest in sophisticated equipment in hand. If anything can be automated, it has been. Can spend hours moving from modeler to modeler, comparing his equipment to others at the site. Has a Rossi with 1975 stamped on its side. Usually has a larger head than is normal for others on the field and is characterized by a very neat and clean appearance.

Auditory cry: "Wait'll you see the next one."

Sub-types: The Radio Controller, The Millionaire, The Other Guy.

#### 4. The Inventor: (Creatimus Non-Flyimus):

Has been seen with a stable of out-of-the ordinary models in hand. He goes to every meet with at least one new and unusual design. He has also been found test-flying these creations... usually from within a large crowd, much to their dismay. He is the nemesis of the CeeDee, who loathes his presence.

Auditory cry: "My next one is a

canard-pusher, twin-boom, twin-engined, 1/2A FAI Power model."

Sub-types: The Creator, The Cogitator, The Enigma.

#### 5. The Ideal Contestant (Nicemus Guyamus):

Is usually seen at the site before anyone else; assists others, especially the CeeDee. Is also the last one seen on the site, assisting with cleanup. He flies models about half of the time, and is seen helping younger contestants fly. Is never heard complaining, prefers to compliment instead. Some-

### Index to Advertisers

Cal Aero-Model .....	66
Cloudbuster Venture .....	54
Craft-Air .....	55, 62
Dumas Products, Inc. ....	2nd Cover
Flyline Models .....	61
Carl Goldberg Models, Inc. ....	63
W. C. Hannan .....	64
Hartman Fiberglass R/C .....	66
Hobby Capitol USA .....	1
HRE, Inc. ....	68
K & B Mfg. ....	52
Kim-Kraft .....	60
Kraft Systems .....	57
Marlow Engineering .....	60
Micro Models .....	62
Miniature Aircraft .....	62
Model Builder Products .....	56
Walt Mooney (Peanuts) .....	70
Sid Morgan (Vintage Plans) .....	70
Model Rectifier Corp. (MRC). 4th Cover	
M & S Ltd. ....	58
Peck-Polymers .....	59
Royal Products Corp. ....	3rd Cover
Sig Mfg. Co. ....	59
Sonic-Tronics Inc. ....	61
Jack Stafford Models .....	67
Sterling Models, Inc. ....	53, 54, 55
Su-Pr-Line Products .....	65
Tatone Products .....	59
Victor Model Products .....	64
Vortex Model Engineering .....	58
Williams Brothers .....	67
Windspiel Models .....	69

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times is seen with a trophy at the  
end of the day.

Auditory cry: "What can I do to  
help."

Sub-types: The CeeDee, The Offi-  
cial, The Sponsor.

6. The Trophy Hound (Glitterimus  
Doggicus):

Is seen on the field with the first  
timer of the day. Continues flying  
until the contest is over. Enters in  
every event, places in the top three  
of all events entered . . . or else.  
Never quite gets around to timing at  
a time-one-fly-one contest . . . and  
has excuses for same. Drives a large  
vehicle to accommodate his models  
and his trophies. Puts evil smelling  
fluid into most of his models.

Auditory cry: "Timer!"

Sub-types: The Complainer, The Mo-  
tor-Cycle Modeler, The Loophole  
Finder.

Well, there they are. Hopefully, you  
will be able to add your own types  
and descriptions to those suggested  
above. Remember no single person ever  
categorized any other scientific exer-  
cise, nor can one mind be completely  
responsible for categorizing the crea-  
tures on the free flight field. Others  
are needed. Suggestions solicited. And  
before you get the wrong idea, the  
above are not intended as value judg-  
ments or criticisms; simply exaggerated  
observations in their extreme.

See you next month.

**Workbench . . . Continued from page 5**

be many indoor and outdoor exhibitions  
of R/C planes, helicopters, cars, boats  
and gliders.

\* \* \*

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cooperation from the major model clubs  
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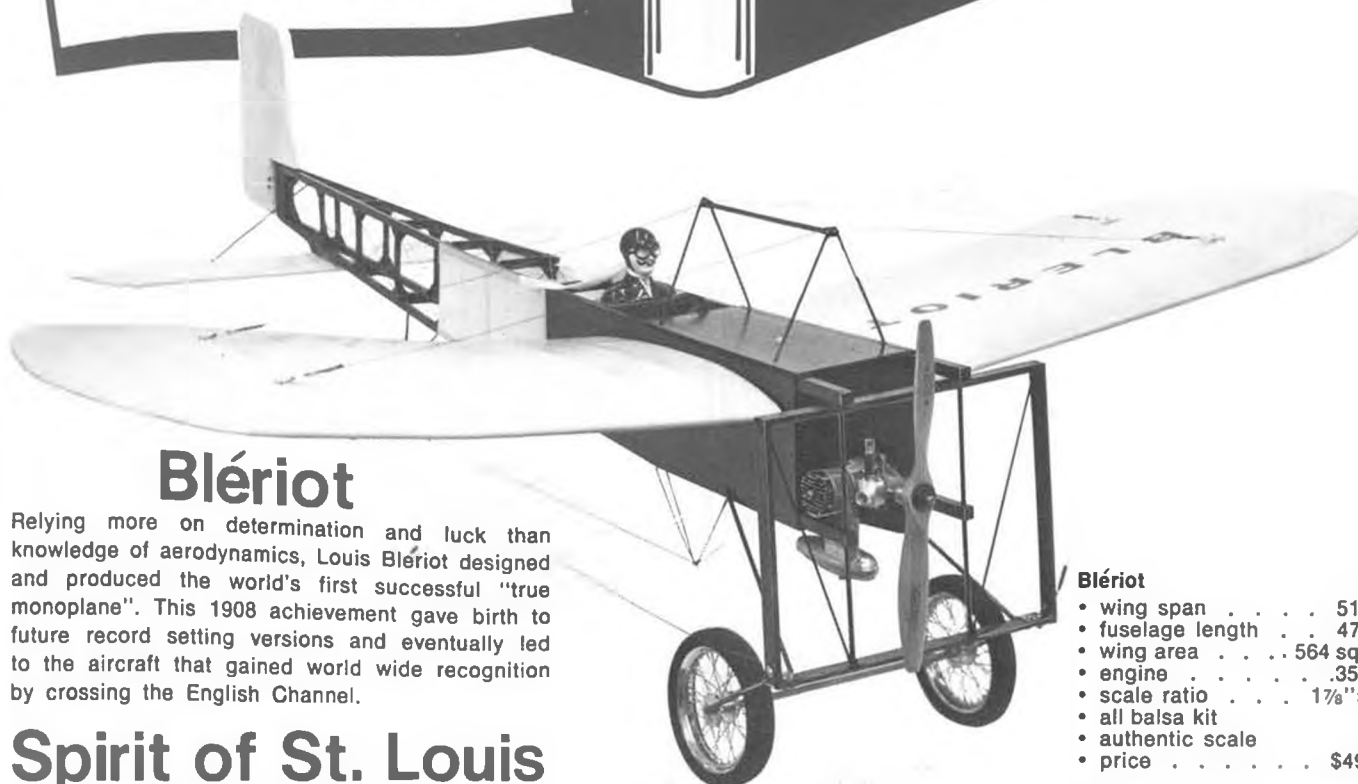
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HELP!

We're by no means involved in mak-  
ing a large collection of old engines, but  
there are a few particular ones we'd  
like to get a hold of in order to build up  
a display for our editorial office. If you  
have, or know of some clean and com-  
plete oldies, let us hear from you. We're  
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Atom and a Brown Junior, Model B,  
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- authentic scale
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