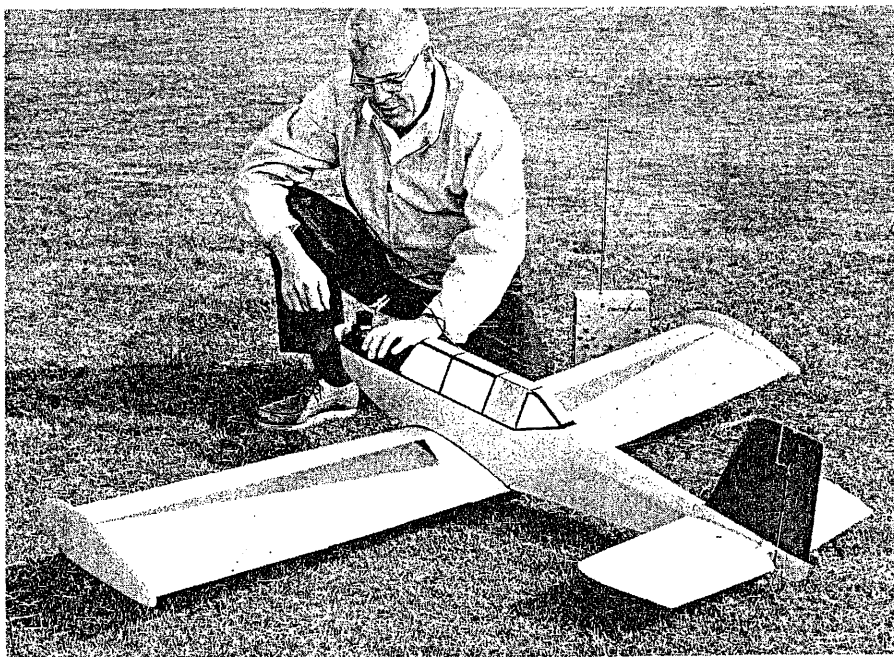




Old Bill is famous for confounding the old beliefs, here he is exploding that hoary old myth — "Big man, small plane" — you have to admit that both are big.

BY WILLIAM WINTER



No one enjoys his hobby more, after more than thirty years with model airplanes Bill still gets real pleasure from a well designed and good flying model.

the rookie

Thinking of multi R/C for the first time, think your reactions are too slow, think you would like some calm, peaceful multi-flying for a change then think real hard on our trainer as it offers all this and even more as our author, real oldtimer in radio, had the same need.

JUDGING by the initial reaction of innocent multi fliers seeing this Nigerian T-6 for the first time, we have some explaining to do. Overheard remarks in subdued voices usually vary from, "Do you suppose it flies?" to "Those ailerons will never roll it!"

While our best sales story is that it was flown by a big old man with bifocals, which should prove something or other, this crate does possess interesting and worthwhile capabilities — and science and design have little to do with it.

Having flown one of the kid's multi bombs (see MAN September) — he'd put it up and we'd steer it around and not much else — it was quite evident that the old man required a safe flying machine tuned to his reaction time and which could be landed without splintering cartwheels when a tip dropped close to the ground.

The objective in the beginning was simply a safe and easy flying airplane that could be kept in one piece. But, as so often happens, the least scientific and reasoned designs often turn out better than the skull-breakers.

Perhaps we should state, first, what we did to the airplane and, secondly, what the airplane did for us. Bob had stretched out a Cosmic wind through a succession of ships until all traces of the deBolt ancestry had disappeared (though the Cosmic wind still brings a shine to his eye!) So we took Bob's last one and stretched it again, gave it a new profile — how can you be different? — and sundry hidden features.

Approaches and landings being the chief obstacle to our attempts to get into multi — most aerobatics are nothing but stick pushing anyway — we came up with a six-foot wing with just over six square feet of area. The airfoil is thick and it is a zip — apparently NACA couldn't have done better. The tip plates were put on in the hope they would help delay tip stalls (ship never stalls a tip) in slow approaches when you have to stick out an aileron.

The combination of differential-action ailerons and large vertical tail probably have something to do with this. The differential action (nothing new, true) is obtained by locating the horn hole well aft of the hinge line. This results in much more up than down aileron. (The idea was taken from the Blackwell 600.) Down aileron causes the off-center drag which shows up as yaw. While the big fin helps compensate for this yaw, the use of differential action goes a long way to balancing out the drag of both ailerons in the full-control position.

The two-wheel gear is crazy wide because Bob, not knowing better, went in for super-wide gears. And he had something. Two wheels, incidentally, are a lot cheaper — and lighter — than three and, if you (Continued on next page)



THE ROOKIE . . . continued

are not a contest hound, why bother with three and all that work?

With an Orbit 8 originally installed, weight came to 6½ pounds; somewhat heavier with the present Control-aire 10. And here, we wander to note that it is trim, more than anything else, that separates the men from the boys. For training and sport, trim can complicate things plenty!

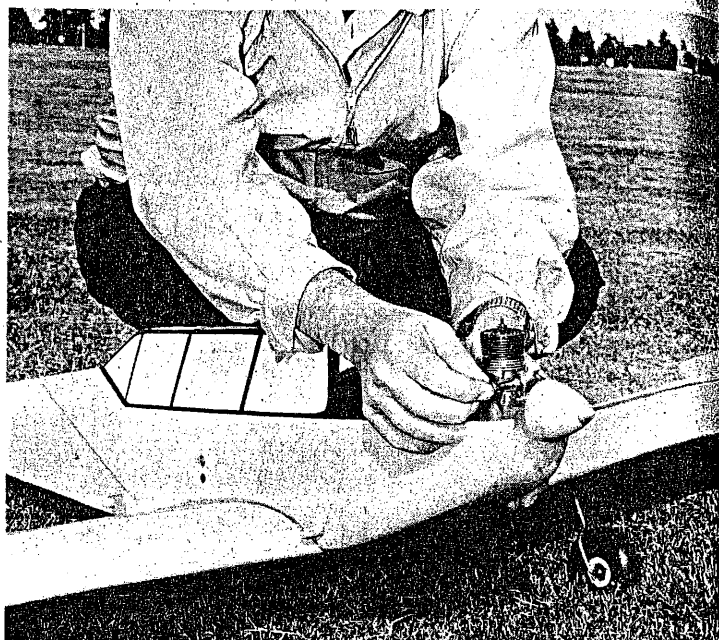
What did the airplane do for us? Right off the bat we could perform consecutive rolls, even getting the down roughly where it should be, could fly inverted, and land right side up all the time.

The phenomenal thing is that the ship can be slowed down until it hangs, and it will never drop a wing. In fact, you can perform altitude killing little turns almost up to the landing spot at very low airspeeds. Takeoffs are automatic with uptrim in grass that traps the nosewheel jobs. And we can't fault our old K&B .45.

Despite the low dihedral, 360's can be done (shallow of course) on rudder alone, and wide figure eights. On one occasion when the transmitter, peaked too much in the tuning, went out of oscillation, we were lucky enough to get rudder — but nothing else and don't ask why — whenever called for and got the ship down hard but safely.

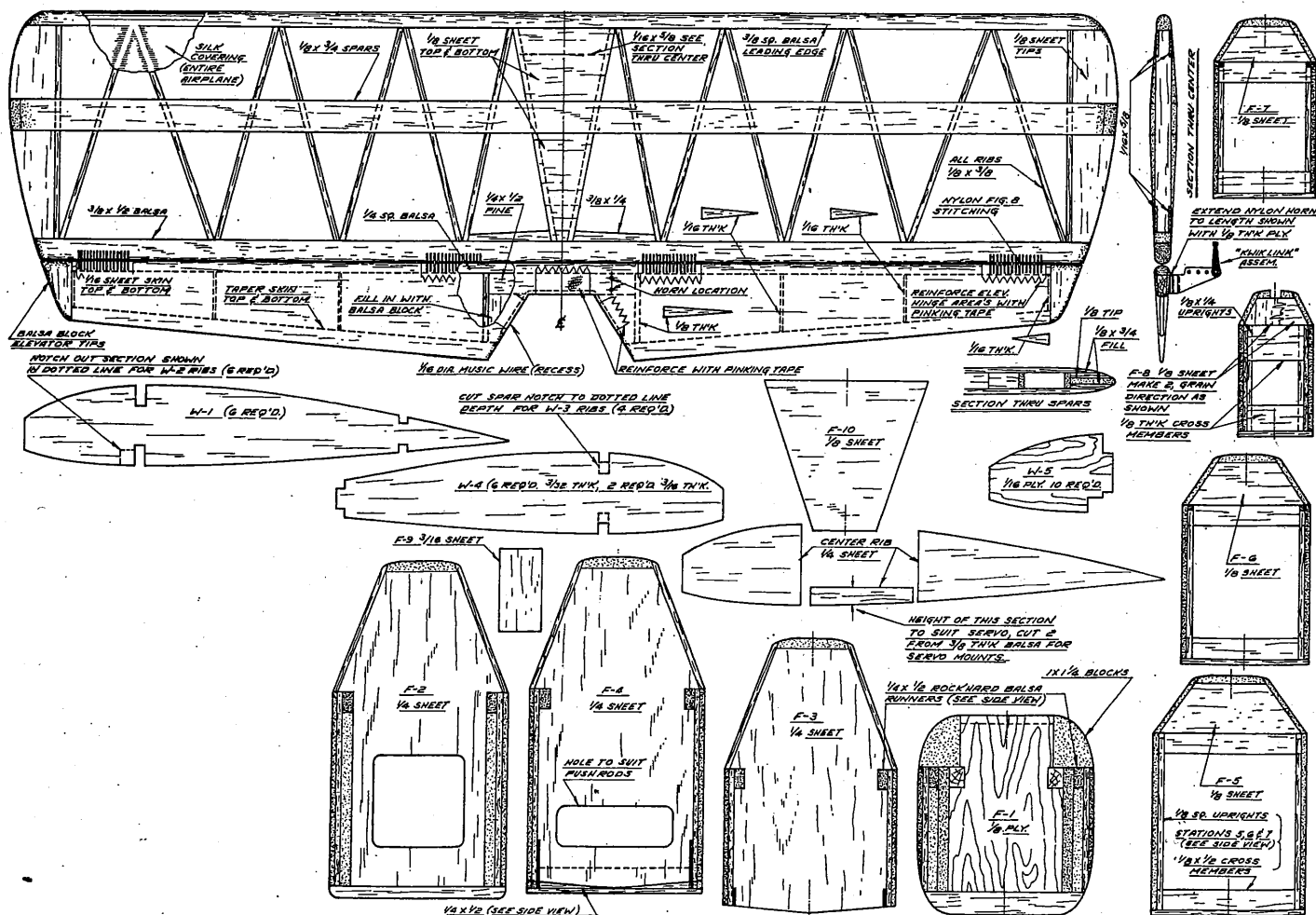
The ship has soared in the glide and, with uptrim, will float better than many rudder jobs. (Nice if you panic!) The fact that it happens to be a low wing — and with only 3 degrees dihedral — apparently has no ill effects on safety. It came as a surprise to us that the Rookie is as docile as any shoulder wing or cabin job — and, of course, a low wing trims as well as the shoulder jobs, better than most, and much better than any cabin configuration.

What was altogether unexpected was the ship's aero-



The combination of the K&B .45 putting out up front, the Controilaire 10-channel Superhet and the "Rookie" has made for many good flights.

batic ability. It is no Orion, or even a Stormer, to be sure, but size and bulk appear to have relatively little effect on its stunting. In some respects, the lighter wing loading — a good pilot can do beautiful wingovers — gives it an advantage over generally better contest types. Approaches are string straight and business-like despite the large area and floating abilities — some- (Continued on page 34)



duke's mixture



Nationals over but can't seem to get settled down. Keep wanting to start 100 new projects, yet having trouble keeping up with daily work.

Quite gratified with the percentage of FOX wins. Especially Dubby Jett's win in Sr. A Speed with a \$6.95 Fox 15x. Unexpected dividend was Larry Miller's 1st in B Free Flight, Sr., Gerald W. Comp's 1st in B Free Flight, Open, and John Paser-sky's 1st in Free Flight ROW. All with Foxes. So much for the Nats—should be well covered elsewhere.

Flew over to Tulsa Glue Dobbers Contest (Netzeband's balliwick) August 11 and 12. Contest went off with unusual smoothness. Landed at Brown Field, Hdq. for Tulsa Chapter of Experimental Aircraft Association. Saw some wonderful "home-built" airplanes. Builders were mostly ex-modelbuilders.

Been doing a lot of experimenting with Rat Racers and our 40 BB. I think this is one of the most challenging forms of racing. Sure would like to see it on the Nats event schedule next year. Fellows—write your AMA. Clubs get up a petition. Those who scream the loudest get heard.

Apologies to Tom Vincent for referring to him as Bradshaw in August column. He evened things up by calling me Duke Brodbeck all week at Nats. What's bugging me now is what face belongs to Bradshaw. Send me a picture, someone.

Latest run of Fox 15x started checking out a bit shy on RPM. So we made a full go-round on variables—here's what we found: Few hundred RPM gained by honing main with polish stone. Filing top of baffle smooth gained a couple hundred more. Chamfer on last spacers dropped compression and RPM more than intended. Thick glow plug gasket cost a couple hundred more RPM. Made corrections indicated and now every one RED HOT. Moral — if any — RPM is where you find it—or no siesta for Duke.

While reshuffling stock room, came across experimental Air Cushion. Plat-forms built a year ago. Fox 049 model lifted over 40 lbs. and I rode the Combat powered one myself. Do you think M.A.N. ought to publish the plans?

1st Place Contest Winners using Fox Motors:

Mokey Peavy	Larry Stubblefield
Charlie Phillips	Steve Marks
Bill McGraw	Bill Davis
Bill Kirn	Bob Palrman
Roy Stubblefield	Johnnie Bowling

Congratulations to you and the many others I missed.

Special thanks for Steve Marks, Sandy Fairbairn, Michael Fireyuk.

Most interesting letter from CHAIM SHNEURSON of Israel saying he won 8 of the 9 stunt contests held there in the past 2 years. Fox 35, of course. Congratulations.

QUESTION: What accessories could we make that would fill a need? Send sketch or description. No reward except remote possibility of seeing your brain-child in production.

ADV.

The Rookie

(Continued from page 20)

how it keeps the nose down but naturally does reach out if you tap up.

The one big failing is a seeming inability to spin. One expert pilot did get one-turn spins by entering from a slightly banked condition, then stalling over the top. The light loading, thick wing and big leading edge make a sharp stall virtually impossible and, if stalled successfully, the instant the nose drops, the ship is flying normally again. We regard this as life insurance for our usual hairy approaches and landings.

Several expert fliers have evaluated the ship. Two of these men are nationally known and are top pilots in the East. The third, equally proficient, is not a contest man. In fact, two of these people have placed at the Nats. Comments ran from high acclaim to studied indifference. Here's the score:

Pilot One: "It flies nicely. Really safe airplane." Sounds like a left-handed compliment but fair enough — it is beyond doubt a safe airplane.

Pilot Two: "The best low-wing I have ever flown." This guy made six flights in a row and obviously got a charge from it. He did everything in the book—and was the only man so far to get even that one-turn spin. His stunts were letter-perfect. We did note that the weather was fine and the engine right on that day—and no ship is better than its engine.

Pilot Three: "It is really sluggish compared to mine." This chap flies a five-foot egg-shell which is truly a tremendous contest airplane, so we can't blame him for his viewpoint. (And this time our engine was off.)

Incidentally, Pilot Two stated that if the wing was clipped a bit and everything else left the way it is, the airplane would be an ideal contest job — we wouldn't know. We like it the way it is.

It is about as close as you can get to a multi-trainer—we still don't think there is such a thing as a multi trainer. Compare airplanes and all you can come up with is that one is relatively safe and easy to fly compared with another. It is only a matter of degree. Not many are easier to fly—or safer—than this one. If this is what you need, we've got a deal.

CONSTRUCTION

Fuselage: The sides are 1/8-in. sheet, medium-hard. Select wood with an obvious grain, even a bit stringy to avoid breaks between wing and tail in a hard carwheel. (One can goof!) There are three doublers forward, one aft in the stabilizer area. First forward doubler is 1/8-in. sheet, 3-in. wide, grain running diagonally; this doubler terminates at the trailing-edge bulkhead. Doubler two, forward, is 1/4-in. sheet, terminating at the mid-chord bulkhead. The last doubler, also 1/4 sheet, terminates at the leading edge bulkhead. The aft doubler 3-in. wide 3/32-in. sheet, beginning (broken lines) at Station 7, grain diagonal.

All doublers should be applied with contact cement, such as Welwood. An additional 1/16-in. thick ply doubler runs from Station 3 to Station 5, with its front end projecting between Bulkhead 3 and the fuselage side. (A butt joint was found insufficient.)

Stations 5 through 8 are built up frames. The uprights glue to the fuselage sides before the sides are joined, and the horizontal members are added later.

Firewall is 1/8-in.-thick ply.

Before assembling these parts, be sure you understand the disposition of the doublers. It is particularly important that the

1/4-in. thick doubler which goes against the fuselage side allows for the location of the rock-hard 1/4 x 1/2 runners which extend all the way from the front of the nose back to Station 5 (aft of Station 4, these runners taper to accommodate the fuselage bend toward the tail post). It will be found that the 3/8 x 1/2 hardwood mounts, when glued against the sides of the nose doubler, will be properly spaced for the engine-mounting plate (which is 1/8, or heavier, ply as you prefer).

While step-by-step procedure is hardly necessary, a few points should be mentioned. The original model had the sides run straight back from Station 4 to the tail post; this required a crease in each side at the rear edge of Bulkhead 4, made with a straight edge with the sides placed flat on the bench. If the fuselage is going to break in a hard rap, it will be midway between Stations 5 and 8 and it is impossible to prevent all breakage short of using a fiberglass shell.

Note the 1/8-in. sq. strip along the top edge of the side (inside) between Station 5 and 8.

The canopy has a 1/4-in.-thick soft sheet top, 1/8-in. thick soft sides, grain fore and aft, with a hatch for motor-servo access (re pushrod) on the port side as indicated. Spot glue the hatch when ship is done. Front end of the greenhouse is a soft shaped block; aft end has a 1/8 sheet floor piece, 1/4 sheet top piece, and 1/8 sheet sides, grain vertical.

Sturdy 5/16-in. diameter wing hold-on dowels are required; under each, across ship, is a piece of 1/4 x 1/2 balsa.

Aft turtledecking is 3/16-in. soft sheet top, with 1/8 soft sheet sides, grain lengthwise on all three pieces. On greenhouse and fairing, install top pieces first, then overall sides pieces, later sanding the corners round.

The 1/8-in. ply servo mounting board which holds four servos (the motor control servo on top, using the same holes as the elevator trim servo beneath it) bolts to 3/8-in. sq. hardwood pieces which, in turn, are well cemented across Bulkheads 3 and 4 as shown. (It might be better to arrange the mounting pieces along the sides, between Bulkheads 3 and 4, although this is left to the builder.) The servo board inserts through the wing opening.

Nose construction is simple. The top is closed—after tank is installed — with a piece of 3/16-in.-thick sheet; the bottom is covered with a 1/2-in.-thick block, fairly soft. Two small blocks close in the front as seen on the side view. Blind nuts (for 4-40 machine screws) are suggested for the removable mounting plate—the nuts should be installed while the nose is still open. Under the tank is a 1/8" balsa sheet floor, grain cross ships, resting on 1/8"-sq. fore-and-aft side supports. Batteries can be placed in the nose through the access hole in Bulkhead 2, which is balsa—and strong enough, though a thin ply bulkhead doubler may be added, if you wish.

It is suggested that all pushrod fitting be done before the fuselage bottom is enclosed. Bottom skin is 1/8"-thick sheet, grain across ships. If the grain is lengthwise it quite definitely will crack.

Note that provision must be made for a 1/4 sheet key, part of the fin really, which notches into the top of the turtledeck at Station 8. Without it, there is a tendency for the stab to work loose.

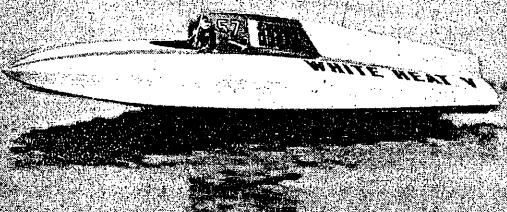
The Bonner-type steerable tail wheel mechanism is obvious — use any appropriate nylon mount.

Tail Surfaces: The fin is assembled from four segments of 1/4" medium hard sheet,

(Continued on page 36)

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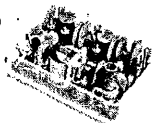
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The Rookie

(Continued from page 34)

tending slightly to the soft side. The rudder is soft balsa, with Figure-8 nylon hinge stitching. We used metal hinging on the rudder which tore loose on several occasions.

Kasmirski-type construction features the stabilizer. The flippers are built-up with 1/6-in.-thick ribs and skin, feathered at the trailing edge. Leave the T. E. at least 1/16 inch thick.

The center of the one-piece elevator is rather tricky: A 1/4" x 1/2" piece of pine butts against the flipper spar between the two innermost ribs, and a 1/16" music wire reinforcement piece, bent as shown, insures against airloads giving unequal action due to the off-center horn. A pine filler piece is located at the horn station for a substantial purchase for the 2-56 mounting bolts or screws—whichever you use.

Pinking tape re-inforcements wrapped around the flipper leading edge help prevent the hinge stitching tearing away balsa in an accident. You will need a horn extension to reduce elevator action. (See side view.)

The fin is notched out to butt against the stab leading edge, over the stabs top spar, and against the trailing edge. After covering, the tail is glued on as a unit—be careful of alignment.

Wing: There are two sets of over-and-under spars. Front spars are rock hard 1/4, doubled with short 1/4 square inner pieces that extend out to Rib 8. A Top Flite landing gear assembly is installed as shown, with the section attaching to Rib 3 angled up to move the wheels well forward to prevent nose-overs. Rear spars are rock-

hard 3/16 in. square.

Forward of the spars, Ribs 3 and 5 are laminated on both sides with 1/16-in. ply. The hardwood landing gear mount that comes with the gear kit glues to the front of the bottom spar (see rib section view).

On my model the tip plates are laminated from three thicknesses of 1/4-in. soft sheet, with the center ply vertical. Eight-inch thick material shows on the plans. My thicker tip plates had the center ply, and parts of the outer plies, gouged for lightness before gluing up. Rough objects do damage the fronts of the plates, so silk-cover the bottom edges and fronts of the plates. The plates glue to the wing after it is complete.

The center section reinforcement filler pieces at the trailing edge are vital, as are generous plywood protecting pieces for the rubber bands. These extra-long plywood shields were installed after rubber-band damage resulted from the rubbers sliding off the ends of the plywood pieces in an accident—yes, we run into bushes, etc.

Aileron servo is held down by 4-40's threading into blind nuts located under the 3/8-in.-wide servo mount pieces—hard balsa carved to fit wing skin contour. One-sixteenth music wire pushrods are used, and two fairleads at Ribs 4 and 6 are sufficient to stop buckling. Kwik-Link connectors were used on all controls to permit easy adjustments, but these should be examined closely periodically. Wing skin or

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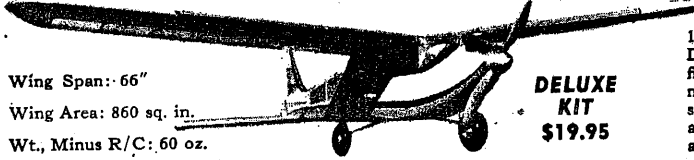
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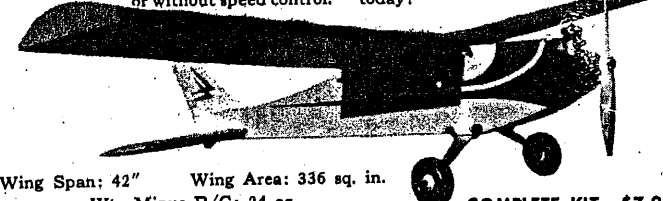
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planking is 3/32-in. sheet, medium hard, running over the leading edge, and feathering to a 1/16-in. thick extreme trailing edge. Cap stripping, aileron construction and dihedral joiners are obvious.

Note the special micarta aileron horns. Locating the pushrod hole well aft of the hinge line provides differential action as explained.

Covering: We used white silk with five coats of clear and three of colored. Fuselage was yellow with black trim, vertical tail red, wing white with yellow forward of the front spars, and red trim. Greenhouse windows are white with black trim.

Before covering the fin, give it two coats of well plasticized dope—about eight drops of castor oil to an ounce of dope. This will minimize warping tendencies because of silk pull.

Covering may be applied wet or dry, though we favor the wet method. Do not apply successive coats of clear before the previous coat has dried thoroughly—otherwise you may get a loose oilcloth-like finish.

Flying: By all means check out the decalage—angular settings of surfaces—before flying. Also locate the CG within 1/8 inch of the location shown. The decalage is one degree maximum. To measure this block up the plane, wing in place, on an accurate surface and measure up from the table top to the edges of the surfaces.

Have some expert flier make the first few takeoffs for you and stand by while you try gentle turns in the air—if you have flown these things before, you'll have no problems. If you haven't flown multi-trainer or no trainer bit—you should depend on some good flier to help you make a beginning. Paper-talk means nothing.

If you have trim, set it at a minimum in the beginning. The slightest up trim will insure takeoff. If not hauled off the ground with muscle-bound elevator, the ship will swing into a slight, very wide, left turn until it picks up speed. Trim on high motor makes the ship much trickier to fly, faster and more sensitive.

Gor for altitude, then throttle down a bit until you get used to controls. The expert may be interested in how the Rookie turns.

While an easy application of aileron won't drop the nose very much, it at all, hard aileron—but short of roll—will have to be followed up with elevator to complete the turn. The ship will not groove like a rudder job. With more dihedral it probably would sail smoothly around a 360 but it was felt that excessive dihedral might spoil things for people who like to stunt.

As inept as the author is with all those sticks—sometimes searching around or even hitting the wrong one—there is always plenty of time for recoveries.

(We hope no one judges this crate by the way its "designer" flies it!)

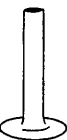
Editor's Note: What is a multi trainer? This is a moot question that Bill and I have asked ourselves as well as many others in this radio control hobby. The answers have been amazing, as no two actually agree—none can see the multi trainer other than how it applies to their individual problems. Just in this morning's mail, we received a long letter from Robinson Blackwell of Blackwell Models, and his letter was in response to Bill's article, Rx for R/C. Outstanding in his considerations is docility and slow speed—then again to cite an instance right in my own club—two members have the same trainer model, each made from a kit and one has

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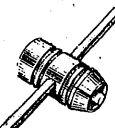
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.085	.192
.119	.187
.092	.206
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.121	.312
.191	.356
.122	.655
.164	.655



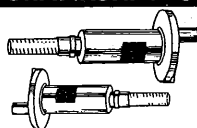
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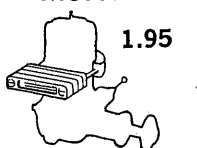
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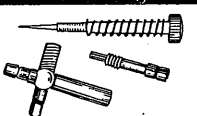
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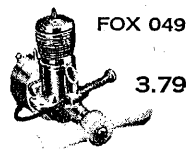
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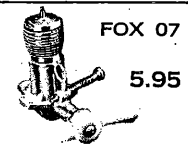
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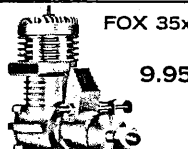
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FOX 07

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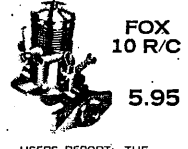
WEIGHT ONLY 1 1/4 OZ. YES! SWAPS A 7" PROP. THROTTLES BEAUTIFULLY WITH SIMPLE FLAPPER VALVE.



FOX 35x

9.95

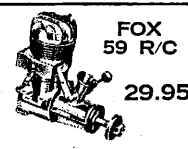
FEATURING NEEDLE BEARINGS & SWIRL-QUENCH.



FOX 10 R/C

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USERS REPORT: THE EASIEST STARTING, MOST RELIABLE MOTOR IN ITS SIZE RANGE.



FOX 59 R/C

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LIGHTER WEIGHT THAN MOST 45's—MORE POWERFUL. MORE DEPENDABLE. EASY TO FLY. FLOWN BY PHIL BREITLING.



FOX COMBAT SPECIAL

19.95

SCOURGE OF THE COMBAT CIRCLE.



FOX 40 BB

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ONLY FULL-DISPLACEMENT HIGH PERFORMANCE MOTOR THAT COMPLIES WITH AMA RACE RULES.



MISSILE MIST

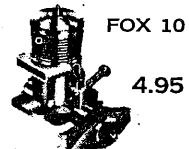
"The Purple Brew"

Gallon.....5.50
Quart.....1.69
Pint.....95¢
Half Pint.....59¢



LUSTROX POLISHING COMPOUND

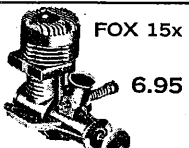
50c BOX



FOX 10

4.95

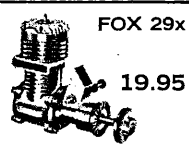
DEVELOPS AS MUCH POWER AS SOME 15's.



FOX 15x

6.95

THE MOST POWERFUL 15 YOU CAN BUY



FOX 29x

19.95

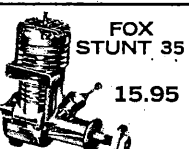
DEVELOPS OVER 90 HP. HOLDS MORE SPEED RECORDS THAN ANY OTHER MOTOR.



FOX 15 R/C

8.95

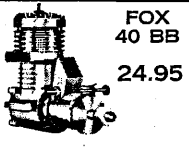
THE WORLD'S VALUE LEADER IN A FULL RANGE HIGH QUALITY R/C MOTOR.



FOX STUNT 35

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THE WORLD'S FINEST STUNT MOTOR.



FOX 40 BB

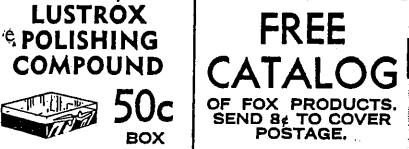
24.95

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NEW! FOX BLAST
A NEW FUEL DESIGNED SPECIALLY FOR RACING MOTORS
PINTS ONLY.....1.25



LUSTROX POLISHING COMPOUND

50c BOX

FREE CATALOG
OF FOX PRODUCTS. SEND 8¢ TO COVER POSTAGE.

AIR-MODELING BOOKS 1.00 EA.



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B-102 ENGINES FOR MODELS
B-103 CONTROL LINE MODELS
B-104 HOW TO BUILD MODEL AIRPLANES

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XX PARTS

15x Lightweight PISTON & CYL. 6.00
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BERKELEY PLANS

WRITE FOR COMPLETE LIST.

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TURN YOUR OWN CYLINDERS AND PISTONS

MEEHANITE BAR STOCK 3" x 13/16".....75¢
LEADED STEEL BAR STOCK 3" x 1".....75¢

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SMALL OR LARGE 3 FT.25¢

MOTOR PARTS

AVAILABLE TO FIT ALL CURRENT FOX MOTORS AND MOST OUT-OF-PRODUCTION MODELS.

SPECIAL

ONE TON OF STEEL SHAVINGS.....10.00. HAUL 'EM AWAY YOURSELF.

Smart Champions Choose...



FOX MANUFACTURING COMPANY
FT. SMITH, ARK.

NEW!

SCIENTIFIC PRESENTS 3 BIG ACTION — TOP PERFORMING MODELS

THESE MODELS ARE DESIGNED TO GIVE YOU THE
KIND OF TERRIFIC PERFORMANCE YOU'RE LOOK-
ING FOR — AND, AT EXTREMELY LOW COST, TOO!



SCIENTIFIC

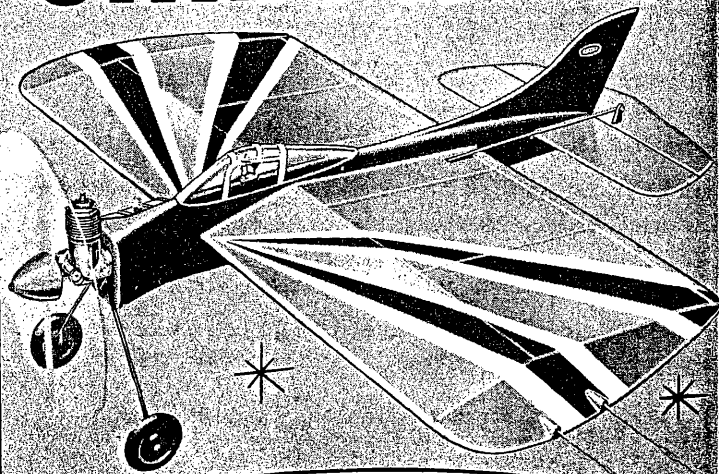
If no dealer is available, add 25c (postage & packing) to cost of model.

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1/2A CONTROL-LINE MODEL WITH A GIANT WING



CIRCLE-MASTER

WOW! ... THIS SPECTACULAR
CONTROL-LINE MODEL HAS WING
AREA OF 152 SQUARE INCHES!

20" Wingspan — For .020 to .074 Engines. All
prefabricated kit with a ready formed balsa fuse-
lage and all die-cut wing ribs.

\$2.49

retired it to the basement as it does not serve his purposes as it cannot help his stunt flying, just won't help him perfect his stunt work. The other, well he is all wrung out after each flight, "claims its too much for him," and all he ever does (and this is not in criticism) is fly it up and fly it down, no stunts, just straight and level flight.

So what do we want—a transitional flier—or a Sunday flier? As can be seen a trainer is all things to all people and those who want the transitional bird that will lead them well into the good stunt model class, the "Rookie" is their bird as it can perform all the stunts in the book and still permit oldsters like Bill to fly it and fly it well—well, that is to Bill who has no aspirations to be a Nats or local contests winner, but does want the stunts as part of his Sunday schedule.

Engine Review

(Continued from Page 34)

have achieved their greatest successes, including numerous international wins and records. Encouraged by U. S. Super-Tigre distributor, John Maloney of World Engines, Inc., to turn his attention to the radio-control engine market, Garofali began, about 3 years ago, to develop throttle systems to suit his glow engines. Six Super-Tigre engines are now available with throttles as standard equipment and throttles are also obtainable to fit four others, thereby covering all displacements from .15 to .56 cu. in.

The subject of our test report this month is the Super-Tigre G.21/40-RC. This is one of a family of four new 1962 Super-Tigres bearing the G.21 designation and based on

a common crankcase casting. They should not, however, be confused with the earlier type G.21's which had a detachable front housing. The 1962 G.21's are easily recognized by their one-piece body casting comprising crankcase, cylinder block and front housing with unique, offset intake.

This new series includes the powerful G.21/29 for 'B' class speed, proto-speed, free-flight, etc., a modified version of which was used by Red Willard to set a 166.29 mph speed earlier this year. The factory claims an output of 0.95 horsepower at 19,500 rpm for this engine in stock trim on nitro fuel. With bore and stroke increased by 1 mm., but retaining the .29's flat-crown lapped piston, the engine becomes the G.21/35 for combat and rat-racing with a claimed .75 hp on straight methanol/castor. (Here, we might add, Super-Tigre also make two other, cheaper, .35's, one for stunt (.55 hp) and one for combat, etc. (.65 hp). These have been variously described as "C.35", "C/S" and "S.T.," which is a bit confusing, to say the least, and we can't help feeling, incidentally, that the entire Super-Tigre identification system is long overdue for complete revision. Finally there is the G.21/40, with bore and stroke further increased and a baffle type piston available either in a lapped meehanite type cast-iron version or, alternatively, of aluminum with the two cast-iron compression rings. In the U. S., the former type piston is used for the standard .40, intended for rat-racing, etc., while the ringed piston is used for the throttle equipped R/C version.

Having got these explanations off our chest, let's get down to a study of the G.21/40-RC. The first thing one notices, on stripping it down, is that this is a quality product and, while Micromeccanica Saturno have never sold shodily made

engines, it is better finished than some of the earlier Super-Tigres first imported into the U. S. The main casting is cleanly produced and of robust proportions. It contains two German-made ball journal bearings, a 12 mm i.d. 8-ball inner and a 7 mm. i.d. 7-ball outer, to support the crankshaft.

The crankshaft is unhardened but of adequate proportions. It is ground to a very fine finish on the journal and crankpin diameters. Counterbalance is fairly generous (more than the weight of the entire conrod but less than conrod plus wristpin) and is achieved by cutting away the flanks of the 1/4-in. thick crankweb either side of the crankpin, which is also drilled for lightness. The 12 mm. (.472 in.) dia. main journal has a .9 mm. (.354 in.) bore gas passage fed from a 13.5 mm. long valve port, timed to open from 40 deg. ABDC to 45 deg. ATDC.

The cast aluminum piston is extensively machined. It has a flat crown with a machined straight fence baffle, filleted on the exhaust side. Below the wristpin bosses, the skirt is reduced in thickness and is cut away to clear the backplate and shaft counterbalance at BDC. The piston, less wristpin, but complete with rings, weighs only 0.27 oz. The full floating wristpin is tubular and is hardened, with brass end pads.

A different cylinder sleeve is used with the ringed engine. This, naturally, has multiple ports in order to provide vertical guide bars for the piston rings, but it is also distinguished by a chromium plated bore. A chromed bore is now a characteristic of other current Super-Tigre ringed engines, namely the .51 and .56 models. Port timing is fairly orthodox, the exhaust opening leading the bypass by 9 deg. for a measured duration of 132 degrees to 114