AIR TRAILS®

SEPTEMBER 1949

25 CENTS

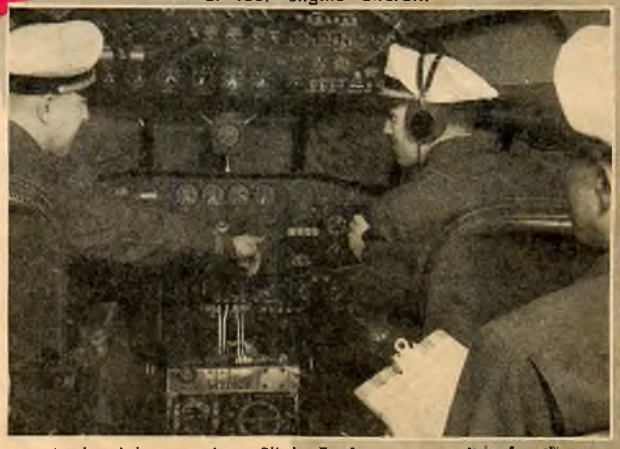
Pictorial

AERIAL HOT-RODS: COMPLETE HISTORY OF THE THOMPSON TROPHY RACES

ANNOUNCING

The Spartan FLIGHT ENGINEER Course

This Spartan developed Trainer simulates the operation of four engine aircraft.



At the right rear sits a Flight Engineer responsible for the performance of the aircraft in flight.

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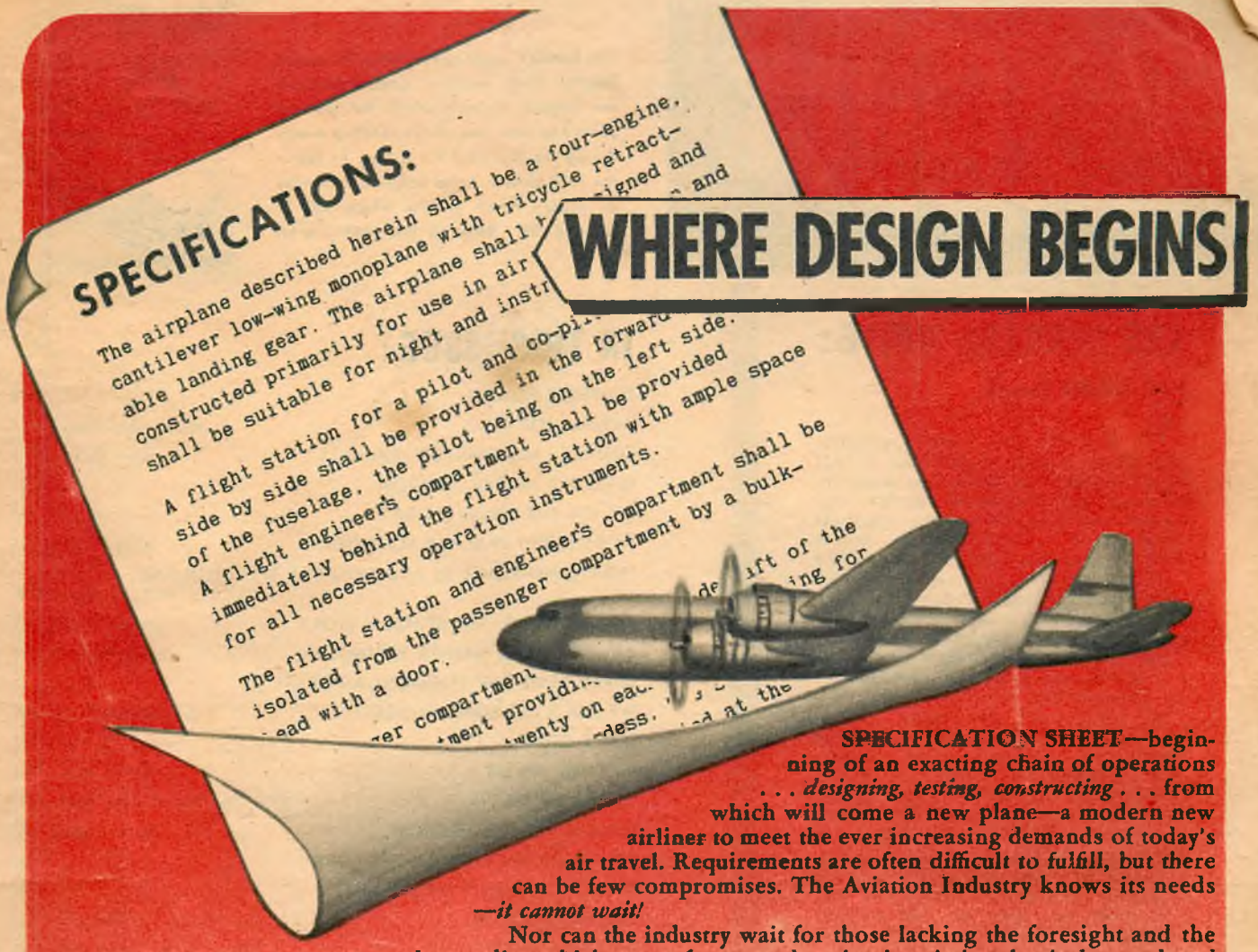

WHERE DESIGN BEGINS

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AIR TRAILS Pictorial

SEPTEMBER, 1949 • VOL. XXXII, NO. 6

This month's cover shows three Thompson Trophy Race winners, commemorating the famous air epic which for thirteen years has been one of the leading events during the National Air Races. At top is the 1930 winner, Laird Solution. In center is Turner's Pesco Special which won in '38 and '39. Below is the 1948 winner.

THE READERS WRITE:

PAA-LOAD Event

Sirs:

The generous and artistic presentation which you gave our PAA-LOAD Event in May Air Trails has certainly launched our 1949 model airplane activities with pleasant and vigorous effectiveness. Pan American World Airways, and Mr. George Gardner and I personally, are most appreciative of your understanding assistance in helping us conduct a model airplane program which we feel is genuinely educational toward the acceptance by modelers of the principles and problems of air transportation.

My assignment to Tokyo, Japan, as Special Representative—Orient for PAA will prevent my having the personal pleasure of seeing the PAA-LOAD Event through the expanded activities of 1949, but you may be assured I will watch its progress anxiously each month in the columns of Air Trails. Should I discover that Air Trails is not promptly available in Tokyo, you will hear from me again on *that* subject! Just as "back east," I find that on the west coast, your magazine is the "bible" for aero modelers, and that everywhere there is agreement that your publication gets better every month.

DALLAS B. SHERMAN
PAA System
San Francisco, Calif.

The Man Says . . .

Sirs:

I have just received the May issue of Air Trails and enjoyed very much Douglas Rolfe's "Famous Battles of World War I" and his "Air Progress" drawings. But I would like to call to your attention two mistakes in them.

First, in the caption under the picture of Baron Richthofen, you say that he was shot down immediately after he had shot down his last victim. This is not true, as he brought down his last victim several days before

(*Continued on page 9*)

Letters to the Editors
All communications to the Air Trails editorial offices should be sent to Air Trails, Box 489, Elizabeth, New Jersey.

IN THIS ISSUE:

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• Subscription correspondence should be addressed to P.O. Box 494, Elizabeth, N. J.

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BURIED IN THIS AD are most of the new items. Sometimes there isn't time or space to include them. But, if available, we have it.

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Semi-Finished 8" 9" 10" in 10" 12" or 14" pitch $ for 1.00	
Hi-Ball 9,10,11,12,13,14"	.35
Super Screw Pusher 8,9,10" in 8,10,12" p - .60, 8,10,12" in 5" pitch	.35, .40, .45
Super Spl. 8,9,10,11" dia" p	.25
Buzzard 9" 10" in 12" 14" p 11" in 10" 12" pitch $/	1.00

Also all sizes of Power, Top-Flight, Ohlsson, Rite Pitch, Bacell, Super Dynamic, Flo-Torque 100

RUNNING & TEST BLOCKS	
Universal Running Block	1.50
S-Z Bowling Stand	1.25
Modewell Test Block	2.25
Wright Test Block	4.95
METAL GAS TANKS	
Frooc: 1¼x1¼ or 2 hor. or ver.	.85
1¼x1¼x2 Sq.	.90
1¼x5/8x2¼ Wedge	1.00
1¼x1x2¼ ½-End Stunt	1.00
1¼x1¼x1¼ ½-Round	.95
Austin Tank Kit	.50
Beeco	1.00 & 1.25
Minitank (smallest)	1.25
Dale Tanks	.95
FLYWHEELS	
A & B - 1.00; C & D	1.50
DeLuxe 2/16" shaft - 1.25; 1/4" shaft - 1.50; 5/16", 3/8" sh.	1.75
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Rechargable 2V Flight	2.35
4V Booster	3.50
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Wilco - 1.95 Arden - 2.50	
O.K. - 1.75 Rogers - 2.00	
Winston - 2.00 Regular - 1.50	
Spitfire - 1.50 O.K. Twin - 5.00	
Aero Twin - 4.00 Aero Qual.	3.00
Aero Featherweight	2.50
Smith: Competitor - 1.95, Firecracker - 2.75, Big Shot	3.00
Dual	4.50
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Regular - .20; Heavy Duty - .25	
Aero Metal - .35; Heavy Duty Metal - .45; Rogers	.20
SPARK & GLO PLUGS	
Champion V, V2, V3, V81, V82	.50
Sparkplug washers	.05
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End Clips, 2 for	.10
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Austin Booster Plug-in	.30
Copper Lugs, 12 for	.25
Midget Switch-slide -30¢ Turn -	.50
Terminal Clips, 2 for	.05
Arden Battery Cord kit	.35
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5/8" -20¢; 13/16" -25¢; 1-1/4 -65¢	
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2"	1.30
Adapter Nuts (state eng.)	.20
Plastic 1½"	.50
WHEELS	
Baly-arc Streamlined (pr) 1¼"	.45
2" - 50¢, 2¼"	.75
Pneumatic (pr) 2" - 2.50, 2¼" - 3.00, 4½"	3.50
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Sponge Rubber, Wood Hub (pr) 2" -40¢, 2¼" -50¢, 2½"	.60
Trexler Pneu. (pr) 1¼" or 1½"	.40
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Sparky Tail Wheel Assembly	.25
BATTERY BOXES	
Metal, side by side, penlite	.40
medium - 40¢; regular	.50
4-pencell	.60
Plastic, end-to-end pen., med.	.40
Plastic, for 6 penlites	1.25
Paper	.25
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Austin metal	1.50
Millicrest plastic	1.25
Arden plastic	1.65
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'Spinit' Starter	5.00
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Tiger Fuel Pump	.69
Fuel Line Filter	.35
Motor Cover	.25
Elgin Stop Watch	12.50
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.006-.008-.010-.012-.014-.016 dia. 2-52' lines	.50
.010-.012-.014-.016-.018-.020 dia. 2-70' lines	.65
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.008-.011-.014 2-70'	.65
2-150'	1.00
Stranded .015-.021-.55'-75'-70'	1.00; 100' - 1.95; 200' - 3.75
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U-Reely Remote	12.50
Jar Contr. Handle (pistolgrip)	2.50

3 Ready-to-run Leaders

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Everything you want in your engine A REAL POWER PLANT !! .29 displ., 1/6 horsepower, weight 4 ounces. Class B

IN KIT FORM $6.95

GENIE 29 $6.95

BOYS! Here is the engine you've always wanted. An engine that's been acclaimed the "easiest starting gas engine!". .29 displ., 1/6 horsepower, weight 4 ozs., Class B. Good for glo-plug.

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With features that step-up power, give longer life with lighter weight Class B. .232 displ., 1/6 h.p. 6800 rpm. weight 4½ ozs.

DUAL RAM INCL. GLO PLUG $6.95

Propeller tubing, per 100'	.20
Transparent	.15
Gasket Paper	.25
Plug Wrench, 3-way-15¢; 4-way	.25
Sanchet Plug Wrench, 4-way	.50
Universal Needle Valve	.50
Flexible	.75
Needle Valve Exten. flexible	.35
Log Book	.10
Extension Shaft 4½"	2.00
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heavy 24x36" (white)	.10
Red, Blue, Yellow 24"x20"	.10
Silk per yard	1.50
Blow Torch	3.25
Cement (tubes)	10¢ & 25
Wood Stripper	.25
Landing Gear J-bolts, 4 for	.25
Landing Gear washers 3/32", 1/8" 12 for	.05
Plastics Box	.15
Fillet Fill	.25 Fill-It	.45
Wheel Collar & Rub. pr.	.25
Copper Tubing 1/8" OD, per ft.	.20
Brass Tubing 1/16", 3/32" 1/8"	.25
Sheet Aluminum (sq. ft.) .019"	.35
.020"-55¢; .032"-75¢; .064"	1.25
Plywood (6"x12") 1/32"	.10
1/16"-25¢; 1/8"-30¢; 1/4"	.35
Masking Tape 1/4"x3 ft.	.10
3/4"x30 ft.	.29
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Soldering Set	2.25

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Control-it Elev. Contr. Unit	1.95
Good Control handle	.25
Metal Needles	1.00 & 1.25
Good Control Reel	1.00 & 1.25
2-2 Plastic Control Handle	.85
Samples Handle & Reel	1.25
Metal Flight Reel, 1.00 &	1.25
Reel, Handle, Crank kit	1.25
Stunt Bellcrank & Elev. horn	.25
Feco Bellcrank	.25
Elevator control horn	.25
Horn (bellcr.) 2"-10¢, 4"	.15
Speed Indicator Tables	.10
Elevator hinges 4 for	.10
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Adjustable Push Rod set	.25
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ALSO ALL COX UNITS

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PYLON control lines	
Flexible 2-52' 1.50; 2-70'	1.95

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with every purchase of a PHANTOM P-30 engine at $13.95

You can have, without extra charge, your choice of any U-Control or Free-Flight Kit listed, selling for $5.00 or less. All free items for engine and plane also included.

Glo or Ignition — 1/5 hp., .295 displ. Class B, 8,500 rpm.

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Plus not 75, not 100 but ALL **ACCESSORIES including:**

● PLUS: Correct size finished propeller ● 3-way plug wrench ● Presto Engine starter with handle and cord ● Speed indicator tables ● Log Book ● Motor cover ● Spark or glo plug with gasket ● Complete engine instructions ● 24 page Gas Engine Theory Manual ● Engine adjustment chart ● Metal fuel tank and gas line ● Metal Battery box ● Wilco Quality Coil ● 12" Hi-tension lead wire and end clips ● 18" insulated ignition wire ● Ignition slide switch ● Coil holder and mount ● Everlast condenser ● SAE = 70 Oil ● 4 ignition wiring lugs ● Spark plug guage set ● 2 plane identification tags ● 72 Insignias ● 72 page book on Control-liners, How to build and fly them ● Cement ● Sandpaper ● "Pro" all-metal knife and blade ● Metal bellcrank with bolt, nut and washer ● Elevator horn ● Elevator hinges ● Lead-in wire ● Push-rod wire ● U-Control handle ● 100 feet U-Control stainless steel wire and reel ● Membership in Modelcrafters of America ● 24 page giant 2-color catalog ● Postage ● Packing ● Insurance.

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Everything you will need except a 1½ volt battery, fuel and a small file for cutting away parts of the body to install the engine. In addition, mounting and motor shaft holes must be drilled.

Scoop! Complete PEE-WEE FLYING OUTFITS

These are the new pint-size glo engines that are so tiny (1 to 1¼ ounces) but develop plenty of power for free-flight or U-control flying.

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You get the same accessories listed in our other flying outfits (excluding those not needed in a glo engine, of course). Everything needed to build and fly planes shown except fuel and starting battery.

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For the younger set, their Fathers and big brothers, there's nothing like the thrill of CO2 flying. You don't need much space for free-flights (100 feet square on windless days), and less than a twenty foot circle for tethered flying.

THERE'S NOTHING TO LEARN AND PLENTY OF FUN!

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(includes refillable tank, capsule charging unit). Costs only 2c per flight to run. Plus Cavocraft Stinson, Berkeley Profile Powerhouse or 19" Puddle Jumper. Kits are completely precut and shaped, ready to assemble).

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(largest CO2 engine made) with the famous contest-winning 33" Powerhouse kit. (Most CO2 contests during 1948 were won with this matched combination of plane and engine) or 19" Puddle Jumper.

CAMPUS A-100

$7.95

(Smallest CO2 engine made, includes refillable tank). Costs only 1c per flight to run. Choice of Cavacraft Aeronca kit with Cava-Cut parts, completely precut and ready to assemble or the World War I fighter biplane, the S.E.5.

Plus all accessories

CO2 Engine, ready to run ● CO2 Capsule holder ● 2 CO2 Capsules ● Correct propeller ● Complete Engine instructions ● Complete suitable airplane ● Landing gear ● Wheels ● Complete plane plans ● Cement (if needed) ● Flight log ● Insignia ● Identification tags ● Packing ● Postage ● Insurance ● Membership in Modelcrafters of America ● 24 pg. Giant model Catalog ● Full A.H.C. Guarantee.

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.....have been produced by popular demand! BUZZ Engines have been used in every type of model flying, U-Control, Free-Flight, Radio Control, and now the same high-quality engines are available as Glo-Engines. These engines are the simple, dependable BUZZ engines that in the past year have been time and field-tested by over 20,000 modelers! You'll enjoy more hours of flying per dollar investment with BUZZ Engines!

Rising Costs...

have been offset by the tremendous demand for BUZZ ENGINES. That's the only reason we are able to continue to offer you these Ignition BUZZ Engines at only $4.95! Note we have been able to reduce the price of the "60" it, too, is only $4.95!

GLO BUZZ 19, 29 & 35 $4.95 EACH

The interchangeable Class A, B and C Buzz Engines in glo-plug operation! The BUZZ 19, 29 & 35 Engines lead the field in low-cost FLYING FUN! Thousands of modelers all over the world depend on the rugged construction and easy starting of BUZZ Engines every day for their FUN in FLYING. Can be interchanged on the field so you can fly the same model in Class A, B or C.....the crankcase mounting holes are identical.

NOW! EACH ENGINE ON THIS PAGE..... $4.95 ASSEMBLED & TESTED

GLO BUZZ "60" $4.95

.....for large Class D models in Free-Flight or U-Control or as a simple way to avoid ignition interference for radio-controlled flying! Wherever you have a lot of airplane to haul skyward, use this power-packed "60". It's the engine that generated power for the field-command radio sets with the Army during the last War. A flip will start it and you'll have continuous, smooth power for every flight.

The BUZZ 19, 29 & 35 EACH $4.95

Thousands of modelers all over the world have depended on these ruggedly-constructed, easy to start BUZZ A, B & C Engines. They've changed engines on the field and have flown the same model in all three events not once, but repeatedly, contest after contest. Four screws to change and your plane flies in a different class...the crankcase mounting flanges and screw holes are identical in all three engines.

A BIRTHDAY WE'RE PROUD OF....

BUZZ Engines recently passed their first Birthday. One year has passed of selling these famous engines to hobbyists all over the world. The letters and enthusiastic comments we have received make us proud of the fact that we can supply quality engines at this low price of only $4.95

Use the BUZZ "60"

for the same dependable, easy starting smooth power that thousands of modelers have been enjoying since this engine was first offered a year ago. This is the engine that powered field-command radio sets during the last War.

Use the Buzz 60 for your large Class D Free-Flight or Controline model. Each engine is factory tested and will provide you with smooth, dependable power that will avoid crack-ups and disappointments in contest or sport flying.

NOW! $4.95

BUZZ CO2 ONLY $4.95

The BUZZ CO-2 Engine is the first 5/16" bore 2 stroke engine on the market. Thousands have been sold and thousands of modelers have enjoyed the dependable power and economical operation of this intermediate-size engine. The refillable tank allows five flights per CO-2 Cartridge less than 2c per flight! Engine is complete with refillable tank connected to engine and a capsule tank-charging unit that is also used.

Some facts about BUZZ Engines.....

SPECIFICATIONS:

	19	29	35	60	CO-2
Displ.	.199	.299	.350	.610	——
Bore	.660	.812	.880	1.000	5/16
Stroke	.562	.562	.562	.777	5/16
Horsepower	1/7	1/6	1/5	1/4	——
RPM	7,500	8,000	8,500	9,000	variable
Prop	8"	10"	11"	12"	5½
Weight	4	4½	4½	9	¾

The BUZZ Engines are manufactured by a company that for years has been the world's largest maker of automobile replacement pistons and other precision gasoline engine parts. Thousands of gas engines and parts were made during the war by this company for the War Dept. for use in walkie-talkies, field generating sets, etc., etc. Since the war, thousands of gas engines have been made for scooters, lawn mower and other industrial uses. When we say unconditionally that the BUZZ engine is well engineered and well constructed will give you plenty of good service, this is no idle boast, but a fact!

ACCESSORY UNITS

For IGNITION Engines...only $2.49

Spark Plug & Gasket • Wilco Quality Coil • Hi-Tension Lead Wire & End Clips • Everlast Condenser • Correct Size Finished Propeller • Ignition Slide Switch • 3-Way Plug Wrench • 4 Wiring bags • 4 Mounting Bolts & Nuts • Presto Engine Starter, with cord & handle • Spark Plug Gauge Set • Motor Cover • 24 Page Gas Engine Theory Manual • Leg Book • Engine Adjustment Chart • S. A. E. No. 70 Oil • Coil Holder and Mount • Metal Fuel Tank • Gas Line • Metal Positive Battery Box • Insulated Ignition Wire

For GLO Engines...only $1.49

Glo Plug & Gasket • Insulated Ignition Wire • Correct Size Propeller • 3-Way Plug Wrench • Mounting Bolts & Nuts • Presto Engine Starter, with cord & handle • Motor Cover • Leg Book • 24 Page Engine Theory Manual • Fuel Formulas • Metal Fuel Tank • Gas Line

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Correct Propeller • Motor Cover • Lubricating Oil • 2 CO2 Cartridges

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(*Continued from page 4*)

being shot down himself. Incidentally, he was shot down by Capt. A. Ray Brown of Canada, who was flying a Sopwith Camel, while Richthofen was occupied with "Wop" May, who later was an instructor in World War II. Capt. Brown died in 1944 in Canada.

The second mistake is that you stated in the "Air Progress" feature that a plane of 1914 was called the "Gun Bus" and was made by Vickers. Actually, it was made by Sopwith and was called the "Greek Gun Bus," because of an order by the Greek government for procurement of this type.

NED EVANS

Florence, Ala.

● Anybody want to argue the points?

Folding Curtiss

Sirs:

I would like to contradict Henry Struck's article in the November issue on the Curtiss Pusher. This tail assembly never did fold up over the machine as he stated. I was just a kid on the airport at the time and I have seen all of the early Curtiss ships, even his very first. I was there when Lincoln Beachey came back and had his special machine built and when he hit the girders on top of the tent. I am a pilot now, at the age of 53, and have lived around here most of my life.

ERNEST MERRILL

Bath, N. Y.

● The full-scale Curtiss Pusher did not have a folding tail assembly. Henry Struck designed his model Pusher that way so that the engine could be started.

Low C.L.A. Type

Sirs:

I am still laughing heartily. "Model Types" by Cayton are very good. But I think Mr. Cayton has forgotten the "low-center-of-lateral-area" advocate. So here he is:

RAUL

Rio de Janeiro, Brazil.

Goodyear's Good

Sirs:

. . . I would just like to put in my two cents worth of praise for your unique and intensely interesting series on "Goodyear Racers." This fine group of pics and three-views provides a lasting record for aviation enthusiasts in general and Goodyear fans in particular. I'm sure that Air Trails is the only U. S. magazine that has devoted much space to these original aircraft. It certainly is a shame when American racing fans have to turn to British publications for National Air Races information. I repeat, orchids to you, and keep up the good work!

CAMERON DEVORE

Spokane, Wash.

Thanks to C.A.P.

Sirs:

I would like to take this opportunity to say that I think that every young man and woman who is interested in aviation should join the C.A.P. or the C.A.P.C., as the knowledge that one can learn is very valuable. The training that I myself had received in the C.A.P. gave me a head start on the other people who went through military training with me. I would never have become interested in radio had not the C.A.P. started me on the course. I went through 32 weeks of radio school at Scott Field, Ill., and I have never regretted my choice. I would like, when I get back, to teach radio to cadets who would like to learn it.

Cpl. ROBERT SCHOTTER

Berlin, Germany

Showcase

See your hobby shop for the items shown here. Both the price and specifications subject to change.

Goodyear Winner→

A "fast moving" number in Cleveland's line (Cleveland Model & Supply Co., 4506-12 Lorain Ave., Cleveland 2, O.) is the concern's $1 Minnow kit which makes up into a 24-inch span free-flight job for rubber, CO_2 or small glow motors. Can be beefed up for control-line operation. Cleveland has new, illustrated catalog costing 5c or two 3c stamps.

←Rever Fuel

An anti-carbon fuel for operation in glow plug equipped engines is Rever Products' (259 Hancock Ave., Jersey City, N. J.) Glo-Fuel. Now available in quarts for $1. It is described as a nitrated fuel with methanol base and castor oil (AA). Concern is encouraging dealer inquiries. Trade inquiries should be addressed to the Jersey City plant.

Three-Volt Glow Plug→

A unique feature of the new "Special" glow plug is that it operates on 3 volts. It is distributed by Polk's Model Craft Hobbies, Inc. (314 Fifth Ave., New York 1, N. Y.). Retails for 39c. Has inner expansion ring for compression seal, aluminum gasket for seal with cylinder head, high tensile strength steel body. Thread size: ¼ x 32 which fits most A-B-C motors.

←Brigadier's Super

The first gas model kit to be designed specifically for PAA-LOAD and radio-control flying is now being marketed by Berkeley Model Supplies (138 Greenpoint Ave., Brooklyn 22, N. Y.) This is the Super Brigadier, a prefab kit which sells for $3.95. Co-designed by Henry Struck and Bill Effinger, Jr., meets requirements for PAA-LOAD event.

She Sells Seal Sure . . .→

A new hot-fuel-proofer that offers protection for model finishes from the effects of nitrated blends, methanols and all other hot fuels has been announced by Seal Sure Chemical Products (3019 N. San Fernando Rd., Burbank, Calif.), manufacturers of Seal Sure model lacquers and Skycharger model dope. Seal Sure Hot Fuel Proofer is 45c for 4-oz. bottle.

Showcase

Try your nearest hobby shop for items presented here. Write the manufacturer if you can't find it.

Doodle-Bug→

The .099 Thimble-Drome powered Doodle-Bug racer is the latest addition to the Thimble-Drome family (L. M. Cox Co., Santa Ana, Calif.). A low-speed "lap job" designed for youngsters, the new car-engine combo is said to be very easy starting. $19.95. Also available in packaged unit with fuel, cable, center post, starting cord, hook-up wire, $23.50.

←Tough Character

Something new in bellcranks is offered in the "Deco" line by Development Engineering Co. (Box 691-A9, Hagerstown, Md.). It's an insulated, light, tough bellcrank with a low-friction pivot bearing, free turning cable bushings to cut down cable wear. Sells for 45c; works fine in Deco's 3-volt, 2-speed system. Has 3 holes for adjustable movement.

Their Nominee→

Pee Wee Pursuit is the name Joy Products Co., Inc. (Menominee, Mich.) has given to its Infant-powered control-line trainer. Span is 20 inches; length is 14 inches. Kit contains completely shaped balsa parts, drawing and all necessary hardware. Sells for $1. Pee Wee is #2 in series of Simplikits. Plane was tested by setting up training program for clubs.

←Got Your Fyll?

Fyll, a new non-shrinking, non-cracking plastic filler material developed for modeling is now being produced by Testor Chemical Co. (Rockford, Ill.). Comes in tubes at 25c; when dry can be carved or sanded like wood. Used for filling holes, cracks, or rough spots in new construction and general repairing; can be molded to innumerable shapes.

Watch This→

New Swiss two-button chronograph wrist watches are offered by Ecco Enterprises (Box 168, Bridgeport, Conn.) for $9. In lots of 6 or more, the price is $8 apiece. Features standard watch, is also a stop watch. Watch case is chrome; wrist strap is leather. Choice of plain or radium dial. Movement is genuine Swiss. It can help you measure distances.

Showcase

See your hobby shop for the items shown here. Both the price and specifications subject to change.

Fly? Boy!→

A new prefabricated U-control stunt model is the Fly-Boy by Cavacraft Model Airplanes (137-39 N. 6th St., Philadelphia 6, Pa.). Features die-cut and slotted fuselage with side cover plates. $1. For Class A and B operation; span is 24 inches; length, 17 inches, wing chord, 5 inches. Has 15 parts and hardware. Die-cutting is by manufacturer's Cavacut method.

←Little Civy Boys

Paul Gilliam, noted West Coast free-flight designer and contest flyer, has established notable records with his Civy Boy 74. Now, Austin-Craft Co. (431 E. Victory Blvd., Burbank, Calif.) makes available Gilliam's Civy Boy 24 and 31 models in kit form for $1.35 and $1.65 respectively. The "24" has 88 sq. in. wing, takes an Infant; the "31" has 155 sq. in. area.

Learn From The Birds→

After you've spent several years snapping those models that never seem to perform just right, maybe you'd like to take some photos of some real flyers—the birds, that is. Kodak now offers a free 16-page booklet, "How To Take Bird Pictures With Still And Movie Cameras." Write: Sales Service Division, Eastman Kodak Co., Rochester 4, N. Y.

←Protection Agent

An all-around protective coating for models and proof against hot fuels is Comet's Hot-Fuel Proofer (Comet Model Hobbycraft, Inc., 129 W. 29th St., Chicago, Ill.) Firm reports one clear color covers all coatings, no thinner is needed. Doesn't disturb dope finish. Bottled in containers of over 2 ounces at 25c. Comet also has new deal in packaged balsa.

Scale Gliders→

Wallis (The Paper Man) Rigby, the chap who can build better flying models from cardboard than most of us can from balsa wood has a new book of cardboard cut outs titled "Jet & Rocket Planes." From the printed sheets of colored Bristol board you assemble 10 scale jets. By mail $1 from Garden City Publishing Co. (Box J-2, Garden City, N. Y.)

HURRY! HURRY! HURRY!

TAKE ADVANTAGE OF THIS TERRIFIC OFFER BEFORE IT'S TOO LATE!

THE response to the sensational sale of Bullet and Torpedo Special engines has been stupendous! Thousands of orders have poured in from every state and many foreign countries! Many who bought have since re-ordered in quantity to take advantage of this phenomenal bargain. As D. M. of Vero Beach, Florida, writes, "I am glad to report that all three of these motors are running very good. So good, in fact, that I am enclosing a check for one more Torpedo motor."

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Complete with O & R GLOW PLUG but without timer (shown here with spark plug—and timer $1.00 extra)

BULLET
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You'll be proud to power your finest model with a Bullet! Tremendous power, speed and endurance. • Displacement —.275 cubic inch. • Bore — ¾"; • Weight—6½ oz. • Rotary valve. • Heat-treated, precision-ground crankshaft. • Super-honed steel cylinder. • Centerless ground Meehanite piston. • Radial or Beam Mount.

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The Torpedo Special is one of America's finest engines. • Displacement —.30 cubic inches. • Bore —.711. • Stroke —.750. • Weight — 7¾ oz. • Double ported exhaust. • Crankshaft — one piece steel alloy. • Piston — Meehanite ground. • Bearings — Naval bronze for crankshaft.

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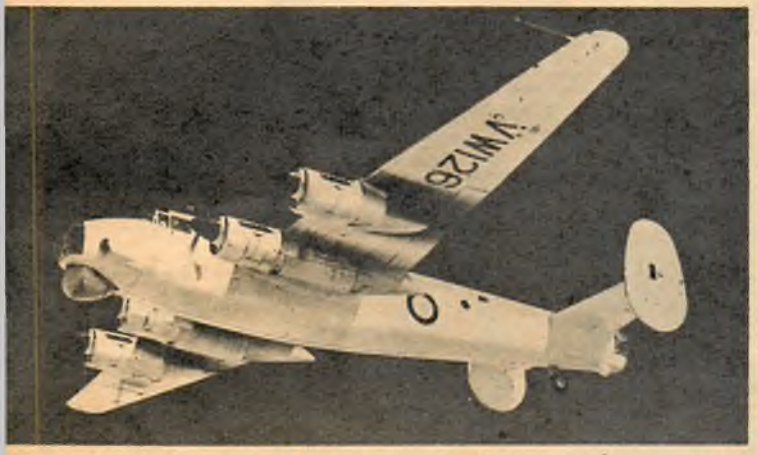
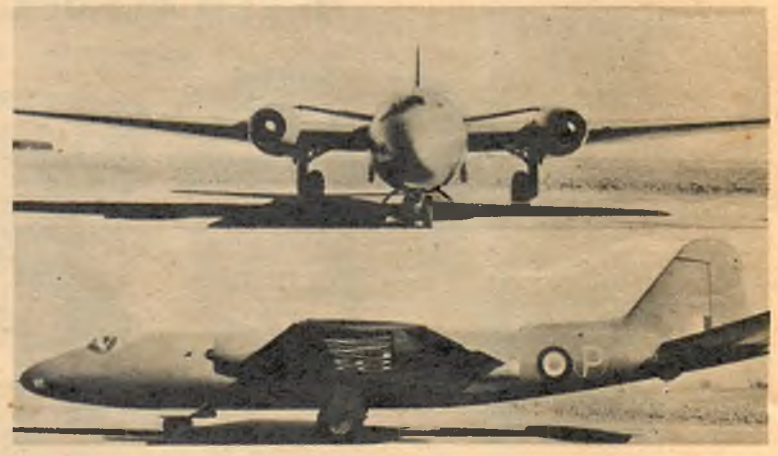
Development Highlights

● Exhibited at recent air show in Paris was this 11/28th scale model of French SE 2410 jet attack plane, now under construction. Powered by two RR Nene engines mounted one above other.

● Stanley Hiller, Jr., famous helicopter manufacturer, is experimenting with man-carrying rockets. Hiller is here shown with a two-place job that would stand 30 feet high and be capable of taking off without any extra launching apparatus.



● England's latest bomber, the Avro Shackleton, will do reconnaissance duty for Coastal Command. Span is 120', length 77'6". Powered by four Rolls-Royce Griffon engines developing 2,500 hp each, driving six-bladed contra-rotating propellers.



● First English jet bomber: Still cloaked in secrecy, this good looking craft bears the designation A.1. Has been produced by the English Electric Co., Ltd., and is powered by two Rolls-Royce "Avon" engines. Plane still undergoing test flights.

● French light-freighter the Fouga CM-100, a development of the Castel-Maubussin CM-10 glider. Can carry a maximum of 21 passengers or an equivalent weight in freight. Is powered by two 580-hp Renault engines. Span 84.3 ft. Speed 187 mph.

● Navy's newest anti-submarine aircraft, the Grumman XTB3F-1S (top) and XTB3F-2S. Production planes will be designated AF-1S and AF-2S and called the Guardian. Bulge under fuselage is large search radome. Both have Pratt & Whitney R-2800 engines.

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All-wing glider designed by Northrop engineering students—a typical training project for practical design and production experience.

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Air Notes

AVIATION TODAY AND TOMORROW

Fast Tunnels

The U. S. Navy is now using for research one of the most famous wind tunnels in the world—the German supersonic tunnel in which the V-2 rocket was developed at Peenemunde and, later, Kochel, Bavaria. Captured by the U. S. in 1945, the tunnel was transported to the Naval Ordnance Laboratory at White Oak, Md., where, reconstructed and modernized, it was dedicated recently. At White Oak, speeds of Mach 5.18 (5.18 times the speed of sound) have already been achieved with the tunnel.

The tunnel works on a unique vacuum principle. A huge steel sphere is evacuated, then dried air is allowed to rush back in through an expansion nozzle. The size and shape of the nozzle determine the speed of the air in the working section where the test model is mounted. Effects are determined by study of photos made of the air flow around the model. (This same system is used in North American Aviation's new supersonic tunnel, which is the largest operated in the U. S. by an aircraft company.)

For use in connection with the wind tunnels, NOL is now completing two ballistics ranges which can check at normal temperatures the results obtained in the wind tunnels. The ranges are 350-feet-long tubes through which projectiles or missiles up to 40 mm. in size can be fired. Any atmospheric condition on or above the earth's surface can be simulated, up to a pressure of six atmospheres. Performance is recorded by use of spark photography.

Testing

Navy's D-558-2 Skyrocket sonic research plane has successfully demonstrated its combined rocket and jet power in flight tests at Muroc. The needle-nosed Skyrocket is producing valuable information about new power plants and speeds near the sonic range.

The world's first track-tread type landing gear for medium or heavy bombers is being tested on a 164,000-pound Boeing B-50 Superfortress. The new-type gear may make possible the use of unimproved, unpaved runways for the operation of heavy bombers, tankers and transports. The B-50 track gear consists of a double tractor-like rubber tread for the main gear units and a single tread in place of the nose wheel. The weight of the plane is spread over a ground contact area three times as great as that of the usual double-tire B-50 gear.

A new twin-engine transport and cargo plane, the Chase "Avitruc," awaiting CAA action on its application for an approved type certificate, has been flight testing at the Chase Company's New Jersey plant. Two prototypes have been built for the Air Force, with a military designation of YC-122.

De-icing The Jets

Anti-icing protection for jet engines, long a subject of study, is nearing realization. Tests have shown that hot air supplied at the nose of the engine through heated hollow sections is a practical method which can be accomplished without any added weight or loss of performance. Icing has been a problem for the jets, because accumulation of ice at the inlet shuts off air flow and may break off and enter the compressor, with possible damage.

Interceptor Progress

Two probable new Air Force high-altitude interceptor fighters, the Republic XF-91 and Lockheed XF-90 are now making flight tests at Muroc AFB.

The XF-91 has sweptback wing and tail surfaces and is the first U. S. plane to use inverse tapering of the wings, making them wider at the tips than at the intersection with the fuselage. There's also a novel landing gear arrangement, two main wheels being arranged in tandem under each wing instead of in parallel position. The XF-91 has a J-47 turbojet engine and is designed to utilize rocket motors for accelerated take-off, climb, and additional boost in speed while in flight.

The XF-90, a penetration fighter designed for operation deep within enemy territory, is powered by two turbojet engines. Its wings are sweptback at a 35-degree angle. The plane has conventional landing gear and incorporates a pilot ejection seat, cabin pressurization and air conditioning. Extensive flight test data was obtained through use of six steel and plastic models of the XF-90 which were dropped from high-flying aircraft and followed by radar. The XF-90 is about 55 feet long and has a span of 40 feet. Although it is a single-seat fighter, it is almost as heavy as the familiar DC-3 transport plane.

Bombers For Britain

Britain's first jet bomber to fly is the English Electric A.1, which has just made its initial flight tests and been ordered into quantity production. The plane is a twin-jet medium-range craft with the engines buried in conventional straight wings. The cockpit is placed well forward, in front of the nose wheel. No performance figures of any kind have been released, but the A.1 is expected to exceed 500 mph.

Another new British bomber which is now in the flight testing stage is the four-engine Avro Shackleton, which will be the most powerful piston-driven plane in the RAF. It is powered by four Rolls-Royce Griffon engines driving six-bladed propellers and is conventional in appearance. Heavy offensive gun armament is provided. Details of performance and the installation of equipment are still secret.

Operation Lookout

The aircraft detection and warning systems that would be needed to protect the United States in emergency will be tested early in September by the Air Defense Command in a six-day exercise over a region covering parts of 10 eastern states. The test will measure the efficiency of radar units in use at Air Force and Navy bases in the area and of volunteer civilian aircraft spotters at 1,300 ground observation posts.

The ground observer of World War II is still a vital part of the nation's aircraft warning setup. Even the elaborate radar detection screen planned for the future cannot give complete surveillance of approaching aircraft. Radar frequencies do not follow the curve of the earth but travel in straight lines and depart from the earth at the horizon. Thus it is possible at certain points for aircraft to fly in low under the radar beams. Without a network of ground observers to spot them, hostile planes might reach targets undetected.

For "Operation Lookout" tests, both fighters and bombers will be used, flying at various altitudes and from different directions. Ground observers will report through a telephone network to filter centers which will evaluate reports and relay them to Air Defense Control Centers.

Windmill Invasions

Assault forces in a future war might land by helicopter rather than the barges and "alligators" of World War II, under a new invasion technique being developed by the Marine Corps. The Marines contend that the use of helicopters, which could get troops ashore quickly and from some distance, would permit dispersion of the invasion fleet, making the ships less vulnerable to attack. Leatherneck chiefs who have been working quietly on such tactics since 1946, recently felt they were far enough along to be demonstrated for Congress. Needed are more and larger helicopters and ships from which they could be quickly launched.

Jet Patrolling

The Navy's first jet-powered patrol plane, the Martin P4M-1 Mercator, is now in full production. Two prototype planes have been undergoing extensive tests, and the first production plane was readied for flight this summer. The Mercator is one of the most electronically complete airplanes now being built. Navy wants it for use in anti-submarine warfare. With two jet and two piston engines, it has a fast rate of climb and is unusually maneuverable for a heavy airplane.

Also now in production for the Navy is the North American AJ-1 multi-engine attack plane. The AJ-1 has two piston engines and one jet.

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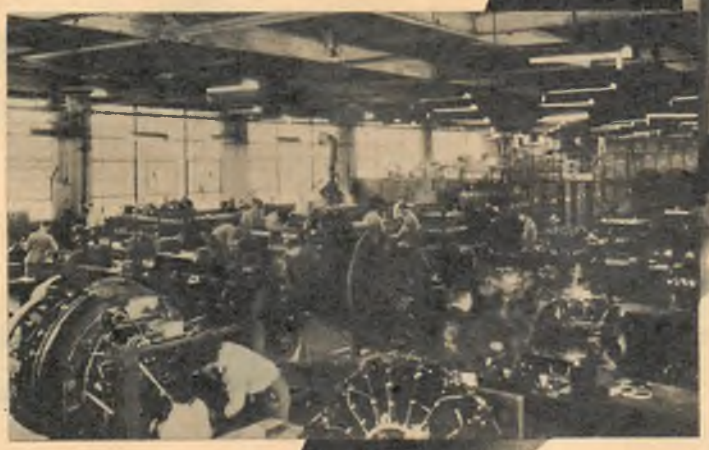

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Powered Soarers

Humming Bird with engine extended. Engine was specially designed

With engine retracted, ship is a true sailplane with fine performance

● This is how the engine nestles inside the fuselage when fully retracted. Much ingenuity went into it, as prop must stop vertically when ready to retract, and retraction and extension must be accomplished with minimum CG change.

LIKE a sailboat, the sailplane suffers from the vagrancies of Mother Nature. It is apt to find itself becalmed in the air and a soaring flight is then ended in a glide. It also depends entirely on outside means of getting airborne, such as automobile, winch or airplane. Soaring enthusiasts the world over have been seeking an easier way of getting into the air.

In this country, Ted Nelson, president of Nelson Specialty Co., San Leandro, Calif., himself a powerplane and soaring pilot, pioneered the powered soarer. Together with famous sailplane designer Hawley Bowlus, he produced the first certificated American powered sailplane, the Dragonfly.

Now, Nelson has the Humming Bird, an exceptionally clean aircraft featuring retractable engine and landing gear. With engine retracted it has a glide angle of 20 to 1, sinking speed of 3 ft. per sec. Under power it has a rate of climb of 275 to 300 ft. per min., about the same as a sailplane in aero-tow. Engine is started from cockpit. Wing span is 54 ft.

● The cockpit of the Humming Bird holds two, seated side-by-side. Fuselage is wood, wings metal. Landing gear retracts.

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AIR TRAILS
SEPTEMBER 1949

Aerial Hot-Rods

HISTORY OF THE THOMPSON TROPHY RACE

By JOHN L. MacKENZIE

ICARUS, the character in Greek mythology who flew on wings of his own creation is the central figure of the fabulous Thompson Trophy. Standing with wings spread and face looking skyward, he symbolizes man's everlasting desire to fly. Above his head a row of silver shields portrays man's achievements of ever greater speeds in his conquest of the air. These are the small plaques which bear the names of air racing's greats, the men who have won the trophy in the thirteen times it has been up for competition. Standing almost three feet high, fashioned in gold, this beautiful example of the sculptor's art is valued at $10,000. It is awarded annually to the pilot winning the world's premier aerial contest, flown each Labor Day as the climax of the National Air Races.

What the Indianapolis Memorial Day Race has been to the automotive industry, the Thompson has been to aviation. Instituted in 1930 by the late Charles E. Thompson, Cleveland manufacturer of automobile and aircraft valves, it has always catered to the fastest airplanes and the most daring pilots the game has to offer. Over the years men have risked their lives and their fortunes to capture the famous award. A roster of its winners includes names like James H.

1930: Laird Solution, 201.91 mph.

1931: Gee Bee, 236.24 mph

1932: Gee Bee, 252.69 mph.

1936: Caudron, 264.26 mph.

1937: Folkerts, 256.91 mph.

1938-39: Turner-Laird, 283.41 & 282.53 mph.

Doolittle and Roscoe C. Turner. Also included are men who were wholly unknown before they captured the Trophy.

There is no other race like the Thompson. It is the only closed circuit competition in the world open to any type of propeller-driven airplane regardless of horsepower. Consequently it is the fastest, most exciting race ever run before human eyes. Planes of tremendous power, flying bunched together at tree top level, swinging around pylon turns in perpendicular banks and roaring down the straightaways at terrific speed are characteristic of the Thompson. A dangerous game at best, it is one of the most severe tests to which flying men and machines can be put.

When Mr. Thompson established this race, he stipulated the rules which have made it a free-for-all event. It was definitely his aim to stimulate the development of faster aircraft at a time when our nation was lagging behind European accomplishments in that field. Contrasting the winning speed of 201.91 miles per hour registered by Charles W. Holman in 1930 with Cook Cleland's present day record of 396.131 mph gives a fair idea of just how much that goal has been realized.

Although the race has fulfilled its objective over the years as a proving ground of the industry, it has

• Charles W. "Speed" Holman, noted stunt and speed pilot, winner of the 1930 Thompson Trophy Race.

• 1931 winner was Lowell Bayles, who later met an untimely death in a crash in his fast Gee Bee racer.

• "Jimmy" Doolittle, famed for his raid on Tokyo, won in 1932. His speed was unsurpassed for three years.

• The only foreign pilot ever to fly in the Thompson Race was Michel Detroyat, who won spectacularly in '36.

• In his small Folkerts, Rudy Kling took first place in the '47 race. He was later killed in this craft at Miami.

• In 1938 and 1939 the Thompson Trophy was won by Roscoe Turner, the only pilot to win it three times.

1933: Weddell-Williams, 237.95 mph.

1934: Weddell-Williams, 248.13 mph.

1935: Howard, 220.19 mph.

1946: Bell F-39Q Cobra II, 373.90 mph.

1947: Goodyear F2G-1, 396.13 mph.

1948: No. Amer. F-51, 383.76 mph.

gone even farther. It has made of air racing a spectacular show which plays to the largest audiences ever assembled for one sport. Upwards of a half million spectators will congregate at Cleveland this Labor Day, as they have in previous years, to witness the big event. The very nature of the race makes it impossible to confine it to the paying customers. Since it is flown around a fifteen-mile rectangular course, only the start and finish line, the No. 1 pylon and the homestretch are in view of the Air Race grandstands. As the high-speed planes roar around this circuit fifteen times they will be flying over the heads of countless thousands in the surrounding countryside.

Each of the thirteen races that have been run to date constitutes a tale worth telling. Together they add up to a dramatic history that reads like pages of fiction. Take for instance the case of that first race. "Speed" Holman was a well known figure in the air racing circles of that day. He also served as test pilot for the small E. M. Laird Airplane Company in Chicago. Just one month before the race was scheduled to be flown, his employer accepted a contract to build a racing plane for Lee Schoenhair of the B. F. Goodrich Company. And it was just one hour before the race that the ship was finished. In view of this shortness of time at (*Continued on page 71*)

• 1933 winner was James R. Weddell. This flyer was better known for the design of his racing planes.

• Most colorful pilot of the racing circuit was Colonel Roscoe Turner, who took first place in the 1934 race.

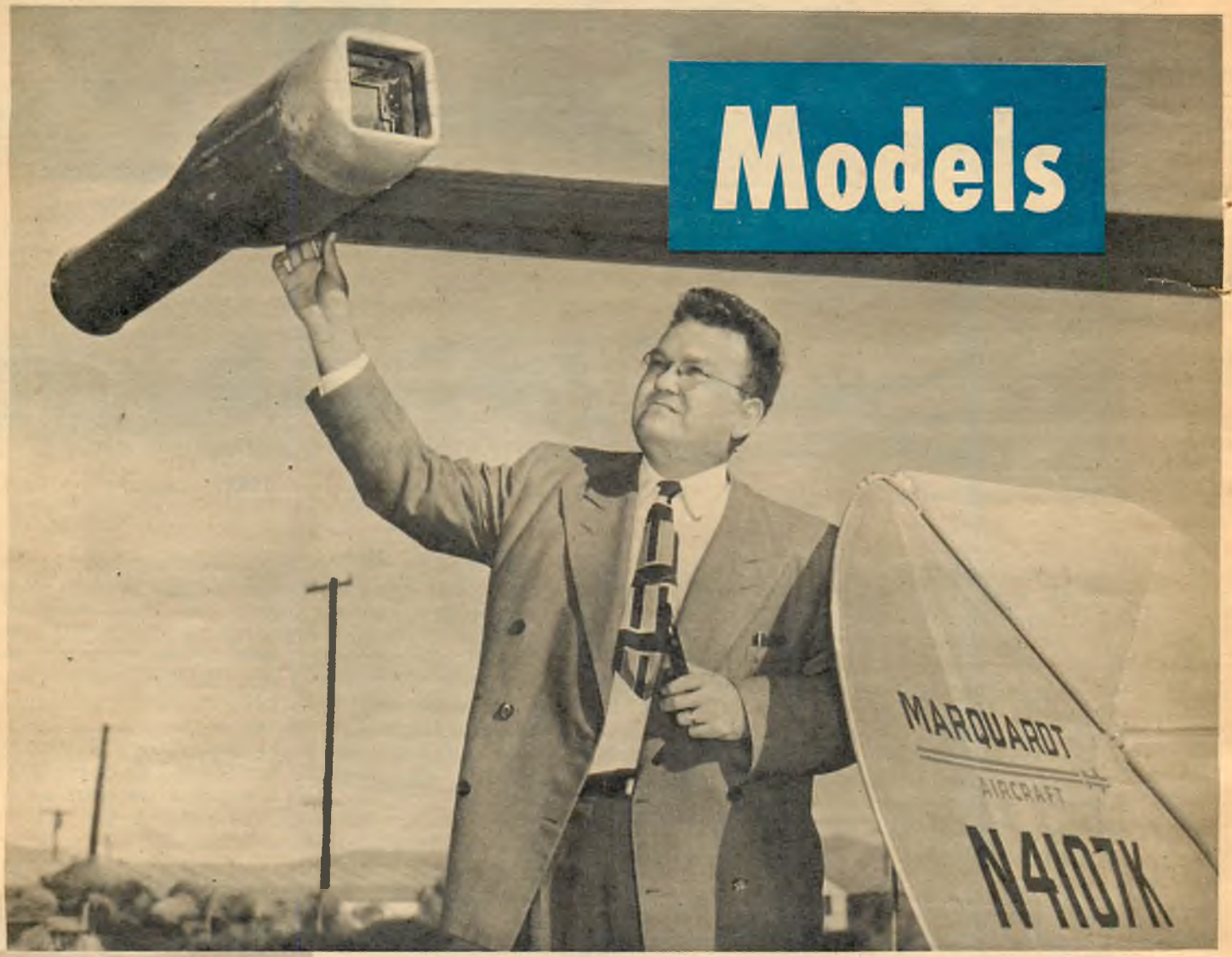
• Harold Neumann won the race in 1935. He flew Benny Howard's fast, white-and-gold Mister Mulligan.

• The first post-war winner was Alvin "Tex" Johnson. With his victory was started the military plane era.

• Fastest speed ever reached in a Thompson Race was by Cook Cleland who won in '47 with his big Corsair.

• Trouble with Chuck Brown's Cobra II and Cleland's Corsair helped Anson Johnson win Trophy in 1948.

Models



Starting out as a model builder, Ray Marquardt has racked up a number of distinguished accomplishments, not the least of which is his successful work on ramjet engines

By DON DOWNIE

● Above: The Marquardt "Whirlijet" helicopter powered by two pulse-jet engines of 8" diameter. This type of power plant is light and torque-free, increasing load-carrying capacity of 'copter. Right: Ramjet man Marquardt with his 30" "athodyd," another name for ramjets. This type engine has enough power to fly a conventional fighter-type plane.

● Right: Lockheed F-80 fitted with two Marquardt ramjets during experimental flights over California.

+ Marquardt = Ramjets

ONCE he built model airplanes—good ones too! Now he builds "flying stovepipes," those transsonic ramjet engines that make headlines every time a new story is released.

Everything about Roy Marquardt is jet-propelled. His experimental helicopter, the Whirlijet, is the first of its kind in the world. He even has a jet-propelled pipe lighter.

Head man of a 26-acre aircraft plant with over 175 employees and $2,500,000 in military orders for jet engine research, young Marquardt gives much of the credit for his success to model building.

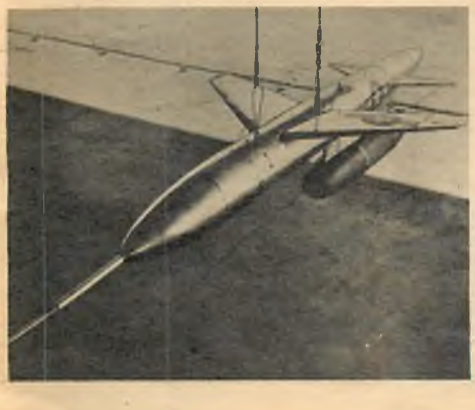
"Model building is the finest way I know to demonstrate ideas found in books and magazines. There are probably as many wrong ideas as right ones, but the up-and-coming enthusiast who combines reading and research with his model building will learn a lot about aviation, just as I have," says Marquardt.

He should know, for Roy Marquardt began his aviation career at the age of 12, teaching model building at the "Y" in Burlington, Iowa. In high school he was largely responsible for building two gliders; a primary job that he cracked up himself and a secondary sailplane that was barely completed because of slim finances when the banks closed in 1933. Everyone was broke in those lean years, so they all resumed building inexpensive model airplanes.

Marquardt won the Mississippi Valley model contest, sweepstakes for 1937, with an 8-hour, 50-mile flight from East St. Louis, across the river and on toward central Missouri. Plans for his plane, the Rizer Rider, were printed in Air Trails later that year.

Life was just one blue-ribbon contest after another until Marquardt came West and entered the California Institute of Technology for graduate study in aeronautics. Even then he took time out from his slide rule work to win the 1939 California State contest in Taft. Since that time, however, his model building has been restricted to engineering research scale-downs and helicopter models.

● Martin Gorgon IV guided missile fitted with Marquardt 20" ramjet.



To fill in a meager income during school years, Marquardt taught advanced mathematics and worked on the wind tunnel staff at Cal-Tech until he received both his Bachelor and Master degrees in aeronautical engineering there.

After college came a job in the aerodynamics department at Douglas Aircraft and a two-year stretch at nearby Northrop where the former model builder was in charge of one of the first Navy research contracts in jet propulsion. He moved to the University of Southern California as director of aeronautical research and persuaded USC to take a contract from the NACA for jet helicopter research. Next came the Marquardt Aircraft Corporation and later the Whirlijet.

"The helicopter itself was almost incidental," says Marquardt. "It grew out of a test stand for these pulse-jet engines, a modified V-1 buzz-bomb power plant, but the helicopter worked out so successfully that we hope to go ahead with a contract to perfect it.

"Actually, over 90% of our work is in the research and development of ramjet motors for military planes and drones. We built the 20-inch 'stovepipe' for the Martin Gorgon IV and the 30-inch wing-tip jet engines for the Lockheed F-80. Beyond that, our ramjet business is classified as a military secret."

The 30-inch jet, already successfully test-flown on the F-80, is 11 feet long. The smaller 20-inch engine has been flown on the F-51, F-82, F-83 and the F7F. All that security regulations permit is the statement that "at its design speed, this engine develops greater thrust than the largest available American turbojet. It is sufficient to power a large pilotless aircraft or a small fighter."

The Gorgon IV, built by Martin Aircraft and powered with a 20-inch, seven-foot Marquardt ramjet engine, has just been announced by the Navy. Since the ramjet has no static thrust and therefore cannot take off under its own power, tests at Point Mugu in California were made with the Gorgon IV taken aloft and released from a specially modified Northrop Black Widow. Other than a fuel pump, these engines have no moving parts and operate on 80 octane gasoline.

In comparing the various types of jet engines, Marquardt says, "at design speeds, the ramjet has a specific fuel consumption per pound of thrust of about four times that of a turbojet engine and about one-fifth that of a rocket engine. This high fuel consumption at subsonic speeds necessarily limits the application of ramjet engines to very short periods of time where the light weight of the engine more than makes up for its high fuel consumption.

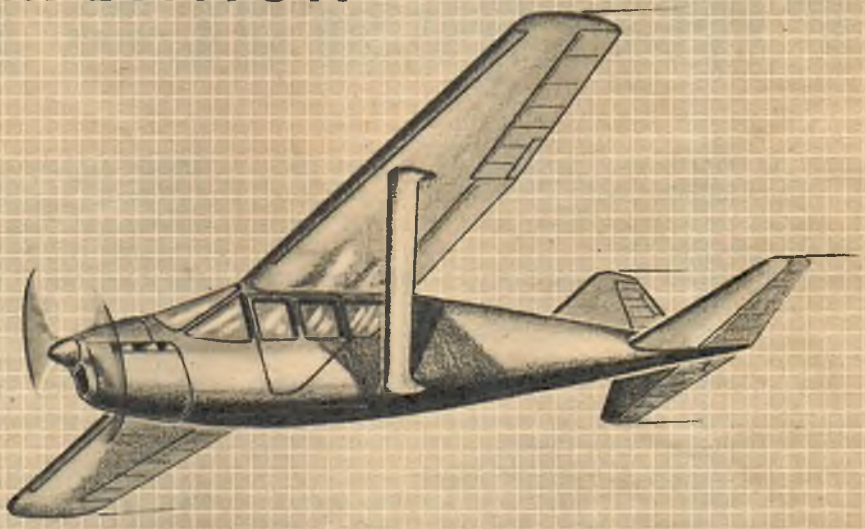
"Actually, you can build a model plane to fly at 20 mph with a ramjet engine. The main problem would be in designing the correct fuel nozzles, and I don't recommend that any but the most energetic model builders take a crack at it. We get into enough trouble with these big ramjets and we have a lot more background than the average basement model fan."

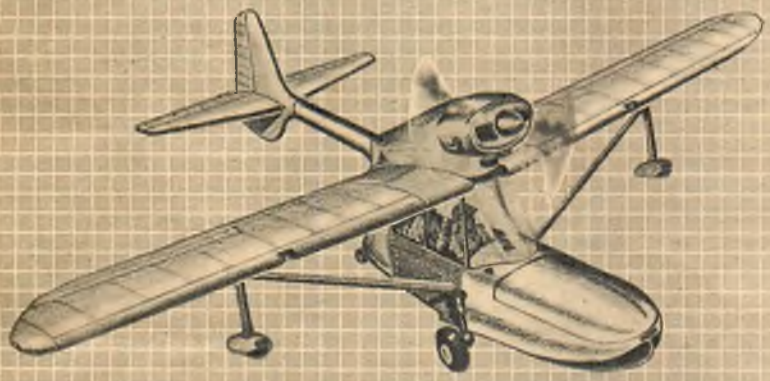
The Whirlijet is the first known flyable pulse-jet helicopter. This 29-foot (*Continued on page 75*)

Airmen of Vision
DESIGN COMPETITION

First Prize:

● A three-place personal airplane by Jan Thylen of Norrkoepping, Sweden. Plane bears resemblance to British Heston Phoenix. However, Thylen's craft is of all-metal construction. It has retractable landing gear folding into belly of fuselage. Span is 30' 3", length 23' 8". Engine is a four-cylinder in-line, developing 125 hp. Wing is equipped with slots and flaps to give the plane good lateral stability.



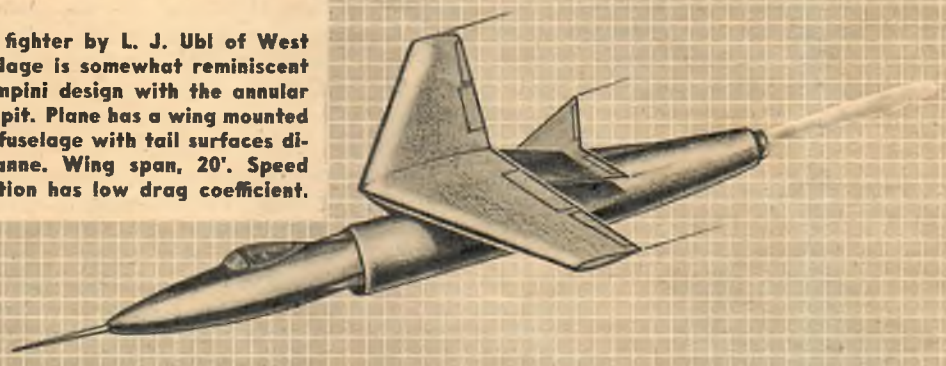


Second Prize:

● Murrel Dee Hobt, Nashville, Tenn., submitted this design of an amphibian adaptable for either sport business or light express flying. Hull and tail are metal-covered, wings fabric. Wheels retract forward only far enough to be out of water. Ship is 2-place job. The tubular boom is very light and eliminates long hull usually required for amphibians. Span is 36' 9". Engine, 125 hp. Top speed, 120 mph.

Third Prize:

● An unconventional jet fighter by L. J. Ubl of West Los Angeles, Calif. Fuselage is somewhat reminiscent of the early Caproni-Campini design with the annular air intake behind the cockpit. Plane has a wing mounted on a cabane mast above fuselage with tail surfaces directly behind, à la Delanne. Wing span, 20'. Speed over 600 mph. Configuration has low drag coefficient.



Air Trails has opened its columns to those who are interested in presenting plans for aircraft of the future.

Rules governing the competition are:

1. Three-view sketches of the proposed aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views.
2. Give sketches of the complete airplane in three-quarter front and rear position.
3. Photos of a model of proposed design may be included.
4. Information on power plant (s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges.
5. Entries will not be returned and for that reason those participating should retain copies of all material submitted.
6. The editors regret they cannot enter into correspondence concerning entries.
7. Designs may be of any type: commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-place sporting craft.
8. Mail entries to Airmen of Vision, c/o Air Trails, P. O. Box 489, Elizabeth, N. J.
9. The entry each month judged by the editors as the most practical or of the greatest significance will receive an award of $25. Awards of $5 will go to runners-up.

Civil Air Patrol Newsletter

● Staff Sgt. M. Orack, of Budd Lake Squadron, on duty as control tower operator, directing aerial traffic at New Jersey CAP Air Show.

C A P Air Show

ON a fine Spring Sunday, the Budd Lake Squadron (222-6), New Jersey Wing CAP, put on its first air show to raise funds and to acquaint the public with the operation of a CAP Squadron.

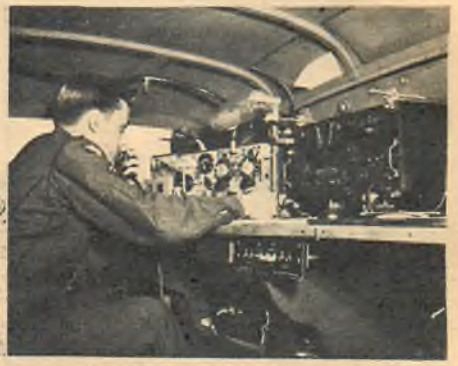
All that morning airplanes and equipment arrived from other squadrons that were cooperating in staging the air spectacle.

As 3,000 watched, the CAP started the show with an impressive formation flight of CAP aircraft. Next came air maneuvers and stunt flying by the cooperating Squadrons, followed by the bomb-dropping contest, where hits were made on a moving jeep from a low-flying L-4. After the bombing contest, a parachute jump was made by Sherwood E. Cole of Easton, Pa.

● Tech. Sgt. G. Howland installing antenna on SCR 299 radio unit of Essex Squadron.

● Aircraft of cooperating squadrons land at field for participation in activities.

● Tech. Sgt. R. Burton, of Headquarters Sq., N. J. Wing, at mike of SCR 299 radio unit.



● Cpl. Joan Failla, Budd Lake Squadron, was kept busy at switchboard during show.

● 3,000 attended the show and had good opportunity to see how the CAP operates.

● Big attraction was parachute jump by Sherwood E. Cole. In foreground is Piper L-4.

Civil Air Patrol *Newsletter*

(CONTINUED)

Awards Board Appointed

National Headquarters CAP has established an Awards and Decorations Board which will review and have final approval of all recommendations for awards or decorations pertaining to CAP members as well as the USAF personnel of National Headquarters.

Members of the Board, all USAF officers, are Col. William G. Booth, President; Lt. Col. Carl W. Adams; Majors Robert A. Trennert and Herbert G. Rollins, and Capt. Jerome H. Keating, recorder.

Washington S&R Setup

The Washington Wing CAP has now perfected a plan of cooperation with nine state agencies and organizations so that combined search-and-rescue operations will offer downed pilots and victims of flood disasters the finest protection ever afforded in that state.

The agencies and organizations cooperating are USAF Air Rescue Detachment 8; 13th Naval District U. S. Coast Guard; Washington State Air National Guard; Washington State Police Patrol; Washington State Aviation Association; Washington Flying Farmers Association; CAA; Mountain Rescue and Safety Council and Washington State Aeronautics Commission.

A complete plan was drawn up to which all the organizations are signatories, detailing procedures as to notification of search, decision to search, communications, and the like.

Do You Just Belong?

Are you an active member,
The kind that would be missed,
Or are you just contented
That your name is on the list?
Do you attend the meetings
And mingle with the crowd,
Or do you merely stay at home
And crab both long and loud?
Do you take an active part,
To help the CAP along,
Or are you satisfied to be
The kind who "just belong?"
Do you ever go to visit
A member who is sick,
Or leave the work for just a few
And talk about "the clique?"
There is quite a program scheduled
That means success, if done,
And it can be accomplished
With the help of everyone.
So attend the meetings regularly,
And help with hand and heart
Don't be just another member
But take an active part.
Think this over, member:
Are we right or wrong?
Are you an active member,
Or do you "just belong?"

—G. B. M. KILMER
West Virginia Wing CAP

Cross-Country with C. A. P.

Carbondale, Pa., Flight is now a separate flight under W/O Duane Johnson with a pilot roster more like a Squadron —one commercial, nine private and several student pilots . . . Bunkie and Ville Platte, La., expect to form CAP Squadrons . . . Easton, Pa., Squadron has been reactivated with indications they'll exceed former membership . . . Lake Wallenpaupak, Pa., (noted for good bass fishing) is soon to have a new Squadron with Lt. Carl Walters as CO.

Ruston, La., Squadron is off to a big membership drive and a comprehensive program of activities . . . W. Va. Wing CAP has established an aeronautical rating board to make decisions on rating CAP pilots and observers, composed of Capt. Robert Beckulhimer, president; and Captains Byron B. Berry and John R. Duncan.

When's the best time to recruit Cadets? Lt. Col. Wilson Kellogg, Idaho Wing CO believes the last six weeks of the school year when students of Cadet age are booming with energy and most without any plans for constructive summer activity. Organized at this time CAP units need not go through the difficulties of forming when school begins in the fall . . . Richland, Wash., Squadron has installed CAP courses in the local high school with regular credits for students taking courses in ground and preflight aviation subjects.

About 75 officers of the Pennsylvania Wing have graduated from a special course in AF administration at Olmsted AFB, Middletown, Pa. . . . Since the FBI is no longer able to file fingerprint cards submitted by contributing agencies, CAP has discontinued fingerprinting of Cadets . . . Washington State CAP has two new Squadrons, Willapa Harbor at Raymond and Centralia-Chehalis at Centralia.

Congrats to Huntington, W. Va., which now has a Flight of colored CAPers organized with William R. Alston, former USAF lieutenant and fighter pilot as CO . . . Cadets at Great Falls, Mont., think Lt. Don Wright, Communications Officer, a mighty fine guy, which goes for Mrs. Wright, too. The Wrights recently entertained for the Cadets with dancing, games and refreshments following studies, and now the Cadets are asking, "when do we do it again?" . . . The report of Lt. M. Harris, adjutant of Twin Falls, Ida., Squadron on activities during last February's blizzard is being hailed throughout the state as a model of detail and clarity.

Norfolk, Neb., Squadron was to hold an Air Show and Model Airplane Meet on July 17 in that city . . . Cambridge and Central City, Neb., may soon have CAP Flights; the Lexington Flight has started a Model Club . . . North Platte, Neb., high school will initiate cooperative CAP aviation classes in the fall . . . Cadets from the Omaha Squadrons were given special commendations recently for their assistance in flood patrol work.

National CAP Headquarters passes along a "word to the wise" in urging that CAP L-4's be properly staked down so that in high winds tie-down failures will not result . . . Newest radio station on the Wisconsin Wing State network is West Bend WIAZ . . . Michigan Exchange Clubs think so much of the CAP Wing of that State they recently presented $1,600 for use in Cadet Training, to be used to finance needy Cadets. Cheers for the Exchange.

Rhinelander, Wis., has organized a new CAP Squadron, commanded by Lt. W. Roeder, with 52 applications already processed . . . There are a lot of questions being asked about the October 1948 accident rate in CAP, reported at 145 for every 100,000 hours compared to 37 per 100,000 hours for the USAF . . . A bill was introduced into the Nevada State Legislature providing for $3,000 toward purchase of an ambulance plane for that State's Wing.

Four new units were formed in Wisconsin recently, among them a Special Cadet unit attached to the Security Unit of Wing Headquarters . . . New chief clerk at CAP Liaison office, Colorado Wing, is T/Sgt. James Burge of USAF . . . Hats off, fellows, to six girl Cadets of Squadron 23, Scranton, Pa., promoted as follows: Pfc. Ann Austin to Cpl.; Privates June Banick, Helen Brod, Arlene Preitz, Marie Posluszny and Elizabeth Mireski to Pfc's.

T/Sgt. C. F. Vorlisch, Jr., member of Covington, La., Squadron since '42, is now organizing a woman's squadron for that city; 2nd Lt. Nick Fitzsimons of the same Squadron, Communications Officer, is now licensed to operate that Squadron's radio . . . Three new Flights have been activated in Missouri: at Albany under command of J. Van Houtan; at Maryville, commanded by Robert C. Taylor, and at Springfield, commanded by Jack S. Dixon . . . St. Louis Squadron 123 is in full swing on a Cadet program—every Thursday night, and Sunday mornings when time permits.

Washington Wing has received a C-45 on loan from USAF, to be used primarily to aid in administrative work, enabling Wing staff officers to visit the various Squadrons and Flights, to transport limited cargo to units and for Cadets on indoctrination flights . . . Yakima, Wash., Squadron will be transmitting on 2374 Kc. . . . A comprehensive plan whereby air reserve officers will be made available to instruct certain CAP Cadet classes should be in operation this summer.

Cadets of the New Orleans Women's CAP Squadron walked away with top honors in the Louisiana Wing Drill competition. The girls' winning team was led by Cadet Capt. Marge Rauch, the boys' by Cadet Capt. Mike O'Keefe.

Training Officer Is In Key Position

The Unit Commander and his Training Officer can spell success or defeat of any Civil Air Patrol unit, according to National Headquarters CAP.

Subscribing to and quoting from the Michigan Wing, National Headquarters declared:

"It can no longer be stated that CAP does not have a program which will interest both its Senior members and Cadets. With the clear training directives, and the valuable equipment available today, any lack of a program in any CAP unit can be traced directly to the doorstep of the Unit Commander and his Training Officer.

"The Training Officer must plan special maneuvers that will embrace the use of all personnel in the unit, and he must not, by any means, neglect social activities which are outside of the regular curriculum of training. In dealing with Cadets he must always keep in mind that he is dealing with young boys who must have some fun mixed in with their normal CAP activities. Weiner roasts, hayrides, skating, dances, must be worked in wherever possible. Rifle clubs and exhibition drill hold great fascination for the Cadets.

"Radio operation on the CAP frequencies should be turned over to the Cadets at least one night per week in training for radio procedures and the handling of radio traffic.

"The principles of navigation, military courtesy and classes in the study of features of terrain, location of emergency landing strips, airframes and light motors, theory of flight, control surface of aircraft, traditions of the CAP, interior guard duty. infantry drill, aircraft radio procedures, if fully exploited by the Training Officer, will involve the use of all Unit Officers and Senior and Cadet Personnel.

"The responsibility, of course, rests with the Unit Commander, for he selects the Training Officer."

FCC Regs For Radio Ops

The SCR-511 "walkie-talkie" radios cannot be operated by CAP members unless they possess a valid Restricted Radiotelephone Radio Operator Permit issued by Federal Communications Commission, it was announced.

Also no SCR-511 transmitter can be operated unless it has the transmitter identification card (FCC form 452-C) attached to it in the proper manner. Call or station identification to be used is found in the upper left hand corner of each card.

Saginaw County's Flying Deputy

Saginaw County, Michigan, has found a brand new use for a Civil Air Patrol member, a "flying deputy sheriff."

Increased flying over the Saginaw area recently prompted the Sheriff of the County to deputize Capt. Darrell B. Milstead, CO of Squadron 631-8 in Saginaw, with responsibility of supervising air travel in Saginaw County.

According to Sheriff Munroe, Capt. Milstead will have authority to investigate reports of low altitude flying and other violations of CAA regulations affecting the public safety and welfare.

Senior CAP'er of the Month

Texas, noted for its bigness, comes up this month with what may be the youngest "Senior CAP Member of the Month," 20-year-old Lt. Jack K. Brown, who is doing one of the biggest jobs in the entire Civil Air Patrol.

A member of CAP since 1944 when he entered as a Cadet, Lt. Brown today is Assistant Operations Officer of the Texas Wing, has 1,500 certified hours of flight time, is a rated CAP Senior Pilot, holds CAA certificates and ratings as commercial pilot, airplane single- and multi-engine land, single-engine sea, commercial glider, flight instructor, student pilot examiner, and a CAA ground instructor.

It may sound amazing for a 20-year-old, but Lt. Brown has instructed many of the Texas Wing's prominent Senior members. He devotes most of his time, however, to the Cadet program and is rated one of the Wing's greatest assets in the Cadet program.

Lt. Brown is a member of many organizations, among them the Texas Private Flyers Association, AOPA, Soaring Society of America, Navy Club of USA, Pea-Brain Flyers Club, U. S. Flight Instructors Association, Texas Air National Guard, and many others.

Don't Give Up the Ship

Maj. D. J. Whittingham, AF-CAP Liaison Officer in Montana, has recently passed along valuable reminders to pilots of the Montana Wing who may be forced down in isolated areas which could serve equally as well in other areas.

"Stick to your airplane unless you know exactly where you are; it is easier for search planes to spot a plane on the ground than to find persons, especially in heavy forests.

"Even though wrecked, a plane provides such survival equipment as parachutes and fuselage for warmth and shelter; oil and gas for quick starting fires, and wire and cable for traps or snares. Oil and gas can also be used for signal fires and metal parts of the plane for reflectors."

Million Dollar Radar for Sq.

CAP Cadets of Essex, N. J., Squadron now operate a $1,000,000 radar unit at the Hanover, N. J., airport to "talk" down lightplanes in bad weather, and to assist lost planes in emergencies. The operation of a radar unit by the Essex Squadron is believed to be the *first such* operation in the United States.

Essex Squadron purchased the radar unit last February from War Assets Administration for only $250. The radar set is now being operated by Cadets T/Sgt. Donald McWhorter, T/Sgt. William C. Bratsch, T/Sgt. Eugene Howland, S/Sgt. George V. Hectus and Sgt. Edward W. Koven. To train the Cadets in the operation of the radar unit, Squadron Commander Major Ernest Eagles, Jr., is assisted by a Signal Corps veteran, Arthur Lackner.

The six-boy team of Cadets now operating the unit plan shortly to train a full girl crew. Planes are tracked to within 100 ft. of the ground, and walkie-talkies are used in communicating with pilots. An L-4 is used for practice.

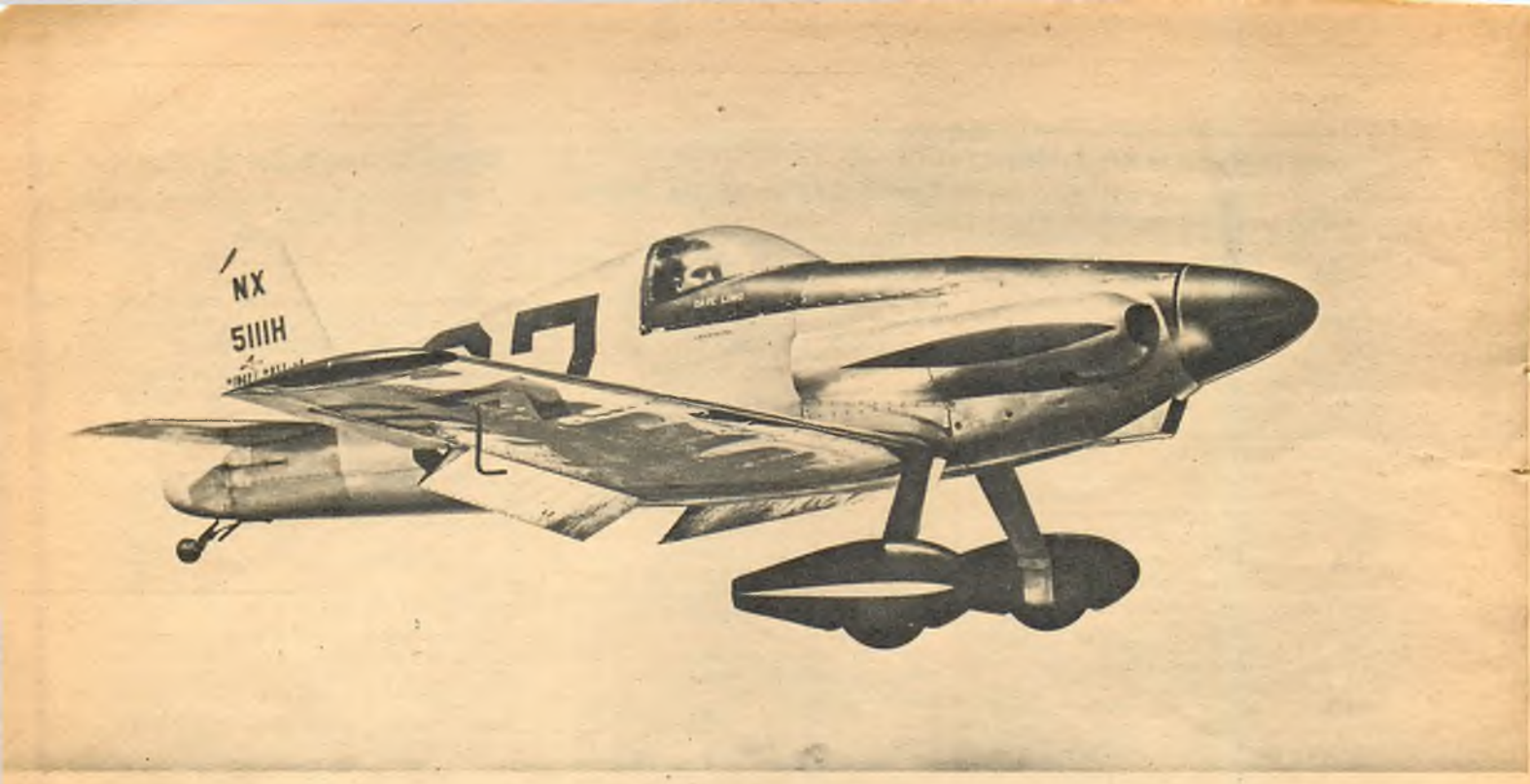
The radar set itself looks like two giant size bedsprings, set almost at right angles to the ground on a revolving boom. Signals, indicating altitude, direction and distance of target planes are shown separately on three oscilliscopes. This information is transmitted to the controller with direct reading dials and he in turn uses that data to direct planes to the ground.

Reshuffle of Little Used L-4's

National Headquarters CAP has been forced to transfer L-4 aircraft from several Wings to other Wings due to the low number of hours flown on the planes, it was learned.

According to officials at National, some L-4's of a few Wings were actually averaging less than 10 hours per plane per month. At the same time other Wings were requesting National Headquarters for more L-4's in order to answer demands for training.

Meanwhile several of the Wings began transferring L-4's around to the various Units not previously utilizing such planes. With the growth of CAP units throughout the nation not all CAP units can be immediately equipped with L-4's, thus necessitating rotation so as to provide an equitable distribution.



We Fly the Long Midget

By EMIL A. LEHECKA

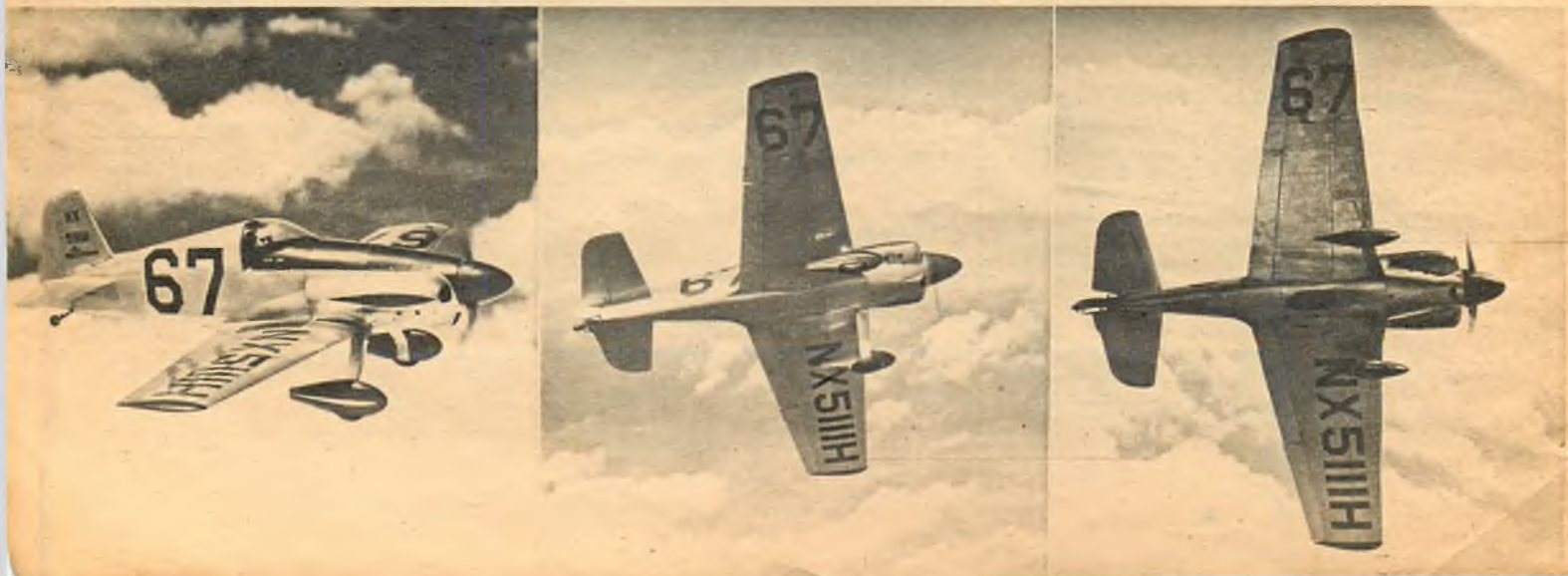
It's fast, it's small, it's a dream to fly—it's the Long Midget

HOW many lightplane pilots and enthusiasts have dreamed of being in the cockpit of a sleek racing plane, turning the home pylon, or streaking cross-country at a spanking 170 mph? Even a beggar can dream of being a king, but if he wakes and finds himself dressed in royal raiments, that's a story with a different twist.

There's a fellow in Lock Haven, Pa., named Dave Long, who waved a magic wand, and behold! No longer does Mr. Average Pilot have to sink into slumber to visualize himself at the controls of his dream plane. The reverie has become a reality. The plane that turned the trick is the diminutive and beautiful Long Midget, with the dashing performance of a racer, yet gentle as a kitten.

Long, who is Chief Project Engineer for Piper Aircraft Corp., and a former Air Transport Command pilot, incorporated in his design such features as laminar flow wing and tail surfaces, simplicity in construction, lightness, extreme sturdiness and accessibility for maintenance. Careful streamlining and flush riveting are important in order to get the best out of laminar flow airfoil section, and the Long Midget is slick as a whistle.

30 Demonstrating its maneuverability, the Long Midget, with Long at the controls . . .



The little ship was originally conceived while Long was in the Air Force. At first he planned to use a 65-hp engine, but when the 85-hp engine became available and the idea for midget plane racing came along, it was decided to use the larger power plant, as it would enable Long to enter the Goodyear race. The final product differed from the original in having a fixed landing gear. His first design, with the 65-hp engine, had retractable undercarriage. Wing area, planform and everything else was decided upon long before the Goodyear Races were planned. It is obvious that much design, engineering and constructive thinking went into both the Long job and the formula for the Goodyear Race type airplane, as separately they came upon the almost exact specifications for optimum performance of this class of airplane.

The plane was finished in 1947 and was entered in the 1948 Goodyear races where it participated under the name of "P-Shooter." Later, with a few modifications such as improved canopy and faired landing gear incorporating wheel pants, Long flew it in the All-American Air Maneuvers at Miami, Fla., and won fourth place, ahead of the late Art Chester. Its similarity in lines to the F-51 caused Long to name it Midget Mustang. However, at the request of North American Aviation, builders of "Mustang," Long changed the ship's name. It is now the Long Midget.

When the prototype was built, it turned out even better than expected. Long dove it to a speed of 260 mph, exceeding, on the pull out, the 6G forces required for the Goodyear Race type airplane. With flaps down, the stalling speed was only 53 mph. The ship handled so well and was so simple to fly that then and there he decided to offer the Long Midget to the flying public.

The production job, now being built by Schweizer Aircraft Corp., Elmira, N. Y., will differ slightly from the ship we flew. The landing gear will have wider tread and will be relocated from fuselage to wing, fixed to the leading edge spar; the tail surfaces will be slightly modified to render them somewhat less sensitive, and there will be a baggage compartment of increased volume behind the pilot's seat.

Meeting the trim little Long Midget for most pilots is like falling in love at first sight. Standing only 4 ft. 6 in. high, its symmetrical lines and simplicity of form give it a distinct air of attractiveness. So it was with considerable pleasure and anticipation that we returned several weeks later to Lock Haven to fly the Long Midget again, after bad weather had curtailed flights during an initial visit. We managed to fly it only fifteen minutes after we pulled up in front of the Cub Haven hangar in a car loaded with baggage, cameras, and two model planes (a Fireball and a control-line Long Midget, which also makes its appearance in this month's Air Trails). Cal Smith and Technical Editor Alex Dawydoff accompanied us. Dave Long was waiting for us and as soon as greetings and introductions were over he wheeled the Midget out of the hangar where the little ship nestled under the wing of a Piper Clipper. "I'll take it up for a short hop first, so that you can watch the take-off, glide path and landing," he said. "After that it's all yours." Long's short hop culminated in a beautiful series of aerobatics, the smoothness and effortlessness of which had me itching to take her up myself.

After a very short landing in a gentle cross-wind he taxied up to the hangar and invited me to take his place in the cockpit. (Dave says the ship can be operated from an 800-ft. strip, once the pilot gets to know it well.)

Since the Long Midget is a single-place airplane, the only check-out can be an oral one, such as: "Here's the ignition switch; remember to bring her down low; this is the fuel shut-off valve; don't forget to get her close to the ground on landing; on final approach glide her at 80 mph; and that's the gas gauge. *Remember you are sitting mighty low.*" (At this point I felt I was high man on the totem pole.) After the last reminder to paste her right down to the ground on landing, Dave stepped around to the front and started the engine.

Being accustomed to the snug fitting sailplane cockpits, I was surprised to find that the diminutive Midget's cockpit was so roomy and comfortable—the exception is the space around the rudder pedals, where the gas tank at first is apt to interfere with one's toes. The canopy is hinged on the right side and has a slide-bolt catch on the left. It can be jettisoned quickly in case of emergency. There is ample headroom inside once the moulded hatch is closed and I could just look out over the nose of the ship while taxiing. The cockpit is wide and the controls well placed—everything is within reach without your having to bend forward.

The small size of the ailerons and flaps may cause some speculation as to their effectiveness, but by actual performance the (*Continued on page* 64)

. . . performs a roll at 9,000 feet for cameraman-pilot Lehecka.

"THERE are no stupider people anywhere than those who fly private planes. Stupid? They are vicious, criminal damn fools. Let's get rid of them before they give a black eye to organized air service," read the blurb for an article called "Damn Fools in the Air," published in Cosmopolitan magazine. J. C. Furnas, the author, also wrote "And Sudden Death," an all-out horror study calculated to scare the pants off auto drivers.

"My first thought on reading this article," comments Solo Club member Howard W. Hibblethwaite, #8305, "was to have the club hound the author until he apologized, but on giving it serious thought, I could not help but see the significance.

"This is the impression we make on people who do not fly. It is what your mother and your neighbor think when you circle the house too low. Regardless of what we are, or are not, this public prejudice against private flying holds back all of us. Rather than fight those who dare write about it, let's promote good will by starting with ourselves. Let's quit 'cowboying' and fly safely to win public approval."

Sad Tale of the Boy Who Wasn't From Missouri

By A. R. FELKNOR, JR.

Line boy said
The tanks were full.
Grease monk gave
The props a pull,

Harry's take-off
Was quite neat,
But he stalled out
At forty feet.

Harry's now
Among the ages:
He forgot
To check the gages.

Of all sad words
Birdmen have muttered
The saddest are,
"The engine sputtered."

NASAO News—National Association of State Aviation Officials—commented that the same article was meant to be constructive but certainly wouldn't do any good for private flying. The subtitle, NASAO noted, was not borne out by the rest of the article. Overzealous and ridiculous, that blurb made about as much sense as might have a similar imaginary blurb on "And Sudden Death," suggesting that auto drivers be abolished before they gave a bad name to Greyhound! We'd like to introduce that blurb writer to the thousands of flying farmers who use planes like cars, the thousands of businessmen, salesmen, contractors, and the like, who use planes because no other mode of transportation offers the same flexibility and speed of travel. So let's divorce the magazine's presentation of Furnas's comments and consider objectively the situation the author described.

We know that about half the accidents that occur in private flying are due to stalls and spins. The majority of these accidents, in turn, result from dangerous flying practices, such (*Continued on page* 88)

HOW TO BECOME A SOLO CLUB MEMBER

This club is open only to those who have actually soloed a heavier-than-air craft, either powered or motorless. It does not matter where or when the flight was made. Applicants must furnish the membership committee with a satisfactory proof of their qualification for acceptance. There are no dues. Once a member, always a member.

To obtain sterling silver Solo Club wings and life membership card, send coupon, with 75¢, to Solo Club Membership Committee, Air Trails Pictorial, Box 489, Elizabeth, N. J.

Proof of qualifications as a Solo Club Member:

1. CAA Airman Certificate, number and rating.....
2. F.A.I. license and number.....
3. Evidence of: Service in Army, Navy air forces, either as a rated pilot or having received flight training including solo time (attach).

Applicant..... Age.....

Street..... City or Town.....State.....

NORTHROP F-89 BLACK SCORPIONS

By ALFRED OWLES

An Air Trails Air-Pix

There's No Place In Aviation For The Untrained!

By WILLIS C. BROWN
Office of Education, Federal Security Agency

IN August, 1911, at the Harvard Aero Meet, Atlantic, Massachusetts, I saw the 1911 version of the Wright biplane in action. With its 4-cylinder engine opened up wide it sounded much like pioneer automobiles of that date speeding along at 45 mph. Its two huge propellers turning in opposite directions were geared down so that you could almost count the rpm in flight. Its slipstream instead of giving off a roar like modern planes, by comparison made a slight hustling noise.

Those staunch pioneers, the Wright brothers, one wearing a derby, the other a cap, looked almost ministerial. I was amused as one of these dignified gentlemen would climb gingerly into this newest creation of American imagination and fly over our heads at a low altitude. His trouser cuffs would flap wildly in the breeze as he pushed his plane to its utmost speed!

Did I infer above that the Wright plane flew at 45 mph in 1911? I did not mean that. The plane merely *sounded* like an automobile going 45. It remained for that daredevil American flyer, Glenn Curtiss, to establish a national speed record of 43.38 mph with his pusher on August 23, 1909. The Frenchman Nieuport on June 21, 1911, set a record of 82.72 mph. Those were the days when a plane was a fragile thing, constructed of lightest spruce with cloth-covered wings, and no enclosed cockpit. A daring young Brazilian balloonist, Alberto Santos Dumont, even designed and flew a tiny monoplane, the frame of which was constructed mainly of bamboo fishing poles! In most of these early pushers, the pilot sat perched precariously on a small seat at the front of the wing.

For 46 years aviation has progressed. From a modest flight on December 17, 1903, the new science developed slowly at first, and then at an ever increasing pace. Here was a new field to challenge the imaginative minds of the world. Many strange mechanical problems had to be solved. Louis Bleriot in France believed a plane with one wing was more effective than the Wrights' biplane. He had scarcely completed his revolutionary monoplane, when the pendulum swung the other way and Roe, an English inventor, developed a triplane. Soon pilots felt the need for more protection from the rushing air as speeds neared then exceeded 60 mph. Bleriot, Farman, and Antoinette, all of France, were among the first to enclose an area around the pilot or to cover the entire fuselage.

Along with these refinements in the plane, major developments came in engine design. The original Wright engine was a 4-cylinder 16-hp horizontal water-cooled model. Then the Wrights developed a 4-cylinder vertical water-cooled model with 30-35 hp. Glenn Curtiss, who had been a motorcycle racer, brought out a revolutionary air-cooled model combining two motorcycle four-cylinder engines forming a "v" and using one crankshaft. The French Le Rhone and Gnome rotaries were early experimental types and soon leading automobile manufacturers in all countries were developing more powerful and more reliable engines which in turn required a better designed plane to utilize properly the additional horsepower.

On the ground, the mechanic of that day had to be an all-around, clever chap. He had to service the entire plane and be able to tune the engine so that the plane would have enough flying speed to take off. The mechanic patched fabric, replaced blown cylinder head gaskets, adjusted valves and soldered leaks in the radiator with a minimum of tools. As I recall, the mechanic usually carried a small black leather bag and prominent among his tools were the household type of monkey wrench and the so-called bicycle wrench. Contrast this with the mechanic who cares for modern aircraft!

This is the age of *specialization*. Today the complex modern airplane

THE AUTHOR

Mr. Brown served with the Signal Corps in the first World War. He taught school for many years, and during the last war directed the Navy-U. S. Office of Education Scale Model Plane Project in the Boston, Mass., schools. He is currently Assistant Specialist for Aviation in the Office of Education, Washington, D. C.

is not repaired by one man, but by scores of highly trained specialists who now do the work that in the old days was one man's job. We have specialists for hydraulic systems, electrical wiring, starters, propeller testing, heat treating, sheet metal working, plexiglas and in the several types of welding. Even different specialists may work at engine disassembly and engine re-assembly. Instrument repair is done by specialists of either pressure, temperature or electrical instruments. Radio communication is an important new field and some of the minute operations on a plane require men who specialize in such details as cable and tubing repair.

The fifty-five overhaul repair bases of the leading commercial airlines have the same type of highly specialized mechanics. If a young man wishes employment in a mechanical field with one of the airlines, he will do well first to get his "A" and "E" license from a reliable school certified by the Civil Aeronautics Administration. Following this training he can specialize in whatever line he is most interested in or where the demand for employment is greatest.

According to the Occupational Outlook Handbook of the Department of Labor, in 1948 there were over 20,000 mechanics employed in jobs not in manufacturing. About half of this number are employed by the airlines. Fully half are employed in the repair shops of fixed base operators. These may be at the smaller airports all over the country. Here one will find less specialization, and the really clever mechanic who has the reputation of being "good" at all the types of work for which his certificate shows he is qualified really comes into his own. More or less specialization is desirable depending on whether one aims to be employed in a small hangar housing a half dozen lightplanes used in private flight training or at an airport which engages in commercial activities such as crop dusting, aerial survey and photo work, charter flight service and private flying and training with many planes of different types.

In any case, one should start definite planning as early as possible, preferably in high school. It may be necessary to revise plans occasionally in consideration of altered conditions in the aviation industry or personal preference. That is all right—the important thing is to have a goal and a well-thought-out plan. Then one must work hard to carry out that plan.

One might say, "What can I do while I am in High School—we do not have a course in aeronautics there." That may be true, but if there is enough interest for such an

(*Continued on page 68*)

Here are some representative aviation schools selected as typical by the editorial staff of Air Trails

Course listings as given below have been checked carefully, but are subject to change. Write directly to the schools at the addresses given for complete information. Please mention the fact that you obtained the basic information from the "There's No Place in Aviation for the Untrained" story in this issue of AT.

Oakland

Aero Industries Technical Institute
Oakland Municipal Airport, Oakland 14, Calif. This school is now concentrating on those courses which train students for CAA certificates as certified engine mechanics and certified airplane mechanics.

Chicago

Aeronautical University
Lakeview Building, 116 S. Michigan Ave., Chicago, Ill. Offers courses in aeronautical engineering, aero engineering drafting, certified engine and airplane mechanics, master mechanics and aviation administration.

Fort Worth

American Flyers
Meacham Field, Fort Worth 6, Tex. Courses leading to private pilot license, commercial pilot license, instructor rating, instrument rating, multi-engine rating, airline transport license, several others.

St. Louis

Brayton Aeronautical Training Division
Lambert-St. Louis Municipal Airport, St. Louis 21, Mo. Base operators and maintenance course, airplane and engine mechanics course, aeronautical engineering and flight training from pilot through airline.

Glendale

Cal-Aero Technical Institute
Grand Central Air Terminal, Glendale, Calif. Aeronautical engineering course, master aviation mechanics course (50 weeks) as well as separate airplane mechanics course and engine mechanics course (each 33 weeks).

Inglewood

California Flyers School of Aeronautics
1720 W. Florence Ave., Inglewood, Calif. Aircraft mechanics and engine mechanics courses (each 33 weeks); A&E mechanics course (50 weeks). Special courses in airframe work, plus other short courses.

Dallas

Dallas Aviation School
3300 Love Field Drive, Dallas 9, Tex. Aircraft mechanic and engine mechanic courses (each 34 weeks); A&E mechanic course (52 weeks). Aircraft instrument technician and aero drafting courses.

Miami

Embry-Riddle School of Aviation
Miami 30, Fla. Combined and separate aircraft mechanic and engine mechanic, design engineering and maintenance, aero drafting and design, flying mechanic. A&E with commercial pilot, also flight courses.

Keystone Heights

Florida Aviation Academy
Keystone Airpark, Keystone Heights, Fla. Radio technician and operators course, private pilot, commercial pilot, flight instructor, instrument course, twin-engine rating and seaplane rating courses.

Fort Wayne

Indiana Technical College
379 E. Washington Blvd., Fort Wayne 2, Ind. Aeronautical engineering course which leads to Bachelor of Science in Aeronautical Engineering. Nine-term course (27 months) consists of 180 credit hours.

Hawthorne

Northrop Aeronautical Institute
1515 E. Broadway, Hawthorne, Calif. Aeronautical engineering course (24 months), pre-aeronautical engineering prep course (8 weeks), aircraft and engine mechanics course which runs for 50 weeks.

East St. Louis

Parks College of St. Louis University
Parks Airport, East St. Louis, Ill. Courses in air transportation, aircraft maintenance engineering and aeronautical engineering. CAA aircraft and engine mechanics certificates part of requirements in AME.

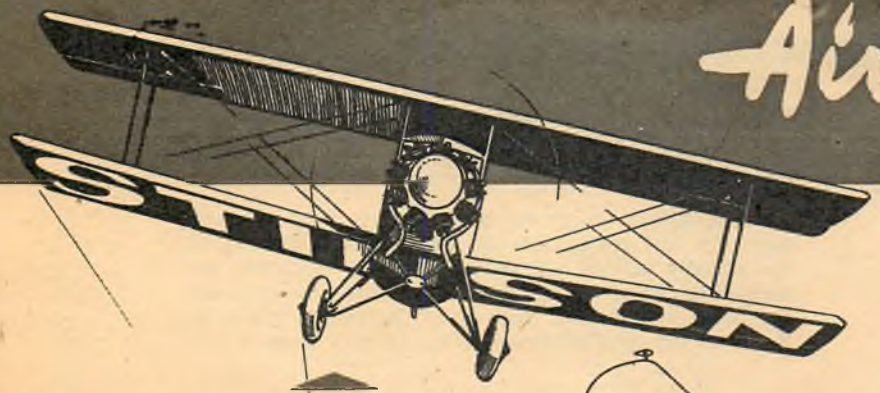
Pittsburgh

Pittsburgh Institute of Aeronautics
Aviation Building, 100 7th St., Pittsburgh 22, Pa. Aircraft and engine mechanic courses, drafting and design course, industrial-aircraft instrument course, aviation secretarial, airline reservations course.

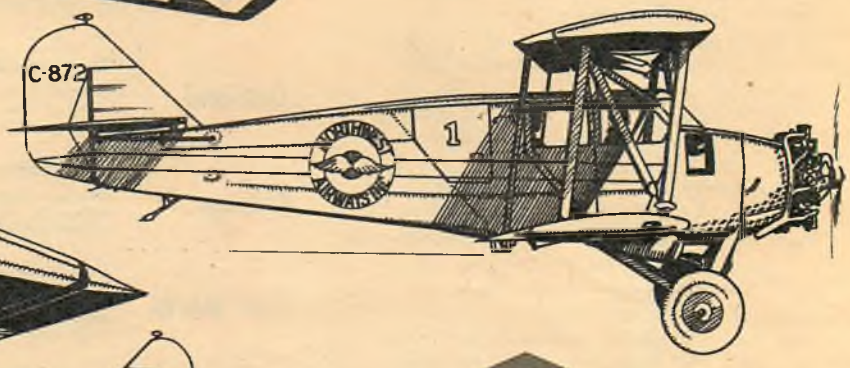
Tulsa

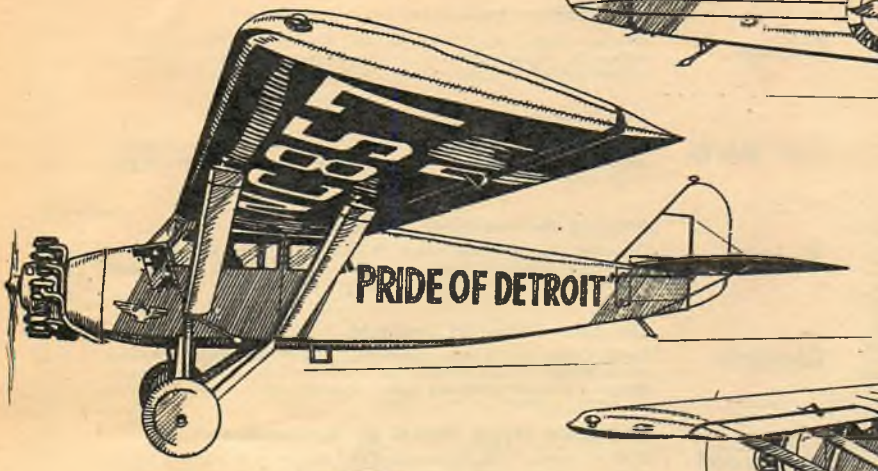
Spartan School of Aeronautics
Municipal Airport, Tulsa, Okla. 17 courses offered include flight, mechanics, radio, meteorology, instruments, aeronautical engineering, airline maintenance engineering and management and operations.

Air Progress

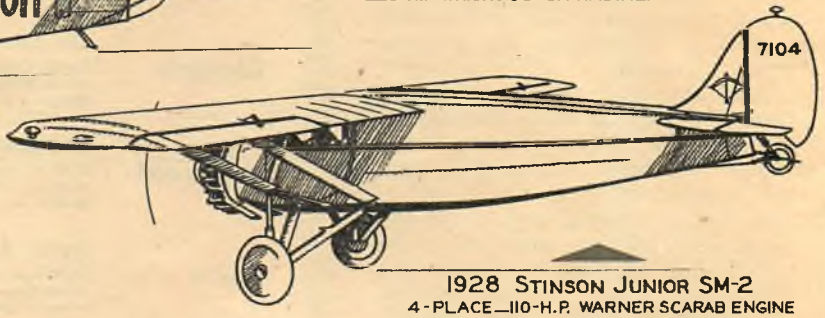


1926 STINSON CABIN BIPLANE
STINSON'S FIRST DESIGN — 200-H.P. J-5 WRIGHT RADIAL. CRUISING SPEED 90 M.P.H.



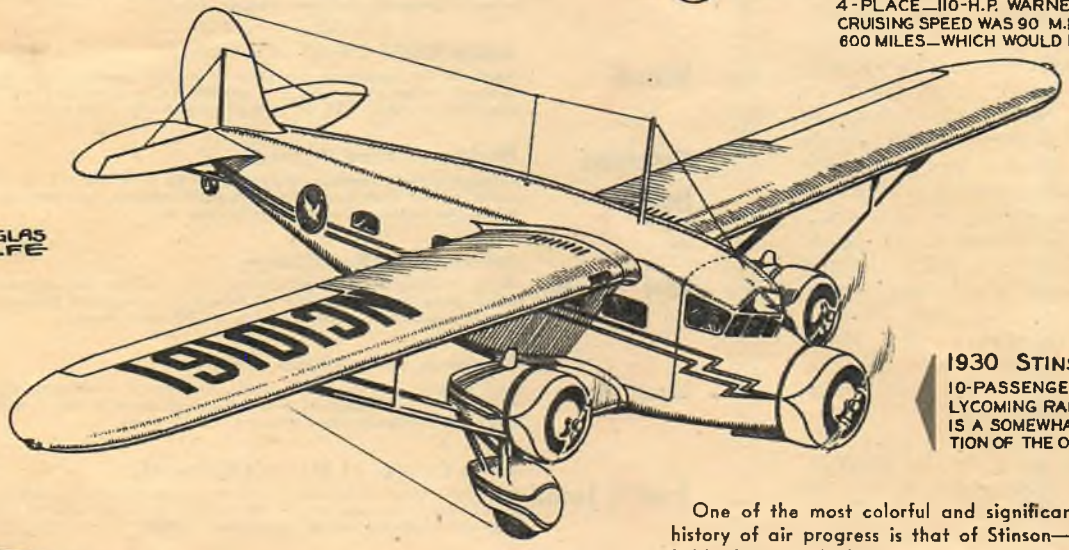


1927 STINSON DETROITER
4-PLACE PASSENGER MAILPLANE. 220-H.P. WRIGHT J5-CA RADIAL.

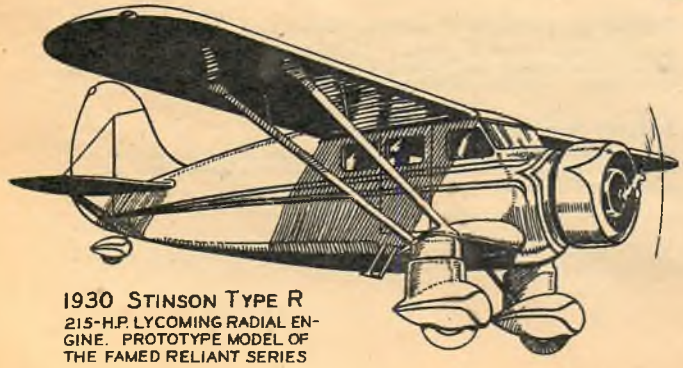


1927 STINSON SM-1
6-PLACE- 220-H.P. WRIGHT J5-CA RADIAL—CRUISING SPEED 103 M.P.H.

1928 STINSON JUNIOR SM-2
4-PLACE—110-H.P. WARNER SCARAB ENGINE CRUISING SPEED WAS 90 M.P.H. RANGE ABOUT 600 MILES—WHICH WOULD NOT BE BAD TODAY!



1930 STINSON TRI-MOTOR
10-PASSENGER. THREE 240-H.P. LYCOMING RADIAL ENGINES. THIS IS A SOMEWHAT LATER MODIFICATION OF THE ORIGINAL 1930 MODEL



1930 STINSON TYPE R
215-H.P. LYCOMING RADIAL ENGINE. PROTOTYPE MODEL OF THE FAMED RELIANT SERIES

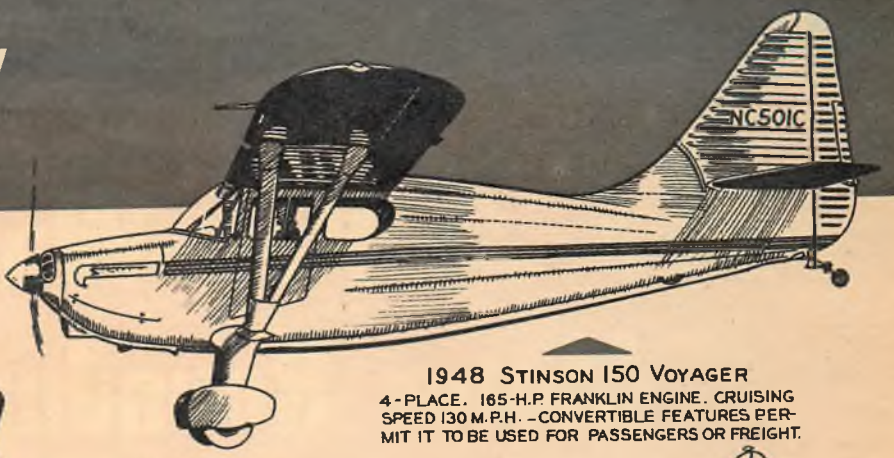
One of the most colorful and significant names in the history of air progress is that of Stinson—pioneers in the field of personal planes.

When Eddie Stinson founded the company in 1925 he was already famous as one of the world's outstanding pioneer pilots, with a sensational record as both stunt flyer and flying instructor. During World War I he served as chief instructor at Kelly Field. After the war he proceeded to hang up several notable records including the first Chicago-New York night flight and the then (1928) World's Endurance Record (53½ hours).

Meanwhile, in 1925, he supervised the construction of the first Stinson airplane, a cabin biplane which was the first American plane to employ wheel brakes and a self-starting mechanism. This successful design was followed

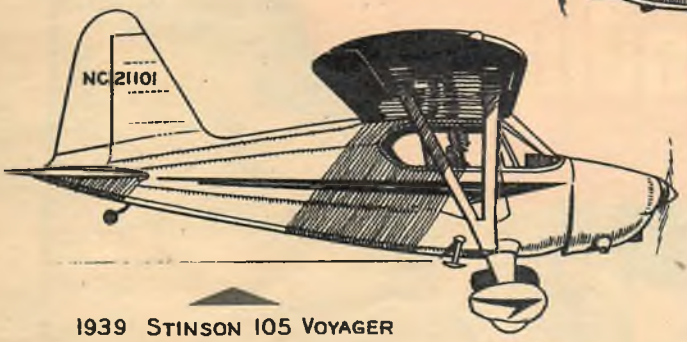
The STINSON Story

By DOUGLAS ROLFE



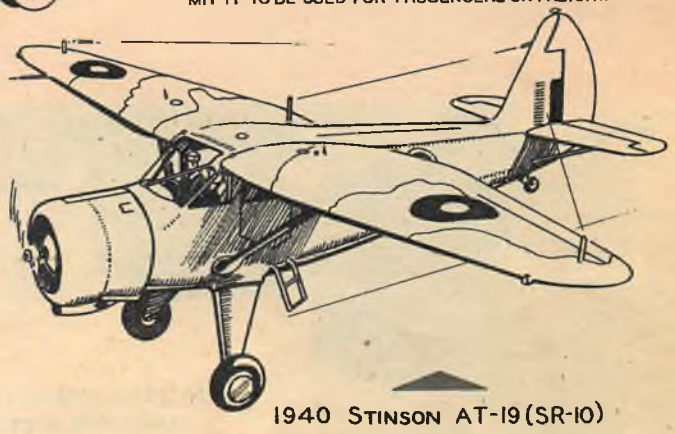
1948 STINSON 150 VOYAGER

4-PLACE. 165-H.P. FRANKLIN ENGINE. CRUISING SPEED 130 M.P.H. – CONVERTIBLE FEATURES PERMIT IT TO BE USED FOR PASSENGERS OR FREIGHT.



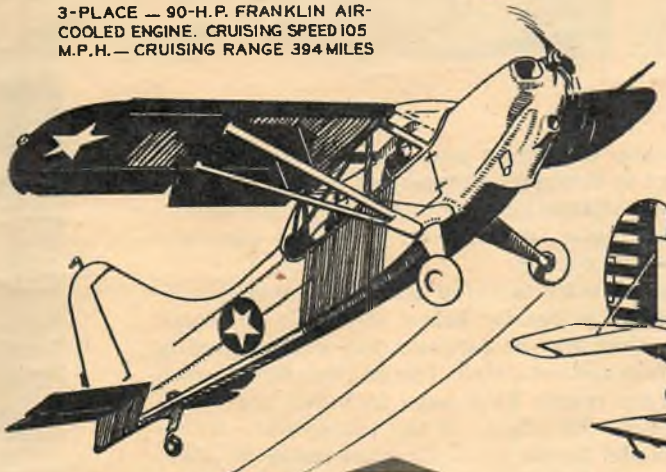
1939 STINSON 105 VOYAGER

3-PLACE — 90-H.P. FRANKLIN AIR-COOLED ENGINE. CRUISING SPEED 105 M.P.H. — CRUISING RANGE 394 MILES



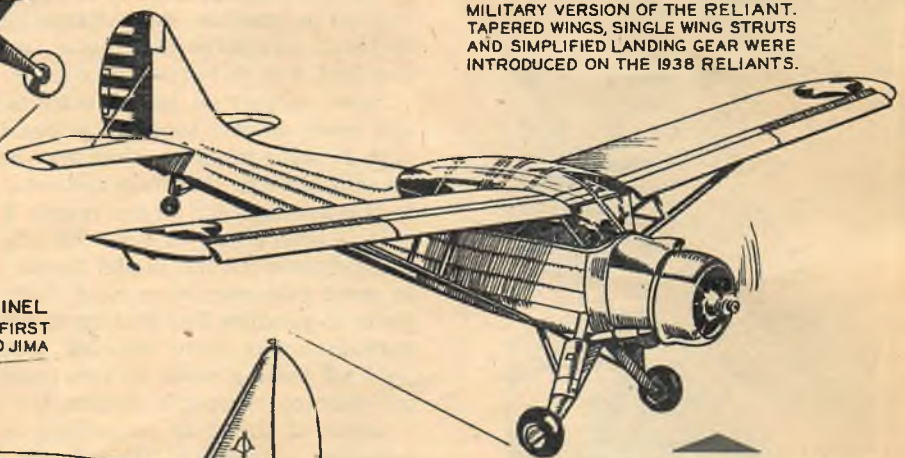
1940 STINSON AT-19 (SR-10)

MILITARY VERSION OF THE RELIANT. TAPERED WINGS, SINGLE WING STRUTS AND SIMPLIFIED LANDING GEAR WERE INTRODUCED ON THE 1938 RELIANTS.



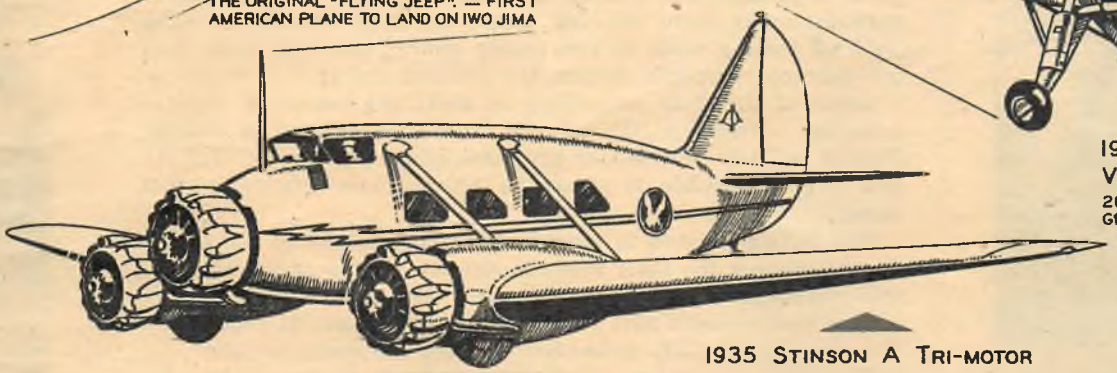
1942 STINSON L-5 SENTINEL

THE ORIGINAL "FLYING JEEP". — FIRST AMERICAN PLANE TO LAND ON IWO JIMA



1940 STINSON L-1 VIGILANT – (O-49)

280-H.P. LYCOMING ENGINE. MIN. SPEED 31 M.P.H.

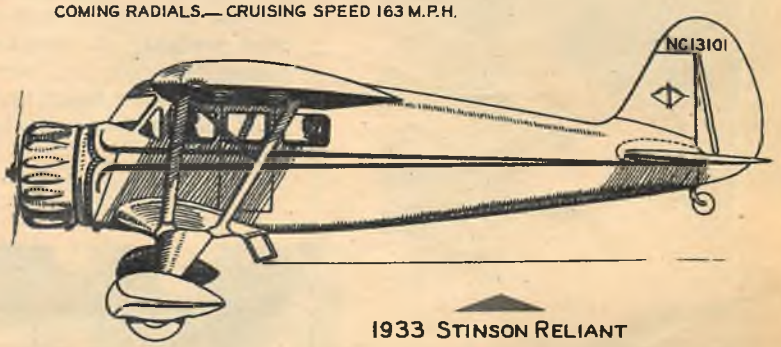


1935 STINSON A TRI-MOTOR

8-PASSENGER AIRLINER.—THREE 260-H.P. LYCOMING RADIALS.— CRUISING SPEED 163 M.P.H.

by the original Stinson Detroiter, another cabin biplane which was immediately ordered by the infant Northwest Airways to haul passengers and mail on its St. Paul-Minneapolis-Chicago run. In 1927 the first Stinson cabin monoplane made its appearance and soon made history with the famed Detroit-Tokyo flight. Designated also Detroiter, this excellent plane, the SM-1, was followed by a smaller model, the SM-2 or Stinson Junior. This ship was the direct ancestor of the later Reliant series.

Shortly before Stinson's untimely death in 1932, the company merged with Vultee. Later it became the Stinson Division of Consolidated-Vultee, and remained so until recently, when it was acquired by Piper Aircraft Corporation—thus passing into the hands of another great pioneer in the field of personal aircraft.



1933 STINSON RELIANT

4-PLACE. 225-H.P. LYCOMING RADIAL ENGINE.—CRUISING SPEED 120 M.P.H.

AT's Post-War Motor Roundup

IN this pictorial roundup of leading post-war engines we have attempted to present as complete a picture of the model motor market as possible. All information was furnished by the manufacturer, exclusive distributor, or importer, and was carefully checked, but is subject to change.

Some motors no longer manufactured and not included here are being offered today at prices far below their original retail cost. In some instances they may be bargains, but will eventually be sold out and therefore are not listed. The engines best known to the average Air Trails reader have been included here.

It is interesting to note the effects of the competition which has returned to the model motor field. Custom motor builders in most instances have held their prices of necessity and continue to produce fine motors in limited quantity. Quality motor manufacturers have reduced prices as their volume of sales paid off tooling costs, so now many motors cost less than their pre-war counterparts despite the inflated dollar.

Some of the data pertaining to what engines were used to establish various official national records is subject to change. This is because new marks are established with great rapidity and it is impossible to present a 100% correct listing in that regard.

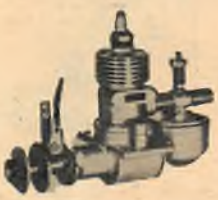
The author wishes to express his appreciation to the motor manufacturers for their fine cooperation in the preparation of this roundup. If any reader desires more information on any engine here, consult first your local hobby dealer. If your questions cannot be fully answered, contact the manufacturer.

The following abbreviations are used: d, displacement in cubic inches; b, bore in inches; s, stroke in inches; wt, weight; bwt, bare weight; ck, crankcase; cyl, cylinder; p, piston; con rod, connecting rod; hp, horsepower; rpm, revolutions per minute; mph, miles per hour; cr, compression ratio; oz, ounce; pc, piece; phos, phosphorous; ht, height.

—JAMES NOONAN

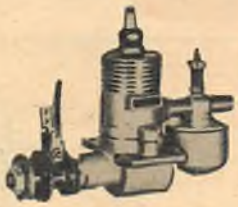
America's Hobby Center, Inc.: 156 W. 22nd St., New York 11, N. Y. Buzz engines are aluminum and steel construction. Simple design for easy replacement and service. Factory repair service available. Motors operate as glow plug or spark ignition. Many accessories available.

Buzz A



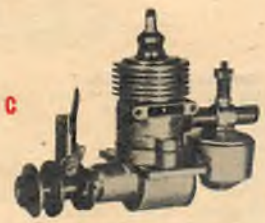
Buzz A: d—.199; b—.66; s—.562; wt—4 oz; 1/7 hp at 7,500 rpm; 3 port; uses 8" prop.

Buzz B



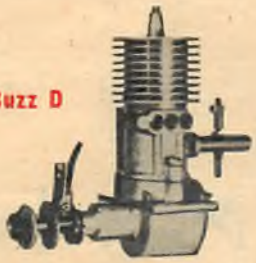
Buzz B: d—.299; b—.812; s—.562; wt—4½ oz; 1/6 hp at 8,000 rpm; 3 port; uses 10" prop.

Buzz C



Buzz C: d—.350; b—.880; s—.562; wt—4½ oz; 1/5 hp at 8,500; 3 port; uses 11" prop.

Buzz D



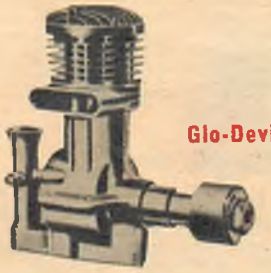
Buzz D: d—.610; b—1.00; s—.777; wt—9 oz; ¼ hp at 9,000 rpm; 3 port; uses 12" prop.

Atwood Manufacturing Co.: 147 Pasadena Ave., S. Pasadena, Calif. Don Newberger won 1948 Class C speed championship at Olathe, Kan., National meet using a Triumph Special (not yet in production) equipped with ball bearing crankshaft and disc rotary valve. Atwood motor was first to have really large ports (1941). They hold several National records. The Triumph series have exceptional power-to-weight ratio.

Super Champ

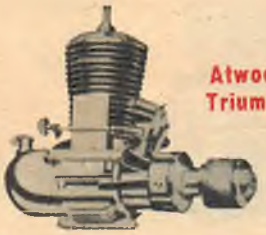
Super Champ: d—.624; b—.940; s—.900; 2 port; wt—11½ oz.

Glo-Devil



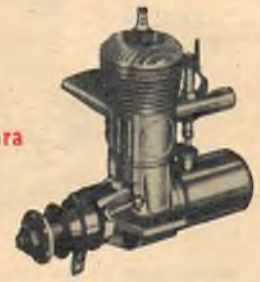
Glo-Devil: d—.624; b—.940; s—.900; 2 port; wt—11 oz; used by National Stunt Champ Dave Slagle to win Jim Walker trophy in 1947; Slagle also won 1948 National precision event using this engine.

Atwood Triumph



Triumph 49 Glow Plug: d—.490; b—.890; s—.790; 2 port; wt—8½ oz; **Triumph 49 Ignition** has same specifications except wt is 9 oz. **Triumph 51 Glow Plug:** d—.510; b—.900; s—.790; 2 port; wt—8½ oz; **Triumph 51 Ignition** has same specifications except wt is 9 oz.

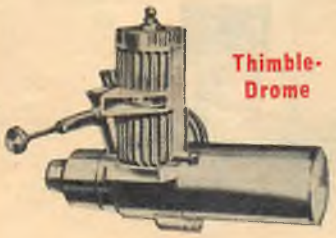
Cobra



Berkeley Model Supplies: 138 Greenpoint Ave., Brooklyn 22, N. Y. **Cobra** (made by Air-O Model Supply Co.): d—.45; b—⅞"; s—¾"; wt—7½ oz; side porting; max hp at 10,000 rpm; cyl, steel; ck—hi-pressure die-cast aluminum; crankshaft, 1 pc. steel; aluminum head; p—steel, 2 rings; con rod—steel, chrome moly. bushings. **Notes:** a rugged motor suitable for stunt and free-flight. Has long wearing qualities. Two models available for both glow plug and ignition operation; 1949 model—shorter, uses ¼" plug; 1948 model—uses ⅜" plug.

L. M. Cox Mfg. Co.: 730 Poinsettia St., Santa Ana, Calif. Cameron Bros.-built **Thimble-Drome** is special engine designed for Thimble-Drome race car. D—.199; b—.635; s—.625; die-cast construction; steel sleeve; glow plug operation.

Thimble-Drome

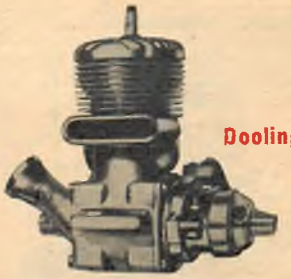


Thimble-Drome #519: data as above; plus high dome piston; ground tubular steel piston pin; 2 rings; wt—4 oz.

Thimble-Drome #515: d—.15; b—.625; s—.500; wt—4 oz; high dome baffle piston; 2 rings; speeds in excess of 18,000 rpm.

Thimble-Drome #509: d—.099; b—.500; s—.500; wt—4¾ oz; machine-cut hardened steel piston. All engines 2 15/16" high; 3⅞" long.

Dooling



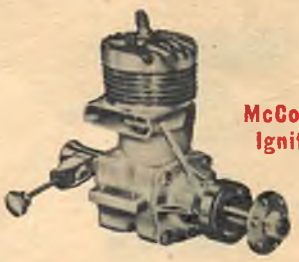
Dooling Brothers: 5452 W. Adams Blvd., Los Angeles 16, Calif. D—.607 (10cc.); b—1.015; s—.750; 1½ hp at 16,000 rpm; cr—approx. 9-1; bwt—14 oz; operates as ignition or glow plug; cyl-ck, aluminum alloy; liner—centrifugal cast iron; cyl head—aluminum alloy; p, aluminum alloy; 2 cast iron rings; con rod—aluminum alloy; forged crankpin bearing; roller crankshaft bearing; 2 ball bearings; inlet valve—rotary valve; disc type timer, hi-speed automotive type. **Notes:** peak hp is reached at 15-16,000 rpm. Motor available with adapters for boats, cars or planes. The Dooling is result of intensive experiment and development and is claimed to have the highest power-to-weight ratio of any motor. Recommended fuel: 3 parts methanol, 3 parts nitromethane, 2 parts castor oil. Complete information and use of fuels available in mfgr's booklet. Holds Cl. D U-control speed record of 155.11 mph by Bob Thomas, Anaheim, Calif.

Drone Diesel

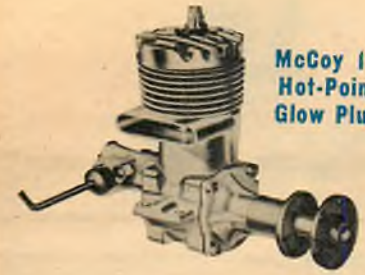
Drone Engineering, Inc.: 851 Anna St., Elizabeth, N. J. **Drone Diesel:** d—.297; b—.21/32"; s—⅞"; 3 port; rotary ck valve; wt—9 oz; ¼ hp at 8,000 rpm; cast aluminum crankcase and front end; hardened and ground shaft and liner; cast iron lapped piston; forged and bushed con rod; New Departure precision ball bearing; aluminum fuel tank mounted on crankcase; cr—18-1; variable compression and glow heads available. **Notes:** the original Drone Diesel resembled French diesels. In its latest form it is faster and more powerful, as well as very rugged. Its ability is indicated by its consistent winning of National and Eastern stunt events. Excellent performance also obtained in free-flight and radio-control. Hint: add a little "Cata-Crax" to Drone Diesel fuel.

Duro-Matic Products Co.: Hollywood 38, Calif. McCoy motors hold 11 of 12 speed records as well as free-flight records. Held in high esteem by modelers the world over. Have been copied by engine builders in many countries, so that even some foreign racing diesels look like McCoys. Engines are of rugged construction, have high speeds that are hard to surpass. Built in a range from .19 to .60 disp. for all classes.

McCoy 19 Ignition

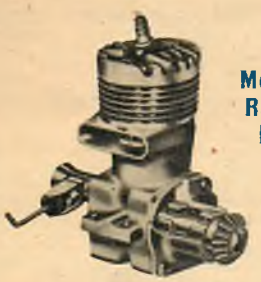


McCoy 19, Ignition: d—.195; b—.625; s—.630; wt—4 oz; .35 hp at 14,600 rpm; ball bearing; steel crankshaft; aluminum castings; cast iron cyl liner; aluminum 2 rings piston; forged aluminum con rod; disc rotary inlet.



McCoy 19 Hot-Point Glow Plug

McCoy 19 Hot-Point Glow Plug: see McCoy 19 Ignition data above.



McCoy 19 Race Car Engine

McCoy 19 Race Car Engine: see McCoy 19 Ignition data above; 2 ball bearings; pinion gear; Hot-Point glow plug.

McCoy Sportsman 29

McCoy Sportsman 29: d—.295; b—.746; s—.670; wt—6 oz; ball bearing; steel crankshaft; aluminum castings; cast iron cyl liner; aluminum piston, cast iron rings; forged aluminum con rod; disc rotary inlet.

McCoy Sportsman Junior

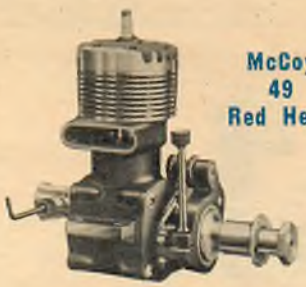
McCoy Sportsman Junior: d—.359; b—.809; s—.670; wt—6½ oz; .4 hp; see McCoy Sportsman 29 for other specifications.

McCoy Sportsman Senior

McCoy Sportsman Senior: d—.548; b—.940; s—.790; wt—9½ oz; .6 hp; see McCoy Sportsman 29 for other specifications.

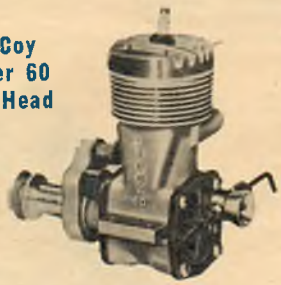
McCoy 29 Red Head

McCoy 29 Red Head: d—.2994; b—.750; s—.670; wt—7½ oz; .54 hp at 15,000 rpm; 2 MRC ball bearings; chrome moly crankshaft; aluminum castings; cast iron cyl liner; aluminum piston, cast iron rings; forged aluminum con rod; disc rotary inlet.



McCoy 49 Red Head

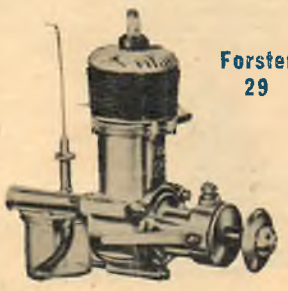
McCoy 49 Red Head: d—.499; b—.890; s—.790; wt—11 oz; .83 hp at 15,500 rpm; see McCoy 29 Red Head for other specifications.



McCoy Super 60 Red Head

McCoy Super 60 Red Head (Series 20): d—.6072; b—.940; s—.875; wt—13½ oz; 1.32 hp at 17,000 rpm; see McCoy 29 Red Head for other specifications.

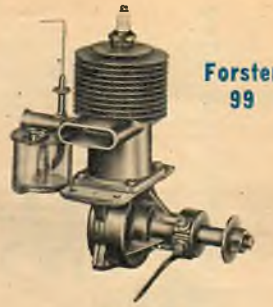
Forster Brothers: Lanark, Ill. Exceptional motors, Forsters combine high power-to-weight ratio with very smooth speed changes with 2-speed timers. Good performance with glow plugs. The "29" has proven itself in author's 6-ft. radio-control model. Forster engines have won many first places in regional and National meets. Two-speed timer is standard equipment on "99," optional on "29" and "305."



Forster 29

Forster 29: d.—.297; b—.750; s—.672; cr—9 to 1; wt—6½ oz; .35 hp at 12,500 rpm; steel hardened and ground crankshaft; ball bearing in rear, outer bearing is "oil-lite" sleeve; ck—aluminum alloy; rotary valve, steel ground and lapped; full-floating, steel wrist pin; aluminum tank, 2/3 oz. capacity; aluminum alloy cyl head.

Forster 305: d—.305; b—.760; s—.672; cr—9 to 1; wt—6½ oz; .4 hp at 13,200; see Forster 29 for other specifications.



Forster 99

Forster 99: d—.99; b—1.0625; s—1.125; cr—8 to 1; wt—14 oz; .69 hp at 7,800 rpm; aluminum alloy crankcase and cyl; steel cyl sleeve; 2-ring aluminum piston; steel hardened crankshaft with ground finish, ball bearing in rear, outer bearing is "oil-lite."

Deezil

Gotham Hobby Corp.: 107 E. 126th St., New York 35, N. Y. **Deezil** motor available in kit form: d—.125; b—.473; s—708; 8,000 rpm; wt—5 oz; ht—3.5 in; beam mounting; Deezilmix fuel; construction, aluminum castings; steel sleeve and piston; free-flight prop, 10" dia., 6" pitch; U-control prop, 8" dia., 10" pitch. **Notes:** the motor design is basically that of the Italian Movo and Swiss Dyno, known for simplicity and reliability. A good motor for sport flying.

E. D. Bee Diesel

G. S. T. Hobbies: Box 885, Los Angeles 53, Calif. **E. D. Bee Diesel** (made in England): d—.06 (.984 cc.); b—.437; s—.400; variable compression; wt—2.75 oz; rotary valve in rear of crankcase; 2 transfer and 2 exhaust ports; ck—aluminum alloy; cyl barrel cast in one piece; carburetor, rotary valve and rear crankcase cover are detachable unit; no tank supplied; plain bearings; beam mounting; nollow spinner nut; flat top piston. **Notes:** very compact and will fit in scale or contest models without any projecting parts. It starts and runs at 8-10,000 rpm with little effort, running well on U. S. diesel fuels. Very rugged and nicely built; will last long time with careful handling.

H & H 45

H&H Model Motor Co.: 307 W. Marshall St., Norristown, Pa. **H&H "45":** d—.451; b—.875; s—.750; wt—8 oz; 10,500 rpm

with 9/8 prop; cyl—cast iron; steel, hard chrome plated piston; hardened, ground-steel crankshaft; con rod—3 piece, brazed construction; diecast aluminum crankcase, Oil-lite bushing; machined aluminum cylinder head; machined aluminum, top-drawn tank; glow ignition is platinum coil, fully exposed in cyl head. **Notes:** the H&H was first glow ignition motor on the market, having been developed prior to the war. Fuel is 70% alcohol, 30% castor oil.

Herkimer Tool & Model Works: Herkimer, N. Y. The Herkimer "O.K." line offers a wide choice of motors from the tiny Cub to the giant Twin. Reasonably priced and easily serviced, since parts are sold almost everywhere. O.K. motors have racked up an impressive list of records and competition victories throughout the country.

OK Cub

OK Cub: d—.049; b—.390; s—.415; cr—6-1; bwt—1½ oz; cyl—steel; cyl head, aluminum; con rod, die-cast aluminum; p—hardened steel; 2 port; shaft rotary inlet valve; prop—5¼-6½" dia., 2-4" pitch; with prop 6-15,000 rpm; radial and beam mount; fuel, glow; thrust, 6-8 oz.

OK Bantam

OK Bantam: ignition model shown; both ignition and glow plug versions made; d—.199; b—.656; s—.590; cr—7-1; bwt—3¼ oz; cyl—steel; integral cyl head; con rod, die-cast aluminum; ck—die-cast aluminum; p—cast iron; phos. bronze crankshaft bearing; 2 port; disc rotary inlet valve; prop—7-9" dia., 4-8" pitch; with prop 5-11,600 rpm; beam mount; thrust 24-32 oz. As ignition engine uses gas and oil fuel; as glow plug engine uses glow fuel.

OK Super 29

OK Super 29: d—.299; b—.760; s—.660; cr—7-1; bwt—7½ oz; cyl head—aluminum; con rod—aluminum forged; ck—die-cast aluminum; p—hardened steel; phos. bronze crankshaft bearing; 2 port; shaft rotary inlet valve; prop, 8-11" dia., 6-8" pitch; with prop, 5-11,800 rm; beam mount; fuel, alcohol or gas; 36-48 oz thrust.

OK Hot Head: this glow plug engine has *same* specifications as the ignition OK Super 29 above except bwt—7 oz; cyl head, integral; no crankshaft bearing; uses glow fuel.

OK Super 60

OK Super 60: ignition model shown; both ignition and glow plug versions made; d—.604; b—.900; s—.950; cr—8-1; bwt—12 oz; cyl—steel; cyl head, integral; con rod, forged aluminum; ck, die-cast aluminum; p—hardened steel; crankshaft ball bearing; 2 port; shaft rotary inlet valve; prop—11-15" dia., 6-9" pitch; with prop, 5-10,000 rpm; beam mount; 72-96 oz thrust. As ignition engine uses gas and oil fuel; as glow plug engine uses glow fuel.

OK Raceway-Marine: same specifications as OK Super 60 above, but is equipped with flywheel in both ignition and glow plug versions.

OK Twin

OK Twin: 2-cylinder; d—1.208; b—.900; s—.950; ½ hp at 5,600 rpm; cr—6-1; bwt—22 oz; cyl—steel; cyl head, integral; con rod—forged aluminum; ck—die-cast aluminum; p—hard steel; crankshaft ball bearing; 3 port; prop—16-18" dia., 6-12" pitch; with prop, 1,500-6,000 rpm; radial mount; fuel, gas and castor oil (3-4).

K&B Manufacturing Co.: 6901 Eastern Ave., Bell Gardens, Calif. The Infant, the first of the new small motors to go into production, is constructed entirely of turnings. Special care must be exercised in handling tiny motors and they must be tuned to peak rpm for proper performance. It is not advisable to disassemble these small motors; return them to the factory for repair. The larger K&B's have an enviable reputation for performance; engines are rotary valve type

K&B Infant

Infant: d—.020; b—.281; s—.331; bwt—1 oz; no castings used; crankshaft—steel; p—steel.

K&B Glo-Torp

Glo-Torp 32: d—.318; b—.750; s—.724; bwt—6 oz; die-cast aluminum castings; bronze bearings; steel crankshaft; p—Meehanite; steel liner.

K&B Torpedo

Torpedo 29: d—.299; b—.725; s—.724; bwt—7½ oz; see Glo-Torp 32 data above.

Glo-Torp 29: d—.299; b—.725; s—.724; bwt—6 oz; see Glo-Torp 32 data above.

Torpedo 24: d—.249; b—.662; s—.724; bwt—7 oz; see Glo-Torp 32 data above.

Glo-Torp 24: d—.249; b—.662; s—.724; bwt—6 oz; see Glo-Torp 32 data above.

Rocket

Little Mike Marx Toy Co.: (Div. George C. Knight Co.): 21820 Wyoming Ave., Detroit 20, Mich. **Rocket:** d—.4610; b—13/16"; s—7/8"; rated at 1/5 hp plus; 7,850 rpm with 10 in. pitch, 10 in. dia. propeller; high-test gas (without lead) recommended as fuel; rotary valve; oil-lite bearings; aluminum diecast construction.

Glo-Mite

Mercury Model Airplane Co.: 920 Utica Ave., Brooklyn 3, N. Y. **Glo-Mite:** d—.099; b—.500; s—.500; wt—2.6 oz.; ck—die-cast magnesium; cyl head—die-cast magnesium; alloy steel crankshaft; bronze bearing; p—alloy steel; con rod—alloy steel. **Notes:** this is the former Mite engine fitted with a glow plug for glow operation.

Micro-Bilt, Inc.: Lee-Mac Ave., Danbury, Conn. Designed by Ray Arden, these motors reflect his 40 years' engine experience. Construction not matched by the finest European hand-made motors. Arden's introduction of the glow plug to the model field created an entirely new type of flying and increased rpm and hp.

Arden 099

Arden (1-P-099) 099: d—.099; b—.495; s—.516; bwt—2.44 oz; flying wt—4.19 oz; 1/11 hp at 10,000 rpm; cr—9-1; plain bear-

ings; 360-deg. radial intake and exhaust porting; fuel—3 parts white gas and 1 part SAE 70 oil; radial mount; V-3 spark plug; suction gas feed; cyl—alloy steel; aluminum head; p—alloy steel; con rod—alloy steel; rotary shaft type valve; ck—die-cast magnesium; crankshaft, hardened ground steel; all joints threaded; fuel-proof plastic tank.

Arden (1-B-099) 099: bwt—2.62 oz; flying wt—4.37 oz; 1/10 hp at 10,000 rpm; high-precision annular ball bearings; see Arden 1-P-099 above for all other data.

Arden 199

Arden (1-B-199) 199: d—.199; b—.635; s—.625; bwt—4.16 oz; flying wt—5.91 oz; 1/5 hp at 10,000; high-precision annular ball bearings; see Arden 1-P-099 above for all other data.

Wasp Twin

Micro Model Co.: Metropolitan Airport, Van Nuys, Calif. **Wasp Twin:** 2 opposed cylinders; d—.60; b—.740; s—.702; rpm—10,000 plus; hp—¾; 2 port, rotary valve. beam "shelf" mounting; cr—7-1; wt—12 oz; 1 pc. alloy steel crankshaft; 2 main bearings steel cyls; hardened steel pistons; aluminum alloy crankcase, timer and heads. **Notes:** excellent vibration-free operation, a feature of all opposed, simultaneous firing twins, easy to start. Operation either on ignition or glow plug. Suitable for all types of models.

Super Wasp: d—.65; b—.740; s—.750; 2 cylinder; radial mount (Wasp Twin Special has beam mount); 2 port, 2 cycle; cr, 7-1; down draft carburetor; down exhausts; hi-speed timer; ¾ hp at 10,000 rpm; wt, 12 oz; power-to-weight ratio 1.08 hp per pound.

Miniature Motors: 8557 Higuera St., Culver City, Calif. Television and camera manufacturer is closing out Torpedo and Bullet engines. Concern states that parts will be available. Good motors for sport and small stunt models.

Bullet

Bullet: d—.275; b—¾"; wt—6½ oz; rotary valve inlet; cyl—steel, sleeve; p—Meehanite; radial or beam mount; for glow plug or ignition operation.

Torpedo Special

Torpedo: d—.30; b—.711; s—.750; wt—7¾ oz; remaining data same as Bullet above.

Mohawk Chief

Mohawk Engineering Co.: Mohawk, N. Y. **Mohawk Chief:** d—.299; b—.760; s—.660; cr—7-1; bwt—7 oz; steel cylinder; die-cast aluminum con rod; ck—die-cast aluminum; hardened steel piston; shaft rotary valve; recommended prop, 8-11" dia.; 6-8" pitch; rpm with prop, 5-11,800; beam mounting; uses standard glow fuels with glow plug; for ignition, gas or alcohol and castor oil, 2½-to-1 ratio. **Notes:** very rugged motor, exceptionally easy starting.

Ohlsson & Rice, Inc.: Emery at Grande Vista, Los Angeles 23, Calif. Ohlsson & Rice have been leaders among engine manufacturers since 1936 when the "Gold Seal" was introduced. The "23" in 1938 opened a new field of engine design and engines ceased looking like the venerable Brown Jr. Today Ohlsson & Rice offer variety and good looks as well as performance at a very reasonable price.

O&R 19 Rotary Valve Glow Plug

O & R 19 Rotary Valve Glow Plug: d—.199; b—11/16"; s—17/32; .28 hp at 9,000 rpm; cr—7-1; bwt—4¾ oz; crankshaft rotary valve; cyl—machined steel; con rod, aluminum alloy; ck, die-cast aluminum; p—alloy steel; bronze shaft bearing; ball thrust bearing; 2 port; radial or beam mount; fuel, O&R #2.

O&R 19 Rotary Valve Ignition

O & R 19 Rotary Valve Ignition: specifications same as O&R 19 rotary valve glow plug engine above except fuel, O&R # 1.

O&R 19 Side Port Ignition

O & R 19 Side Port Ignition: data same as O&R 19 rotary valve glow plug engine above except side port inlet; 3 port; .156 hp at 8,200 rpm; bwt—5 oz; fuel, O&R #1.

O&R 23 Rotary Valve Glow Plug

O & R 23 Rotary Valve Glow Plug: d—.230; b—11/16"; s—21/32"; .295 hp at 9,400 rpm; cr—7.5-1; bwt—4¾ oz; fuel—O&R # 2; remaining data same as O&R 19 rotary valve glow plug engine above.

O&R 23 Rotary Valve Ignition

O & R 23 Rotary Valve Ignition: d—.230; b—11/16"; s—21/32"; .295 hp at 9,400; cr—7.5-1; bwt—4¾ oz; fuel, O&R #1; remaining data same as O&R 19 rotary valve glow plug engine above.

O&R 23 Side Port Ignition

O & R 23 Side Port Ignition: d—.230; b—11/16"; s—21/32"; .22 hp at 8,000 rpm; cr—7.5-1; bwt—5 oz; fuel, O&R #1; 3 port; remaining data same as O&R 19 rotary valve glow plug engine above.

O&R 29 Rotary Valve Glow Plug

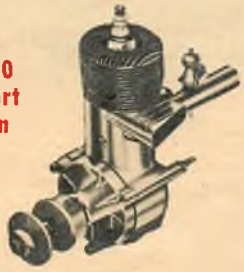
O & R 29 Rotary Valve Glow Plug: d—.299; b—.760; s—.660; .4 hp at 10,500 rpm; cr—7.5-1; bwt—5 oz; fuel—O&R #2;

roller thrust bearing; remaining data same as O&R 19 rotary valve glow plug engine.

O&R 29 Rotary Valve Ignition

O & R 29 Rotary Valve Ignition: d—.299; b—.760; s—.660; .4 hp at 10,500 rpm; cr—7.5-1; bwt—5 oz; fuel—O&R #1; roller thrust bearing; remaining data same as O&R 19 rotary valve glow plug engine.

O&R 60 Side Port Ignition



O & R 60 Side Port Ignition: d—.660; b—15/16"; s—⅞"; .32 hp at 7,000 rpm; cr—6.5-1; bwt—9 oz; fuel—O&R #1; p—cast iron; 3 port; side port inlet; remaining data same as O&R 19 rotary valve glow plug engine.

Phantom

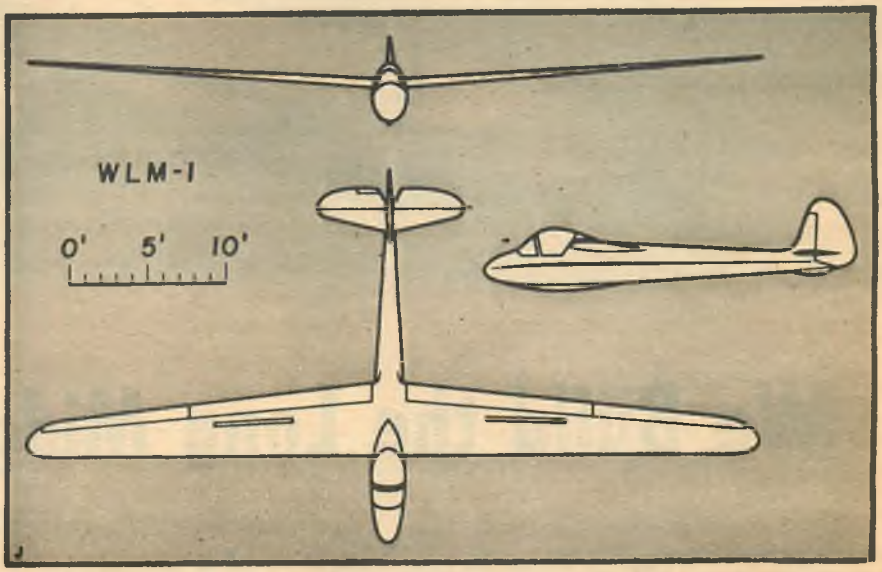
Phantom Motors: 806 E. Gaga Ave., Los Angeles 1, Calif. **Phantom:** d—.29; b—.715; s—.750; wt—6⅞ oz; ports, 2 intake, 2 exhaust; rotary valve on crankshaft; prop—11-12" dia.; 3½-6" pitch; cyl—alloy steel, pressed-in by pass, welded-on exhaust ports; cyl liner, hard chrome; p—cast iron, precision ground, hand lapped; con rod—die-cast aluminum alloy; ck—die-cast aluminum. **Notes:** the Phantom is fitted for ignition and 2½ to 1 gas-oil fuel. Will perform well on glow plug.

Super Cyclone

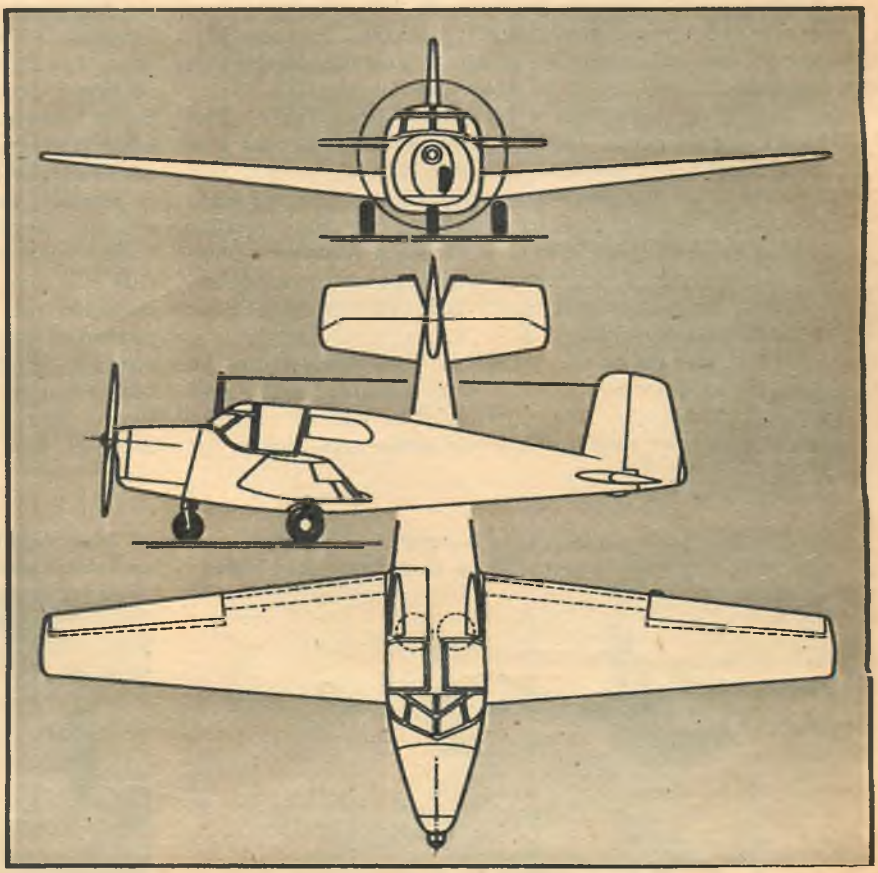
Super Cyclone, Inc.: Grand Central Air Terminal, Box 1351, Glendale 5, Calif. The Super Cyclone is one of the few pre-war motor designs still on sale, proving its quality and popularity in a highly competitive market and on the contest field. The author has found the engine excellent for stunt and free-flight work. Complete parts and repair service available. **Super Cyclone:** d—.604; b—29/32"; s—15/16"; wt—9½ oz; rotary valve; hp—1/5 to ¼; normal rpm, 6-7,000; prop; 6-8" pitch, 13-14" dia.; rotation counterclockwise; 2 port; aluminum alloy castings; p—cast iron; crank pin and crankshaft, steel; cast iron cylinder liner.

3 Views Of Foreign Aircraft

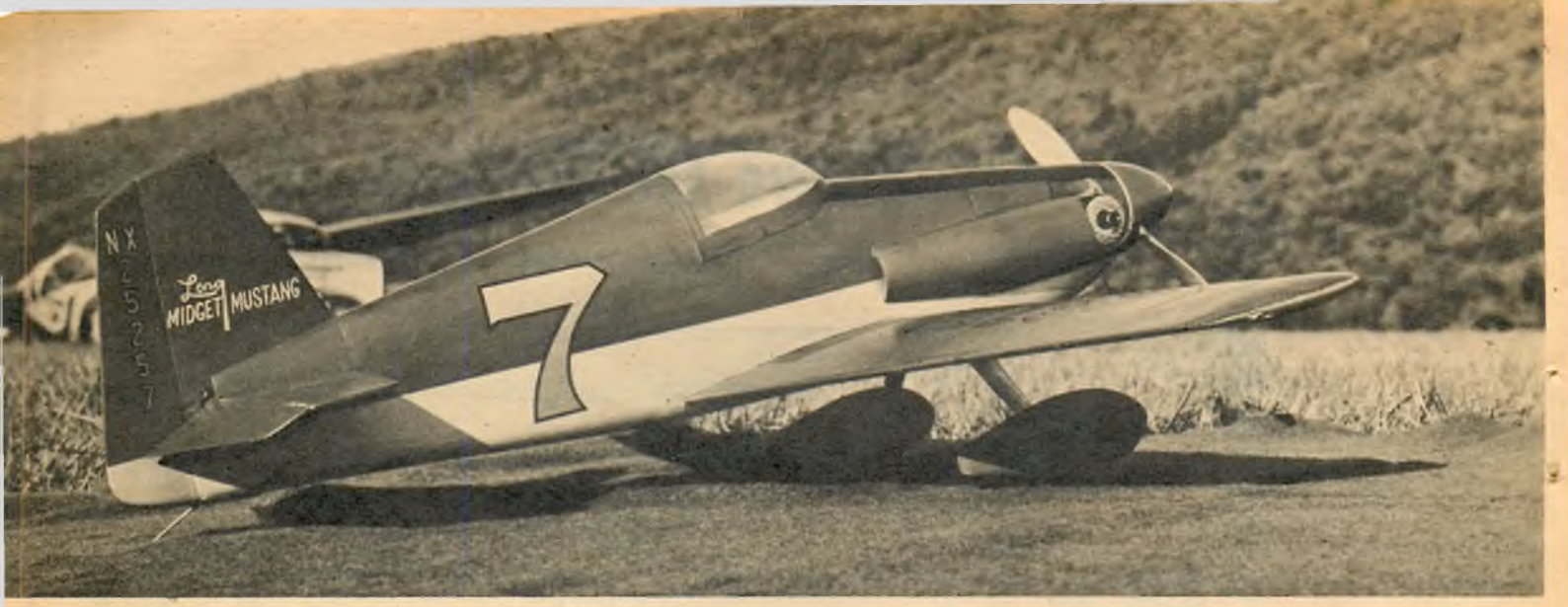
Two new interesting designs from Switzerland and Sweden



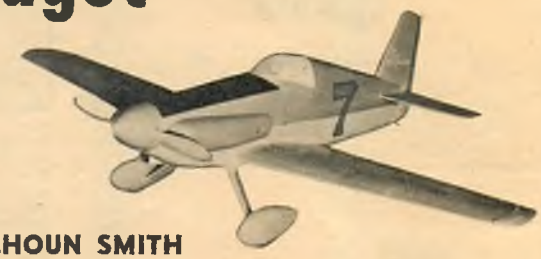
● Switzerland with its high mountains and deep valleys presents a veritable paradise for the soaring enthusiast. However, the topography itself, though productive of strong upcurrents, is dangerous to the uninitiated and requires a rather specialized technique and machine. Such a sailplane must be strong, to withstand severe buffeting of the air flowing around the mountains, must have a good speed range, maneuverability, and high turning (spiral) stability for blind flight. In the WLM-1 its designers and builders combined all the requirements to produce one of the finest ships in existence. Of all-wood construction, it has a span of 46 ft., length of 23 ft., wing area of 150 ft. The glide angle is 25 to 1 and the sinking speed is 2.62 ft. per sec. at 40 mph. The WLM-1 has been towed by a fighter, demonstrating the strength of its structure.



● This interesting Swedish personal plane couples American production methods with German construction principles. Its chief design engineer was responsible for such famous planes as the Buecker and the Messerschmitt Taifun. The three-place all-metal machine established a distance record of 3,750 miles when it was flown from Lynkoeping, Sweden, to Addis Ababa, Ethiopia, in 31 hours non-stop. The Safir is manufactured by the SAAB firm of Lynkoeping who also build military aircraft and airline transports. It is powered by a 145-hp Gypsy Major engine, has a top speed of 156 mph, landing speed of 50 mph. Cruising range, 600 miles.



We Build the Long Midget



Add this Goodyear racer to your collection of U-control flying scale models that fit into the Team Racing event

By S. CALHOUN SMITH

IF you don't happen to have $5,000 handy to buy the full scale Long Midget (described on page 30), dig out the balsa and the cement. You can model this sweetheart and fly it to your heart's content.

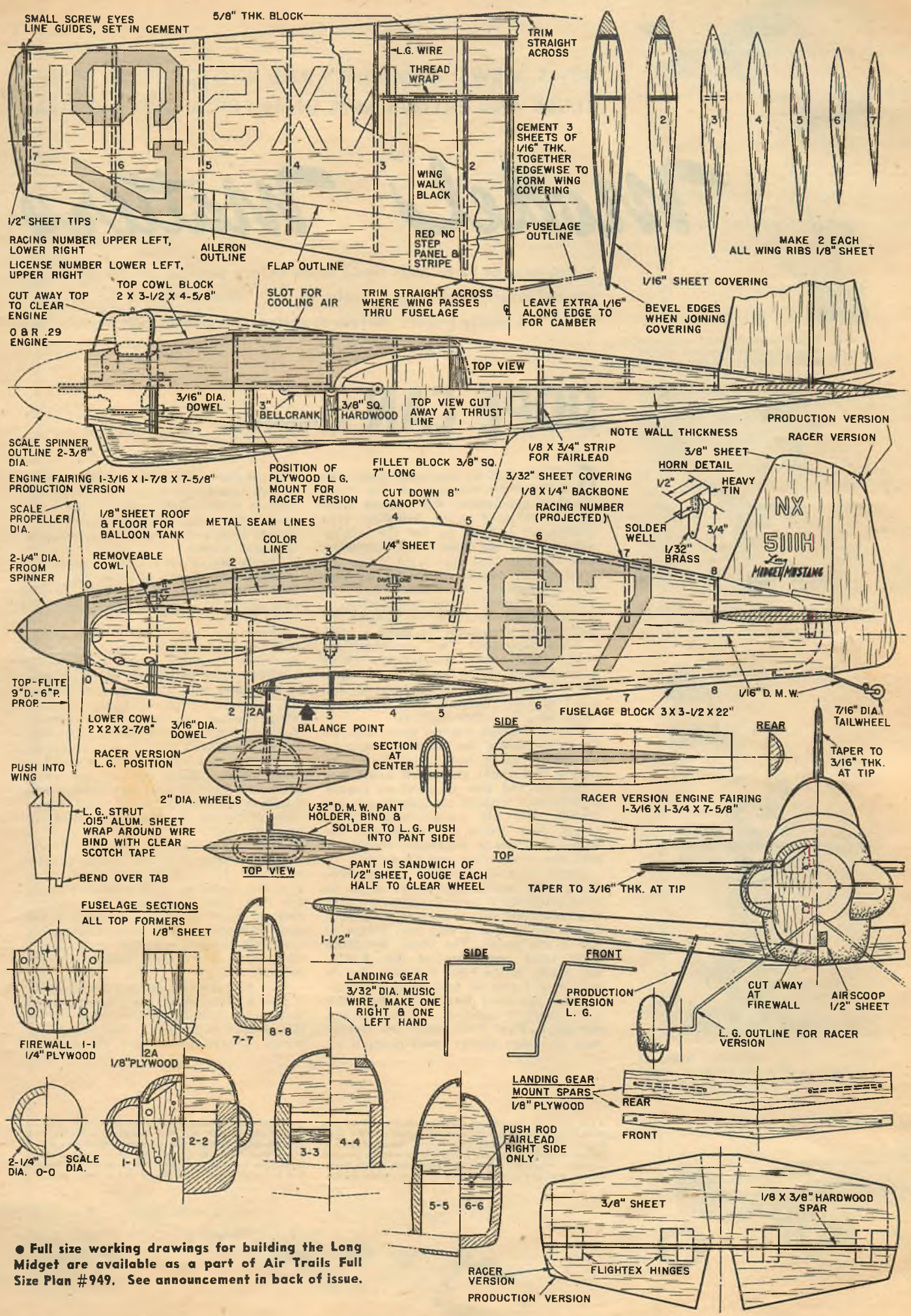
The Long lovely is a natural control-liner. The clean design lends itself to simple construction and good flight performance. We'd like to pound our private drum for Dave Long, designer of the full scale prototype. In addition to smart engineering—resulting in excellent performance of the prototype—Dave must have kept a soft spot in his heart for the modeler, because his design has really fulfilled our wishes for a good honest model.

The model is scaled at 1¾" to 1', directly from the factory three-views, and if our drawing hand isn't getting too shaky, they are mighty accurate (solid scale fans take note). This odd scale was picked for a number of reasons, an important one being the combination of wing area and power that was desired. Also, the spinner size comes within a gnat's whisker of being exactly the size available from Mr. Froom. Scale wheels and canopy are also very close to those sizes procurable at your hobby dealer's. Naturally some of the curves and wiggles of these parts don't fit exactly, but outlines are included for those builders who are interested in *absolute* scale.

The page plan is ¼ scale; ¼" equals 1" on AT's full size plan and the finished model. Outlines are included for both the present racer version and the projected production version. The changes include: altered engine fairing shape, wider landing gear (mounted in wing), and square tips on all tail surfaces. The real Long Midget uses NACA 641A212 laminar flow airfoil. We (*Continued on page* 84)

● Model man Smith and Dave Long, designer of Long Midget, compare ships. First called Midget Mustang, plane now is Long Midget.

● Power department of model Long Midget. Ohlsson 29 was used on author's model, but motors up to .40 cu. in. displ. are possible.



● Full size working drawings for building the Long Midget are available as a part of Air Trails Full Size Plan #949. See announcement in back of issue.

• P. van de Dyte of Utrecht, Holland, sends us some fine photos of model activity there, and included this one of himself launching his original t.l. glider.

NEWS, VIEWS, COMMENTS AND PHOTOS FROM MODEL CLUBS AND ENTHUSIASTS IN AMERICA AND OVERSEAS

Model Matters

• Payment of $2 to $5 is made on or before publication for photos of unusual interest sent exclusively to AT. Photos should be at least 4" x 5" on glossy paper. Retain negatives; no photos can be returned

• Gail Fox, out Dearborn, Mich., way, produced this mighty nice DC-3 powered by two McCoys. Here a young neighbor asks if the ship can loop

• Like Texas, this ship is big! Galen A. Stephens of Austin Aerocrats with original Orwick 64 powered 8-ft. job. Chord, 12 in; area, 1,072 sq. in.; wt., 65 oz.

DOPE CAN By "DOPESTER"

GENTLEMEN, we have some good news for a large segment of the model building population. We address these opening remarks to the free-flight clan. Things are looking up for the launch-'em-and-pray set. Now, lots of oldtimers will tell you that free-flight never did drop off in popularity as far as they were concerned, but we must admit that from the national competition standpoint, it's been pretty much 60-70% control-line and 30-40% free-flight for quite a spell.

What happened? Two important developments: the "quarter-A" (A/4) engines such as the Infant, Baby Spitfire and Cub coming into the picture and a lot of clear thinking on the part of many long-time free-fliighters.

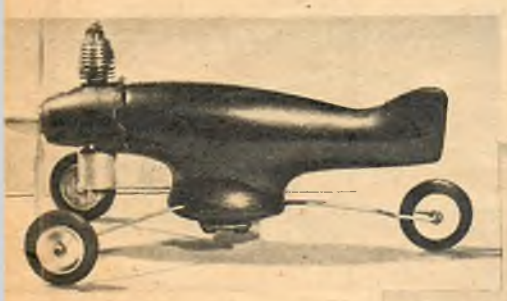
The new small engines were naturals for rejuvenating the heave-ho activity; for years we've been waiting for an engine that could go into a small free flying job and give us sport or contest performance without big investments, big models, and big transportation probblems. Now we've got them and the Midget A Class is expanding rapidly in both the control-line and f.f. fields.

Plenty of soul searching among free-flight clubs and contest flyers seems to have produced a general agreement that it is downright silly to require (in effect) that a fellow lose a ship and engine to win a top award. The three 10-minute flight limit regulation of the A.M.A. was a step in the right direction. Comes now new forms of free-flight competition that are being developed to make the sport more interesting and a lot less expensive. First there were the Northwest precision events spark-plugged by Jim Walker and the Portland, Ore., crowd. Latest idea to get widespread support is a time-limit contest. Sure, it's been tried many times in the past, but at last everyone seems to be jumping on the band wagon.

The Brooklyn (N.Y.) Skyscrapers club is attracting plenty of attention in the East with its time limit contest. In general, here's what sounds like mighty good sense to us:

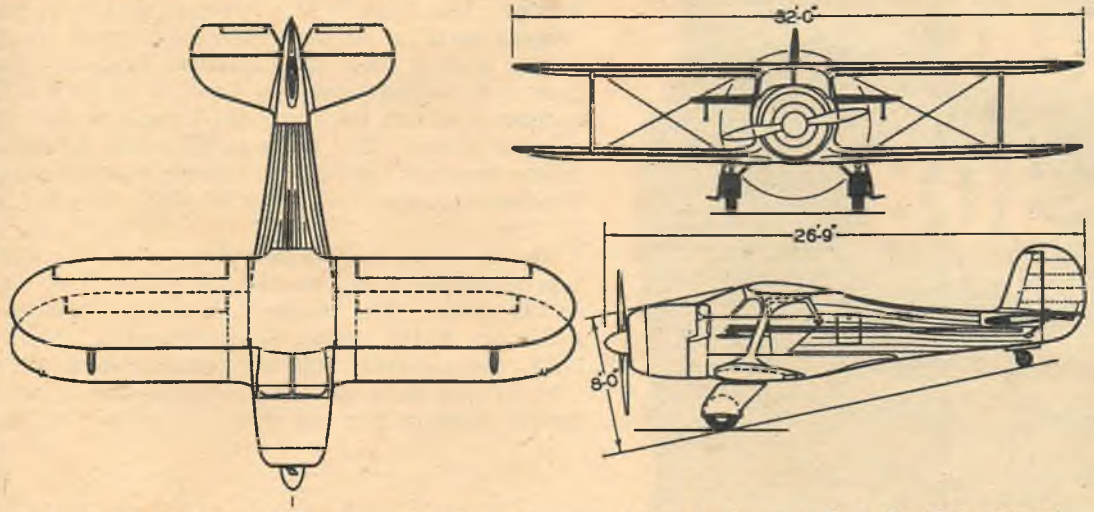
Everybody entered in a free-flight contest receives 3 official flights and *must complete* 3 *official flights* or he's disqualified. The individual coming closest to 4 minutes with his 3 flights is declared the winner. No power loading and no wing loading requirements. Classes A, B, C and D all compete against each other. Prizes are offered on Novice-Expert basis, or in the familiar Junior, Senior and Open classes. Motor runs of any length up to 40 seconds are permitted. Flight duration ends when model lands within sight of timers. Behind the trees or out of sight, tough luck—score the flight as delayed with no time credited. Everything else from 1 second to 2½ minutes is official. If model is still in the air at 2:30 the contestant gets a delayed rating the first time it happens. But only 1 delayed flight is permitted for any one flyer. If models collide in air (we've seen that only 3 times outdoors in 20 years) time ends when each model hits the ground.

How does it sound to you? We feel that it puts a premium on design, adjustment and motor tune-up. Brute force of the 60's doesn't overshadow the Infant-Cub crowd. Every- (*Continued on page* 93)

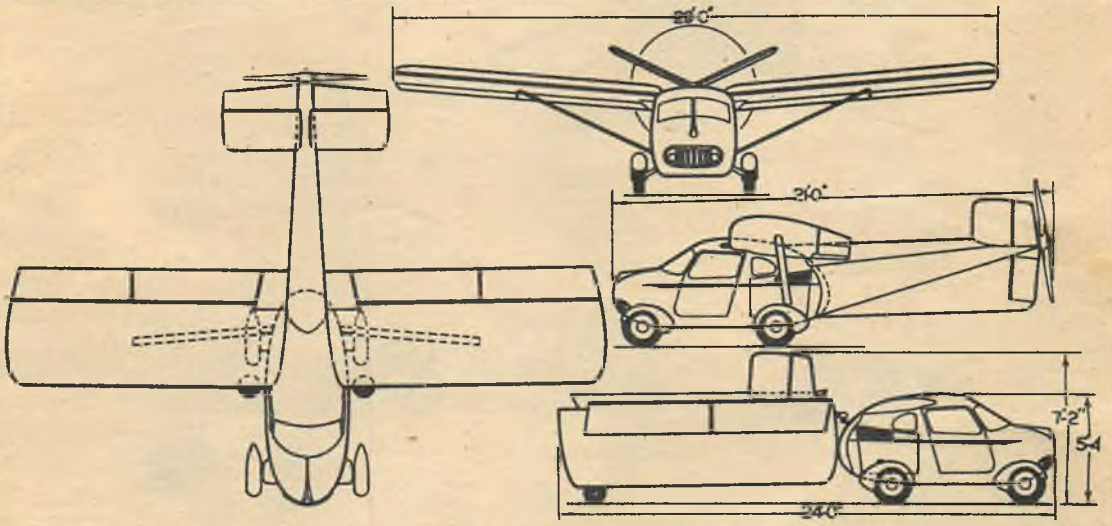


• Lud Kading's (the "K" of K&B) Infant-powered air car (left) which holds shop's race course record of 42.5 mph. Engines hit around 17,000 rpm. Below: chassis of air car before streamlined planked balsa body is added; inverted engine is completely cowled. Fuel tank made of shim brass. Rubber tires are ground to knife edge to reduce friction.

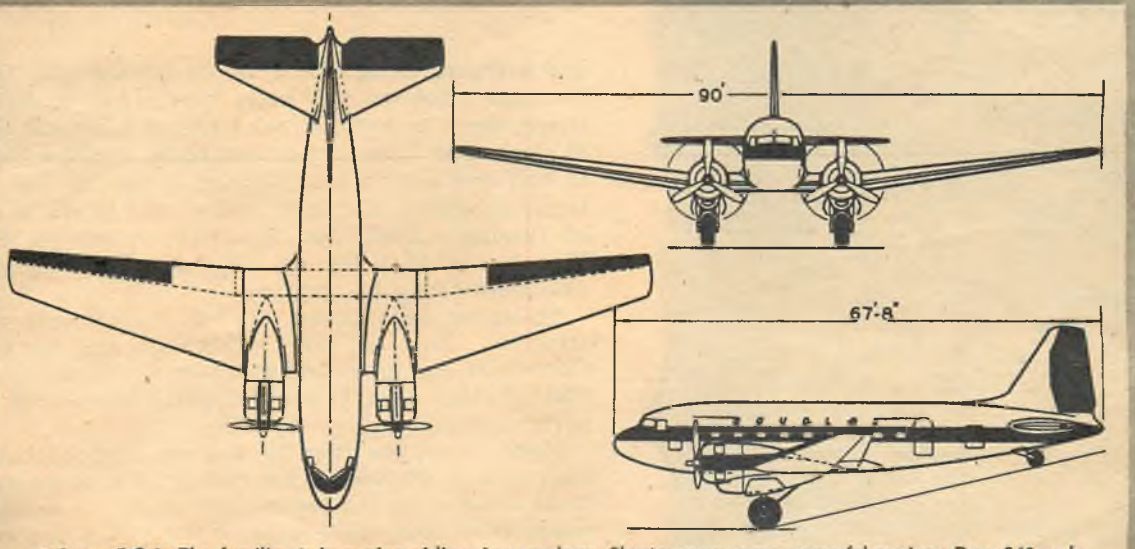
• Six cars made by K&B'ers: standard metal Infant prop cut down to about 3½ in. dia., filed to toothpick width, polished. Heavy brass washer flywheel sometimes added. Diameter of wheels from 1⅛ in. to 2¼ in. Cars run in either direction. These have metal tether plates. Due to centrifugal force (8 ft. 9 in. circle) engines are tipped so fuel feeds properly.



● Beechcraft G17S: One of the famous line of popular personal aircraft of pre-war days. Could do 212 mph.



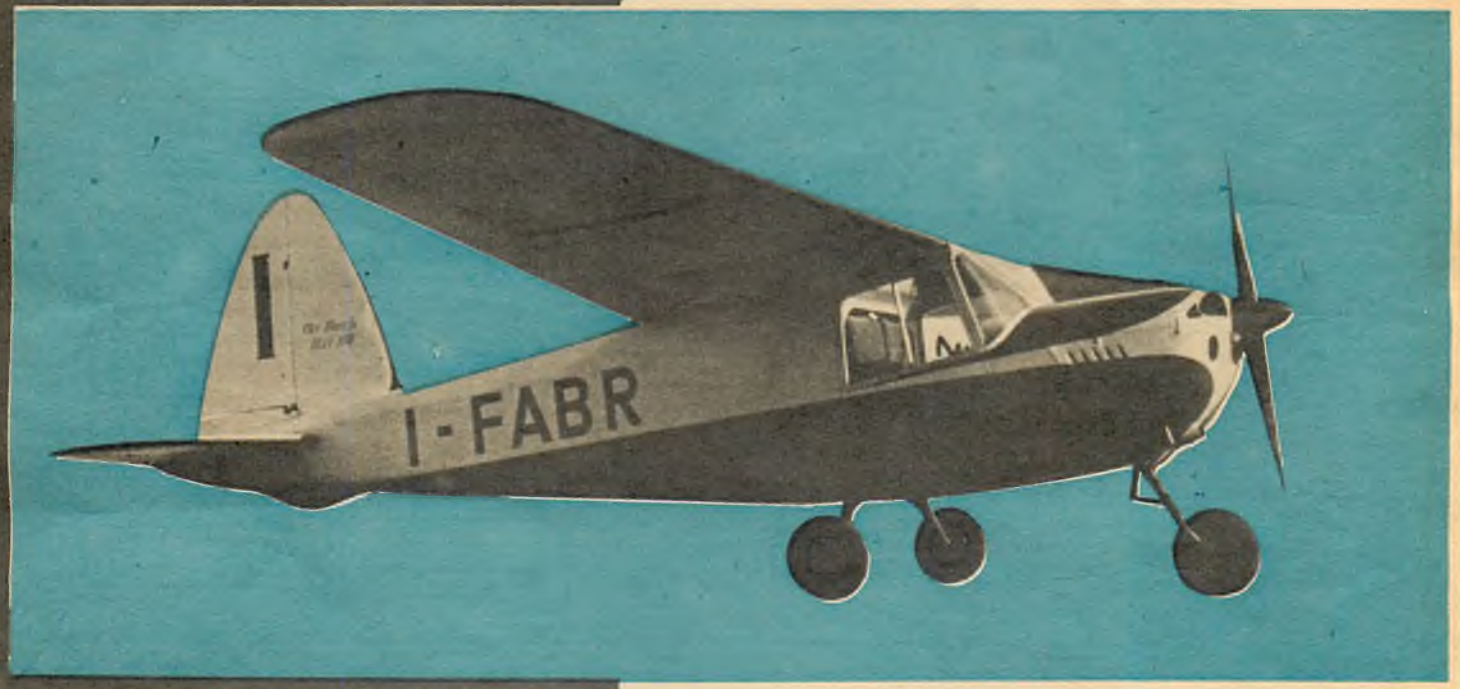
● The Aerocar: An interesting approach to the roadable airplane problem, near completion at Longview, Wash.



● Super DC-3: The familiar twin-engine airliner in new dress. Shorter span, more powerful engines. Does 240 mph.

Macchi MB-308

A design to warm the heart of any builder of rubber-powered flying scale models. This neat job also takes Campus A-100



By CRISTO RUSSO

● Solid model builders can construct a same-size scale model right from these plans. The flying model clan can obtain full size working drawings as a part of Air Trails Full Size Plan #949.

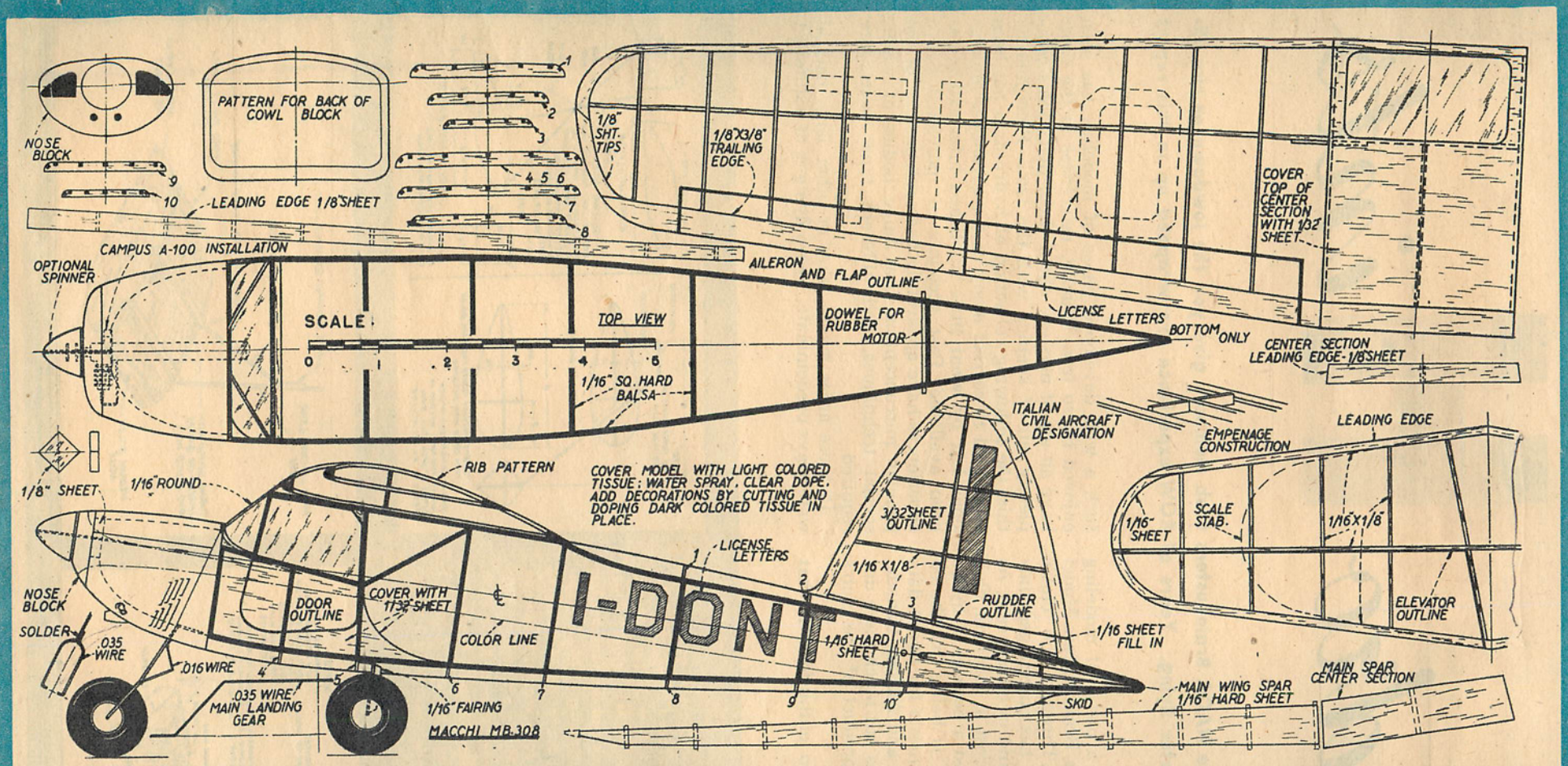
ITALY'S top offering to the lightplane enthusiast, the MB-308, bids fair to become the favorite of all Europe. The wing is of a tapered cantilever design coupled with a simple fuselage of neat, compact design seating two side-by-side. Tricycle landing gear or twin floats may be used. It is sold with or without a motor; the continental A-65 is the recommended power. The price is $3-5,000; no accurate means of computing cost is available due to fluctuating European currency. Span is 32′ 9½″; length overall 21′ 3½″.

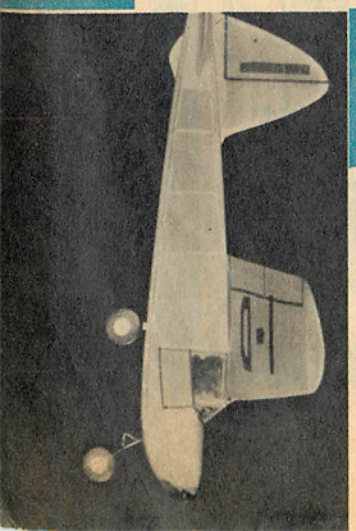
Ideally suited to a stable flying design, the MB-308 is presented here as a small scale job for T-56 rubber or CO_2 power. The model shown in the photos uses a Campus A-100 motor. Construction is simple and light. Use carefully selected balsa as specified.

Build two body sides on the plan side view. Assemble them as per top view and attach bulkheads and stringers, using hard 1/16″ sq. throughout. Trace the nose block on soft balsa blocks; cut to outline shape; carve to contour; sand and give several coats of clear dope, sanding between coats. Cut the blocks in half and with a small gouge, hollow to the wall thickness shown. Cement together and attach to nose of fuselage. Bend and insert wire landing gear. Wheels are of balsa or celluloid. Small Trexler pneumatics may be used.

Stabilizer and rudder are of conventional construction. Exercise care to prevent any warpage. Cover with Jap tissue and water-spray. Give one thin coat of clear dope (use eight parts thinner to two parts dope).

Make a template from tin can metal of the largest rib (center). Proceed to cut ribs of 1/16″ sheet balsa. Make a cut along the top surface; move the template down 1/16″ and make another cut. Thus you have a rib 1/16″ sq. Cut sufficient (*Continued on page 92*)


NOSE BLOCK
PATTERN FOR BACK OF COWL BLOCK
LEADING EDGE 1/8 SHEET
CAMPUS A-100 INSTALLATION
OPTIONAL SPINNER
SCALE
TOP VIEW
1/16" SQ. HARD BALSA
DOWEL FOR RUBBER MOTOR
1/8" SHT. TIPS
1/8"X3/8" TRAILING EDGE
AILERON AND FLAP OUTLINE
COVER TOP OF CENTER SECTION WITH 1/32 SHEET
LICENSE LETTERS
BOTTOM ONLY
CENTER SECTION LEADING EDGE-1/8 SHEET
1/8" SHEET
1/16 ROUND
RIB PATTERN
COVER MODEL WITH LIGHT COLORED TISSUE: WATER SPRAY. CLEAR DOPE. ADD DECORATIONS BY CUTTING AND DOPING DARK COLORED TISSUE IN PLACE.
ITALIAN CIVIL AIRCRAFT DESIGNATION
EMPENAGE CONSTRUCTION
LEADING EDGE
1/16" SHEET
SCALE STAB.
1/16X1/8
ELEVATOR OUTLINE
3/32 SHEET OUTLINE
1/16 X1/8
RUDDER OUTLINE
1/16 SHEET FILL IN
LICENSE LETTERS
I-DONT
NOSE BLOCK
SOLDER
.035 WIRE
.016 WIRE
DOOR OUTLINE
COVER WITH 1/32 SHEET
COLOR LINE
1/16" HARD SHEET
.035 WIRE MAIN LANDING GEAR
1/16" FAIRING
MACCHI MB.308
SKID
MAIN WING SPAR 1/16" HARD SHEET
MAIN SPAR CENTER SECTION

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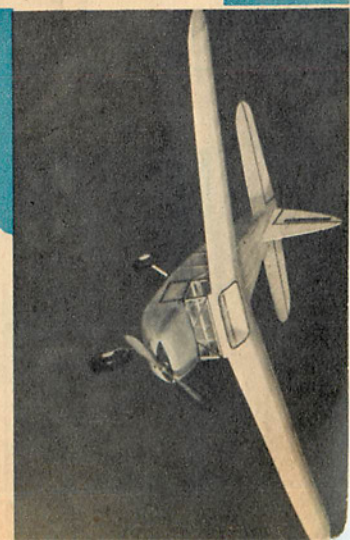


Hydro Hints

The NACA BrainBusters Club members give you the lowdown on rise-off-water flying. Years of ROW experience are wrapped up in this report

HYDRO flying has long been a phase of modeling regularly engaged in by the BrainBusters Model Club of Hampton, Virginia. Through the club's sponsorship of hydro contests it has encouraged similar activities on the east coast and in other areas. As evidence of their particular interest in this field, club members prepared and published a booklet of hydro hints which has been and still is being distributed free in answer to a series of requests for hydro data from all sections of the country and Alaska, Canada, and England. Along similar lines but much more detailed, this article is also the product of the club's efforts to popularize the sport.

A situation puzzling to hydro enthusiasts is that such a well developed phase of modeling has been enjoyed by so few. Usually, references to the sport have an air of mystery about them that seems completely out of keeping with the facts. Prompted by this, the following collection of hydro data has been assembled to correct many of the erroneous impressions left by what little published information has been available. Past accounts of individual hydro experiences have apparently been responsible for the popular misconception that huge bodies of water, special techniques, and different type models are required.

In those areas where lakes or other large natural waterways predominate, hydro flying is of a different

● FIG. 1—single forward float for Class A gas models; maximum weight of model not to exceed 18 oz. FIG. 2—(left) Class D float used by Dick Everett for national record in open stick (average time, 6:21); (right) Class D floats used by Joe Dodson on stick and fuselage designs adaptable to most any type rubber model. FIG. 3—typical float construction. FIG. 4—adaptation of floats to one-wheeler free-flight gassie by John Worth; hardwood strip wrapped and glued thoroughly to aft brace. FIG. 5—this Class C fuselage model was national ROW open class record holder. FIG. 6—Class B gas floats for models of 20 to 26 oz. designed by Charles ("Climax") Folk. FIG. 7—floats for Cl. C models weighing 3½ lbs.

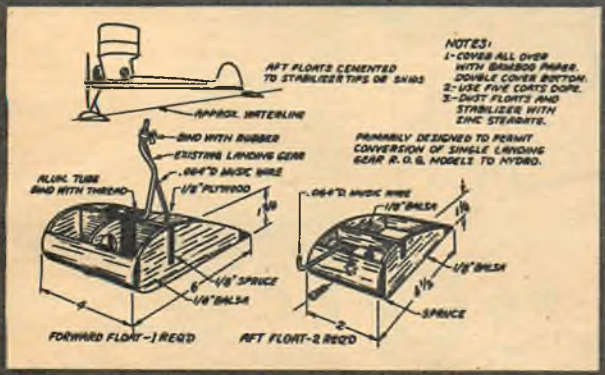


FIG. 1

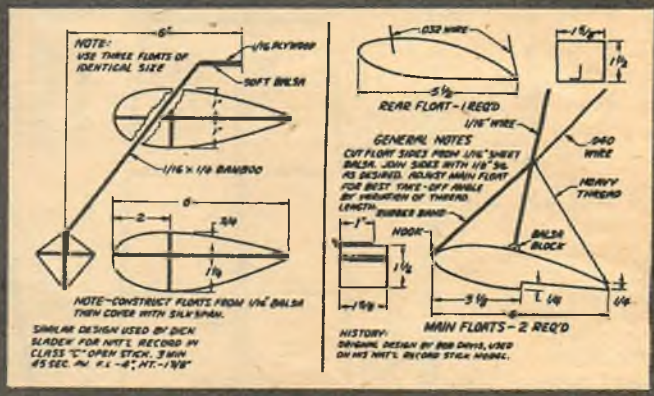


FIG. 2

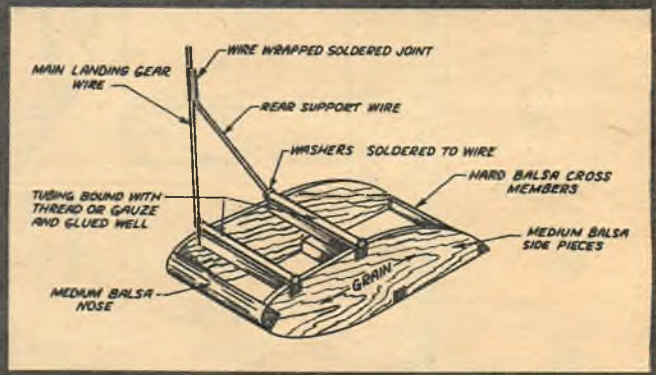


FIG. 3

sort than is covered herein and is a separate art in itself. Modelers in such localities seldom have satisfactory R.O.G. sites so their building concentrates on types stressing utility rather than performance. It's reasonable that such ships capable of withstanding repeated water landings cannot be expected to compete with landplanes since they must be more completely waterproofed and rugged. True hydro flying, therefore, is not our primary concern, because only a relatively small group of builders is in a position to try it. For the majority of "landlubbers" the thrills of hydro flying may be realized, however, and the process involved is practically painless.

Conventional ships with adapted float installations, flown from normal free-flight sites, supply all the thrills and satisfaction characteristic of the sport with few of its drawbacks. For the average flyer, landings on terra firma eliminate the need for redesigning of models, as well as the need for boots or boats for retrieving. Landing on water has been found to be hardly worth the trouble it takes for the slight additional kick it gives. Converted landplanes hold the majority of AMA hydro records and are the most popular at meets, especially those with "dry" and "wet" events, since rapid conversion for R.O.W. flying can be accomplished.

A set of floats properly built and installed is all that's necessary for hydro conversion and the accompanying drawings and photos indicate the proven types in current use. One set generally outlasts many models so that several seasons of active life may be expected. It is to be noted that the principal float arrangement used by the veteran hydro contestants embodies three units to support the model. The three-float setup has proved to be the simplest, lightest, and least troublesome of all configurations. This is not to imply, however, that others are not capable of good performance. Flying boats and single-float designs have excellent possibilities. That these have not gained in popularity is due to the added complications involved and a lack of definite design data.

Twin floats seem to be in a class by themselves in that they have been used in contest work with only moderate success. It appears that model builders are prone to copy from full scale aircraft in their use of twin floats and the results have not been conclusive. Sport flyers apparently prefer this float installation, but contest goers discover that penalties of extra weight and drag are incurred because of the added length of floats required for adequate water stability. Long floats also require very careful alignment and are more vulnerable to crash damage.

Two arrangements of three floats have been used and either is adaptable to conventional model designs. For single-gear ships it is sometimes desirable to mount one large float forward with two smaller units supporting the tail at the stab tips. It is advised, however, that this setup be used only on ships possessing "hot" takeoff performance since the planing characteristics of the single float have not been too promising.

For practically all adaptations, the "normal" use of two main floats forward plus a smaller tail float has been the most successful and is highly recommended for novices and oldtimers alike. The stubby forward floats with a wide tread mounted well forward of the C.G. are assisted by a rear float just large enough to support the tail at rest. (*Continued on page 81*)

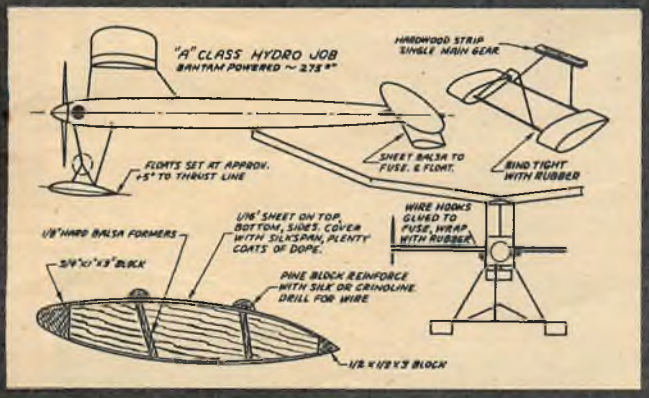


FIG. 4

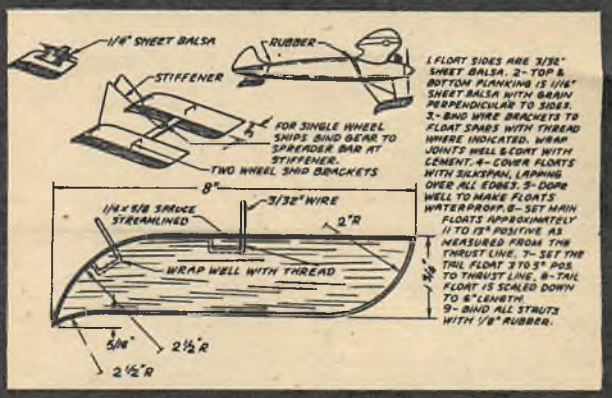


FIG. 6

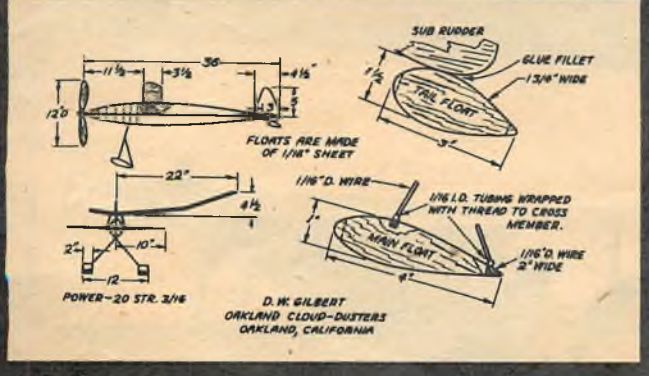


FIG. 5

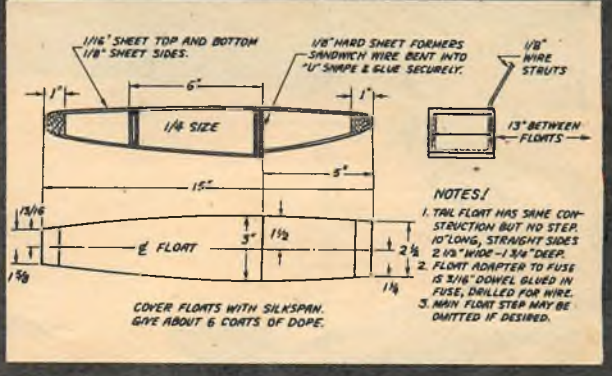
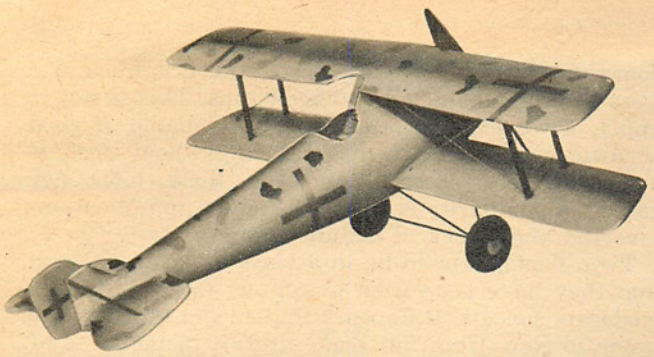
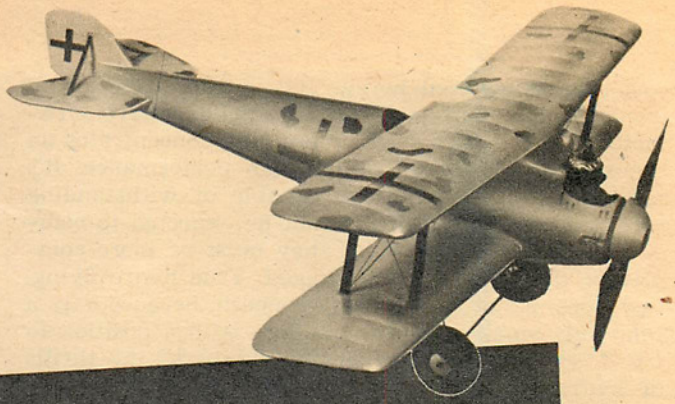


FIG. 7





Roland D-2 "Wahlfisch"

Just what the doctor ordered! U-control bipe with pylon

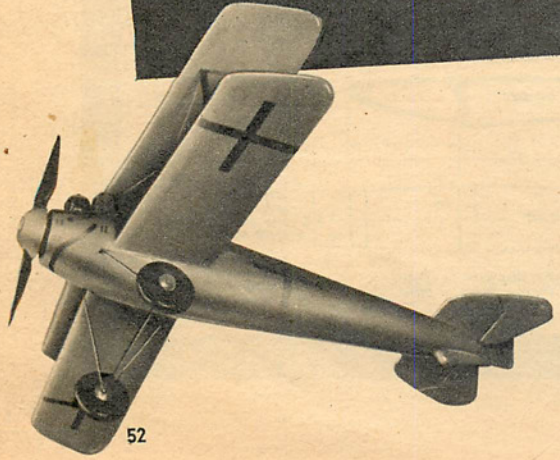
By D. A. NEWELL

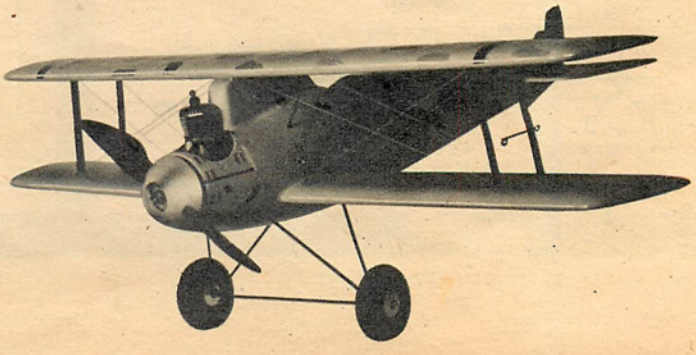
"THE Black Knight of Germany," Hauptman Ritter E. von Schleich, leader of the "Bavarian Blue Tails," attained many of his thirty-five victories using the Roland D-2. Because of its streamlined shape, this plane was nicknamed "The Whale" (Wahlfisch), and many pilots painted a mouth and eyes on the nose to simulate a whale. Although used in action with success for quite some time, the "Whale" somehow never achieved the popularity of the Fokker and Albatros fighters. Unlike the average bullet-nosed planes with liquid-cooled engines, the D-2 did not have a radiator protruding into the airstream. Instead the radiator was cleverly concealed in the nose just behind the spinner, with inlet and outlet slots as the plans indicate.

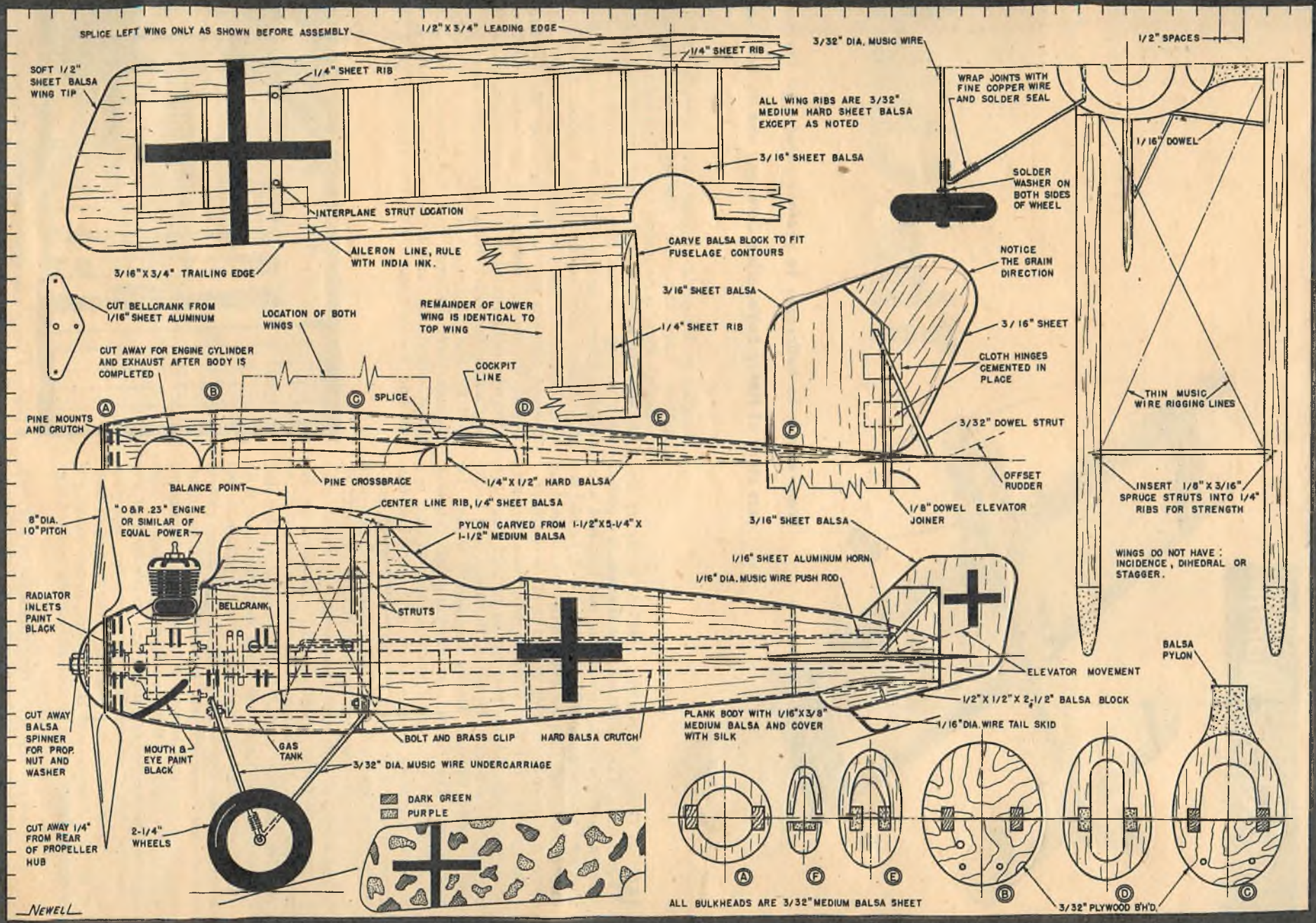
Of all the biplanes used in World War I the Roland D-2 is one of the best adapted to control-line use because of its exceptional streamlining and sturdy construction. The latter is due to the fact that the usual cabane struts are replaced by a husky streamlined pylon—which, incidentally, hindered the pilot's forward vision. No dihedral was used, which makes the wings very easy to build, even with the slight amount of sweepback. The model is easy to fly and should bring back to mind the 1917-18 period when flying machines were assemblies of wood, wire, and fabric.

The fuselage is built up and planked for three reasons: lightness, economy and rapid construction. This type has all these advantages over the hollowed balsa block fuselage. A crutch made from ¼" x ½" serves as a jig, engine mount and backbone. This is built first and the bellcrank attached securely. Cut out the tail surfaces and trim and sandpaper to shape. Add the fabric hinges and cement the stabilizer to the crutch. Cut out the bulkheads and cement them in place on the crutch. Attach the gas tank and bolt the landing gear in place to the plywood bulkhead. Hook up the control push rod and then cover the whole body with 1/16" thick balsa. Strips of about ⅜" wide are good for this purpose. Make sure the strips are cemented to each other as well as to the bulkheads. Sandpaper the body until smooth and then cover it with very fine silk. This makes it almost indestructible. Dope it twice and sandpaper smooth. Cut the plyon and cement it in place. Fillet pylon with Aero Gloss plastic balsa. Cut out the cockpit and engine recess, and add vertical tail and strut. (*Continued on page 77*)

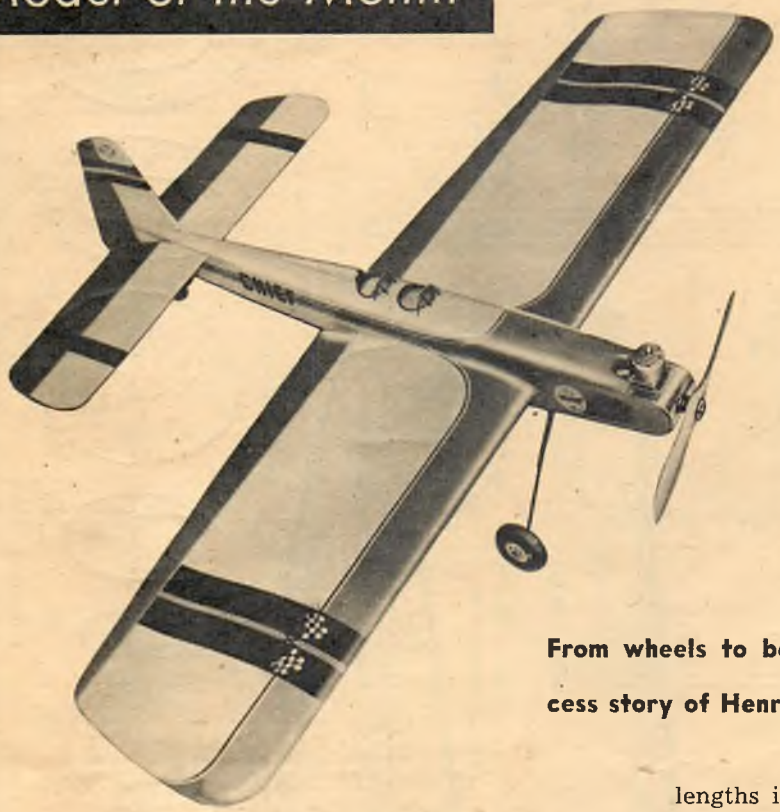
● **Full size drawings of the D-2 are found on Air Trails Full Size Plan #949.**






SPLICE LEFT WING ONLY AS SHOWN BEFORE ASSEMBLY
1/2" X 3/4" LEADING EDGE
1/4" SHEET RIB
SOFT 1/2" SHEET BALSA WING TIP
1/4" SHEET RIB
3/16" SHEET BALSA
INTERPLANE STRUT LOCATION
AILERON LINE, RULE WITH INDIA INK.
3/16" X 3/4" TRAILING EDGE
ALL WING RIBS ARE 3/32" MEDIUM HARD SHEET BALSA EXCEPT AS NOTED
3/32" DIA. MUSIC WIRE
WRAP JOINTS WITH FINE COPPER WIRE AND SOLDER SEAL
SOLDER WASHER ON BOTH SIDES OF WHEEL
1/2" SPACES
1/16" DOWEL
CARVE BALSA BLOCK TO FIT FUSELAGE CONTOURS
CUT BELLCRANK FROM 1/16" SHEET ALUMINUM
LOCATION OF BOTH WINGS
REMAINDER OF LOWER WING IS IDENTICAL TO TOP WING
NOTICE THE GRAIN DIRECTION
3/16" SHEET BALSA
1/4" SHEET RIB
3/16" SHEET
CUT AWAY FOR ENGINE CYLINDER AND EXHAUST AFTER BODY IS COMPLETED
COCKPIT LINE
CLOTH HINGES CEMENTED IN PLACE
THIN MUSIC WIRE RIGGING LINES
A
B
C
SPLICE
D
E
F
PINE MOUNTS AND CRUTCH
3/32" DOWEL STRUT
PINE CROSSBRACE
1/4" X 1/2" HARD BALSA
OFFSET RUDDER
1/8" DOWEL ELEVATOR JOINER
INSERT 1/8" X 3/16" SPRUCE STRUTS INTO 1/4" RIBS FOR STRENGTH
BALANCE POINT
CENTER LINE RIB, 1/4" SHEET BALSA
8" DIA. 10" PITCH
"O&R .23" ENGINE OR SIMILAR OF EQUAL POWER
PYLON CARVED FROM 1-1/2" X 5-1/4" X 1-1/2" MEDIUM BALSA
3/16" SHEET BALSA
1/16" SHEET ALUMINUM HORN
1/16" DIA. MUSIC WIRE PUSH ROD
WINGS DO NOT HAVE: INCIDENCE, DIHEDRAL OR STAGGER.
RADIATOR INLETS PAINT BLACK
BELLCRANK
STRUTS
ELEVATOR MOVEMENT
BALSA PYLON
1/2" X 1/2" X 2-1/2" BALSA BLOCK
PLANK BODY WITH 1/16" X 3/8" MEDIUM BALSA AND COVER WITH SILK
1/16" DIA. WIRE TAIL SKID
CUT AWAY BALSA SPINNER FOR PROP. NUT AND WASHER
MOUTH & EYE PAINT BLACK
GAS TANK
BOLT AND BRASS CLIP
HARD BALSA CRUTCH
3/32" DIA. MUSIC WIRE UNDERCARRIAGE
DARK GREEN
PURPLE
CUT AWAY 1/4" FROM REAR OF PROPELLER HUB
2-1/4" WHEELS
ALL BULKHEADS ARE 3/32" MEDIUM BALSA SHEET
3/32" PLYWOOD B'H'D.
NEWELL

Model of the Month



The Chief

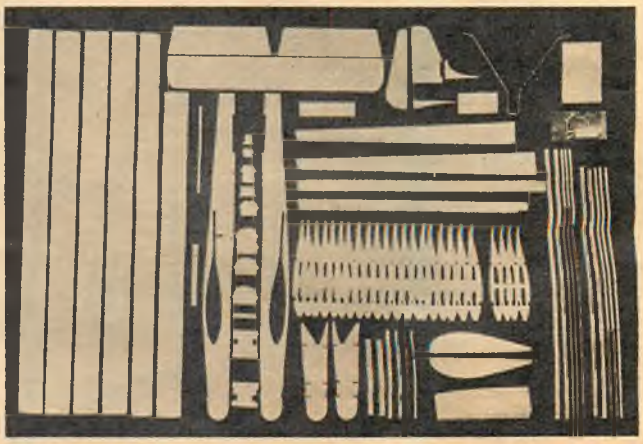
From wheels to bellcranks to prefabricated kits: the success story of Henry Engineering Company and its Veco line

WHEN Gilbert A. Henry, president of Henry Engineering Co., Burbank, California, a concern manufacturing wheels, accessories, and kits, first went to work as a design engineer on the DC-2, he had not the faintest idea that he eventually would head up one of our most interesting model airplane concerns.

Starting as a detail and layout man more than sixteen years ago Gil worked up to project engineer, putting in his licks at Douglas, Northrop, and Lockheed. After VJ day, Henry discovered models for relaxation. The result was anything but relaxing, apparently, for ever since, Veco has been as busy as a beehive, first with wheels, then bellcranks, and now a fuel-proofer and a line of popular U-control kits—the latest of which is the *Chief*, a 595½-square-inch area, 51½-inch span job for the McCoy 29, at $5.95.

The Chief, of course, is another step in Veco's plan to cover the entire precision field. Readers are acquainted with the Brave U-control trainer and the Warrior, the latter a good-looking precision job noted for its full-span flaps that work in conjunction with the flippers to avoid mushing. The Chief's principal addition in the way of unique features is a new radical airfoil that "squeezes in" toward the trailing edge, with both surfaces having a kind of undercambered appearance back of the maximum chord point. Less apparent to the eye but important to the flyer of any precision model is the designer's and the manufacturer's approach to ship and kit. Henry's design team of Howard Johnson and Bob Palmer, to say nothing of engineer Henry, has a unique philosophy toward prefabrication.

Prefabrication is a word covering a lot of territory. Some manufacturers have gone to unbelievable lengths in designing airplanes that literally fall together. Some fit together like the pieces of a puzzle—though there is no puzzle to building them—in that the ship can be loosely assembled without pins or glue or covering. It has got so a manufacturer's eye gleams when he gets a chance to show someone how his airplane goes together. Par is about 30 seconds. But like the old story of price and quality, and how the one depends entirely on the other, the degree of prefabrication is determined by public demand. Overwhelming prefabrication, some think, is ideal for beginners, for sport flying by beginner and expert, and for the mass market. But at least one major manufacturer believes that the modeler wants to build everything, and between these two extremes we find Veco's Chief. All (*Continued on page* 78)



● Displayed here are the various parts that go into the Chief stunt model. Design features full span flaps and "squeezed in" airfoil.

● O&R 60 powered Taylorcraft was radio-control entry by Joe Picarole, Morristown, N. J. Fran McElwee won event with his Radart model.

● Portion of Grumman airport showing 12 U-control circles, cleared free-flight area (bottom) and small portion of thousands of autos.

World's Largest Model Meet

New York Mirror's Model Flying and Air Fair draws 250,000 spectators, 1,000 contestants to Grumman Airport, L. I.

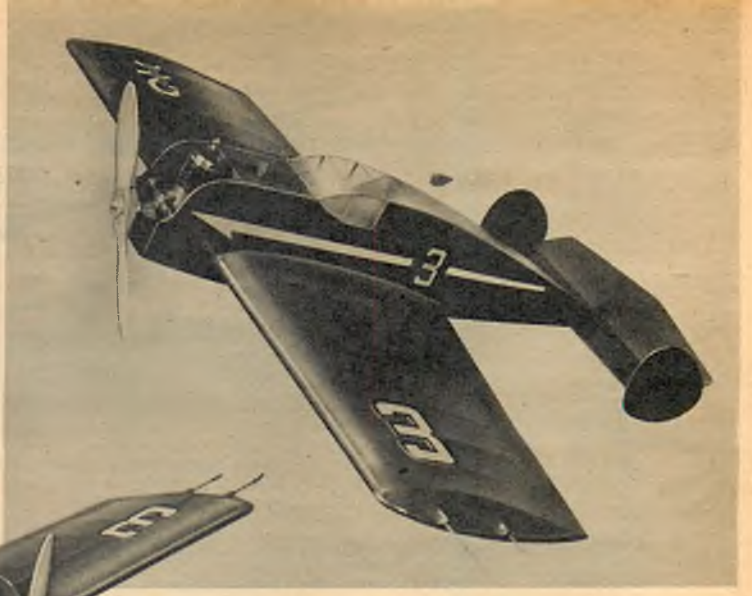
● Plymouth International stunt champ Lew Andrews of Boston, Mass., flew his new design. Wing has 660 sq. in. area, weighs 2 lb., 7 oz.

● McCoy 29 powered asymmetrical speed job entered by J. Warren Kohler. Speed events were timed by electronic-operated pylons.

● Harold Reinhardt, 16, Elizabeth, N. J., trimmed all the boys in stunt, received raft of prizes including Grumman aluminum canoe.

● Aubrey Pearson, Schenectady, N. Y., (center) receives Air Trails trophy from Seldin Converse, Grumman chief pilot, for 1st in D f.f.

Cub Controller



This tiny stunt plane will thrill the expert, yet it's very easy to build

By WALTER A. MUSCIANO

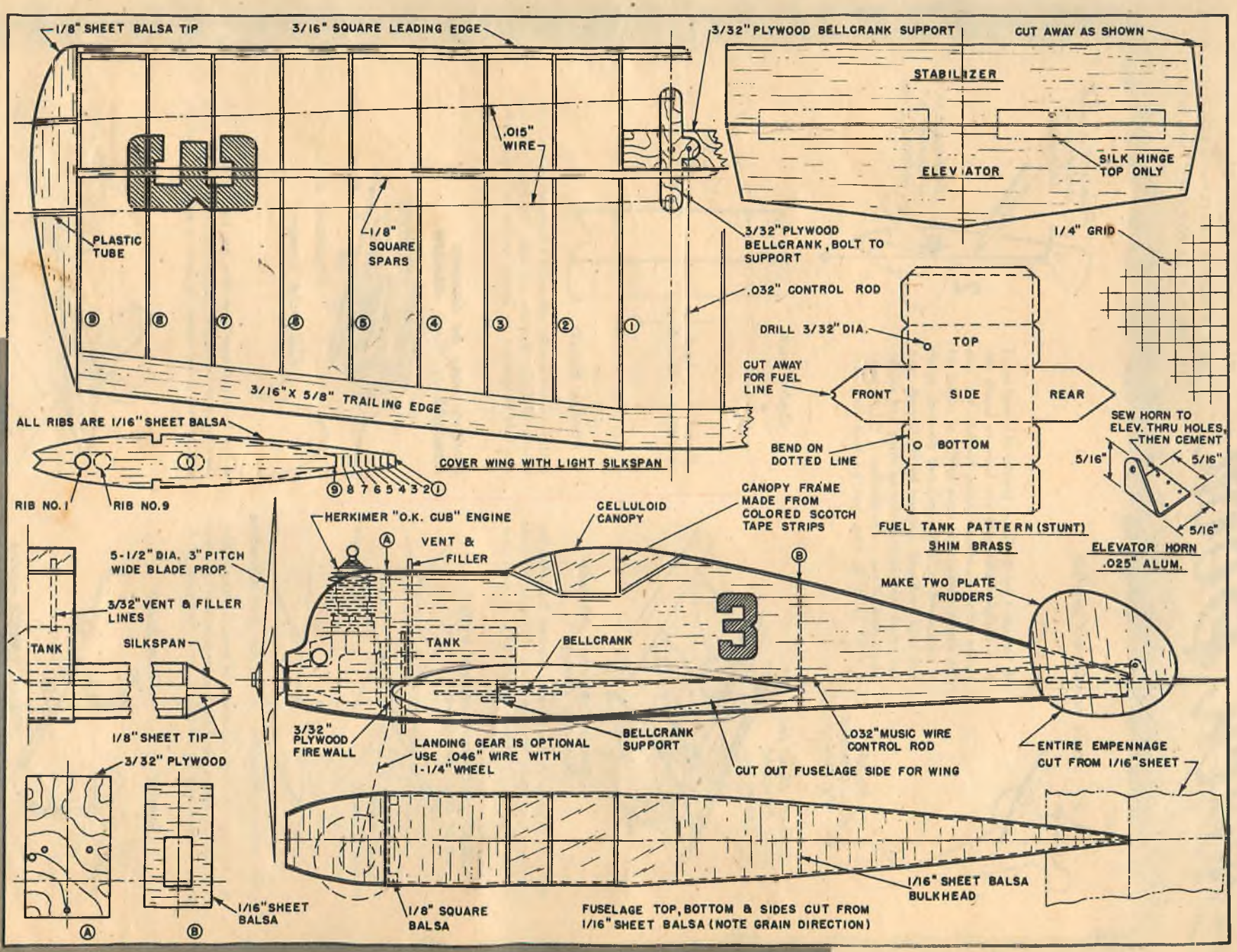
"EASY as ABC" aptly describes the construction and operation of this tiny stunt plane. Designed around the new easy starting OK Cub glow plug engine, this model is perfect for the tyro's first attempt at control-line stunt. Yet it will please the experienced modeler by its performance. With only 90 square inches of wing area the model can be flown in most any open space. It should not take more than two evenings to construct this model.

Select medium hard balsa for the fuselage sides and cut these to shape including the wing and stabilizer slots. Cut out bulkhead B. Cement the rear of fuselage together and insert bulkhead B. Hold together with straight pins while cement dries. Plywood firewall A is cut to shape and holes drilled for engine mounting and fuel line. This should be cemented well to the fuselage. Use ⅛"-square balsa strips to reinforce this joint. The entire bottom can now be covered from the firewall rearward. The grain should run spanwise. Cement can be applied through the open fuselage top to insure an adequate bond.

Cut the tail surfaces from hard 1/16" balsa sheet and sand smooth. When cutting the stabilizer note that one end is cut at an angle so the plate rudder will be offset when it is cemented in place. This maintains tension on the flying lines. The control horn can be cut from dural or metal from a tin can and is sewed and cemented in place on the elevator. Hinge the elevator and stabilizer with pieces of fine cloth such as silk. These hinges are cemented to the upper surface only, but make certain that the elevator moves freely in both up and down positions. Slide the stabilizer into the fuselage slot and cement well.

The wing is made in one section with no dihedral. This, plus the fact that the fuselage slot automatically sets the correct incidence angle (which is zero), adds to the already simple construction. Although the wing is tapered the ribs are easy to cut and assemble. Medium 1/16" balsa is used for the ribs. These are sanded on both sides to about 1/20" thickness. All ribs are identical from the spars forward and the after portions do not vary a great deal from one another. The root and tip ribs are shown and lengths indicated for those between. Very hard balsa should be used for the spars and leading edge. The trailing edge is of medium soft balsa. Mark off the rib locations on the spars and leading and trailing edges. Pin down the lower spar and cement the ribs in place using pins to hold them upright. Cement the upper spar followed by the leading and trailing edges.

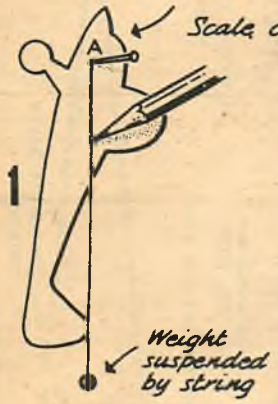
Cut the plywood bellcrank and bellcrank support. The support is securely cemented to the root ribs after the 3/32" hole is drilled. The holes in the ribs are easily made with a leather hole punch or ticket punch. If neither is available holes can be burned through with a hot three-inch nail. Notice that the leadout wires are staggered rearward. This helps to keep the lines taut when flying at high angles. Install the leadout wires and bellcrank at this time. Add the ⅛" sheet wing tips and when dry, sand the entire structure with fine sandpaper (*Continued on page* 62)



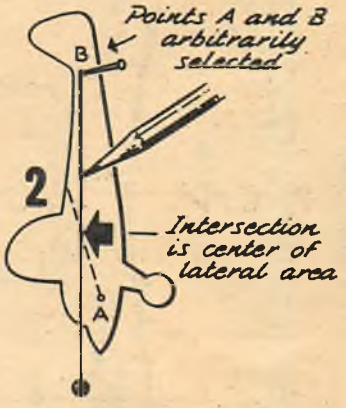
● Full size working drawings for making your own Cub Controller are a part of Air Trails Full Size Plan described in this issue. Send for your copy now.

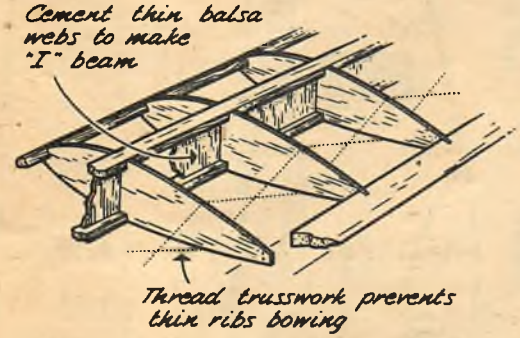
Sketch Book

HAVE YOU DEVELOPED SOMETHING NEW IN CONSTRUCTION, CONTROL, OR FLYING THAT MIGHT INTEREST OTHER MODELERS? SEND A ROUGH SKETCH—WE'LL REDRAW IT AND PAY $2 FOR EACH ONE ACCEPTED

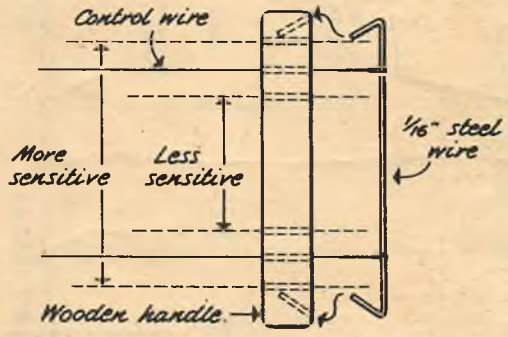


● You can't use the C.L.A. (center of lateral area) as a design factor until you learn to locate this elusive point. Lawrence Miller, Norfolk, Va., uses this simple method: cut scale profile of model out of cardboard, including projected dihedral; punch hole near each end. Suspend by pin through each hole, mark the perpendicular by string and weight. Intersection of two perpendiculars is C.L.A. point. A third point, in wing, can be used for check.

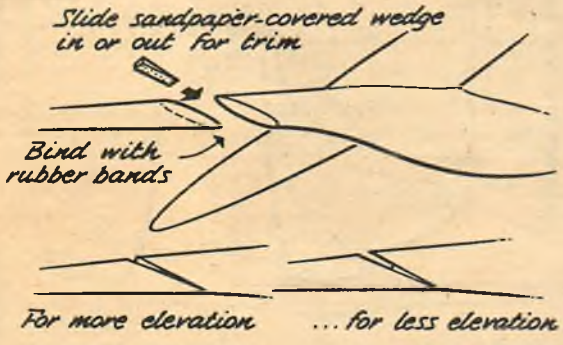




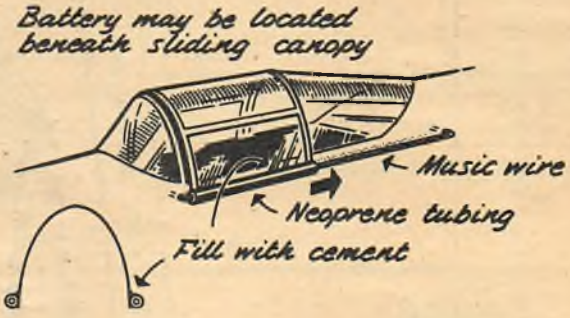
● Boeing engineer Archie Chapel, Wichita, Kan., has tips for strong gas model wing structure similar to full-scale aircraft practice. "I" beam weighs 60% of solid spar.



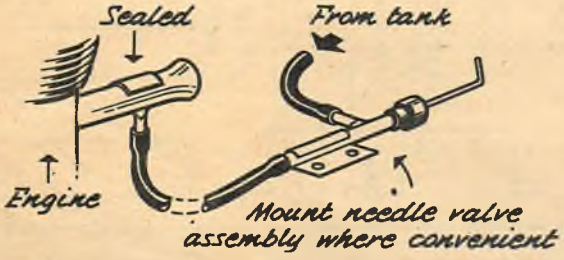
● Neat control handle with quick adjustment of sensitivity is idea of Ernest Iversen, Chicago, Ill. Steel retaining wire held in position by spring tension of angled ends.



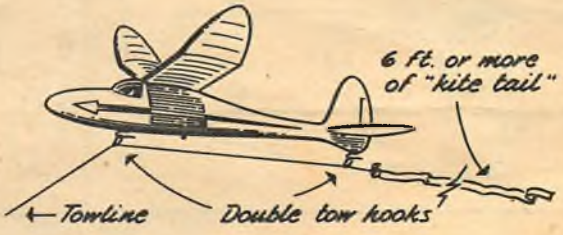
● Precise longitudinal adjustment of hand-launched glider by means of wedge positioned in angularly-cut fuselage boom is novel trick by Charles Francis, Hamburg, N. Y.



● Bob Leisses, Beaver Dam, Wis., has been using this sliding canopy on his realistic gassie. Hatch slides back along wire guides, giving access to battery inside the cockpit.



● For special installations, Larry Lundy, Lockport, N. Y., proposes a remotely-located needle valve. He suggests use of Bantam parts. How about it, experts—think it'll work?



● Few modelers can use 200-ft towline to full advantage because of erratic flight in tow. Gregg Conlon, San Francisco, Calif., adds 2nd tow hook, kite tail for stability.

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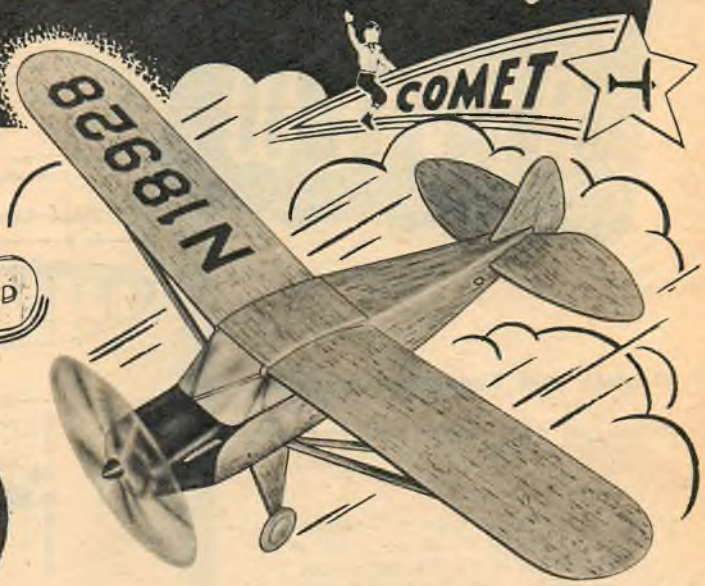

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DRAWINGS by FRANK ZAIC

RECORD REVIEW

Virginia and Tennessee modelers produced this month's aircraft.

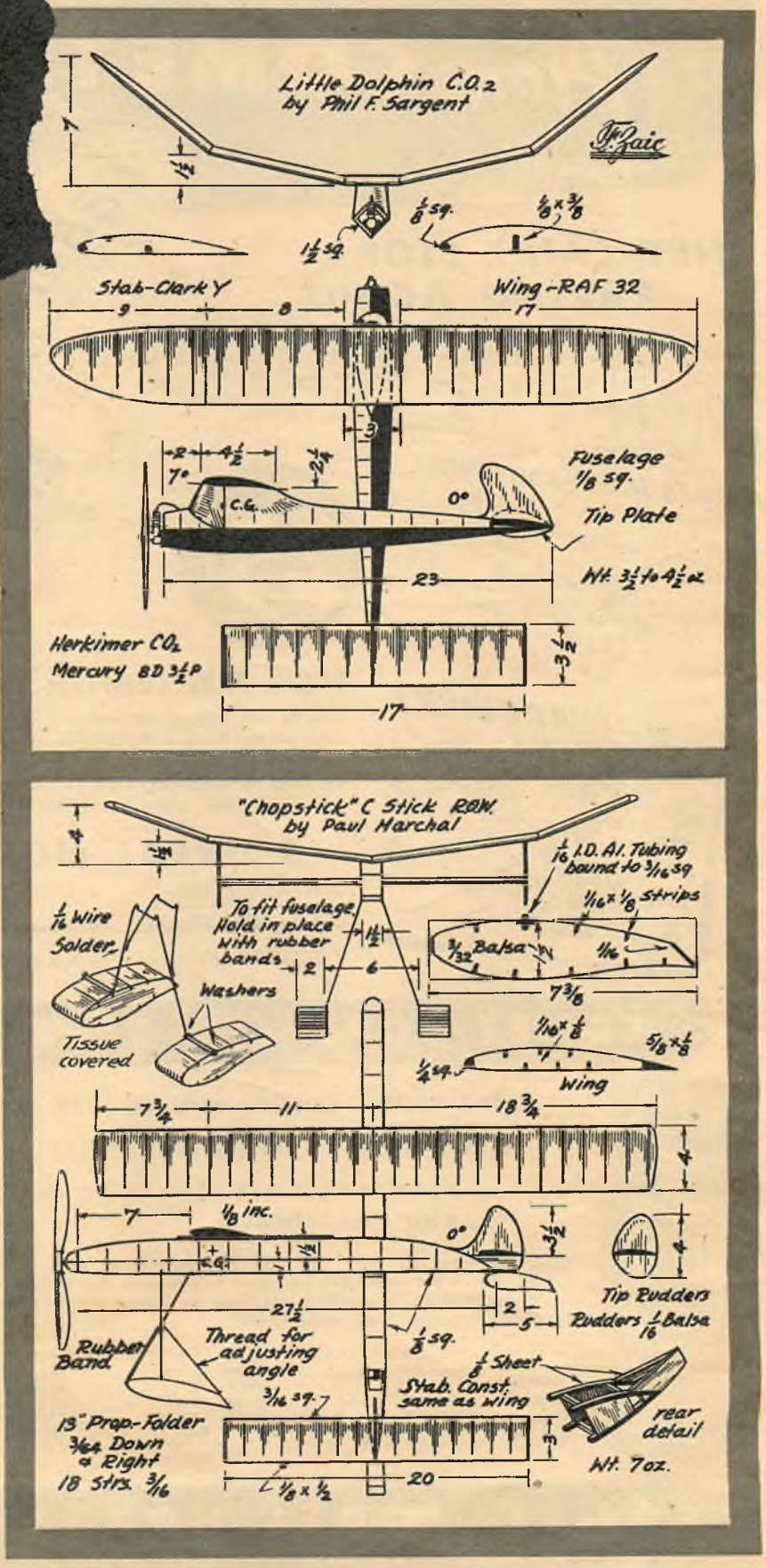
IT was in his home town of Chattanooga, Tenn., that Phil F. Sargent set a national record with his Herkimer OK CO_2 powered model. Wind was 1-2 mph and thermal conditions very good. General data is on the drawing; ribs and formers are of 1/16" sheet; two coats of clear dope were used on the plane. Prop thrust angles are zero all around.

Paul M. Marchal, Jr., of the Brain Busters Club of Langley Field, designed and flew this record setting ROW stick model from a salt marsh near the NACA field. The day was cool and cloudy with a 15-18 mph wind. Rubber motor was new and pre-wound only 3 times prior to the record attempt.

The three-flight total was 3:45.2, averaging 1:15. The time was modest indeed, reports Mr. M., and not indicative of the ship's true performance. As a straight h.l. stick, Chopstick has turned in 6:30-plus at a Richmond, Va., meet.

Here are additional details: wing and stab are covered with red Jap tissue and have 3 coats of clear dope; wing tips are soft balsa blocks shaped; floats are held on with rubber and moved fore and aft for adjustment, may have angle changed; wing area is 150 sq. in., stab area is 60 sq. in.; prop thrust is 1 paper match down, 1 right; work for right turn under power, left turn in glide; pack in 600-700 turns.

Stab section is Clark Y (approx.) with 6 1/16"-sq. spars like wing. Stab trailing edge is ½" tapered, leading edge is 3/16" rounded. Fuselage uprights and cross-pieces are spaced 2" apart; double cover with pre-war red Jap tissue, give 5 coats of clear dope. Notch wing trailing edge ⅛" to take ribs. Aluminum tubing on float is bound to 3/16" sq. and cemented in place, then ⅛" x 1/16" strips are added to each side. Float leading edge is ⅛" sheet; dope red tissue until water-tight.



Cub Controller

(*Continued from page 56*)

and cover with light weight Silkspan. Water and dope.

Now slide the wing through the fuselage and cement liberally from inside as well as outside. When this is dry, cut away the Silkspan in way of bellcrank and install the control rod.

It is advisable to install the engine at this time. Use small bolts (steel preferred) and when in place apply several coats of cement over the nuts which should be on the aft side of the firewall.

The fuel tank pattern is shown on the plan. This type of tank is required only if stunts are contemplated and is made from very thin shim brass about the thickness of bond paper. All joints should be well soldered and tested for leaks before the tank is installed. The tank lays on the wing leading edge and fits between the upper spar and firewall. Cut away wing covering to install tank. A ⅛" square balsa strip laid across the top of the tank and cemented to the fuselage sides will hold the tank in place. The fuel supply line pierces the firewall. In the event that no stunts are contemplated other than loops, a very small can will serve as a good gas tank.

Cover the fuselage top from the firewall rearward, and when dry, cover the bottom forward of the firewall pulling the sides together as the plan view indicates. Sand the entire model smooth after the engine has been covered with a cloth. The celluloid canopy is added now. This is made in three pieces. The top is cemented in place after the two sides have been attached.

The prototype model was hand-launched and landed on its belly. If you desire a landing gear, cement it to the fuselage bottom now. Use lightweight wheels.

Apply a coat of clear dope to the entire model and one more to the wing. Sand lightly and apply one coat of thin colored dope for looks. Add decals.

The model was flown on fifteen-foot lines indoors and then on thirty-five-foot lines outdoors and in both tests the model handled well. Use .008"-dia. flying lines any length you desire up to thirty-five feet. Of course the longer lines are better for stunting. Before flying be sure that the model balances at the point where the forward flying line leaves the wing. Addition of lead weight in the nose or tail will remedy any unbalanced condition. The elimination of landing gear obviously improves performance. It will be found that the model leaps out of the launcher's hands. It is suggested that for the first few flights the model be assisted with a bit of a push until the "art" of launching is understood.

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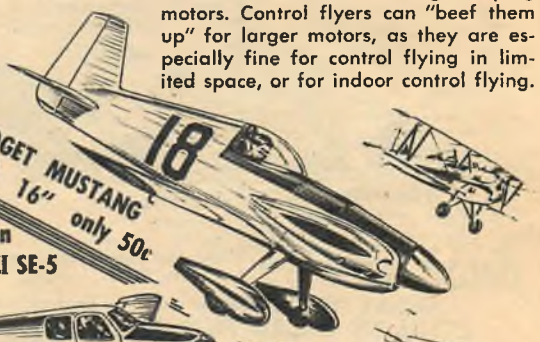

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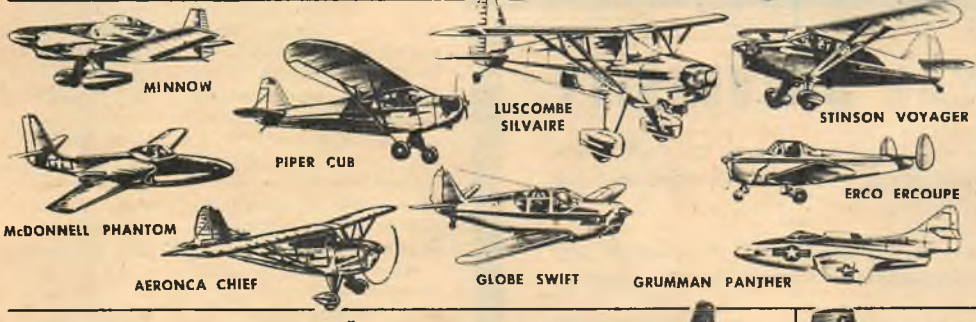

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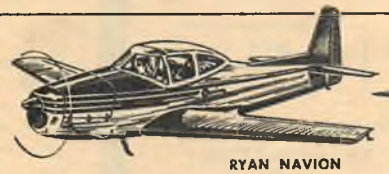

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We Fly the Long Midget

(*Continued from page 31*)

ailerons leave nothing to be desired and the flaps lower the landing speed from 65 mph, without flaps, to 53 mph when fully extended.

The airplane has a steerable tail wheel and toe brakes, and taxis very easily. Although used to low sailplane cockpits, I had an impression of sliding down the taxi strip on the seat of my pants.

With just a brief run up of the 85-hp Continental injection engine, a check of the magnetos and a look-round for any incoming traffic, I was ready to take off. As the throttle was opened, the little ship literally leaped forward and was off the ground in what appeared to be not much more than 200 feet. It is very delicate directionally during take-off run and care must be exercised when applying rudder in order to prevent over-controlling which would result in a snaking take-off.

By keeping the air speed down to 90 mph, I had over 1,000 feet of altitude at the end of the 3,000-ft. runway. Proceeding at this amazing rate of climb I came back over the middle of the airport at 1,800 ft. about 60 seconds after take-off. Bringing the nose down to zero climb and throttling down to 2,700 rpm, it was a joy to watch the air speed needle move around the dial and settle at 170 mph.

The ship seemed to be comfortably quiet. Engine noise level is very low and no whistling was heard at any speed. This last is a tribute to the Long Midget's clean aerodynamic design and construction, as any protrusions or poor aerodynamic shapes cause considerable air flow separation resulting in pronounced air-noises. Control forces are light and the response is immediate to the slightest touch. Long has definitely achieved a happy balance between ailerons, elevator and rudder.

After several minutes of just cruising around watching the ground slide by at a pleasing rate of speed, I tried some slow rolls. Without any doubt this is the easiest rolling airplane in both directions I have ever flown. Rolls can be made without touching the rudder; as a matter of fact, Dave Long recommends the ship be rolled with the feet completely off the pedals, resting on the floor board—in view of the extreme sensitivity of the rudder, just using the stick. The Long Midget is almost free of torque, power-on or power-off—the nose drops straight down in the stall, the stick being loaded as back pressure is applied.

During prolonged inverted flight or while doing very slow rolls the engine cuts out, as it is not equipped with an inverted fuel system, but it cuts right in again. I have been told that with slower ships equipped with similar engines, the *propeller stops quickly* and is quite difficult to start again, but with the Midget doing 160 mph it continues to windmill, re-starting the engine as soon as normal flight attitude is attained.

No longitudinal trim is provided in this model and I did not see the need of it for anyone of my weight—175 lbs.

Top Performance!

"OK" CUB

ONLY

$5.95

INCLUDING GLOW PLUG

Develops up to 15,000 RPM!

HOBBYISTS—here's the small displacement glow plug engine you've been waiting for! It's easy on your pocket—a cinch to install—a snap to start.

This new "O.K." CUB is a "natural" for free-flight and control-line flying. Its small frontal area offers low wind resistance. No limitations in installation, either—you can use radial or lug mounting.

SPECIFICATIONS	
Displacement	.049
Bore	.390
Stroke	.415
Weight	1½ oz.
RPM	Up to 15,000 using a 5½" low pitch prop.

Higher power on a weight-ratio basis results from the unique and patented port design which provides radial fuel injection, higher turbulence and more effective scavenging.

Like all "O.K." engines, the new CUB gives you all the qualities of a full-scale engine: easy starting, reliability, wearability, long range and economical speed. All built in by "O.K.'s" skilled engineers.

Look over the "O.K." CUB at your dealer's. Examine its sturdy construction . . . heft it . . . you'll agree it's a honey!

OK

The *Only* Complete MINIATURE ENGINE LINE

An Engine for Every Class
A Model for Every Purse

NEW!

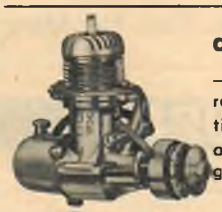
The Improved 1950 Models are Here! Now at your dealer's—the new advanced Hot Head, Super 29 and Super 60. Redesigned with ebonized cylinders and gold anodized cylinder heads. Smoother performance! Higher output!

Class A "O.K." BANTAM

—an improved 1950 model of the record smashing engine, designed by Ben Shereshaw, noted model engine designer. Wt. 3¼ oz. RPM 2,500 to 11,600. Complete with spark plug and tank for only **$11.95**

Class A "O.K." BANTAM

—**GLOW PLUG MODEL.** Features all the championship performance and construction details that won world-wide fame for its brother spark plug model. Complete with plug, less tank..... **$9.95**



Class B "O.K." SUPER 29

—with high-compression head, rotary valve and ram induction. Complete with spark plug and tank, an outstanding bargain at only..... **$11.95**

Class B "O.K." HOT HEAD

—extra rugged for the extra stresses of pre-ignition firing. Will exceed spark ignition speed when "O.K." Hot Head Fuel is used. Wt. 7 oz. Complete with plug less tank, only **$9.95**

Class D "O.K." SUPER 60

—aluminum crankcase for lightness. Large size ball-bearing and new domed cylinder head for smooth performance. With 3-position timer located at rear for easy access. Complete with spark plug and tank..... **$11.95**

Class D "O.K." SUPER 60—

—**GLOW PLUG MODEL.** With steel cylinder, hardened crankshaft and hardened and lapped piston for long wear. Complete with plug, less tank. You can't beat this value at only... **$9.95**

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—an experimental engine for large models and radio-controlled ships. Wt. with tank 23 ozs. RPM 1,000-6,000. Complete, less coil..... **$49.00**

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—fat spark, low battery drain. Models for A to D Class engines. Complete with lead..... **$1.75**

In coil pack with lead and matched condenser..... **$1.95**

Twin Coil with leads and matched condenser..... **$5.00**

"O.K." CO 2

—the basic trainer in the compressed gas class. No gasoline, battery, timer, coil or spark needed. Wt. bare ¾ oz. RPM 3,000-7,000. Complete, ready to run..... **$4.95**

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—a new class glow plug engine that "revs up" to 15,000—far beyond what you'd expect from such a tiny power plant. Wt. 1½ oz. Including plug, only a low, low..... **$5.95**

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139 Harter St., Herkimer, N. Y.

CANADA: Herkimer "O.K." Engine Co., 511 Hermant Bldg., Toronto
EXPORT: 120 Wall St., New York 5, N.Y. (All cables: Concordia, N.Y.)

The ship automatically trims out nicely and the stick forces are light. However, the production jobs will have a bungee arrangement for trim to take care of the auxiliary fuel tank and the larger baggage capacity.

On landing, Dave told me to glide on final approach at 80 mph with idling engine, using half flaps. The flaps are actuated by a lever located on the left lower side of the cockpit. They are very effective and cause very little change in trim. With full flaps it should be easy to spot land the airplane by just pointing the nose at the point on the runway at which you decide to make the touch-down. The Midget controls perfectly at the lower speeds and lands normally provided you remember Dave's warning that it sits close to the ground. The most common mistake made on landing this ship is flaring out too high and ending up with a pancake landing. Even then, the spring-steel landing gear takes the landing shock without protest and the only damage is to the pilot's pride.

Several landings were made both on the runway and on the grass sod in a direct cross-wind of 10 to 15 mph. The ship handled very well and showed no vices whatsoever. The landing gear gave a smooth roll but as the pants have only a few inches of ground clearance a smooth field is necessary. As I taxied to the hangar and the waiting group, I could think of nothing but high praise for the Long Midget and its designer-builder.

Of course, no aircraft is perfect and a few items such as lack of room around the rudder pedals, over-sensitivity of rudder (which is objectionable only during the take-off run) and a slight rumbling around the fuselage nose section when the engine is running at low rpm on the ground, are rather small if one compares them with the overall result achieved by Long in designing and producing an excellent sport plane. These items, anyhow, are being remedied on the production jobs.

Dave Long already has about a dozen orders for the plane. These craft will not be used for racing purposes, but for pleasure, fast transportation and advertising of company products. The low price of $5,000 should make it attractive to exhibition pilots appearing at various air shows who should not have much trouble in amortizing the cost of the airplane after comparatively few participations. Just the appearance of the Long Midget should be the best selling point for any air carnival. A good indication of this is that Dave Long himself is booked solid for the remainder of the year.

Simple construction, ease of maintenance, small engine power and high speed makes the Long Midget an extremely economical ship to operate. Last winter Long made a round trip between Lock Haven, Pa., and Miami, Fla., at an average speed of 170 mph consuming 6½ gallons of fuel per hour.

For those interested in racing, a different prop is available which steps up the engine speed to 3,300 rpm and raises its output to 110 hp. This should make the little ship step right along at some 200 mph or better. Keep it simple is Long's motto. Therefore production Midgets will not feature electric starters as the addition of starter motor, ring-gear, battery and generator will add weight and cut performance.

HERE IT IS! A REALLY TERRIFIC Smash-Hit Kit THAT'S THE BIGGEST VALUE YOU EVER SAW

TESTORS

PIPER CUB Super Cruiser

ONLY 25¢

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ALL PARTS PRE-CUT AND READY FOR ASSEMBLING

Never before have you seen such amazing value packed into a kit at 25c as you will find in this newest Testor sensation! It's the biggest headline story in the entire model industry . . . it will set a fast new pace in flight-club circles for months to come! First-quality die-cut balsa . . . quick, easy, fit-into-place assembly . . . sleek, trim lines that give you a real flying beauty. Don't wait. Be among the first to hit the sky-ways with your Testor's Piper Cub Super Cruiser! *At your dealer's . . .*

★ Rubber powered ★ Overall length: 13" ★ Wing span: 18" ★ Wing width: 3" ★ All die-cut balsa construction ★ Kit complete with rubber band, propeller, formed wire landing gear and prop hook, hardwood wheels and thrust button.

TESTOR CHEMICAL COMPANY *(Woodworking Division)* **ROCKFORD, ILLINOIS**

There's No Place For the Untrained

(*Continued from page 35*)

activity, sometimes schools have found a way to provide such training in a reasonable and practical way. There are many high schools in the larger cities that offer machine shop courses or even elementary airplane mechanic courses. These are not for the purpose of preparing for a particular job, but rather for familiarization with tools, materials and basic operations to be followed up by more intensive training later.

Even if a school does not have such a course, surely a person can profit greatly by becoming proficient in mathematics, mechanical drawing and many other subjects. The mechanic needs to be able to plan his work, making his layout with pencil and paper. He needs to learn accuracy and precision in both drawing and mathematics in order to do the many kinds of jobs that may be assigned to him. Mathematics as a mastered skill will often make money for you just as will skill with other mechanic's tools. The principles of science (especially physics), English, social studies and an understanding of people and society are also of great importance.

Don't forget that upon completion of school and an advanced course in aviation mechanics, one is supposed to be ready to meet competition on a real job. There are many people, possibly just as clever, applying for these best jobs in the field of aviation. In order to be successful it is necessary to be just as capable and probably a little better than the other fellow. One should take every opportunity to learn and develop skills while still in high school.

While attending high school some boys have successfully held a Saturday job or a summer-time job in order to find out what work at an airport is like. Sometimes there is work as a stock clerk, other times as cargo handlers or in some clerical position. Many times if the boy has ability and tries to make a good record for honesty, industry and smartness, it may even work into a full-time job. If, however, there is no nearby airport, just being able to make good at any type of a job is well worth while, be it as a machinist, woodworker or stock clerk. This should be included in one's plan and followed.

On graduating from high school if one wants to be an aircraft or engine mechanic, he should learn the location of schools that have been certified by Civil Aeronautics Administration to give "A" and "E" training.

Good thorough training is very important in aircraft and engine me-

You Asked for Them, Fellows . . So Here They Are!

NEW! THREE MORE MONOGRAM SPEEDEE BILT flying models

"I have built all the Speedee-Bilt models and I like them fine because they are so easy to build. Couldn't we have more of them? Maybe a two-wing job too." — E. A. B., Newark, N. J.

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"I have built lots of different models, but I like Speedee-Bilt the best. All the fellows I know like them too. I hope you will get some new models out soon." — T. A. R., Chicago, Ill.

"The only way you can make your Speedee-Bilt models better is to give us some more. Our whole troop thinks they are the best of all and we want more models to build." — P. K., St. Louis, Mo.

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Model has molded plastic engine and big extra value with two MONOFOIL WINGS, and shaped cowling. Tens of thousands of war-time flyers got their early training in a Kaydet. Now in wide use for sport flying.

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A faithful model of one of the nation's most popular and fool-proof airplanes. A familiar sight at all air fields. Cabin parts all finished.

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The active entry in all air races. Soon to be on the market for private flying. Model has plastic canopy, spinner and engine cylinder fairings.

The original SPEEDEE-BILT models. Your dealer has them along with the new models. In the familiar red and blue box . . . 75 cents.

Your Thousands of Letters Tell Why You Like SPEEDEE-BILT Kits Best!

Here are the new SPEEDEE-BILT kits which so many of you said you wanted. And every one has all the revolutionary SPEEDEE-BILT features which you like so much. Get them at your favorite store now and enjoy again the thrill you got out of the original group of these flying models. These new numbers are intriguing — they're different — but like all SPEEDEE-BILT models, they are packed with fun and free from tedious, time-consuming labor. Even a beginner can build and fly a SPEEDEE-BILT model in one evening.

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Monogram design and quality leads the field. Monogram precision has never been duplicated in other kits. Only Monogram Speedee-Bilt kits have all these features: (1) Plastic props, cowls, engines and spinners. (2) Monofoil wings (patent pending) with leading and trailing edges, spars and top planking precision-built-in. (3) Prefabricated, fuselages are precision cut, and go together in a jiffy. (4) Sharp, clean, precision cut completely finished parts. (5) Fully formed metal parts. (6) Finished plastic cabin closure parts. (7) Genuine Decal markers. (8) Plans and miscellaneous other parts fully detailed and finest quality.

FLY WITH SMALL ENGINES

All models are furnished with rubber for power or they can be engine powered with CO-2 Campus "Bee" or "A-100" or similar small engines.

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Let's hear from you when you have built these new SPEEDEE-BILT models. Tell us how you like them. Tell us too, what you want for the future. We'll give it to you. You can always depend on Monogram design and quality.

Only 75c At your favorite store. If none near you order from address below. Add 25c for packing and postage from nearby dealer's stock.

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chanic courses because, more than most types of training, safety to the public and passengers is involved. The airlines are very proud of their safety record and it can be bettered by proper training of mechanics, better supervision and inspection, better pilot's training and better navigation aids.

D. W. Rentzel, Administrator of Civil Aeronautics, said in a recent talk on technical schools, "We examined the accident files for a recent 12-month period, and out of some 1,200 accidents, we found only three which could be attributed to errors by mechanics. In two of the three cases, the mechanic at fault was not a graduate of an approved school, and the third accident was caused by a bad *aircraft* repair performed by a man who was certified only as an *engine* mechanic.

"This record speaks well for the proficiency of the aircraft and engine mechanics being graduated from the 118 schools holding Civil Aeronautics Administration certificates of approval.

"A recent survey made by our Office of Aviation Safety shows that the approved schools are giving approximately 20% more hours of training per course than the minimum required to secure their Civil Aeronautics Administration certificate of approval.

"And it is interesting to note that at certain locations aircraft factories are seeking out A & E's, because their training enables them to adapt readily to skilled production work."

It is easy to see that the industry needs well trained persons. Careless or poorly trained personnel would be certain to increase the accident hazard. On land, with an automobile or truck if something goes wrong, you can pull over to the side of the road and repairs can be made. On the ocean, likewise, if anything goes wrong—well, there you are. You stop until you can make the needed repairs. But in the air if anything fails it means an emergency landing. *There is just no place in aviation for an untrained or poorly trained mechanic.* The safety and perhaps the lives of many people may be in the hands of the airplane mechanic.

A well-trained mechanic should pride himself on his thoroughness. He should get great satisfaction out of a job well done. Such a man certainly has personal responsibility; he can be trusted to do his work well even when there isn't someone there to see to it that he doesn't skip some minor detail.

The importance of adequate training cannot be over-emphasized. Such training presupposes a well equipped school staffed with qualified and experienced teachers who follow a tried and proven course of study which allows for enough time to cover all parts of the course with thoroughness.

Aerial Hot-Rods

(*Continued from page 23*)

the very last minute, test pilot Holman flew the untried ship across town to the racing field and replaced Schoenhair in the starting lineup.

Captain Arthur H. Page of the U. S. Marine Corps was favored to win that day, but Captain Page crashed to his death while leading the field in the seventeenth lap. That tragedy left the Laird Solution at the head of the pack to finish what was then a 100-mile race. So a substitute pilot in an untried airplane won the first spot on the new Thompson Trophy.

The most spectacular happening in Thompson history must be accredited to Colonel Roscoe C. Turner, dean of all racing pilots. It was back in 1935 that it occurred, the year after Colonel Turner had won the trophy for the first time. Determined to become the first man to repeat a victory, he had completely rebuilt his famous Wedell Williams racing plane to make it superior to any in the field. And on the qualities of his racer, to say nothing of his experience and personal ability in the cockpit, Roscoe was rated the unquestioned favorite to win.

From the start of the race Turner had the lead to himself in the expected manner. And he increased that lead until he had lapped everyone in the field. Then the unexpected happened! Rounding the south pylon and approaching the airport at tree-top level, his golden monoplane suddenly burst forth with a tremendous cloud of black smoke. Leaving a billowing trail, the Colonel pulled for the sky. At about 1,500 feet altitude he leveled off and stopped the engine. The Thompson Trophy Race was forgotten for the time being as the eyes of every spectator were fastened on that little plane. Anxiously the crowd waited for the bloom of white silk which indicates that a flyer has successfully escaped his doomed ship. But no parachute appeared. Instead, the undaunted pilot nosed down into a long circling glide which brought him around into a perfect dead stick landing right before the grandstand.

It was a broken oil line that had caused the trouble. And although there was plenty of smoke there was no actual fire. When Roscoe had reached sufficient altitude to bail out, he found that the area for miles around was covered with parked cars and outside-the-fence spectators. Rather than abandon his ship to fall into that crowd, the courageous racer chose the dangerous course of landing his hot ship without power.

Although all of the Thompson races have had their thrilling aspects, and some have been more closely contested than others, the most sensationally close race of them all was that of 1937. Here was a 200-mile contest that was won by a margin of .57 of a second! It was a race that was characterized by keen competition of every position, and a race whose outcome was in doubt every second of the way.

Nine planes started that year with Steve Wittman leading the way in his famous Bonzo. Roscoe Turner in his brand new Meteor was the last off the ground. But as the race progressed Turner passed his competitors one by

one. As the halfway mark was reached, he gained second place. But the speedy Wittman was almost a whole ten-mile lap ahead. Then in the eighteenth lap the fireworks broke loose. Wittman had one of those freak accidents that come only once in a lifetime. A bird crossed his path and smacked the propeller. The vibration which resulted made it necessary for that veteran flyer to throttle back and take a higher, safer altitude to finish the race. The sudden change of circumstances yielded the lead to the Colonel, who took over in nothing flat.

Lady Luck was no more partial to Roscoe Turner than she had been to Steve Wittman, however. For as Colonel Turner led the field into the third pylon turn of the last lap he thought he cut inside the corner. He immediately pulled around to circle the marker, as the rules of the race require in the case of such an infraction. In so doing he relinquished the lead to Earl Ortman while Rudy Kling also flashed by into second place. These two then came roaring into the homestretch in one-two order, but Kling was high, much higher than most pilots fly in the Thompson. Putting his sleek Folkerts racer into a long dive he slipped under Ortman's Keith Rider just as they crossed the finish line. Photo finish equipment proved Kling's victory by half a plane length.

It remained for the post-war years to produce the wildest, most disastrous race of them all. After a lapse of seven years the Thompson got under way again in '46. But what a difference those seven years made. Aircraft development had surged forward by leaps and bounds. The fastest and most powerful fighting planes the world has ever seen had been created. And expert pilots by the thousands were trained to fly them. Then when War Assets Administration offered these planes for sale at bargain prices, the stage was set for a new day in air racing. It will suffice to say that the 1946 race definitely reestablished this aerial competition in the public favor.

It is the '47 event that is referred to as the roughest, toughest air race the world has ever seen. Out of thirteen planes starting, only six finished! Four planes crashed during the course of the race, one killing its pilot. Yet this is the race which Cook Cleland won at the record speed of 396.131 mph.

The first note of disaster came at the very take-off when the engine of a P-51 failed just as the ship cleared the airport. Miraculously, Jack Hardwick walked away from the wreckage of this plane unhurt. Tony Jannazo was not so lucky, for it was he who met death when he lost control of his powerful Corsair at a pylon turn in the fifth lap. Woodrow Edmundson was seriously injured in a crash landing, while Jean Ziegler parachuted from his plane from a safe altitude. Three other pilots made forced landings safely on the vast Cleveland Airport.

Of all the men who have had their names engraved on the golden trophy, none is better known than James H. Doolittle. The man who has become one of the world's outstanding air generals was, in his younger days, the Army Air Corps' foremost speed flyer. Leaving the Army with the rank of Major in 1931, he became actively en-

gaged in civilian air racing. He immediately went to the top in that field but failed in his first attempt at the Thompson Trophy when engine trouble forced his Laird Super Solution from the race. But the indomitable Jimmy came back. In 1932 he not only established a new world's speed record in the radical Gee Bee racer, but he won the Thompson at a speed which stood unbeaten for four years. Satisfied with that accomplishment, Doolittle retired from the game while still on top.

Synonymous with air racing is the name of Roscoe C. Turner. There never was, and probably never will be, a more colorful character in all the annals of aviation. Certainly his was the most brilliant career of air racing that has ever been seen. Here was a man who won more prize money in air races than any other in history, and in turn spent twice his winnings to develop his high-speed ships. He not only won the Thompson Trophy three times, he participated in the race a record of seven times. He also flew in the famous Bendix Transcontinental Derby four times, winning it once. In 1934 Roscoe placed third in the 10,000-mile London to Melbourne Race, the best showing made by an American.

Turner's fame was merited by his accomplishments, but it was his personal color and showmanship that made this man an unforgettable character. His immaculate military uniforms of his own design, his swaggering, self-assured manner, his proud title of Colonel bestowed upon him by the Nevada National Guard, his flair for publicity, and his iron nerve in the face of danger —these endeared Roscoe Turner to the American public. Truly this great flyer will be remembered as long as air races are flown. Today Turner heads the Roscoe Turner Aeronautical Corporation, in Indianapolis, Indiana.

The only foreign entrant ever to take part in the great race was Captain Michel Detroyat, of France. And "Mike" gave a right creditable performance, for he won the trophy for his native land in 1936. The dapper Frenchman also won himself a place in the hearts of the Thompson followers by virtue of his gracious personality and fine sportsmanship. But his spectacular victory in the race itself shook the American aviation industry to its very roots. His little blue racing plane had only 350 hp, less than half the power of some of our best ships. Yet it won the race by the widest margin ever achieved. The French Republic had poured close to a million dollars into the research program which produced this Caudron Racer and had opened a new avenue in the design of high-speed aircraft.

Typical of the new generation of Thompson contestants is Cook Cleland, who holds the present speed record for the race. Cleland, whose story appeared in the August 1948 issue of Air Trails, is one of the many veterans of World War II who are now the backbone of the high-speed game. He is the only man to participate in all three of the post-war races and like his pre-war forbears, has invested much more than his winnings in the planes he flies. His racer is a Goodyear-built Corsair F2G-1, the most powerful single-engine airplane developed during the war period.

Unfortunately, the story of the Thompson Trophy Race would be incomplete without mention of its dark chapters. These involve the deaths of three gallant airmen. The first to lose his life in the course of the classic was Captain Arthur H. Page, as previously mentioned in the account of the first race. This marine was a prominent speed flyer who was at the controls of the U. S. Navy's entry in 1930. His ship, a radically revamped Curtiss Hawk, was developed by the Navy for that particular race and was the only entry ever to be backed by a military service. Post mortem examinations showed carbon monoxide poisoning in his bloodstream, apparently the result of poor cockpit ventilation.

Strangely enough, the third Thompson fatality seems to have been due to the same cause. It was in the wild 1947 race that 23-year-old Tony Jannazo crashed in a mysterious manner. Jannazo, a navy veteran and a pre-med student at John Carroll University in Cleveland, was flying one of Cook Cleland's Corsairs at the time. Rounding a pylon, the ship suddenly ran wild and plowed into the ground at top speed. Since the pilot of a similar plane reported having trouble with exhaust fumes in the cockpit of his craft during the race it has been assumed that monoxide was the death factor in this case.

The one other case of death in the Thompson was that of Doug Davis in 1934. That time, as in 1930, it was the favorite who lost his life. Davis was an oldtimer at pylon flying and was rated one of the best in the country. And he flew the plane that held the world's speed record at that time. But it was the plane that failed. The strain of an extreme tight turn overtaxed the structure of the high-powered racer and it plunged to the ground from the low altitude at which it was flying.

The airplanes which have flown in the Thompson have in themselves been unusual craft. While some of them were produced in the best aircraft factories of their time, others were the home-built products of the men who flew them. In many cases thousands of dollars went into the development of a new ship only to have it suffer defeat at the hands of a backyard mechanic's design which was financed on a shoestring. But each made a definite contribution to the forward march of high-speed aviation.

They were distinctive airplanes, these Thompson racers. There were the little Laird biplanes, Holman's Solution and Doolittle's Super Solution, which showed the superiority of their type in close turning maneuvers. And there was Lowell Bayle's Gee Bee monoplane which introduced a new theory in the streamlining of radial engines, an idea carried to the ultimate in Doolittle's big Gee Bee. Jimmy Wedell's famous low-wing designs flown by himself and Roscoe Turner proved the value of the thin airfoil, while Keith Rider introduced retractable landing gear. full cantilever wings, and all-metal construction to the high-speed game. Along with Rider, Ben Howard, Larry Brown, Clayton Folkerts, Art Chester, Caudron and a host of others, not overlooking engine builder Al Menasco, did a remarkable job of obtaining high speeds at low horsepower. Howard

also showed with his Mister Mulligan that racing developments were adaptable to commercial flying. And let's not pass by Steve Wittman, the exponent of light construction and liquid-cooled engines, whose odd looking Bonzo was tops in its day.

Even in these post-war years Thompson pilots through their use of experimental fuels and ingenious adaptations of their wartime planes have upped the top speeds of propeller-driven aircraft. But in many respects the dream of the Trophy's donor has been realized and the race has apparently fulfilled its purpose. The very requisite of unlimited design which made it a classic may now bring the Thompson as we have known it to an end. For no one can afford to develop new designs to compete with the war surplus planes which represent millions of dollars in research. And these planes are showing that they have already been souped beyond their own practical limits of operation. The reciprocating engine has apparently reached the limits of its usefulness for high speeds, with jet propulsion definitely taking over the higher brackets. Jet engines in turn are not yet available for civilian use and furthermore have already demonstrated that they are too fast for pylon flying.

Although it has been definitely established that the great race will be run again this year on an unlimited basis, the distance will be cut to 225 miles. And this may well be the final chapter of a thrilling drama. For already plans are in the making for a new contest to take its place in 1950, a race with a definite engine displacement limitation, one which will be patterned in many respects after the popular Goodyear event, but on a higher horsepower basis.

In all probability the Thompson sponsorship and the famous Trophy will be associated with the new event. But whatever the outcome may be, the glory of its past will never dim. The Thompson Trophy Race will always remain in aviation's history as a glorious milestone and the men whose names it bears need never relinquish their niches in the aeronautical hall of fame.

Marquardt

(*Continued from page* 25)

helicopter has an eight-inch pulse-jet engine on the tip of each blade. Marquardt and his staff of engineers, which includes such well known modelers as Don Justice and "Joe" Weathers, did both the basic design and development of these 15-pound "engines."

There is no need for a tail rotor on the Whirlijet since there is no main-rotor torque except for bearing friction. The main advantage of this unusual design is its light weight. On the conventional helicopter, nearly half the gross weight goes into power plant, gear boxes, clutches, tail-rotor and linkage. On the Whirlijet, the power plant comprises only five percent of the total weight, but fuel consumption is roughly four times that of the conventional craft.

For short hops of under an hour in the air, the pulse-jet 'copter figures out on paper to be a more efficient load-carrying vehicle than its present competitors, according to the designers. It will lift twice the payload for the first hour of flight of any similarly sized helicopter.

The pulse-jet engine is an explosion-type power plant having reed-like valves in the air inlet while the ramjet is a continuous-burning engine. No other power source is required for the Whirlijet since fuel and ignition are supplied to the pulse-jet engines through integral lines within the blades.

Since the Whirlijet was designed primarily as a flying test stand, little consideration was originally given to its utility as an aircraft. When pilot Bill Davis first flew the ship, he found the hovering and forward flight characteristics unexpectedly stable. Designers credit this stability to the mass of weight of the jet engines at the extreme tips of the rotor blades and point out that many conventional helicopters carry weights in the tips of their blades for added stability. To date, only low altitude flights have been made in the Whirlijet and no accurate performance data is available.

The pulse-jet engines on the Whirlijet are started by pumping fuel into the combustion chamber, igniting the mixture with a spark plug and then holding a nozzle from an outside air compressor in the nose of the engine until resonance occurs. Resonance in a pulse-jet engine is similar to resonance in a church pipe organ where sound waves (explosion waves in the engine) go down the tube and bounce back as a new wave is started. The explosions of a pulse-jet engine are timed to the length of the tube, just as the tone of the pipe organ is determined by the length of the pipe. Just as the organ pipe amplifies the noise, the pulse-jet engine amplifies the thrust.

Once resonance occurs, the stream of compressed air is removed and the rotor is freed for rotation. In a finished model, a built-in starting system would include an air compressor and a tank within the fuselage with transmission lines inside the rotor blades. A rotary seal, similar to that now used for the fuel system, would carry compressed air to the rotor-tips.

The Whirlijet weighs 1,000 pounds and has wood and steel rotors with a laminar flow NACA 8-H airfoil. Cyclic pitch control is conventional while directional control is obtained from a single rudder hinged about a 45° inclined axis. The control system and landing gear are from a Sikorsky R-6 helicopter.

Like all good model builders, Marquardt is an opportunist. During the early development of the ramjet engine he now produces, there were no adequate test laboratories. A ramjet cannot be tested in a trans-sonic wind tunnel because it contaminates the airstream with its exhaust gasses. Actual flight-testing is expensive and accurate results are hard to calibrate, so Marquardt and Bob de Vault, another former modeler, contracted with the Kaiser Steel plant at Fontana, California, to use their blast furnace blower for an air supply. It proved to be the best compressed air reservoir in the area and is still being used for research purposes. A large line was tapped into the compressor to shoot a steady stream of air into the mouth of the ramjet engine at speeds up to 1,000 mph and accurate readings were no problem to obtain.

While teaching at USC, Marquardt built up his pint-sized research plant

at Venice, California, and recently leased the 100,000-square-foot Timm hangar on the Metropolitan Airport at VanNuys in the San Fernando Valley.

In addition to their ramjet engine business, they also manufacture radio loudspeakers and industrial mufflers. Their muffler business is coming in very handy for this new company since they can eliminate most of the noise from their experimental jet engines with Marquardt-built mufflers.

"It's been a long haul from those first model building days at the 'Y' in Burlington," reminisced Marquardt as he selected a pipe from the large stand on his desk and lit it with his jet lighter. A sign on his desk says "The Chief," and refers to this 31-year-old, 6'1" ex-model builder who now weighs 240 pounds and "likes to eat just about anything."

"Actually, we look on these subsonic jet engines more or less as toys. If he could get past the guard at the gate, the guy who draws 'Buck Rogers' could get some real ideas out here."

"Wahlfisch"

(*Continued from page* 52)

When you make the top wing, extend the right wing leading edge straight through past the center line, as the plans show. This will make a very strong wing. The bottom wing is made in two pieces. Only the root is shown in the plan because the rest is the same as the top wing. A small balsa block is used to fair the wing into the fuselage. Both wings are covered with fine silk. Dope well.

The top wing is cemented in place first. Plenty of cement must be used when doing this. When this is thoroughly dry, the wing struts can be cemented in place. These should be sharpened and pushed into the wing ribs as shown on the plans. Lay the plane on its back and cement the bottom wing panels in place, inserting the struts in the ribs. Carve the spinner from soft balsa and cement to the propeller, cutting away for the propeller nut and washer.

Once the model has been clear doped three or four times, it is ready to paint. Using Aero Gloss dope the entire model was painted pale yellow three times. The mouth and eyes are black. The upper surface of the top wing is covered with splotches of green and purple. The horizontal tail surfaces and top side of the body are colored in the same manner. All struts are either dark green or purple, and all crosses are black. Of course you can paint the plane any color you wish but be sure to use a paint that is impervious to hot glow plug fuels. It is a good idea to use fuel-proof cement as well. Fine music wire is used for the rigging. This is not necessary but adds quite a bit to the appearance of the model. Machine guns can be made from a hair curler.

The model flies at about 65 mph. I used 50-foot lines for flying, the size of which should be at least .010" dia. A line guide made of wire or plywood should be cemented to the inboard wing strut. Balance the model ¼" forward of the pivot point. Do not fly if the model is tail-heavy or a crack-up will occur. Add lead weight in the tail or nose to balance the model. Be sure to offset the rudder to turn the model away from the center of the circle. This will keep the lines taut.

The Chief

(*Continued from page 54*)

parts are prefabricated but there are no fuselage shells. Henry's boys—and let's say this is one manufacturer's opinion—feel that some sacrifice is necessary in prefabrication to get peak performance. In other words, they reason, prefabrication and performance are factors in yet another of the many design compromises that must be made in every airplane, big or little.

Make no mistake, however, the Chief is a beautifully made up kit. Judging by the design and pre-cut parts, one factor in the manufacturer's thinking concerning performance is light weight. For instance, while the Chief is not a short-coupled stunter of the flip-flop school (the wing flaps being part of the alternate to extreme shortness), its materials indicate that much attention was given to selection of thicknesses and grades of wood.

The two sheet balsa fuselage sides are cut to shape from medium ⅛"-thick sheet, and are cut out for the wings and notched for cross-pieces, bottom sheet, and tail surfaces. The stabilizer and flippers are outline-cut from 3/16" medium or medium-hard sheet. Ribs come ready to drop in, notched for spars and holed for leads. The trailing edges are hard balsa, notched for ribs. In short, every part is neatly provided for, including some tricky metal parts for the control system, and the landing gear. An innovation, as in the Warrior, is the use of scaled-down plans with plenty of detailed installation info and step-by-step assembly. Henry thinks full sized plans are bulky.

As stunt models go, the Chief is a pretty airplane. Conventional airplane proportions suggest realism, an effect increased by the use of two tandem cockpits, complete with wind-screens and head rest. By tapering the full-span flaps toward the wing, the machine appears to have a tapered wing, although it does not. It benefits by the use of standard chord and identical ribs for simple construction. The fuselage is rounded on top, a touch that goes far in defeating the "boxy" look of many stunt and precision jobs.

Of interest to free-flighters as well as control men is Henry's claim that the "D-tube" method of wing construction has the highest strength-weight ratio of any known system of wing making. Henry, however, does not close in the back of the D-section with a vertical shear web. This construction has proved flexible enough to adapt itself to all flight characteristics. The D-section is achieved by running a sheet back from the leading edge. on both bottom and top of wing, to the front spars, one of which is located on the top of the wing and the other beneath at the same chord point.

"In appearance," states Henry, "we have attempted to design a ship more realistic and closer to scale than most. Experience shows that, although complete scale cannot be used successfully in precision flying, there are definite benefits to be gained by application of full-size aircraft design. The Chief does not use an extremely short moment arm, to obtain maneuverability, thus it is as steady as a rock in all attitudes.

"After the technical design work had been completed on the drawing board," Henry relates, "we began a series of extensive flight tests to bring to light any flaws in the Chief's performance. Several versions of the airplane were built to compare flight characteristics when slight modifications were made. Then, after trying various engines in tests, it was decided to try a small engine to reduce air-speed for study of the ship's characteristics. The McCoy 19 happened to be selected. Bob Palmer was able to fly the complete pattern, pulling around nearly 600 inches of area with that little .19. We had, we discovered, a ship that would fly all four classes. The ability of the Chief was demonstrated when Bob performed a series of horizontal eights while walking toward the airplane."

Bob Palmer, like Yates who stunted Palmer's scale Stearman at the '48 Nationals, is one of the country's best pilots. Nevertheless, that the airplane performed so well on widely varying power in his hands, indicates that the combination of flap airfoil, and realistic proportions, rates the Chief a major contender among hot precision models.

How Henry got into the kit business and came to manufacturing the Chief is an entertaining case history of what happens when an engineer takes a "postman's holiday." After playing with models for a month or two in '45, he began to wonder about business potentials and decided to find out what the industry needed. Usually, an engineer makes the very bad start of trying to remake the modelers who, to his thinking, seem to do things the hard way. Henry took a closer view.

Discovering that inflatable air wheels had not been made since before the war, he purchased the tooling of the

Voit Rubber Corporation whose production of pre-war type Airwheels was tied in knots due to the shortage of natural rubber, essential in their manufacture. Waiting for the government to release natural rubber, Henry decided to design sponge rubber wheels from synthetics. Veco's 1⅜"-diameter wheel with aluminum hub was first shipped to the trade in December, 1945. By 1948, Henry was a big wheel in the wheel business. From wheels he eyed the green pastures in the equipment field, and the famous Veco bellcranks resulted. If by this time Henry longed to put out quality kits, his one-man efforts in the engineering line fell far short of covering so many aspects of the business simultaneously. But his luck held.

Bob Palmer, who had built models since 1930, came to California to work for Lockheed during the war. Howard Johnson, who also came to the state in 1931 to join the full-scale industry, was another widely known builder. Palmer and Johnson had crossed paths in the airplane business and, as luck had it, Henry encountered the two experts just after they had renewed acquaintance.

The Palmer flap is not a trick gadget dedicated to widening sales appeal. It is a device used with much success by Palmer and Johnson and developed to its optimum over a long series of tests that predate the older Warrior kit. It, too, presented its problems, because flap movement naturally changes the center of pressure and its relationship to the center of gravity. This detail had to be worked out, as well as the amount of movement in conjunction with the elevators. When the final differential of deflection between flap and elevator had been found, and the performance curve plotted, the boys found that the new arrangement was superior to their older designs. Ability to do small overhead eights, vertically and horizontally, without falling in, is due to a combination of the proper amount of lateral area and the correct placement of its center with respect to the center of gravity of the machine, true of both the Warrior and Chief jobs.

With Johnson and Palmer, Henry decided he had the men to spark Veco's expansion into the kit field. Both men had been looking for a manufacturer to enable them to market ideas they had developed for model planes. All three were quick to see the possibilities of throwing in together, and after some discussion the groundwork was laid for expansion. Howard ("Hi") Johnson would be vice-president in charge of production and Bob would be chief designer and test pilot.

No sooner had the boys laid these bright plans than Rick's Manufacturing Company was offered for sale. The newly formed Henry Engineering Company, finding the Rick equipment ideal for its purposes, purchased the assets and immediately started preparation for the production of new kits.

By May of this year the company had two successful designs to its credit. One was the Brave and the other the Warrior. New and larger quarters had become necessary. Now manufacturing kits, wheels, accessories, and the fuel-proofer, the Henry Engineering Company is beginning a line of high-performance propellers and more distant plans range over a wide variety of kits and accessories.

Hydro Hints

(*Continued from page* 51)

Designing floats has become a fairly simple procedure as a result of combining past experience with a knowledge of physics. The system outlined here assures floats of the correct proportions on the first try. No longer is it necessary to go through the "cut and try" process.

With the weight of a model known, the required float displacement is found as follows: 1.8 cubic inches of water weigh one ounce, which means that at least 1.8 cubic inches of float volume is needed to support each ounce of the model's weight. This, however, is the bare minimum and it has been learned that a *safety factor of 3.00 takes care of all conditions.* Therefore, if a model weighs 50 ounces it should have a float displacement of 150 cubic inches.

With two floats, each would contain 75 cubic inches—for three floats, ¾ of the required volume is allotted forward and the remaining ¼ used to support the tail. The main floats would carry 66 cubic inches and the tail unit 38 cubic inches. Analysis of this chart will provide approximate dimensions:

TYPICAL FLOAT DESIGNS
USING A RECTANGULAR CROSS SECTION

No. Floats	3	3	3	3	3
Weight Oz.	50	30	20	5	10
Front Floats					
Length	12	8	6	4	5
Width	3	3	3	1½	2
Depth	1⅝	1¼	1⅛	1	1¼
Rear Floats					
Length	8	6	6	3	4
Width	3	3	2	1¼	2
Depth	1⅝	1⅛	1¼	1	1

Slight variations in any direction will not greatly affect results, especially since the actual time a model is on the water during take-off is too short for critical designing to be of much importance.

Proper float angle, however, is a fine point not to be neglected. In general, the leading edge of the main floats should be out of the water with the model at rest. Too high an angle, on the other hand, causes terrific drag during take-off and while in flight. Approximately ten degrees has been found to be a good average, with minor variations for final trim. By using a reflex trailing edge float, the effect of a higher angle is achieved, without the penalty of setting the whole unit at that angle and increasing drag. The need for steps, chines, or other features carried over from twin float design has not been apparent as stepless floats have shown no performance deficiencies and are simpler to build. Various profile shapes, including thickened airfoil sections either upright or inverted, with flat bottoms and sides, have performed well.

Float mounting should also be carefully considered in order that the proper angle of attack be maintained and floats kept aligned. Rigidity with flexibility is the compromise to reach and the different examples illustrated are well designed.

A few words describing the action of a hydro take-off may help to explain the basic requirements of successful installations: Power thrust at the launch acting above the initial resistance of the floats causes a nosing-over tendency. By placing the floats well-forward of the C. G. this effect is reduced and the thrust acts to propel the model forward. Inclining the floats at a positive angle reduces their resistance and acts against the model's weight as motion begins because the resultant force tends to push the floats above the surface of the water. As the tail lifts with forward motion the wing's lift also comes into effect and lightens the load on the floats, so that as speed increases they skim the water in the manner of an aquaplane. The model becomes airborne when adequate air speed develops enough lift to support the model's weight. A proper balance of forces acts so rapidly that the sequence is accomplished as one smooth motion with the take-off almost instantaneous after launching. Long, flat, and supposedly graceful take-offs are actually inefficient and any delay during the take-off period is an invitation to a dunking.

Hydro take-offs should not be attempted until the model is fully flight-tested with the floats installed. In other words, the ship should be tested with normal power and glide adjustments made until final trim is obtained. Fear of float damage may be discounted; in fact, in most cases it will be found that floats do a better job of shock absorbing than regular gears. Idling or taxi runs are not advised since they prove little and invite trouble. Rather, the initial ROW flight should be attempted with plenty of power applied to carry through the take-off period. Dusting the floats and stabilizer with Zinc Stearate "baby" powder just prior to launching acts to repel the water's tendency to cling and

we recommend it for general practice.

Perhaps the most important rule to observe at all times when launching is that any assistance given the model will be cause for regret. In plainer language, *Do not push!* Pushing is probably the greatest single cause of ill-fated take-offs, and the necessity for unassisted ROW flights cannot be too strongly emphasized.

The field selected for hydro activities should have the same features as any free-flight site, plus a body of water at least several inches deep. The ideal size for this body is one just large enough for take-off with as small an area as possible so that it does not present an obstacle to retrieving dunked models. Natural lakes and rainwater ponds are excellent hydro sites. The length available for take-off need be only a few feet if no interfering scenery projects above the ground within the immediate launching vicinity.

A very practical artificial site for contests may be easily constructed as a club project, such as those used at the last two BrainBuster meets. The most difficult item to obtain, a large waterproof tarpaulin, may be borrowed or rented from trucking companies, contractors, or industrial firms. A twenty-foot square is about right even for fairly large events. After selecting a level clearing, scrap 2" x 6" lumber is set on edge to form a frame a few feet smaller than the overall dimensions of the tarpaulin and is held in position by pegs driven into the ground every few feet around the circumference. The "tarp" is draped over the frame so that the edges overhang and these are secured by rocks or weights (don't use nails and avoid leaks). Filling with fresh water within an inch or so of the top completes the job. However, this may pose a problem if there is no nearby source of water supply. The services of the local fire department may be requested to solve this, especially if the contest sponsorship is tied in with civic activities or organizations.

One of the many advantages of using a tank is that it may be placed in the most desirable location, a worthy point of consideration since natural areas are generally swampy. That the tank may be stored for future occasions assures a constantly available hydro site without the dependence upon the weather that flying from the rain water ponds necessitates. Finally, in areas where only salt water facilities prevail, the tank provides a less deteriorating fresh

water launching area, so it's a good idea.

Any type model may be adapted for hydro; successful rubber, CO_2 and gas-powered types in all classes have been flown by the BrainBusters. They all react similarly, and variations according to type are so minor in nature that the broad coverage of these instructions is applicable to all. However, the design of a model affects its dunking characteristics, and pylon jobs have an inherent advantage over cabin types in this respect. A ship with the wing mounted close to the prop's plane of rotation rarely soaks the operating equipment. But even the best hydro designs can be expected to experience dunkings sooner or later.

Water that has collected on surfaces can be blown or wiped off, but penetration beneath the covering soaks the balsa which becomes heavier and weaker. Even after draining, by puncturing the covering and sucking out all visible drops, the structure remains so saturated that the model's performance is greatly reduced. The application of at least two more coats of dope than normal is an obvious insurance policy for the hydro flyer to observe. The extra weight eventually pays off because less generously treated ships soak up many ounces of water in short order. At contests, this reversal of relative weights is all in favor of the well doped ship. Another penalty is caused by the slow process of final drying which is usually accompanied by the development of warps.

Engines and accessories as well as the structure should be protected against moisture effects, for metal surfaces are particularly susceptible to corrosion. Dunking in fresh water is relatively safe, but salt water does an especially efficient job of deterioration, if no immediate remedial action is taken to minimize corrosive damage.

However, this need never be encountered if a few elementary corrective measures are performed without delay after a dip in the drink. Cleaning externally and flushing alcohol or fuel mixture through intake and exhaust ports and then running the engine quickly usually relieves the headaches of fresh water dunking. But failure to start within a few minutes demands further action. The most effective procedure, and practically a "must" after a salt water plunge, calls for removal of the engine followed by a thorough cleaning in alcohol. Placing the engine in the fluid with the plug out and spinning the crankshaft removes all traces of water and makes

complete disassembly unnecessary. When removal is impractical, the engine should at least be dismantled as completely as possible and sprayed generously with fuel mixture, if no alcohol is available.

Accessories are best moisture-proofed by sealing within the fuselage. If ignition is used, it should be a compact and carefully wired installation sealed by doping. Flight timers, if mounted close to the C. G., are not likely to become jammed since the C. G. seldom gets under water regardless of the model's position when it dunks.

Dunking often becomes exasperating, but seldom is it a serious problem. At the Fifth Annual Hydro Championships one entrant was the most consistent dunker of the day as time after time his attempted take-offs ended in spectacular splashes. But eventually patience and perseverence paid off, for at the close of the contest it was the same entrant, Paul Salake, who walked off with Meet Champion honors and a new Class A Open Hydro record.

[*Contributions to this article were by: Joe Blanco, Jim Chacamaty, Joe Dodson, Charles Folk, Reid Hull, Paul Marchal, Bill Poythress, Paul Salake, Jesse Shepherd, and Phil Weatherwax. Compiled and edited by John Worth.*]

We Build the Long Midget

(*Continued from page 44*)

have retained the thickness but used a symmetrical form for stunting.

The 32"-span model weighs in at 22 ounces with an O&R 29 in the nose. Total wing area is 211 sq. in., giving the light wing loading necessary for good stunt performance. Speed is between 65 and 70 mph, and if higher speeds are desired, *engines up to 40 cu. in. displacement can be used.* But don't carry this too far, because too large an engine in the long nose will move the C.G. too far forward.

Construction can be started with the fuselage. The bottom portion consists of a hollowed block and the top is built up of formers with 3/32" sheet planking. If available a 3" x 4" x 22" block can be carved for the bottom; otherwise, a block 3" x 3½" should be glued up of widths that are available.

Transfer the fuselage top and side view outlines to the block and cut to shape. Notch the bottom for the wing and be sure that the front face is perfectly flat for the firewall mounting. The area over the wing can be hollowed out with a coping saw; cut the side thickness to the dimension shown.

Carve and sand the outside contours to shape, checking with the templates at the cross-sections given. Complete the hollowing out with a wood gouge, retaining the wall thickness indicated.

With the lower portion of the fuselage completed, the firewall and numbered formers can be cut out and added. Glue the firewall in place with Weldwood or other hard glue. Spot in place with a couple of small wood screws, then drill as shown for four hardwood dowels. Cut 2" lengths of 3/16"-dia. dowel and taper one end to about one half the diameter. Fill the holes in the balsa with glue and drive the dowels in place leaving about ⅛" projecting ahead of the firewall. Spread glue over these ends. This firewall mounting may seem rather beefy, but

it will stand up under engine vibration and hard landings.

Next glue in the 3/8"-sq. hardwood bellcrank mount. Two wood screws through the fuselage sides into the ends of the mount will keep it in place for the life of the model. At this point it is a good idea to carve the stabilizer and elevator and install the control system because the innards will be closed up once the top planking is on. The horizontal tail is carved from 3/8" sheet. The hardwood spar is cemented to the elevators and the control horn added. Bind the horn to the spar with heavy thread and cover with cement. Flightex hinges were used on the original model but any hinge system you prefer can be used. Install bellcrank, bend push rod to size and assemble to control horn. Solder retaining washers on push rod ends at bellcrank and horn, then cement elevator in place permanently. Be sure to notch out the top of fuselage rear so that the stabilizer has 0° incidence. Check control linkage for good free movement. The elevators should drop of their own weight when raised to up position. Have 30° travel up and down.

A 3/4"-wide strip of hard 1/8" sheet should be cemented across the fuselage block at former 6 to act as a fairlead for the push rod. Notch the strip for the push rod. When the top former is added over this strip, the lead hole will be all enclosed. Line leads can be added now to complete control system.

The top formers can now be added and the planking cemented on. Select medium soft quarter-grained 3/32" sheet for planking. If the outside surface is dampened slightly with water, a full 2"-wide sheet can be bent over the formers and almost the whole curve covered. Strips of 3/32" x 1/4" planking will have to be used over the sharp top curve aft of the cockpit.

The nose section of the fuselage can be completed next. Cut two blocks for the engine fairing "apple-cheeks" and rough-carve to outside shape. The insides are hollowed to about 3/16" wall thickness all around. If the production version fairings are used, cut a slot in the rear for cooling air exit on the engine side. If the racer version is built, simply hollow the whole length so air can pass out the rear end.

Blocks for upper and lower cowling should be cut to rough shape and spot cemented in place. The upper removable cowling should be hollowed roughly inside to clear the top of the firewall. Now spot-cement the engine fairings on the sides and complete carving and sanding the nose section to final shape. All the pieces can then be removed, hollowed out and cemented permanently in place. Coat the inside of the right engine fairing and adjacent fuselage side with fuel proofer so that when the fairing is finally in place the hidden wood will be protected.

Space for the engine cylinder can now be cut into the right fairing and the engine bolted into place temporarily on the firewall. We substituted O&R 60 front crankcase bolts for the bolts on the 29 so that there would be plenty of room on the rear of the firewall for threading on double nuts. The cowl hold-down fitting should be made and installed on the top edge of the firewall. This consists of a 1/2" wide strip of 1/32" brass or steel bent at right angles with the vertical portion bolted

to the firewall. An Elastic Stop-nut should be soldered to the horizontal portion for the hold-down screw. Heat from the soldering iron will melt the rubber in the nut, so when solder cools, mash the rubber end of the nut with pliers so that the rubber will grip the screw. A ½" square of 1/16" plywood should be inlaid into the top of the cowling over this fitting so that the hold-down bolt will bear against a hard surface. To spot the bolt hole in the cowling accurately, thread the bolt up through the underside of the fitting and press the cowling down into place. The bolt will mark the balsa—simply drill here. Scrap ½" sheet is carved to shape to form the air scoop on the underside of the nose.

The fin and rudder can be carved from ⅜" sheet and cemented in place next. The fin portion extends from the rear of former 8 and is flat along top of stabilizer. Add scrap blocks on each side above the stabilizer and carve to complete the rear portion of the fuselage top. The tail skid is bent to shape from 1/16"-dia. music wire and cemented in place. A small patch of Flightex fabric cemented over the underside will strengthen the area. A small tail wheel and steering yoke can be added if desired. This is a Scott tail wheel of the type common on most lightplanes.

A commercial canopy about 8" long is cut down to required length and cemented in place. For a really neat job, shave the balsa planking to the canopy thickness where the canopy extends over the wood. This overhang should be about ¼" wide at former 5. The edges of the canopy will then fair neatly into the wood and any cracks between can be covered with filler.

This completes construction of the fuselage; sand to final smoothness and apply one coat of clear dope or dope filler. We like the old glider standby—dope and pure talc. This will protect the wood until the final finish is on.

Wing construction is borrowed straight from Jim Walker's Fireball, this type being strong and yet light in weight. Cut out the wing ribs and stub spars. Cement up 1/16" sheets to the width required for each top and bottom wing covering half. These wing sheets are then cut to outside shape and should be sanded smooth on their outside surfaces before any construction is started. Then when the wing is completed only a light sanding will be necessary. This will prevent the covering from sagging between ribs. The lower halves are built separately and joined later. Begin by cementing rib 7 in place first and adding succeeding ribs, working toward the root. Hold the sheet to the ribs with pins pushed in diagonally through the sheet into the rib. Do not cement rib 1 in place until later.

If the production version is being built, the landing gear legs are bent to shape and assembled to the stub bars. Bind the horizontal portion of each gear leg to the center spar with heavy thread and cover with several thin coats of cement. Next cut notches in rib 2 to receive the spars, cut a hole in the sheet covering for passage of the leg and cement the spar assembly to one wing half. The front spar will have to be beveled to the contour of the wing surface so that the covering will be smooth. The other wing half

can now be assembled to the spars. The root seam should be trimmed for a good snug fit. Now rib 1 can be notched for the spars and cemented in place. Use cement liberally at this junction. Bevel the leading and trailing edges before adding the top wing covering sheets. A length of hard 5/8" sheet can be cemented to the front face of the front spar across the center section as shown, to help stiffen the wing landing gear joint. With everything nailed down tight inside the wing structure, the top covering can be added.

This operation is a bit tricky because the work must be done quickly before the cement sets. Run a bead of cement along the top of each rib extending to within an inch of both leading and trailing edges. Lay the top sheet in place and start pinning down to each rib. Place pins at the high camber point of each rib and then work outward toward the leading and trailing edges of each rib. Pin down to ribs 1 and 7 first, to minimize warps. As the sheet is pinned down check constantly to prevent any warps by sighting along the span from the wing tip. This is important because once the top sheet is firmly cemented into place warps or twists cannot be taken out.

To join the leading and trailing edges, lift up the top sheet and force cement onto each rib and along the edge seam. Clamp with spring clothes pins or Scotch Tape until cement is thoroughly dry. It is suggested that all pins and clamps be left on the wing structure overnight to insure that cement dries thoroughly inside the wing structure. This assembly process is repeated for the other wing half top covering. Add ½" thick block to wing tips and carve to shape when dry.

The wing is next cemented into the fuselage notch. Shave fuselage block where necessary for a good snug fit and 0° incidence. Use cement liberally. Fillets can be carved from soft block to triangular shape, bent and cemented into place. Final contours can be achieved with any commercial filler.

If the racer version is being made the landing gear is not built into the wing so that the front spar is not necessary. Make the center spar of ⅛" sheet balsa and use as a dihedral joiner. Notch ribs and spars half way through for a good joint. The landing gear can be bent to the shape shown and a ⅛" plywood bulkhead (2A) made. The inside front face of the notch in the fuselage for the wing should be cut across perfectly flat. Take off an extra ⅛" to allow for the plywood bulkhead. Notch the inside surface of the fuselage sides vertically to form a ⅛" slot on each side for the bulkhead. The landing gear can be fastened to the bulkhead with "Eye" or "J" bolts. Slide plywood bulkhead up into place and set in hard glue. The leading edge of the wing should fit snugly against the back of the bulkhead when the wing is cemented in place in the fuselage.

Add scrap block over the wing bottom at the leading and trailing edges to complete the lower fuselage contours.

Final finish can be started now. If a good finish is desired several coats of filler and dope will be needed. We didn't lean over backwards in the finish department because we didn't want to add too much weight. Two coats of filler and two coats of dope did the job for us.

The original Midget was finished in natural metal color with metallic blue trim and numerals. Blue trim covered spinner and front of top cowling back to canopy rear edge. A blue airfoil shape runs along the engine fairings. Wing tips are blue, pants are blue with airfoil shape along center line left natural metal.

If you build the production version a trim job of your own choice seems in order. Large racing numerals on wings and fuselage and your AMA license number on wings and fin make a good decoration.

Final details such as pants and strut fairing are shown in detail on the plans.

Radial mounting of the engine presents no problems if care is used. Place large washers over the long bolts ahead of the firewall (place an extra one on the bottom bolt for slight right thrust). Place large flat washers and lock washers on bolts at rear of firewall and use double nuts on each bolt. When this is tightened down thoroughly, the engine is guaranteed to stay put. A coat of cement over the nuts adds a final "safety."

The horizontal engine mounting works well in all flight altitudes, and it is a pleasure to see the model in the air without that jug sticking up like a sore thumb. We used Jim Walker's balloon tank idea in the original, but a wedge tank can be fitted if desired.

If a balloon tank is used, install a floor of 1/8" sheet across the inside of the fuselage behind the firewall 5/8" below the thrust line. The underside of the removable top cowling should have 1/8" sheet cemented across it at the same location. This floor and roof forms a box with equal space above and below the needle valve level for the balloon tank. This insures equal fuel level in normal or inverted flight.

Top-Flite 9"-dia. 6"-pitch prop was used, and turned in good performance for us, but you should use the fan most suitable for your engine for maximum speed and power. If heavier engines are used, small lead weights will have to be added in the tail to maintain C.G.

Test flights of the model were made at Lock Haven's Cub Haven Airport, and the model did all the tricks in the book first crack. Using the U-Reely control handle flights on 50- to 90-ft. lines have been made with good performance. We personally like the long line flying because sweeping, graceful, maneuvers are possible that can't be achieved on short lines.

Flying the model with wheel pants is only troublesome in high grass and we were pleased to find them still intact after one of those ground wiping loops that bent the gear back into the wing.

Solo Club

(*Continued from page 32*)

as low, slow flying and buzzing by show-off pilots. Less well known is the fact that stalls and spins are run a close second by collisions. Here again, nearly half such accidents are due primarily to the same causes. The single difference is that pilots have more flying time and hence, being less apt to commit a high speed stall or an aileron spin, are privileged to depart this scene by snagging poles, lines, fences, barns, and other obstacles that sneak up in the blind spots. This entire group of willful, stubborn people, happily, are in the minority. How vital it has be-

come to do something about them is indicated by Cosmopolitan's blast against *all* who fly.

That a comparative handful of people can give their law abiding fellow pilots an undeserved black eye, is possible because aeronautical law is a joke. CAA regulations, in most cases and areas, boils down to an honor system, so readily forgotten by some that it is no system at all. Who would drive an auto at 80 mph down a well traveled highway without guiltily looking in the mirror for the first sign of the law? In the air, where is the law?

The fundamental weakness lies in Washington, for regulations cannot be enforced by any so centralized a group as CAA and/or CAB, regardless of minions in the field. That enforcement can be worked out effectively was proved over recent years by one large eastern state that, plagued by a handful of nutty pilots who had people up in arms, devised an enforcement system built around the well-manned State Police. With thousands of specially indoctrinated police on the lookout, it became so easy to apprehend buzzing pilots that numerous culprits were dragged before sundry justices of the peace like any common traffic offenders and fined to the limit that the law allowed. Hairbrained flying quickly decreased to the extent that there were 20% less fatalities.

But all that a state can do is to fine the pilot and report him to the CAA in Washington. Perhaps a year later Washington gets around to lifting his ticket. What we need is state enforcement of standard flying laws with local authority to handle a man's flying license as if it were a driving license. In at least one state the speeder is considered as dangerous as the drunken driver and he knows that he may forfeit his license by breaking the limit. Some pilots, sorry to say, must have the same big stick hanging over their heads. This pains the overwhelming majority of us, but the medicine must be swallowed if we are to get protection from the inconsiderate loner who lacks judgment and common sense. This does not mean that we should fall into the trap of having 48 states with 48 sets of laws.

Still other paths of action are suggested by the Bureau of Safety Investigation, Civil Aeronautics Board, Washington, in their Safety Study No. 102-49.

"Unfortunately, no airplane gadget has been invented to prevent a pilot from going out and diving on people, houses, or automobiles to see how close he can come. No such invention is foreseeable," says CAB. "Flight instructors can help by impressing the student with the stupidity of such flying and by practicing what they preach. Law enforcement officials can help by penalizing more severely all pilots caught endangering the lives of others in this fashion. In some states that is already happening and a number of once hot lads have found themselves in the cooler. Operators, of course, can use a potent weapon and refuse to instruct or rent to the lunatic fringe."

Howell Dornall, member #2446, is one of a group of ten pilots who want to form a flying club. As you probably saw in past columns, Howell, there are quite a few club schemes. Several months back we reported on a number of clubs of various sizes and affluence that had been set up in the Reading area. Now the Colorado Fixed Base Operators have proposed a unique plan known as the Kitty Fund Flying Club. For full information address the Fund at Hangar Number 5, Stapleton Field, Denver, Colo. (Copies sell at 20c.)

Briefly, the scheme works this way. To distribute maintenance and flying costs fairly, each member, upon returning from a flight, tops off the tanks out of his own pocket and deposits a dollar in the "kitty." At the end of 100 hours, there will be $100 in the kitty for maintenance, oil, and inspections. The combined figure averages $2.40 a flying hour. Under this plan it is assumed that the members have sufficient funds for outright purchase of a plane. Monthly dues include full-coverage insurance, 20% depreciation, hangar rental, and taxes. One excerpt from the table indicates that a ten-member club taking on a $2,600 airplane would have monthly dues of $8.52, besides paying the $2.40 a flying hour. These figures will vary widely depending on the airplane, the number of people in the club, type of insurance, and so on. A plane may be used as well as new, and less all-embracing insurance may be taken out.

As pointed out previously, a group may also approach an operator to have him set aside one of his ships for their exclusive use, making him a guarantee on minimum flying time. In any event it is always wise to put him in charge of the ship, from maintenance on down to deciding who flies the plane and when. Experienced hands say it is wise, too, for individual members to pay their instruction costs on the side,

rather than have a member instructor.

Let's hear how you fellows make out, Howell. Give us a progress report.

"Everything is still the same—but the students — at commercial airport," writes Niles Carter, a student at Oklahoma State Agricultural and Mechanical College. "Back in 1947, with only 41 solo hours, I checked out on an AT-6. I have been spoiled ever since I logged that two hours in the '6.' Curtis Knight, a chum, came out and I gave him his first ride in a T-Craft side-by-side. Today he has his own T-Craft tandem. He's only 19 but well on the way to his commercial ticket.

"Another pal, Jim Frost, and I went in on a Fleet, which we got for $300 in September, 1948. What a ship! Climbs like a homesick angel but glides like a brick. NC 434K is four months older than I am. She looks more like a World War I ship I've read about than a modern airplane.

"Here at school we have a club called the 'Flying Aggies.' Costs $25 to join but you get it back when you quit, and three dollars an hour on Airknockers (Aeroncas). Swell deal, only I haven't the $25.

"Now here are some things worth voting for. Government-sponsored flying training during high school or college. And it ought to be required for all high schools in towns of 50,000 or more that aeronautics be provided. How about printing some articles or hints on how to fly in different parts of the U. S.? Mountains, deserts, and so on. And useful hints for improving flying technique and ability. About pins, how about some decals to put on our ships. Wouldn't mind paying a dollar if decals came with the membership card."

Whew! When these older Solo Club members (Carter is #809) take us seriously about suggestions, you see what happens? Would be a good deal if, with a decal, we had a motto, "I fly safely." Carter touches on several things of community interest. By taking up friends for a ride we can spread interest in learning to fly. Note that the chum Carter gave a ride to is working for his commercial. This business of hints: Everybody wants them. Why not send in your hints, preferably based on learn-by experiences. Just little things. But things that will help us to fly better and not to make mistakes.

Reminds us of the time an accidental tip saved our neck. As a student we had hired a beat-up Cub which had most of its instruments inoperative, al-

though the operator failed to point this out. The airspeed usually read 70 mph, so that when we glanced at it on the approach, say, we'd conclude, "Hmmm, a bit fast, better slow it up." Another glance at it would still be 70. "Slow it up again, Lindbergh." Well, it so happened that the day before a friend had happened to mention that the stick felt sloppy on the ailerons approaching a stall. So finally banking from the base leg into the approach, the stick went sloppy. Brother, we nearly jumped out of our skin to push that stick forward. It was a wonder our innocent name wasn't added to the stall spin tables as another "dope" who flew too slow. See what we mean by suggestions?

Tell you what we'll do. For every acceptable hint on technique and practice that we print, we'll shoot you a fast $3 bill. Line forms on the right. P.S. Still bushels of letters but few pictures. Doesn't anyone want to see their face in print?

Did you hear? Civil Aeronautics Administration, Fifth Region, Kansas City 6, Mo., has prepared a "must" sheet on radio usage. Distributed by the Iowa Aeronautics Commission, State Capitol, Des Moines, the title is: "Pilots—Are You Radio-Wise?" Then, in typewriter type on a single fact-packed sheet there is dope on the causes of failures of air-ground communication, what you should know about radio frequencies, what to do if you use VHF, and so on. Whether or not you use radio, this fact sheet is worth having. One thing that catches the eye is a reference to "Notices to Airmen" and the "Airman's Guide," which keep pilots aware of latest details on airports and facilities, such as radio stations that have been discontinued, or runways under repair, or fields shut down. Have you ever gone into a field that formerly used no radio but now required one-way, perhaps even two-way? Embarrassing, isn't it? That's why there is such a thing as the "Airman's Guide." If you fly a great deal it would pay to invest in a subscription ($6) for the Guide, obtainable at the Government Printing Office, Washington, D. C. And, if you use radio in connection with much cross-country, you may want the Radio Facility Charts ($4.50), obtainable from the U. S. Coast and Geodetic Survey, Washington, 25, D. C. To get the ultimate out of radio, you need both.

As the Iowa Aviation Bulletin asks: Time flies, why don't you?

Macchi MB-308

(Continued from page 48)

ribs for top and bottom surfaces of the wing. Do not trim to proper length until assembly. A pencil line drawn through each rib at the main spar position will help when assembling the wing. Cut and prepare the leading edges, main spar and trailing edges. Pin them to the plan and cement the center ribs in place. Carefully cut to length and cement the tip ribs in place. Attach the wing tips. This raises the spars to the proper level so that the tops of the ribs can be cemented in place, trimming off at leading and trailing edges for proper fit. Turn the wing structure over and fit the bottom portion of the ribs in place.

Sight along the finished wing to check for good alignment, removing and replacing any defective ribs. Join the wing panels to form the center section, using odd bits of 1/16" sheet for gussets if desired. Cover the center section with light 1/32" sheet. Cut out the skylight and cover with thin celluloid or cellophane. Cover the wing with Jap tissue, water-spray and give one coat of light clear dope.

Now, back to the fuselage. Install the desired power plant and cover the entire structure with Jap tissue. Water-spray and dope. Cut out window sections and cover with thin celluloid. Cement the wing and tail surfaces in place; be careful to line them up properly.

Decoration consisting of cabin and door outlines may be added. Cut them of black tissue and dope in place. The "I" designates an airplane registered in Italy. Some letter combinations seen on the MB 308. are I-DONT, I-FABR, I-RAIC and I-LAGA. However, it would not be improper to substitute U. S. private aircraft license numbers.

Flight-testing is quite the same as for any simple model; balance the model at the wing tips and add bits of modeling clay to nose or tail as required, then easy glide test and last, power flight.

Our model balanced perfectly with the Campus A-100 and required only a slight warp in the rudder for right circling flight. We fly it indoors to add variety (and speed) to the usual slow flight of microfilm models. However, it is rugged enough to be flown outdoors on a calm day.

Dope Can

(Continued from page 46)

body is on an equal footing. We can visualize several types of timers and dethermalizers on a single model. One timer cuts the motor. Another handles a conventional dethermalizer which operates for several minutes. A second dethermalizer of some drastic type really brings the plane down after the 2:15 mark.

Why not kick the idea around in your next club meeting? Don't just yak-yak—draw up your own regulations, get out and try them and give us a report.

We're for more free-flight flying and fewer lost models.

Speaking of regulations—here's some real good news. The A.M.A. has a good supply of its Official Model Aircraft Regulations which govern sporting model aviation in America. A copy is yours for the asking. All you have to do is send a 3c stamp to the Academy of Model Aeronautics, 1025 Connecticut Ave., N. W., Washington 6, D. C., with your request for a copy of the regs. If you can honestly use more than 1 copy, send a 3c stamp for each additional set requested. This applies to clubs, too.

This nicely printed 48-page booklet is made available through the generous contribution of the Plymouth Motor Corporation. In addition to the standard A.M.A. events, you'll find rules for U-control precision acrobatic flying (with illustrations), novelty acrobatic control-line flying, U-control flying scale, radio-control and the Wakefield contest. Sketches show the recommended construction of control lines. All for 3c!

Plymouth Going Great Guns—on its national and international model program as it brings its full weight into the aeromodeling fields. Plymouth dealers this year are banding together in their local trading areas and in most cases two or more dealers sponsored the local qualification contests to determine entries for the International Plymouth meet in Detroit August 22 to 29. For instance, the Plymouth dealers of Southern California got together to back qualifying rounds in Los Angeles on July 8, 9 and 10. The top 15 contestants were to receive all-expense trips to Detroit. The same procedure was scheduled all over the United States during the period of July 9 to 17 which the A.M.A. set aside as Plymouth Qualification Contest Time.

Help! Help!—says William A. Peterson of Janesville, Wis. We'll let him state his case himself: "Just recently, in conjunction with the city and school recreational department, I started a hobby club for the primary purpose of building model airplanes. The idea being to get together a group of younger boys and teach them from scratch or assist those further advanced in their problems in building model planes.

"Our group now numbers about 40 whose ages range from 10 to 16, mostly about 12 and 13. During the past few months we have been building gliders and such so as to impart the general idea of lift, airfoils, dihedral and the like. The ultimate idea being to bring these boys along to the advanced stage of building and flying gas models.

"A more worthwhile hobby I cannot think of. It's a definite deterrent to juvenile delinquency, yet teaching at the same time things such as construction, mathematics,

aeronautics, use of various tools, engines, chemistry, safety, neatness and exactness, sportsmanship, initiative and inventive ideas and a host of other things that go into the building of a plane that will really fly.

"Unfortunately my own knowledge along these lines is quite inadequate, but I do have some good assistance. My big problem is the lack of a definite program and there is where I feel that you can help . . ."

Golly, Bill, we wish everyone who has turned down requests for help in the sponsorship of aeromodeling could be made to read what you wrote. We agree with you 1,001%. Here are a few suggestions for your group and any similiar club or leader needing help: The American Legion is preparing a complete beginner's course in model plane design, building and flying that is right down your alley. Your local Legion post can get all the dope on the series from Frank Nekimken, Americanism Department, The American Legion, Indianapolis, Ind. Start there.

The course can be supplemented with simple glider and rubber-powered kits put out by such concerns as Guillow, Cleveland, Comet, Berkeley and Jasco—to mention a few. Write to these outfits (addresses are in ads in this issue) or contact your local hobby dealer for details. Cleveland once had its own beginners' flying course series—maybe some are still available. Other concerns had the official Air Youth of America series of simplified beginners' models. Write them all and ask what's available.

If you need funds to purchase material and kits talk to the local Exchange Club. Exchange is noted for its assistance in the model plane movement. Try also the Legion and VFW posts as well as other service and civic organizations. Talk your problems over with the local Plymouth dealer (see above).

Build up a library of model books, booklets and plans for exchange among the club members. Check on those that are available from those concerns advertising. By the time this reaches print the Academy of Model Aeronautics should have its revised club manual in print. That will give you lots of help. For what other communities are doing for the beginning model enthusiast, keep your eye on the Dope Can. We'll report similar classes and give addresses of key personnel. Write them and exchange ideas.

Keep up the good work, Mr. Peterson. And you expert flyers in the vicinity of Janesville, contact this fellow who needs and deserves your help. You can reach him through the Milner Hotel. Offer your assistance, your no-longer-used model and aviation books, plans—anything and everything that will result in more modelers, more activity, more fun.

That's what the man said! F. R. Little from Atlanta, Ga., writes, "My friend and I have been having a slight difference of opinion as to why U-control models can fly in one direction only. He believes that it is due to the rotation of the earth and I'm of the opinion that it is due to engine torque. We will both appreciate your giving us the correct reason." Mr. L, how you do torque, but maybe you're pulling our leg. At least 99 44/100% of all model builders know control-line models can be flown in either direction (clockwise and counterclockwise). Drop out to those big Atlanta meets and you'll see fellows flying in both directions during one flight—to say nothing of inverted, overhead, outside and inside loops.

The only thing that governs direction of flight around the circle is whether the lines come out the port or starboard wing (for those beginners like ourselves who fly only straight and sometimes level!) and the placement of the motor and effectiveness of the tank and fuel line systems. You see some fellows just starting out don't rig up their tanks or lines properly so inverted flight (model on its back) can be maintained for any length of time. But if you can fly inverted you can take off in one direction, then put the model over on its back and fly in the opposite direction. Of course, the earth occasionally rotates itself right into the model.

(We still think he's pulling our leg.)

We've said it before—but we'll say it again. You new modelers around the San Francisco area ought to get active in the model activity run by the Pterodactyls Club, sponsored by the S. F. Recreation Dept. (Hustle over to the Junior Museum, 600 Ocean Ave., for more dope.) Latest wrinkle is a helicopter contest with the winning design to be blue printed and added to the training course of the Junior Museum.

Club membership is open in following categories: Micro division, 11 years of age or younger; Junior, 12 to 16; Senior, 16 to 21. The Pterodactyls' 6th annual glider meet was run off and resulted in a near tie for first place between Charles Actis and Ches-

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ter Cracciola. Charlie came up with 97.0 points; Chet was close behind with 96.3 pts. They were flying in the Micro division. Franklin Lehmann, competing for the first time, was third with 79.2 pts.

In the Junior department Darrell Larks won with 444.6 pts.; Dick Czeikowitz came in 2nd with 226.1 and scored the single longest flight of the contest when he did 2:44.1 with his Cl. B catapult glider.

This 'n' that—Loyal Hanson, RD 1, Box 170, Bark River, Mich., is planning a lending library of old model plans. We gather it will be a no-cost proposition to modelers in his area. Probably anyone borrowing a plan will have to furnish postage both ways. He's looking for any and old plans. So if you want to help build up the first circulating library of fine old prints—we mean plans—send what you have along to Hanson . . . Warner C. Lincoln, the airline pilot whose letter appeared not so long ago in the Readers Write Column, is back in the States at Lawrence, Kan. He claims some sort of a record for having 6 control-line models fly all the way from Lima, Peru, to Kansas City (via Braniff!). He reports, "It was some job, as I had 6 U-control planes and my wife and 3 children (of course, I didn't have to carry the wife and children) and I got them back with only minor injuries such as torn covering." The kids or the crates, Warner? Anyway, he sends us a photo of his fine Bojo which he built from AT along with a mighty nice Fokker Tripe.

What number, please? America's Hobby Center reports the theft of the following engines. If any come to your attention notify AHC: Arden 099, No. 10583; Arden 199, 4029; Bantam Glo, 29955; Bantam ignition, 29093; Atwood Triumph 51 ignition, 2370; Drone, 0014573; Fox Hi Torque, 514; McCoy 29, 12723; McCoy 49, 11095; McCoy 60, 2933. Looks like somebody knows how to pick good engines, if not in the right way.

Fuel-proof proposition — Been wondering what those "additives" are which are a part of some fuels? The following new-product release may clear up the question: "A new all-chemical additive which will improve the operating characteristics of motor oils has been announced by the Petroleum Chemicals Dept. of American Cyanamid Co. The new product, called Aerolube 70, is available to refiners and blenders of motor oils, and is said to be an exceptional oxidation and bearing corrosion inhibitor.

"Additives have become vitally important to the oil industry as lubricants have been forced to meet the severe demands imposed

AIR TRAILS

ADVERTISERS' INDEX

September 1949

While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this September, 1949, index.

by greater loads and speeds . . . these products of the chemical industry have made it possible for oils to perform far beyond their natural capacity. Certain additives reduce oxidation of oil which may form deposits interfering with engine efficiency. Others prevent or retard catalytic action, a condition which promotes oxidation of oil . . . corrosion and wear of machine parts can be reduced by certain additives, while engine cleanliness can be improved by chemicals which prevent deposition of contaminants."

Hooray for Hillman! James F. Hillman is our candidate for honor in the modeler's hall of fame. He is president of the Harmon Creek Coal Corp., and has made available land for the permanent use of Pittsburgh model flyers. Hillmans Model Wings Airport has something going on every Sunday as a glance at the Contest Calendar will show you. Best of all, the Pittsburgh clubs are whooping it up for both U-control and free-flight. To build up interest in the later category special meets are being held for such f.f. events as greatest number of flights over 1 minute, exact-duration flights, team competition, and precision gas flying. A low bow to Mr. Hillman from the Dopester; another to the Pittsburgh up-and-at-'em clubs!

Big AF Affairs—are the contests run off at Chanute Field AFB, Ill., by the Chanute MAA and Lt. Harry G. (Pride of Pittsburgh) Vogler, Jr. At last meet Pfc. Herb Breitinger walked off with the Air Trails award in the free-flight exhibition event. A flash thundershower almost wiped out the contest, but despite poor cooperation from the weather boys, times for speed and performances in U-control stunt were very good. Cpl. Stanley Kwit of Chanute won the meet championship title with a total of 240 points.

Keep those photos bigger—that you send to Air Trails. A photo may be run small, but the original glossy print must still be at least 4" x 5" in size. It has been necessary to return a great many mini-sized pictures. Gerald Kikin of New York City sent some about 1½" x 2½"—much too tiny to use although his first U-control job, a Nieuport model, looked like a mighty fine one. Julio G. Dumo of the Philippines and Alvin Williams of Chicago are just two of hundreds of modelers who build excellent models, but send us photos much too small to handle for reproduction.

Cook's really cooking—on the front burner, that is, when he says no one should overlook the solid model fraternity. Not us, Cook Barnes (of Brooklyn, N. Y.), we think the solideers are mighty fine folks. Cook says he's a member of a small club called the Solid Sanders. "We do not build control-line or free-flight gas because we don't care to have hours of work destroyed in a crack up, and most of all we haven't the capital to invest." Well, not everybody will agree there, but every modeler to his own likes and dislikes.

Members of the Solid Sanders build 3 to 5 scale jobs each month. Cook has built 140 since 1942, still has 101 of them!

Race car stuff—is what John Kaczornowski of Wildwood, N. J., is talking about. Even he can't get over the performance of his stock Thimble-Drome race car with a Mini-Mount drive powered by a McCoy 19. He did add ball bearing front wheels of his own make. Anyhoo, three individuals timed his car for 20 laps at an average speed of 102 mph. Though it was all unofficial John wanted us to pass this information on to those who might be considering taking up the sport. **Hint:** he runs a length of ⅜" inside diameter copper tubing from the venturi up to the radiator grille to get ram air intake.

Requestfully yours—are these queries. F. S. Frater, 770 Olive St., Coatesville, Pa., has been trying to run down 1¾" rubber-tired bicycle type wheels If any shop has them drop friend Frater a card. Midshipman T. R. Galley is building a flying scale model of the Panther and has had difficulty in locating a proper sized plastic cowling. If you can't buy one, Mr. Galley, why not make your own. We quote from Paul Plecan's instruction for building the Minnow which appeared in last January's Air Trails: "Form the celluloid canopy by soaking .010" or .020" sheet celluloid in 'Tiger' Mold-ex and pulling down over a wooden form. The form should conform with the side and top view and be ⅛" longer and 1/16" deeper to make up for shrinkage once the celluloid has been removed from the form." Wallace Barrie of Philadelphia wants a listing of all meets to be held within 100 miles of the Quaker City this summer. Wally, this information is carried each month in our Contest Calendar listing. **Note to meet directors:** get your listings in to Air Trails at least 90 [illegible] before your meet to insure its publ[illegible]

Coming Air Events and Contest Calendar

Contest directors are invited to send listings of meets to Contest Calendar, c/o Air Trails, Box 489, Elizabeth, N. J. Such announcements must be received at least 90 days before contest date.

To secure more information on a contest, write to the individual listed. His or her city and state address is same as location of meet unless otherwise noted. Where different city is listed in address, the state is the same.

Air Trails makes every effort to check listings. It should be noted, however, that contests carried in this Calendar are subject to change without notice.

Aug. (date pending)—Butte, Mont., L. L. Richens, 9 S. Montana St.
Aug. (date pending)—Essex, Conn., Chas. Hoelck, 25 Dennison Ave., Mystic.
Aug. 7-14—Grand Prairie, Texas, Southwestern Soaring Contest.
Aug. 14—Chicago, Ill., R. C. Brown, 2818 E. 79th St.
Aug. 14—Salem, Ore., E. J. Roth, 2080 Market St.
Aug. 14—Lancaster, Pa., P. J. Liller, 567 Pershing Ave.
Aug. 14—Dubuque, Ia., C. W. Witter, 2081 Garfield Ave.
Aug. 14—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Aug. 20-21—Battle Creek, Mich., Keith Vincent, 25 Haskell Ave.
Aug. 21—Palo Alto, Calif., Palo Alto U-liners, 2215 El Camino Real.
Aug. 21—Grand Island, Neb., W. H. Parmenter, 1634 K Lincoln.
Aug. 21—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Aug. 21—Valley Stream, L. I., Bernard Liquorman, 2154 E. 34th St., Brooklyn 10, N. Y.
Aug. 22-29—Third Annual Plymouth International meet. Contact your local Plymouth dealer for entry blank and rules.
Aug. 28—Mishawaka, Ind., Richard Ramsbey, 713 N. Main St.
Aug. 28—Doylestown, Pa., William Lehman, 47 E. State St.
Aug. 28—Long Island, N. Y., Donald Martin, 23 Slatterie Ave., Valley Stream, L. I.
Aug. 28—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Aug. 28—Long Island, N. Y., E. V. Roff, 56 Stuart Ave., Malverne, L. I.
Sept. (date pending)—West Chester, Pa., H. J. Aldsworth, 302 S. High.
Sept. 3-5—Cleveland, O., National Air Races.
Sept. 3-5—Bangor, Me., R. C. Fleming, c/o Kiwanis Club.
Sept. 3-5—Tulsa, Okla., Y. M. C A, 121 E. 4th St.
Sept. 3-5—Adelanto, Calif., Soaring regatta (6th heat), El Mirage Field.
Sept. 4—Indianapolis, Ind., L. V. Brown, 5506 N. Illinois St.
Sept. 4—Jacksonville, Fla., M. W. Myers, 1807 E. 27th.
Sept. 4—Decatur, Ill., Fred Bascom, 806 W. Elm.
Sept. 4—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Sept. 5—Far Hills, N. J., Harold J. Dobbs.
Sept. 6—Cleveland, Ohio, Federation Aeronautique Internationale Model Commission Meeting.
Sept. 11—Rochester, N. Y., Ray C. Edmunds, 675 South Ave.
Sept. 11—Trenton, N. J., M. G. Michlik, 237 E. State St.
Sept. 11—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Sept. 18—Chanute AFB, Ill., Lt. Harry G. Vogler, Jr., Hq. 3499th Mobile Trn. Group.
Sept. 18—Royal Oak, Mich., J. R. Kates, 604 S. Edison Ave.
Sept. 18—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Sept. 24-25—Sullivan, Mo., Airport, dedication ceremonies.
Sept. 25—Pittsburgh, Pa., Box 4439, Pittsburgh 5.
Oct. 1-2—Adelanto, Calif., Soaring regatta (7th heat), El Mirage Field.
Oct. 29-30—Adelanto, Calif. Soaring regatta (8th heat), El Mirage Field.
Nov. 11-19—Philadelphia, Pa., World Hobby Exposition at Commercial Museum.

The Last Word

Paging our English Readers: If you've been wondering how you can secure copies of Air Trails regularly here's the answer to your problem. Atlas Publishing & Distributing Co., Ltd., 18 Bride Lane, Fleet Street, London, E.C.4, is one of the firms that can set up a subscription for you. Price is 17/-d. per year, we're informed.

* * *

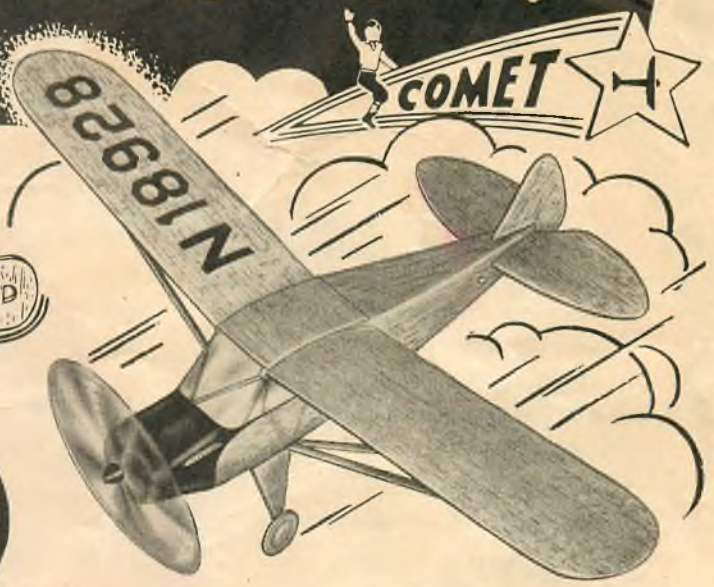
Another Model Builder That Made Good: We speak now of Emil Lehecka who handles the "We Fly" article in this issue. After building rubber-powered and glider models, Emil (The Beret) learned to fly the big gliders at the tender age of 16. Then he went on to powerplane flying. He has put in about 1,000 hours in glider, 2,000 in power ships. In 1938 Lehecka was U. S. National Soaring Champ. He holds the fifth Silver "C" issued to an American. Here he is shown in the cockpit of the Long Midget with Dave (Ex-modeler) Long explaining what control gives you the hot coffee (with cream and sugar).

October, October, October: We have to keep reminding ourselves of the coming issue and the month. Right now we're sweltering in the summer heat of New Jersey. If it's hard to get excited about Fall, at least we can wax enthusiastic about the October issue (on sale in your neighborhood September 6-10—and why not subscribe and get your issue early?) We lead off with an interesting "Winged World" pictorial titled "Egg Beater Parade—Picture History of American Helicopters." How the U. S. is developing tactical aviation comes in for a preview. The We Fly story concerns the Luscombe Sedan. And getting underway with Part I is a grand Air Progress set of drawings on the development of the U. S. Air Force.

You'll be charmed with the Supersonic Miniatures report, and the National Guard air group is covered nicely in "Minutemen of the Air." The model builders will welcome the sage advice in "Let's Have a New Deal in Free-Flight." This is accompanied by some fine Thomas drawings of "H.A's." excellent .099 Arden-powered low-wing free-flight gassie, The Southerner, which is just the job for these new precision and limited duration f.f. events. Control-line fans can rejoice over the scale drawings of the Tipsy Junior model as well as a U-control speed trainer that is really simple and fine for those who want to break into speed work. Yes, and lots more!

—THE EDITORS

The BEST that's NEW- from COMET to YOU!



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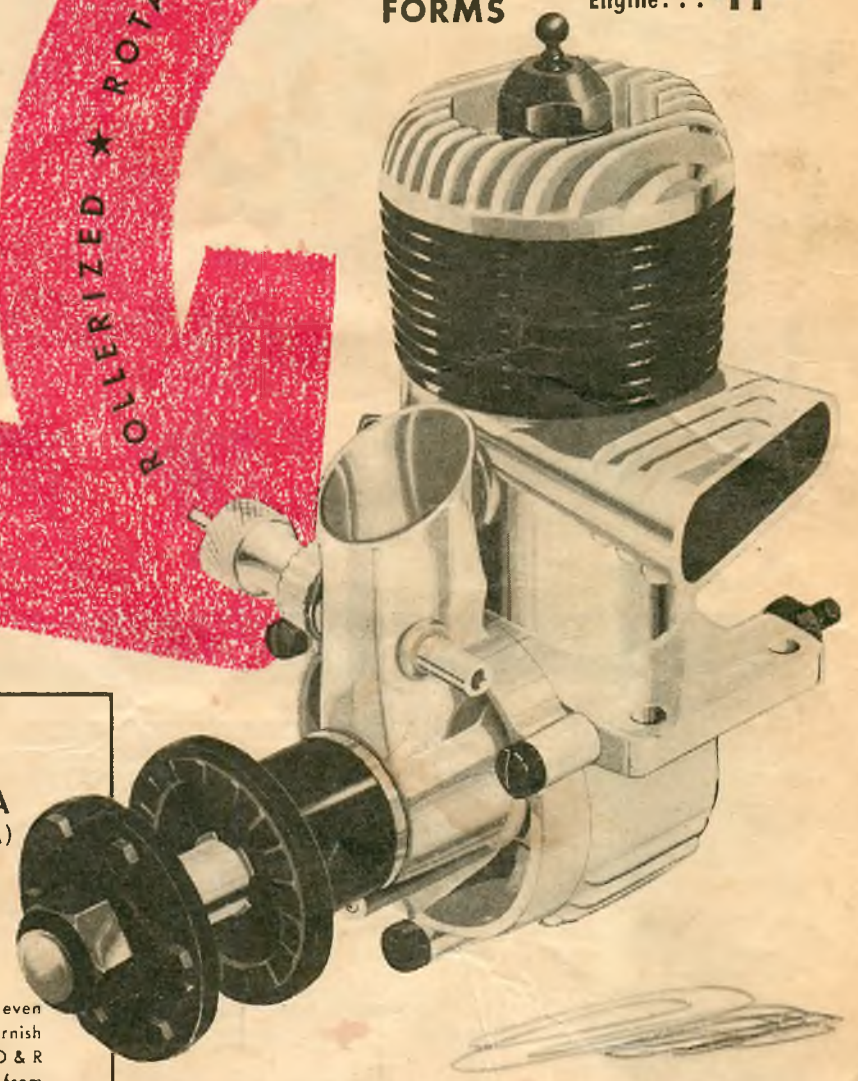

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