AIR TRAILS

NOVEMBER 1950

25 CENTS

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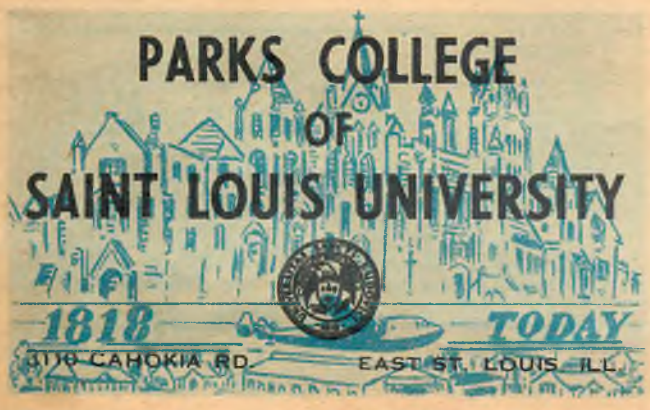

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☐ Aircraft Maintenance Engineering
☐ Please send me information regarding educational benefits available by Veterans Administration.

Name..... Age.....

Address..... Zone.....

City..... State.....

AIR TRAILS

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THE READERS WRITE:

Blue Angels, Ahoy! . . . You claim the AF's Acrojets outperform the Navy's Blue Angels. Any of your staff members at the National modelplane meet in Dallas? What did they report?

Aroused Navy-ite, Annapolis, Md.

• The Navy flyers, now thoroughly familiar with their jet Panthers, would have been a match for the Acrojets. As the Blue Angels were disbanded to enter the Korean air fighting, Air Trails declares the Acrojets vs. Blue Angels controversy an honest-to-goodness draw.

New Caterpillar . . . Please advise me of the address of an office of the Caterpillar Club where I can apply for membership as the result of an emergency parachute jump.

Lt. Philip D. Haisley, Fort Campbell, Ky.

• For membership in this organization write to the Caterpillar Club, Inc., P. O. Box 478, Trenton, N. J.

Out of Mothballs . . . I just thought I'd congratulate you on your stirring article "What Happened to the Great American Aircraft Industry?" I think articles like that and "Will Britannia Rule the Skyways?" will spark up our "great" aircraft industry.

I also thought I'd make a small correction on your February 1950 issue. Therein under "Air Notes" appeared an item which stated that the big Lockheed Constitutions may be put in mothballs. I'm enclosing a recent newspaper clipping under date of August 2 which states that the Navy has put its two largest landplanes, the Constitutions, on the San Francisco-Hawaii run.

Charles Cobb III, Rye, N. Y.

Jet Maneuverability . . . A few of the fellows here in Ward C-8 are having a very heated argument as to whether or not the jet fighter can outmaneuver the fighter of World War II. Can you settle this?

Doug Shay, Fitzsimons General Hospital, Denver, Colo.

• We doubt that a jet fighter has as much maneuverability as a piston-engine fighter as far as radius of turn is concerned. However, the rate of roll of an F-80 is better than that of a standard propeller fighter.

Single-seat Luscombe . . . Can you tell me whatever happened to that little single-place Luscombe lightplane? I thought it was a very sweet little job.

Ralph E. Ormdorf, Dayton, Ohio

• We believe the single-place low-wing Luscombe design was abandoned because of lack of practicability. There is not much demand for a single-place personal plane.

Prop Numbers . . . I have always wondered what the second number in the measurement of a prop means. I know that it refers to pitch, but exactly how do they get this number?

Victor Royer, Gainesville, Fla.

• The number referring to the pitch of a propeller specifies the distance the propeller would advance in one revolution if there were no slip. Thus a 5/7 prop means that the blade diameter is 5 inches, that it will theoretically travel 7 inches forward for each revolution. The higher the number, the greater the pitch.

•Jets from a Carrier . . . I would like to know if a jet airplane can take off from a carrier under its own power. How far do jets have to run to take off?

J. A. Hopkins, Norfolk, Va.

• Jet fighters not only can take off under their own power from a carrier deck, without Jato or catapult assistance, but actually do. The distance of a jet plane's ground run depends on the strength of the wind; the more wind, the quicker the take-off. This is why carriers steam at high speed into the wind while launching aircraft.

Control-Line Voyager . . . I am building a scale control-line model of a Stinson 150 Voyager and wish to finish it off with a detailed cabin. Would you be able to tell me where I can obtain photos, drawings or sketches of the interior and exterior?

I want all the detail I can get for the cabin interior, such as upholstery detail of the seats, walls, and ceiling and doors. Also I want details of the instrument panel and all controls including door handles, inside and outside.

Incidentally, I am using the plans from your 1948 ATs and am powering my six-foot monstrosity with a Viking 65 with two-speed control. Here's hoping she will perform like the real thing.

Harold J. Baker, Drexel Hill, Pa.

• We suggest that you write to the Piper Aircraft Corp, Lock Haven, Pa. Piper bought the Stinson concern from Consolidated-Vultee several years ago, though is not producing the plane at present. However, they likely have all pictures and literature on the Voyager still available.

Test Pilot Job . . . I am interested in and want more information on a recent article you ran, "Your Job in Aviation: Test Pilot." It says you must know mechanics, and have engineering training. I would like to know if that means aviation mechanics and if you should have a great deal of experience in it. As for the engineering, is there a particular field involved?

Harlin Gillet, Jr., Moses Lake, Wash.

• A good thorough knowledge of aviation mechanics and aircraft engineering are prerequisites for a test pilot's job.

Belle of Bethany . . . How about more information on the "Belle of Bethany" which you included in "Development Highlights" for Sept.? It looks like a sleek little ship. Has it been entered in any races, and how did it make out? What is its average speed?

Charles Andrews, Waterbury, Conn.

• The Belle of Bethany participated in its first race at the Westchester Air Show held at the Westchester County Airport, N. Y., last June. Although it was the first event of its kind for both ship and pilot, the

(*Continued on page 9*)

What will YOU be doing in 1951 ?

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NAME

ADDRESS

CITY AGE

ZONE STATE

HIGH SCHOOL ATTENDED GRADUATED: YES ☐ NO ☐

Check one: ☐ Veteran ☐ Non-Veteran

AT-11

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Dnaero Spl. Jr. 16" A-B-C	3.95
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Flivver 36" B-C	3.95
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Flying Circus Jr. 16" AA	1.50
Flying Clown 28" A-B-C	1.98
Flying Saucer 18" A-B	1.95
Freshman 9 24" A	2.48
Freshman 15 24" A	2.98
Freshman 29 36" B	3.98
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Hell—Razor 15" B	6.60
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Invader B 17"	7.98
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Junior Stunt 29 40" B	4.98
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Sharpy 47" C-D	4.98
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Sky Bee Stunt 42" B-C-D	3.95
Snooky 24" A-B-C	1.95
Sophomore 19" A	2.48
Sophomore 19 32" A	2.98
Sophomore 25 35" B	3.98
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Speedwagon 20 12" A	3.95

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

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Trixter Babe 20" AA	1.00
Trixter Invert Jr. 40" A-B	2.95
Trixter Profile 22" A-B	1.95
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Powermist Spitfire	.80	1.45
Ranger Glo	.80	—
Red Devil	.80	1.10
Testors 39	.75	—
Dynaglo	.75	—
Ranger AA	.80	—
Spitfire AA	.80	—
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Blue Blazer #2	.70	—
OK Cub	.75	—
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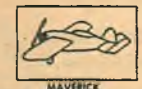

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The Readers Write

(Continued from page 4)

average speed, we believe, was around 150 mph.

Aircraft Grade Plywood . . . Having read your magazine for some time I feel you might be the logical place to find out where I can obtain information about aircraft grade plywood—who deals in it, processes involved in its use and its cost. Can you tell me who handles this material in my section of the country?

Guy A. Landrum, Midland, Tex.

• The only firms we know of that handle aircraft grade plywood in Texas are Southwest Airmotive and Air Associates, Inc., both located at Love Field, Dallas.

Red Tails . . . I have seen photos of some of the Air Force's transports and bombers which have the tail section painted red. Could you tell me what it means?

Lamar Posey, Rayville, La.

• All military aircraft that operate in Alaska or the Arctic have red markings in order to make them visible in case of forced landings in snow-covered areas.

Mustang Racer . . . On the cover of your September issue you have a drawing of a plane which I think is supposed to be a Mustang racer. But there is one fault. The cockpit is different from the ones used in the last war. Otherwise the ship is the same as the one my father flew then. Maybe this is a different type of plane. If so, what type is it?

Philip Wullschleyer, Bergenfield, N. J.

• Our illustration of the F-51 Mustang used in races is correct. Earlier F-51s such as Series A, B and some of the Cs did not have bubble canopies. Some racing pilots claim that these older models, with later type engines, are faster than Series D and H Mustangs with the bubble canopies.

Available Waco . . . In reference to Anthony Gangelhoff's letter in which he wanted to know where he might buy a Waco biplane, I would like to send him the following information.

There is a Waco biplane for sale at Coventry Airpark. It's Waco NC 17466, 5-place cabin with a Jacobs 225 hp engine. Total time on ship and engine, 1,571 hours. Engine majored 100 hours ago. Completely recovered in 1946. Plane is equipped with two-way radio with reel antenna, steel propeller and blind-flight instruments.

The owner may be contacted through Everett Potter, Coventry Airpark, Washington, Rhode Island.

Dick Colburn, Oneonta, N. Y.

Soviet Planes . . . In an issue several months ago R. Spicker wrote a letter saying you should write more about our planes instead of Russia's. Well, I would rather hear more about Russia's planes and their size because it is hard to get information on them.

Victor Vycana, Los Angeles, Calif.

Commendation for Air Trails . . . We should like to express our sincere appreciation to you for the splendid work you are doing in your recruitment activities for the Civil Air Patrol.

Lt. Col. Nanette M. Spears, New Jersey Wing Hq.

NACA Bulletins for Racers . . . In the article about Mr. Pitts, builder of midget race planes, he mentions bulletins on aerodynamics which are put out by the NACA. Will you please let me know where I can obtain these?

Victor D. DeLaney, Cincinnati, Ohio

• We suggest you write to the National Advisory Committee for Aeronautics, Washington, D. C., and ask them to send you a list of their publications on airfoils.

Too Much Half-A? . . . The aviation section of your mag is excellent, but in the model section, for the last nine issues, you have had only one free flight larger than A/2. I realize you are trying to help the beginners get started, but with all the A/2s on the market there's a large selection to choose from, whereas free flight models larger than Class A are scarcer than hen's teeth.

James H. Johns, Jr., Aldan, Pa.

you will find this month's

SHOWCASE

on pages 88 and 89

Word from Britain . . . In the September issue of your excellent magazine you are off the beam in stating that "England, despite attempts of its Socialist government to nationalize the air industry, leads the world in jet propulsion, both civil and military."

Proud we are of our jet eminence. But the Labour Party, although it has admitted hopes of nationalizing the armaments industry, has not made any proposals about the aircraft industry.

Personally, I think the fear of nationalization would be the best thing to give drive and efficiency to our industry; which none the less can claim to be making a splendid post-war recovery, when one considers that all construction and design of transports and civil planes was stopped when the war commenced.

R. Prizeman, Chalfont St. Giles, G. B.

The Flea and the Yank . . . I liked your splendid article on the "Flying Flea" fine except for one serious omission. There was no mention of the American, Frank Easton, who was associated with Henri Mignet in the building of six different experimental Fleas before the war.

Their last ship was powered with a Continental A-40 and weighed 415 lbs. empty. At the time the war stopped their work, they were designing a ship with a tricycle gear and changing to wheel control.

Roy Bohreer, McAlester, Okla.

Reformed Bipe Pilot . . . Would like to compliment you boys on the excellent form the full-size plans are in, also the detailing. Have been building models for 22 years—have been a draftsman and am now an engineer, so I can appreciate a well-drawn plan.

Keep the biplanes coming as I used to fly the old Wacos, Stearmans, Eagles and so forth. Now I have more sense, so it's models only for me.

R. H. Morgan, Sharpsville, Pa.

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OFFICIAL WINNERS

Plymouth's 4th International Model Plane Contest, held in Detroit, August 14-21, 1950

H. L. Weckler, Vice Pres. and Gen. Mgr. of Chrysler Corporation, presents Sportsmanship Trophy to Ralph N. Smith.

D. S. Eddins, President of Plymouth Motor Corp., awards Plymouth International Jet Trophy to Donald R. Zipoy.

Ronald Plotzke, Senior High Point winner, receives award from J. A. O'Malley, General Sales Mgr., Chrysler Division.

Fred W. Sage, III is awarded Freshman High Point Trophy by L. L. Colbert, President of Dodge Div. of Chrysler Corp.

Dick A. Modler receives Junior High Point Trophy from C. E. Bleicher, President of De Soto Motor Corp.

C. L. Jacobson, President of Chrysler Motor Parts Corp., presents Stinson Flying Scale Trophy to David C. Lefebvre.

A. H. Paterson, Vice Pres. Plymouth Motor Corp., awards the Youngest Contestant Trophy to Gregory E. Wald, age 5.

PERPETUAL TROPHY WINNERS

High Point Winners — **Points**

Fred W. Sage, III (Freshman), Independence, Mo. . 58
Dick A. Modler (Junior), Dayton, Ohio 56
Ronald Plotzke (Senior), Detroit, Mich. 33
Theresa C. Grish (High Point Girl), St. John, Ind. . 13

Flying Scale — High Point Score — Stinson Trophy

David C. Lefebvre, Seattle, Wash. 261

Stunt — High Point Score — Air Trails Magazine Trophy

Harold C. Reinhardt, Elizabeth, N. J. 364

Top Speed — Jet — Plymouth International Jet Trophy — **Speed**

Donald R. Zipoy, Minneapolis, Minn. . . . . 142.35 M.P.H.

Other Top Winners

Team Racing Trophy
Arthur E. Scholl, Milwaukee, Wis.

Style and Beauty (Team Racing) Trophy
Richard N. Rigney, Long Beach, Calif.

Sportsmanship Trophy
Ralph N. Smith, E. Orange, N. J.

Youngest Contestant Trophy
Gregory E. Wald, Minneapolis, Minn.

Indoor Stick

	Place	Flight Time
Freshman	1. Courtney Pond, San Francisco, Calif.	321.4 Sec.
	2. Theresa Matulis, Cicero, Ill.	301.6 "
	3. Richard W. Allen, Los Angeles, Calif.	211.0 "
Junior	1. Steve Benovich, Detroit, Mich.	1051.2 Sec.
	2. James L. Lempke, Detroit, Mich.	850.2 "
	3. Lyman A. Slack, Cleveland, Ohio	769.0 "
Senior	1. Ronald Plotzke, Detroit, Mich.	1191.6 Sec.
	2. Erwin E. Rodemsky, Detroit, Mich.	1159.0 "
	3. A. D'Allessandro, Philadelphia, Pa.	1082.4 "

Indoor Cabin

	Place	Flight Time
Junior	1. James L. Lempke, Detroit, Mich.	540.0 Sec.
	2. Steve Benovich, Detroit, Mich.	383.8 "
	3. Ronald S. Nowicki, Detroit, Mich.	376.0 "
Senior	1. Erwin E. Rodemsky, Detroit, Mich.	900.8 Sec.
	2. Ronald Plotzke, Detroit, Mich.	891.2 "
	3. Paul E. Simon, Detroit, Mich.	829.6 "

Outdoor Stick

	Place	Flight Time
Freshman	1. Joseph Scuro, Jr., Pittsburgh, Pa.	642.4 Sec.
	2. Fred W. Sage, III, Independence, Mo.	443.8 "
	3. Chris A. Hanson, Midland, Mich.	276.6 "
Junior	1. James L. Lempke, Detroit, Mich.	771.9 Sec.
	2. Ronald S. Nowicki, Detroit, Mich.	480.5 "
	3. Leslie K. Bartlett, San Diego, Calif.	475.4 "
Senior	1. John Korta, Hamilton, Ontario	642.9 Sec.
	2. George W. Doran, Montreal, Quebec	638.0 "
	3. Richard F. Malinski, Chicago, Ill.	609.6 "

Outdoor Cabin

	Place	Flight Time
Junior	1. Thomas R. Jesme, Minneapolis, Minn.	600.0 Sec.
	2. Clayton L. Hofer, Binghamton, N. Y.	570.4 "
	3. James L. Lempke, Detroit, Mich.	569.6 "
Senior	1. Paul E. Simon, Detroit, Mich.	1303.2 Sec.
	2. Ronald Plotzke, Detroit, Mich.	1257.8 "
	3. Robert J. Bates, Clarksburg, W. Va.	865.4 "

Towline Glider

	Place	Flight Time
Freshman	1. Fred W. Sage, III, Independence, Mo.	258.6 Sec.
	2. Richard W. Allen, Los Angeles, Calif.	215.7 "
	3. Albert Lynch, Jr., Chicago, Ill.	54.4 "
Junior	1. Gareth E. Lucier, Windsor, Ontario	473.4 Sec.
	2. James D. Foster, Kansas City, Mo.	408.8 "
	3. Jack C. Ritner, San Francisco, Calif.	386.5 "

Free Flight Gas—Class ½-A

	Place	Flight Time
Freshman	1. Donald Held, Detroit, Mich.	697.4 Sec.
	2. Michael Larson, Minneapolis, Minn.	284.0 "
	3. Ronald J. Becker, New Orleans, La.	253.3 "
Junior	1. Charles M. Shure, Newton Centre, Mass.	486.3 Sec.
	2. Dick A. Modler, Dayton, Ohio	444.2 "
	3. Thomas W. Grubb, Portsmouth, Ohio	431.1 "
Senior	1. Jerry P. Lindsay, Highland Park, Mich.	714.1 Sec.
	2. Donald Ferguson, Newtonville, Mass.	615.3 "
	3. Sidney V. Voris, Bexley, Ohio	602.0 "

Free Flight Gas—Class A

	Place	Flight Time
Freshman	1. Richard W. Allen, Los Angeles, Calif.	889.8 Sec.
	2. Joseph Scuro, Jr., Pittsburgh, Pa.	351.7 "
	3. Courtney Pond, San Francisco, Calif.	286.7 "
Junior	1. Dick A. Modler, Dayton, Ohio	1460.0 Sec.
	2. Bob R. Turner, San Diego, Calif.	1265.6 "
	3. Clay Boatman, Jr., Cleveland, Ohio	1184.6 "
Senior	1. Cornelius R. Morton, Lake Villa, Ill.	1372.4 Sec.
	2. Charles Legg / Elbert Wheeler, Enid, Okla. (Team)	1358.2 "
	3. Ron G. Wozny, Chicago, Ill.	1328.2 "

Free Flight Gas—Class B

	Place	Flight Time
Junior	1. John C. Nassr, Windsor, Ontario	673.1 Sec.
	2. Leslie Bartlett, San Diego, Calif.	658.1 "
	3. Frank S. Boyes, Toronto, Ontario	628.0 "
Senior	1. Richard E. Moore, Lemoyne, Pa.	1004.8 Sec.
	2. Joseph P. Stanton, Chicago, Ill.	1002.2 "
	3. Bob R. Kennington, Jackson, Miss.	975.9 "

AND THEIR RECORDS

Banquet scene where trophies were awarded immediately following contest.

THE Detroit meet was the climax of many local and state contests in which thousands of contestants, Plymouth dealers, and others interested in model aviation co-operated. To all these people the Plymouth Motor Corporation wishes to express its sincere thanks. Here is the final and complete list of the results at Detroit.

Sara Mitchener, as proxy, gets Theresa Grish's trophy from J. B. Wagstaff, Vice Pres. & Gen. Sales Mgr. De Soto Motor Corp.

Harold C. Reinhardt, High Point Stunt winner, is congratulated by Al Lewis, Editor of Air Trails Magazine.

Col. James R. Gunn, Jr., CO, Selfridge Air Force Base, awards Richard N. Rigney the Team Racing Style and Beauty Trophy.

Capt. T. O. Dahl, USN, CO, U. S. Naval Station, Grosse Ile, awards Team Racing High Point Trophy to Arthur E. Scholl.

Free Flight Gas—Class C

	Place	Flight Time
Junior	1. Jack Hudspeth, Olympia, Wash.	1369.0 Sec.
	2. Bernard A. Boehm, South Bend, Ind.	1315.6 "
	3. Roger L. Barron, Springfield, Va.	1309.8 "
Senior	1. Carl R. Wheeley, Washington, D. C.	1785.2 Sec.
	2. Paul Edwards, Chicago, Ill.	1270.6 "
	3. Joe D. Kubina, Detroit, Mich.	1215.0 "

Control Line Speed—Class A

	Place	Speed
Freshman	1. Al M. Davis, Birmingham, Ala.	103.65 M.P.H.
	2. Thomas P. Tomoser, Kenmore, N. Y.	102.70 "
	3. Fred W. Sage, III, Independence, Mo.	101.88 "
Junior	1. Dick A. Modler, Dayton, Ohio	105.96 M.P.H.
	2. Larry Weare, Little Rock, Ark.	104.85 "
	3. Warren J. Tomme, Little Rock, Ark.	103.29 "
Senior	1. Joe Stein, E. St. Louis, Ill.	116.23 M.P.H.
	2. Alfred H. Stegens, Cleveland, Ohio	109.05 "
	3. Albert G. Bone, Atlanta, Ga.	108.26 "

Control Line Speed—Class B

	Place	Speed
Freshman	1. Fred W. Sage, III, Independence, Mo.	114.82 M.P.H.
	2. Eugene McKechnie, Royal Oak, Mich.	108.19 "
	3. Edwin Schneider, Eastchester, N. Y.	105.78 "
Junior	1. Ronald Marchese, New York, N. Y.	123.83 M.P.H.
	2. John Brodbeck, Jr., Compton, Calif.	122.15 "
	3. Larry Weare, Little Rock, Ark.	121.49 "
Senior	1. Theresa C. Grish, St. John, Ind.	130.95 M.P.H.
	2. Don M. Schrello, Pittsburgh, Pa.	125.74 "
	3. Alfred H. Stegens, Cleveland, Ohio	124.60 "

Control Line Speed—Class C

	Place	Speed
Junior	1. Dick A. Modler, Dayton, Ohio	128.61 M.P.H.
	2. Clay Boatman, Jr., Cleveland, Ohio	125.74 "
	3. Kenneth R. Kimmel, Ft. Wayne, Ind.	125.47 "
Senior	1. Alfred H. Stegens, Cleveland, Ohio	134.68 M.P.H.
	2. Dave J. Gregory, Joliet, Ill.	133.97 "
	3. Charles Le Boeuf, Dayton, Ohio	132.49 "

Control Line Speed—Class D

	Place	Speed
Junior	1. Dick A. Modler, Dayton, Ohio	141.79 M.P.H.
	2. Ronald H. Marchese, New York, N. Y.	138.73 "
	3. George E. Newberry, Flint, Mich.	138.19 "
Senior	1. Fletcher Slade, New York, N. Y.	145.22 M.P.H.
	2. Charles T. Winter, New York, N. Y.	142.57 "
	3. Noel B. Preston, West Hartford, Conn.	140.79 "

Control Line Jet Speed

	Place	Speed
Junior	1. Henry D. LaVon, Tacoma, Wash.	133.28 M.P.H.
	2. Roger K. Welden, Rockford, Ill.	119.87 "
	3. Richard E. O'Harrow, Wauwatosa, Wis.	114.90 "
Senior	1. Donald R. Zipoy, Minneapolis, Minn.	142.35 M.P.H.
	2. Herbert L. Davis, Birmingham, Ala.	139.37 "
	3. Dale J. Kirn, Salina, Kansas	137.77 "

Flying Scale

	Place	Points
Junior	1. Jack Hudspeth, Olympia, Wash.	169
	2. Richard S. Curry, Pittsburgh, Pa.	138
	3. Clay Boatman, Jr., Cleveland, Ohio	136.2
Senior	1. David C. Lefebvre, Seattle, Wash.	261
	2. Richard R. Smith, Bangor, Maine	247.5
	3. Dale J. Kirn, Salina, Kan.	173

Control Line—Stunt

	Place	Points
Freshman	1. Fred W. Sage, III, Independence, Mo.	297
	2. Ronald M. Brich, Cleveland, Ohio	232
	3. Robert E. Leyner, Western Springs, Ill.	221
Junior	1. Dwight W. Miller, Los Angeles, Calif.	294
	2. Jerome P. Oravec, Detroit, Mich.	289
	3. Daniel Lee, Jr., New Bedford, Mass.	285
Senior	1. Harold C. Reinhardt, Elizabeth, N. J.	364
	2. Duane L. Varner, Venice, Calif.	356
	3. George F. Lieb, Elizabeth, N. J.	335

Control Line Team Racing

Main Event Race

1. Arthur E. Scholl, Milwaukee, Wis.
2. Charles Petranek, Madison, Wis.

Consolation Event Race

1. Ronald Fey, LaGrange, Ill.

Team Beauty

1. Richard N. Rigney, Long Beach, Calif.

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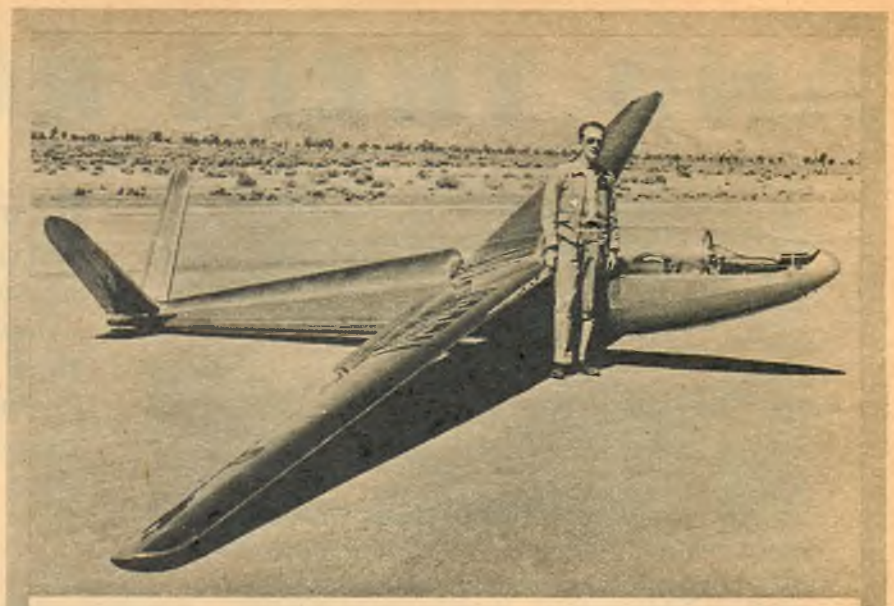

Prue 215, all-metal sailplane which made first appearance at National Contest.

Sailplane Parade

Highlights and sidelights on this year's National Soaring Contest held at Grand Prairie, Texas

■ The 17th National Soaring Contest has come and gone, and a fast American Airlines DC-6 has brought us back to the desk after a flight of 6 hours and 26 minutes from Dallas, Texas. Quite a difference compared to the four days it took us and our flying partner, By Baker, to make the 1690 miles to nearby Grand Prairie by car and towing our Pratt-Read sailplane in a trailer behind us.

The Grand Prairie Airport, scene of this year's National Soaring Contest, lies only a couple of miles west of Hensley Field, site of this year's National Model Contest which ended just as the former began. Thus a number of modeleers dropped in at the close of their activities to have a direct look at the 40 sailplanes neatly tied down on parking mats. In an attempt to show our appreciation of their enthusiastic interest in a kindred sport, we took Keith Storey, the well-known West Coast model speed flyer, for a ride in the Pratt-Read.

The variety of motorless craft attending the event far exceeded anything to date. There were nine Schweizer 1-23 all-metal sailplanes, several flat-topped LK-10As, the most beautiful of which was "Pop" Krohne's red Comet modified for him by George Panker of Fort Pierce, Fla. Pop's LK had a mahogany plywood planked-wing upper surface and the entire ship sported the sleekest finish of any craft present. Detroit's Chuck Kohls flat-topped the cockpit of his Pratt-Read, equipping it with two Plexiglas bubbles mounted side by side, for passenger and pilot, thus giving it the bug-eyed appearance of a frog.

Dick Johnson of Starkville, Miss., brought his (*Continued on page* 79)

Pilot Lyle Maxey in reclining seat. "Prue's" span, 42 ft. Best flight, 220 mi.

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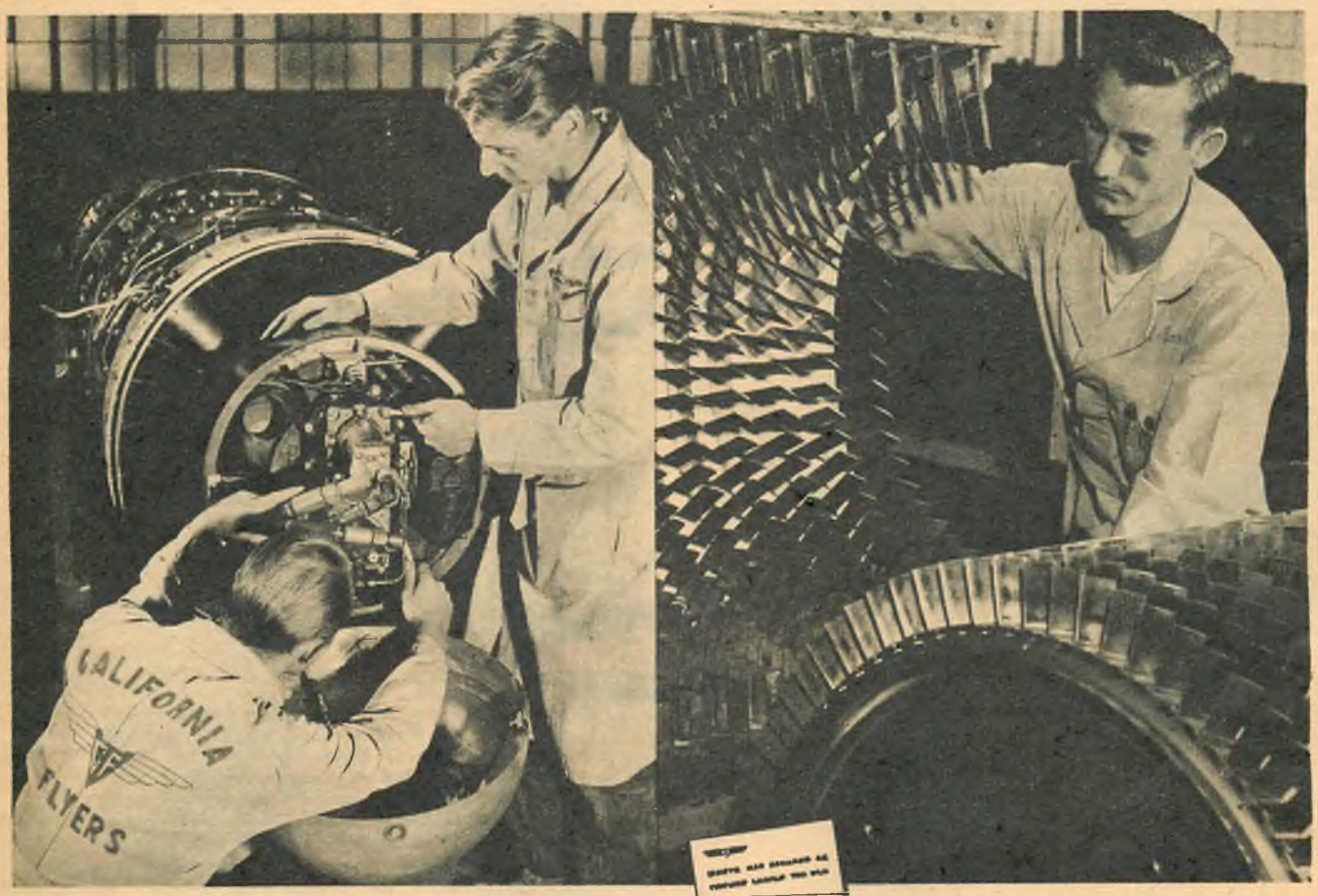

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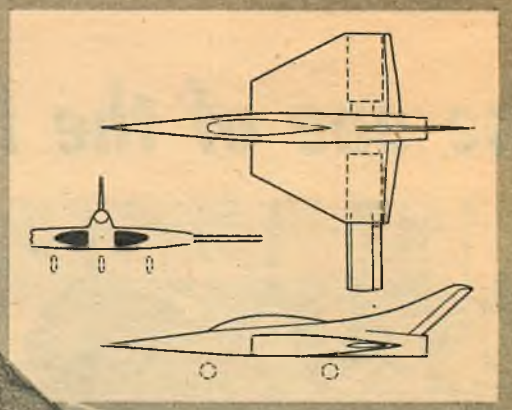
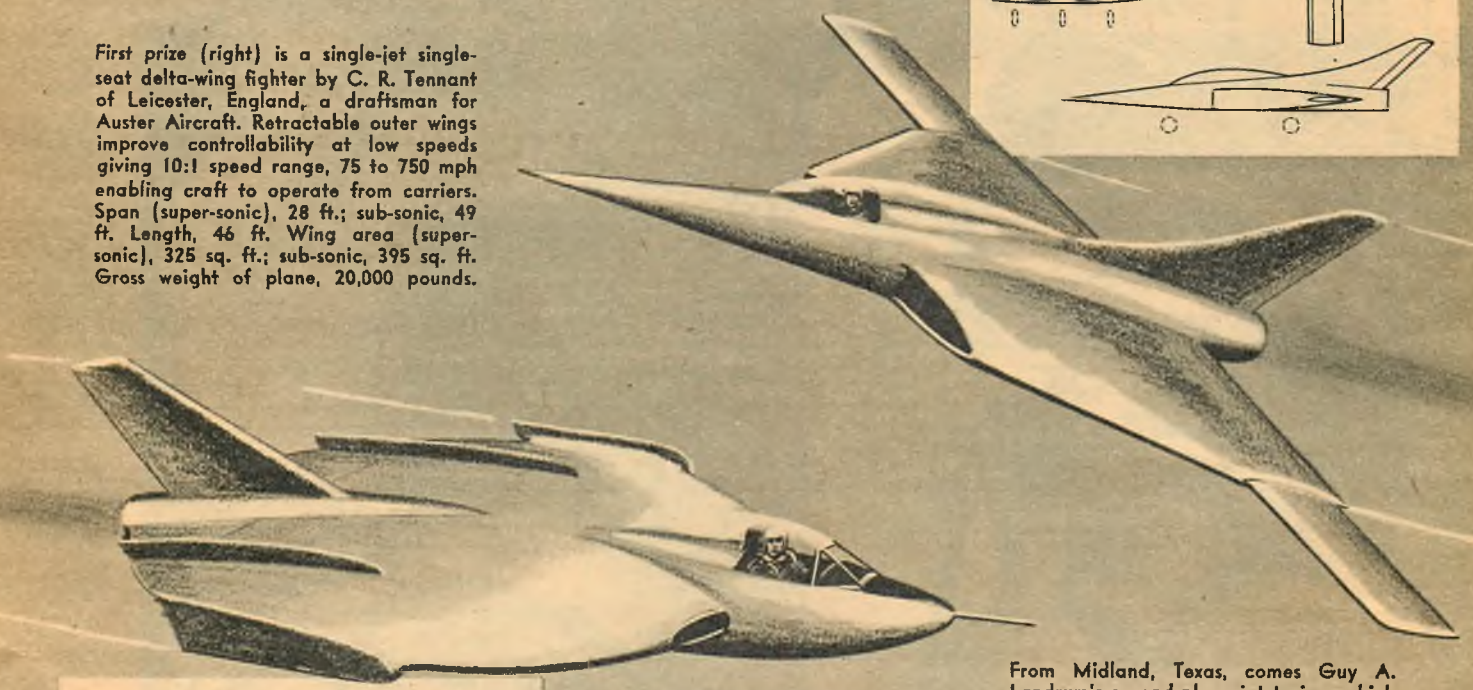
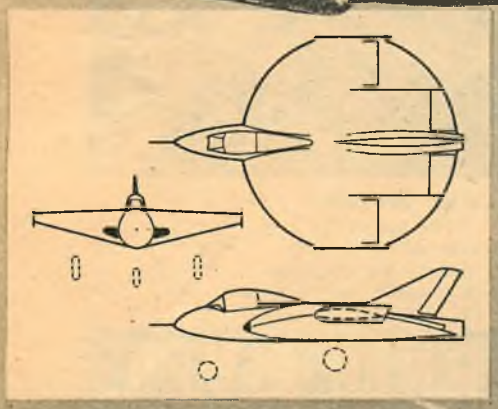
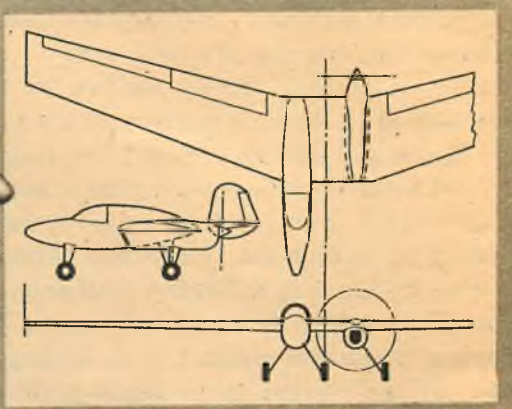


First prize (right) is a single-jet single-seat delta-wing fighter by C. R. Tennant of Leicester, England, a draftsman for Auster Aircraft. Retractable outer wings improve controllability at low speeds giving 10:1 speed range, 75 to 750 mph enabling craft to operate from carriers. Span (super-sonic), 28 ft.; sub-sonic, 49 ft. Length, 46 ft. Wing area (super-sonic), 325 sq. ft.; sub-sonic, 395 sq. ft. Gross weight of plane, 20,000 pounds.





From Midland, Texas, comes Guy A. Landrum's second-place jet trainer which features a Westinghouse J-30 engine mounted on pivoting supports so jet can be swung up and out for easy maintenance. Span is 12 ft., length, 17 ft., 2 in. Maximum speed is 450 mph, stall, 75 mph. Range is 600 miles. Advantages cited for circular-wing planform are strong construction, possible delay of high speed stalls and low vertical sinking speed with minimum forward speed.



Third place this month goes to Robert Woods, Trenton, N. J., with his "Privateer" design, an asymmetrical flying wing pusher for sport and personal use. Span is 28 ft.; top speed, 195 mph. Power is to be supplied by a 90 hp, 6-cylinder in-line engine. This single-place job should weigh about 600 pounds. Says Woods, "Although at first glance the off-center motor mount would seem to cause a serious yaw, it's not likely: thrust line is less than 2 ft. from C. L. and C. G."

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, Box 489, Elizabeth, N. J. The editors regret that because of large number of entries they cannot enter into correspondence on Airmen of Vision.

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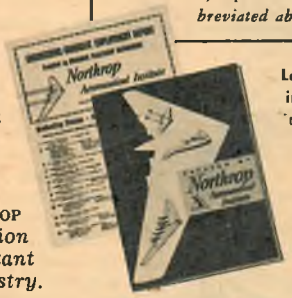

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air notes | AVIATION TODAY AND TOMORROW

Boom School: As another step toward practical use of in-flight fueling for our aircraft, the Boeing Company has begun an instruction program for a group of Air Force personnel on the mechanics and operation of Boeing's "Flying Boom" aerial refueling equipment. Half the program will be classroom lectures; the other part, in-flight familiarization and training under the direction of the Air Force plant representative's staff.

Flaps Under Water: A development that will make possible operation of the Navy's first postwar seaplanes in much more restricted space than before has recently been successfully tested on the P5M-1 Martin Marlin flying boat. The device is a pair of hinged underwater flaps which serve both as brakes and as stern rudders for increasing maneuverability. The flaps will be incorporated into production models now being built for the Navy for use in anti-submarine warfare.

The long afterbody of the Marlin design solves one problem of seaplane operation—stability. But the additional amount of hull under water had increased the stiffness of the ship in maneuvering, tests showed. The flaps which eliminate this difficulty are located on the lower part of the hull near the tail. They are operated hydraulically by the pilot and may be used individually or as a pair. A reduction in turning radius of at least 50 percent is indicated from tests. One troublesome job which the flaps will thus simplify is anchoring the seaplane to a floating buoy.

Sabre Range Boost: The short combat range which troubled our jet fighters in early Korean fighting adds to the importance of such developments as the external combat gas tanks designed to give the Air Force's F-86 greater range. The new tanks are now being installed on Sabres coming off the production line and added to those already in service. The tanks are banana-shaped and cause less drag than larger ferry tanks previously used, thereby stretching the airplane's range on less fuel and with little effect upon performance. Airflow over the top of the new tanks is so similar to the flow over the Sabre's sweptback wings that there is little reduction in top speed, no buffeting in dives.

Tops in the Forties: The Harmon International Aviation Awards recognizing the world's top flyers of the past 10 years will be presented in Washington this fall. Three Americans are the winners: James H. Doolittle, wartime commander of Eighth Air Force and leader of the famous Tokyo raid, as outstanding aviator of the decade; Miss Jacqueline Cochran, organizer of the WASPs and holder of many national and international air records, outstanding aviatrix; and Vice Admiral Charles E. Rosendahl, wartime commander of the Navy's lighter-than-air activities, top-ranking aeronaut.

Missile Management: A change in the management of the nation's guided missile test centers putting each under the jurisdiction of a single service has recently gone into effect as a move to increase economy and efficiency. Under the new alignment, the Long Range Proving Ground at Banana River, Florida, has been delegated to the Air Force's command; the White Sands Proving Ground and Holloman AFB in New Mexico have been transferred to the Army; and the Navy will continue to operate its test center at Point Mugu, California. The single-service management plan applies only to operational and budgetary responsibilities. All three test ranges will function for the joint benefit of the three services and in the best interests of the overall guided missiles program.

Runway in the Lab: A portable testing runway which, for the first time, permits an airplane landing gear to be laboratory tested under conditions closely simulating those experienced in actual landings, has been developed by the Fairchild Aircraft Division for the Air Force. The test runway consists of two large endless belts driven by an electric motor over seven rollers and will duplicate landing speeds and resulting drag and shock conditions up to 160 miles per hour, when aircraft gear suspended over the belts are dropped onto the belt surface to simulate actual spin-up created by landing aircraft. One important use of the new device will be the lab testing of nose-gear shimmy.

Direction Finding: The first civilian-type aircraft direction finders, which will enable air traffic controllers to identify specific aircraft on their radar screens during communications, have been ordered by CAA for installation at 44 major airports. These Very High Frequency Aircraft Direction Finders (VHF-ADF) are linked with the scope of an airport's surveillance radar system and are actuated by the VHF radio impulses from the plane being contacted. A line of light is drawn on the screen from the aircraft "pip" to the center of the scope. This enables the traffic controller talking to the aircraft to be certain which of the "pips" on his screen represents the plane with which he is talking, and permits him to give the pilot directions for entering the landing pattern with assurance.

Another recent CAA contract covers new radar equipment for civil airports. Fourteen airport surveillance radar (ASR) and 14 precision approach radar (PAR) units will be procured for installation next summer. The ASR units, with which direction finders may later be tied in, are used for the surveillance of air traffic in the terminal area and guiding planes to the proper position for final approach. They have an effective range of about 30 miles. PSR units, which are installed at some airports also having ASR, are used as a final approach and landing aid to "talk" planes down or monitor approaches on instrument landing aids.

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Air Briefs

Late Support for Air: Spurred by the crisis in Korea, Congress has at last given its support to the Air Force program long urged by air authorities. USAF is now moving to increase its strength from 48 to 58 groups within the next 8 months and to its full 70 groups by January, 1953. Additional procurement funds voted for planes will mean a doubling of the nation's aircraft production as fast as the aviation industry can expand. Pre-Korean production of 215 planes per month could be tripled within a year with an unlimited production go-ahead, says the Aircraft Industries Association.

Name News: There's another name change to mark down in your directory of Air Force bases. Moses Lake AFB, Washington, has been renamed Larson Air Force Base, in honor of Major Donald A. Larson. The change is in keeping with USAF's policy of naming fields for airmen killed in the war.

Arctic Loran Ends: The last stations on an experimental Loran navigation system set up in northwest Canada and Alaska have been closed because of radio transmission difficulties in the Arctic. This marks the end of several years' research in the area with the low-frequency Long Range Aid to Navigation chain of transmitting and monitoring stations. RCAF and USAF authorities say that operation of the stations has produced much scientific information of value in developing a workable long-range radio navigation system for the Arctic.

Speak Up: CAA is urging all private pilots to use their radios more often and thus promote safety. Apparently many flyers hesitate to call CAA communicators because they are afraid of reprimands if they don't know the special communication patter used by tower experts. Though the short and standard procedures do speed replies, tower phrases aren't required. CAA insists, "We don't care how you say it. Just talk to us, please."

Service Please: As has often been said of such items as automobiles and women, so with airplanes—it's not just the initial cost that hurts, it's the upkeep. So with the giant B-36, that calls for plenty of special accessories —even special servicing docks to get workmen up to the big bomber. Sixteen sets of such docks—half a million dollars' worth—are currently being built for Air Force by TEMCO. Each is large enough to completely envelope a section of the B-36 wing. Delivery to USAF was due to start in June, simplifying service work on the ship.

Fuel-Proof Surface: One answer to the problem of runway damage from fuel spilled by jet planes is a new surfacing material developed by the U. S. Rubber Company and recently disclosed at Wright-Patterson AFB. The new material is a solvent-resistant rubber compound which when mixed with tar produces a tough, durable surface that resists the dissolving effects of kerosene type fuel used by jet planes. Damage caused by this fuel to pavements has been a serious problem, due to its lower rate of evaporation compared with high octane gas used by regular planes.

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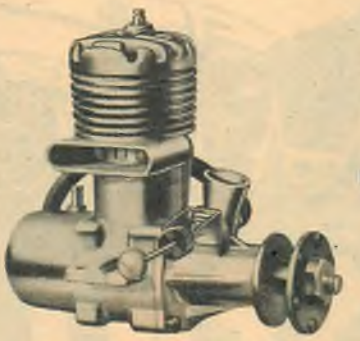

McCOY "19" ENGINE

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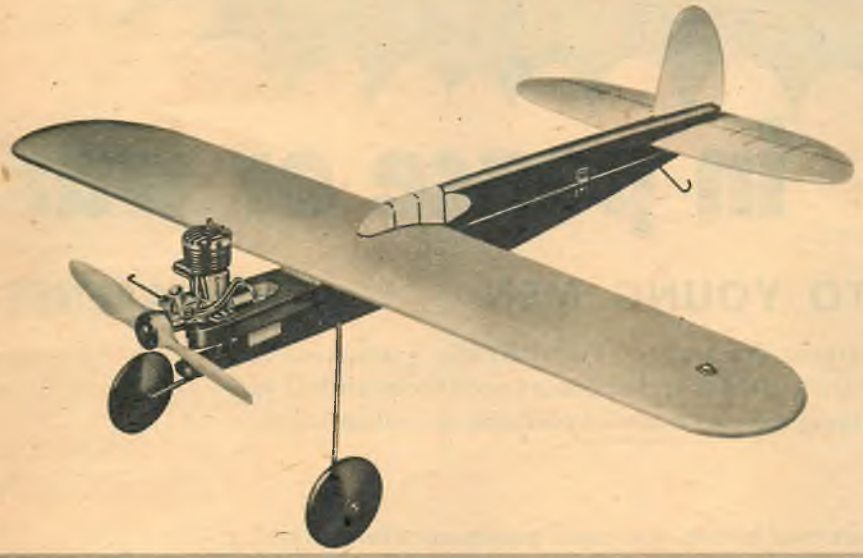
TESTOR'S "39" FUEL



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Here is the full, true account presented for the first time on the origin and development of World War II's most controversial aircraft. Designer Horikoshi who masterminded the Mitsubishi 00 lifts the veil on the Great Zeke Mystery

I Designed the Zeke

By JIRO HORIKOSHI

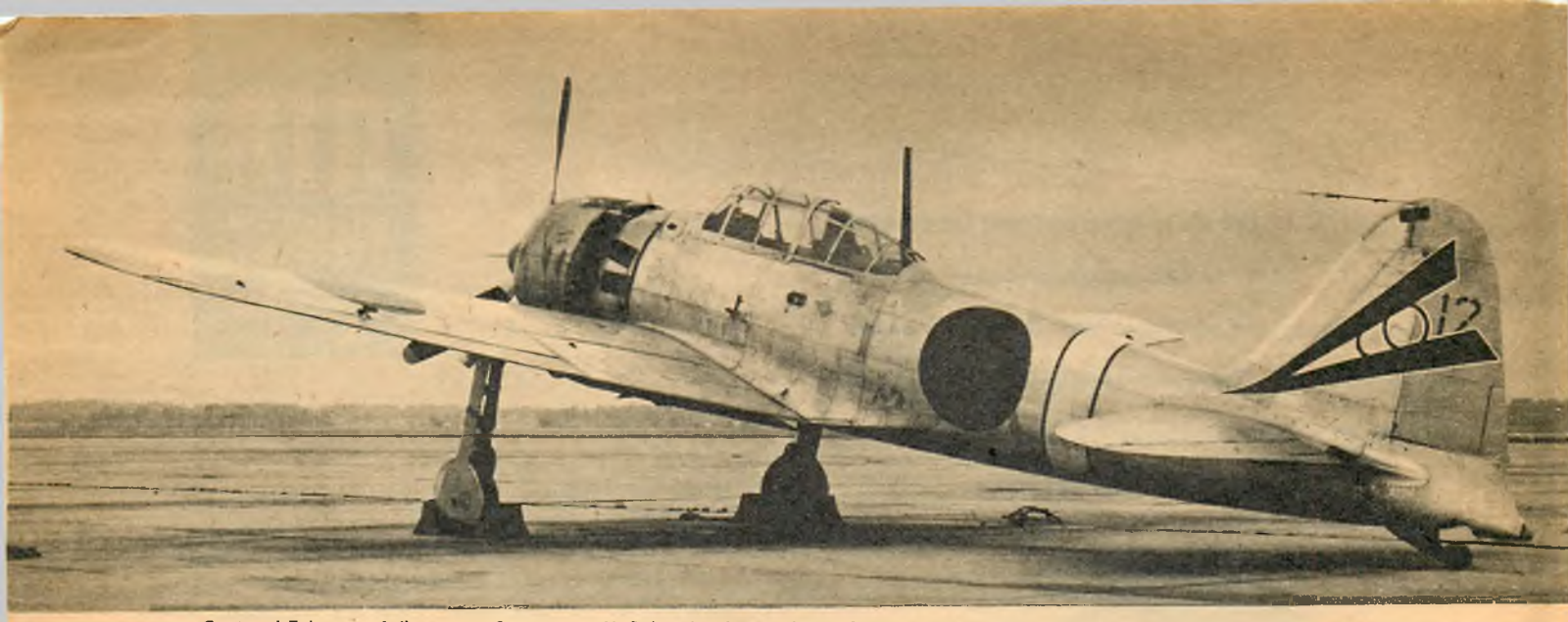
■ It might seem better if the man who designed the best-known fighter plane of the losing side kept his peace. However, by the mysterious channels through which back copies of publications travel, the April 1949 issue of Air Trails came into my possession. The American friend who gave it to me pointed out David A. Anderton's article, "The Great 'Zeke' Mystery," which indicated that the "Zero" fighter was progressively "borrowed" from a number of other contemporary aircraft.

As the designer of the Zero, I would like to be permitted, for the benefit of history, to set the record straight. The Zero fighter, as the world got to know it, was no more copy than any other fighter used in the world today. All single-engined all-metal low-wing monoplanes are to some extent progressive "copies" of the original Junkers "Bleichsesel," the father of all these machines. There is a certain pool of common information from which all engineers draw. There is a certain reciprocal borrowing of detail ideas without permission during wartime, and by cross-licensing in times of peace.

There have been few scientific studies of the Zero as an airplane published anywhere. In Japan, it was naturally praised; overseas, it was frequently subjected to certain ridicule, to dogma and to prejudice. I am grateful to Mr. Anderton for his prompt discounting of many of these false rumors and half-true reports. However, I can best prove the originality of the design of the Zero by relating its history and its background. Like people, airplanes have ancestors. They get to look as they do partly by heredity and partly because of the functions which they have to perform. This is, in essence, the story of Zeke, as seen through the informed albeit maybe slightly prejudiced eyes of its designer.

Mr. Anderton, in his article, intimates that the world first saw Zeke on that day all Japanese would like the world to forget, Pearl Harbor Day. Had Mr.

Taking off on a battle mission is a Zeke. This is a Jap military photo from the personal files of author Horikoshi, who was a top Mitsubishi designer.



Captured Zeke was similar to one flown across U. S. bearing Jap markings. Great consternation resulted when plane spotters let it go by unnoticed.

Anderton been given access to proper military information which I am sure must have been at the disposal of leading American military and naval intelligence personnel, he would have known that the Zero had been in action on the mainland of China for about a year and a half before the Pearl Harbor strike. In July of 1940, it began to replace the leading Army type, the Type 96-4 carrier fighter which had been a standard machine since 1936. Since the air phase of the operation in China was chiefly a Navy show, the Mitsubishi 96-4 (A5M4) had, up to then, been the leading single-place job.

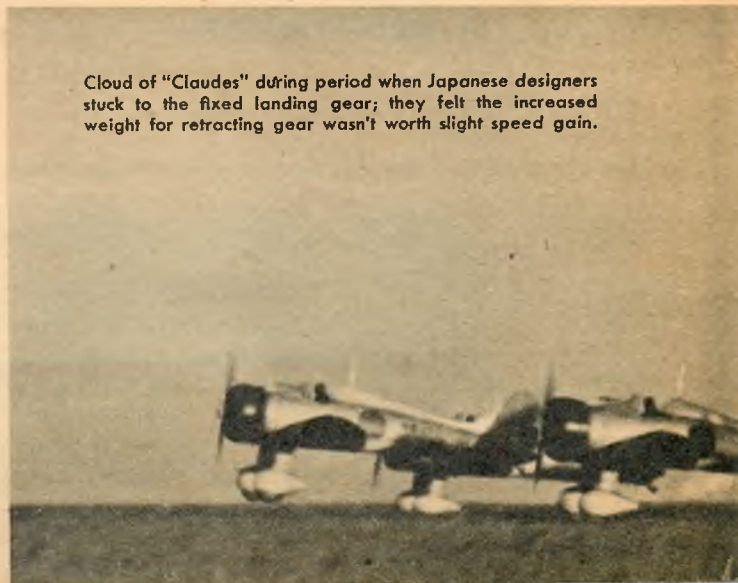
Here let me explain, again for the record, how the Japanese numbering system of identification worked. The 96 denotes the year that the plane was put into regular service, the 2596th year of the old Japanese era, 1936 AD. The figure 4 indicates the fourth modification or revision. The symbol A5 indicates that it is the fifth fighter prototype built by Mitsubishi, or M. This system was adopted by the Japanese in 1936, but was applied to planes built before that period also in reference files. The Army and Navy, which seldom got together on anything important, used somewhat different designations for everything but the year of service.

As the war in China moved further inland, the Navy felt that they needed a fighter with a much longer range, in order to escort the bombers to and from the targets. It was this need for combination of speed, range and maneuverability that begat the Zeke.

Mr. Anderton's knowledge of the early history of Japanese aviation is remarkably sound. As he stated, Japanese Naval aviation is chiefly British in its ancestry, while the Army aviation drew heavily from French and German sources. These were the easy old days, after I received my degree in aeronautics from the Imperial University in Tokyo and entered the Nagoya Aircraft Works of Mitsubishi Heavy Industries, Ltd., as a design calculator—or subordinate structures engineer, as one would be called in the United States. This was the period during which Japanese industry was trying to catch up with the more advanced technical status of certain Western powers by hiring experts and buying ideas and experience.

By the time I entered Mitsubishi, at the age of 23, the noted American designer, Mr. Smith, and his party were no longer with the company. There were no Americans with the firm at the time. Prof. Baumann, the noted German designer, and Mr. Schade and Mr. Keil, both from Junkers, were with the company. The noted French designer, M. Vernisse, was employed in the outfit, as was Mr. Petty from Blackburn Aircraft Co. in England, and his assistants, Mr. Bolton and Mr. Wilkinson. These men stayed for contracts ranging from one to three years during the formative period between 1926 and 1931. They designed aircraft, taught other engineers the techniques of design. Unfortunately, I was in the lower echelon, my task was supervising stress calculations, and I had no opportunity to contact these foreign experts directly.

This importation of foreign experts was universally practiced during this period when Japan's infant aviation industry was gathering momentum. Nakajima, Kawasaki, Aichi, Tachikawa—all of these had



Cloud of "Claudes" during period when Japanese designers stuck to the fixed landing gear; they felt the increased weight for retracting gear wasn't worth slight speed gain.

experts from abroad on their payrolls. Their influence during this period can be seen directly in the airplanes that were acquired by the Army and Navy. During this period, the Japanese companies went heavily into the purchase of patent licenses of all kinds. For example, the Handley-Page-Lachman leading edge wing slot was acquired jointly by Mitsubishi and Tachikawa for a hundred thousand pounds. Licenses for accessories, engines, instruments and the like were purchased wholesale, to permit the infant industry to get into a competitive position.

I was sent abroad to study during this period, and from June to December, 1929, I traveled in Europe, England, France, Germany and the Netherlands, visiting airplane factories. I stayed with the Junkers company for three months, studying their procedure in design. In December 1929 I embarked for the United States where I visited many plants. I stayed several months at the Curtiss Company's plant in Buffalo, where I acted as inspector for the P-6 pursuits that had been purchased by Mitsubishi.

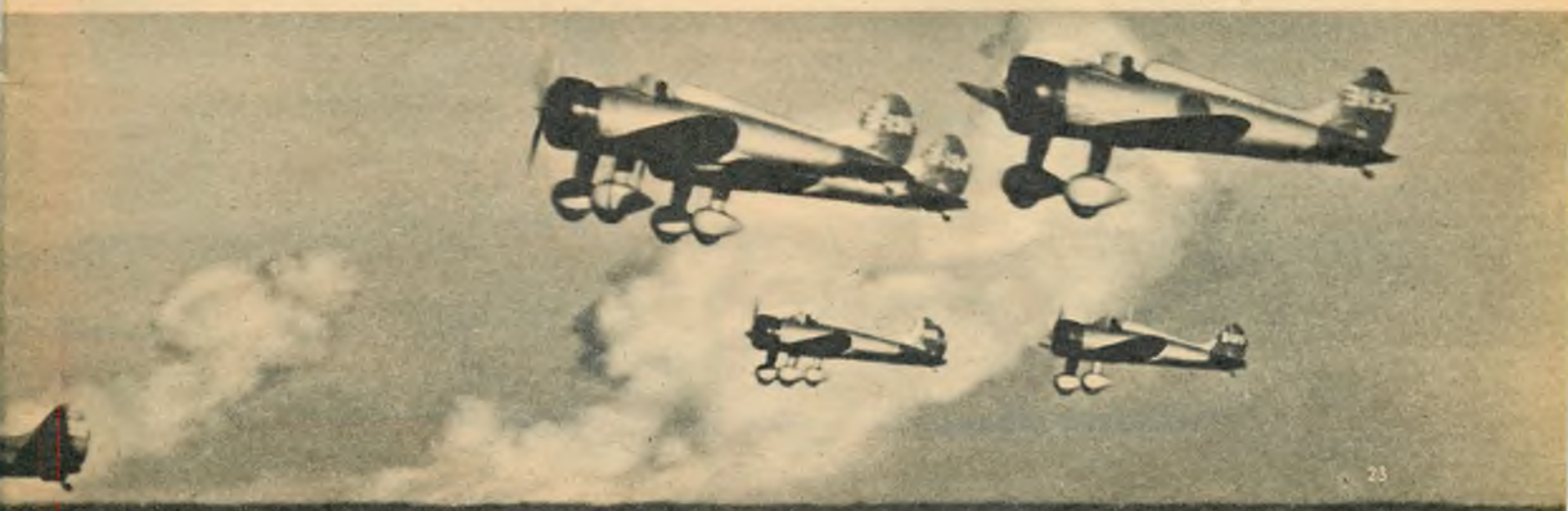
When I got home in the early fall of 1930, there was a new movement in the air. The Japanese designers had a feeling that they wanted to try their own ideas in designing. By 1932, the Japanese government was about ready to listen. The Japanese Navy was particularly anxious to start a new line of aircraft, built entirely by Japanese. They ordered three important types under this program, a carrier-fighter, a carrier torpedo-bomber and a reconnaissance seaplane. These were designated as the 7-Shi class since they were ordered during the seventh year of the Showa reign or era, 1932. Nakajima and Mitsubishi got orders for the carrier jobs, and I was appointed chief designer of the carrier fighter, chiefly on the basis of my experience and knowledge of fighters gained by contact with the P-6.

By this time, the trend was definitely to monoplanes in fighters. By modern standards, the 7-Shi fighter was a clumsy, angular monoplane, but it was in the contemporary line (*Continued on page* 62)

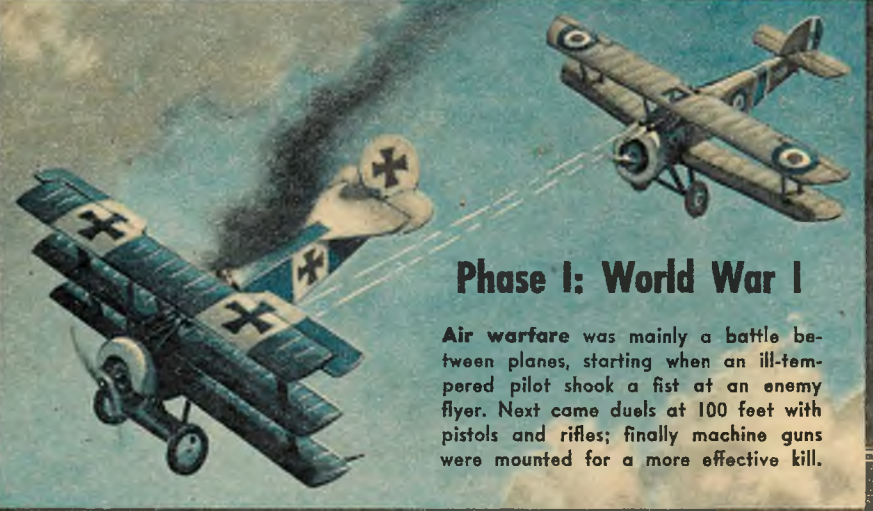
Type 96-2b Deck Fighter (A5M2b) known to us as "Claude." The "96" indicates 2596th year of old Jap era (1936) when plane went into service.

Type 00 deck fighter. The first plane to be termed a Zero model was the 12-Shi land-based bomber designated "Betty" by the American forces.

"Hamp" designation was given this Mitsubishi. Americans had great difficulty understanding Jap method of numbering planes all during war.



Air Warfare—Phase III

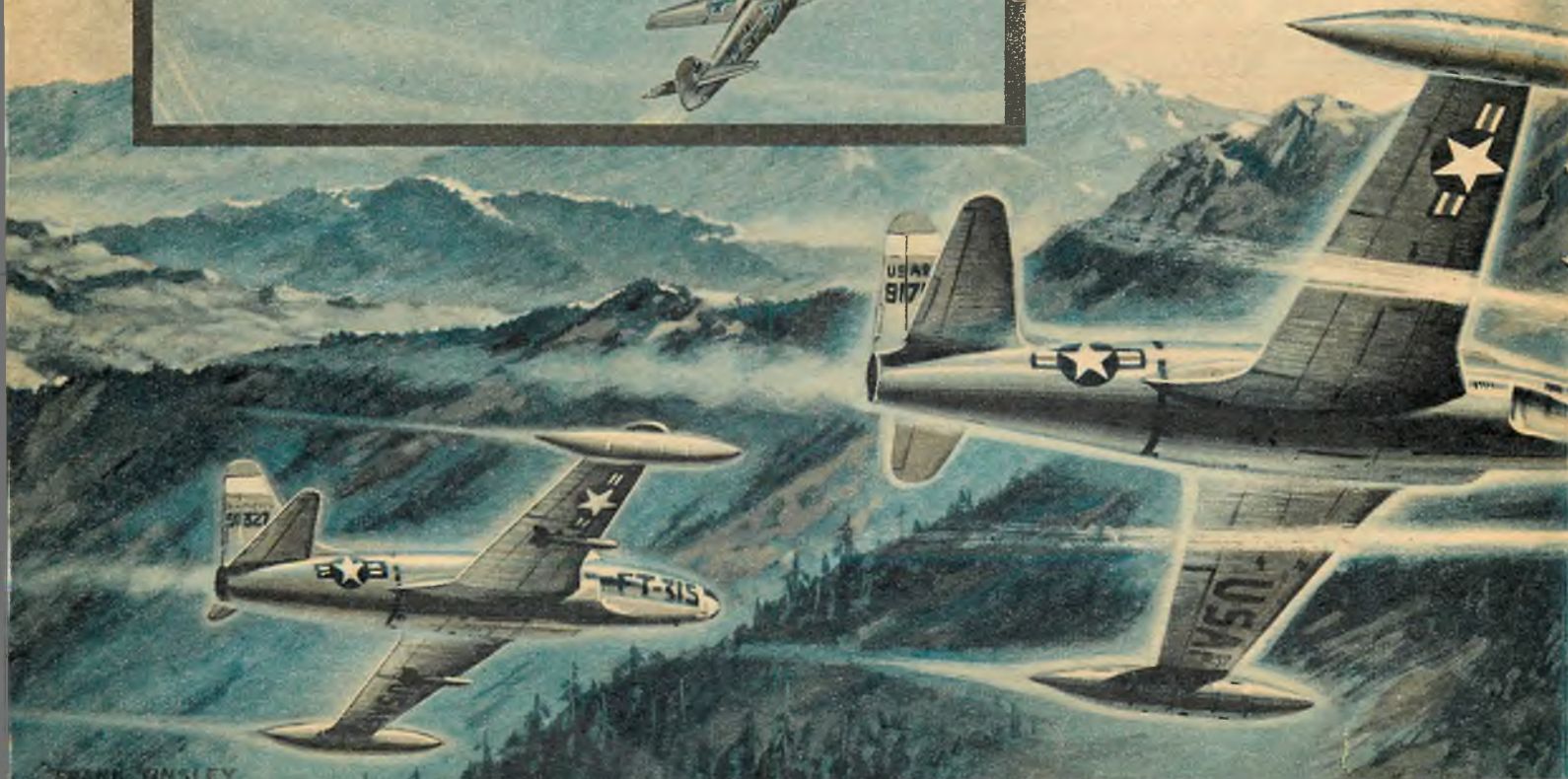


Phase I: World War I

Air warfare was mainly a battle between planes, starting when an ill-tempered pilot shook a fist at an enemy flyer. Next came duels at 100 feet with pistols and rifles; finally machine guns were mounted for a more effective kill.

Phase II: World War II

In early part the fighter still acted as plane destroyer, but greater number of heavy caliber guns and ability to carry a large bomb-load increased its versatility, turning the fighter into an effective weapon against ground targets.



The third phase came into being on the Korean front. Here the fighter plane really demonstrated its many-sidedness. The Lockheed F-80s, as yet untried in battle and designed primarily for high-altitude fighting, proved effective tank destroyers, using rockets against enemy armored columns, while not only liaison planes but even T-6 trainers were pressed into service to spot Red tanks. Propeller-driven American aircraft were in immediate demand.

Development Highlights

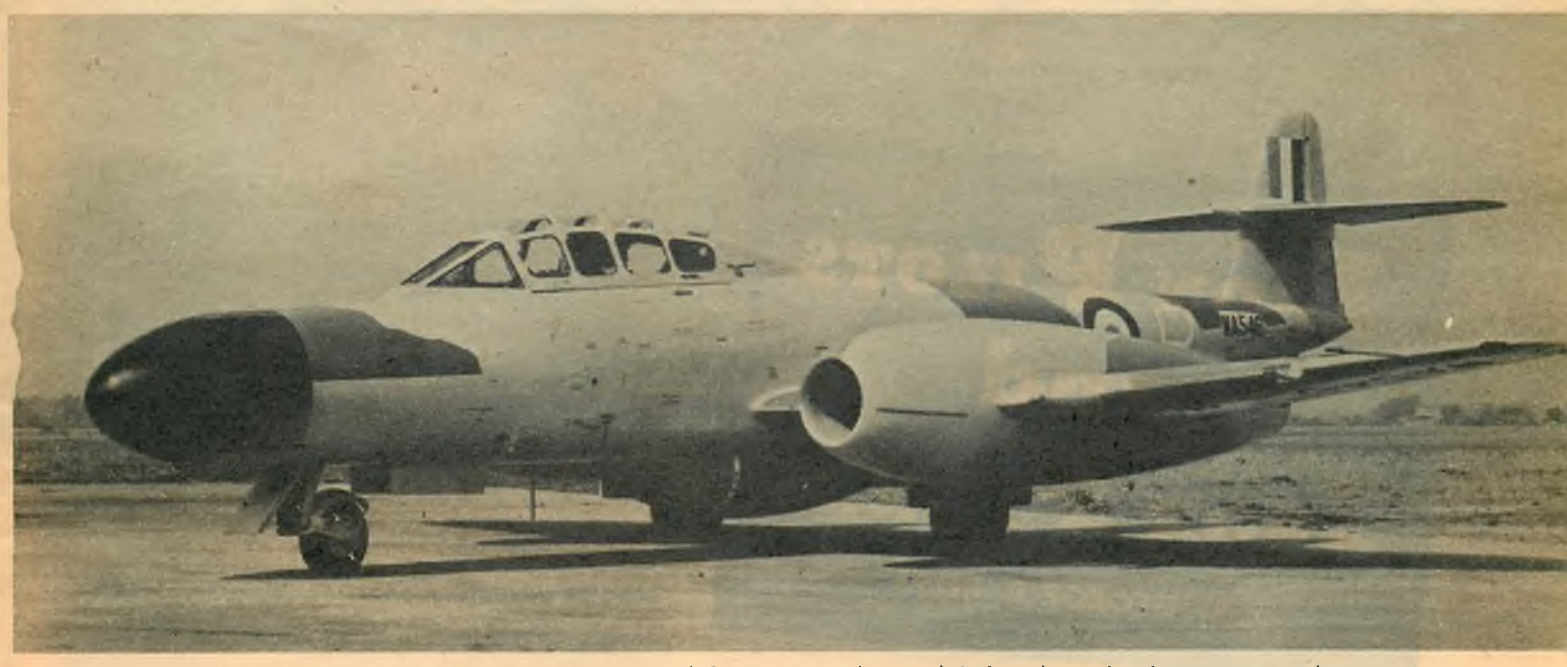
Jet pods of the production B-36s will be equipped with doors to protect the engines from foreign objects when not in operation.

Four complete engine nacelles can be carried by B-36 in these pods under wings

Aero-Commander by Aero-Design & Engineering Corp., Culver City, Calif. A new executive transport. Span 43'10", engines two Lycomings, 190 hp each.

T-6 Captivair (above) used at Randolph AFB for familiarization of cadets with aircraft prior to flight instruction. Left: De Havilland Heron, British 4-engine feeder-liner. Cruising speed is 160 mph.

Flying Wing Sailplane designed by Vanderbilt U.'s Franklin Farra, shown in cockpit on the right. First exhibited during National Soaring Meet in Texas. Construction is entirely of wood, covered with fabric reinforced plywood. Pilot has to extend arms in wings to control craft. Tail cone fits over occupant's legs. Span 25'4", length 7'4". Was not flown. All control surfaces are at the wing tips.



Jet night fighter. British Gloster Meteor NF.11 adapted from standard fighter for night duty. Plane has large radome in the nose, a two-place cockpit for pilot and radar operator, and can carry extra fuel in a large belly tank to extend operational range.

Kahru 48. Finnish four-place personal plane designed to be used on wheels, skis or floats. Powered by a 190 hp Lycoming engine. Span 37'10", length 25'9". Speed 140 mph. Range over 400 miles.

Finnmark 5A. An all-metal Norwegian flying boat specially designed for Arctic climatic conditions. Carries 14 people. Span 55'9", Engines P&W Wasps of 600 hp each. Maximum speed, 190 mph.

Iron Pilots and Iron Planes

By GEORGE R. REISS

Long on adventure, short on formality, H.U.T. airline considers 60 below flying as normal

■ You may as well get this straight at the outset—Hollinger Ungava Transport, Ltd., is no ordinary airline, with ordinary ambitions and ordinary operations. Its timetables aren't listed in the airline guides; it hasn't placed any orders for million-dollar fleets of Constellations or DC-6s, and you'll never find alluring come-hither posters in the travel agencies depicting the scenic joys of riding its several routes.

On the other hand, it is a very real and very remarkable flying outfit that is doing a big transportational job, with its DC-3s and little float planes, over some of North America's toughest terrain and under some of its most rigorous weather conditions. And probably the most spectacular phase of the line's job is helping to safeguard the nation's economic future. In a word, H.U.T. supplies the air lift for exploring the fabulous iron ore riches of Ungava.

These are the deposits which it is hoped will serve as a replacement for the diminishing resources of the Mesabi and other Minnesota iron ranges on which our whole industrial economy is built. Ungava is a 1,000,000-square-mile wilderness comprising northern Quebec and interior Labrador. Lying between the St. Lawrence and Hudson's Bay, the Atlantic Ocean and James Bay, it is a bleak, forbidding, unpopulated land. And smack dab in the center lies the iron, accessible only expensively by air, as yet.

At Lat. 54 deg. 50′ N., Long. 66 deg. 40′ W., the brand-new village of Burnt Creek (pop. 156 summer, 10 winter), the main exploration base, is a long, discouraging way from anywhere else. Burnt Creek lies some 350 miles from the nearest highway or steamer harbor, 450 miles from the nearest railroad. Hence its airline is its lifeline. Every last man who works on the iron exploration job must come and go by air. So must everything he uses or desires on the job—every bulldozer, every crate of eggs. There is a saying that the only things which don't fly to Burnt Creek are wood, water or fish. But even that's no longer true. A Hollinger airliner recently hauled in a case of canned salmmon, a bundle of plywood paneling, and a jug of distilled battery water.

"If it weren't for that airline," says Dr. Joseph A. Retty, the chief geologist, who is known as Mr. Ungava, "this iron ore would still be 100 years away from the American blast furnaces. Without the airplane, these explorations would be impossible."

When Retty first visited Ungava, the only practical transportation was flying in by chartered float planes operated by a few bush pilots. But it was difficult and highly expensive transportation. It cost Dr. Retty $100 for a 100-pound sack of flour in Ungava—$10 for the flour, $90 for flying it in.

Jules R. Timmons, one of the organizers of the North Shore Explorations Co. which holds mining concessions at Ungava, and a very practical fellow, was concerned about the bills for flying in men and supplies to the exploration camp. He arranged with Canadian Pacific Air Lines to fly supplies to the new village, Burnt Creek, in a twin-engined seaplane. The plane landed at nearby Knob Lake weekly. And its rates were dirt cheap—only 20 cents a pound. That meant a 100-pound sack of flour cost only about $30. Canadian Pacific flew in a heavy churn drill—cost $5,819.60 for freight.

"Too much," persisted Timmons. "And we've got to have more churn drills." So he organized an airline to do the air freighting. He dubbed it Hollinger Ungava Transport, Ltd. Then he hired Charlie Hoyt, a big burly white-haired Canadian flyer, to run it. An ex-wing commander of the Royal Canadian Air Force, Hoyt had been commanding officer of Squadron No. 164, based at Moncton, in World War II. He had been in charge (*Continued on page* 81)

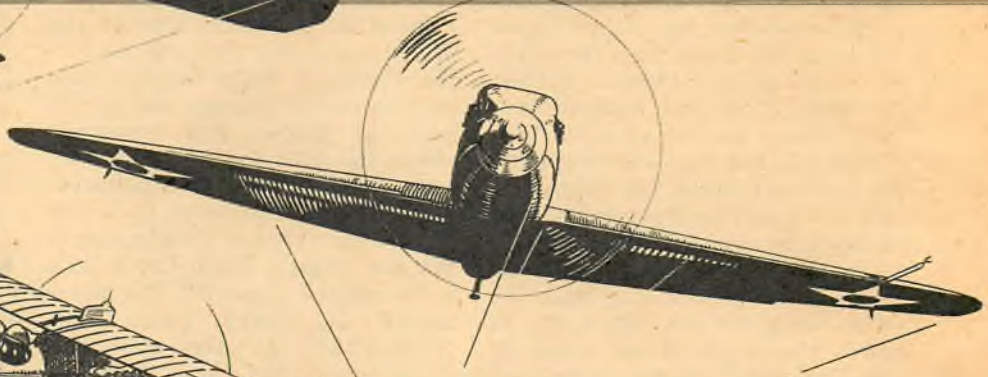
Fifteen tons of plane and equipment land on frozen Labrador lake. Ice four feet thick in 60 below weather provides perfect air strip.

Shades of the Twenties? No, this is a recent Canadian-built Bellanca which flies regularly for Hollinger Ungava Transport, the iron airline.

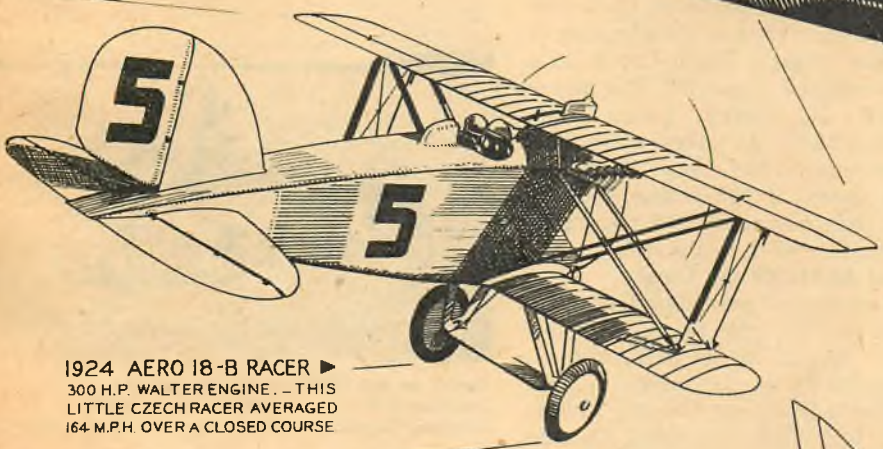
Isolated camp (above) of exploring party is dependent entirely on float-equipped Bellanca for food and supplies. The Norseman (below) changes floats for skis in wintertime to ferry supplies through Labrador-Quebec iron ore areas.

AIR PROGRESS: the

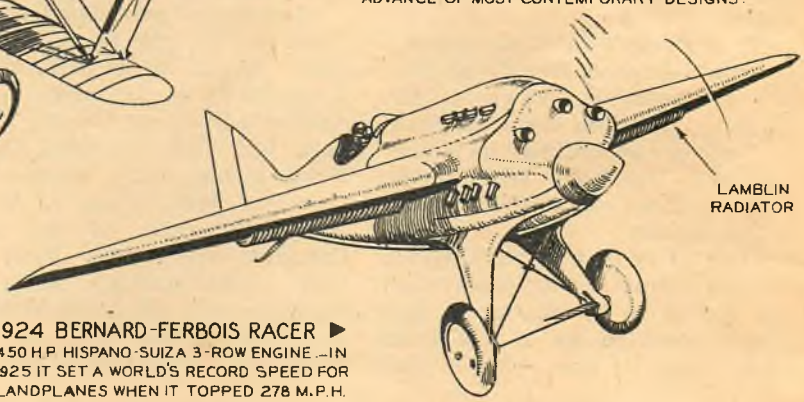
1921 THOMAS-MORSE ARMY RACER ▲
400 H.P. WRIGHT-HISPANO ENGINE.— A 1921 PULITZER CONTESTANT. TOP SPEED, 162 M.P.H.



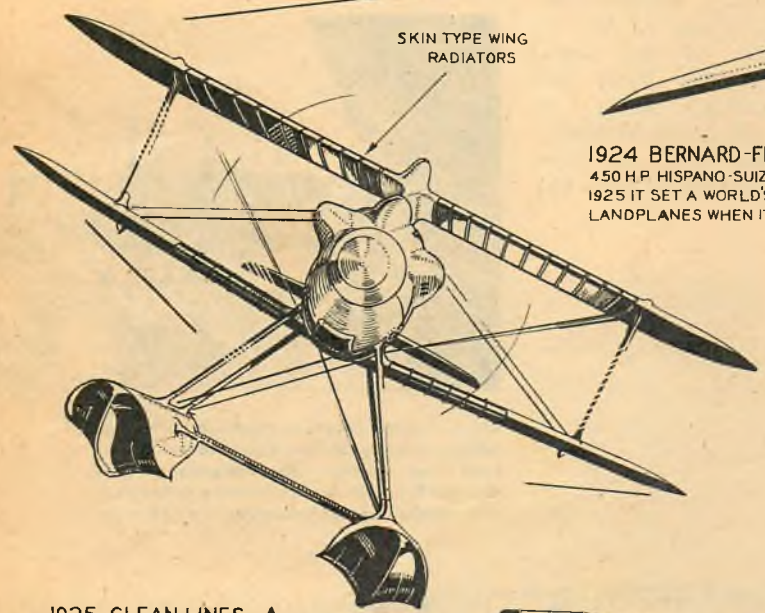
▲ 1922 VERVILLE-SPERRY ARMY RACER
400 H.P. WRIGHT-HISPANO ENGINE(ALSO, LATER, 500 H.P. CURTISS D-12 SPECIAL). THIS LOW-WING AIRPLANE WITH FULLY RETRACTABLE LANDING GEAR HAD A TOP SPEED OF 191 M.P.H., WAS FAR IN ADVANCE OF MOST CONTEMPORARY DESIGNS.



1924 AERO 18-B RACER ▶
300 H.P. WALTER ENGINE.— THIS LITTLE CZECH RACER AVERAGED 164 M.P.H. OVER A CLOSED COURSE.



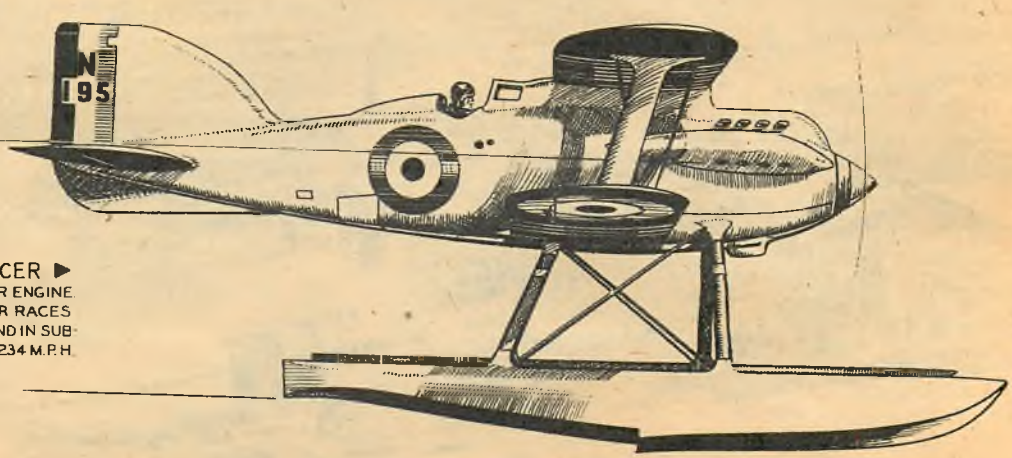
1924 BERNARD-FERBOIS RACER ▶
450 H.P. HISPANO-SUIZA 3-ROW ENGINE.—IN 1925 IT SET A WORLD'S RECORD SPEED FOR LANDPLANES WHEN IT TOPPED 278 M.P.H.



Presented on these pages we find a selection of racing planes which, despite the fact that each made an important contribution to Air Progress, have nevertheless passed into comparative if not complete oblivion. The best explanation for this state of affairs is that few if any of the designs shown here were winners in any major racing contest, though two at least established world's speed records in their day.

All designs have been carefully chosen to illustrate the widely varying approach made by top-notch designers of the times to the same problem, i.e., speed. And a mere glance at the names involved will show that most of these designs came from the drafting rooms and assembly plants of historically famous manu-

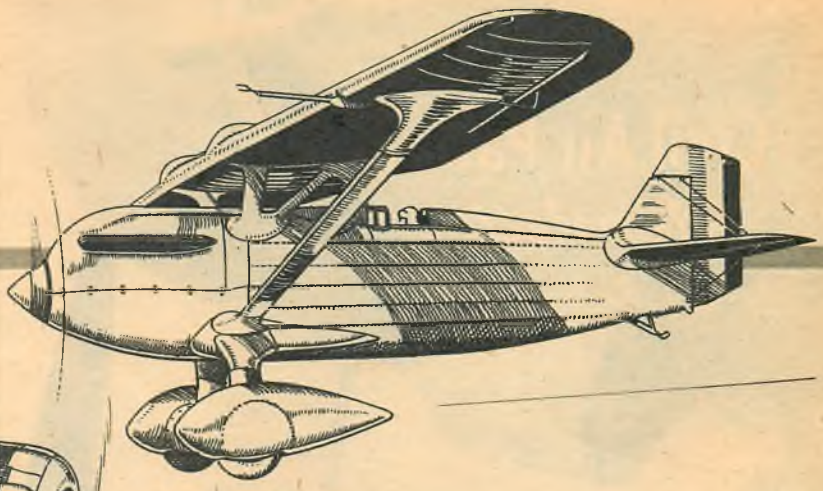
1925 CLEAN LINES ▲
FRONTAL VIEW OF THE GLOSTER III SCHNEIDER RACER REVEALS THE TRIM LINES AND SMALL WING SPAN OF THIS 25-YEAR OLD FLOAT BIPLANE



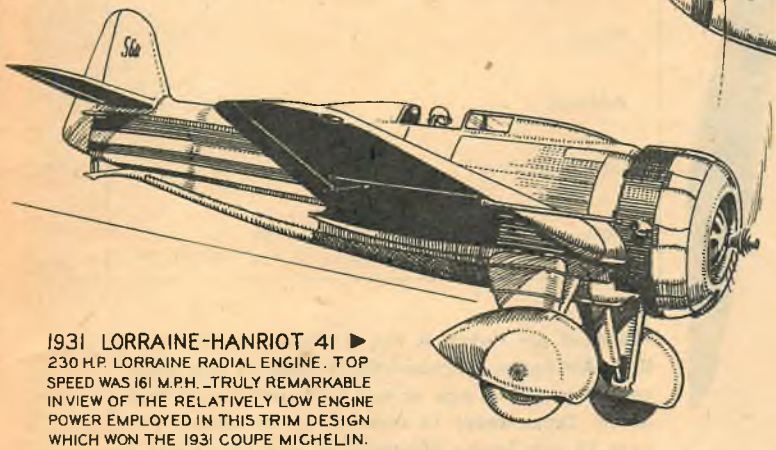
1925 GLOSTER III. SCHNEIDER RACER ▶
1275 H.P. NAPIER LION 3-ROW 18-CYLINDER ENGINE. IT PLACED SECOND IN THE 1925 SCHNEIDER RACES WITH AN AVERAGE SPEED OF 200 M.P.H. AND IN SUBSEQUENT TRIALS ATTAINED A SPEED OF 234 M.P.H.

search for speed

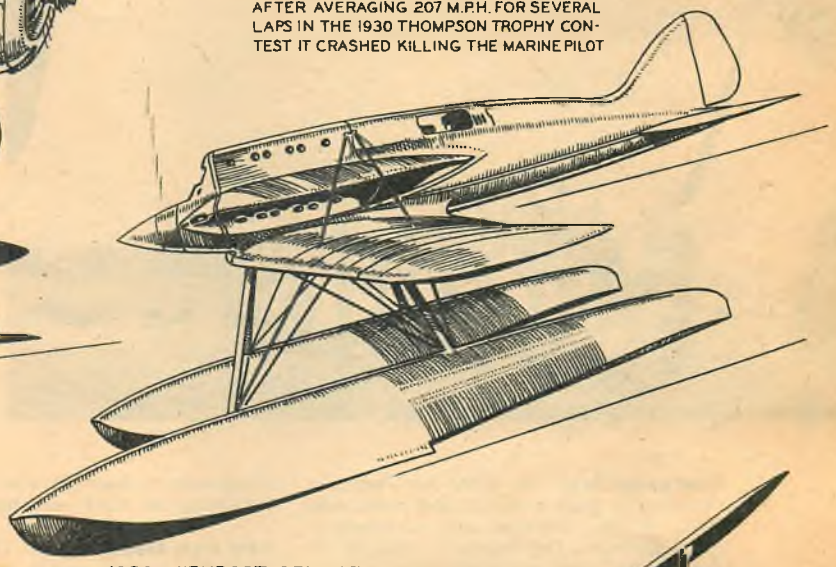
By DOUGLAS ROLFE

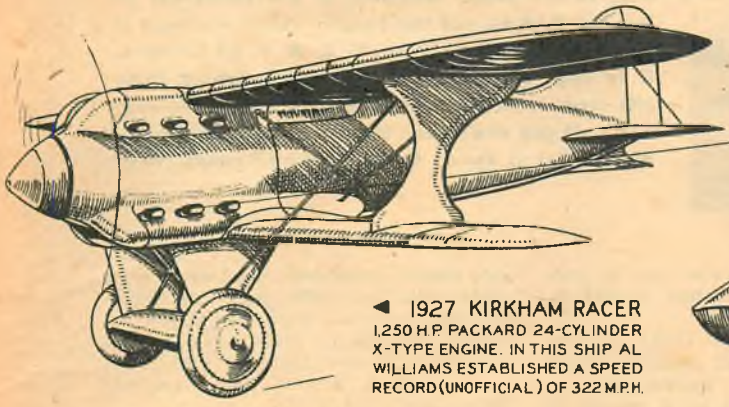


▲ 1930 CURTISS RACER 600 H.P
CURTISS CONQUEROR 12-CYLINDER ENGINE. AFTER AVERAGING 207 M.P.H. FOR SEVERAL LAPS IN THE 1930 THOMPSON TROPHY CONTEST IT CRASHED KILLING THE MARINE PILOT



1931 LORRAINE-HANRIOT 41 ▶
230 H.P. LORRAINE RADIAL ENGINE. TOP SPEED WAS 161 M.P.H. —TRULY REMARKABLE IN VIEW OF THE RELATIVELY LOW ENGINE POWER EMPLOYED IN THIS TRIM DESIGN WHICH WON THE 1931 COUPE MICHELIN.





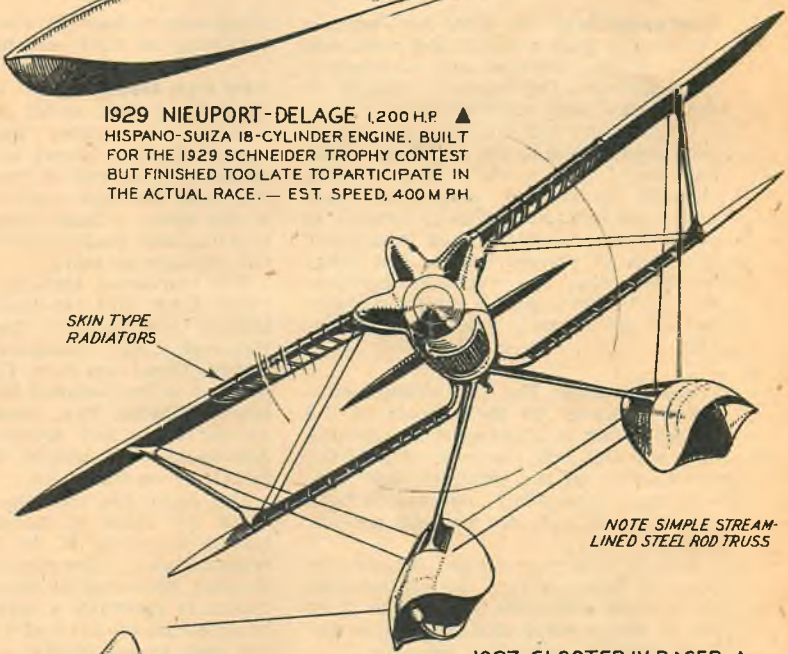
◀ 1927 KIRKHAM RACER
1,250 H.P. PACKARD 24-CYLINDER X-TYPE ENGINE. IN THIS SHIP AL WILLIAMS ESTABLISHED A SPEED RECORD (UNOFFICIAL) OF 322 M.P.H.

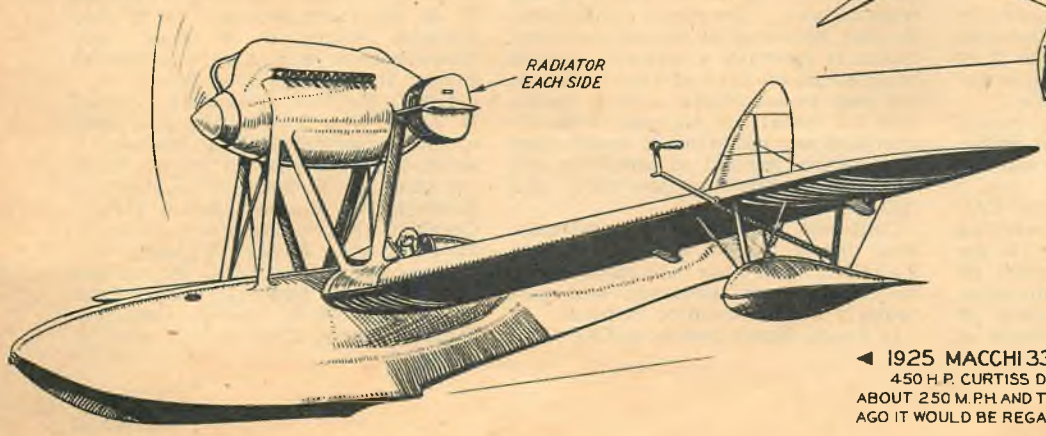
facturers many of whom are still just as well known today.

The wide variation between actual speed and the horsepower used is another point of interest. It will be observed that some of the lower-powered planes attained speeds far beyond, comparatively speaking, their higher-powered rivals. This situation is of course true today, when the design problem of producing a really fast piston-engine airplane is just as much a problem as it was to the men who brought forth the planes portrayed here.

At least one of the firms represented, notably the Gloster Aircraft Co., is still making some of the world's fastest aircraft; this indicates the importance of racing plane development.

1929 NIEUPORT-DELAGE 1,200 H.P. ▲
HISPANO-SUIZA 18-CYLINDER ENGINE. BUILT FOR THE 1929 SCHNEIDER TROPHY CONTEST BUT FINISHED TOO LATE TO PARTICIPATE IN THE ACTUAL RACE. — EST. SPEED, 400 M.P.H.





1927 GLOSTER IV RACER ▲
1,275 H.P. NAPIER LION 18-CYLINDER ENGINE — A RUNNER-UP IN THE 1927 SCHNEIDER CUP RACES. IT HAD ATTAINED A TOP SPEED OF 294 M.P.H. DURING PRELIMINARY FLIGHTS.

DOUGLAS ROLFE

◀ 1925 MACCHI 33 SCHNEIDER CUP RACER
450 H.P. CURTISS D-12 ENGINE.—TOP SPEED WAS ABOUT 250 M.P.H. AND THOUGH PRODUCED 25 YEARS AGO IT WOULD BE REGARDED AS GOOD DESIGN TODAY

C. A. P. NEWS c/o Air Trails
122 East 42nd St., New York 17, N. Y.

I'm interested in more information on the CAP and would like to hear from my nearest unit.

Name .....

Address .....

City (and Zone) .....

State ..... Your Age .....

Air Trails, Nov. '50

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 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 fill out the coupon above and send it to Air Trails, 122 E. 42 St., N. Y., N. Y. AT forwards it to your state Patrol Wing Headquarters; Wing HQ sends it to the CAP organization nearest your home. If you don't hear from your local unit within 60 days let us know. Get active, mail coupon now.

Emergency Role: The Civil Air Patrol is destined to play a major and vital role again in any international emergency, high Defense Department officials in Washington have made clear.

Officials pointed out that any auxiliary organization to the Air Force which maintained the world's largest radio network under one command, more than 1,100 units strategically located in every State, Territory and Possession, hundreds of planes, trucks, and other facilities, plus the existing organization, "is bound to play a vital and major role in any overall mobilization planning."

School Program: The CAP aviation education program in the schools of the United States is growing at an amazing rate, and this fall, the beginning of the second year of the program, will witness more than 100% increase in both number of schools and students participating.

According to information disclosed by National Headquarters, during last year 121 schools with 3,454 students in 36 of the 52 Wings were participating in the CAP aviation education program.

This fall, 345 schools with nearly 8,000 students in all of the 52 Wings will be taking part in CAP aviation courses.

Most important aspect of the CAP aviation education program, according to National CAP Headquarters, is the fact that the program is accepted by virtually all State Boards of Education. This presages an ultimate potential of thousands of schools and hundreds of thousands of students who may be participating in CAP aviation education.

Help from Model Meets: Units of the Civil Air Patrol, in all sections of the nation, are turning increasingly to model airplane shows as a means of stimulating interest in the CAP, and at the same time are finding that if there is one thing a Cadet likes better than building one model plane, it's to build two of them or more.

The increasing attention directed by many CAP units to model plane activities has focused the interest of National CAP Headquarters on the matter. Observers from CAP were dispatched to the National Model Airplane Meet at Dallas, Tex., sponsored jointly by the Navy and Academy of Model Aeronautics, to obtain first-hand information on the event.

The Navy has for some time recognized the value of model contests. A former Secretary of the Navy, in this respect stated: "The model airplane enthusiast, by virtue of interest and education, is generally a desirable type to bring within the orbit of Navy influence, and may be considered a likely candidate for naval air training. Properly promoted and publicized, a model meet is a certain method of attracting the maximum number of spectators and visitors . . ."

California, Mississippi, Pennsylvania, New Jersey, Maine and many other State CAP units have held model plane meets, attracting thousands, and particularly Cadet candidate material.

In Fargo, North Dakota, a CAP-local auto dealer sponsored model plane meet drew more than 2,000 spectators. Showers and gusts of wind dampened the contest, but did not drive away a single contestant or spectator. As CAP units have learned, model plane contests "bring and hold 'em."

Foreign Exchange: The Korean crisis did not interfere with the CAP Cadet Exchange Program this past summer, and 70 lucky American Cadets journeyed to six foreign nations, while a like number of foreign youngsters were brought to the United States in the reciprocal exchange.

The following American Cadets and the countries they visited were:

To Canada: Billy M. Murchison, Alabama; Ervin J. Gallagher, Arizona; J. W. Rouse, California; Robert B. Stilley, Colorado; Lawrence L. Midolo, Connecticut; Robert Earl Johnson, Florida; Ronald J. Silva, Honolulu; B. F. Broaddus, Jr., Indiana; T. W. Chaffee, Kansas; W. M. Waggoner, Kentucky; D. L. MacFarland, Maine; D. A. Mastroianni, Massachusetts; W. S. Archibald, Nevada; Robert H. Delaney, New Jersey.

Neil L. Matthews, New Mexico; Ralph H. Lethi, New York; Billy Joe Abercrombie, North Carolina; Richard C. Grim, Ohio; Nicholas P. Veneski, Pennsylvania; Dan C. Snow, South Carolina; Kenneth M. Busness, South Dakota; Gerald G. Payne, Tennessee; James W. Poole, Virginia; Richard H. Carder, West Va.; and Manuel V. Crespo, Puerto Rico.

To England: Bruce I. Wennerstrom, Alaska; Harold D. Rawley, California; James R. Early, (*Continued on page* 83)

Your Job in Aviation

Link Trainer Instructor...

. . . the fellow who teaches flying by instruments has proved his importance. He's in demand

■ George White is the cormorant of aviation. Like that bird with inadequate wings, he may strut, waddle and swim, but not fly. Yet George, and a flock of others like him, hold important jobs in this flying world.

George can handle aircraft with consummate skill. He can fly any radio problem, anywhere. To him instruments tell a revealing and truthful story. He cross-checks automatically. He knows what it means to fly by substitution.

At low altitude during good weather, you fly by contact. The weather closes in or a night flight comes up. Instruments take the place of natural horizon. You'll understand them, believe them, know how to apply their readings —or else.

As a Link Trainer instructor, George doesn't get the Sunday pilots. Every private or commercial licensee who wants an instrument rating is his meat. Plus airline, company, and service pilots in for refresher training.

George differs from a real pilot. He's concerned not with landing one load safely through bad weather, but with keeping all the pilots on his airline or on his Air Force or Navy post both skilled and confident in their abilities. George is a philosophical guy. He knows you can't fly by the seat of your pants any more. He is helping breed the sort of flying man who really flies by his instruments.

Sitting in one corner of George's small classroom is that marvel of instruction, a Link Trainer. It looks like an airplane, but isn't. Its wings, if indeed it has any, are worthless appendages. The trainer consists of a fuselage, always with an empennage and sometimes with wings. It is mounted on a series of bellows so that it can move in bank and pitch in excess of maneuvers normally executed on instruments. It may be moved around three axes by stick or wheel control and rudder pedals attached to valves that control vacuum-operated bellows. Altitude may be simulated—and unsteadiness or storm conditions reproduced by a rough air device.

Let's watch George at work. He sits at an ordinary office desk. Before him is a flight log or recorder. It's a gimmick that rests on three wheels, and the wheels are geared together so that directional control becomes effective from one synchronous motor. A cabinet on his desk contains airspeed and vertical speed indicators and an altimeter. They duplicate instruments in the Link. The recorder moves as the student "flies" a changing course, tracing that course in a thin red line on a map. Each move registers.

Says George to the student: "There hasn't been any basic change in instrument flying for 20 years. But we've got ILA, new omni ranges and new holding procedures. That's what this refresher is for. If you don't practice, you'll become sloppy and stale."

One field is like another when you're fingering controls, trying to get down through rain or fog. Local maps give you the dope on the particular airport you approach. Having the map, you need only apply the Link lessons, and you'll break through safely. No matter whether it's Gander, Dallas or Mitchel Field on Long Island, you believe your instruments and come on in.

Today we're at Philadelphia. The student is scheduled for a cross-country flight to Mitchel. He has a New York area chart. He buttons down the hatch cover, and holds for Airway Traffic Control clearance. Shortly he takes off, climbs to 3,000 feet, maintains his course on the beam to his first check point. George, acting as co-pilot, voices corrections, and the student flies on toward New York. Now George comes on the air as the New York radio operator.

"Hello, Link One, this is New York (*Continued on page* 76)

Detroit club takes the team title and a Californian walks away with the National Championship; meet suffers worst weather in history

The

Navy's Blue Angels stunt team roars overhead in diamond formation. Crack aerobatic unit flew last show at the Nationals; members were ordered to Korea with their F9F Grumman Panther jets.

A/2 PAA-Load winners: J. Greenspan, Brooklyn, 3rd; F. Ehling, Jersey City, 1st; G. Gardner of Pan-Am; D. Daugherty, Tulsa, 2nd.

Heavy rains or 20-30 mph winds harassed more than 900 contestants all during meet. Wind was strongest on day of Half-A free flight.

Fifteen-year-old Leslie Bartlett of San Diego, Calif., shown left with Herold M. Harter, national secretary of The National Exchange Club, won the 1950 National Championship award with 31 point total. Runner-up was Jim Lempke, also 15, from Detroit, 27 points.

National Championships

At last—an "Oscar" for modeling! This distinctive award went to 1st, 2nd, 3rd placers.

Heavy rain opening morning of meet resulted in processing inside the work hangar.

■ The 1950 National Championship Model Airplane Contest—the mid-century "Nationals" and the 19th such competition — almost wasn't held. It was set up to be run off at the Dallas, Texas, Naval Air Station July 25 through 30 before the Korean conflict flared up. By July 25th every Navy base in the country except Dallas NAS had been closed to the public. So to the Navy goes great credit for the 19th Nats, the nearest thing to a "wartime" championships model aviation has ever had.

The 1950 contest was the first to take place in the Southwest section of the U. S. Previous meets have been conducted at Detroit, Dayton, Atlantic City, New York City, Akron, St. Louis, Chicago, Wichita, Monticello, Minn. and Olathe, Kansas.

Sponsored by the Downtown, Oak Cliff, North Dallas-Park Cities and East Dallas, Texas, Exchange Clubs, the outdoor events were run off at the Dallas Naval Air Station; the indoor events at the Will Rogers Memorial Coliseum in Fort Worth. No previous "Nats" have had a more loyal crew of hard-working officials.

John E. Clemens directed the meet; J. D. Dickey was chairman of the Exchange's executive committee; Capt. Hugh R. Nieman, Jr., CO of the Naval Station, represented the Navy.

When all the flying was ended Leslie Bartlett, 15, of San Diego, California was crowned National Champion, and the Detroit Balsa Bugs were declared the Champion Club. Between registration on the 25th and the victory dinner on the 30th there was considerable activity —but only because 900 entrants who filed more than 2,900 entries in the 70 events were determined to fly at the National Meet come hail or high water.

Frankly, flying conditions were terrible. The weather bureau reported there'd been no rain during the same period for 15 years; yet the first (*Continued on page* 58)

Top team in 19th annual National Championships was from Detroit, Mich., Balsa Bugs club. Five men were permitted to compete as team from any A.M.A. chapter club. These flyers brought home the bacon (from left); Carl Redlin, Erwin Rodemsky, Bob Bienenstein, Paul Simon and Jim Lempke. Jim almost got individual Nat. Champ. too.

National Championships

Dick Everett, San Diego, Calif., gets ROW underway. Keith Kreigh won event with 10:59.2 time. Heavy wind made take-off tough.

Richard Moorhead, Houston, Tex., with his 2nd place Waco in control-line flying scale, open class. George Adams, Phila., was 1st.

Dave Call, Phila., Pa., flies his national-record-holding Cl. C cabin job at indoor events held in Ft. Worth. Ship has done 24 min. plus.

Jim Walker, daddy of U-control, brings out the young spectators—rain or shine.

Veco's Bob Palmer (rt.), outstanding stunt man despite hand injury, took 2nd in open category.

Frank Zaic (rt.) winding rubber stick job, lost tail-surfaces en route, had to rebuild.

Rubber-powered flying scale entries were few. Two fine ones were L-5 (left) by Ed Stoll, Detroit; Feisler Storch by Dick Overman, NYC.

Ray Matthews, CAA instructor from Oklahoma City, racked up 1st place in PAA-Load. His "Crowbar" did 10:24.1 with Arden .199.

Winner of Navy's carrier event was Douglas AD-2 model by Calhoun Smith. Has 2-speed ignition O&R 60, 43½ in. span, ⅞ in. to ft.

Bob Holland, '48 Nat. Champ, holding Art Snyder's Wasp-powered seaplane. Ship weighs 7 oz., has 150 sq. in. of wing area, reports Bob.

Team racers Frank Manley (left) of Manley & Hudson combo and Rudy Panko compare props. Rudy placed 2nd, M&H team 3rd.

K&B's Lud Kading with "Gnats." Without engine one on left weighs 2 oz., has done 17 mins. with .02 Infant. Boasts 21 sq. in. area.

Charlie Bothner, Rutherford, N. J., with enclosed Dyna-Jet; has bettered 150.

Contest director Johnny Clemens (left), originator of "in-clement" weather, with Don Murray, indoor dir.

Bill Krecek, a San Valeer from Calif., flew this 240 sq. in. rubber canard job.

Indianapolis' Gene Foxworthy (left) took radio control event with Citizenship r-c unit by V. C. McNabb (rt.) in "Hoosier Hot-Shot."

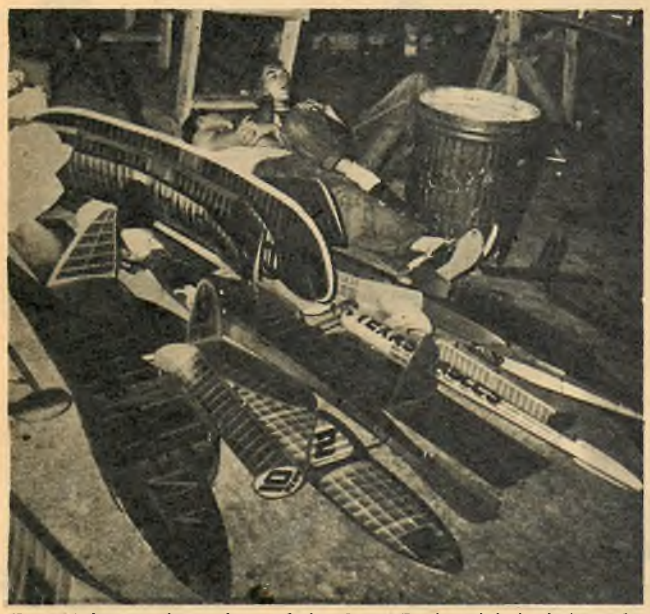
Keith Storey (left) on behalf of California's F.A.S.T. club presents team racing trophy to winner Donald Post, Glen Rock, N. J.

National Championships

Bryant A. Thompson of Keesler, Miss., AFB returned for 2nd year with his B-17G four-engined flying scale entry. He took 3rd in Senior Class. Air Trails sponsored 1st, 2nd, & 3rd place flying scale awards.

Howard Thombs, Warren, Ohio, won new Testor best-finish perpetual trophy with semi-scale bipe. Plane has K&B 32 Glo-Torp, 325 sq. in. of wing area, weighs 21 oz.

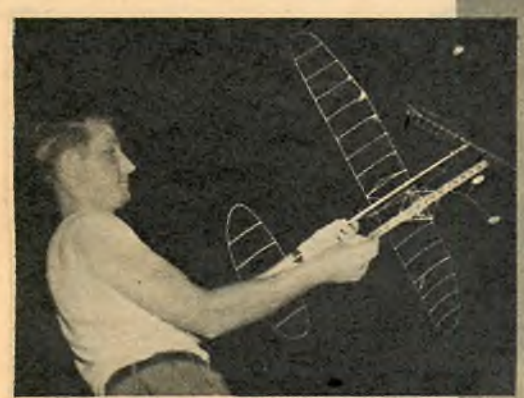
Claude McCullough, noted free flighter from Ottumwa, Iowa, gets one away between the showers which plagued flyers.



Two mighty tired members of the Texas Eagles club bed down for quick shut-eye after some late repair work. Navy set aside big hangar where contestants worked all night building and repairing.

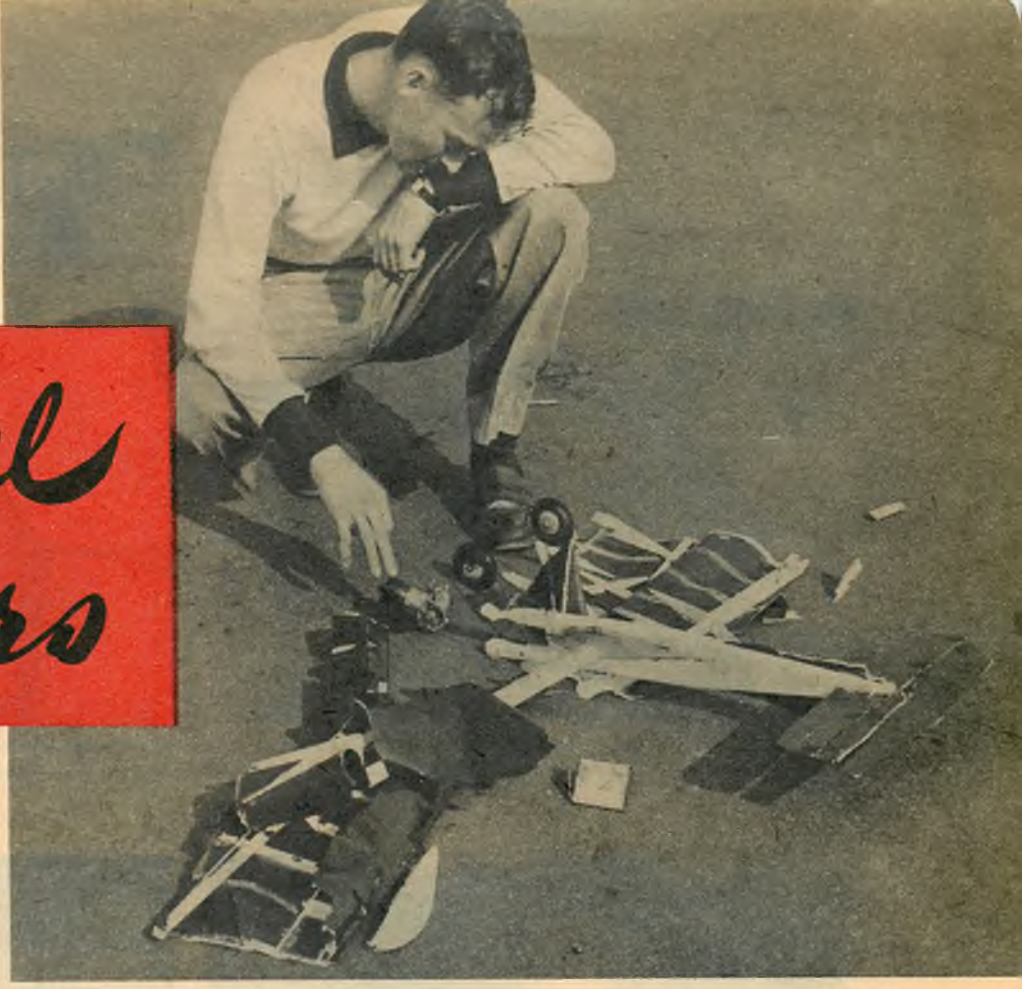
Dale Kirn's B-25 won 1st in Senior Class U-control flying scale. He's from Salina, Kan., flew same ship in '49. Plane is built from a Cleveland kit, has great detail. Insert shows twin-engine entry flying.

Ervin Shaw (left) & Milton Moise, both of Sumter, S. C., sported meet's most unique headgear. Carl Rambo (below), Oakland, Calif., won indoor stick event in open class with 19:24.1. He holds cabin which replaced stick; 148 sq. in. stick weighed .036 oz.



Model Matters

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



Sgt. C. K. Holton of Marine Corps Air Base, Cherry Point, N. C., surveys wreckage of his control liner after it crashed in strong wind. And hasn't it happened to us all!

DOPE CAN

BY "DOPESTER"

■ As the 1950 contest season drew to a close in most parts of the country a great cry went up throughout the land for something to be done by someone about competition rules and the great number of contest events.

Every large contest this year has produced a huddle of old-time leaders now active in the meet management picture asking that rules be simplified and the number of events be lessened. If you were standing on the sidelines at Dallas you heard it at the National meet, and if you were at Detroit you probably heard similar comments at the Plymouth competition.

The trouble is that from a two-event contest in the late '20's (indoor stick and outdoor twin pusher, both rubber powered) we've graduated to the current National set-up of 27 events, most of which are broken down into three age groups. And this figure does not include the "impromptu" Half-A PAA-Load flying which was instituted this year.

Whereas one could once attend the Nationals with all his entries in one large florist's cardboard box, now one needs a station wagon. No matter what sort of an answer you come up with, you're certain to tread on a lot of toes. But it is imperative that the Academy of Model Aeronautics—and that means the model builders and contest directors—do something mighty fast to straighten out the confused situation.

It's been suggested that the A.M.A. retain its present category of events only for purposes of record; that is, you could go out and try for record under the prescribed conditions at any time. To simplify contest procedure and the job of the flyer, many would drastically cut down on the number of competition events. Here are a few proposals we've heard making the rounds this summer:

1. Divide free flight into two classes. Make the break around .09 cubic inches.

2. Fly one rubber-powered event indoors, one outdoors. Have no requirements for the models other than they R.O.G. and have only rubber for motive power.

3. Put all flying scale together—rubber powered, free flight gas and control line. Work out an equitable system whereby all types could be judged together and flown against one another in competition.

4. Require *all* models to R.O.G., contain their own landing gears, with no dollies allowed. This would do away with hand-launched gliders unless they were excepted.

5. Recognize only hand-launched gliders as an indoor event; confine outdoor gliders to towliners. Reasoning here is that outdoor hand-launched gliders are lost to the sight of untrained timers too quickly.

These are only a few of the many suggestions that are making the rounds. The big job is to jell the sentiments of the modelers and come up with some practical proposals. (*Continued on page* 84)

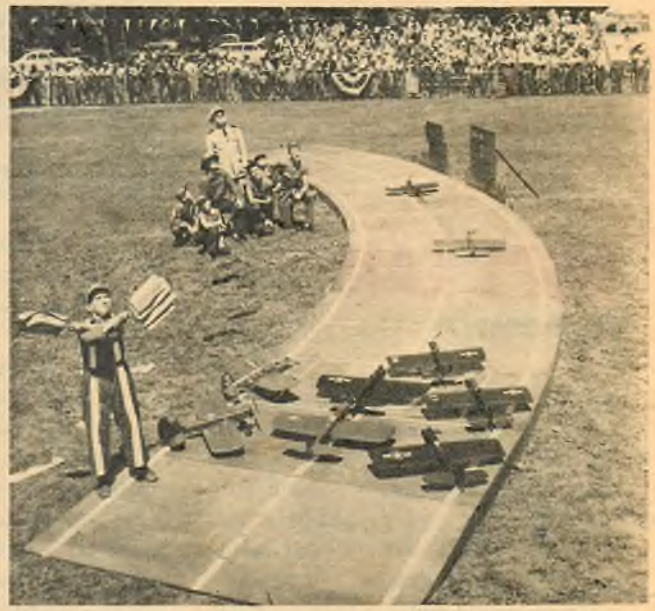
● Payment of $3 to $5 is made for glossy photos (at least 4 x 5 in.) sent exclusively to AT and used. Don't send negatives.

Six-year-old Fred W. Sage of Independence, Mo., was high-point man in the meet winning 3 first-place trophies, 2 2nd and 1 3rd. Left, R. C. Somerville of Plymouth, at right, Fred's dad.

Internats

Sponsored by the Plymouth Motor Corp. at Detroit, Mich., August 14 through 21, the 4th International Model Plane Contest brought together 500 outstanding model builders under 21 years of age. In all respects it was the smoothest running contest of its size ever held. Almost every contestant was sponsored by a local Plymouth dealer with all expenses paid to the Detroit meet. 127 trophies and $7,000 in bonds awarded.

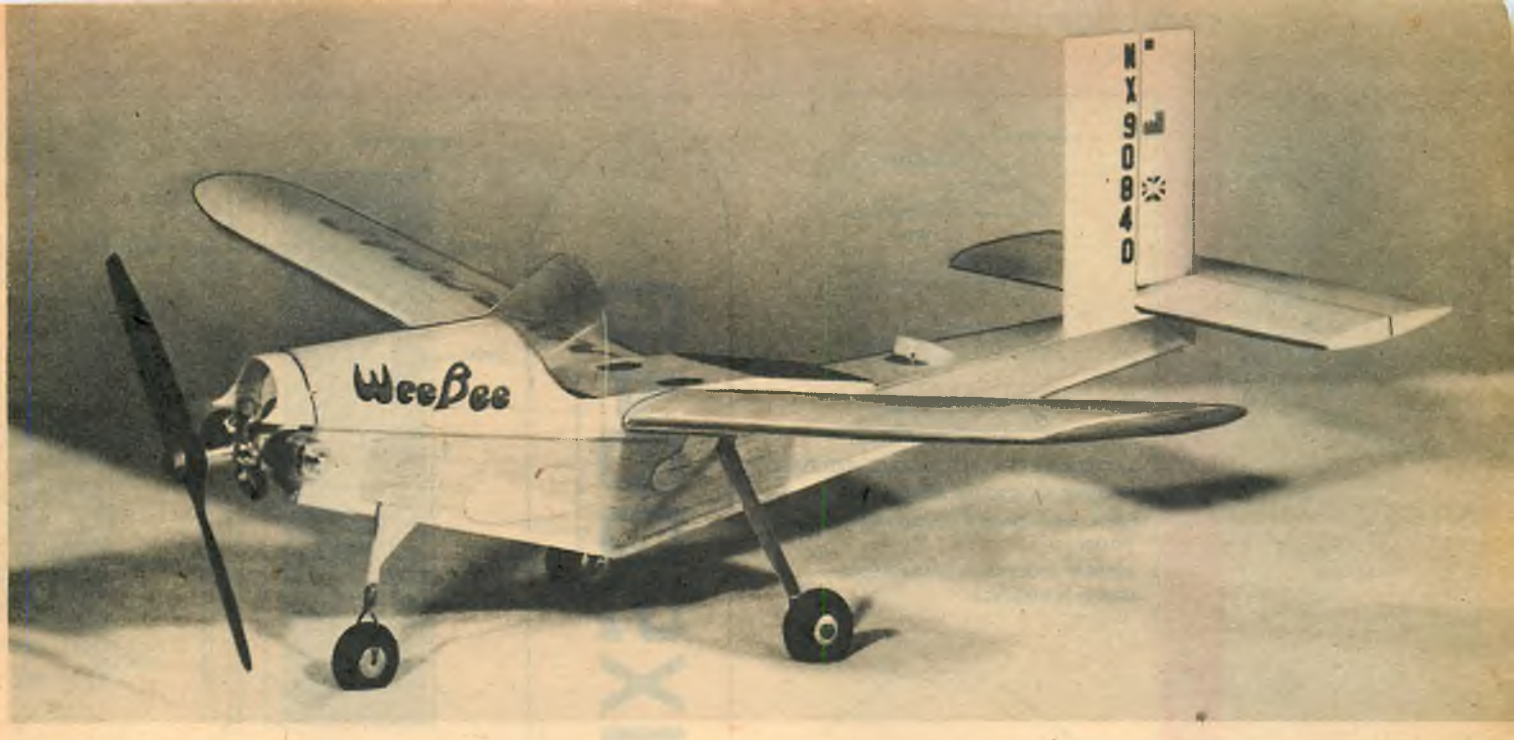
High-point winner among the gals and a first-place speed winner was Theresa Grish, St. John, Ind., member of famous speed family.



Special Navy carrier event was demonstrated at Belle Isle recreation park, U-control site. Lt. John Burton of Navy and flyers, rear.

Impressive line-up of team racers preceded event on last day of meet. Competition had complete attention of crowd and contestants.

Richard R. Smith, 20, Bangor, Me., entered this Spad in the flying scale contest. Older flyers could choose type of model for first time.



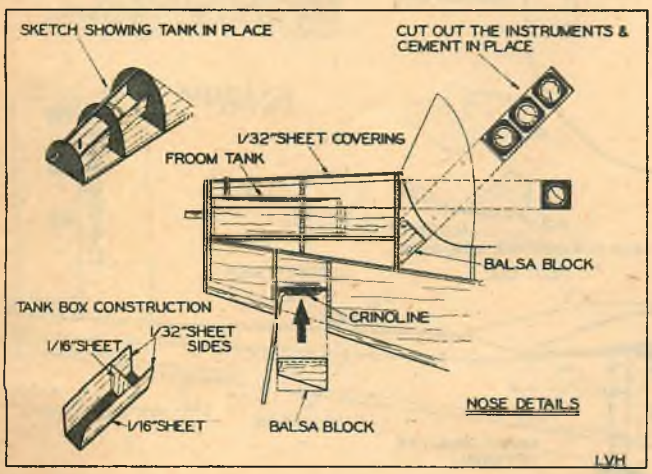
Wee Bee

World's smallest man-carrying plane looks like a big model; makes a swell free flight or U-C scaler

By LLOYD V. HUNT

■ The Wee Bee, one of the world's smallest airplanes, first hopped for the newsreels in December 1948. Shortly after its first real flight to altitude it was taken to London, England, to appear in the International Air Pageant. In London, the little airplane was flown before 90,000 people attending the gigantic air show. A week later it went to Belfast in Ireland to appear in the Royal Air Force pageant there. On its return home, it stopped at the National Air Races in this country where it made a flight before another huge crowd of spectators.

Since the initial hop over a year ago, and since its return to San Diego from Europe, a number of major improvements have been (*Continued on page* 68)



From left: Author Hunt who was aided by the designer of the "full size" Wee Bee; the real airplane; and two shots of the model W-8. Plane can be flown as free flight or control liner.

1/32"SHEET
CEMENT
PIN
1
2
3
4
1.ATTACH SHEET AT LEADING EDGE, ADD CEMENT TO EACH RIB BACK TO THE SECOND SPAR
2.BEND SHEET BACK TO THIS POINT, PIN DOWN TO DRY
3.REPEAT PROCESS TO TRAILING EDGE
4.FINISH BY SANDING

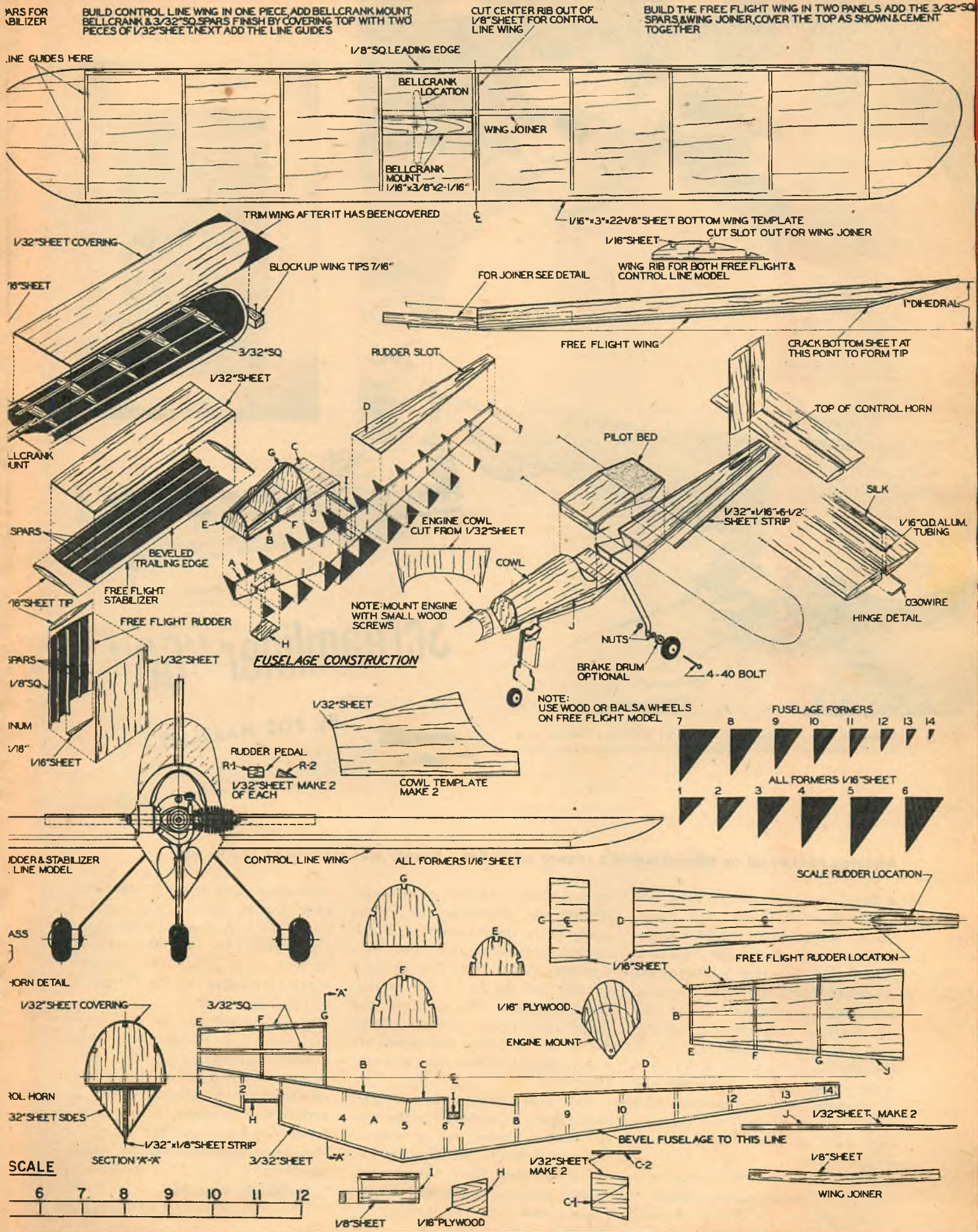
WINDSHIELD PATTERN

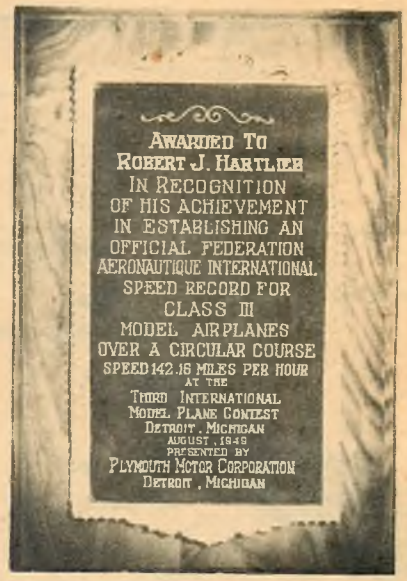
NX90840

1/16"SHEET TIP
SPARS 1&2
SPAR 3
1/16"SHEET
1/8"SQ.
SPARS
FREE FLIGHT STABILIZER TEMPLATE
NOTE: USE THE SAME S THE RUDDER & S CONSTRUCTION
LOCATE
CONTROL LINE GUIDE .040 DIAM. WIRE
FREE FLIGHT RUDDER TEMPLATE
TYPICAL STABILIZER & RUDDER SECTION
CONTROL LINE
3/8"
SANDPAPER
1/2"
2"
1-3/4"
PILOT BED DETAIL
SCALE STABILIZER 3/16"SHEET
BELLCRANK MOU
BELLCRANK 1/32"ALL
3/4"
MAKE 2
1/8"SHEET
1/16"SHEET
NOTE: COLOR-ENTIRE AIRPLANE ALUM. NUMBERS & DETAILS BLACK, THE NAME WEE BEE, RED TRIMMED WITH BLACK
NOTE: USE SCALE FOR CONTR
AILERON LINE

BEND DOWN
TRUE PROJECTED LENGTH
BEND UP
BEND DOWN
1/16"DIA.WIRE
.046 WIRE
YOKE
SIDE VIEW OF NOSE GEAR
MAKE 2
COPPER WIRE & SOLDER
CUT FROM .032 ST DURAL
L-1
L-2
L-3
1/32"SHEET
LANDING GEAR DETAIL
1-7/16"
4-9/16"

SCALE RUDDER 3/16"SHEET
MAKE 2 OF EACH
P-1
P-2
P-3
ALL PARTS 1/32"SHEET
1/32"
CONTRO
BALANCE HERE FOR CONTROL LINE MODEL
PILOT BED
RUDDER PEDALS
R-1
R-2
Wee Bee
C-2
J
K&B INFANT TORPEDO
C-1
L-2
L-3
L-1
BALANCE POINT FOR FREE FLIGHT
P-1
P-2
P-3
1/32"DIA.WIRE
1/32"x1/8"SHEET STRIP
BRAKE DRUM LINE OPTIONAL
3/4"DIA.WHEEL
1"DIA.WHEELS
INCH
0 1 2 3 4


ARS FOR
BILIZER
BUILD CONTROL LINE WING IN ONE PIECE, ADD BELLCRANK MOUNT BELLCRANK & 3/32"SQ SPARS FINISH BY COVERING TOP WITH TWO PIECES OF 1/32"SHEET. NEXT ADD THE LINE GUIDES
CUT CENTER RIB OUT OF 1/8"SHEET FOR CONTROL LINE WING
BUILD THE FREE FLIGHT WING IN TWO PANELS ADD THE 3/32"SQ SPARS & WING JOINER, COVER THE TOP AS SHOWN & CEMENT TOGETHER
INE GUIDES HERE
1/8"SQ. LEADING EDGE
BELLCRANK LOCATION
WING JOINER
BELLCRANK MOUNT 1/16"x3/8"x2-1/16"
TRIM WING AFTER IT HAS BEEN COVERED
1/16"x3"x22-1/8" SHEET BOTTOM WING TEMPLATE
CUT SLOT OUT FOR WING JOINER
1/16"SHEET
WING RIB FOR BOTH FREE FLIGHT & CONTROL LINE MODEL
1/32"SHEET COVERING
BLOCK UP WING TIPS 7/16"
16"SHEET
FOR JOINER SEE DETAIL
1"DIHEDRAL
FREE FLIGHT WING
CRACK BOTTOM SHEET AT THIS POINT TO FORM TIP
3/32"SQ
RUDDER SLOT
1/32"SHEET
TOP OF CONTROL HORN
LLCRANK UNT
PILOT BED
SILK
SPARS
ENGINE COWL CUT FROM 1/32"SHEET
1/32"x1/16"x6-1/2" SHEET STRIP
1/16"O.D. ALUM. TUBING
BEVELED TRAILING EDGE
COWL
FREE FLIGHT STABILIZER
NOTE: MOUNT ENGINE WITH SMALL WOOD SCREWS
.030 WIRE
/16"SHEET TIP
FREE FLIGHT RUDDER
HINGE DETAIL
NUTS
BRAKE DRUM OPTIONAL
4-40 BOLT
SPARS
1/32"SHEET
FUSELAGE CONSTRUCTION
1/8"SQ
NOTE: USE WOOD OR BALSA WHEELS ON FREE FLIGHT MODEL
INUM
1/16"
1/16"SHEET
1/32"SHEET
FUSELAGE FORMERS
7 8 9 10 11 12 13 14
RUDDER PEDAL
R-1 R-2
1/32"SHEET MAKE 2 OF EACH
COWL TEMPLATE MAKE 2
ALL FORMERS 1/16"SHEET
1 2 3 4 5 6
DDER & STABILIZER
LINE MODEL
CONTROL LINE WING
ALL FORMERS 1/16"SHEET
SCALE RUDDER LOCATION
ASS
HORN DETAIL
1/16"SHEET
FREE FLIGHT RUDDER LOCATION
1/32"SHEET COVERING
3/32"SQ
1/16" PLYWOOD
ENGINE MOUNT
OL. HORN
32"SHEET SIDES
1/32"x1/8"SHEET STRIP
SECTION "A"-"A"
3/32"SHEET
BEVEL FUSELAGE TO THIS LINE
1/32"SHEET MAKE 2
SCALE
6 7 8 9 10 11 12
1/8"SHEET
1/16"PLYWOOD
1/32"SHEET MAKE 2
C-2
C-1
1/8"SHEET
WING JOINER



Designer Robert J. Hartlieb, Jr. (left) with Russ Nichols, exec. dir. Academy of Model Aeronautics, after world record flight.

Screamliner "60"

By BOB HARTLIEB

America racked up an official world's record when Bob's beauty was clocked at 142.16 mph

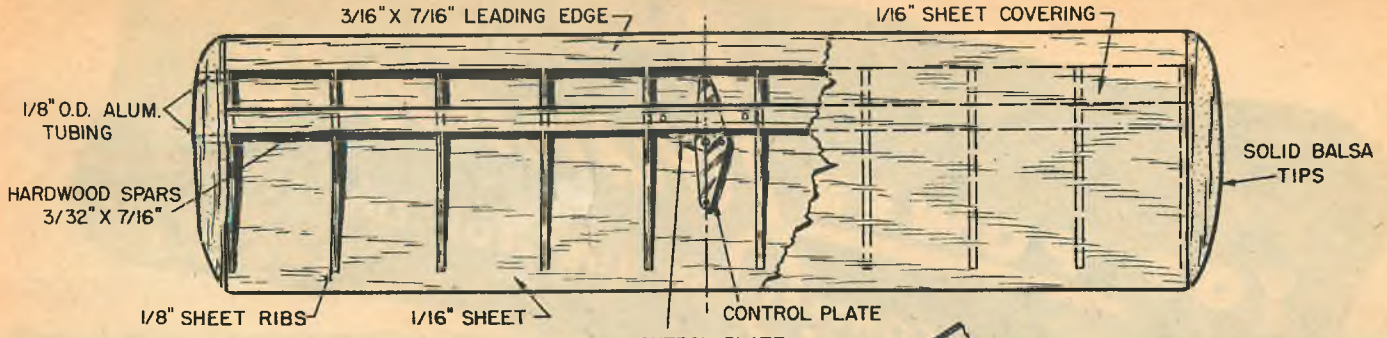
■ Until fairly recently, very few U. S. modelers knew that model plane records existed on an *international* level, under classifications established by the Federation Aeronautique Internationale, world-wide governing body for all sporting aviation. During the past 18 months, however, U. S. modelers have set new F.A.I. records in straight-line speed, and in circular course (control line) divisions, established the jet record, and all three reciprocating engine records.

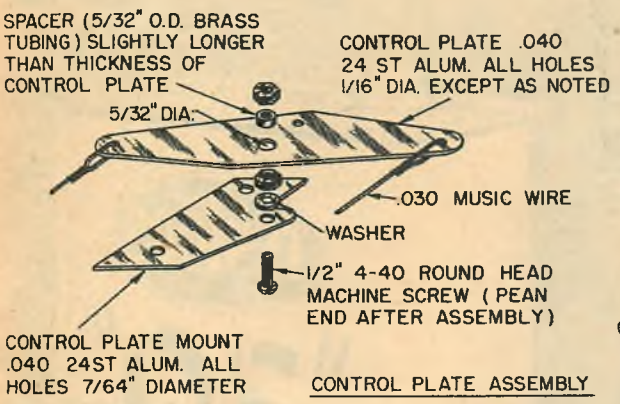
Your author learned of all this first hand, being lucky enough to be invited to the F.A.I. circular course trials at Detroit at a special session just preceding the Plymouth Third Internationals. F.A.I. record competition will gain momentum in the next few seasons, so why not get in on the ground floor, perhaps by building the latest modification of the Class III (5 to 10 c.c. piston displacement) F.A.I. record holder, the Screamliner 60?

The new Screamliner 60 presented here is identical to the record-holder except for a restyled slimmer fuselage. The Screamliner series has been flown with considerable success in all four engine classes, and is the result of several seasons of competition flying. However, the 60 version was destined to set both A.M.A. (141.68 mph) and F.A.I. (142.16 mph) records, as well as to attain the 150 mph mark (Williamsport, Pa. Plymouth qualification meet).

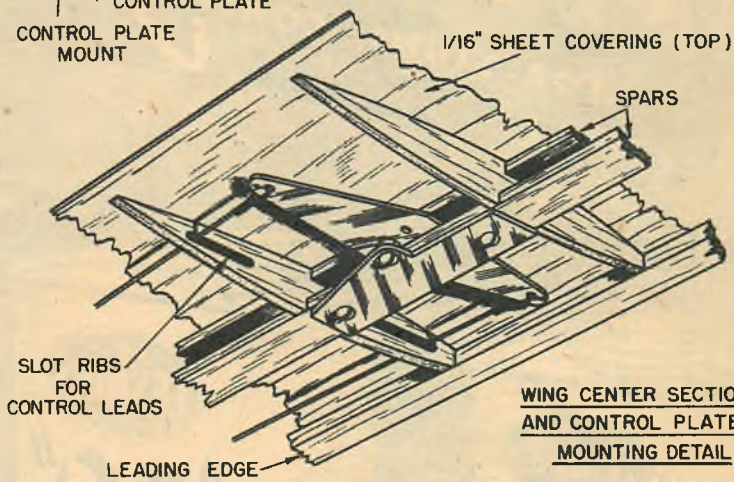
The Screamliner 60 is rugged and easily hand-launched, both definite advantages at the rough fields often encountered. Also, construction is simple, with no prohibitive machine-shop operations required. As for flying, a steadier ship throughout the entire speed range cannot be found.

Build the wing first, as this unit is needed (*Continued on page* **78**)





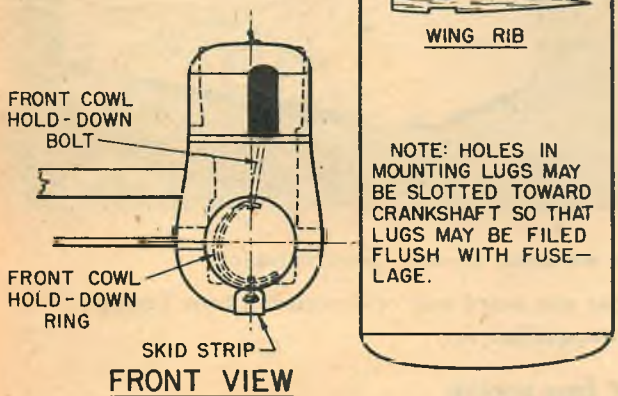
CONTROL PLATE ASSEMBLY



WING CENTER SECTION AND CONTROL PLATE MOUNTING DETAIL

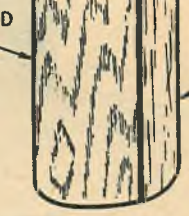
ELEVATOR HINGE DETAIL

SEW (ON SEWING MACHINE, FINE STITCH) TWO ONE INCH WIDE PIECES OF BIAS TAPE AS SHOWN

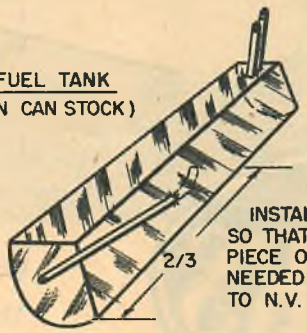


FRONT VIEW

TOP VIEW
(ABOVE THRUST LINE)

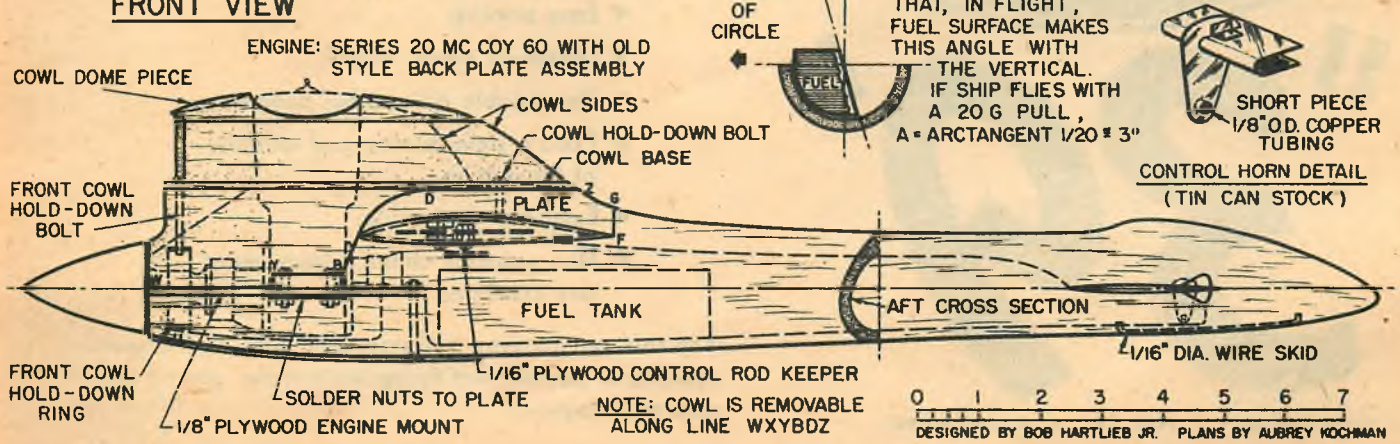


FUEL TANK
(TIN CAN STOCK)



INSTALL FEED TUBE SO THAT ONLY A SHORT PIECE OF NEOPRENE IS NEEDED TO CONNECT TO N.V. JET

USE DOUBLE THICKNESS FOLDED AS SHOWN



NOTE: COWL IS REMOVABLE ALONG LINE WXYBDZ

ANGLE "A" IS SUCH THAT, IN FLIGHT, FUEL SURFACE MAKES THIS ANGLE WITH THE VERTICAL. IF SHIP FLIES WITH A 20 G PULL, A = ARCTANGENT 1/20 = 3°

CONTROL HORN DETAIL
(TIN CAN STOCK)

DESIGNED BY BOB HARTLIEB JR. PLANS BY AUBREY KOCHMAN

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Testor's STA is the *only* hot fuel proof finish on the market which is not in the least affected by any known hot fuel . . . including those containing high concentrations of such ingredients as nitro-methane, nitro-propane, castor oil, methanol, etc. In addition, consider these other superior characteristics, too:

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STA

*Plus STA Sealer and STA Thinner

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DeHavilland Moth

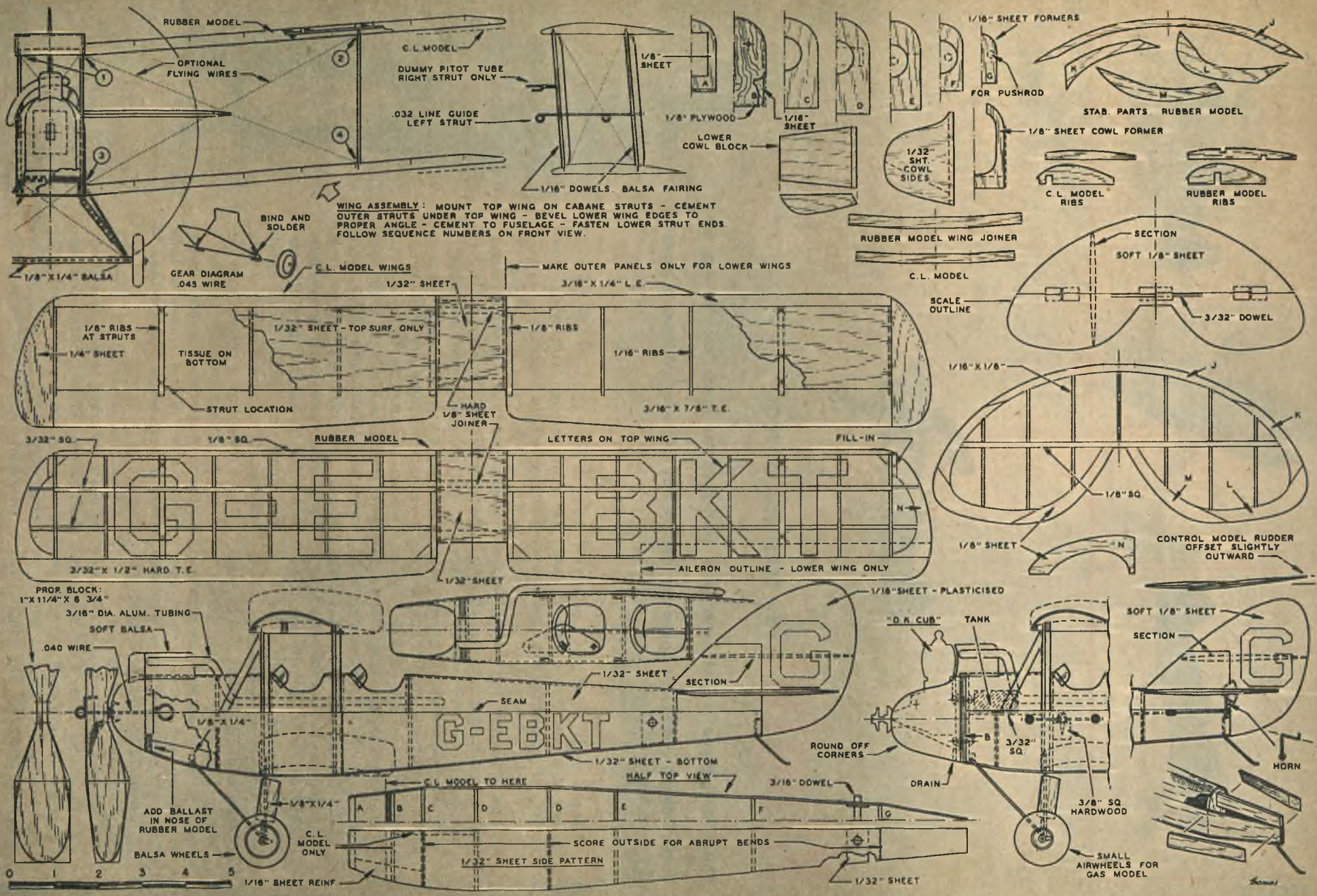
Another of those AT "Specials": a glamorous old gal reappears as a control line beauty or as a rubber-powered free flight

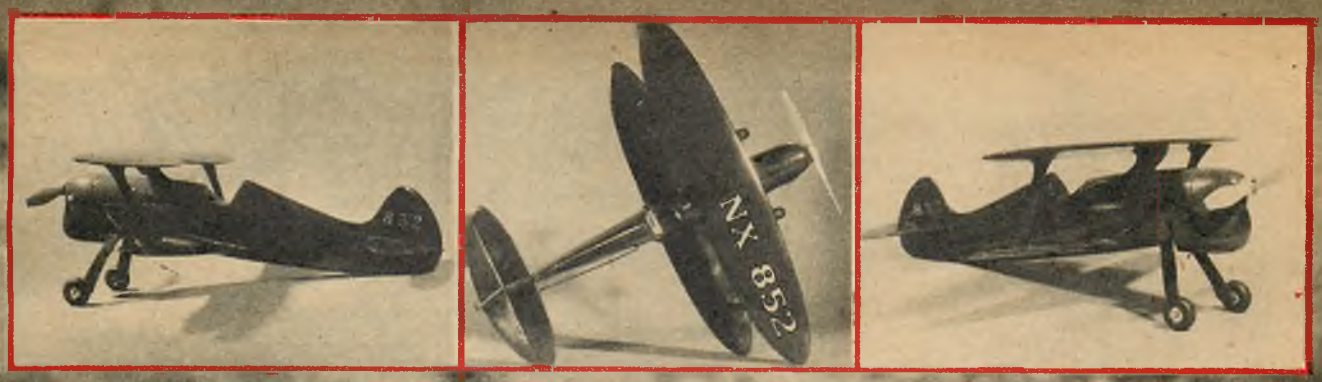
By WILLIAM WINTER

■ No private plane ever built had greater claim to lasting fame than the De Havilland Moth. First seeing service in the mid Twenties, this English plane was a leader for nearly a decade. It got in its share of the glamor flights, to Australia, over the Atlantic, but all that merely pointed up why what ordinarily should have been just another lightplane, actually was considered both here and abroad as one of the real greats in the private aircraft field.

As originally designed, the Moth was powered by the 60 hp Cirrus, on which it had a top speed of 90 miles an hour and a minimum speed of 38 miles an hour, a performance almost identical to late 65 hp American monoplanes like the Cub and the Champion. Being a biplane, it was small, spanning only 29 feet—and its wings could be folded. Some 686 pounds were available for the two passengers who rode in its open cockpits, gasoline, oil, and luggage. That's a pretty fine performance, as any present day lightplane owner can tell you. Moreover, the engine was so smooth and so well muffled that pilot and passenger could communicate without a speaking tube.

In appearance, the Moth was a recognizable little brother of the DH-4 and the DH-9 of colorful World War 1 days. Since most of us don't recall those days, it can be pointed out that the Tiger Moth bipe that trained tens of thousands of airmen in the Second World War bears a striking resemblance to the Moth. Students of airplane histories will recognize in all (*Continued on page* 73)


RUBBER MODEL
C.L. MODEL
OPTIONAL FLYING WIRES
DUMMY PITOT TUBE RIGHT STRUT ONLY
.032 LINE GUIDE LEFT STRUT
1/8" SHEET
1/8" PLYWOOD
1/16" SHEET
LOWER COWL BLOCK
1/32" SHT. COWL SIDES
1/16" DOWELS. BALSA FAIRING
1/16" SHEET FORMERS
FOR PUSHROD
1/8" SHEET COWL FORMER
STAB. PARTS RUBBER MODEL
C.L. MODEL RIBS
RUBBER MODEL RIBS
RUBBER MODEL WING JOINER
C.L. MODEL
WING ASSEMBLY: MOUNT TOP WING ON CABANE STRUTS - CEMENT OUTER STRUTS UNDER TOP WING - BEVEL LOWER WING EDGES TO PROPER ANGLE - CEMENT TO FUSELAGE - FASTEN LOWER STRUT ENDS FOLLOW SEQUENCE NUMBERS ON FRONT VIEW.
BIND AND SOLDER
1/8" X 1/4" BALSA
GEAR DIAGRAM .045 WIRE
C.L. MODEL WINGS
MAKE OUTER PANELS ONLY FOR LOWER WINGS
1/32" SHEET
3/16" X 1/4" L.E.
SECTION
SOFT 1/8" SHEET
SCALE OUTLINE
3/32" DOWEL
1/8" RIBS AT STRUTS
1/4" SHEET
TISSUE ON BOTTOM
1/32" SHEET - TOP SURF. ONLY
1/8" RIBS
1/16" RIBS
STRUT LOCATION
HARD 1/8" SHEET JOINER
3/16" X 7/8" T.E.
1/16" X 1/8"
3/32" SQ.
1/8" SQ.
RUBBER MODEL
LETTERS ON TOP WING
FILL-IN
1/8" SQ.
1/8" SHEET
CONTROL MODEL RUDDER OFFSET SLIGHTLY OUTWARD
3/32" X 1/2" HARD T.E.
1/32" SHEET
AILERON OUTLINE - LOWER WING ONLY
PROP. BLOCK: 1" X 11/4" X 6 3/4"
3/16" DIA. ALUM. TUBING
SOFT BALSA
.040 WIRE
1/8" X 1/4"
1/32" SHEET
SECTION
SEAM
1/32" SHEET - BOTTOM
1/16" SHEET - PLASTICISED
"O.K. CUB"
TANK
SOFT 1/8" SHEET
SECTION
HORN
ROUND OFF CORNERS
DRAIN
3/32" SQ.
3/8" SQ. HARDWOOD
SMALL AIRWHEELS FOR GAS MODEL
C.L. MODEL TO HERE
HALF TOP VIEW
3/16" DOWEL
ADD BALLAST IN NOSE OF RUBBER MODEL
BALSA WHEELS
C.L. MODEL ONLY
SCORE OUTSIDE FOR ABRUPT BENDS
1/32" SHEET SIDE PATTERN
1/16" SHEET REINF.
1/32" SHEET
0 1 2 3 4 5



Kinglet

By BERNARD O. BECK

This slick biplane is just what your Half-A engine needs; all the way from South Dakota comes this speedster designed by a famous old-timer in modeling

■ The Kinglet is different. After the parade of super-simple ships we now accept as necessary for these new small motors, it comes as a nice change. Moreover, the clean lines are not the result of a complicated, delicate structure. For example, each wing is made of two pieces; one hard sheet carries the load while a soft sheet provides the airfoil. Again, where the fuselage needs strength and a compound curve or two, solid construction is used. Since the carving of big blocks isn't too satisfactory, stacked sheets are substituted. Carving and sanding are simplified by a set of built-in templates.

Weighing 7½ ounces, it flies swell with a Cub .074. At low power it coasts around, but with the rpm's up it will spin you dizzy on short lines. Control is good at all times, with nice maneuverability and real steadiness. The Kinglet is fun to fly.

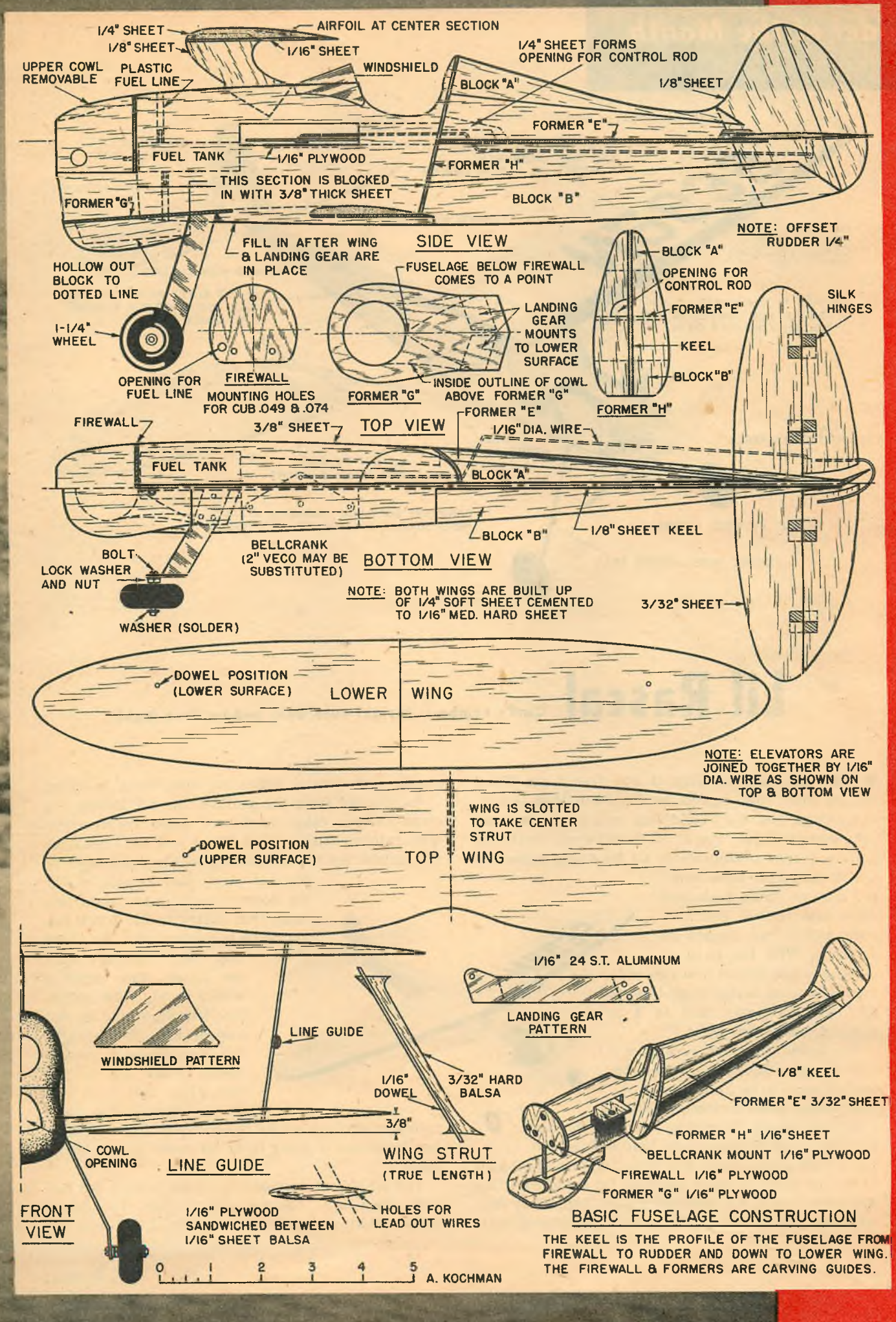
What good is a sport ship if it isn't able to forgive those sour landings? Or power-on pile-ins? Or just the usual beating you deal out during an afternoon of flying? The original has had its share of rough handling and has come through with flying colors. Damage to date—none.

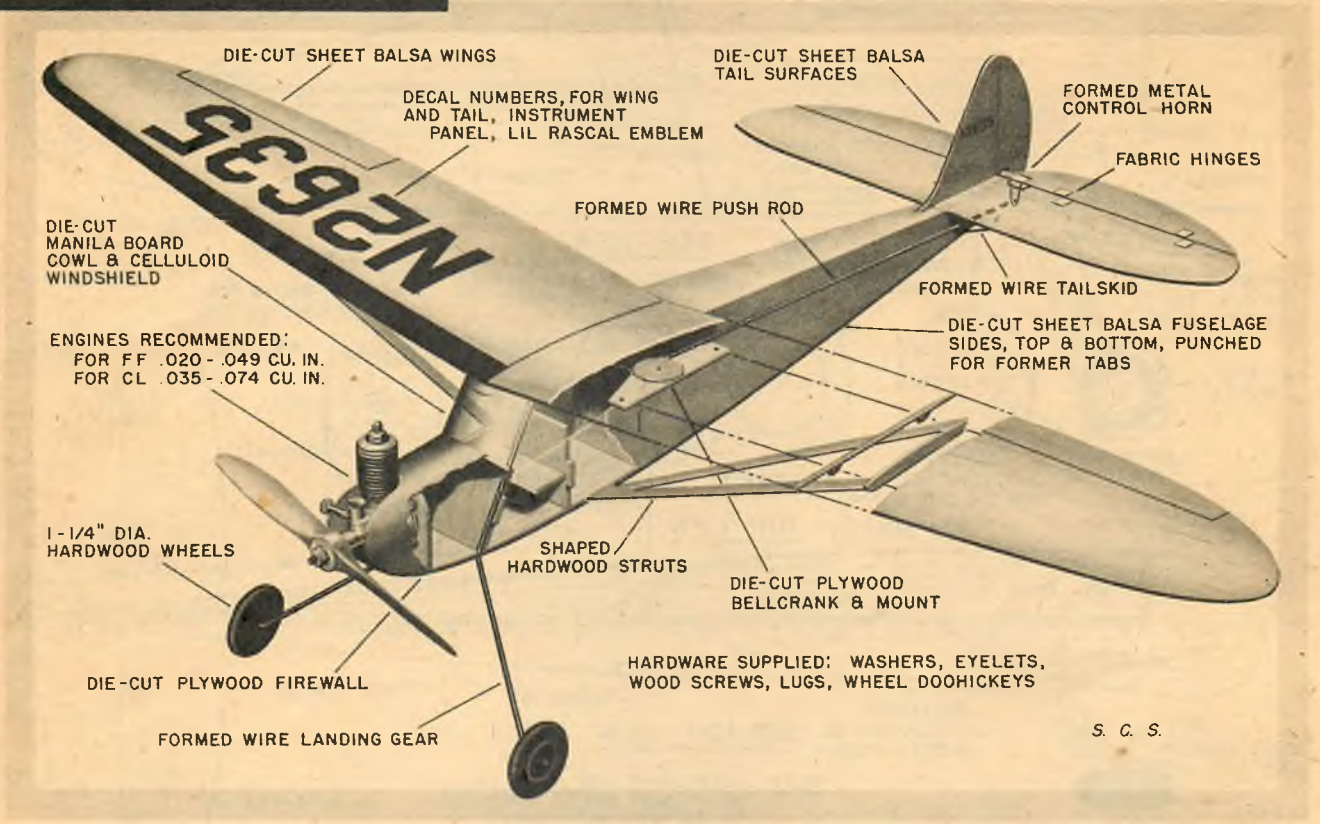
In building the ship, check the drawing carefully. If some instructions seem odd, check again, as some of the building procedures may be new to you. Unless there's a good reason, better build her as shown.

Start construction by gluing the wing materials. While the 1/16″ sheet must be the full width of the chord, the ¼″ sheet may be 2″ wide, or even less. Glued, these must be weighted down flat for several days. Remember, since any cement dries slowly between sheets, give it plenty of time. Also, a slow-drying cement provides a much better structure, so use it rather than the faster drying variety. While this "plying" takes a little time, it gives wings that are hard to beat.

When the material is dry, the wings are worked to outline and airfoil shapes. Finally, strut positions are marked and dihedral is put in the lower wing.

Horizontal (*Continued on page* 56)


1/4" SHEET
1/8" SHEET
AIRFOIL AT CENTER SECTION
1/16" SHEET
UPPER COWL REMOVABLE
PLASTIC FUEL LINE
WINDSHIELD
1/4" SHEET FORMS OPENING FOR CONTROL ROD
BLOCK "A"
1/8" SHEET
FORMER "E"
FUEL TANK
1/16" PLYWOOD
FORMER "H"
THIS SECTION IS BLOCKED IN WITH 3/8" THICK SHEET
FORMER "G"
BLOCK "B"
NOTE: OFFSET RUDDER 1/4"
SIDE VIEW
FILL IN AFTER WING & LANDING GEAR ARE IN PLACE
HOLLOW OUT BLOCK TO DOTTED LINE
FUSELAGE BELOW FIREWALL COMES TO A POINT
BLOCK "A"
OPENING FOR CONTROL ROD
SILK HINGES
1-1/4" WHEEL
LANDING GEAR MOUNTS TO LOWER SURFACE
FORMER "E"
KEEL
BLOCK "B"
OPENING FOR FUEL LINE
FIREWALL
MOUNTING HOLES FOR CUB .049 & .074
FORMER "G"
INSIDE OUTLINE OF COWL ABOVE FORMER "G"
FORMER "H"
FIREWALL
3/8" SHEET
TOP VIEW
FORMER "E"
1/16" DIA. WIRE
FUEL TANK
BLOCK "A"
BLOCK "B"
1/8" SHEET KEEL
BELLCRANK (2" VECO MAY BE SUBSTITUTED)
BOLT
LOCK WASHER AND NUT
BOTTOM VIEW
NOTE: BOTH WINGS ARE BUILT UP OF 1/4" SOFT SHEET CEMENTED TO 1/16" MED. HARD SHEET
3/32" SHEET
WASHER (SOLDER)
DOWEL POSITION (LOWER SURFACE)
LOWER WING
NOTE: ELEVATORS ARE JOINED TOGETHER BY 1/16" DIA. WIRE AS SHOWN ON TOP & BOTTOM VIEW
WING IS SLOTTED TO TAKE CENTER STRUT
DOWEL POSITION (UPPER SURFACE)
TOP WING
1/16" 24 S.T. ALUMINUM
LANDING GEAR PATTERN
LINE GUIDE
WINDSHIELD PATTERN
1/16" DOWEL
3/32" HARD BALSA
1/8" KEEL
FORMER "E" 3/32" SHEET
3/8"
FORMER "H" 1/16" SHEET
BELLCRANK MOUNT 1/16" PLYWOOD
COWL OPENING
LINE GUIDE
WING STRUT
(TRUE LENGTH)
FIREWALL 1/16" PLYWOOD
FORMER "G" 1/16" PLYWOOD
FRONT VIEW
1/16" PLYWOOD SANDWICHED BETWEEN 1/16" SHEET BALSA
HOLES FOR LEAD OUT WIRES
0 1 2 3 4 5
A. KOCHMAN
BASIC FUSELAGE CONSTRUCTION
THE KEEL IS THE PROFILE OF THE FUSELAGE FROM FIREWALL TO RUDDER AND DOWN TO LOWER WING. THE FIREWALL & FORMERS ARE CARVING GUIDES.



Lil Rascal

Carl's combo is a right cute Ukie and/or free flight

■ Time marches on. First it was free flight. Then control line. Now, thanks to Top Flite Models Inc., of Chicago, and Carl Goldberg, you can have your cake and eat it too. For $1.50, Topflite has marketed a 27-inch-span prefabricated kit for a ship called the Lil Rascal. This cute number may be flown both free flight and control line. No, fella, you're not limited to a choice. With the twist of a teeny screw driver you can convert this novel design from Ukie to f.f. and back again, and do it as many times as you want.

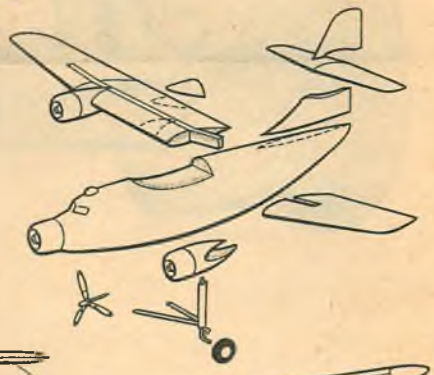
You know, this idea may have a big future. Suppose convertible models were to be judged on duration, speed, and stuntability! Wow! That sure would determine who had the best airplane. And suppose clubs held events with these Rascals to make the free flighters take hold of one of those plagued handles! Or made the Ukie die-hard forget his beloved wires! Yep, Carl may have started something. Guys will be hanging bellcranks and control horns on everything in sight.

As you see from the picture, the Lil Rascal is a clean-looking cabin model of wood construction, with rather realistic lines. What you can't see from the picture are the interesting features provided by the kit. And, just looking at the kit doesn't reveal some good features that spring to life when you get down to construction. We found that out, having made one Rascal, then flown it with a handy K&B .02 Infant free flight and an .035 control line. Incidentally, the manufacturer recommends from .02 to .049 free flight and from .035 to .074 control line. Those recommendations are on the ball and no one following directions is going to be let down on the power angle.

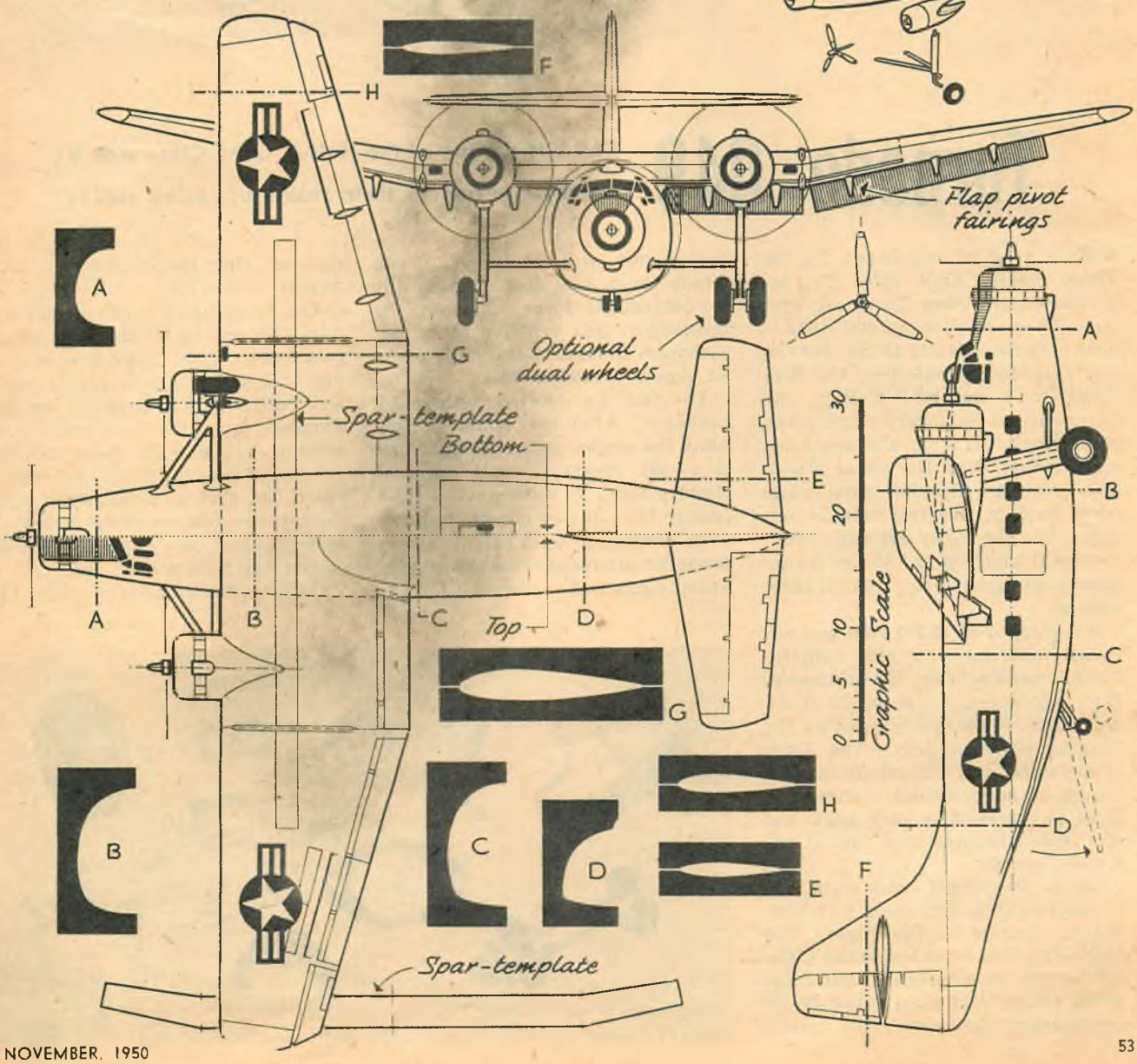
The kit is prefabricated to a high degree and features the firm's "Jigtime" construction. This means simply that the various (*Continued on page* 70)

Raider C-125

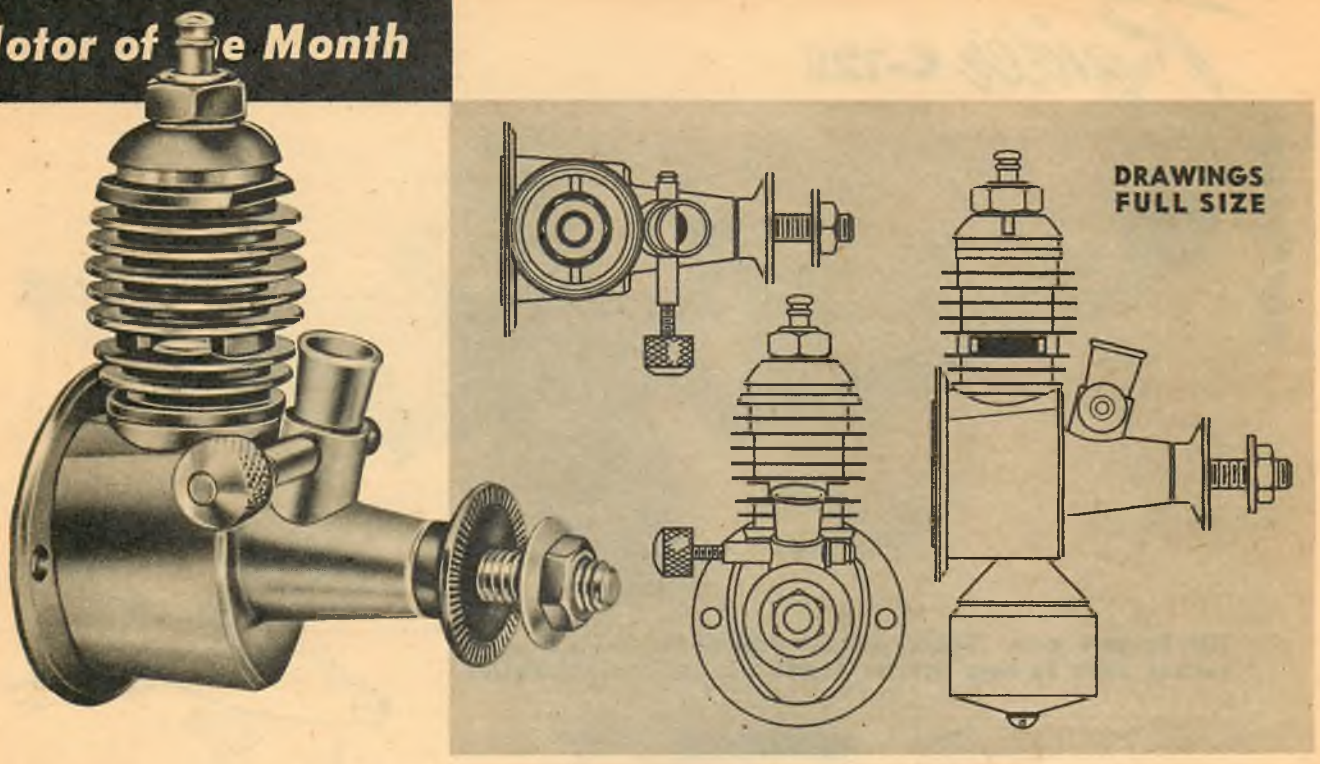
northrop



Air Force's new "light" assault transport uses six Jato rocket units to help lift its 40,000 pounds over obstacles



Motor of the Month



Torpedo .049

K&B hits the top of the Half-A (AA) Class with a worthy addition to their stable of racing steeds

■ Not to be outnumbered by the Three Bears, K&B Mfg. Co. has completed its three Torps. A Torp must be a smaller animal than a bear because it starts at the .049 size and goes down, including the Torp Junior and the K&B Infant. All three engines look very much alike, being machined from aluminum bar stock rather than the usual aluminum castings. Special glow plugs were used in the two smaller engines, but the new .049 has a conventional short plug. Motor mount dimensions are the same on all three engines.

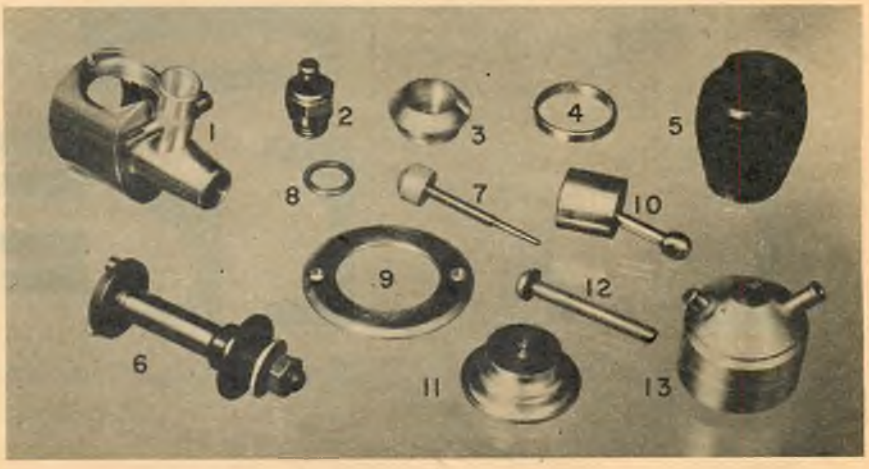
A top speed of 15,300 rpm was obtained with the glow plug supplied by the manufacturer. Hot mechanics from the speed circle could probably improve on this by opening the by-pass ports slightly. The large rotary valve and crankshaft opening should be adequate for higher rpm. Base compression is very high, and this would help to feed fuel at increased speed.

Sport, free flight, and stunt enthusiasts will be impressed with consistent running during flight. The eight-inch fuel level test is the highest for any small engine, and compares well with engines in the .30-.49 displacement bracket. This means the engine will continue to run steady when fuel flow changes due to centrifugal force, changing air pressure at tank vents, or other disturbances in flight that usually cause an engine to slow down.

The test was started with a 6/3 propeller. After two hours of running, the engine was still tight and it would overheat when adjusted slightly lean. It showed very little change from its new condition. However, changing to a 5½/3 plastic propeller produced some fast results. Speed continued to increase for five minutes, then the engine was thoroughly broken in.

This high-speed break-in did not hurt the engine in any way, as it retained a good compression seal and still ran well on a large propeller. Both the Baby Torp and the .049 Torpedo have the rare quality of running well at high speed and still remaining tight enough for slow-speed use, such as a free flight ship. During the test, starting was very easy whether the engine was cold or red hot from a hard run.

Half-A (*Continued on page* 73)



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Tank & Prop included

This is the Real Engine for your first power model . . . easy to install . . . a snap to start. Bore .390, stroke .334 . . **$4.45**

SAVE MONEY on this easy assembly

"OK" POWER KIT
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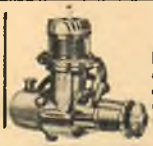
A better than ever edition of the famed record breaker. Weight 3¼ oz. with range of 2,500 to 11,500 rpm. With glow plug, less tank . . . **$7.95**



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Kinglet

(*Continued from page 50*)

tail surfaces are cut from a piece of 3/32" sheet. They are sanded carefully and the control horn and hinging are installed, then a section is cut out of the middle of the elevator. The cross wire cemented on the lower side reconnects the two pieces around the rudder.

For this size ship, 24ST makes a swell landing gear. By getting two ⅜" wide strips cut at a sheet metal shop, you can eliminate the hard work. A file works it to final shape and it bends easily over any straight edge. Drill holes for a snug fit, attach the struts to former G, and cut off the extra length of the bolts. Axles are also bolts, pulled tight on the struts, and filed down until the wheels turn freely.

Since the fuselage builds around a keel of ⅛" medium sheet, set this up first. Notice that the center wing strut is a separate piece, as is the fin. Now finish the firewall and cement it to the keel front. We mounted a Thomas stunt fuel tank at venturi level. This type of fuel tank installation is recommended, but if you want to use another kind instead—just be sure it will fit in the space allowed and that it will actually work. Formers H are glued in place.

Since that finishes the basic structure, you're ready to start blocking. In doing this make reasonably good joints, use plenty of cement, and hold the pieces in place with pins. Again, a slow-drying cement is the one to use. Don't be too concerned with weight—it will come down as the cement dries. Starting near the line of thrust, fill in the front part on both sides of the keel with soft sheet. We used ⅜" because it was handy, but any thickness from ⅛" to ½" should work.

Lay these in flat. As you go, cut away for the fuel tank, bellcrank, control rod, and so forth. Don't hollow any more than is necessary. As you build, completely fuel-proof the inside. When you've blocked down to the lower wing and former G, cement them in place and fill in below them.

The fuselage to the rear of former H can be finished any time. In block A and B the sheets are laid vertical. Former E, of course, is 3/32" sheet laid flat. With these in place, the whole thing is brought down to final shape. The stabilizer and rudder are cemented in their places.

Getting back to the front—bring the section below the firewall and above former G to a point as shown and make the lower cowl. Now, with the top cowl spot glued in place, sand the whole fuselage to final shape. This isn't hard if you take your time. Sandpaper without some sort of block will ruin the job. Get that block behind the paper. The control system can go in any time, after which the rear sides can be covered. Silkspan's O.K.

Mounting the top wing is easy. Glue it on the center strut and adjust by shifting it on the dowels at the outer strut positions. When the alignment is right, the dowels are glued, and when dry, struts are set up around them. The line guide goes on the inboard strut.

That winds up the building. Plastic filler will make the lower wing fillets and serve to fill holes and rough spots. Using a sealer and fine sandpaper, smooth the whole ship, then color-finish it. Our ship is done entirely in fuel-proof maroon. The windscreen goes on after the finishing is done.

When mounting the engine, run a lead-out of stranded wire from the glow plug out the bottom cowl opening. The other lead-out runs from a beam mounting lug and out a side cowl opening.

The upper cowl slides on from the front and the needle valve holds it there. There's no point in flying without it. A small oil can fills the fuel tank through the vent. We adjust the mixture with our index finger on the front face of the needle valve.

Engine priming is done in the exhaust from the front. First flights should be made on a calm day.

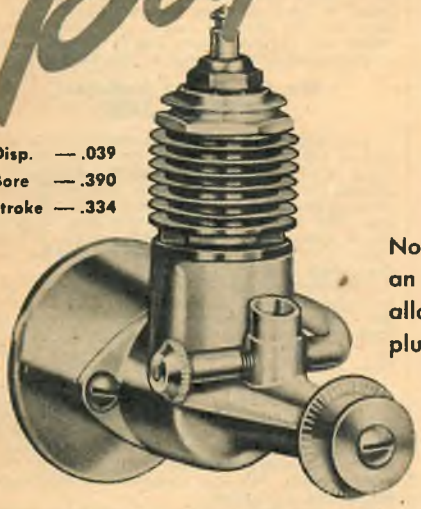
Bill of Materials—Kinglet

2 pcs 1/16" x 3" x 18," wings and former H. 2 pcs 3/32" x 2" x 18," horizontal tail, former E, and wing struts. 1 pc ⅛" x 3" x 18," keel and rudder. 4 pcs ¼" x 2" x 18," wings and cowl bottom. 6 pcs ⅜" x 2" x 24," fuselage blocks and cowl. 1 pc 1" x 1½" (1/16" plywood), bellcrank mount and line guide. 1 pc 2" x 2" (1/16" plywood), firewall. 1 pc 2" x 4" (1/16" plywood), former G. 2 pcs ⅝" x 4" (1/16" 24ST), landing gear. 2 pcs 1/16" dowel stock, wing struts.

1¼" Veco wheels. 2" Veco bellcrank. Fuel tank. Control horn. 3½" fuel line. Silkspan. Celluloid. 11 bolts. Plastic filler and solvent. Fuel-proof finish. 18" piece 1/16" wire, control rod and elevator cross wire.

Beginners... Now you can afford a GAS ENGINE!

New OK CUB .039



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Combination engine mount and fuel tank, neoprene tubing	value	.50
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TOTAL VALUE		$5.85
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Outstanding "Half-A" for free flight and indoor flying.

Outstanding for its stunt and speed flying performance.

Outstanding for its rugged, powerful Class "A" performance.

"OK" engine plus propeller, gasoline tank and neoprene tubing.

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Nationals

(*Continued from page* 35)

day of the meet, Wednesday, opened with a record 1.22 inch downpour. Ditto for Thursday and Friday. Saturday and Sunday were different—no rain, just gusts up to 30 mph. All of this meant director Clemens took a terrible ribbing. Everyone talked about the "in-clement" weather.

A complete listing of the winners along with their times, speeds or points will appear in forthcoming issues, together with data on the models flown. As a departure from our regular reporting methods, here's a contestant's eye-view of the '50 Nats.

We Fly at the Nationals
By FRANK ZAIC

You don't have to go to the moon to get out of this world, just go to the Nationals. Loss of reason results when the decision to attend the Nationals is made. Perfectly good contest models lose their glamour and nothing else but new ships will do. Despite work, school and family obligations, practically every event is entered. Luckily, the Nationals come only once a year.

This year's trip to Dallas was on the long side for most of us, so that by the time we got there we were bounce-happy. Our first impression of Texas was that if a contest needed flat country to be a success, they sure had enough of it down there.

We arrived on the afternoon of registration day (the 25th). Expecting a long line we were pleasantly surprised that it was all cleared. Gave us feeling of good organization. The big hangar was like a bazaar; the tables were covered with brightly colored models. We saw some new designs and many old favorites.

We noted that Tulsa was back in the meet. Must have been at least two dozen boys from the town made famous by Roy Wriston, Bruce Luckett and others way back in '34. Goes to show that it takes almost fifteen years for a cycle to repeat itself. With the experience the boys got this year, next year should see a nice tussle between the West Coast and the Midwest. One group had a deluxe trailer with portable lights and radio in case the boys had to work late at night.

We met friends we have not seen for years. To many of us this is one of the best reasons for going to the Nationals—seeing friends from the other side of the country. We should have gone to bed very happy if we had not pulled a classical lulu. While changing cars in Hagerstown, Md., we forgot to transfer stabilizers. So there we were at the Nationals with five ships, all inoperative. So instead of having a good gabfest we had to stick to the work bench and chop up a wing to make a stabilizer of sorts. You know, National meet spirit and all that. We finally did get to bed with visions of brilliant sunshine and thermal activity that only Texas can produce.

Oh no, impossible! Could it be we only dreamed that we drove to Dallas and actually woke up at home? But it was no dream and the nightmare persisted. It was raining in Dallas, Texas. Who said not to bring a raincoat? Somehow, we felt cheated. Perhaps the rest of the boys did too. Actually, no one said anything as such things can happen in the best of states. And so the morning drizzled and rained away with cement and dope blushing on repairs.

Rains cleared after one o'clock and flying began. That is, for those that had a chance to test their flights during the registration day—the field had been closed for testing on Tuesday. Smart boys traveled to a nearby airfield for checkup and were they glad! It was a pity it had to be so as the hot trip did things to wings and stabs in the boxes. Warpage was terrific as many found out on short test flights. Since the meet had to close at five on the dot each day there wasn't much else to do but try to get as many official test flights as possible. Must have been fun for those who had both rubber and gas to fly. (We managed to get some sort of flights with our makeshift stabilizer, but no chance to show off with real good flights.)

Take the foregoing and make it Thursday and Friday. Rain showed up with regular monotony on each of these days. Flights were short on the whole so that there was very little waiting for timers.

Sunday was the first day we saw sunshine in the morning, but we paid a price for it as the skies were cleared with the aid of 25 mph southern breeze. And on this day A/2, towliners, ROW and Payload were supposed to be flown.

Half-A boys had fun of a sort. The models would up and over into the concrete, just like at the Wakefields last year. Towliners had the boys running with the wind for launching instead of the usual against the wind. Payloads behaved better because of extra weight. There were some long flights but on the whole the models drifted far fast.

(*Continued on page* 83)

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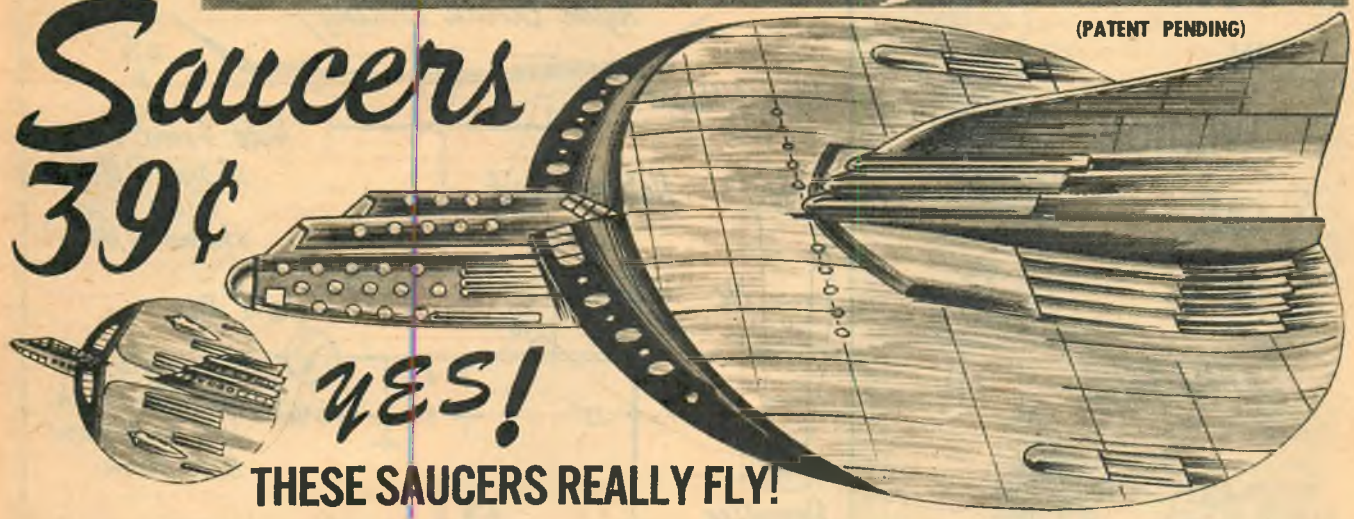

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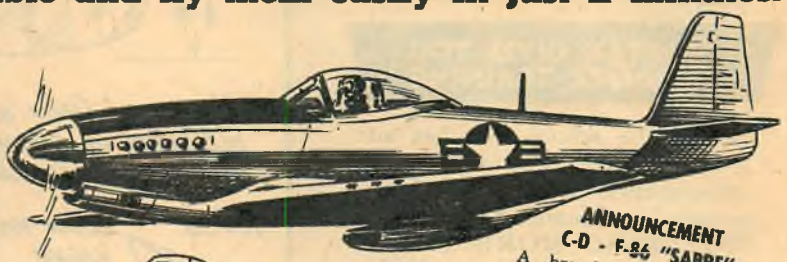

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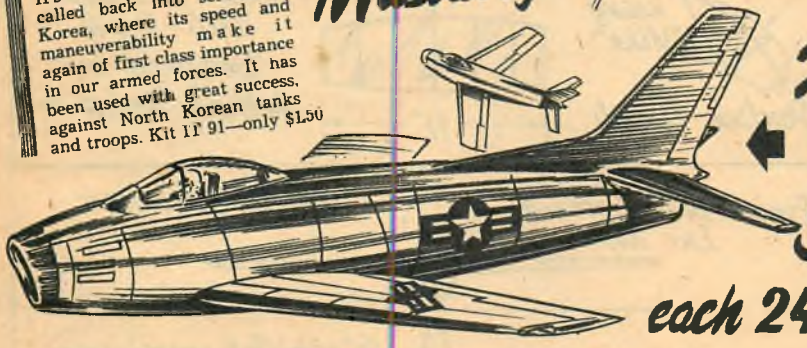
each 24" span



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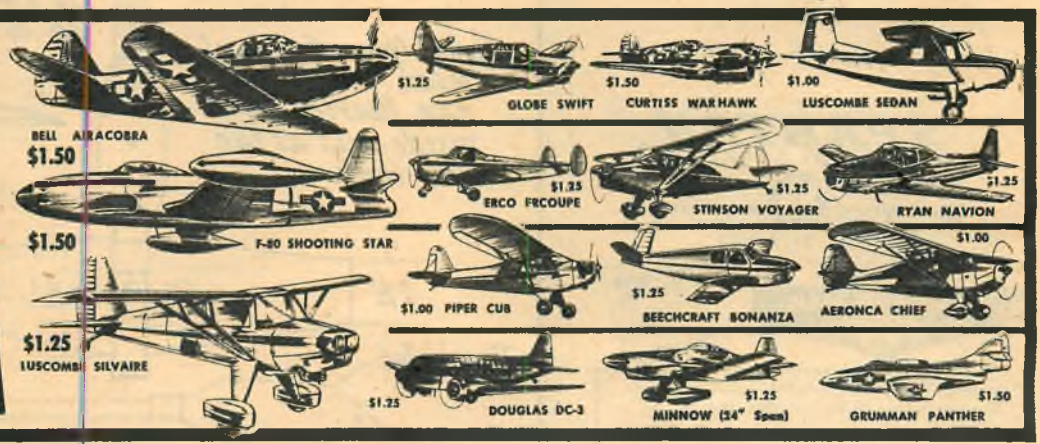

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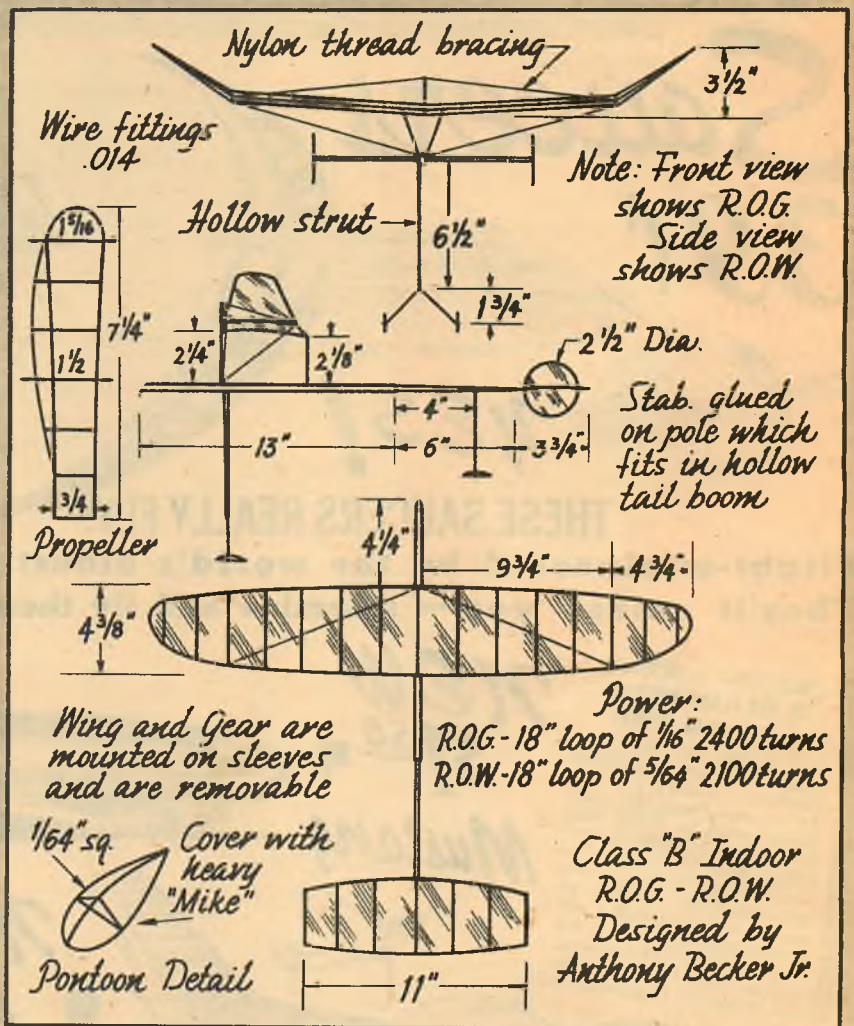
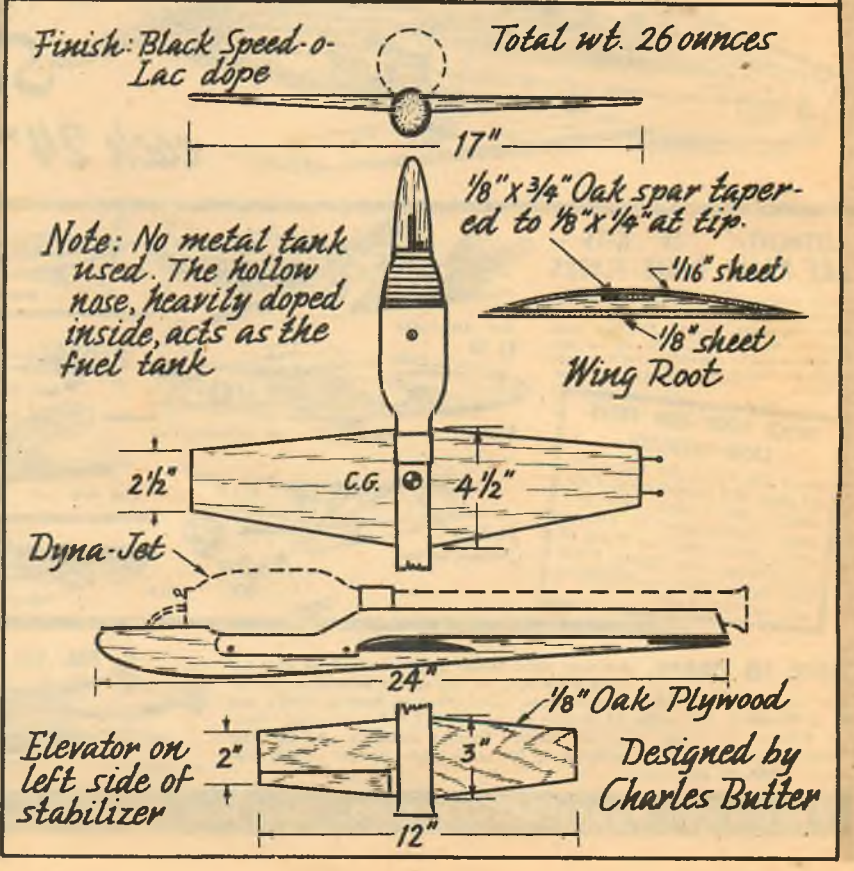
RECORD REVIEW

● "Tony" Becker's indoor microfilm model set ROG record of 22:22.5, ROW mark of 18:51.6. For a time it even held stick hand-launched national high time with 24:16.





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ENGINE "A" was run for only *one hour* on a leading advertised brand of "non-specific" fuel. Notice the amount of sludge, gum and engine varnish accumulated on the piston and in crankcase—even during this short period!

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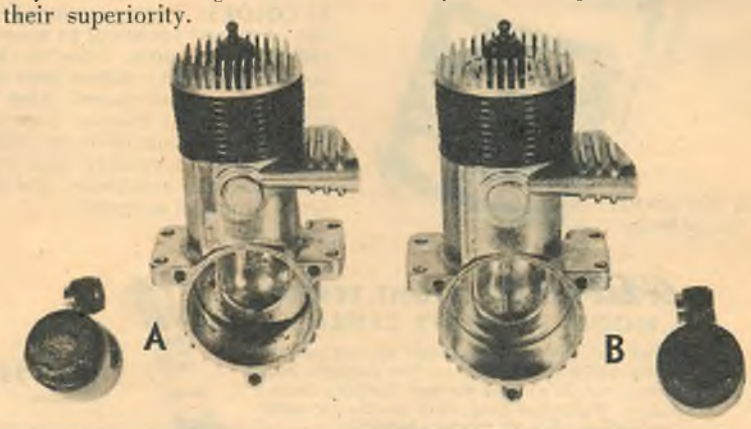
This gum, sludge and engine varnish—plainly visible in crankcase and on piston—show what happens *inside* your engine when non-specific or non-recommended fuels are used. By ignoring this "inside story" thousands of modelers are risking irreparable damage to their engines.



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Zeke

(*Continued from page 23*)

of design. The wings were thick, full-cantilever structure, fabric covered, using the popular elliptical planform that was the current leader. The fuselage was dural semi-monocoque structure. The prototype had a three-strut landing gear. The second machine had a full-trousered leg. The tail was dural structure, fabric covered.

The machine was conventional for its time, many of its characteristics having been dictated by the rigid demands for visibility and performance laid down by the Navy.

None of the machines presented for the 7-Shi competition met the Navy's requirements. Nakajima had presented a carrier version of the old Army 91-type fighter, evolved by the French designer Marie. I don't know what happened to the other machines in the 7-Shi competition. Ours didn't fare too well. The original machine shed a stabilizer during a power dive test. Luckily, the pilot bailed out without any trouble. The second airplane went into a flat spin during an aerobatic test, the ship went in from a double roll. The pilot, Lt. Okamura, got out all right. Despite his bad experience with my first original design, Lt. Okamura stood by me, giving me ideas and encouragement for my further work.

By 1934, the Navy eased up on size and range demands for their carrier fighters and dive bombers. By this time, I had a lot more experience and a few more original ideas. When the call came for the 9-Shi fighter, I conceived long, slim lines for the new ship instead of the thick, stubby ones.

Most of the leading Navy pilots had most of their experience on the old biplane fighters. They conceded the need for speed and climb, but their tactical concept ideas still called for turning combat, the old dogfighting idea. To get the combination of speed and maneuverability into the airplane I desired, the answer was a light airplane.

We retained the fixed landing gear in this design, since the gear constituted only 10 percent of the overall drag. A retractable gear would have raised the top speed from 400 to 410-15 km per hour. We did not figure that the increased weight and mechanical complexity of the retraction mechanism was worth the investment.

The 9-Shi incorporated the use of tension-field spar webs, an idea that was brought to Japan from Rohrbach in Germany by Capt. Wada who later became Vice Admiral and Chief of the Navy's Air Headquarters. This system permitted great lightening of the wing structure, without sacrifice in strength.

The 8-Shi was the first plane in Japan to use flush riveting and was probably the second design in the world to do so. The first, I believe, was Heinkel He-70.

The first 9-Shi was test-flown at Kagamigahara Field in February 1935. It had a top speed of 280 mph, 63 kmph faster than the old 7-Shi and the Type 95 carrier fighter it was built to replace. The fabric-covered Nakajima machines, built for the competition, were sold to the local newspaper, "Asahi," to be used as liaison planes.

The first 9-Shi was an inverted gull-wing job, built without flaps. The ship developed a pitching motion at high angles of attack, due to the turbulent flow at the V-shaped concave part on the upper surface of the wing. Thus, despite the better visibility and the weight saving afforded by this configuration, the second 9-Shi had a straight center section.

The 9-Shi was undoubtedly, as the Americans call it, a "hot ship." A shallow approach was required, and the ship had a decided ballooning tendency on touchdown. It was thoroughly tested under the supervision of Lt. Comm. Yoshito Kobayashi, chief pilot of the

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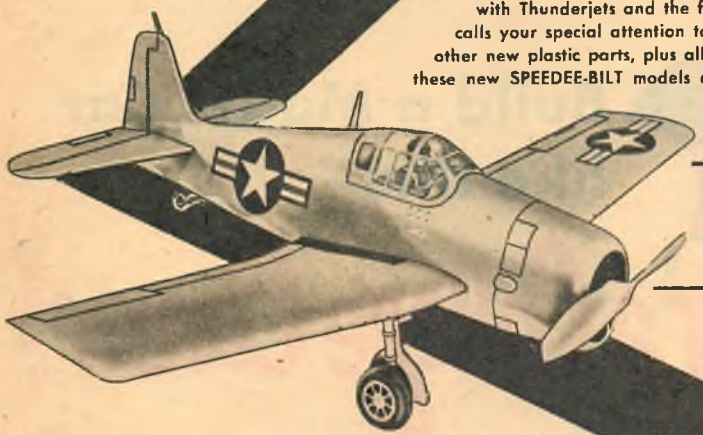

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flight test section. Its virtues were noted, particularly its speed. Its faults were analyzed, and corrective measures taken. Then the ship was used for static testing.

The second 9-Shi was fitted with a split flap and a larger engine, a direct-drive type, since the first machine had developed some trouble with the reduction gear system. This machine suited the rigid requirements of the Navy. On the basis of its performance, the Navy tried to cancel an order for French Dewoitine D-510's. They finally had to take two, which were kept, chiefly for the study of the motor cannon. The noted pilot Marcel Doret flew the planes on demonstration for us. We flew comparative tests against the 9-Shi at Kasumigaura Navy Field, and the Mitsubishi machine proved superior on almost every point of performance.

It is interesting to note that as early as 1927, Mr. Noda, then chief of the wind tunnel section and later assistant manager of Mitsubishi's Nagoya Works, filed patents on a simple split flap. Because the prophet is often without honor in his own country, Mr. Noda's flap was buried under the avalanche of foreign patents that were being purchased. It was several years before the idea was picked up and put to actual use.

The gap between the final approval of the 9-Shi airframe and its final adoption as a military machine stemmed from our inability to produce a suitable powerplant. A number of radial engines, varying from 600 to 800 hp were considered by the Navy. Finally, the smallest unit, the Nakajima Kotobuki 2-1 was adopted because it was the most reliable unit in production. The 9-Shi machine went into service as the Type 96-1 Carrier Fighter (A5M1).

For the time being, the production machine's performance was lower than the prototype's, but it was put into production for use in the Sino-Japanese conflict which began in July of 1937. There were over a thousand of these fighters built; 800 by Mitsubishi and two hundred odd by the Sasebo Naval Arsenal and the Kyushu Airplane Company. Its power was progressively stepped up as better engines became available. What went into actual mass production was a Type 96-4, powered with a 700 hp Kotobuki 41 engine.

During the time when the 96 was the leading Japanese fighter, we had the opportunity of running comparative tests against the Seversky P-35. We purchased ten of these for purposes of test and study, and found that the machines were heavy, unmaneuverable and did not compare with the performance of the Type 96 in virtually all major points. Actual combat against the Gloster Gladiator, the Curtiss Model P-75 and the Russian I-15 and I-16 indicated that for most purposes, we had the superior machine. However, the Navy was not deluded into believing that these tests made us the tops in fighter design; it stood to reason that no country was going to export its best aircraft. For that reason, we were encouraged to improve our design and keep step with the world.

The Navy determined that the next machine, which was to be faster and have reasonably proportionate performance, must retain greater maneuverability than opposing aircraft. In brief, the Navy air strategists wanted speed and climb, but they still demanded a tight turning circle.

These were exacting demands; the sole solution appeared to be in building the lightest possible airframe and keeping the wing-loading as low as possible. We were forced, therefore, to eliminate consideration of such things as fire protection, self-sealing tanks, armor plate and anything else that was weight consuming. The design specifications laid down by Naval Air Command appeared impossible.

We knew that Japan was a nation of limited resources. Therefore, it was important that we build what airplanes we did produce as superior machines. I had laid down three criteria for the design of a fighter; performance, producibility and ease of service. For a small country, performance was the major object—even at the cost of the other two or if need be, the safety of the crews.

It was against this background of virtually impossible demands that we began work on the 12-Shi prototype in 1937. We estimated that it would take three years to produce the plane that Supreme Command wanted. Yet as the war retreated further inland in China, the range of the old 96 was proving inadequate. Even with drop tanks, it was getting more difficult as the Chinese moved the scene of battle further from the coast.

The earliest designs in the 12-Shi project were built around the 875 hp 14-cylinder Mitsubishi Zue-sei engine, swinging a Sumitomo two-position propeller, a Hamilton-Standard design. Later, the Nakajima Sakae, a slightly larger and more powerful engine became available, and was incorporated into the third machine. The bulk of the production Zeros carried this engine. Later, when most of the Zeros were land based, the Mitsubishi Kinsei engine was used.

To achieve the performance demanded by the Navy, weight conservation was the prime order in the 12-Shi design. We built the wing in one piece, thus eliminating heavy center-section fittings. We used the smallest possible fittings to join the wing to the fuselage. The flanges of the main wing spars were made of a new type aluminum alloy called ESD. The fuselage was built in two sections for convenience in storing and for easier transport on trains. The entire structural philosophy of the 12-Shi design was aimed at lightening the structure.

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The Rules Are Simple and Easy

You are eligible to enter the Competition if you live in the United States, and if you were at least 12 but not yet 20 on September 1st, 1950.

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Dept. J

The plane itself was built for minimum air resistance, good control and stability. The wing area was determined on the basis of keeping the wing loading below 21.5 lbs. per square foot, in order to satisfy the take-off, climb and turn requirements.

The 12-Shi model used a new wing curve that was specially created for it. It has the same thickness ratio as the B-9, which had the best polar curve at the time and a similar camber line as the NACA 23012 series with a maximum camber of two percent. The new airfoil was designated as the Mitsubishi 118. Its polar curve was about the same as the B-9, but it had only about half the movement of the center of pressure. This same wing curve was used in the Type 1 land-based bomber, known in the U. S. as Betty.

To prevent tip stall the wing was given a 2 degree washout angle. The tail surfaces of the Zeke were designed to give maximum longitudinal and directional stability. The original planforms were laid out to match that of the wing. This system used a removable tailcone, which, we believed, would be useful for structural maintenance. This system was used in the 7-Shi series fighters. A later experimental model used a flat-sided fuselage, fairing into the rudder. Most of the Zeke series used the tailcone configuration. The vertical stabilizer and rudder on this first configuration was set above the center line and well forward of the end of the fuselage. This plane had fine spinning characteristics. Toward the end of the Zeke run, the flat-sided fuselage was used for the sake of producibility, and was also used on the later types that I designed, the Raiden and Reppu.

The effect of our general effort toward aerodynamic refinement showed up well in our competition with other fighters which emerged later in the war. In comparative runs with the Army fighter "Hayabusa" (Oscar) and "Shoki" (Tojo), our design showed itself to be a prime design despite certain mechanical advantages enjoyed by the newer ones. For example, the Oscar, with its more powerful engine was equal in speed and climb and was a less maneuverable machine. Its gross weight and useful load was the same.

In its general structural features, the Zero and the model 96 were quite similar. Aside from the obvious use of the retractable landing gear and other improvements previously mentioned, the major change was the extensive use of the ESD high-strength aluminum alloy which was developed by the Somitomo Co. This alloy is rich in zinc and chrome, and was generally similar to other high-strength alloys. Sumitomo pioneered this field and their product had 30-40 per cent greater tensile strength and 70-80 per cent higher yield point than the alloys previously used.

This alloy, however, had definite limitations; it has a tendency to develop cracks when rolled or extruded. Heavy extrusions had to be clad heavily with pure aluminum, and proved reliable only when these were furnished by the original supplier, and were usable without bending or drawing. This limited the efficient use of the alloy to relatively small aircraft and in such applications as main spar flanges. I used the alloy only for this portion of the main beams, but they did effect a considerable weight saving.

This philosophy of lightness in structure which characterized the 12-Shi or Zero was basic in its nature; we knew that we were going to have certain problems at the outset, and we were willing to take those chances in order to achieve the result we wanted.

The first Zero was flown by Navy test pilots at Kagamigahara Field in July, 1939, and was accepted by the Navy after 119 hours had been put in on the prototype by the company's personnel and 43 by the Navy. The

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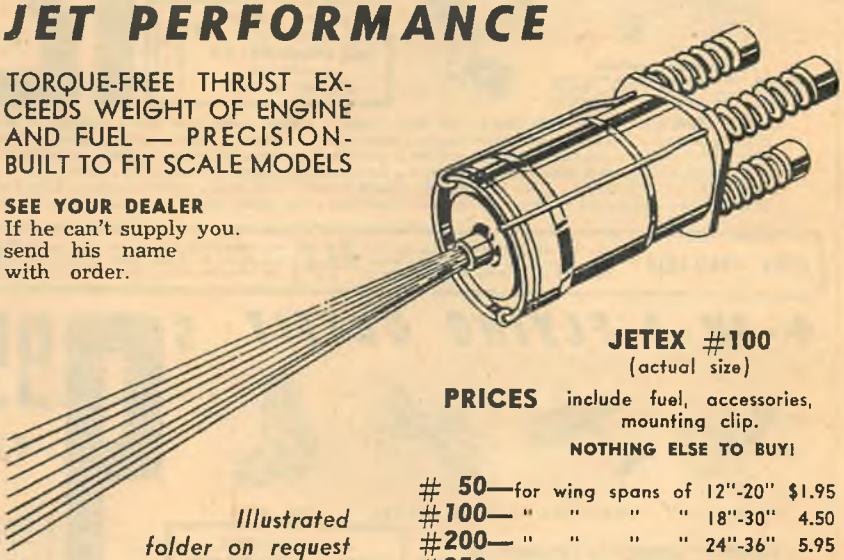

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second machine was accepted in September 1939, and the prototype was used for static testing. There was no great pressure put on the Mitsubishi Company to produce the 12-Shi model until early in 1940, since the old 96 was held adequate for use in the Sino-Japanese operation. As a matter of fact, the first machine to be termed a Zero model was our 12-Shi land-based bomber (designated as Betty by the Americans). Performance tests were held with a number of powerplants. There was a general beefing up of the airplane, especially in the power section, and minor changes were made in the control system to augment maneuverability.

During the trial period, we lost two experimental aircraft. Out of these accidents, we learned that the ESD spars had certain structural limits, and the wing structure, particularly the spar caps, were redesigned. One of the victims was 1st Lt. Shimokawa, who was investigating flutter during a dive. Again there were structural revisions in the wing.

The Zero went into service in China, as previously stated, in mid-1940. However, there were progressive improvements in the design. Actually, no Zeros were produced after August of 1945, the end of the war, although my later designs, the Raiden and Reppu, were then being readied for production.

The Zeke, as the war went on, was altered. Armament and power were varied, armor and self-sealing tanks were added. On one modification the wings were clipped to improve the rate-of-roll, general structural concessions were made to permit better diving speeds. However, we suffered to a great degree from an ultra-conservative topside, who were slow to put into effective practice such changes.

In summing up the defense of the design originality of the Zero, I will give credit where credit is due. As I stated previously, and as virtually all competent airplane designers will hold with me, the business of creating any new airplane is a process of adapting the existing art and science to the problem at hand. For example, I will state that the undercarriage retraction design on the Zero was inspired by the Vought 143, and that the system for fastening the engine cowl and the method of mounting the engine came from other foreign planes. Any designer who fails, out of vanity, to adapt the best techniques available to him, fails at his job. All engineers are influenced by their teachers, by their experience and by the constant stream of scientific information that is placed at their disposal.

In the case of accessories, many of these were built under license from abroad; wheels were manufactured by Okomato Engineering Company under license from Bendix and Palmer, instruments were built by the Tokyo Instrument Company under license, or later in the war, by direct copy from Sperry, Pioneer and Kollsman. Sumitomo built hydromatic propellers under a license from Hamilton Standard, as well as the German VDM propeller. The Nihon Musical Instrument Co. built the Junkers and Schwarz propellers, while the Kogusi Aircraft Company built the French Ratier propeller. We built 20-mm cannon licensed by Oerlikon of Switzerland and copies of the 13-mm (.50 cal.) Browning.

In the matter of communications radio, our material was adequate, but not in the class of the U. S. equipment. Our radar never reached full-scale use, although we had excellent research along these lines. Our powerplant development was consistently behind the U. S. and England. For example, we never developed a successful turbo-supercharger, despite the obvious need for a high-altitude powerplant.

We did do a lot of early work in water-methanol injection, but this was an attempt in the direction of improving power output with 91 octane fuel.

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Probably the major contribution of the Japanese during the war to the field of aviation was the ESD prime material, and the production technique developed for its proper use.

I can claim, in the study of the Zero, its ancestors and descendants, that it was original to the same degree as other planes are, and that while it contains certain special features that were all its own, it serves as a prime example of a special design created to suit an unusual set of circumstances.

Wee Bee

(*Continued from page* 41)

incorporated in the airplane. Wing tips have been added, a new spring landing gear replaces the older one, a larger windshield, cowling and other changes have really improved the little ship. The Wee Bee is powered with a 30 hp 2-cylinder horizontally opposed engine. Its weights are: empty 215 lbs., useful load 200 lbs., gross weight 415 lbs. Cruising speed is 70 mph at level flight, stalling speed with power off, 45 mph. Take-off ground run is 550 feet, and landing ground run 300 feet.

Construction is all-metal. The wingspan is 18 feet and the fuselage is 14 feet long. Landing gear is of the fixed tricycle type, equipped with hydraulic brakes. The nose wheel is steerable.

Ken S. Coward, an aeronautical engineer who is employed in flight research at Consolidated-Vultee, designed the airplane. Others associated with the development of the Wee Bee are Bill Chana, who is currently flying it, Karl Montijo who conducted the early flights and piloted the airplane in the European Air Shows, and James Wilder, a mechanical engineer, who performed the powerplant installation work.

The author wishes to express his thanks to Mr. K. S. Coward for his cooperation in furnishing drawings, photos, and data which made the exact reproduction possible.

Several things should be pointed out before construction is begun. Your workmanship must be light, for 3¼ to 3½ ounces maximum is about tops for the Infant-powered version. All the wood is coated with a mixture of clear dope and castor oil; use a half teaspoon of oil to two ounces of dope. The oil will prevent brittleness and hence retard splintering which is the drawback to sheet balsa design and construction. The one-side mounting of the engine preserves the scale effect of the cowl line and in fact gives better results. In the event that your Infant will not start in this position, be sure to check the fuel line first to see that there is not an air space in the line.

Our model is presented as a control line flyer or a free flight. The power used for the control line model may be either the Torp Jr. or O.K. Cub .049 or .074. The latter can be installed with only minor modifications; for the free flight version use the K&B Infant engine.

Construction is identical in both types, but with a few minor changes for the free flight model, such as added dihedral and larger tail surfaces to insure stability.

As for construction, let's first consider the fuselage. Sketches indicate the extreme simplicity of the fuselage assembly. Select a firm piece of 3/32" sheet balsa for the basic fuselage keel, lettered A. This template is indicated by the heavy lines of the part in the lower right-hand corner of the drawing. Next cut out the fuselage formers from hard 1/16" sheet and cement them to the fuselage keel as shown in the sketch. While these parts are drying, cut also from 1/16" sheet balsa and cement in place templates B, C, D. (In template D cut out the rudder slot location for whichever version you are building). Then cut from 1/16" sheet balsa and cement to template B formers E, F, G. (You will note that they extend over template B.) The reason is, when covering these formers with 1/32" sheet balsa, it will form the outer flange of the cowl.

If you are building the control line model, former F should be cut out to allow gluing in the control line tank. Cement in place three 3/32" sq. hard balsa stringers for the cowl construction. Use only one 3/32" sq. stringer for the control line cowl.

Next, glue in place the piece marked I to the fuselage keel. This part is the main landing gear platform. As the last step before covering the fuselage sides with 1/32" sheet balsa, bevel the bottom of template A to a sharp point to facilitate covering the sides. You are now ready to cover the sides of the fuselage. Starting at former No. 1 and working back to the middle of former No. 5, cover both sides of the fuselage. Then, working from the middle of former No. 5 to former No. 14, cover in the same manner.

Locate and cut out the landing gear slots, both nose and main gear. See sketch.

Covering the cowl is accomplished by cutting from 1/32" sheet balsa the two cowl templates, making sure first to dampen them lightly, and cement in place. Hold the templates in place with pins while they are drying. To finish the cowl detail cement the two 1/32" sheet pieces marked J in their exact location. After this, P1, P2, P3 are glued in place, on the sides of the fuselage. Now add the following details: a strip of 1/32" x ⅛" sheet balsa along the entire length of the bottom of the fuselage, leaving open the aforementioned nose gear slot; two strips of 1/32" x ⅛" x 6½" sheet balsa to the sides, as noted in the sketch, to form the simulated aluminum flange.

Form the main spring landing gear from 32ST Dural, and not from soft aluminum sheet, by laying it out on a strip of ¼" x 6 5/16" in length. Bend to shape and cement to the landing gear platform marked I. Two strips of ⅛" x ¼" x 1 13/16" sheet balsa are used as a fill-in, employing the sandwich method to hold the gear securely. The nose gear strut is bent from 1/16" dia. wire. Next, bend and form the nose-wheel yokes from .046 dia. wire. (Two required.) The nose wheel is attached to the yoke by first inserting one side and then the other; join the yokes to the 1/16" dia. wire strut with copper wire and solder.

This assembly is then wrapped to the 1/16" sheet plywood platform marked H, with crinoline, and cemented generously. When dry, place it in the nose gear slot; next fill in with a small block of balsa, sanding to shape to complete. The nose gear details may now be added. These consist of pieces marked L1, L2, L3. L1 is formed of two strips of 3/16" square balsa. Cement them to the landing gear strut, and sand to a round shape as shown. Just a word of caution. Do not cement this part to the bottom of the fuselage as the nose gear will need a slight play to absorb the shock of landing. This will also apply to L3 which is cemented to L1. Lastly, glue L2 to the fuselage.

To finish the fuselage, cement in place the 1/16" sheet plywood motor mount. Mount the K&B Infant engine with two small wood screws. Add the 1/32" engine cowling. Lastly glue in place the pieces C1 and C2 which are cut from 1/32" sheet balsa. (Two of each are required.)

Now, let's get back to the main spring landing gear. If you are building the control line model, use the standard rubber wheels. For the brake drum detail use two aluminum hubs from a pair of rubber wheels and fill in each hub with a 1/32" sheet balsa strip. Bolt the wheels on the spring gear as shown. If you are building the free flight version, we would suggest making balsa wood wheels to keep down the weight.

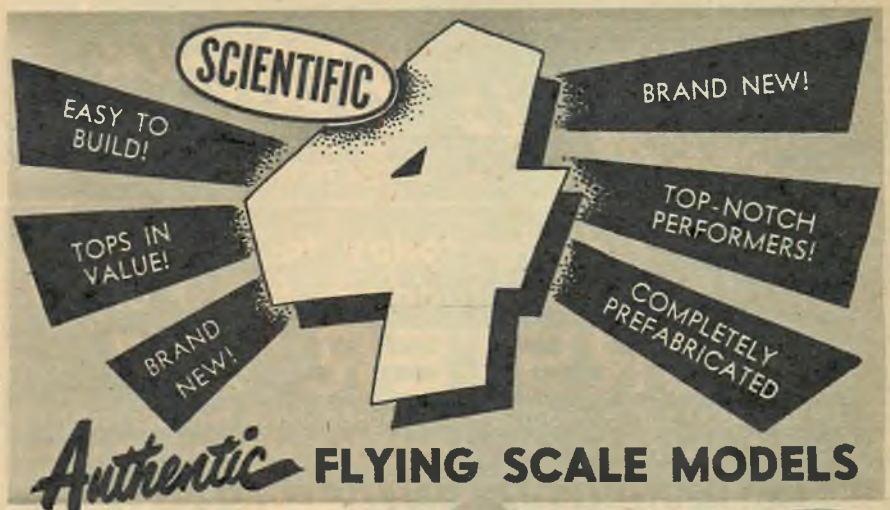
The next step in construction is to build the wing which is made in one piece for the control line version. Begin by cutting out the bottom wing template from 1/16" x 3" x 22⅛" sheet balsa. This is the projected length of the wing template, as the added ⅛" on the bottom wing template will be utilized in forming the wing tips. One important point in both versions is that the undersurface of the wing template is purposely cracked at the last rib location near the tip to form the wing tip. Block up the wing tip 7/16", cement. Now after adding the ⅛" sq. leading edge strip, follow up by beveling the trailing edge to form a joint with the 1/32" top sheet covering. Cut and cement in place the wing ribs, the center rib being cut from ⅛" sheet and the remaining eight from 1/16" sheet.

Next, cement the bellcrank mount to the bottom of the wing template and insert the bellcrank pivot bolt. Add the bellcrank to the opposing side of the wing template and lock with two nuts. Glue in place the three 3/32" spars, and finish the wing by covering the top with two pieces of 1/32" sheet. Last of all add the line guides at their respective locations.

The free flight wing is built almost in the same manner as the control line wing, except that the 1/16" sheet bottom wing template is cut apart on the center line to allow for adding dihedral. Before starting construction, cut ten ribs from 1/16" sheet. Be sure to cut out the slot in the two center ribs to allow for the wing joiner to be glued in place. Then, cut the wing joiner from hard ⅛" sheet balsa. Next, add the ⅛" sq. leading edge strip and the five ribs to the one panel; also, cement the wing joiner in place at this time. Now cement to the ribs the three 3/32" sq. spars. Finish by covering the panel with a 1/32" sheet balsa covering. Build the other panel in the same manner as the first. Finish by adding the correct dihedral by blocking up the tip to one inch and cementing together.

Construction of the pilot bed is started first by cutting from ⅛" sheet the two pieces marked A. Cement on to the wing in their correct location. When dry, fill in between these parts with a piece of 1/16" sheet balsa 1¾" x 2 3/32" long. Next add the piece

(Continued on page 71)



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Lil Rascal

(*Continued from page 52*)

pieces are precision keyed and will fit only where they are supposed to fit. For example, the fuselage formers have tabs that fit snugly into slots die-cut in the sheet-balsa fuse sides. These tabs vary in width and the slot locations vary on the fuselage. If you should manage to fit the wrong tab, the former would project in an obviously wrong manner.

Prefabrication in this case means extensive die-cutting. The fuselage sides, the formers, tail surfaces, even the large wing panels pop out of the die-cut sheet with the pressure of an indoor modeler's finger. The fuselage assembles about as expected, but two clever stunts are involved. First, there is a pilot's seat; this is nothing but two pieces of sheet, die-cut, which cement together at right angles. But put that seat in place and you have an automatic means of aligning the fuselage. The other nifty is the mounting of the formed landing gear wire.

Visualize the familiar upside-down U-shape at the center of a landing gear wire—where the wire generally is sandwiched in. Now extend the U until it reaches the top of the cabin. By attaching the top of this elongated U to the cabin corners, the fuselage is immensely strengthened at the one place many fuselages fail in a bad crack-up.

If the ship is to be flown free-flight only, the tail surfaces cement in place with the stab as a single unit. For combination flying the printed elevators are separated from the stab with razor blade and straight edge; then the usual insert is installed, control horn and nylon strip hinges are added. All these items, as well as ply bellcrank and sturdy pushrod are included in the kit. Just bring your own wires.

The wing is a story in itself. Two die-cut panels, of course, but the mounting, as well as means of maintaining camber and strength, are fairly unique. The top line of the fuselage is so profiled that it matches the camber of the wing. Thus, when the wing glues in place, it's a cinch that it will keep its shape. In addition, there are two ribs per panel, one rib being at the root and the other just beyond the mid-point of the panel. Tabs on the ribs fit into a series of three slots die-cut into the wing.

Common clothespins at the leading and trailing edge clamp the rib ends in place while the cement sets. To insure that you get the right dihedral, there's a die-cut dihedral gauge, a piece of sheet balsa slotted at the right angle and height for the wing tip. You put the wing on the bench, one panel flat against the surface, then stand your dihedral gauge on end, with the wing tip fitting into the slot. Presto, the right dihedral.

This will kill old-timers who had to hack and sand wing struts, but Top Flite gives you finished streamlined hardwood struts. The upper ends fit against the outer wing rib—no going wrong there. The lower ends, which come together as a V, automatically point out the proper balance point for the airplane. At this stage someone really got foxy, for a narrow strip of reinforcement nylon cements to the V end of one set of struts, against the fuselage bottom, then to the struts on the opposite side. Recall how wing struts always pulled loose on flying scale jobs?

The bellcrank assembly consists of a small ply disk that cements to the bottom of the left wing outside the cabin; the bellcrank attaches to this disk with a small screw and washers. For a guide, two sheet metal eyelets are cemented to a piece of sheet balsa, this in turn attaching to the struts. Now, if you wish to free flight, you tighten the screw to hold the bellcrank in one position—this feature should

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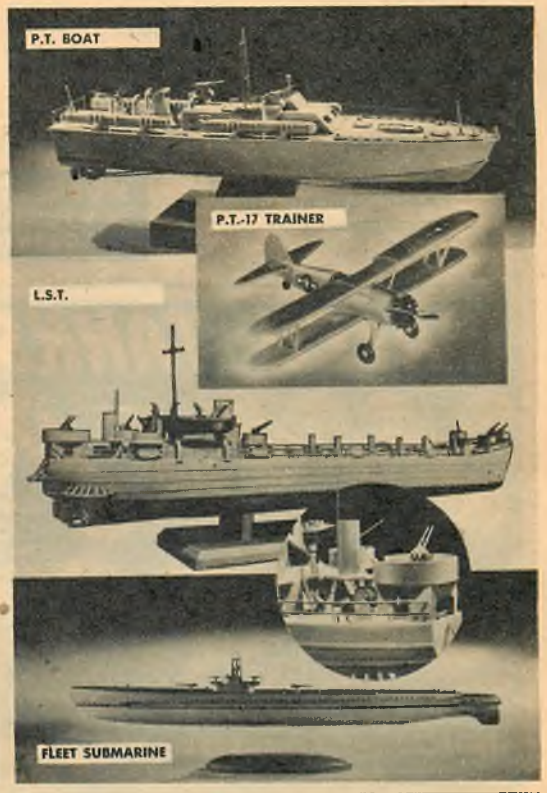

permit toying with elevator trim. For control line you loosen the screw which frees the flippers. The rudder has to be put over to maintain taut lines, brought back to a free flight setting otherwise.

The plan deserves a few words. There's the usual full-size profile, including various nose profiles for the different baby engines. In addition there are 22 helpful perspective details showing assembly, and six more drawings having to do with trim and adjustment.

Balancing is done with lead BB's. The model should be balanced where the struts intersect the fuselage. If it is nose heavy a small hole is made in the rear of the body. BB's dipped in cement are dropped into the hole until the nose rests level when the plane is balanced on a finger.

For free flight, the ship is hand-glided over tall grass. If it dives, the elevators are moved up slightly, and vice versa. Straight glide is obtained by bending the rudder opposite to the direction of circle. For control line, just bend the rudder to the right, or the outside of the circle, after balancing. On 30 to 35-foot lines the model will perform smooth loops. Without wires it really kicks up its heels with an .049.

Next Month

Watch for the big

Christmas Issue

Wee Bee

(*Continued from page 69*)

shown in the sketch of the pilot bed which is a strip 1/16" x 2" long to the parts marked A. This forms a base to glue the bed detail to the end of the 1/32" cowl. For the free flight wing, pieces marked A will have to be trimmed slightly around the wing contour to allow for the dihedral in the wing. Now the wing may be cemented in place onto the fuselage. To finish the pilot bed detail, cut the two pieces marked B from 1/16" sheet. These pieces are to be added last, as they form, not only the remaining pilot bed construction, but also the slight wing fillet which may be seen in the top view of the drawing. Also fill in between these parts with 1/16" sheet balsa and the 1/16" sq. strip to complete.

The horizonal tail surface should be built now and the control system assembled. Cut the stabilizer from 3/16" sheet, carve and sand to a streamlined section. Leave a flat surface on the center of the bottom of the stabilizer for later assembly to fuselage. The elevator can also be cut from 3/16" sheet balsa. Carve and sand to the remaining streamline section. Cut a slot on the center line of the elevator just far enough into it to allow for inserting and cementing in place the control horn which is cut to outline from 1/32" brass sheet as shown in the detail.

Let this piece dry, and meanwhile bend from wire the pins that fit into the 1/16" dia. aluminum tubing which should be added at this time. The tubing runs the entire length of the elevator. This assembly should be cemented firmly along with a strip of silk to hold it in place. Next add the 1/32" dia. wire control rod between the bellcrank and control horn. We've found this arrangement to be successful, but you may install your own system. Cement the stabilizer to the fuselage (zero incidence).

Cut the control line model rudder also from 3/16" sheet, carving and sanding to a streamline shape and offsetting it 3/8" to the outside of the circle. Then, cement the rudder to the scale location (into template D).

The free flight stabilizer and rudder are constructed from 1/32" sheet balsa templates incorporating the use of three spars instead of ribs. Cut out the two stabilizer patterns, and bevel the trailing edges of each pattern

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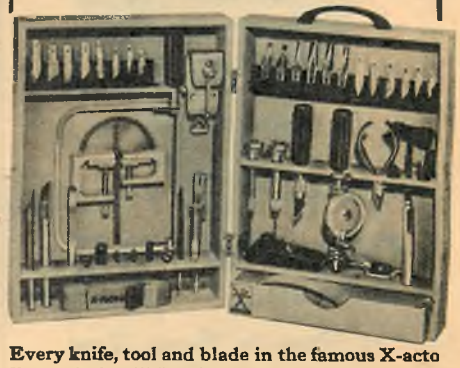

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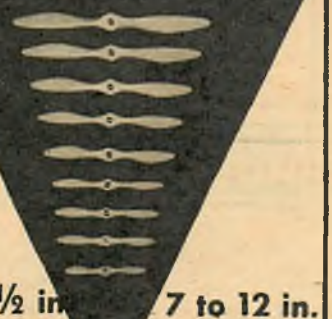

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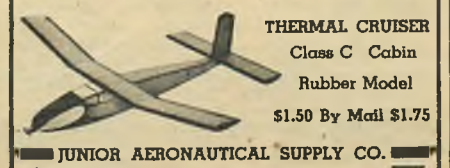

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by sanding lightly to make a joint for cementing the patterns together in forming the stabilizer. Next add the ⅛" sq. leading edge to both patterns; then add the 1/16" sheet spars Nos. 1 and 2. Lastly add spar No. 3 and cement the patterns together to form the trailing edge.

Add the two 1/16" sheet tips to finish the stabilizer. Construct the rudder in the same manner as the stabilizer, adding the 1/16" sheet tip and the bottom 1/16" sheet cap. Cement the assembled rudder into the free flight rudder slot location. Before cementing the free flight stabilizer onto the fuselage, cut a small wedge to be used as an incidence guide for the free flight stabilizer setting. This wedge should be cut to form a ⅛" negative incidence setting. This completed, cement the stabilizer into position.

Finally, sand the entire model to remove any imperfections and fuzz. End the construction by adding the rudder pedals (two) which are cut from 1/32" sheet balsa and cemented to the fuselage at their location.

Finishing details for the control line model are as follows. Paint the entire ship aluminum, which can best be applied by spraying or may be thinned and applied with a brush; add wing numbers and rudder numbers cut from black Trim Film, or laid out first in pencil outline and then filled-in with black India ink. Adding the brake-drum line detail is optional, but this may be constructed by bending to shape from wire winding as shown on the spring gear. The flags on the rudder (we cut them from different colors of Trim Film, but these may be painted on) are, starting from the top, the United States flag, the one representing the Belfast, Ireland, Royal Air Force Pageant, and lastly the flag representing the International Air Pageant in London.

Add the control surfaces, outlined with Trim Film or by ruling in with black India ink. Cut from celluloid and cement into position the windshield. If you wish, the name Wee Bee may be added to both sides of the cowling filled in with red and trimmed with black.

Details for the free flight version are the same as for the control line model, but in order to keep the weight at a minimum, omit painting the model aluminum.

Balance the control line model where indicated. Fifteen foot lines may be used to find out the characteristics of your ship. Be sure to guard against overcontrolling during the first flights as you will find that the Wee Bee will almost fly itself. We used a Kay Sun propeller for best results.

For the free flight ship, balance at its respective location, glide the ship over tall grass. After you have obtained a flat glide start the K&B engine using no more than three-quarter power. Launch with a slight push. For power adjustments a slight downthrust might be necessary.

Bill of Materials—Wee Bee

3 pieces 3/32" sq. x 36" hard, stringers. 2 sheets 1/16" x 3" x 36", templates, formers, wing ribs, spars, etc. 2 sheets 1/32" x 3" x 36," templates, wing covering, cowling, details. 1⅛" x 3" x 36," pilot bed details, etc. 1 pc 1/16" x 1½" x 3" plywood, firewall. 1 pc 1/16" x ⅜" x 2 1/16" plywood, bellcrank mount. 1 pc 1/16" x 13/16" x 13/16" plywood, landing gear platform. 1 pc 1/16" dia. wire 2⅞," the nose gear strut. 1 pc .046 wire 2½" long, landing gear yoke. 1 pc Dural aluminum ¼" x 6⅞," spring gear. 1 pc 1/16" x 6¼" dia. aluminum tubing for control line hinge, wire for pins to fit inside the tubing.

1 strip silk 6¼" long. 1 pc brass ⅜" x ⅝," control horn. 1 pc 1/32" x ⅜" x 1¾" aluminum, bellcrank. .040 piano wire, control line guide. 12" 1/32" dia. wire, control rod. Two 4-40 bolts for spring landing gear. Three wheels, two of 1" dia., 1 of ¾" dia.

Cement, silver dope, fuel proofer, Trim-Film, black India ink, sandpaper, .020 free flight engine, .035-.049-.074 control line engine, small gas tank celluloid, accessories.

PHOTO CREDIT LIST

Page 12—Warren Watson.
Page 23—H. G. Martin.
Page 26—Heron: H. Levy.
Page 27—Flying Wing: Hans Groenhoff; Meteor NF. 11: British Office of Information; Kahru 48: H. Levy; Finnmark: H. Levy.
Pages 34-35-36-37-38—H. A. Thomas, S. Calhoun Smith, D. David Bash, A. L. Lewis.
Page 40—Plymouth.
Page 44—Plymouth.

Torpedo .049

(*Continued from page 54*)

engines started out a short time ago as a mere novelty, but they caught on fast and every manufacturer was in a hurry to get one on the market. As long as it ran well enough to pull a small airplane customers were satisfied. However, recent tests for AT Motor of the Month articles show a sudden jump in the performance and design of the A/2 engines. Many of the tricks used in larger models such as a low stroke bore ratio, special port designs, and lightweight parts are being used to increase speed and power. Mechanical construction is improving with such details as pressure die castings, steel bushings, and many hardened steel parts.

It appears that a complete round of new miniature engines has started, and we will probably hear from most of the leading engine manufacturers in a short time. Half-A classes should show a big advance during the next flight season.

Torpedo .049 Engine Data

PERFORMANCE. Bare weight, less tank: 1.37 oz. Propellers—6/3 wide blade wood plastic, 10,800 rpm; 5/4 wide blade wood, 12,500 rpm; 5½/3 plastic, 13,700 rpm; 5/3 wood, 15,300 rpm. Fuel: any hot blend. Fuel level test: 8" at 12,500 rpm.

DESIGN DATA. Displacement: .049 cu. in. Class: A/2. Stroke: .380. Bore: .406 Stroke-bore ratio: .935. Compression ratio head: 5.8. Compression ratio base: 1.62. Port area intake .0154 sq. in.; bypass .00523 sq. in.; exhaust .0370 sq. in. Ignition: Torpedo glow plug (short).

CONSTRUCTION FEATURES. Bearings — crank shaft: aluminum; crankpin: aluminum: connecting rod, ball joint: aluminum & brass.
Parts all machined from bar stock—no castings.

.049 K&B Torpedo Parts Illustrated

Part	Material	Size (in.)	Wt. (oz.)
1. Crankcase	Aluminum		.28
Needle valve body	Brass		
2. Glow plug	Steel	¼-32 Thread	.10
3. Cylinder head	Aluminum		.05
4. Cylinder spacer	Aluminum		.01
5. Cylinder	Steel	.406 bore x .863 long	.31
6. Crankshaft	Steel hardened & ground	.218 dia.	.19
Drive washer	Steel	.558 dia.	.02
Front washer	Aluminum	.386 dia.	.01
Nut	Steel	8-32	.02
7. Needle valve	Brass	2-56	.03
8. Glow plug washer	Copper		.01
9. Mounting flange	Aluminum	13/32 dia.	.04
10. Piston	Steel-hardened, ground lapped	.406 dia. x .367 long	.14
11. Back plate	Aluminum	¾ dia.	.09
12. Tank bolt	Steel	4-40	.03
13. Tank		¾ dia. .. 13/16 long	.14
		Scale weight	1.54
		Less tank	1.37

DH Moth

(*Continued from page 48*)

three machines the typical DH landing gear, vertical tail, and planform shapes. All these things, and the many other distinctive features, like the long exhaust pipe that carried fumes well behind the cockpits, and the thick, center-section gas tank, have been reproduced faithfully in our model. The drawings are accurate enough for competition scale models, having been scaled from a three-view that appeared when the Moth made its first test flights.

The plans present complete information for making either a rubber-powered flying scale model or a U-control job for either the Cub or the Baby Spitfire. Somewhat on the large side for an Infant, the Moth should fly on new engines, smaller than the .045-.049, which were promised when this was written.

Although the planes are identical in size, all the design factors important to top performance in either version have been considered. Dihedral and tail surface size vary. So do wing construction and other, less important, details. If you are handy with the drawing tools, you may be interested in making a free flight one-half again this size for the Cub, featuring the rubber-model type construction; or a big-engined control job with its appropriate frame.

Before starting fuselage construction be sure you have located on the plans the details pertinent to the type you select to build. For example, the front end of the

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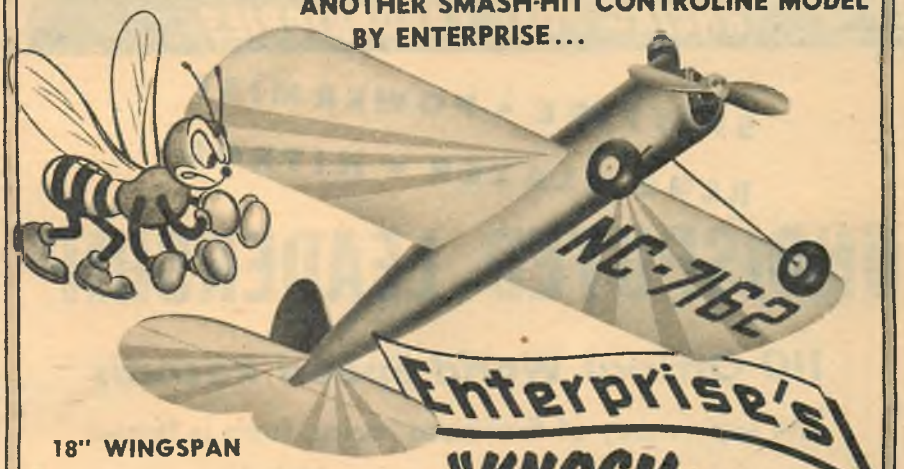

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fuselage is altered to take the gas engine, the rubber job having the conventional plug for winding.

The fuselage sides are cut from hard 1/32" sheet balsa and are assembled onto the 1/16" medium grade sheet-balsa formers. Note that sharp breaks in outline (see top view) are achieved by scoring the outside of the sheet sides. Start with formers C and D, then score sides, and bring in toward former A at the nose, and G, near the tail. Finally, connect together the two sides at the rudder post, and slip in the remaining formers. The rounded top of the fuselage consists of two pieces of 1/32" sheet (select pliable wood, easy to bend).

The front piece, which ends behind the rear cockpit, is easily installed, but the rear portion, due to its taper, should be soaked for ten minutes in hot water, then wrapped around the fuselage with strips of cloth and allowed to dry. It is advisable to make this wood oversized, then rule it off, and trim, before gluing it in place, once the shape has been permanently assumed.

However, before closing in the fuselage completely, be sure to install the landing gear, bellcrank, rear rubber peg, tank or other interior fixtures, depending on the model selected. The landing gear is assembled from three pieces of .045 wire, the joints wrapped with fine wire, and neatly sweat-soldered. It will help to install the two main struts pieces in the fuselage before binding the three sections together for soldering. Note that the rear piece is bent to be sandwiched in with sheet balsa fill. This is clearly shown on the detail of the gas model Moth.

Incidentally, note the position of the bellcrank mounting block and the manner in which the center-section struts enter the fuselage. These struts are virtually indestructible, being made of 1/16" dowels, faired with balsa. Make up blank lengths for the struts before streamlining them and, where the struts enter the wings, sharpen the ends of the dowels to enter the wood.

The bottom of the fuselage is a single piece of 1/32" sheet with the grain running fore and aft. Place the fuselage upon the sheet and trace the outlines. It is best to let the wood extend on either side, though, and then trim it off when the cement has set. Special details on the plans show the construction of the fuselage, where it supports the tail, and the construction of the gas model nose. The latter consists merely of a soft bottom block and two sheet sides, which follow the contour of the firewall behind the engine. The bottom corners are rounded off once the cement is dry.

Sand lightly the finished fuselage, then coat with Testor's sanding filler and sand again with wet-and-dry paper. If you have selected the gas model repeat the process to gain a good filled base for the final paint job.

As to tail surfaces, note that larger areas, with built-up construction on the stab, are specified for the rubber job. The gas model surfaces are true scale. If making the rubber version, pin down the stabilizer parts on wax paper as they are cemented together. Materials and patterns are supplied on the plans. After the usual sanding to round the leading edges, taper the trailing edges, and remove all cement bumps, cover each side with one piece of light rubber tissue. This may be water doped, held under weights to insure against warp while the paper stretches, and then doped twice with clear that is cut half and half with thinner.

The vertical tail for both versions is made from sheet, although the larger rudder is made of 1/16" sheet and is plasticized with dope that has had added to it a few drops of castor oil (per ounce). Use material that resists bending. The vertical tail for the control version is ⅛" sheet to resist breakage in flip-overs. Note the cross section indicated; also the hole cut through for the one-piece elevator. The stabilizer for the gas model likewise is ⅛" sheet. Cloth hinges are used as shown, wth a reinforcement of 1/16" dowel across the middle, and a bent-wire horn. Note the offset to the outside of the circle in the control-line rudder. Sanding filler is used on all sheet surfaces with a final wet-and-dry paper sanding.

Depending on the ship to be built, wing construction differs radically. The rubber-model wing is conventional, with a 3/32" sq. spar on top, forward, and on the bottom to the rear. Only material not a standard size is the trailing edge which should be cut from a piece of hard 3/32" thick sheet balsa. The easiest way to build these wings is to assemble each panel on the plan *without* the thick root ribs that butt against the deep center section. When ready to install dihedral, put in the ⅛" hard joiner piece, the ⅛" thick center-section trailing edge, the ⅛" sq. leading edge of the center section, the two 1/16" center section ribs; only then install the two heavy root ribs. When the wing is almost finished the 1/32" sheet covering of the center section may be added. The tips are ⅛" sheet of medium hardness; note, also, that the ribs to which the outer struts will be cemented are from ⅛" sheet.

The bottom wing differs from the top in

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that the center section is omitted, the thick root ribs butting directly to the fuselage sides. An old trick to maintain your wing mounting is to work a thin piece of music wire through the fuselage at the leading edge of the lower wing panels, then bend over the ends to sink into the wood of the edge. Once cemented, this wire prevents a wing-tip crash from pulling back a panel. Or the wire may be cemented directly across the fuselage bottom if you don't mind the appearance.

To cover, use four sections of rubber model tissue, one for each panel top and bottom. The grain should be chordwise because the top spar will prevent the tip pulling up. Water-spray and give two coats of clear dope, cut 50 percent with thinner. To mount the top wing, make four small holes *precisely* located to take the pointed ends of the center section struts. Cement the ends of the struts and work the wing in place. Align carefully by looking at the ship from the front and the top. In joining the wings with the interplane struts, scrape away a tiny piece of covering where the joints will be made. Note the assembly sequence on the plan. A wood-to-wood joint is vital, or the struts will tear the covering to ribbons in a crash.

Construction of the control wing is simpler still. After some experimentation with the model, it was decided in the interest of appearance and durability to fill in the top surfaces of all panels with 1/32" sheet balsa. The finished wing can be paper covered, top as well as bottom, to provide a well-filled, smooth base for the finish. Note, however, that the edges are of heavy, wide material, as is usual with U-control design.

The leading edge can be cut from 3/16" sheet (or from ¼" sheet if the dimensions are turned around) if the hobby shop does not stock 3/16 x ¼." Tips are from soft ¼" sheet. Ribs are 1/16" with the exception of the ⅛" thick ribs that take the struts. The 3/16" trailing edge may be obtained from triangular stock but *insist* on hard balsa if you would avoid a "hook" from paper pull. The sheet covering is on the top surfaces only and requires that the ribs fit properly 1/32" below the tops of both leading and trailing edge. Detailed procedure is given on the plans for assembling the wings and struts to the airplane.

Flying wires and landing gear bracing wires were not installed on the original model due to the difficulty of keeping a taut rigging once the plane begins to take abuse. Position of the bracing is given.

There is nothing to say about the mounting of the Cub engine except that the nuts will have to be cemented to the rear face of the nose bulkhead B. One improvement that could be made would be to face the portion of the 1/16" balsa face of B with small plywood pieces (1/32") to prevent the nuts from crushing the wood if the screws are pulled up very tight. Or shim brass could be faced to the bulkhead and the nuts sweat-soldered to it.

If mounting troubles are encountered, remove a small portion of the sheet-balsa nose siding and replace it carefully after the engine is in position. If desired, the nose fairing can be left off after the fashion of most free flight models with the engine mounted on the bare firewall. Comet fuel-proofer was used over the entire fuselage, the center portions of the wings, and inside the nose compartment to minimize seepage of fuels into the wood.

The rubber-model nose is a plug that may be pulled out for installation and winding of the rubber. Note the bent-metal bearing inserted into the nose block to reduce friction of the turning prop. Bend the hook first, then slide on the block, friction washers, and the prop, and finally make the winding hook. Cement the bearings, including the one against the back face of the prop hub, and the winding hook to the front of the hub. Power is six strands of ⅛" T-56 flat rubber. This may be overpowered, but four strands leaves something to be desired, unless your construction is very light.

The original model was trimmed with red. Use masking tape for clean lines. After the tape is put down, dope over the edge with clear dope and let dry, then do your painting. Allow time to dry, avoiding ragged edges from impatient removal of the tape. The letters may be cut from Trim-Film or black tissue. These letters are the same as those on one of original real Moths. The full-scale Moth usually had a solid color on the fuselage but plain fabric on wings and tail. The dummy engine block and exhaust stack may be black. One way to bend the metal tubing for the stack is to fill it with sand and plug the ends. This prevents buckling. Windshields are cut crescent shaped from light celluloid.

In flying, for control-line use .008 wire of fairly short length as, say, 20 feet. The Moth flies in counterclockwise circles. For rubber, it will be necessary to add ballast to the nose. The ship is trimmed as built for control line but the position of the center of gravity shifts rearward when the

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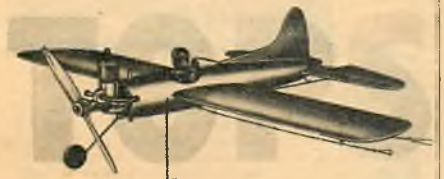

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rubber prop replaces the Cub and the rubber is strung along inside the fuselage. A number of inches of strip solder may have to go into the nose but don't let this alarm you. The proper glide will be somewhat fast without any trace of a swoop. Hand glide the Moth over tall grass if possible until enough ballast has been added to bring about an approximate trim. Now wind on 50 turns and hand launch over a "hospitable" surface to find if any stall remains.

If the glide is okay but power flight stally, put in downthrust until the power flight trims out; don't add more weight. If slight stall remains it may be taken out by making the model turn, a desirable feature anyway. It is desirable to make the ship turn to the left under power. If straight glide is wanted and a power turn is not natural in your airplane, resort to a little side thrust. If the turn seems too tight under power, either make the ship glide to the right with rudder, thus alleviating the power turn, or add a bit of right thrust.

Link Instructor

(*Continued from page* 33)

Radio, over."

"Link One, over the cone zero five at three thousand feet, request landing instructions, over."

"Link One, New York closed. Proceed to Mitchel field at 2,500 feet, over."

The student proceeds. Soon he requests the "copilot" to tune in on Mitchel radio for instructions. In they come . . . "You are cleared to make an instrument approach. Ceiling five hundred feet, visibility two miles, altimeter setting zero zero five. You are only ship using the range. Descend to two thousand feet and report over the cone one two, over."

The student completes the approach, and when over the field at minimum altitude requests landing instructions. He sets her down, and that ends the problem.

Instrument flying without leaving the ground is no gimmicky approach to solid training. It's really not exactly a substitute, except that Linking saves lots of airplane time, and consequently large sums of money. "Here," says Mose Harvey, Lockheed's instructor, "students learn to ignore bumps and other physical sensations. They correct mistakes only as they are told to do so by their instruments."

George White, as well as many others who have found new careers in the training field, knows that an instrument approach and maneuvering down through thick stuff to a clear landing require many complex, coordinated movements. Actually the pilot becomes a switchboard operator facing a panel filled with meters. He needs long, careful instruction before he is qualified to handle and pedal those controls. And that's exactly why the forces of feeling and acceleration are omitted from the Link. He flies, but doesn't go anywhere.

How do you become a Link instructor? First, you need sound, solid training as a pilot—the kind offered by the schools. Next, you become far better than average on instruments in actual flying. In a CAA school, you take rigorous examinations to qualify. For employment by an aircraft company, you may need only an instrument rating, plus a record that satisfies the chief pilot. Some instructors may never have flown an airplane, a quality upon which most employers would frown. Elsewhere qualifications vary with the job.

As a student you would find the first four hours under the hood tedious. Later you will know why. Your reactions have not yet reached the automatic stage of response. But once you begin to make the instruments read as you plan them to do, you are over the hump in the training phase. "At that moment," George insists, "I have the makings of a qualified instrument pilot before me."

With his rich background of experience, George doesn't care where he is asked to bring a passenger liner down, so long as he has maps and radio aids available. It is because all operators know their pilots must keep on the instrument ball that more and more Links are being installed. Bonanza Airlines, headquartering at Las Vegas, Nevada, flies a quintet of DC-3s over a rough 800-mile route between Phoenix and Reno. Now flying daytime contact, soon the line will be certificated to fly at night. In a hangar at Las Vegas sits a Link, with Louis J. Arpin in charge of both Link training and ground school.

Arpin offers important suggestions to pilot candidates, and especially to those who may themselves become Link instructors.

"Get a good working knowledge of mathematics," he urges. "Stress plane and solid geometry, for you will be working in three dimensions. It takes a good imagination for an instructor to set up problems. Each problem should be so presented that the

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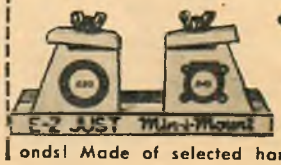

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student learns one new thing every time he 'flies.'

"Where does mathematics come in? Say you're up beam bracketing. I introduce a 30-mile cross wind, and the Link begins to drift. Or you are cruising at 160 indicated and the cruise is cut to 120, where the drift angle becomes greater. That's exactly the sort of thing that happens to airplanes. Not too simple to figure out when you're under the hood, or really flying in a storm, unless you know how."

George sent a new student "up" for a half-hour orientation flight the other day. When the youngster stepped down, his first words were: "The Link doesn't feel like a plane."

George concurred, happy because what the boy said is true.

"When one flies by instruments," he told the student, "one merely controls the instruments. The plane will take care of itself if the instruments read correctly.

"Only two things control an instrument flight," he went on, "and they are the attitude of the plane and the power setting. That's all you need worry about for either take-off or letdown."

Teaching certainly keeps George on his mental toes. He constantly studies latest instruments and radio facilities, for he has to simulate the latter and perhaps even build and install required facilities at his control desk and in the trainer.

George is an old hand at the game now. He has been instructing since he left an airline four years ago because of deafness. He knows from experience that Link training and flight instruction should be closely coordinated, that both instructors should work as a team. Both may be good, yet if their techniques clash the student will fail to gain maximum good from either. Both instructors should dwell on one important point: what he sees is all important, what he feels should be ignored!

George considers airline pilots to be little short of marvelous. First pilots must take an hour every month, copilots two hours monthly in the Link. In addition, they undergo instrument checks during actual flight. George is pretty proud of the role played by his fellow instructors—as well as by himself—in helping assure an excellent safety record.

Were you to accompany a first pilot approaching Los Angeles airport on a TC flight from La Guardia, ceiling five hundred, ground visibility one mile, you would find yourself in one of two quadrants, perhaps 3,000 feet up. In comes the A signal. Gradually the signal's intensity diminishes. You know you are flying away from the station.

In the Link, or in an airliner, the procedure is the same. You fly a heading of 105 degrees, so you know you are in the northwest quadrant. You make a 180-degree turn, heading briefly toward the station, then a 90-degree turn. When the signal changes, you know which leg you are crossing. On you go . . . a high-pitched hum says you are over the station . . . one dash identifies the Downey marker . . . swing left, let down to 1,500 . . . fly ILS coming back . . . the vertical needle reports you are on the localizer . . . double dashes reveal the outer marker . . . switch to VFR for final approach . . . cleared to land. . . .

It is very mysterious to the passengers. To George, and the thousands of pilots who train in Links, instrument flying has become a precise science. If George does his work well, the boys in the cabin will perform likewise, thank you.

George never enjoys the thrill of some exploit in the air, for he's sitting quietly on the ground when a distant plane comes down safely through soupy stuff to hit a ribbon of concrete smack on the nose. He gets it second hand, perhaps days later. Then he may say to himself, "My training guided the pilot's hand."

To George, such reports afford almost as much satisfaction as that slip of paper that flutters into his hand twice a month saying, "Pay to the order of George White."

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Screamliner "60"

(*Continued from page 44*)

in subsequent operations. The location of the spar in the wing is correct for use with the McCoy 60. If a Dooling is used, move the wing spars 7/16" toward the trailing edge, so that the control mechanism will clear the Dooling intake tube. Furthermore, if wing spar is moved rearward, it is advisable to relocate rear tip guide to the front edge of the spar. Make sure the 3/32" x 7/16" x 16" hardwood spars fit precisely into the wing rib notches.

Preferably on a flat surface, assemble ⅛" sheet balsa ribs on lower spar, and add top spar and 3/16" x 7/16" x 16" balsa leading edge. After this unit is dry, plane and sand leading edge to match rib contour, as shown in wing cross-section on drawing. Add top wing sheet (1/16" x 4¼" x 16" balsa), balsa wing tips, and ⅛" O.D. aluminum tubing tip guides. Shape inboard wing tip block to final shape (do this now as it would be more difficult after control leads protrude).

Slot ribs of inboard wing for control leads; consult drawing for location of these slots. (This operation is most easily accomplished with a slotting saw mounted in a hand power tool). Attach .030" dia. music wire control leads to previously assembled control mechanism, feed through from center section, and secure control-plate mount with two ½" 4-40 round head machine screws.

Make sure control mechanism *operates freely;* do not tighten mounting screws so as to squeeze spars together, restricting control-plate movement. Solder nuts to mounting-plate bolts. Now add lower wing sheet (with a cut-out to clear control mounting plate); allow to dry *thoroughly* (enough for cement shrinkage to occur) and then sand entire wing assembly smooth.

On original Screamliner, the only removable fuselage section was the cowl; this made a very rigid airplane which took much abuse. However, accessibility to the tank was sacrificed for this rigidity, a sacrifice which may be made only if the builder is sure of his tank design and workmanship. If the builder desires access to the tank, the ship may be built to come apart conventionally along the thrust line. If so, alter the following instructions accordingly.

Lightly cement together two pieces of hard balsa, one 1¼" x 2½" x 21" (bottom) and the other 1⅝" x 2½" x 21" (top). Bandsaw fuselage to top and side profiles. Mark centerlines on top and bottom of fuselage block. Cut out cowl base from ⅛" bass sheet, and cement lightly to fuselage block, noting cowl offset. To cowl base securely cement band-sawed cowl sides and then add cowl dome piece. When dry, carve and sand entire fuselage to final shape. Split fuselage halves apart where lightly cemented; also split cowl from upper fuselage half where cowl was lightly cemented to upper half.

Recess the fuselage lower half to accommodate ⅛" plywood engine mount. Hollow out engine recess and rear fuselage according to the drawing. (Be sure to leave solid the separation between the compartments). Sand the compartments smooth. Drill engine mount, solder engine mounting nuts to tin plates, and cement mount in position with plates in place beneath.

Cut fuselage upper half along line ABCD (see drawing), and cement forward piece securely to cowl. Hollow rear piece according to drawing. Mark lines CEF and FG on both sides, then cut along these lines. Cement wing in place, making sure it is at *0 degrees incidence.* Carve block previously removed to fit on top of wing and cement in place, after locating rear cowl hold-down plate (.040" 24ST aluminum, tapped 6-32). Add plastic wood wing-fuselage fairings.

Build stabilizer (⅛" plywood) and elevator (⅛" bass) in conventional manner, and cement to upper fuselage half. Add control rod (1/16" dia. music wire) and a plywood cross-piece in front to hold front end of control rod in engagement with control plate. Rear end of control rod may be held in engagement with control horn by lower fuselage half.

It is strongly recommended that gauze or dress facing be cemented to inner fuselage surfaces, with particular emphasis on making secure the engine mount.

Install tested tank, and cement upper assembly to lower fuselage half, making cut-outs where necessary for filler and vent tubes. Add 1/16" dia. music wire tail skid. Cover wing and entire outer fuselage with silk, or cover wing with Silkspan and entire fuselage with dress facing, starting with a strip centered on the upper half-lower half joint. Fit cowl to engine, and then cover this part with reinforcing also.

Apply a fuel-proof finish. Add .040" 24ST aluminum skid strip. Also, fashion front cowl hold-down ring from .040" 24ST aluminum; tap one end 4-40 for front skid bolt, and other 6-32 for front hold-down bolt. Cowl hold-down ring must be installed

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after engine installation, and must be removed before removing engine.

Note: A series 20 McCoy 60 was used in the original Screamliner 60, with the series 20 backplate assembly replaced by the less sensitive old style assembly; this change allowed unfaltering engine operation under the rapid acceleration imposed by hand launching.

Sailplanes

(*Continued from page 12*)

RJ-5 super-sailplane with a toothpick wing. This was the ship's first appearance at a meet, having been finished just in time to be rushed down to Texas. Though practically untried, in Dick's hands it proved to be everything claimed for it. His last flight of 337 miles to Odessa, Tex., cinched for him the title of National Champion and established two new U. S. National records for goal and distance.

The brand-new Prue 215 flown by Lyle Maxey of California from a reclining position, also showed that its designer Irving Prue had good ideas for a small, light sailplane. Maxey's best distance was 220 miles to San Angelo, Tex.

Considerable interest was shown in Ted Nelson's auxiliary-powered sailplane, Hummingbird. It is the most completely equipped craft we have come across. The cockpit appointments are superb seats provided with foam rubber cushions of mauve tone, chair-type parachutes with easy slip-on harnesses, excellent instrumentation, radio and plenty of leg room. It was our pleasure to fly the ship during one of the daily meteorological guinea-pig flights, and this proved one of the most exciting experiences of our flying career.

The ship handles beautifully. Trimmed out to desired speed it will stay there indefinitely, and if displaced by abrupt stick movement, will return without oscillation to its original attitude and speed as soon as the stick is released. So unusual was this characteristic, that in the beginning we had a tendency to vary the airspeed considerably in circling flight by misuse of the stick, until it dawned upon us to leave it alone as far as fore and aft pressures were concerned. From then on everything went handsomely. The small 40 hp two-cycle engine gets the Hummingbird quickly off the ground and gives it a nice climb. Although it turns up in excess of 4000 rpm, the noise in the cockpit is not objectionable. The Hummingbird, which was entered in the contest as a full-fledged sailplane and flown by Les Arnold and Harry Perl with boss Nelson acting as a crew chief most of the time, used an ingenious method to enable meet officials to judge when the engine was shut off and retracted following the take-off and climb to the altitude from which soaring was to start. Its recording barograph, carried by all participants, was equipped with a solenoid starting switch wired to the plane's ignition. While there was juice in the lines with the engine running, the barograph was shut off. As soon as the engine was stopped and the ignition switched off, the solenoid started up the barograph. Re-starting the engine in the air automatically stopped the barograph from recording.

For the first time, this year saw active contest participation by women soaring pilots. Four girls vied for the honor of U. S. National Feminine Soaring Champion. Ruth Petry of New York, member of the Metropolitan Soaring Club, earned the title for the second consecutive year. Second place was taken by Virginia Bennis of Hicksville, N. Y., Feminine Soaring Champion, 1947. Third honors went to Margaret Downsbrough of Morristown, N. J., who also earned her Silver "C" during the meet. Fourth was Betsy Woodward of El Mirage, Calif.

The two Sundays falling during the contest were non-competing days, and given over to spectators who thronged the airport. An elaborate air show was conceived for their amazement under the direction of Herman Stiglemeier of California during which the glider pilots engaged in every type of aerobatics and precision flying imaginable, including balloon busting four feet off the ground, rope braiding by three sailplanes in tow, single, dual and triple aerobatics, parachute chase and snake dance by as many as 25 soaring machines. Also on these occasions a National aerobatic contest was held which was won again by Kim Scribner of Pan American Airways with his roll-on-tow act, outside loops, square loops and climbing rolls. Second place was taken by California's Raymond Parker flying a midget sailplane, "Tiny Mite."

Quite a number of VIP's visited the Nats. First to appear was Delos W. Rentzel, Administrator of the Civil Aeronautics Administration who was flown from Fort Worth to Grand Prairie by Wally Wiberg of the Texas Soaring Association in his two-place tandem LK. Mr. Rentzel was extremely interested in the sailplanes. (Looking over

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our spacious side-by-side Pratt-Read he commented: "This looks like a very companionable machine.") Others at the meet were General Carl "Tooey" Spaatz, Gen. Lucas V. Beau, National Commander Civil Air Patrol, and Dr. Alexander Lippisch, noted aerodynamist who gave a talk on sailplane aerodynamics during the joint meeting of the Institute of Aeronautical Sciences and the Soaring Society of America. Also present in addition to other celebrities were a number of Swiss, British, Canadian, French and Portuguese air cadets and their leaders who were visiting this country under the CAP Cadet Exchange program.

The entire meet was organized and conducted by the Texas Soaring Association under the direction of its president, Jon Carsey, and Hal Cronkhite who acted as contest director. It was a tremendous undertaking, beset with many headaches and plagued by an entire first week of bad weather which kept these powerful Texas thermals in abeyance. The second week, however, turned bright and fair, and the loud noises heard over Texas prairies were thermals popping all around. No sound could have been more welcome.

A note of humor was added to the serious procedure of prize distribution at the meet's end when the Air Trails prize, a much-valued 300-foot Nylon towline awarded for best two-place sailplane performance was won by a team which had no use for such a device. The recipients were Ted Nelson, Harry Perl and Les Arnold, whose Hummingbird qualified for the award. The presentation was greeted by a roar of laughter, but Nelson quickly explained that they have also a Schweizer TG-3 sailplane which will appreciate the prize and try to prove worthy of it.

Probably the most enjoyable evenings in Texas were those spent on the spacious lawn of Jon and Mary Carsey in Dallas, who gave a number of parties for the visiting pilots and crews and whose open-hearted hospitality did much to relax us all from the strain of competitive flying.

SSA Officers. New officers of the Soaring Society of America, elected during the 17th National Soaring Contest are Jon Carsey, Dallas, Tex., President; Ralph S. Barnaby, Philadelphia, Pa., Eastern Vice-President; Dr. W. Klemperer, Los Angeles, Calif., Western Vice-President; Paul A. Schweizer, Elmira, N. Y., Secretary and Benjamin Shupack, Malverne, N. Y., Treasurer. Eugart Yerian, Memphis, Tenn., was elected editor of Society's publication, "Soaring."

—ALEXIS DAWYDOFF

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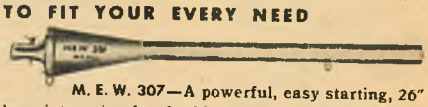

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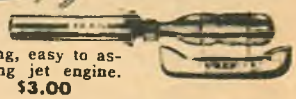

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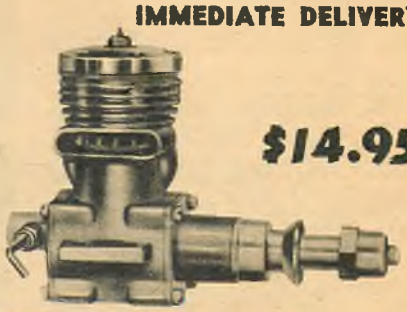

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Iron Pilots

(*Continued from page 29*)

of flying supplies to Goose Bay. And he knew the problems of north country flying. He was determined to establish a full-fledged airline.

Hoyt rounded up a couple of stripped-down DC-3s, virtually new, for $100,000 each; a good twin-engined PBY, and some smaller aircraft—a Norseman, a Bellanca, a Stinson Station Wagon, all on floats. He gathered in some old RCAF buddies, some of whom were pilots for regular airlines but preferred the shirt-sleeve informality of north country flying. Next he picked Mont Joli, Que., a small town on the Gaspé Peninsula as the line's main base. Mont Joli was the nearest point to the iron deposits with good rail service; besides, it has a fine RCAF base, with 6,400-foot paved runways, plenty of unused hangar space. Seven Islands, 135 miles northeast, was chosen as an intermediate base.

Then Hoyt got Timmons to put his bulldozers to work gouging out a crude gravel-covered airstrip at Knob Lake, 10 miles from Burnt Creek, 450 miles north of Mont Joli. Only a two-way 4,200-foot strip, Knob Lake still is the only spot level enough, in all interior Labrador, for a big-wheel plane to land safely, except for the ice-covered lakes in winter. Hoyt installed plenty of radio stations for safe instrument flying, and set up airline procedures. Weather minimums are those in effect for most Stateside airfields—500 feet and one mile.

Hoyt reserved the DC-3s for the mainline run between Mont Joli, Seven Islands and Knob Lake; the PBY hauls supplies, mainly gas or oil, from Seven Islands to Knob Lake, and the single-

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engine planes do the errand boy jobs, distributing the prospectors and their supplies from Knob Lake to the outlying prospecting bases.

Hollinger Ungava Transport's planes have hung up some impressive airlift records. For example, in 1948, they made 233 flights to Knob Lake, carried 2,044,785 pounds of cargo, including 1,188 passengers.

"Costs?" said Cap'n Charlie. "They're still too high—seven cents a pound. We've got to get them down." That means gas, delivered in Ungava, now costs less than $1 a gallon, instead of $7.50; a 100-pound sack of flour now may cost $17 delivered, instead of $100.

Hoyt's pilots are uncanny navigators, with or without radio, and also good aerial psychologists. Some time ago a young pilot uninitiated in bush flying took off in his seaplane from Goose Bay after laughing at warnings about the dangerous country.

When he became long overdue, a radio alarm was sent out and the usual extensive and costly search prepared for. However, Henry Gates, a H. U. T. pilot, picked up the alarm and asked permission to deviate a little from his course. A half hour later, he radioed in to report finding the lost pilot, down safe on an uncharted lake, out of gas, and thoroughly frightened.

"Very simple," explained Gates later. "Merely figured out how much gas he had, where he would go with that much gas if he didn't know the country. So I went there—and there he was."

Ungava is a particularly unhappy place for the timid pilot who hates cold weather flying. For Ungava is a land of July and 11 months of winter. Mid-winter temperatures often drop to 50 or 60 degrees below zero, rarely rise even to zero. That's when the exploration workers close up and go home, leaving the camps to prowling wolves and bear.

But that's Hollinger Ungava Transport's busy season, the time of the year when the line performs its best work. Then it hauls in hundreds of drums of gasoline and oil to see the camps through the spring, summer and fall; and the jeeps, trucks, power shovels and other heavy machinery.

"Why should we quit just because it gets cold?" says Hoyt. "That's when we carry our biggest loads—in the cold heavy air; that's when we get our best flying weather. Sixty below zero? Pshaw! Just pile on more clothing and turn on the heaters. If we've got to shut down the plane engines, a few gallons of gasoline in the oil will keep it from congealing."

Besides, he explains, that's the best season for distributing the supplies to the outlying camps—for every lake, with ice three or four feet thick, serves as a good landing place for the DC-3s, even with gross weights up to 30,000 pounds. It is cheaper, he explains, to fly the gas and other supplies direct to the outlying camps, rather than to haul the loads to Knob Lake, and then truck them over the crude road system.

Charlie Hoyt has a healthy respect for airplanes and for weather; and he's particularly uneasy about flying in the good old summertime, down in the States.

"That," he explains, "is when you get those dreadful thunderstorms in the U. S. Make mine cold weather flying!"

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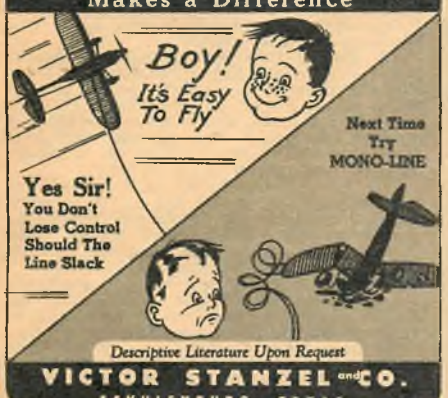

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Nationals

(*Continued from page 58*)

That wind picked up cool air off the nearby lake before it came to us. ROW had it tough: chopped lake and warning of water-moccasins.

By now you might be getting impression that if you had to stay at home to be close to the draft board, you did not miss much. It is not exactly so—you should never miss the Nationals if you can help it. After all, somebody has to win, regardless of the circumstances. Talking about winning, wonder how most of the boys took the scoring for the National Championship? The open class was hotly contested with real top notchers and a lot of contestants which made winning first place mighty tough. Yet they had to compete with other divisions where entries in some events were very small indeed.

To me the Nationals are super-special. Many of us plan for the next one as soon as we start for home. And consider the younger fellows: they hear so much about them that it becomes their major ambition. All this means that we older men and boys have an obligation to see that their dreams come true.

And so, back to normal living. Sure was fun while it lasted.

C. A. P.

(*Continued from page 32*)

Colorado; John M. Lanyon, Delaware; Hugh G. Blocker, Georgia; Lee A. Morton, Honolulu; Val G. Hopkins, Idaho; Robert M. Livin, Iowa; Terry A. Kennedy, Kansas; Carmi W. Saylor, Maryland; Donald E. McGregor, Michigan; Roy L. Nelson, Minnesota; Samuel E. Gaskill, Missouri.

David W. Rowland, Maryland; Alfred H. Delisle, New Hampshire; Alan B. DeVries, New Jersey; Francis D. Kehner, North Carolina; F. L. Kremers, Oregon; Thomas H. Baker, III, Tennessee; John T. McDonald, Texas; Donald W. Panoushek, Vermont; David B. Flanagan, Virginia; Richard L. Meyer, Washington; Thomas B. McDonald, Wisconsin, and Darryl M. Stevens, Wyoming.

To France: Morse W. Rose, Arkansas; David D. Madison, Montana; Paul L. Lundberg, Nebraska; Jerrey M. Paden, Oklahoma; Ronald Kirkham, Utah.

To Italy: John Smith, Arizona; Jean-Paul B. Bouthiller, Massachusetts; William A. Kuschel, Michigan; Andrew P. O'Rourke, New York; Jose M. Rosario, Puerto Rico.

To Portugal: John W. Bryan, Florida; Gerald E. Hess, Illinois; Buddy L. Burke, New Mexico; Paul A. Nordhougen, North Dakota; William L. Elkins, Texas.

To Switzerland: Ronald L. Hauck, Indiana; Savery G. Stuckey, Louisiana; Glenn E. Tucker, Maine; James D. Stockwell, Nebraska, and Galen O. Griffee, North Dakota.

OTC Requirements: Minimum requirements for ratings and promotions in the officers' training corps (OTC) of CAP were announced by National Headquarters.

General outline is as follows:

Required Time in Grade	Rating	Required Hours Each Grade
½ month	Basic	0
1½ months	Private	4
3 "	PFC	12
4 "	Cpl.	24
5 "	Sgt.	30
5 "	S/Sgt.	26
5 "	T/Sgt.	26
	M/Sgt.	26
24 months		Total hours 148

Subjects for the total hours required total 18, and include CAP, military customs, drill regulations and drill, interior guard duty, Articles of War, physical training, organization and activities of CAP Cadets, first aid and so forth.

New Jersey put on a disaster (simulated, of course) exercise that surprised even those who took part. Using 19 aircraft on 60 flights, with 78 Cadets and 79 Seniors, between South Plainfield and Hunterdon Airport, the exercise moved 5,200 lbs. of medical supplies, 1,600 lbs. of small machinery, 3,600 lbs. of foodstuffs, 3,600 lbs. of clothing and 53 injured persons as well as evacuation of 22 specialists and officials.

Actually all this materiel was not really moved, but Cadets and Seniors each representing 200 lbs. of materiel and evacuees were transported in order to simulate an actual disaster experience. And it was accomplished between 8:15 a.m. and 5 p.m. Deputy Wing Commander Frank E. Johnson said at the conclusion:

"This maneuver, designed to ascertain the efficiency of CAP in aiding a small isolated community in time of dire need, through the use of their liaison-type aircraft, definitely demonstrates the CAP is qualified to play its role as an emergency air arm for the citizens of our state as an auxiliary of the USAF."

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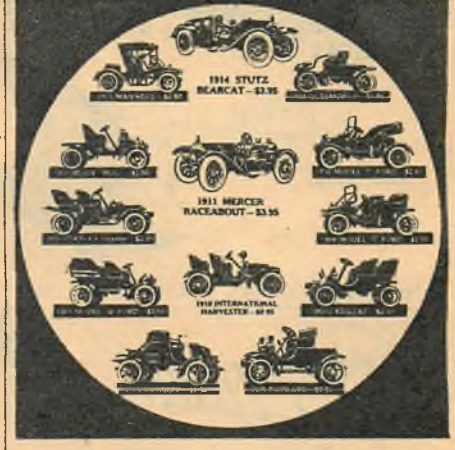

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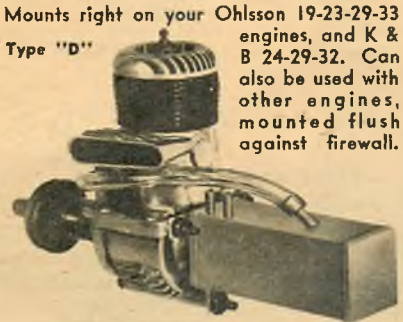

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Dope Can

(Continued from page 39)

That's the big job for the Academy right now. It must be remembered, of course, that every model flyer will go all out for the classes in which he flies—and the others don't matter too much (he thinks).

Along with thinking that there are entirely too many events for most folks to fly in, lots of experts are beefing about the way meet champions are chosen these days. There's another field in which the Academy can do a great service by coming up with some practical suggestions in its rules book on how a meet champion should be selected.

All honor to the last four National champions—each has been an excellent flyer and an extremely likable chap. But there are many who point out none racked up any points to speak of—if, indeed, any at all—in control line flying. The entrant who performs indifferently in some of the indoor events of the National meet stands a far better chance of picking up points for the National Championship than does a crack control-line speed or stunt flyer who must compete against 10 times as many entries.

It just doesn't seem right that the most hotly contested categories produce few champions. The champs are all strong in indoor and outdoor rubber and free flight gas. No matter how much we may like to build or watch indoor rubber models, we must admit it's a diminishing field where a few experts and a mighty few newcomers sort of get off on their own with little regard for the overall contest picture.

We'll say no more on the subject. Comments from readers will be welcomed. Let's keep all remarks as fair as is humanly possible.

Award Data. Credit for the first club to respond to AT's request for reaction to its prize poll was the Lansing, Mich., Model Association. There the great majority voted for trophies and merchandise for top-place awards and merchandise for runners-up. Leslie E. Steen, Jr., LMA secretary sent along the results of the voting. Members felt that a trophy *and* merchandise should go to a 1st place winner since there was not sufficient motivation for all to seek top places when only trophies are awarded.

National Meet Highlights: Three very fine perpetual trophies were put into competition this year—Testor's best finish award, the Tulsa Glue Dobbers' hand-launched glider cup, and the First All Speed Team's team racing trophy. The F.A.S.T. trophy was a club project and was hand-crafted by Leighton Conrad, Paul Conrad, Les McBrayer, Rudy Panko, Howard Borden, Tony Palethorpe, Granger Williams, Lawrence Williams and Keith Storey.

The Dallas affair seemed to be a "second generation" Nats with such flyers as Dick Everett showing up with the offspring. Some of the events drew surprisingly few entries. Jet speed, flying scale rubber and control line scale were several that had fewer entries this year than in '49. A trend? or just the location of the contest?

One of the drawbacks of the National competition was that a big group of gobs was not available for timing purposes as in past years at the Olathe, Kan., meets. This was no fault of the Navy, nor of Johnny Clemens, the hard-working contest director. The Communists almost wrecked the meet—by starting the Korean conflict. The big Dallas naval air base had to turn to and activate Marine units and Navy air squadrons, thus having very few men it could place at the disposal of Mr. Clemens. But a number of modelers pitched in to help so the meet did come off.

Managers of various special events gave the sponsors a great deal of help. These individuals were Keith Storey, director of control line; John Young, team racing; John W. "Red" Hillegas, free flight; Harry D. McCall, R.O.W. free flight; M. J. "Mike" Thomas, radio control; Lt. John H. Burton, USN, Navy carrier event; Don Murray, indoors; Lt. Harry Vogler and Matt Sullivan, flying scale; Earl Witt, stunt; George Gardner, PAA-Load; Chuck Adkins, AMA supervision; and Mrs. Dorothy McCall, registration.

Beginners' Instruction Material. Quite frequently we receive requests for info on suitable kits to start would-be modelers off on the right track. We remembered that Cleveland Model & Supply Co., 4506 Lorain Ave., Cleveland 2, Ohio, had two special "packages" for instruction work. We queried the concern to see if the materials were still available. Here's the reply of E. T. Pachasa of CM&SC:

"In Cleveland's two M.A.C. (Model Airplane Course) kits, each selling at 35c, is the material and the instruction needed to start the beginning modeler off on the right foot," reports Mr. Pachasa. "Too often youngsters eager to get into gas modeling

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spoil their own fun by tackling planes far beyond their years. Boys from 8 to 10 years of age need simple, elementary instruction in the fundamentals of flying and these cannot be obtained by plunging into a complex, costly kit model.

"Their needs are filled in the M.A.C. kits, in simple step-by-step fashion, beginning with the five very simple models contained in kit MAC I and going through the 3 more complex built-up stick models contained in kit MAC II. The first kit contains two paper gliders, one of conventional form and the other of flying wing layout, also a built-up tissue-covered glider, and a 17-inch balsa wood contest glider.

"By the time the novice has built the five gliders contained in MAC I he has an elementary grasp of just what makes an airplane fly and also how to control its flight. Simple adjustments are described in this kit. Then the modeler is ready for MAC II and its three built-up rubber powered stick models, two of which are hand launched and the third of which is provided with a landing gear to permit R.O.G. flight. In this kit, too, the adjustment is clearly and simply described and the beginner now has progressed from fundamentals through to adjustment of powered models and is ready to go on to stick models and built-up models of a more complicated type with full confidence and with far greater chances of success."

A remarkable feature of both kits is the excellent plan which abounds with special sketches and supplementary suggestions for the novice flyer.

Carl's Caravan. Carl Malmsten, 24-year-old chief engineer for the F-B Model Plane Co., went on a three-month tour of the country this summer demonstrating F-B models and "selling" modeling in general. Thus he follows along in the footsteps of some other famous model designers. Carl Goldberg, while designing for the old Comet concern made a cross-country demonstration trip, as did Leon Shulman when he was with Drone engines. Jim Walker of A-J Aircraft does that almost every year and all of the demonstrators have produced a great many new modelers from the audiences which have watched them fly.

Most Active Club East of California. That's what the Prop Spinners club of Elmhurst, N. Y., calls itself. R. L. Hatschek tells us that the PSC has recently reorganized around a nucleus of old members. The new group numbering about 30 includes such well-known figures as Bill and Warren Fletcher, Merrick Andrews, Val Luce and Alfred Van Wymersch. Main club interest centers on the Wakefield, but is also high in free flight and radio control. Six of the members have r-c jobs in flying condition. U-control is also represented and indoor microfilm flying is not to be overlooked with men like Pete Andrews around.

For information on membership prospective PS'ers should contact William Fletcher at Newtown 9-2795 (87-08 Grand Ave., Elmhurst, N. Y.).

Reader-Builder Comments. Grady F. Fuller, Sedalia, N. C., says he cannot find words to tell us how good he thought the last several issues were. "I have just finished flying Loopy," he writes, "and I cannot think of another plane that I have flown that will do all the stunt patterns with (such) ease. Loopy should have been (called) a trainer instead of a stunter. I had a total of about 2 hours' time with a control model and had just started doing wingovers, dives and loops before flying Loopy. On my first flight after trying out the controls and winging it over a few times I decided to try a vertical 8 which I did with ease, then I tried an overhead 8 with the same results. After looping it a few more times I tried a stunt I dreamed up, the 'ZX5'—it is nothing but following the lines of these letters and number.

"I am only 16 but I have been building models and reading Air Trails since I was seven and every year and every month it gets better and better."

Thanks, Grady, mighty nice of you to write.

"In the September '48 issue of AT," Dion Typond of Brooklyn, N. Y., reminds us, "you had . . . plans for the Towliner C by Benton Cleveland. May I say that if anyone intends to build the Towliner C he had better put on some sort of dethermalizer or be prepared to give chase. I have

ADVERTISERS' INDEX

November, 1950

While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this November, 1950, index.

AND NOW
LITTLE MOE HAS
THE HIGH PERFORMANCE
"NITRO XX" FOR THE
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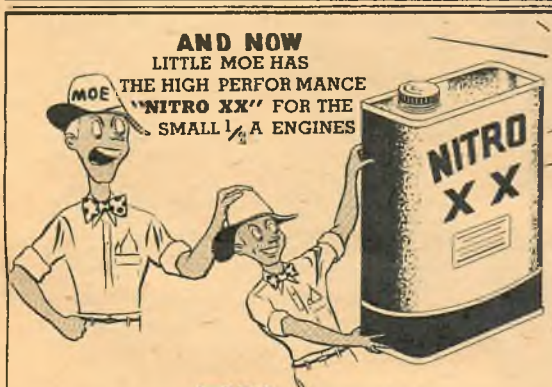

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recently taken an interest in towline gliders so I built the 'C'. It was finished in two days and flown on the third. After a slight bit of trimming I followed the instructions given by the author: 'Attach a short line to the front hook and tow gently.' After running no more than a half-dozen steps I watched the ship rise to the full extent of the lines (about 30 feet) and smoothly unhook.

"That's all brother!! The thing kept going up."

Sorry, Don, looks like you built too good a model.

AT's AT-6 (or T-6, as it is currently known) by S. Calhoun Smith has been widely modeled throughout the U. S. and overseas. Slick 6's have shown up in both the National and Plymouth International meets as well as at many regional scale model events. H. L. Guinn of the Selma, Ala., Dope Daubers (he's prez incidentally and can be reached at 125 La Porte St.) wants to get a good word in for his model. "Boy, does it fly swell; it will do a beautiful loop—maybe a little on the large side. Mine does somewhere around 85 mph with an Ohlsson 60 rotary valve. Won 2nd in beauty at Meridian, Miss., on July 4th. Just one point you might have included; the original (full size) had 2 degrees wash-in and out. So I yanked one (wing) down and one up when I planked mine so she pulls about 10 pounds at full speed and keeps the lines tight straight up."

Control Tower. The Dunndalk Model Airplane Club of Baltimore, Md., has a combined club house and control tower at its flying site. Affair is professional looking job which cost only $10 for materials plus plenty of elbow grease by the members. During the summer flying season the club house serves as a refreshment stand and contest headquarters. A public address system in the control tower keeps the spectators advised of activities which include plenty of team racing by the group.

Typical of the entries in DMAC team racers was a photo John Dohner, secretary, sent in. It shows two Petes, a Miss Los Angeles, a Curtiss Hawk and a Knight Twister. Other officers are Don Seeley, pres.; Dan Wieczynski, veep; Vernon Jung, treas.; Fred Blahus, sergeant at arms; Clarence Smith, contest director; and Lee Witmyer, field director. The last election brought some young blood into the management circle so the old timers could catch up on their modeling.

Kitty Hawk Comments. "Let me thank the person responsible for sending along the dope on the new Kitty Hawk contest for rubber models," says George W. "Bill" Poythress, noted model designer and contestant from Hampton, Va. "I am interested in giving the kids a break and yet not putting them in a class by themselves.

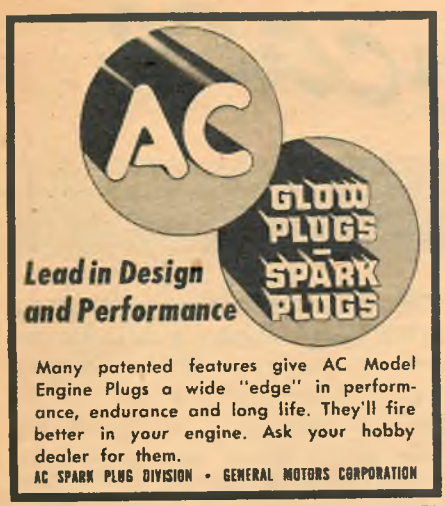
"After I had read the article in the issue and the stuff you people sent to me I favor the event in almost every respect. The system of wing area measurement, however, I am not so keen on. I am probably a little old fashioned though, I can't see any easier way to do it. Sure, it will make all ships have square wing tips, but they are easier to build for the beginner!

"My own opinion on the stabilizer area is as follows: I suggest a maximum *total* area of wing plus stab of 210 sq. in. and let the builder use any means he pleases to divide the two. If a modeler should try a tandem wing arrangement and he is successful, why discourage him? Probably most ships will follow conventional lines with about 50 percent stabs anyhow. Or maybe I just favor the guy with—shall I say—intestinal fortitude enough to try something a little different.

"The contest director will welcome one less rule to enforce.

"As for the number of flights I say if the contest has less than 25 entries, let the contestant have as many flights as he can squeeze in with the fellow having less than 5 flights to his credit having preference in obtaining a timer. Highest single flight wins. The average meet I have been to recently has about 20 or less entered in rubber anyway, and with all day to fly in, why should the last hour or so of contest time be spent in just sitting around waiting for the prizes? Let them fly as much as possible, the more contest time a fellow can accumulate, the better he will be next time. A super Wakefield team could be the result!!

"Henry Dore is a man after my own heart. I endorse his proposals 100 percent. I have talked over the K. H. event with most of the (Langley Field) Brainbusters Club members—also Mr. Dore's suggestions. Here are the results: No wing area rule; minimum weight to be 5 ounces; no cross section rule; no stab area rule (however, they thought my area rule was sound); highest total of three flights, any number of flights or attempts, anything under 15 seconds not to be recorded to save paper work; the AT article placed too much emphasis on available kit designs, more in-



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terest should be shown in the kids instead of the kits.

"The above suggestions are just that. We want to see the ball get rolling and iron out the differences of opinion later. So we will endorse the rules as written to speed things up. Didn't someone once say, 'You can please some of the people some of the time, etc. . . .'?"

Bill, our sincere thanks for a swell report. And our appreciation to the Brainbusters, too. We'll be watching the mail for additional comments and we hope to have some results of a real Kitty Hawk contest right soon.

Terse Copy. "The Boston Balsa Bees, an active control-line club in Greater Boston have their own centrally located flying field in Boston. Although most of the members specialize in control-line planes—scale, stunt and speed—several build free flight jobs and recently a glider contest was held with great success. Prospective members should contact William O. Ellis, 135 Federal Ave., Quincy, Mass." That's just the way M. S. Wolf wrote us and we'd say he got the story across very nicely.

Cross Country. "I think you might be interested in news from a Canadian model club, the Hastings East MC of Vancouver, B.C. (Canada)," opines W. E. R. Collins, honorable secretary of the organization. "This club was formed six months ago and now has a membership of 35, among them being some very keen control line flyers. The main object of the club is to interest and instruct the juniors in the art of aeromodeling. In addition to the two monthly club meetings, a class of instruction is held at headquarters one evening a week and the juniors are encouraged to bring their models and also to voice any of their difficulties. The senior members present give them all the help they require. This instruction night is going over with a bang.

"We hold monthly contests and cups are presented to the winners of the various events to be won outright after three successive wins and at the end of the year there is a trophy presented by one of our patrons for the next best performance of the year.

"The following are the officers for 1950: chairman, E. Fick; treasurer, F. W. Collins; safety officer, Harry Hackett."

Father-Son Team. James L. Nobles reports that both he and his son are U-controllers and the activity has served to give them some great times together. When the father went off to the war his son was 11 and had reached 16 before Mr. Noble was demobbed. They soon got reacquainted and started modeling together. Their first job was the AT Albatros tripe—a tough one to start with. It looked nice but crashed quick. "Two TC-2's and a Piper Cub later," says friend Noble, "I built a second tripe and it was a sweet flyer." At present the younger Mr. Noble has a Nifty and a Key, while Father flies a Trixter Invert, a Pete and a Waco Y-4. Both use O&R power plants.

During the war friend Noble spent 18 months in France and Belgium and now would like to correspond with some control line fan in either country. He reads and understands French fairly well. He is a mechanical engineer. How's about it, *mes amis*? The address is 416 W. Main St., Covington, Va.

Incidentally, Monsieur N. has started his 3rd Albatros tripe!

Can't Keep Good Man Down. The name of Bob Palmer is well known in West Coast flying circles, but we wonder how many realize the handicap under which he performs. To hearten those who may think model flying is not for them, Bob sends in this interesting story. "I have been flying U-control models almost since the activity started," he writes. "I had won a good many contests and then teamed up with J. C. Yates. Our team work became a byword out here. Then, as things will sometimes happen, I lost four fingers of my right hand in an industrial accident. First I thought my flying days were over and I'd never be able to build and fly again.

"But as my hand healed and I watched my friends flying I sat down and devised a plastic glove to fit my hand and it wasn't long before I was back in there pitching—both building and flying. Of course, the building part takes a little longer now, but I get it done and now I'm working at my hobby and enjoying it and life immensely. This past year I even won my share of contests."

Bob, we congratulate you on your outstanding model record which seems even more impressive when we know of the odds that were stacked against you. We hope that others who may have become dispirited because of some ailment or accident will take heart from your story and try to stay with the sport.

Bob performed with great success at the '50 Nats, taking 2nd in open.

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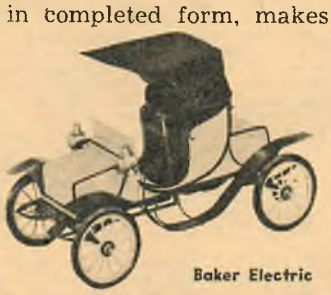
Showcase

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

New entry in power boat field is Ohlsson & Rice (Emery at Grande Vista, Los Angeles, Calif.), with the O&R Marine engine, a .29 cubic inch displacement job selling for $14.95. Features are front end flywheel and rear shaft which permits low hull placement. Set-up includes a ballbearing thrust drive, roller bearing crankshaft and universal coupling. . . . Hobby Decal Specialists (393 Smith St., Perth Amboy, N. J.) have added "Checkerboard" trim and an "Alfa-bet" package to the Trim-Film line. Latter consists of 144 miniature numbers and letters made up in 4 sheets selling for 25c. "Checkerboard" comes in red, white or blue on a transparent background, so the checks can be applied over a different colored Trim-Film background if desired, thus producing up to 24 different color schemes. Checks are available in ½ or ¼ inch size for 25c per booklet. Hobby Decal has a special offer whereby model clubs can obtain club emblem decals at cost. Write the firm for more information. . . . Within a short time the Fador Mfg. Co. (501 E. Clinton St., Elmira, N. Y.) will add another Smallster auto kit to their line of miniature car models. This newest kit, shown below in completed form, makes up into the 1908 Baker Electric Auto, a favorite of genteel society in the early part of the century. Since the Baker used an electric motor it appealed to those who deplored the noise and gas fumes of the gas engine "buggy." The Smallster Baker will have a wheel base of 5 inches and will sell for $2.50. . . . Monarch Model Aircraft Co. (Brooklyn 33, N. Y.) adds a Class AA (Half-A) prefabbed free flight to its line, the pod-and-boom Scot-Free. Ship has a wing span of 34 inches and retails for $2.50. Monarch makes control jobs, too.

O&R's Marine

Trim-Film Checks



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Showcase

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For those of us who like to "tinker" with engines (and breathes there a modeler who doesn't?) the Herkimer Tool & Model Works (109 Harter St., Herkimer, N. Y.) has come up with an assemble-it-yourself kit for its .049 OK Cub engine. You get complete instructions and they say 15 minutes is about all the job takes. What you get is the $4.95 Cub in knockdown form with all parts precision machined, a fuel tank-engine mount with Neoprene tubing, a prop and spin starter. This is a $5.95 value which in kit form costs $4.75. If you want an engine that's already assembled the finished .074 and .099 Cubs come at $5.95. . . .

The resumption of aerial warfare has stimulated interest in military aircraft. Among the concerns with fighting planes in kit form is Cleveland Model & Supply Co. (4516 Lorain Ave., Cleveland 2, Ohio) whose F-80 Shooting Star we've pictured here. Other C-D military ships are the Thunderjet, the F-38 Lightning and the F-61 Black Widow. Cleveland has a 10c catalog of its complete line available. . . . Speaking of catalogs reminds us that Polk's Model Craft Hobbies (314 5th Ave., NYC) offers "Americana on Wheels" for 15c which lists a number of lesser known vehicle kits in addition to all the scale automobile kits now available. The old fire "masheens" and early Western wagon models, plus the hansom cabs and other horse-drawn carts will appeal to those modelers who like to vary their modeling diet. . . . Comet Model Hobbycraft (129 W. 29th St., Chicago 16, Ill.) has added another cement to its line, a fast drying formula. This is in addition to the regular Comet cement and sells at the same price, 10c, in tubes. . . . "Yank" is a ready-to-fly Class AA free flight for engines from .035 to .049 by Berkeley Models (138 Greenpoint Ave., Brooklyn 22, N. Y.) costing $1.50. Wingspan is 23.5 in.

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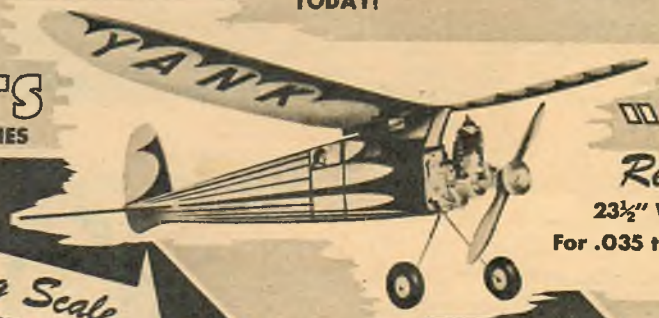

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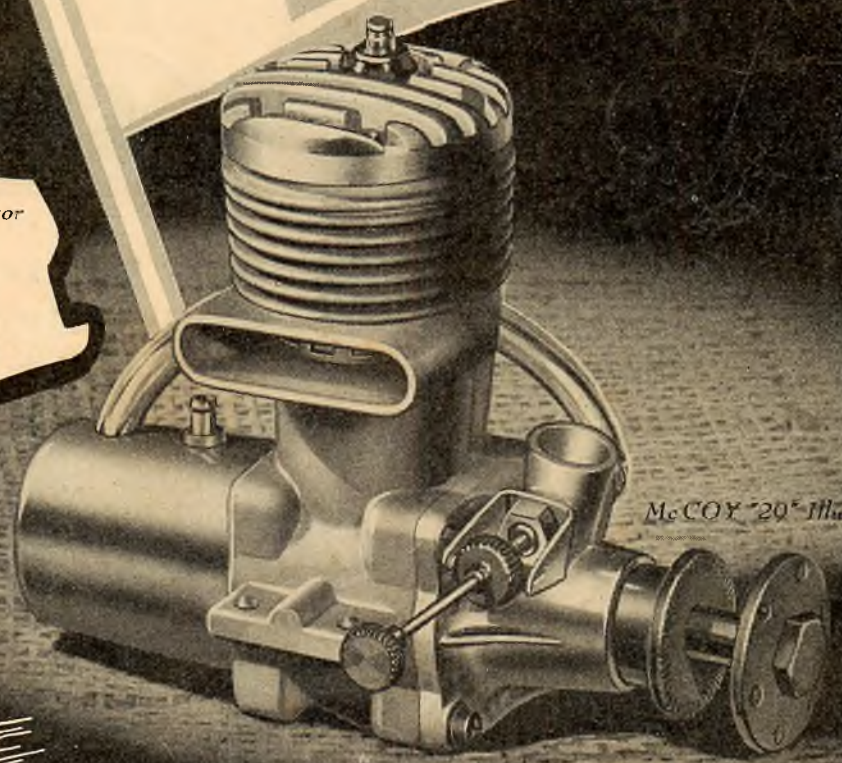

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