

# AIR TRAILS

DECEMBER 1950

25 CENTS



**Special Big Christmas Gift Section!**



# DEPENDABLE *and* SURE!



## TALKING THEM IN G C A

Through the black of night — through the worst of weather, an airliner comes in for a perfect landing. The pilot is being given instructions as the giant plane glides through the quiet darkness: "Adjust your elevation to 1500 feet — your new heading is 130 degrees — you are two and one-half miles from the airport." These instructions are sent to the pilot by radio from the Ground Control Approach (GCA) station at the airport.

### DEPENDABLE AND SURE — THAT'S GCA

As the pilot adjusts his speed and course he knows that a perfect landing is assured. From the ground, the miracle of radar is bringing his ship into port. Further instructions are heard; "Adjust your elevation — come down 50 feet — steer left — steady — you are now 1000 feet from the end of the runway — down another 50 feet — you're right over the runway at 50 feet — set her down."

The wheels of the airliner touch ground and it rolls to a stop. The eyes of science — radar — have brought about a safe landing that only a few years ago would have been impossible.

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# AIR TRAILS

DEC., 1950 • VOL. XXXV, No. 3

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Editor: Albert L. Lewis. Art Director: W. F. Tyler. Technical Editor: Alexis Dawydoff. Editorial Production: Carl Happel. Editorial Assistants: Rose Borello and Carmen Dreher.

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## THE READERS WRITE:

**McDonnell and Rolfe . . .** I wish to compliment Douglas Rolfe on the unusual accuracy of "The McDonnell Story" in a recent Air Progress feature. The only inaccuracy is a very understandable one and related only to the Hamilton Metalplane of 1927.

The Hamilton Metalplane had a 225 hp Wright Whirlwind radial engine. This plane was designed and built in 1926-27 when I was with the Hamilton Aero Manufacturing Co. of Milwaukee as chief engineer. This was the second all-metal transport design built in the United States (the first having been that of the Stout Metal Airplane Co.), and in 1927 this plane won first place in the air transport competition at the National Air Races and second place in the nationwide Ford reliability tour.

All the rest of the article is done with accuracy both as regards illustrations and text that far exceeds the usual press standards.

J. S. McDonnell

● Thanks for correction. I remember one of the very first of these planes, with full cantilever wing set at high midwing position and plastic window in the underside of the wing. Later models, as illustrated in the Air Progress feature to which you refer, were powered by the Pratt & Whitney Wasp engine.

Douglas Rolfe

**Bigger Prefabs! . . .** I always read AT and like it very much and don't usually have anything to kick about, but this time I just have to. I think the manufacturers are doing a swell job in their prefabs but I also think there is too much stress on the new pint-size planes in the .045 to .099 class. As a "B" or larger fan I would appreciate more new prefabs in that class.

Bob Keal, Chadron, Nebr.

**Glow Plug Quiz . . .** At what compression ratio do glow plugs operate most efficiently? Where can glow plug fuel be purchased in five-gallon lots? And/or where can the ingredients be purchased in large amounts?

John H. Karl, New Brunswick, N. J.

● The answer to your first question depends on type of fuel mixture used and heat of glow plugs. A hot fuel and hot plug (such as Power Mist and Ohlsson plugs) will operate engines of 5:1 compression, such as a Madewell. Hot fuel with a cold plug (such as a Champion) will work on the 7:8 compression ratio. Cold fuel and cold plugs will work from 10:1 compression ratio. Most engines on the market today have a compression ratio between 7 and 10.

Your question concerning the purchase of fuel or ingredients is a little difficult to answer. You might be able to buy a case of fuel from some wholesale dealer. Some of the ingredients may be purchased at Dooner and Smith, 374 Mulberry St., Newark, N. J. They handle commercial alcohol, castor oil and amyl acetate. Nitrated chemicals may be had at any laboratory supply house, but the sale of such chemicals is restricted and it's doubtful if you can obtain them.

A suitable mixture for high-compression engines could be mixed as follows: two parts alcohol, one part castor oil, one part Ohlsson #30 fuel.

**Base Suggestion . . .** President Truman wants to see you immediately—to tell him how to unify the armed services in one stroke of your typewriters. You've done it, by Jove! In your very nice story about the National model meet you calmly floated the Navy right onto an Air Force base by locating the 1950 Nationals at "Hensley Field Air Base."

Hensley Field, my dear Watson, is the Air Force Base. Nationals were held at the Dallas Naval Air Base. Of course they border on each other, but that border is all the same as the 38th parallel.

See you in the brig.

Dallasite, Dallas, Tex.

**Pistons . . .** What is the difference between a lapped piston engine and a piston ring engine? What would the O&R 23 be?

Alec Vogel, New York, N. Y.

● A lapped piston uses a piston that has smooth sides which are matched carefully for a sliding fit into the cylinder. The term lapped means that the piston is moved back and forth in the cylinder to wear down any high spots and insure proper fit for a good compression—all done at the factory.

Piston rings are generally used where lapped pistons are not. In this case the piston is slightly smaller than the cylinder so that a very free fit results. The rings are placed in grooves around the top of the piston; they are a bit larger in diameter than the cylinder. The rings are squeezed slightly to get them into the cylinder while on the piston, and they serve to maintain the compression and the tight sliding fit in a manner similar to the lapped piston.

The O&R 23 uses the lapped type piston.

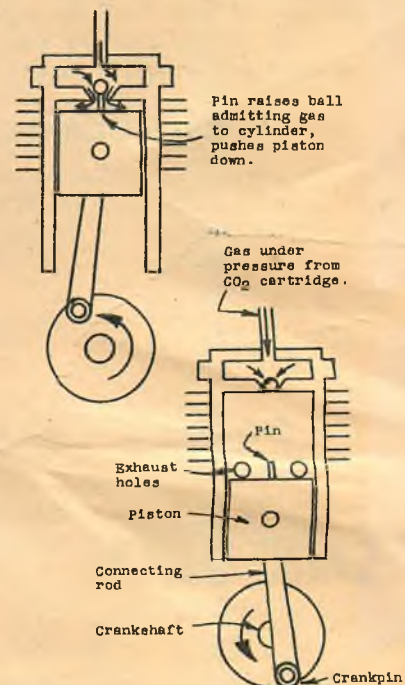
**By the Numbers . . .** I would like to know: 1. What do the initials NACA stand for? 2. Whatever happened to the Douglas DC-6B, the passenger version of the DC-6A? Is it flying yet, or was the idea scrapped? How many passengers was it supposed to carry? 3. Where can I get some information about the Grumman Widgeon, and is there a solid model kit of it available?

Jim Bertrand, Green Bay, Wis.

● 1. The initials NACA stand for National Advisory Committee for Aeronautics. 2. The Douglas DC-6B is still in the process of construction. It will have a seating capacity for 66 passengers. 3. We regret we do not know where you can obtain one.

**The CO<sub>2</sub> at Work . . .** I want to inquire about an engine, and Campus Bee. I am just a beginner in model airplanes, and never could understand just now a CO<sub>2</sub> engine works.

Adolph Kuester, Jr., Kirkwood, Mo.



● The CO<sub>2</sub> is a miniature reciprocating engine similar to the steam engine used on locomotives and boats, with a valve system greatly simplified for purposes of weight reduction. The operating principle is:

(Continued on page 9)



*... This Young Man  
took a few minutes out  
... to think about his  
FUTURE CAREER  
... why don't YOU?*



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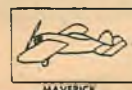
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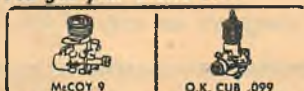
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## 8



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## Civil Air Patrol News

**Important Work Ahead:** You can look to the Patrol for some important tasks in the accelerated national defense program. Washington is awakening to the fact that CAP can take on vital jobs so necessary in all-out warfare. Complacency is a thing of the past; look for a tightening-up process all down the line, those who have been sticking around for the social side of things will go. The Patrol responded to the call once before; it's ready again.

Some of the jobs assigned to CAP by the AF: antisubmarine patrol; border patrol; courier, mail and light transportation service; radar test flights; tow target flights; noncombat reconnaissance flights; antisabotage patrol; recon flights to assist ground traffic control; pipeline patrol; evacuation or supply of civilian population in devastated, isolated or danger areas; plus other duties.

**Second for Baton Rouge:** New squadron being activated in Baton Rouge, La., will be based at Harding Field and commanded by Justin Wilson. Original Rouge Sqn. will headquarter at East Baton Rouge Parish airport. Statewide training school for Patrol officers scheduled at Alexandria, La., with Maj. Gen. Robert W. Harper, commanding general, AF Training Command, among speakers.

**Special to Southwesterners:** Private planes may now land on Mexican airfields, providing Secretaria de Comunicaciones (Civil Aeronautical Department) is advised three days prior to proposed arrival date, according to Andrew Horcacitas, Federal tourist delegate of the Mexican government. It is necessary to indicate type of plane, airfield from which departure is made, and Mexican landing fields to be used.

**Scholarship Winner:** Cadet Eugene J. Carroll, 18, of Little Silver, N. J., won the A&E Mechanics Scholarship for 1950 offered by Teterboro, N. J., School of Aeronautics. Cadet Carroll is a member of Red Bank Sqn. 223-6. Scholarship

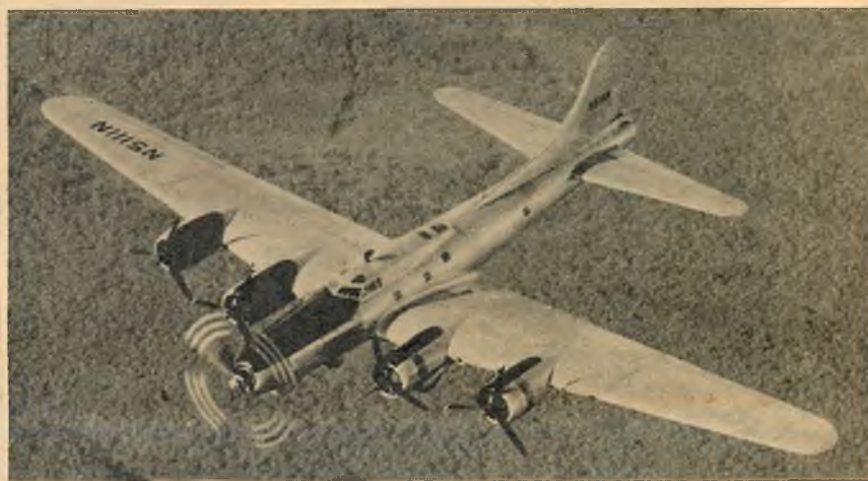
consists of an 18-month course valued at \$1,123.

**Florida Session:** A statewide meeting was held at Everglades City with 95 CAP'ers attending the two-day sessions. With 10,361 licensed pilots registered in the state, this means that less than one percent of the Florida flyers participated. Seems like more aviation folks than that should get behind the Patrol.

**How to Join:** The Civil Air Patrol is the civilian auxiliary of the U. S. Air Force. Membership is open to any American 15 years of age or more and of good moral character. Those under 18 serve as CAP Cadets, those over 18 are Senior Members. If you would like to join the CAP drop a note to CAP Newsletter, c/o Air Trails, 122 East 42nd Street, New York 17, N. Y., giving your name, address and age and stating, "I'm interested in more information on the CAP and would like to hear from my nearest unit." Air Trails will see that your request gets to the proper CAP organization.

**Air Search & Rescue:** Pennsylvania Wing has come up with an excellent booklet on air search and rescue in Pennsylvania titled "That Others May Live." It details the Wing's "ASR" work in conjunction with the Air Force's Flight A, 6th Rescue Sqn., Westover AFB, Mass. A copy went to every aircraft owner in the state. Other Wings could well copy since the purpose of the brochure is to explain to the flying public how air rescue works and to secure additional volunteers for the service.

**Blood Donors:** Fall River, Mass., Sqn. reports 17 members donated blood to Red Cross during acute shortage of whole blood. The newly formed Sqn. has expanded rapidly, now has its own hqtrs. and Link trainer. With 100 members active and a new municipal airport in the process of construction, CAP future in Fall River is very bright.



B-17 Flying Fortress performs under power of single Pratt & Whitney T-34 turbo-jet engine with regular engines shut down and props feathered. T-34 delivers equivalent of 5,700 hp.



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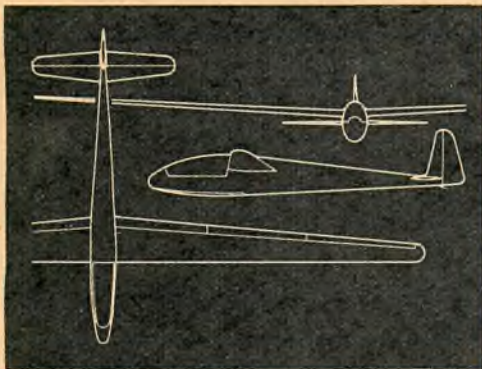
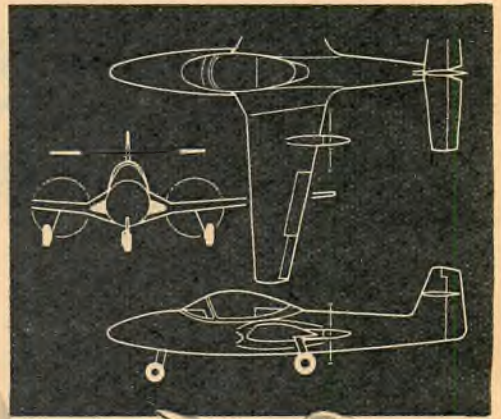
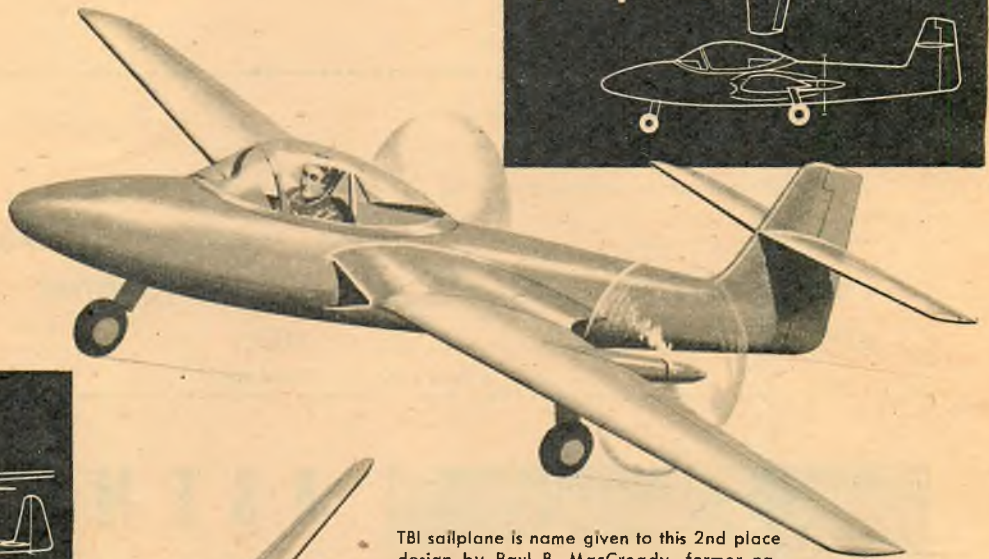
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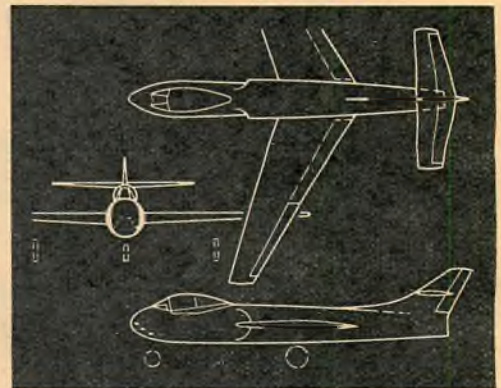
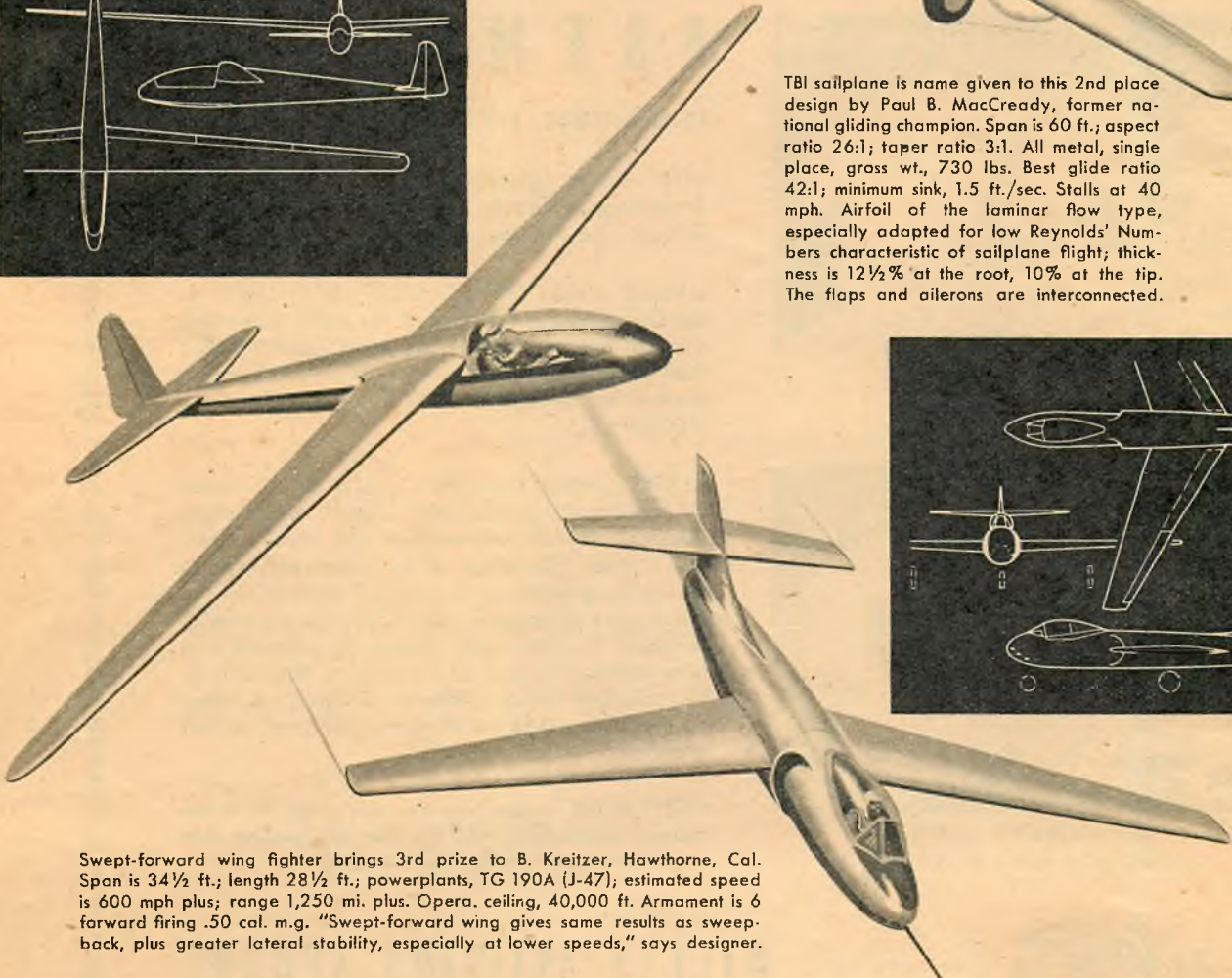
# Airmen of Vision

## DESIGN COMPETITION

Small 2-seat private plane using single Continental 185 hp opposed engine to drive 2 small diameter wide-blade props through extension shafts and gears wins first prize for National Airlines' engineering photographer J. W. McConnell, Miami. Engine buried in fuselage and wing roots; exhaust stacks used to augment ducted air flow. L. G. would retract in the deluxe model.



TBI sailplane is name given to this 2nd place design by Paul B. MacCready, former national gliding champion. Span is 60 ft., aspect ratio 26:1; taper ratio 3:1. All metal, single place, gross wt., 730 lbs. Best glide ratio 42:1; minimum sink, 1.5 ft./sec. Stalls at 40 mph. Airfoil of the laminar flow type, especially adapted for low Reynolds' Numbers characteristic of sailplane flight; thickness is 12½% at the root, 10% at the tip. The flaps and ailerons are interconnected.



Swept-forward wing fighter brings 3rd prize to B. Kreitzer, Hawthorne, Cal. Span is 34½ ft.; length 28½ ft.; powerplants, TG 190A (J-47); estimated speed is 600 mph plus; range 1,250 mi. plus. Opera. ceiling, 40,000 ft. Armament is 6 forward firing .50 cal. m.g. "Swept-forward wing gives same results as sweep-back, plus greater lateral stability, especially at lower speeds," says designer.

Air Trails has opened its columns to those who are interested in presenting plans for "aircraft of the future." Rules governing the competition are as follows: 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. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. 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. The designs may be of any type: commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of \$25. Payments of \$5 will go to the runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 122 E. 42nd; New York. The editors regret that because of large number of entries they cannot enter into correspondence on Airmen of Vision.



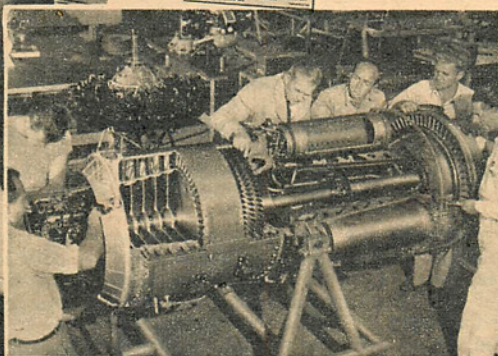
## Your Career in Aeronautical Engineering

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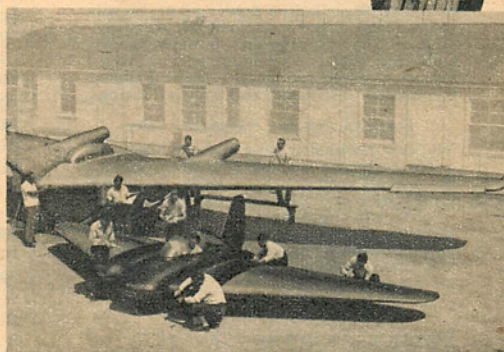
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Northrop student engineers learn the principles of advanced all-wing aircraft design, as they study the design and aerodynamic characteristics of a Northrop-built experimental "buzz bomb" (front), and one of the N-9M 60-foot scale model Flying Wings (rear).

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## air notes

## AVIATION TODAY AND TOMORROW

Nobody will argue that the lowly Piper Cub is just about the oldest basically unchanged airplane design in production (it actually goes back to 1930!), is unglamorous, the butt of many jokes and hardly a symbol of aeronautical engineering achievement. But while doodling with our slide rule the other day we discovered to our astonishment that, at least by one yardstick, the Piper Cub is the most efficient airplane—barring none—currently in production! Think we're kidding? Well, we hope you'll agree that the number of pounds of useful load lifted by each horsepower of an airplane is a pretty good indication of its efficiency. The Ryan Navion works out to 4.7 lb./hp., the Bell 47D helicopter to 4.6 and the mighty Boeing Stratocruiser (designed purely for weightlifting) to a mere 4.3. But the poor, much-abused Cub turns out the terrific figure of 7.9 pounds of useful load for each horsepower of its engine: almost twice that of the Stratocruiser! Makes you stop and wonder where we're getting with all this research, education and engineering "progress."

Have you ever wondered why flying saucers have only been seen in the United States and usually by airline pilots?

We have always been downright confused by the constant hullabaloo about our super radar equipment, Ground Control Approach and Instrument Landing Systems equipments that are supposed to bring the pilot in and taxi him up to the hangar when the fog is sitting right on the ground—yet when the ceiling gets down to 300 feet the airport is "closed" by the CAA and all airliners must go somewhere else to land where they can see better! Yessir, we are a bit confused.

So you think it's new, do you? Landing flaps were used on a British S.E.4 (yes, that's 4, not 5) fighter in 1915. . . . The Handley-Page slot was first used in 1918. . . . The first supersonic wind tunnel was used in 1887 by Ernest Mach, after whom we get the term Mach Number. . . . The transition of laminar flow to turbulent flow (the concept on which the NACA laminar flow wing is based) was first observed by Sir Osborne Reynolds in 1883 (and Reynolds Number is a basic factor in wind tunnel research today). . . . The idea of boundary layer control as a means of increasing the lift of a wing was first advanced by Dr. Ludwig Prandtl in 1904. . . . The first successful tailless airplane was the American Burgess-Dunne of 1914, used by both the Army and Navy. . . . The first plastic moulded airplane was the Lockheed Vega I of 1927—designed by John K. Northrop.

And if you think a man's a hero in his own home town, did you know that in England the ratio of the speed of an object to the speed of sound is termed "Mach number" (just as it is here) after a German, but in Germany during World War II this ratio was known as the "Glauert number"—after an Englishman!

Would you believe that those big, globular auxiliary fuel tanks hanging on the tips of jet fighter wings actually reduce the airplane drag? This reduction is obtained by a trick of aerodynamicists but it works just the same. Since the pressure on the upper surface of the wing is lower than that on the under surface there is an upward flow around the tips with the high-pressure air from below curling around up into the low-pressure region above the wing. This creates an induced drag on the airplane that can add up to as much as 50 percent of the total drag. By placing the tanks directly on the tips, an effective dam is created prohibiting this tip air-flow, thereby reducing the induced drag and, therefore, the total drag of the airplane. The Lockheed F-80 Shooting Star, for example, will glide from 40,000 feet, a distance of only 87 miles to the ground without the tanks but a distance of 92 miles with the tanks! This effect is so important on the Grumman F9F Panther that its tip tanks are an integral part of the wing and are not jettisoned after their contents have been emptied—it would increase the drag too much!

The main idea of the wind tunnel used to be that it was much cheaper to make changes in a small airplane model and correct defects than it was to build the actual airplane and then make the changes, but when we heard that a new eight-foot supersonic wind tunnel to be built at the NACA Ames Laboratory in California was to cost about \$32,000,000—we began to wonder if it isn't cheaper these days to build a few airplanes and make the design changes as required from flight tests than to build an expensive wind tunnel.

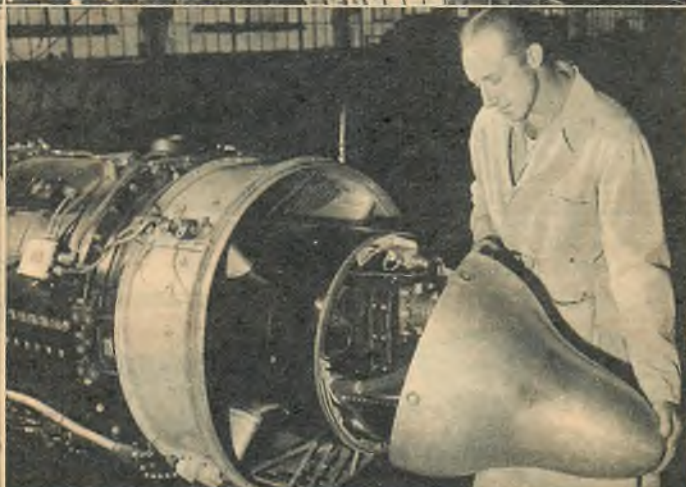
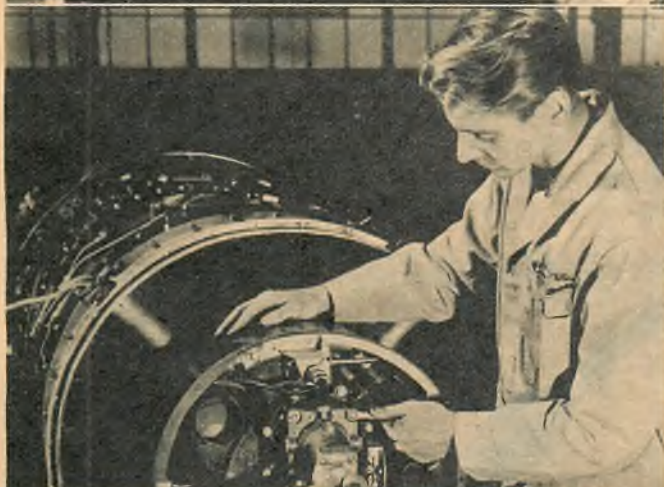
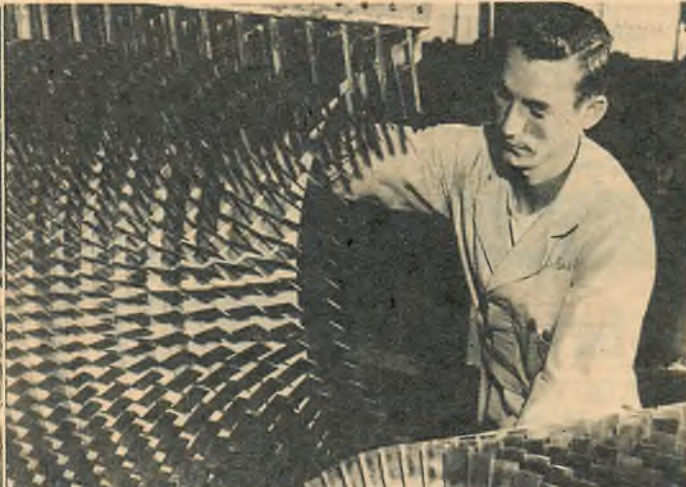
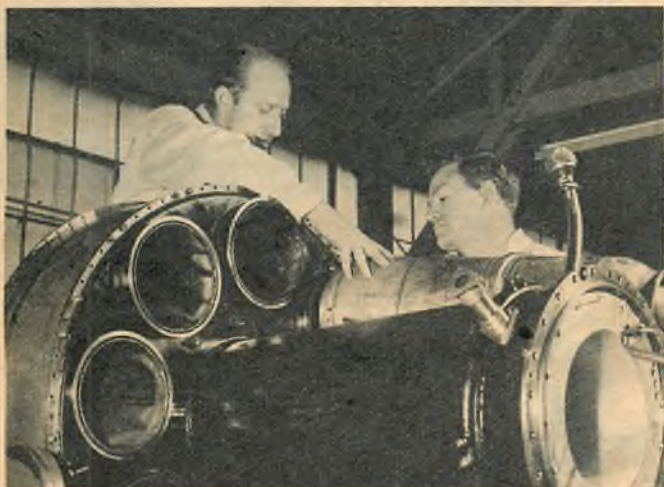
If a jet fighter pilot tells you he pulled the wings off his plane in a steep bank at very high speed above 40,000 feet, tell him "t'aint so." It is impossible to put a load of more than about 2½ G's on a high-speed aircraft at 40,000 feet, believe it or not! At 40,000 feet the air has a density of less than one-fourth that at sea level, so that the same maneuver executed at the same speeds puts only about one-quarter the load on the airplane at that altitude as at sea level. And if the pilot is flying more than about 550 mph, then the lift coefficient of his wing is beginning to deteriorate due to compressibility. Since the total load on the wing is determined by the lift coefficient and the density (among other things), the combination of these two effects reduces greatly the number of G's a pilot can pull at such high altitudes. Also wings are no longer "pulled" off high-speed aircraft, they are twisted off at the root.

After their "Baby Wright" racing plane hit a speed of 80 miles per hour in 1911, the Wright Brothers announced that airplanes should never be designed to fly at more than 100 miles per hour as any greater speed was "too dangerous." And Glenn Curtiss, who repeatedly broke speed records at the controls of his own airplanes, never drove his automobile at more than five miles an hour because it was "too dangerous."



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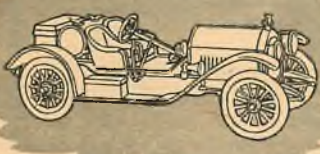
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Among the Miniature Aircraft Corps' fleet of flying scale for U-control or free flight is the big 4 foot Curtiss P-40F of World War II. (□ \$9.00)



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<b>1/2 A</b>	THE INFANTWAGON	Stunt	\$1.75
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THE deBOLT MODEL ENG. CO.

## MONO-LINE TUFFY

*A Model Any  
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Complete Pre-fabricated Kit  
Only ... \$1.98

Mono-Line Control Unit for TUFFY... \$ .98

Mono-Line Handle for flying TUFFY. Only \$1.50

Complete Set . . Kit, Control Unit, & Handle ... \$4.45  
At Your Dealer . . . If He Cannot Supply, Order Direct

VICTOR STANZEL & CO., SCHULENBURG, TEXAS



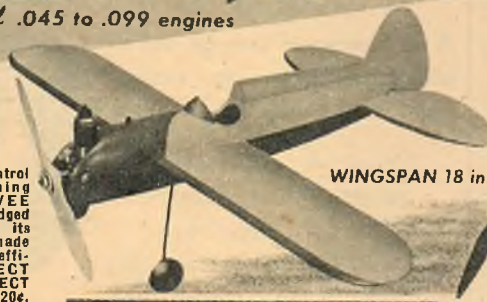
Class 1/2 A  
WING SPAN 24"

## • THE ULTIMATE IN FINE MODEL DESIGN •

WEE WILLIE by Monarch  
for All .045 to .099 engines

\$1.95

For HALF "A" control line flying, nothing compares with WEE WILLIE. Acknowledged the finest model in its class. All precision made — handsome and efficient. The PERFECT model — the PERFECT gift! By mail add 20¢.



WINGSPAN 18 in.

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Our 330th Advertisement

## For a Merry Christmas REAL DIESEL ENGINE!



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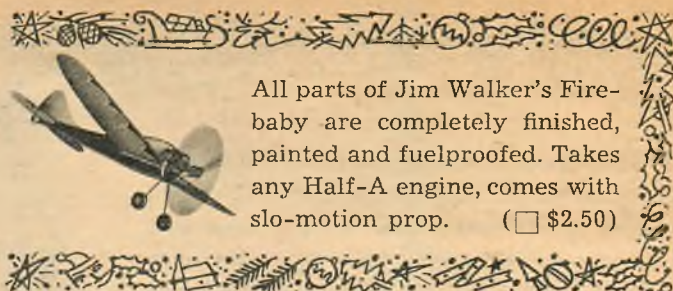
- Ideal for planes, boats, midget cars
- Actually runs at 7500 RPM, produces 1/7 HP
- Height a full 3 1/2 inches; weight 5 ounces
- Comes completely assembled, ready for operation

MAYBE WE'RE CRAZY, giving away a precision diesel engine, complete with cylinder and piston, carburetor, crankshaft, connecting rod, etc. for ONLY \$2.95. But we're selling thousands of DEEZILS all over the world, and that keeps our production costs down. DEEZIL is streamlined, compact, rugged. Starts quickly, easy to install, runs for years! Fast delivery if you ORDER DEEZIL today!

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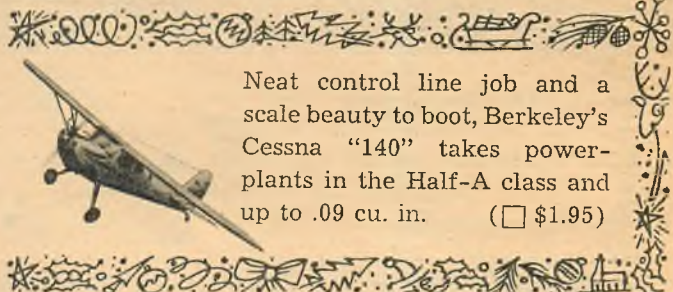
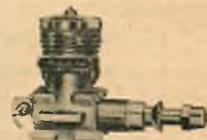
SEND \$2.95 plus 25¢ postage for each Deezil

GOTHAM HOBBY CORP. DEPT. A, 107 E. 126TH ST. NEW YORK 35, N. Y.



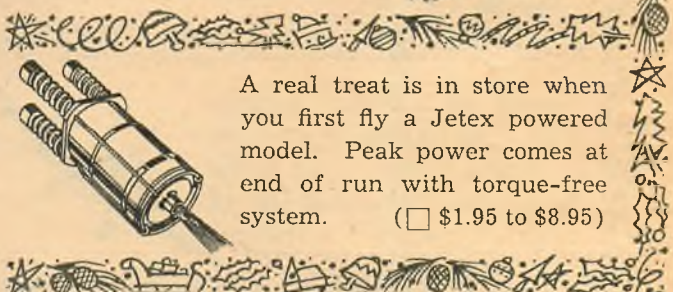
All parts of Jim Walker's Fire-baby are completely finished, painted and fuelproofed. Takes any Half-A engine, comes with slo-motion prop. (□ \$2.50)

Bearing a distinguished name in the model motor world, Dooling Bros. "29" has moved into the team racing and the B speed circles. (□ \$14.95)



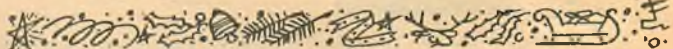
Neat control line job and a scale beauty to boot, Berkeley's Cessna "140" takes powerplants in the Half-A class and up to .09 cu. in. (□ \$1.95)

Oil, fuel, fire and crash resistant is the Tufskin material of which Thomas Associates' Pl-A kit is made. U-control, Cl. B; 31" span. (□ \$9.95)



A real treat is in store when you first fly a Jetex powered model. Peak power comes at end of run with torque-free system. (□ \$1.95 to \$8.95)

Basic model in the Testor-McCoy program of progressive model building is the Testor Freshman "19" trainer kit to take McCoy 19. (□ \$2.98)



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Super SIZE PERFORMANCE PREFABRICATION

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PDQ PRODUCTS COMPANY

TULIP & DAUPHIN STREETS PHILADELPHIA 25, PA.





True 12 to 1 scale model of famous Offie racing car is Ohlsson & Rice's new mid-gt racer. Available with sport drive. (□ \$19.95)

Four new Scientific control line scale ships are the Voyager (shown), Cessna 170, Aeronca and Piper Spl. Carved balsa fuselage. (□ \$1.95)



Build an old-fashioned auto for your dad or uncle. Hudson Miniatures has this Maxwell. (□ \$2.50)

The job that amassed greatest number of points in Nationals stunt event: the Andrews-designed, Guillow-kitted Trixter Barnstormer. (□ \$5.95)



Hard to pronounce, but easy to build is Gjoa ("yeah") by Model Shipways. This detailed kit of Amundson's ship makes a very fine gift. (□ \$8.25)

Remarkable for its ability to fly free flight, then be immediately transformed into a control line job is Top-Flite's Lil Rascal. (□ \$1.50)



MR. DEALER:

*A Tip for You!*



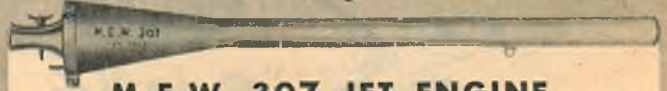
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**M.E.W. 307 JET ENGINE**

M.E.W. 307 is the fastest selling jet engine on the market today! Starts with air from auto spare tire or inner tube. Built completely from heat resistant stainless steel. M.E.W. 307 is 26" long yet weighs only 8 ounces. Mounting brackets built on engine. M.E.W. 307 is instant starting. Has easy-to-replace valves. This rugged, powerful jet is only \$9.95 prepaid in U.S.A. Order M.E.W. 307 now for XMAS delivery. Satisfaction guaranteed.

**MINNESOTA ENGINE WORKS**  
218 SOUTH WABASHA ST. PAUL 1, MINNESOTA



This big brother to our popular 'A STUNT RUNT' is a sweetheart with either Cub .099 or McCoy 9 engines.

- All parts pre-shaped
- Airfaired wings
- Flies full stunt pattern

Span 20" Length 17" \$1.95

**SUPER STUNT RUNT**

JOY PRODUCTS COMPANY, INC., MENOMINEE, MICHIGAN

## Dyna - Model's 2 New Kits



**SPITFIRE and ME-109—\$2.75 ea.**

These 1/4" scale solid model kits are superbly detailed. See our ad on page 81 for complete listing.

If your dealer cannot supply you, write direct, enclosing check or money order, plus 25c for packing and postage—no C.O.D.'s.

**DYNA-MODEL PRODUCTS COMPANY**  
76 SOUTH STREET, OYSTER BAY, NEW YORK

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For speedy delivery of any merchandise advertised in this issue of AIR TRAILS.

**FREE!** With purchase of \$1 or over we will include Winter's 'MODEL AIRCRAFT PLAN BOOK' (Regular \$1.00) With purchase of \$3 or over, we add 'PLANE MODEL WINNERS' (Regular \$1.00) Total Value \$2.00 FREE.



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Send items listed below, for which payment is enclosed.

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# It's EASY to Get HARD-TO-GET California Merchandise from CRESCENT!

OHLSSON & RICE 60  
Engine \$11.95\*  
plus  
CASALAIRE KIT \$8.75  
Retail Value \$20.70

Combination  
for  
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Kit Only \$8.75  
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## A CRESCENT Special Feature!



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MODEL SHOP

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## OUTSTANDING STUNT PERFORMER



**SCIENTIFIC**  
**"Baby ACE"**

"1/2 A" U-CONTROL MODEL  
for small bore engines (.02 to .09)

**\$3.50**

Ask your dealer to show you this Scientific beauty! Kit features: Carved Balsa Fuselage, Stunt-Shaped Balsa Wing, Die Cut Balsa Tail Surfaces, Formed Landing Gear & Firewall, Aluminum Cowling, Decals plus Complete Hardware.

**COMPLETELY PREFABRICATED**

SCIENTIFIC MODEL AIRPLANE CO., 113 Monroe St., Newark 5, N. J.

Buy from your dealer and save 15c mail charge



1/4"  
Scale

### KINGFISHER

Super-detailed

Works into a beautifully interesting model—and easy to build from complete kit.

**\$2.00**

One of the best-known fighters!

## Redi-Carved SOLIDS Make Thrilling Models

These famous kits contain REDI-CARVED FUSELAGE, Wings, rudders and stub cut to outline shape; Wheels, Die-cast Prop, printed cockpit enclosure, color insignia and score markers. Cement, dowels, paint and full-size plans

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Focke-Wulf 190 .... \$1.25	Grumman Hellcat... \$1.25
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Monthly & Annual Awards for Performance with our spectacular HELL-RAZOR. Entry blanks at dealers or by mail—FREE

Mail-orders filled. Remit with order (No C.O.D.)

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2347 AVIATION HIGHWAY, TUCSON, ARIZONA  
World's Largest Builder of Motor Boat Models

9 beautiful power boat construction kits—25" to 33 1/2" length. \$5.50 to \$9.50. Write for literature on boats, motors, fittings. At all hobby stores. Chris-Craft, Owens, Harbor, Vinyard, Colonial. Large boat construction from factory plans.



Enterprise's latest is the prefab "Knockout" boasting 18 inch wingspan for tiny engines. Sister to New Era & Baby Era. (□ \$2.25)

Making a name for itself in automotive circles is Fador's EMF 30 racer kit, a Smallster miniature of a popular 1909 car, 6 1/4 in. long. (□ \$2.50)



Monarch's new prefabricated free flight for Class AA (Half-A) engines, Scot-Free has a wingspan of 34 in. (□ \$2.50)



Sound-powered Walkie-Talkies are two-way units including two-conductor copper wire coil for distance operation by Technical Industries. (□ \$2.95)



One of a brilliant collection of prefabbed control line scalars is Sterling's Howard Pete. This job spans 30 in. (□ \$5.95)



Spitz is an .045 Half-A engine from Mel Anderson's Spitfire concern complete with tank, glow plug, plug-clip, prop, wrench and bolts. (□ \$3.95)





**Fellas...**  
For the Finest  
Gifts to Give or Get

SEE THE **TOP FLITE** MODEL INC. AD ON PAGE 76

TOPFLITE MODELS INC., 2635-455 Wabash Ave., Chicago 16, Ill.

AIR TRAILS



New models added to Monogram's Speedee-Bilt collection are the F-86, Navion and Grumman Hellcat shown. (□ 75¢)



Latest entry in the Forster line of engines is the "29" which has such features as ball-bearing crankshaft and hi-compression head. (□ \$11.75)

High-performance Half-A free flight, Sniffer is a Midwest kit with die-cut ribs, body, windshield and firewall. (□ \$1.50)



Something that has long been needed is this 124-pg. book "Radio Control for Models" printed in England and available from Polk's. (□ \$2.00)

An Ehling design and a Junior Aeronautical Supply Co. kit, the "Phoenix Imp" has 120 sq. in. wing area. (□ \$1.25)



Companion ship to F-B's "Folly" and "P-T Trainer" is this Cl. C and D "Sharpy," a 47 in. span stunt model. (□ \$4.95)



# FOR XMAS CHEER YOUR FINISHING KIT IS HERE...

Brushes and bottles and trimming needs galore, Complete in one box, At your local hobby store. Scientifically designed, to provide you with success,—ask for a FINISHING KIT—don't settle for less.



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OK Cub, 2273.....	327.50
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OK Cub, 2299.....	353.50
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OK Cub, 2301.....	355.50
OK Cub, 2302.....	356.50
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Fourth member of the famous "Cub" family of Herkimer—OK engines is this .039. Made especially for the new modeler and tiny planes. (□ \$4.45)




New addition to Cleveland Model & Supply Co's "IT" line is this F-86 Sabre with wingspan of 24 inches; fuselage is even longer. (□ \$1.50)




Another of the big engine boys to go into the Half-A class is Bill Atwood. Here's his .49 Wasp which did well at the Nats. (□ \$5.75)



Endurance type rubber powered planes are fun to build and fly, Comet offers a trio of interesting designs: Dipper, Sparky, Stratus. (□ \$1, each)



One of the few American diesel engines is Gotham's "Deezil" with variable-compression head. Weighs 5 oz.; 3 1/2 inches in height. (□ \$2.95)



Simplikit construction is feature of Joy Products' Nomad free flight kit for Half-A engines. All parts are pre-shaped; span, 31 inches. (□ \$1.50)

**ON ITS  
WAY TO  
YOU . . . .**





Henry Engineering, makers of the Veco line of plane kits, props, wheels and accessories, now brings out the Veco "29" glow plug engine. (□ \$14.95)

Detailed scale, with the hard work done, Dyna-Model scale exhibition planes are a collector's delight. New ones are Me-109 and Spit. (□ \$2.75)



A remarkably powerful engine for its size is Minnesota Engine Works' MEW 307, a 26 inch long jet engine for model planes; easy starting. (□ \$9.95)

Sporting a magnesium alloy base, Consolidated's Hell-Razor has done well in speed. (□ \$5.95 to \$6.95)



Everything you want to know about the care and operation of glow plug engines is in America's Hobby Center's "Glo Engine Handbook." (□ \$1)

Finishing kit containing Trim-Film in 3 forms plus colored and clear dope, hot fuel proof-er and other necessary materials by Hobby Decal. (□ \$1.50)



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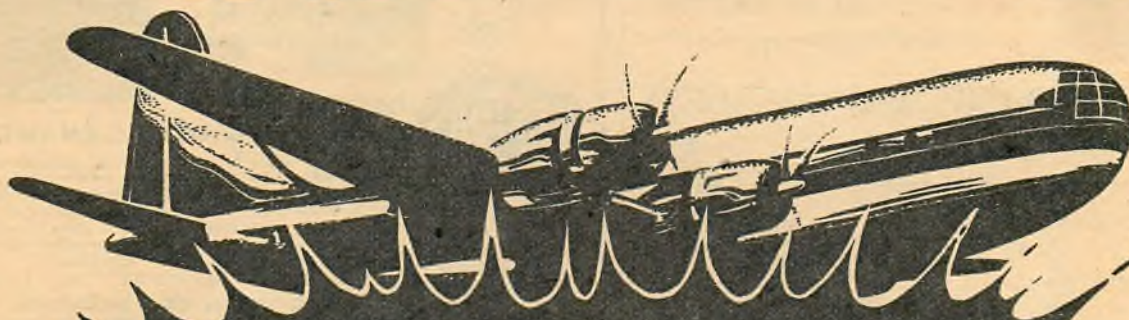


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TRAIN IN MIAMI -- AIR CAPITAL OF THE WORLD





A Marine Corsair landing on carrier deck after a flight from Tokyo—member of a squadron taking part in the war against Korean Reds.

## The Same Old Fight... and the Same Old Enemy

They called it a "police action" in the beginning, but to the men manning the guns and the tanks, the planes and the ships, it looked like the same old fight—a continuation of the last war, a sort of World War II½. One of the chief reasons was that each new conflict is fought in the beginning mainly with the weapons developed in the last one. And thus it was that although the USAF had some F-80's on the scene within a matter of hours, it was the F-51's and the Corsairs that took up the battle in force. So to the veterans of the last war it was little wonder that they had a creepy feeling they'd been through all this once before.

And we have been through this sort of thing . . . many times. This time under the banner of the United Nations the free countries of the world are again facing with armed might a threat to all humanity. The same old enemy in slightly different dress is still there. We must continue to oppose this aggressor nation, to fight the expansion of Communism. Once again America has learned by the bitter lesson of unpreparedness; let us all fight for ample military strength on the land, on the sea and in the air.

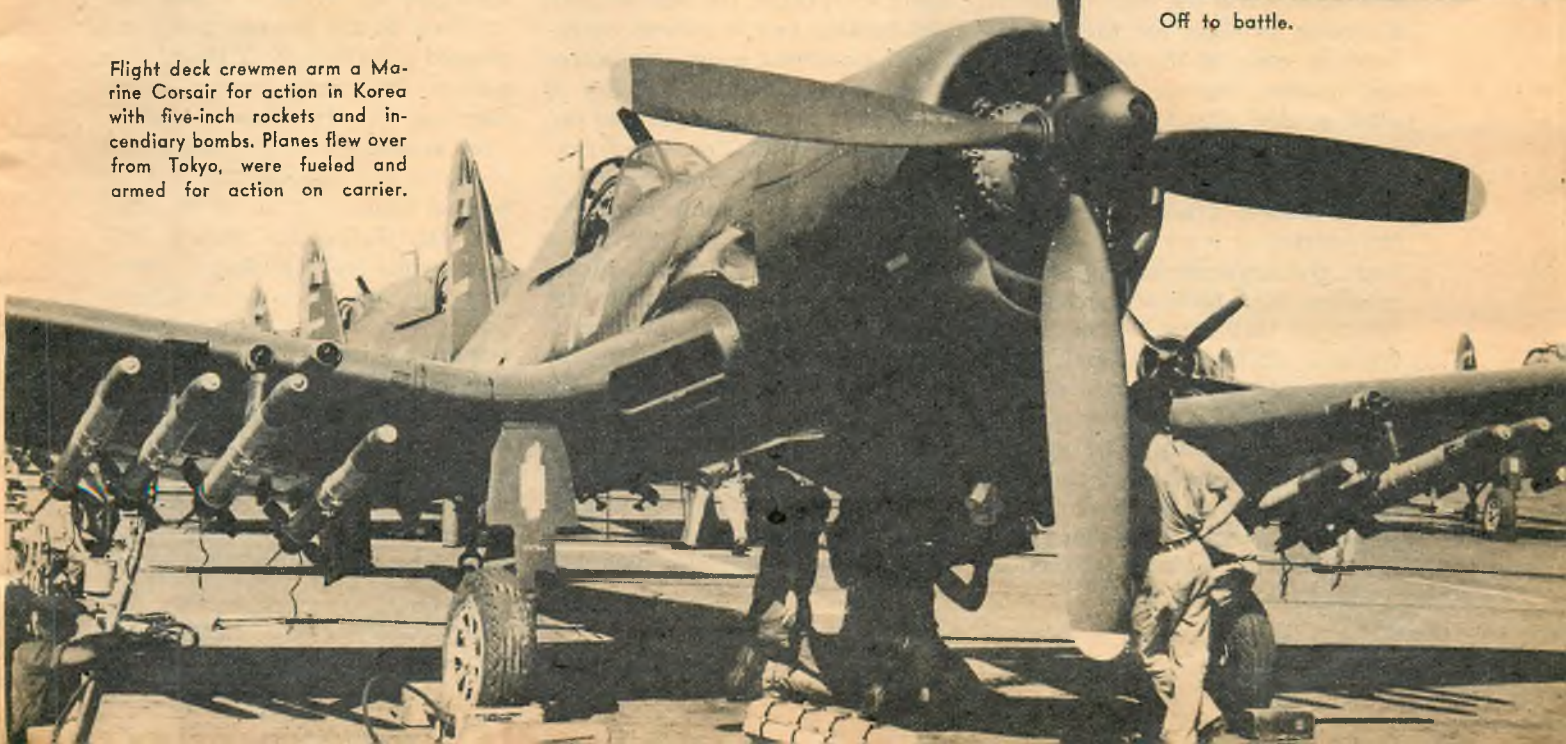
Flight deck crewmen arm a Marine Corsair for action in Korea with five-inch rockets and incendiary bombs. Planes flew over from Tokyo, were fueled and armed for action on carrier.



On catapult . . .



Off to battle.







# Bomber Mission — 1951

The "high bomber" offers many new operational problems. Here's how we are solving them

■ America's fundamental strategic weapon will be, for some time to come, the speedy, far-ranging carrier we now call the "high bomber." This is still the only means of transport in sight for the big H-bomb or some of the other atomic annihilation agents. And even after guided missiles become operational, the high bomber will be needed as a mother plane for the air-to-surface types and to control, during at least a part of their flight, the larger surface-to-surface missiles. This tactical importance, combined with the bomber's increasing ability to defend itself against interceptors, assures the future of bombardment aircraft.

These bombers fly twice as fast, twice as high, and three times as far as did wartime bombing planes. With this increase in performance we inherited a number of tactical

By JAMES L. H. PECK

advantages over enemy interceptors and antiaircraft defenses. But along with these, the bomber men also became heir to several operational problems which are introduced by the bomber's ability to fly so high and so fast and so far.

Target Identification, Bomb Stability, Bombing Platform Stability, Armament and Countermeasures, Navigation—these are the main problems of present and future bomber operations; but there are others of importance which bombardment experts believe will present their own solution as the major requirements are met.

Bombardiers must locate their objectives 40 or 50 miles away to keep from overrunning the targets. They have only three or four minutes to set up ballistic data and

complete the bomb run, since their bombs must be released from six (for the B-36D) to 10 miles (for the B-47A) short of the target if the ships are flying at 48,000 feet.

"Even on the clearest day," explained Col. Paul W. Tibbets, who piloted the atom bomber Enola Gay on the Hiroshima mission, "you encounter a high haze which obscures the specific target from normal vision." Most of the time, one can distinguish ground features while looking straight down. But objects become indistinct when you look at oblique angles out toward the horizon. There are only two solutions for bombardiers who must look far ahead to spot the target. For visual sighting, the experts have developed a device which incorporates a powerful telescopic sight. When this device cannot be used, the airmen would



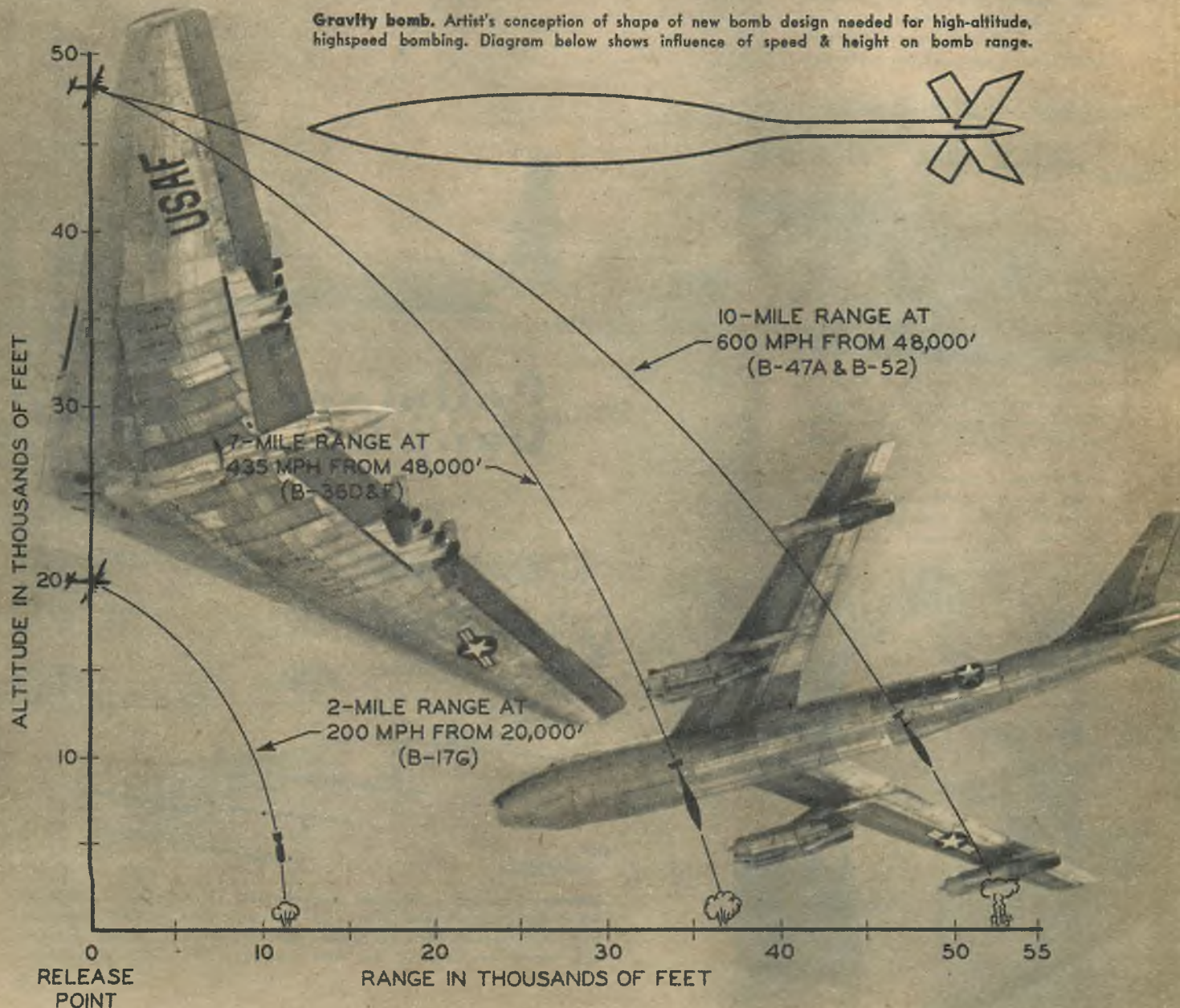
**Tarzan**, a 12,000-pound radio-guided bomb by Bell Aircraft. Use of radio control greatly increases its accuracy.

use radar equipment (active on North Korean "runs") which can be described only as an improvement on the excellent wartime "Eagle" gear employed over Japan. Unofficially, the use of infrared attachments has been suggested as a means for improving visual air-to-ground sighting in the event that the radars are jammed by sudden and effective enemy countermeasures.

This long-distance bomb release has both tactical advantages and disadvantages. When you can drop your bombs while still 10 miles away from a target, it means that you have a good chance of

taking evasive withdrawal before you cross heavy flak areas. Secondly, the interceptors have to come out this greater distance to reach you. If they do not hit you 15 miles away, it is too late. The disadvantage lies in having to sight while so far away. Even with the aid of high-resolution radar, there is a chance of not distinguishing your specific target or mistaking some similar terrain feature for it. Bombardiers may use "retrobombs" fitted with rearward-firing rocket boosters to cut down the range of their bombing without slowing flying speed.

Hitting (Continued on page 57)







**Margaret Downsbrough**, Butler, N. J., won her Silver "C" and established new National feminine goal-and-return record of 76 mi., Grand Prairie-Cleburne.



**Dick Johnson** in cockpit of his winning RJ-5 receives tribute from (lt. to rt.) Kim Scribner, Paul Schweizer, Ray Parker and Wally Wiberg, all top performers.



**Double bubble** Pratt-Read flown by Chuck Kohls of Mich. drew attention of modification experts. Ship came in first in Class B category. Best flight 115 miles.

**Ted Nelson**, designer of powered Hummingbird, was slightly nonplussed when presented Air Trails prize of Nylon tow-line. Tech. Ed. Dawydoff shows back.



**Ross Ranger III** in flight. This sailplane was designed and built by Vernie Ross of Wichita Falls, Texas, brother of Harland Ross, designer of the RJ-5. It has excellent maneuverability and is the only sailplane in the country using the small Van Zelm aileron. Was flown by Frank Goff.



## Sailplane Parade:



**Line-up** of competing sailplanes ready for take off. A guinea pig flight by the Nelson Hummingbird after each morning's pilot meeting determined strength of thermals which was radioed down to the ground. As soon as favorable report was received the ships were given their take-off positions.





**Sleekest** modified LK at Grand Prairie was Pop Krohne's red Comet. Top of wing was covered with mahogany plywood. Excellent workmanship paid off in excellent performance. Shortly after the meet Pop made outstanding flight of 225 miles.



**The Tiny Mite** flown by Ray Parker of California was another sailplane which has undergone considerable face lifting since its first appearance. Originally the ship was built and owned by Dick Johnson. It still suffered from a few bugs, one of which was high wing incidence.



# Grand Prix at Grand Prairie

**America's top soaring pilots rack up new records thanks to the famous Texas thermals**

■ Outscoring his nearest competitor by 370 points or by almost 50 per cent, Richard Johnson of Starkville, Miss., won hands down the title of U. S. National Soaring Champion at this year's 17th National Soaring Contest. In doing so he established two National motorless records for distance and goal with his flight of 337 miles from Grand Prairie to Odessa, Texas.

Johnson's victory was not due entirely to the excellence of his high-performance RJ-5 sailplane, but in considerable measure to his astute interpretation of weather conditions, which were not too favorable for a flight of this kind. He

had to work up wind and cross-wind in order to reach the goal, thus considerably reducing his ground speed. Even then his average was in the neighborhood of 45 mph, a high mark for sailplane cross-country flight. Could he have flown downwind, he undoubtedly would have been able to establish an International distance record.

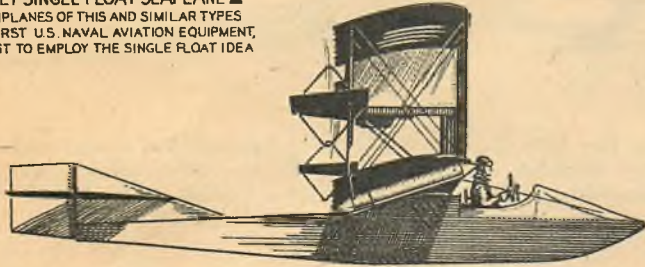
Although the meet was plagued by poor soaring weather five of the eight contest days due to a stagnated front and insufficient heating to raise a low inversion layer, the 46 participating pilots flew a total of 15,172 miles. This was the next highest mileage flown (*Continued on page 64*)



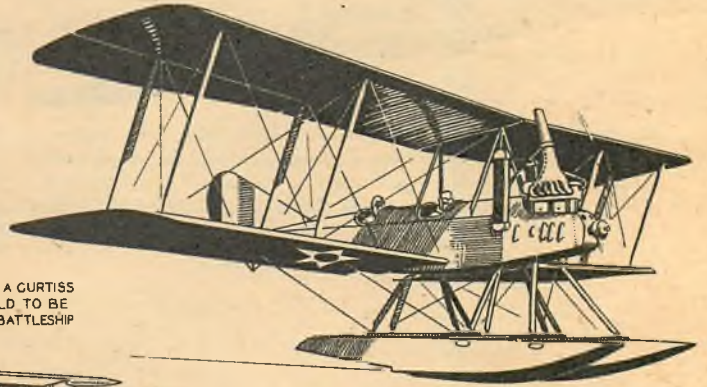


**1910 EARLY SINGLE FLOAT SEAPLANE ▲**  
CURTISS BIPLANES OF THIS AND SIMILAR TYPES FORMED FIRST U.S. NAVAL AVIATION EQUIPMENT, WERE FIRST TO EMPLOY THE SINGLE FLOAT IDEA

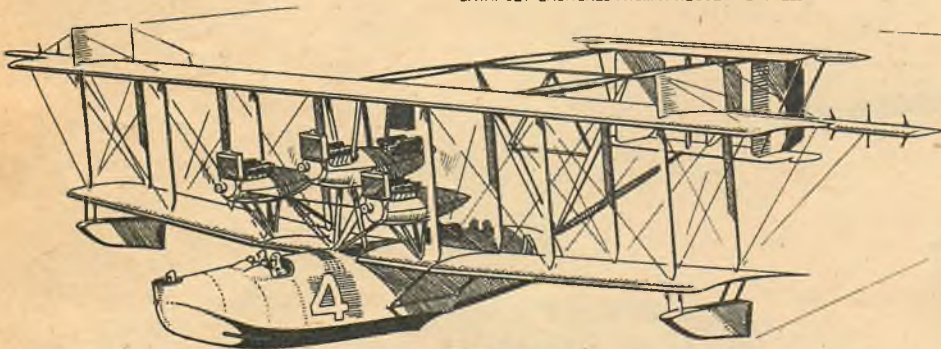
# Air Progress



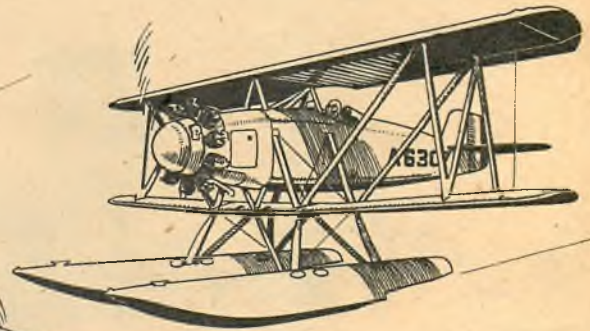
**▲ 1912 EARLY FLYING BOAT** ALSO A CURTISS DESIGN AND FIRST AIRPLANE IN THE WORLD TO BE CATAPULT-LAUNCHED FROM A REGULAR BATTLESHIP



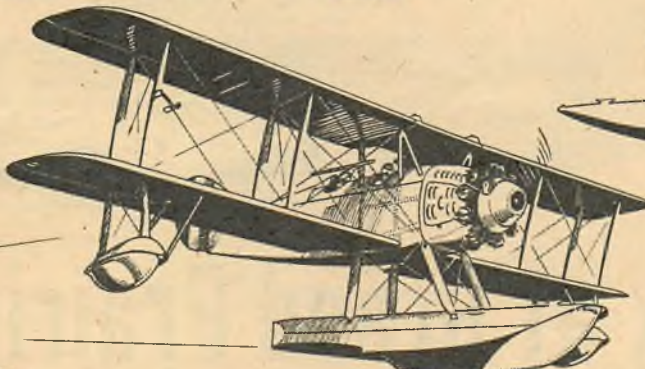
**▲ 1917 EARLY TWIN FLOAT SEAPLANE**  
BOEING TWO-PLACE SPOTTER AND ALL-PURPOSE SEAPLANE. 110-H.P. HALL-SCOTT 6-IN-LINE ENGINE. TOP SPEED WAS A DOUBTFUL 73 MILES PER HOUR



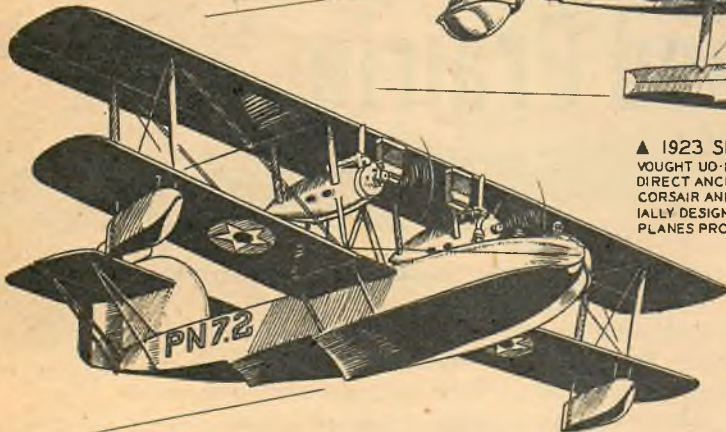
**1919 NC (NAVY-CURTISS) ▲**  
DESIGNED AT THE TAIL END OF WORLD WAR I THE BIG NC BOATS HAD A WING SPAN OF 126 FEET STOOD 22 FT. HIGH AND WERE POWERED WITH FOUR 400-H.P. LIBERTY V-12 ENGINES. ONE OF THESE SHIPS WAS FIRST AIRPLANE IN THE WORLD TO COMPLETE A SUCCESSFUL TRANSATLANTIC FLIGHT (1919).



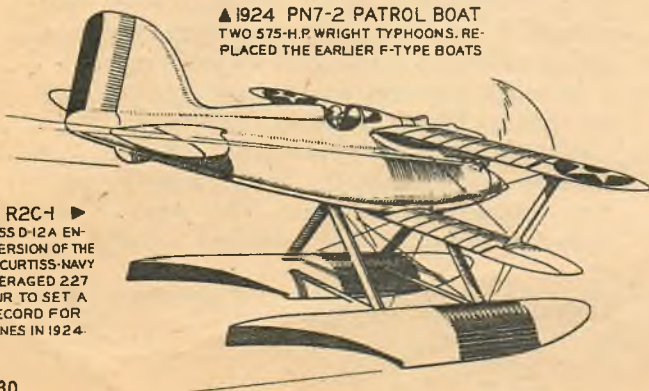
**1924 NAVY TYPE TR-1 ▲**  
220-H.P. LAWRENCE RADIAL ENGINE EXTENSIVELY USED BY THE NAVY AS BOTH LAND AND SEAPLANE.



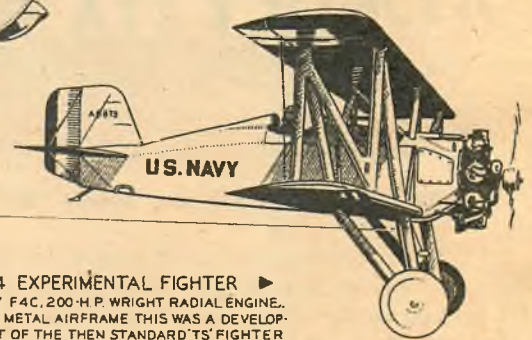
**▲ 1923 SHIPBOARD SPOTTER**  
VOUGHT UO-1, 200-H.P. WRIGHT RADIAL. DIRECT ANCESTOR OF THE FABULOUS CORSAIR AND ONE OF THE FIRST SPECIALLY DESIGNED CATAPULT-LAUNCHED PLANES PRODUCED FOR THE U.S. NAVY.



**1924 NAVY R2C-1 ►**  
500-H.P. CURTISS D-12A ENGINE. FLOAT VERSION OF THE ORIGINAL 1923 CURTISS-NAVY RACERS IT AVERAGED 227 MILES PER HOUR TO SET A NEW SPEED RECORD FOR FLOAT SEAPLANES IN 1924.



**▲ 1924 PN7-2 PATROL BOAT**  
TWO 575-H.P. WRIGHT TYPHOONS. REPLACED THE EARLIER F-TYPE BOATS



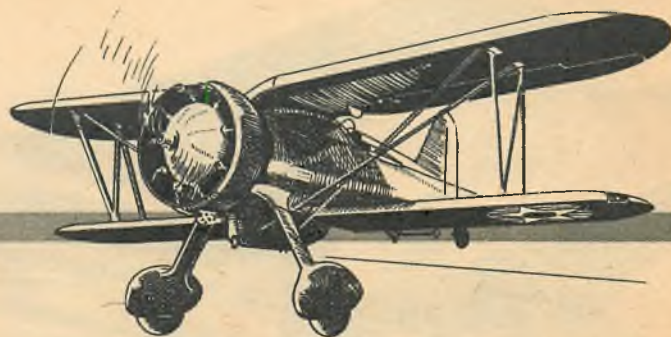
**1924 EXPERIMENTAL FIGHTER ►**  
NAVY F4C, 200-H.P. WRIGHT RADIAL ENGINE. WITH METAL AIRFRAME THIS WAS A DEVELOPMENT OF THE THEN STANDARD 'TS' FIGHTER

Capt. Washington Irving Chambers may rightly be called the father of U. S. Naval aviation. Though not a flyer himself, he was convinced of the need for a strong air arm, and through his efforts the Navy finally assigned a single officer, Lieut. T. G. Ellyson, to learn to fly. That was in 1910. By 1914 a permanent Naval aviation base had come into being at Pensacola, Florida. When America entered World War I the total strength of Naval Air Service comprised 40 officers, 1,650 enlisted men and around 55 airplanes of all types. Navy planes did coastal patrol work both here and in Europe, and provided eight land-plane squadrons to operate against German U-boat bases on the Continent of Europe.

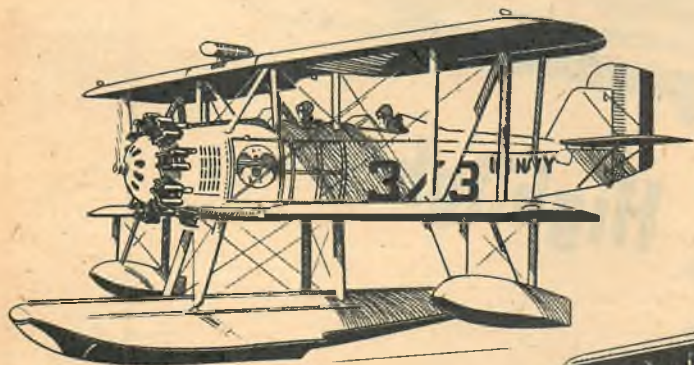


# Naval Air Service Story

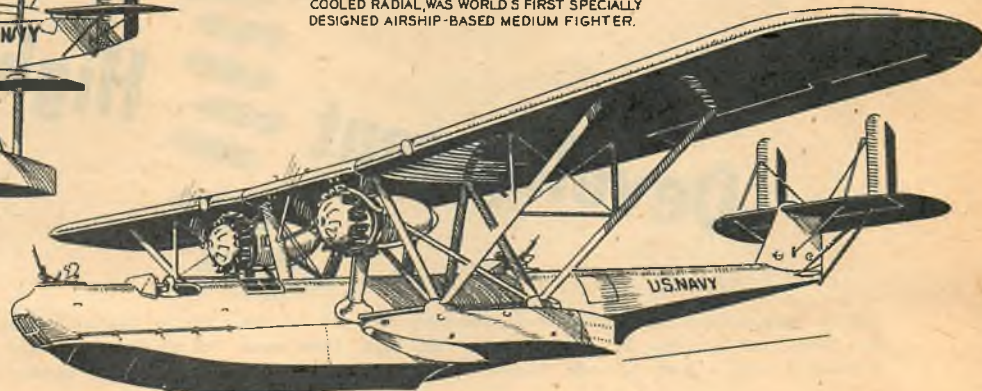
## Part 1—by DOUGLAS ROLFE



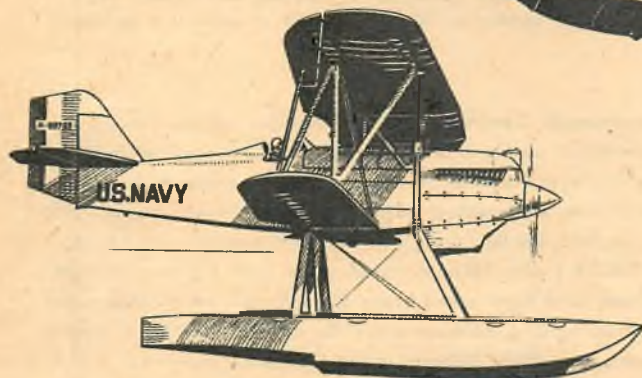
▲ 1931 AIRBORNE CARRIER-FIGHTER ▲  
THE CURTISS NAVY F9C-1, 400 H.P. WRIGHT AIR-COOLED RADIAL, WAS WORLD'S FIRST SPECIALLY DESIGNED AIRSHIP-BASED MEDIUM FIGHTER.



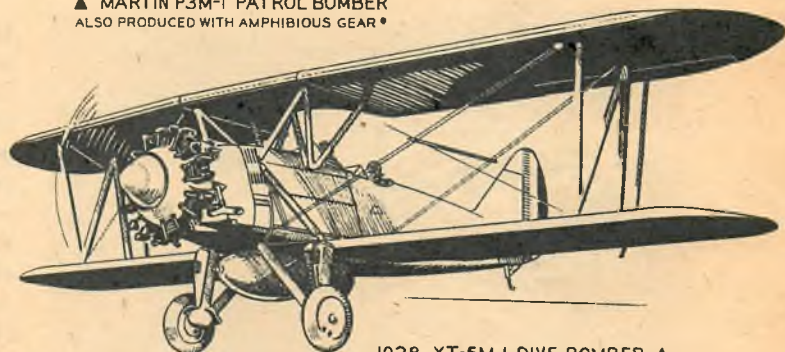
▲ 1929 VOGHT CORSAIR 425-H.P. PRATT & WHITNEY RADIAL ENGINE. — LONG THE STANDARD NAVY SHIPBOARD SPOTTER THE CORSAIR WAS AN UNUSUALLY RUGGED PLANE DESIGNED FOR CATAPULT LAUNCHING



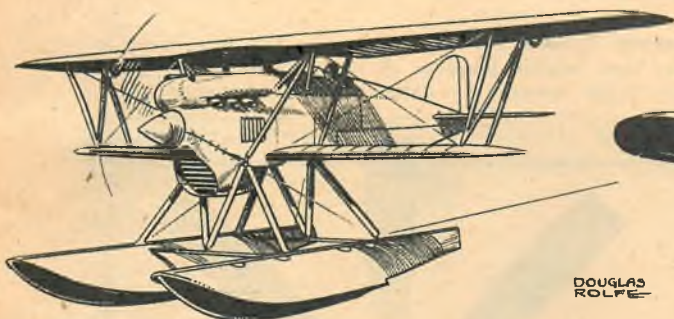
▲ MARTIN P3M-1 PATROL BOMBER  
ALSO PRODUCED WITH AMPHIBIOUS GEAR •



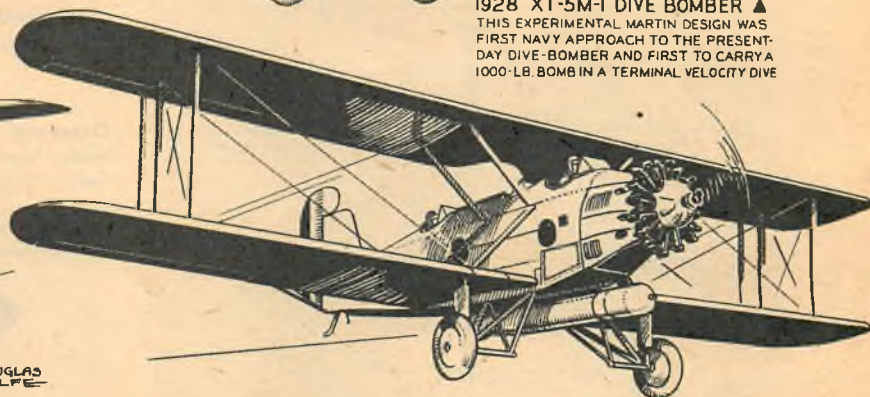
1926 TYPICAL NAVY FIGHTERS CURTISS F6C ▲ HAWK 430-H.P. CURTISS D.12 ENGINE AND BOEING FB-3 600-H.P. PACKARD ENGINE. TWO REPRESENTATIVE NAVY FIGHTERS OF A QUARTER OF A CENTURY AGO. EACH WAS CONVERTIBLE TO LAND OR SEAPLANE BY INTERCHANGE ▼ OF LANDING GEARS—LATER, WAS RADIAL POWERED



1928 XT-5M-1 DIVE BOMBER ▲  
THIS EXPERIMENTAL MARTIN DESIGN WAS FIRST NAVY APPROACH TO THE PRESENT-DAY DIVE-BOMBER AND FIRST TO CARRY A 1000-LB. BOMB IN A TERMINAL VELOCITY DIVE



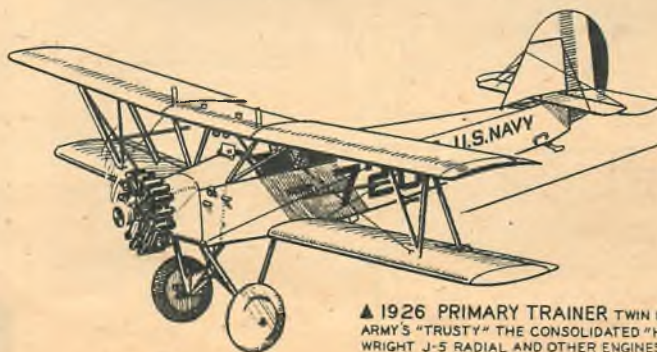
DOUGLAS ROLFE



1926 SCOUT TORPEDO-BOMBER MARTIN T4M-1 ▲  
FIRST LARGE CARRIER-BASED BOMBER USED BY THE NAVY

The fledgling service experimented with deck take-offs and catapult launchings from the very beginning, and in 1921 the first turntable catapult was mounted on the U.S.S. Maryland. At the end of World War I the Navy sent three NC-boats on a transatlantic flight. Two were forced down at or near the Azores, but the third, the NC-4, under command of Lieut. A. C. Read, reached Plymouth, England—thus becoming the first airplane in the world to fly the Atlantic.

Types illustrated here show merely a handful of the many strictly U. S. designs used by Naval aviation up until 1932. No attempt has been made to cover the numerous lighter-than-air craft it employed during this period.



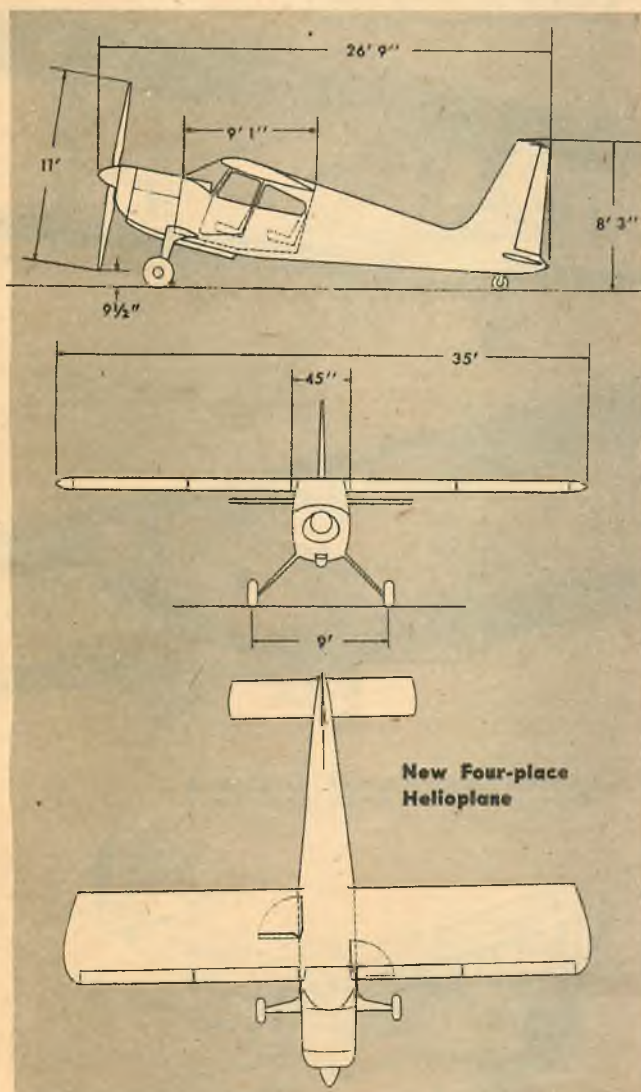
▲ 1926 PRIMARY TRAINER TWIN DESIGN TO THE ARMY'S "TRUSTY" THE CONSOLIDATED "HUSKY" 225HP WRIGHT J-5 RADIAL AND OTHER ENGINES, WAS NAVY'S MOST WIDELY USED PRIMARY TRAINER FOR MANY YEARS





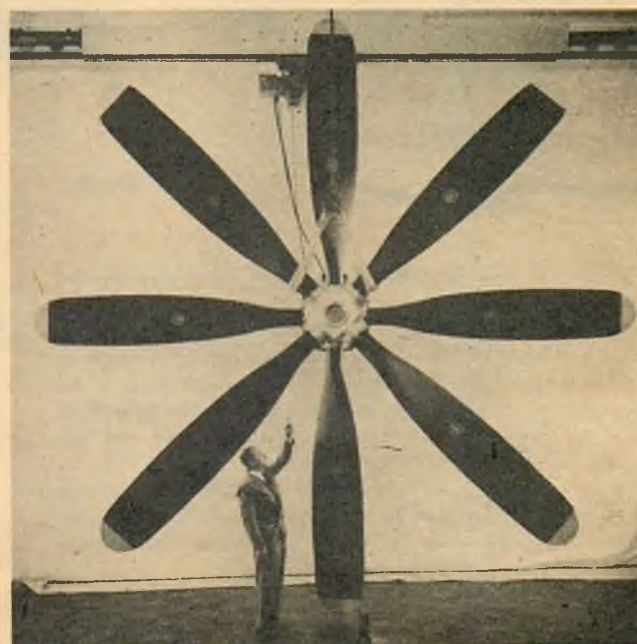
**Heavy bombs** have been safely and accurately dropped for the first time from a plane flying better than 500, mph. Tests were conducted with a B-45 Tornado four-jet bomber equipped with

special overlapping bomb bay doors which overcome the problems of air turbulence that cause bombs to climb and tumble. The new doors permit bombs to fall free almost directly into airstream.

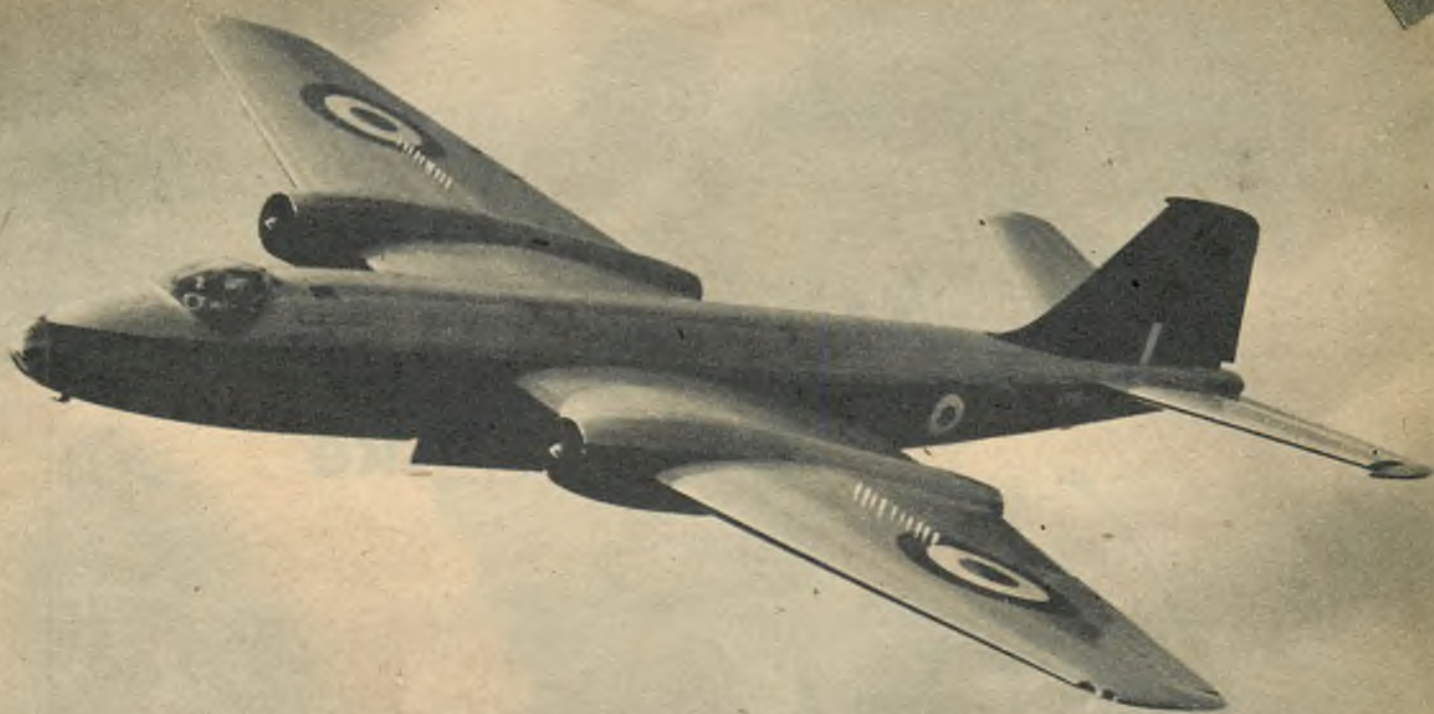


**Powerplant:** Continental 145 hp air-cooled engine. Construction: all-metal full cantilever wing, all-metal tail surfaces, welded steel tube fuselage, fire-resistant fuselage fabric covering, fire-resistant interior trim, stall-resistant automatic slats. Weights: empty, 1,212 lbs.; payload, 850 lbs.; gross, 2,062 lbs. Performance: maximum speed (at 5,000 ft.) over 140 mph; cruising (at 5,000 ft.) over 125 mph; minimum level flight speed under 30 mph; take-off distance under 50 yards; landing distance under 50 yards; take-off and landing distance over 50-ft. obstacle under 150 yards. Equipment: C.A.A. standard contact flight instruments; variable-pitch propeller, two 25-gal. wing fuel tanks, navigation lights, shoulder and seat safety belts, ejector-type engine muffler, hydraulic brakes, cabin heater. Performance figures for full gross load, guaranteed within 5%.

**Octoprop.** Towering two stories above the floor level, this eight-bladed dual rotation propeller of 19 ft. diameter was built by Curtiss-Wright company for 10,000 to 15,000 hp turbine engines.







**Canberra B.2**, England's latest jet-propelled bomber exhibited at the Farnborough show. Plane was built by English Electric Co., Ltd. and is powered by two Avon engines developing over 6000 lbs. of

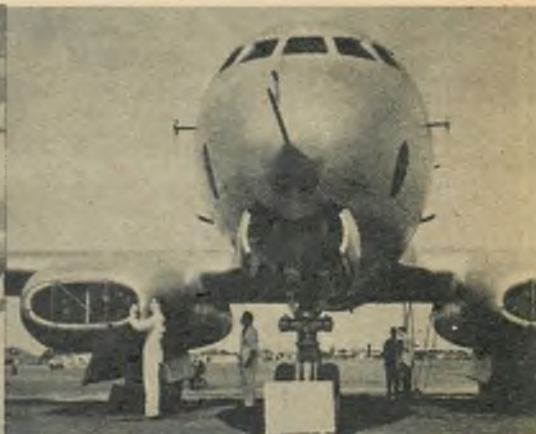
thrust each. Its performance and maneuverability aroused world-wide interest. Wing span 64 ft., length 65.5 ft. No performance data currently available. Note extended finger-type dive brakes.



**Convair XP5Y-1**, world's first turbo-prop flying boat, remained aloft recently 8 hrs. 6 min. Designed for long-range search-rescue and anti-submarine missions. 60-ton aircraft has speed of more than 350 mph. Takes off in time of 30 seconds.



**Jewels in the sky.** A Gloster Meteor jet fighter of the RAF powered by two experimental Armstrong-Siddeley Sapphire engines, each capable of developing 7200 lbs. of thrust. Meteors have been used by British for testing a number of new powerplants, including the early models of turbo-prop engines.



**Avro Ashton.** Four-jet-engined research plane, five of which were ordered by British Air Ministry. Span 120 ft., length 85.6 ft. Power supplied by four RR Nene engines developing 5000 pounds of static thrust each.

**Fairchild XC-120** is pictured directly below in flight minus cargo pod. In lower right picture pod shown as it is being attached to flying component. Note the small wheels for towing on ground which are detached and stowed into pod when aloft. Top right shows entire unit in flight. The Packplane is such a radical departure from previous conception of cargo aircraft that it promises beginning of a new era of air transport, both in military and civil fields.







# Mary Says it in Smoke

**This gal practices her penmanship faithfully—  
in a 450 hp Stearman at altitudes of 2 miles.**

■ "From left to right," was Dorothy Thompson's answer to a would-be author who once asked her advice on how to start writing. But Mary Tracy, a pretty, young aviatrix from Miami, Florida, claims the best method is "from right to left and backwards," because in her league that's the way it's done.

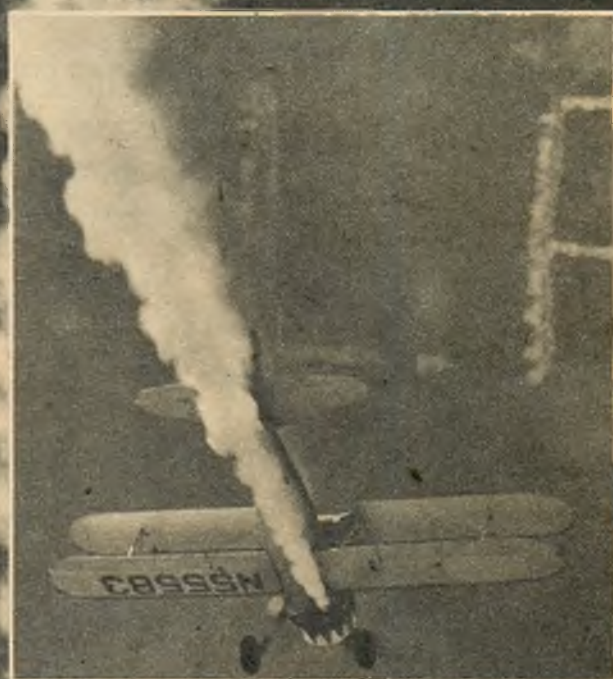
Mary is, to our knowledge, the first woman skywriter. She struggled valiantly against discouraging odds to make a place for herself in aviation. She is now writing her success story in white, mile-high letters against blue Florida skies.

"The Hi-C kid is coming to town—watch for her in the sky." This enigmatic message, in newspaper advertisements, precedes Mary's visit to any particular city by several days when she is making a skywriting circuit for Juice Industries, Inc. The puzzle is solved for the newspaper readers when Mary's 450 hp Wasp-powered Stearman appears overhead and, with gigantic strokes, paints the sign: "Drink Hi-C Orangeade." In between Hi-C chores Mary freelances signs for other companies.

Mary became avidly interested in flying while still in high school but she was handicapped by lack of money for flying lessons. After graduation, taking two jobs at the same time enabled her to devote a small cash surplus weekly to flying. By day she worked in the sales department of an engineering concern and at night in a drug store. It took three years of weekend flying, but Mary finally graduated from Embry-Riddle with a Commercial ticket, instructor's rating and a seaplane rating.

(Continued on page 69)

By  
**ED FRANCIS**  
and **DEL PENDLEY**





**Your Job  
in  
Aviation**

# The Navigator



**Celestial navigation, radio bearings and Loran are the tools of this important crew member**

■ Bob Bergin slides out of his leather seat aft of the captain. He climbs quickly aboard a short stool, looks into an eye-piece at an illuminated cross-hair. (That's Bob in the photo.) For two minutes he keeps the cross-hair centered in a floating mirror. Twice he repeats the procedure. Each time he aims the octant at a navigational star. Three readings give him three fixes. From each fix he knows the Stratocruiser is located at some point along a line. He finds where the lines intersect—and at that point the big United Air Lines Boeing *was* only a few minutes earlier. Knowing the heading and speed, Bob can pinpoint the plane's position within five miles.

His quick scanning of three heavenly bodies and reduction of his observations to a plotted position are routine. He peers into the octant and completes his task in 15 minutes. He does this every hour, for it's his job to make certain the pilots move the Boeing from San Francisco to Honolulu according to the flight plan. Saving only 20 minutes saves 100 gallons of gas, to

say nothing of even more important flight time overhead. Too, United Air Lines wants him to hit Diamond Head smack on the dot, to please both the passengers and friends awaiting them. Schedules must be maintained.

The navigator is a very precise person. He has to be, even when crossing an ocean, for every minute saved helps bring the schedule within required limits. CAA and ICAO approve eight different routes between San Francisco and Honolulu. Which to fly?

Bob's due out of San Francisco at 11:45 this Saturday night. Two hours earlier you'd find him wheeling his car into the airport parking area. He's got some getting-ready ahead before the plane lifts and heads west. This night, as on every departure, he first scans the weather maps. With the flight analyst, a ground-based technician, he makes preliminary flight plans for the crew to study. The flight analyst offers him three outline plans—two direct routes at 10,000 and 20,000 feet, a third which would take him 300 miles

farther north at the mid-point. Bob studies the weather map, finds he'll have tail winds for three-fourths of the flight on the more northern route, as against favoring winds for only half the distance on the direct route. Important, too, he knows the earth's curvature extends the flight only 22 miles longer on the northern leg.

From tables and experience, Bob knows the rate of gas consumption. He applies the table, adds three hours' fuel for safety. That's his gas load. His flight plan is complete, and signed. He's ready for take-off.

You've heard of the "point of no return." Many a service pilot has sweated out a critical decision. Bob is more interested in the "point of equal time." He's not expecting to make use of the figures, for only once in 210 round trips between California and Hawaii has he navigated a plane that turned back. But he constantly figures ahead, so that if an engine begins to miss, he need only glance at a chart to know whether it's shorter in time to go on (Continued on page 70)



**We visit  
the Experimental  
Test Pilot School  
at Wright Field**

# Whizz Kids of the Air Force



Back from preliminary flight check with school's chief, Lt. Col. L. C. Moon, far right.



First check flight is given in twin-engine C-45 as instructor can ride with student side by side explaining procedure. Knee board on which data obtained is recorded is mark of test pilot

■ The difference between test flying today and ten years ago is the difference between the Bell X-1 and the Curtiss P-1. The advent of high performance, extreme speed and altitude operation and radically designed airframes and powerplants tossed an atomic bomb into the process of flight testing. Because test flying today is so complex, the Air Materiel Command at Wright-Patterson AFB, Ohio, maintains the Experimental Flight Test school where carefully selected pilots get a rough-tough two-phase course that qualifies them to do test work for the Air Force. The first three months of the half-year course consist of performance testing, and the following months are spent on stability and control work. In the interim, students attend classes to learn the "mathematics" of their machines, and how to evaluate airplane performance.

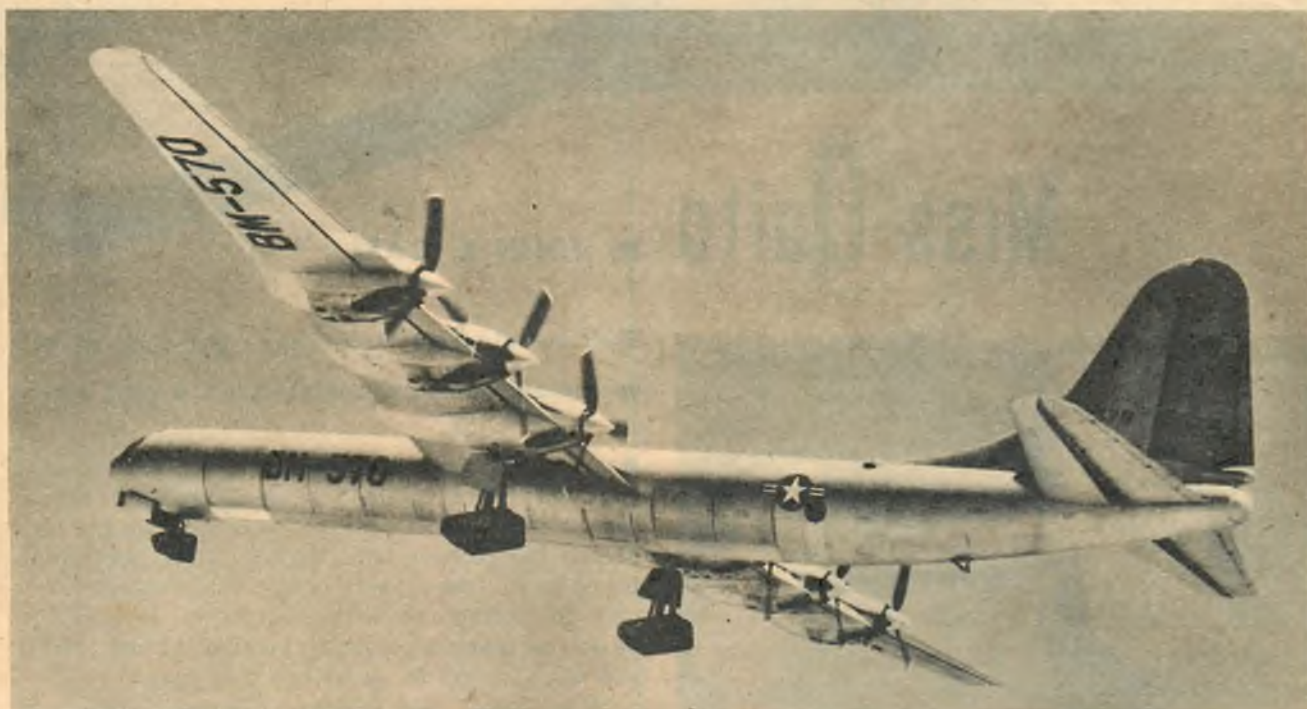




**Maj. K. O. Chilstrom** of Test Pilot School briefs student on cockpit instrumentation technique of an F-80. Planes flown by test pilots carry many more recording instruments than the standard ship.



The F-80 jet fighter is last plane to be flight tested in the course. Here student gets send-off from **Capt. Chas. Yeager**, right, first flyer to exceed sound, & **Maj. L. Wiehrdt**, former school chief.



**Test pilot's** work does not consist of evaluation of the plane alone; new gadgets, such as B-36 track gear, must be proven too.

**All Air Force** planes must be matriculated by Wright Field; the pilots of the Flight Test Division determine which gets diplomas.





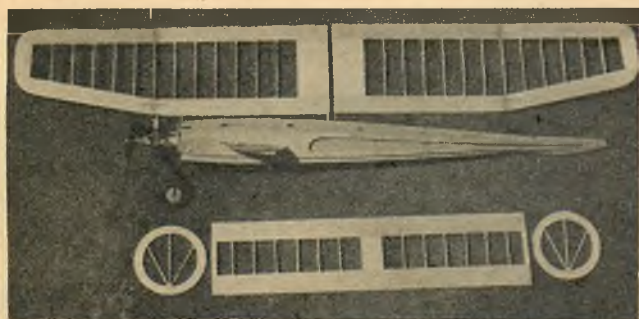


# Miss Quito

By JOHN R. CARL



Remember when a photo of the plane appeared in Dope Can? In response to many requests, here are all the plans and info.



Nothing hard about this baby. Mr. Carl in Miss Quito has one of the cleanest, simplest ships to emerge from W. Coast contests.

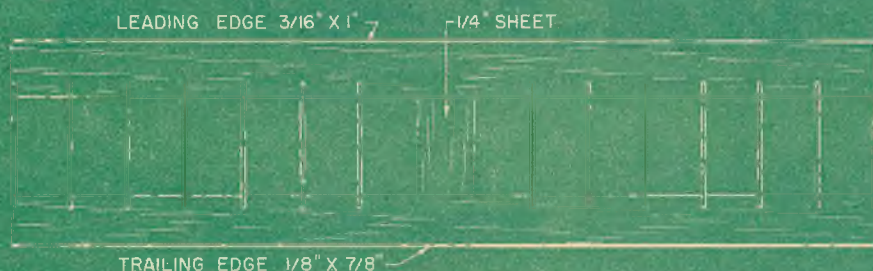
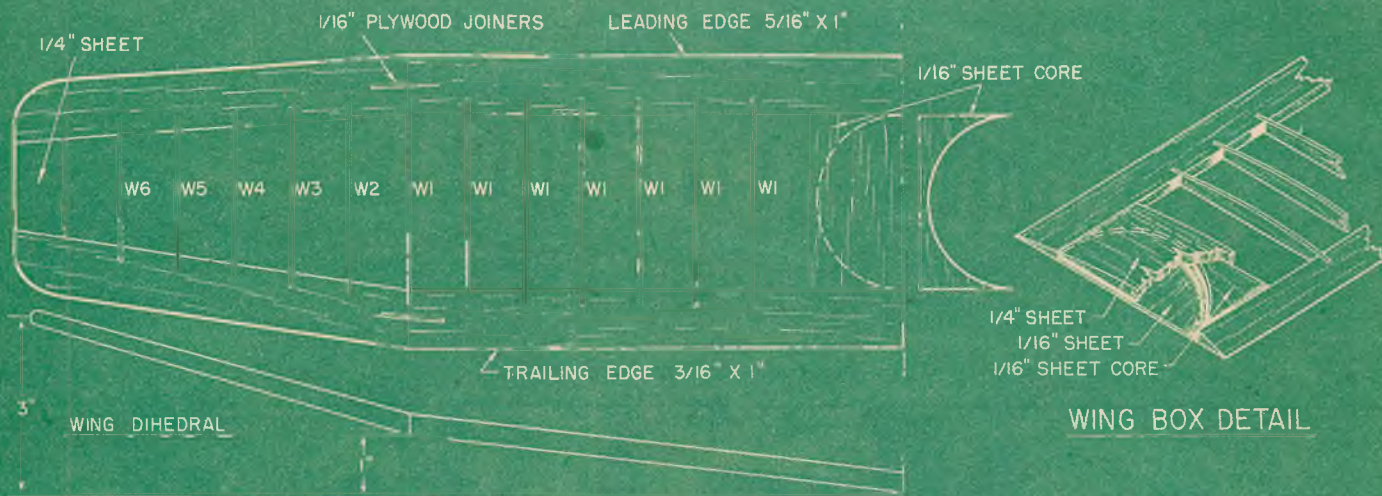
**She's sweet, she's simple, she's got a lot of get-up-and-go; and in a contest she's a real winner**

■ For many years we have been one of the small group of die-hards who believe a ship can be a good contest model and still be attractive to the eye. Models like Vernon Oldershaw's "Glory Bee" (published in AT some years ago) is proof of this. Our only real complaint with most of the nice-looking models is that they usually involve too much work and don't always fly as well as they look.

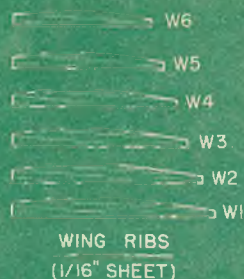
"Miss Quito" was designed and built both to fly and to look well. That we have been successful is easy to see. (Pardon our modesty.) The total building time took about twelve hours and the pictures which are shown here were taken of the second model by, Bob Lux (a popular West Coast modeler and amateur photographer). The reason they were not of the first model is because Miss Quito No. 1 flew o.o.s. on her third flight and has never been seen since.

The original model was Spitfire powered and weighed in at  $4\frac{1}{2}$  oz. The climb was extremely fast and to the left with a smooth flat glide to the right. Little can be said about flight times because of the short while it remained in our possession; however, the No. 2 ship powered by the new Wasp .049 has a really incredible climb and consistently turns in long thermal flights, any of which (Continued on page 68)

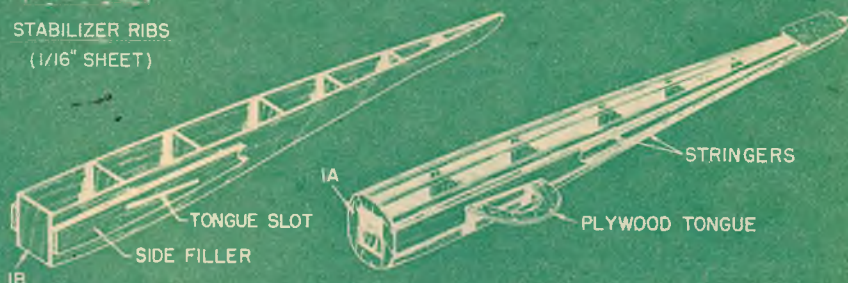




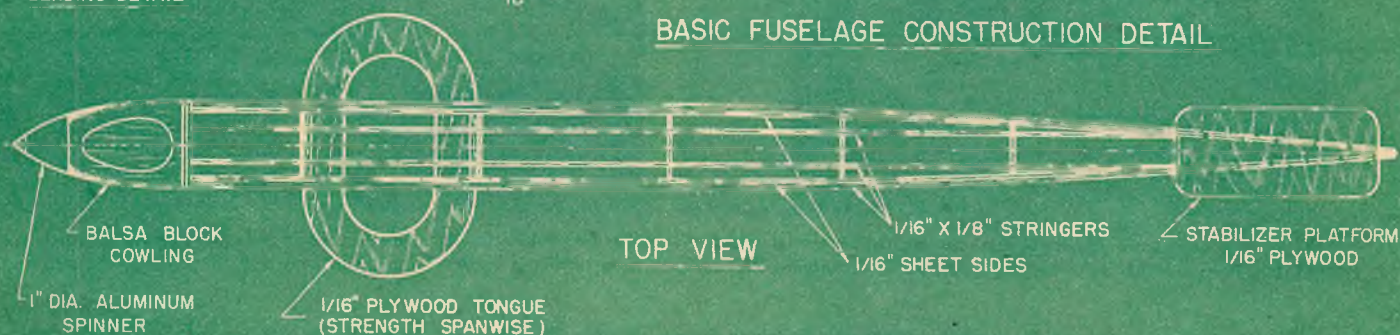
RUDDERS (2 REQ.)  
EACH MADE OF TWO 1/16" SHEET RINGS LAMINATED



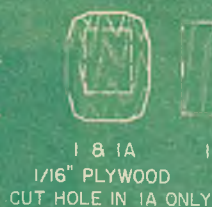
STABILIZER RIBS (1/16" SHEET)



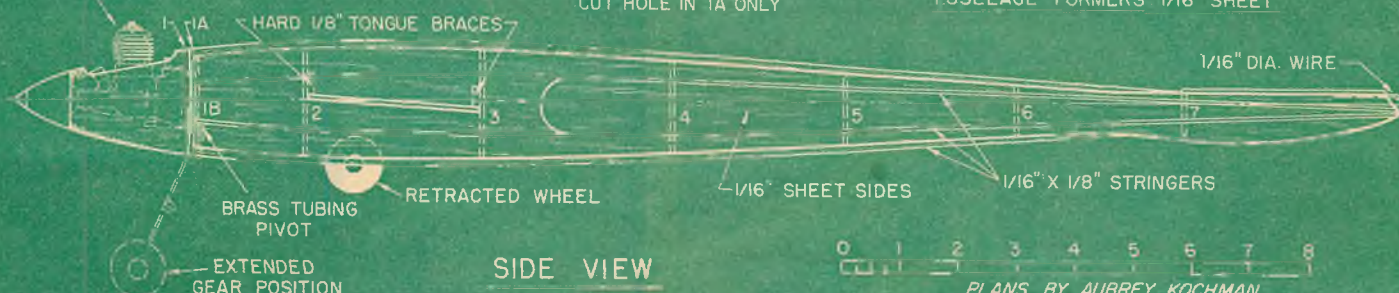
### BASIC FUSELAGE CONSTRUCTION DETAIL



.049 "WASP" ENGINE



FUSELAGE FORMERS 1/16" SHEET





# Plymouth Internationals

Five hundred top-notch modelers from every state compete for \$7,000 and a truckload of trophies; meet outstanding for smoothness, good weather

Victory banquet was held on Bob-Lo Island, famous recreation park on the Detroit River. Hour-long boat ride was first for many flyers.



Examining semi-scale Navy Carrier demonstration model are B. K. Steele, Plymouth; Lt. John Burton, USN; R. C. Somerville, Plymouth.



Gas and rubber models that landed in Lake St. Clair near Selfridge were retrieved by Air Force helicopter and returned to contestants.

Processing lines at gas model events flown off AF's Selfridge Field moved rapidly. Note Mom in line holding place while Junior flies.

Warren Bartlett, jovial contest director, awards first place flying scale trophy to junior Jack Hudspeth who flew big Beechcraft G175.







More than 1,200 contestants, parents and officials attended the dinner as guests of Plymouth to witness presentation of the 127 trophies.

■ Considered the finest contest of its type and size in airmodeling history, the Plymouth Motor Corporation's fourth International Model Plane Meet held in Detroit late in August brought together 500 outstanding model builders from all sections of the country. Every entrant was under 21, and a special class for Freshman flyers—those under 12—was run off.

When the six-day meet had ended top honors in the form of perpetual high-point trophies went to Fred W. Sage, III, Independence, Mo., in the Freshman class; Dick A. Modler, Dayton, Ohio, top Junior; Ronald Plotzke, Detroit, Mich., high Senior contestant; and Theresa Grish, St. John, Ind., high-point girl flyer.

Other perpetual trophies were awarded David C. Lefebvre, Seattle, Wash., in the flying scale event (Dave flew an AT Spirit of St. Louis), Harold C. Reinhardt, Elizabeth, N. J., who won the Air Trails trophy for his superb stunting; Donald R. Zipoy, Minneapolis, who captured the jet speed prize. Special prizes included a team racing trophy to Arthur E. Scholl, Milwaukee; style and beauty award for team racers to Richard N. Rigney, Long Beach, Calif.; and the Sportsmanship trophy to Ralph N. Smith, E. Orange, N. J.

Flyers were headquartered in the Fort Shelby Hotel in downtown Detroit and for the first two days of the contest were transported by bus to Selfridge Field. There for the outdoor rubber and gas model events timing tables were set up on flat-bed trailer trucks so in event of a wind shift the operations area could be changed quickly.

The remaining four days of the Internationals were spent at Detroit's Belle Isle amusement and recreation park on an island in the Detroit River where 10 control line circles were set up. Indoor flying was run off in the State Fair Grounds' Coliseum the first day of U-control; shuttle buses ran continuously between the two contest sites; the only bad weather occurred toward the close of one day's U-control activities. For a period the following morning, the circles were soggy, but they soon dried out. Except for that all flying was under the best of circumstances.

Evidence of the "grand manner" in which the Internationals was run off is indicated in the presentation of awards which took place in a big field house on Bob-Lo Island, an hour's boat ride down the river from Detroit. To many of the flyers this was the biggest treat of the meet since quite a few confessed they'd never been on a boat before.

Bob L. Brawner, Phoenix, Ariz., gets his national record-holding job "Sliver" away, but the tail surfaces decide to stay home and rest.



Youngest contestant trophy goes to Gregory Wald, Minneapolis. A. H. Paterson, Plymouth v.p. makes the award. Mr. Wald is 5 years old.





ROOT END OF REAR SPAR NOTCHED FOR SMALL REAR SLOT IN RIB "K".

MARK FORMER POSITIONS IN INK ON FUSELAGE SIDES

FUSELAGE SIDE - 2 REQUIRED - 1/16" MEDIUM SHEET

FORMERS 'B' TO 'H' CUT FROM 3/32" MEDIUM SHEET.

1/8" SHEET

OUTLINE FOR MID-WING VERSION

1/8"x3/8" TRAILING EDGE

AILERON OUTLINE

PUSHROD STRUT POSITION

CELLULOID

BRACES 1/16" BELOW TOP OF RIB

1/8"x1/4" BRACES & BELLCRANK ONLY ON MID-WING VERSION

DOTTED LINES INDICATE GUSSETS FOR MID-WING VERSION

1/8" MEDIUM-HARD SHEET GUSSETS ("N" STRUTS ATTACHED TO WING AT POINTS MARKED BY "X")

HARD 1/8"x1/4"

1/8" SHEET TIPS

1/8"x5/8" VERY HARD BALSA - FLUSH WITH BOTTOM OF RIBS. (ON U-CONTROL VERSION).

STRUT POSITION

STABILIZER OUTLINE IS MEDIUM 1/8" SHEET

2 REQ. 1/4" SHEET

4 REQ. 1/16" SHEET

BALANCE POINT FOR U-CONTROL MODEL IS DIRECTLY UNDER THE FRONT SPAR.

WINDSHIELD OUTLINE

ONLY LEFT ELEVATOR IS MOVABLE FOR U-CONTROL.

ONLY TOP CENTER STRINGER SHOWN FOR CLARITY.

ALL TOP AND BOTTOM FUSELAGE STRINGERS MEDIUM 3/32" SQ.

3/32" SQ. CROSS BRACES BETWEEN FORMERS

O.K. "CUB" .099

1/4"x3/8" HARWOOD ENGINE BEARERS

MOUNTING BOLT HOLE SPACING FOR .049-.074 "CUBS"

SPACING FOR .099 "CUB"

1/16"x3/16" STRUTS

FILL IN AREA AROUND THE COCKPIT WITH SCRAP 1/16" SHEET BETWEEN STRINGERS.

FOR MID-WING VERSION, CUT OUT ONLY 12 MAIN RIBS AND 2 EACH OF "J" AND "K" RIBS. USE HARD BALSA FOR "K" RIBS.

MAIN L.G. STRUT - .040" DIA. MUSIC WIRE. 1 REQ.

SCALE DIHEDRAL - 5/8" AT TIP RIB. 1-1/2" RECOMMENDED FOR FREE-FLIGHT.

O.K. "CUB" .049 OR .074

BALANCE POINT

AILERON PUSHROD

3/32" SQ. CROSS BRACES BETWEEN FORMERS

TAIL STRUTS 1/16"x1/8" HARD BALSA

L.G. BRACE STRUT - .030" DIA. MUSIC WIRE (2 REQ.)

1/16" MEDIUM SHEET FAIRING

1-3/4" DIA. AIRWHEELS

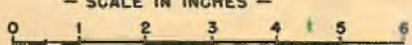
LEAD-OUT WIRE GUIDE. .030" DIA. MUSIC WIRE.

TOP VIEW

FRONT

SIDE

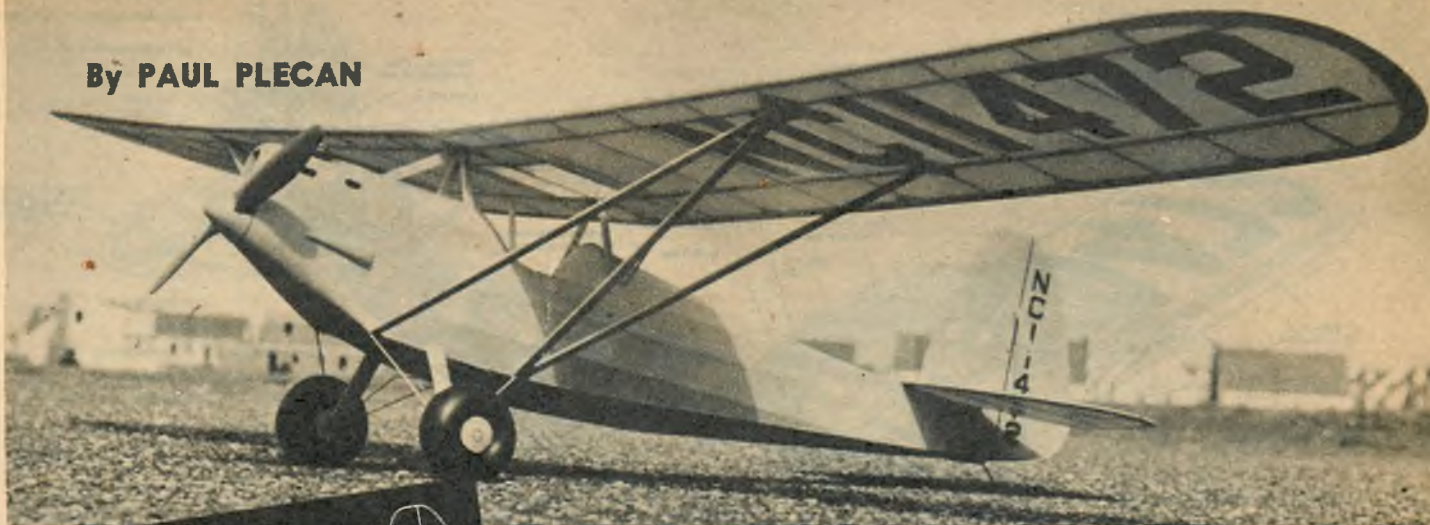
SCALE IN INCHES



PLANS BY PAUL PLEGAN

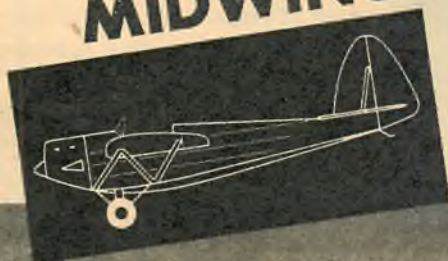


By PAUL PLECAN



## Build the HEATH

MIDWING



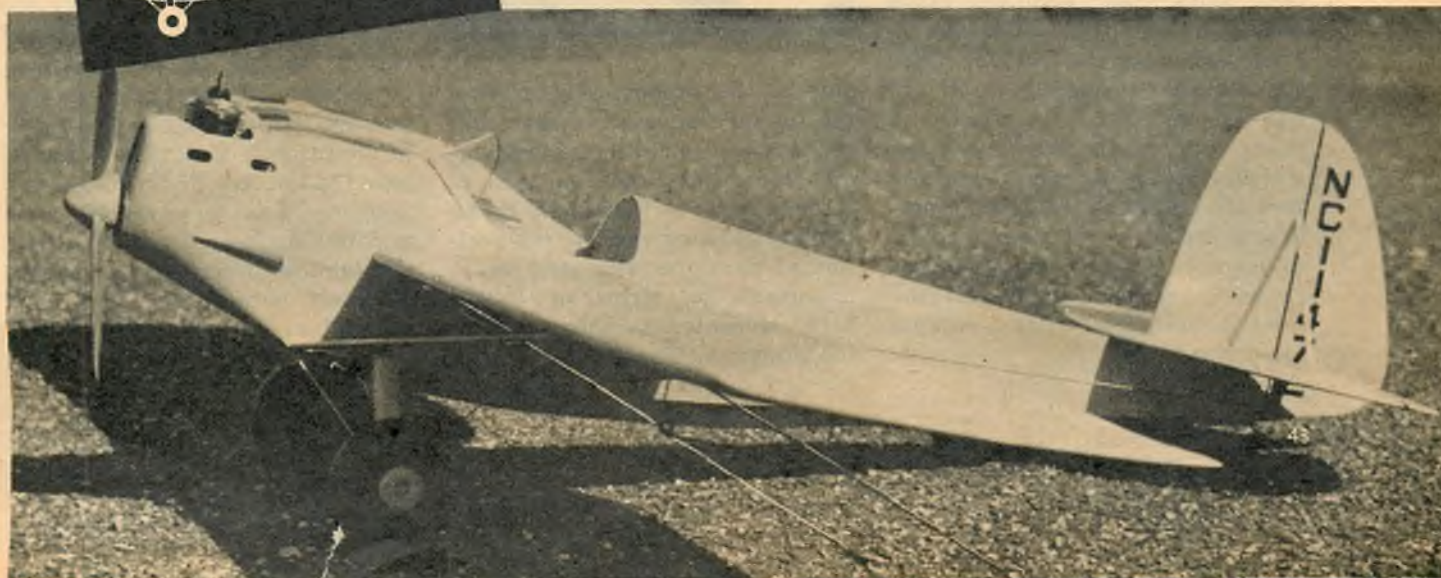
**Shades of the Thirties! Look what's here: Ed Heath's famous Parasol and the not-so-well-known Midwing job**

■ Take your choice—both the Parasol and Midwing are good performers. In the search for outstanding scale models, one is apt to overlook many old-time designs which are excellent for both U-control and free flight use.

In its day (the early Thirties), the Heath Parasol was the most famous single-seat lightplane made. Available in finished or kit form, the Parasol saw extensive use, as variations fitted with skis, wheels, or floats enabled it to be flown just about anywhere. A later version, the Midwing, became very popular due to its compact size and greater speed. Still using the same basic framework, the Parasol was modified again, this time emerging as a biplane glider, the first glider to perform the loop. Such was the genius and diversity of Ed Heath, a true pioneer of the lightplane.

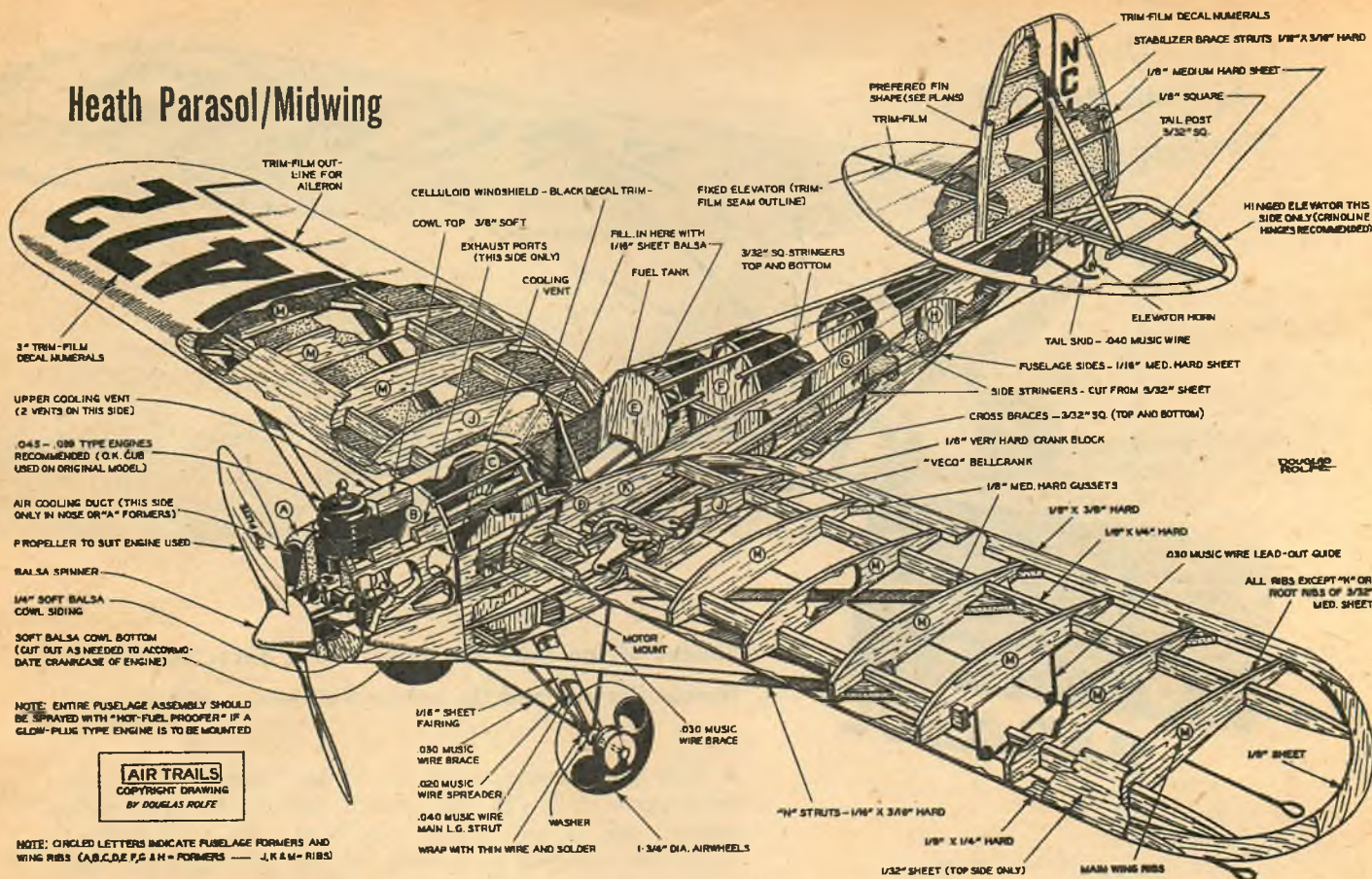
The Parasol makes a fine free flight model, and the Midwing seems to be the answer to a stunt man's dreams. The U-controlled Midwing can be powered with any engine within .045 to .099 cubic inches displacement, and, with a little "beefing-up", a .19 or .23 can be accommodated.

In the latter case, however, it should be noted that the nose is quite small in size and a .19 or .23 may be too tight a squeeze. (A scale model looks so *much* better when the engine is partly or fully cowled in). Due to the fairly long





# Heath Parasol/Midwing



nose moment, it will be necessary to shift the wing forward from the scale position when using a .19 or .23. As a Parasol free-flight, any engine of .020 to .070 cubic inches will do nicely.

Before construction is started, it should be remembered that flying characteristics will be affected by the grade of balsa used; extra light wood (except on spars and struts) for .020 to .045 engines, medium for .045 to .070, and medium-hard for the .099 engines. Construction is simple and straightforward; however, it won't hurt to read the rest of this article.

The two fuselage sides are cut from 1/16" medium sheet and marked for former positions. Cut both sides from identical grade balsa, as any real difference in grade will warp the fuselage. Once the required formers B to H are cut out, they can be cemented in place between the fuselage sides, starting at the rear and working forward. Note that 3/32" sq. cross-braces are fitted between formers to counteract the shrinkage of the covering, which would pull the sides in between formers, ruining the appearance.

Once the engine bearers are slipped into place and cemented, the stringers can be added. Since the bellcrank is externally mounted on the Midwing version, holes in the formers for the pushrod are unnecessary. Nevertheless, it isn't a bad idea to install the fuel line before the top stringers forward of the cockpit are in place.



Due to the pronounced curve of the fuselage sides aft of the cockpit, it is best to cut the side stringers from 3/32" sheet instead of forcing strips to follow the curve. On the Midwing version, the position of the upper side stringers is important, as strips of 3/16" x 3/16" cemented to them provide the proper incidence for the wing

roots (rib K). So check the alignment of these stringers carefully.

The landing gear is bent to shape now and assembled. Note that the main and spreader struts are braced fore and aft by a brace strut on each side. The brace strut is cemented to the fuselage at its extremities and the point of the "Vee" is wrapped with fine copper wire and soldered to the joint where the main and spreader struts are joined.

Be sure to add a second and third coat of cement to all wire strut-to-fuselage joints before covering the fuselage, a point all the more important if the U-control version is being made. Once the engine is mounted, touch up all joints with cement, especially between the engine bearers and formers. After careful sanding, the covering may be applied. It is best to work with narrow strips running the length of the fuselage to achieve a smooth job. On the free flight Parasol job you may want to cover the wing and tail surfaces with Jap tissue, but for the fuselage it pays to use Silkspar because of its greater strength and resistance to tearing.

The tail (*Continued on page 63*)



# Model Matters

News, Views, Comments and Photos from Model Clubs and Enthusiasts in America and Overseas

## DOPE CAN

BY "DOPESTER"

■ Some very interesting figures have come in from Johnny Clemens, director of this year's National contest. They concern the number of entries that were received in each class of competition. Of course, not every contestant flew in each event he signed up for, but since there's an entry fee for every class, modelers don't list events unless they're pretty certain of competing in same.

The bad weather at Dallas meant



Curtiss Hawk P6E built by J. L. Nobles, Covington, Va. Has McCoy Sportsman 29; fuel system has pressure tank made from de-Bolt series in AT. Estimated speed, 80 mph.

a lot of last-minute shifts and lots of hopes dashed, but by and large we can take the "entries per event" figures to draw a fairly complete picture. First, let's just run through the events and give the total number of entries for each:

Control line—speed A, 104; speed B, 149; speed C, 77; speed D, 105; jet, 36; flying scale, 14; stunt, 128; team racing, 4.

Free flight—CO<sub>2</sub>, 61; R.O.W. gas, 122; outdoor hand-launched glider, 249; towline glider, 169; outdoor rubber cabin, 127; outdoor rubber stick, 122; flying scale rubber, 8; Half-A gas, 381; A gas, 343; B gas,



Sway-backed, but still a good performer is this 1,200 square inch Hornet-powered original by Ted Petrolia, Cohasset, Mass. Polyhedral stabilizer of generous size gives excellent glide.

228; C gas, 185; PAA-Load A, 107; PAA-Load B, 82.

Indoors—gliders, 57; stick, 23; cabin, 17.

Other—radio control, Navy bomb dropping (r-c), Navy carrier event and PAA-Load Half-A, roughly 50 entries all told.

Now, one thing that we must remember in this is what we've pointed out in the past couple of columns. Free flight gets a better break in the number of events. For instance, control line stunt is one engine class, but even a new free flight event such as PAA-Load is



First photo of Betty Skelton's Little Stinker to reach us comes from Gene Sample, Anderson, Ind. For additional dope on full-size plane read "Girl vs. Airplane" next month.

broken down into two official classes (A and B) and one unofficial category (Half-A).

So keep that in mind, because the percentages will astonish you. With

a total of almost 3,000 entries made by the more than 900 flyers, it works out that 74% of the flying was in outdoor free flight events, 22% in



C. N. Huddle, Sr., Orland, Calif., must have rolled out the barrel for inspiration. McCoy is the power; diameter at leading edge, 6 inches; and at trailing edge, 5 1/2 inches.

control line, 3.3% indoors and 7/10 of 1% in the "other" categories just listed.

Some observers have said the free flight events were particularly well attended because Texas is primarily a free flight area, that it is far from the predominately control line "big city" sections of the country. Could be. But it is remarkable how the coming of the small engines has given free flight such a shot in the arm, while being too small up to now to warrant any new control line classes.

We're not (Continued on page 80)

• Payment of \$3 to \$5 is made for glossy photos (at least 4 x 5 in.) sent exclusively to AT and used. Don't send negatives.



HALF PINT: 39c

★

PINT: 75c

★

QUART: \$1.40



This is the fuel that gives  
**TOP POWER** performance  
with either glo or  
ignition type engines!

RECOMMENDED BY

**McCOY**

"Testor's '39' Model Engine Fuel has been tested by the makers of McCoy Engines for easy starting, all-weather performance, power output, quality and quantity of lubrication. We have found Testor's '39' to be an excellent all-purpose fuel for both Glo and Ignition types of McCoy and all other standard Model Engines. We at Duro-Matic recommend Testor's '39' without reservation as a fuel that will assure the model builder high performance and extended engine life."

DURO-MATIC PRODUCTS CO.

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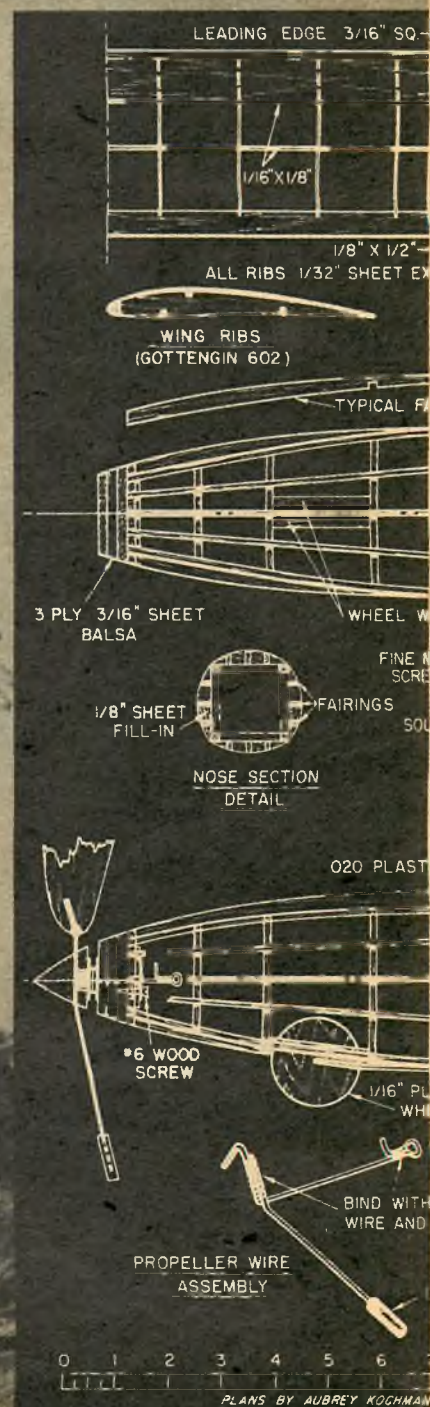


# El Dobo

By DICK EVERETT



Dick's design represents 15 years of air modeling progress. Starting out as a youngster in West Virginia, Mr. Everett went on to Langley Field, Va., and became active in the famous Brainbusters Club. Now he is living in California and working in the guided missile program. Note, above, that the tail section hinges to permit access to the rubber motor; this also acts as dethermalizer for model.





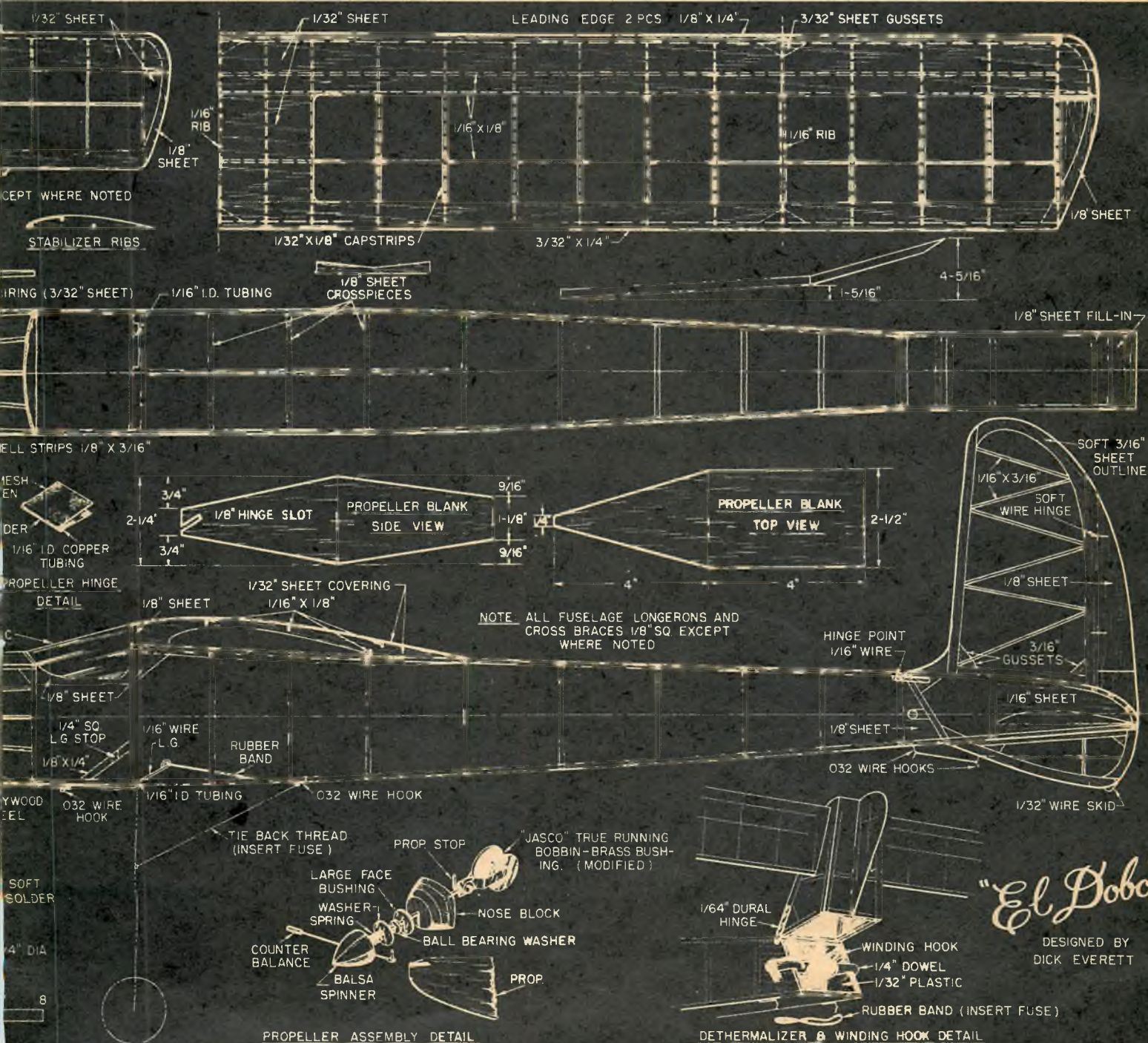
**This well known West Coast designer won a "first" at the Nationals with his cabin model entry**

■ For quite a few years the goal of all the rubber model builders has been the winning of the Wakefield Contest. The number of models designed for this event is countless, and the number of models actually built is also very large. But it has remained for a select few to emerge triumphant. Your author has tried for fifteen years and has built and designed a number of models exclusively for this event. "El Dobo" is the direct result of these years of experience. We have tried to combine all the good features of these numerous models and added new features which promise bonus efficiency.

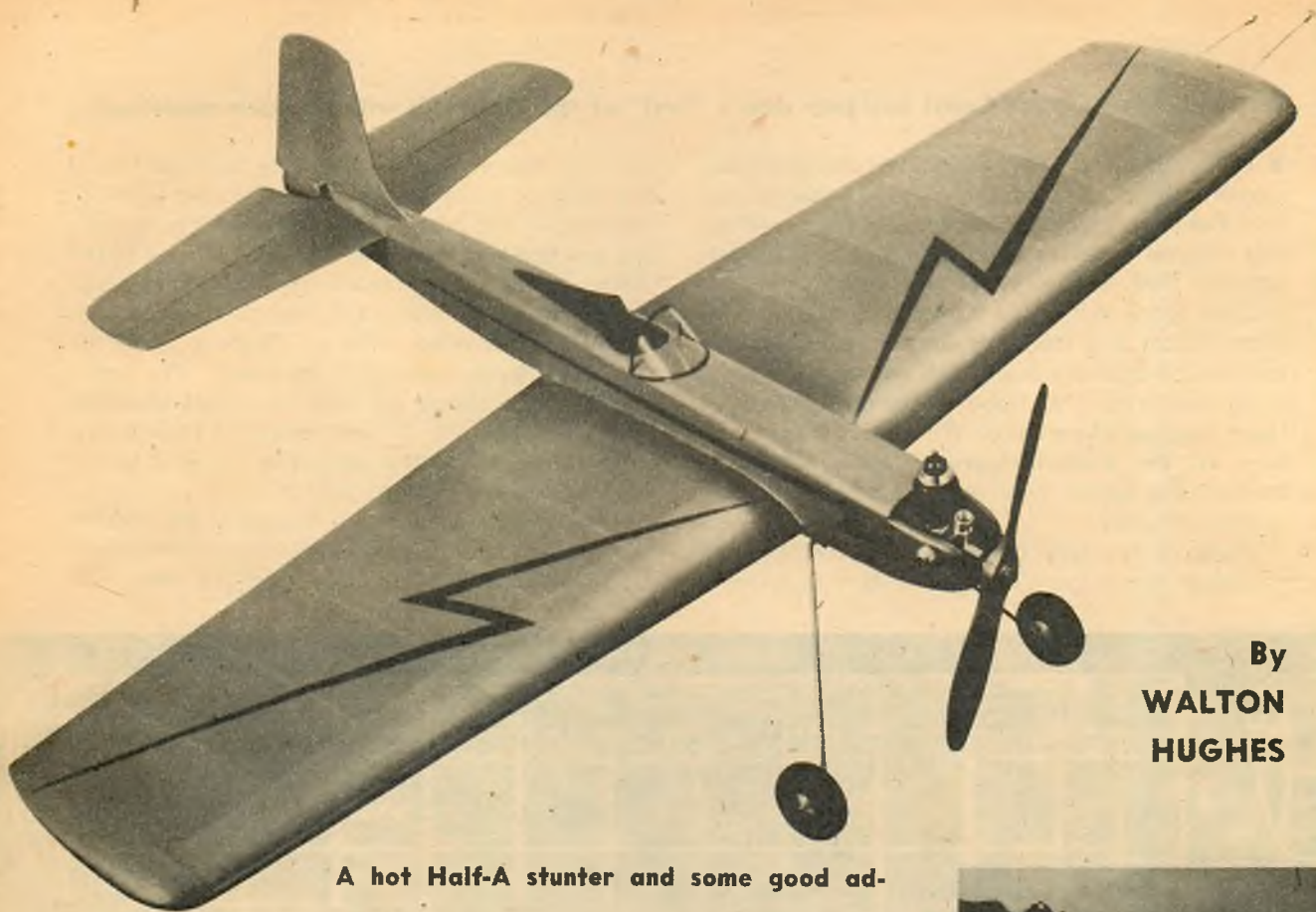
Those of you who have been to contests have probably seen a great many models with retract-

able landing gears. The majority of them would not support the model for an unassisted take-off, because of the gear folding prematurely, resulting in a delayed flight and probable damage to the ship. On the other hand some models have had gears so complicated the working percentage was nil. This retractable on El Dobo is simple and adds no extra weight to the model. The burning of a fuse allows the gear to retract *after* the ship has taken off. It does require a little added preparation before the contest in the way of the loops of thread. Simple, isn't it?

The propeller is another feature of this model. It's the popular flip-flop type prop pioneered by C. C. Johnson of the (Continued on page 61)







By  
**WALTON  
HUGHES**

**A hot Half-A stunter and some good advice on scaling down models for tiny motors**

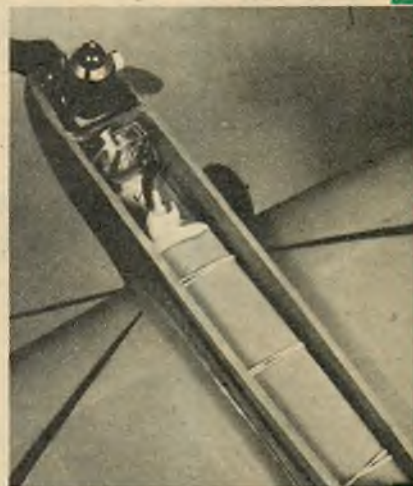
## High Pressure Pete

■ High Pressure Pete may be in the runt class, but he still boasts all the latest improvements in model aviation as well as top-notch flight performance.

Shortly after the introduction of A/2 engines, fellows in our neighborhood became interested and we built some small stunt planes. Performance was reasonably good but the engines were very erratic and would sputter and slow down during stunt maneuvers. Red Reinhardt's "Roger Dodger" (AT March 1950) is a good example of this design trend. Inconsistent power made it necessary to keep the total weight between 3 and 3½ ounces. The power plant weighed approximately 1½ ounces with fuel tank, so the ship had to be held to 2 ounces.

To accomplish this, landing gear was eliminated and light framework was used with no sheeting on the wing, and the paint job was very skimpy. Performance was not good enough for contest stunt flying and the novelty of small engines seemed to be the main point of interest. This wore off after a couple of months and we went back to larger engines.

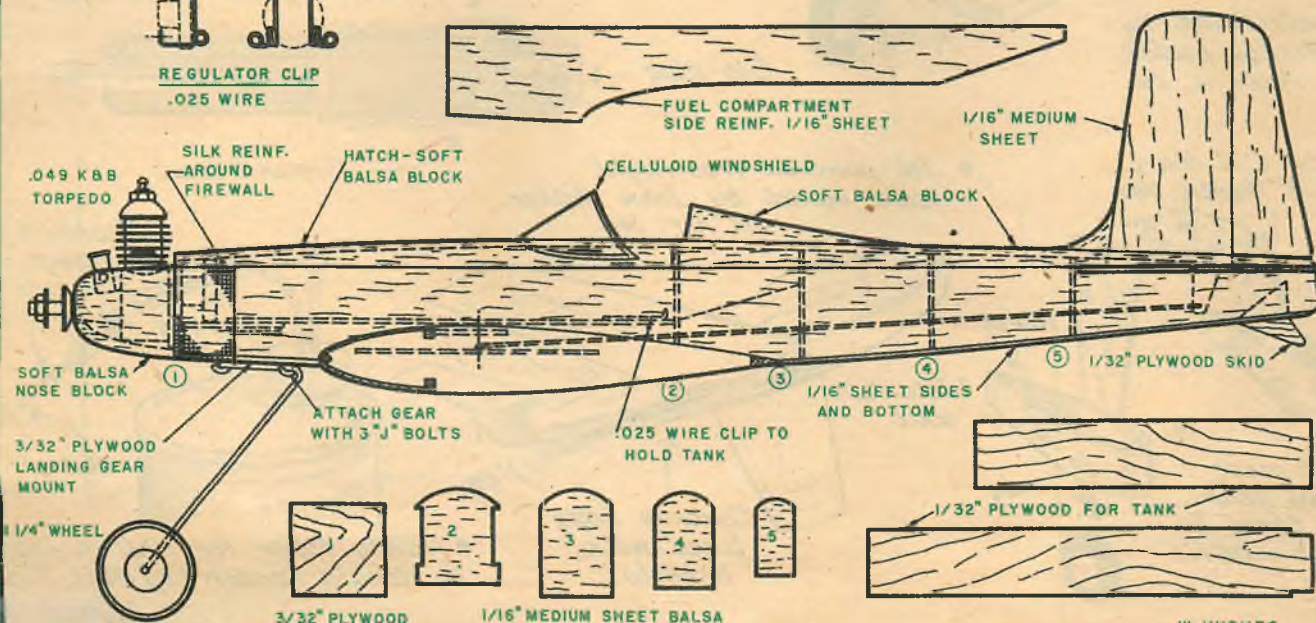
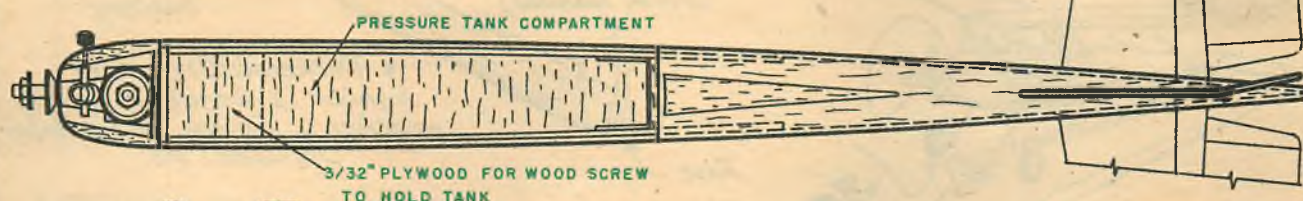
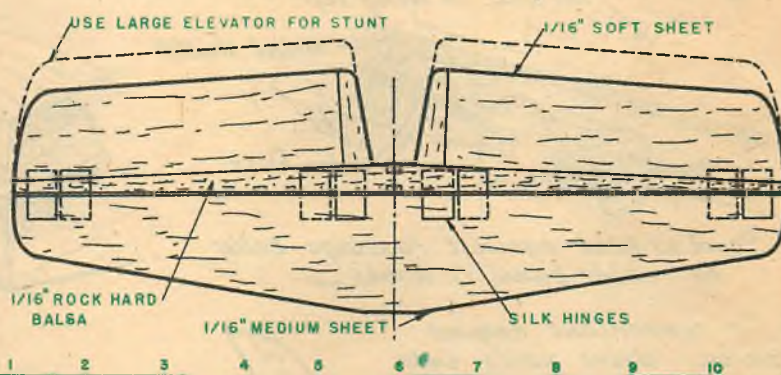
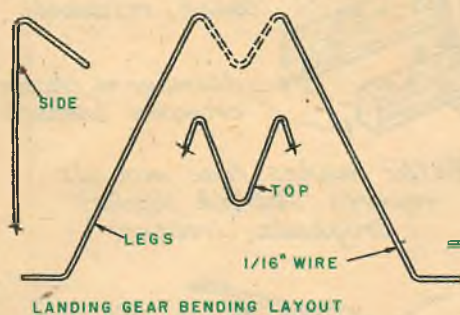
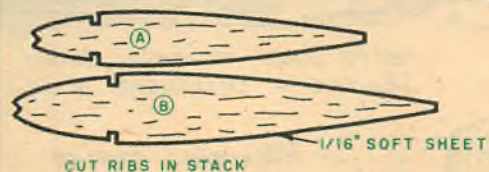
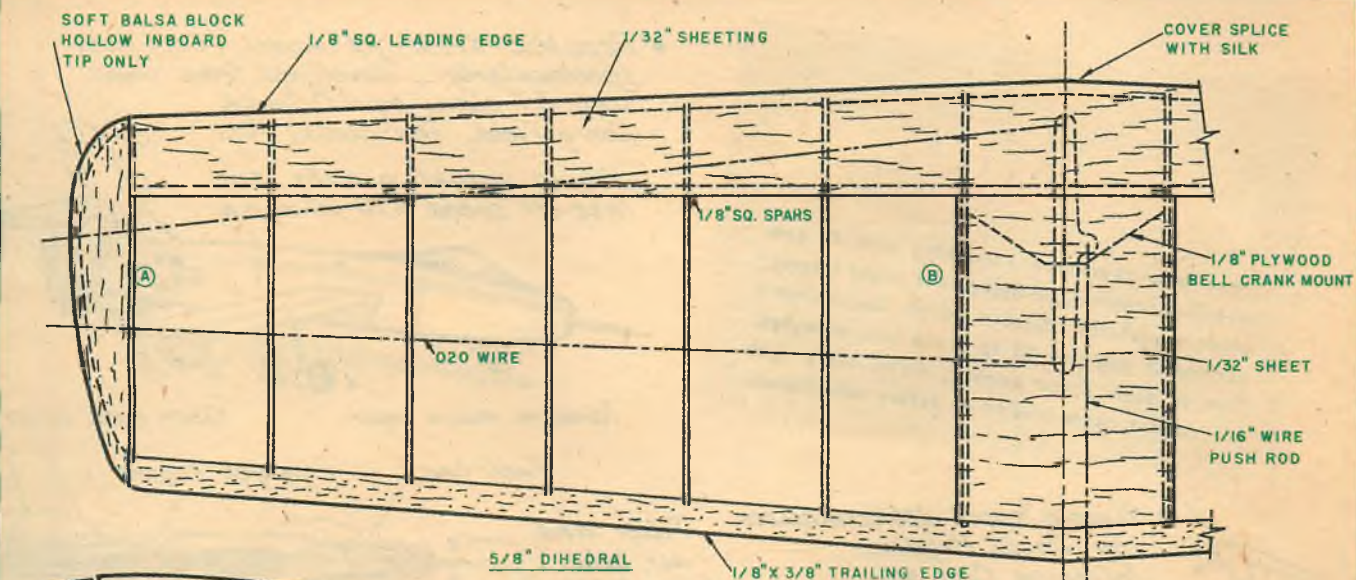
Early in the 1950 season when new contest ships were taking shape, Jim Walker introduced his pressure regulator fuel system. Fuel supply has always been the greatest problem in stunt flying, so we tried a Walker tank in an experimental ship. The results were amazing. After we had learned a few tricks in installing (*Continued on page 66*)



Sleek, trim lines of H-P Pete comes from the completely enclosed fuel tank made by Jim Walker. Note complete absence of protruding air or intake vents which usually mar beauty of hot stunt models. Below, tank ready for installing. Note fold in "balloon."







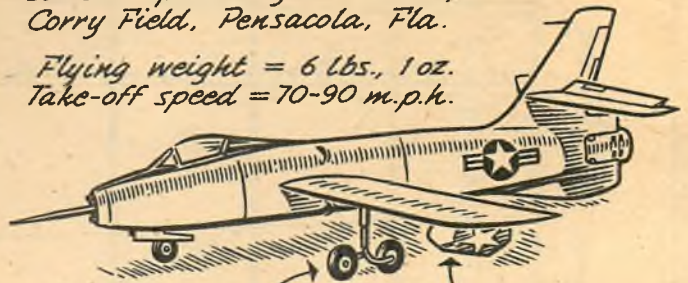


# sketchbook

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. Due to their large number, we're sorry that we cannot acknowledge or return submissions.

- Republic XF-91 jet model (C.L.) flies spectacularly — developed from small scale A.T. plans by H.C. Smith, Corry Field, Pensacola, Fla.

Flying weight = 6 lbs., 1 oz.  
Take-off speed = 70-90 m.p.h.



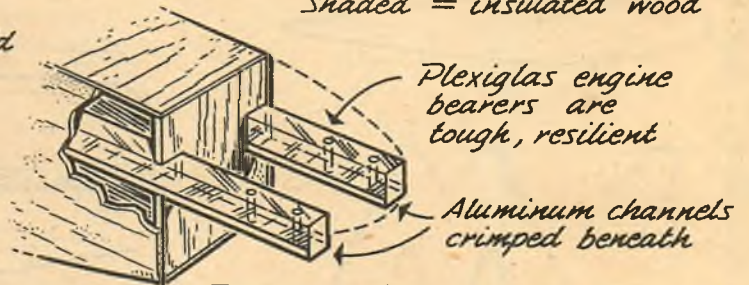
Tandem main gear

Gear well cover

Fuel tank Dynajet engine

Filler and air tube (for starting)

Heavy lines = metal tubes  
Shaded = insulated wood

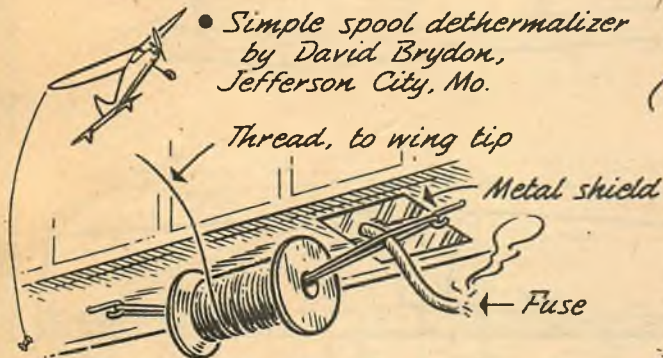


Plexiglas engine bearers are tough, resilient

Aluminum channels crimped beneath

- Plastic makes fine mounts reports Patrick Hughes, Drogheda, Ireland

- Simple spool dethermalizer by David Brydon, Jefferson City, Mo.



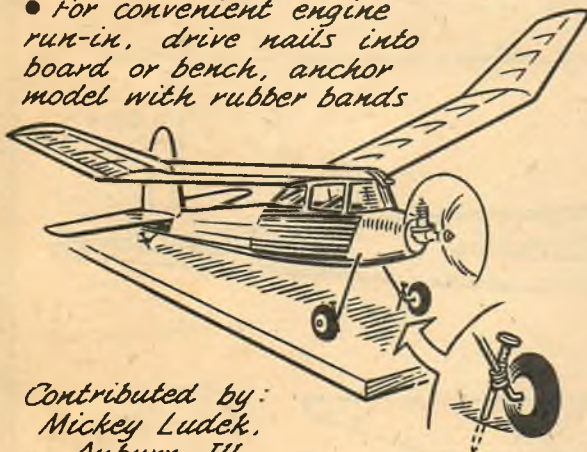
Thread, to wing tip

Metal shield

Fuse

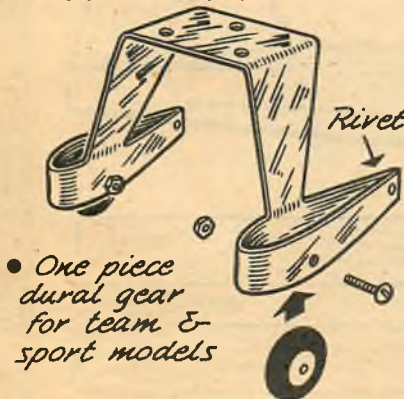
Spool is held against fuselage belly by rubber band & hooks —

- For convenient engine run-in, drive nails into board or bench, anchor model with rubber bands



Contributed by: Mickey Ludek, Auburn, Ill.

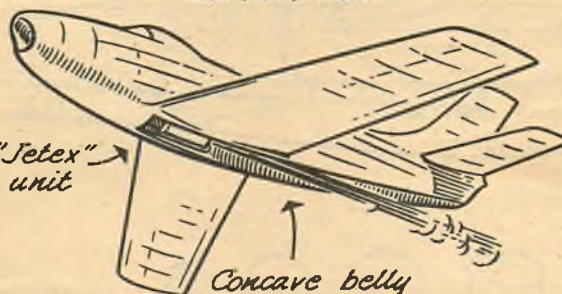
by C.R. Maris, Ft. Worth, Tex.



- One piece dural gear for team & sport models

Rivet

"Jetex" unit



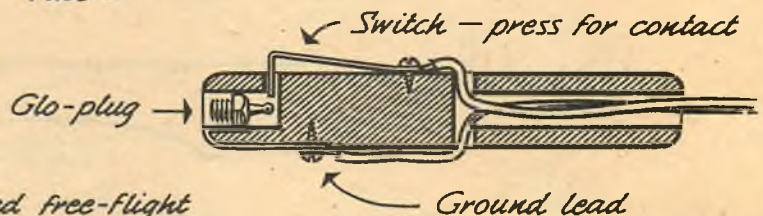
Concave belly lined with asbestos

Wooden housing (piece of broom handle)

Fuse

to 1 1/2 volt battery

- Dethermalizer fuse lighter is handy in windy weather — George De La Mater, Overland, Mo.



Switch — press for contact

Glo-plug

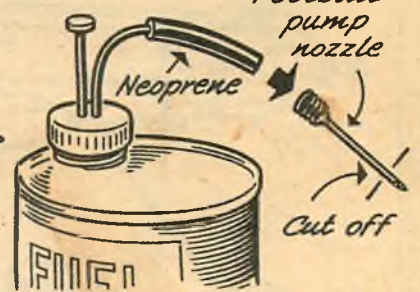
Ground lead

- Jet-powered free-flight scale model by John Walker, Bel Air, Md.

Football pump nozzle

Neoprene

Cut off



- Handy Filler for Half-A jobs by Ronald Render, Key West, Fla.





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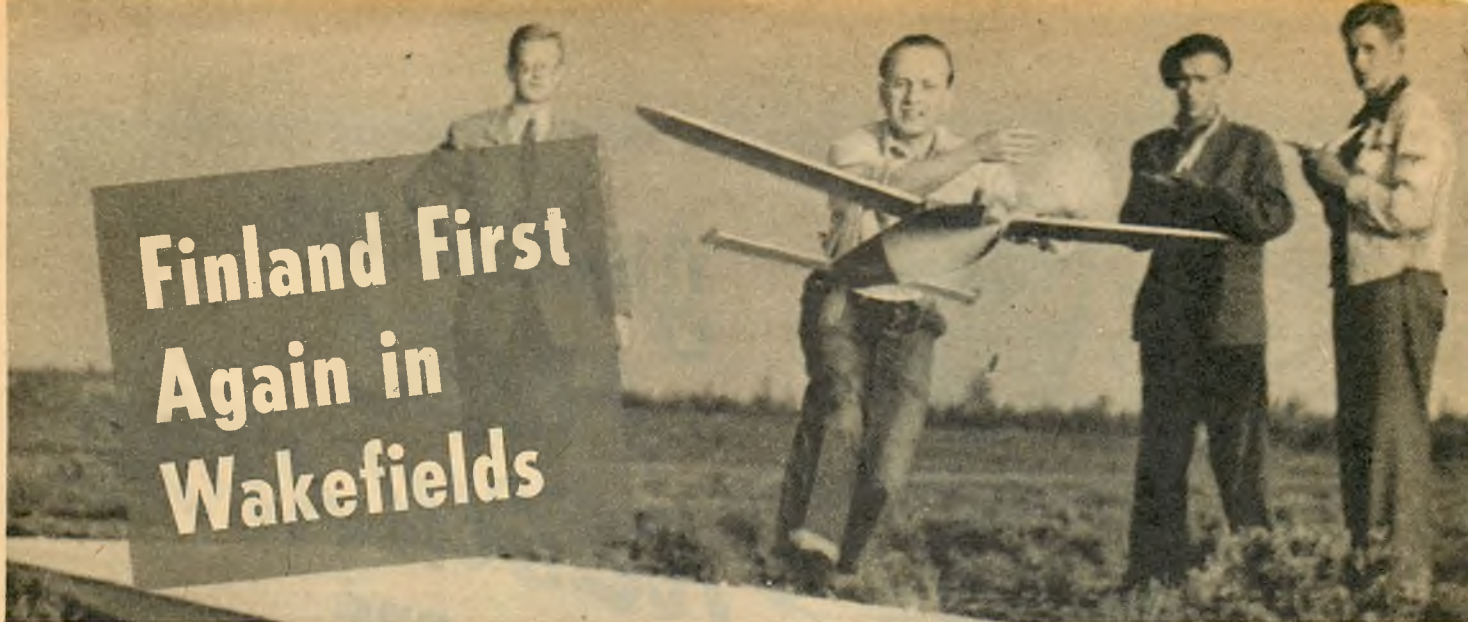
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N. Y. Mirror Contest  
U-Control Stunt
- 2nd Place:  
Walter Hughes  
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U-Control Stunt

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1949 Wakefield Winner Aarne S. Ellila gets his entry away on its first flight which helped him capture the cup for second year in row.



Ted Evans of England, second-place winner in the 1950 Lord Wakefield International Cup rubber-powered model competition, gets his entry off (above). In background is the author of this account, C. S. "Rushy" Rushbrooke. At right A. Leardi of Italy winds model for its third and final flight. The Italian placed third in the competition which saw 16 nations represented in person or by proxy-flown ships. The winner stands below before scoreboard with his models.



■ I have been privileged to witness no less than nine Wakefield Finals in four different countries, but undoubtedly the 1950 affair was the most interesting from any point of view. I can honestly say it is the first time I have ever gone to sleep in the middle of a contest!

Don't think from this statement that the 1950 Contest was boring.



Far from it. Interest was high from start to finish, with the battle for top honors as keen as ever, and for the first time in the history of the Contest the winner was decided on pure flying ability without any assistance from thermals

or our old friend Lady Luck.

Held at the site of the Finnish Gliding School at Jamijarvi, Finland, the field was a long sandy airstrip set in the midst of dense pine woods, with a number of steep hillocks culminating in a high ridge which practically cut the length of the field in two. Had the usual conditions prevailed, this factor would have been a serious handicap for timekeeping, but in the non-thermal weather, with only a very slight amount of drift, the majority of models were easily kept in sight to the end of flight, though a few did lose valuable seconds owing to drifting out of sight behind the trees.

As a distinct contrast to American and British practice, Finnish aeromodeling receives every assistance from the senior divisions of their aeronautical movement, and high-standing officials of every order were on hand to make the function a great success for the honor of their country.

Generally, all the models were well constructed, and of a much higher standard than 1949, with the Yugo- (Continued on page 74)

Held at Jamijarvi, Finland, this year's Wakefield was remarkable for fact that it was flown under the "midnight sun" in 3 separate rounds.





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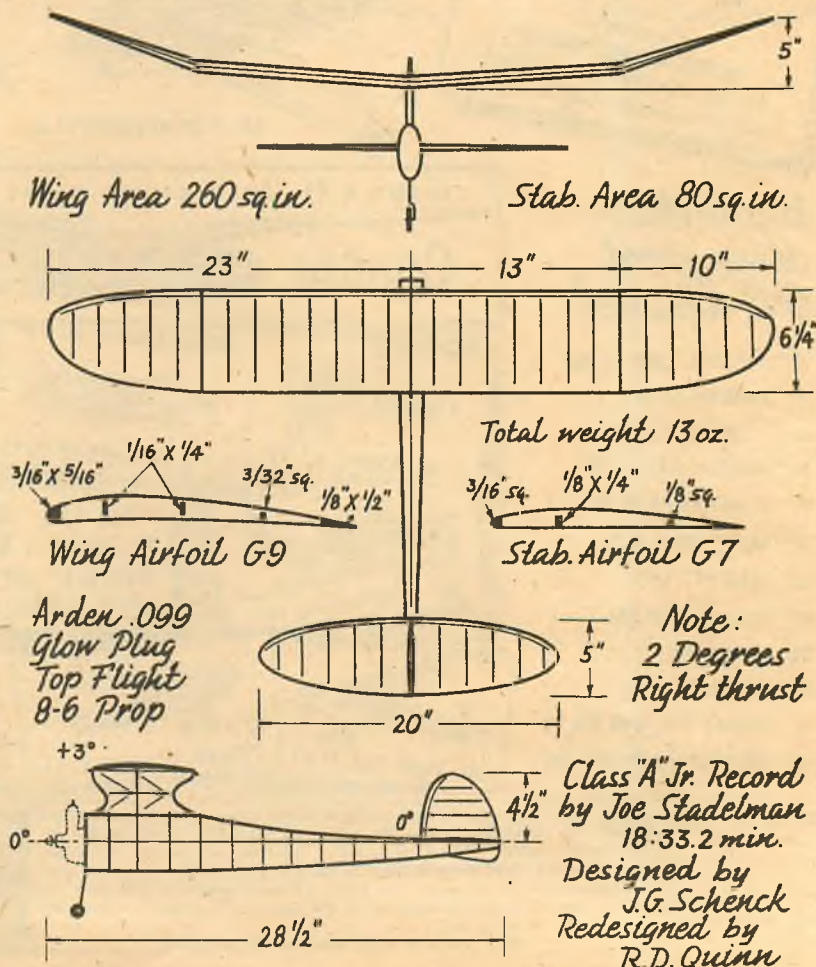
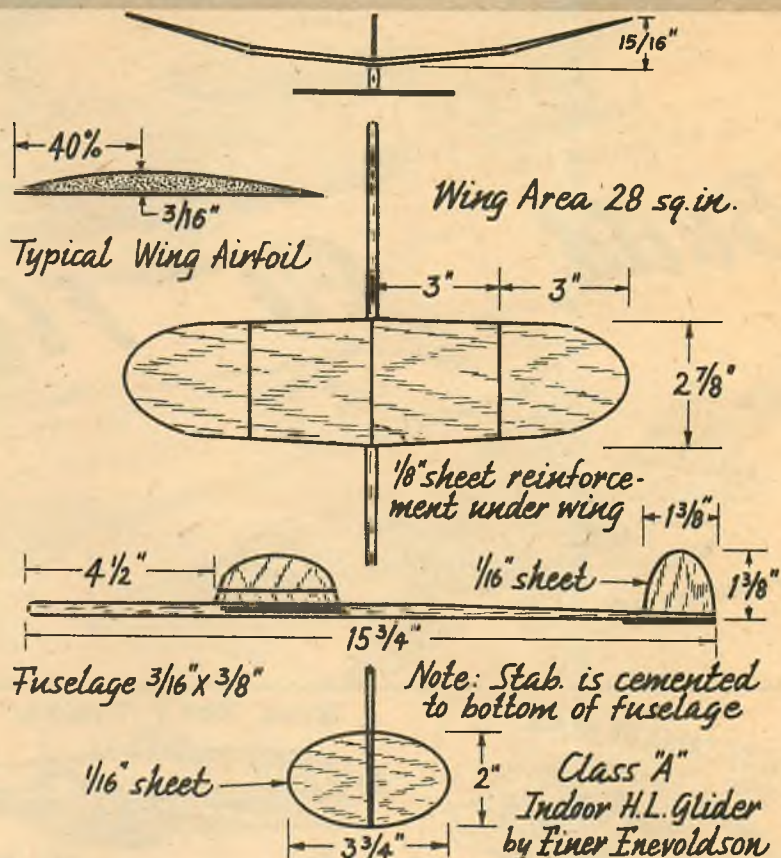
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## RECORD REVIEW

Two remarkable models from two centers of high modeling activity: Mr. Enevoldson is from San Francisco; the Stadelman-Schenck-Quinn trio is active in Pittsburgh clubs.





# Bomber Mission

(Continued from page 27)

the target once it has been located involves other considerations. Some issues back we discussed the effects of compressibility on falling bombs, pointing out how poorly streamlined casings caused tumbling and gyrating. This unstable behavior spoiled the trajectories. And the longer trajectory, in which bombs must fall eight or 10 miles, must be perfect in order to register hits. The NACA and the National Bureau of Standards have now developed new "gravity bomb" designs whose form and balance assure stable flight when released at high speeds.

"Bombs," explained Col. Tibbets, "have to punch through the barrier the same as do supersonic planes. At one time, we thought of rocket boosting as a means to speed the bomb through the transonic region. The scientists accomplished the same thing, however, by increasing the 'high fineness ratio' of regular bombs. The greater the altitude from which one expects to bomb, the higher ratio bomb you use." This means that the high-altitude bomb will be longer and slimmer compared to missiles designed for use at lower levels.

How big will the new bombs come? They are not likely to exceed in size the experimental 12½-ton Amazon and Samson missiles; and, except for "special purposes," bombs may be limited to 11 tons. It appears that two of these 11-tonners will do more damage than a single 22½-ton "Grand Slam"—our largest experimental bomb of conventional type—and the smaller missiles can be produced and handled more easily. One expert indicated that special-purpose bombs will be used for specific missions against targets which it might not be desirable to atomize. And smaller bombs containing conventional explosives will be widely used in any future conflict.

The stability of the bombing platform is a knotty problem which has a considerable effect on the accuracy of our operations. Because of the many miles bombs now have to fall, the least deviation from plumb, or true vertical, at the instant of release will send the bombs off-target even if the aiming and trajectory are perfect otherwise. Lateral motion of the wings would put the bombs to one side, while pitching movements would make the bombs hit short or over. Due to the difficulty of stabilizing the airplane itself under combat conditions, we may wind up with a gyro-stabilized bomb rack that remains in plumb even if the bomber should dip a wing or pitch at the instant of release. At high altitudes the most stable airplane has a tendency toward rocking, and sensitive aileron control is necessary continually to keep the wings perfectly level. The air at 55,000 feet, where they are talking of operating the improved B-36 models, is only one-eighth sea-level density and offers little support in comparison to the "solid" airflow found at lower levels.

Bomb bay design is another factor which enters into the stability consideration. Particularly in the case of jet bombers such as the Stratojet, Tornado, and Flying Wing, opening of bomb bay doors exposes the plane to changes in the airflow that can affect trim at high speeds. Even the bomb bays of the slower B-36 and B-50 are shaped so as to reduce buffeting. An additional measure is the use of high-speed doors which expose the gaping bay for the shortest possible time. The doors open just half a second before the bombs fall free, then snap shut immediately—all in a matter of two seconds.

For obvious reasons, it is more difficult to navigate the high bomber over a 12,000-mile flight than to plot its course over a relatively short distance. But it is the altitude and speed, rather than the distance involved, which makes for difficult navigation. Constant checking of ground speed and check points is necessary; but for reasons mentioned earlier, terrain features are often rendered indistinct by the high haze. If one is directly over a check point it can be seen, but should the plane pass to one side of the landmark and you have to look for it at an oblique angle, it might be missed or mistaken for some other point to which it bears a resemblance. Because of this, greater use will be made of Loran and Shoran techniques.

The main reason for checking constantly on long-range, high-altitude missions lies in the terrific winds encountered in the high stratosphere. These wind strata have been clocked as high as 200 miles per hour, and for the most part they blow from a westerly direction. But there are narrow and completely unpredictable bands of "inverse winds" from five to 60 miles in width which blow in other directions. Occasionally, they blow in opposite directions and at high velocities. If one were to encounter such winds unawares and neglected to check drift and ground speed, he could be blown

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a couple of hundred miles off course or be delayed an hour or more in reaching the objective.

To aid the navigators, a new GPI (Ground Position Indicator) device is being installed in all operational bombers. Known as the APA-44, this is a computing apparatus into which course data, drift, airspeed, and other factors are fed. Pointers on two scopes are kept matched by the navigator; and any deviation is indicated by the pointers. Wind data can be fed into the GPI as changes occur, and so can Loran fixes. The device incorporates both visual and radar indications of ground features.

The GPI will not only guard against lost bombers but against the loss of critical time near the target area before and after the bombing activities. High bomber crews can approach their "initial point" from just the right direction to commence the bomb run, instead of losing valuable time maneuvering for the run while within reach of flak or interceptors. Precise navigation is required also to make rendezvous with tanker planes or escort fighters. In the event of radar damage or enemy jamming, the GPI will still perform reliably.

The range problem is considered to be well in hand, due to our success with cruise control techniques and the near-perfection of the "boom" and "suckling" methods for aerial refueling. Fueling tests are continuing, however, in an effort to speed up the operation. Some airmen consider the present rate of fuel transfer from tanker to bombers and fighters as being much too slow. The planes have to fly at relatively slow speeds and remain in contact for too long a period. Our best fuel flow rate to date is secret, but the USAF is aiming toward a reported 600-gallon-per-minute rate of flow with equipment that will perform reliably at speeds up to 500 mph. Another shortcoming is that tankers must come down to about 15,000 feet to get the best results from present equipment. The lack of atmospheric pressure higher up slows down the flow rate. These problems are said to be well in hand, however, and their solution appears imminent.

Bomber crews will be protected by two new items of personal equipment. A recently perfected pressure suit of rubberized Nylon will be worn above 40,000 feet. These suits will keep the crewmen at peak efficiency by supplementing cabin pressurizing and by affording them a source of oxygen without use of the uncomfortable oxygen mask. Secondly, the suits will afford protection against "explosive decompression" in the event that the cabin or sighting blisters are punctured.

A three-quarter-length armored jacket of steel mesh and Neoprene will be worn by airmen. This is designed so that the jacket can be divested in emergencies by the pull of a ripcord. It implements the new tactical scheme of armoring the man instead of the airplane. Thus, the bomber need not be burdened down with performance-curtailling weight at times when it is not likely to be exposed to immediate combat conditions. Such small amounts of armor plating as the high bomber does carry will probably be made of the new metal, titanium. This is 40 percent lighter than face-hardened alloy steel armor.

We now come logically to the \$64-question: How well can the high bomber defend itself? Amazingly well. But the explanation of why this is so is less simply stated.

First, there are the "indirect defenses" of speed, altitude, and maneuverability which are inherent in the plane's design. Above 20,000, every thousand feet the bomber can add to its operating altitude is so much insurance. It has already been mentioned how high altitudes and speeds permit the bombers to release miles short of the target. And most readers understand how the relatively low wing loading of the big bombers enables them to turn tighter than the smaller winged fighters in the thin air of high altitudes. What is not generally understood is that speed differential between bomber and fighter is as important to the bomber's defense as is the maneuverability factor. At altitude, the fighter does not have enough speed margin over the bomber to permit fast closure. Thus, for reasons which will become apparent, it is the fighter and not the bomber which is the "sitting duck."

The bomber's "direct defenses" lie in its weapons. And it is here that the bigger plane shines brightest. The high bomber simply outguns the fighter at least three-to-one.

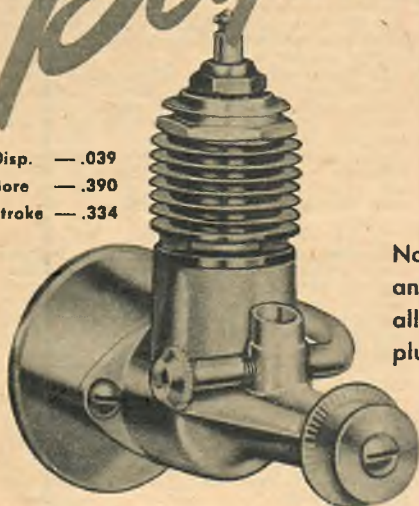
The current B-36D model does about 375 mph with its props and what has been admitted officially as 435 mph with the jet pods operative at 40,000 feet. Its top speed is probably higher. An F-80C flying a pursuit curve from beam attack at this altitude would close on the bomber at a maximum speed of 570 mph. (An F-84E would make its run at about 600 mph, and an F-86A around 640 mph.) Assuming that the 80C pilot judged his "roll through" just right and flew his pursuit curve without stalling—a 50-50 chance—he would commence firing at between 1,000 and 900 yards.



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**75¢**  
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The B-36 gunners would fire at about the same range. The relative, or actual, speed of the approaching fighter would be, roughly, 570 mph minus the bomber's 435 mph, or 135 mph. A gunner good enough to gain a berth on a B-36 crew would have no trouble at all hitting a target which was practically "hanging" out in space within range along a pursuit curve at only 135 mph. This is why the speed differential is so important. (The gunner would experience only a little less trouble against the F-84's 165 mph speed differential or the F-86's 205 mph differential.) In the exchange of fire, the fighter's six guns are no match for the 12 20-mm cannon that would bear on him in a side pursuit curve.

In the event that the fighter goes into an accelerated stall in attempting to make his curve tight enough—and recall that the chances are only 50-50 he will not stall—the pilot must ease off his rate of turn to regain control. This invariably widens the fighter's turn and it winds up at 6 o'clock low every time—cold meat for the six 20's and 37-mm gun in the tail and ventral turrets.

There is more to the situation. The attack described assumes that the high bomber flies a straight course at constant speed during the attack. If the bomber should turn toward the curving fighter, the latter's pursuit curve would be spoiled before he got within range. The pilot would have to make a diving withdrawal, and would still be exposed to a brief but heavy interval of turret fire.

At the moment, fighter pilots believe the best attack is a head-on rush. Closing speeds are terrific, leaving time for only a couple of bursts. But the fighter coming in at 12 o'clock level is exposed only to the two nose cannon of the bomber, and he is shooting at the most vulnerable part of the plane, the pilot's cabin. But as one fighter pilot complained: "So you get the pilots. Those ships carry two or three extra crews, and someone else takes over."

To give the fighters a better chance against the heavily armed bombers, the ordnance experts developed a couple of weapons with a much longer reach and a harder punch than caliber .50, caliber .60, or 20-mm armament. One of these which can be mentioned is the "Mighty Mouse." These 2 3/4-inch rockets can be launched in clusters, and a single hit is supposed to cripple the largest bomber. The bomber experts' answer to this weapon is the 70-pound MX-904 rocket that has a range of five miles.

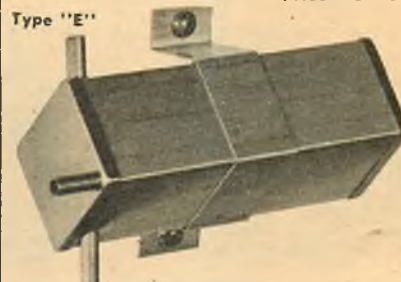
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Test will soon be held with a turret with twin launchers for these rockets, and we may see within a few months the faster turbo-prop B-36F with these rocket turrets in approximately the same locations as the present RCT guns.

With such weapons, the high bomber will be impregnable to anything but air-to-air or surface-to-air missiles. Higher speed will give the bomber a continuing advantage in speed differential. The turbines on the F model are expected to boost top speed to around 480 mph. And plans for further B-36 modification involve sweptback outer wing panels to raise the ship's Mach number to 0.75. This bomber, fully a year in the offing, will have a new designation and experts expect from it a performance of 500 mph at 55,000 feet with a five-ton warload.

In the meantime, however, fighter pilots find the B-47A Stratojet a completely hopeless proposition. Only one operational fighter, the F-86A, has enough speed margin to even attempt a pursuit curve against this bomber. The others are hard pressed even to keep up with the Stratojet, let alone overtake it. The lighter armament of the B-47, however, may indicate still another trend in bomber defense: emphasis on electronic countermeasures rather than heavier firepower.

## El Dobo

(Continued from page 49)

Brainbusters. This feathers under power to its own optimum axis, thereby allowing a more constant thrust output for the duration of the power flight. When the power is exhausted the prop folds back like any other folder. The main point in the prop, though, is its detachable blades. It has been quite a large problem to replace broken blades or to change props for different climatic conditions.

We had been giving serious thought to this matter of changing props but had met with all kinds of trouble in getting a hinge that would stay in one piece under the rigor of contest flying. All the hinges had the habit of parting company with the blades. The idea presented herein was seen at the Nationals on a prop by Alfred van Wymersch. Tests with this type of hinge proved beyond a doubt that it was very good and would work satisfactorily. In

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A fitted VECO prop is furnished with each VECO engine to insure peak contest performance.

### SPECIFICATIONS:

Engine	Bore	Stroke	Displ.	Approx. Wt.
VECO "29"	.725 in.	.724 in.	.299 cu. in.	7 oz.
VECO "31"	.750 in.	.724 in.	.319 cu. in.	7 oz.



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flight the prop has acted well, giving a nice high climb and taking all the knocks of contest work. Blade change is very fast and easy, requiring about five seconds. The idea of hinging the tail is not new, having been used for years, but on this model it serves a dual purpose. Besides providing an easy means for winding, it is also the dethermalizer. The combination of large props and more and more rubber has made the winding of a model quite a task, so it was decided to try to make the job a little simpler by winding from the rear. The combination of the dowel with the winding hook and the hinged tail proved the right answer.

The wing section was decided on after thorough testing on a previous Wakefield and a large seven-foot gas model. It is the Goettingen 602. This is a ten percent thick foil having all the characteristics of a good model foil, low drag and high lift. The leading edge of the wing and horizontal tail as well as the trailing edge of the wing are all planked with 1/32" sheet. The wing ribs are all cap-stripped to fill out the section. . . . Further details of construction appear on the full-size plan.

A dye was used in the clear dope to provide a deeper and longer lasting color to the colored tissue. The fuselage and vertical tail were doped with Lithosol Yellow G Concentrated and Butyrate dope, the wing and horizontal tail with Lithosol Red 2B and dope. Both dyes are manufactured by the du Pont Corporation and are very cheap. Your local dealer will do very well to stock these items since they add practically no weight to the finished model and the dye makes the model much more beautiful.

When first flown the model needed more vertical tail area, which was noted by a slight "Dutch roll" oscillation. When the needed extra area was added, test flying was short and very sweet. El Dobo required a little extra incidence and a little side and down thrust. After these small adjustments were made time started to build up. Three successive flights under the Wakefield rules resulted in two flights of maximum time of five minutes and one of 4:43. A very nice trio for the first of January.

The motor should take 850 winds under very good conditions, which will give you a prop run of about a minute. By this time the ship will really be upstairs—then watch that glide!

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Dress up that ship and get real fly-wheel action and easier starting, with sparkling 1/2" hex spinner nuts. 2 sizes: No. 5, 5/40 thread, fits Sputfire, Atwood, O.K. Engines; No. 6 8/32 thread, for K & B Engines .020 and .035, McCoy .09".

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# Build the Heath

(Continued from page 44)

surfaces need no explanation. Merely cut the necessary  $\frac{1}{8}$ " sheet outlines and  $\frac{1}{8}$ " sq. strips to size and assemble. Sand leading edges round and trailing edges to a taper and there you are—all done. The rudder shown on the Midwing side view was the shape used on both the early type Parasol and on the Midwing. The larger type, as shown on the side view of the Parasol, was the last type used, about 1936-1937.

The wing is of light construction, inasmuch as it is strut-braced. If you desire you may add sheet balsa to the leading edge upper camber for rigidity, as the wing on the original model warped upwards at the tips when the covering was doped. The celluloid panel in the center section applies to both the top and bottom surfaces of the wing. Note that braces are added between the main and K ribs on the Midwing version to resist the pull of the covering; these won't be necessary if leading edge sheet balsa covering is employed. The bellcrank mounting is fitted flush with the bottom of the wing and the bellcrank put on before the wing covering is applied.

The full-size plans will contain additional construction information.

Assembling the model should present no problem if attempted carefully. It is best to use a large flat surface (like a drawing board or desk top) as a jig. Line up the fuselage in a horizontal position, with the landing gear struts hanging over the edge of the board. With blocks and strips of masking tape, secure it in place, once it is level when viewed from the side and front.

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## Sailplanes

(Continued from page 29)

since the memorable 1947 Wichita Falls meet during which the total score was 40,921 miles. Dick Johnson was the only pilot to break 300 miles, the next best distance flight of 262 miles going to Bill Ivans of California who reached Big Springs, Texas. Five other flights, by Johnson, William Coverdale, William Ivans, E. J. Reeves, and Lyle Maxey were in excess of 200 miles. Highest altitude reached, above point of release, was 14,000 feet by Eastern Airlines Pilot J. Shelley Charles flying a German Weihe high-performance sailplane.

An innovation in this year's competition was the introduction of National Classification Championship by which sailplanes were classed in three categories, A, B and C, depending on their performance. The method was to multiply the sailplane's best glide ratio by speed in mph of best glide, the resulting figure being a classification factor by which the sailplane's category was established.

Thus, if a sailplane had a glide ratio of 30 at a speed of 50 mph, its factor would be 1500 which put it in Class A. Anything from 900 upwards was Class A, from 800 to 900, Class B, and below 800, Class C. In Class A were all high-performance sailplanes such as the RJ-5, Schweizer 1-21 and 1-23, the Weihe, Prue 215, Tiny Mite and the modified Laister Kauffmann LK-10's, flat topped or equipped with moulded canopies. All surplus sailplanes, non-modified or which did not gain enough performance from modification to attain the above-900 factor were in the Class B. Into Class C fell the intermediate class of sailplane such as the Goepfingen Wolf, Baby Bowlus, Kirby Kite and the utility gliders. Only one Class C sailplane was present at Grand Prairie, a Goepfingen Wolf, flown by George Lambros of Starkville, Miss. Class A championship was won by Richard Johnson, and Class B by Chuck Kohls of Lincoln Park, Mich., in his double-bubble Pratt-Read. Class C honors went to George Lambros.

Other events for which the pilots competed were National Feminine Soaring Championship, won by Ruth Petry of Ithaca, N. Y.; National Champion Soaring Club, the Texas Soaring Association; National Aerobatic Champion, Kimball J. Scribner, Flushing, N. Y., and Texas Soaring Championship, E. J. Reeves of Dallas. Scoring for contest points was done on the basis of miles flown, one point per mile, an additional 50 percent being awarded for completion of goal or goal and return.

Of the eight competing days, three were open with flights made at pilot's choice. The remainder were fixed task days with goals set by the Contest Committee.

Poor soaring weather on the opening day of the meet forced the Contest Committee to declare it a no-contest day, and competitive flying did not start until August 3. On this day E. J. Reeves of Dallas, flying his Schweizer 1-23, got first place with a flight of 99 miles to Henrietta, Tex. Second place went to Johnson who soared 95 miles just short of Henrietta. From then on Johnson was ahead, never making a flight less than 90 miles for the next consecutive two days under very poor soaring conditions and reaching Abilene, 157 miles away, on the 10th with a remarkable flight during which he had to use tacking tactics by flying south against the wind to get out of the stagnated area around Grand Prairie, and work west where he gained good altitude and finally north to his goal.

On the 10th and the following day a num-

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ber of goal and return flights were made with best performance put in by Ray Parker of California who completed a 107-mile round trip flight to Corsicana. Unfortunately his Tiny Mite was not recognized at the turning point at Corsicana, losing him credit for the flight. The next day Parker set out again on a goal and return flight and covered 126 miles from Grand Prairie to Navarro and back. This time his yellow midget was recognized and the flight credited with 189 points. However, the best goal and return flight was made by the Hummingbird team of Leslie Arnold and Harry Perl of San Leandro, Calif., who made a round trip flight of 158 miles with Waco as the turning point. Margaret Downsborough of Butler, N. J., established on the same day a feminine goal and return record of 70 miles from Grand Prairie to Cleburne and back.

The last day of the contest was given over to the Beechcraft Award Speed Event which called for the fastest flight over a 77½ mile triangular speed course—Grand Prairie, Russell Field, Fort Worth, Waxahatchie and back to Grand Prairie. Winner of the speed dash was Kim Scribner who covered the distance at an average speed of 36.5 mph with his white and red Schweizer 1-23. Second was Lyle Maxey with an average speed of 35.2 mph flying the Prue 215. third, Ray Parker in the Tiny Mite at 29.8 mph. Fourth place was won by the team of Les Arnold and Harry Perl in the Nelson Hummingbird, and fifth by J. David Malkeemus of Austin in a Pratt-Read.

On Sunday, August 13, National Aerobatic Championship competition finals were held as part of a huge all-glider airshow, and Kim Scribner was adjudged champion through his immaculately precise aerobatics. Ray Parker took second place and Wally Wiberg of Grand Prairie, Texas, third. Wiberg, who came in fifth in the competition for National Championship, did a remarkably good job of flying in his surplus Laister-Kaufmann, mildly modified by the installation of a moulded canopy. To show his accomplishment, it might be pointed out that the first eight places were taken by pilots flying such high-performance craft as the RJ-5, Schweizer 1-23's, the Tiny Mite and the Prue 215. His best flight was 160 miles to Abilene.

By popular demand of contestants the final banquet was abolished and the prizes were distributed on Sunday night at the Grand Prairie American Legion Hall. Early next morning a caravan of trailered gliders

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started on their trek home, drawing a final curtain over another National Soaring Contest.

In final analysis, though this year's Nationals might not have been what the pilots expected, weatherwise, we believe that it still proved pretty conclusively that Texas has excellent possibilities for International distance record flights, as even under marginal conditions the final total score of mileage flown is impressive, and so are a number of individual performances.

(Continued on page 80)

## Pete

(Continued from page 50)

and operating the regulator, this fuel system produced better results than any arrangement previously tested. We built four stunt planes with engines from .30 to .49 displacement and found them very dependable for contest flying.

The rubber tank is available in only one size and this is well suited to 29 displacement engines. According to instruction sheets the tank may be folded in the back for use in smaller ships. The tank is 1 1/2 inches wide and requires a fuselage nearly 2 inches overall for correct installation. This is too large for the average A/2 ship and has been a drawback in this field of application.

Remembering the erratic performance of A/2 engines in flight we decided to try a pressure system to see if it would make Half-A stunt more practical. The idea of folding the tank lengthwise rather than crosswise seemed to be a possible solution but had never been tried to our knowledge. An experimental ship was built to test this arrangement and flew very well. Power was so great that the short 20-foot lines snapped after five flights; however, the tank arrangement had been proven.

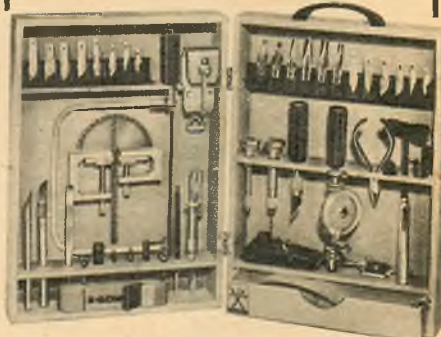
With information on power and flight performance of the test ship, we set about designing an up-to-date A/2 stunt model. Most contest rules require landing gear and ships are often judged for beauty. These all point toward a heavy plane but improvements in Half-A engines as well as new fuels, glow plugs, and propellers have increased the total power output sufficiently to pull this extra weight.

Fuselage is all-balsa construction, and

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sheeting is used on leading edge of the wing to improve appearance. A good finish was put on the original H-P-P by filling wood grain with talc and dope, followed with several coats of color and light sanding. All these factors brought the total weight to six ounces, which is nearly twice the weight we formerly considered maximum for the same size airplane.

In spite of this, H-P-P will do loops, vertical eights, overhead eights, three-leaf and four-leaf clovers. This could not be accomplished until power output was increased by operating the engine at 13,000 rpm on the ground. Best results were obtained by Ohlsson AA fuel and a 5 1/2 inch Kaysun propeller on the K&B .049 engine. If the ship is being built strictly for stunt flying a finished weight of five ounces would allow slower flying speed during maneuvers. This would give more time to control the plane and result in smoother maneuvers. Additional instructions for building H-P-P appear on the full-size plans.

Many model builders are puzzled about the proper size for Half-A ships. Present stunt and sport designs show a variation in wingspan from 15 to 36 inches and weights from 3 to 9 ounces. Our latest flight tests show that a stunt ship with 24 to 26 inch wingspan weighing 4 to 5 ounces is correct for modern A/2 powerplants. Scale or beauty models could weigh up to 9 ounces with a 24 inch wingspan and be easy to fly.

Scaling down larger ships will often help in deciding what size and weight to build Half-A models. The following table shows how to figure comparative size and weight.

Engine Displacement	Reducing Factors Dimensions	Weights
.19	.633	.258
.29	.552	.169
.35	.519	.140
.49	.463	.100
.60	.433	.0817

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Packet #11PP - Fighters - all ABsmC: Republic Thunderbolt P47 38; Bell Airacobra P39C 33; Grumman Hellcat F6F 38; Curtiss P40F 37; Mitsubishi S-00 Zero 40.

Packet #12PP - Fighters: Bell Kingcobra P-63 37; ABsmC: Messerschmitt 109 32 ABsmC; P38 Lightning 52 BC; Hawker Tempest 34; ABsmC; Douglas Dauntless SBD 40 ABsmC.

Packet #13PP - World War I - all AB: Nieuport 17C.1 26; Spad 13C.1 26; Fokker D8 26; Fokker D7 22; Sopwith Camel 27.

Packet #14PP - Lightplanes - all AB: Piper Sky-cycle 30; Johnson Model 31; Globe Swift 29; Ercole 30; Culver V 29.

Packet #15PP - National Air Racers: Gee-Bee 25AB; Howard 30 lgBC; Falkerts 20 AB; Wedell Williams 26 lgBC; Pesse Spec. 25 BC.

### SCALE MODELS

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Packet #2PP - Fighters: Bell Airacobra P39C 8; Republic Thunderbolt P47 10; Stormovik IL-2C 12; Grumman Hellcat F6F 10; Mitsubishi S-00 10; North Amer. Mustang P51 9; Grumman Avenger TBF 13.

Packet #3PP - Fighters: Northrup Black Widow P61 16; Hawker Hurricane 10; Hawker Tempest 10; Bell Kingcobra P63 9; Douglas Dauntless SBD 5 10; Bell Airacomet P59A 12; Messerschmitt 109G16 8.

Packet #4PP - World War I Fighters: Fokker D 7 7; Sopwith Camel 7; Fokker D8 7; Nieuport 17 C.1 6; Spad 13C.1 6; Albatross DVa 7; SE5a 6.

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## PILOT MODEL SHOP

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For example, if you have a ship with a .49 engine and a 52-inch wingspan and wanted to reduce it to Half-A, proceed as follows. Multiply the total weight such as 42 ounces by the weight factor from the table opposite .49. This gives  $42 \times .1 = 4.2$  oz. total weight. The wingspan or any dimension from the large ship can be reduced in a similar manner using the dimension factor and would be  $52" \times .463 = 24"$  wingspan for a corresponding A/2.

Control line sizes may also be figured from the larger ships by using dimension factors from the tables. The .49 ship proposed above would fly well on 70-foot lines of .012 diameter wire. These two dimensions should be reduced by the .49 dimension factor:

$$70' \times .463 = 32 \text{ ft. long}$$

$$.012 \times .463 = .0055 \text{ dia.}$$

The closest available wire size should be selected and cut to 32 feet. These figures will hold true only if power output is comparable on the large and small engine. Keep in mind that smaller engines must turn at high speeds near 12,000 rpm to deliver full power.

## Miss Quito

(Continued from page 38)

would be plenty good enough for any contest. The additional half ounce of weight seems to make no difference, and the increase in power really shows up.

Construction is simple and fast, the only different feature being the plug-in wings, and they are simpler and faster to make than the conventional pylon and wing set-up.

Each ship is different from its twin because of warps and a difference in the type of material used. So the only flight suggestions we can give are to set the rudders for a gentle right bank and trim the model by increasing or decreasing the stabilizer angle of incidence. From there on it is up to you.

This model is not at all tricky. It has a normal tendency to turn left, which must be adjusted for with right rudder so that it climbs left under power and tight (100 to 150-foot) circles to the right in the glide. Above all don't be afraid to experiment. This ship is built for punishment and the increased performance obtained is well worth the effort.



## Mary

(Continued from page 34)

Instructing soon became too prosaic to suit Mary and she took up aerobatic flying under the tutelage of C. H. "Mac" McLendon, an accomplished sportsman pilot, who is now her business manager. In 1948 Mary won an air race at the 99's meet at Melbourne, Florida, and also won the Beverly Whitfield Trophy for aerobatic flying.

Little, blonde, blue-eyed and very feminine, Mary possesses a pleasing personality and a friendly manner. Modest about her flying ability, she quietly dons her gear and chute, climbs into the big Wasp Stearman and proceeds to demonstrate a masterful technique in the difficult art of smoke-writing. She makes it look easy as the roaring Stearman trails the arcs and lines of smoke that combine to form the letters.

"Spacing and keeping the letters lined up are the important things," Mary told us. "It's a combination of sighting visually and timing with a watch. It's most difficult when there are cloud banks on the horizon beyond the letters and you can't see the smoke already out. Then the spacing is entirely by watch."

"How about wind effect?" we asked her.

"We get a break there. There isn't any. The wind drifts the letters at the same rate it drifts the plane. So it's just as if it was calm," Mary explained. "Of course I have to consider the wind effect on the position of the sign when it's finished. Many times when I'm writing here and there's a high wind I start my sign out over the Everglades so when I'm finished the sign will have drifted in over Miami."

"A hard day's work is often two hours of skywriting," Mary observed. "Of course this includes twelve hours at the airport waiting for clear skies."

Mary's plane is equipped with a 60-gallon capacity tank for the paraffin oil which expands into the white smoke trail as it feeds out through the hot engine exhaust. The oil is consumed at the rate of about one gallon per letter.

Proficient at writing in both script and block letters, Mary prefers to work in block. "It's easier to put up, the letters remain legible longer, and there is less tendency for the slipstream to distort the smoke already out," she explained.

Some skywriters have their sign written out, backwards, on paper pinned to the instrument panel with arrows showing the path of the plane. Mary does this only when writing script. She



carries the sign in her head when working with block letters.

Mary works at between 10 and 13 thousand feet altitude and dresses warmly, usually wearing two flying jackets. Even over Florida it's cold up there. "By working high the letters hold longer. Even then, some days the letters won't stick well—then I just keep repeating them. Other days they hold almost indefinitely." Mary says that aside from wind, such factors as humidity, temperature, and air mass stability have a telling effect on how long the sign will last.

While Mary works high with her skywriting she is equally at home down on the deck doing precision aerobatics. Her skywriting contracts permit her to do

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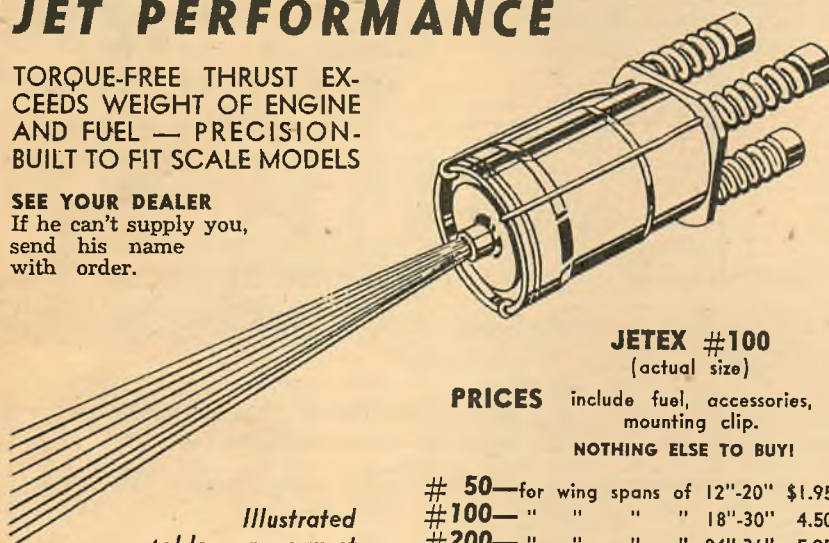
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airshow work and she accepts bookings  
for exhibition aerobatics.

Mary usually sticks strictly to business with her smoke-writing but occasionally she delivers a personal message in this medium. When President Truman was in Key West she flew down and wrote, "Greetings to Harry T. from Mary T."

"He must be pretty busy," Mary told us reflectively, "because I didn't get an answer."

## Navigator

(Continued from page 35)

or turn back for his starting point.

As the plane swings over Golden Gate bridge, Bob knows where his craft should be at all times during the flight. His information, passed along to the captain, will apply the winds forecast for every five degrees of longitude. These are called zones. Plane speed will increase from 260 to 300 miles an hour as the gas load is reduced. Apply wind effect to airspeed, and there's your time of passage through each zone.

His "how goes it" charts will tell the story. He checks predicted and actual positions as he goes. The same with calculated and actual fuel consumption. "These checks," he tells you, "make for precise navigation. We perform as planned, or we know the variations and what to do about them."

His real work begins as the Farralon Islands, some 30 miles off the California coast, disappear. From here on he must determine actual positions every hour. He's got to be a triple-threat man to do the job well. First, celestial navigation, or shooting the stars. Second, radio bearings. Third, Loran. It goes without repeating that he must be able to dead-reckon his way across should other means fail.

So he climbs upon the stool and peers into the periscopic octant. He labors 15 minutes until he plots his position. If that position checks with earlier calculations, all is well.

Where will the plane be an hour from now? Bob keeps at his job. He computes the heading the captain must fly. His last actual position shows how the winds were



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blowing in the preceding zone. From that knowledge, he determines the projected movement during the next hour—and where he should be 60 minutes later. At the same time he reports back to San Francisco his determined position, wind calculated for the preceding hour, anticipated track and ground speed for the next hour, plus meteorological observations for the weather bureau's use. Not to mention the amount of remaining fuel, information of interest to the flight analyst who is now working on later flights. And on the back of his report he draws a picture of cloud formations, to be passed on to the weather bureau at Honolulu.

About halfway across Bob hears San Francisco report the latest wind forecast for the three remaining zones. He busies himself again with the flight plan, revising his figures to determine the flight time of the second half. He sends an ETA to Honolulu.

Meantime, he has taken periodic bearings on three radio transmitters located along the coast. Triangulation gave him fixes to check his star gazing. Later he will tune in on three stations in the Hawaiian Islands for similar checks. Two hours out from Honolulu he will turn to his Loran set—a cousin of radar—for another kind of signal. Loran is faster than celestial observations. In 30 seconds he can get a fix. It's tricky, and requires experience. In a nutshell, what he does is measure the difference in time for signals from three sources to reach him. He measures those differences on a screen in millionths of a second. Loran's dependably accurate during the last 400 or 500 miles of flight, and it will bring him in without benefit of star checks.

Shortly before landfall, say 50 miles out, the pilots take over, following the radio range in. That ends Bob's flying job, except for completing his charts. Flight over, he

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delivers his cloud pictures and other data to the weather bureau. He makes talk about weather and winds he may encounter a day later on the return trip. Then he is ready for a romp on Waikiki Beach. East-bound, he reverses his procedure, zone by zone, until the captain picks up the Farallons.

No man-made aids ever will supplant celestial navigation, in this experienced young man's opinion. He looks at the problem this way:

"Weather usually occurs in pockets 200 to 300 miles wide. When planes flew only 100 miles an hour, a pilot might be in the stuff three hours. Now, hitting nearly 300, we're through in an hour or less. Seldom does more than an hour go by when I can't shoot the stars."

Basis of all navigation, he reminds you, is dead reckoning. "Given the heading and speed of the plane," he explains, "and knowing the winds from forecasts or your own calculations, you determine how winds will alter your course and speed, and project your future position."

How will navigation develop in the future? It will be no more complicated than today. As jobs open up on the airlines and in the services in swifter planes, the man responsible for directing the captain's steering will encounter less wind effect proportionately. He'll have to take more fixes in terms of time, the same number in terms of space. With Loran, he can easily take a fix every 10 minutes.

No member of an aircraft team ever was in greater demand than today's navigator. One outfit recently advertised for 19 navigators. During the first week, not one acceptable candidate applied. Not until the schools have time to turn out a new class will the need be completely met. How do you become a navigator?

Charles A. Zweng, publisher of aviation books and long an instructor in navigation and other subjects, reduces the requirements for celestial navigation to a simple formula: "All you do is measure the height of a star with a good sextant. You'll need a good watch to check time."

Reaching the state of efficiency that will sell an airline on hiring you isn't so short or sweet. Zweng amplifies, and Civil Air Regulations back him up. Normally you'll need two and one-half years of training and experience, including two years experience in navigation. "Get all the time you can in

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a school offering aeronautical courses," Zweng adds.

If you have had no flight time, perhaps an airline will permit you to fly for experience, as a navigational observer. Of course, they will expect you to sign on for a job when you win your ticket. Build up your library as you go. All the pertinent volumes having to do with navigation will scarcely fill a three-foot shelf, and will cost comparatively little yet be worth their weight in gold. Try for pilot training, too. This will help raise your standards in the eyes of a personnel director.

Civil Air Regulations call for at least 200 hours of flight navigation or 500 hours cross-country as a pilot plus 100 hours of navigation before you can go up for your ticket. You must be 21 years old, must have determined your position in flight at least 25 times at night by celestial observation and 25 times during the day by celestial and other aids. And you must have graduated from a flight navigational course approved by CAA.

Since recently a shorter-than-usual examination is being given—only 25 questions. But they're comprehensive. They cover CAR provisions about navigators' duties; fundamentals of flight navigation, including analysis of weather maps, reports and symbols; calibration and use of instruments used; navigation by dead reckoning, celestial and radio; pilotage and map reading; interpretation of navigation and identification symbols, and practical tests in navigation by the three methods.

If you pass, you get a temporary 90-day certificate, and later a permanent ticket.

"With an octant (or bubble sextant)," says Bob Bergin, "I can find my position anywhere in the world."

All the student navigator need do is practice, then he can go and do likewise.

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## Wakefields

(Continued from page 54)

slavia and Swedish models outstanding. Aarne S. Ellila, '49 winner, had a completely new job based on his successful model of last year, and the excellence of construction and finish brought many well-earned words of praise. However, the most beautifully built model there was undoubtedly Ted Evans' "Vanstead," which was perfect in every detail. His feathering propeller created a great deal of interest, and in practice proved both effective and efficient, there being no chance of timekeepers mistaking the model on the glide with the prop just ticking over, for all the world like an indoor model.

Round 1—5 p. m. to 6 p. m., Saturday, July 22.

In what appeared to be a dead calm, the contest got under way with a minimum of fuss, and the air was soon filled with models climbing with effort in the absolutely non-thermal conditions. Five long take-off boards were in use, and it made no difference in which direction the flight was made, there being no wind to either assist or complicate the take-off.

However, it was soon demonstrated that above tree-top level a slight drift was in existence, and a number of models began circling over the dense pine woods on the boundaries of the field. This naturally cut down the actual durations recorded in many cases, and protests were made to the officials in an effort to get the starting area shifted further up the field. Quite rightly the decision was made to keep to the same area for the duration of the first round, and the contest carried on.

Some models had difficulty in getting away cleanly, and had evidently been trimmed with a breeze to assist the take-off. and a number of delayed flights were experienced. The rule here was that all delayed flights (and repairs) were to be carried out within the stipulated period of each round, and the rounds were closed dead on time.

Round 2—8.45 p. m. to 10.15 p. m., Saturday, July 22.

In response to requests, the take-off area was placed farther out from the enclosures, but contrariwise, the slight drift upstairs

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had now changed direction, and for the second round models were traveling away from instead of toward the official area! However, this made matters easier for all, and though one or two models did get freed, the proportion was much smaller in this round.

In view of the steadily failing light, and generally worsening conditions, there was a long queue at the Recorders' table awaiting the signal for the start of this round, and with the distance to the take-off boards increased, things did not go with quite the swing that was experienced in Round 1. Here again, the advantages of making the contestants instead of the officials do the work paid dividends and it was quite amusing to see flyers, helpers and timekeepers running as hard as they could go to get out to the take-off boards! (Incidentally, each man was allowed ten minutes from the time his flight card was handed to his

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timekeepers to the time he must get his model airborne, hence no time was lost out in front).

Much consternation was witnessed during Round 2 owing to a steadily thickening mist that rose from the edge of the woods and gradually spread over the ground. Tissue slackened off alarmingly, and I actually saw models streaming with water towards the end of the round! Weight checks were considerably eased in consequence!

Matters were now reaching something of an anti-climax. Many drifted away with repairs to carry out, and in fact Round 2 ended in something of a fizzle. With most competitors having crowded into the beginning of the period, only a few were left to make their attempts, and when the hooter sounded closing the round, only a mere handful were left at the contest area carrying out last-minute jobs. With the last few scores recorded, everyone adjourned to

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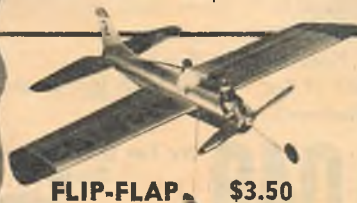
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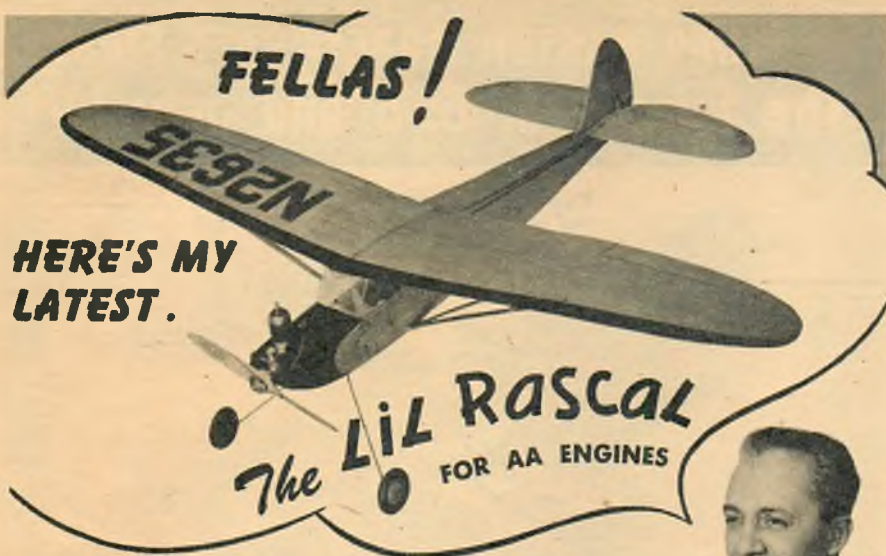
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the clubhouse for a very welcome supper and bed.

Yes—bed! With the light now almost gone, the starting time of Round 3 was given as probably 3 a. m., but an announcement would be made after the Jury had studied the conditions at that hour. With the forecast that it would probably be 4 a. m. before a start was made, we went to bed for a few hours of badly needed sleep—an experience unique in my aeromodeling career!

Round 3—5 a. m. to 6.30 a. m., Sunday, July 23.

With everybody on the spot, and eager for a return to bed, little time was wasted in starting the final round, and with the last vestiges of mist rapidly disappearing in the bright morning sun, models took off with commendable rapidity.

Criticism of Ellila's method of launching having been voiced earlier, attention was centered on him for this final flight, but knowing the conditions probably better than anyone else there, he was in no hurry to fly off his remaining flight. Perhaps the British team would have done well to have delayed their starts until toward the end of the period, as conditions were obviously improving steadily, but it is always easy to be wise after the event and the chaps followed out their agreed-upon flight order.

Fear of Italy spoilt his good position here, scoring no points in this final round. However, his teammate Leardi, following a drop in time in Round 2, improved matters to such an extent that he was able to return the top time in Round 3 with a duration of 3:48.7, and Stevens with a flight only 2 seconds lower improved his final listing to 5th place.

With all eyes on Ellila, he wound up for his last flight in an atmosphere of tension. But there can be no criticism of his third attempt. With one knee on the ground to prevent his criticised "follow-up" run, the launch was perfect, and away the model went to clock 3:42.6 and clinch matters for the second year in succession. Thus for the second time in the history of the Wakefield Trophy one man has won two years in succession, the previous holder being Joe Erhardt of the U.S.A. who won similar honors in 1931 and 1932.

By returning the top time in two of the three rounds, and producing just enough on the third flight to keep ahead of the opposition, Ellila showed that he has all the



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skill in designing, building and flying to be duly acknowledged one of, if not the, top men in the rubber-driven model field today, and his win was accorded all the congratulations he so richly deserved. As Ted Evans, his closest rival said, "Ellila beat the rest of the field fairly and squarely, and under conditions which produced actual results according to the model and its flyer's abilities."

In my opinion, the winning model could have easily made maximum times under our thermal conditions in England, and the fact that it could average over four minutes per flight under the handicaps of absolutely dead air and dampness says much for the overall soundness of the design. Many competitors are already seriously studying the application of gears to their next year's entries! Furthermore, some people were made to realize that the durations they were claiming in "still" air are not achieved in "dead" air.

With the rest of the field straggling along behind the winners, proceedings drew to a close at 7.30 a. m. prompt, and everyone aimed straight for breakfast and more bed.

Proceedings officially ended with an informal banquet at which a minimum of speeches preceded the presentation of the Trophy to Ellila by our A. F. Houlberg of England, who heartily congratulated the winner on his great feat.

The top six men were presented with some extremely fine specimens of Finnish glassware, suitably engraved with details of the event. A special award went to Ellila, this being a gold wrist watch donated by Pan American World Airlines, and it is not to be wondered at that Aarne appeared somewhat bewildered by the time he was free to sit down and sustain the inner man!

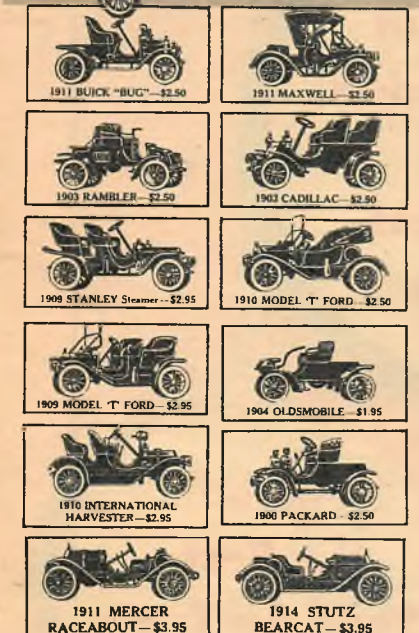
#### FINAL WAKEFIELD RESULTS

		Total
1	ELLILA, A. Finland	732.1
2	EVANS, E. W. Great Britain	660
3	LEARDI, A. Italy	644.8
4	Seton, P. W. Holland	619.6
5	Stevens, H. R. Great Britain	618.4
6	Salisbury, L. L. U.S.A.	606
7	Lustrati, S. Italy	597.7
8	Bachli, B. Switzerland	597.1
9	Sadorin, E. Italy	573.4
10	Warring, R. H. Great Britain	553.7

—C. S. RUSHBROOKE

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(Continued from page 66)

### PRIZES AND AWARDS

DuPont Memorial Trophy for National Championship: Richard Johnson. Pioneer Parachute to holder of second place: William Coverdale, Chattanooga, Tenn. Silver Bowl by Southern Bankers Mutual Life Ins. and gold watch by Zales Jewelry Co. to Feminine Champion: Ruth Mary Petry, Ithaca, N. Y. Silhouette Trophy by Luscombe Div. of Temco to Texas Soaring Champion: E. J. Reeves, Dallas. Beechcraft Speed Award: 1st pl. \$150. Kim Scribner; 2nd pl. \$125. Lyle Maxey; 3rd pl. \$100. Ray Parker; 4th pl. \$75. L. Arnold and H. Perl; 5th pl. \$50. J. David Malkemus. Stroukoff Award for goal and return flight, \$200: T. Nelson, L. Arnold and H. Perl; \$100: W. Coverdale; \$50: R. Parker. Air Trails Award, Nylon towline for best two-place performance: T. Nelson, L. Arnold and H. Perl. Alexis Dawy-doff Award to first woman to earn her silver "C" during meet, \$20: Margaret Downs-brough.

Goal prizes: Richard Johnson for flight to Odessa, \$150. Richard Johnson for flight to Abilene, \$150. Paul Schweizer for flight to Wichita Falls, \$150. Lyle Maxey for flight to San Angelo, \$150. Beaumont Cooley for flight to Coleman, \$100.

## Dope Can

(Continued from page 45)

going to draw any special conclusions from this. We'll leave that up to you and your fellow club members at the next club session. And speaking of clubs, that recent AT survey in which so many readers cooperated so magnificently showed that slightly more than 77% of all flyers are not affiliated with any local model aero club. Makes us think that a lot of folks are missing out on some good fun and flying. How about it? Aren't there enough enthusiasts in your neighborhood or town to permit you to band together?

Last Grand Flight. We received some news of the California Free Flight Championship meet sponsored by the East Bay Aeronautics Association and held in the Oakland-San Francisco flying area. Mrs. June Dyer supplied us with the dope. What surprised us were her comments: "This was the final contest of the EBAA. The balance in the treasury at the close of the contest was divided into cash awards for the finish of a well-known free flight club."

During the '40's the association was one of the largest and most prominent free flight clubs in the country. A goodly number of A.M.A. records in free flight gas R.O.G. and R.O.W. were held by such members as Bill Streese, Jack Dyer, Bud Romak, Don Foote, Russ and Marge Watkins, plus others. The club was organized in 1938 at Henry Ingraham's Hobby Shop in Oakland. At this final contest trophies and prizes were awarded as has been customary with E.B.A.A.—every flyer received a prize equal in value to his entry fee and some came in for a second round down to 10th place.

The close-out contest saw some nice weather, with wind holding off until late in the day. In Class C Gene Hildeman of Alameda took high time of the meet with an old Westerner powered by a Super Cyke which racked up 12:28. Next highest per-

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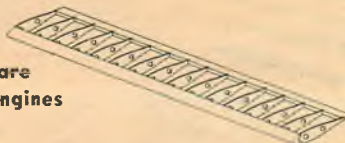
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formance was by a junior flyer, Robert McQuade of the San Leandro Line Twisters using a McCoy 19 powered job. His total was 10:34. Don Foote, noted designer and contestant, won in B with a Forster 29 powered Foote Racer and 9:53.3. A newcomer to free flight, James Freshman of the Albany Control Flyers, with a Wasp .049 Half-A which did a very credible 8:16.5, walked off with the small engine event. Half-A's flew on the same motor run as the bigger jobs: 15 seconds if hand-launched, 20 seconds if ROG'ed.

**Note to the Academy of Model Aeronautics.** Your contest board members might well consider the Class I, II and III designations given to "open," "senior" and "junior" class flyers respectively. Originally, the committee which recommended such a designation suggested Class I for juniors (under 16), Class II for seniors (16 to 21) and Class III for open flyers (over 21). How come it got twisted around?

**Bulletin Board.** Dusty Norton, formerly of Boise, Idaho: we still have a check for you. How about supplying your present address? Club secretaries: new film by British Information Services, 30 Rockefeller Plaza, NYC (20), is "Wonder Jet." For \$2.50 you can rent this 19-minute film which gives a spectacular account of developments in the field of jet propulsion. Re-enacted are highlights of Frank Whittle's research which led to first jet engine.

**Delanne Design Patented.** W. E. Pestalozzi, vice president of the Padel Development Corp., NYC, asks us to point out that P.D.C. is the exclusive owner of the Delanne Patents and that reproduction of Delanne models for commercial purposes is prohibited without specific permission of P.D.C. This is in reference to the Delanne Duo-Mono which appeared in a recent issue of Air Trails.

**Word from Tokyo.** Dallas B. Sherman, an official with Pan American World Airways in Japan and the chap who developed the PAA-Load event originally was a winner this year of the annual Berkeley chronograph award which is presented at each National meet to the individual not in the model industry who does the most to advance aeromodeling. (An "industry" award is also presented and this year went to John Brodbeck as a representative of K&B in recognition of that firm producing the first Half-A engine commercially).

Mr. Sherman in a letter to Bill Effinger of Berkeley, Models passes on some information on Japanese modeling: "Sad to state, all official model airplane contests in Japan—both Japanese and American G.I.—have been indefinitely postponed due to the Korean war. We are all giving full time to full-sized aviation activities. Meanwhile, model aviation shows every sign of surviving and coming back bigger and better than ever, at first opportunity. This past week-end, the local lads slipped in a little unofficial meet, flying PAA-Load on floats from a lake in the immediate vicinity of Mount Fuji!

"I presume some conclusions were reached at Dallas on the future of PAA-Load. I hope adequate provision has been made to use the smaller engines because I believe that the future of gas free flight lies in smaller, cheaper models which can be flown in smaller areas, closer into the cities. In such event, I foresee that most of the Class B and larger free fighters will die off for being too big and clumsy to survive the present crowded age. I should think this would be a great boon (to the activity) because many builders who give up after experiencing the inconvenience of one or



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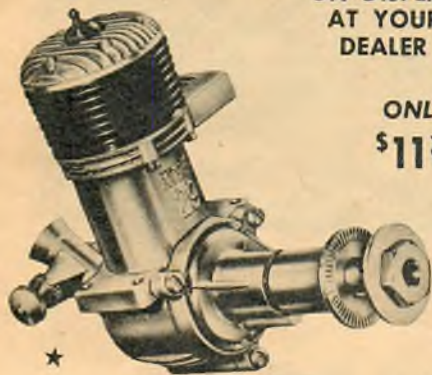
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two large models would keep right on after building the smaller ones that are able to fly in smaller areas and meanwhile hide in the closet or under the bed. I believe this is likely to be true for control line as well as free flight."

**Wives vs. Modeling.** A chap you've read of in this column, but whom we'll call Bill (that isn't his name) to keep his identity a secret comments on that bit we ran recently about the tough times the little women have who try to keep up with the model building spouses. He reports that at the last club meeting one member resigned because his wife was raising the devil about all the time and money he spent on models. "He went through the usual routine," recalls Bill, "telling us that all the married men were doomed and would have trouble if they kept building models. He went so far as to try and scare the single boys, too. However, tonight he was out again flying as big as you please."

Bill's contention is that model makers make wonderful husbands. Their wives get free trips to contests, the man is usually handy around the house and good at fixing things. He cites his own case as an example. "This summer I finished building a house in the country on seven acres, dug a well, put in a water system that includes a hot water unit, painted everything, and made a power mower. I have a Jeep and the other week I gave my wife the keys to a brand-new Plymouth and the first night I went flying, where do you think the wife went in her new car? Yup, you guessed it—to the model ring to watch me fly."

"Well, you take it from there," concludes Bill. "It's (modeling) a great life and no doubt the women like it. I also have a pilot's license and if a plane buzzes the house the little woman jumps me for spending the hard-earned cash in the air. Then when vacation time comes, what happens? We rent a Cub, fly up to Canada and really have a good time with quick, clean transportation. She even brags on how she helped fly. The noise—terrible! But she falls asleep at 5,000 feet."

"Yes, they love the activity and we couldn't do without the gals. Way down deep she knows darn well she's a lot better off with a model builder husband than the neighbor who has to drag her better-half away from the beer hall on payday."

**"Standard Speed" Events.** Something new and special in the way of U-control speed competition is the "standard speed" contests run off by member clubs of the Bucks County, Pa., Federation of Model Clubs. This deal was originated by Fed-pres. Ralph Biddle and has been drawing a lot of interest and inquiries. Set-up is simple: a certain speed is fixed in a class and the models coming closest to that mark win. It requires the contestants to experiment with props and engine settings to keep their planes from going too fast. Now there's a real novelty.

The Federation is emphasizing junior competition and has helped in the establishment of a number of new clubs. Frostbite contests are scheduled for the entire winter season. So many A.M.A. contest directors belong to the BCFMC, one wit suggested the name should be changed to the Bucks County Association of Contest Directors and Meet Officials.

Proof that the Federation has done considerable good for modeling in the state can be obtained by checking over the meet records held within 200 miles to the Bristol, Pa., area. The major portion of junior members entering competitions and the winners are from the Bucks County Federation member clubs. Model builders in the Bucks County area are invited to join a Federation



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club. All the dope can be secured by contacting the Secretary, Bucks County Federation of Model Clubs, Box 85, Neshaminy, Pa.

**Guatemala Gang.** Club Aeromodelista Guatemalteco is the big, lively modeling organization in Guatemala according to Kenneth Rosenthal who flies with the CAG although he's not a full-time member since he attends school in the States. Sparkplug of the group is Don Andres Bobowsky who apparently has the only complete model shop in the country and spends a great deal of his own time instructing newcomers to the activity.

"So far," says Ken, "we have had almost every kind of model—sailplanes, U-control, rubber and, naturally, gas free flight. Rubber-powered ships are preferred, but a definite trend towards small Half-A jobs is noted. The only trouble is fuel. Since it is inflammable it has to be sent down by the ships and takes a long time to get here."

Ken enclosed three photos of his Kothe-PAA-Load which appeared in AT. Power is a ten-year-old OK "49" and the piloting is done by Joe and Schmoe, a couple of dummies with character. Friend Rosenthal would like to hear from other modelers. His school term stateside address is 168 Westminster Ave., Syracuse 10, N. Y.

**Deep, Dark Ark.** We receive a lot of photos that just can't be squeezed into AT, no

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matter how hard we try. One came from Kenneth Makepeace of El Dorado, Ark. Ken moved there recently from Decatur, Ill. Claims one town is airplane crazy while the other wonders what modeling's all about. He's in the latter spot now. Says he promised the gang back in Decatur that he'd try to get AT to print a photo of his first model finished in El Dorado. This is to certify that Ken's model was mighty purty, fellows; we just wish the photo itself was better so we could have run it.

**Corinth Club Calls for Members.** Dexter Bumpas, 1203 Wick St., Corinth, Miss., reveals that a new club is abornin' down there. If you're a Mississippi modeler in the vicinity of Corinth contact Dex for membership data (that goes for nearby Tennessee flyers, too).

**Mad Man on Lines.** "During the recent Gulf hurricane which came across the state a little north of Orlando, I got up my nerve and took my modified Junior with a McCoy 29 Red Head over to the field to make what was obviously to be a disaster of grand magnitude."

(This is David L. Nicholson, Orlando, Fla., reporting.)

"The first attempt failed, but already soaking wet, I tried again with better results. It staggered off the ground and flew for about a minute and a half until a tremendous gust of wind caught it with its tail up and downed it."

How strong was the wind, Dave?

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Dave, when the gale goes by the 55 mph mark we crawl under the bed. We concede defeat; you and the Junior win.

**Most Northern Flyer?** J. A. W. Robertson, Box 174, St. Andrews East, Quebec, Canada, claims that he is the only fellow flying control line models north of Montreal—and that includes a mighty big area. Anybody dispute the statement? Mr. R. would like to hear from model builders anywhere and especially from his neck of the woods.

**Reading the Mail.** Man after our own heart is Virgil A. Davis of Portsmouth, Va. He's building a Convair-Liner from AT-H. A. Thomas plans after enlarging to a one-half-inch-to-the-foot scale. Wants a real exhibition model with movable controls and interior detail. The Junior, Museum run by the San Francisco Recreation and Park Department is boosting rubber-powered models with endurance and speed contests. Speed ships are flown over a 100-yard course. Richard Crabie of Deseronto, Ontario, came across some old AT plans and turned out the Cruiser rubber model. He beefed up the framework by using 1/8 inch square balsa; turned a 11-inch folding prop with 18 strands of 1/8 inch flat rubber. Results were an initial 3 1/2 minute, half mile flight followed up by an out-of-sight flight. Louis Surcek of Lethbridge, Alberta, wants to know if he can double the size of the DeHavilland Comet we ran to take Class D ignition motors with two-speed control. Sure, Lou, that should be about right size. Lou's president of a Plymouth Aero League club with 23 members. He got to the Provincial finals meet with his O&R 60 powered AT-6; placed second.

**Ohio Wakefield Team Contest.** We're delighted to see that the West Coast idea of Wakefield competition in the form of team flying has caught on. Latest outfit to report such activity is the Akron, Ohio, Society of Model Plane Engineers. The Second Annual Inter-City Wakefield Type Team Competition was the official title of the contest conducted by the ASMP and sponsored by the Akron Women's Chapter of the National Aeronautic Association.

Miss Frances G. Alexander, director of

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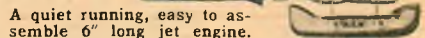
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# AIR TRAILS



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Model Builders! Here's a listing of the nation's leading hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

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youth aviation activities for the Akron NAA, says the chapter's efforts are being directed toward strengthening the interest in the Wakefield Internationals, but instead of one man winning for his team, they have a different set-up and awards are made on the basis of the aggregate flying time of each 3-man team (this is like the California plan). The boys seem to like it, says Miss Alexander. The second annual meet had two teams from both Cleveland and Akron, and one apiece from Detroit, Pittsburgh, and Columbus. The Akron team won the trophy for the second straight year with honors going to Toful Petraltis, captain; Lloyd Wellner; Dick Obarski; Eddie Conrad; and Hubert Wise. Single high-point man for the day was Ralph Knapp of Pittsburgh.

"Our chapter," writes director Alexander, "has set up a perpetuating trophy for the winning team and awards an individual trophy to be kept permanently for each of the five members, together with a permanent award to the high-point winner of the day. We believe this is the only competition in the middle west devoted exclusively to the Wakefield type of flying and that our Akron SMPE is the only society organized for rubber-powered flying only."

This is another indication that Wakefield flying has a much greater hold on the American modeler than most folks reckon. We say, why not make the outdoor cabin competition event exclusively Wakefield?

**Quotable:** "I am looking for a pen pal. I am interested in U-Control stunt, scale and speed. I am a freshman in high school!"—Charles Downing, Box 497, Brookhaven, Miss.

"I am enclosing a photograph of my Long Midget model built from AT plans during lunch periods in the company workshop. I started construction at the beginning of the year and just recently completed it. We here really look forward to plans like the Long Midget and your recent Pitts Special."—E. A. Stautzenberger, Sequin, Texas.

"In answer to a letter from George E. Bullwinkle . . . I wish to put over three points. First, as far as we know or have been able to find out, Nevada has no laws concerning flying jets as free flight models. The restrictions are the same as for any other free flight or radio-controlled model. Secondly, we have never made any claims that our model has flown. And third, evidently Mr. Bullwinkle has never been to Nevada where one could fly several thousand battleships in formation and no one need ever see or know of it. Due some extent to the surprising response by readers of Air Trails, our appetite has been whetted. Our F-80 is now in many parts which we use for retraction (wheel) tests, engine bed tests and other functions and unfortunately will never be in one piece again. From this model, however, we have gained invaluable information which will be used on other models now nearing test stages. Going is

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F-B SHARPY — Trophy-Winning Stunt Plane. 517 sq. inches—47" span, 11" cord. For class C-D engines. **\$4.95**  
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P-T TRAINER—Learn to Loop. Prefabricated profile. 155 sq. in.—26" span. For class A-B engines. .099-.29 cu. in. Build and fly in one hour. **\$1.99**

Super Sky Box Stunt, low wing, class C-D	<b>\$4.50</b>
Reg. Sky Box Stunt & Trainer, class B-C	<b>\$3.95</b>
Baby Sky Box Stunt & Trainer, class A-B	<b>\$2.95</b>
Vagabond Scale Stunt, Class A-B	<b>\$3.95</b>

**F-B MODEL AIRCRAFT**  
3240 Larimer — Denver 5, Colo.

slow due to the innumerable problems involved in a project of this nature (jet powered free flight scale models). —Al Gifford, Las Vegas, Nev.

"Ever since I sent for my Swisher and Jetex 50 engine I've been a jet-plane enthusiast. Recently when I received a Jetex 100 I saw an article on the picture 'Chain Lightning'; it showed a few views of the 'JA-3' which was the 'star' of the movie. Next day I bought materials and started right away. The body was hollowed from 1 1/2 inch soft balsa, wings and fins from 1/2 inch sheet and stab from 1/16 inch sheet. That night I assembled the JA-4 (!), making it a fast pylon model. Color scheme is blue and white. Wheels are 1 1/2 inch diameter. Since the original ship didn't have air intakes I left off some of the celluloid from the front of the cockpit to ventilate the engine which is located in the middle of the fuselage. Fuselage insides are lined with asbestos. When power cuts it's like a bomb with large fins. That's why I am working a parachute brake controlled by a second line. I've had 72 good control line flights with it. I have to use especially long wicks." —Ricky Joachim, Schofield Barracks, Honolulu.

"I am enclosing a photo of interest. It shows one of your countrymen, James Tangey, at the Irish Nationals held in Dublin. Jimmie placed 2nd in the Wakefield class flying his cabin job with single-bladed folding prop. As you are probably aware, Tangey is at present in England with the U. S. Navy and has rapidly made a name for himself in the aeromodeling world over here. The Irish Nationals have become a 'must' on our contest calendar now, this being the second year I have attended and a more pleasant contest cannot be imagined." —D. A. Brockman, Bechenham, England.

**Modelers Have More Fun Than Anybody.** Take James G. McClure of Vancouver, British Columbia, for example. When he saw a \$2 million Northwest Stratocruiser fly into his home town some months ago he was quite impressed by the aircraft. So he built a model. And what a model: it was his 2,000th, it took 600 spare-time hours, it scales 1/25th actual size, covering is sheet aluminum with rivets, features fully retractable landing gear, has cabin lights on both decks and intermittent flashing navigation lights on wing tips and tail. Wings are detachable and are secured to the fuselage by 3/16 inch bolts. Cost exclusive of labor was \$120. The model Stratocruiser weighs 20 pounds.

McClure, now 25, has had some amusing experiences as a modeler. Once, testing a free flight in Winnipeg's Central Park at night, he had to climb a tree to rescue his craft. Someone called the police to come and get that "midnight maniac roosting on a branch." Came the gendarmes who first ordered him down, then heard his plea and ended up retrieving ship for him.

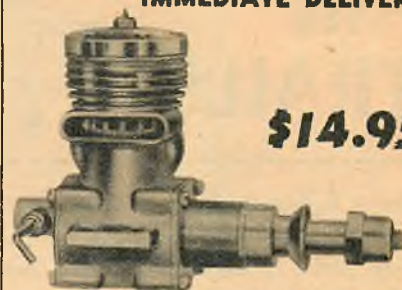
On another occasion one of his gliders got snagged in some power lines. An uncle blazed away with a shotgun until he wrecked the glider, then added the finishing touch—in a helpful way—by setting it afire with a kerosene-soaked grain sack which he sent aloft. But that wasn't all. Flames melted the power wires and the uncle had to pay for repairs.

McClure once designed and built a flying wing and when he got this into the air he stopped traffic on a nearby railroad. Train crews halted the freights to take a look-see.

Mac does things in a big way. The wings and tail of his Stratocruiser were hand-carved from a nine-foot balsa plank.

Oh, for the life—etc.

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A FLICK OF THE FINGER IT'S HIGH OR LOW

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\*CLUE: OUR AD - PAGE 17  
CHRISTMAS SECTION

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(See another Consolidated ad, page 20)

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THE KIT IS REALLY COMPLETE:

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25 1/2" WINGSPAN CONTROLINER\*  
FOR .19 TO .33 ENGINES

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12" LONG — FOR .035 TO .099 ENGINES  
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YOU can now assemble your own radio control unit from completely fabricated parts. A pair of pliers, screw driver and soldering iron are the only tools required.

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Ready-To-Fly

23 1/2" WINGSPAN  
For .035 to .049 Engines

**\$1.50**

*Championship Flying Scale*  
Free-Flight for .035 to .049 Engines, or  
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34" Wingspan  
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*Controliners*



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Here's the Model with the "PERFECT 30 MINUTE" FLIGHT RECORD -

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*Free-Flight*



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1" Scale - 36" Wing  
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1 1/2" Scale - 24" Wing  
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1 1/2" Scale - 25" Wing  
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**"NAVION"**  
3/4" Scale - 25 1/4" Wing  
.099 to .199 Engines



**HAWKER "SUPER-FURY"**  
3/4" Scale - 24" Wing  
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56" Wingspan  
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54" Wingspan  
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**POWERHOUSE "56"**  
56" Wingspan  
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1st Place Winner DALLAS NATIONALS,  
1950 INTERNATIONALS

### Radio Control PAA-Load



**"SUPER BRIGADIER"**  
58" Wingspan  
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**"LIL' DUPE" ZILCH**  
42" Wingspan  
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25" Wingspan  
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#### "SWISHER" READY-TO-FLY

#### READY-TO-FLY "SWISHER" JET AIRPLANE

#### Complete with Jetex "50" Engine and Fuel!

17 1/2" Wingspan. All-Balsa construction,— nothing else to buy! Climbs to 500 ft. altitude on a pellet of Jetex Fuel, glides

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with wire alignment guide

Lightweight aluminum discs with separate channels for each wire. Alignment Guide prevents wire from jumping groove. Supplied with lacquered wood handles and attaching screws.

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Smooth casting of the proper weight and grip. Line is attached to adjustable bolts to provide setting of handle.

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#### SPORTSMAN "30"

Can be powered with rubber, CO-2 or gas engines up to .049. A perfect flyer, easy-to-build with completely cut-out balsa parts.

**95c**



#### SINBAD "40"

40" Wingspan — Towline-launched glider with famous Berkeley "Keel-Crutch" Construction. All balsa parts clean cut-out. Official AMA Junior Record Breaker.

**75c**



#### CONTOLINER FLIGHT UNIT

A complete, ready-to-use Reel-Handle-Line Combination. All-metal Reel-Handle with flexible steel cables and adjustable connectors. Just unroll, attach to the model's lead-in wires, and fly!

#### For "1/2 A" and "A" Models

Complete combination with two — 35 foot lengths of .012 stranded cable. **\$1.65**

#### For "A" and "B" Models

Complete combination with two — 55 foot lengths of .015 stranded cable. **\$1.95**

#### PRESSURIZED GAS TANKS

Berkeley Gas Tanks are precision deep-drawn from fuel resistant tin plate. Only one soldered seam eliminates leaking problems found in other types of tanks.

The tanks are designed to give positive fuel flow during all control-line stunt patterns, in either upright or inverted flight. The filler tubes extend OUTSIDE the airplane, for ease of filling. They face into the wind stream to prevent "leaning-out" of the engine at high speeds.

Mounted in a vertical position, Berkeley Gas Tanks are ideal for free-flight flying.



Endorsed by Jim Saf-tig, National and International Stunt Champion

1/5" x 3/4" x 1 1/4" 3/4 oz. Capacity

3/8" x 1 1/4" x 2 1/4" 7/8 oz. Capacity

15/16" x 1 1/4" x 2 1/4" 1 1/4 oz. Capacity

3/4" x 2-1/16" x 2 1/8" 1 1/4 oz. Capacity **85c**

1 1/8" x 2-1/16" x 2 1/8" 2 1/4 oz. Capacity **85c**

#### "NON-KINK" PLATED WIRES

Pre-straightened, polished wire that lays out flat when unrolled. Will not rust. Supplied 2 coils to a roll.

.004 dia. x 2- 35' coils **35c**  
.006 dia. x 2- 35' coils **35c**

.008 dia. x 2- 55' coils **50c**  
.010 dia. x 2- 70' coils **65c**  
.012 dia. x 2- 70' coils **65c**  
.014 dia. x 2- 70' coils **65c**  
.014 dia. x 2-150' coils **\$1.00**  
.016 dia. x 2- 70' coils **65c**

#### STRANDED STAINLESS STEEL

.012 dia. x 35 feet **35c**  
.015 dia. x 55 feet **75c**  
.015 dia. x 70 feet **\$1.00**  
.015 dia. x 200 feet **\$2.75**  
.021 dia. x 70 feet **\$1.00**  
.021 dia. x 200 feet **\$2.75**

Flexible and anti-kinking. Multiple strands make it extra easy to handle. One coil to a roll.



#### D-E FUEL SHUT OFF VALVE

Automatically and instantly shuts off fuel on any model engine. It stops all engine, glow-plug, diesel or spark ignition the right way — by stopping the fuel flow — not by flooding the engine. Precision machined and fitted. Every unit flow tested and checked. **\$1.00**



#### "POLYTHENE" FUEL LINE

The new transparent tubing that resists all model engine fuel. Extruded from the new light-weight Dupont miracle plastic, Polyethylene.

For all size engines - 15c per foot

#### "FUEL-METER" A TIMER FOR "1/2 A" ENGINES

The first effective way to control the engine run on small engines. Weighing only 1/4 ounce, it acts as an air bleed in the fuel line. By varying the length of fuel line between "FUEL-METER" and the engine needle valve, the engine run can be accurately controlled.

"FUEL-METER" is simple to operate. It can also be used with larger engines in conjunction with a timer as a fuel shut-off. Priced so low, you can't afford to fly without one. **Only 50c**



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IF NO LOCAL DEALER IS CONVENIENT, MAIL ORDERS WILL BE FILLED BY BERKELEY MODEL SUPPLIES, DEPT. AT., WEST HEMP-STEAD, L. I., N. Y. PLEASE INCLUDE 25c PACKING AND POST.