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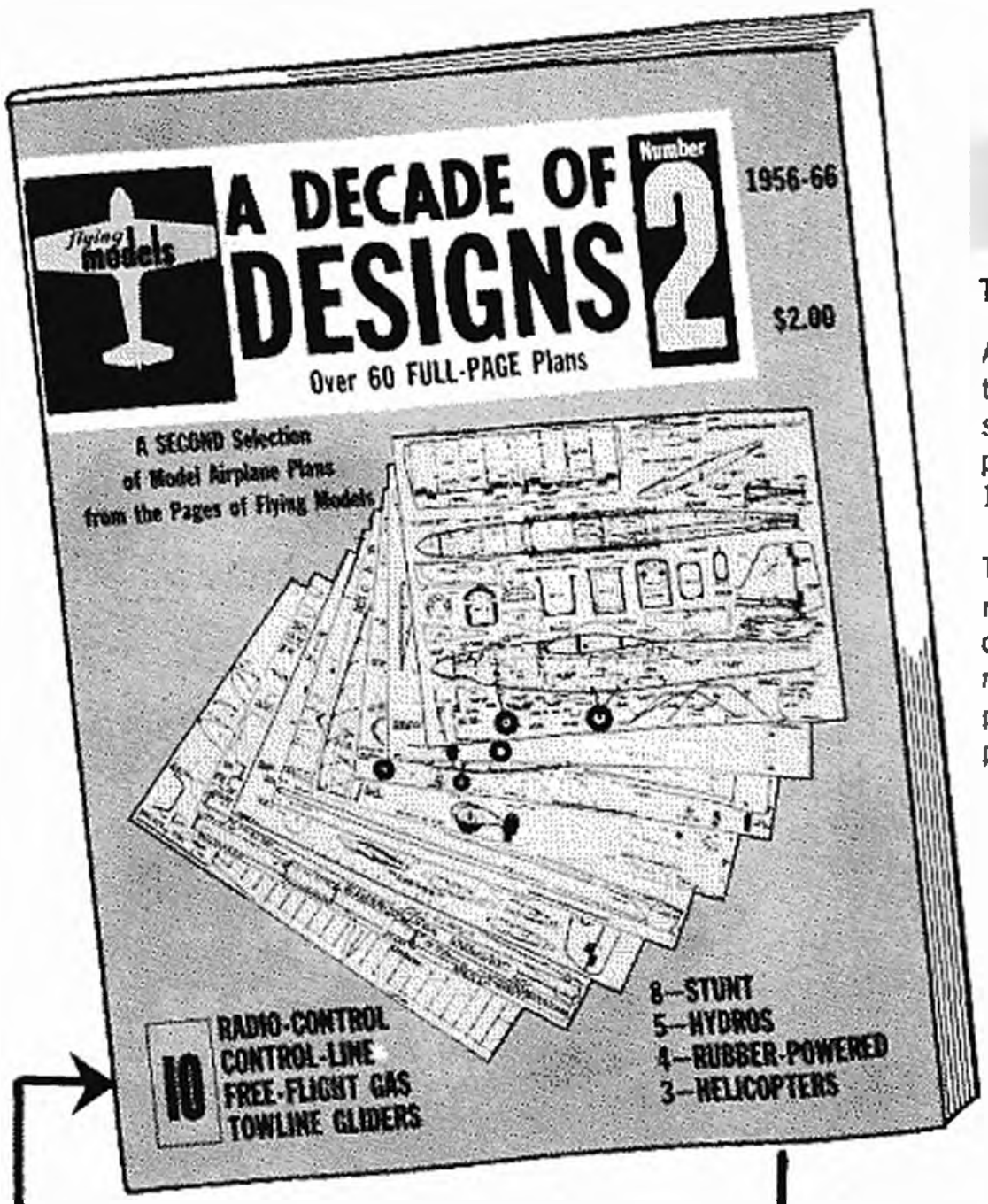

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The Model Builder's How-To-Do-It Magazine

Number 365

July, 1967

CONTENTS:

Front Cover: Jayanne Mays displays the handiwork of Byron Trent. His R/C Goodyear, with a beautiful finish. "Gypsy Six." Photo taken in Florida by Chuck Barel. 4" x 5" transparency.

JOSEPH J. HARDIE
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ED WHALLEY — Modeling News
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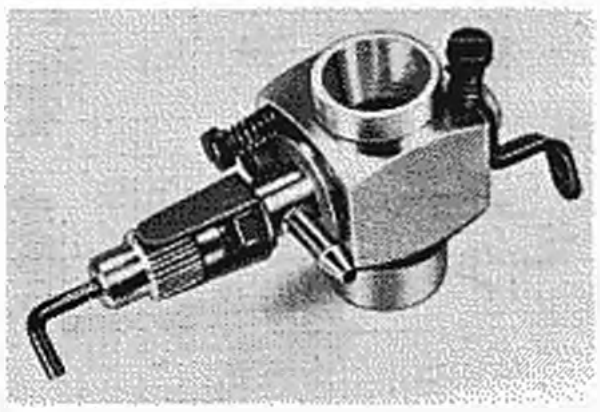

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(Continued on Page 48)

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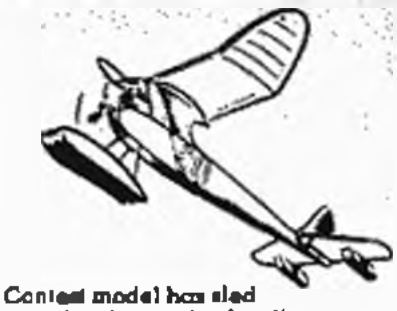

Contest model has sled type float for quick take off

Rubber model floats are small and usually of rectangular configuration

Three float gear type

ALL WET . .

Free-Flights and Ukies have their share of fun on floats:

♦What of Controline aircraft on floats? While much has been printed here of late, regarding Radio Seaplanes, little has been mentioned of "ukie" possibilities, and for that matter, Free-Flight.

If you hanker to try a Controline ship on floats, go ahead. It can be a ball. While a few ships have been built, both twin float and flying boats, and flown off the water, the sport never achieved as much popularity as it should have. With proper power and design, there is no reason you cannot shoot good touch and goes, and indeed, the flyers that have tried it, have a real good time in this field.

The late Jim Walker should get much of the credit for experimental float flying with his famed "Fireball." He showed up in the Long Island area about 20 years ago, and pressed a king sized mud puddle into use, right on the site of the present "Mets" ball stadium.

It was most interesting to see the fine degree of control he maintained on this aircraft, ladened as it was with full-length twin pontoons. If memory serves us, he had only nominal power in the aircraft, about a .29 or .35 at best, for the 36" aircraft. It was equipped with engine speed, ignition system, and not lightweight by any means. Unlike other ukie types, it was not necessary to have a helper or stooge hold the aircraft at the point of launch. Jim mearly started the engine, and let the "Fireball" taxi out on its own. The line drag in the water swung the aircraft into its circular course, and when lines were tight, Jim poured on the power.

The "Fireball" was a sight to behold, lifting off and touching down in a cloud of spray, or hovering just inches off the water. All the action remains in full view of the spectators, not always the case with R/C and Free-Flight.

A worry to conquer: Flying Controline Seaplanes means wet controline wire. Wet wire tends to rust. Rusted wire is weak wire, and weak wire is not very fair to innocent spectators which will surely collect around you. If you are flying on salt water, the rusting action will be immediate and severe.

All is not lost however. Proper line care will extend the life of the wire considerably, as long as you are aware of the need. What the proper line care is exactly, I do not know either, not having fooled too much with this part of the hobby. I would venture a guess that rinsing off the lines, rubbing down with a waxey or oily rag, having the lines plated or lacquered etc. will help. Also, go to a slightly heavier wire gauge, inspect them before each flying session, air them out in the yard immediately after returning home and replace them more often. Above all, pull test the lines, and don't spare the muscle. Better you snap a defective line than face a lawsuit.

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(Continued on Page 48)

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TOP WING
Last 2 Ribs Are Placed After Tip is Sanded To Shape

Cowling Pattern Make 4 1" Thick
3/32 Ply Firewall A
B 3/32 Ply
Nose Cowl Pattern 1/32 Ply
Capped With 1/32 Ply Scrap
4-40 Nylon Sheer Bolts
3/32 Ply

11/16 Prop.
Balsa Block Cut To Fit
Flap Access Hole In Top
Filled With Filler & Sanded
A
B
1/32 Ply
Note: Use a Generous Amount of Epoxy On all Nose Joints
Plank Over Ply & Sand To Fit With 1/16 Balsa
Windshield To Here
Short Stringers Here On Opposite Side
(F1) 3/32 Ply
Spreader A
3/32 Stk. Top & Bottom
Spreader B
3/32 Balsa (F-3)
3/32 Balsa (F-4)
Beechcraft
1/16 Stk.
3/32 Stk.
Rounded To Fit
Mylar Hinges Doubled
1/4 Dowel
Balsa Block
Torsion Bar
1/32 Ply 3 Sections
(F-2) 3/32 Ply
Color Line
Air Escape Hole
Triangle Hardwood Brace
1/4 Balsa Rounded
Balsa Block In 4 Sections
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3/16 Balsa Doubler Sanded For Fillet
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Tip No. 2 4 Reqd
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Bevel
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by BRYCE PETERSEN
Span 52 1/2 Area 393 3/4 sq in.

Ahead of its time in design and in line. The Staggerwing "Beechcraft" makes a spectacular scale R/C design, capable of excellent performance.

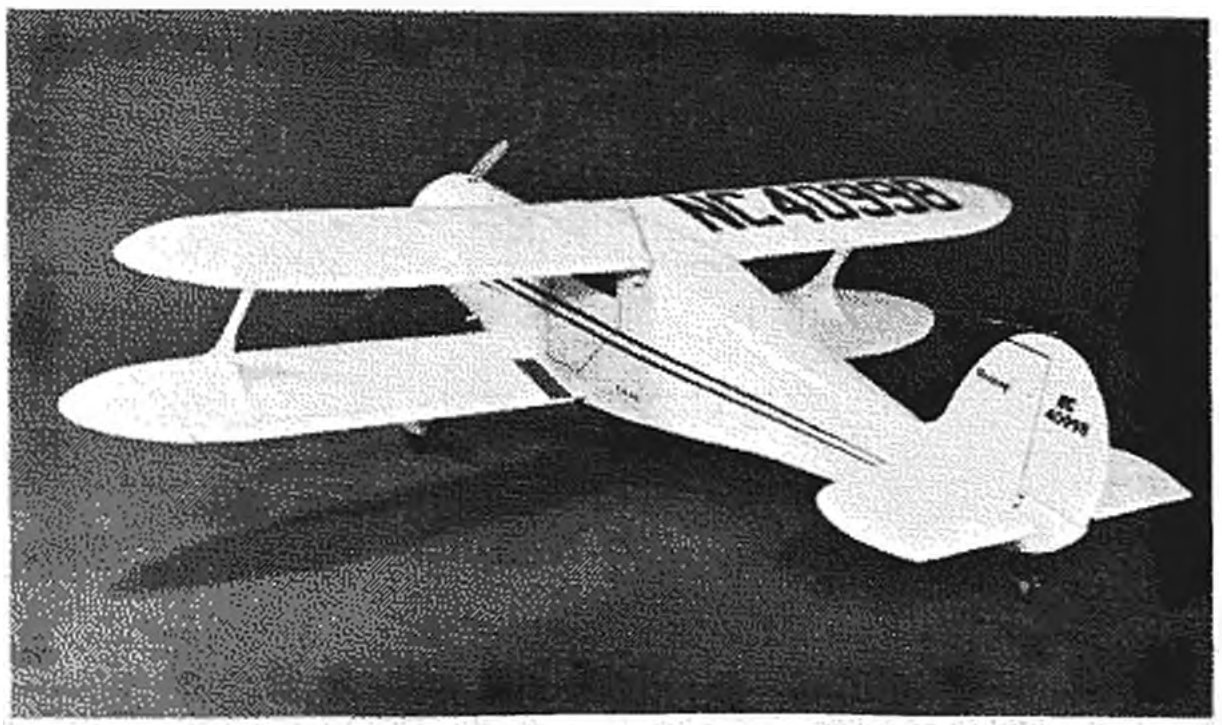
Bryce Petersen's

Staggerwing "BEECHCRAFT"

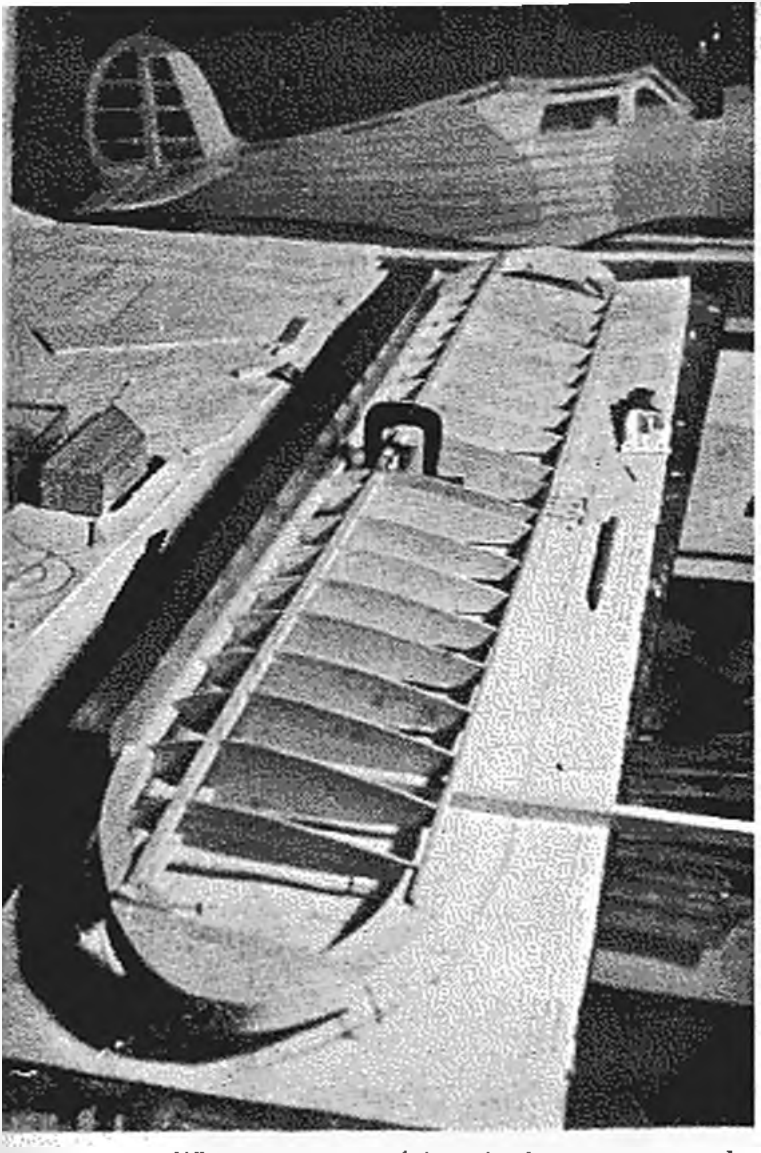
FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

♦ My enthusiasm for this famous airplane is so great that I should have someone else write this article. In my opinion, it is the best example of what imagination can do in aircraft design to make an airplane a classic. Even to this day the "Staggerwing" holds its own, parked next to the latest designs, and will run rings around most of them. It is praised by everyone except those who had a hard time learning to fly it. Its ground handling was poor, and it would stall around 60 m.p.h. in a most unusual way that got many a beginner in trouble, however it would outrun a DC-3 without trying and this made it number 1 for most pilots.

The negative staggerwing concept was designed to add safety; it was intended to make it spinproof and improve the landing ability. (When the bottom wing stalls the top wing is still



A classic from every angle. Aerodynamically it is a good acrobatic ship, but real prototype was not stressed for violent maneuvers.



Wing structure, plain, simple, strong, sturdy.

Appealing in line from every angle. This late '30 era bipe is a classic, still to be seen at many fields. Well remembered, loved by pilots.

"BEECHCRAFT"

. . . continued . . .

flying, giving that little extra stability on the final.) This was confusing to many pilots and power-on landings was the standard operative procedure.

It was clear from the beginning that the Staggerwing "Beechcraft" was built as an executive-type company airplane and Mr. Beech went all out for performance and clean design. It also had the distinction of being the first commercially available airplane with retractable gear.

CONSTRUCTION

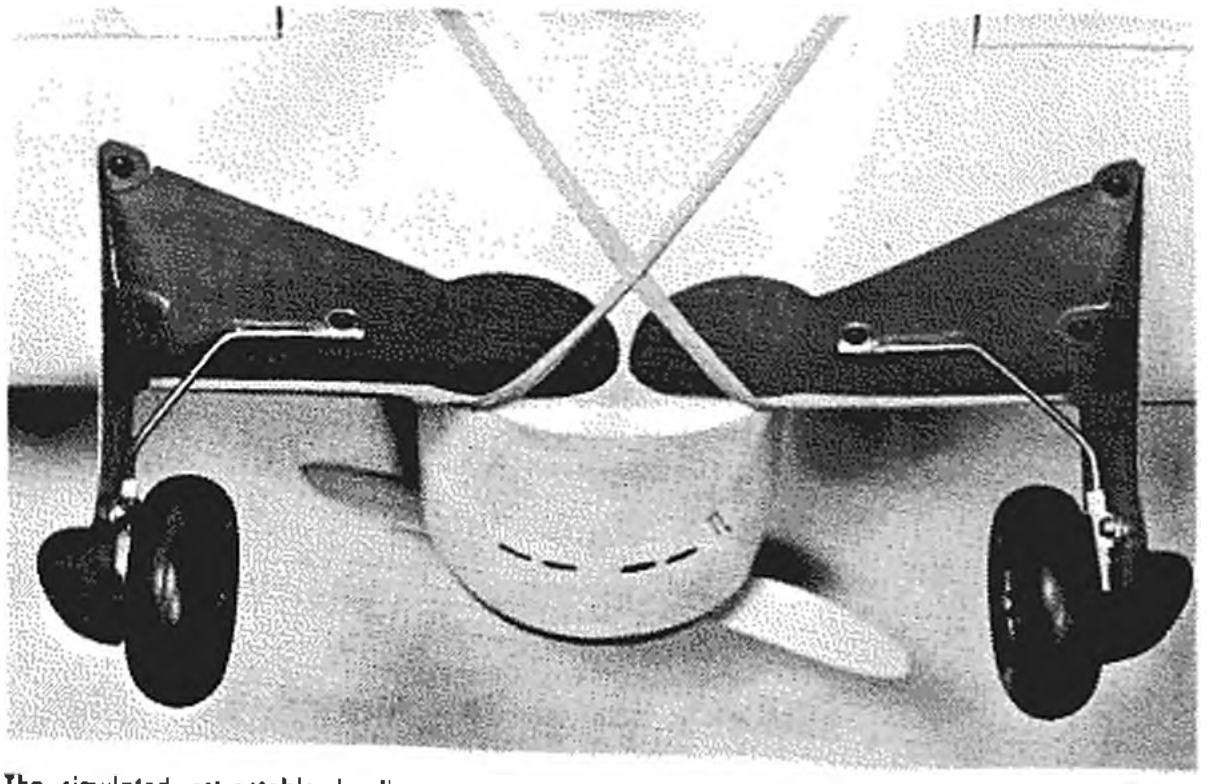
Deviation from Scale: These plans were drawn from factory drawings and the changes are: the stab has been enlarged 10% for added stability. The wing section was also increased to offer maximum lift with added drag for stability and grooveness.

This model has been designed to provide excellent flight performance and at the same time, keep the appearance of the real thing.

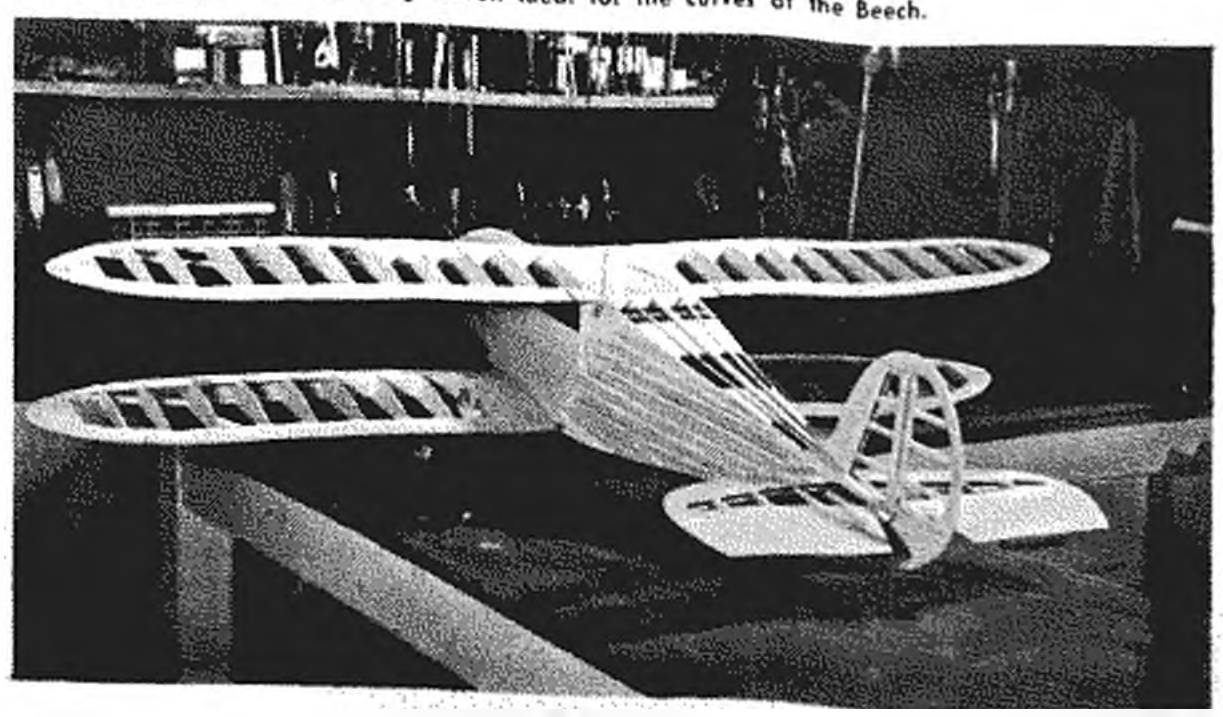
Fuselage: In order to achieve the difficult curves involved, a unique system was used to jig the fuselage. It is simple and positive, and I recommend you follow this system.

1. Cut out the plywood front section (3/16" plywood) and the 3/16" balsa rear sections, and when joining them together, elevate the center front to back 1/4" so a slight curve exists in both halves. When dry, join halves together with the servo mounting board and let this dry thoroughly (See Photo No. 1). Next, the firewall is epoxied in place along with the lower 1/4" thick balsa sections, again adding a slight inward angle (See Photo No. 2).

(Continued on Page 27)



The simulated retractable landing gear. You might want to give thought to retracting it.



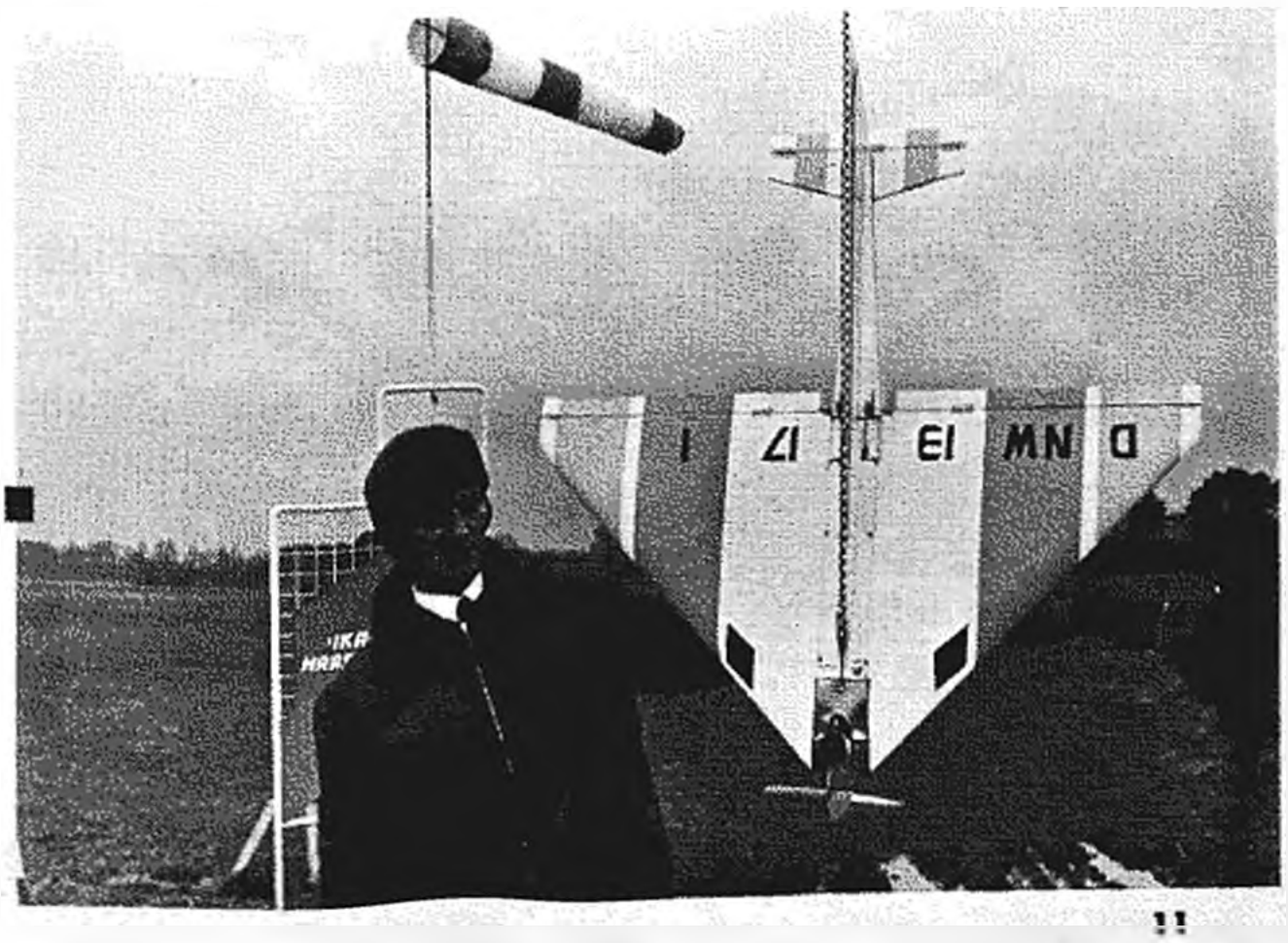
Just about ready for the covering. Silron ideal for the curves of the Beech.

Don't just stand there, deep knee bends promote good health. Hans de Zwart grabbed this shot of incoming Bosch aircraft which has the balloon stick remainder in tow, hung on the antenna. Be careful!!! Note spectator control for this event. Buzzing crowds never clever.

Dale Willoughby's

R.C. Channel Chatter...

Fritz Bosch of Germany and a very unusual and beautifully rendered speed design. Hitting 225 km/hr. against the wind and 275 km on downwind leg. It really moves is word. Photo by Hans de Zwart.



♦ In the Classified Ads section of Brand X magazine, the following ad appeared which set me to thinking about the change in the concept of R/C modeling over the past 10 years. It read:

> WANTED—Modeler to build R/C planes for personal use. Will pay top price for quality workmanship. Contact

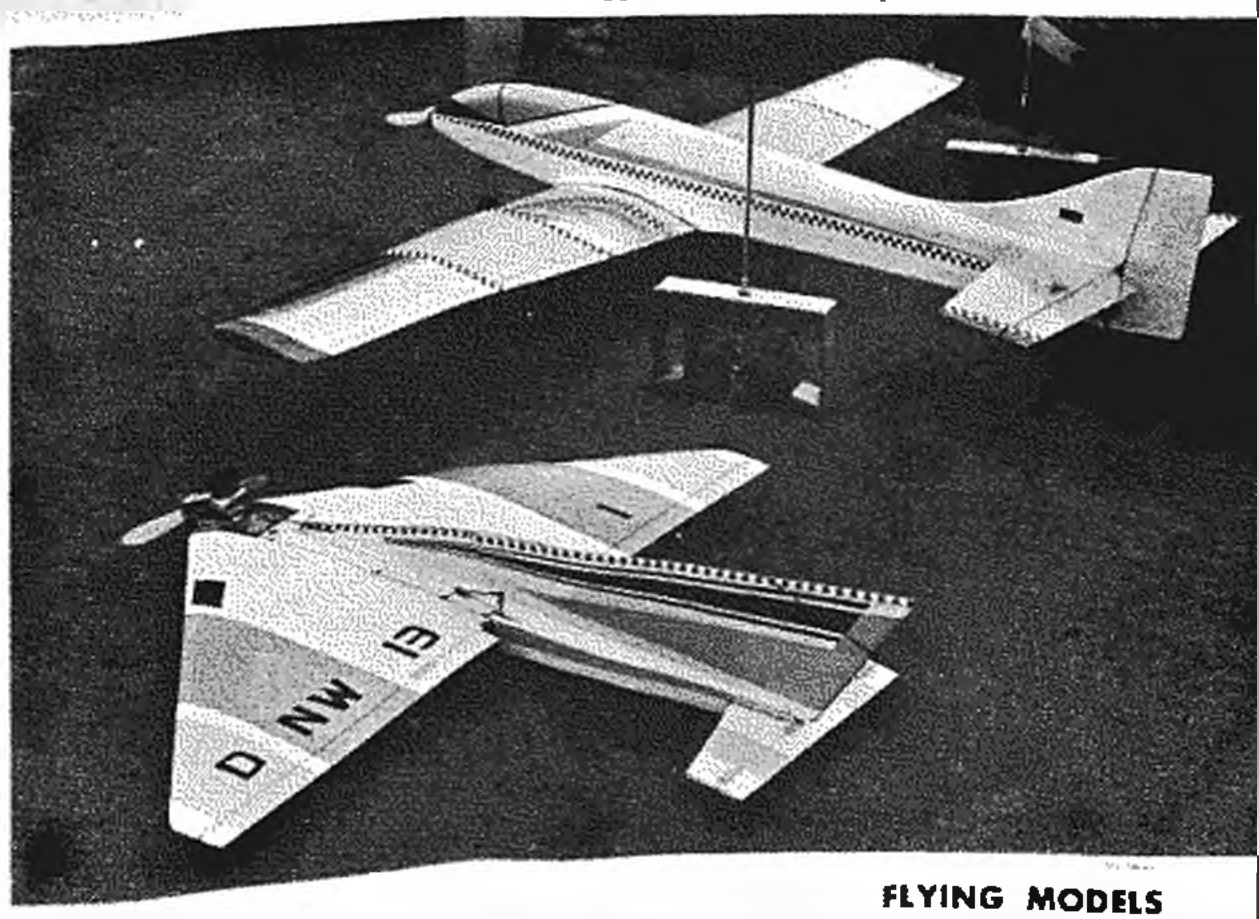
In the old days (I started R/C flying

The "Super Dolphin", designed by Fritz Bosch of Germany. Hans Meyer. He intends to fly it at the World Championships at Corsica. A Rossi .60 powerplant, Simprop Digital system. Clean lines, attractively trimmed. Seen here in a variety of attitudes. A de Zwart photo.

R.C. Channel Chatter...

continued

in 1956) the challenge was to buy a receiver and transmitter kit, follow the step-by-step building instructions, and hope it would work upon completion. If it didn't, there appeared in the text specific steps to take to find the error in assembly, by listening to the tone at point "Y" or testing for voltage at point "X." And most of the time, it seemed to be low battery voltage in the receiver's system or a burned out tube in the transmitter. With the electronics (rather . . . radio . . . so called in those days) problems solved, it was then a matter of adjusting relays or escapements to get just the right control. One of the main problems in escapements was to get right rudder when right rudder was needed. Now flying with proportional equipment it comes automatically.



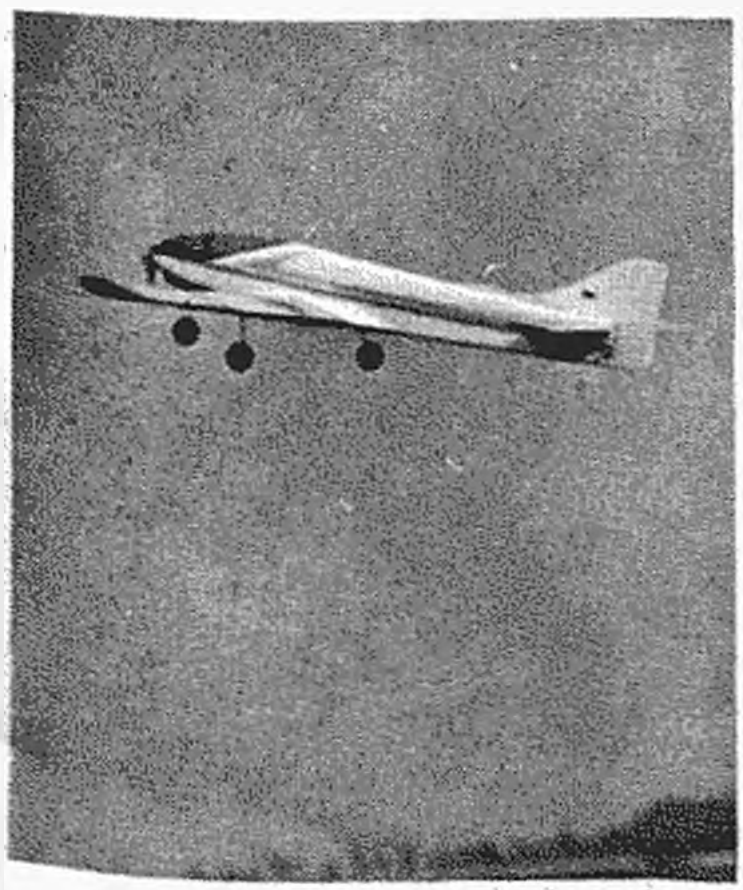
Super-Tigre ST 60 R/C fitted with F-K carburetor made in West Germany by Franz Kavan. (The muffler, by the way, is a Swiss Koelliker.) F-K carb really does work, giving lower idle and much less risk of engine quitting in flight. German champ Fritz Bosch uses this carb on his Rossi 60's to great effect and a lot of other people are switching to it.

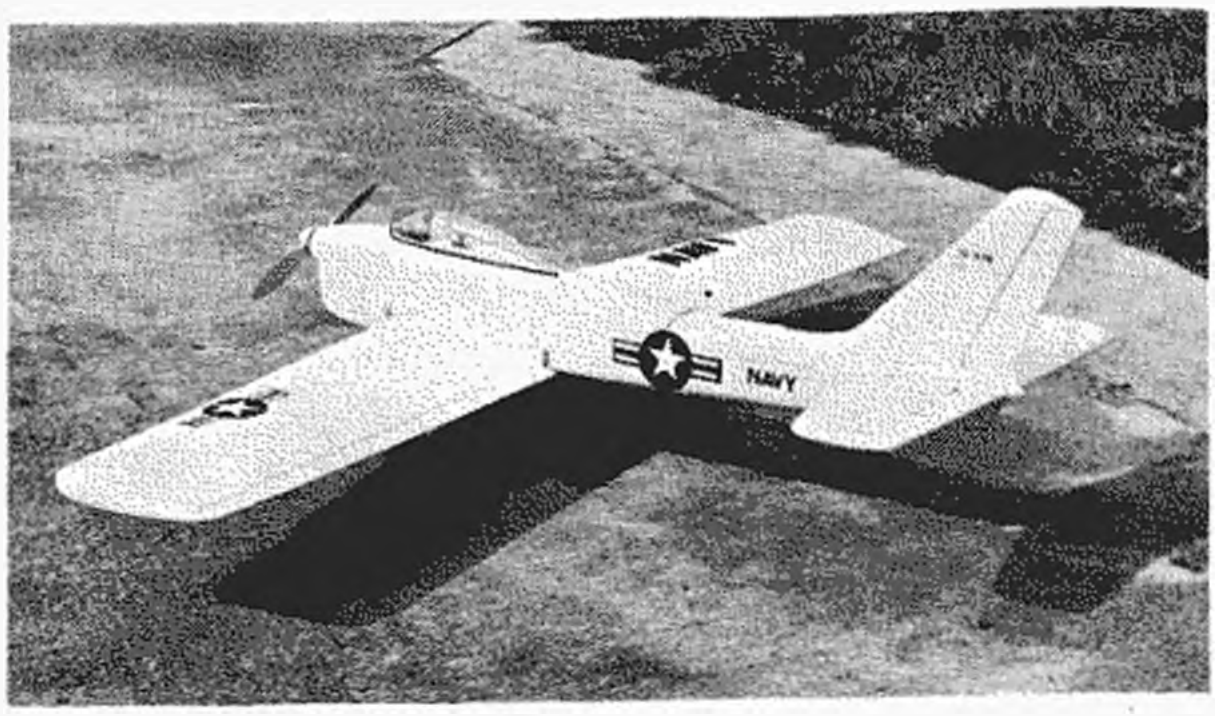
Another Scale R/C model by Franz Meier of Switzerland. Swept wing FGU-2N "Crusader." This time the engine is visible in jet intake. Fixed landing gear and all-flying stab, with working flaps

With the advent of rock-solid proportional equipment, the majority of competitors rely on proportional equipment, even if they are flying in Class I—Single Axis control. So it seems the phase has shifted from the do-it-yourselfer to ready-to-fly R/C planes and equipment. AND there are some who apparently do not like to be grouped with the professional flyer, but rather to remain the typical "Sunday flier" who gets maybe an hour's flying time all week. And perhaps that's fine with him and he is content with this limited time, but the real competition flier practices every chance he gets. It could be said that the present R/C crowd for the most part can be separated into two distinct groups . . . Those who consider it a SPORT and those who consider it a HOBBY. The SPORT FLYER doesn't really care who builds the model, just as long as he gets to

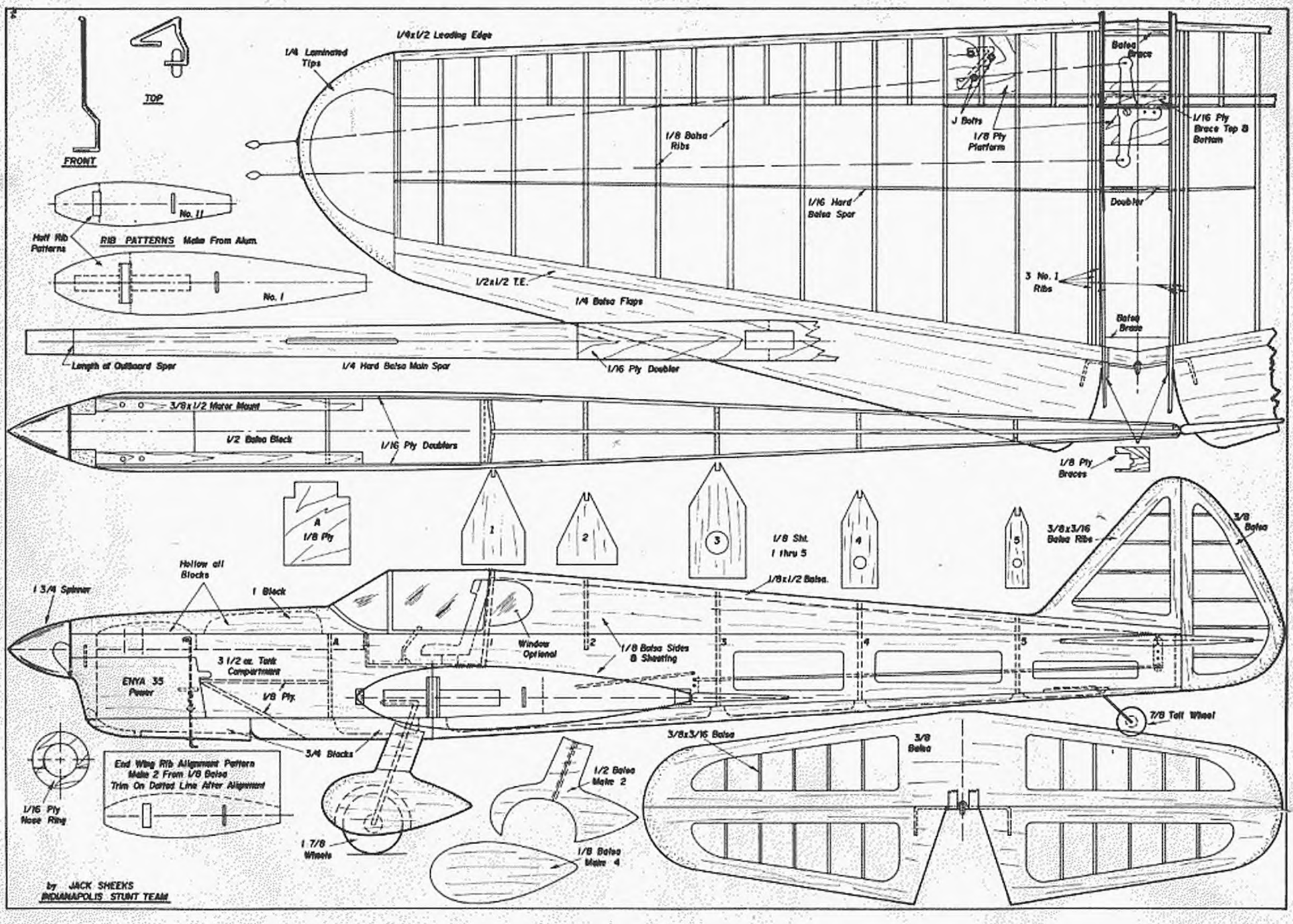
(Continued on Page 28)

Franz Meier of Switzerland and his magnificent Sabre "D" R/C scale model. Engine is side mounted





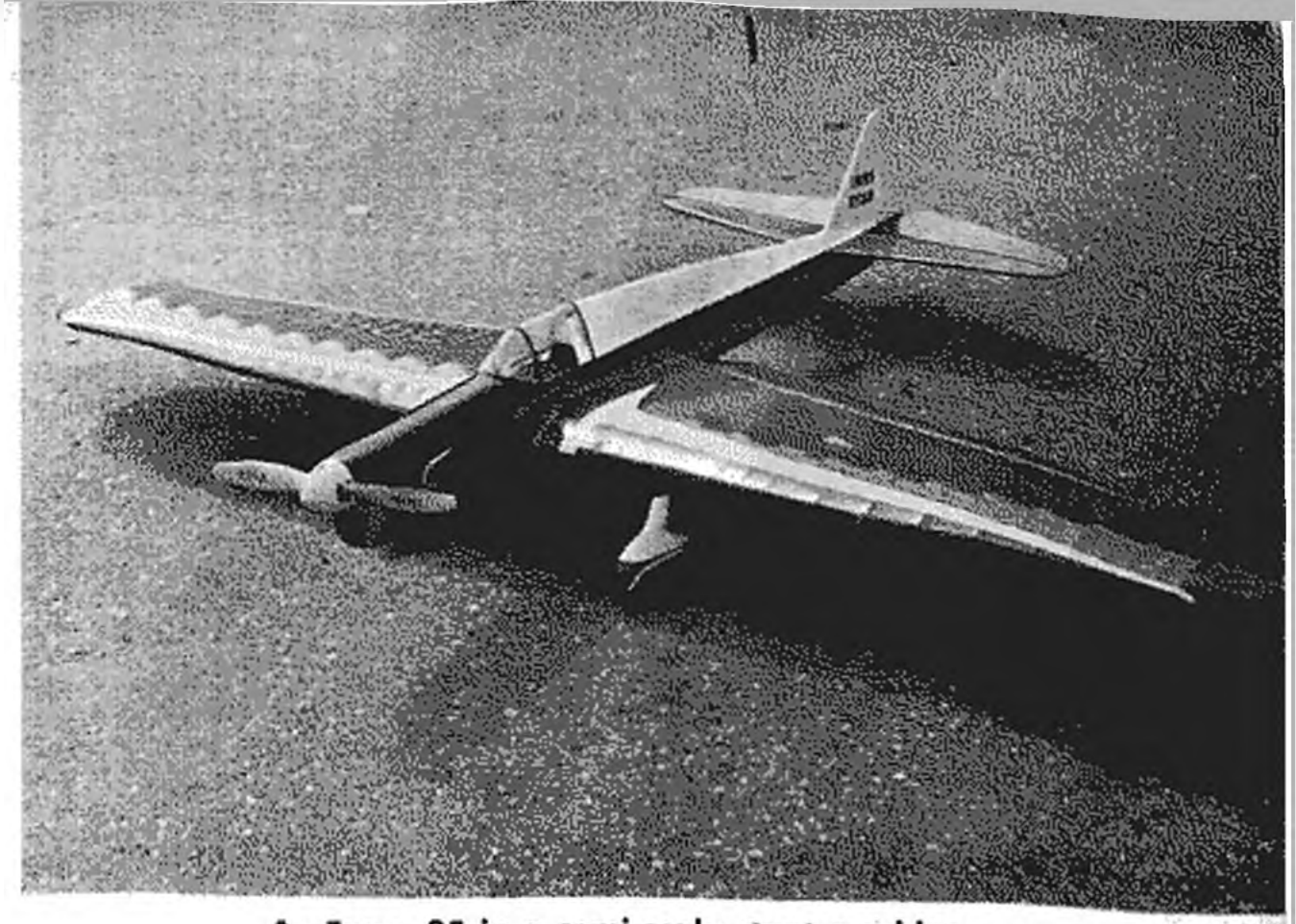
"Sabre" — Lanier Industries latest Ready-to-Fly R/C is a semi-scale F-86 model featuring several new ideas. Both wing and stab are swept back in keeping with the design of the full scale airplane. The fuselage has a full length fuselage stiffener with a unique stab slot molded to fit the stab perfectly even though it is above the mold line. A large fin and rudder make the model an excellent contest model. It performs a fine pattern. The wing attachment can be with rubber bands or bolted on with a new simple technique. Span is 63", with 620 sq. inches of area, a 12% symmetrical airfoil, for .45 to .60 engines. Can be flown with up to 10 channel proportional outfits.



by JACK SHEEKS
INDIANAPOLIS STUNT TEAM

Sleek in line, inverted engine, wheelpants and racey look about it. A capable aircraft aloft.

A distinctive planform, ample in area, makes maneuverable machine. Trim adds nice contrast.



An Enya .35 in a semi-scale stunt machine . . .
Hard to resist this one, easy, neat and flyable!

THE RYAN "S.C."

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

by Jack Sheeks

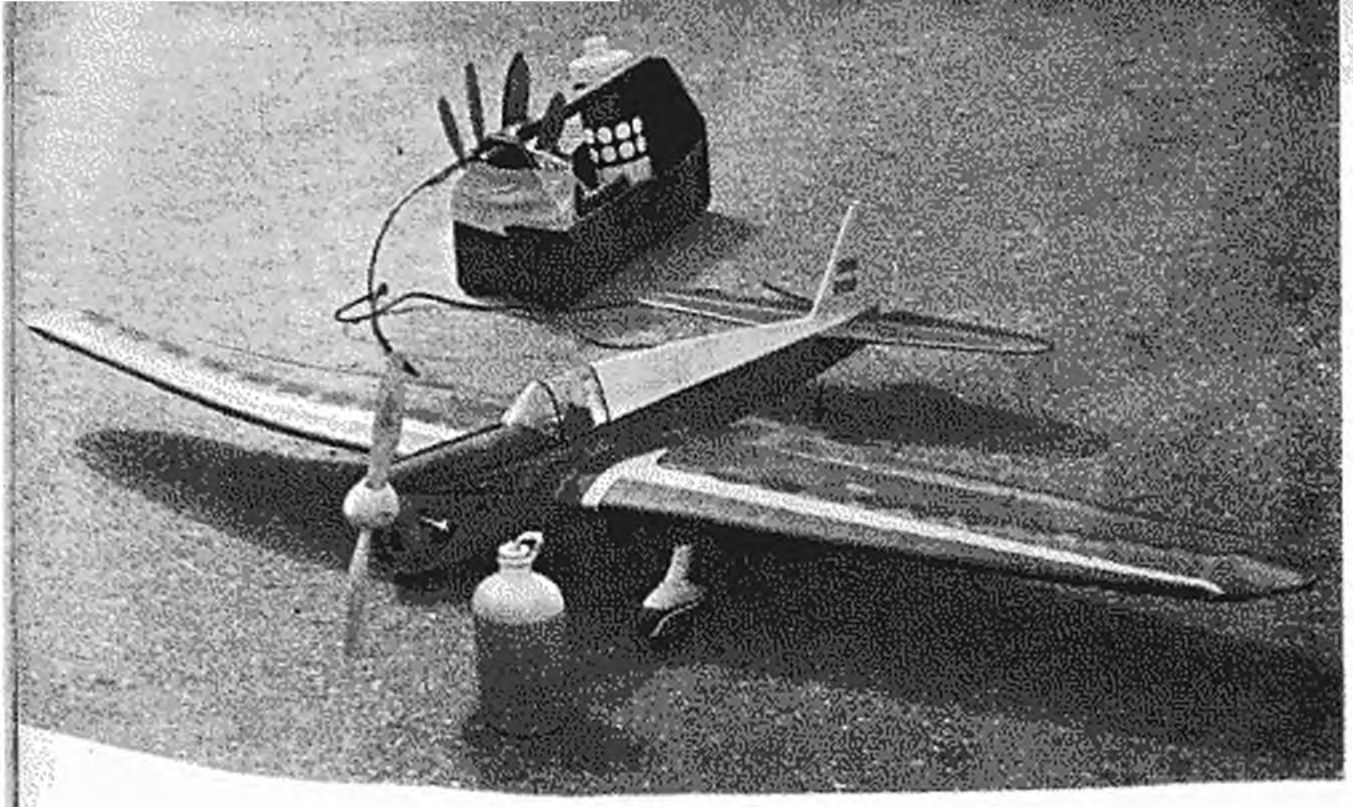
◆ During one of the many bull sessions at the Nats last year, the discussion came around to semi-scale stunters. As you probably know the modelers here in Indianapolis are quite interested in semi-scale, so this was right up our alley. As the conversation progressed, Dave (PT-19) Hemstrought made the statement that everything now days seems to be trending towards the Jet line of aircraft, and there's very few of the old timers left that would make a good stunt ship.

This brought to mind an old war movie I saw back in the 40's. Those were the years when stick models were 5¢ (with a rubber band yet) and movies were a dime. Anyway, in this movie, they were using a plane with a fixed panted gear and a wing that was different from most. It was supposed to be a Japanese fighter. I couldn't remember the name of the plane and this bugged me.

On my arrival home, out came all my old and new airplane books and the search was on. I had only gotten half way through the books, when one day at Mikes Hobby Shop in Indianapolis, I was picking out some balsa. Low and behold, on the shelf the ship in question was staring at me. A small Comet stick model of the "Ryan S.C." This

Time to go inverted or dent cement. Choose!!

Jack's daughter, slightly collapsed under Ryan.



Enya .35 makes a fine Stunt engine, it howls.

. . . continued . . .

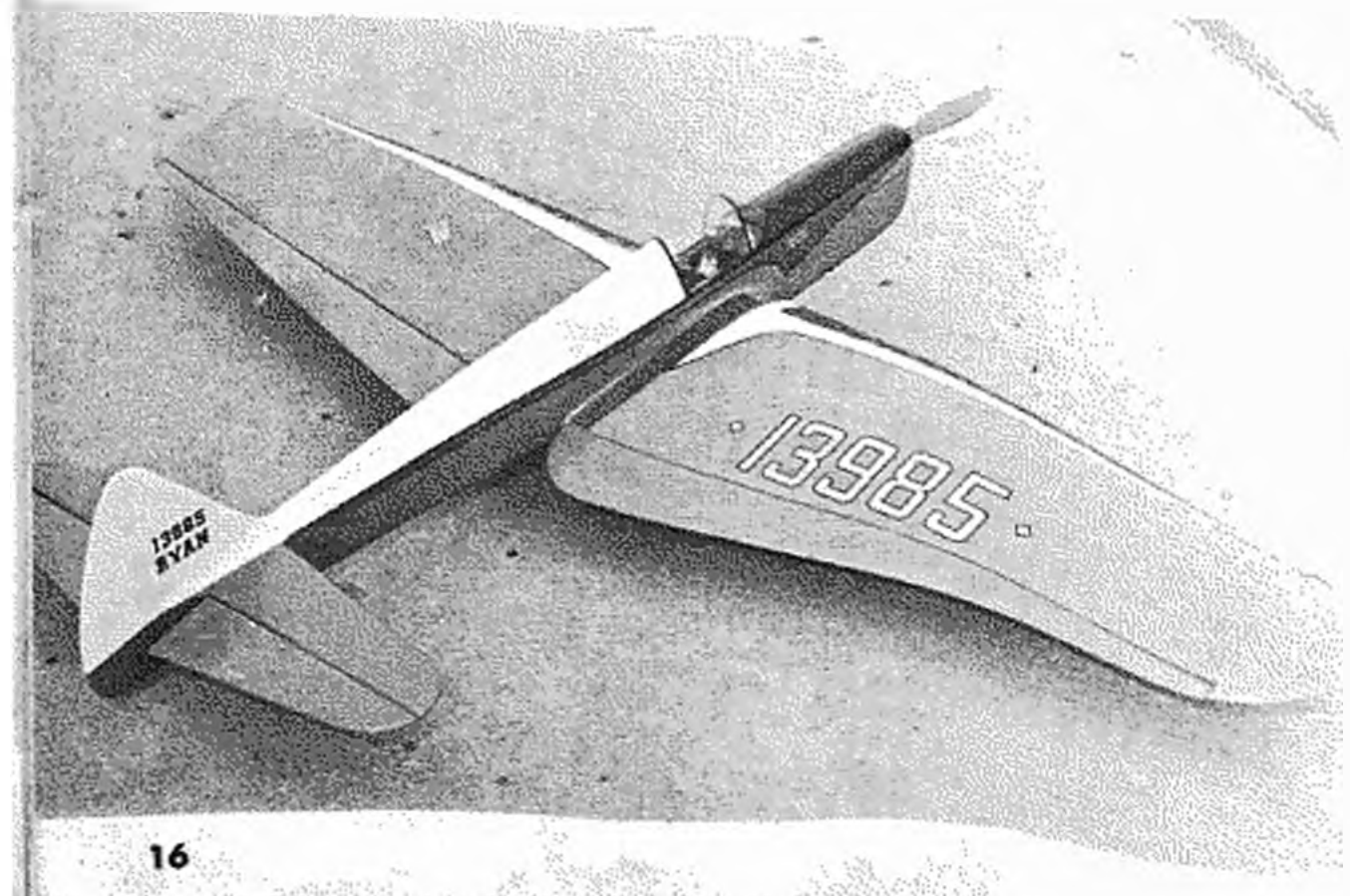
RYAN "S.C."

Ready for flight. Design is practical approach, turns into a durable, potent contest aircraft.

Typical tail surfaces, rugged easy structure.

The ship all set to launch. Responds nicely to handle movements, fast and light, grooves fine.

The tail is adequate in size, long tail moment.



was it! Needless to say I bought the kit. Seems like after the ice is broken you can find all kinds of material on a plane. And the more I read and saw on the "Ryan," the more I wanted a model of it.

Out came the old drawing board, and it was worth it too. The ship came out weighing 43 ounces, ready to fly. This in itself gives you a little advantage even before you test fly. Why? Because you can make changes if you have to without picking up too much weight for the wing to handle.

The "Ryan" really didn't need any changes, other than a little nose weight. I like to fly nose heavy. Makes old men like me smooth in their flying, and believe me you need all the help you can get with the keen competition you're up against is today.

That brings up another subject thats bugging me. Competition . . . Junior competition that is. It's fallen off in the last few years and there must be a way we can prevent this. I feel that one way to help relieve this situation is to eliminate ground points for juniors or possibly eliminate the rule that they must build their own plane. The feelings of many of these young modelers are they aren't good enough to compete building wise, but would love to compete in flying and most of them can put in a good pattern too. So maybe some thought ought to be given to the Junior for they are our coming champs and I'd like to see as many of them compete as possible.

Back to the Ryan now. I've given my sermon for the day. The ship was designed with competition in mind. When building it keep two things in mind. First, use light straight wood. This factor alone can mean the difference between a mediocre model and a good competition ship. Pick your wood carefully. Secondly, use care in alignment. Work from the center lines and double check everything before you glue the parts into place and use a good flat surface to work on.

Start by sharpening your ax, buzz saw or what ever you use. While it's still sharp, hack out all the ribs from ⅛" balsa, plus the flaps and center spar from ¼" balsa. Glue the spar doublers into place and align. Next cut out the ⅜" light balsa and cut the stab, elevator and rudder to shape.

Place your tank into position between the body sides and glue former "A" into place. Now glue the ½" balsa block into position over the tank and between engine mounts. Cut the lower tank compartment components from ⅛" plywood and glue into place. As for all glueing that has been going on, we here in Naptown use Super Model Cement. Found its good for anything in the model airplane field.

After this has set up sufficiently, pull the body sides together at the rear

(Continued on Page 30)

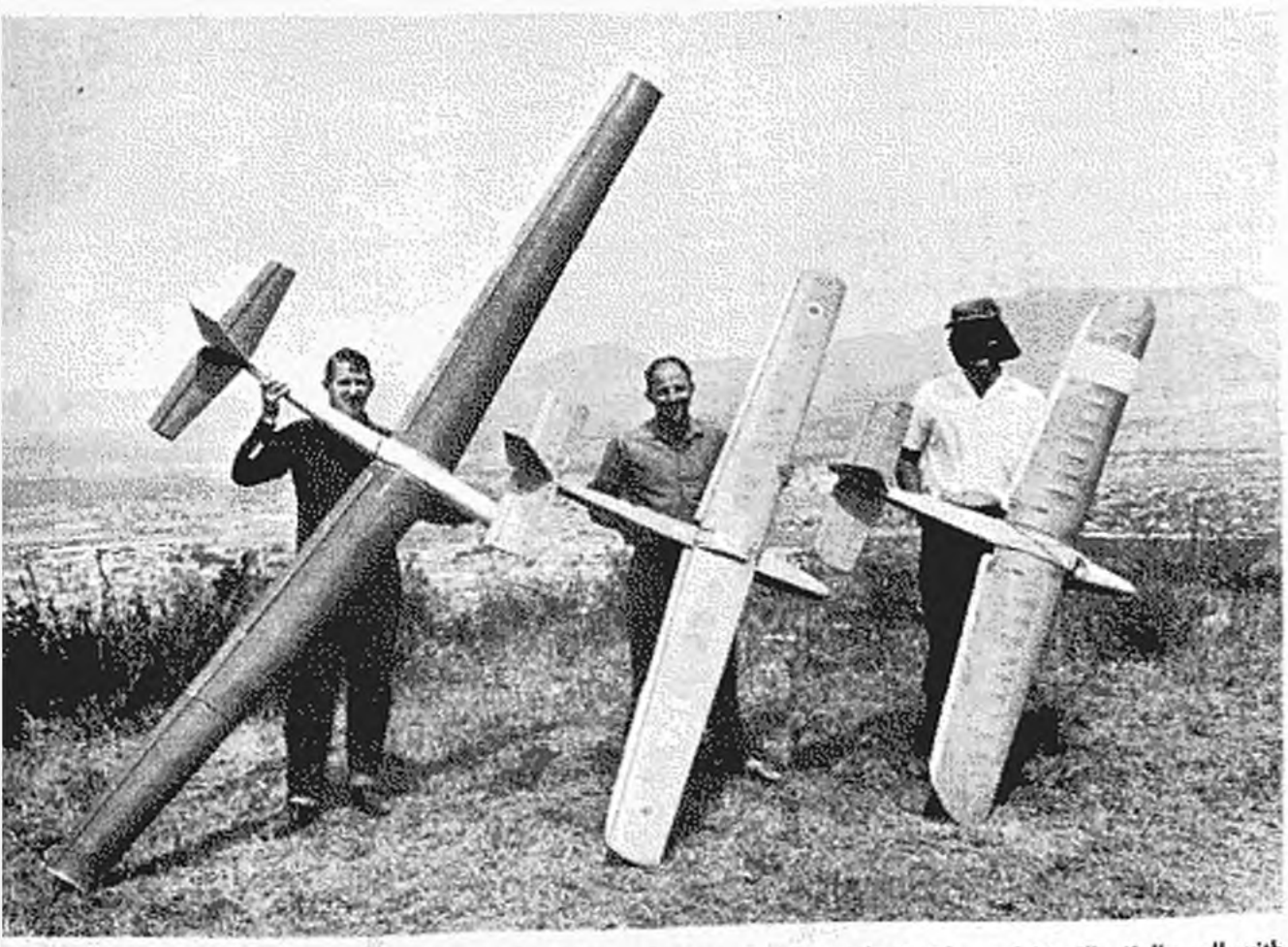
the zephyr:

by Dale Willoughby

From the thermals to the slopes, the trend is toward the big whoppers.

◆ Geoff Brooke-Smith, whose jubilant face is pictured on the lead page of the October 1966 edition of the ZEPHYR, sends along some photos of his latest R/C glider now abuilding. Geoff held the World's R/C Glider duration record of 11 hours, 33 minutes 30 seconds, which also was the World's Absolute Duration Record, for nearly nine months. His record was superceded by Germany's Georg Friedich in July 1966, a record that still stands to the best of my knowledge. After all 12 hours and two minutes is a long, long time to fly one glider. I know, for about three weeks ago, I flew a Graupner "CLOU" for six hours and fifteen minutes. Started out taking it easy on a chaise lounge, however, even during the flight was helping to test fly Bill Poppleton's "Thermal King." My body served as a real good antenna connection as I held by PCS transmitter in one hand and the "Thermal King" fuselage in the other and watched the elevator and rudder twitch in response to the PCS transmitter signals even though the receiver in the "Thermal King" was on a different frequency. As soon as the glider was launched, the trembling ceased. All the time, my "CLOU" was high in the sky. But back to Mr. Smith.

Guy Negri, of Northwest R/C Club in Illinois launches his original 8 foot design. Note engine running and its position. Flying with Logictrol, using R.E.M. in this 4.5 lb. powered glider (see text).



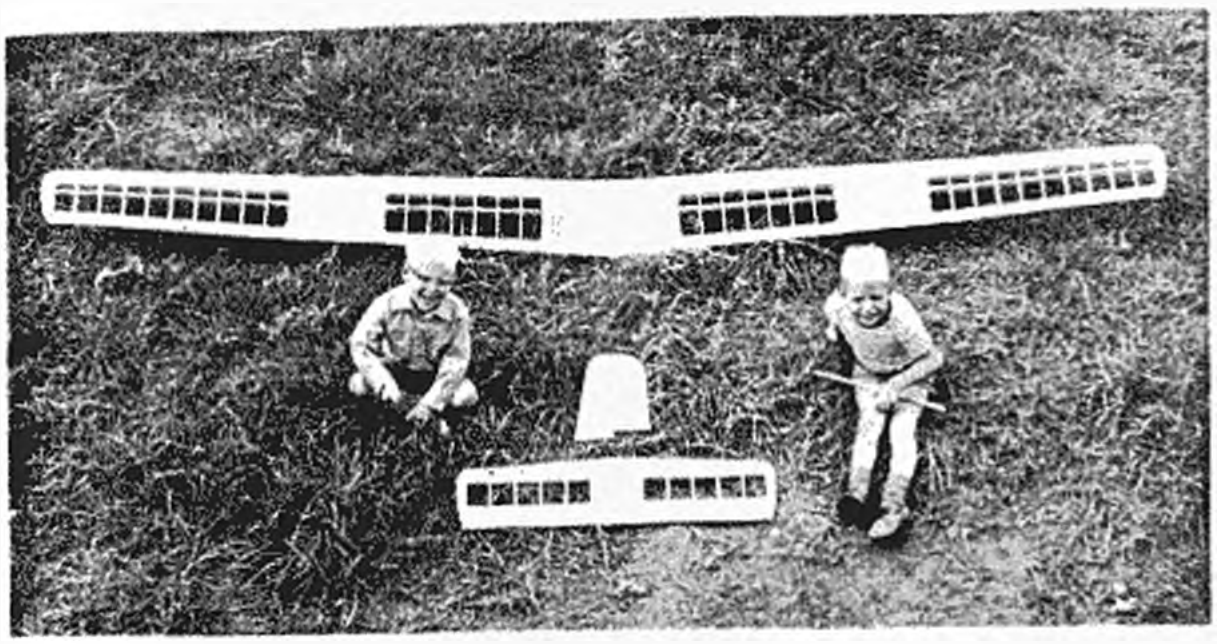
South African modelers (left to right), Trevor Loxton, Geoff Brooke-Smith, and Neville Kelly, all with original designs. Photo taken from top of Tygerberg hill, near Capetown. (see text.)

Writing from Kenilworth, Capetown, South Africa, Geoff indicates he particularly likes the ZEPHYR column "which to me is most refreshing with new ideas, photos, etc., as here in South Africa model soaring has, as yet, not caught on as well as it has in USA and in Europe. However, during the past few weeks there has been quite a lot of interest shown in slope soaring down here at Capetown. Notably by some of the Western Province M.A.C. members who fly mostly single channel. This is a very healthy sign and I feel sure that it won't be long before we have quite a number of fellows flying gliders from the Tygerberg Hills. (This was where the Duration record was set). I have just completed a twelve foot soarer (see photos) very much the same as Maynard Hill's "Bong Boomer" but as yet I have not been able to try it out as it has been too windy. That is why I think slope soaring will be more popular here than thermal soaring as the wind blows a lot of time and the Tygerberg produces lift from

zephyr

. . . continued . . .

Guy Negri and Dave Burt, AMA R/C Contest Board member for District VI, show original designs which they are flying with great success. Say they have much more flying time in thermals using engine assist. Trend is toward the big gliders.



Another photo showing uncompleted wing and stab of Geoff Brooke-Smith's Thermal Seeker mentioned in text. Large wing, tans aileron control, dwarfs .Graham Brooke-Smith and pal Johnnie.

Nancy Cloud (nee Willoughby) and Gale Kloes examine Dave Hughes' slope soaring design at Eton College in England. Dave writes the "Strictly for Soarers" column in Radio Modeler and is actively pushing slope soaring by this means.

winds blowing from almost any direction.

At this stage I have no photos of my new glider completed (yet unnamed) but will be pleased to send you some later. This model is intended for thermal soaring and it may be some time before I get around to having any success with it now that winter is just around the corner here in Capetown. As I only have reed equipment, I have made it an eight channel model giving rudder and rudder trim. Elevator and elevator trim. The idea being, one in a thermal, circling will be maintained with the rudder trim rather than pulsing all the time. The model weighs 7.5 lbs. with 1500 square inches of wing area and 300 square inches of stab. I wonder how this compares to Maynard Hill's "Bong Boomer?". . .. . (Ed. . . . The "Bong Boomer" has 1210 square inch wing and 180 sq. inch stab for a wing loading of 7.9 ounces per square foot).

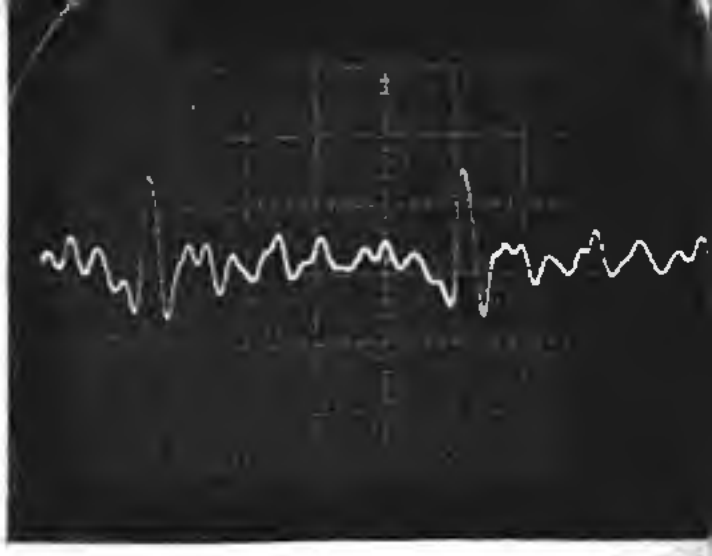
Trevor Loxton (see photo) has been taking some 8mm movie films of our soaring activities during the last couple of years, off and on, and wants to join them up to make a 15 to 20 minute film. Unfortunately without sound, because we are not quite that rich yet. When completed he intends sending it to various clubs here and I am sure he will send it to you too, if you would be interested in seeing it. He lives just close to Chips Wannenberg so you can always contact him in care of Chips. I have tried thermal soaring a few times, but as my glider is very slow I was never able to get to any great height without being blown downwind rather quickly, (this model only weighs 2.75 lbs.) and I have "chickened out" and dived it down. I am hoping for better results with my new 12 footer . . . Geoff Brooke-Smith, South Africa.

While searching for thermals, I have found the wind will blow these bubbles of heat quite quickly away from the spot at which spawned, and the only way to take advantage of a good thermal on a windy day, 20 knots or better, is to have some mobile means of transportation . . . . like a Honda or Suzuki . . . . mules are too slow! While on the subject of thermals a few more points may be in order. First, thermals are formed by the heating of air near the surface of the ground, which then rises and as it does, cooler air around it rushes in to fill the vacancy created. Sometimes a bubble of hot air is a half mile across, other times only a couple of hundred yards, and sometimes not over fifty feet! On a warm sunny calm morning on the desert, I have watched the crows, flying from

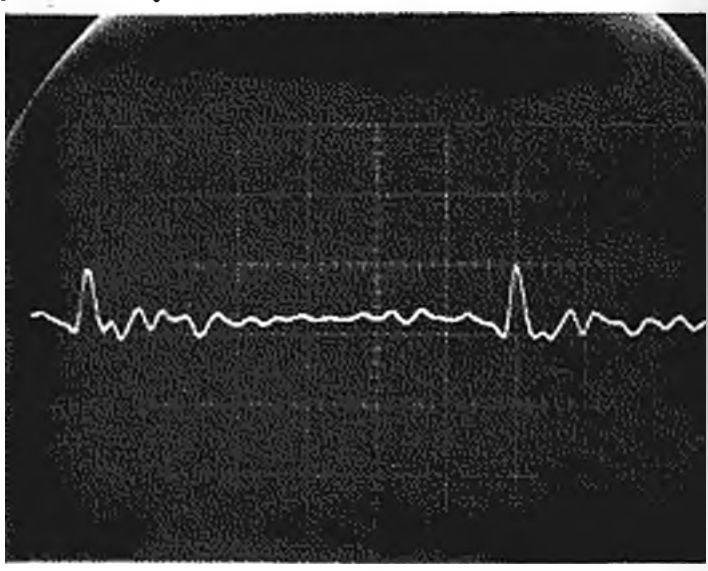
(Continued on Page 36)

**The Doppler Effect puts the finger on your hurtling R/C,
a practical way to do more than guess . . .
a simple, easy method of roughly calculating flight speeds . . .
A minimum of easily available equipment is required.**

Hang an Benll Estimate the static thrust on the ground with a 9/12 prop to be about six pounds. The model climbs vertically at about 60 mph when asked.



photos by Freemont Davis



This is how engine noise registers. The upper oscillograph was taken on tape recorder towards which the model was flying. Lower photo is the recorder that the model was going away from. Distance between large spikes indicates r.p.m.

Maynard Hill on "SPEED TRAPS"

HOW FAST DOES YOUR MULTI REALLY FLY?

Here's a way to test props, fuels and throttles to reach peak speeds.

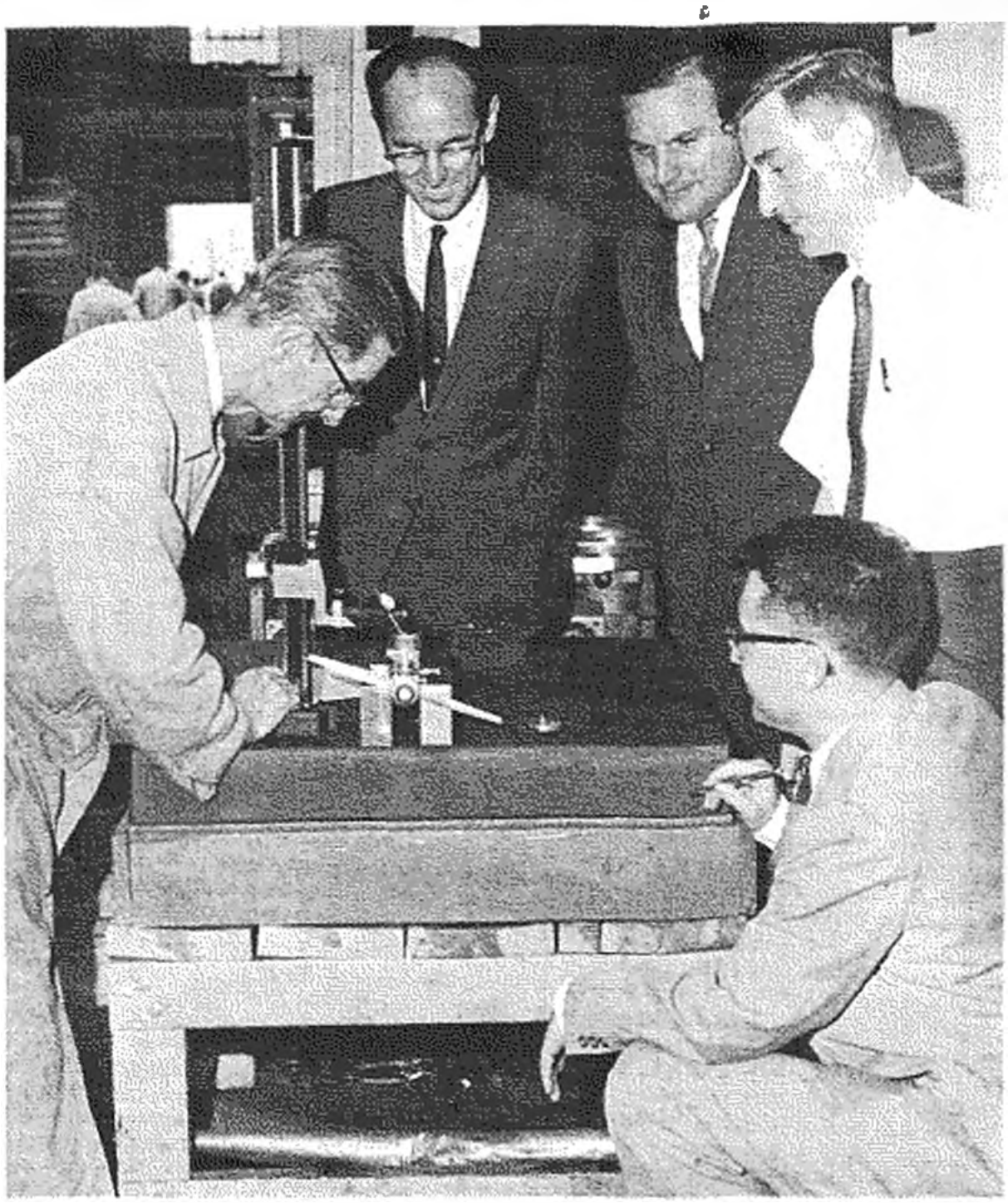
♦ Some pretty wild estimates about this question have been made on many flying fields. For instance, we've heard reports that some Goodyear racers go to 120 miles per hour in the straight away! This figure might be correct, but in the wake of some of the experiences we had during a project aimed at breaking the Scott-Jehlik world R.C. speed record of 127 mph, we suspect that some accurate measurements would be revealing! Apart from just getting enough power and low enough drag, some tough stability and control problems were encountered. These latter problems suggest that a typical Goodyear configuration would be tough to keep under control at 120 mph and even more difficult to be flown in a consistent pattern around pylons.

Using the DCRC's speed timing equipment, we did clock Joe Solko's "Aeolus" Goodyear at a fun event at

Don Jehlik, Bob Scott with 127 mph bird. The record stood for three years, but finally fell to the "Tortoise" (April '67 FM). Systematic study of the engine with Doppler noise proved both helpful and interesting. Give it a try.

SPEED TRAPS

. . . continued . . .



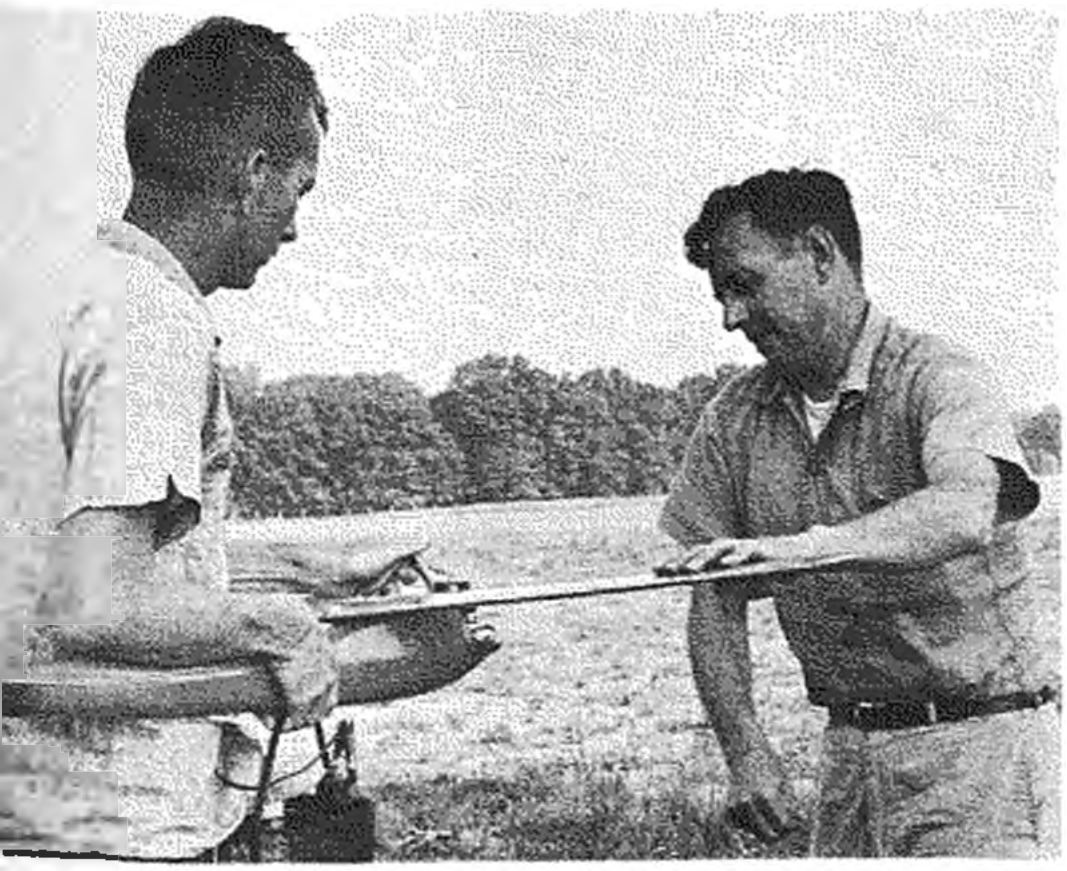
Engine check-out at Worthington Corporation by interested crew of their employees. The four at right are AMA members. Left to right: George Audette, Inspector, using a height indicator, with engine on parallel bars, on a granite surface plate. John Papageorge, President of Hampshire County Radio Controllers for 1966, an engineer for Worthington. Ray Brandoli, Worthington employee, AMA member and member of Northern Conn. Radio Control Club. Ulrich Toll, Worthington employee and member of HCRC. Carl Cousineau, Worthington employee, member NCRCC (kneeling in foreground).

the Fourth of July Contest at Frederick—and by the usual comparisons, it stirred up comments like "Man, that's really moving." However, the timing reported 97 mph. This was erroneous, on the high side, because the course wasn't the full length. The real speed was about 92 mph. The difference between 92 mph and 120 mph is a bit larger than it sounds, since the control response and stability required, for equal flyability, go up nominally with the square of the speed. As a matter of side interest, the fastest multi ship was Paul Ennis's "Marksman," clocked at 84 mph.

But enough of this lecturing! How can the speed be measured without all the complicated paraphanalia of clocks, switches, surveying, etc. that goes with a speed trap? If a simple technique could be developed, we would not only know what speed we're flying at, but we could also experiment with propellors, fuels, and throttle settings and get some numbers that tell us when we're headed in the right direction. In the normal situation of pylon racing, one wide turn can add seconds to the total time for the race—and so it's still often a guess as to which combination of engine variables really gives the highest speed.

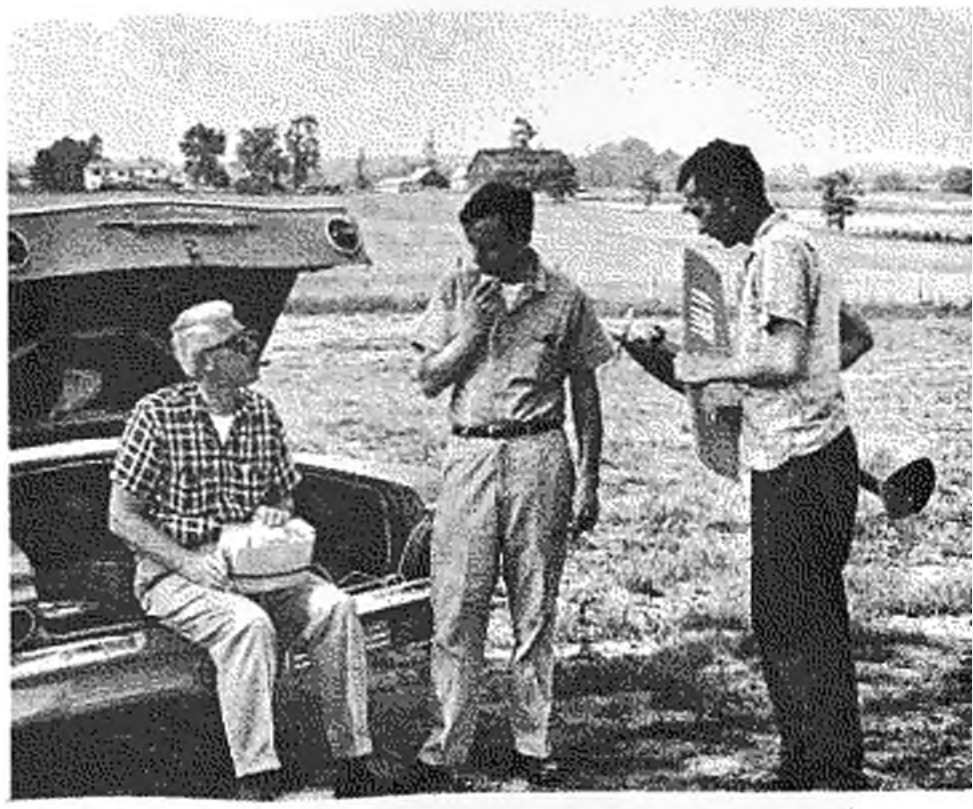
This article describes a simple technique that was worked out during tests of the FAI speed model shown in the

(Continued on Page 32)



The clean lines of the model are seen here. Simple flip starts were common. Pilot soon learned to wear glove! Short props can hurt just as much as long.

Don Clark and Ben Givens at the D.C.R.C.'s Country Club field preparing for engine tests. Engine run was too fussy to use tachometer. It was tape recorded, later analyzed at home. Experimentation such as this advances the sport.



FUSELAGE TOP 1/16" balsa

FUSELAGE BOTTOM 1/16" balsa

FUSELAGE SIDE 1/16" balsa, 2 req'd.

Hole for ballast, one side only

M 1/16" balsa

K 1/16" balsa, 2 req'd.

D 1/8" balsa, 2 req'd.

G

Trim after assembly

L 1/16" balsa, 2 req'd.

R 1/8" spruce

S

E 1/16" balsa

F 1/32" balsa, 6 req'd.

C 1/16" balsa, 24 req'd.

A 1/8" balsa

B 2 req'd.

FIN 1/8" balsa

RUDDER 1/8" balsa

J 3 req'd. 1/32" ply

H

O 1/16" ply

Join plan at break in right wing panel

WING SPAR PLAN

W

U

1/32" music wire

V

1/8" × 1/4" balsa

Join plan here

LEFT WING

RIGHT WING

1/8" × 1/4" spruce

FUSELAGE BULKHEADS 1/16" balsa

N 1/8" balsa

P 1/16" balsa

1/2" balsa

T 1/4" × 1/4" balsa

Groove for towhook, both sides

Balance assembled model here

1/32" music wire

1/16" diam. tube

RUDDER HINGE

Glue rudder to hinge tube & cover joint with nylon.

SIDE VIEW

SCALE

0 1 2 3 4 5 6 7 8 9 10

4-40 × 3/8" bolt, nut & 2 washers for towhook stop.

Bend towhook to T with thread

Bend towhook to final shape after bottom has been installed

3/64" m.w. TOWHOOK

BOTTOM VIEW

Fill between spars with 1/32" balsa.

3/32" × 1/4" balsa

1/16" × 1/16" balsa

STABILIZER

1/32" balsa

1/8" × 1/8" balsa

NOTES

Build fuselage upside down, omitting K, L, M, N and P until all other parts are finished. Add weight to nose until assembled model weighs 5 1 oz. Then add K, L, M, N and P to locate the wing on the balance point shown.

Cover the entire model with Jap tissue.

1/8" dowel

TOP VIEW

SKY-SCRAPERS

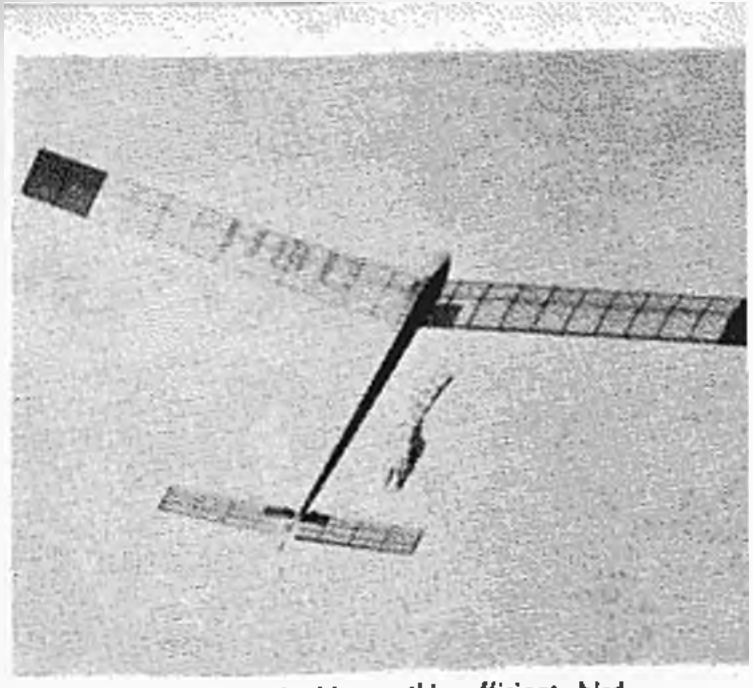
Soar Sam

NORDIC A-1 GLIDER

designed & drawn by [illegible]

Bill Dunwoody and his "Soar Sam." It has fine floating glide and thermals out on any excuse.

Understung rudder, fuse D/T, sheet fuselage.



Nothing hard to build on this efficient bird.

"Soar Sam" hauls itself up on the towline. The design is stable on the line, easily adjusted.

Just one dihedral break, a soarer that builds fast, fine for contests just days ahead of you.

by Bill Dunwoody

A graceful, easy, able NORDIC A/1

"SOAR SAM"

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

◆ The Nordic A-1 Glider rules have been in the books for a number of years, but it's only recently that this class has become popular. The recent increase in popularity has come as the result of a steady improvement in the model's design and the great appeal that this event has for younger modelers.

Early A-1 Gliders tended to be heavy and were usually difficult to fly. They were especially troublesome on the towline, because designers compensated for the heavy structures by reducing ballast weight and lengthening the model's nose. Long nose moments are one of the major perplexities of free-flight model design, leading to poor stall recovery and, in a towline glider, to wild oscilations during tow flight. As modelers gained experience in this class, weights were reduced, noses shortened and flight performance improved greatly.

These models have much to recom-

(Continued on Page 31)

STAB

1/8" SHEET

1/4" SHEET

ELEVATOR

ENYA 60

1/4" AIRCRAFT PLY CRUTCH

SINK COMPARTMENT

NACELLE CRUTCH

LIGHTENING CUT-OUT

ENGINE:

60 TO 60 POWER SUITABLE FOR R/C/W

ENYA 60

FIBERGLASS OR PHENOLIC

FUEL TANK - 8 OZ. OR MORE

HOLLOW BLOCK

ROUND BLOCK

NACELLE

NACELLE IS ROUND IN CROSS-SECTION

5/32" DIA WIRE (SEE WING GUSSETS)

5/32" DIA WIRE

W-1

W-2

W-3

SUGGESTED FLAP CONSTRUCTION

FLAP

W-4 5/32" RIBS

RIBS

TRIM LATCH

CABIN

CURVE FROM FLOOR RELIEF

PLEXIGLASS WINDOW

AIR SCOOP

TUNNEL

BATTERY

RADIO AREA

SERVOS

1/8" SIDING

1/4" SQUARE

CHINE

1/8" PLANKING

WING FLOAT

SIDE VIEW

1/8" SIDING

1/4" KEEL

STEP

VENT

STEP

W-5 5/32" RIBS

WING MOUNT

SPRAY RAIL

HULL BOTTOM

STEP VENT

HULL BOTTOM

AIR SCOOP EXITING AT STEP

TRIM TABS FROM 5/32" X 3/4" CHIP STOCK

FIN

RUDDER

NOTE

"V" BOTTOM CURVED CONCAVE TOWARD

TRAILING EDGE OF 1/4" X 1/4" BALSA CROSS BRACE

SEE SIDE VIEW

1/4" SQ. SPRUCE OR BALSA

WATER RUDDER

WATER RUDDER PIVOTS UPWARD

MAIN GUSSETS

FRONT ENGINE MOUNT

1/8" AIRCRAFT PLY

PLATE 1 OF 2 – SEE PAGE 28

SCALE:

FLYING MODELS

**A highly practical experimental Flying Boat design.
It just might swallow a gull or two, so beware.**

**A vented main step, with slipstream ducted down to dispell vacuum . . .
For full house radio systems, Class II or Class III equipment.
Radio positionable wing float setting . . .**

Citizen-Ship Digital radio, an Enya .60 mounted in the nacelle.

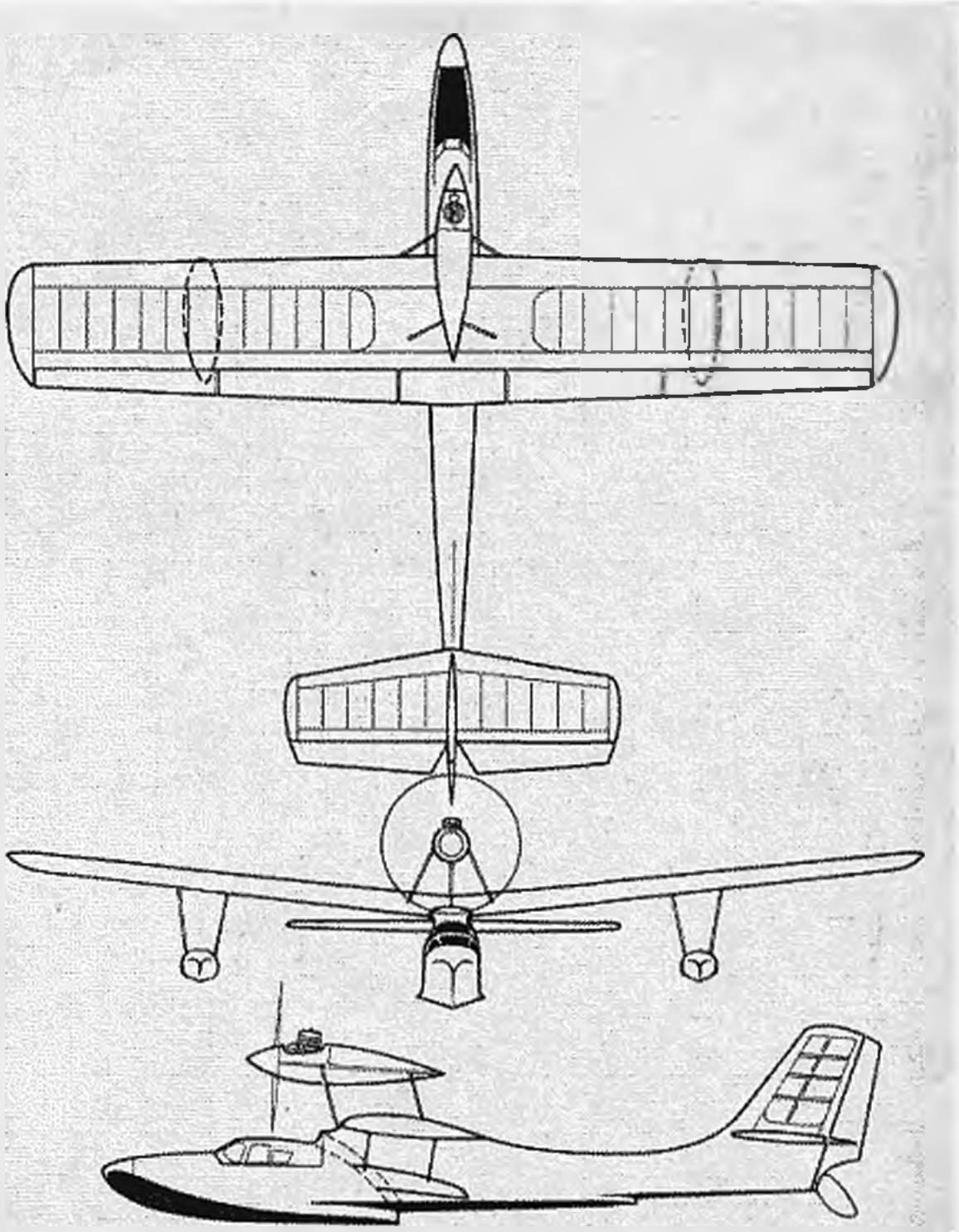
Vented Long Planing Hulll

"MAKO" MONSTER

Amphibious Flying Boat

76" wingspan, 67" overall. Rudder/Elevator/Engine/Flaps/Ailerons/Floats

by Don McGovern



◆ Native to the local puddle is a particularly cute fang-toothed carnivore which does much to promote sun tans on the beach. It is a handsome species of dangerous shark, considered to be quite a game fish which has been known to leap some 15 feet out of the water to pull down passing gulls. Imagine the surprise!!!

After looking into the mouths of a few, I got sort of inspired with the dental work. I figured it would be rather nice to have a pet like that to keep the neighbor's mutt out of my swimming pool. And so I built the "MAKO" monster.

Admittedly, it's not what you'd call a scale replica. Sharks do not have scales, but rather a rough-sandpaper-like hide, which is sort of the way I build anyway to hear Crash Rogers tell it.

I tried a G.H.Q. to activate a pair of dentures I swiped up at church, and while it ate lunch fine, it fell short in the thrust department. So I settled on an Enya .60 whirling a Top Flite nylon screw which does everything well. It would like to meat you, and see how nicely careless finger bits and pieces are ingested down that cavernous tunnel which serves as a mouth, rudimentary digestive system and general catch-all.

Not exactly scale perhaps, but then you can blame it on the evolution of the species. It's about time the stupid sharks were updated a bit anyway. They trace back about 350,000,00½ years and have had moderately rotten to poor table manners for the whole time, except for the Vietnam truce periods which are always scrupulously observed.

Actually, there are other similarities. Your "Mako" monster will get just as oily, the same reception at the local beach, and worry the garbage-laden

(Continued on Page 28)

FULL SIZE PLAN AVAILABLE THROUGH "MODEL PLAN SERVICE" . . .

4 NEW KITS—ALL LEGENDS I

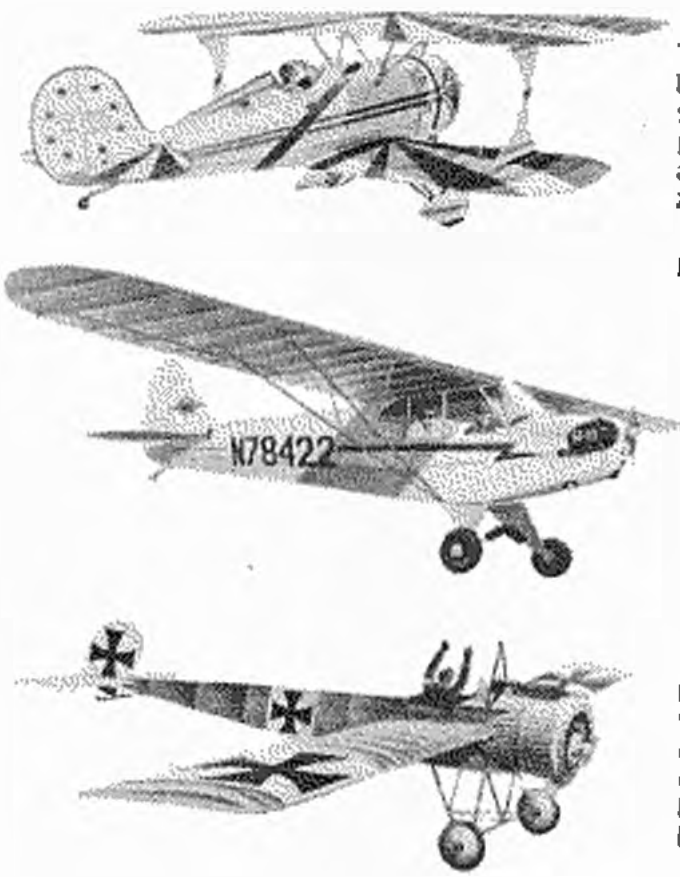
RUBBER-POWERED, BALSA-WOOD, FLYING SCALE MODEL KIT

- GET THE WHOLE SERIES! 21 OTHER AMAZING RUBBER POWERED FLYING MODELS—FROM 98¢ TO $3.98!
- ALL EASILY CONVERTED TO GAS POWER FOR CONTROL LINE, FREE FLIGHT OR RADIO CONTROL.

•

PRECISION MADE for Easy ASSEMBLY

Kits made of selected balsa wood. Parts die cut accurately for easy, trouble-free assembly . . . plus all this: detailed plastic parts, plastic prop, rubber wheels, finished wire parts, authentic scale decals, full-size plans with simple instructions!



Kit A-24—Hal Kriers

GREAT LAKES SPECIAL

This fabled barnstorming biplane of the "Golden Thirties," rebuilt by the Krier Brothers is winning nearly every trophy in sight with Hal Krier at the stick, a 185 h.p. engine and sporting the flashiest paint job of them all. Our authentic model has all the flash and zip of its prototype.

$3.98

wing span 24"

Kit A-22

PIPER CUB J3

The Piper Cub holds a unique place in aviation history. It is probably the most famous light plane in the U.S.A. . . . because of the untold thousands who learned to fly in it. It holds a warm spot in the hearts of model builders everywhere because of its simple lines, good looks and flying ability.

$3.98

wing span 30"

Kit A-23 Fokker

EINDECKER-EIII

Forerunner of Germany's World War I vaunted Fokker fighters, the Eindecker was the first to use propeller-synchronized machine gun fire. Max Immelman (the maneuver still bears his name) piloted this great fighter. Simple lines, large wing area make our scale model a flying beauty.

$2.49

wing span 25"

CHANNEL CHATTER

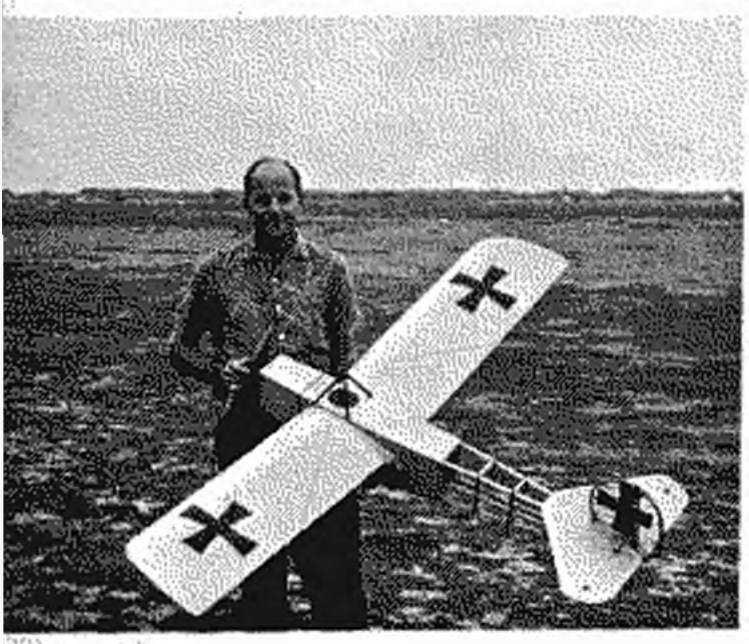
(Continued from Page 13)

fly it, until it is finally "dorked," or "dinged." It could even be some one else's tired old "bird" with a new paint job or a bit of sprucing up, but as long as it is half-way presentable and will fly, thats the ship for him. Though price is important, it is not the main consideration. If he is fairly well heeled, he will shop the local hobby shop for a bargain, or as the ad in the model magazine reads, "pay top price for quality workmanship." There are a number of Hobby Shop owners in this same category. They need real sharp, well decorated and finished R/C models to hang in their shops to either attract attention or to sell a particular brand of a new kit, just released. Heresy? . . . No, just plain facts!

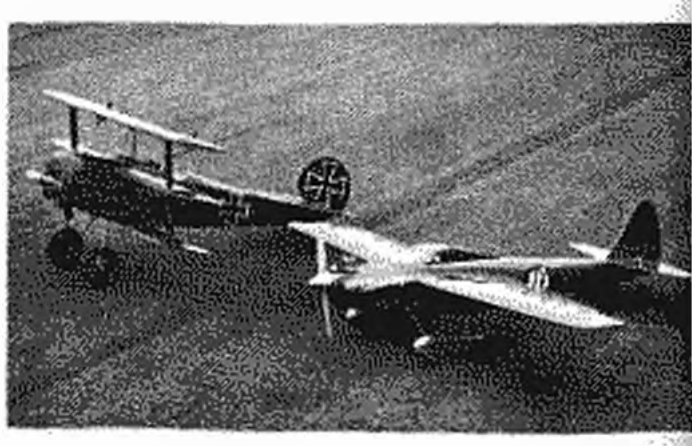
On the other hand, the Hobbyist stoutly maintains that every one must build and fly their own R/C models. To do otherwise is somewhat akin to cheating . . . and not good sportsmanship . . . to say the least. Countless hours must be spent "creating" the model, and there are some purists that believe building from a kit can stain the reputation of a modeler. There are many sides to modeling and as a modeler of some 35 years experience, I say "To each, his own!" and then let the chips fall where they may.

● Received a letter indicating that Ralph Majeski, of Contact Radio Guidance Systems, 7160 Wheatland Rd., Salem, Oregon, has researched the uses of the new 72-76 MH bands in his area. The letter is too long for reproduction and is not pertinent to your area (unless you live in his vicinity), but it showed that with a bit of forethought, it is possible to pick a frequency not being used on the 4 meter band by someone else and thus eliminate interference possibility. A tally of all the FCC licensed stations, fixed and mobile, in the state of Oregon, showed the following number of stations on each frequency. 72.08 MHz (2); 72.24 MHz (0); 72.10 MHz (0); 72.96 MHz (0); and 75.64 MHz (0). So if you live in Oregon, what would be your choice of one of the newer frequencies available for the sole use of control of model aircraft? This same bit of planning can be used by calling or writing the FCC officer in your area or the FCC Monitoring station. Are you licensed? If not, secure FCC form 505, and send it with $8.00 to Federal Communications Commission, Gettysburg, Pa., for your license. Do this well in advance of buying an R/C system as it generally takes 30 days or more.

(Continued on Page 28)



Geoff Brooke-Smith, South Africa, holds his own design called "Frantic." Photo taken at Rietvlei with the Table Mountain in the background.



The old and the new . . . Shoestring No. 16 and the Fokker Dr I 152/17. Original failed to get airborne, due to small prop and large cowl. "Shoestring" built by Rolf Zumkehr, near Zurich.

THEIR OWN TIME!

Sterling MODELS
BELFIELD AVE. & WISTER ST.
PHILADELPHIA, PA. 19144

STEARMAN PT-17

SIXTY-FIVE AND A HALF INCHES OF R/C* SCALE MAGNIFICENCE!

NEVER BEFORE A KIT SO TRUE TO SCALE!

No deviation from scale outlines. Scale airfoil and rib spacing in wings and tail. Rugged fuselage construction with scale stringer spacing. Detailed scale plastic dummy Continental engine. Army Air Force insignia. Nylon screw-wood nut wing fastening—no rubber bands.

39.95 Kit FS-20

NEVER BEFORE A KIT SO REQUESTED!

From modelers everywhere, we have been "bombed" by requests for this classic beauty. Many of the R/C fliers today learned to fly (full-size aircraft) in the PT-17, still used for cropdusting and barnstorming.

Scale: 2" = 1 ft.

NEVER BEFORE A KIT SO COMPLETE AND DETAILED!

• Finest balsa sanded and density graded • Accurately die cut balsa and plywood parts • Shaped leading and trailing edges • 5/8 thick shaped plywood firewall • Maple center seats • Formed 3/16 wire landing gear and 1/8 wire wing center struts • Scale plastic dummy engine, landing gear fairings and air intake • Spun aluminum cowl • Giant decals • Hardware pack complete with screws, nuts, washers, blind nuts, landing gear clamps, nylon screws and hardwood mounting nuts, nylon horns and ball cranks, etc. • Giant plans with full size layouts and step-by-step drawings and instructions, etc.

*Can also be built as control line model

Don Dewey's
ROYAL COACHMAN

The fastest and easiest-to-build R/C Model ever! .09 or .15 engine 4 Channel R/C Operation

$9.95 Kit FS19

STERLING MODELS
BELFIELD AVE. & WISTER ST. PM 7
PHILADELPHIA, PA. 19144

If no dealer available, direct orders accepted—with 10% additional charge (50c min.) for handling and shipping.

☐ Catalog of entire line of airplane control line model kits, R/C scale & trainer kits, boat model kits, accessories; etc. 10¢ enclosed.

☐ "Secrets of Model Airplane Building," including design, construction, covering, finishing, flying, adjusting, control systems, etc. 15¢ enclosed.

☐ "Secrets of Control Line and Carrier Flying," including pre-flight, spirals, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 15¢ enclosed.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

"BEECHCRAFT"

(Continued from Page 10)

Now, a straight piece of hardwood about 1" x 24" is "C" clamped to the servo-board, until it extends straight back between the fuselage halves and rubber bands are now placed between the hardwood and the sides until a perfect angle is achieved (See Photo No. 3). Now, the top and bottom spreaders and tail block are glued in place. Following this, the bottom planking is put in place and rounded to fit (See Photo No. 4).

Stringers and the 1/32" top plywood sheeting are now placed and glued (See Photo No. 5) and the 1/16" doublers are added to the sides.

Cowling: Cut out the front four sections out of soft 1" thick balsa, the same diameter of the firewall, epoxy together and shape to fit the skin sections. The skin sections are in three pieces and overlap the front section and the firewall about 1/4" and are held in place with rubber bands until dry (See Photo No. 6). The overlaps are filled and sanded to shape (See Photo No. 7).

Note: Although the nose portion appears to be difficult to build, I was delighted with the ease in which it went together. (Hobbypoxy was used throughout the nose section.)

Tail Sections: Straightforward in construction (See Photo No. 8). Fin is placed first and then the stab. Tailwheel detail is now epoxied in place along with the rudder and tail block and elevators and hinges (Use Hobbypoxy No. 2 for long working time).

Wing: (See Photo No. 9)

1/4" square bottom spar is pinned in place on the plan and the ribs are fit in place. (Make sure the center section ribs, both top and bottom wings are correct.) The leading edge is now placed and glued. Next, the trailing edge and oversized tip pieces are test fitted and then cemented. The center of the wing is left unglued. Both halves are elevated 1/4" from the sixth (6th) rib from the tip using leading and trailing edges (See Photo No. 9). Now, the center spars are added and glued. Bottom wing is fitted with landing gear

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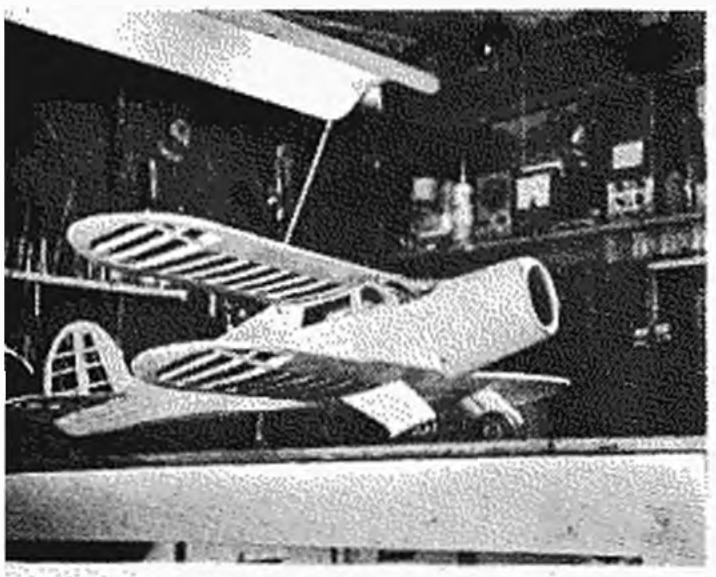
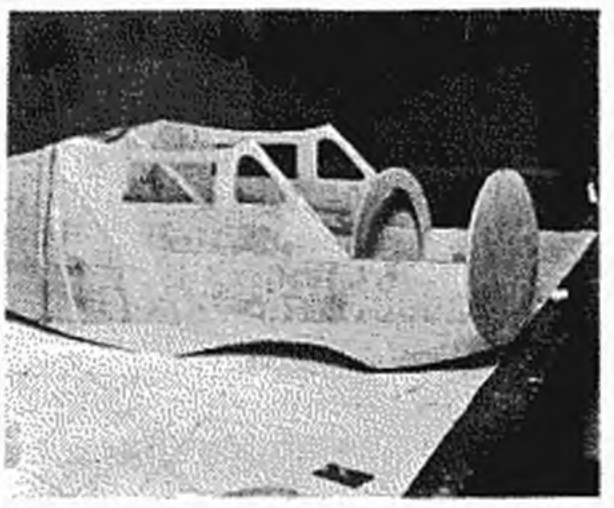




Firewall in place, lower structure fairing in.

Engine fully cowled, an 11/16 Top Flite screw.

"MAKO" MONSTER

(Continued from Page 25)

gulls an equal degree. Locally the gulls now fly in sort of a "stack" formation. "Low-man-eaten" marks the 15 foot elevation, whereupon they regroup. What else?

Originally I had thought of building a multi R/C Portuguese Man-of-War made out of nettles, acid and Jello to beat the high cost of balsa, but I feared it might thermal-out, and how would I explain that to the Air Force? Besides, Sig would have difficulty packaging the raw materials.

The "MAKO" is an experimental ship, a sixth generation Flying Boat with a Privateer/Scavenger/Navigator/Piranha background. Of these, it most resembles the "Piranha" design, which appeared in the December issue. This .45 powered seaplane performed excellently in the air, but could stand further improvement in water affairs. Notably, it had a minimum amount of bow displacement, which makes it work too hard to reach planing speeds. More displacement has been added to the forward bow on this "MAKO" design. Secondly, the wing floats have been increased in displacement slightly and mounted a few inches further outboard on the wings to better stabilize the aircraft in severe cross-wind conditions. Use of a wider bow, plus a forward chine spray rail has been employed to fling bow splash water (as when striking a wave) further from the prop arc.

Drops of water hitting a seaplane's propeller is a major factor in retarding take-offs. The tips of the prop at high r.p.m. approach the speed of sound, and drops of water can actually demolish the blades of a softer type wooden prop. The nylon props are better suited for the task and we have not had any difficulty with them. The intricate forward chine lines of the hull on this new design require a little more building effort, but it will greatly retard this spray problem and allow faster acceleration on every take-off run. This is most important, as it creates stabilizing wing lift, which lessens water drag as the hull rises higher in the water. Once speed starts to build, the take-off is assured.

A more concave "V" bottom to the forward bow has also been employed on this design, with the intention of riding the forward portion of the hull on entrapped air, as on many of the newer speedboat hulls.

Aft of the step, another innovation which we hope will be of some merit. The large air scoop just behind the prop arc, above the cabin and below the wing is intended to duct quantities of prop wash down through the hull, exiting into the void behind the "step". In theory, it should help eliminate any vacuum which might otherwise develop, a constant source of trouble with seaplanes. It should vent the step, and provide a layer of air for the hull to slide on, bordering on a "hovercraft" principle.

(Continued on Page 37)

TOP FLITE introduces... a complete new line of

ROCK HARD MAPLE
SUPER M PROPS

TOUGHER LASTS LONGER STRONGER

Rock hard maple is *hard*...*hard* enough to reduce vibration to a minimum...*hard* enough to let you tighten down the prop nut so it won't come lose...*hard* enough to make it last longer than other woods and even nylon, particularly when flying from a field covered with tall grass and stiff weeds which have a tendency to chip and splinter most wood, and nick nylon props.
And...as you would expect...every Super M Prop has been expertly developed and designed, precision made and properly balanced to deliver maxium thrust

NEW, HIGH-GLOSS FUEL PROOF FINISH
SUPER M PROPS ARE MADE ESPECIALLY TO MEET THE MOST RIGID REQUIREMENTS OF THE NEWER, MORE POWERFUL ENGINES

Diam.	Pitch	Price
9"	6	65¢
10"	6	70¢
11"	6	75¢
11"	7	75¢
11"	8	75¢
12"	6	85¢

A PROP FOR EVERY FLYING REQUIREMENT!

TOP FLITE MODELS, INC., 2635 S. Wabash Ave., Chicago 60616

THE PROPS OF CHAMPS

SPEED PROPS

Diam.	Pitch	Price
6"	7-7½-8	50¢
7"	7½-8-9½-10-10½	55¢
8"	7½-8-8½-9	60¢
9"	7-12½-13-13½	65¢
10"	8 8½-9	70¢

POWER PROPS

Diam.	Pitch	Price
5¼"	3-4	25¢
6"	3-4	25¢
7"	4-6	30¢
8"	4-5-6	35¢
9"	6-8	40¢
10"	6-8	45¢
11"	4-6-8	55¢
12"	4-5-6-8	60¢

TOP FLITES

Diam.	Pitch	Price
6"	3-4-5	25¢
7"	3-4-6	30¢
8"	3½-5-6-8	35¢
9"	4-5-6-7-8	40¢
10"	3½-5-6-8	45¢
11"	4-5-6-7¼-8-8¼	55¢
12"	4-5-6-8	60¢
13"	5½	70¢
14"	4-6	75¢

NYLON PROPS

Diam.	Pitch	Price
5¼"	3-4	25¢
6"	3-4	25¢
7"	4-6	40¢
8"	4-6	60¢
9"	4-6-7	85¢
10"	3½-6	85¢
11"	4-6-7*-8*	$1.00
12"	6	$1.50

*NEW

CHANNEL CHATTER

(Continued from Page 26)

● Last month I mentioned that the LARKS had taken on a new direction in purpose in coordinating Goodyear Pylon racing through-out the nation. On the West Coast, long a hot-bed of the Goodyear movement, there has been quite a number of Goodyear races each year since its inception, and as long as most of the contestants started out at the same time, it has been a real struggle to keep ahead of the guy coming up with a new gadget or a new engine on the Goodyear Pylon racer. Nevertheless, its been a scene of friendly but tough competition. Now the Northern Connecticut Radio Control Club (NCRCC . . . not to be confused with the North Carolina Radio Control Club . . . NCRC Club) have scheduled the third Sunday of each month through October as "Go-Go-Goodyear Day." Their flying field is located on Connecticut Route 187 and they have 100 level acres of pasture in which to fly with 200 feet of Paved runways. First day of the race will be 21 May, and the field will be set up with a regulation Goodyear Course to give those interested a chance to practice, to compete in a non-competitive attitude, as all the club will give (perhaps) is a seasonal trophy. Contact R. T. Granville, Fernwood Lane, Somers, Conn. 06071.

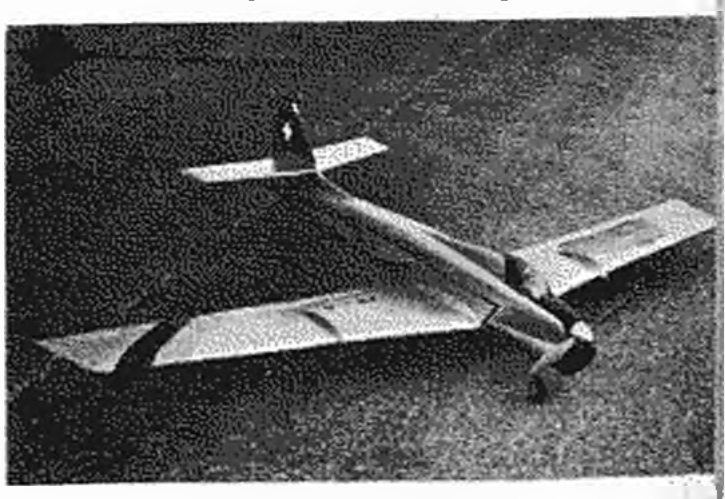
● The September '66 issue of Flying Models carried a report of the Proportional Control System (PCS), which is advertised as a "Sweetheart of a System." Well, it could be called that and we'll let you be the judge. Some months ago I had been flying at the HSSS site, when I gathered my equipment near the Econoline Ford truck I drive, and then decided at the last minute to take some photos of the glider arriving. Putting my glider in the truck, I hustled off and took some pictures. Then I climbed into the truck and drove off. The front wheel gave a crunching sound and I just knew there weren't any rocks on that hill!! Looking into the interior, I missed my PCS transmitter . . . My heart sunk as I realized I had run over the transmitter. When I picked it up, and examined it, my relief was overwhelming. The red knob on the left Bonner Stick assembly was broken off, two mounting lugs of the same stick had broken off inside, there were several scratches and dents in the case, but it still worked!! Application of a bit of epoxy on the mounting lugs inside fixed these, and my PCS was back in commission!! Though this little "boo-boo" was NOT on the PCS test program, it proves that the PCS can still take a beating . . . and still be "A Sweetheart of a System." Incidentally that has been over three months ago, and several weeks ago I flew my glider for 6 hours and 15 minutes on the 500 maH pack without a glitch! When I asked Cliff Weirick the designer, how much longer I could expect the batteries to last (I landed at sunset), he indicated that according to his calculations, "I had crashed already" . . .

● The East Bay Radio Controllers "Carrier" edited by Jackie Richardson, published a cute poem and with their permission, it is repeated here:

A POEM

Its easy enough to be pleasant
When your plane flies along in good trim—

(Continued on Page 35)



Another Swiss design, this one by Gerd Huber, called "Fireball." This design uses a flying stab and wing "fences." Very brightly colored and was a test version of a plane in which the Huber family were going to attempt to fly the Swiss Alps following in an aircraft. A later version crashed and will be re-built for a try in the spring of 1967.

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MPS 64 - HUDSON SOMBER - C/L Scale
Side mounted twin, .19 engines, 41" span 2.00

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Stubby 8 plane fighter model uses .19 mill 2.00

MPS 78 - SEVERSKY P-35-C/L Scale P. PALANEK
Sleek Army Air Corps Pursuit, .29 engine 33" 2.00

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1/6th size WWI Fighter - .60 to .75 engine 3.00

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MPS 81 - GRUMMAN AG-CAT - C/L Scale BOB ADAIR
Faithfully detailed "Duster" - Jun67 FM .00

MPS 82 - CURTIS HAWK 75 - C/L Scale PAUL PALANEK
French AF version of P-40 for .35 engine 38" 2.00

MPS 83 - STAGGERWING BEECH - R/C Scale - 2.00
Unique old timer for beauty - 52 1/2" BRYCE PETERSEN

MPS 84 - MAKO MONSTER - R/C Amphibian D. McGOVERN
Fun on the water - 76" span - .45-60 engine 3.00

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MPS 86 - SOAR SAM - Free Flight Glider B. DUNWOODY
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THE RYAN S.C.

(Continued from Page 16)

and glue ¼" sq. balsa in place. Now grab the 1/16" stock and strip cut some ribs for the stab, elevator and rudder. Install the elevator control horn and hinge. Turn the body upside down on a large flat surface.

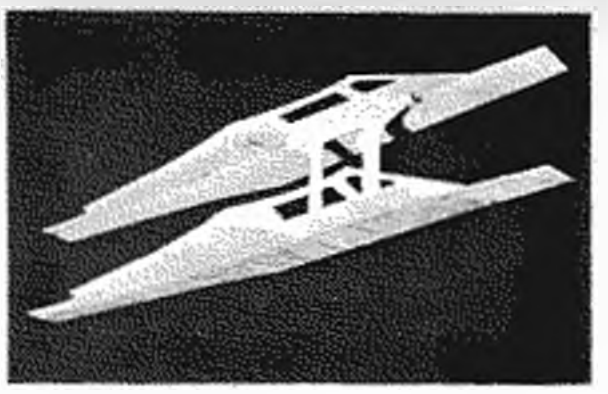
Shape the leading and trailing edges as shown on the plans, except for the part that will fit into the body. Place the main spar, leading and trailing edges in the body, leaving them loose. Now slide the full ribs on the spar into the place. By the way, when cutting out the ribs, make the rib templates from aluminum or tin stock. Sandwich 11 pieces of ⅛" balsa together between the templates and carve them to size. Mark and cut them for the spar holes and leadouts. Do the same thing for the ½" ribs. After the ribs are in position adjust them and pin to spar. Now adjust the leading and trailing edges into place and pin to the end wing tip alignment ribs. After a final check and alignment, install the flap control horn and glue all joints. Now bend your ⅛" plywood platforms for the gear and bellcranks. Also the 1/16" plywood for tailwheel gear. While your idle cut the wheel pants of ⅛" and ½" balsa. Install wheels on gear and epoxy the wheelpants into position and let dry. Jigsaw out the wingtips and laminate them so they can be final-shaped.

Now that the body is dried, install the plywood platforms for the gear bellcranks. Install the bellcranks, leadouts and pushrod to flap control horn. Be sure and install the plywood braces on the flaphorn, for it rotates at this position.

Install the remainder of the body formers. At this time install the pushrod to the elevators from the flaps. Glue the stab into proper position and align. Build the cowling and tack glue it into position along with the top and bottom blocks, then let it dry. Shape and sand the wheelpants and flaps.

Now install the ⅛"x¼" balsa strip in the formers #1 through 5. Shape and sand the top and bottom blocks. The cowling is trimmed along with the blocks, then remove the blocks and hollow them. Install the tail wheel assembly and the main landing gear. Cut and glue the 1/16" balsa deck sides into position. Recement the blocks into final position. Final-shape and install the wing tips, then bend and solder the leadouts. Install the spring hold-down mechanism and dowel rods into the cowling and the 1/16" plywood nose ring. Hinge and install the flaps. Lubricate all controls and make sure they are free-moving. Glue the rudder into position. Let model dry overnight. Finally sand entire model and cover with SGM Silkspan. Finish is a controversial subject, so I leave this up to the modeler.

The colors used on the original were pale yellow, bright red, black and royal blue. Good luck and hope for fair weather, so we have a good season. ●



The fuselage sides are aligned in this manner.

"BEECHCRAFT"

(Continued from Page 27)

mounting detail and both wings are planked top and bottom according to plan. (See Photo No. 10.)

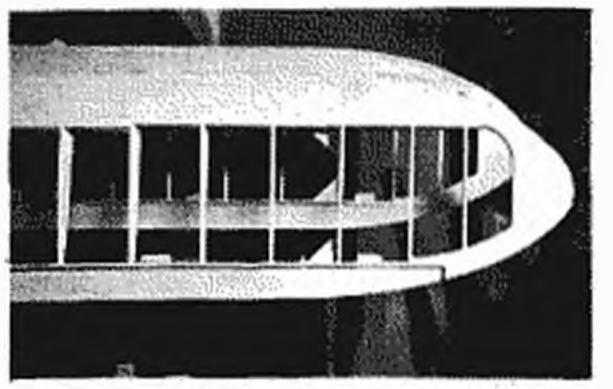
Landing Gear: 1/32" aluminum sheet is cut to size and roughed with soft sandpaper so the dope will stick. The wire bracing is bent to size except for an axle bend and mounting lugs are silver soldered as shown.

Snug-fitting plastic tubing goes on as shown and the axle bend completes the bracing. Other lugs are shaped from soft aluminum scrap, and the bracing is bolted to the sideplate with aircraft nuts.

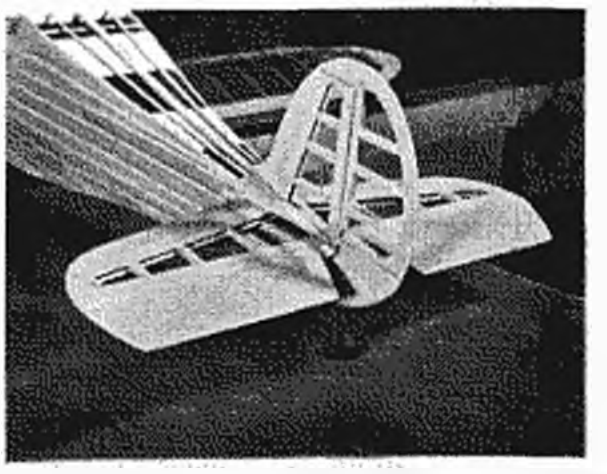
Covering: "Silron" was used and highly recommended because of its ability to curve around difficult areas. Run a bead of glue down the center of the area to be covered and stretching the DRY Silron with the thumbs, place the Silron in place and allow a few minutes to dry. Next, dampen the Silron and stretch to shape and glue with dope; this allows difficult areas such as around the tail section to be covered with ease.

Final Assembly: Engine is mounted in place and bolted with aircraft nuts, servos are mounted in place with fuel tank, etc. Balance is achieved by positioning the battery pack around the

(Continued on Page 44)



Note ailerons, tip structure, hinge positions.



"SOAR SAM"

(Continued from Page 23)

mend them to younger model builders: they're inexpensive, easy to build and, most importantly, they are easy to fly. Many young modelers who are not in a position to receive much adult help become discouraged competing against Juniors whose "helpers" obviously bend the Builder of the Model Rule to the breaking point, but these gliders must be towed by the builder and the "old man" can't help much.

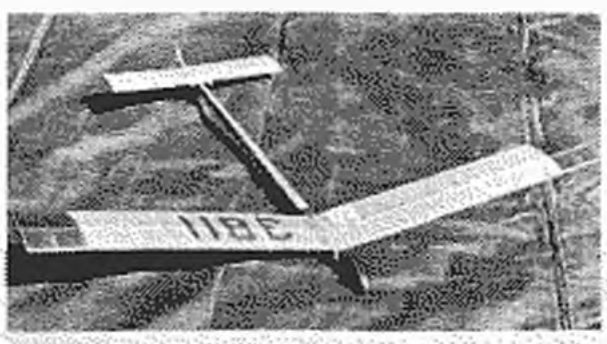
"Soar Sam" is my fourth A-1 design. Each of the four were very similar in appearance, with the major differences being successive reductions in structural weight and improvements in airfoil section (at least I hope they were improvements). The present design should present few problems to any but the most inexperienced model builder.

The plans for "Soar Sam" were drawn to provide all the information needed to build the model with a minimum of explanation. I will sketch briefly the procedure I used in building, and cover in detail only the auto-rudder mechanism and flying procedures.

The first step in building any model airplane is to select the materials to be used. For a "Soar Sam" you'll need the following:

2 pcs. ⅛"x¼"x36" spruce: wing spars, auto-rudder stops.
1 pc. ¼"x½"x9" hard balsa: towhook mount.
4 pcs. ¼"x¼"x36" hard balsa: wing leading & trailing edges.
2 pcs. 1/16"x⅛"x36" hard balsa: stabilizer spars.
1 pc. ⅛"x⅛"x18" hard balsa: stabilizer leading edges.
1 pc. 1/32"x¼"x18" hard balsa: stabilizer trailing edge.
2 pcs. 3/16"x3"x36" med. balsa: fuselage, ribs, formers.
as reqd. ⅛"x3" med. balsa: tips, wing mount, rib, rudder, fin.
as reqd. 1/32"x3" med. balsa: stabilizer ribs, saddle plate.

(Continued on Page 32)



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"SOAR SAM"

(Continued from Page 31)

as reqd. 1/32" thick plywood: wing dihedral gussets.
as reqd. 1/16" thick plywood: stabilizer saddle.
1 pc. 3/64" dia. x8" mus. wire: towhook.
1 pc. 1/32" dia. x12" mus. wire: autorudder hinge, hooks.
1 pc. 1/4" dia. x4" dowel: wing mount pegs.
1 pc. 1/16" dia. x2" alum. tube: autorudder hinge.
1 pc. #4-40x3/8" bolt, with nut and two washers for towhook stop.
1 pc. 30" long linen fishing line for autorudder.
4 pcs. Jap Tissue covering.
As reqd. solder, lead, leadshot or Cerrolow for ballast.

It's obvious that most of the materials can be picked out of your scrap box, and the rest are commonly available at your friendly local . . . . . A word or two about selecting balsa would be pertinent here. "Hard balsa" should be almost as hard as spruce and wood for spars and edges must be straight (look down the length of the wood for bends and reject those pieces that leave doubt in your mind. "Soft balsa" is light in weight, not pulpy, while "medium balsa" is more than just "in-between," it must be straight grained and without twist, and for "Soar Sam" you should lean toward the lighter wood. Now, let's get on with building the model.

Wing. Build the spar first. Cut the scarf splice as shown and glue on the two gussets (J). Build a leading edge using one gusset (J), and a trailing edge with one (H) gusset. Pin the edges to the plan of the left wing panel and glue in all the ribs, then add the spar. Use care in aligning the center rib (A). The plan of the right wing panel is drawn in two pieces which must be joined together to provide a complete plan. Build the right panel as you did the left, add a second coat of glue to all joints, add the tips and sand the edges to airfoil shape. Put another coat of glue on all the dihedral joints.

Stabilizer. The stabilizer is built in much the same way as a wing panel. Lay out the edges and lower spars, glue in the ribs, add the top spars and the tips. Use 1/32" balsa to fill in between the top and bottom spars each side of the center rib (E) and behind the leading edge of the bottom surface. Sand the edges to airfoil shape and add the dethermalizer hook (V).

Fuselage. Cut out all the pieces for the fuselage and mark the former locations on the top. Lay the top flat on your workbench, glue on all the formers and the fin, then glue both sides in position. Bend the towhook, bind it to the keel (T) and glue the keel into the notches of the formers. Add the noseblock (I) after carving it to fit between the sides. Glue the bottom in place and bend the towhook to final shape. Bend the auto-rudder hinge wire to shape with the tubing in place on it, then glue and bind the rudder to the tube. Do the same with the rudder horn (W) and fasten the hinge wire to the fin and to the underside of the fuselage. Make sure that the rudder swings freely on its hinge. Install the stops (R & S), the hook (U) and the stabilizer saddle (Q), then reglue all joints. Sand the fin and rudder to airfoil shape and put in the wing mount dowels. Make the dethermalizer limit wire from stranded controline wire, 3-3/4 inches from loop to loop and glue it around the hook end of the hinge wire.

Cover the wing, stabilizer and fuselage before completing the wing mount portion of the fuselage.

Covering: Put two coats of dope on all surfaces of "Soar Sam's" structure which will come into contact with the covering tissue. Cover the lower surface of each wing panel or the stabilizer before covering the top of that panel. Dope the trailing edge and stretch the tissue along it as tautly as you can without generating any wrin-

(Continued on Page 46)

"SPEED TRAPS"

(Continued from Page 20)

photographs. It is based on measurements of the Doppler effect—the familiar change in pitch of, for example, a train whistle as it passes by a cross road. The only equipment necessary is a portable tape recorder, such as is now in common use by modelers for sending long-winded letters around the country. A direct measurement of the straight line speed can be obtained. Its accuracy is not anywhere near adequate for official world record claims, but it can be used quite nicely for experiments. With a little practice, the speed can be determined to within about 3 miles per hour when the true speed is around 100 mph.

If a tape recorder is available, all you need to do is to fly the model out near the horizon, pour on the coal and fly at about 100 feet altitude straight towards the recorder—over it and away from it. The accuracy isn't greatly impaired if the model passes 100 feet in front of the recorder, so don't take any chances of hitting yourself or the recorder operator. You must do the experiment in calm air—or if there is a light breeze, make the pass in a cross wind direction to reduce the error. You can gather a whole bunch of data this way and then subsequently analyze it in the peace and quiet of your shop.

When you get home to your shop and listen, you'll hear a typically high pitch note when the model is coming towards you. The pitch goes through an abrupt change to a lower note when the model passes by. Then it continues at constant lower pitch until you pull up or turn around.

You or a musical friend will be able to pick out constant pitch notes that you can identify and hum. Pick out and hum or sing the pitch for the early stages of the oncoming part and then also for the late stage of the outgoing part of the pass.

A radio speaker hooked to an audio oscillator will permit you to play notes that exactly match your hummed notes. Any amateur will be able to do this with an accuracy of about 2 cycles per second at the 150 to 250 cps range that results from engines running about 10,000 rpm. If you are eager and want to get some idea at the field, you can use a vibratac as a tuning fork. Twang it, and extend it until it matches the engine note when twanged. Then read the rpm. Divide by 60 to obtain pitch in cycles per second. Now all you need do is plug the pitch reading (cycles per second) into the equation below which was derived from the Doppler equation.

$$S_a = S_s \frac{P_1 - P_t}{P_1 + P_t}$$

S_a is the speed of the airplane
S_s is the speed of sound in air
P_1 is the pitch of the note while the model is coming toward the recorder

(Continued on Page 34)

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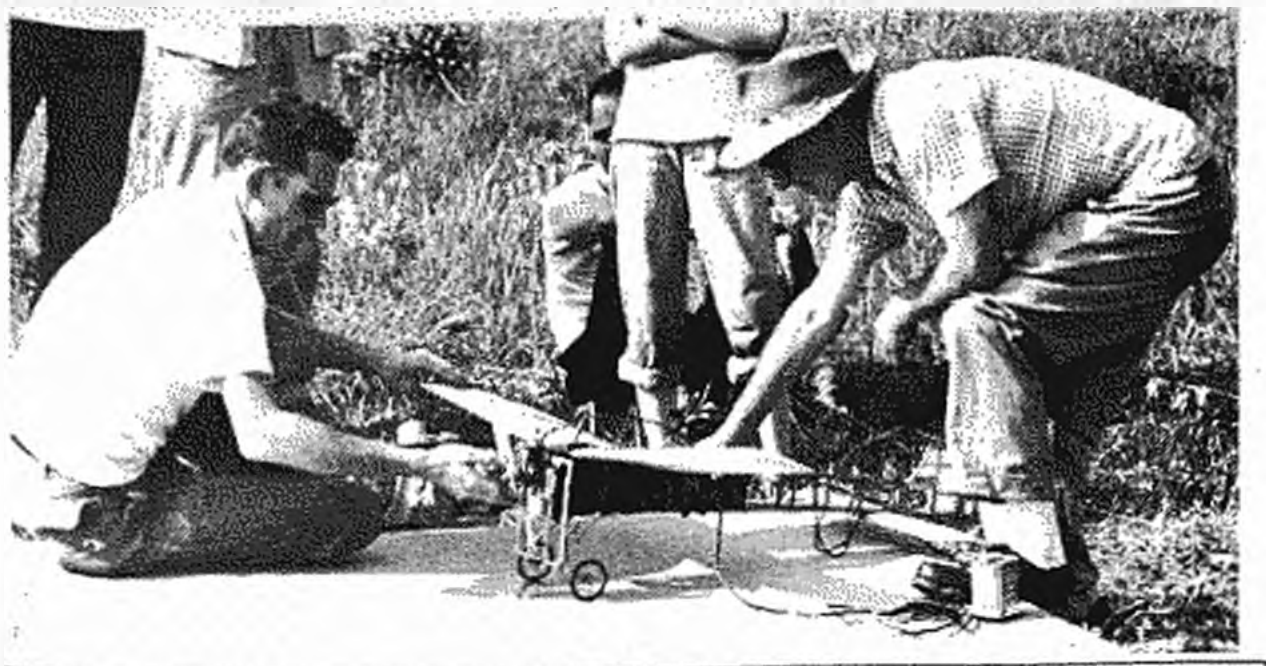

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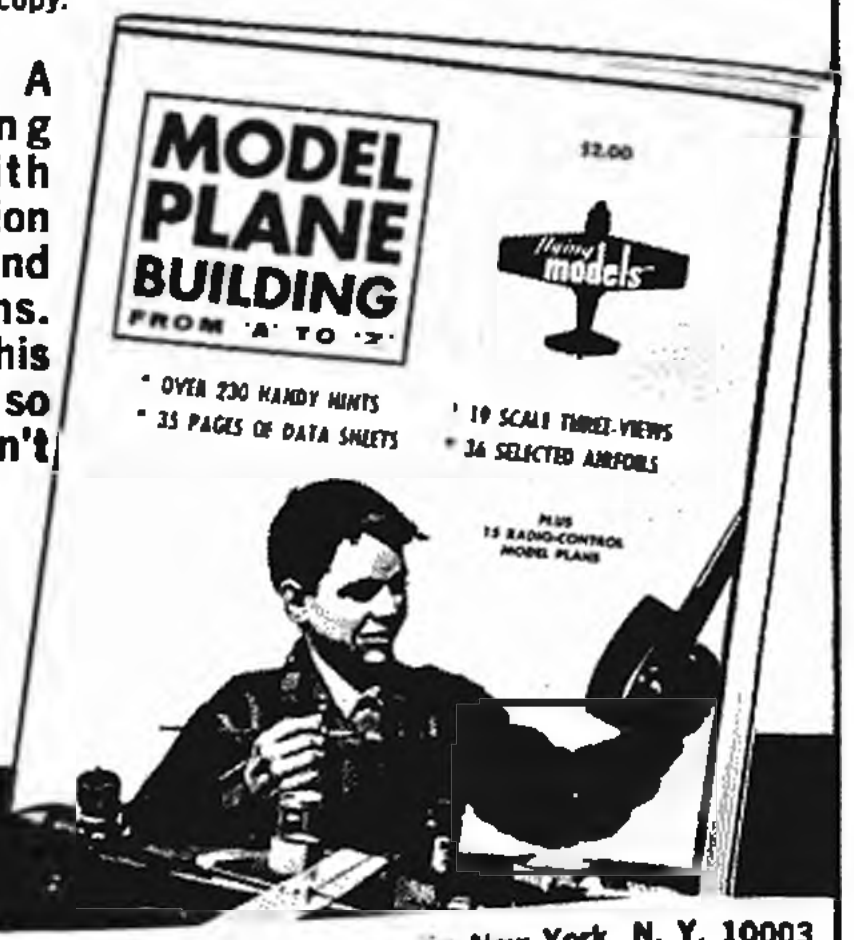

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"SPEED TRAPS"

(Continued from Page 34)

P_1 is the pitch while the model is going away from the recorder

(Note: You can also plug in the apparent rpm directly from the Vibratac—there's no real need to divide by 60.)

At sea level and 80°F, the speed of sound is equal to about 776 miles per hour. It changes a bit with atmospheric pressure and temperature, so if you're doing this experiment in Denver, in the Sahara desert, or at the Arctic circle, you have to make corrections to this value to get true speed. However, it isn't important to have the exactly correct value of the speed of sound if you are simply making experiments to compare the efficiency of propellors or other variables. Any number, including unity, will do for S_s in this case.

In one typical pass of the FAI model shown in the photographs, we determined that the high pitch was 232 cps and the low pitch was 166 cps; the temperature was 80°F and we were at 200 feet altitude which is nominally sea level. We ignore changes in barometric pressure since it enters the experiment only in a minor way. From the above tone pitches, the speed of the model is calculated to be

$$S_s = 776 \text{ mph} \times \frac{(232 + 166)}{(232 - 166)}$$

$$= 776 \times \frac{66}{398}$$

$$= 129 \text{ miles per hour}$$

We eventually set a speed record of 140.28 mph with this model—and one of the reasons is that by using this technique, we found a better propeller than we had on board on this particular flight.

This analysis assumes that the engine runs at constant speed throughout the pass. Unless you play a lot with the throttle, this assumption doesn't introduce much error. Since you are only concerned with relative change in pitch, it doesn't matter whether the engine is turning at 8,000 or 16,000 rpm—so long as it is constant.

The technique can be simplified further if you have a good musical sense and can sing Do-Re-Me from the "Sound of Music." For instance, you can sing the two notes while the model is flying. If the pitch changes from Do to La (a minor third to a musician), when going from the higher to lower note, you're doing about 80 mph. If it changes from Do to Si (a minor third) you're going about 95. From Do to Sol (a fourth to a musician) you're doing about 115 and from Do to Fa (a fifth) you're really moving at about 140. If your musical sense is good enough to decide whether the interval is a little flat for a major third or a little sharp for a fourth, you can interpolate between these numbers. Granted, it's not very accurate, but it can tell you the difference between 120 mph and 100

mph. We are still looking forward to hearing the symphony composed by those 120 mph Goodyear racers to see if Beethoven and Brahms agree that they're really going that fast!

Now then, if you want to get more accurate, there are more sophisticated techniques that can reduce the error to about 3 mph. You simply take two portable recorders and set them about 600 feet apart on the flying field. Now fly over the line between the two recorders. Just about when the model is at the midpoint, have an assistant fire a blank pistol or a cherry bomb if it's permitted. The pistol should be at about midcourse so the time of arrival of the Bang is almost the same for both recorders. This loud boom gives simultaneous marks to the tapes. Cherry bombs add excitement, but if you don't have any, you can have the recorder operators say "Mark!" into the microphone when someone waves a flag at midcourse. Now then, you can take simultaneous readings of the pitches by means of your musical matching to an audio oscillator, or with an oscillograph photo as shown in the pictures. Bob Hooper helped in these photos and we won't go into detail here—but he had the scope set up to make a single sweep whenever we pushed a button on the scope. We first played the tape from one end of the course into the scope and pushed the button an instant after we heard the pistol. Then we switched

(Continued on Page 50)

Berni Huber's Swiss "Wildcat" multi ship. Note muffler on Merco .61 engine. Flown on Kraft KP-6 radio in high altitudes, with great success.

CHANNEL CHATTER

(Continued from Page 29)

But the man worthwhile—is the man
who can smile
When his plane comes augering in!

The above is a very true statement
And I shall attempt to tell why
A man must smile at these times
It's not nice for a grown man to
CRY!

● Open invitation to all travelling to Montreal to visit EXPO 67, who would like to attend and/or fly with members of the Model Aeronautic Radio Specialists (M.A.R.S.) of Montreal, are invited to contact by telephone one or more of the following: Al Rosen (731 2541); Claude Hamelin (725 7524); Ray Gareau (681 1782) or Jean Rivard (626 5356). EXPO 67 opens in April and closes in October, so if you stand a chance of attending, clip these numbers out and secrete in the wallet. Might get some good ideas on attending a Canadian Club meeting.

● For those modelers not attending the Toledo Conference, to personally view all the new "goodies" there was one item that intrigued me . . . . . NYRODS . . . . . So I sent to Dan Pruss for some extra long lengths for a special R/C glider abuilding and they arrived all coiled up on a roll. Even when I moved the inside nylon tubing, I found it had very little friction. (It relaxes when set in installed positions, offering even less friction.) These NYRODS are quite the thing especially where a bend or turn is required, and because one piece of nylon tubing is inserted in another piece, there is very little friction. They sell for $.95 for a 30 inch length with the #2 screws or 48 inches for $1.50. Dealers who are interested in getting free mock up, or modelers who want more information should write to Su-Pr-Line Products, 34F Copper Drive, Plainfield, Ill. 60544. ●

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DP-372 System—(72mc frequencies: 72.080, 72.240, 72.400, 72.960, 75.640mc) $299.95

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THE ZEPHYR:

(Continued on Page 18)

their roosts in the scraggly trees, flap their wings very vigorously and through this action, break the bubble loose from the surface of the desert floor. Soon they were joined by other crows in the area, all circling and cawing, delighted to have a free ride. Gradually the altitude of the gaggle (an English term denoting a flock of wheeling sailplanes) increased to the point where the crows were merely dots in the blue sky. Some of the crows would drop out of the gaggle and glide off to distant destinations in search of food or water, others keep on wheeling until lost in the azure sky. Once bubble was on its way, with cooler air displacing the spot vacated, there was no lift available for a glider. Only when I was able to place my R/C glider in or near the bottom of the lift area, marked by the lowest of the circling crows (noisy too) was I able to use any lift. And the quickest altitude gained was done so by means of trimming the glider to bank the same direction as the crows flew, and then FLYING HANDS OFF. The only correction necessary was to keep it inside the magic circle. Some gliders are rather "groovy" in that once put into a bank, they will not pull out of it as quickly as others. These are generally closer coupled, i.e., short moment arm, and can turn tighter circles without loosing altitude in thermals.

As for advice on how to find thermals, the most valuable sign post is the cumulus cloud. And if you find a number of them building into a cloud "street," in a line exactly down-wind from a hill or other obstruction, head for that spot for about once in every twenty minutes, all conditions being equal, it will spawn another thermal. Some months ago I used the term "Mother Nature breathing in Slow Motion," and this action is very evident by the formation of a cloud street. The next most visible sign is of course, the birds of the air, be they swallows, buzzards, hawks, or condors. They are equipped to sense out the upward moving of air much more than you can, particularly with the glider in a different place than you. A favorite trick at the HSSS "Instant Lift Hill" site is to keep watch for circling gulls over the water, then to head the glider into their gaggle as soon as one develops. A week ago last Sunday, while flying the "CLOU," which is much more a thermal glider than the "Kurwi 33," I was able to join up with a huge gaggle and ride up to over 800 feet. As a matter of fact, it ended when I was quite far back (about a half a mile) from the edge of Instant Lift and as the birds were leaving the warm air, I left it also and trimmed the "CLOU" for optimum glide. Some spectators around questioned my wisdom in allowing the soarer to get so far downwind, but when it came over the edge of the cliff with a couple of hundred feet to spare, back into the lift, it was proof that I had become acquainted with the flying qualities of the "CLOU." Oh, I was using the 95" wing on the design this day.

George Clarke, in Newark, Ohio, is interested in learning more about thermal-hopping techniques, and though I've tried in the foregoing to explain how I do it, it pretty much relates to fishing. Sometimes the most expensive

Photo shows site of Tunbridge Wells Slope soaring spot in England, and several modelers taking it easy awaiting wind. This typically depicted slope soaring site in England could well be duplicated a thousand times in America if the modeler would search for good slopes. When one is found, write to Dale giving details which will be included in a map now partially finished giving slope soaring locations.

equipment does not catch the fish. Experience in the best teacher, and quite a bit of thought and concentration on what you are doing without overcontrolling the glider and forcing it out of the thermal will bring best results. There are too many variables in thermal flying to set up a "rule of the thumb" measure. However, some of the hints for transitional training from power to R/C gliders may be of use. First, if you are still using relay equipment or reeds, adjust the servo for loose centering. This technique allows a bit of residual rudder to remain. By residual I mean that the rudder does not return to exact center but favors the last command. With this feature, instead of rudder trim (which serves as rudder trim very well), a slight circling effect is evident in the trim of the glider. Not recommended for the elevator. Then remember you usually fly in pretty smooth air, consequently the flight path will be fairly constant. When you hit a thermal, this is moving warm air and most always turbulent. If your glider is normally stable, the small thermal will tend to throw the glider out of the thermal because of the lift generated on one wing and not the other. When this occurs, apply down, and opposite rudder and dive the glider into the unseen warm air. If it gains altitude, then begin a circle of normal proportions making sure it is not so tight that a spiral dive develops. And . . . ride the thermal until it has served

(Continued on Page 41)

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"MAKO" MONSTER

(Continued from Page 28)

It may not be needed, for the "long planing type hulls" do not seem to develop as much suction as other types, a fact that is obvious by the smoother lift-offs, without a violent upward surge. Still, it offers interesting food for thought, and has been incorporated into this aircraft with fingers crossed. Possibly it might cause aerodynamic complications, but could easily be closed off if need be.

Wing floats are necessary for water stability, but are less than helpful in all other respects as the model tries to accelerate. A pivoting parallelogram arrangement has been employed on this design to offer a positionable float setting, which can either be adjusted manually, or with a servo to position the floats. Thus, a full down position while at rest on the water, with the floats retracting into a slightly higher above-water position as the model accelerates and stabilizes itself on its own wing lift. It can and should be landed in this same position, minimum initial wing float water contact, with the floats driven to the lowest position as the model coasts to a halt. The problem is solved in full scale flying boats by the higher setting, with the pilot balancing the leaning aircraft on aileron control. Possible, but harder to feel on a model, when you are not within the aircraft, and in fact may be some distance away at times to clearly view the take-off conditions. The water rudder will offer directional control at low speeds before the air rudder becomes effective.

Flaps and ailerons have been incorporated into this aircraft for more than the normal reasons. Our regular "Seavenger" design of 1962 featured flaps, which worked quite well in developing additional wing lift, though not too necessary with the Davis airfoil which it employed. The "MAKO" has a semi-symmetrical airfoil section, and can use the additional lift to advantage. It does not seem to be really needed on large bodies of water, but if you are faced with flying from marginal pond sized sites, it will speed up the lift-off. 150 foot to 200 foot take-off runs are common with multi radio seaplanes, and the use of flaps can take a few extra yards off this, which might help you clear the trees, etc. Consider them optional, if your equipment has the servo to trigger them, and build the wing accordingly.

The same might be said of the ailerons. The design certainly in no way requires them aerodynamically, as proportional engine/rudder and elevator will do a near perfect control job for you. Still, those with full house equipment enjoy using it, and it can refine the performance aerodynamically and widen the scope of stunts possible. It is of value to a seaplane taking off, in that as already mentioned, it gives you stabilizing corrective control to a model leaning on one wing float or another, when you want to accelerate straight ahead. It can be used in addition to, or instead of the positionable wing floats.

At this writing, the aircraft is being built. It is a fact of life with seaplanes that the year doesn't have enough months. To test a seaplane in mid-winter is impossible, yet it must go into print in April before the boating season, to be printed in May for distribution in June, for building in July, for flying in August. Otherwise you end up in about

(Continued on Page 42)

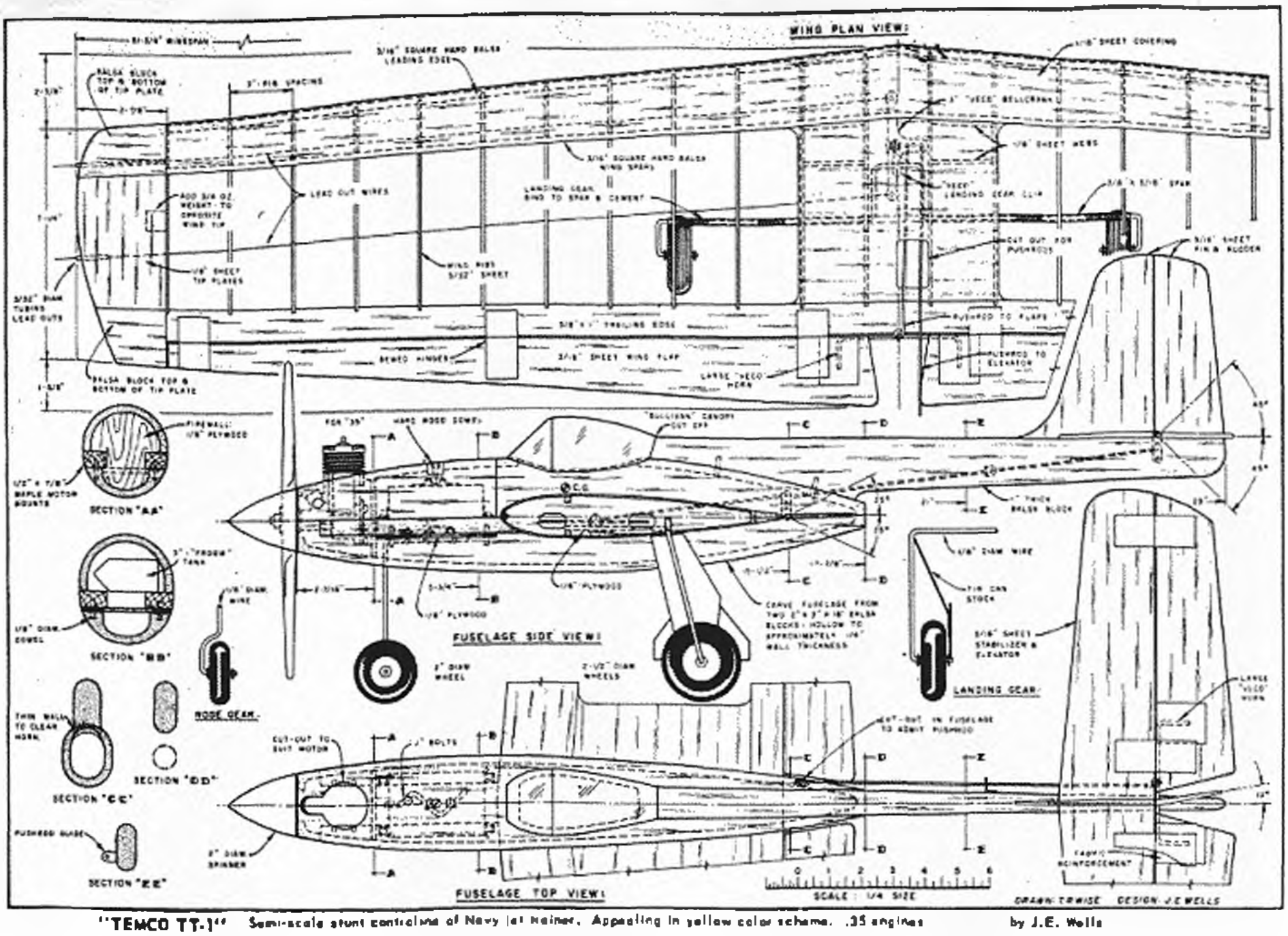
MODEL BUILDERS

(Continued from Page 21)

neers, Concord, California, are a Western Associated Modelers group interested in Controline flying.

One member, **Vic Garner**, has an eye on the endurance record of 3 hours 45:05.6 set by **Rick Asturias** in '63. Vic's modified McCoy .35 gets around nine minutes on an ounce of special fuel, burns seven ounces an hour. Vic figures that, if he can carry a quart of fuel, he's got it made.

Like other clubs, the "Concordians" have site problems, but they intend to hang onto those they have. Instructions for the use of one site specify a drip pan (clean sheet of cardboard) to keep fuel off the hardtop, as well as the



"TEMCO TT-1" Semi-scale stunt contestant of Navy Jet Trainer. Appealing in yellow color scheme. .35 engines by J.E. Wells

usual instructions about picking up cans and litter.

● Word from the "Fox Valley" (Illinois) boys is that the big FVMAA annual will be held August 27, at the new Aurora Ring-Kings' field between Aurora and Batavia. Jesse Roush will CeeDee. Events at the AA meet include: Ratting, Combat, Stunt, Carrier and Balloon Bust. There will be two age groups for most events. Incidentally, FVMAA's new officers incude: Wayne Morrison, Lily Lake, president; Tom Johnson, Lily Lake, veep; Ed Jordan, North Aurora, sec'y; and, Dick Marek, Carpentersville, treasurer.

● Interested in vintage UC kits? Contact Ed Jordan at 641 Redwood Drive, Aurora, Ill. Among the goodies: kits for an Eagle Co. "Dreamer," Stanzel "Tiger Shark" and "Super G Shark," "Super Cat," floats, Scale and Speed designs. According to the list, he has quite a selection.

● The word from St. Louis is that the Metro-East Meet is set for August 6th, and the 1400-lap Rat Romp will go off on July 23 at Buder Park. The Metro-East will be held in Alton, Ill., as in past years. In other Tri-City developments, we learn that the "Yellow Jackets" are now sponsoring Goodyear Races and the "Hot Heads" have started Biplane Combat. And the FF boys

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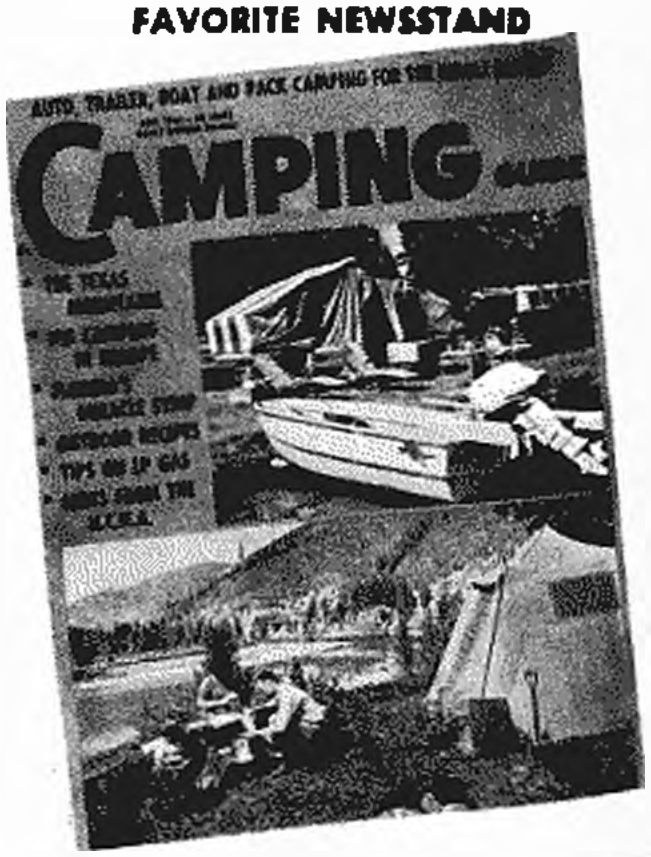

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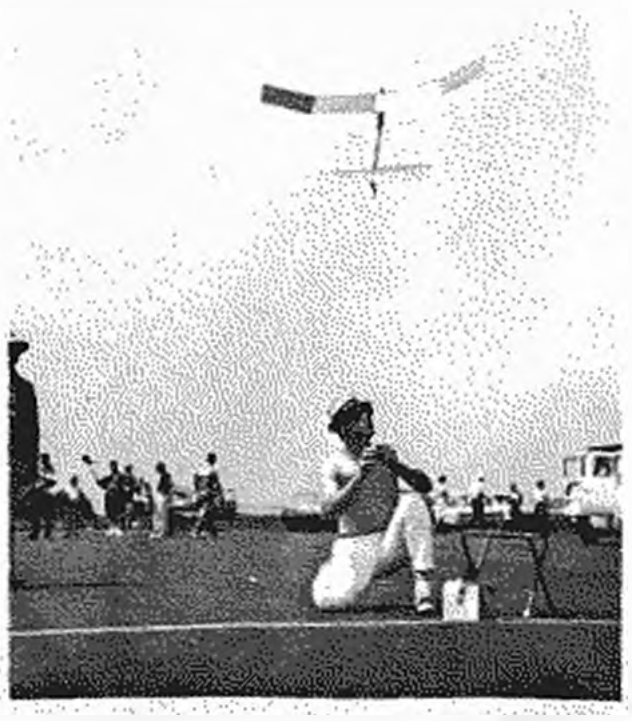


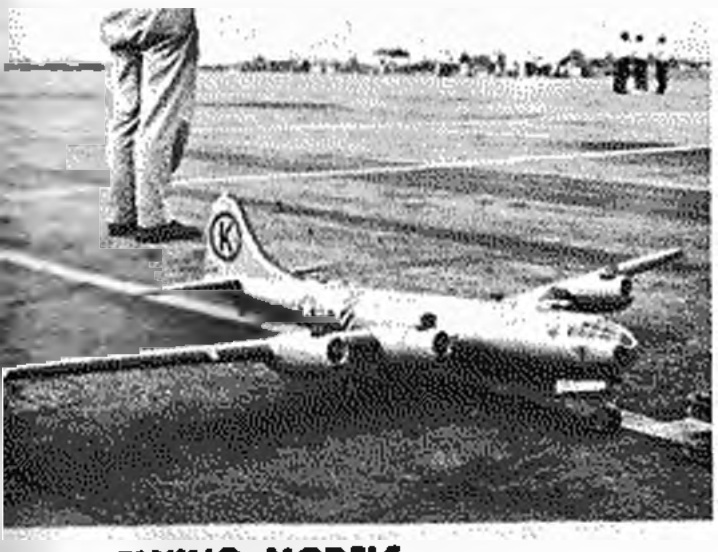
have come into the fold: the Kirkwood "Thermaleers" have joined the Association.

Weight-lifting is back again. Art Biehl of the "Hot Heads" won in the Senior division of a recent meet by hoisting fourteen pounds. Tom Reeh took Junior honors with five pounds. Tom flew a Sterling "P-51," but Art's ship was a specially-designed job.

Those biplane Combat obs, above, are WW I profiles with .29 to .35 mills. They carry three-colored streamers on five-foot leads, fly on sixty-foot, .015 lines. The Goodyears are being built in .15 sizes.

● Please, please, please . . . boil nylon props for about ten minutes before using, relieves mold stresses and strains, making them safer. Extreme cold weather does not help. These are great props, but safety precautions are always worth the minutes. Fine chance to die them colors at the same time.

● Seems like Scale is making a comeback as a small-field and fun event. All the sheets are carrying plans of ol' time two-bit kits, and the clubs are scheduling events in rubber and small-bore power. Fudo Tagaki reports on Walt Mooney's fun meet; sez Walt plans a full-blown Scale meet this spring. Anyhoo, the meet was jackpotted at ten cents a flight, scored on a first, second, third, etc. placing system with the guy with the lowest total points winning. Clarence Mather won with a PT-19. Chrislea Mooney won in Junior and Phil Moore took Power wtih a "Faircihld."



● Talking about Goodyears, the Tulsa 'Dobbers have been flying 'em for some time. They fly 140 laps. Most recently, Speedy Lewellen took first in 15:00, followed by Don Richardson and Glenn Harris. The FF boys are gettin' mighty interested in Ol' Timer, too; fly to John Pond's rules.

Pre-season FF activity, however, has centered on the ANG Hangar where the "Dobbers" have been chucking gliders and flying Scale. Winning gliders have been doing 45 seconds and better, even in the hands of Junior novices. Junior Dave Polhemus won with 49.4, was followed by Gary Jones in 47.5. In Scale flying, Dan Hodges took first with a no-dihedral "Pietenpol". These ships run to about 24-inch spans, fly on a loop of one-eight flat rubber.

In the "expert" handlaunch category, Bob Hanford turned in 75.7, followed by Willard Kehr in 68.8 and Jack Roach with 65.8. And young Geoff English went an even 65.0 to win in Junior. Open Rubber went to Mark Valerius with 7:40.5. He was followed by Roach and Jim Dyer. Geoff also took Rubber in 6:20.4.

Hodges' winner in Scale garnered 128.6 points, finishing ahead of Kehr's entry with 108.8. In Junior, Bobby Hanford's "Helio Courier" piled up 107 points to win.

Among the improvements to the Dobbers' field is a newly-surfaced R/C strip. A bunch of the boys got together and levelled, graded and spread "chat" for the facility. (For the uninitiated, "chat" is residue from a mining operation, sandy in appearance, and possibly rich in bonding agents.) Rain and rolling or packing operations will produce a smooth, hard surface.

● Cd'H fans would get a kick out of the report by Bill and Shirley Horton in the Crawley "Turbulator". They madd the February trip to Paris, proxied American ships in addition to flying their own entries. Thirty-five minutes from London to Orly-Paris in a Boeing 707, a few heetic moments retrieving model boxes, a coach ride to the hotel, and they landed in the same room they occupied last year. Their group took the Metro to the Au Savayard, spent two hours sampling French cuisine, and broke up to do a little sight-seeing.

Sunday was cold and windy, terriby overcast. At Chavenay, greetings from the French regulars and a quick series of test hops since flying was to be in rounds, the first round already underway. Flying was a series of near calamities until 12:15 when the meet "broke" for lunch. Then the sun came out.

At 1:30, Round Two commenced and the sun went back in. With Bill working on one max, the round was series of motor changes, adjustments, a near max for Shirley and another max for Bill.

Round Three got under way at 3:00, with only three contestants having double maxes. Shirley led off, maxed. Bill followed, downdrafted in 67 sec.

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With the weather deteriorating rapidly, proxy flights were rushed. How'd they make out?

Shirley ended up twelfth with 321, Bill twenty-first with 307. John O'Donnell came 28th, behind V. Taylor, 26th. American entries finished: Chuck Sotich, 31st; George Batiuk, 76th; Dave Linstrum 88th; Fudo Takagi, 105th. Frank Monts and Dick Monts ended up 47th and 52nd.

● Chuck Borneman sends the word on the St. Louis-Kokomo challenge meet at Bunker Hill AFB Gym. Events included Easy-B and Glider. The Bunker Hill boys won hands down. Jim Richmond and Al Rohrbaugh topped the lists in Easy-B with 13:33.9 and 13:09.4, Jim setting a new site mark as both he and Al went past the old 12:18 mark. Bob Larsh took Handlaunch with 44.4 seconds.

In other events, Bob Hotze took the paper airplane event with 13.1, followed by Larsh with 12.8 amid a litter of folded paper. In Scale, Richmond's "Pilatus Porter" earned a total of 140 points to tie with John Adams' Blackburn All-Steel, necessitating a flyoff. Richmond won. Third place went to Jack Fike's Bristol Prier with 118.5. Highest flying points (100) went to Richmond; highest scale (79) to Adams. The event was very well supported and more are planend.

● The Michigan Association Newsletter carries rules on a for-fun profile Carrier event instituted by the group to attract a broader base of competition. Many of the associated clubs have agreed to sponsor the event at local meets and it will be carded at the State Meet. Briefly, th rules specify: sixty-foot .015 lines; .36 max. plain-bearing engines, with mods limited to those necessary for throttle; fuselage may have a max thickness of ¾" and a minimum length of 23 inches; minimum area of 300 squares with no flaps, spoilers, or other lifting devices; conventional two or three-wheel gear; nine-inch max hook length; and, flying must be on commercial fuels.

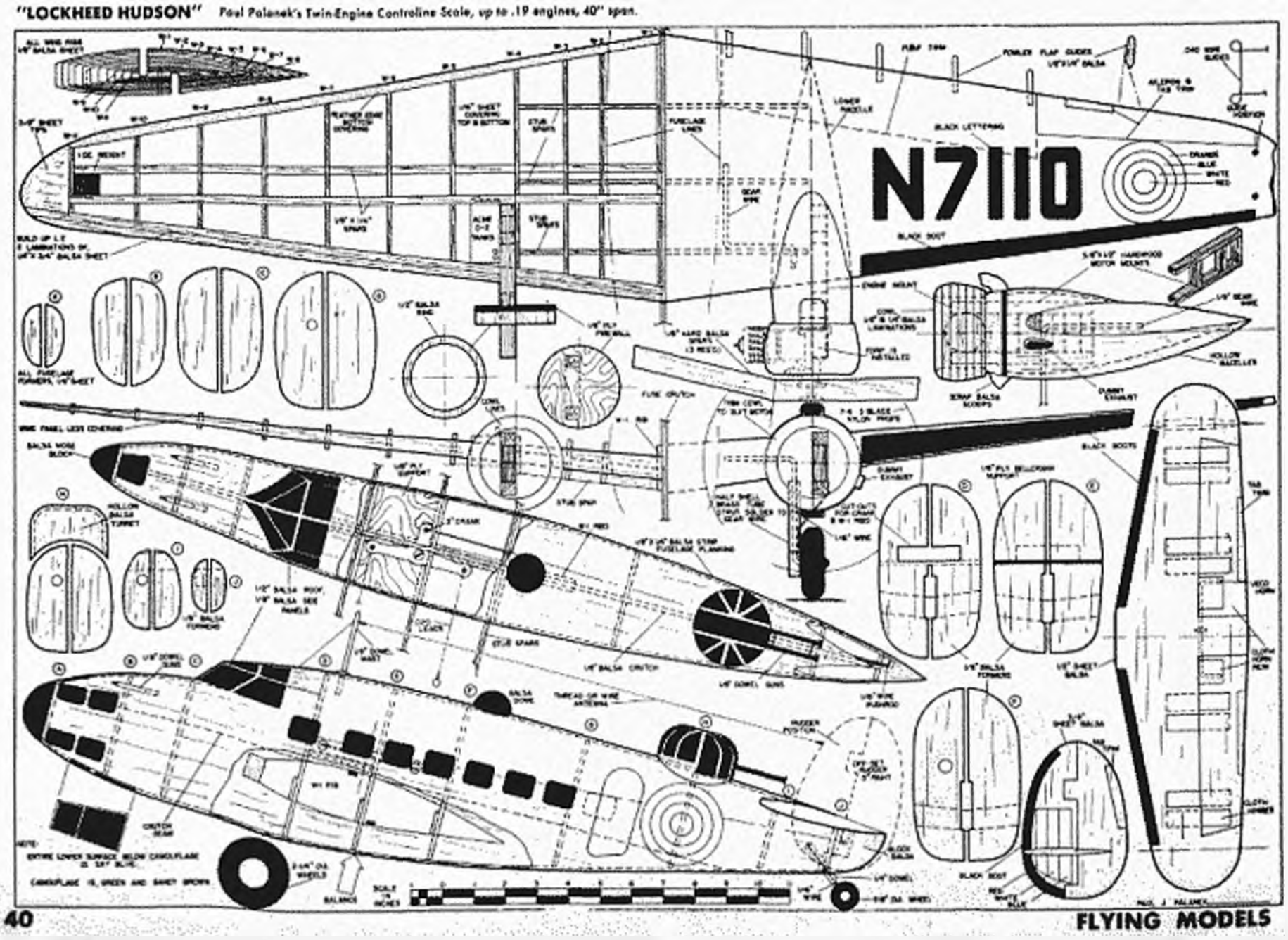
● Florida modeling got off with a bang via the AAA State meet at Sebring in April (we'll give you the low-down next issue), promises to keep going strong via Fiesta of Five Flags and the Confedrate Nats. However, a series of monthly meets has kept the boys tuned up. The "Tropic Airos" (Miami) last such saw John Pizzulo win Rat on a cold, windy day. Time was 7:07. Brown and Sawyer finished two-three. Balloon Bust resulted in lots of prangs on the blacktop, but Sawyer and Pinckert tied for first in this one. Speed ran all day with scoring on a percentage basis — clocked time against the record. Don Pinckert, turning 173 in B, came first with 97%. Pete Rubino, 168 in B, came second at 94%, and Tony Regna, 146 in A, was third with 90%. Free-Flight was cancelled due to weather.

● Bill Gieskieng's MMM Newsletter, "The Hoarse Voice of Denver's Magnificent Mountain Men," continues to be a joy. In addition to the local news, it carries quite a lot of info on new products, motors, and gadgetry.

One of Bill's friends, Glen Menu, has developed an auto-elevator, CG-shifting device. Glen uses a pin on the side of the nose which retracts when his Wakefield's torque is expended. This releases two lines: one goes to the hinged-trailing-edge elevator on the stab; the other goes to a sliding lead weight which comes forward to shift

(Continued on Page 43)

"LOCKHEED HUDSON" Paul Polanek's Twin-Engine Controline Scale, up to .19 engines, 40" span.



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	8105-5	.100 x 2 x 3.5	15.0	8-32	4.5 to 6.0	4.25
Heavy	8106-3	.080 x 1.2 x 3	10.3	8-32	3.5 to 4.5	3.80
Duty	8106-4	.100 x 1.5 x 3.2	12.8	8-32	4.5 to 6.0	4.25
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THE ZEPHYR:

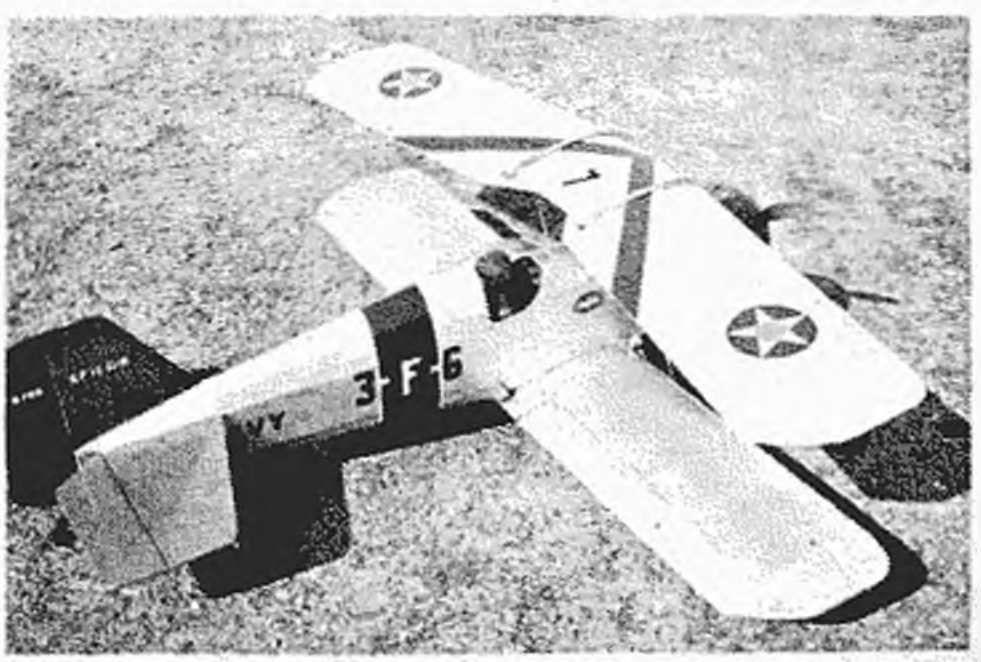
(Continued from Page 37)

its purpose. When you leave the thermal, head directly upwind and trim for maximum glide without stalling. The glider may seem to just float up there with such trim in it, but really thats the way to keep airborne until the glider indicates another thermal. Perhaps this isn't the right approach to thermal finding, but because most of the glider kits are designed in Germany (the land of Volkswagens), they are two-piece wings. Being two-piece wings, they tend to "flap" a little in the transition from smooth air to rough air. If the glider is low enough to distinguish this "flapping" it is a sure sign of gusty air and a good indicator of thermal activity. Of course, the correct approach to thermal finding is something akin to Maynard Hill's "Hill Seeker" which transmits an audible tone to indicate the relative increase or decrease in atmospheric pressure. Such a system is being incorporated into my thirteen footer, now under construction.

Another letter from R. R. (Bob) Parker in Warrnambool, Victoria, Australia, asks about the reliability of PCS system and if, because of its low price, it is reliable. Further, at this price will the manufacturer be in business for some time to come. For the answer to the first question concerning reliability, see my comments in the Channel Chatter column, after I had ran over the PCS transmitter with my Ford truck. And now the answer to the second question is obvious. Not only will Cliff Weirick represent the USA at Corsica at the Internats R/C competition, but since the beginning of January will serve two years as President of Academy of Model Aeronautics. As for the price remaining at $299.95, this is open to question as some current rumors (in April) are circulating that he will deal through distributors in July and of course this will force the price up. Bob Parker sent along a tracing of the AV-36 a tailless French sailplane which he maintains approximates the force layout of Dr. Rolf McPherson's "Foamin Wing But." Bob Parker has flown (once owned) an AV-36.

Dave Burt, District VI representative on the AMA Radio Control Contest Board, sent along a couple of photos and comments about flying in the Evanston, Illinois area. He also advocates the use of engine assist to get more flying time in R/C gliders. I will concede that "Fun is the name of the game" and where there are no "Instant Lift" type hills in his vicinity, the use of engines are probably necessary. He writes: Basically, our ships are designed to fly from small fields with ten to fifteen mile per hour winds and thermal type lift. In the years past we did a considerable amount of towing using up to 450 feet of line, but with high winds, gusts and rough terrain we had quite a few launch accidents which were unavoidable. With these things in mind we are now designing and building ships having fast glider speed, minimum drag, fairly low wing loading, tight turning radius and equipped with a small motor for getting it up and to the lift areas. We debated the need for this last item extensively and finally decided that the means justified the end results. As a result, we are now getting at least ten times as much flying (gliding). Thermal Soaring is no less fun just because you have to use a motor to reach the areas of lift . . . Dave Burt. I am still planning to publish a map of slope soaring sites in America, so if you know of a good one, please drop a line to me at 14695 Candeda Place, Tustin, California 92680 and report such a site. Have ten locations so far . . .

FLASH—"Zephyr" editor Dale Willoughby sets new World Record for R/C Glider speed. FAI Class F3B, category 33 records of 29.5 mph smashed by Dale Willoughby using PCS radio, fiberglass fuselage and foam wing with a speed of 46 mph. Submitted to FAI Paris for confirmation, the new tentative record was set on 8 April at "Instant Lift" hill and took a team of seven persons to adequately time the Speed Trials. Full details will appear in a future issue of Flying Models once it is officially recognized as a new World's Record.



The "Aeromaster" in Navy Fighter colors. Painted to resemble the Curtiss Navy Hawk F11C off the Carrier U.S.S. SARATOGA. Engine is a Super Tigre .56 with the smoker tube sticking out from the cowl. Top of wing is yellow, all tail surfaces red, cowl and fuselage band blue, and flown with Logitrol 5. Ship weighs 8.5 lbs., built and decorated by Jim Sunday, Mt. View, California.

"MAKO" MONSTER

(Continued from Page 37)

September with a plan, a ship in November and you missed the summer season.

Give the design a try. We feel it will be the best Flying Boat of the long series by far, and while some of the special features are still to be proven, the ship can't be that far from wrong. It is a very graceful aircraft in line, sleek and streamlined, and judging from the bulkier "Piranha", capable of a bit of thermal soaring even.

It also differs from the preceeding "Piranha", in that the nacelle is wire mounted on ⅛" dia. braces, which are quite easily formed and installed. They slip into drilled ply gussets within the wing, and may be installed after the top of the wing is sanded and silk covered. Mounting brackets bolt the bracing to the ¼" ply nacelle crutch, and the affair is solidly mounted. It offers room for a larger fuel tank than possible with a central plywood nacelle mount projecting from the wing root.

The "MAKO" is aerodynamically quite rugged and can be stunted as much as any other multi aircraft, within its potential of performance. If you trip over the wing spar gusset for instance, you'll probably break a leg. Other balsa spars within the wing terminate at varied rib positions, stressing the wing evenly.

Unlike the predecessor, the radio is divided into separate watertight compartments, with the receiver, nicad power pack, rudder and elevator servos in the foreward bow, while the servos related to engine speed control, ailerons, flaps and wing floats are located within the thick wing section. More on this further along.

Much water trys to enter a Flying Boat via the top the cabin. It tends to splash onto the bottom of the wing, then run down the dihedral angle, spilling into the cabin unless precautions and hatches fend it off. On this model, the radio is accessible without taking the wing off. The cabin area is simply removable, with excellent waterproofing.

CONSTRUCTION:

● Full Size Plans are available if desired, which saves a long session on the drawing board with dividers. Study the basic design over a bit, with an eye toward your radio equipment, servos and channels available, and how it will fit etc. Make a list of the materials required, all of which are fairly easily obtained through hobby shops, and stock-pile the necessary lumber etc. Inform your little 'uns that if they cut up your spar stock for forts, turtle cages and the like again, you will boil them in glue. My monsters always take the middle out of every log and test-crush the remainder in the vise. Then there was the day I cut out a whole set of tapered wing ribs, whereupon my son appeared on the scene, picked up the set of ribs, looked at them, decided they were the scrap pieces, snapped the whole stack in half and consigned the fragments to the trash can, all before I could register the proper shade of horror. No doubt you have had a few such highlights in your day from time to time also, but I am digressing, back to the delightful chore of gooing a few thousand ity-bity parts together, some of which won't fit.

To set your mind at ease a bit, there is nothing truly difficult to build in the entire aircraft, just a lot of it. Admittedly I am never accused of not using enough ribs and pieces, but each is there for a reason. Ample ribs insure a strong wing and a good airfoil section, adequate framing within the hull guards against structural sagging, which frankly interferes with my digestion, to rephrase a familiar comment. Actually, the difference between ribs and not enough is about two in number. Less than ten minutes time. Personally, I feel that if I'm going to spend the hundred-odd hours of time and the money on a radio design, I should end up with a structure to be proud of. If the number of ribs really does bother you, you might want to shorten the span one or two ribs on each panel. The wing has more than adequate area, and it therefore can be easily shortened in favor of a hotter aircraft. The more the lift is reduced however, the more you will have to depend on brute power to make take-offs.

Wing Panels: Accurately cut-out the required ribs and sight your spar stock, leading edge etc. for serious warps. The ribs are self aligning with a small foot toward the rear, which holds each round-bottomed rib in a level attitude. After the panels are lifted from the workbench, they are easily trimmed off with a slice of a razor.

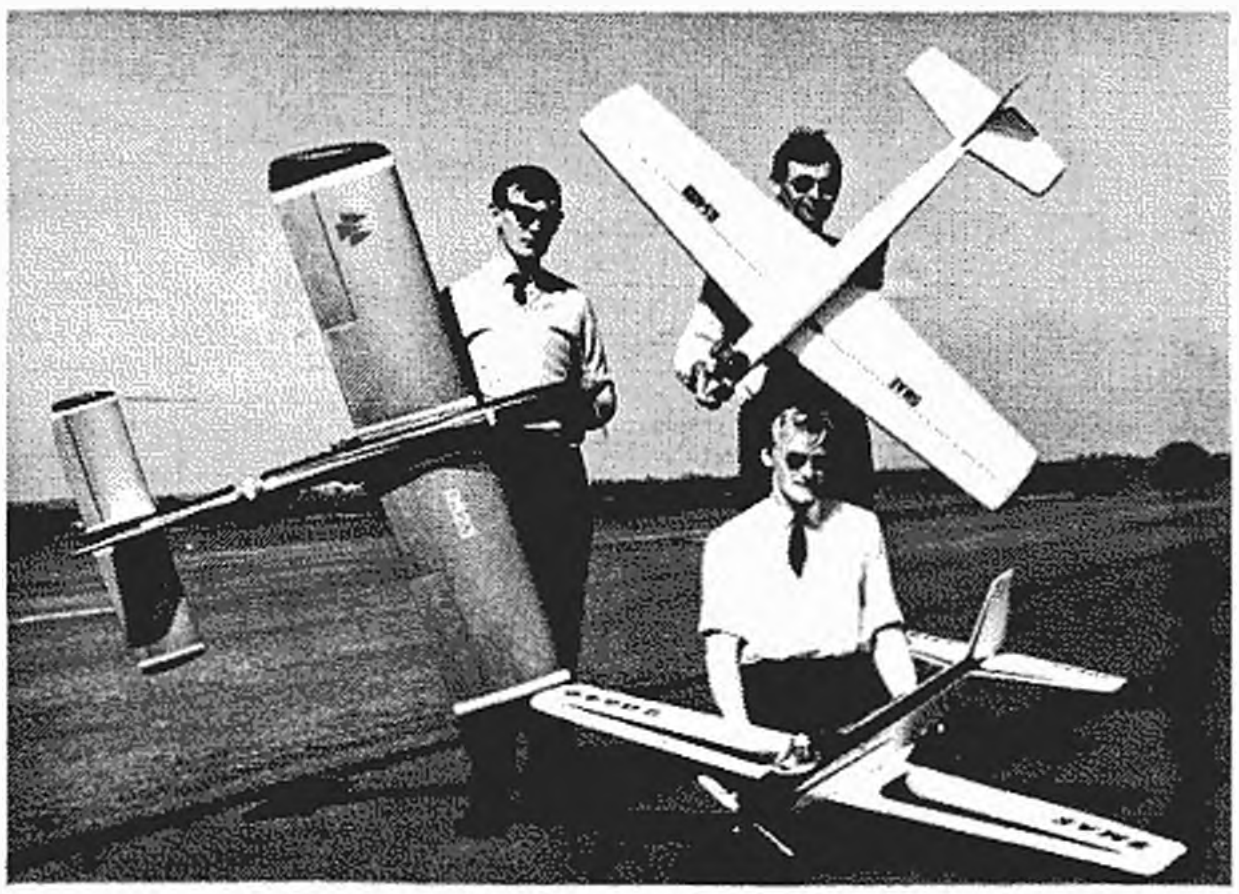
Jig-saw ¼" plywood main gusset, the ¼" ply leading edge gusset, and drill 5/32" dia. holes in each as indicated. Do this accurately. Cut out the secondary gussets as detailed on the plans.

Swipe your wife's best China, and mix up a nice glop of Hobby-Poxy epoxy cement, and bond the ¼"x¾" (hard) spar stock to the ¼" main gusset forever. Clear the 5/32" dia. holes of epoxy squeezings before it hardens to stone.

Slip ribs #2 through #17 (in order) over the tip end of the spar and slide to approximate position. No cement as yet. Accurately position main spar over the plan, and slide each rib into exact position, apply cement on both sides, shifting rib back and forth a bit to carry the cement into the joint. Pin the rib firmly to the working surface, and carefully align both spar and rib. Each rib in turn can be so treated, working reasonably quickly down the panel.

Before the cement has had a chance to set too firmly, block up the last rib 3/16" under the aft foot of the rib. About mid-panel, or at rib #9, block up the rib with 3/32" shim. This will build a small amount of washout into the wing panel, to lessen chance of tip stall. Some of this washout will probably creep out, leaving perhaps ⅛" washout per panel. (Trailing edge of tip raised.)

The top wing spars are now installed. Note that some of the ¼" square spars are double laminations extending to mid wing as per rib notches. Extend each to the next rib blocking its way. These partial spars should be installed before the full length spars capping them, as it must be done in this order. The idea is to make a light wing, evenly stressed.



The British team for World R/C Champs, Corsica, selected following FAI Trials two weeks ago. They are: Peter Waters (left), Chris Olsen and (kneeling) Dennis Hammant. Waters uses Min-X propo gear, the other two Kraft propo. All three models powered by Merco .61's This is Olsen's fifth W/champs. He has been a team member in every W/champs held to date.

If in doubt about the strength for your form of acrobatics, extend the sparts a rib or so further.

Installation of the leading edge, trailing edge strip, ⅛" squares, bottom spars etc. is pretty obvious. I used a ⅛"x¾" spruce trailing edge spar, capped with a more easily tapered ⅛" x whatever height required shim to reach the height of each tapered rib.

Flaps: If desired, the flaps are easily assembled as per plan call-outs. Install good strong hinges, with no metal to metal contact. A suggested method is shown on the plan.

Ailerons: Also optional, and not unlike the flap structure and hinging system. Use care in rounding off the leading edge and check for a smooth rotation in reference to the wing rib.

Wing Float Mounting: Essentially two ⅛" wire mounting wires rotate within non-metallic tubing within the wing. This permits the wing floats to swing forward and back into raised and lowered positions. At the time of this writing, the best method to actuate these floats by radio is still to be decided upon. A full-down stop, preferably spring loaded is a possibility, with the floats held down by light rubber tension and air and water drag. An electric motor could then wind in a line on a small diameter axle, pulling both floats up bit by bit on command.

Radio positionable wing floats are not a necessity. Perhaps with your equipment you would prefer to settle for a manually adjustable setting prior to flight. If the floats are radio actuated, they should be ideally full down for "at rest" position on the water, full down for low speed taxiing, raised gradually as the aircraft develops wing lift, and fully retracted to the highest position possible as the aircraft is balanced on the wing lift, prior to take-off. The airplane should be landed with floats high, with the floats lowering as the model coasts to a stop on the water. (About two to four seconds.) This timing is not all that critical, for the most the model will do is lean to port or starboard at rest, at which time the plane can still be levelled while at rest. As said before, winter is just ending as I write this, and therefore this float positioning mechanics is more in mind than fact at the moment and should be considered an experimental idea. The ship will take-off with these floats in almost any position with sufficient power. It may be more advisable to swing the floats up and rearward to maintain a cleaner airfoil. In either case, keeps the floats as clear of the wing itself as possible to avoid spoiling the airflow.

Bear in mind that when contacting a wave, the shock to the float will be fairly hard. Try to cushion this impact before it is transmitted to a servo. Possibly a monofiliment fishline with a weak-link, externally replaceable. Thus, on hard impact, this fishline retracting the float would be free to snap lighter string loop, minimizing

(Continued on Page 44)

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MODEL BUILDERS

(Continued from Page 40)

CG from 100 to about 80%. Reportedly, the whole setup works very smoothly: prop folds, stab comes up, CG goes forward and the ship settles in for the glide. The down elevator controls first part of power burst and the rearward C.G. loads the stab at shallow angles. In flight, ship makes three-quarters to a full turn before the prop folds, climbs at launch angle.

Bob Schleim has been experimenting with Cox engines. His goal: to increase power output on standard fuels. One approach was a special head with a "squish" band machined in. (the "squish" concept puts a generous area of the cylinder head into extremely close proximity with the piston crown at top dead center) The idea is that at the last possible moment the gas mixture caught in the squish band is compressed at high velocity into firing areas, enhancing firing conditions. Results with special head were indifferent; but results with the standard head and a special piston (raised, tapered crown) are "appreciably above stock."

Bill promises more details on these developments. We'll let you in on them.

● Received a new bulletin from the "Cowtown Circleburners" of Ft. Worth. Edited by **Pete Davis** and **Ron Krumland**, the sheet is devoted to Controline activities in the Ft. Worth-Dallas area. Currently, the management of the Park Plaza Shopping Center has offered to sponsor a demonstration by the club. Included in the offer are: publicity, a sound unit, and a roped-off area of the parking lot. Sounds pretty good to us. Contact Ron at 3732 Avenue J, Ft. Worth, Texas 7£105. Let's hear more, fellas.

● That Team Challenge in Yuma which we reported on last month between the "Orbiteers", SCAT and the Phoenix boys was the brainchild of Ed Dolby, now residing in Phoenix. Yuma was selected as an intermediate location, and the site was an abandoned airstrip in the middle of the desert. The meet, for Wakefield and Nordic, is expected to become an annual with perpetual cups at stake.

Flying was originally scheduled for Saturday afternoon and Sunday morning (Shades of old Saugus!) but the wind altered the arrangements somewhat. The San Diego boys: **Fudo Takagi**, **Brian Donn**, and **Clarence Mather** took top honors in Wakefield with a team total of 2103. (Individual team placings as listed). The "Phoenicians" came second with 2030. **Dolby** managed the highest individual time for the event with 756. (Takagi's time was 744) **Dick Dolby** was second for the "Phoenicians", and **John Snaden** was third. The "Scatmen" totaled 959, with "Orbiteer" **George Howard** leading the way with 641 as he proxied for SCAT. The "SCAT" team was a man shy, however, as **Dick Gildersleeve** was out. (He splintered his prop on both days)

In Nordic, Phoenix won handily with a 2013 total, set up via **Jim Wood's** 742. **Sal Fruciano's** 681, and **Bill Roseberry's** 590. SCAT came second as **Bill Hartill** made the best time of the meet (776) followed by **Pierre Brun** (694) and **Ross**

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"BEECHCRAFT"

(Continued from Page 30)

leading edge of the bottom wing.

Total weight (dry) is 5-¾ pounds and I was quite delighted with the light weight.

Comments: This airplane is an example of what can be done with some of the new building materials such as Hobbypoxy and Silron and would be almost impossible without them. It is also recommended that the builder have a good straight edge and jigsaw. Do not let the little things like Silver Soldering throw you. This is my first time to try it and it is easy to master. All you need is a Butane torch and Flux.

Build the crowd pleasing "Beechcraft" and add realism to your model flying this season. Be sure to gear down the surfaces for smooth flying and join the crowd in scale. Good Luck! ●

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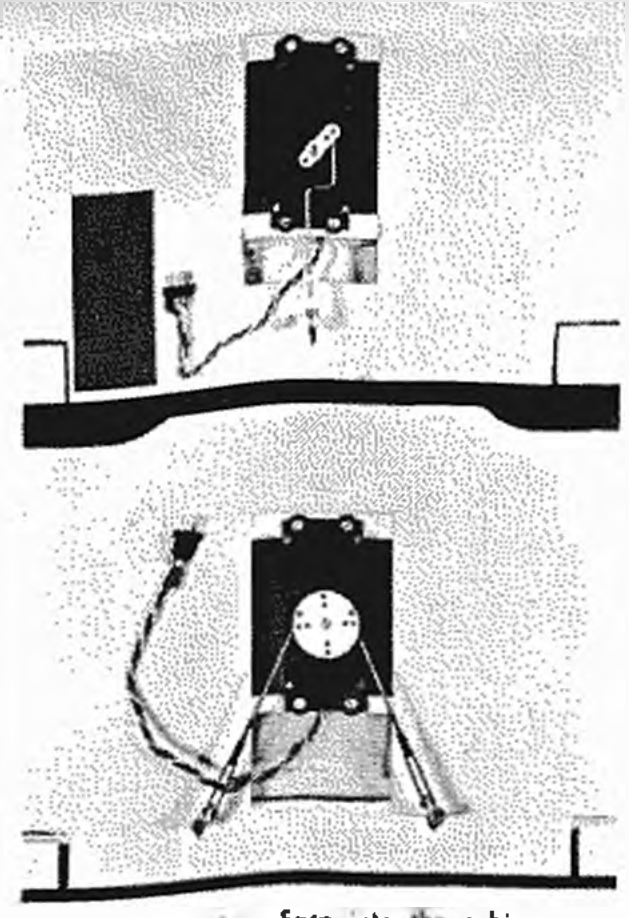
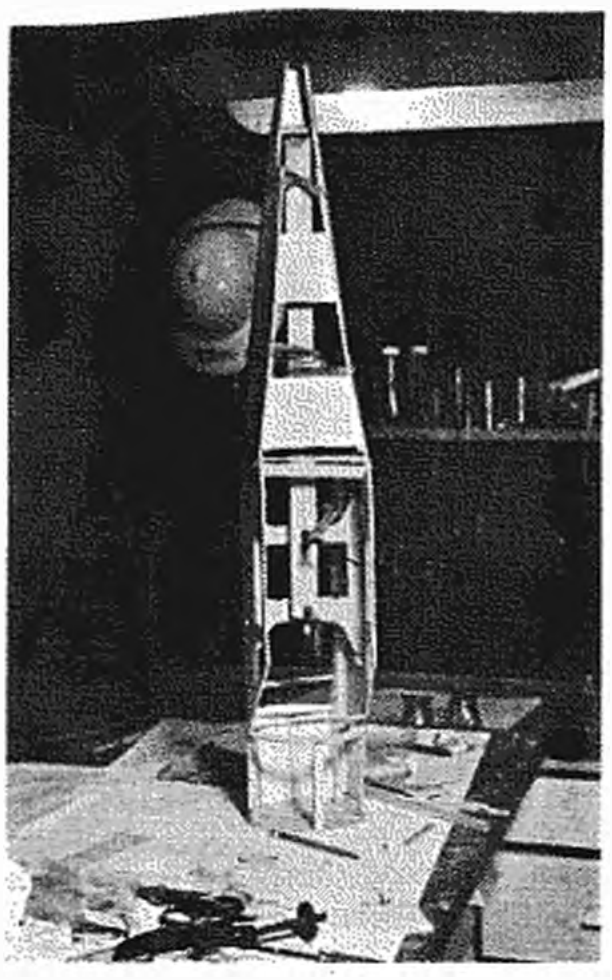
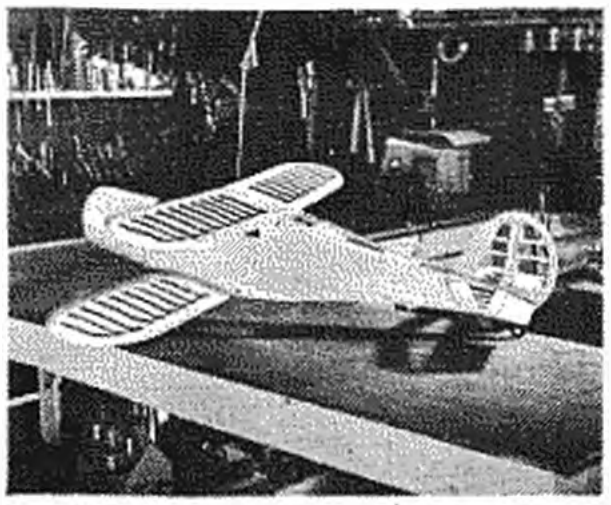


Servos in the wing. Face into the cabin areas.



Note his method of aligning the fuselage. Any way you end up straight is legal, this works.

Note stringers over sheet siding for simulated structure. Retains advantages of sheet siding.



"MAKO" MONSTER

(Continued from Page 43)

the force to be transmitted back to winding motor and shaft. File the whole problem away in your mind and work on it in your sleep. By the time you have advanced the structure to the point where installation of the floats is at hand, a solution will come to mind. Incidentally, try to rig the floats in a detachable manner for land flying. With a fiberglass or Celastic bottom on the hull, you can skid onto the ground with no difficulties, launching via the hand-launch route, which is also easy with this lightly loaded aircraft. The wing floats however are best removed for land flying, though not that objectionable to fly with, as long as you maintain a level wing attitude on touchdown. Always try to signal floats to raised position for land or water flying, particularly for rough land or water.

Wing Floats: Easily asembled of sheet balsa parts, as per plan patterns. A central keel, formers to give shape, bottom sheeting the "V" bottom", ⅛" soft planking above. The ⅛" wire mounts are pivoted in the tubing and installed as you progress. Both floats can be completed in just a few working hours. They should be silked or covered in some way as they are exposed on landings. Celastic or fiberglass on the bottoms is good insurance.

Engine Nacelle: Now this is fun. Chew out the ¼" Sig birch aircraft grade plywood nacelle crutch as per pattern presented. Next, a 3/16" (minimum—not ⅛") phenolic or fiberglass engine mounting plate is jig-sawed to the pattern, modified to seat your intended powerplant. Carefully set engine at 0 degrees downthrust (in relation to the nacelle crutch, as 4 degrees upthrust has been already built into the basic design, which is just about right) and about 1½ degrees of right thrust, to counter torque. An upright engine is advised to simplify starting problems, but invert the engine if you wish for a still more streamlined silhouette.

The nacelle is basically a strong ply crutch, a fiberglass engine mount bolted to the ply, secured beneath with 4/40 blind mounting nuts. A large clank tank, at least six or preferably eight ounce capacity. Larger if you can fit one in. Carved blocks top and bottom, rounded in cross-section, and tack-cemented in place temporarily for the shaping operation. The 5/32" dia. piano wire struts are bolted in place, well lathered into epoxy pudding, as is the bottom nacelle block. The upper half (or possibly the lower half if engine is inverted) is made removable to facilite engine repairs and tank inspection. A spinner should be installed for insurance reasons, not to mention efficiency.

Stabilizer: If you can build the wing, you can build anything, so not too much need be said on the stab. Ribs

are self-aligning as on the wing, slipped over the ⅛"x⅜" spar, and pinned down after cementing in place. Add the top spars, leading edge and gussets at the center. I found it convenient to mount the elevator hinges at this point, sandwiched between two ⅛"x¼" strips plastered in Hobby-Poxy. A straight edge aligned them perfectly. The remaining trailing edge stock is now bevelled and installed as per plan details. Once removed from the plan, the bottom spars are easily inserted, and short of trimming, sheeting and capstripping, your stab assembly is pretty well kicked in the head.

The Elevators: Cut four to outline, of firm quarter-grained balsa 3/32" sheet. Bevel the edges to make a neat thin edge, on account of if I catch you at the lake with an ⅛" thick trailing edge, I will get sick.

Fuselage: Any old 2"x4" will do, but it makes people stare at you. Better you should follow the plan to a reasonable degree. It is not hard at all to build, almost fun. Start with the ⅛" medium-hard (or hard) balsa siding. You will have to splice to make the length, preferably as indicated, with strip balsa backing each seam. I used Sig's ⅛"x3" aft of the step, ⅛"x6" sheet forward of the step. This width is often factory joined of two sheets, and on a hunch, I soaked a sample in a dish of water for a few minutes. The seam gave way, indicating a water soluable glue, so beware!! I noted this a little late, or I would have reseamed the sheet. I added a butt block in the form of ⅛" x ¼" strip the length of the joint, which hopefully will prevent trouble. Keep it in mind, and do not use any white glue in a seaplane. Akin to a snowball in a frying pan.

With siding laid out, aligned, cemented etc., the longerons and cross-pieces are added. ⅛" x ¼" balsa, laid flat is ideal. If ⅛" x ¼" spruce is available, it is worth using for the longerons, as it it a slender fuselage and potently powered. Both sides should take only an hour or so each to complete.

Join the sides in the conventional manner. Cut cross-pieces to size (⅛" x ¼" laid prone for greater pushrod pushrod clearance) and pre-cement ends to seal the pores. One ⅛" sheet rectangle temporarily mounted at the widest point forward of the step, and another near the aft end will align the sides initially. Check with a triangle. Once dry, a few cross pieces of similiar width are installed, the sheet spacer pulled away from the rear, and the sides drawn together at the aft end. Trim and bevel to meet, sheet to sheet (¼" aft width). Add additional cross-pieces, a pair at a time, with rubber band tension when necessary. Next, pull the bow together with a rubber band, and fill in the nose cross-pieces.

The bottom keel is next installed. Cut from ⅛" sheet, splicing as necessary, but retain strength in an unbroken length near the step area. The

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MODEL BUILDERS

(Continued from Page 43)

Steckel (435). The "Orbiteers", Larry Simpson, Howard Harvey and George Howard totaled 1850 and last place.

● We've been piecing together reports on the 17th Annual Southwestern Regional Championships at Buckeye, Ariz. CoeDoed by Ed Dolby this year, the meet is one of the two big Southwestern meets, the other being the Cal-Western in L.A. Free-Flight, Controline and R/C events are flown on both days. Eleven FF events were carded, and our info is from FF sources. Reports have it that the weather was beautiful: 75 degrees, little wind, thermals a bit spotty. Some of the flyers who made out included: **Don Doyle**, 1st in A; **John Warren**, 3rd in B and C; **George Batiuk**, third in Wakefield (all SHOC Clubbers); **Clarence Mather**, 1st in Wakefield, second in A; **Nat Antonioli**, second in ½A; and **Ed Dolby**, first in Unlimited Rubber.

Among the added features was a Western Barbecue on Saturday night and a display of model goods by some leading manufacturers.

● The "SHOC Open" at Elsinore this spring proved to be a "smashing success" both financially and competitively. The day (March 5) started cold and foggy, and stayed cool most of the day. The wind picked up in the afternoon and many OOS flight were logged. Al Vela racked up notable wins in B and C. In B, Al was better than 3:00 ahead of the competition as he totaled 18:40. In C, he went for an even 21:00. Second in B was **Bob Johnson** with 15:18, while **Jack Thomas** provided the competition in C with 17:02. **Brian Dann** won Glider with 15:00, ahead of **Jim Trego** with 12:34. **C. Myerscough** took first in ½A with 13:04, one second ahead of **Joyce** (yep, a gal!) **McAllister** with 13:03. **Art Marion** won in A with 14:22, and **Bob Orth** beat Vic Cunnyngham for second with 13:28.

● Plans and Gadgets Dept. In a previous column we mentioned the possibility of using a "bearing" in the middle of a rubber motor to "dampen" the vibration. The idea was suggested by **Fred Wetzel's** center bearing. **John Roberts** of Pensacola reminds us that a similar idea, a "diaphragm," has been patented in England and used there for many years. And **Ron Dagenais**, 138 Ivy Crescent, Apt. 2, Ottawa 2, Ontario, sent us the drawings for his pendulum setup, one which allows both elevator and rudder control. He also has full-size Coupe d'Hiver plans for sale or swap. He also has plans for a "Sopwith Tabloid", 38-inch span, with the pendulum sketched and plans for a "Sopwith Pup" with pendulum elevator only.

● **Dick Welch** passes the word on Texas doin's and personalities. Seems **Johnny Clemens**, **Pete Peters**, **Bob Lutker** and **Gordon Gabbert** attended the '67 Nats planning session at Los Alamitos. They give out that the dates are set for July 24 through 30, with registration set for Monday the 24th. Flying starts on the 25th. Class A Gas, ½A Proto, B Proto and FAI Speed will be scheduled this year. The Dallas Demonstration Team will put on a show on Saturday and Sunday. They fly all kinds of novelty ships, including WW I Biplane Combat. And Johnny says that kits for these bipes will be marketed shortly.

Of particular interest to Texans is the news that there will be no Dallas Nats in '68. The word is that the meet will move to Olathe, Kansas. (Site of the 1948 and 1949 Nationals.) The Olathe NAS is on Interstate 35, thirty miles southwest of K.C.

Idea: The Grand Prairie "Dopedobbers" fly two-age-class events at their meets. When flying Combat, over-eighteeners' are required to use a streamer one and one-half times regulation length in competition with younger modelers. Acts as an equilizer. They also fly Slow Combat at club meets.

The Fort Worth "Planesmen" have a good Free-Flight site on Ruff-Snow Road, north of Loop 820 in North Richland Hills. Anyone wanting info on the flying, should call **Bob Kennelley** at AT 4-0186.

For news of local meets and clubs,

(Continued on Page 49)

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"SOAR SAM"

(Continued from Page 32)

kies in the paper, then dope each rib and rub the tissue onto each one, working toward the leading edge. Dope the tissue to the leading edge still stretching out any wrinkles which appear. Trim off the extra tissue and cover the top surface in the same manner (it is not necessary to dope each rib before pulling the tissue to the leading edge on the top surfaces). The fuselage is covered by stretching the tissue over the doped balsa and rubbing out any wrinkles.

When all surfaces are covered, shrink the tissue with water, allowing it to dry completely before applying at least three coats of dope to them. Allow time for each coat to dry before applying the next one, and check the wing and stabilizer throughout the doping to twist out any warps which appear.

Wing Mount. Assemble your "Soar Sam" and weigh it. Then add ballast weight to the nose (between formers 1 & 2) to bring the weight of the complete assembly up to 5.1 ounces. I use Cerro-low metal for ballast, because it melts at a very low temperature and may be poured directly into the model while molten. Lead shot, pieces of solder or other heavy material will work equally as well, but must be securely cemented in place when proper trim is finally achieved. With the model up to weight, slide the wing along the top of the fuselage until the model balances with the fuselage level when supported at a point 1-¾ inches ahead of the trailing edge of the wing. Mark the top of the fuselage where the leading edge rests and disassemble the model.

Glue former (N) in place on the mark and add L, K and P allowing room between P and N for the wing to rest loosely. When these parts have dried in place, shape the sides (L) to curve smoothly from the wing down to the nose, then glue M in place. Rub in a couple of coats of glue over the whole nose area and cover the wing mount with tissue.

Auto-Rudder. Check again to make certain that the rudder swings freely between the stops. When the rudder is held against the tow stop (R) it should be approximately neutral (lined up along the center-line of the fuselage). Against the glide stop. (S) the rudder should provide about ½" of left turn trim. Loop a small rubber band between hooks (U) and (W) to pull the rudder lightly but firmly against the glide stop. Twist the rubber band to increase tension and use a longer one if the tension is too great.

Hook a smaller rubber band (same thickness, smaller loop) into the rudder horn and tie it into a loop in one end of the linen fishing line. Knot the loop securely and rub glue into the knot. Draw the other end of the line through the U shaped end of the towhook and pull it so that there is no slack, but not tight enough to move the rudder away from the glide stop. Knot the line around the towhook and test the action by pulling about 1" of slack in the line which should pull the rudder tightly

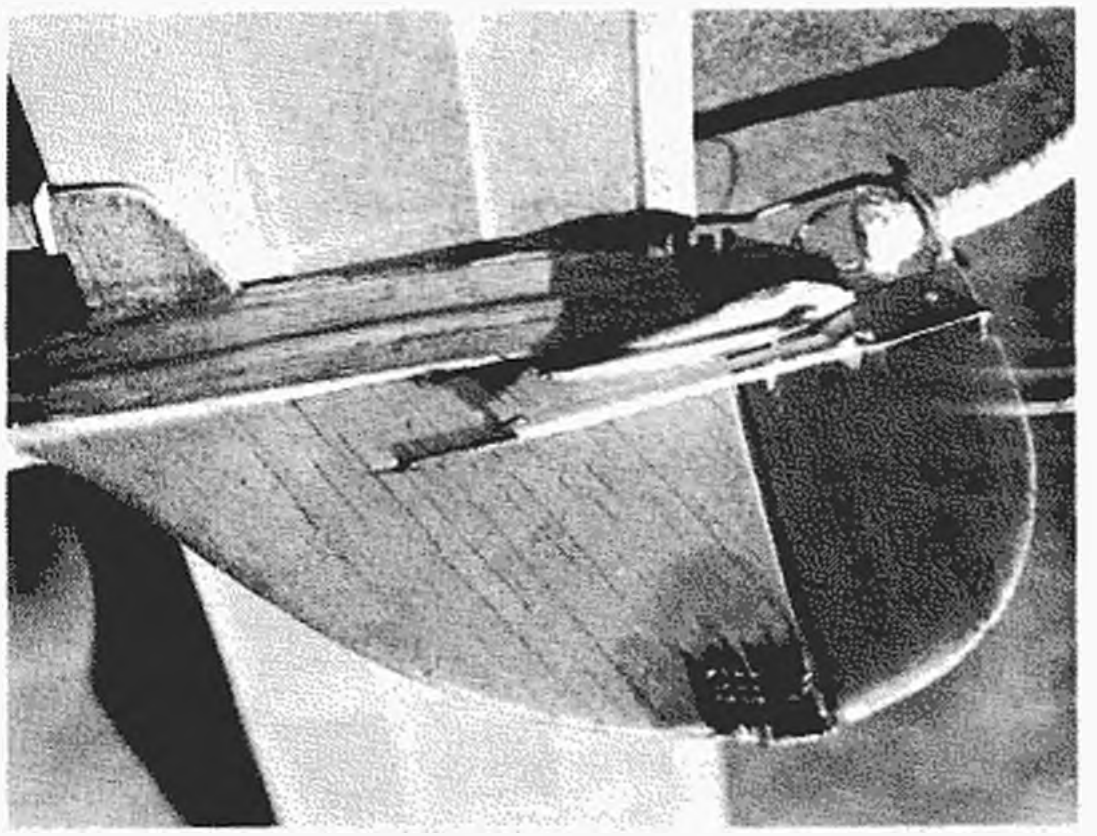
A #4-40 bolt is used to limit the forward travel of the towline ring on the towhook. Fasten the bolt securely about 2-¾ inches forward of the trailing edge of the wing. Your towline should be equipped with a ring about ½" in diameter. Try slipping the ring over the end of the towhook, drawing the auto-rudder line along with it, until the ring rests against the screw. In this position the rudder should rest against the tow stop. Letting go of the ring should permit the auto-rudder to return to the glide position and should pull the ring off the towhook. If this all works, glue the knot on the towhook.

In case you are confused about holding the stabilizer onto the saddle, here's how it's done. Place the loop of the dethermalizer limit wire over the stabilizer hook (V) and loop a rubber band over one of the horns on the saddle (Q), pull the rubber band across the top of the stabilizer, under the hook (V) and across the top of the stabilizer again to the other horn. Two or three rubber bands are enough to hold the stabilizer.

Flying. Hand glide "Soar Sam" gently. If it dives, glue 1/64" thick shims under the trailing edge of the stabilizer. If it stalls, shave thin slices from the top of the fuselage beneath the stabilizer trailing edge. Very little trimming should be required if the building instructions have been followed. When the model is properly trimmed, a hand glide will result in a smooth curving descent to a point about 50 feet away and about one quarter of a turn toward the left.

Having your helper launch the model properly will make your towing very much easier. The model should be pointed upward at an angle of 30 to 40 degrees, with no turn or tilt. The towline ring must be placed against the stop screw and the auto-sudder should be straight. When you're ready to have the model launched, your helper should release it straight up as you take a few steps into the wind. The model should not be thrown toward the tower, it should be released in an upward direction. As the model climbs, you should try to keep uniform gentle pull on the line and take notice of the direction in which it turns. Let the line go quickly if the model turns violently. Shim or shave the top stop (R) to straighten out the climb. Within a few tows, "Soar Sam" should be climbing straight overhead. It may be necessary to move the bolt on the towhook forward if you feel that the glider is climbing too quickly, or to move it rearward if you must run hard to make it climb.

Properly handled, the design is as good an A-1 as can be found, it's a very good idea to use the dethermalizer on every flight. HAVE FUN! ●



A close look at the underslung fin, auto rudder set-up. Note hardwood stop, rubber tension, the fuse attachment and stab rest at extreme left.

"MAKO" MONSTER

(Continued from Page 45)

keel is the height visible on the side view between the bottom ⅛" planking forward of the step, and the actual siding edge at the chine. (Not the edge of the bottom planking at the chine.) Just remember it must sent against the cross-pieces joining the siding, and must be capped with the ⅛" bottom planking. Cement it in place.

Fill in with ⅛" x ¼" or triangular 1/16" stock further aft to form an 18 degree "V" bottom. Forward of the step, the shallow "V" bottom is carved into a graduated "concave" bottom, creating a very graceful and functional bow flair, designed to help curl the water away.

When planking the bottom of the hull, be weight conscious. 1/16" hard sheet is adequate aft of the secondary step. Install this sheet first, extending it underneath the step completely, to provide a foundation for the arched step formers. Cut four of these to pattern indicated. Cement two to the 1/16" aft bottom sheeting at the step position. Attach the others in line with where the bottom sheeting forward of this step is to be positioned. Brace between to support it.

3/32" sheet, cut into thin strips with grain running vertically is now cemented in place to box in the step. Apply ample cement here. The excess is easily trimmed off when the cement dries, and the grain direction makes it easy to bend the sheeting around the step.

You may wish to run some sort of a vent tube from a side or top mounted air scoop to further vent this secondary step, but it is not known to be needed. If you wish.

The second and major step position is built in like manner, with the 3/32" bottom sheeting (extending amidships from step to step) passing underneath the entire step area, to form a foundation for the step formers. The second pair of formers are once again blocked up, boxed in with the vertically grained 3/32" sheet and trimmed flush as before. This step differs from the other in that the tunnel area venting the step from above must be cut away as indicated. This according to my weak-minded theory will forever dispell the chance of vacuum in the step proximity. If nothing else, it is wierdly odd to behold, and worth the trying. Whether it will actually help will be fairly easy to determine by plugging the scoop on alternating take-off attempts.

The forward ⅛" planking is of ⅛" x ⅜", mashed and crushed into shape around the bow sweep. You will find it easiest to start at the chine, bevelling and cementing strip by strip, allowing each to dry to form an anchor for the next. This is not easy to plank, but not too hard either. It will look horrible until sanded into one compound curvature which is reward enough for the effort expended.

Before sanding anything however, the nose block should be bandsawed and epoxied in place. Also, the chine spray rail should be installed. Start with triangular stock if possible, carving a concave hollow into it. It may be cut into small lengths if necessary to follow the curving chine, sanded and faired into the siding as neatly as possible. Work carefully to avoid gouging the siding. Save that for crashing. The superstructure is not difficult. Forward of the cabin, the nose has four small formers, ⅛" planking. The cabin has plexiglass windows, jigsawed to shape fitted. The cabin is best formed of a mixture of sheet, block and strips as indicated, swerving into the air scoop tunnel.

Bear in mind the dowel pushrods have to pass through this tunnel area, and can best due so through a tubing effect. Positions will vary with servos used to some extent, but actually there is plenty of room to seek individual solutions in this ship.

The bow compartment houses the battery pack, receiver, elevator servo, rudder servo, switchboard and switch. The wing root mounts your engine speed servo and your aileron, flap and float positioning servos. Any combination and double uses you can dream up will do. Build in a waterproof tunnel for connecting wiring. Make all radio compartments watertight. Make radio system readily removable, both hull from wing, torque rods and push rods from servos, and radio system from the aircraft. In short, it must be convenient under adverse conditions at the beach or in a wave tossed boat, and it must be quickly accessible in case of accidental flooding. It should and almost "must" be removed from the damp environment as soon as the days flying is over. I always remove R/C gear upon returning home and expose it to warmth to guard against dampness.

The Jan. '67 issue of F.M. dealt in great detail with waterproofing radio systems, and much of the data is applicable with modification here. Visualize a slender sealed box in the bow, housing the radio totally, pushrods exiting rearward, capped over with toy balloon necks, shielding against water entry. Silica gel within to absorb dampness if any enters, a layer of silicone rubber sealing the hatch which is bolted tight. All this within water deflecting nose hatch, which does its best to keep water out. A sealed envirement within the airframe describes it. Not easy, but you must, and the ship will hopefully last many years it must be remembered. Worth the effort. As a side advantage, the waterproof housing also keeps sand, dust, dirt and rain out, major causes of radio and servo failures. More work, but less crashes, and less chance of damage in a bad crash, due to the strength of the packaging.

The wing mount is rugged, best envisioned by referring to the plan. The air scoop through the fuselage in no way detracts from the strength. The aft turtleback is formered and planked in typical fashion. It cannot take in the vast gulps of water that other cabin types tend to swallow.

Fin and Rudder: Built up, though you could get lazy and substitute flat sheeting. Actually an airfoiled rudder fin will keep flying longer than a flat rudder, which stalls sooner, and just might cream you some day. Apart from that, it blends into the design much better.

Water rudder. Try hard, thin ply, epoxied over. Bracket with metal strips, attached to moveable rudder. Pivot the water rudder as indicated to swing upward on landings, under impact, and from excessive water drag. It turns with the rudder, giving you directional control on the water at dead slow speeds, when the air rudder is not effective.

A word in regard to finishing. Use ample clear, silk, and clear or color trim to a high gloss. Wax if desired.

In flight, it will perform much like any other aircraft. It will fly in a mild mannered way, not bad as a training type, except it's a lot of marbles to cream. Without flaps it will run an estimated 150 feet on the water before lift off, and on approaches, it will seek a flat glide slope, which will surprise you. This due to its relatively light wing loading and ample power, even when throttled. Flaps will settle it in, via a steeper slope. Fly it safely. ●

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ALL WET...

(Continued from Page 6)

Now maybe they can't quite match a radio craft, which can shoot touch and goes up and down the beach, but there is something to be said for taking a seven foot .60 ship, filling up the tank, watching it blast across the water, break loose and angle toward the blue. A tank of gas used to put it as high as could be seen with binoculars, and we'd amble after the high soaring ship in an outboard, comfortable prone on an air mattress. One flight terminated seven miles offshore after 28 minutes.

No, it's not radio, but don't knock it till you try it. Sometimes it's just a family day at the beach, and enough of a task just to get the old boat underway. And where else do Free-Flights use 5 minute engine runs? •

WHAT'S COOKING?

(Continued from Page 3)

justments are provided. The needle valve is easy to set and reportedly holds its position accurately. The complete carburetor is easy to install with two screws and comes with a sealing O-Ring.

All models of the Kavan Custom R/C Carburetor are priced at $14.95 and are available at local hobby shops or direct from Aristo-Craft. All carburetors are individually custom fitted to specific engines and are in stock for the following types: Enya, O.S. Max, Veco, K&B, Super Tigre.

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• **First complete ship model catalog:** A brand new 48 page catalog has just been printed by America's Hobby Center, largest hobby supply mail order firm, featuring just about "Every Ship Model Made in America" (as well as many imported models). Up to now, any model builder interested in wood ship models (or plastic kits) needed a collection of different manufacturer's catalogs. Now, this new catalog combines all these catalogs in one . . . at the low price of 25c. Pictured and described are the most popular wood ship models available in this country — complete kits with carved wood hulls, metal fittings and all pre-formed parts. With these kits, almost anyone can make a beautiful "collector's quality" model.

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INDEX TO ADVERTISERS — JULY, 1967

MODEL BUILDERS

(Continued from Page 45)

contact Dick at 2130 Lemart, Grand Prairie, Texas 75050.

● Back in Southern Cal, the "Max Men" hosted the Association banquet this year. The "Team Challenge" perpetual trophy went to the "Max Men," while member clubs awarded individual Hi-Point trophies to their own members. The host club awarded pots to **Marty Schroedter** in Junior and **Vic Cunnyngham** in Open. The San Diego awards went to **William Harvey**, Junior, and **Howard Harvey**, Open. SHOC awards went to **Billy Doyle**, Junior; **Tim Batiuk**, Senior; and, **George Batiuk**, Open. Note the father-son combos. Teamwork pays off. The SHOC Club has a father-daughter combo in the persons of **Bob** and **Cathy Vinson**.

We also note from the "Satellite" that **Steve Houlihan** scored a double at Buckeye (the Southwesterns) by taking both Towline events. We also learn that "scrub oak and range mesquite" at Buckeye generated a lot of sympathy for the "two models rule proposal."

● While the boys at Buckeye basked in the 75-degree weather, the Garden State Circle Burners Snowbird Meet came off in New Jersey's snowy February. Word from John A. Miske, Jr., club prexy, has it that there were 183 entries (103 contestants) who flew in the twenty-degree weather. Balloon Bust drew the most competitors (57) while the two classes of Carrier drew about the same. Slow Combat drew 37; Stunt, 18. Twenty-one clubs were represented, with the Union MAC taking the Club Champs perpetual with 78 points.

Gordon Albrecht took Scale with 361 points. Carrier I went to **Bert Allaire** with 295.46; Carrier II went to **Fernando Bonnani** with 522.06 (a combined-ages event). **Mike Luciano** won Carrier I Open with 374.21. Balloon Bust winners included: **Bob Kuhle**, a six-year-old Junior; **Dave Lilly**, Senior; and, **Joe Finnegan**, Open. (Joe racked up 144 points.) **Dawn Cosmillo** took Jr.-Sr. Stunt (479 pts.); Open went to **John D'Ottavio** (532.5). **Larry Scarinzi** won in Combat with 297.5, ahead of **Joe Finnegan's** 294.

● Canadian Rule Books, long a source of annoyance to the MAA Executive, have finally been printed. And they are classy. The hard-bound book goes for a buck and one-half the copy, has provision for adding inserts as rules changes occur. They carry both Canadian "national" and FAI "international" rules. Books will be numbered and registered to each purchaser to whom addenda will be sent automatically. It is estimated that supplements and revision sheets will be in the hands of the owner within three or four weeks of homologation. According to "Canadian Model Aircraft," the book was two years in production. Copies may be had from the Model Aeronautics Association of Canada, P.C. Box 276, Station B, Montreal 2, Quebec.

We also learn from CMA that the RCFCA has dropped MAAC because "the volume of our own work (has caused) serious delays in the provision of the services that we expected to give your membership and our own." MAAC has made "other arrangements" to supply office services. ●

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Ben Givens in ready position. The battery box was dropped to the ground, the switch flicked on, model launched usually in less than 10 sec. to save fuel.

"SPEED TRAPS"

(Continued from Page 35)

tapes, found the same pass on it, and photographed the engine noise again immediately after the instant of the pistol. (It helps a lot to have someone talking into the tape recorder during the flight to identify what's going on, but be sure he shuts up after shouting "Mark.") Now, from the picture of what the engine noise looks like, we can identify the rpm by measuring the distance between the big spikes. In this case, since each division on the scope grid is 1 millisecond, we see that the high note has a pitch of 1 cycle/.0046 seconds or 218 cycles per second and the low note has a pitch of 1/.0062 or 161 cps. These two notes calculate out to 114 mph. This run was with a prop that overloaded the engine with a resulting lower rpm and flight speed than that obtained in the earlier descriptive calculation. On thinking it through, you will recognize that with this technique of two recorders, we don't really have to have constant engine rpm throughout the pass, because the two data points are only about 0.2 seconds apart in real time, as far as the engine is concerned.

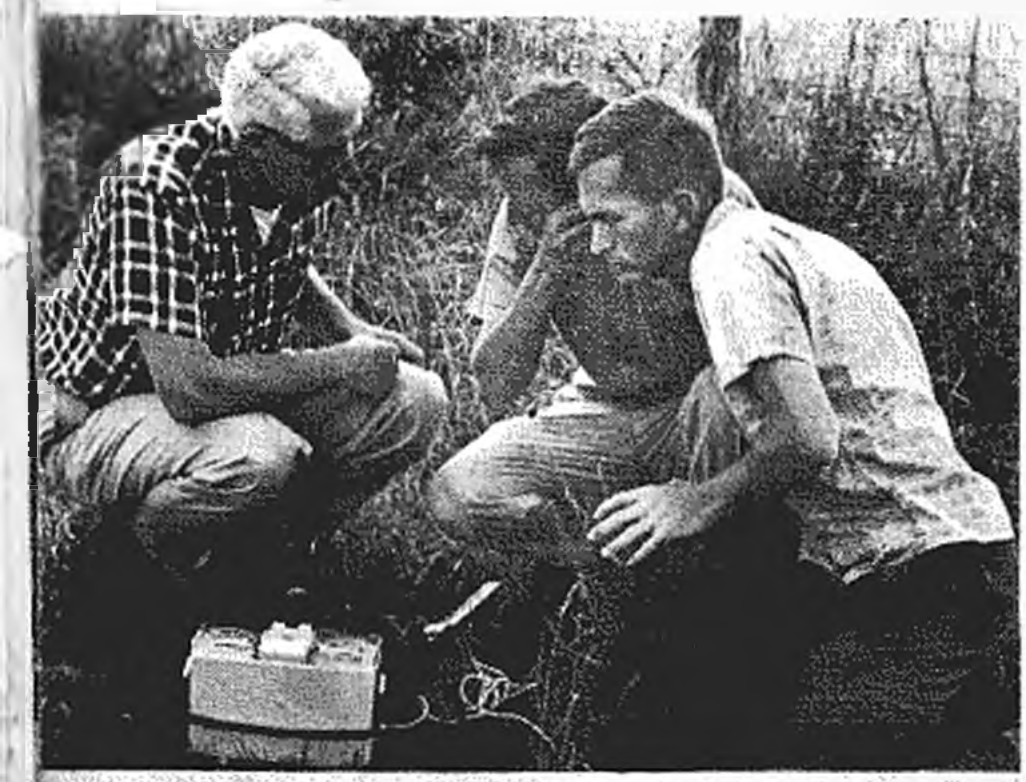
You should do your experiments in dead calm. For those who aren't fortunate enough to ever get these conditions in their area, there is a correction for wind that is not complicated and this can be found in elementary physics textbooks. However, it's a problem getting accurate wind speed data at the site so it's easier to use a calm day or have the flight path exactly crosswind.

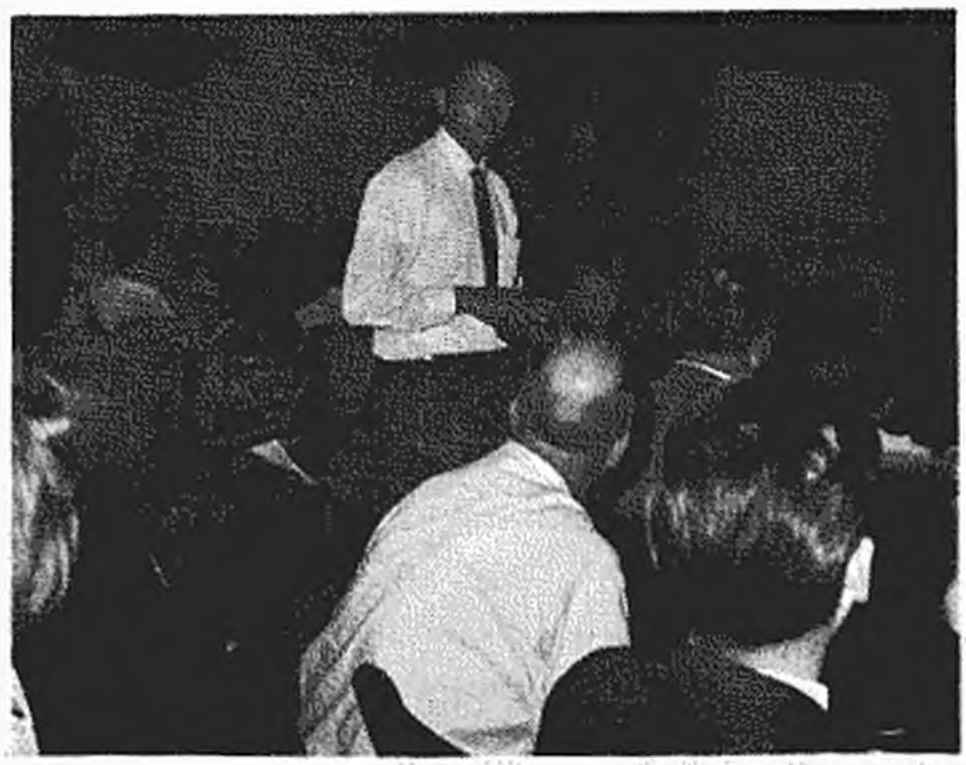
One other useful piece of information that drops out of all this is that the true engine rpm in the air is halfway between the top pitch and low pitch. You can also get the engine rpm on the ground if the tape recorder is turned on prior to launch. It was very interesting to get actual comparisons between airborne and ground rpm. It was even more interesting to get a comparison of the theoretical speed of the model (based on propeller pitch and rpm) and the actual flight speed, which was always lower. Both these comparisons, in the fine detail of things, give an indication of propeller efficiency. As a result of these experiments, we had a pretty good idea before we set out to go to the Hampshire County R/C Association FAI speed trials at Westover Air Force Base on June 26 of last year, that a Top Flite 9-12 speed prop was the right propeller to use in combination with the particular engine (Super Tiger .60 Front Rotary) and the particular drag characteristics of this model. Ten, eleven and thirteen inch pitch propellers gave lower actual flight speed for various reasons of mismatch between the engine and airplane drag.

You'll find this experiment is a lot of fun and fascinating for just estimating speeds of multi ships. The accuracy tends to go to pot at speeds below 50 mph—but the effect is still analyzable if you've got someone with a good musical ear. It would be rather fun to have a club contest in which tapes are made up, thoroughly edited to remove the identity of the pilots and then sent to the local violin teacher for a subsequent report at Club Meeting as to who won!

It might be mentioned that Bob Hooper has suggested that it would be fairly easy to make electronic gadgets that could be set at each end of the course which might discriminate the difference between the two tones and report it back as a reading of speed on a meter at the center of the course. This could be a fascinating project for home experimenters, whose ranks have been diminished to near extinction by the marvelous array of commercial radio control sets now available to us.

And now, may the light of the Holy ghost of Brahms forever shine on Goodyear pilots and lead them to give us a straight pitch instead of a fortissimo opinion! ■





The Hampshire R/C'ers turned out in neckties for lecture on Record Attempt.

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February 1959
Rubber-powered "Dart" by Gerald Zeiger/use * Asteroid C49 f.f. by Bob Hunter * 3P2N R/C Servo by Gene Thomas.

April 1959
"GUSTY" Joe Bilgri & Joe Foster * STUNT R/C Model by Richard Vance

June 1959
"Niblick" A/2 Glider by Bob Hunter * Del Gatto's "Fiesler Storch" rubber f.f. * Scarinzi's "Devil Dart" u/c Combat

July 1959
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August 1959
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September 1959
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December 1959
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February 1960
Scarinzi's "Grey Ghost" u/c Stunter * Handlaunch Gliders by Stu Savage, Part 2 * "Yard Bird" f.f. Sport by Keith Laumer

April-May 1960
F.A.I. Racer by Joe Bilgri * Cessna L-19 "Bird Dog" by Vince Micchia * Stinson Voyager Paul Del Gatto * Side Winder by Gerald Zeigenfuse

June-July 1960
Ind. A/1 by Bob Hunter * Dust Devil by Don Yearout & Henry Mullen * Panic Paul Del Gatto

October-November 1960
Ramrod Adjustment by Ron St. Jean * DU-AC R/C Actuator by Strader * Del Gatto's Electric u/c * "Hi-Trail 320" by Mel Schmidt

December-January 1961
"Whirlwind" R/C by Strader * "Nova" u/c Stunter by Larry Yuscavage * "Szut" Jetex by Bob Hunter

April-May 1961
Frank Hoffman's "Little Richard" 45 f.f. * Palagalo's "Nieuport 11" for .020 * "Sun Devil" u/c Stunt by Clair Stevesting * "Luffa Bird" f.f. Sport by Keith Laumer

June-July 1961
"Easy I" R/C by Strader * "Which-a-Way" Combat by Walt Williamson * Del Gatto's "Stinger" u/c Combat.

December-January 1962
Bob Munroe's "Big Eagle" giant 110" f.f. * Dale Kirk's 15 "A Burner" speedster * Howard "Mike" R/C Multi.

February-March 1962
"Fairfielder" R/C by Phil D'Ottilio * Mackey's Delta Stunter * "Switcheroo" twin-engine seaplane by Keith Laumer

June-July 1962
Del Gatto's P-47 T-Bolt u/c * R/C Shiner by Ted Strader * FAI Hustler f.f.

August-September 1962
The Scavenger R/C Seaplane * Sea Gull R/C Glider * Dub-L-Dek-R f.f. sport by Keith Laumer * Mackey's Hummingbird u/c

October-November 1962
"Ridge-Hopper" R/C 15-19 * Control-line Curtiss Hawk "75" * 1/2A "Simple Sam" f.f. by Bill Dunwoody * Nationals Photos

February-March 1963
Douglas JD-1 by Bob Coell * Dornier Do-335 A/1 * "Square Eight" helicopter * "Yoosha" 1/2A Free Flight by Hatty English * "Tranquilizer" .010-.020 sport or R/C.

April-May 1963
"Airshocker" R/C by Bill Winter * "Vulture" R/C glider * Grumman "Ag Cat" profile bipe Control-line * "Show Off" f.f. hydro by Ron St. Jean * "Mutineer" Control-Line sport.

June-July 1963
"Mosquito" u/c Scale with retracting gear * Citation 10 Channel R/C * Hall-Wheat .049 R/C * Navigator R/C Flying Boat by Don McGovern

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Genie R/C by Marty Meyer * Echo Wakefield by Joe Bilgri * Ice Breaker F.F. for .09-.19 * La Donna twin-boom u/c * Ton-Up 100" R/C towline glider

April-May 1964
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Lockheed "U-2", Robert Fushin * "Mirage" Wakefield by Roger Simpson * "The Strafer" controline sportster * TGX Glider by Larry Conover.

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March 1967
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June 1967
Nick Ciroli's Classic World War I Fokker "D VII" * Bob Adair's Grumman "AG CAT" * McPherson's "Sombouthat" R/C Soarer * Bill Cowee's "Wild Goose."

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1958 ($1.00 each)	1959 ($1.00 each)	1960 ($1.00 each)	1961 ($1.00 each)	1962 ($1.00 each)	1963 ($1.00 each)	1964 ($1.00 each)	1965 ($1.00 each)	1966 ($1.00 each)	1967 (35¢ each)
	☐ Jan.		☐ Dec. Jan.	☐ Dec. Jan.		☐ Dec. Jan.		☐ Dec.	☐ Jan.
	☐ Feb.	☐ Feb.		☐ Feb. Mar.	☐ Feb. Mar.	☐ Feb. Mar.	☐ Feb. Mar.	☐ Jan.	☐ Feb.
	☐ Apr.		☐ Apr. May		☐ Apr. May	☐ Apr. May	☐ Apr. May	☐ Feb.	☐ Mar.
	☐ June July	☐ Apr. May June July	☐ June July	☐ June July	☐ June July	☐ June July	☐ June July	☐ Mar.	☐ Apr.
	☐ Aug. Sept.			☐ Aug. Sept.	☐ Aug. Sept.	☐ Aug. Sept.	☐ Aug. Sept.	☐ Apr.	☐ May
☐ Oct.		☐ Oct. Nov.		☐ Oct. Nov.	☐ Oct. Nov.	☐ Oct. Nov.	☐ Oct. Nov.	☐ May	☐ June
☐ Dec.	☐ Dec.							☐ June	
								☐ July	
								☐ Aug.	
								☐ Sept.	
								☐ Oct.	
								☐ Nov.	
								☐ Dec.	

IF ANY ISSUES ARE OUT OF STOCK PLEASE SUBSTITUTE

Name

Address

City State Zip Code

Place your order now

SIG FIRST IN BALSA AND MODEL SUPPLIES

☆ Two New F/F Kits from SIG...

BOTH DESIGNS – 1/2A CLASS

40-1/2" SPAN
DIE-CUT BALSA & PLYWOOD PARTS

$3.75 EACH

Ramrod 250 One of the all-time greats in F/F contest flying, this 250 sq. in. wing area Ramrod – designed by Ron St. Jean – is again available in this brand new kit production by the Sig Co.

Witch Doctor X ▸ This hot contest-winning high-thrustline F/F gas design comes from the drawing board of Jim Clem – well known free flight authority. It's easy to build and the kit features the finest grade Sig building materials.

Ron Dyer (Tulsa, Okla.) & Witch Doctor X ▸

Win a 1967 SIG "Nats Award"!

ALL the FIRST PLACE WINNERS at the "1967 NATIONAL MODEL AIRPLANE CHAMPIONSHIPS" (July 24 through July 30, at U.S. Naval Air Station, Los Alamitos, California), whose winning models are built with SIG BALSA* and/or finished with SIG SUPERCOAT DOPE, will receive one or more "1967 SIG NATIONALS AWARDS" (which, as in previous years, will consist of "Sig Model Supplies Certificates" to a grand total value well in excess of $1000.00).

These valuable Certificates will be valid for any of the thousands of different model items available from the Sig Manufacturing Co. – and will be mailed to all '67 Nationals Winners who qualify.

$50.00 SIG CERTIFICATES will go to the GRAND, OPEN, SENIOR & JUNIOR 1967 NATIONAL CHAMPIONS.

$15.00 SIG CERTIFICATES will go to First Place Winners in every event – in OPEN, SENIOR & JUNIOR classes.

NO ENTRY FORMS REQUIRED! Sig Certificates will be awarded in accordance with the official "Nats Winning Models Data", as collected from all winners by the Academy of Model Aeronautics.

*OR Sig Spruce, Sig Bass Wood, Sig Birch Plywood

SIG 'AAA' BALSA – NEW PRICE LIST

SHEETS – STRIPS – BLOCKS

[illegible]

SECOND GRADE SHEETS [illegible]

PLANKS [illegible]

SIG BAG OF BALSA

#1 BAG – ALL BLOCKS [illegible]
#2 BAG – BLOCK, STRIP, SHEET [illegible]
CELLOPHANE-WRAPPED PACKET OF "OFF-SIZE" OR BLEMISHED BALSA STRIPS AND SHEETS. [illegible]

SIG SPRUCE

36" LENGTHS – 48" LENGTHS [illegible]

LARGE BUNDLE OF ASSORTED STRIPS – "SHORTS" AND "SECONDS". [illegible]

BIRCH PLYWOOD

FINEST GRADE – FLAT SHEETS
12" LENGTHS – 24" LENGTHS – 48" LENGTHS [illegible]

SIG BASS WOOD

18" LENGTH SHEETS [illegible]
BLOCKS [illegible]

SIG BIRCH DOWELS

12" LENGTHS – 36" LENGTHS [illegible]

GLO-PLUG HOOK-UP WIRE

3-FT. TWIN CONDUCTORS [illegible]

MOTOR MOUNTS

H/WOOD, 12" long 3/8 x 1/2 12¢
3/8 x 3/8 10¢ 3/8 x 3/4 15¢

SIG METAL PRIMER

NEW ITEM REQUESTED BY BUILDERS
4 oz. 60¢ 8 oz. $1.00 Pint $1.65

SIG MODEL PINS

[illegible]

SIG RUBBER BANDS

[illegible]

SIG DOPE BRUSHES

CAMEL HAIR: 3/8" 19¢ 1" 25¢

SURGICAL KNIVES

WITH PLASTIC HANDLES. IDEAL FOR CUTTING LIGHTWEIGHT BALSA AND TRIMMING PLASTIC MODELS ETC. No. 10 STRAIGHT BLADE, No. 11 ROUND BLADE. 25¢ each

RAZOR PLANE

USES DOUBLE-EDGED BLADES $1.50

R/C FUEL TANKS

NEW SIG DESIGN HAS TWO-PIECE PLUG & LEAK-PROOF SCREW-CAP / PLASTIC CONTAINER AND FLEXIBLE PICK-UP / NON-CORROSIVE BRASS TUBING. 2 oz. 95¢ 4 oz. $1.00 6 oz. $1.15 8 oz. $1.25 12 oz. $1.40

SIG PIANO WIRE

1/32 dia. 6¢ 3/32 dia. 17¢
3/64 dia. 7¢ 1/8 dia. 22¢
1/16 dia. 9¢ 5/32 dia. 40¢
36" LENGTHS 3/16 dia. 50¢

COPPER WIRE

FOR BINDING C/LINES, L/GEAR 15¢

SIG L/GEAR BLANKS

ALCLAD – TEMPERED SPRING ALUM.
1/32x3/4x8 20¢ 1/16x1-1/2x12 45¢
1/32x1x10 25¢ 3/32x1-1/2x12 75¢
1/16x1x10 30¢ 3/32x1-1/2x12 1.00
1/16x1x12 40¢ 3/32 x 2 x 18 1.50

SIG ALCLAD SHEET

TEMPERED SPRING ALUM., FOR R/C & TEAM RACING LANDING GEARS (6" x 12" SHEETS). 1/32" Thick 65¢ 1/16" Thick $1.25 3/32" Thick $1.85

SHEET ALUMINUM

.012x6 x12 35¢ .020x12x24 1.45
.012x12x12 65¢ .032x6 x12 50¢
.012x12x24 1.00 .032x12x12 1.35
.020x6 x12 35¢ .032x12x24 2.15
.020x12x12 75¢ .064x6 x12 75¢

BRASS SHEET

FINEST QUALITY – 6 x 12 SHEETS
.001 THICK 60¢ .003 THICK 65¢
.002 THICK 63¢ .005 THICK 70¢
NEW! HARD BRASS SHEETS (6" x 6") 1/32" Thick $1.00 / 1/16" Thick $1.65

PLANE CLEANER

• NEW PRODUCT: MAXEY HESTER'S PLANE CLEANER. SPRAY CAN $1.39

SIG NYLON SHEET

.010 THICK NYLON, MAKES 16 R/C OR C/L HINGES (3 x 4 SHEET). 25¢

SIG FOAM RUBBER

1/2x8 x12 45¢ 1 x20x60 4.00
1 x8 x12 49¢ 1/2x30x60 5.95
1/2x20x36 4.00 1 x36x60 12.50

SIG CELLULOID

.008x8x10 15¢ .015x8x10 30¢

FLITE-FOAM

WHITE EXPANDED BEAD FOAM (1 lb PER CUBIC FOOT) 12" WIDE PLANKS
1x12 30¢ 1x36 90¢ 1x48 $1.20
2x12 60¢ 2x36 $1.80 2x48 $2.40
3x12 90¢ 3x36 $2.70 3x48 $3.60

FOAM WING CORES

SOLID CORE (1 LB./CUBIC FOOT) FEATURE DIHEDRAL PRE-CUT / SPAR SLOT PRE-CUT / SPARS PRE-CUT / LANDING BLOCKS AND CUT-OUT / AVAILABLE IN 12 STYLES: TAURUS, CANDY, CITATION, RAIDER 10, VK CHEROKEE, SMOG HOG, ORION, JENNY, SENIOR FALCON, BEACHCOMBER, VISCOUNT & STORMER. PER SET (with Instructions) $12.00

SIG FOAM BOND

NEW CONTACT TYPE CEMENT FOR BONDING BALSA TO EXPANDED POLYSTYRENE / WILL NOT ATTACK FOAM / COLORLESS & STAINLESS PINT Can $1.25 QUART Can $1.95 THINNER, PINT Can 89¢

R/C WINDER

SPECIAL NEW "SMALL WINDER" FOR R/C ESCAPEMENT RUBBER. $1.00

R/C HOOK-UP WIRE

SIG PACKAGE OF EIGHT DIFFERENT COLOR WIRES 3-FT. LENGTHS. 69¢

SIG D/T FUSE

CALIBRATED IN MIN., FIVE FT. 25¢

D/T FUSE BANDS

1/4 LB. OF #6 RUBBER BANDS (BEST SIZE FOR MOST MODELS). $1.10

GLIDER TOWLINE

#3 NYLON 20 lb. TEST, 175 ft. 30¢
#4 NYLON 28 lb. TEST, 175 ft. 35¢

SURGICAL TUBING

THIN WALL, FOR FUEL LINE & USE WITH CLOCKWORK TIMERS 15¢ FT

SIG CONTEST RUBBER

NEW "HIGH POWER" RUBBER STRIP 1 LB. of 1/8" $5 1 LB. of 1/4" $5

SIG POWERSTRIP

NEW 1/24" SQ. RUBBER STRIP WITH AMAZING POWER/WEIGHT RATIO. 50 ft. 45¢ 100 ft. 85¢ 1 LB. $4.95

SIG FLIGHT RUBBER

1/8 x25 ft. 30¢ 3/16x50 ft. 65¢
1/8 x50 ft. 55¢ 1/4 x25 ft. 45¢
3/16x25 ft. 45¢ 1/4 x50 ft. $1.15
1 LB. CANS $4.50 (590 FT. OF 1/8") (373 FT. OF 3/16") (285 FT. OF 1/4")

PIRELLI RUBBER

IN 1 POUND CANS ONLY $6.50 (475 FT. OF 3/32") (280 FT. OF 1/4")

RUBBER LUBRICANT

4 oz. 60¢ 8 oz. $1.00 Pint $1.95

SIG FOLDING PROP

HAND-CARVED, LACQUERED BALSA PROPS, WITH BRASS BEARING PLATES
12 diameter 2.00 20 diameter 3.25
16 diameter 2.25 24 diameter 4.25

SIG EPOXY GLUE

1-1/2 oz. set 89¢ 3 oz. set $1.29
KING-SIZE 12 oz. set $3.95

SIG EPOXOLITE

NEW 2-PART EPOXY PUTTY / LIGHT AS BALSA & STRONG AS EPOXY / QUICK SETTING / EASY TO WORK / LONG SHELF LIFE / EXCELLENT BUTYRATE DOPE ADHESION / CAN BE CARVED, SAWN AND SANDED. 4 oz. Set $1.49 8 oz. Set $2.95

SIG JAP TISSUE

PRE-WAR QUALITY JAPANESE TISSUE IN ORANGE, YELLOW, RED, WHITE, BLUE OR BLACK. 18x28 sheet 7¢

BAMBOO PAPER

HEAVIER THAN OUR REGULAR JAP TISSUE – IN YELLOW, RED, WHITE, BLUE OR BLACK. 21x31 sheet 10¢

SILKSPAN

00 WHITE: 19-1/2x24-1/2 sheet 3¢
GM WHITE: 24 x 36 sheet 10¢
SGM WHITE: 20-1/2x33-1/2 sheet 13¢

SIGRAY

NEW SIG COVERING MATERIAL – A BLEND OF RAYON AND SILK, IN WHITE, BLACK, RED, YELLOW AND BLUE (36" WIDTH). Per Yard $1.10

SIG NYLON

WHITE, 36x48, IN PACKAGE, $1.00

SIG SILK

FOR R/C MODELS – IN RED, BLUE, WHITE, GOLD OR GREEN (36" x 36") HEAVY $1.25 EXTRA-HEAVY* $1.75 – *EXTRA-HEAVY IN WHITE ONLY

JAP SILK

LIGHT-WEIGHT, FOR SMALL GAS, RUBBER, GLIDER ETC. – IN RED, WHITE, BLUE, GREEN, SILVER OR GOLD. 30" x 36" sheet, $1.15

SIG SUPERCOAT FUEL PROOF DOPE

BRILLIANT WHITE • DIANA CREAM • POLAR GRAY • BROWN • JET BLACK • LEMON YELLOW • TENNESSEE RED • CUB YELLOW • ORANGE • MAROON • LIGHT RED • SILVER • OLIVE DRAB • FOREST GREEN • BRIGHT GREEN • DK. GREEN • DK. BLUE • LIGHT BLUE • MIAMI BLUE • CLEAR • THINNER

PLUS 5 NEW SUPERCOAT COLORS – GOLD, COPPER, METALLIC GREEN, METALLIC BLUE, METALLIC MAROON

COLOR		CLEAR		THINNER	
4 oz.	39¢	4 oz.	30¢	4 oz.	29¢
8 oz.	95¢	8 oz.	59¢	8 oz.	59¢
Pint	1.49	Pint	1.39	Pint	79¢
Qt.	2.79	Qt.	2.19	Qt.	1.49
Gal.	7.95	Gal.	6.39	Gal.	4.39

SIG SUPERCOAT IN NEW SPRAY CANS

ALL 19 SUPERCOAT COLORS, PLUS CLEAR, NOW AVAILABLE IN THESE HANDY, LOW-COST SPRAY CANS 3 oz. 49¢ 6 oz. 79¢ Pint 1.39

SIG DOPE RETARDER

SLOWS DRYING – WHEN ONE PART IS ADDED TO SIX PARTS OF DOPE 4 oz 45¢ 8 oz 69¢ Pt 1.25 Qt 2.25

SIG FUEL-RESISTANT DECAL SHEETS

BRAND NEW LINE OF 44 DIFFERENT SIG MODEL PLANE DECAL SHEETS

• SOLID COLORS (CHOICE OF 9): RED, WHITE, BLUE, BLACK, YELLOW, ORANGE, GREEN, GOLD OR SILVER

• CHECKERBOARD (1/4" AND 1/2" SQUARES): RED, BLUE, GREEN (ON WHITE) • RED, WHITE, BLUE, BLACK, YELLOW, ORANGE, GREEN, GOLD OR SILVER (ON CLEAR) • ORANGE (ON BLACK) • RED (ON YELLOW)

• STRIPES (1/4", 3/8" & 1/2" WIDTH ON EACH SHEET): RED, WHITE, BLUE, YELLOW, ORANGE, BLACK, GREEN, GOLD OR SILVER (ALL ON CLEAR)

• STARS (5-PT.): RED, BLUE OR BLACK (ON WHITE) • RED, WHITE, BLUE, YELLOW, ORANGE, BLACK, GREEN, GOLD OR SILVER (ON CLEAR)

TWO 4-1/4" x 11" DECAL SHEETS 35¢

MASKING TAPE

1/8, 1/4, 3/8 or 1/2 – 17 ft. rolls 15¢
ALSO AVAILABLE IN 180 FT. ROLLS:
1/8 55¢ 1/4 65¢ 3/8 75¢
1/2 90¢ 3/4 $1.00 1" $1.25

SIG "MYLAR" TRIM

ADD DECORATIVE, FLASHING TRIM TO MODELS, WITH METAL-PLATED SELF-ADHESIVE "MYLAR" (4" x 10" SHEETS). CHROME 35¢ / GOLD 40¢

SIG-MENT

OUR GREAT NEW "ONE-TUBE A & B SUPER-CEMENT" – FOR ALL MODEL BUILDING AND FAST FIELD REPAIRS – HOT FUEL PROOF, STRONG AND QUICK DRYING – FOR BALSA, PLYWOOD, HARDWOOD, WOOD-TO-METAL, METAL-TO-METAL & CLOTH 2 oz. Tube 30¢ 4 oz. Tube 49¢

CONTACT CEMENT

ONE COAT INSTANT BONDING FOR ALL WOODS, METAL, CLOTH ETC. 4 oz. 35¢ 8 oz. 95¢ Pint 1.50

SIG SUPERWELD

LIQUID RESIN MODEL PLANE GLUE – IN PLASTIC DISPENSER BOTTLES. 4-1/2 Ounces 39¢ 9 Ounces 69¢

SIG SUPERFOAM

AMAZING POLYURETHANE 2-PART CHEMICAL – WHICH EXPANDS 25 TIMES WHEN COMBINED. DRIES IN 10 MINUTES INTO LIGHT, DURABLE FOAM THAT CAN BE SAWN, CAST IN MOLDS, CARVED, SANDED AND DOPED. COMES IN PARTS "A" AND "B", IN TWO 8 oz. CANS. $3.25

SIG GLASS KIT

FOR MOULDING COWLINGS, WHEEL PANTS, FUSELAGES, BOAT HULLS. CONTAINS 8 OZ. CAN OF RESIN AND HARDENER – 38" x 38" GLASS CLOTH – 1 OZ. CAN OF RELEASE AGENT – MIXING RODS – MIXING CUPS – FULL DIRECTIONS. $2.65

SIG GLASS RESIN

8 oz. CAN 95¢ Pint CAN $1.50 (HARDENER NOT INC. WITH RESIN)

SIG HARDENER

1/2 oz. Bottle 30¢ 1 oz. Bottle 50¢

SIG GLASS CLOTH

38" x 38" PIECE $1.00

SIG RELEASE AGENT

STOPS MOULDED PARTS STICKING TO PATTERNS. 1 OZ. CAN 39¢

SANDING SEALER

LIGHTWEIGHT, TRANSPARENT, WILL NOT FILL GRAIN LIKE "SUPERFILL" 4 oz. 55¢ 8 oz. 1.00 Pint 1.39

SIG SUPERMOLD

BALSA IN PLASTIC FORM 4 oz. 59¢ 8 oz. 1.00 Pint 1.69

PETER CHINN "R/C FUEL N730C" Available in gallon cans only, $4.95

SOLE CANADIAN DISTRIBUTOR FOR SIG "PETER CHINN FUEL" – CALGARY HOBBY SUPPLY 1335 – 11th AVENUE S.W. CALGARY, ALBERTA

NEW CELASTIC

FANTASTIC NEW PLASTIC MATERIAL BECOMES SOFT AND PLIABLE WHEN DIPPED IN THINNER. MOLDS TO ANY SHAPE – CAN BE SANDED & DOPED. PERFECT FOR COWLINGS, FILLETING & REINFORCING USES. 9x18 SHEETS: Light 80¢ / Heavy $1.00

WING CUSHION

NEW FUEL-PROOF POLYURETHANE PRESSURE SENSITIVE WING STRIP. 3-FOOT ROLL x 1/4 x 3/8 45¢

SANDPAPER

TEN 4-1/2 x 5-1/2 ASS. SHEETS 15¢

GARNET PAPER

FIVE 4-1/2 x 5-1/2 FINE SHEETS 15¢

SIG SUPERSOLV

NEW CEMENT SOLVENT, REMOVES CEMENT FROM HANDS & CLOTHES 4 oz. 35¢ 8 oz. 49¢ Pint 89¢

1967 SIG CATALOG SEND 50¢ – FOR NEW 136-PAGE CATALOG OF KITS, ENGINES, BALSA WOOD AND HARD-TO-GET ACCESSORIES

SIG FREE DOPE COUPON!

★ CLIP OUT THIS COUPON AND MAIL IN WITH YOUR ORDER ($3.00 MINIMUM) FOR ANY SIG MERCHANDISE – AND WE WILL SEND YOU, AT NO EXTRA CHARGE, AN 8 OZ. CAN OF NEW SIG SUPERCOAT DOPE (STATE "CLEAR" OR "COLOR" CHOICE), PLUS TWO SIG DECALS. HURRY, THIS OFFER IS LIMITED! JULY 1967 FM

IF YOUR LOCAL DEALER IS UNABLE TO SUPPLY YOUR NEEDS, ORDER DIRECT – ADDING 50¢ POSTAGE (OR 75¢ FOR CANADA) • MINIMUM ORDER $1.00